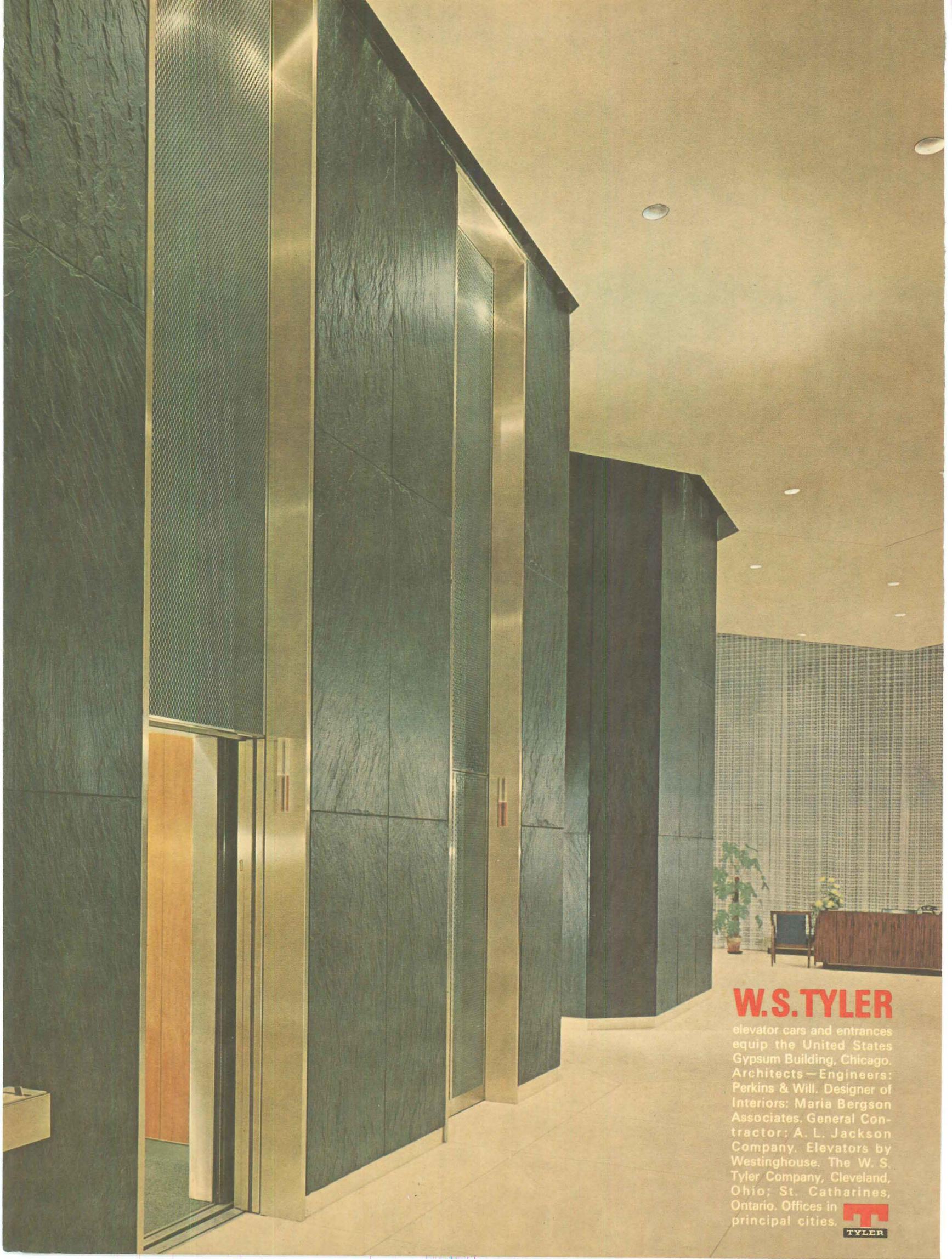


ARCHITECTURAL FORUM THE MAGAZINE OF BUILDING FEBRUARY 1964

FORUM





W.S.TYLER

elevator cars and entrances equip the United States Gypsum Building, Chicago. Architects - Engineers: Perkins & Will. Designer of Interiors: Maria Bergson Associates. General Contractor: A. L. Jackson Company. Elevators by Westinghouse. The W. S. Tyler Company, Cleveland, Ohio; St. Catharines, Ontario. Offices in principal cities.

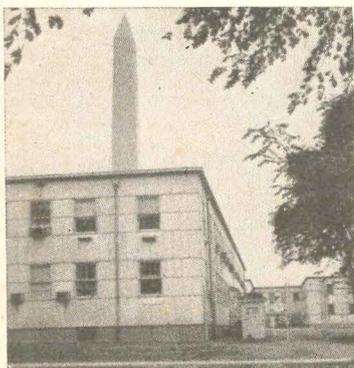


PUBLISHER'S NOTE

In their December editorial, the editors paid tribute to "the best friend the arts in America, including architecture, (have) had in the White House since Thomas Jefferson." Apparently, John F. Kennedy was also the most interested reader of FORUM ever to occupy the presidential mansion.

This became clear on December 1 when Artist William Walton wrote for the *Washington Post* a full page account of the late President's love for his city. A close personal friend of Mr. and Mrs. Kennedy, Walton was the President's unofficial counselor on art and architecture and for six months has been head of Washington's Fine Arts Commission. The introductory paragraph of his account and his references to our magazine are of particular interest to other FORUM readers:

"One of John F. Kennedy's many radiant faces was turned toward architecture. Of all the arts this was the one closest to



his heart. His interest was not that of a dilettante trying to design buildings which professionals would later put into rational shape. His was the interest of a cultivated man who recognized in architecture the true expression of his age and who realized that as President he could influence architecture and thus the face of the land he loved. . . .

"The January 1963 issue of the ARCHITECTURAL FORUM devoted

all its pages to a critique of Washington architecture, a good deal of it very unfavorable. I knew he would be interested. His voracious appetite for reading is well known. The only problem always was to get his devoted and wise secretary, Evelyn Lincoln, to put it in one of the many reading piles that stood beside his various operation posts—his office desk, his rocking chair, his bedside table. She slipped the ARCHITECTURAL FORUM into a strategic place.

"Within 24 hours he had read it from cover to cover and phoned me. 'What are we going to do about the Washington Monument Grounds,' he said without introduction.

"What do you mean,' I asked. 'You know what I mean. I've read your magazine and I've looked out at the Monument Grounds and I think they're right. I'm telling Connie Wirth [National Park Service head] to consult with you and get that cleaned up. And let's get those "tempos" off the Mall right away.' (General Services Administration has already scheduled the first demolition of these unsightly World War II buildings—seen at left.

"These were quick details that he could clean up immediately. And next day he insisted on talking about the deeper criticisms the magazine had made of architecture in Washington. . . . His taste was broad enough to recognize that Saarinen's Dulles Airport is one of the great beauties of our time. He also thought and said that glass curtain façades were not for the heart of Washington's federal area."

Would that all of FORUM's readers reacted as positively to the editors' criticism as did the late John F. Kennedy. The building of a better America would come more quickly if they did.

—J.C.H. JR.

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Armstrong DORELLE VINYL CORLON designed and priced for commercial interiors

This new sheet vinyl floor offers long-term beauty and performance and costs only about 70¢ sq. ft. installed.

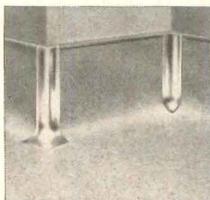
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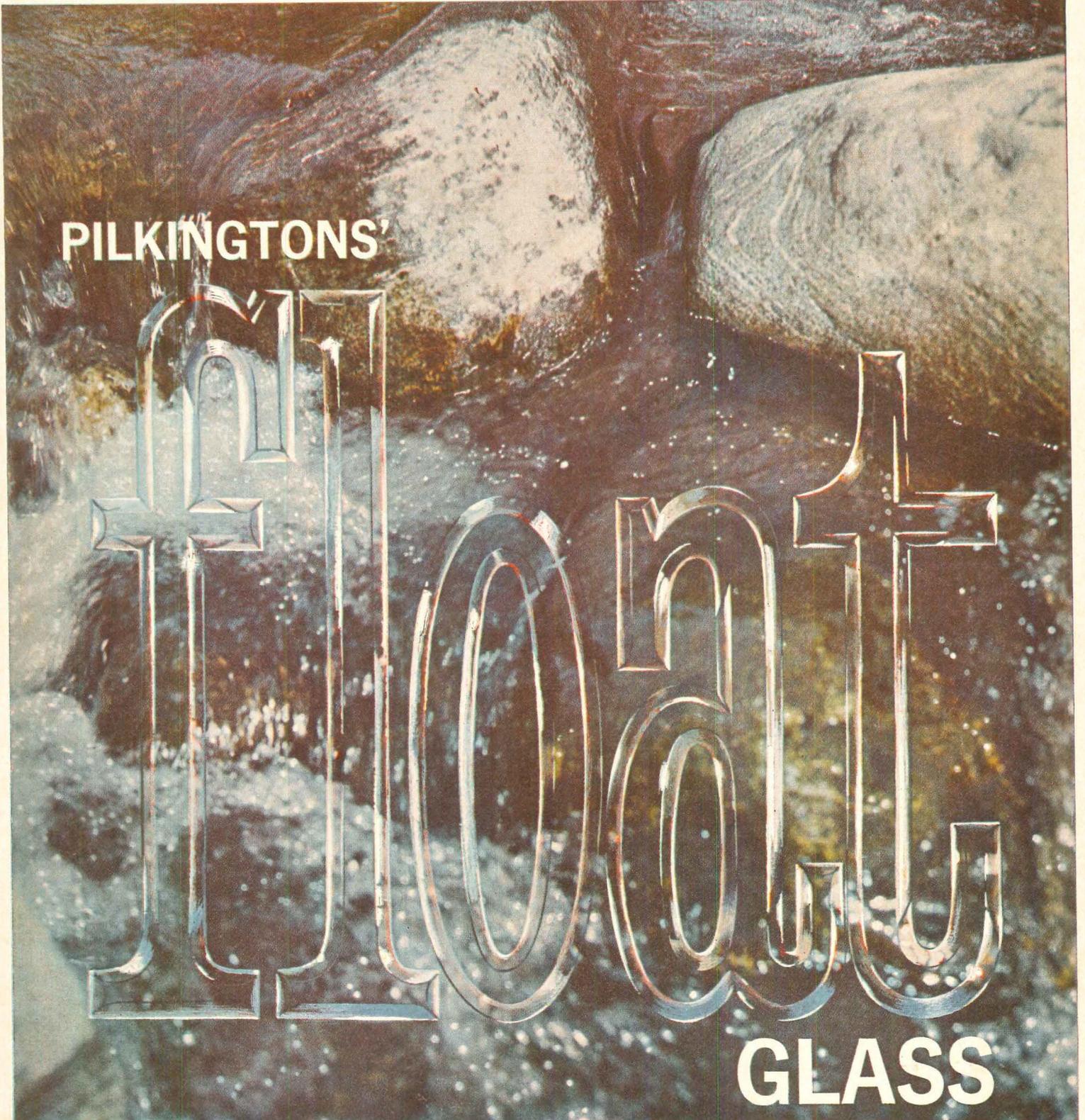


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**HOUSING BILLS:
WHAT LBJ WILL ASK**

WASHINGTON, D. C.—In his State of the Union and Budget speeches, President Johnson hinted that he has big plans for new housing legislation. Just what they were was left vague—Congress will find out when it hears the message on housing later this month. But HHFA Administrator Robert Weaver, who had met with the President in Texas and in Washington (photo) last month, sketched the substance and scope, if not the exact dimensions, of the forthcoming legislation.

One thing seems certain: it will be a more ambitious program than recent ones, involving much new construction, new approaches to old problems, and at least one revolutionary new proposal. Among the highlights of this year's housing bills going before Congress will be:

- ▶ Aid to big developers to purchase large tracts of raw land. The FHA, Weaver intimated, would insure land-development loans to builders who already own the land or have options to buy it. This unprecedented proposal is designed to prevent sloppy, piecemeal development. The federal government would first help finance the purchase of the land, then aid in planning and development. Not only housing, but also commercial and industrial buildings would be encouraged in these completely "new towns."
- ▶ Help to provide new developments with "community facilities,

particularly water and sewage disposal plants." FHA would offer builders easy credit terms to get such facilities built early in the development.

▶ More public housing, and new

CECIL W. STOUGHTON

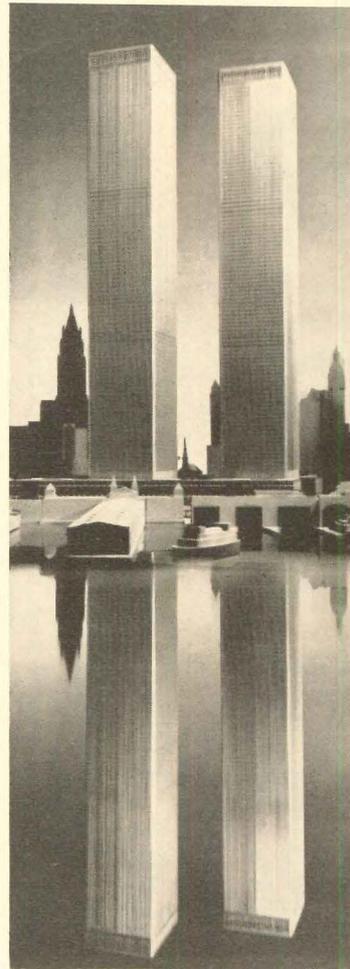


LBJ, Weaver (right), and aides approaches to it (e.g., purchase or lease of existing housing). LBJ asked Congress to authorize 200,000 new units through fiscal 1968.

- ▶ Extension and expansion of the urban renewal program, which has been budgeted at \$1.4 billion for two years, pending Congress' OK.
- ▶ Revival of the \$375 million Mass Transit Bill, which bogged down in the House last year.
- ▶ Continuation and expansion of the middle-income, multifamily housing program under Section 221(d)3. This very popular program provides below-market interest-rate financing for rental units.
- ▶ Training for housing and urban renewal personnel. "One of the great difficulties that we face is a paucity of well-trained personnel," Dr. Weaver commented.



PHOTOS: BALHAZAR



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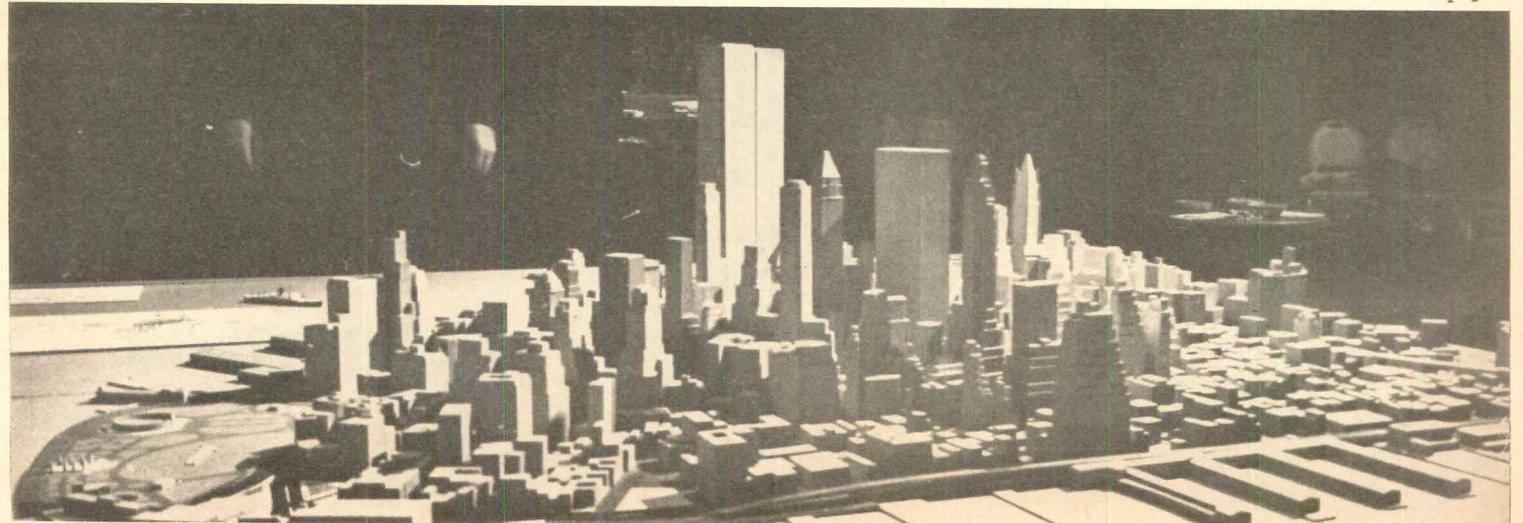
NEW WORLD TRADE CENTER FOR MANHATTAN

NEW YORK—Last month, the Port Authority of this city unveiled the design of its long-awaited World Trade Center. A scale model of the project (left) shows two 110-story towers surrounded by three-story buildings.

The metal-clad towers will stand 1,350 feet above the lower west side of Manhattan, making them the tallest buildings in the world—dwarfing the 60-story Chase Manhattan Building in the model photo below. (The Empire State Building is 1,250 feet high plus 222 feet for a television antenna.) Because the Center will be occupied by a host of public and private organizations engaged in peaceable international trade, Architect Minoru Yamasaki defined his job as the creation of

continued on page 7

DON RICE—N.Y. HERALD TRIBUNE



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Yamasaki (and Associated Architects Emery Roth & Sons) considered 102 different schemes for the Center before finally determining that since Manhattan is "a single-tower town," twin towers would identify the project immediately—especially as the 16-acre site near the Hudson River is "physically separated from the general mass of high buildings in lower Manhattan." (The tract now contains a group of low, generally decrepit commercial structures.)

Basic design decided, the architects took the attitude, said Yamasaki, that "nothing that was ever done in a high building before was necessarily right." Thus, the World Trade Center towers introduce at least two structural innovations: first, a close-knit steel-framing system for the exterior walls. This allows the building, which acts like a monolithic, latticework box beam cantilevered out of the ground, to resist lateral loads. Exterior columns spaced 3 feet 3 inches apart are connected with wide structural spandrel panels that, in effect, turn the outside wall into a series of inter-connected vierendeel trusses. (The structural engineer is John Skilling of Seattle with whom Yamasaki has worked on several occasions in the past.)

A second innovation lies in the organization of the elevators: each tower is separated into three zones, each of which is served by its own local elevator system. Express elevators carry passengers nonstop to "sky lobbies" on the 41st and 73rd floors, where passengers then switch to the locals. This plan effectively leaves 75 per cent of each floor area available for occupancy.

At ground level, the architects have tried to establish a human scale ("where man can identify himself with the project," said Yamasaki) by having an elaborately colonnaded three-story building for exhibits, galleries, and commercial facilities, and a hotel. Also at ground level is a landscaped 5-acre plaza.

Construction of the enormous project will start in 1965, to be

completed in 1970. Cost of construction has been estimated at \$350 million (cost per square foot "will be about the same as that of the Pan Am Building," said a Port Authority official), financed by the P. A. itself. The complex's 10.5 million square feet of rentable space will rent for about \$6.50 per square foot to private organizations—less than in most downtown Manhattan office buildings. As for the city, it will receive more than double its present annual tax revenue (to \$3 million) from the Center.

BIG CITIES REPORT ON BUILDING PROSPECT

Here is a cross-country survey of upcoming building activity, based on local predictions and on permits applied for in five of the cities with the greatest 1963 volume:

LOS ANGELES—This city has been the site of the most fervid construction activity in the nation for the past three years, and it looks as if L.A. will lead again in 1964. But, says Economist Conrad Jamison of the Security First National Bank, there has been overbuilding in residences and offices. Though the totals for these categories will probably decline this year, he adds, institutional building should continue to be strong. Other sources feel that "central L.A." could absorb more office buildings, and that suburban shopping center and commercial construction will decline as demand has now caught up with supply. NEW YORK—For the first time since 1960 and before, this city will not have the benefit of an abnormal situation to spur more building. With the World's Fair construction program and the building splurge caused by the rewriting of New York's zoning laws out of the way, the outlook for construction is now unclear. One economist predicts a 5 per cent slowdown in apartment and office construction.

Scheduled for completion this year, however, are 12 new office buildings with over 6 million square feet of rentable space. Also in the indefinite future are a number of huge downtown projects including the new headquarters of the New York Stock Exchange, and new Civic Center. Outlook: the boom will become a boomlet. BOSTON—Everybody is predicting a good construction year for this city, mainly because of the number of new redevelopment projects underway. If there is one doubtful spot, states President

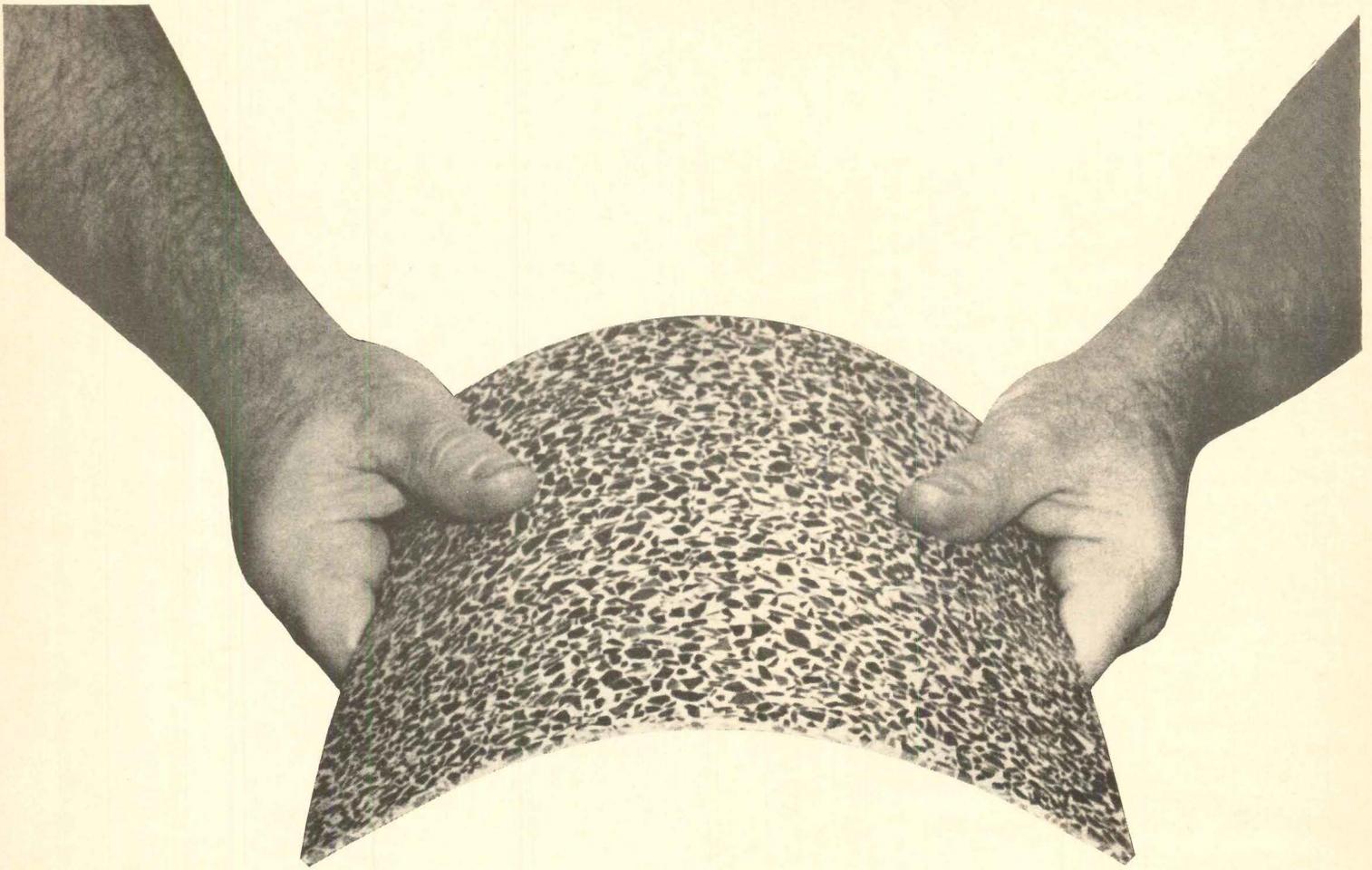
Robert A. Pihlcrantz of the Boston Building Owners and Managers Association, it is in office building. Leasing of the available space went slowly last year, he notes, which bodes ill for the 3 million square feet of new office space getting ready to come onto the market in 1964.

HOUSTON—National attention focused on this city last year as the NASA Space Center and its residential projects came closer to reality. Houston also opened three giant office structures in 1963—the Tennessee Gas Transmission

continued on page 9



RICHARD SAUNDERS—FORTUNE



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Terrafino installation at Empire Trust Company, New York City
Architects: J. F. N. Associates of New York City

Terrafino CORPORATION, P.O. BOX 52, CARLSTADT, NEW JERSEY

Building, the Southwest Tower, and the Humble Oil Building. Most sources see the pace of new construction declining this year. One reason: apartments now have an occupancy rate of 87.3 per cent, office buildings 91 per cent. These figures and new building permits indicate that the rate of new building in such categories will not increase in 1964. A number of new offices outside central Houston are scheduled to open this year, however. Included: the Siteman Building, and the headquarters for the American General Insurance Companies.

CHICAGO—Construction in the Windy City is likely to decline. According to building permits issued in 1963, apartments, a strong factor last year, will slip about 5 per cent under 1963's total of 19,700 units. But industrial building will be strong, says the Association of Commerce and Industry, noting that such big companies in the metropolitan area as Inland Steel, Youngstown Steel, Acme Steel, and International Harvester are expanding and Bethlehem Steel is building a new installation at nearby Portage, Ind.

IS THE APARTMENT BOOM TAPERING OFF?

WASHINGTON, D.C.—Leading housing economists were pleasantly surprised last year by the high growth rate in new U.S. apartment construction—up a healthy 8 per cent over the year before. Unfortunately, they agree that 1964 is not likely to see as much activity in this building category. They do not agree, however, on how big the slowdown will be.

One reason for the predicted decline in the growth rate: several large cities have built more apartments than they could immediately absorb. Signs of overbuilding (high vacancy rates and a decline in the number of apartment building permits issued) can already be seen in New York, Chicago, Phoenix, Philadelphia, San Francisco, St. Louis, and

Houston (but not Washington, D.C., Detroit, or Dallas). Said Nathaniel H. Rogg, chief economist of the National Association of Home Builders: "I have a vivid feeling that the apartment-house boom is going to catch up with us." He forecasts an increase in all residential construction, including houses, of 0.45 per cent.

Department of Commerce economists, along with FORUM Consultant Miles Colean (2.6 per cent increase), and Dr. Robinson Newcomb do not entirely share this feeling; all of them predict a good year for apartments—though not so good a year in terms of growth rate as 1963.

Reasons for their optimism: the most disturbing vacancy rates have been reported in the luxury-priced class of apartments, and not too many of these seem to have been built. Moreover, the apartment boom of the past few years affected 23 of the 25 largest urban centers in the U.S., and in many of these the new structures merely replaced obsolescent buildings, did little to provide additional supply needed because of population growth. Finally, apartment buildings are moving into the suburbs (46 per cent of the 1962 total were built there), and this move is continuing and helping to stimulate construction of new shopping centers, churches, schools, and other suburban structures. "Unless there is a movement toward monetary stringency," says the Department of Commerce, "further growth [in apartment construction] over average 1963 levels appears probable."

JEFFERSON ARCH: UPWARD AFTER DELAY

ST. LOUIS—Ever since the construction of this city's Gateway Arch was halted last November, there have been rumors of serious trouble. These were laid to rest last month when work was resumed on the Jefferson Memorial.

Back in November, a construction error in the south leg of the

Arch made it impossible to post-tension the reinforcing rods in the concrete properly, and work stopped with the south leg 120 feet up. No such troubles existed on the north leg, but work was suspended there too, at 168 feet, so that it would not proceed too far in advance of the south leg. The problem was solved some time ago when it was decided to put in additional stiffeners in the south leg above the 120-foot level of construction.

While this problem was being thrashed out, the contractors (MacDonald Construction Co.) found that there was a chance of a more serious difficulty later on: because of the weight of the creeper derricks and the force of the jacking which will spread the two legs apart for the insertion of the final section, placing this section would create a thrust 50 per cent greater than that for which the Arch was designed. This temporary crisis was resolved by adding permanent structural steel reinforcements in the sections above the 300-foot level on both legs.

Creeper crane on north leg



ARTEAGA

Weather permitting, a new 12-foot section will be set every seven or eight days. If necessary, two sections can be hoisted together, but this will not be necessary to get the Arch ready for a February 1965 opening, according to MacDonald.

BEGINNING OF THE END FOR "TEMPOS"

WASHINGTON, D. C.—Last month, two grown men, neither one especially renowned for his muscles, were seen happily sledgehammering a big hole into the side of "Temporary Building Number 4" on the Mall between the Lincoln Memorial and the Washington Monument. One was chairman of the Fine Arts Commission, William Walton; the other, Bernard L. Boutin, chief of the GSA. Mrs. Elizabeth Rowe, chairman of the National Capital Planning Commission, looked on approvingly.

It was only a beginning, for seven "tempos" on the Mall are now coming down. Built in 1942 to last no more than seven years, they have cluttered the Washington scene for three times that long. Almost everyone from Presidents Franklin Roosevelt, and Kennedy (who finally ordered the demolition), to the editors of FORUM has deplored the unlovely structures, but a chronic shortage of federal office space perpetuated them. Now, GSA has provided two shiny new buildings on Independence Avenue (Federal Office Buildings 10-A and 10-B), and these permit the razing of the Mall's bureaucratic slum.

Wrecking the seven "tempos" is the Julian C. Cohen Salvage Corp., which gets \$173,750 and all the wood and asbestos it wants. The job is contracted to be finished early this summer.

Unhappily, the Munitions and Navy "tempos" on the Mall (built in 1918 to last till 1921) are not scheduled for demolition. Elsewhere in the Nation's Capital, 26 other "tempos" still stand.

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ST. LOUIS ARCHITECTS FOR AIR-SPACE MUSEUM

ST. LOUIS — Architects Hellmuth, Obata & Kassabaum of this city received word last month that they will design an important, new building in the Nation's Capital: the National Air and Space Museum of the Smithsonian Institute. Its site has already been determined—on the Mall opposite the National Gallery of Art. The \$40 million structure will house the Smithsonian's collection of airplanes and other space vehicles. Associated architects on the project are Mills, Petticord & Mills of Washington, D.C.

FLOOD DAMAGES FAMED WEST COAST COMMUNITY

LOS ANGELES—When the 19-acre earthfill reservoir dam above this city's exclusive suburb of Baldwin Hills burst open some weeks ago, almost 300 million gallons of water flooded onto the residential area below. One of the hardest hit of the nearby communities was Baldwin Hills Village, an exemplary rental housing development built in 1941. Planned by Clarence Stein and designed by Architects R.D. Johnson and Wilson, Merrill & Alexander, the Village features low apartment buildings and row houses in a parklike setting.

After the flood, Architect Robert Alexander visited the site,

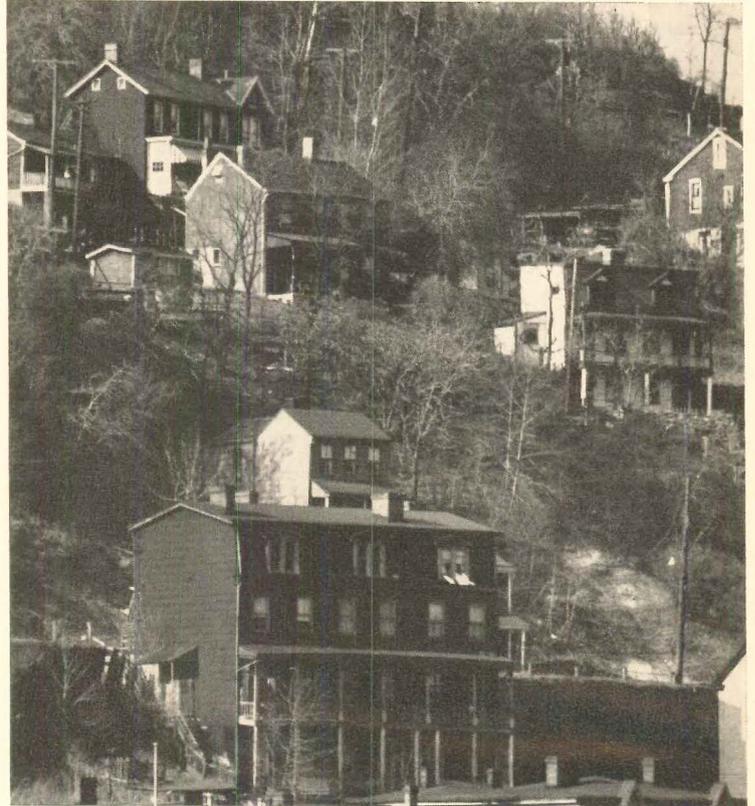
reported that damage was extensive (below). Though all buildings were at least partially standing, one garage court had been completely wiped out. Several dwellings lost entire walls, and the mud in places was 2 feet deep. There was one consolation: "In spite of almost universal water damage," said Alexander, "the landscaping which has taken over 20 years to develop is practically unharmed."

While Village residents cleaned up their neighborhood after the flood had subsided, local officials were trying to determine what caused the break in the dam wall. This is especially important as most home owners (including Village Owner Baldwin M. Baldwin) did not have flood insurance and are poised to sue whoever is responsible for damages. These might total as much as \$50 million, according to one estimate.

The most popular theory maintains that the break was triggered by earth movements under the dam. Whether these were caused, as some hold, by the withdrawal of oil from wells nearby, or whether the City Department of Water and Power or an "act of God" was responsible is still conjectural. Three committees, appointed by the Water Department, the city, and the state, are investigating.



ROTHSCHILD



JOHN L. ALEXANDROWICZ

PLANNERS STUDY STEEP SLOPE RENEWAL

PITTSBURGH—There is a lot more to this city than the glittering façade of the Golden Triangle "renaissance," and no private organization knows it better than ACTION-Housing, Inc. With a fine record already behind it, the agency recently released its latest effort to improve all of Pittsburgh: a detailed study for the development and conservation of the ravines and cliffs that account for 29 per cent of Pittsburgh's area.

The ACTION report points out that for some \$8.4 million in local capital funds (plus another \$5 million from other private and city sources) the festering problem of what to do about most of these steep slopes can be solved. This amount, say the planners, is hardly excessive for a job that embraces some 5,000 acres of blighted land.

Pittsburgh's steep, vacant slopes are thought hardly more unattractive than those nearby with buildings perched on them (above). Both vacant and developed slopes are also uneconomic; the city has to pay for such expensive services as garbage collection, snow removal, and for several types of

maintenance (between 1945-59, Pittsburgh spent a tidy \$2.1 million on repairing and replacing its 15 miles of steps on slopes).

According to the planners who mapped out a detailed pilot program for steep-slope renewal, the City Planning and Parks Departments should work with the Urban Redevelopment Authority of Pittsburgh to implement a coordinated ten-year attack on the problem. Cost in local funds would be only \$400,000 annually the first five years, and \$800,000 annually thereafter. All the while, however, the city would save on maintenance activities—and publicly owned slope land could be credited as a local noncash grant to any federally aided slope renewal project.

During the decade of work, a total of 2,179 families would have to be relocated. But many of the slopes would have been cleaned up and made into much-needed parkland, and others could support special buildings designed for the sites. Not only would the program make sense financially, concludes ACTION-Housing, Inc., but it would also "dramatically alter the unfortunate esthetic reputation of Pittsburgh—an impact possibly even greater than smoke control."

KENNEDY MEMORIAL OK'D

WASHINGTON, D. C.—Politely determined Republican opposition to the bill establishing the John F. Kennedy Center for the Performing Arts did not prevent the measure from being passed by both Houses of Congress last month. Everything the Democrats wished for, they got—with one minor exception: the Edward Durell Stone-designed building (FORUM, Oct. '62) will be the "sole" national memorial to the late President.

Congress authorized \$15.5 mil-

lion in federal funds to match private contributions (now totaling some \$13 million), and \$15.4 million in borrowing authority to build an underground parking garage for the building. Both these provisions and the bill itself came under fire in the House of Representatives, however: William C. Cramer (R., Fla.) proposed an amendment that the memorial follow usual appropriations procedures, but this was voted down—as were such amendments as the one to have the General Accounting Office audit the project, and

another to limit federal participation to underwriting the garage.

In contrast, the Senate was quick to approve the House bill, sending it on to President Johnson.

Meanwhile, plans for the as-yet-unnamed library for JFK's Presidential papers at Harvard University were being formed. The \$10 million structure's design may be determined by an international competition, or by having one leading architect (front-runner: John Carl Warnecke) design the building with advice from several architectural consultants.

URDOA HOLDS CLINIC ON RENEWAL

CHICAGO—Some old urban renewal hands gathered in this city last month to instruct a group of newcomers on the problems and potentials of the renewal program. The "pros" were holding a clinic under the auspices of the Urban Redevelopment Division of ACTION, Inc. (URDOA), a recently formed organization of developers, consultants, and local officials. Their audience listened politely as much familiar terrain was covered (e.g., the need for coordination of all aspects of a large redevelopment project), became more interested as recent innovations were discussed. Chief among these was the FHA's announcement that developers of 220 apartments would be given a bigger break in their attempts to meet mortgage commitments when rentals are disappointing. FHA, which has already been extremely patient with renewal housing, will extend itself even further, offering easier terms to owners who have trouble paying interest and amortization on insured mortgages.

FHA's Stanley Berman also indicated that the agency's recent policy of advising cities at an early stage on purchase terms in the sale of renewal land to private developers has so far been successful. This sort of coordination avoids conflicts between land prices local renewal agencies want, and those which FHA deems realistic given proposed land reuse.

Other subjects covered in this first URDOA clinic included the need for meticulous planning of industrial renewal projects (a particularly sticky aspect of renewal to date) and the need for more careful determination of what new commercial facilities a city should attempt to provide under renewal.

Commenting on the blessings of urban renewal, Mayor Herschel Lashkowitz of Fargo, N.D., reported that downtown renewal not only raised the city's tax take (about three times in his city's case) but also cut the crime rate, thereby reducing costs of municipal services. *continued on page 13*

CITIZENS PROTEST N.M. CAPITOL PLANS

SANTA FE—Residents of this design-conscious city again expressed their civic concern last month when they organized a special Citizens Committee which stormed into the State Capitol Building to protest against the project shown in the rendering below. The target of their protest was the proposed new Executive-Legislative Building, designed by Architect William C. Kruger, and just about everything about it seems to irk the Citizens Committee. Specifically:

► They wonder why an official master plan, drawn up by the Architects Associated of Santa Fe and approved by the Legislature in 1962, was disregarded. According to that plan, the site of the new

building was chosen carefully; but the Capitol Buildings Improvement Commission (CBIC) now seems to have decided to put its round, three-story structure next to the Capitol—replacing many historic buildings.

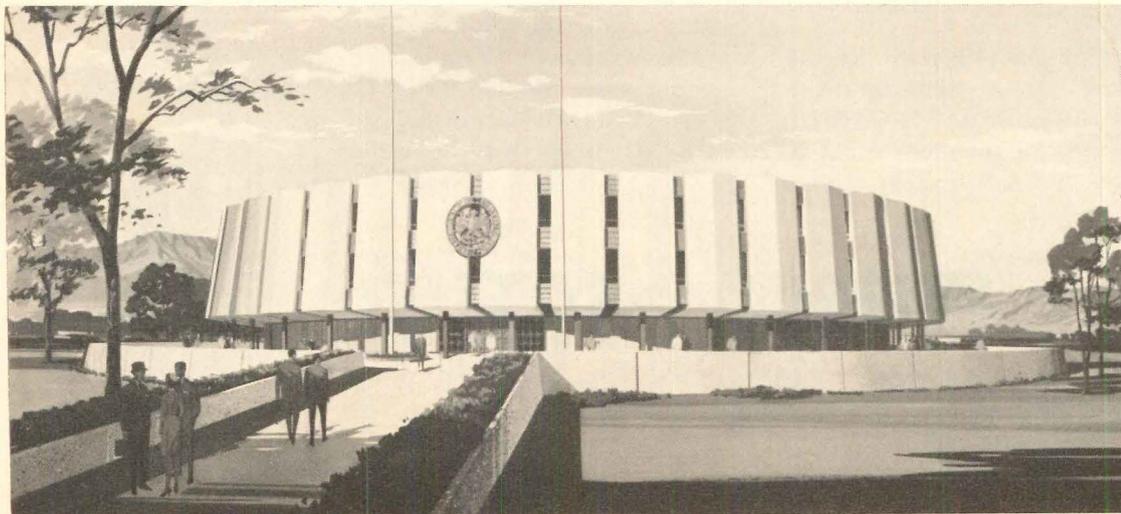
► They are critical of the design of the building, which does not, they say, conform to the city's historical design ordinance. Said Mayor Pat Hollis, who objected to the building when it was shown in preliminary drawings last summer: "As far as I am concerned, it still does not meet the requirements of the ordinance." Architect Kruger described his structure, however, as done in "monumental pueblo style." (The CBIC has not yet approved Kruger's design.)

► They criticize the Legislature for the order in which the new

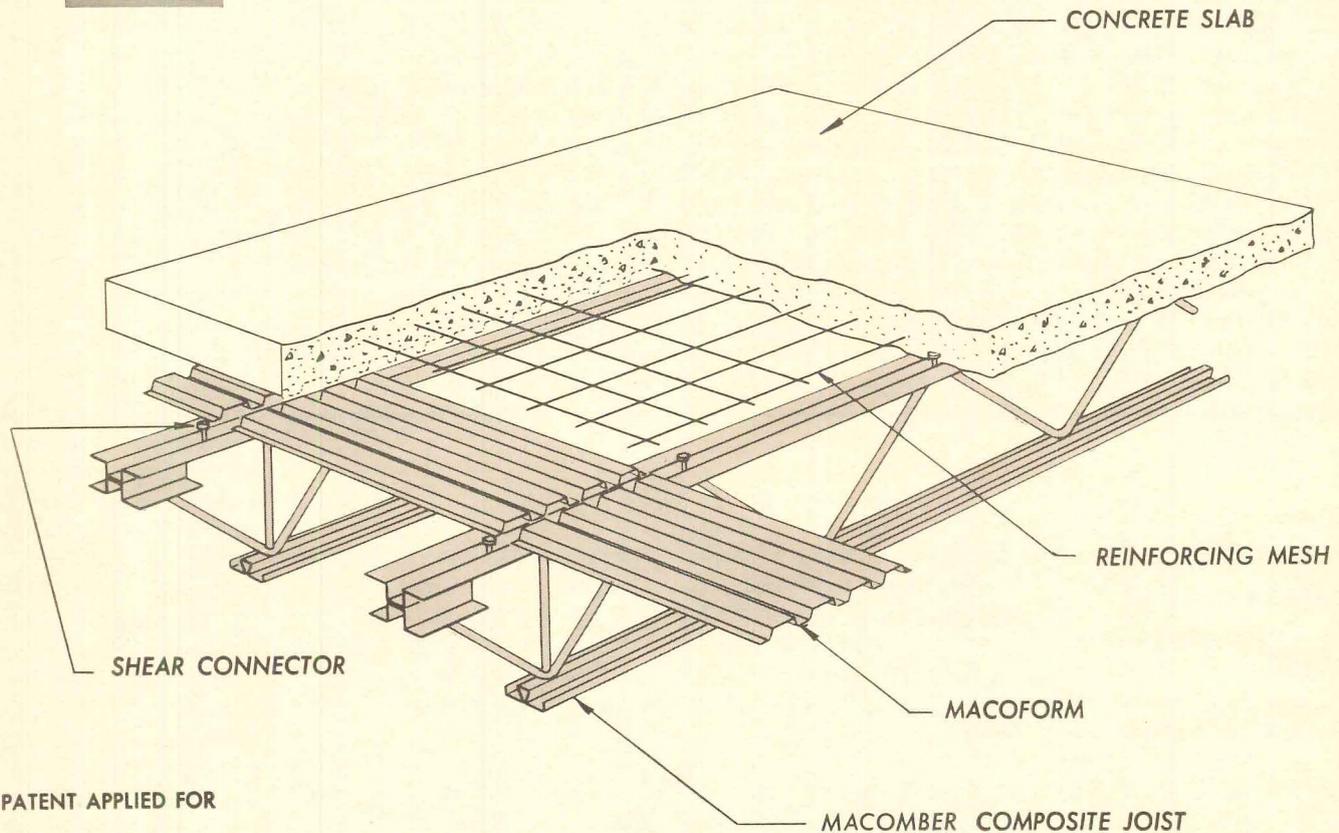
Capitol complex is supposed to be built. What is most urgently needed, say the critics, are office buildings—not a new legislative hall which will be used by the legislators themselves for only two months each year.

► They complain that no design competition was held for this important building, adding that Kruger was architect for the statehouse remodeling and enlargement in the early 1950's, did the state penitentiary, governor's residence, land office building, and a new federal post office.

► And they are disturbed that the Legislature will act on the proposed design in the near future. They feel that not enough time is being allowed for public discussion, and they are making up for the shortness of time by the vehemence of their protest.



NEW



A way to improve multiple story construction (and reduce its costs)

Build a tall building, or a single-story, with less wasted space, more economically. It can be done with an exciting new system developed, tested and proved by one of America's best known structural steel fabricators — Macomber Incorporated, a Subsidiary of Sharon Steel Corporation.

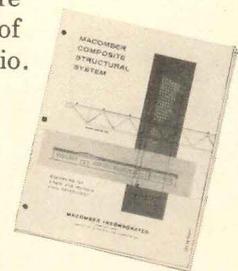
It's called the Macomber Composite System, because it combines steel and concrete into a structural member which functions integrally, utilizing the strength of open-web joists with the capacity of a concrete slab. The inter-action of the joists and slab provides a more

rigid unit than steel and concrete acting independently. Developed around a special open-web joist, the system permits longer spans with shallower depths, reducing height per floor. More efficient use of materials with a reduction in total dead weight and labor costs, result in decreased building costs.

The Macomber Composite System is another new custom steel product from the expanding world of Sharon Steel. For technical brochure write Macomber Inc., Subsidiary of Sharon Steel Corp., Canton 1, Ohio.



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QUOTE . . . UNQUOTE

"Architecture is important today because it lasts longer than any of us."—President Lyndon B. Johnson.

"I would like to see the works of government represent the best our artists, designers and builders can achieve. I want to make sure that policies of government do not indirectly or unnecessarily put barriers in the way of the full expression of America's creative genius."—John F. Kennedy, in an article in 1962.

"Cities are much more than a work of art or a beautiful package: if anything they are more like a striptease show where the main interest is in the human element, in variety, movement and vitality; and to improve a striptease show by concentrating on good taste and decent design simply means chasing the customers away."—Gabriel Epstein, President of the Architectural Association, London.

"Today 'progress' too often outruns planning, and the bulldozer's work is done before the preservationist and the planner arrive on the scene."—Secretary of the Interior Stewart L. Udall.

"One of the reasons I've been able to choose the parts I want to play and not accept just any old paycheck is that I married the right architect."—Actress Aline MacMahon (Mrs. Clarence Stein).

"We are in fact anthropoid apes trying to live like termites, and, as any philosophical observer can attest, not doing too well at it."—Anthropologist Ralph Linton.

"When [the U.S.] undertakes culture, we first hire a fund-raiser. Then an architect. Then a builder. Then we throw up a couple of hundred million dollars worth of architecture, which is roundly condemned by press, pulpit, taxpayers and small boys. Only then does someone worry about what to put inside all that architecture. It's always Leonard Bernstein, because what else is there? Then everyone complains about acoustics."—Columnist John Crosby.



Y. FUTAGAWA

KIKUTAKE GETS AWARD

Each year, the Hawaii Chapter of the AIA gives its Pan Pacific Architectural Citation to an "outstanding" architect from any country bordering the Pacific Ocean. Last month, the Chapter announced the recipient of the increasingly prestigious award: KIYONORI KIKUTAKE.

He is the second Japanese to receive the citation (the first was KENZO TANGE in 1957). Though only 35, he has an impressive list of accomplishments behind him: he has designed a number of important buildings in Japan including a museum and art gallery in Matsue, the Tayabashi City Hall, and the soon-to-be-constructed International Conference Hall in Kyoto. Also to his credit is a visionary city built over water, and first prize in numerous competitions, including an international one in 1953 for a community center for a small city.

NEW POST AT U.S. STEEL

Last month, U.S. Steel Corp. appointed JOHN B. SCALZI to be the director of its new marketing technical service. He will talk to architects and engineers on how to use steel most effectively, economically, and beautifully. He will also write structural reports of new design concepts in steel.

To his new post, he brings experience culled over the last three years as Big Steel's structural design representative, and as a professor of structural design at

Case Institute of Technology and at the School of Architecture of Western Reserve University.

HALL GOES TO BRAB

Anthropology Professor EDWARD T. HALL of Illinois Institute of Technology, author of *The Silent Language* and one of the pioneers in the study of the psychological effects of architectural spaces, has been appointed to the Building Research Advisory Board of the National Academy of Sciences—National Research Council. Dr. Hall, who spoke on the creation and use of spaces at last year's AIA convention, will serve as a liaison member from the Academy's Division of Behavioral Sciences for one year.

RIPPON ON U. S. BUILDING

The Right Honorable (and affable) GEOFFREY RIPPON, British Minister of Public Building and Works, last month took an eight-day tour through the U.S. to study our construction methods—especially how we apply mass production techniques to building. With him was his Parliamentary Private Secretary, A. P. COSTAIN, M.P. (who also happens to be a big British developer) and Deputy Director of Research and Development R. T. WALTERS of the Ministry. The entourage lauded the projects and processes it had seen—particularly "the vigorous approach" to building—but did not indicate which U.S. methods it would emulate in the U.K. Rippon intimated that architects and builders here could also

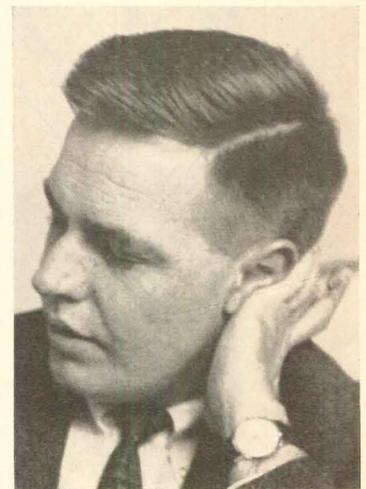
COURTESY BRIT. INFO. SERVICES



learn from their counterparts in England. Example: the British CLASP system, which inspired the California SCSD program described on pages 112-117 of this issue.

BRA'S CRANE MOVES UP

Architect DAVID CRANE last month was appointed Boston's new City Planner, succeeding DONALD GRAHAM who resigned last year to become Planning Coordinator for the Mass Transportation Commission (see *News*, Jan. '64).



Crane, an author and former teacher at the University of Pennsylvania's School of Fine Arts, came to Boston in 1961 to join the Redevelopment Authority as Planning Administrator. He will continue to hold this job along with his new post.

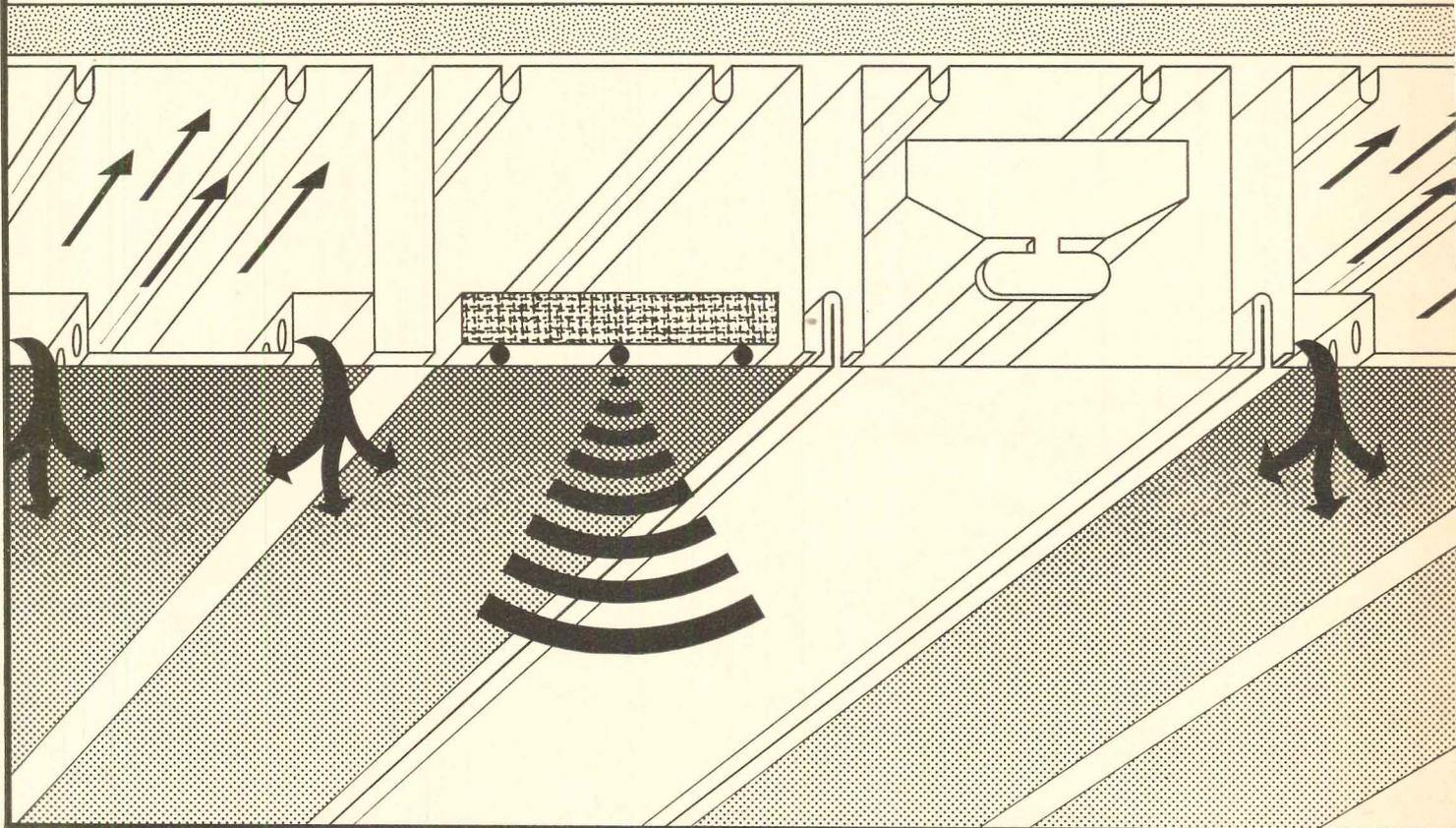
OBITUARY

Chicago Architect SAMUEL A. MARX died last month at the age of 78. Among his most widely known works are famous restaurants in luxury hotels, both in this country and abroad (including the Pump Room at Chicago's Ambassador East, the Cotillion Room at New York's Pierre Hotel). He also designed numerous department stores, launched his career in 1909, when as a 24-year-old beginner he won a competition for the design of the Del Gado Museum of Art in New Orleans. Apart from his architectural practice, his chief interest was in his internationally known collection of French Impressionists. He was a member of New York's Museum of Modern Art Advisory Committee, as well as a Fellow of the AIA.

continued on page 16

Mark of Mahon—CAPABILITY

The MAHONAIRE*



The recently completed Hardin-Jefferson High School of Sour Lake, Texas, designed and engineered by the Houston architectural firm, Wyatt C. Hedrick & Associates. A 7½-in. deep cell MAHONAIRE System section was used practically throughout the 88,000 sq. ft. project. The result: "a squeeze down of 180,000 cubic feet in over-all requirements . . . quiet, uniform, balanced air distribution and diffusion—no

pockets, no build-up, no drafts—and a project cost, built and basically equipped, of \$10.06 per square foot." Additionally, an attractive and functional educational plant to meet the needs of the community—and well within budget limitations. Chief Architect: T. L. Dawsey, Jr. Chief Engineer: L. F. Coburn. General Contractor: Thad Dederick Construction Company. Mechanical Contractor: The Ellington Company.

System



The MAHONAIRE Ceiling System is versatile to provide varying design treatments. The auditorium of Hardin-Jefferson High School is a prime example, considerably different in outward appearance from other school areas but still using the MAHONAIRE System—structural decking, finish ceiling, lighting, conduit chases plus heating, ventilating and air conditioning—in one inexpensive application that was installed without trouble. *The MAHONAIRE package "saved \$1.25 per square foot" according to the architects.*

*Patent applied for MAHONAIRE is a trademark of The R. C. Mahon Company

A ceiling concept becomes practical

The new MAHONAIRE Ceiling System is a low-profile cellular package integrating: (1) heating and/or cooling air distribution; (2) air diffusing channels; (3) structural support; (4) lighting; (5) sound control; (6) electrical facilities; (7) and utility raceways.

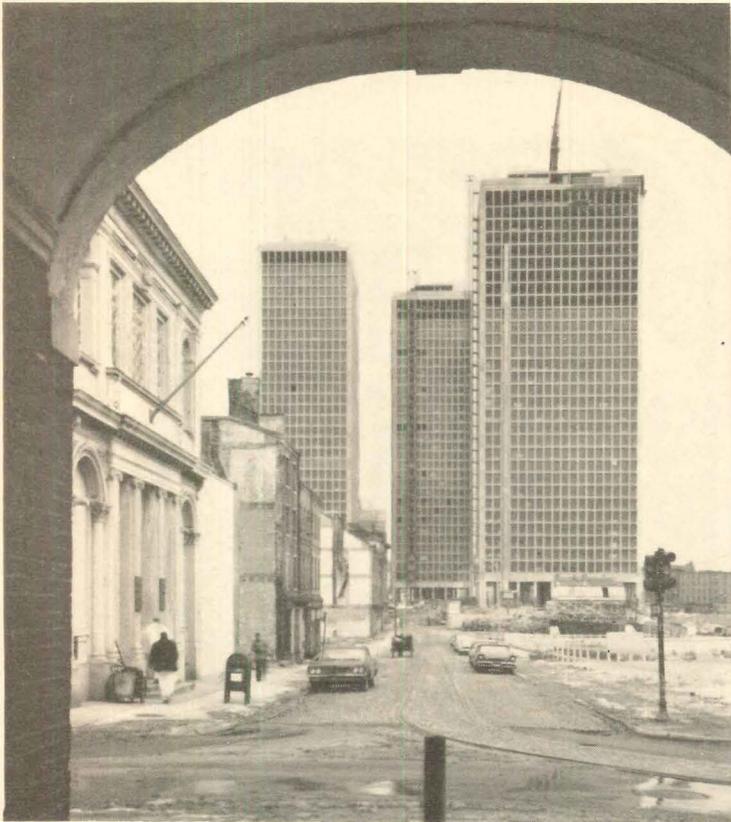
The inherent architectural benefits of such a system have long been recognized; some half-way answers have even been offered. The total answer had to wait until now for MAHONAIRE—sophisticated, precise, versatile, functional and, above all, practical.

Proof of its practicality are the probable cost savings on everything from purchase thru erection

to maintenance. There are even cost savings in the building-height reductions made possible by using cell modules as little as six-inches deep.

Years in development, months in test, MAHONAIRE Ceilings have already been completely proven in diverse architectural projects. Sooner or later, MAHONAIRE Ceiling, or the companion design, MAHONAIRE Floor, Systems will have to be a part of your building plans. Both developments are prime examples of Mahon *capability* in the architectural field. Obtain your copy of detailed informative literature from The R. C. Mahon Company, 6565 E. Eight Mile Road, Detroit, Michigan 48234.

MAHON



CUNNINGHAM WARDENICO

APARTMENTS IN PENNSYLVANIA. Recently topped out in Philadelphia were these three 31-story apartment towers, designed by I.M. Pei Associates. Adjacent to three-story townhouses, they are part of the Society Hill urban renewal project. Like Pei's Kip's

Bay apartments in New York, the towers have grid-patterned exterior structural walls. Each tower contains 240 units. Engineers: Severud-Elstad-Krueger (structural), Jaros, Baum & Bolles (mechanical). Contractor: Paul Tishman. Cost: \$13 million.

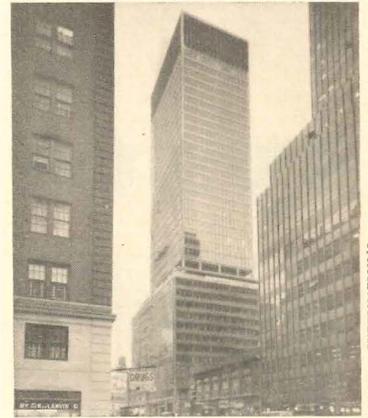
STORE IN CALIFORNIA. This department store in Buena Park is the first of three identical stores which the May Company is building in the Los Angeles area. Located in an existing shopping center, the three-story building has a poured concrete frame with

infill walls faced in mustard-colored glass tile. Decorative, flaring precast columns ring the perimeter are floodlit at night. Architects and engineers: Victor Gruen Associates. Contractor: Lindgren & Swinerton. Construction cost: \$2.7 million.

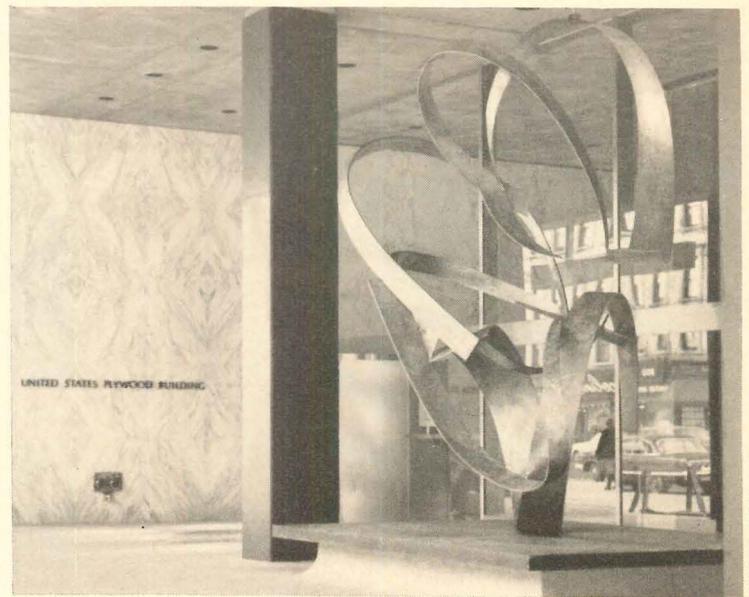


GORDON SOMMERS

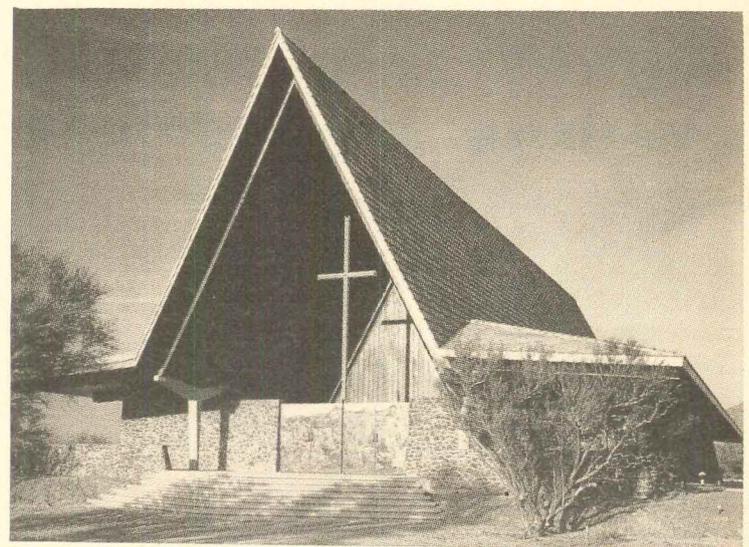
SCULPTURE IN MANHATTAN. One of the first skyscrapers to be built under New York's new zoning is the 38-story U.S. Plywood Building (right), designed by William Lescaze as two simple masses in sharp contrast to the old-zoning "wedding cake." Builder was Diesel Construction Co. In the deep-sheltered entrance (below) is a monumental sculpture of hammered stainless steel by Beverly Pepper. Named "Contra-punto," the sculpture is suspended so that its upper curves revolve slowly over the base.



WAGNER INTERNATIONAL



GRAPHIC ARTS



HILL SEARS

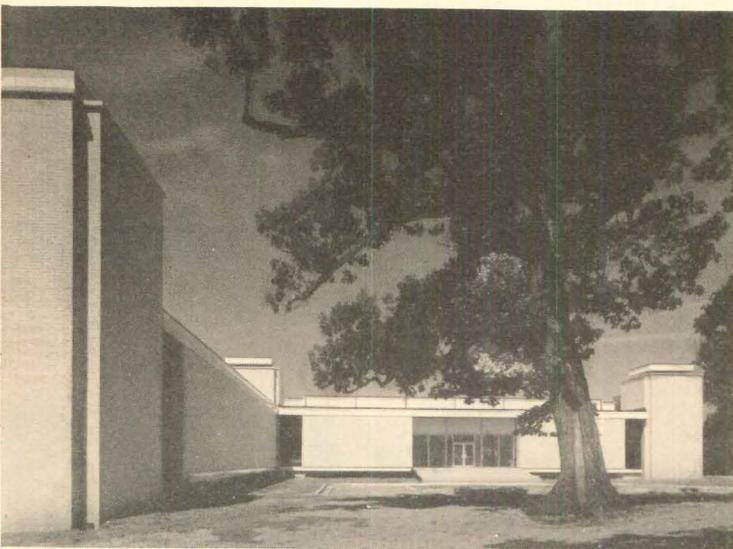
CHURCH IN ARIZONA (above). In the natural desert surroundings of Tucson, the architects of St. Andrew's Presbyterian Church designed a tent-shaped structure to provide a high, dim central space flanked by low side aisles. The tile-clad wood roof is supported

by twin rows of Y-shaped concrete columns, separating the side aisles from the nave, and by low exterior walls of rough stone which undulate to form a series of buttresses. Architects: Cain, Nelson & Wares. Contractor: Ettore De Concini, Inc. Cost: \$130,652.



BELOW: GEORGE CSERNA

CHURCH IN NEW YORK. Cut into a steep hillside, the Hollis Unitarian Church in Queens, Long Island, was built for about \$15 per square foot. The simple, box-like building has a lower level for lobby and classrooms, with a church hall on top. The main structure is fire-proofed steel with exposed roof trusses (right). Infill panels are exposed block inside, face brick outside. Architects: Blake & Neski. Structural engineers: Wiesenfeld & Hayward. Contractor: Jay-Walt Corp.



LABORATORY IN MARYLAND. For easy expansion, Westinghouse's new Molecular Electronics Laboratory in Elkridge, Md. was made out of four "space modules" 90 feet square with columns and service towers at the corners. Additional units will close off courtyards (left). Architect: Vincent G. Kling. Contractor: Kirby & McGuire, Inc.



PHOTOS: LAWRENCE S. WILLIAMS



GEORGE ZINDEL

SCHOOL IN NEW YORK. Mount Vernon's new \$7.5 million high school, one of the largest air-conditioned public schools in the country, focuses on a large, landscaped interior court spanned by a library-bridge. The structure is steel framed, with concrete slabs,

brick spandrels, and aluminum sun shades. Architects: Sherwood, Mills & Smith. Landscape architects: Robert Zion-Harold Breen. Engineers: Fraioli-Blum-Yesselman (structural), Abrams & Moses (mechanical). Contractor: Colmar Construction Co.

FEDERAL CENTER IN ILLINOIS. Nearing completion in Chicago's Loop is the 30-story U.S. Courthouse and Federal Office Building. The steel and sepia-tinted glass structure contains general office areas on the first 14 floors with the remainder devoted to U.S.

Courts and the Justice Department. Collaborating architects and engineers are Schmidt, Garden & Erikson; Mies van der Rohe; C. F. Murphy & Associates; and A. Epstein & Sons. Contractor: Paschen-Kiewit Contractors, Inc. Total project cost: \$38 million. END



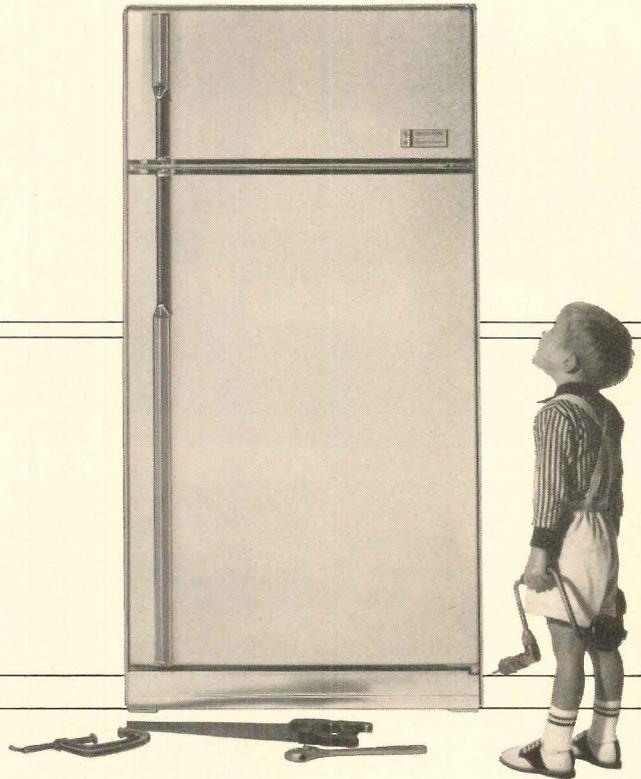
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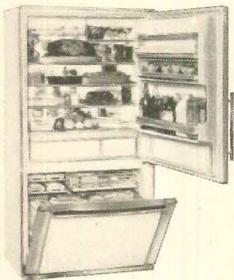
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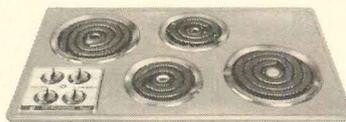
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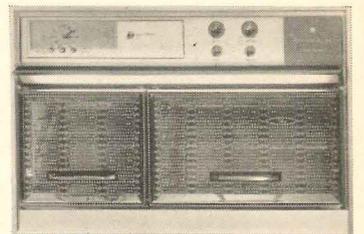
Freezers



Cooking Tops

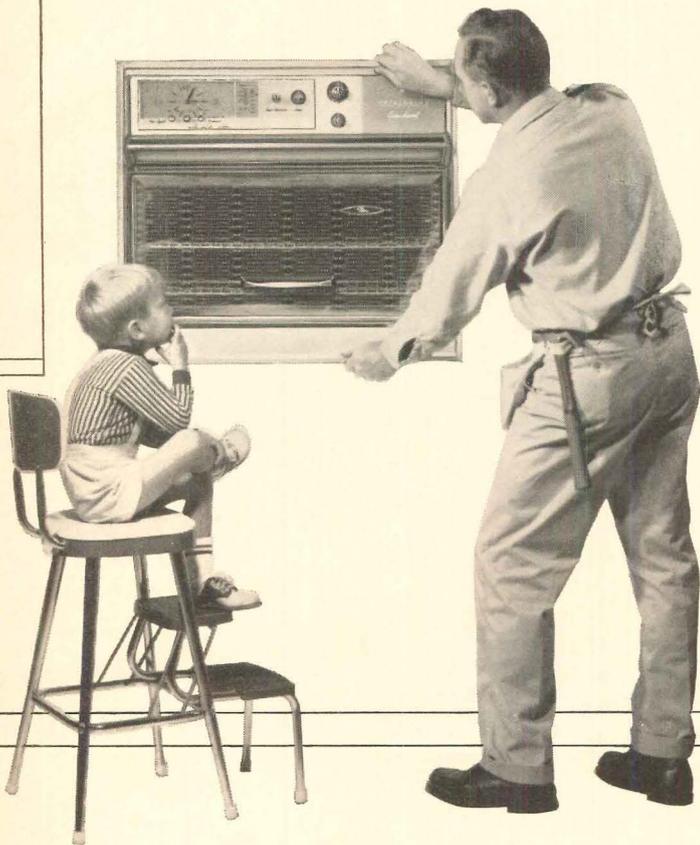


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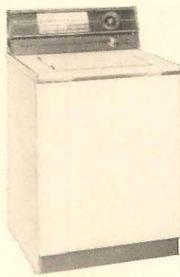


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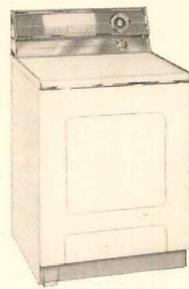
...use the appliance brand people know!



Disposers



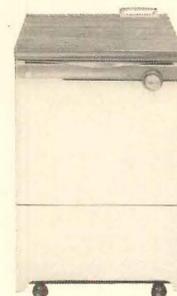
Washers



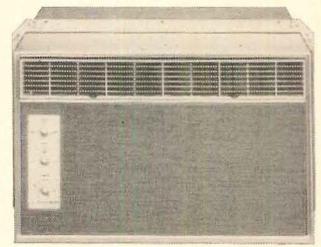
Dryers



Built-in Ranges



Dishwashers



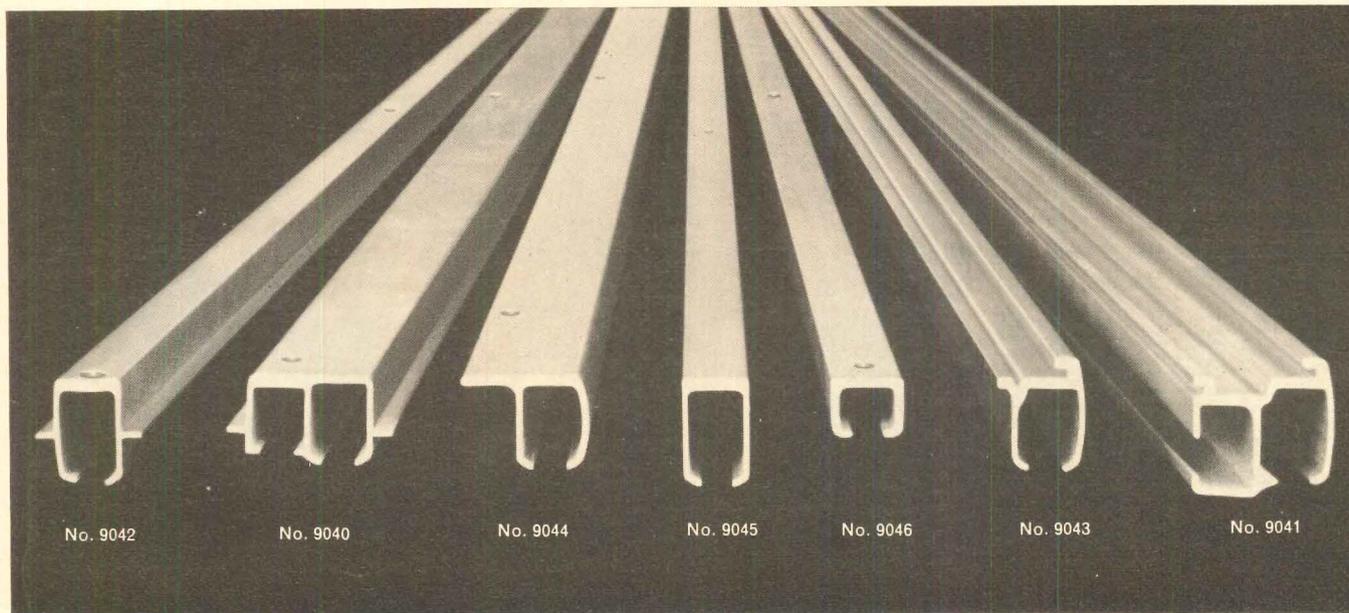
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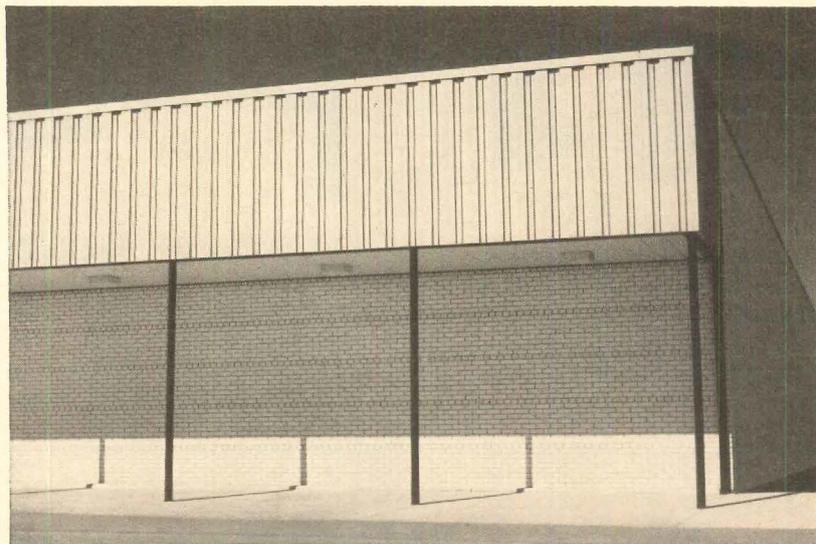


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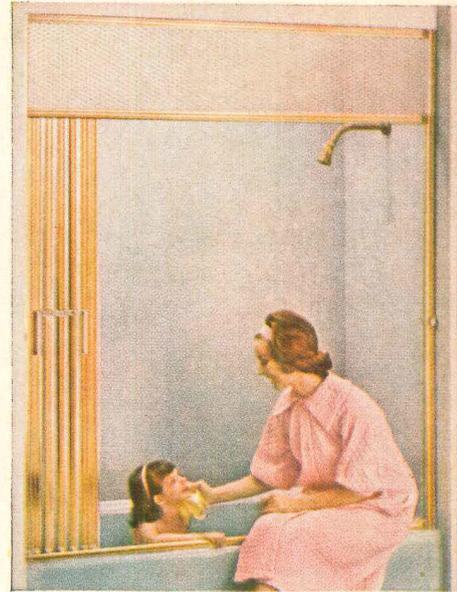
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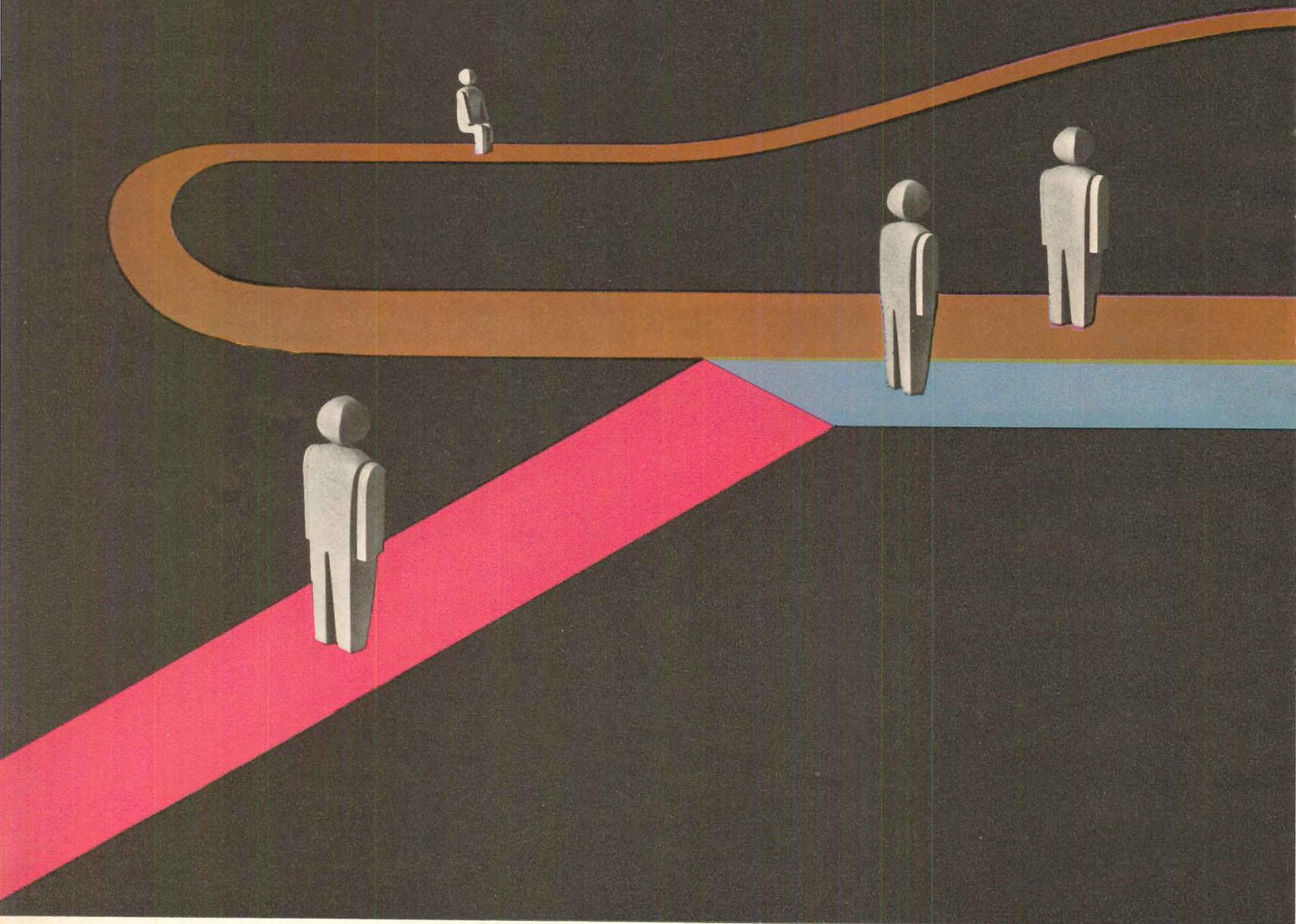


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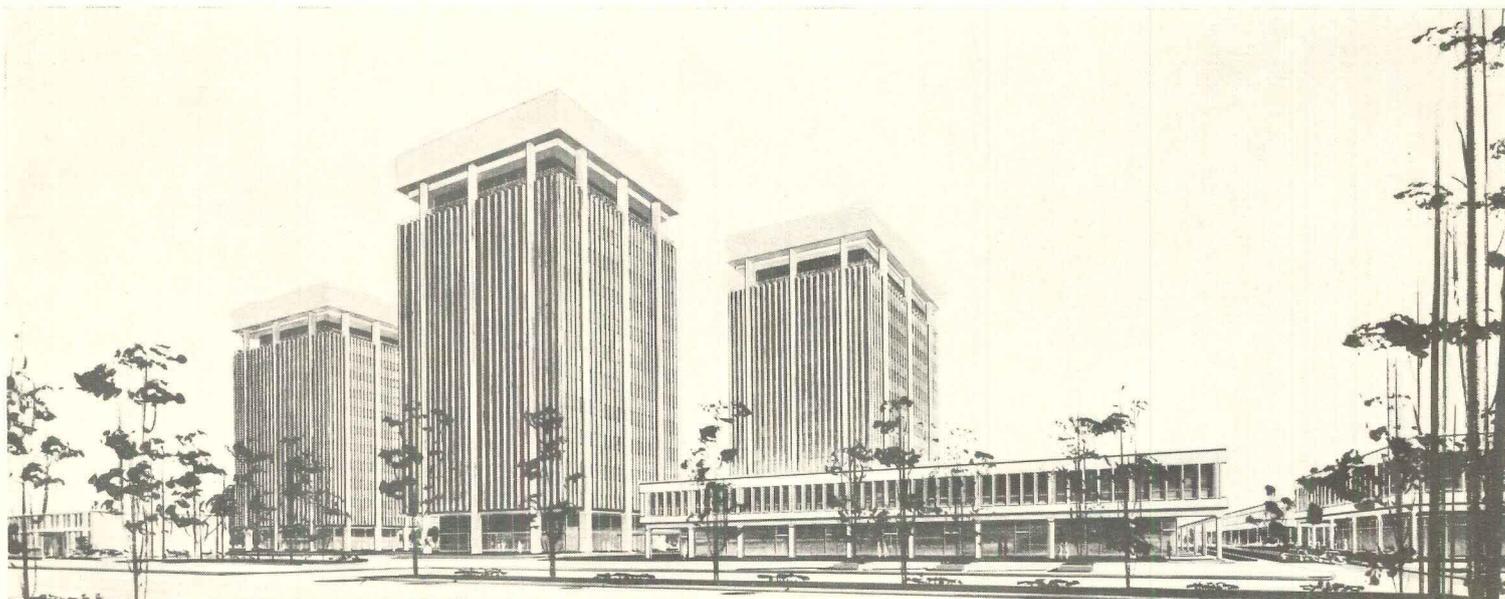
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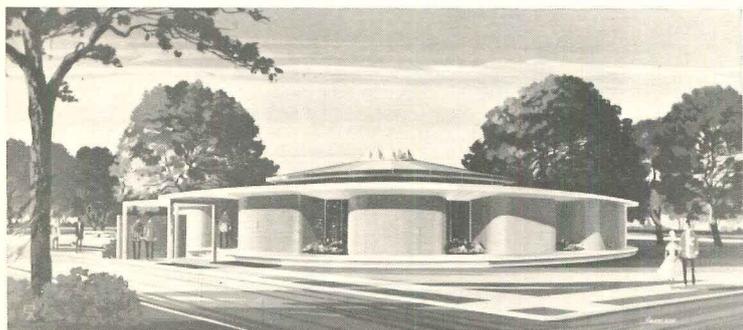
Leader in Bathroom Fashion



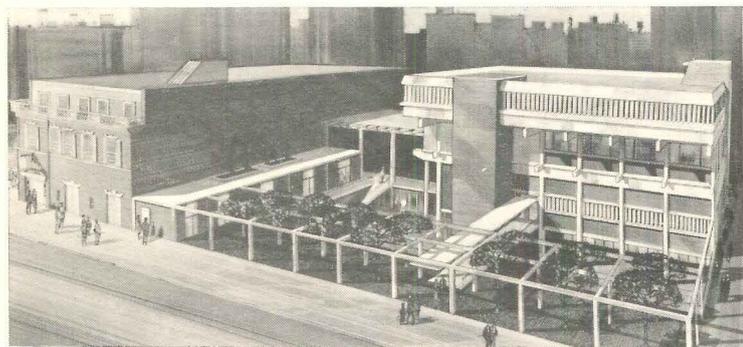
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floors that move...
even chairs that move.



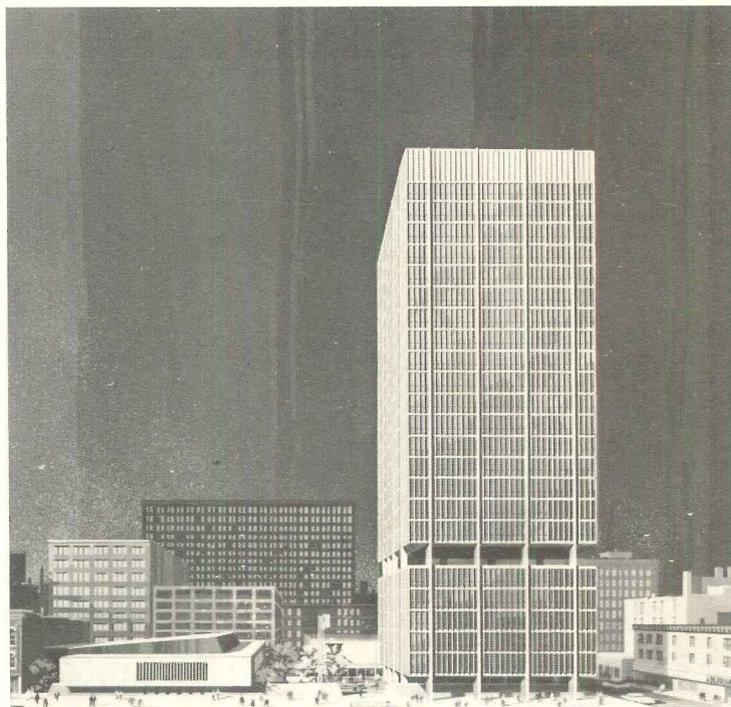
1



2



3



4

1. DETROIT MEDICAL OFFICES.

Three 12-story towers will dominate Professional Plaza, a 15.4 acre complex of medical office and commercial buildings planned as part of Detroit's growing Medical Center. Construction will start soon on the first tower and on an adjoining two-story building to house medical service firms such as X-ray labs and pharmacies. The tower will have column-free floor space around a central utility core. When completed, the \$25 million project will include 14 buildings with space for general

offices and shops. Architects: Gerald Crane, Norbert Gorwic.

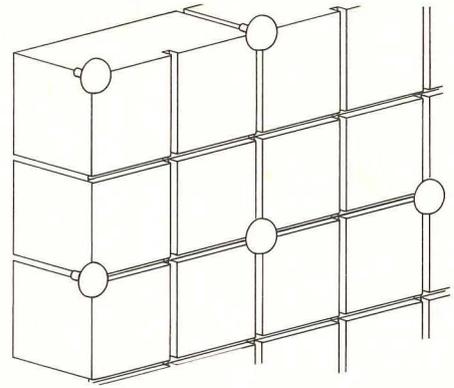
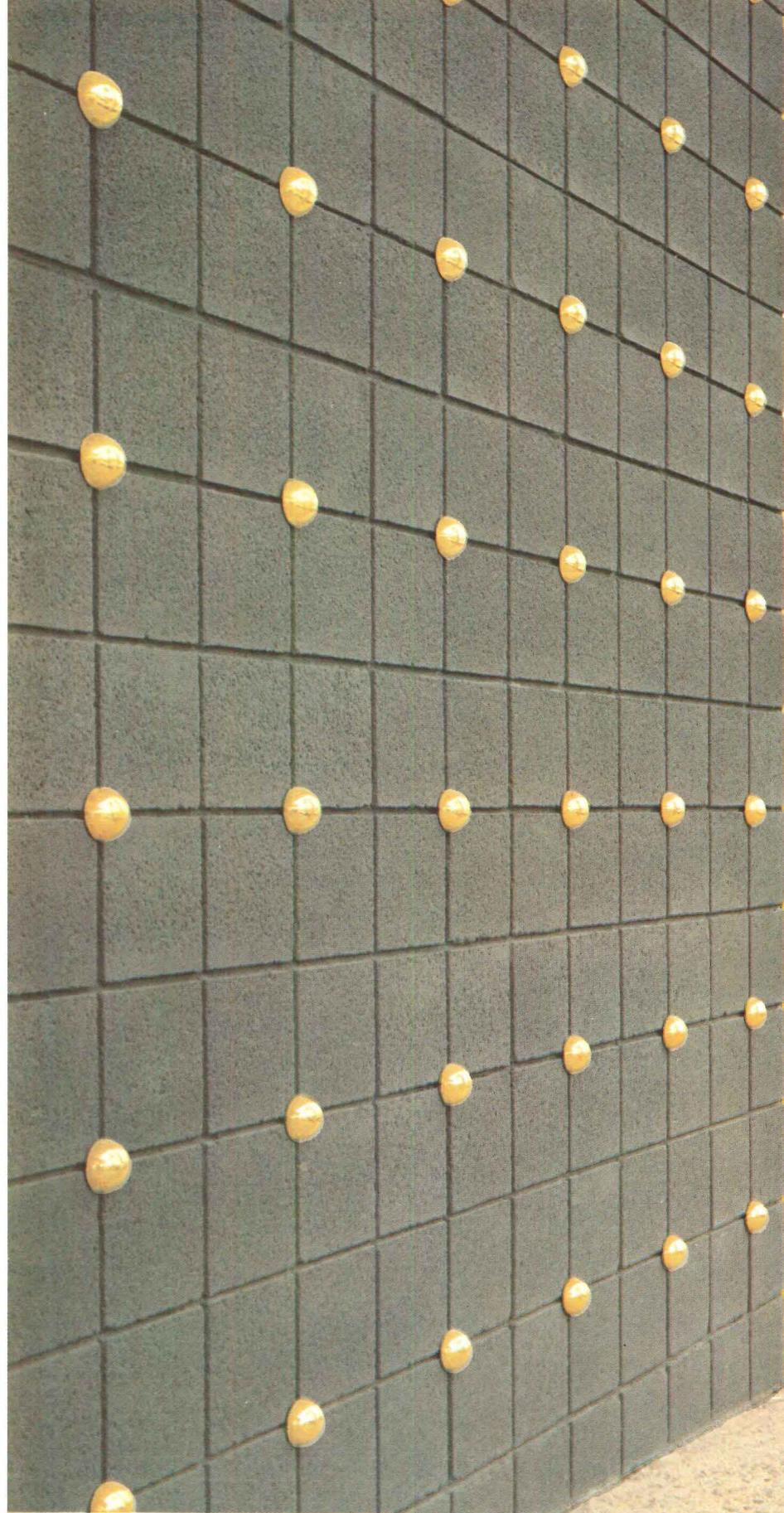
2. COLORADO INFIRMARY. The hospital-in-the-round approach has been used by Architects Caudill, Rowlett & Scott for the Boettcher Health Center on the campus of Colorado College in Colorado Springs. The \$225,000 infirmary has 20 beds and includes study lounges so students can keep up with their classwork. Carlisle B. Guy, of Colorado Springs, is associate architect.

3. N.Y. ARTS ADDITION. A bridge through a row of trees and over a

sunken garden will provide the entrance to an arts center addition to Manhattan's Henry Street Settlement House. The three-story concrete structure, designed by Frederick and Maria Bentel, will have offices, classrooms, studios, and a small recital hall. For summer use, there will be a covered outdoor stage and seating.

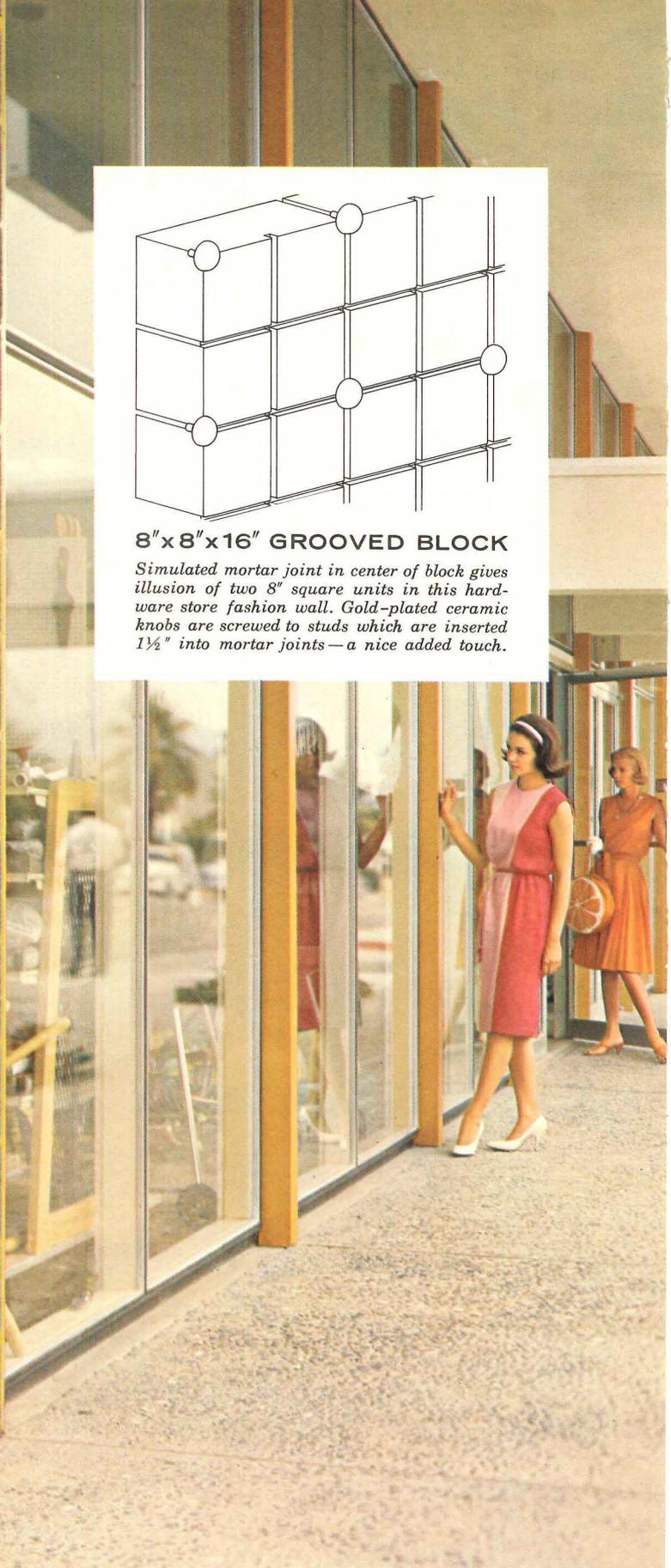
4. CHICAGO HIGH SCHOOL. A city school with an office building on top of it is the eventual plan for the new Jones Commercial High School in Chicago's Loop. The open plaza scheme also includes

a low building to house fine arts classrooms and a cafeteria. For the first phase, the Perkins & Will Partnership has designed a six-story classroom tower with a rooftop fan room. The structure is sized to accommodate 18 more floors above this "notch." Ultimate use for the additional space has not been decided. Among the possibilities: adult education facilities, expansion of the school, offices for the Board of Education, leasing to private companies. Cost for the first phase: \$2.3 million. *continued on page 27*



8" x 8" x 16" GROOVED BLOCK

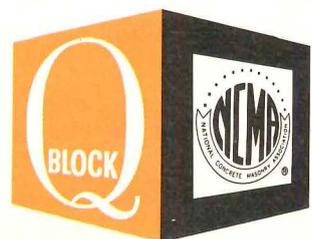
Simulated mortar joint in center of block gives illusion of two 8" square units in this hardware store fashion wall. Gold-plated ceramic knobs are screwed to studs which are inserted 1½" into mortar joints—a nice added touch.



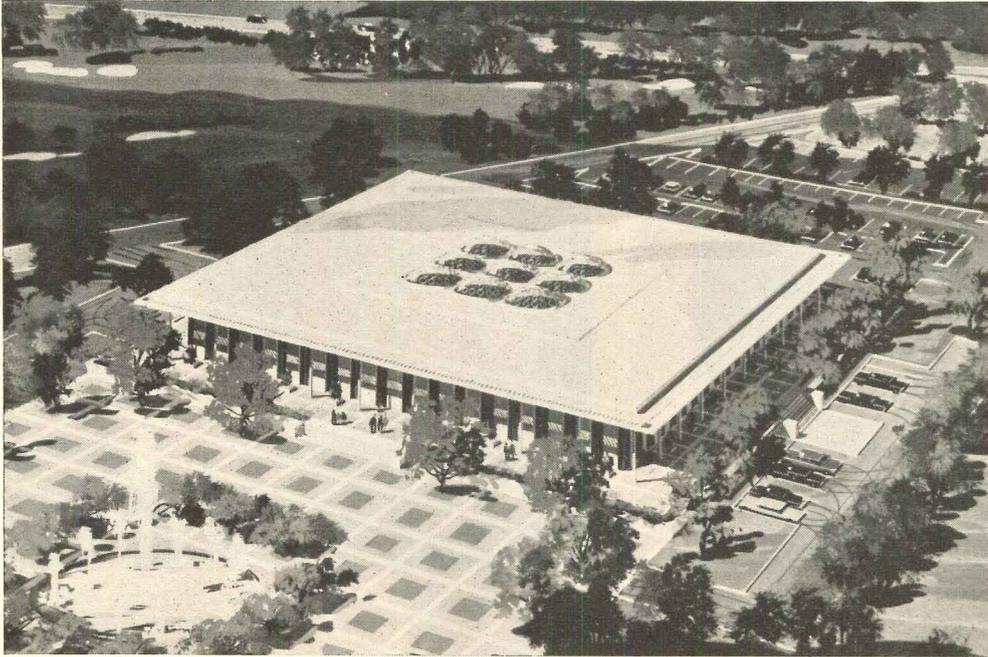
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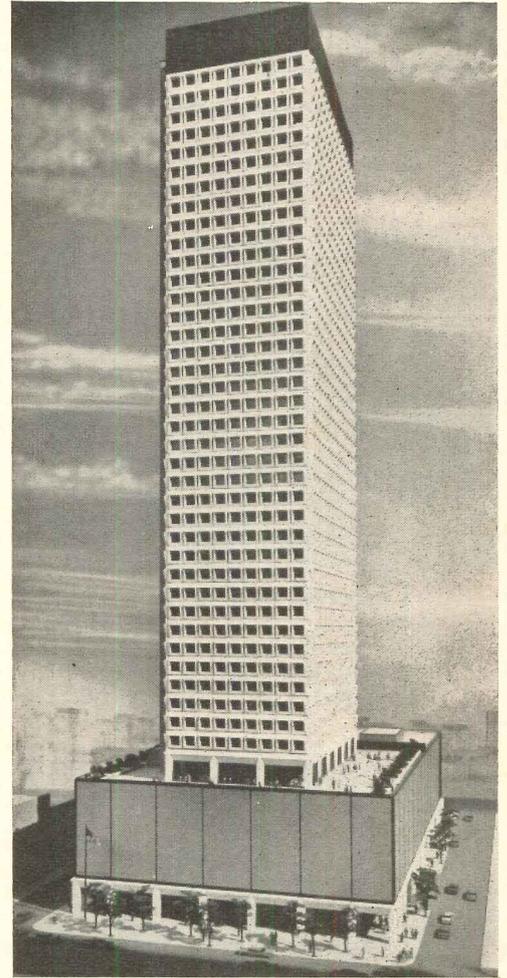
Architect: Lundgren & Maurer



NATIONAL CONCRETE MASONRY ASSOCIATION • 2009 14th STREET NORTH, ARLINGTON, VIRGINIA



5



7



6



8

5. LONG ISLAND OFFICES. For Homebuilders Levitt & Sons' new headquarters in Lake Success, N.Y., Edward Durell Stone has designed a grandly ambassadorial pavilion containing 67,000 square feet around a central court, fronted by a patterned plaza and a fountain pool (landscape designer: Edward D. Stone, Jr.). According to President William J. Levitt, other buildings are planned, but they will occupy less than 15 per cent of the site.

6. NEW JERSEY CENTER. A downtown shopping center for Jersey

City, N.J. will include a two-level covered shopping mall giving access to two department stores, a 200-room motor hotel, and a 20-story office building (foreground). A roof-top restaurant will offer views of the New Jersey hills and the Manhattan skyline. Lathrop Douglass designed the \$25 million Journal Square Plaza Project, which utilizes 4 long-vacant acres plus 8 acres of air rights.

7. MANHATTAN POST OFFICE. The latest skyscraper planned for Manhattan's Third Avenue will consist of a 38-story tower on top

of a four-story base housing a windowless post office. Architect Max O. Urbahn's design calls for tower walls of precast concrete panels encasing windows of gray-tinted glass; the post office walls will be of gray brick trimmed with aluminum. The building will be set back to provide a tree-lined plaza in front of an arcade of big sculptured concrete columns. Private capital will finance the \$35 million structure, and the post office will lease space. The builder will be chosen later this year; completion is scheduled for 1967.

8. CALIFORNIA LABORATORY. Several types of concrete construction will be illustrated in this \$1.4 million research and development center for the American Cement Corp. near Riverside, Calif. Focal point is a circular shell structure which will provide a broad canopy to shelter outdoor testing. Precast, prestressed concrete sections will house offices and labs in the crescent-shaped building. Walls will be poured in place, with the formwork pattern showing. Architects: Albert C. Martin & Associates. *continued on page 29*



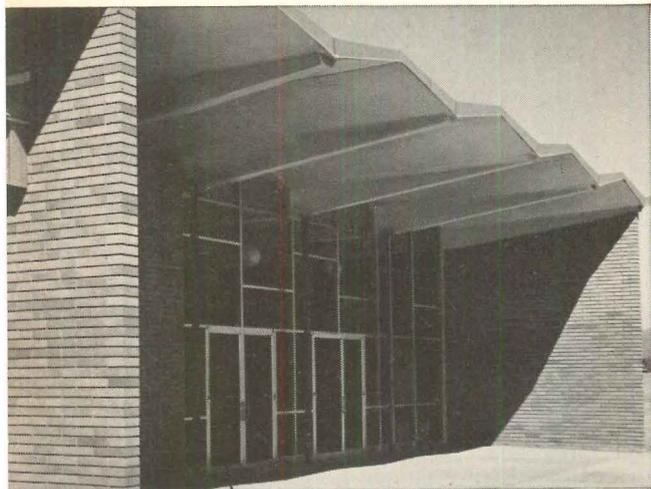
A GYMNASIUM IN MARYLAND—Maryland State Teachers College, Salisbury. *Architect:* Malone and Williams Associates. *General Contractor:* J. Roland Dashiells and Sons. *Masonry Contractor:* Webb and Turner, Inc. *Masonry Cement:* Pocohontas, Inc. and Webb and Turner, Inc.



A FACTORY IN VIRGINIA—I. T. T. Components Div. Plant, Roanoke. *Architect:* John D. Latimer. *General Contractor:* C. M. Guest & Sons. *Masonry Contractor:* Saunders & Divers. *Lightweight Concrete Block:* Webster Brick Co., Inc. *Ready-mixed Concrete:* Concrete Ready Mixed Corp. and Roanoke Ready Mix Concrete.



A BANK IN TEXAS—First State Bank Building, Abilene. *Architect & Engineer:* Boone & Pope. *General Contractor:* Rose Construction Co. *Masonry Cement:* C. C. Building Supply and South Texas Lumber Co. *Ready-mixed Concrete:* Childs Ready-mix Concrete Co. *Lightweight Concrete Block:* Texas Concrete Block Co.



A SCHOOL IN WASHINGTON—Vivian Sterling Junior High School, East Wenatchee. *Architect:* Rothe & Rothe. *Masonry Contractor:* Brown & Walker. *Masonry Cement:* Columbia Concrete Pipe Company.

A MOTEL IN NEW YORK—Motel in the Sky, Yonkers. *Architect:* Samuel Malkind. *General Contractor:* Anthony M. Fusco. *Masonry Contractor:* Elmsford Construction Co. *Ready-mixed Concrete:* Plaza Sand & Stone Corp. and Prime Concrete, Inc. *Concrete Block:* Castle Blocks, Inc. and Yonkers Concrete Products, Inc. *Precast Floor and Roof Units:* Flexicore Concrete Products.

Is masonry an art or a science?

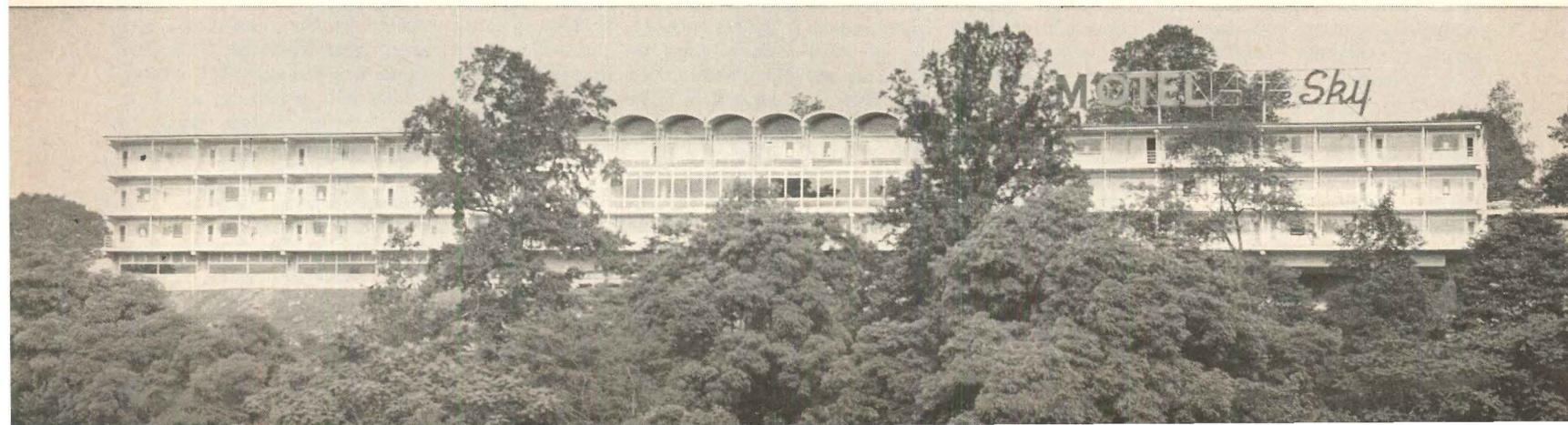
There may be pure art in the architect's plan, and in the mason's craftsmanship... but science in the building materials gives their work permanence.

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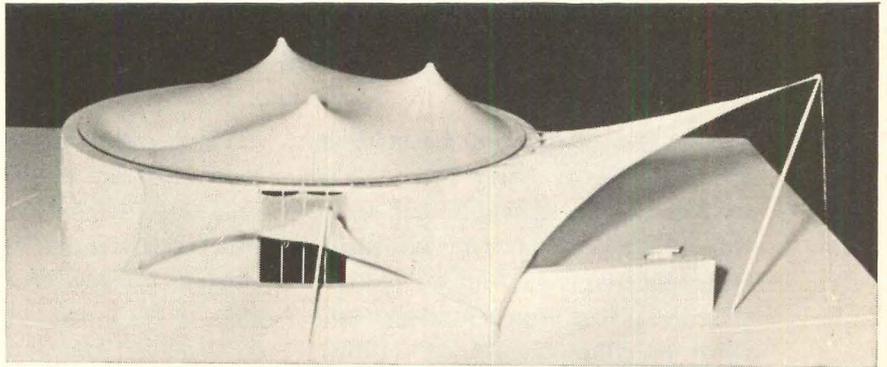
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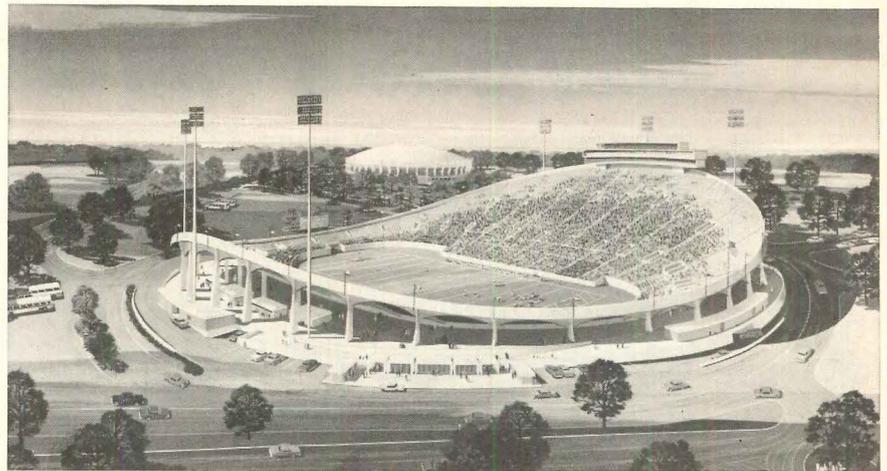




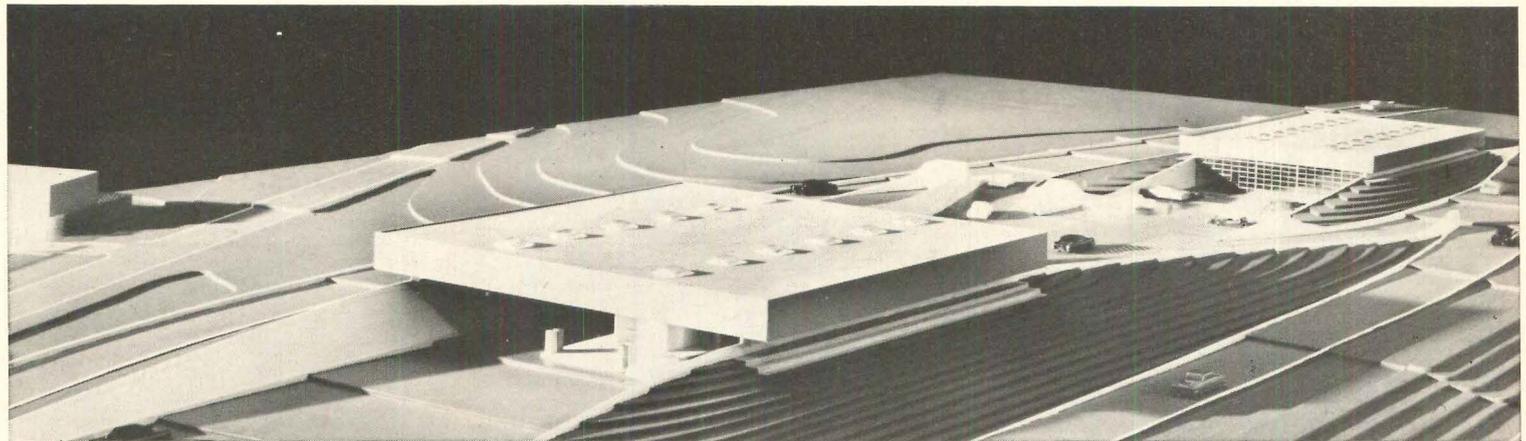
9



10



11



12

9. BALTIMORE OFFICES. Wide bands of black iridescent granite will define the second floor and the penthouse of the new Sun Life Insurance home offices in Baltimore's Charles Center. Floor-to-ceiling glass on the other floors will be set back from the narrow granite spandrels for sun protection. The striking color scheme will be set off by exterior trim of mirror-finished stainless steel. Architects: Warren A. Peterson, with Emery Roth & Sons.

10. NEW YORK PAVILION. A distorted membrane, similar to those

pioneered by Engineer Frei Otto, will form the roof of the Berlin Pavilion at the New York World's Fair this spring. The vinyl-coated canvas will be shaped into a stressed membrane by a system of tension cables and three steel masts; it will be held in place by a circular, steel compression ring supported on steel columns. Architect Ludwig Thürmer has designed a dramatic entrance, with a blue canvas awning guyed to two slanting steel masts and sweeping out toward a freestanding concrete wall 7 feet high.

11. MEMPHIS STADIUM. Actual demand for seat locations helped shape this new sweep-sided football stadium, to be built by the city of Memphis for the Memphis State University "Tigers." The rendering shows the first stage of construction, which has 23,000 seats on the home team side, 14,000 on the visitors' side, and 6,500 behind each end zone. Future expansion to 70,000 seats will be done with a floating tier of seats above the visitors' grandstand. The \$3.7 million stadium will sit in a bowl with entrances

25 rows above the field. Architects: Yeates & Gaskill.

12. ONTARIO GAS STATION. For the median strip of an expressway near the Toronto International Airport, John B. Parkin Associates have designed a streamlined gas station scaled for viewing both from moving cars and from airplanes above. The gas pumps are sheltered by a 100-foot-square roof of exposed steel trusses supported on concrete columns and retaining walls. A large lubrication and repair shop is housed in a separate building at right. END

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$\frac{3}{8}$ " and $\frac{1}{2}$ "; and blue-green Heat Absorbing in $\frac{3}{8}$ ". A bonus: you get impressive reduction of sound transmittance when you use Heavy-Duty Plate (see chart). Ask your L·O·F Glass Distributor about the new low prices on Heavy-Duty Plate. Then go ahead with those big ideas.

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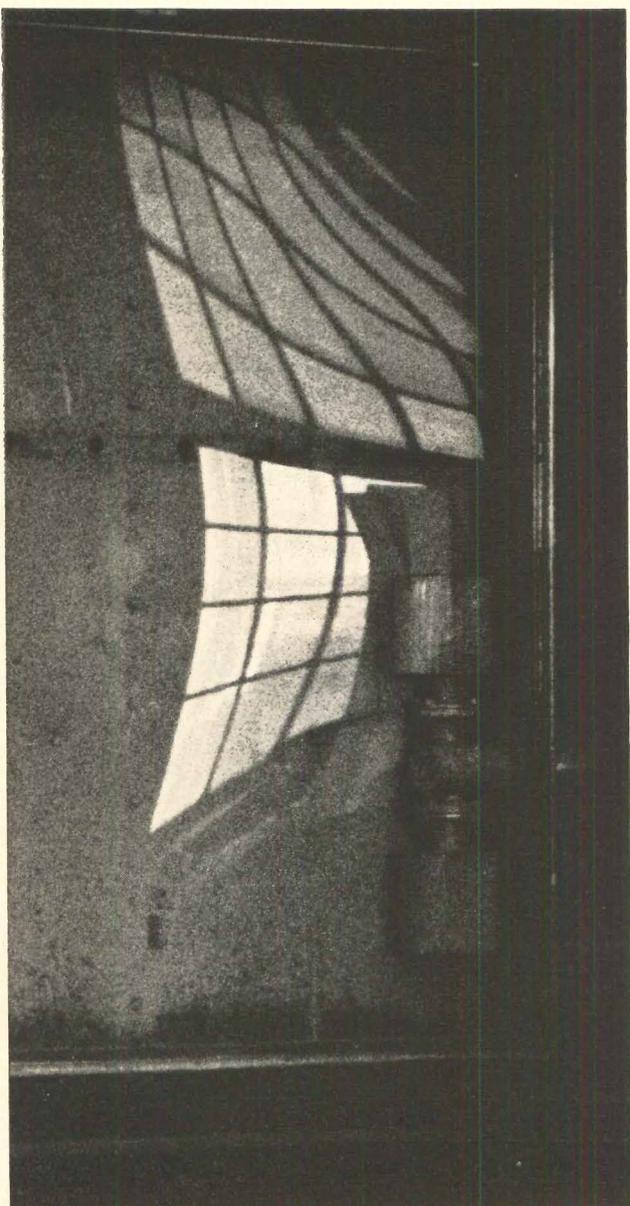


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	72x72	48x120	72x96	72x120	96x120	72x168	120x120	96x168	120x168	120x240
¼"	30	27	23	18	13	13	11	10	8	5
⅝"	43	39	32	26	19	18	15	14	11	8
⅞"	62	56	46	37	28	27	22	20	16	11
½"	91	81	68	54	41	39	33	29	23	16

SOUND-REDUCTION DATA*	
Thickness	Sound Reduction
¼" Plate	26.5 decibels
⅝" Plate	28.8 decibels
⅞" Plate	29.7 decibels
½" Plate	31.5 decibels

*Supplied by Geiger & Hamme, Consultants in Acoustics, Ann Arbor



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Pressure limits for each size and thickness were actually measured in a pressure chamber — not estimated mathematically. Photo at left shows the degree of deflection in a ½"-thick light, 240" x 120". For each size in each thickness, 25 lights of glass — 1,000 lights in all — were tested to destruction in order to provide you with trustworthy p.s.f. data. The design loads shown above include a practical safety factor of 2.5 and are based on L·O·F's advertised minimum for each nominal thickness given. For data on thicknesses greater than shown above, write to L·O·F Technical Sales Service.





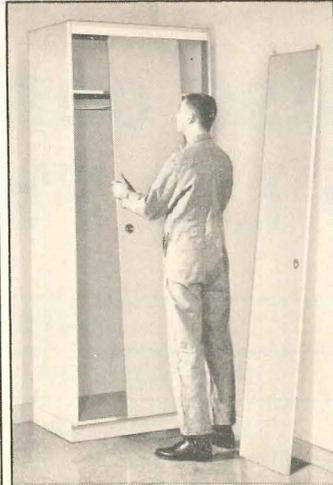
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U-shaped shelf support angle, with hang rod attached, bolts to front frame. This angle supports side panels or wardrobe itself when side panels are not used.



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Top, shelf and bottom are inserted and bolted. Hanger brackets and doors are installed. Door guide plate attaches to floor to complete the unit.

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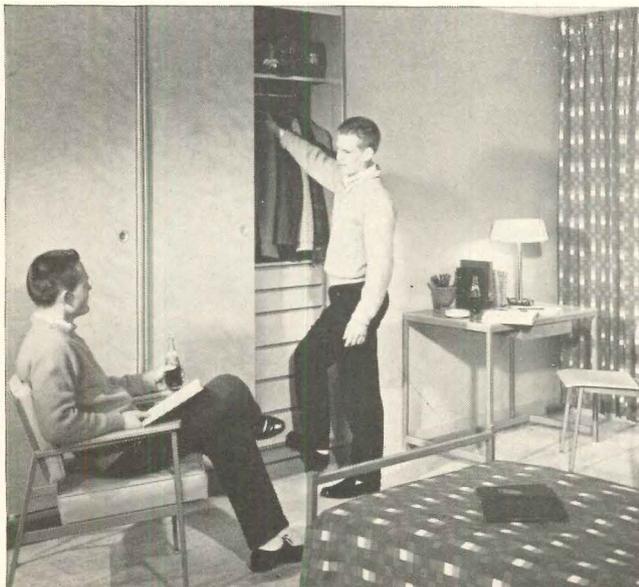
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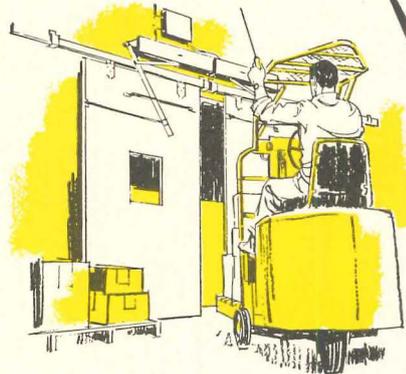
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COMPANY

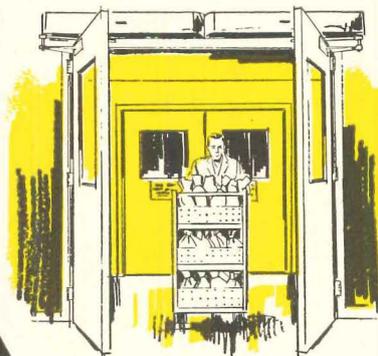
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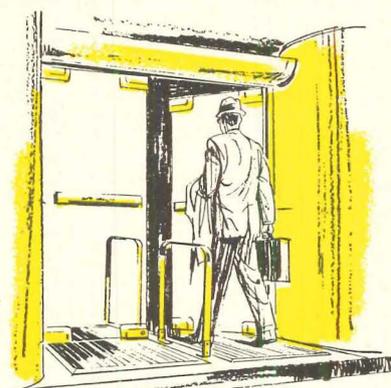
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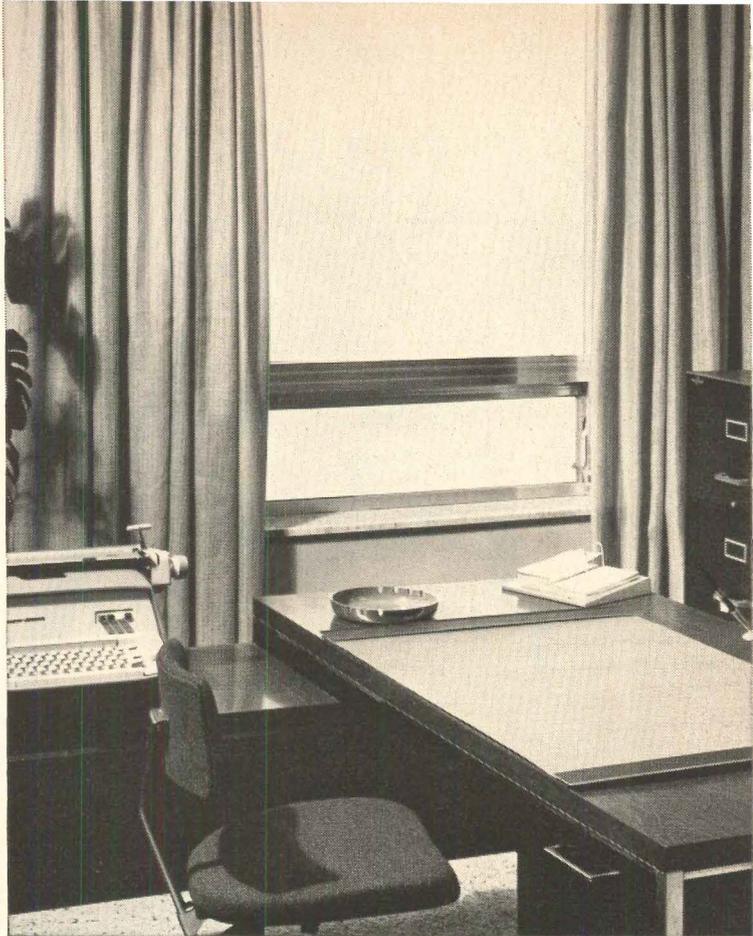
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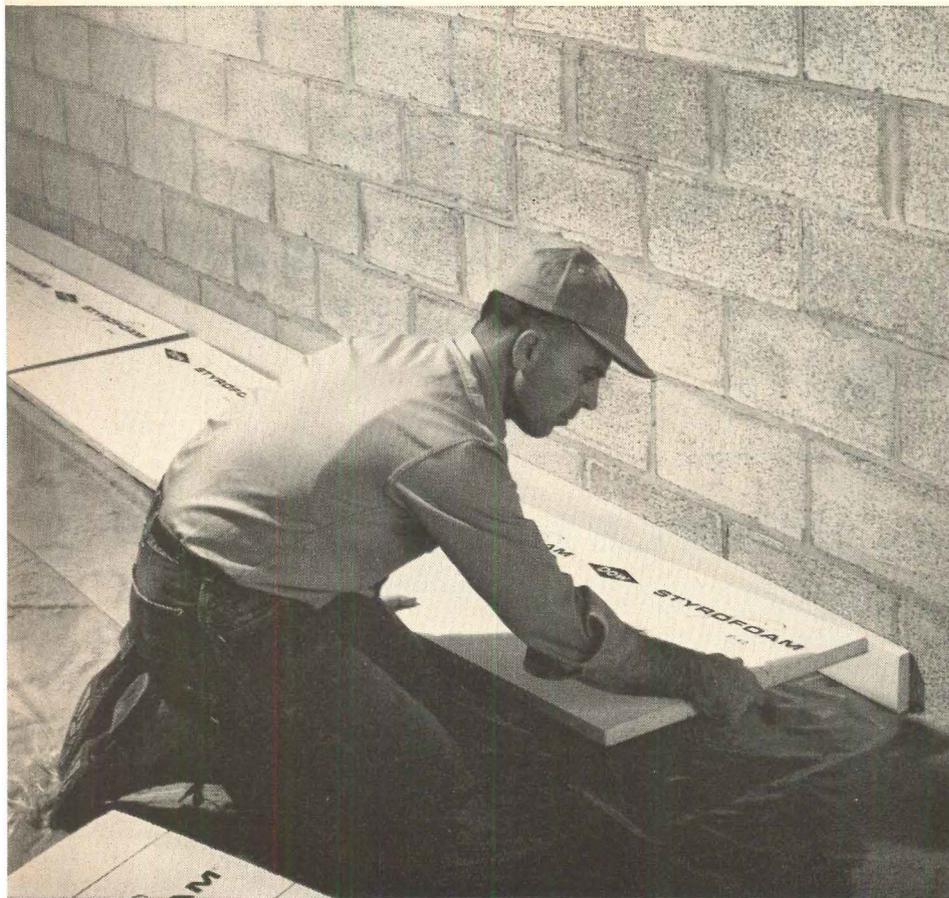
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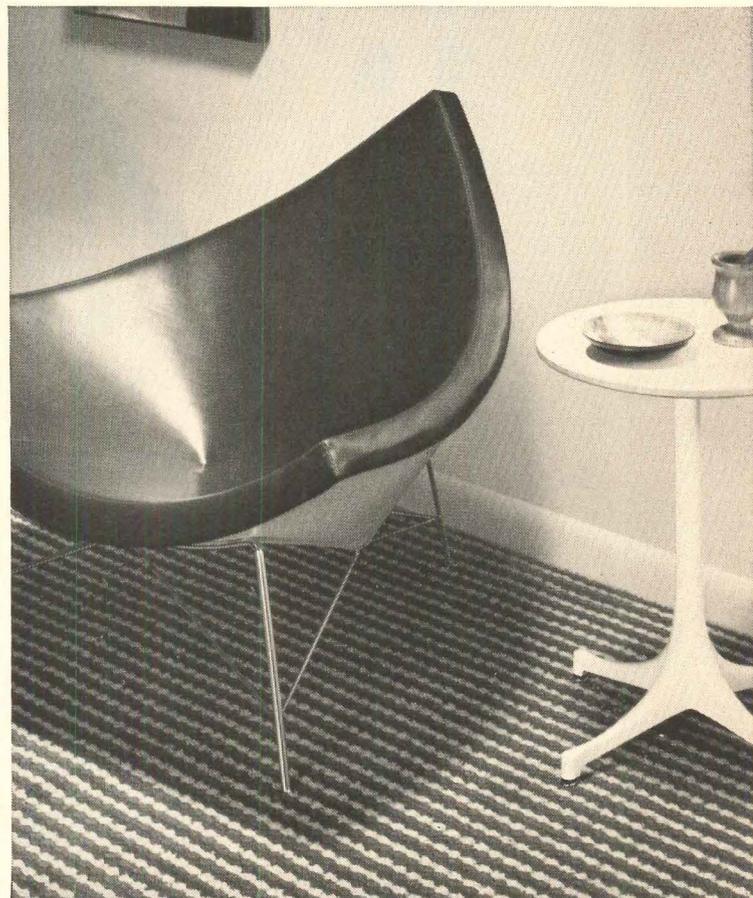
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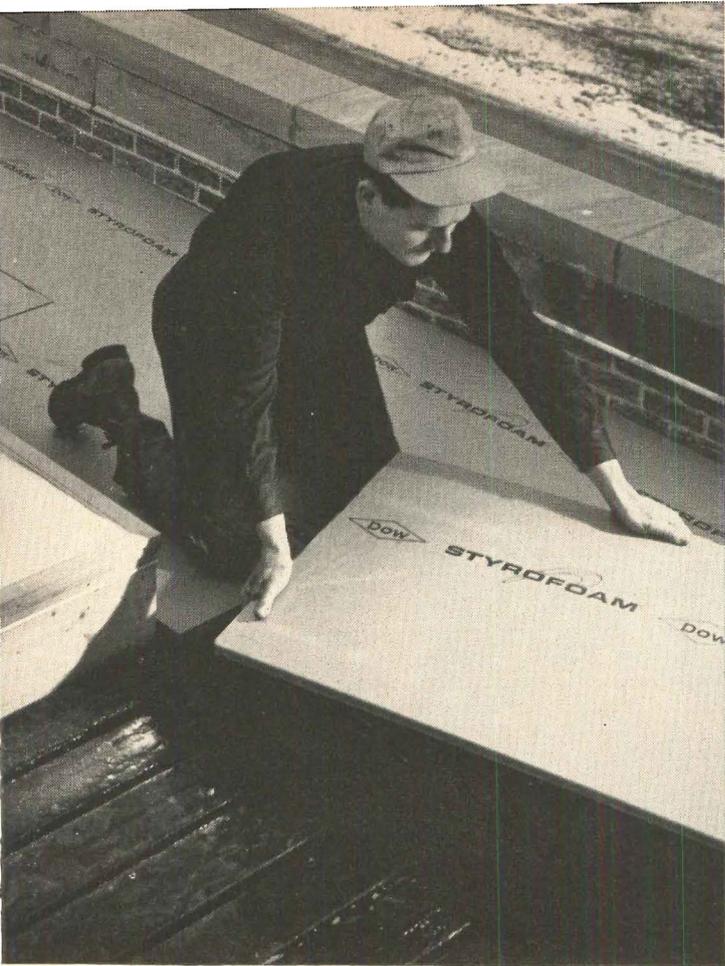
Then forget it.



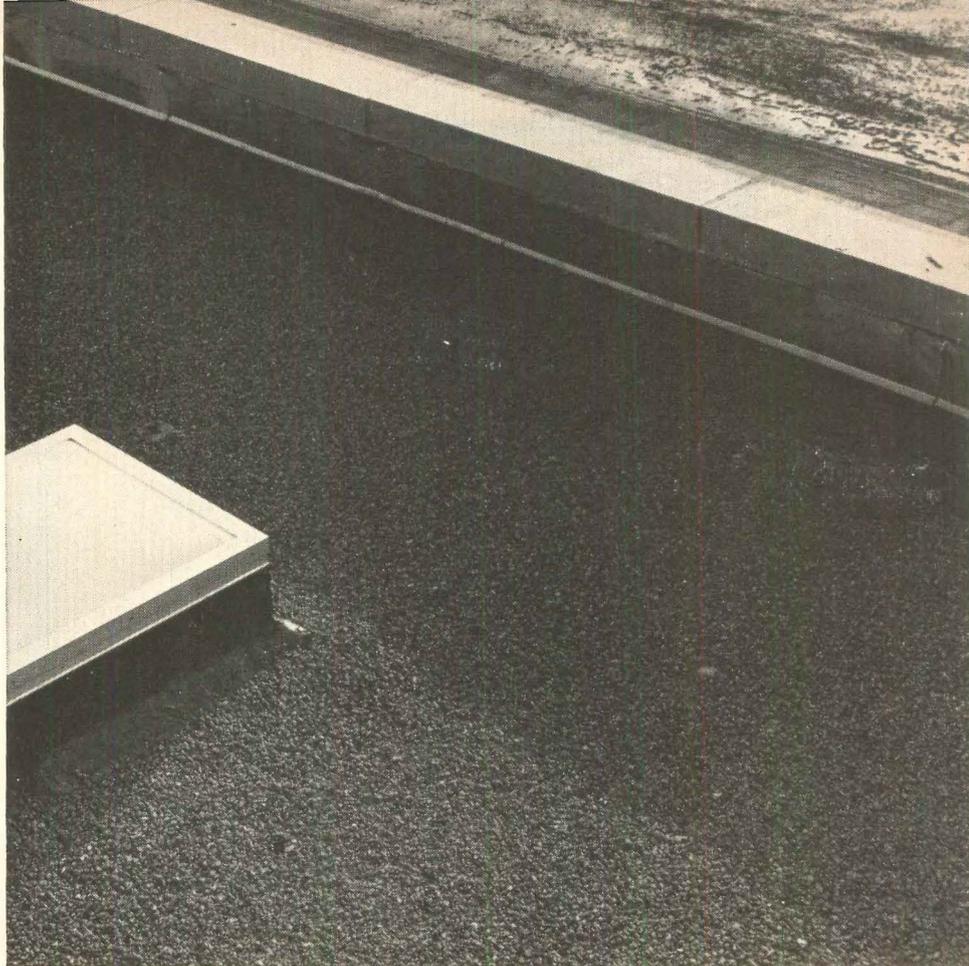
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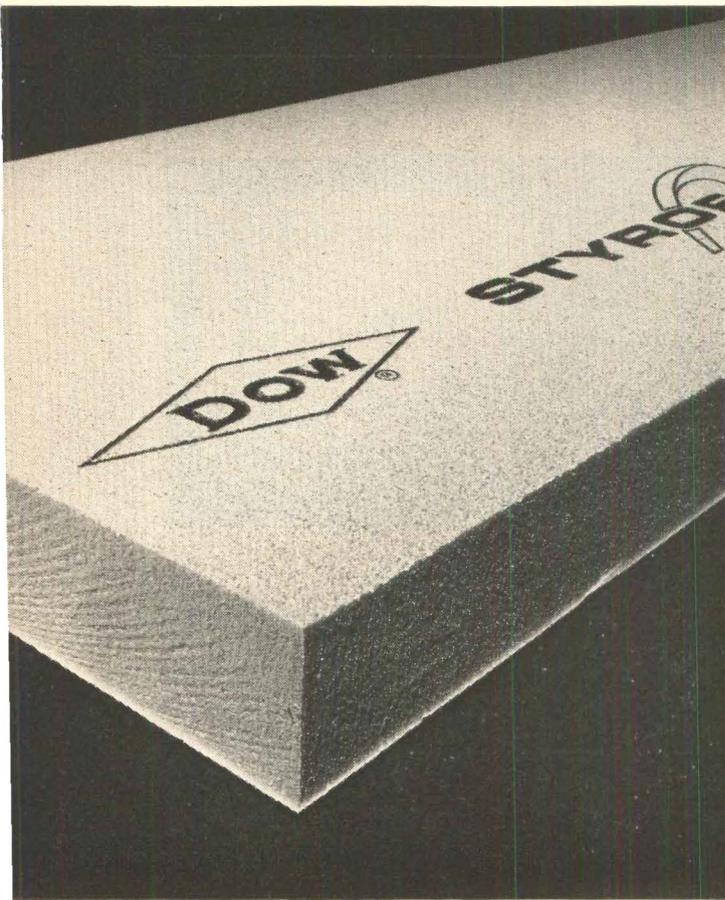
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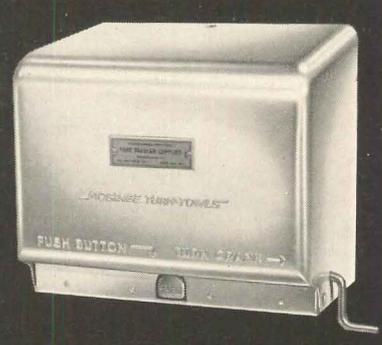

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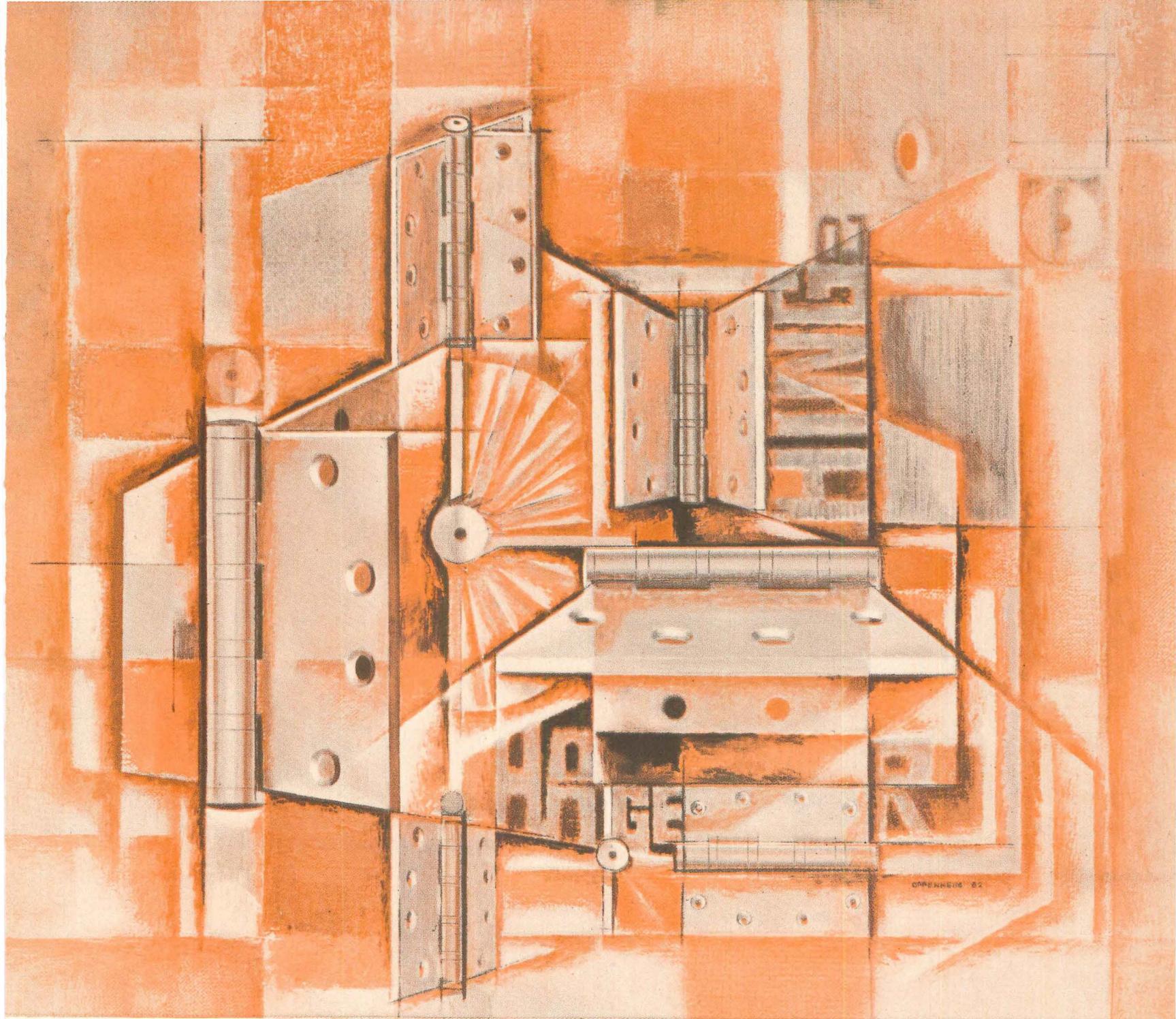
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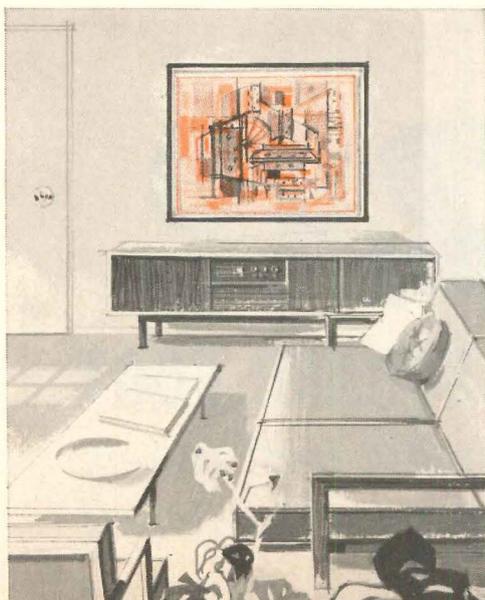
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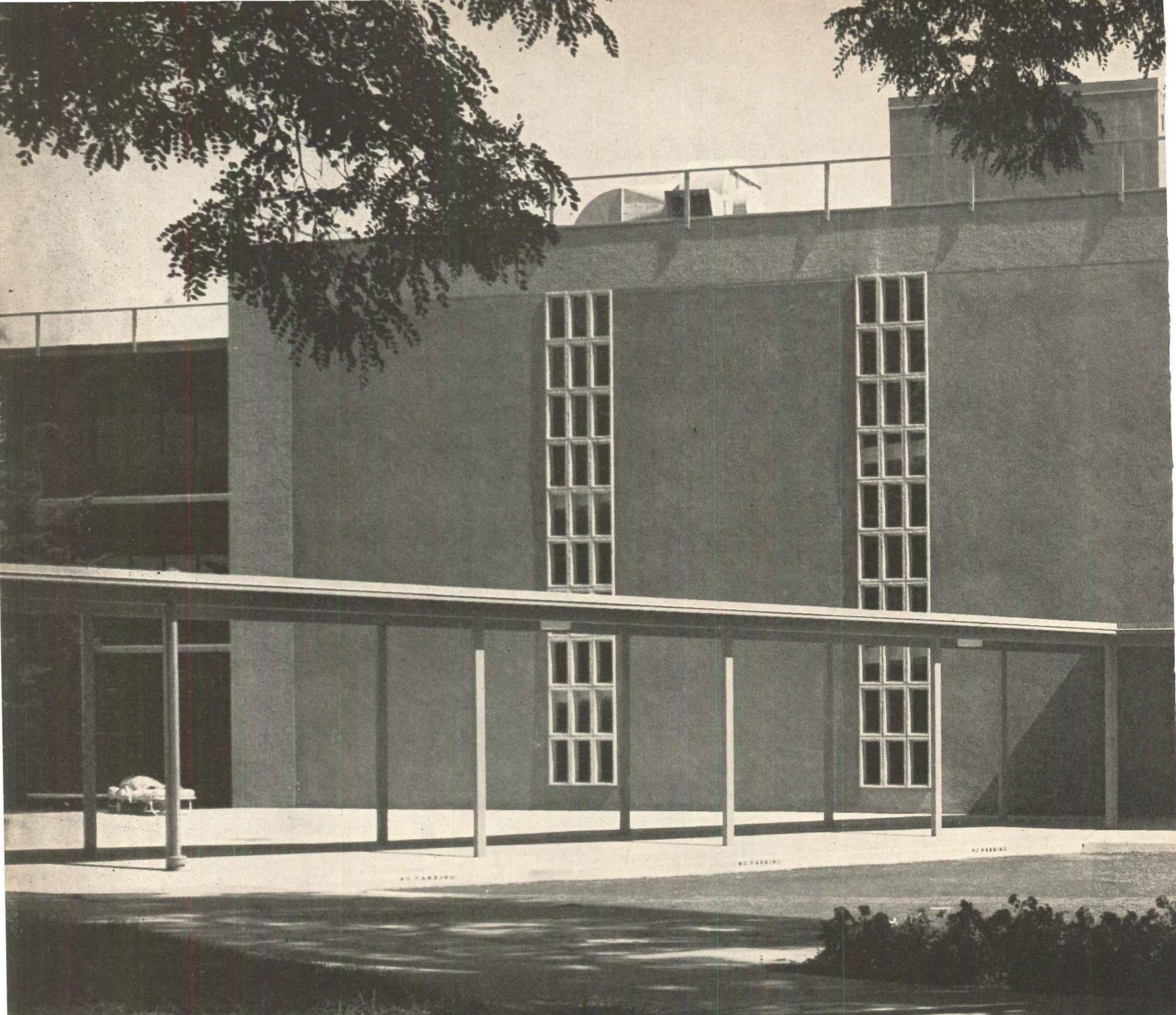
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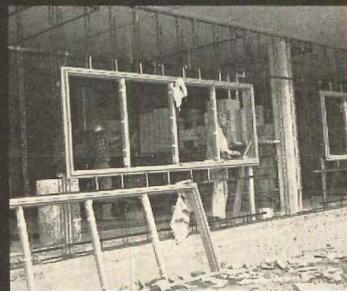
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GOD'S OWN JUNKYARD

Forum: Congratulations on your beautifully written and documented diatribe, "God's Own Junkyard" (Jan. '64).

All that I have been trying to say through the various mass media in this region, plus a great deal more, is there for all to read. I gave it to our mayor-elect with the admonition to "take it down and read it when the despoilers get too insistent."

San Francisco

GEORGE T. ROCKRISE
Architect

EDUCATION AND ARCHITECTURE

Forum: Your editorial on "Education and Architecture" (Jan. '64), is timely, refreshingly candid, and generally accurate on dean and chairman selection procedures.

The star system, in spite of its calculated effect to attract students and money, seldom does either. The best fellowship- and scholarship-endowed schools win the good students more often than not. Endowment is seldom if ever directly obtained because of, or by, a star in an architectural school, but by the university obtaining this for general educational purposes and sparing some for a field still thought of by most as "art," with a lower priority than "science."

The majority of good architects practice first and teach second. Many schools have become victims of the originally rational view of faculty-in-equilibrium and provide salary as subsidy for extraneous purpose.

These observations are not intended as a wholesale condemnation. There are many teachers whose ideals, skills, and integrity are above question and who are sometimes teachers first and foremost. Neither do I believe that star architects, who are designers and builders first and foremost, inevitably betray their educational trust: some enter schools without dissimulation and serve them to the best of their ability.

A group of "master students" communing with a "master" is a rare but wonderful ingredient in education, but is a "star-school," uniquely oriented, a legitimate answer to the problem of a widening architectural spectrum?

More important to the question of school leadership is educational purpose. Gropius became a great teacher at the moment when teachers with fresh attitudes towards architectural responsibilities and potentials were needed. The students of the Bauhaus and the later Harvard period (not always directly students of either) have demonstrated amply what imaginative education can do with

talent and intelligence in a new context.

Perhaps a comparable period is now at hand. Student questioning of current practices in even some leading schools suggests that a re-evaluation of the scope and nature of architecture is once again needed to illuminate the educational purpose.

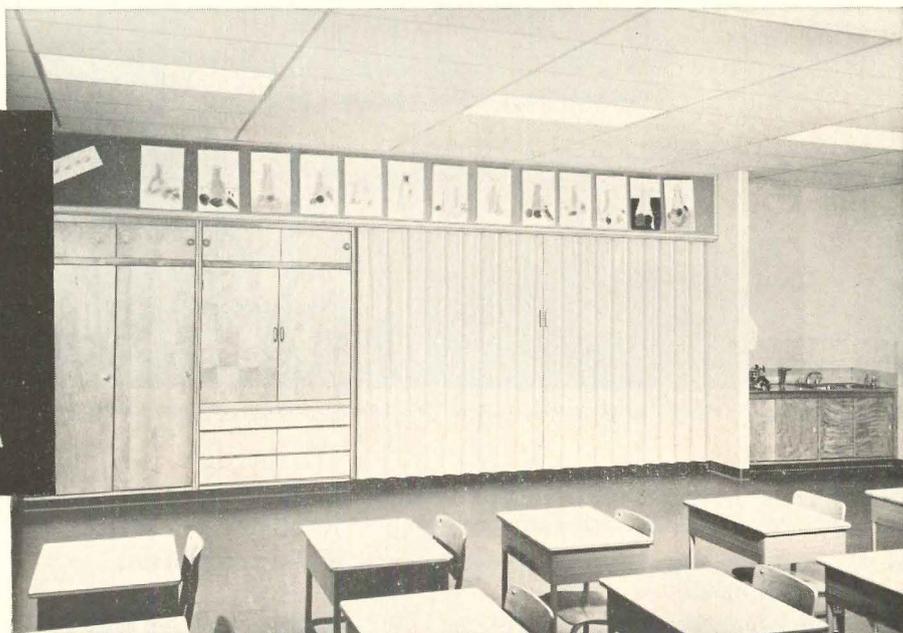
The prevalent short-term attitudes of an affluent architectural profession should now be superseded with the help of new leadership in education, by inquiry and teaching to develop and deepen the field.

The sort of "total architecture" which appears to be needed by urbanizing man requires at least as much attention to research and comprehension of the impact of new technology on environment-shape as comprehension of history and the satisfaction of immediate needs in the economy.

The future needs of three-quarters of the population of the world require perhaps fewer monuments at the drop of a telephone receiver (either pavilions or skyscrapers), and more places to keep proliferating humanity "human" in spite of colossal quantities and redeployment.

SERGE CHERMAYEFF
Professor of Architectural Design
New Haven, Conn. *Yale University*

DA



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CLOWES HALL

Forum: As a long-time subscriber to FORUM, I was more than delighted to find the cover story on Clowes Memorial Hall (Dec. '63). The article exceeded all expectations.

Please accept the thanks of the Clowes family for the beautifully done photographs, the informative text, and Pieter Brattinga's superb cover drawing.

Indianapolis

ALLEN W. CLOWES
Vice President

The Clowes Fund, Incorporated

SUBURBANITES AND PLANNING

Forum: Your article "Suburbanites Cast Their Votes for City Planning" (Dec. '63) is not surprising. Granted the social, esthetic, and economic characteristics of the respondents—including the basic reasons why they are in suburbia—you get the type of civic responsibility you should expect.

If you expose proposals for general community betterment to people who are serious members of big city civic associations you may reasonably expect civic-minded responses.

Conversely, try educating or informing the poor, the disadvantaged, or the relatively

hopeless with the prospects of such a program and you will find indifference if not outright opposition to issues posed.

My comments are by no means critical of what the New York Regional Plan Association has done. I commend it as one more resourceful way to reduce the gap between the increasing complexity of problems faced in space and land utilization, and the time and interest people are willing to apply to deal with such problems.

San Francisco

M. JUSTIN HERMAN
Executive Director
Redevelopment Agency

THE CHALLENGE TO CHURCHES

Forum: For one who spends his days in an effort to convince congregations with building programs that they are living in the 20th Century, Donald Canty's article "Strength or Banality? A New Reformation Challenges Church Design" (Dec. '63) is most welcome.

EDWARD S. FREY, Director
Commission on Church Architecture
New York City Lutheran Church in America

Forum: I was interested, and a bit distressed, at your church review. "Clergyman-critic" is a vapid definition of Hammond, who is a priest of the Church of England, whatever

else he may be. And Dom Gregory Dix wasn't a Dominican; he was a monk, and a member of the Anglican Benedictines at Nashdom Abbey. Both these men draw their strength from the ferment in the same tradition of liturgy, that of the Anglican Communion. The strength to move forward wouldn't be there without both the tradition and the ferment.

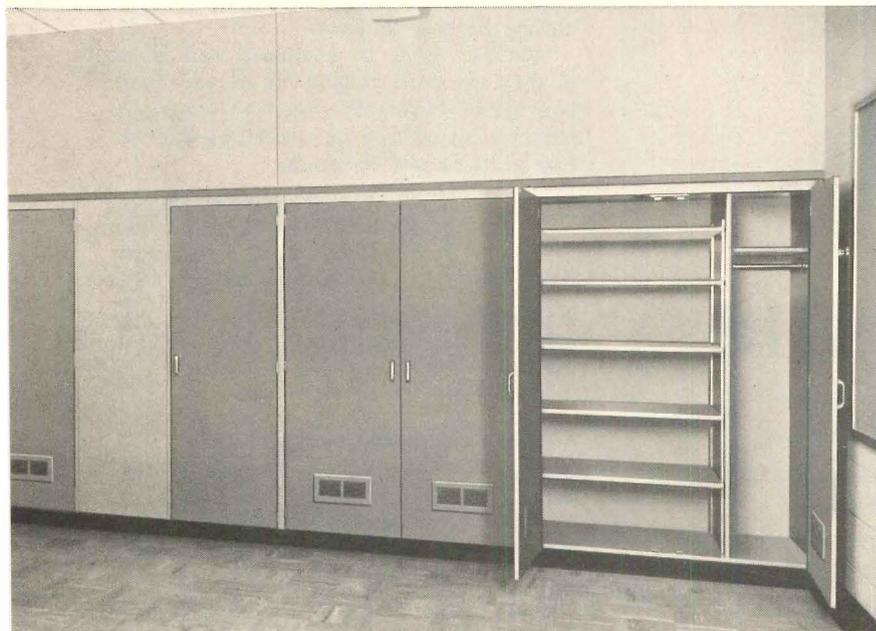
The really important point is the vitality and outreach from various individual traditions—Roman and Protestant alike—toward a fresher solution and one that is more relevant to present needs.

JOHN L. O'BRIEN, JR.
New York City Architect

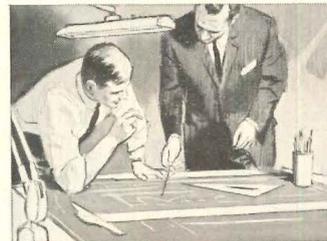
■ FORUM regrets placing Dom Gregory Dix in the wrong religious order. In this ecumenical era, however, it would seem that the really important point is the movement toward unification of individual traditions, and the article attempted to underscore their growing areas of common agreement—ED.

Forum: Congratulations on the relevant, hard-hitting article.

As liturgical consultants, we seek to make of each building a theological statement that is valid for the congregation using it. Our
continued on page 42



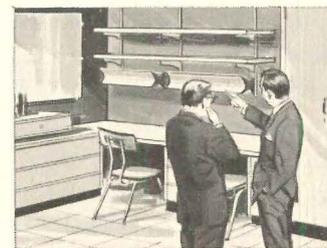
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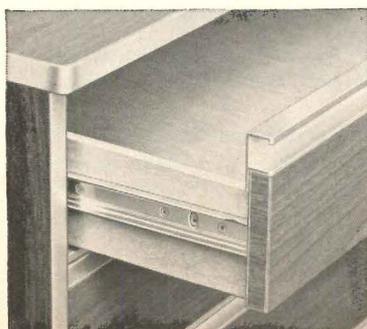


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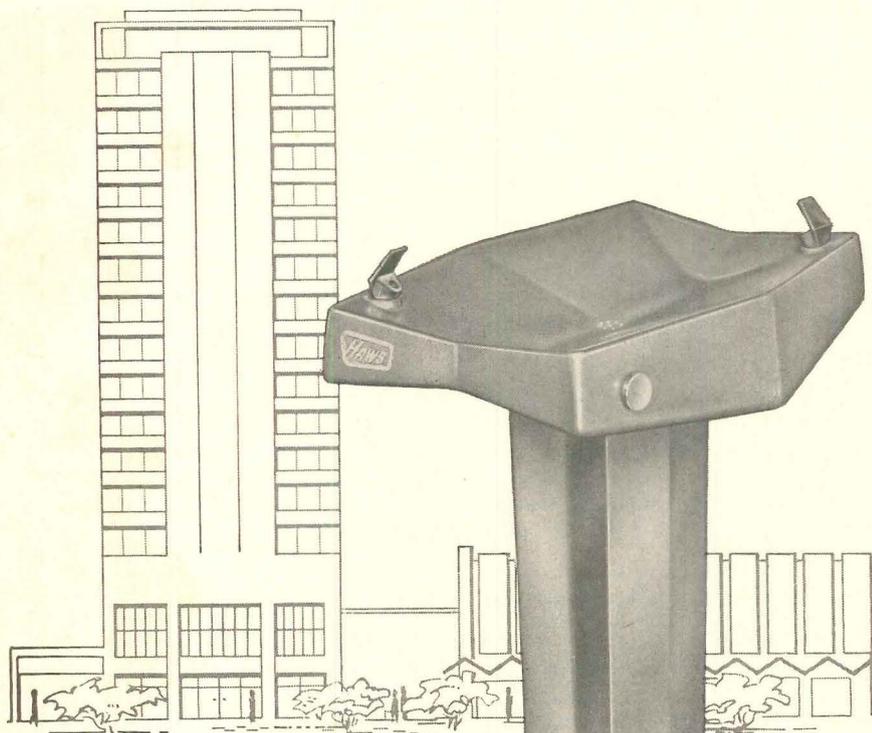
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greatest successes have been when the liturgical definitions were the starting point around which the basic plan was developed.

CHARLES F. POHLMANN
Design Director

Minneapolis Sacred Design Associates Inc.

Forum: Your church article has summarized much of the current thinking that has been done and that still needs to be done, and by it you have informed and stimulated your readers.

New York City

S. T. RITENOUR
Executive Director
Church Building and Architecture
National Council of the Churches
of Christ in the U.S.A.

Forum: A comment on Donald Canty's article on church architecture: Amen!

Wilton, Conn.

ROBERT H. MUTRUX
Architect

WHAT IT TAKES TO BE A CLIENT

Forum: I greatly enjoyed the three articles on "What It Takes to be a Client" (July, Sept., Dec. '63) and look forward to the rest of the series. They are particularly interesting to me as I have been through the design and building of three establishments during the past 15 years.

Will the series be combined and issued in the form of a booklet? If so, we should like to buy about 500 copies or require its purchase by students for use during the next four years in our classwork.

HENRY OGDEN BARBOUR, Director
School of Hotel, Restaurant and
Institutional Management

East Lansing

Michigan State University

■ For the fourth article in the series, see page 104. When the fifth and final article is published in April, reprints of the series will be available at 50¢ a copy—ED.

ACOUSTICS: PHILHARMONIC HALL

Forum: As Chairman of Lincoln Center's Building Committee, I have been aware of the great complexities of the acoustics of Philharmonic Hall. Mr. Lanier's article (Dec. '63) presented an accurate and carefully prepared statement of the problems and our approach to them.

FORUM has rendered a constructive service in publishing a readable and balanced analysis of an immensely complicated subject.

New York City

EDGAR B. YOUNG
Executive Vice President
Lincoln Center for the Performing Arts, Inc.

Forum: We all agree here that the article is a good one and reasonably fair to all involved.

While we do not agree with some of the technical details leading to certain conclusions, the matters should probably not be

continued on page 44

Four proven ways to make your public telephone installations both distinctive and functional

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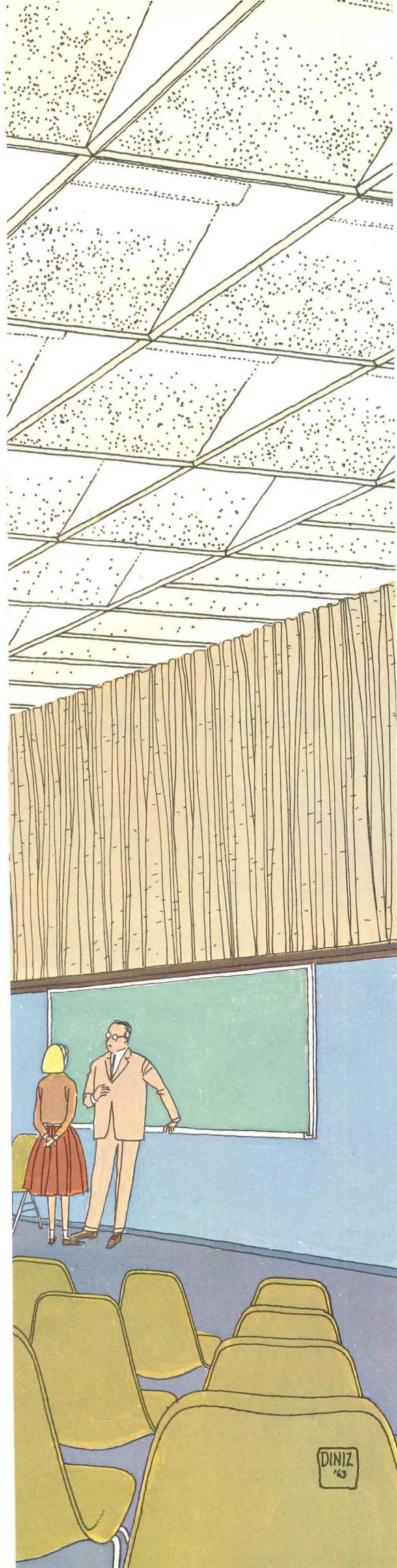
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At work in California: The Armstrong Luminaire Ceiling System

Armstrong takes five ceiling functions and creates the first totally integrated ceiling system.

The place is the new Choral Room of Culver City Junior High School. The ceiling is the new Armstrong Luminaire System—the first ceiling system to integrate air distribution, lighting, acoustical control, good looks, and finished ceiling surface. Hundreds of these ceilings are now in operation throughout the country.

The Armstrong Luminaire System was specified in place of the originally planned separate systems. The architect explained why. The system eliminated most ductwork and all diffusers. It simplified design and installation. Eased inspection and supervision for both air distribution and lighting systems. The system allowed concealment of light sources from normal sight-lines while providing high lighting levels, outstanding good looks.

With the Armstrong Luminaire System, all components are available from one source. All functions are supported from one grid. Each 50" module is its own light and air distribution source. Directed entirely downward, light is uniform and glare-free—10% more efficient than conventional recessed troffers. Here, illumination levels measure 180 footcandles at the work plane. These levels are typical. The ventilation function provides uniform, draft-free air distribution.

Flat ceiling panels allow the system's adaptation to any size or shape room. Specially designed to accommodate ceiling-high partitions, it offers limitless layout flexibility. The system is available with one-, two-, or three-lamp fixtures. Even shielded, as here, lamp cleaning and replacement are fast, uncomplicated.

MORE INFORMATION. For complete information on the new Armstrong Luminaire Ceiling System, contact your local Armstrong District Office or Armstrong Ceiling Systems Contractor. For a free illustrated portfolio and photometric data, write to Armstrong, 4202 Rooney Street, Lancaster, Pennsylvania.



CREDITS: Culver City Unified School District, Culver City, Cal. *Architect:* Boyd Georgi, Altadena, Cal. *Mechanical Engineer:* Thomas H. Parry & Assoc., Pasadena, Cal. *Electrical Engineer:* William H. King, Pasadena, Cal. *General Contractor:* W. J. Shirley, Inc., Pasadena, Cal. *Ceiling Systems Contractor:* Crownco, Los Angeles, Cal.

RENDERING BY CARLOS DINIZ.

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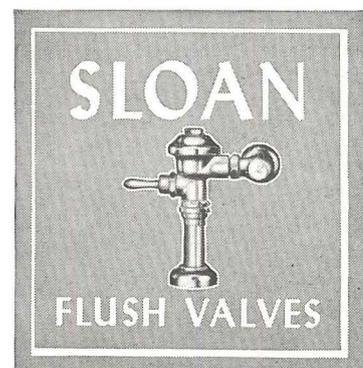
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Sears, Roebuck and Co., Greensburg, Pa. Architects; Kuhn, Newcomer & Valentour, Pittsburgh. General Contractor; Westmoreland Construction Co., Greensburg



W. T. Grant Company store, Port Jefferson, Long Island, N. Y. Architect; Frederick Saphier, New York City. General Contractor; Reliable Construction Co., Bronx, N. Y.



Benkins Van & Storage Co., Falls Church, Va. Architect; John M. Walton, Falls Church. General Contractor; Earl J. Rosti, Falls Church

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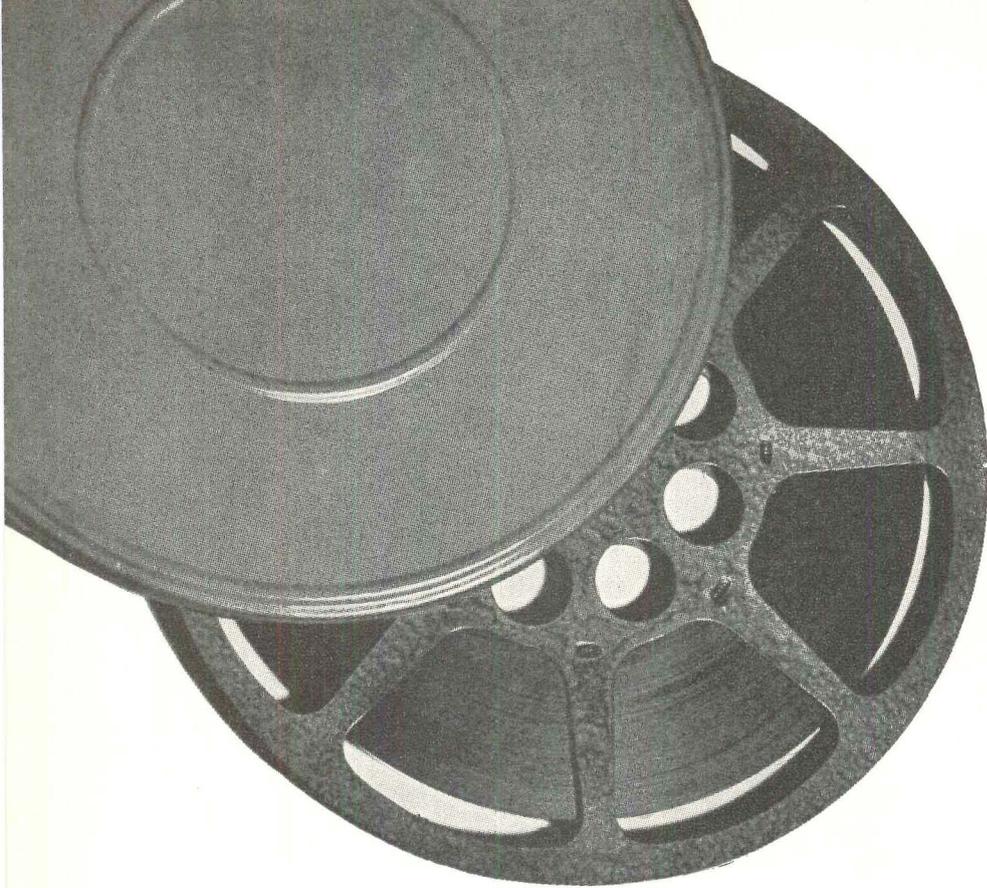
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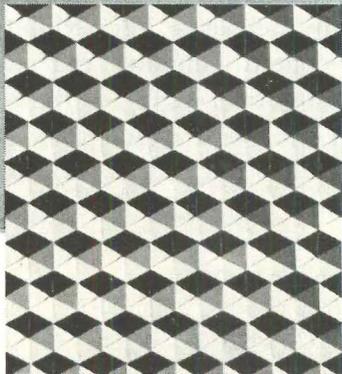
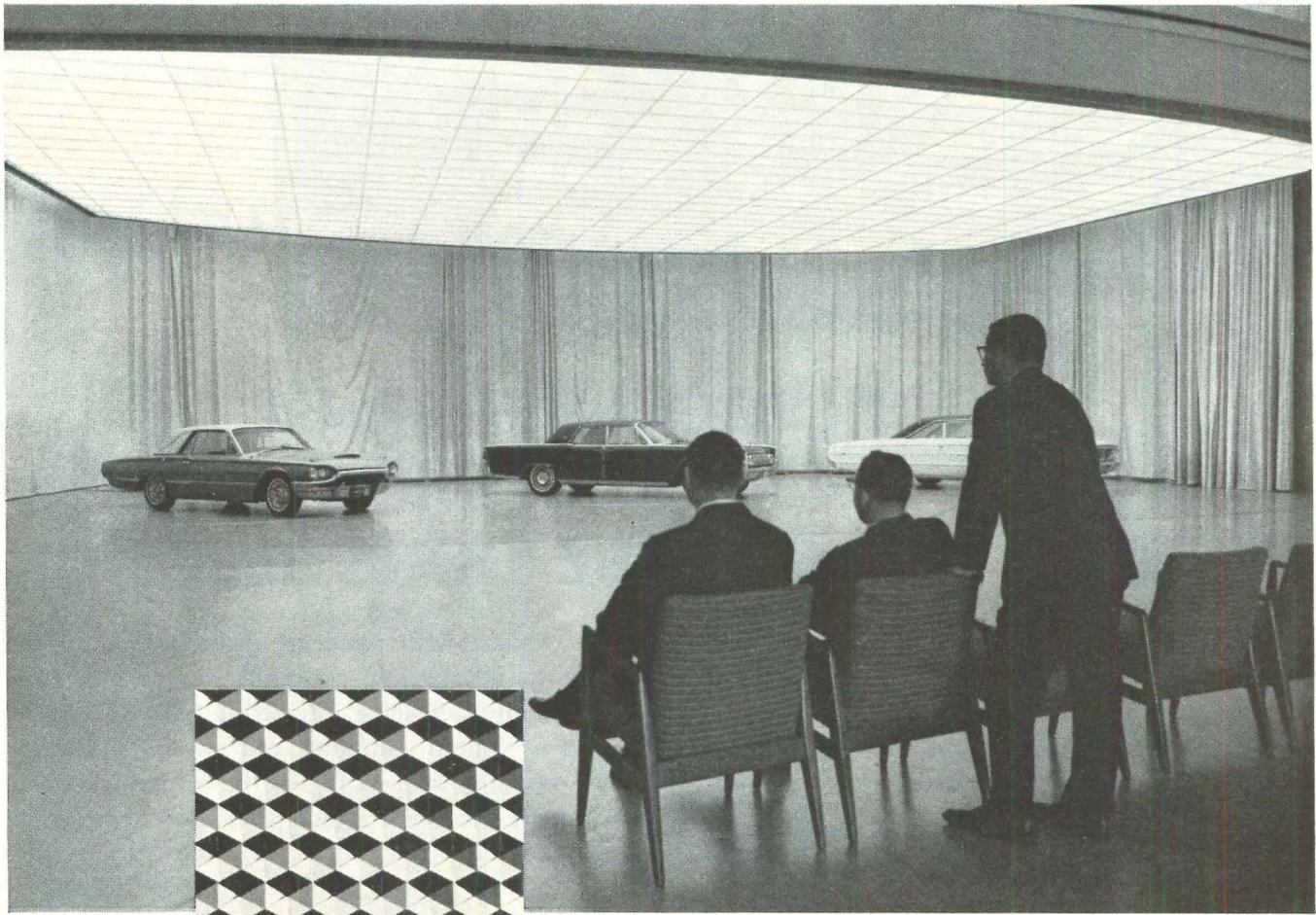
In an extraordinary film, the editors of Architectural FORUM have brought together America's leading men of building—each filmed on location—and each expressing in his own words his ideas about aesthetics, the new methods, the new materials, and the new frontiers of science and technology which they feel will come to shape our new age of architecture.

The New Age of Architecture is a 42-minute documentary film in black and white. Honored by exhibition at the annual Edinburgh Film Festival, the film was described by The New York Times critic as "stimulating, provocative and unique." The film has also been highly endorsed by ACTION and the AIA.

The New Age of Architecture will find a wide audience among architects, architectural students, building manufacturers, as well as those who are engaged in and supply the building industry. It is also ideally suited as a major presentation for management meetings, building seminars, and for distributor and dealer meetings.

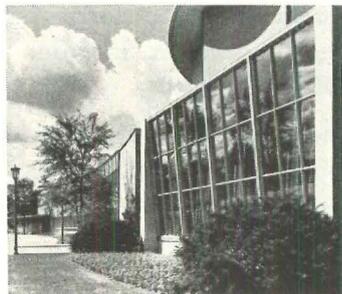
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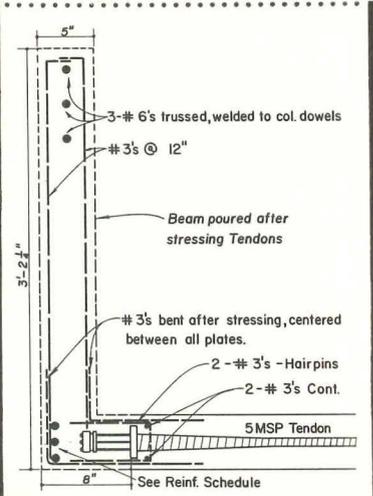
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Detail of typical anchorage cover strip used as a beam serving as a wall to stiffen the building and help carry the wind load.

The Cliff House, Corpus Christi, Tex.
 Owner: Morris Lichtenstein, Jr.
 Architect: Hans and Bennett
 Engineer: Wallace R. Wilkerson
 Contractor: Braselton Construction Co.

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EP-26

labored further in the architectural press until they have been more thoroughly discussed in appropriate scientific meetings and journals.

We shall continue in our efforts to learn more about what makes really good halls and to produce examples like Clowes Hall in Indianapolis (Dec. '63). It seems a pity that, in the Philharmonic Hall situation, good sense and reason did not prevail during its critical initial period of use. We feel confident that its difficulties can be solved, but this won't be done at cocktail parties or in the press.

ROBERT B. NEWMAN

Cambridge, Mass. Bolt Beranek & Newman

Forum: The article was one of the most thoughtful, balanced, and fair presentations I have read to date. Mr. Lanier's grasp of the problems that confront the architect and the acoustician in the design of new halls is commendable.

Most understanding were the paragraphs related to "some lessons learned," which I hope will lead to more knowledge and better understanding between objective procedures and subjective reactions.

Of course, the challenge of the hall of the future must relate to the "ears" and the taste of the generations of music lovers who will create the demand for new halls.

MAX ABRAMOVITZ

New York City

Architect

Forum: I can only say "bravo" to FORUM and Mr. Lanier. It is certainly the most accurate, aware, and objective article on a subject that has usually been treated with misinformation and emotional distortion. A splendid job!

JOHN T. MCCLURE

New York City

Music Director, Masterworks Dept.
Columbia Records

"100 BIGGEST"

Forum: We would be pleased to know if you are going to conduct your survey of the largest architectural firms in terms of buildings put in place in 1963, so we may get an early start on compiling our data.

Richmond, Va.

J. CONRAD SMITH

Marcellus Wright & Son, Architects

Forum: We read with interest your article last year on the 100 Biggest Building Clients in the U.S. The construction in which our company is involved indicates that we should be included. Please advise as to whom the necessary information should be supplied.

NORMAN A. RUBIN

Universal City, Calif.

MCA Inc.

■ FORUM will publish its fifth "100 Biggest" directory this year: architects in April, contractors in May, corporate clients in July. The editors request that all architects responsible for more than \$5 million of construction, contractors doing more than \$10 million volume, and corporate clients with a building program in excess of \$3 million in 1963, submit their

figures as soon as possible so that lists will be complete. Forms will be sent about two months in advance of publication dates; please advise us if you do not receive one—ED.

THOSE STOCK SCHOOL PLANS

Forum: Governor Rockefeller has asked me to reply to your editorial "Rocky Beats a Dead Horse" (Nov. '63).

I am deeply distressed by the editorial's intemperate tone, by its unprofessional bias, and most regrettably by its unwarranted characterizations of the program as "artful manipulation," "flim-flammy," and "patently ridiculous." It is most disturbing to me and my colleagues that a leading journal in our profession should resort to such an approach, regardless of what you may think of the program or the quality of the architecture involved.

Since you have charged us with untruthfulness in presenting comparative cost data, I should like to assure your readers that such a charge is baseless. The cost data presented are not "early cost estimates," but are the product of standard methods of cost analysis, prepared in the customary manner for our consulting architects by various estimating firms. All were painstakingly prepared from accurate quantity surveys. All were checked by means of independent take-off and placed on a comparative basis by this office. Moreover, all are available for inspection by any competent professional. The estimated savings of almost 30 per cent were calculated by comparing the estimated costs of the standard schools with the actual costs of school buildings erected in this state during the same period of time. The estimates, thus, are as accurate as any that could possibly be made.

In our opinion, the cost-per-pupil system, to which you object so strongly, is a very valid method of comparing school costs. It not only indicates value received, but also reflects economy and efficiency of design. It is probably the method most commonly used as a yardstick of school costs and is no different than the use of per-bed costs in hospitals, per-inmate costs in prisons and other institutional buildings, a per-seat cost in theaters and auditoriums, etc. The use of square foot or cubic foot comparisons gives an accurate indication of building costs, but these methods do not reflect the efficiency of design related to population and use.

With respect to your charge that the plans "eliminate entirely . . . joint educational architectural analysis," the Standard School Program was prepared with the assistance of an advisory committee composed of representatives from the fields of education, design, and construction, and this program was subsequently translated into plans by private architects of established reputation.

As to your charge that these are "mini-schools" designed to fit the "lowest common denominator," I respectfully direct your attention to

the introduction of the brochure, which clearly states that the "educational program around which the standard plans were designed takes into account the needs of not only the average child but the slow learner . . . and the academically talented."

The Standard School plans embody the following desirable features: immediate availability of nine types of schools designed by a group of men experienced in all phases of school design, complete with specifications and cost estimates for use by any interested school board; provisions for future expansion; dual purpose fallout shelters; provisions for the physically handicapped; work for local architects in site adaptation, any desired modification or expansion, bidding, checking of shop drawings, and supervision of construction of any project undertaken by a school board; and the basis for comparing costs of other school designs, thus providing school boards and the public with reliable guidelines as to costs, specifications, requirements and construction practices.

In summary, this program has been designed to provide modern school accommodations for an increasing student population, in the shortest time possible, and at the lowest costs consistent with desirable educational objectives.

CHARLES S. KAWECKI

Albany, N.Y.

State Architect



One of New York's stock plans, a junior-senior high school designed by Urbahn & Brayton.

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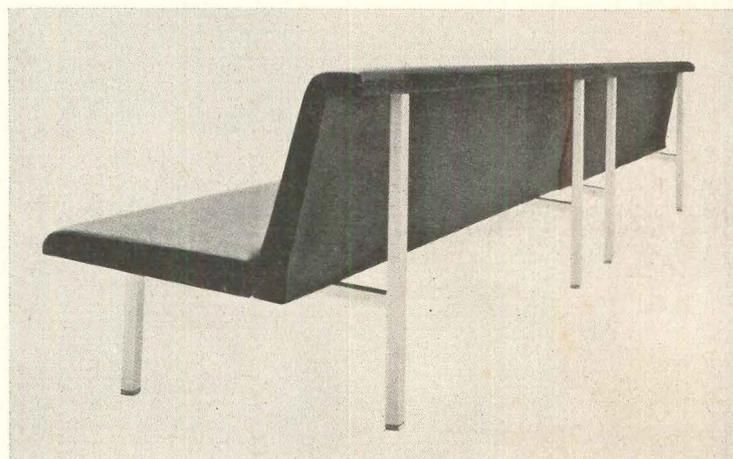
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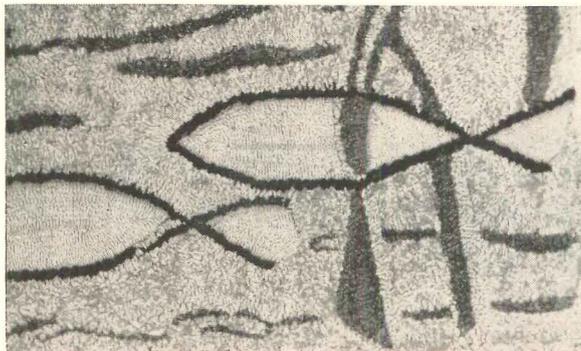
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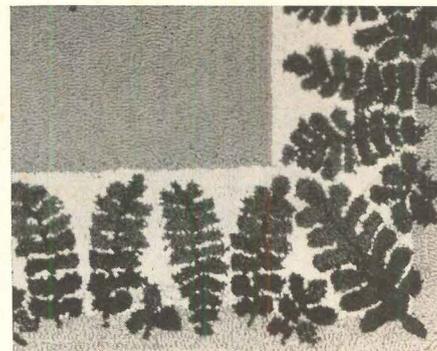
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3



4



1. TUFTED CHAIRS. With an eye toward architects, Monarch Furniture Co. of High Point, N.C. has introduced a line of office furniture called the "Blue Print Group." The tufting is achieved by using hand-tied nylon threads. The legs are steel with chrome plating. Both fabric and vinyl upholstery are available. In vinyl, the secretarial chair lists for \$127.10, the junior-executive swivel chair lists for \$192.90, and the side chair lists for \$177.65.

2. WALNUT DESK. Fine wood and craftsmanship are features of this

72 by 36 inch desk from Huller Inc. of New York City. The wood is American walnut, available with either an oiled or a lacquer finish. Drawers protrude so that they are flush with the front edge of the raised top. Bottoms of drawers are lined with white plastic. List price: \$650.

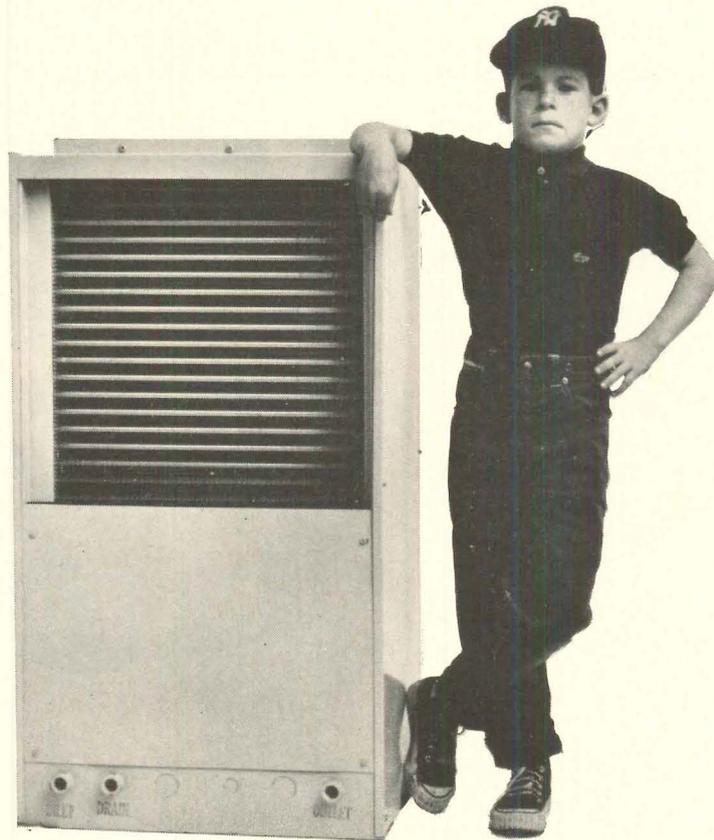
3. LOUNGE SETTEES. Seating for lounges, reception rooms, and waiting areas, as well as for banquet tables, are provided in these settees designed by Finnish Architect Voitto Haapalainen and sold by Stendig, Inc. of New York

City. The frame is of 1 3/16 inch square steel tubing with a choice of satin aluminum, black, and white finishes. All finishes are baked on; the aluminum one incorporates an epoxy resin coating to resist abrasion. The overhanging back allows the settees to be placed back to back and gives perfect alignment of the settees when they are placed end to end in rows. Two seat heights are offered: 17 inches for dining and 15 1/2 inches for use in lounges. Both are 71 inches wide and have foam cushions. In muslin the net

costs are \$125 for the dining height, \$135 for the lounge height.

4. HAND-CRAFTED RUGS. Twenty rugs designed by Dorothy Liebes are in the current collection of 30 hand-crafted wool rugs offered by Bigelow Custom Carpets, Inc. of Manhattan. Left to right are three swatches from Liebes designs: "Aquarium," "Mirage," and "Fern Brake." For the 4 1/2 foot by 6 foot size, "Aquarium" costs \$375 and "Mirage" and "Fern Brake" cost \$400 (list). All rugs are available in various sizes and colors on order. END

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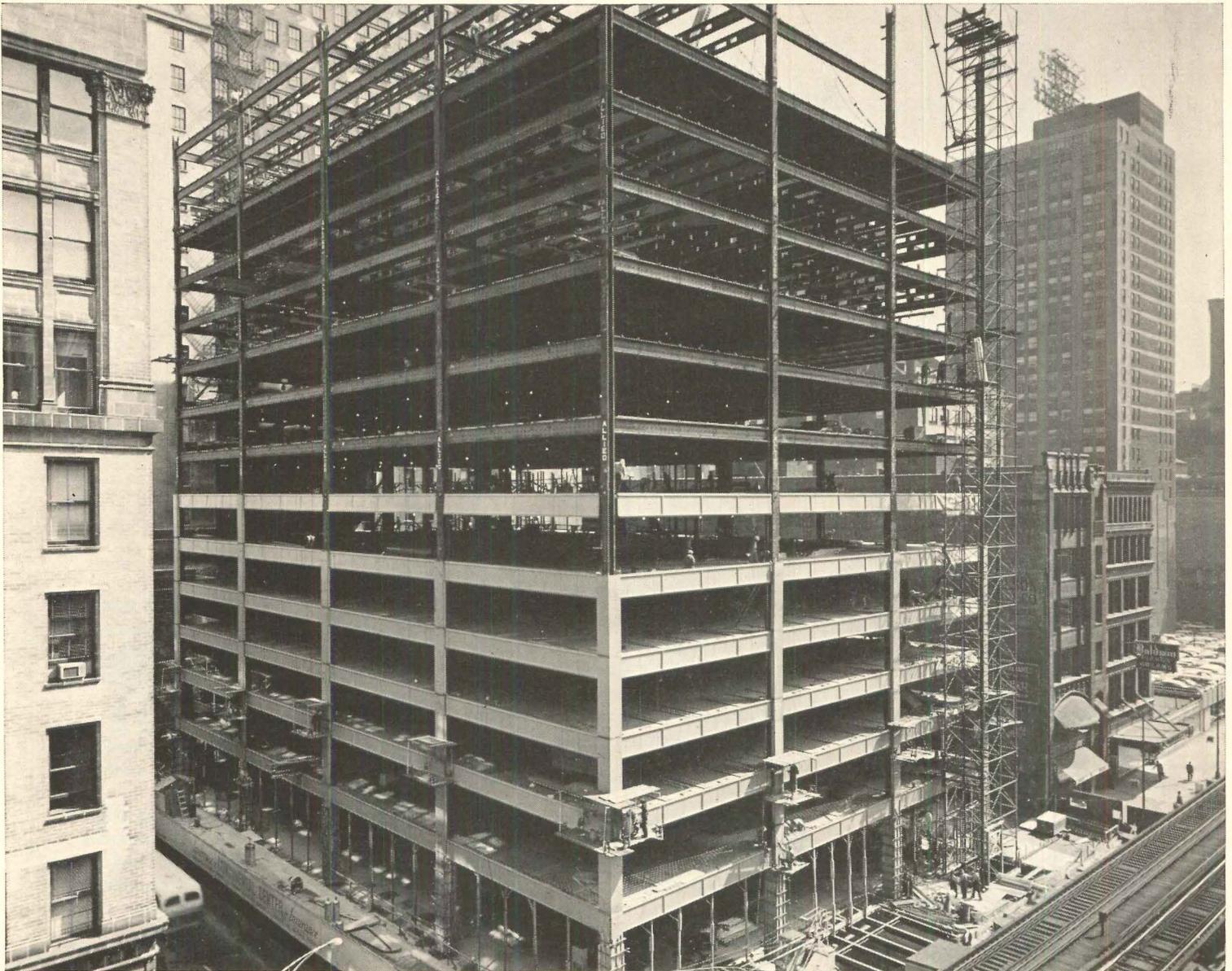
Typhoon introduces 5 closet-sized heat pumps and air conditioners for individual apartment climate control. 1, 1½, 2, 2½ and 3 ton units, engineered to meet maximum standards. Cooperative apartment developers prefer them because each owner has his own central station system, complete with independent control and separate meter. Owners of tenant-occupied apartments like them because tenants pay operating

costs, simplifying initial construction financing. Resulting lower rental rates make tenants happy, and Typhoon's carefree performance keeps them happy! Each unit is made with oversize parts that thrive on heavy usage. Installs easily be-

cause it's completely pre-assembled and shipped ready-to-work. Can be furnished as cooling units with electric heat, or with conventional heating systems. *Equally effective in many commercial applications.* Typical Typhoon versatility! Whatever you need, you'll find in the big Typhoon line of 218 air conditioners/liquid chillers/furnaces/heat pumps. Write today for full product information.

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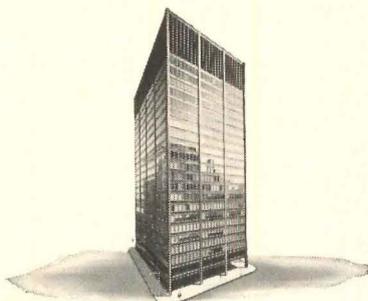
TYPHOON AIR CONDITIONING DIVISION, 505 CARROLL STREET, BROOKLYN 15, NEW YORK



Continental Center office building, Chicago; Continental National Insurance Group, owner; C. F. Murphy Associates, architects-engineers; A. L. Jackson Company, contractor

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speeds erection of new Continental Center building



Design for beauty in steel

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Allied experience and facilities can do the same for you. Request an Allied bid on your next structural steel job.



NEW MOVIE... Just released! Pictures fabrication and erection of welded steel truss bridge over Ohio River at Louisville, Kentucky. Sound, color, 16mm, 28 minutes. For booking, write Allied Structural Steel Company, Suite 1771, 20 N. Wacker Drive, Chicago 60606.



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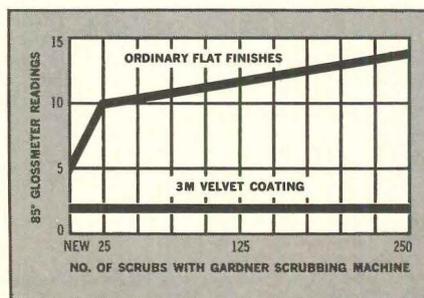
But, as we said, you should see for yourself. That's why we've put together a special get-acquainted Design Kit—a variety of colors to enable you to give 3M Velvet Coating a thorough evaluation in your own field of work.

Compare it, side by side, with the flat paints you've been using. Which gives you the blackest blacks, the whitest whites, the deepest colors?

Check for resistance to burnishing—as we did in a scientific scrub test.

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IBM Building, Kalamazoo, Michigan. Architect: Ezra Gordon, Jack M. Levin & Associates, Chicago, Illinois. Contractor: Miller-Davis Company, Kalamazoo, Michigan. Concrete Panel Manufacturer: Crest/Schokbeton Concrete, Inc., Lemont, Illinois.

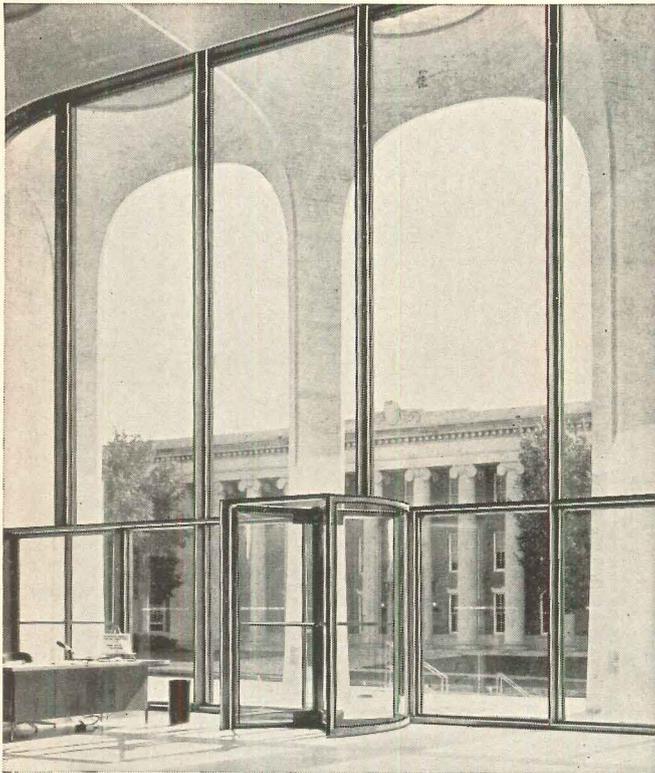
GORDON, LEVIN & ASSOCIATES specified precast white concrete

for the 6,650 square feet of curtain walls of this Kalamazoo office building. The 8-by-15-foot panels, including the picture-frame units, are made with ATLAS WHITE portland cement with an aggregate of silica sand, blended with white and gray quartz. In addition to being aesthetically pleasing, the concrete panels support the roof of the structure. ■ Today, more architects are recognizing the structural as well as the decorative qualities of precast white concrete. One of the most versatile of building materials, it can be cast in a great variety of sizes, shapes, colors and textures. Installation is fast, maintenance costs are low. ■ For specific information, consult your local precast concrete manufacturer. For a 32-page brochure titled "White Concrete in Architecture," write Universal Atlas, 100 Park Ave., N. Y., N. Y. 10017.



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Sheldon Memorial Art Gallery, University of Nebraska, Lincoln
 Architects: Philip Johnson Associates
 Structural Engineers: Leo Zetlin & Associates
 Mechanical Engineers: Jaros Baun & Bolles
 Supervising Architects: Hazen & Robinson
 Contractor: Olson Construction Company

CONTROLLED AIR ENTRANCE

meets aesthetic requirements of modern university art gallery

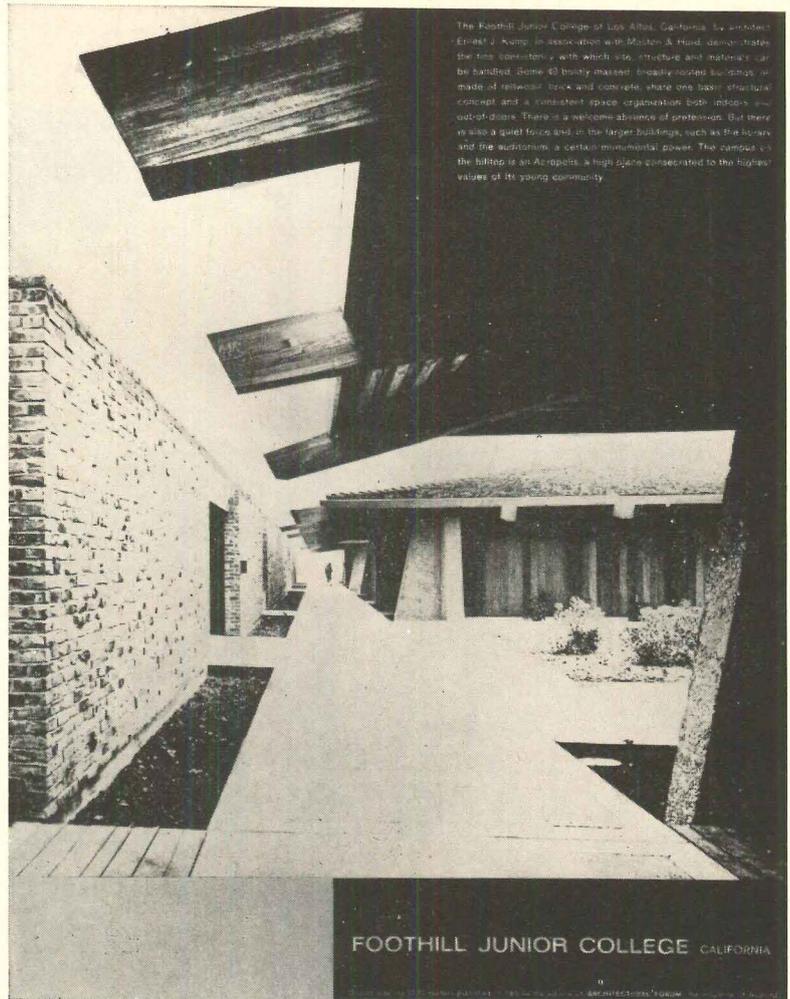
The International Controlled Air Entrance revolving door is suited to this boldly elegant art museum at the University of Nebraska. The "always-open/always-closed" entrance keeps out drafts and makes it economical to heat and air condition the 30-foot-high interior. Note the reception desk within a few feet of the Controlled Air Entrance.



Dare us to prove what we claim. Write today for free 54-page book, **The Controlled Air Entrance**, based on an authoritative ASHRAE study of air infiltration.



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The Foothill Junior College of Los Altos, California, by architect Ernest J. Kump, in association with Maston & Hurd, demonstrates the fine consistency with which site, structure and systems can be handled. Some 40 boldly massed, broadly-sloping buildings, in made of reinforced brick and concrete, share one basic structural concept and a consistent space organization both indoors and outdoors. There is a welcome absence of pretension. But there is also a quiet force and, in the larger buildings, such as the library and the auditorium, a certain monumental power. The campus is the fullest in an Arc region, a high plane consecrated to the highest values of its young community.

FOOTHILL JUNIOR COLLEGE CALIFORNIA

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A GRAPHIC EXHIBIT FOR BETTER PUBLIC UNDERSTANDING AND APPRECIATION OF CONTEMPORARY ARCHITECTURE

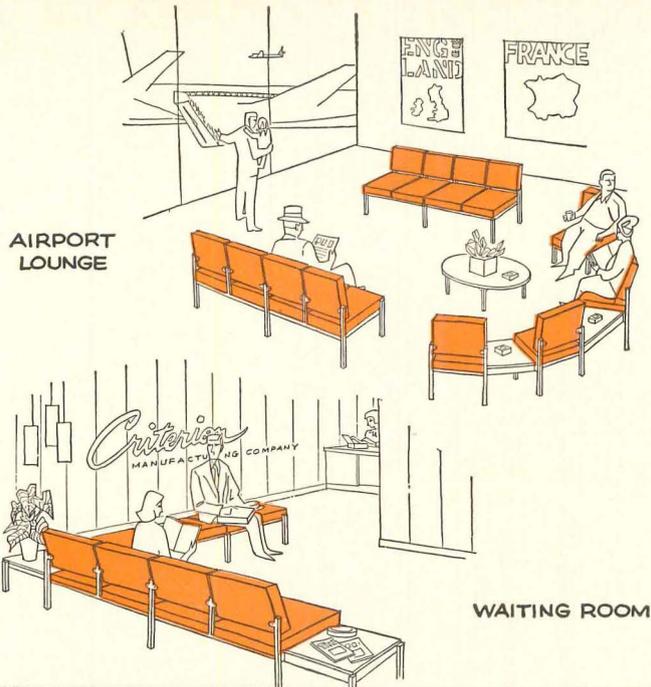
Due to the popularity and demand of its first poster exhibit (now completely sold out) Architectural FORUM has produced its second annual edition of posters for public exhibition. Incorporated in the poster set are handsome black and white photographs of ten new buildings* which, in the opinion of FORUM's editors, have contributed significantly to the art of architecture in 1962.

Designed by John Martinez, a leading graphic artist, the ten posters are particularly suitable for display in schools, colleges, libraries, museums and other public areas such as convention halls, banks and department stores.

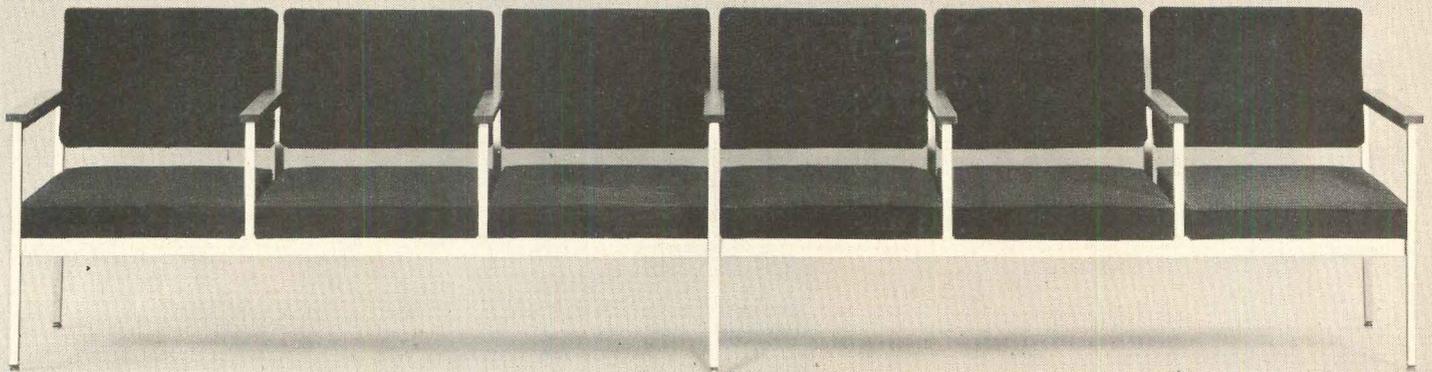
Each poster measures 18½"x24"; but the full set is designed to hang handsomely as a unit.

Cost: \$5.00 per set postpaid while the limited supply lasts. Address all inquiries to Architectural Forum, Room 19-39, Time & Life Building, Rockefeller Center, New York 20, N.Y.

*U.S. SCIENCE PAVILION BY MINORU YAMASAKI / COLUMBUS ELEMENTARY SCHOOL BY JOHN CARL WARNECKE / NECKERMANN WAREHOUSE BY EGON EIERMANN / FOOTHILL JUNIOR COLLEGE BY ERNEST J. KUMP AND MASTON & HURD / PLACE VILLE MARIE BY I. M. PEI / ASSEMBLY BUILDING BY LE CORBUSIER / MARIN COUNTY CENTER BY FRANK LLOYD WRIGHT / NEW HAVEN GARAGE BY PAUL RUDOLPH / DULLES INTERNATIONAL AIRPORT BY EERO SAARINEN / BACARDI BUILDING BY MIES VAN DER ROHE



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We asked Maria Bergson, noted interior designer, to prepare the sketches above showing various distinctive arrangements that can be accomplished with Scope-H furniture. We hope that one of these sketches will spark an idea for your use of Scope-H.

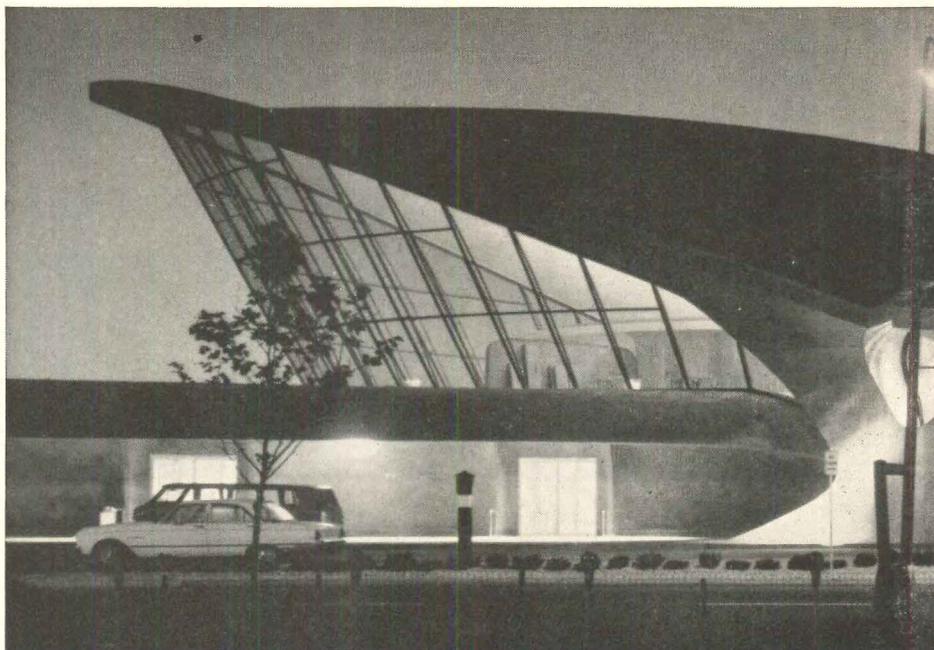
FOLDED

American Concrete Institute Headquarters, Detroit. Architects-Engineers: Minoru Yamasaki and Associates. General Contractors: Pulte-Strang, Inc. Oildraulic Passenger Elevator.



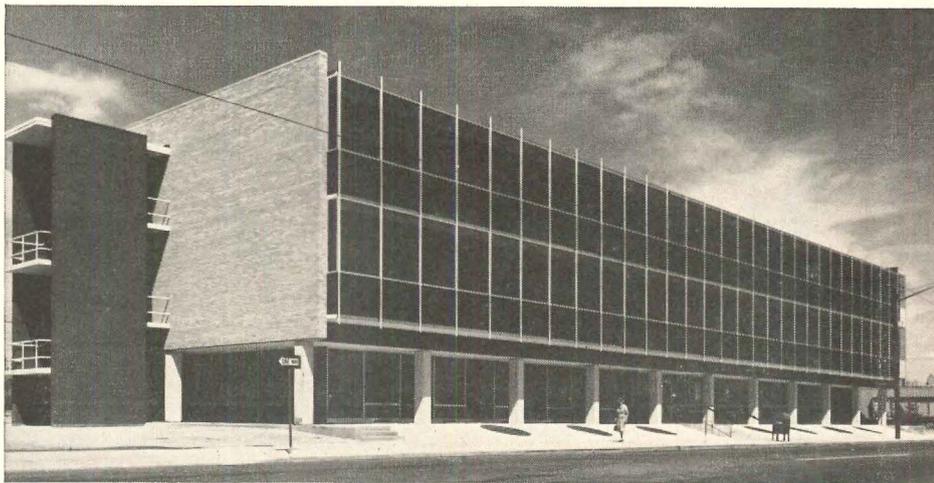
CURVED

Trans World Flight Center, New York City. Architects: Eero Saarinen & Associates. General Contractor: Grove, Shepherd, Wilson & Kruge, Inc. Oildraulic elevating equipment installed by Burlington Elevators, Inc.: two passenger elevators, freight elevator, Levelator Lift, two Leva-Dock Ramps.



FLAT

General Electric Office Building, 201 University, Denver. Architect: Moore & Bush, Denver. General Contractor: N. G. Petry Construction Co., Denver. Oildraulic passenger elevator installed by Dover Elevator Co.

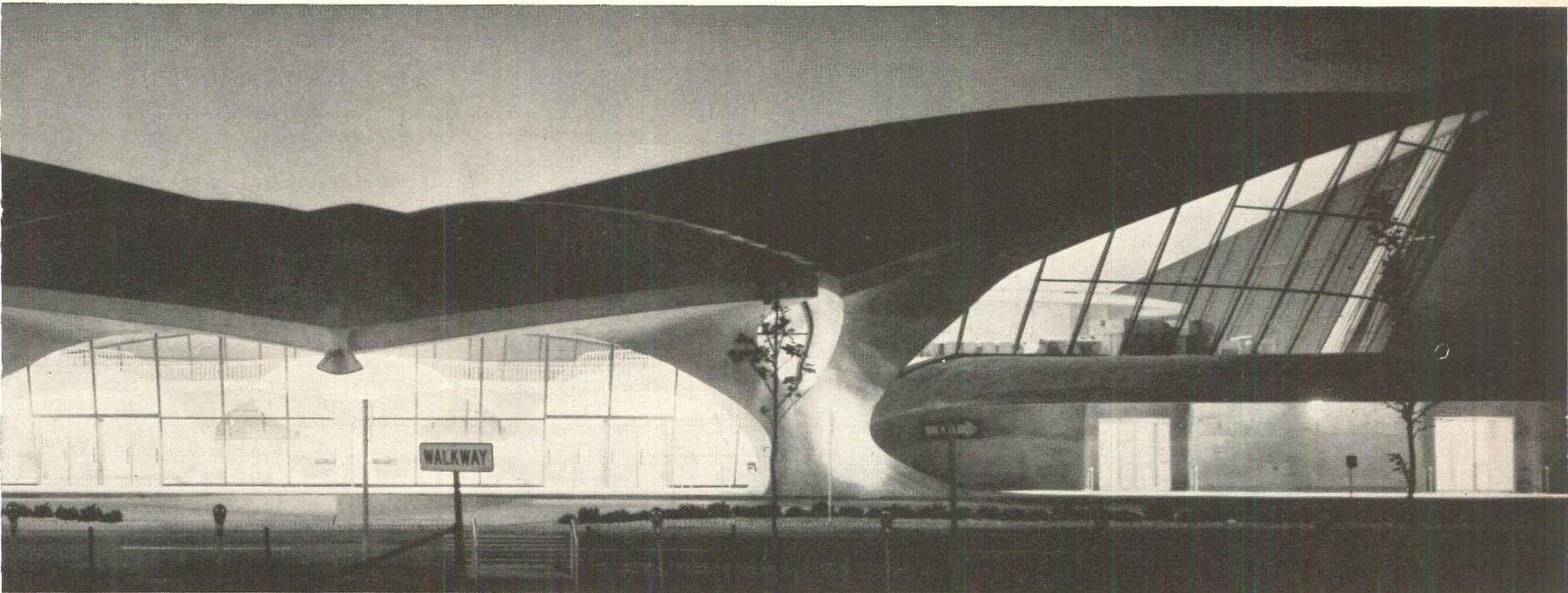


PEAKED

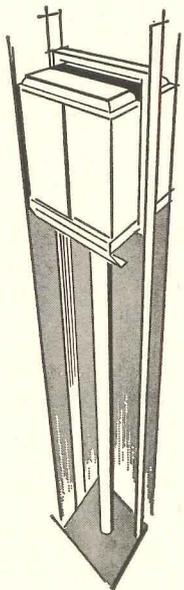
Allstate Insurance Company, Dallas. Architect: George L. Dahl, Architects and Engineers. General Contractor: Inwood Construction Co. Oildraulic passenger elevator installed by Hunter-Hayes Elevator Co.



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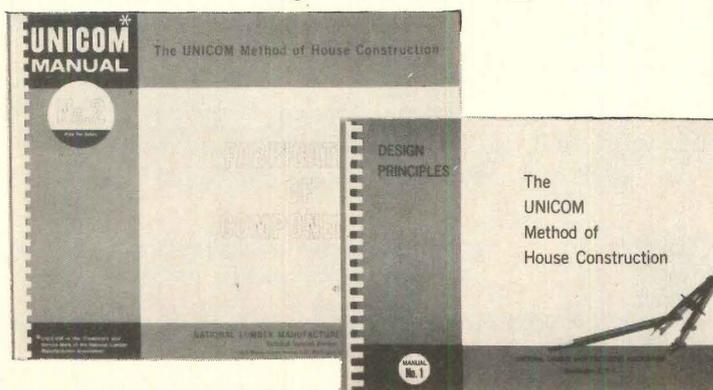


... to build demand for your plans

companies, and communities the most for their money. For more information on designing with wood, write:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1619 Massachusetts Avenue, N.W., Washington 6, D.C.

UNICOM MANUALS 1 & 2: "Design Principles" (122 pages) and "Fabrication of Components" (248 pages), graphically detailing the Unicom method of house construction. Single copies of either or both are available without cost to those associated with or supplying the home building industry. Your request should be made under professional letterhead, and sent to UNICOM, National Lumber Manufacturers Association, 1619 Massachusetts Ave., N.W., Washington 6, D.C.





Steel for Strength

STRUCTURAL DESIGN NEWS

FROM BETHLEHEM STEEL

NO. 5

WHY COMPOSITE DESIGN IS OFTEN BETTER DESIGN

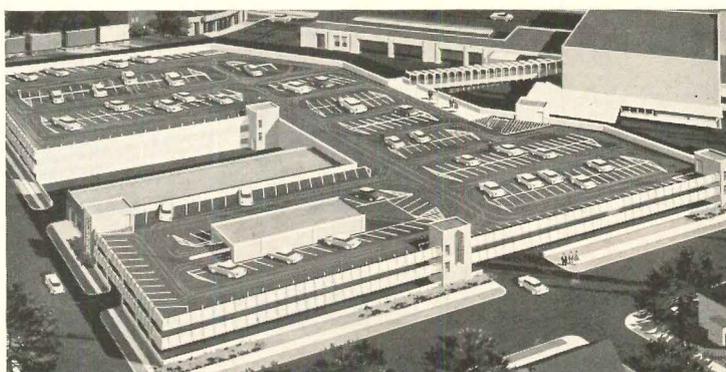
All across the country, architects and their associated engineers are turning to composite construction to achieve a variety of better structures — economically. Composite construction is giving them stronger, stiffer structures ... structures better able to handle vibrations or impact from machinery or moving loads. It's decreasing beam depth and building height. It's making economical use of rolled sections for longer spans. And it's saving steel tonnage. Here are just a few examples.



Redesigned using composite...steel tonnage cut 5%. Original design of this handsome two-story Lord & Taylor department store in Jenkintown, Pa. called for a conventional steel frame. Composite redesign, undertaken to cut framing costs, pared steel tonnage some 5%...saved about \$10,000 according to the architect-engineer.

Composite design of 3-story warehouse saves \$25,000. Composite design and A36 steel won out over concrete in the 253,000 sq ft South Carolina warehouse for Spring Cotton Mills. Increased stiffness of the composite structure, needed to support very heavy loadings on its three floors, was a prime factor. Composite design cost some \$25,000 less than conventional steel design.

Composite design cuts cost of parking ramp to \$1,250 per car... compared to average cost of \$1,700 to \$1,800 per car for reinforced concrete parking ramps. Architects-engineers for the 1,000-car ramp for Buffalo store of Sears, Roebuck & Co. report a 20% reduction in steel tonnage using composite design and higher-stress A36 steel.



New Handbook on Properties of Composite Sections. Does your engineer have a copy of Bethlehem's handbook, Properties of Composite Sections for Bridges and Buildings? If not, have him get in touch with the nearest Bethlehem sales office, and ask for our steel design file on composite sections.



(Names of the architectural and engineering firms responsible for the projects named above will gladly be furnished on request.)

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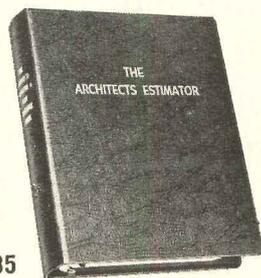
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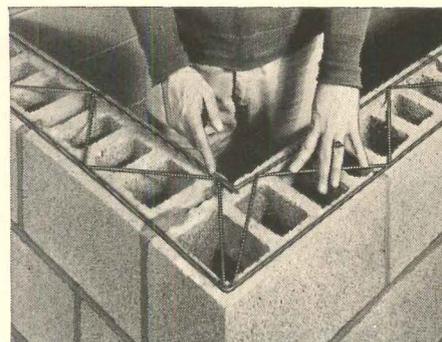
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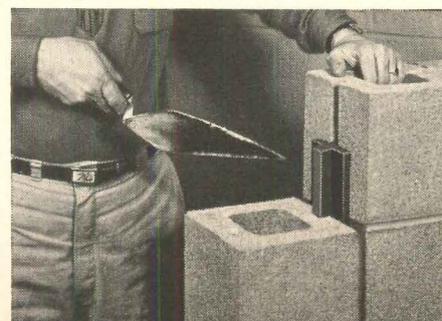
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Now is the time for all good men . . . Norman Mailer, a writer whose comments on the Kennedy Administration during its leader's lifetime were about as acid as any published in this country, wrote recently that John Kennedy "made an atmosphere possible in which one could be critical of him, biting, whimsical, disrespectful, imaginative, even out of line. . . . We may have to live for half a century before such a witty and promising atmosphere exists again." The habit of taking critical pot shots at government from avant-garde positions is, indeed, one of the more extraordinary legacies of the past few years. And it is a good habit to cultivate in a free society, which depends on dissent and fresh ideas to move forward.

In matters of architecture and urban design, we were led to demand a level of performance by government that met John Kennedy's own declared standards. And so it was possible, even desirable, to be immensely critical of the selection of slightly-less-than-immortal architects for certain commissions, and to demand that men of the highest caliber be retained instead. But in this exhilarating atmosphere, some critics began to assume that government existed for the exercise of the most exalted standards of leadership in all things, including the arts; they forgot that only a very short while ago all of us would have been pleased if a merely adequate architect had been commissioned to design a consulate in some unpronounceable emerging nation, rather than the sort of tenth-rater we had grown to expect from government.

It is no reflection upon President Johnson to suggest that the time for taking pot shots from advanced positions is not now. Mr. Johnson's energies in the past have been directed not toward the arts, but toward rather different interests—and this nation is fortunate in having a professional in matters of government in the White House today. But because Mr. Johnson is anxious to continue his predecessor's policies in the arts, as well as in other matters, he deserves all the help that the critics can give him, and less of their criticism. If government is the art of the possible, then government-produced architecture, even at its best, is only the best architecture acceptable. We may regret this, and we should; but this is a time for consolidating the gains won for the American city in the last few years—and not the time to try to expand them even further.

We don't think that anybody criticizing the selection of an architect for John Kennedy's memorial at Arlington, for example, was being malicious. In a sense, this sort of criticism is an implied tribute to the atmosphere established by John Kennedy, of which Norman Mailer spoke. But if our architectural critics, in this post-Kennedy era, spend their time denouncing all decisions and selections that do not measure up to their personal standards of excellence, they may end up doing serious damage to the cause of better architecture and better urban design in America—a cause, among many others, to which John Kennedy was devoted.

Thanks to much that has happened in recent times, the level of architectural quality sought by government is higher today than it has ever been. Let us gain and strengthen public confidence in this remarkable achievement by offering help and support to all serious efforts in this area, rather than opposing them on the grounds that they may fall short of Utopia.

THE new building has been occupied for six months now. The new tables are finally in place in the drafting room, and there are the usual cryptic announcements pinned up on the notice boards. In short, it is now possible to take a measured look.

Admittedly, only the passage of several years will reveal the ultimate effect of this deliberate break by an important American architect with his own past.

But because more than Paul Rudolph's career may be marked by his pivotal design, and because Yale's Art and Architecture Building may, just possibly, become a directional signal for his entire generation, we cover it this month in depth:

First, for more than a dozen pages, are photographs and drawings to document the physical complications and force of the work. This is the story of *the building*—including explanations by Rudolph of some of its details (pp. 66–75).

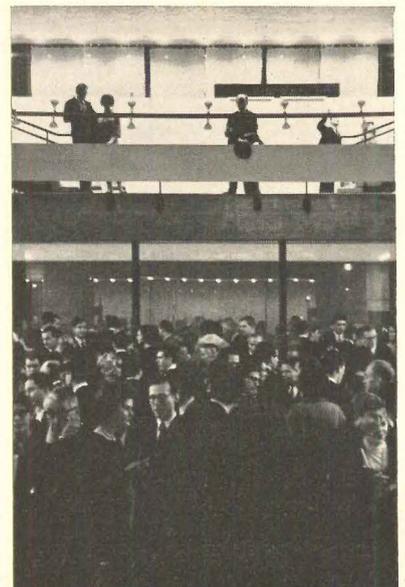
Next, an *appraisal* by critic Sibyl Moholy-Nagy—plus more photographs (pp. 76–79).

Following, a profile of *the contractor*, a very unusual man, who demonstrated here, as on previous occasions, that building itself can be an imaginative and creative act (pp. 80–83).

And finally, to place the A & A building in the context of its time and its likely influence upon others, we show drawings of the next three major designs now on the drawing boards of Rudolph's busy office in New Haven, several blocks from A & A, where he is head of the Yale Architecture department. This final chapter in our story, then, deals with *the architect* (pp. 84–89).

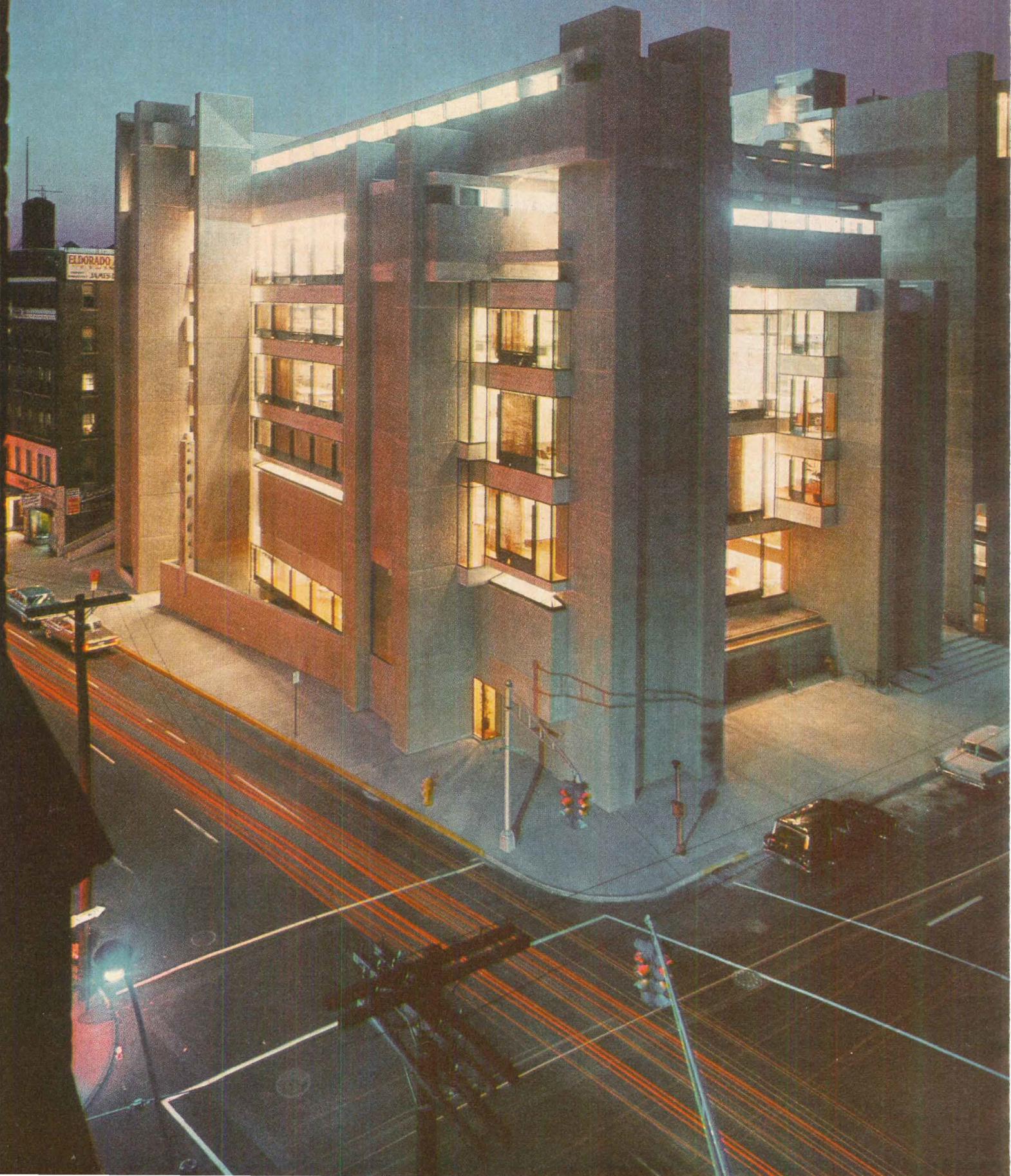
When, on November 9, a polite mob of alumni of the Yale School of Art and Architecture (plus assorted other architects, planners, designers, artists, Yale Corporation Fellows, critics, and friends from several corners of the globe) gathered in Rudolph's strange new building at the corner of York and Chapel Streets in New Haven, the very size of the audience at this dedication (almost 2,300) was a fair measure of the importance of the building as an event. The importance of the building as a structure, as architecture, as an influence upon others, will be discussed on these next pages—and, beyond these pages, for a good many years to come.

A BUILDING THAT IS AN EVENT



ROBERT PERRON

YALE'S SCHOOL OF ART & ARCHITECTURE



1

THE BUILDING

*A description of how its
many parts work,
separately and together*

BY WALTER McQUADE

Architect Paul Rudolph told a recent visitor to his new building that it has 36 separate levels. It probably has, though nobody other than its architect has yet taken the time to count them. In the cutaway view, opposite, which shows the building with its Chapel Street wall (and some of the rooms behind that wall) removed, only a few of the levels are visible. They suffice, however, to suggest the almost explosive complexity of the interior spaces.

Even before completion last year, the burly façades and sculpted interior space of the A & A building had attracted more attention from the design and construction industry, the popular press, critics, and other architectural midwives than any other building in recent memory.

The stir began several years ago with publication of the first of the six designs ultimately developed for the structure. Ground was broken in December 1961, and with great curiosity, the building world watched this structure grow. Rudolph's own architectural students were the closest watchers: their old drafting room was on the top floor of Architect Louis I. Kahn's art gallery extension across York Street overlooking the A & A excavation. It was evident from the very beginning that the A & A design was the most vigorous kick yet to have been administered to that capering horse, contemporary architecture, which has, in recent years acquired many different directions and made very little apparent progress.

But there was another reason for the almost universal interest. The A & A building was the last to be dedicated of the stirring succession of architectural commissions under the Yale presidency of A. Whitney Griswold, though Griswold did not live to see it completed. The Kahn Art Gallery was the first in Griswold's reshaping of the Yale campus, and, suitably, Rudolph's new building deliberately balances it in mass. These two buildings, in short, begin and end a rich, exciting time of building for Yale—the era of Griswold.

Heft—some of it hidden

A & A is a large building, larger than it appears—117,575 square feet. Part of the supression of size (if not of personality) can be traced to the fact that

two full floors of the building are below grade. In the drawing, right, the larger rooms on this two-story lower level are—reading from left to right—a sculpture studio with mezzanine, a large lecture room, and a mechanical service room (with a darkroom above it for the photography department). The entire first floor is given over to a library and stack space; above that, in this section, are the central exhibition room, used for design jury duty, and a classroom, to the left. The mezzanine around this tall space is occupied by office space. The next level up is a set of platforms which compose the architectural drafting room (the platform overlooking the main drafting room floor, and seen in the distance, is for the city planning students). Next highest, left, is another room of the city planning department; painting studios are at the center and right. The topmost rooms in this section are more painting studios; not shown here is the penthouse for guest lecturers and critics (see pp. 74-75).

A quartet of columns

The interior structure consists of four large concrete columns, which are hollow to accommodate service runs; two of them are visible in the section drawing. But there are two exterior towers which also act as structural supports: a stairway tower on the Chapel Street side of the building (visible at far left in photo, opposite), and a stairway-elevator-plumbing tower on the York Street side (far right in photo). Future expansion of the building will place new construction on the unused side of the York Street tower, turning it into a central service stack.

Clarification by code

As interlocking as the vertical spaces are in this building, they might have been even more so if the New Haven fire laws had not decreed that only two floors could be open in the same continuous space. This forced, for example, the glazing of the upper part of the library, where its higher space connects with the second and third floors (far right in section). The exterior walls are either glass or striated concrete indoors and out, except for structural members, which were finished smooth. These concrete walls, cast in place, are one foot

thick; special forms allowed the aggregate to come to the surface, after which the leading edges of the striations were hammered off.

A & A's art

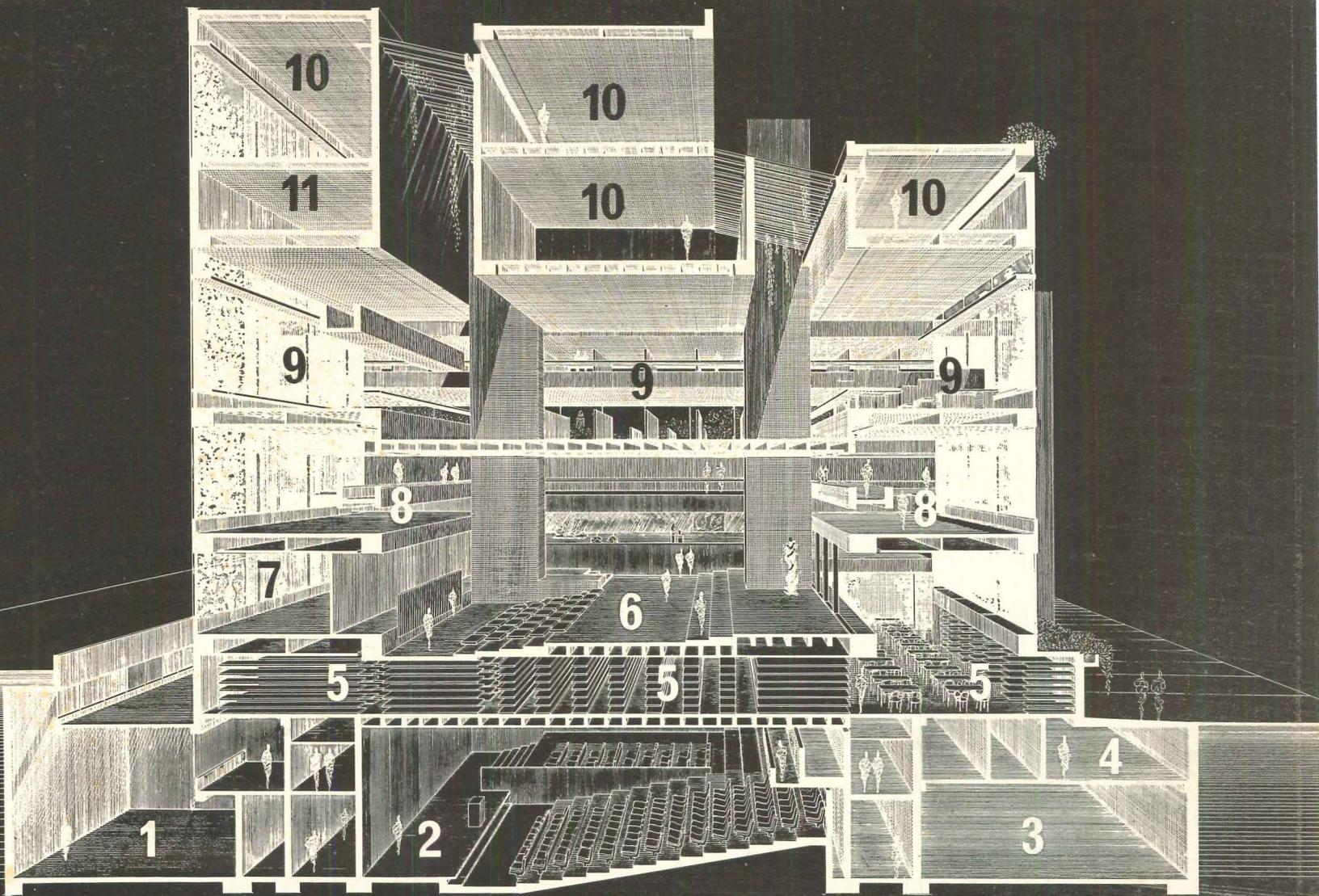
The building contains the art, architecture and city planning departments at Yale. Art enrolls 139 students, with 23 faculty members; architecture has 136 students and 26 faculty members; city planning has 36 students and 8 faculty. Among the many objects of art owned by A & A or loaned to them further to enrich this building are a sculpture in stainless steel by Josef Albers, an Alexander Liberman sculpture and two by Robert Engman, a Willem de Kooning canvas 17 feet square, a Sewell Sillman ceiling panel, two old iron ionic caps from the College Street Church in New Haven (built in 1849), several fragments from buildings designed by Louis Sullivan—including the wrought iron entrance gates from the Chicago Stock Exchange Building and terra cotta pieces from the Schiller Building—a pair of metal sculptures by William H. Woody, canvases by Neil Welliver, Lazlo Moholy-Nagy, Bernard R. Chaet, Louis Finkelstein, Norman Ives (the latter a mural 12 feet by 18 feet), three pastels by Arnold Bittleman, a Chinese Kwan Yin sculpture, five Le Corbusier drawings, a Henry Moore woodblock, a Stephanie Scuris sculpture in plaster, and a Roman Minerva in marble from the second century A.D. (copy of a Greek bronze).

FACTS AND FIGURES

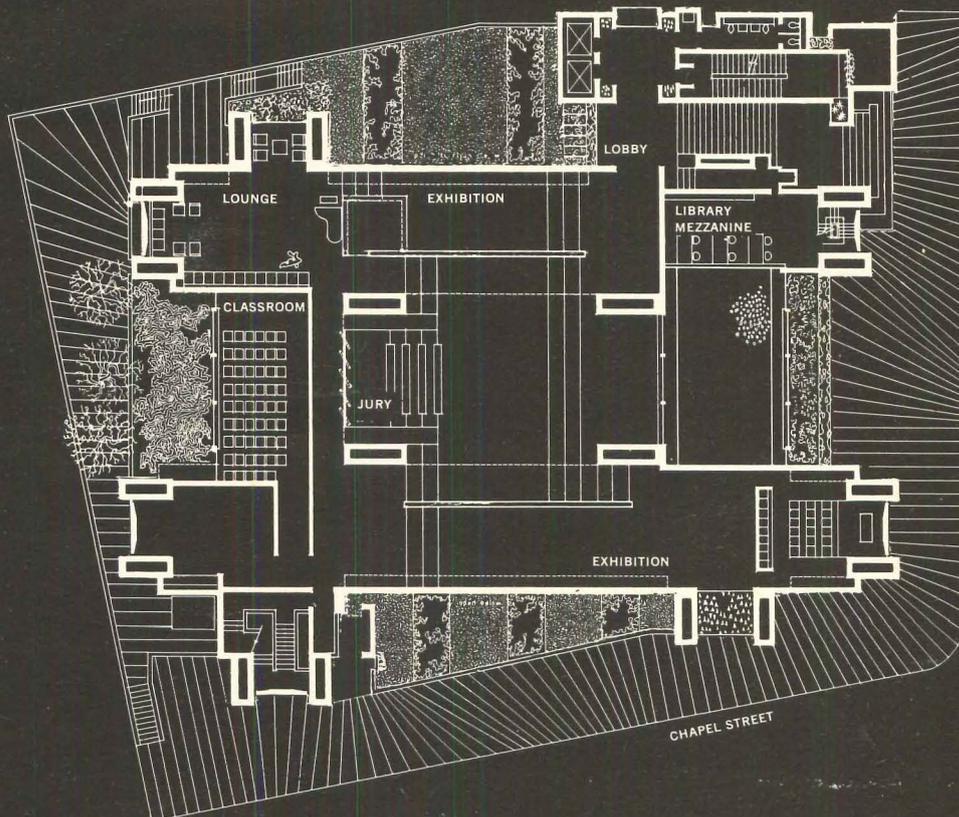
Art & Architecture Building, Yale University, New Haven, Conn. Owner: Yale University.

Architect: Paul Rudolph (job captain, Bill Bedford). Engineers: Henry A. Pfisterer (structural); Van Zelm, Heywood & Shadford (mechanical and electrical). General contractor: George B.H. Macomber Co.

Construction cost: \$3,052,782 (\$25.96 per square foot). Furnishing and equipment, \$140,854.



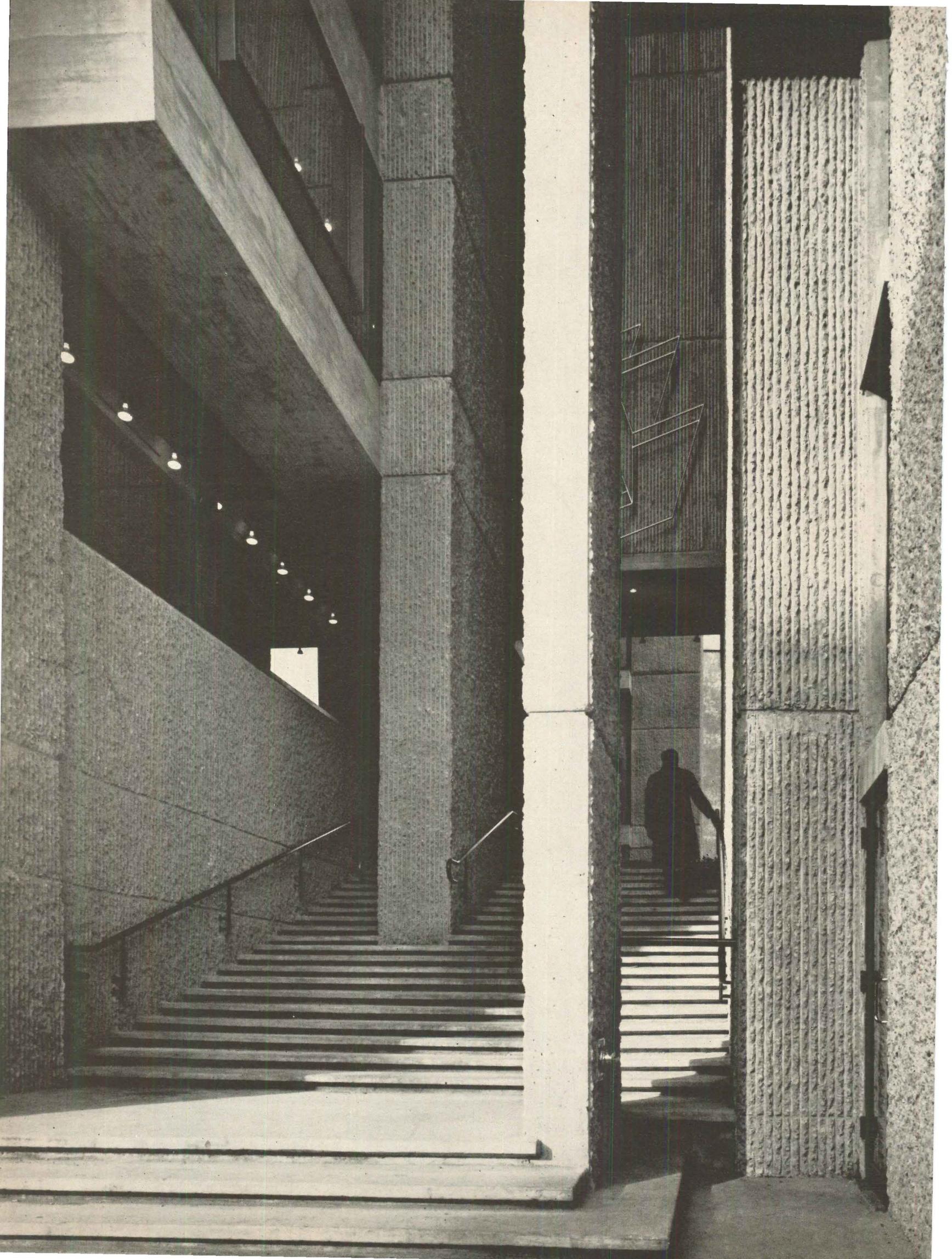
CUTAWAY VIEW FROM CHAPEL STREET

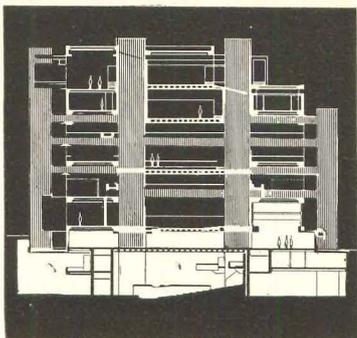


1. SCULPTURE STUDIO
2. LECTURE HALL
3. MECHANICAL
4. DARKROOMS
5. LIBRARY
6. MAIN HALL & "JURY PIT"
7. CLASSROOM
8. FACULTY OFFICES
9. DRAFTING ROOM
10. PAINTING STUDIOS
11. STORAGE

MAIN FLOOR

0 10 20 30 40 50 FEET

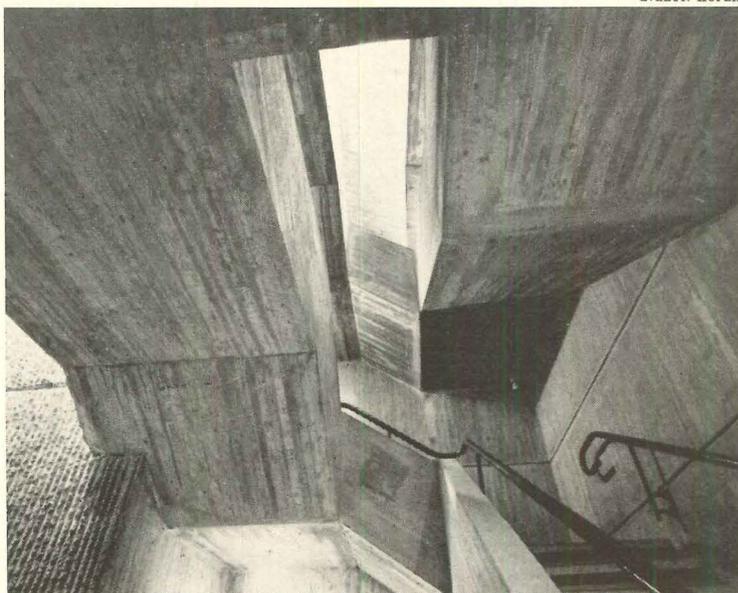




**AT SIDEWALK LEVEL
—AND BELOW**

The main entrance to the A & A building (opposite) consists of a splendid series of steps, which leads up from the sidewalk into a tall slot-cavity in the York Street façade. From a landing at the head of these steps, the visitor can turn left and enter the main hall on the building's third floor level; or he can turn right and enter the elevator-stair tower.

But below the main hall are three more-or-less subterranean levels, including not only the library, the mechanical spaces and a large lecture hall, but also the graphic arts and sculpture studios—all wearing the sturdy corduroy concrete finish indoors that shows on all exteriors. Some of these sunken rooms acquire daylight from ingenious light wells; the spaces, however, are not greatly liked by the people who use them, among them the sculpture students at the School. Painter's studios are under the roof.



Rugged concrete stair (above) extends from lowest level to the roof, is located in service tower next to Chapel Street entrance.

The large lecture hall (below), in the core of the basement area, is a dynamic room, divided decisively into galleries and balconies, with a row of vivid orange-upholstered pew seats stepping down the middle. (The building's carpeting is the same bright hue).

PHOTOS BELOW & OPP.: © EZRA STOLLER ASSOCS.

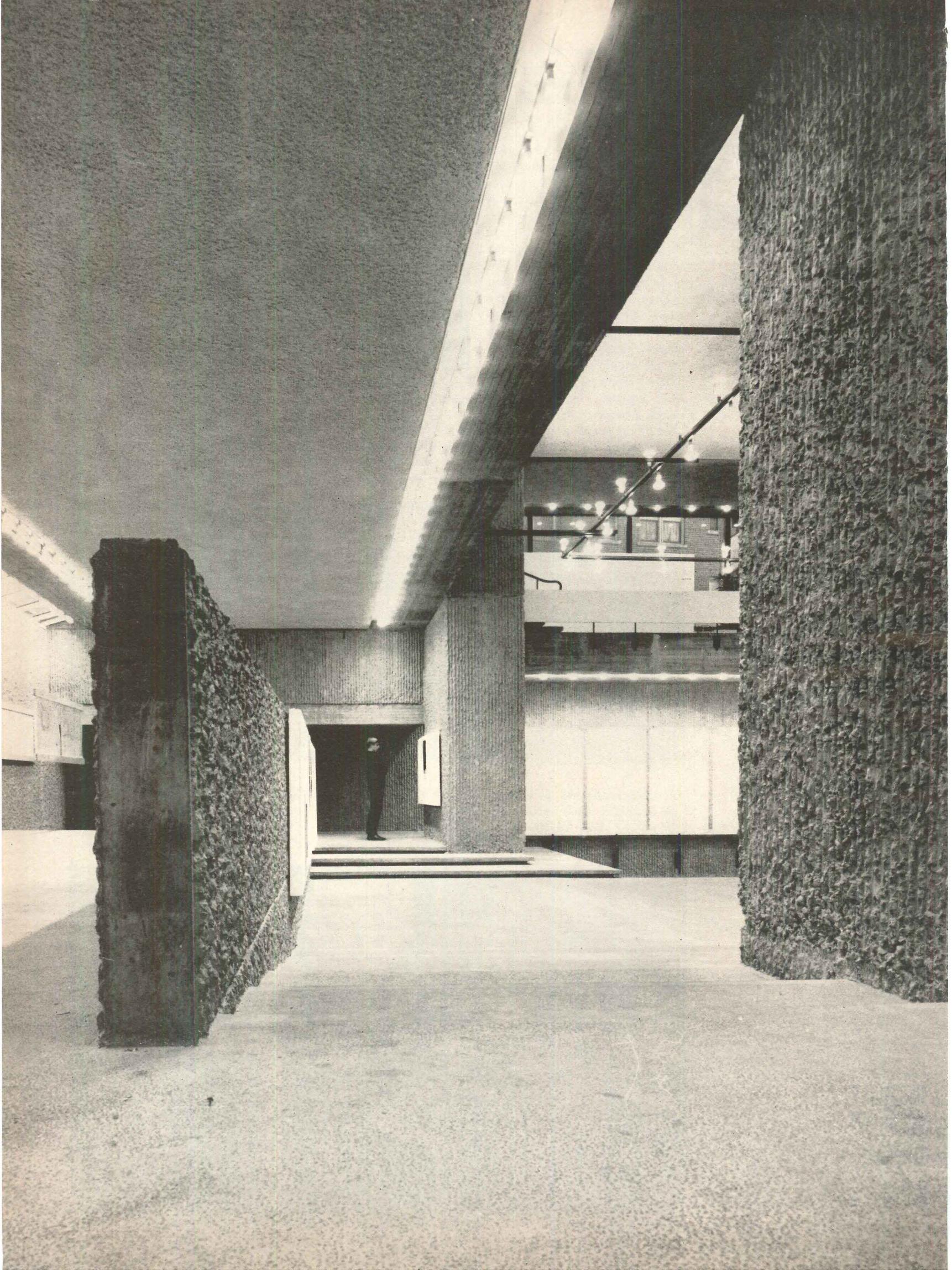


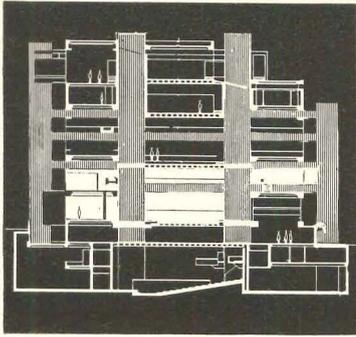
The library (below) is a complex of varied spaces, with more repose than most of the other rooms. The largest part of the

library is 20 feet 9 inches high, reaching up into the fourth floor. (The library also has a reading room on an interior mezzanine at

that level.) The main library floor has work tables for the students; the stack space is in the center under a low ceiling.



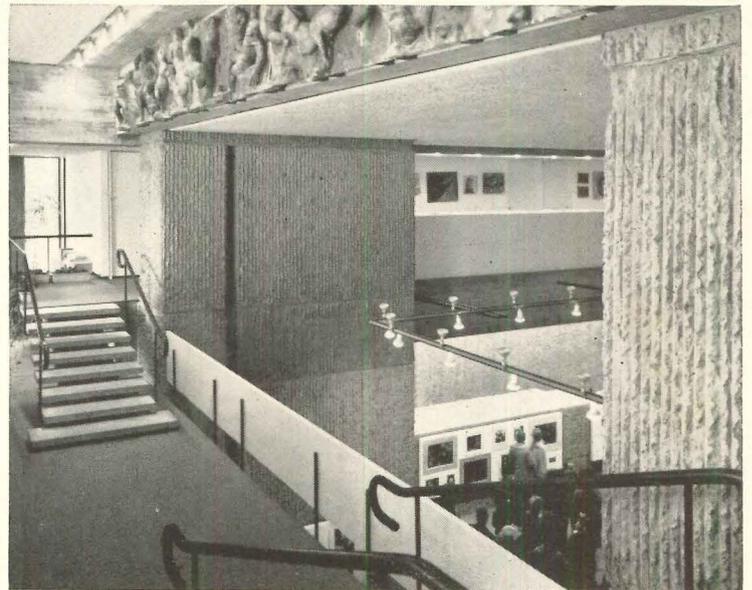




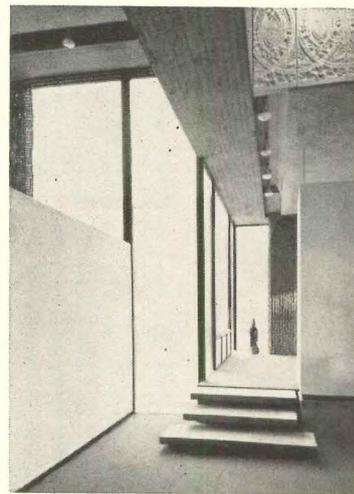
**THE MAIN HALL
—AND ITS MEZZANINE**

Essentially, this two-story space is a large exhibition room, surrounded by smaller exhibition areas under a mezzanine of administrative office space. The most compelling feature of the exhibition space is the "jury pit" (below), a stepped-down arena where architectural students meet their moments of truth. The students' completed projects are put up on wall panels here and discussed by the design jury of faculty and invited experts. Says Rudolph: "The exhibition floor has four levels for exhibits of varying size. Additional views of the exhibits can be had from the surrounding mezzanine which houses the administrative offices. The space is varied in lighting intensity and dimensions, and this grows out of the use of the building. The building will be used by the architects, planners, painters, sculptors and graphic artists. It is the hope that the placing of these various disciplines under one roof will help bring about a common understanding."

The mezzanine (above) contains faculty offices. Photo, right, shows steps to Rudolph's corner office. At far right is a small lecture room located in the corner tower of the building. It is a miniature of the larger lecture room in the basement (p. 69).



© EZRA STOLLER ASSOCS.

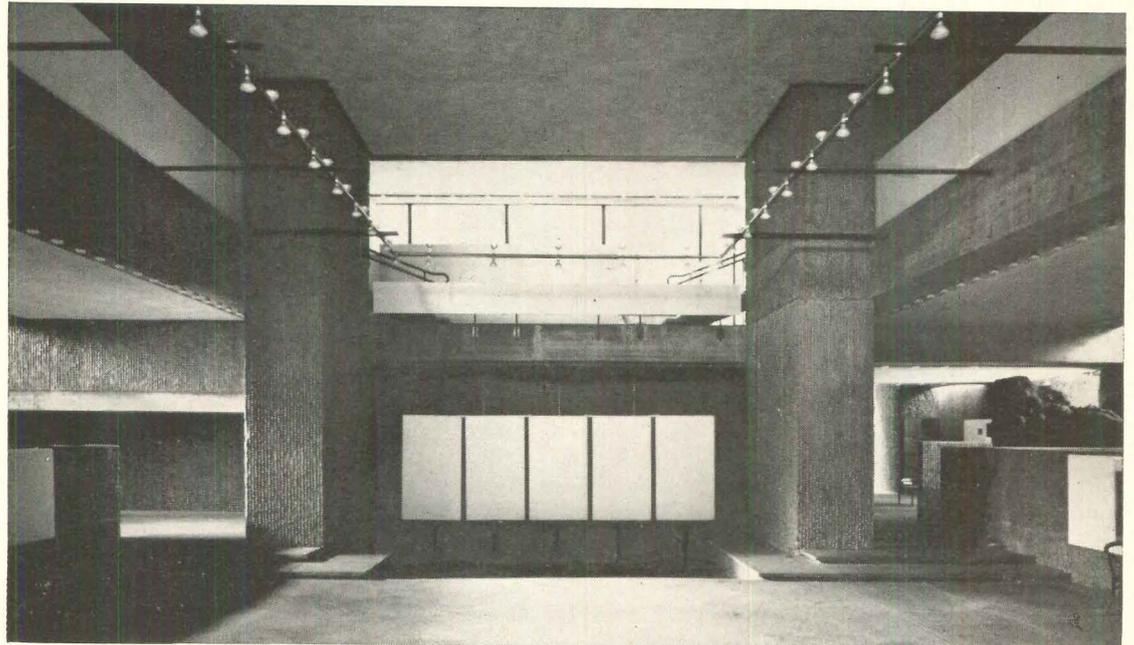


EVELYN HOFER



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BELOW & OPP.: EVELYN HOFER



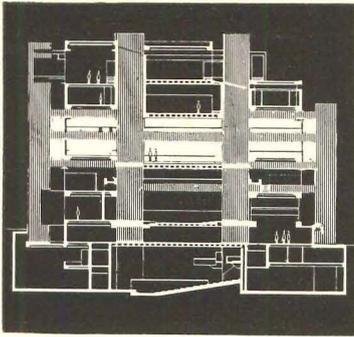
The main hall is 23 feet 6 inches high, and symmetrical except for its corner entrance. Raised exhibition spaces are located along two sides of the hall, and the sunken "jury pit" is in its center. (At right, a jury under Rudolph is seen at work.) The five panels

in back of the "jury pit" can be removed to reveal a small stage suitable for lectures and ceremonies. The mezzanines all around this space contain faculty offices. Plaster copies of Greek statuary, right, lounge on top of a sunken snack bar and kitchenette facility.



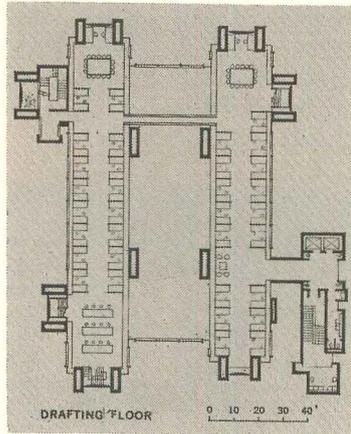
LEONARD TODD





**THE DRAFTING ROOM
—AND ITS BALCONIES**

The drafting room is metropolitan: all the architectural students, plus most city planners, work in the one large, layered space shown on this page and opposite. The space is about 80 feet wide by 130 feet long, and its ceiling height, in the center, is close to 22 feet. Says Rudolph: "...each of the five years has its own platform, but the drafting room is still a single room taking up the entire floor so as to facilitate interchange of ideas between students and faculty." A concrete bridge (right) connects two of the mezzanines at opposite sides of the room: one for planners, the other for architects. Two skylights reach up to the roof for additional daylight (to supplement and balance the light streaming into the space from all four sides). Heavy curtains of cargo netting, visible in top photo, right, further help to reduce glare. The drafting



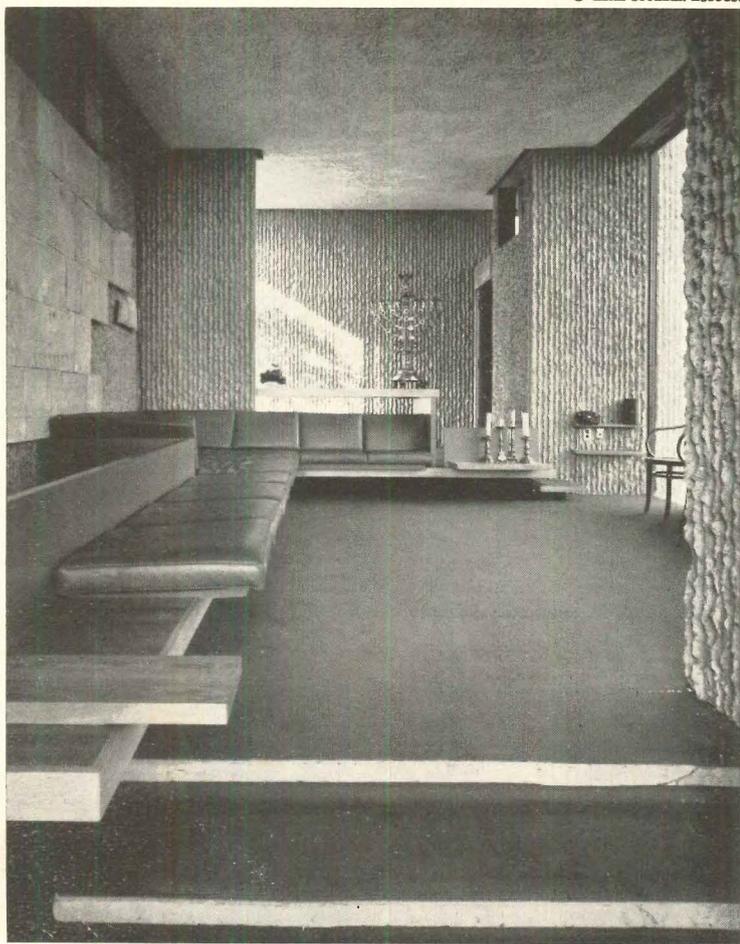
SUSAN GREEN

room is both defined and dominated by an elderly Roman figure in marble, Minerva, a relic of the 2nd Century A.D., resurrected from Yale's old Art Library. Within the two tall skylights, there are additional works of art: a concrete-enamel-on-concrete mural by Sewell Sillman (opposite and below); and an impression, on the side of one of the four concrete shafts that support and serve this space, of Le Corbusier's *Modulor* scale—a full 57 feet high (right). The drafting tables were designed to carry their own partition panels—so that each student can achieve privacy within the space.



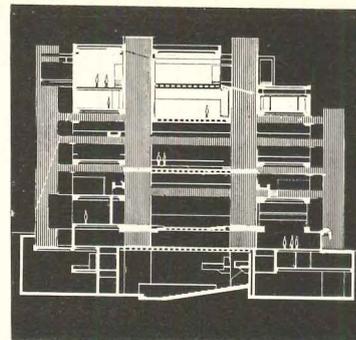
EVELYN HOFER





A & A finally comes to an end—but to a very lively end—up here (opposite). The top two levels are mostly painting studios, plus a spectacular penthouse (left), to be occupied by distinguished visitors to the university, visiting critics, etc. Its wide glass expanses view over the turgid historical jumble of Yale's neo-Gothic, neo-Georgian and slightly Colonial core. Says Rudolph: "Yale's buildings are unified in the sense that they are all masonry . . . dependent on light and shadow for their architectural effect. They are broken down in terms of scale so that they often read as clusters of buildings rather than a single building; they are relatively complex in plan; there is an emphasis on the vertical; they have elaborate silhouettes; they vary in style [with] changing tastes and attitudes. In this sense the design of the Art & Architecture building is in the true tradition of Yale which is reflected in its buildings—change rather than slavish imitation of the past." Witness the elaborate roofscape shown below.

**THE STUDIOS
—AND THE ROOF**

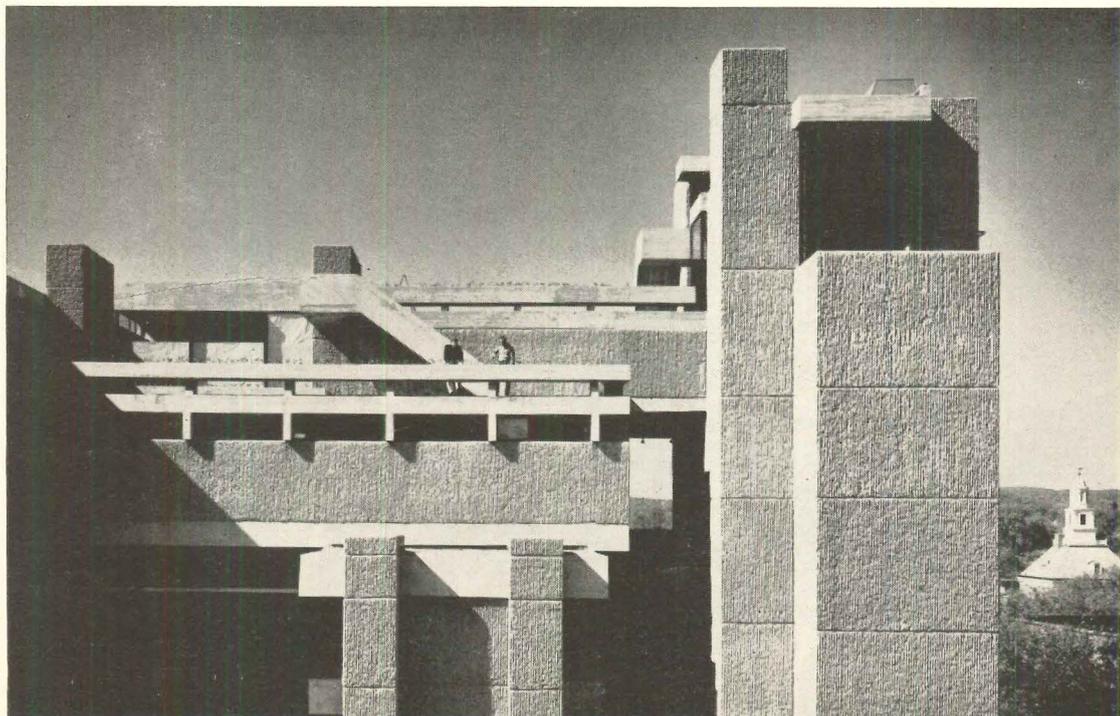


Most of the space on the two floors directly under Rudolph's roof is taken up by studios for student painters (right). Though much of the light comes from clerestories and skylights, there are occasional, wide expanses of glass that offer a view of the old campus, with its various towers spiking up familiarly. Broad roof terraces, protected from the winds, permit painting outdoors in good weather.

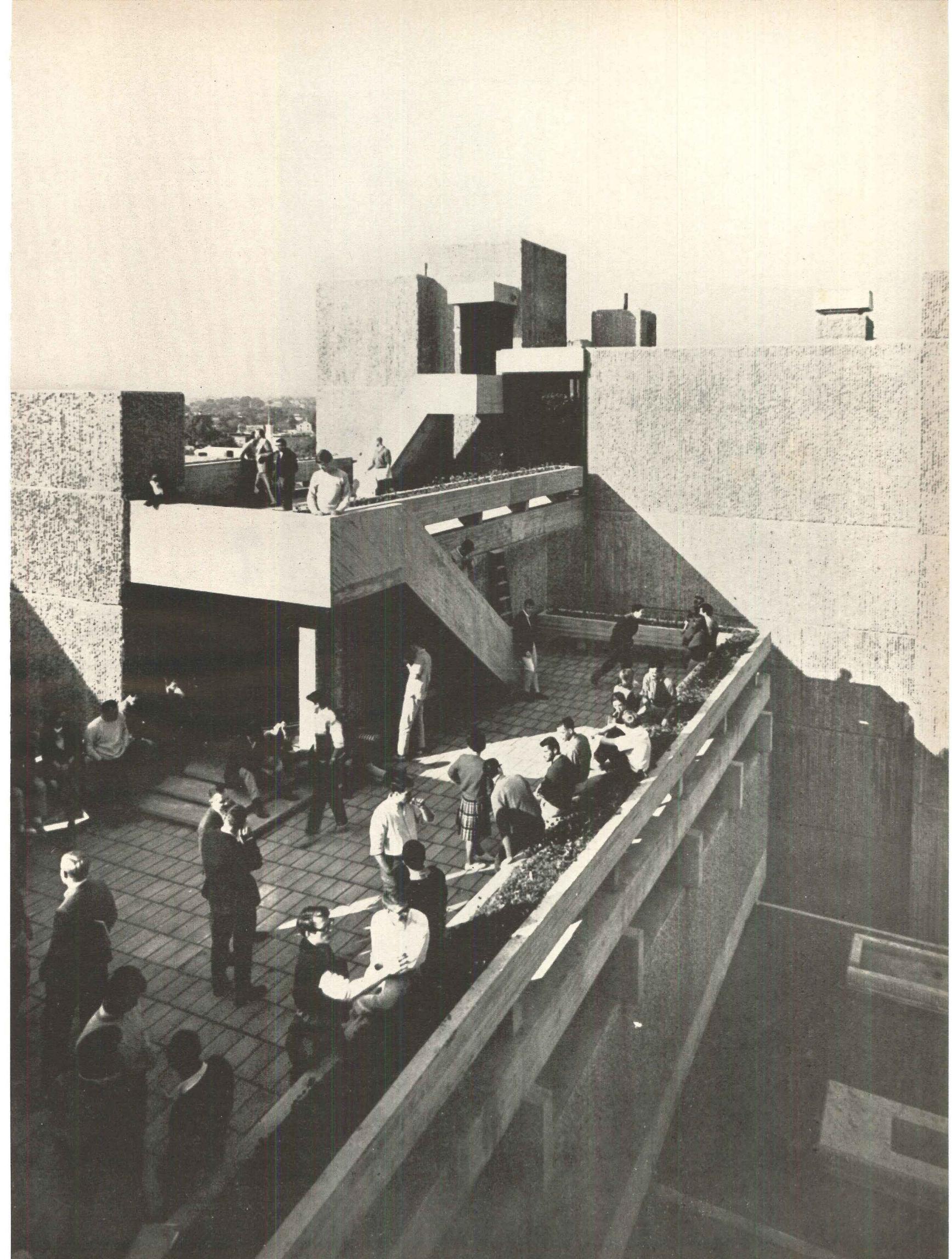
BELOW & OPP.: ALEX LANGLEY-TIME

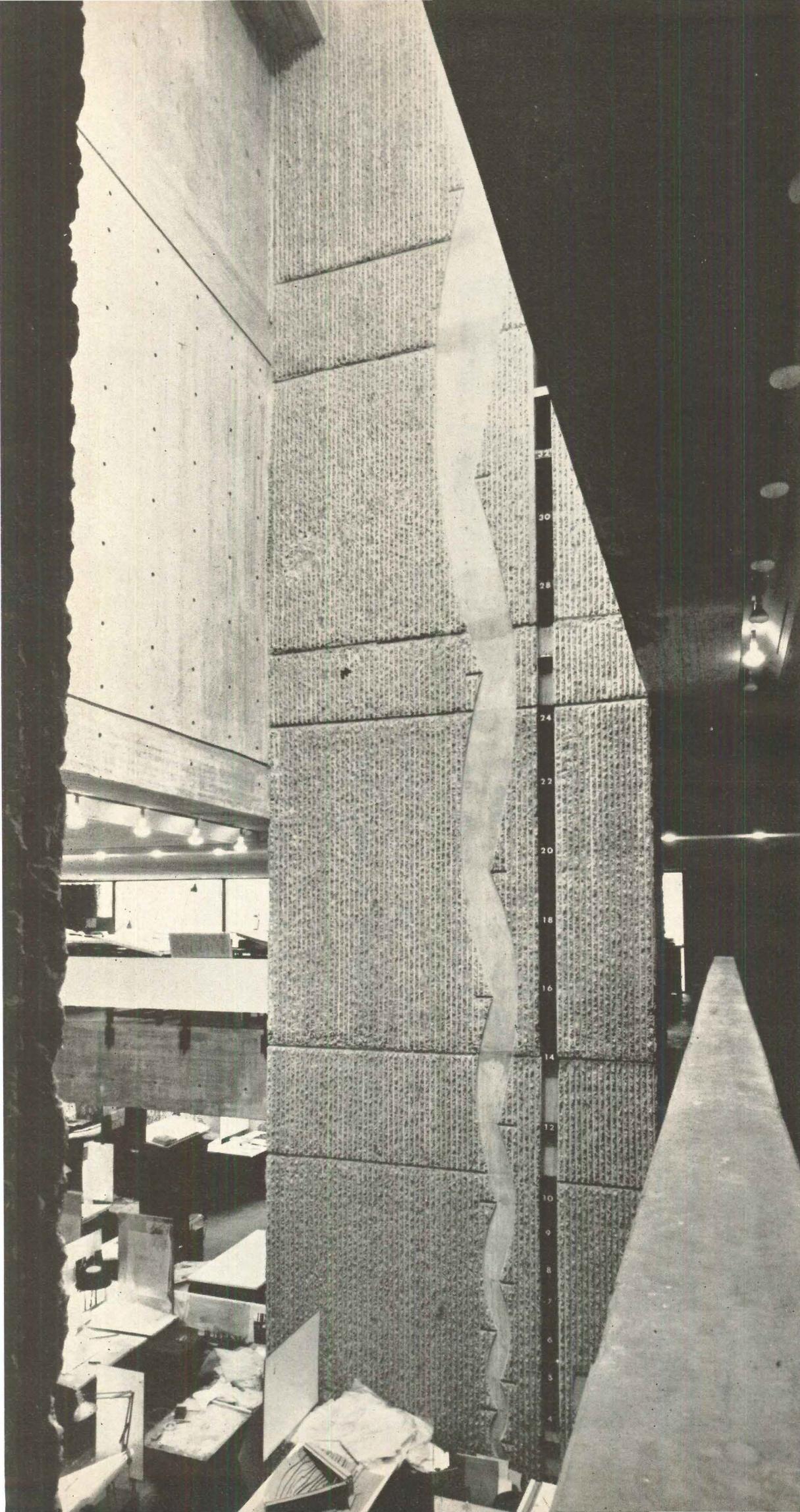


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HILL/SCHULZE





YALE'S SCHOOL OF ART
AND ARCHITECTURE

2

THE MEASURE

*A critical appraisal of the
building and its place in
contemporary architecture*

EVELYN HOPE

BY SIBYL MOHOLY-NAGY
*Professor of Architecture
Pratt Institute, N.Y.*

It is gratifying to know that the world of academic honors and medals has so profusely acknowledged the Bauhaus doctrine of architectural education as taught at Harvard since 1937; because never before has a curriculum turned out such a star roster of infidels. Johnson, Lundy, Barnes, Rudolph, Franzen, and others have revered their teacher while confounding his teaching. They all have left the safe anchorage of functionality, technology and anonymous teamwork to start the long voyage home to architecture as art. A few faithfuls still repeat the old incantations, but the guns by which they struck have stopped firing while those of the apostates are blazing.

Not that it was a painless revolution. Everyone of the respectful assassins of the Bauhaus doctrine went through perplexing transitions in search of liberation. By the maxim of much light engendering much shadow, it now seems, in retrospect, that there exists a reciprocity between the extremes of uncertainty and the quality of final self-realization. The work of Paul Rudolph magnifies by its volume and the rapid tempo of production the problems confronting "the Harvard boys" of 20 years ago. His vacillation between bare-bone structuralism in the early 1950's (1) and skin-deep decorativeness toward the close of that decade (2) made it seem doubtful to the observer whether a talent, so confused, would ever find itself.

This doubt has been laid to rest by his latest building. It is a splendid achievement, crystallizing potential solutions for some of the most vexing propositions facing architecture today. Of these problems, historical continuity had never bothered his teachers, but Rudolph accepted it as an architectural responsibility when he designed the Jewett Arts Center at Wellesley College in 1954 (3). His solution never succeeded in bridging the gap between intention and realization. Glass finials and metal screen façades proved poor interpretations of the exuberant neo-Gothic spirit. When he had to think of a similar building in a similar setting, 7 years later, it seemed that he had gone back to the Harvard doctrine of "modern architecture—not a branch of an old tree, but a new growth coming directly from the roots." The first version (4) of his Yale building insisted on



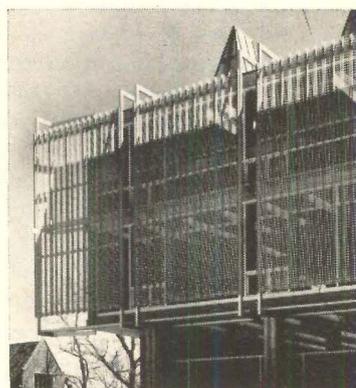
EZRA STOLLER

1



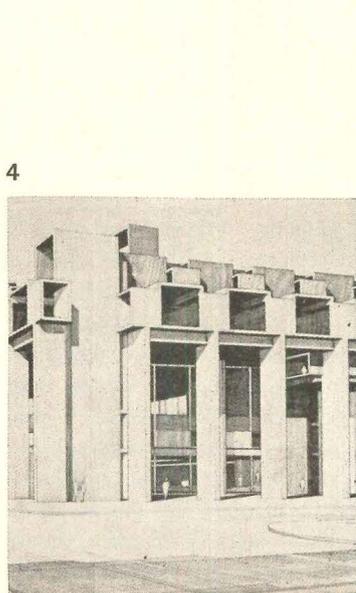
CLEMENS KALISCHER

2



LIONEL FREEDMAN

3



4

an indifferent modular system, true to international type-casting, that fits everywhere because it identifies itself with nothing.

Surprisingly enough, it was Rudolph's Harvard swan song. The final scheme for Yale, emerging after six dramatic transformations, reaffirmed the sequential obligation of the architect, but without compromising his contemporary commitment. The school as it stands now is not an intrusion but a link in urban progression, achieving the feat of being equally complementary to Louis Kahn's handsome new Art Gallery (5) and James Roger Gamble's quaint old one, and to the odd remnants of Victorian individualism on York Street.

These environmental opposites are held together by the corner treatment of the street intersection. In the Wellesley building, the corners had been either hidden in acute embarrassment behind extended screens, or made into a crammed display of incomprehensible columns and mullions. At Yale, the corners sustain and connect. The only emphasis is a 90 degree turn of paired hollow piers, the structural denominator of the entire building (6).

The concrete surface has been widely criticized as being arty in an age of technology. However, the visual relief from the *béton brut* cliché of random formwork in the wake of Le Corbusier's revolution is so pleasing, and the purpose of the building so non-technological, that the artifice seems wholly justified.

Eclecticism among the leading architects of this decade is largely a recreation of historical moods—Kahn's medievalism, Johnson's Cinquecento, and the Moorish Dixieland charm of Stone. Rudolph's Yale building drew its inspiration from a distinct prototype: Wright's Larkin Building, built in 1904 (7). There is no greater honor for an architect than to be turned into an ancestor by later admirers. Only corrupt times identify environmental design with the sales appeal of artificial obsolescence. It has been Wright's genius to combine in the Larkin Building the urbane dignity of a Roman basilica with the structural expressiveness of a commercial building.

But a certain uneasiness remains about a classical symmetry that points backward in history with blind entrances and sculptured piers, crowned by symbolic



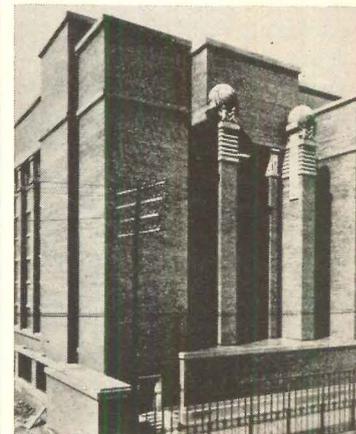
PHOTOS: © EZRA ASSOCS.

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6

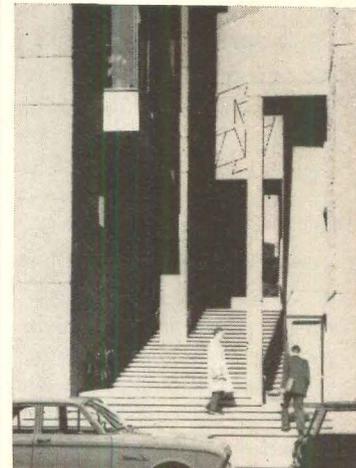


7



COURTESY MUSEUM OF MODERN ART

8



ALEX LANGLEY-TIME

sculpture. Rudolph accepted the inspiration of civic grandeur combined with structural functionalism, but rejected the symmetrical formalism. It works very well in the elevations, which satisfy as self-sufficient compositions, yet raise a curiosity about interior spaces which Wright's cliffs never did. Only when the eye has to climb strenuously over the Chambord-like roofscape does nostalgia for the conclusive and mature Larkin cornice creep in.

It is interesting, by the way, that applied sculpture is as meaningless in the transformation as it was in the prototype. The wire relief of Josef Albers over the entrance, and Bob Engman's 24-foot-high concrete column on Chapel Street, never rise above odd variations of the structural building material.

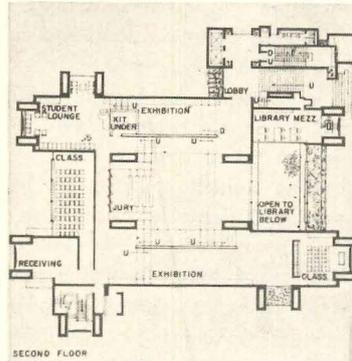
As in the Larkin Building, the main entrance to Rudolph's school (8) penetrates so deeply into the solid body that it has to be looked for; it does not invite. A sudden change of light values, and steps of diminishing width, underline a sense of entry, transforming the passerby into a space participant. The contradictory demands of economy and transparency in contemporary building have all but eliminated entrance design. The effectiveness of Rudolph's entrance derives from a contemporary modification of Bernini's *Scale Regia* design in the Vatican (9). Purpose and anticipation are heightened by the illusion of width, produced by narrow lateral passages and an aerial perspective of great depth toward a distant light source. On leaving the building, Kahn's steel and glass elevation of 12 years ago appears in the frame of Rudolph's fortress (opposite), pointing to an agonizing choice between two kinds of ancestor worship open to the architects of tomorrow: Wright's personalism, and Mies' universalism.

Rudolph has characterized his plan as a pinwheel scheme, referring to four overlapping platforms revolving on the different levels around the big central space (10). Although this analogy conveys itself in the plans, the strongest impression on entering the building at the second floor level is that of an atrium or a cloister, grouping a multitude of spaces and functions around a coordinating center. The startling aspect of this introspective arrangement is



9

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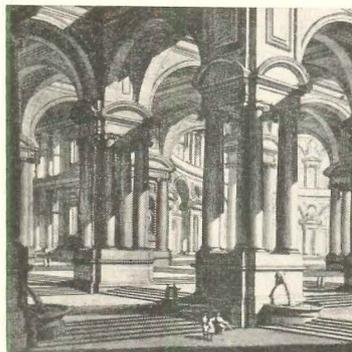


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EZRA STOLLER ASSOCS.

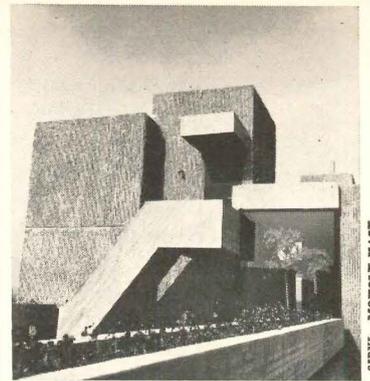
12



the core as a vacuum. On the entrance floor, a jury and exhibition hall forms one space column (11). Another one starts on the fourth floor with the drafting areas extending through 2½ stories and, by means of skylight shafts, to infinity (p. 72). Nowhere in Rudolph's design is space defined by solid walls. It is interpreted through scale, movement and light. The jury and exhibition area is 23 feet 6 inches high at its center, surrounded by balconies and mezzanines with heights varying from 7 feet to 20 feet 9 inches. The drafting room ceiling is 21 feet 5 inches in the center, diminishing gradually in the lateral spaces to an ultimate 6 feet 6 inches on the upper mezzanine. Light influx from four sides, broken by varying textures on columns and parapets, creates space units interlocked by the movement of the users. Within each level, shallow steps change the eye-focus, as on a Piranesi engraving (12), making vertical and horizontal dynamics a self-sufficient, perceptive experience. Applied to teaching spaces, this learning-in-motion is as old as Aristotle's peripatetic method.

It remains to be seen whether the work habits of students will be molded by this continuous process of group interchange in the high open spaces, and concentrated isolation during the design formulation process under the confining ceilings of the side spaces; whether, in other words, individual concepts and solutions can be hoisted like building parts from level to level to fuse in the total fabric of architectural education. One thing is sure: this experiment of learning from each other, with virtual liquidation of class differentiations, will do more to arouse in the creative individual respect for the collective task of environment-making than all the impotent attacks on "prima donna architecture."

The upper and lower extremities of the Yale building illuminate the curious polarity of Rudolph's vision. The penthouse with a guest suite for the visiting critics, is an elegant, sensual counterpoint to the professional discipline below. Three vistas, through floor-to-ceiling panes, place the architectural school in the focus of the old and the new Yale campus, and the sea beyond. The exterior structure, housing the elevator mechanism above

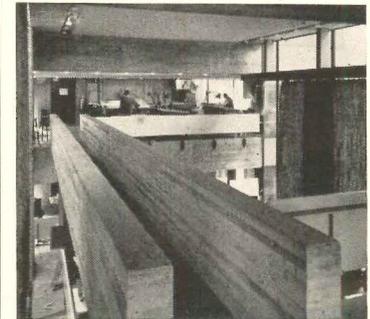


SIBYL MORSEY-WAQT

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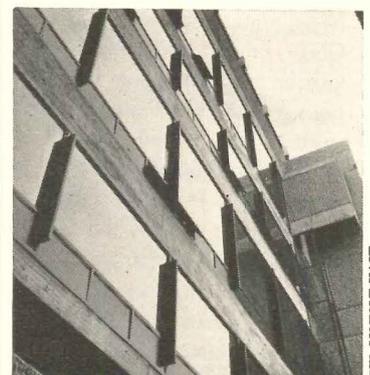
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14, 15, 16 & OPP.: © EZRA STOLLER ASSOCS.

16

17



SIBYL MORSEY-WAQT

the penthouse roof, is a *tour de force* in volume relationships, showing Rudolph's unique sense of material (13). The auditorium on the second basement level, on the other hand, is accessible through dismal, undesigned passages, as if listening to a lecture were the penance architectural students have to pay for the exuberant reality of their design work (14). The seating consists of velvet upholstered church pews, obscuring with their over-brightness the venerable gray of Parthenon frieze fragments on one end of the steeply sloping space, and an Ionic capital, impaled on a gas pipe, on the other.

These decorative contrasts prevail throughout the building. An outsized Hellenistic Minerva presides over the drafting room with the same unquestionable authority as Le Corbusier's Modulor scale. It rears up like a Phoenix from the drafting floor to the skylight, but is invisible to planners who are confined like a menace on an island of barely bridged space (15). More plaster copies of Lord Elgin's marbles cover the beams, side by side with delicate Louis Sullivan borders (16). Wrought iron elevator doors from his Garrick Building mark the entrance to the third floor offices level. It is the special pride of Paul Rudolph that Sullivan's casts corresponded precisely to the girder height of 3 feet 4 inches while the Phidias reliefs differed less than 6 inches, establishing his favorite proportion unit of 40 inches as a standard shared with great masters of the past.

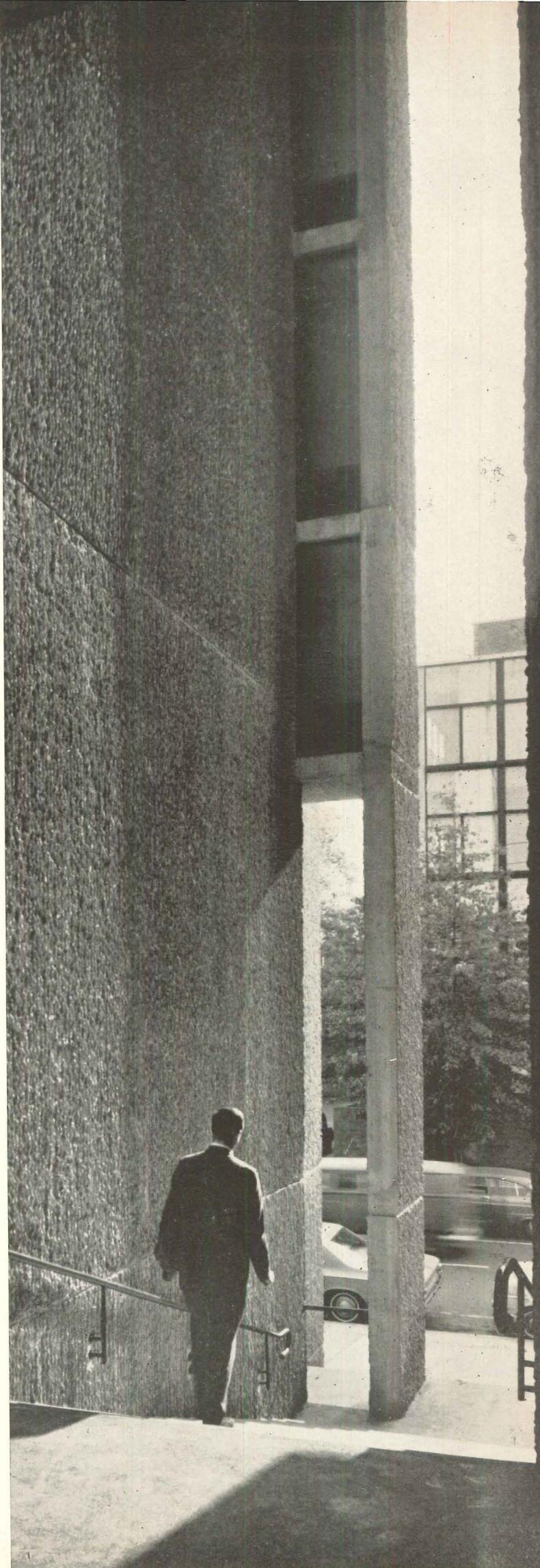
Architectural miracles are exceedingly rare, and the Art and Architecture Building did not spring in faultless perfection from Paul Rudolph's head. The most obvious cause for questioning is the structural system. According to the architect's description "the entire interior of the building is supported on four columns which mark the change of level on various platforms." In the section diagram and in the interior vistas, beams and columns pass each other with no more than adhesive contact, made possible by a profusion of intertwining reinforcement rods. Even if one accepts the peculiar fact, established by Wright's Guggenheim Museum and Saarinen's TWA Terminal, that we build today steel structures that pretend to be of concrete, the activation of space by structural stresses must convey itself with unquestioning visual

logic. There is an irresistible urge to push a column into the center of gravity before the ceiling comes sliding by.

The other cause of uneasiness inside the building is the clash between its existential space, turning from vacuum to plenum through the unrestricted participation of the inhabitants, and technological barriers thrown across that space by lighting and mechanical equipment. Unshielded bulbs on connection rods have been installed on all levels, cutting down the vertical expansion of exhibition and drafting spaces, and destroying by their indifferent glare the changing scale of auditorium, executive offices, and intimate working areas.

A less easily adjustable technological barrier is presented by the fenestration and ventilation problem. In earlier designs for the same building, flush curtain wall units had disturbed the three-dimensional depth of the exterior elevation. Vertical steel bars, adding strength to transparency, were a brilliant solution (17). To preserve this esthetic unity, natural ventilation had to be confined to wholly inadequate strips of mobile shutters. True, the hollow columns carry a complete duct system for air cooling to be installed if the need should arise—and formidable air mixing ducts twist in unconcealed ugliness over the heads of professors in their offices; but this seems a peculiarly incongruous solution for a plan which derives much of its fascination from patios, terraces and open courtyards that make the first floor and basement workshops bearable, and from open stairwells, piercing the intuned world of the great central space with whiffs of air from the world outside.

These are mistakes in the design of a building that is the first of its kind, and not compromises with acceptable expediences. The form language of the building was easier to perfect because it was stimulated by the germinal ideas of the 20th century revolution. Space is an abstraction that must be conceived for its specific purpose. Every user is a judge. It is from their total involvement in this dichotomy of idea and realization that the architectural students will learn the essence of their profession. The Yale school is Paul Rudolph's confessional proof that architecture is not a commodity but an infinite potential of art, and therefore free and imperishable.





YALE'S SCHOOL OF ART
AND ARCHITECTURE

3

THE BUILDER

*A remarkable contractor
helped the architect to
realize his complex plans*

LOIS BOWEN

BY MARSHALL BURCHARD

To most contractors, Paul Rudolph's new structure at Yale would have been a builder's nightmare. To Charles Solomon (opposite), of the George B. H. Macomber Company, it was a sweet dream, just the sort of challenge he thrives on. Solomon's record in a succession of remarkable buildings by remarkable architects clearly tags him as one of the most creative contractors in the U.S. today.

It all began with a telephone call from Paul Rudolph, months before the contract for his new Art & Architecture School was to be let. He had a problem: how to achieve a certain unique finish which he had in mind for the concrete. Would Charlie Solomon, he inquired, be willing to help him work out the answer? Solomon would, and did. Five months and some three dozen sample castings later, the problem was solved: the concrete would be poured in special, vertically ribbed wood forms; then, after the forms had been stripped away, the ridged surface would be hand-hammered to expose the aggregate (photos right).

Teamwork at the start

Solomon, who is vice-president, treasurer and substantial part-owner of Boston's George B. H. Macomber Company, went on to build the Art & Architecture School for Yale and Rudolph. But during all the preliminary experimental work, while Solomon freely committed Macomber's time and money, there were no guarantees, no strings attached. Solomon likes to use the word "responsibility"—but he does so with few illusions: "We feel this kind of involvement is part of our job. It's also good business."

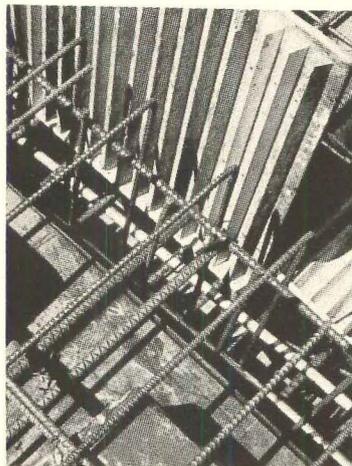
The list of architects for whom Solomon has built in 25 years with Macomber is impressive. It includes (in addition to Rudolph) Lou Kahn, Eero Saarinen, Philip Johnson, Walter Gropius and The Architects Collaborative, as well as a host of lesser luminaries. Extensive preliminary experimentation, meticulously kept budgets, and fine workmanship have characterized almost all of these jobs.

Tetrahedra for a gallery

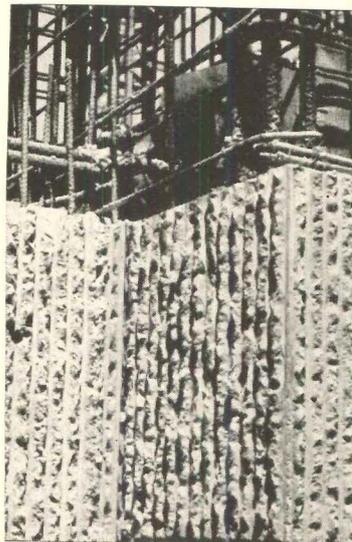
Kahn, for whom Solomon built the Yale Art Gallery, says: "The Macomber people are truly builders, not just contractors. They're builders in the old sense, men who are interested in the



COURTESY WERNK



PHOTOS: ABOVE & BELOW: DER SCUTT



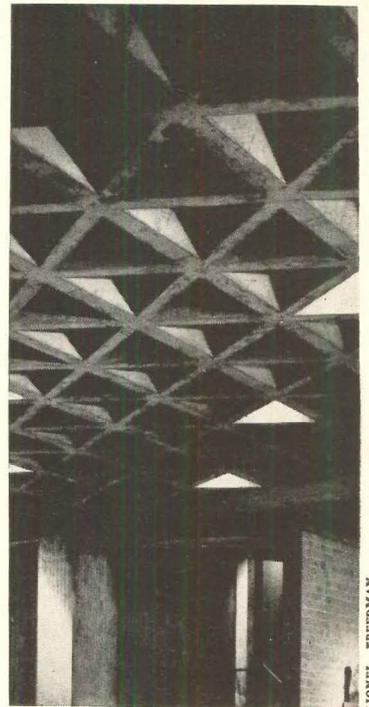
excitement and adventure of building." The story behind the Yale Art Gallery is an excellent illustration of just how valuable a builder like Solomon can be to an architect like Kahn.

Kahn had an idea: to make the floor-and-ceiling structure out of tetrahedral concrete space frames, poured in place (right). But if he knew *what* he wanted, he had little idea *how* to do it, how much it would cost, or how to convince University and public officials who were dubious, to say the least. At this point, Solomon came to the rescue. In all of this, says Kahn, "his word was much stronger than mine because he was a builder after all, while I was only an architect." Solomon persuaded the University to spend some \$10,000 for a full-scale mock-up; he also made a small shop-model to demonstrate that forming the tetrahedra, which was also regarded as a dubious proposition, could be done easily. "Often," remarks Solomon, "the only way to prove even to myself that something can be done is to build it."

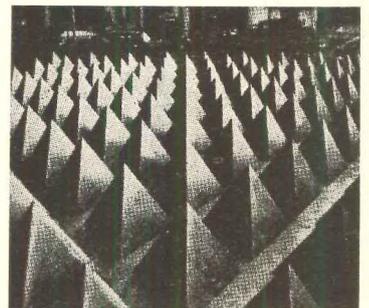
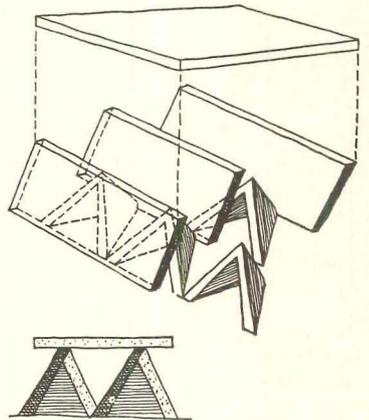
As with Rudolph's Art & Architecture School, Solomon went on to build the Art Gallery. Once again, the freely offered preliminary research work had proved to be "good business." But it had also proved to be something more. "When we were through," says Solomon, "we knew how to do it, Louie knew what it was going to cost and what it would look like—all well in advance."

The architect's friend

The architects for whom Solomon has built use slightly different words to describe his essential quality; but what it all seems to boil down to is "understanding." For Rudolph it is "his ability to sense what it is the architect is trying to do and then, because he can see several ways around a given problem, to give the architect a series of choices." Ben Thompson of TAC, for whom Solomon has built at Brandeis, puts it another way: "The forces involved in building today are so immense that the architect needs a friend. This is what Solomon is. A contractor can fight you through on every level and make the problems even more immense. But Solomon has this comprehensive understanding of the building process which en-



LIONEL FREEDMAN



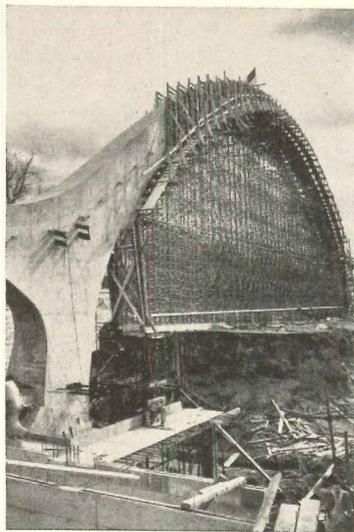
ables an architect's idea to be carried through to a controlled result." Solomon himself sees it the same way: "It's our responsibility to be helping the architect, not to hinder him."

Willingness to experiment, plus close rapport and sympathy with highly creative, innovative architects, are the glamorous side to this story. There is also the question of costs. Says Rudolph enthusiastically: "He's wonderful with budgets." Echoes Kahn: "These were men who knew how to spend money in the right places—the Art Gallery was built for 9¢ a cubic foot under the budget, and it was a strict budget." (There is one almost legendary exception to this happy talk: Saarinen's Hockey Rink at Yale (right) came in way over budget. According to one informed, observer, this happened partly because the drawings were not far enough along when the budget was set. If so, the blame would seem to belong to architect, engineer, and contractor alike. In any case, though Yale was far from pleased at this turn of events, the University has continued to entrust Macomber with subsequent building assignments every bit as difficult.)

Contracts and quality

Practically all the jobs which Macomber undertakes are negotiated on the basis of a maximum guaranteed limit of cost with a fixed fee. "It's a management-type contract," says Solomon, "with great advantages for the owner. If there are any savings he gets them; if the job runs over we pay." This sort of negotiated contract, of course, also has advantages for the builder who is concerned with quality and who could not hope to win the job in open bidding against less quality-conscious contractors. Indeed, the negotiated contract has become a virtual must in buildings as unique as those Macomber is accustomed to constructing. But, cautions Rudolph, "I don't think the negotiated contract is a panacea. It's fine if the client trusts his builder, as Yale trusts Solomon, but this sort of trust is essential."

Solomon's record of responsible behavior is the key to this sort of trust. Thanks to efficient scheduling (Macomber pioneered the Critical Path Method for building construction), the jobs which Solomon undertakes rarely run over the budget. But when they



PHOTOS: BEN SCENALL

do, he does not try to run out on his obligations.

In one job, now nearing completion, he has in fact taken a terrific beating for that very reason: budgeted at about \$500,000, the job ran into difficulties from the start. A serious mistake was made in pouring the footings and slabs and much of the work had to be done all over again.

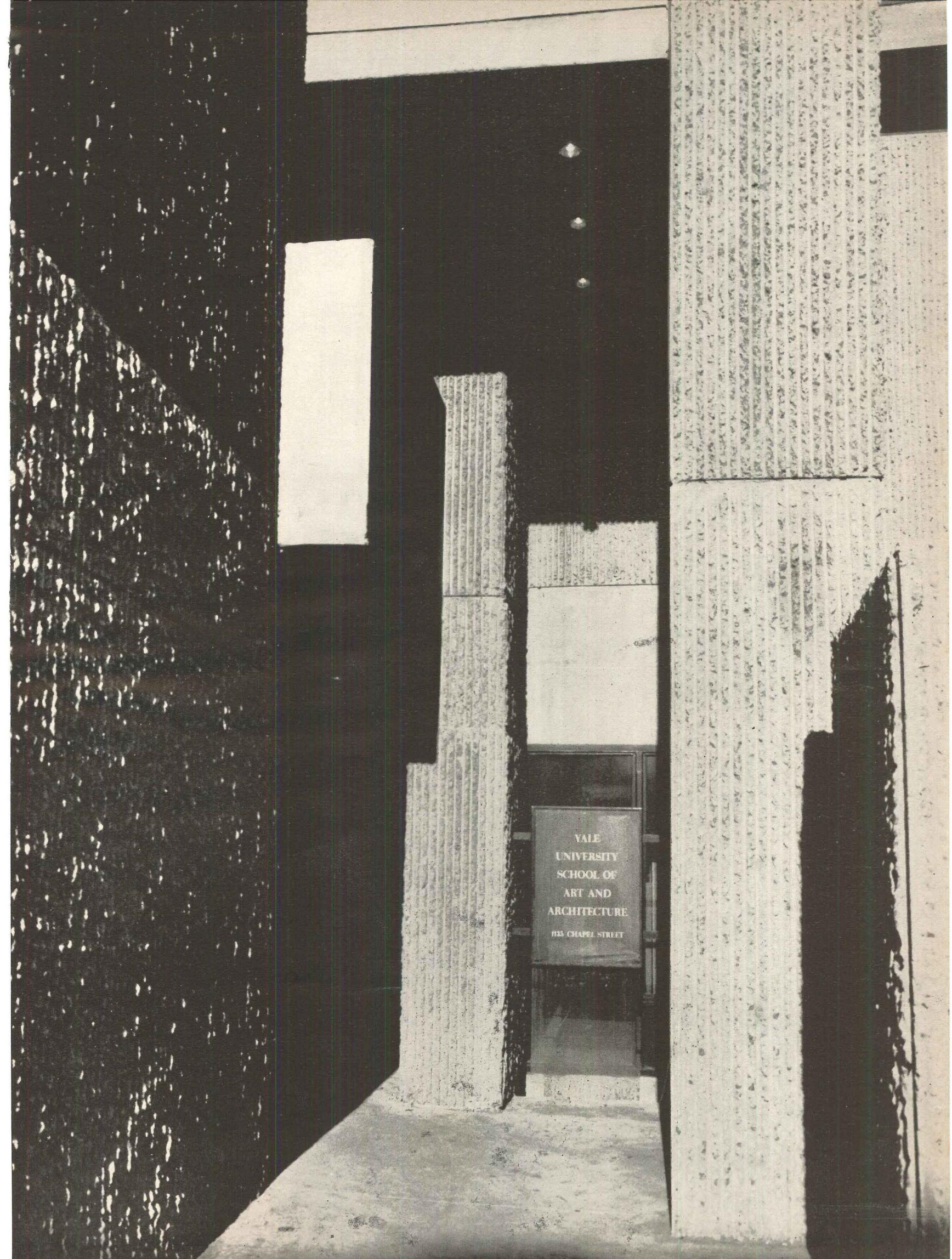
At this point, says the architect, most contractors might have simply walked off the job, saying "sue me." But for Solomon this was only the first in a series of expensive headaches which went on to include delays in the supply of materials and the delivery of wrongly sized equipment and materials. Solomon has not complained once, according to the architect, even though staying on the job has cost Macomber all of its profit and, the architect estimates, about \$50,000 into the bargain.

What about quality? Says Kahn flatly: "The firm's workmanship is unparalleled in its excellence." Solomon admits to no secrets: "We do our own concrete work, of course. Then we simply get good subs. There are always two or three people in each trade with whom we've worked. They know us and we know them. Aside from that, I make sure we're always dealing with the same people at the weekly meetings—I'm there, not my delegate, and the same goes for the architect and the client."

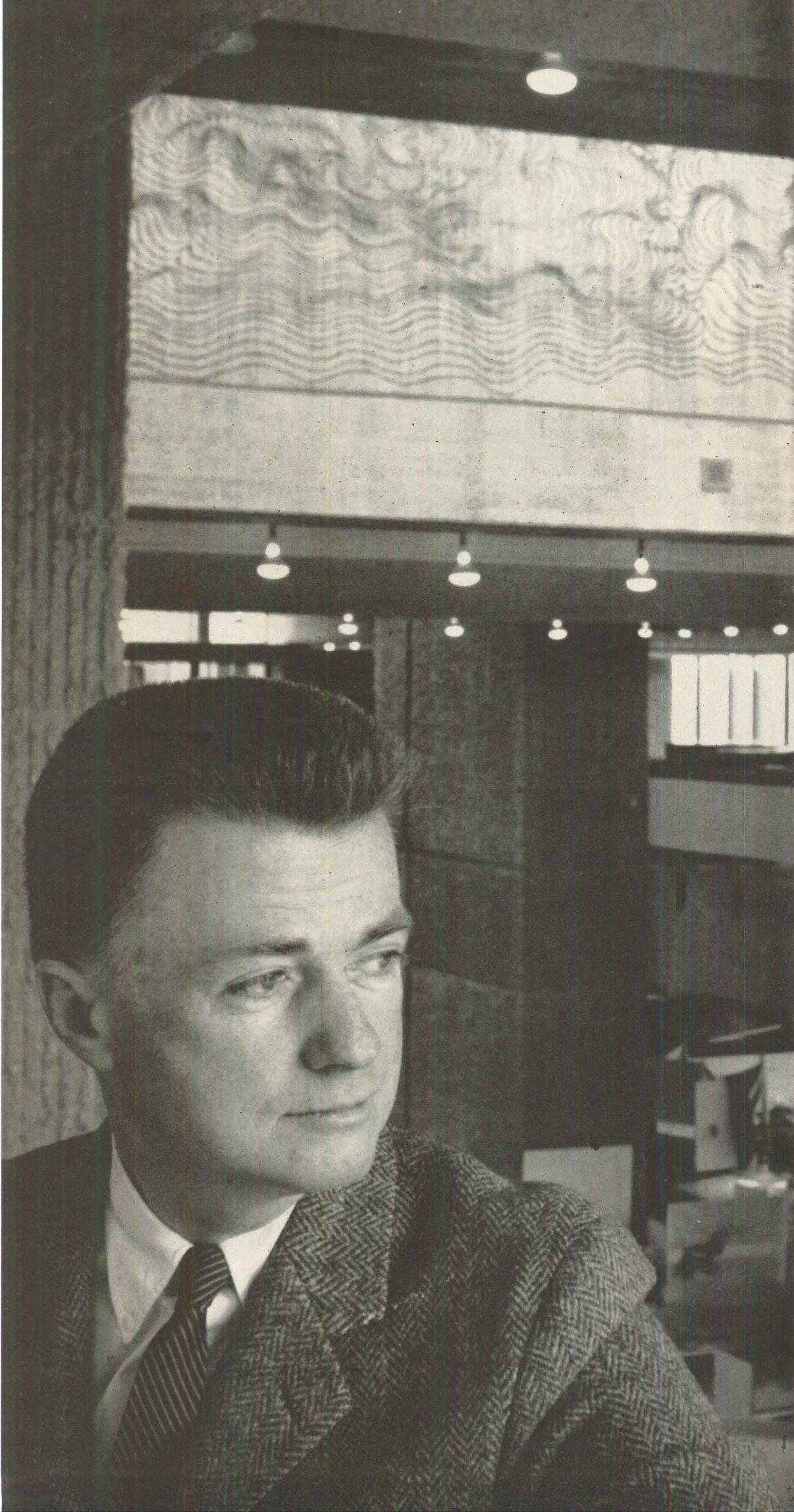
Solomon's approach to building is summed up by this credo: "If we do our job right, we'll make the money." Inevitably, this has meant that the Macomber Company has passed up many lucrative but otherwise insignificant jobs because "you can't wear two hats, you can't do that sort of work and still be a real builder." It means also that Macomber will continue as a "free" laboratory for the development of new techniques: right now Solomon is working out all sorts of details for the new Boston City Hall (by Kallman, McKinnell and Knowles) and the nearby Boston Government Service Center (for which Rudolph is the coordinator)—both public jobs on which Macomber, in all probability, will not bid. And it means finally, that Solomon and the Macomber Company will continue to do the best job on some of the most difficult and challenging buildings being designed in the U.S.



DER SCOTT; OFF: EVELYN BOYER

A black and white photograph of a building entrance. The entrance is framed by two thick, textured concrete columns. Above the entrance, there are three small, circular lights. To the left, a large, dark, textured wall is visible. The sign on the door reads: YALE UNIVERSITY SCHOOL OF ART AND ARCHITECTURE 1135 CHAPEL STREET.

YALE
UNIVERSITY
SCHOOL OF
ART AND
ARCHITECTURE
1135 CHAPEL STREET



YALE'S SCHOOL OF ART
AND ARCHITECTURE

4

THE ARCHITECT

Themes from his new building at Yale pervade much of Rudolph's latest work. Here are three of his most significant projects that prove the point.

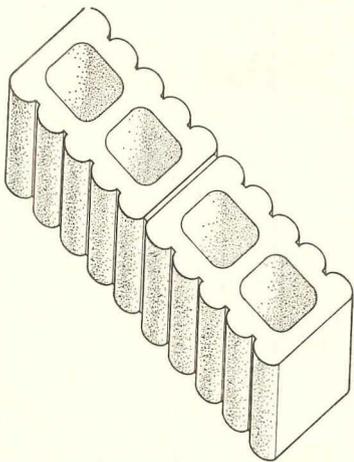
NEW CAMPUS FOR SCIENCE

Several of the themes sounded by Paul Rudolph in the Art & Architecture School are present in the Southeastern Massachusetts Technological Institute (SMTI) which he has designed for North Dartmouth, in association with Architects Desmond & Lord.

There is, first of all, the "tension between masses" (as Rudolph calls it), created by a log-cabin-like interlocking and overlapping of structure (rendering, right). There is also an integrated structural-mechanical system. In his Sarasota High School, Rudolph had used hollow structure to contain horizontal chases; and at Yale his hollow columns do the same thing vertically. But at SMTI, for the first time, he has developed a system to work both vertically and horizontally (plan and section, right). As a dividend, some of the hollow columns can be used as projection booths for the octagonal classrooms and for equipment housing and storage (see part plan).

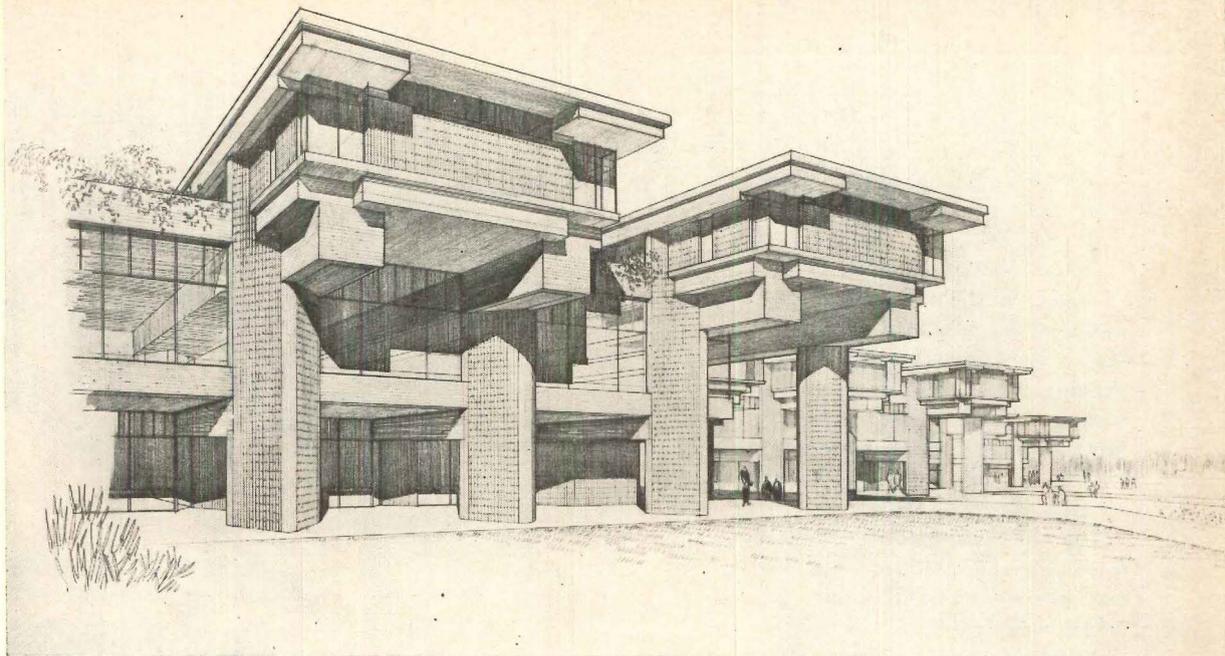
SMTI is to be built in stages and will ultimately consist of a series of linear, three-story classroom, lab, and office pavilions pivoting on a centrally located library, amphitheater, and bell tower (see site plan). The academic area, which is surrounded by parking, will look out toward a lake down a mall lined with dormitory buildings.

For flexibility, as well as for economy, all walls, including interior partitions, are made of con-

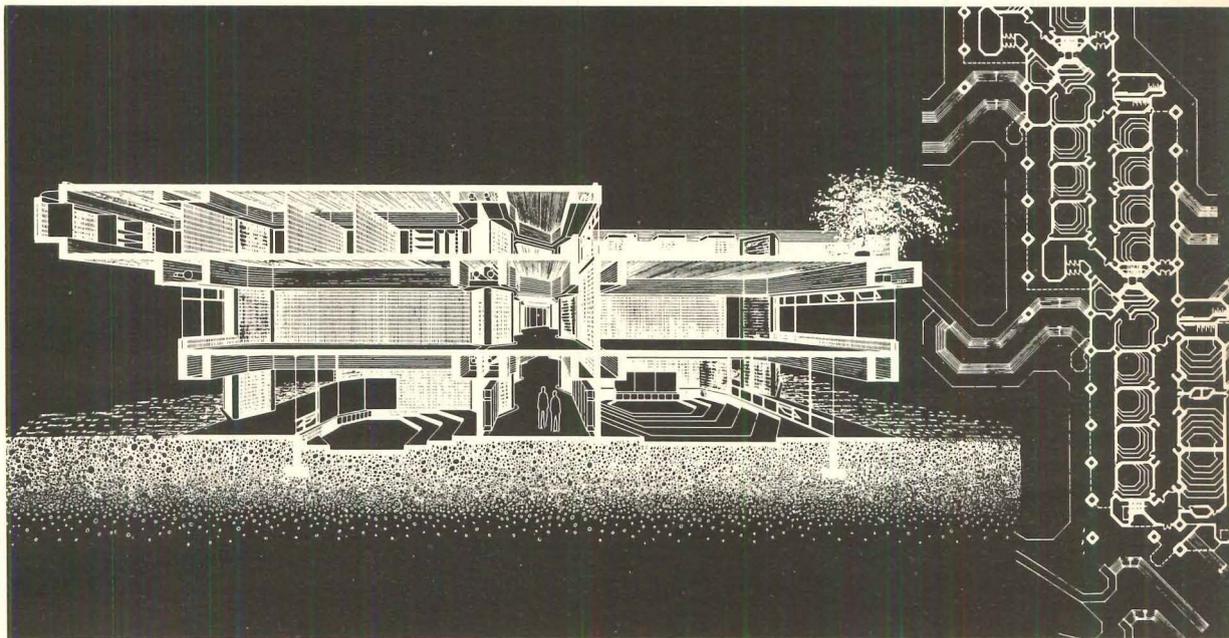


crete block. These nonstructural walls are not only easily demountable; they also lend unity since only one material is used.

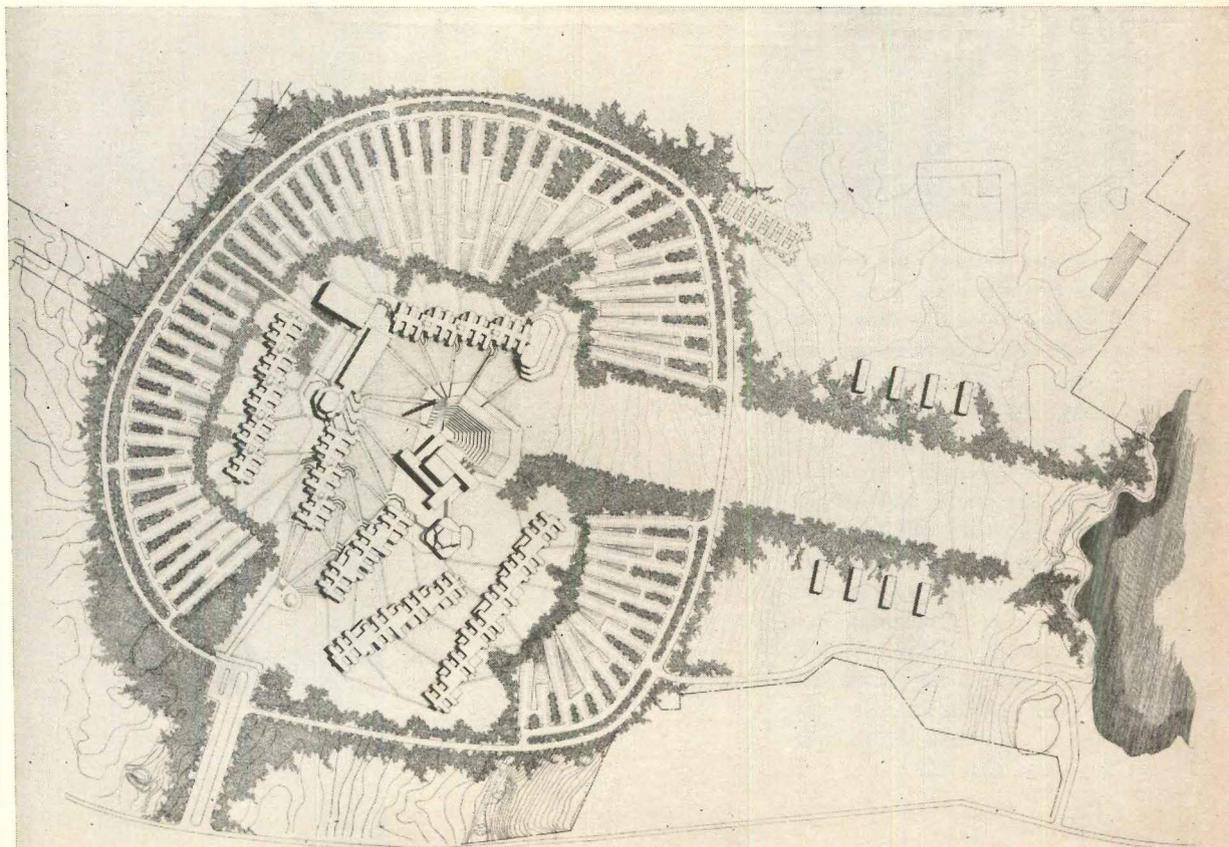
The blocks are fluted (above) to produce a weathering effect as they stain between the flutes, and also to destroy the ungainly scale of the blocks. Structural engineers: Congdon, Gurney & Towle and Sepp Firnkas.



DRAWINGS BY DARYL JACKSON



DRAWING BELOW BY HENRY HAWTHORN



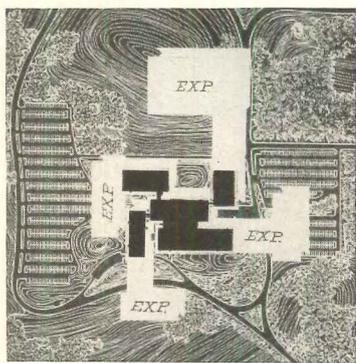
NEW LABORATORY AT IBM

Like the Yale school, this lab and manufacturing facility for the new Components Division of IBM in East Fishkill, N. Y., uses an open-ended pinwheel plan to provide easy horizontal expansion (site plan, below).

IBM's need for flexibility, in an operation where lab set-ups are constantly being altered, also persuaded its architect to design the building as a three-layered sandwich, with a mechanical service floor between lab floors, to permit services to feed up and down (worm's eye view, bottom right).

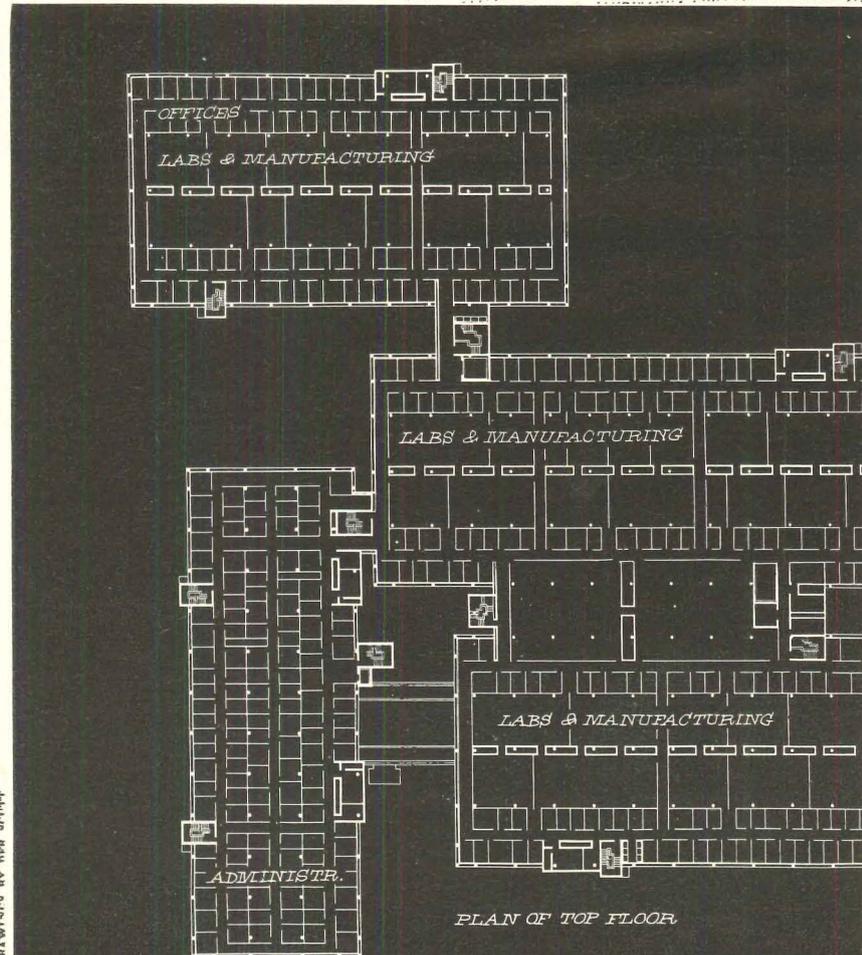
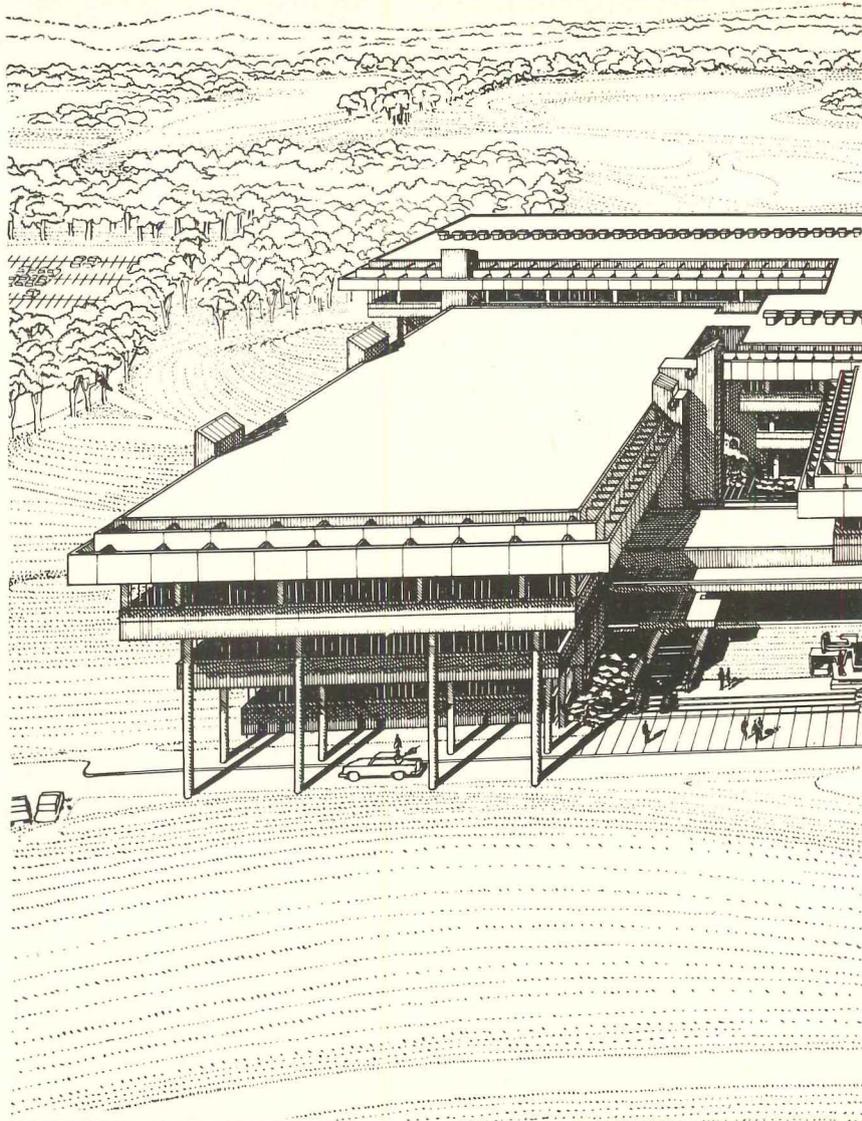
The IBM project demonstrates Rudolph's characteristic ways of manipulating scale. To create a bolder scale for this huge (625,000 square feet) building, he pulled the service elements (such as stairs, toilets, etc.) out of the big loft spaces, which were thus left unobstructed and flexible. "Stairs and toilets are the only things that are fixed nowadays," Rudolph said; "they're the only things we can use to make architecture." So he attached them to the outside of his building, and turned them into shafts and towers that will not interrupt the clean flow of interior space.

Next, to break down the vast scale of the building to human dimensions, he played up the layering quality of floors with one



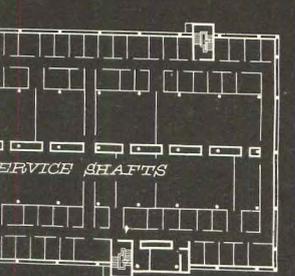
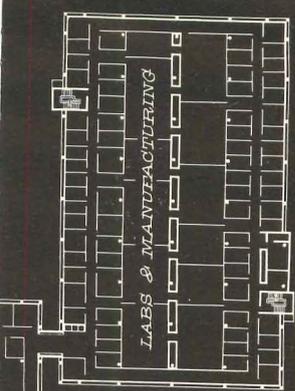
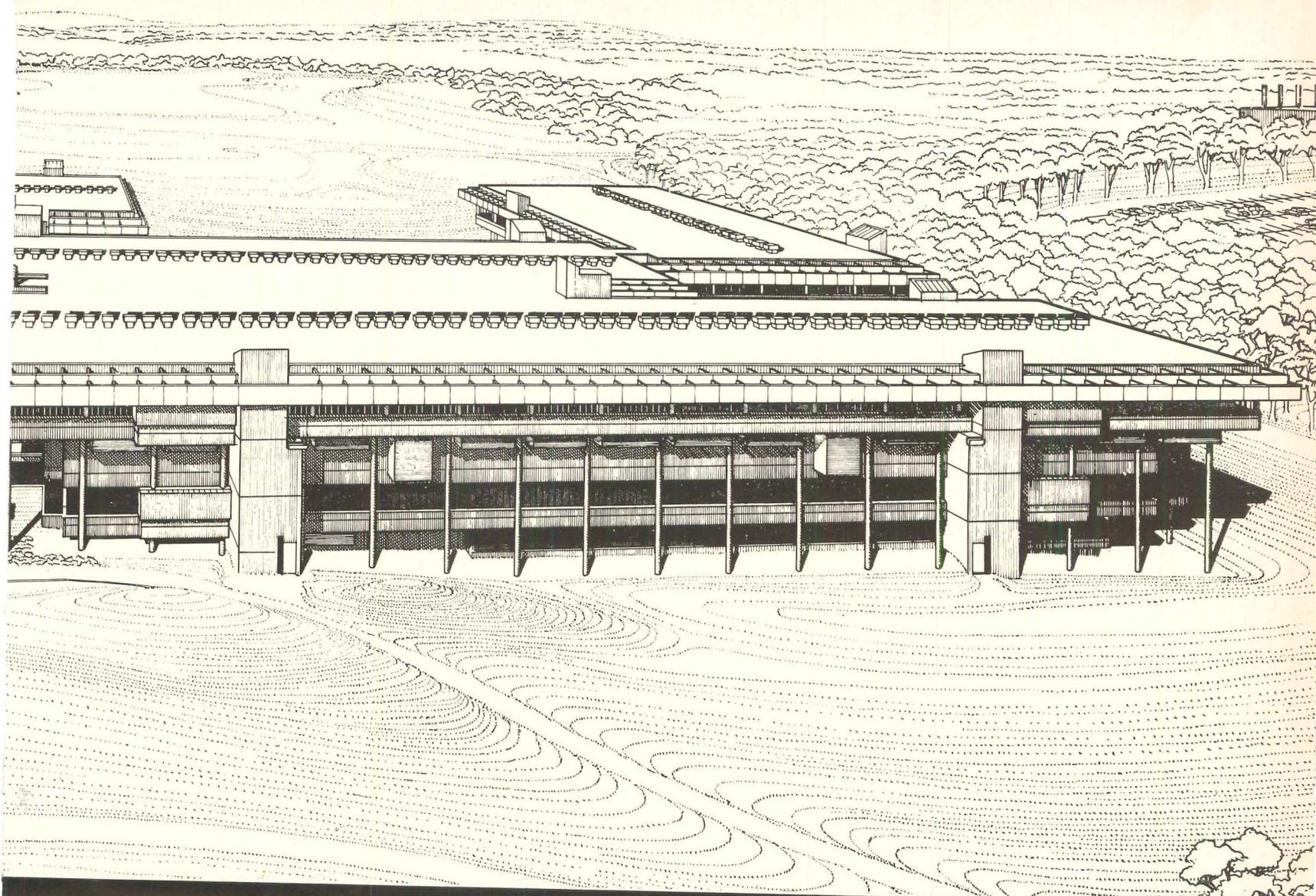
of his pet devices—the setback, which cuts down the area of the mechanical floor while leaving the top floor with a cantilevered band of offices at the perimeter.

IBM, like the Yale building, also demonstrates Rudolph's interest in the potential of concrete surfaces for scale and texture. The method here will be similar to the one employed at Yale—with two exceptions: the aggregate will consist of a different, local stone; and the concrete will be cast in reusable metal forms. Walter Kidde Constructors are the engineers. General contractors: Gilbane Building Co.

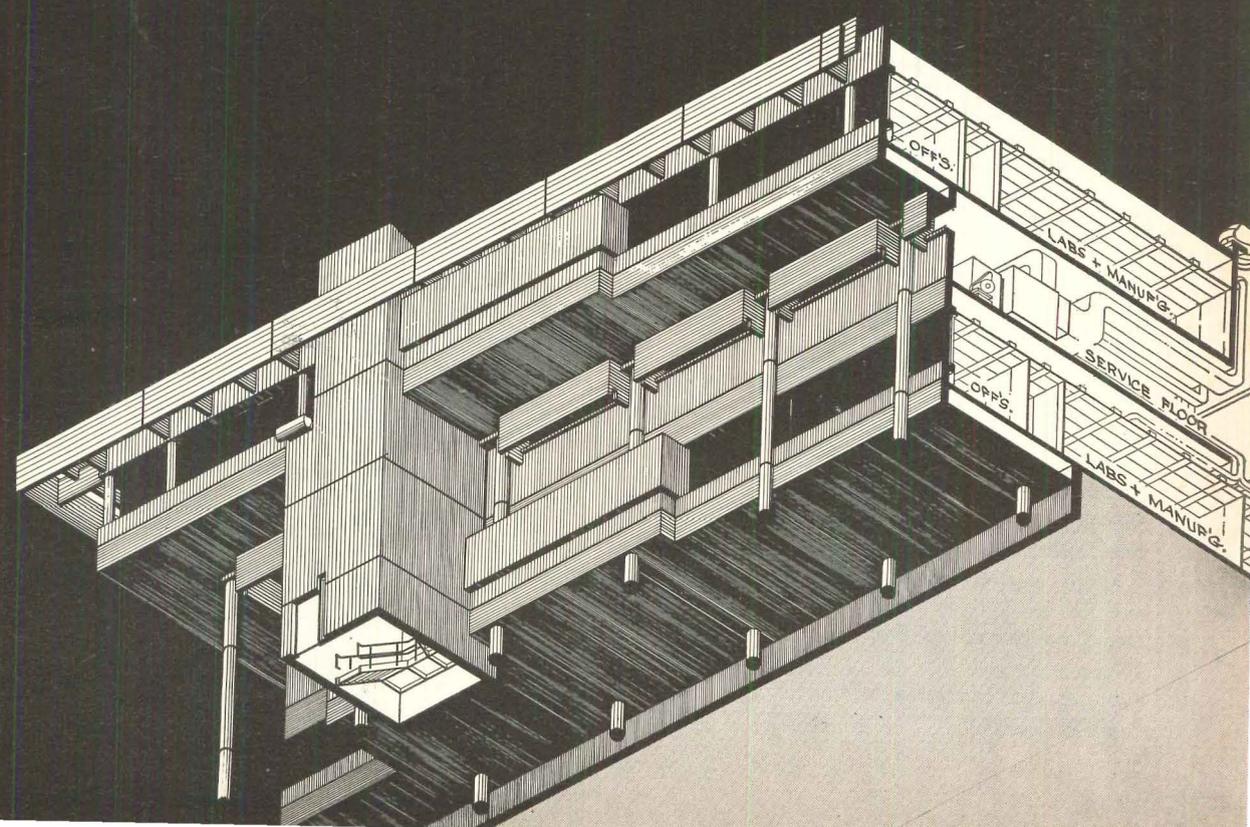


DRAWINGS BY HERBERT

PLAN OF TOP FLOOR.



0 50 100'



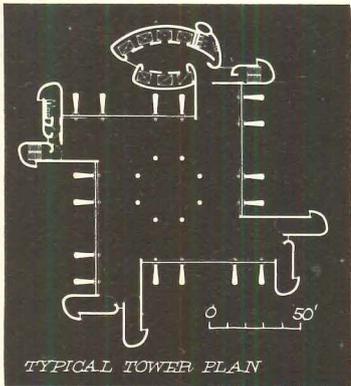
NEW CENTER FOR BOSTON

Paul Rudolph's most ambitious project to date is the Health, Education & Welfare Service Center for the Commonwealth of Massachusetts, in Boston. Most of the themes developed in the Art & Architecture School, SMTI and IBM are strongly evident here.

The design consists of two low buildings joined together to form one long element which follows the irregular street pattern but is cut back at the street corners to form small, Boston-style plazas; and one tall tower which acts as a pivot.

Each tower floor contains 7,700 net square feet. Providing this in a single shaft, the architect felt, would have produced a form too bulky to work as a pivot. By turning, once again, to the pin-wheel form (plan, below) he broke up the bulk into a cluster of pivots, with the clam-shaped elevator core, stair towers, and toilets all located on the outside.

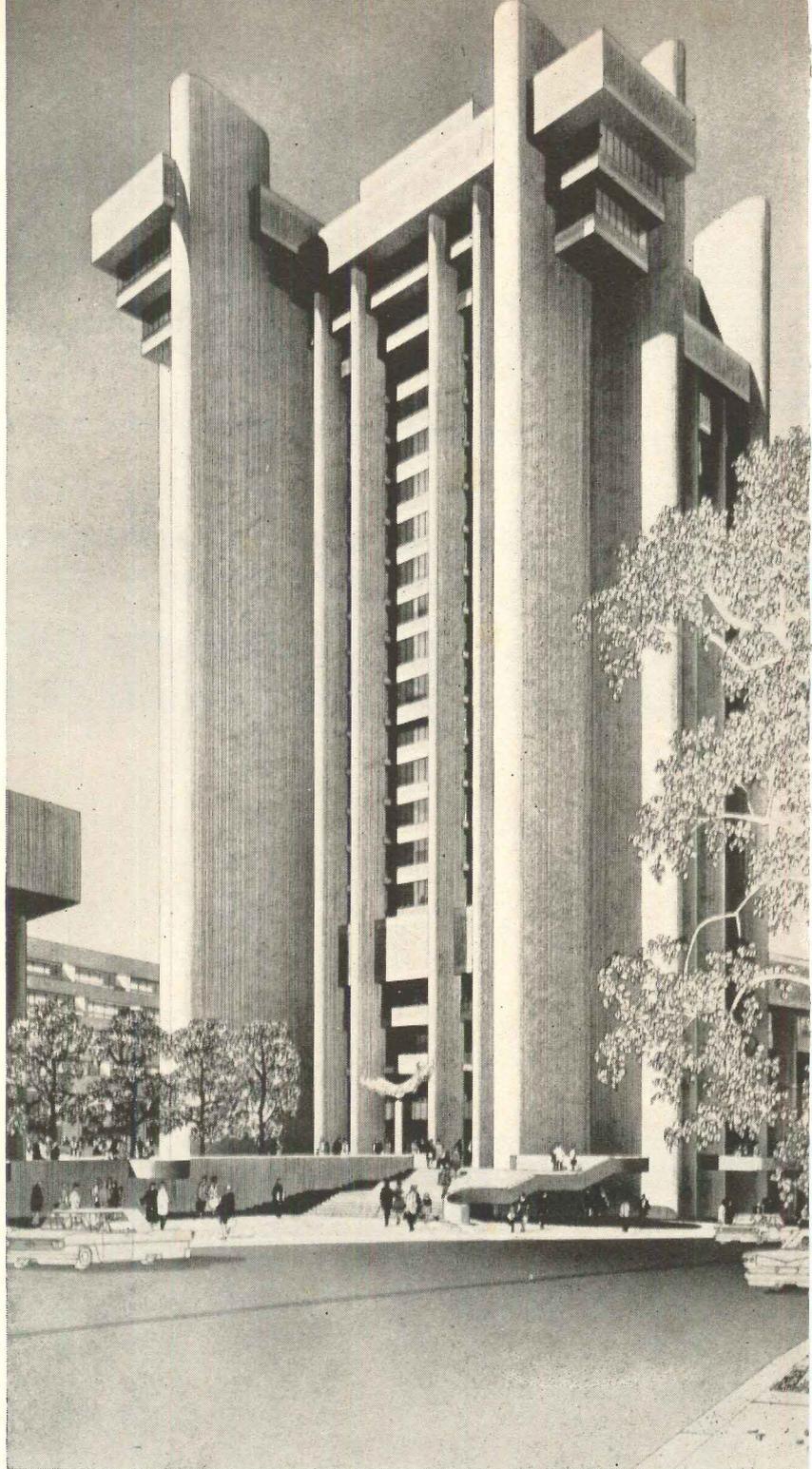
Almost completely enclosed by the low buildings is a great plaza (opposite), located on top of an underground garage. The low buildings surrounding the plaza step back in irregular ziggurat fashion, partly to form a great outdoor bowl and partly to provide an intimate, pedestrian scale



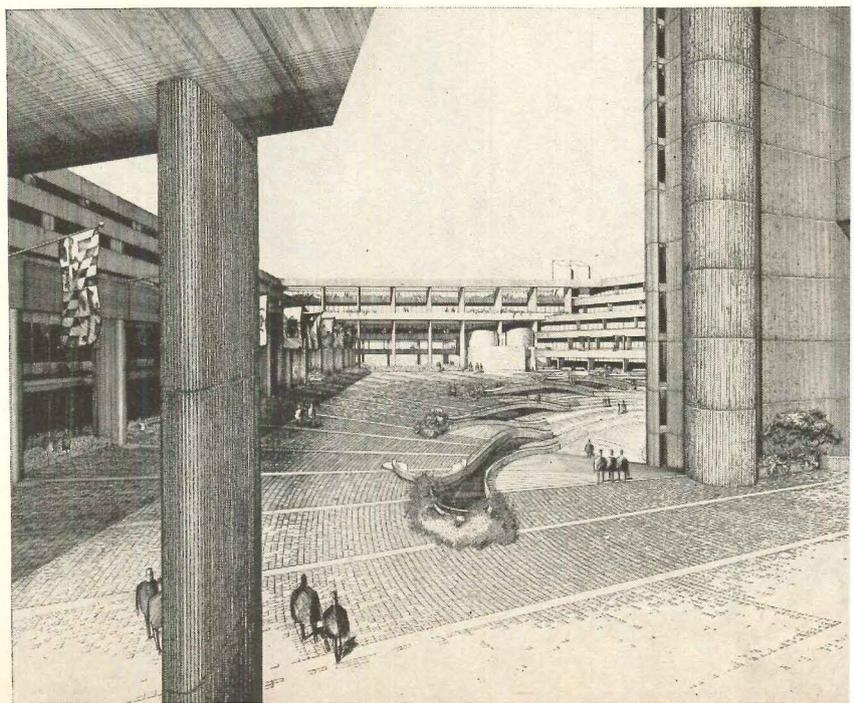
in contrast to the monumentality of the project's outer walls.

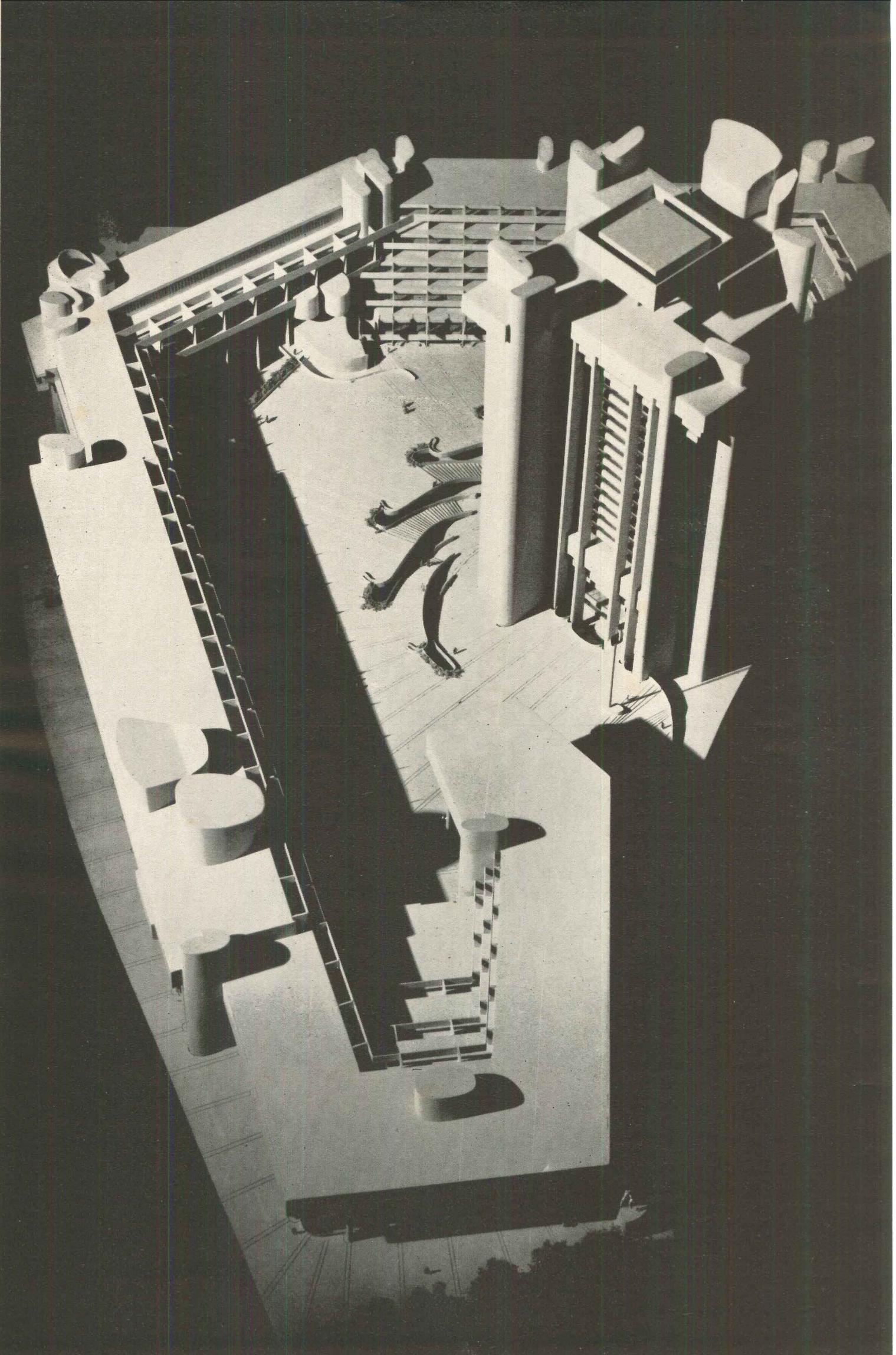
The concrete finishes throughout the new Center will be similar to those used at Yale and at IBM.

Paul Rudolph is the Coordinating Architect. The architects for the Division of Employment Security Building (part of low structure) are Shepley, Bulfinch, Richardson & Abbott; for the Mental Health Building (next to it): Desmond & Lord (with Paul Rudolph as Architectural Designer); for the 23-story Health, Welfare & Education Building: M. A. Dyer and Pedersen & Tilney (with Paul Rudolph as Architectural Designer). END



RENDERINGS BY HELMUT JACOBY



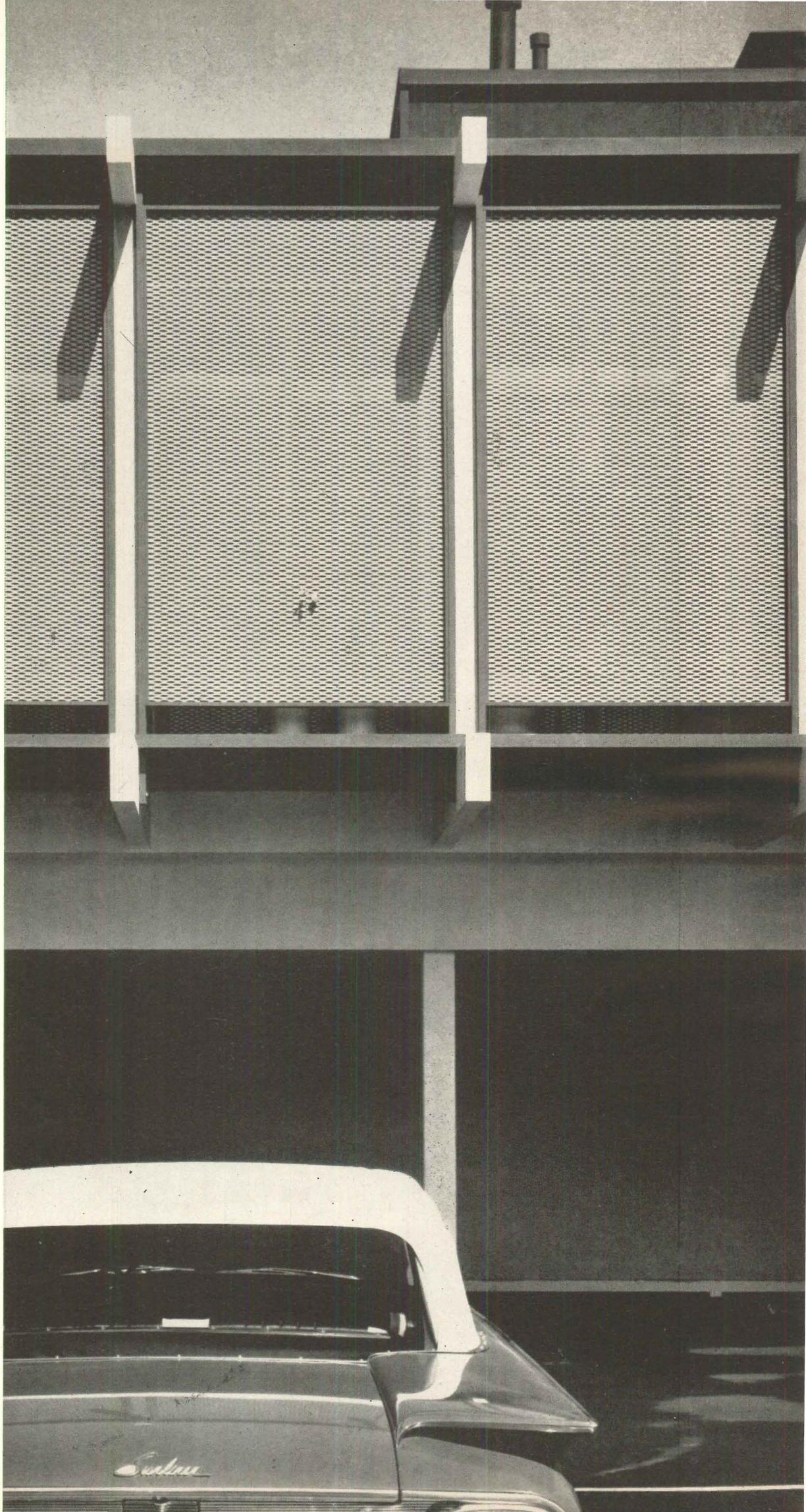


SIX CLINICS

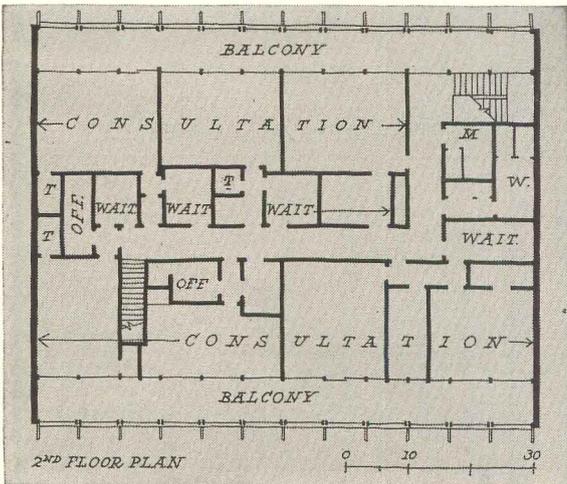
Even in a Sunliner convertible in sunny California (right), going to the doctor is a personal—and not always a pleasant—experience. But it can be made a convenient, a private, and even an architectural one.

The six clinics shown on the following pages help do just this. They are, in fact, about as pleasantly unclinical as a modern clinic can be. Fortunately, none attempts to disguise itself completely, e.g., as the neighboring ranch house or the friendly corner bank. But the accent, nevertheless, is on quiet, warm materials, on reception areas that look more like private living rooms than hospital corridors, on unexpected and reassuring gardens and landscaped courts. The consultation rooms themselves are private and sound-proof; many are raised or otherwise shielded from the street (in some cases providing convenient, sheltered parking right under the building—a scheme which also used up less valuable land).

These clinics, of course, are designed for their owners too, mostly groups of doctors who have associated to share medical, clerical, and other common facilities they could not afford as easily alone, and to offer a range of medical specialities under one roof. The accent is on economy of construction and later maintenance, as well as provisions for internal flexibility and external expansion as medicine and individual practices change. One clinic, in fact, is planned so that it can eventually be sold or converted to a totally different use.



PHOTOS: LARRY FROST; BELOW, RIGHT: RICHARD CRASS



IN LOS ANGELES: STYLE FOR PSYCHIATRY

In designing this clinic in suburban Los Angeles, Architect Richard Dorman had to satisfy ten clients, all psychiatrists owning roughly equal shares in the property. Privacy was a prime criterion, and each doctor also asked for a balcony with a view.

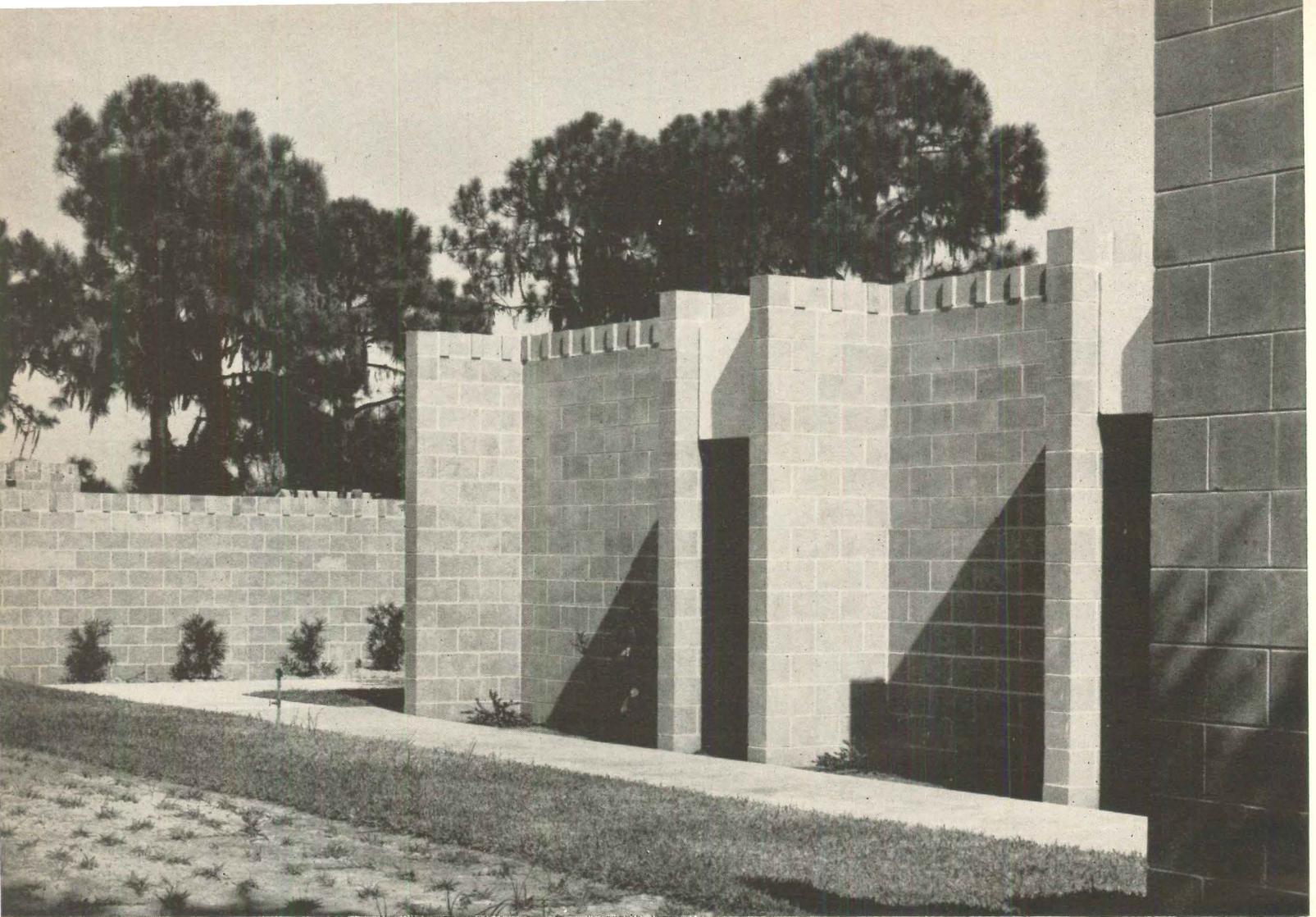
For economy, the structure is wood frame with glue-laminated beams on a 6½-foot module, between brick end walls; concrete floors and roof achieve sound control and tie the building together

laterally. The architect went to two stories to leave space for parking at the rear of the site (top photo). Arrangement of suites is similar on both floors.

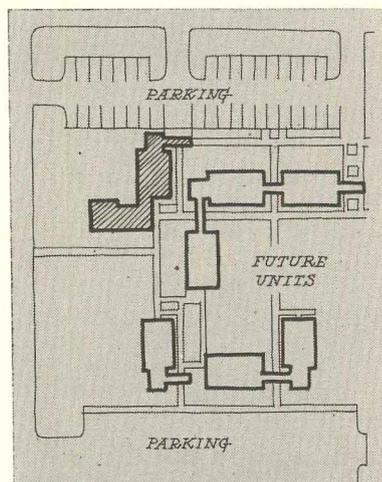
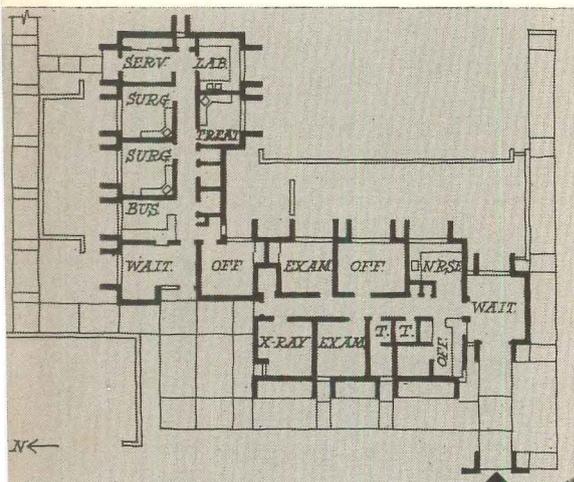
On both north and south facades, the stylish structure extends to form balconies outside the glass walls of each doctor's office (lower photos). Screens of heavy expanded metal attached to these balconies provide visual privacy from the street, as well as some measure of noise control.

FACTS AND FIGURES

Valley Psychiatrists Office Building, 15422 Ventura Blvd., Sherman Oaks, Calif. Owner: Valley Psychiatric Building Group. Architects: Richard Dorman & Associates; Gene Smith, project coordinator. Engineers: Greve & O'Rourke (structural), Norman Levenson & Associates (electrical). Landscape Architect: Richard Dorman. Contractor: Ralph Scott. Building area: 7,500 square feet. Construction cost: \$125,000, plus land, furnishings, fees. Square foot cost: \$17.



J. ARTHUR MILLER



THE BRADENTON HERALD

IN WESTERN FLORIDA: SCULPTURAL BLOCKWORK

The Westgate Doctors' Mall in Bradenton, Fla. is a lively group of linked building units which will ultimately enclose a landscaped outdoor "waiting room" or mall (site plan, above). Streets and parking areas are isolated from view, and offices and examination rooms gain privacy from high garden walls.

The basic material is a simple, buff-colored concrete block, used in a strongly sculptural way to give light and shadow under the

intense Florida sun. Around windows, the block is turned to make simple piers which act as "blind-ers" to shade the interiors.

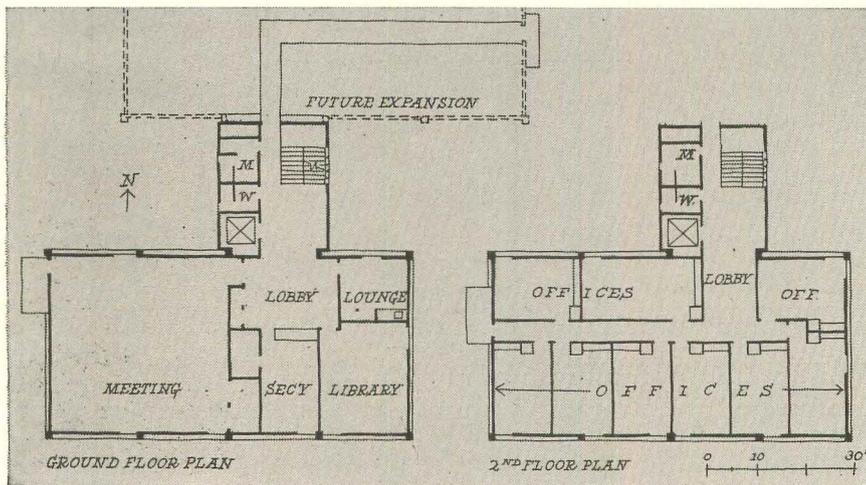
The project was started by a real estate developer to show how a large parcel of land in a residential area might be used for 15 to 20 doctors' offices. The developer has leased one building to a doctor and a dentist, and sold land to another doctor who has completed the first of three buildings he will own himself.

FACTS AND FIGURES

Westgate Doctors' Mall, Bradenton, Fla. Owners: Dan S. Bialock, Jr.; Harold S. Sutton, M.D.

Architect: J. Arthur Miller. Engineers: Emil Tiona and Kaisrlik, Snell & Whitehead. Contractors: C. M. Rowlett and Gulf Coast Construction Co.

Building areas: 2,542 square feet (two-office building), 1,374 square feet (one-office building). Costs: \$35,218 plus \$18,700 land and sitework, \$2,800 fees; \$20,670 plus \$11,870 land and sitework, \$1,853 fees. Square foot costs: \$13.85, \$15.



IN SAN FRANCISCO: A FRAME FOR REFERENCE

The new office and research headquarters of the San Francisco Psychoanalytic Institute was tailored to a lot 106 feet wide and 137 feet deep, located near some of the city's major hospitals.

To get space for parking and a future wing to the rear, Architects Marquis & Stoller raised the building on a straightforward and handsome frame of concrete, exposed inside and out. This isolated the major floor from street noise and view, and allowed entrance

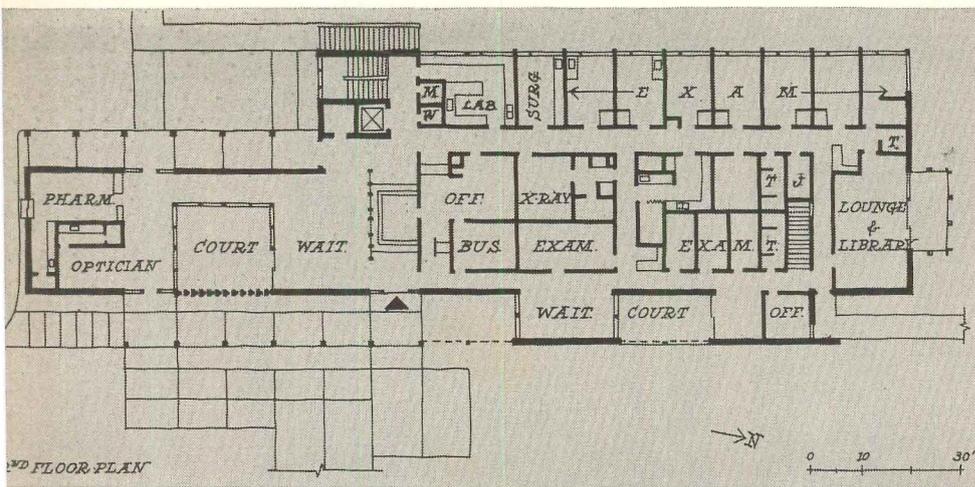
under the building, with the stair and washroom core at the rear where it can serve the new wing.

The ground floor houses a secretarial office and library, a large meeting room, and a small lounge. Upstairs are seminar and research rooms, some used temporarily as psychiatric offices.

Since it was felt the building's use might change drastically at some future date, the simple concrete frame carries non-bearing walls and interior partitions.

FACTS AND FIGURES

San Francisco Psychoanalytic Institute, 2424 Sutter St., San Francisco, Calif. Owner: San Francisco Psychoanalytic Institute. Architects: Marquis & Stoller; Claude Stoller, associate in charge. Engineers: Eric Elsesser (structural), Montgomery & Roberts (mechanical). Interior designer: Harriet Berg. General contractor: C. M. Peletz Co. Building area: 7,500 square feet. Construction cost: \$175,000, plus land, furnishings, fees. Square foot cost: \$23, including sitework.



PHOTOS: HUGH N. STRATFORD

IN WASHINGTON STATE: VARIETY UNDER ONE ROOF

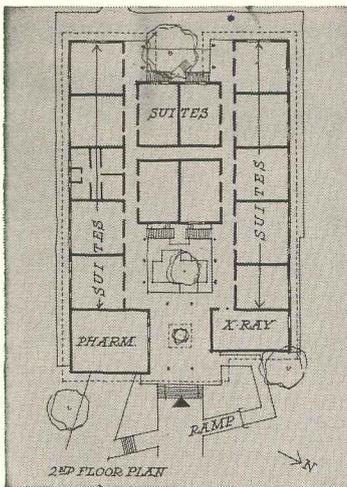
In the fast-growing suburbs across Lake Washington from Seattle, four doctors have built a clinic for group practice to accommodate up to 15 specialists of various kinds initially, and ten more with a simple wing addition. The general practitioner-owners have already been joined by an internist, a pediatrician, an obstetrician, a surgeon, an ear-nose-throat specialist, and an ophthalmologist. Connected to the clinic are a dispensing pharmacist and an opti-

cian in leased space.

The main building, which is sealed and air conditioned, uses the sloping site to provide parking and entrances on two levels. Instead of a large lobby, each area has its own intimate waiting room with garden (photo above), reducing confusion and congestion. The lower floor, partly used now for nurses' lounges and lockers, will eventually have its own reception area, central supply, X-ray suite, and examination rooms.

FACTS AND FIGURES

Lakeshore Clinic, 515 State St., Kirkland, Wash. Owner: Apollo Investment Co.
Architects: Cummings & Martenson. Engineers: Andersen-Bjornstad-Kane (structural), A. A. Morris (mechanical). Landscape architect: William G. Teufel. Interiors: Arthur Morgan Designers, Inc. Contractor: Vaux Construction Co. Building area: 14,225 square feet. Cost: \$230,778 plus \$25,000 land and sitework, \$20,000 furnishings, \$8,500 landscaping, \$21,458 fees. Square foot cost: \$16.20.



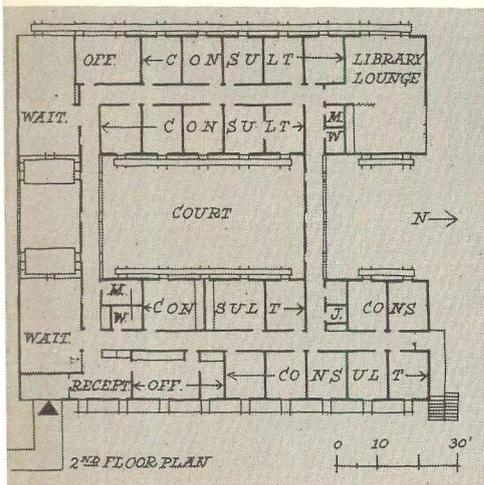
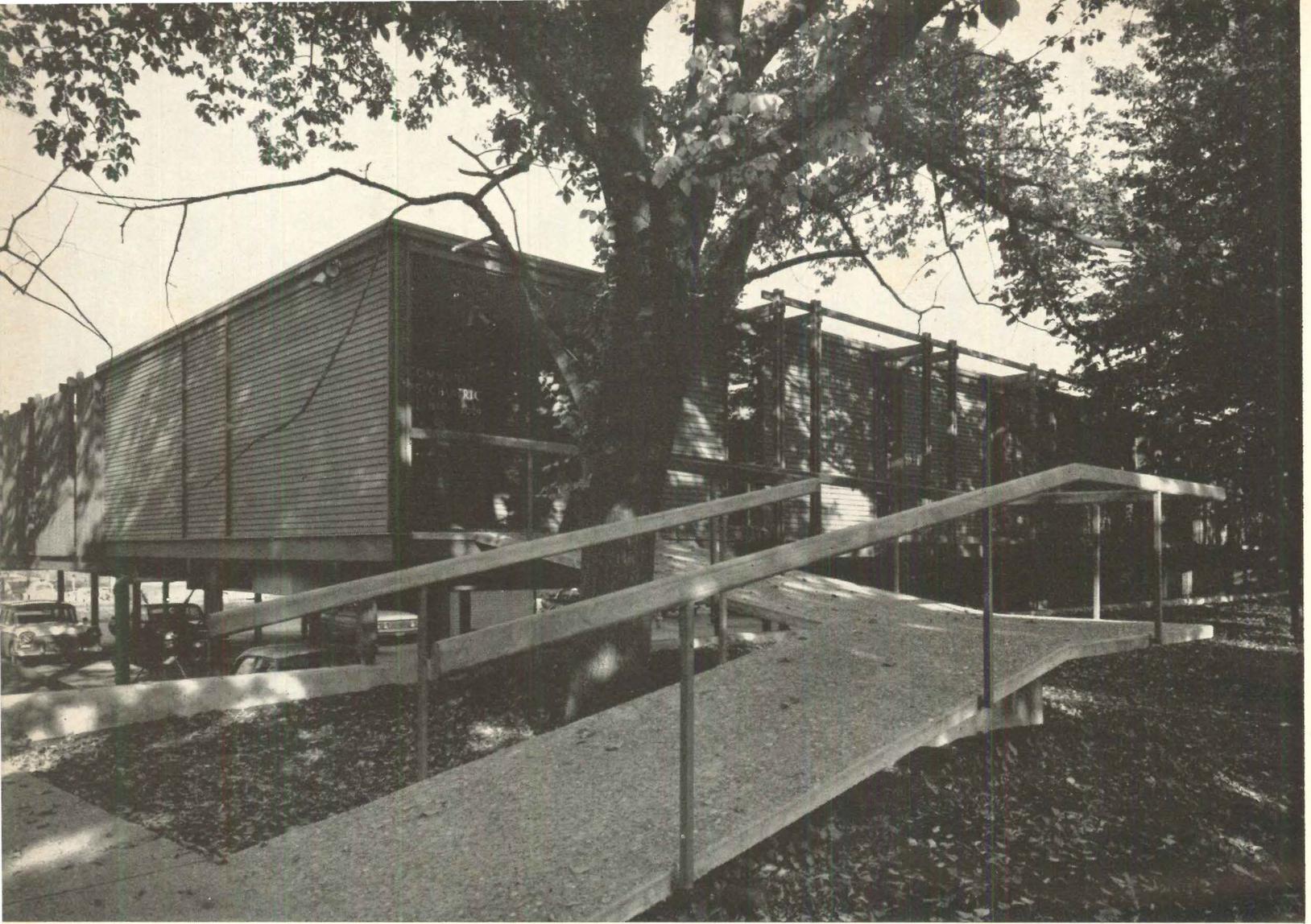
IN CALIFORNIA: SUITES AROUND A COURT

Across the street from Ross General Hospital in Kentfield, Calif., Architect Neill Smith designed this comfortable-looking clinic in modern Bay Area shingle style. Fourteen suites for various kinds of medical specialists face covered galleries around a central court (top photo). At the main entrance, which has both steps and a ramp for wheelchairs (plan), are an X-ray lab and pharmacy flanking a sitting area planted and lighted from above (photo right).

An 8-foot slope down to a stream at the rear of the site gave Smith a chance to provide parking for 42 cars under the building (middle photo) without raising it too high above the street. The changeable stream bed, however, made it necessary to use caissons tied by grade beams, from which rise the block walls and tubeformed concrete columns of the garage. Individual heat pumps for the doctors' suites are housed in a rise along the roof.

FACTS AND FIGURES

Redwood Medical Center, Kentfield, Calif. Owner Hemlock Improvement Co.
Architects: Neill Smith & Associates; Eugene Wedell, associate in charge. Engineers: Stefan Medwadowski (structural), Alexander Boome (mechanical, electrical). Contractor: Aureguy Const. Co.
Building area: 11,095 square feet enclosed; 3,760 square feet covered walks; 14,135 square feet covered parking. Cost: \$224,000 plus \$18,700 land sitework, \$15,300 fees. Square foot cost: \$11.25.



PHOTOS: HUGH N. STRATFORD

IN SEATTLE: COURTYARDS IN THE AIR

Near their own small office building overlooking Lake Union (FORUM, Aug. '62), Seattle Architects Kirk, Wallace, McKinley & Associates have completed a community psychiatric clinic in much the same pleasant redwood style. Since this site, too, was sloping, they raised the building to provide privacy and parking.

In plan, the building is divided into an adult area and a children's area, each facing airborne courtyards, with enclosed bridges

linking the two main wings. There are 21 therapy rooms, private offices, and a large library-lounge for the staff.

To filter the sun, wood slats are used decoratively as projecting shades over the windows (photo opposite). Also used under windows as decking, they become platforms for window washing and planting; this gives the illusion of hanging gardens outside reception rooms (small photo) and screens the cars below.

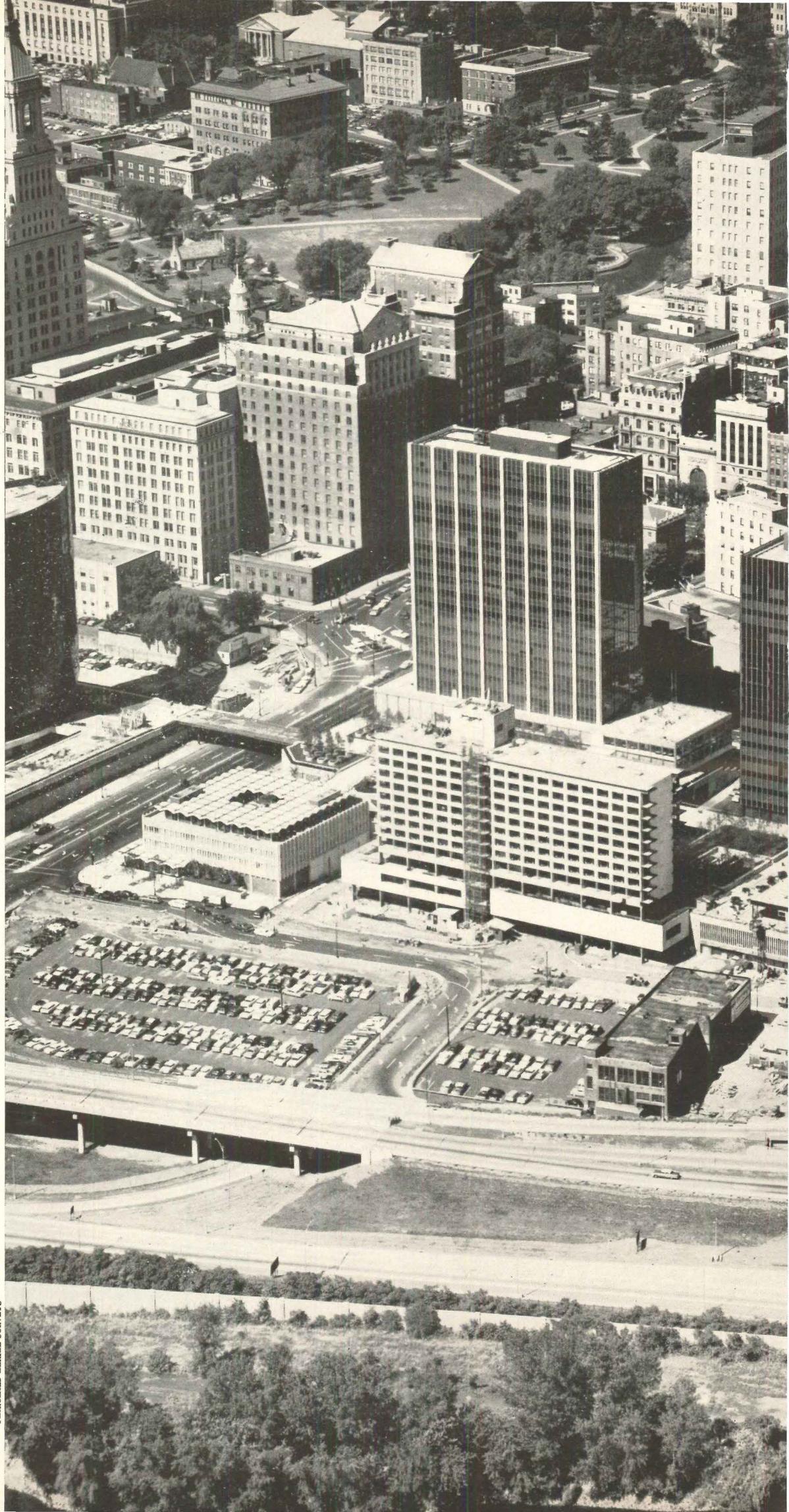
FACTS AND FIGURES

Community Psychiatric Clinic, 2009 Minor Ave. East, Seattle, Wash. Owner: B.F.K., Inc. Architects: Kirk, Wallace, McKinley & Associates; Morris E. Jellison, supervising architect. Engineers: Worthington, Skilling, Helle & Jackson (structural), James B. Notkin (mechanical), Thomas E. Sparling (electrical), Robin M. Towne (acoustical). Contractor: G. Rodney Johnson. Building area: 6,300 square feet. Cost: \$124,997, plus furnishings, fees. Square foot cost: \$19.84.



DOWNTOWN'S DRAMATIC COMEBACK

BY DAVID B. CARLSON



FAIRCHILD AERIAL SURVEYS

From the looks of things in Hartford (opposite), grass won't be growing in the streets after all. The city's \$50 million Constitution Plaza development is putting a new snap in downtown, an area which, like most downtowns, had been experiencing a long-term decline. The same sort of downtown renaissance is underway in Cleveland, where the first buildings of the ambitious Erieview Plaza project are going up (overleaf), and in Pittsburgh, Baltimore, San Francisco, Providence, Philadelphia, Minneapolis, and even staid old Boston, to name a few. Downtown's comeback, in fact, is the most dramatic story on the urban scene today.

It is all the more remarkable because only a few years ago people *did* think grass would be growing in most Main Streets. There was weighty statistical evidence of downtown's postwar decline — population diminishing, jobs moving out, retail sales plummeting. But the figures could not begin to tell the story as powerfully as could the human eye—a walk through almost any central business district was enough. Vacant stores and shabby residences, mingled with decaying warehouses and factories, were the visible evidence of waning economic strength.

The turnabout in downtown's destiny is being backed solidly by both business and government. And the backers, realizing that Main Street must be paved with more than good intentions, have enlisted the considerable talents of many of the nation's top planners and architects. The challenge to the professionals has been considerable—for the first time, vast areas of central cities have to be designed not only with new façades in mind, but with full knowledge that downtown must have a complete revision of facilities and functions if it is to compete with the suburbs.

Eye-catching first efforts

The approach, as characterized by Cleveland's Erieview, Providence's Weybosset Hill (page 101), and Baltimore's pioneering Charles Center, is usually to make the initial downtown project one of striking dimensions and architecture, thereby generating the enthusiasm needed for total redevelopment. In cities such as Philadelphia (page 102), where

considerable new downtown construction has occurred, the effort now is directed toward tying the elements together to support the renewal of weaker facilities. And in at least one city, San Francisco (page 103), the coming of a \$1 billion rapid transit system is giving planners an opportunity to contrive the sort of bold solutions essential to the long-range future of the urban core.

All of these efforts started with the determination by businessmen to do something—even though they usually didn't know what at first — to conserve downtown's economic strength. In Philadelphia, the Greater Philadelphia Movement created a revolution in government and in redevelopment, promoted the building of Penn Center and a citywide renewal program, and now is firmly backing revitalization of the whole central business district. Baltimore's Greater Baltimore Committee sponsored the planning for a new downtown complex of commercial buildings, Charles Center, and backed construction of the city's recently completed arena. Washington's Downtown Progress, Inc., disregarding Congress's traditional indifference to the city's problems, pushed ahead with plans for a vast overhaul of the central city. Today, although Congress has still not permitted the city to get federal urban renewal funds for the central business district, over 17 new buildings have been started or are planned, including downtown's first new hotel, first new apartment house, and first new office building since 1941.

The need for federal renewal aid is illustrated clearly by Pittsburgh, where businessmen sparked the well-known "Golden Triangle" in what was once America's shabbiest downtown. Despite this early support, and a considerable amount of office construction, downtown Pittsburgh still has problems, as indicated in the Regional Planning Association's master plan for the whole area.

The master plan has been supported and some work is proceeding, but a major obstacle remains: downtown is not yet a renewal area, and therefore cannot qualify for federal funds. Such aid is essential, according to city planners, to insure the assembly of adequate parcels for future

development and open space, and to defray the considerable costs of land and planning.

Strong support from business and City Hall, plus urban renewal aid, is the formula for restoring downtown's health. But what will the new downtowns look like? How different will they be from the downtowns people once liked enough to live in?

The plans (overleaf) suggest what that look might be. Differences stem from differing economics, geography, and the imaginations of different architects and planners. The similarities, however, are more striking:

Downtown's new look

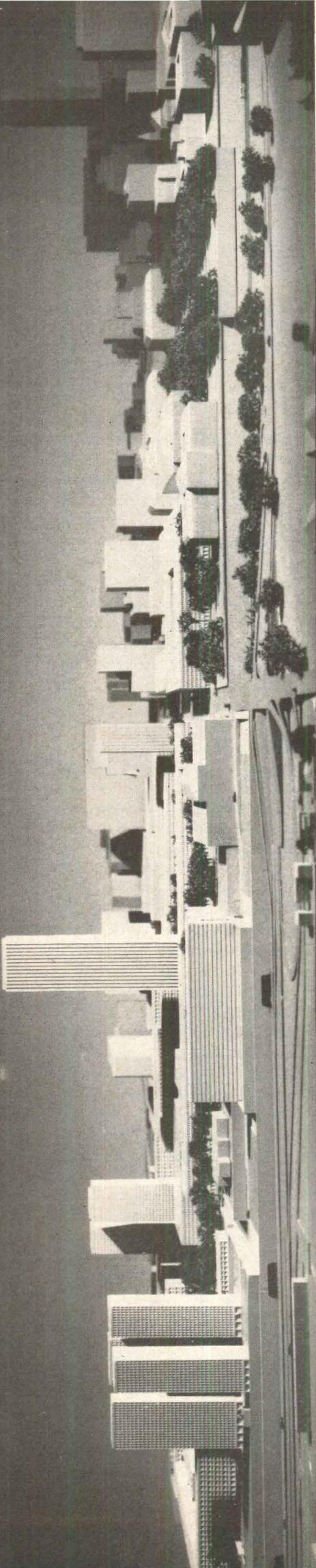
►First, there will be fewer land uses: warehousing, manufacturing, and distribution will probably disappear. What is left—shopping, living, offices, hotels, entertainment, and cultural facilities—will be tightly knit, with boundaries fixed by loop highways.

►The new downtowns will be a pedestrian paradise—every one of the plans calls for bright new walkways, bridges, and parks, free of almost all vehicles. (In a few cases, new vehicles will appear, such as Washington's small minibuses, or Philadelphia's proposed mini-trolleys.) But the car will still be king, particularly with most of the customers living in the suburbs, and will be accommodated in vast parking structures ringing the periphery of the shopping core. Although all plans stress the need for expanded mass transit, even San Francisco provides for the auto.

►New housing, at least in the early years of downtown's comeback, will be glamorous, catering to the wealthy and childless. The return of the middle-class family is still uncertain.

►Finally, downtown will again offer the greatest variety of human experience that can be found anywhere. New concert halls, basketball arenas, waterfronts with a perpetual world's fair look, open spaces—all will be part of the new downtown, which has already learned a lesson from the flashy shopping center.

If strong coalitions of business and political leaders, planners, and architects can indeed create this new downtown image—and the odds are strong that they can—it will be the most remarkable chapter in the remarkable history of the modern city. *continued*



Erieview's major landmark, a 40-story tower, is already under construction. Soon to come will be high-rise apartments (left) and a 600-room hotel (horizontal building in front of tower).

CLEVELAND:

Cleveland's Erieview project (left) illustrates one key to unlocking downtown renewal; build something dramatic first to generate excitement—and investment. It is the first major step in the city's master plan for downtown, drawn up in 1959. Like Providence's Weybosset Hill (opposite), Erieview is designed as a tightly integrated series of buildings and spaces. Not surprisingly, both plans were drawn by I. M. Pei Associates.

Erieview is calculated to tie together two parts of downtown, the waterfront and the retail-office core, long separated by a strip of blighted and battered buildings. The street pattern in the area was typical of many old downtown sections—too many narrow streets and alleys, chopping land into many small blocks. The federal urban renewal law, however, gave the planners the opportunity to assemble large parcels in an area big enough (93 acres) to insulate itself from blighting influences.

Urban renewal has been recognized for some time as a vital tool in downtown's comeback. By the time the federal program was ten years old, it was realized that unless downtown's economic strength could be restored, there would be little chance of successfully building new middle-income housing for families in areas just outside downtown.

So the law was rewritten to permit up to 30 per cent of a city's renewal funds to be used for commercial reuse (instead of all of it for residential reuse), and there is plenty of evidence to suggest that even 30 per cent is not enough. Many observers, on the other hand, feel that renewal funds should not be used for commercial renewal on a scale such as Erieview calls for, and their criticism has grown louder.

Recently, the General Accounting Office leveled a blast at the Erieview project for proposing to clear buildings which are not substandard. Urban Renewal Commissioner William Slayton came to the project's defense. He noted first that a building's condition alone should not be the only determinant of whether it should stay; its function should also be considered. Said Slayton: "If printing plants or warehouses had been permitted to remain in the Erieview area, it is

inconceivable that there would have been the investment in new office construction needed to make the plan work."

Slayton also pointed out that, in such a first project, "a vigorous, sweeping effort" had to be made to boost the confidence of Clevelanders in the viability of their downtown. By way of bolstering his argument, he added that although only one large building in Erieview is so far under construction (a 40-story office tower), over \$43.5 million in downtown improvements have already been completed or announced since the Erieview plan was first presented. And the \$125 million project itself will eventually return over \$3 million in realty taxes annually, in an area that previously returned \$480,000.

Critics had also complained that the Erieview plan proposed to raze substantial buildings to provide open space, but Slayton again defended ably: "This open space is essential as a buffer between commercial areas and areas for new apartment living. In such a city as Cleveland, where there has not been for many years any attractive downtown living, amenities of every sort are needed to make such investment successful."

Erieview might some day be seen as the prototype of the complete new downtown precinct. It provides land for those functions which are currently in strongest demand—offices and housing—and by accommodating that demand, lends strength to the adjacent commercial areas. The new housing, arranged in the highly mannered superblocs characteristic of Pei's urbane concept of city living, should support exciting retail facilities admirably.

The fuss over the role of urban renewal in Erieview should help establish the necessity for such aid in any broad-gauge downtown redevelopment effort. If further evidence is needed, one has only to examine Pittsburgh and Washington, both cities with considerable activity downtown but without the means of fully implementing master plans. Renewal is needed not only for simple money reasons but also to provide the breadth of planning and the dimension needed to bring downtown back. And whether the whole renewal program succeeds will depend largely on whether downtown can come back.



PROVIDENCE:

Perhaps the most remarkable thing about Providence's downtown master plan is that there seem to be so few reasons for bothering with its downtown at all. With a weak economic core, people and jobs moving out even faster than in most cities, and little construction downtown, Providence appeared to have little likelihood of reviving its shabby, decaying central area. The plan is a tribute to the determination of the city's businessmen and civic leaders not to permit further deterioration, and that same determination is now pushing forward with the plan's initial elements. By 1970, if all goes well, Providence will have one of America's most striking new downtowns.

One of the key aspects of the plan is improved circulation and parking. The new freeway, shown under construction (top, left), is nearing completion, and will not only be the principal means of access to downtown, but will also give downtown strong boundaries to the south and west. Tied in with the new freeway is the parking program, under which one new 438-car garage opened last year and another, of about the same size, will open this spring.

When it is completed, the Providence plan will have transformed downtown into five distinct precincts (map, center). This separation of functions permits sorting out uneconomic and blighting land uses, and provides the whole area with a more distinctive identity.

The new civic center area (1) will be made possible by relocating the present New Haven Railroad terminal and tracks. The civic center itself will consist of a state office building, a smaller exhibit building, and a new city hall. A large portion of the area between the relocated tracks and the new freeway will be for surf-

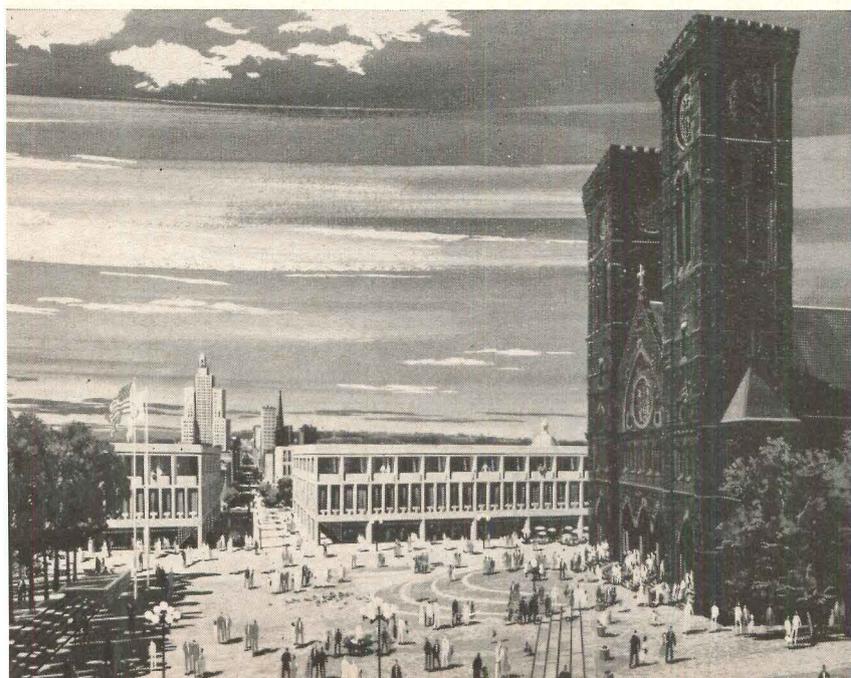
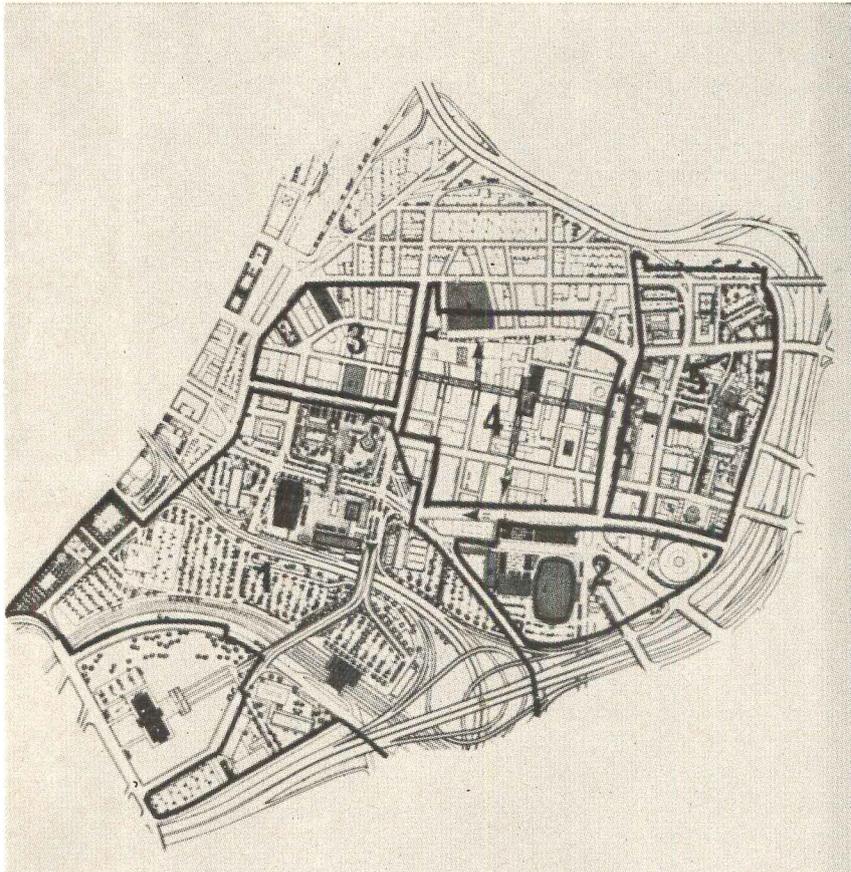
ace parking and a new station.

A new convention and sports center (2), with garages, a bus terminal, and an arena, is planned for a site adjacent to the new freeway. A new office center (3) encompasses several existing large buildings and, hopefully, some new ones. This small enclave lies immediately northeast of the redeveloped retail core (4), the major element of which will be a pedestrian mall stretching for about six blocks up what is today the major shopping street. Providence's retailing base has deteriorated badly (it provides only 15 per cent of the region's sales, about half that of many cities its size), and whether improved access plus good design can bring it to life remains to be seen. The mall, which is expected to open sometime this year, also serves as the principal pedestrian thoroughfare between the large stores and the new residential community, Weybosset Hill (5).

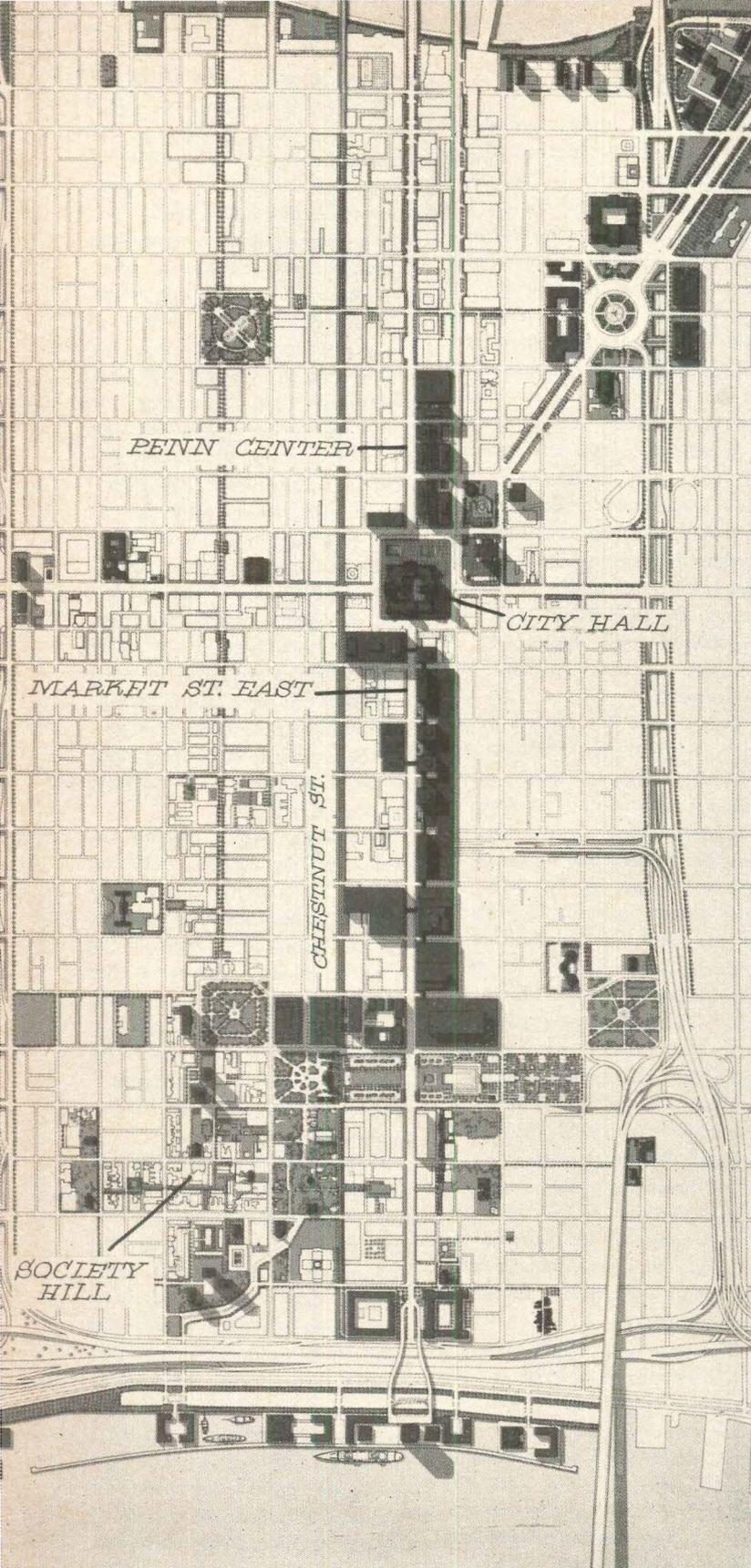
Weybosset Hill's success is critical to the whole downtown scheme. Providence's citizens and planners agree that families must live this close to downtown for it to grow and prosper. A developer has already been selected, and the new community will be developed to the plans drawn by Architect I. M. Pei, who has proposed an almost Parisian urbanity for prosaic old Providence.

The picture at bottom left, for example, shows a new square in front of the cathedral of St. Peter and Paul, with Pei's proposed walkup apartments in the background, flanking the pedestrian mall which stretches toward the retail center. The ground level beneath the new apartments would contain small shops—Pei thereby reinstates the old custom of living over the store, but in a new urban context. Weybosset will have several squares of low townhouses, connected by walkways, and a single apartment tower, near the proposed arena. In Providence's new residential community, the emphasis will be on urban intimacy.

Providence has boldly planned for its whole downtown, and dared to take the drastic steps (e.g., railroad relocation) to make it work. Perhaps most important is that civic, political, and planning leaders have so far stuck firmly to the plan itself, and have insisted on the highest standards of design. *continued*



Downtown Providence has been given new boundaries by the fast-developing freeway system (top). Eventually, downtown will consist of five major precincts (map): a new city hall and civic center area (1); a convention hall-arena and motel (2); a new office building preserve (3) next to the retail core (4). The latter has a pedestrian mall which will tie shopping in with Weybosset Hill (5), a new residential center (rendering, left).



PHILADELPHIA:

While both Cleveland and Providence are going ahead with dramatic new enclaves downtown, Philadelphia is proceeding on a more modest scale, but over a much broader area. During the postwar years, it has had one of the most comprehensive redevelopment programs of any big city, and its Penn Center office-hotel complex has become a well-known symbol. New and rehabilitated housing has been completed in Society Hill to the east and Rittenhouse Square to the west.

Despite all this activity, however, the downtown core—Market and Chestnut Streets running east to the Delaware River—has been declining. Retail sales have dropped over 10 per cent in a decade, and department store sales are down even more than that. Today, Philadelphia's five major department stores probably don't account for much more than half of the department store sales of the metropolitan area, where as recently as 1948 they accounted for nearly 85 per cent.

The dilemma of downtown as a shopping core is exemplified more clearly in Philadelphia than any other major city. And the city's planners, in their Center City plan released less than a year ago, have directed their efforts at solving this dilemma. Their answer is basically to provide better transit services (and parking) to the shopping core, and to tie the major stores themselves together with a pedestrian walkway above Market Street (rendering, lower left). The objective is stated in the plan: "In view of the aggressive competition offered by the newly developing suburban shopping centers, merchants in downtown will have to secure some of the attractive features of the outlying centers, if they are to hold and develop their patronage."

Planners by nature are optimists, and Philadelphia's planners have forecast a rise of 50 per cent

in city sales if all the recommended steps are taken by 1980. The retailers themselves are not so sure. For one thing, they understand the suburban competition better than anyone because they *are* the suburban competition. From 1950 to 1960, nearly 2 million square feet of department store space was opened in suburban branches. And since then, several new major centers, including the attractive Cherry Hills center with its enclosed shopping mall, have been opened, adding at least another 1 million square feet.

The downtown department stores feel compelled to follow their customers to where they live, but at the same time they are weakening the position of their downtown headquarters. The upshot: three of the five major stores are reducing space downtown, and only one, the huge Wanamaker's store, anticipates new additions.

In most such situations, the solution has been not only to contract the amount of retail space, but to bring the stores closer together, and to give them the flair and flavor of the suburban shopping center. This is impossible in Philadelphia because the large stores are locked into their present locations by long-term leases and the weight of their investments in the traditional spots.

Whether the retail problems of downtown can be solved by better transit plus a high order of design treatment remains to be seen. There is as yet no firm evidence that suburbanites can be lured downtown to shop. But then, no very large city has yet proposed to do what Philadelphia wants to do—except perhaps San Francisco (opposite page).

Philadelphia plans to give Chestnut Street over completely to pedestrians and to build a pedestrian walkway, tied closely to improved transit facilities on Market Street. Certainly Philadelphia's planners are correct in recommending *both* better transit and automobile facilities, as well as the most exhilarating design possible for Market and Chestnut Streets. The question remains whether the Philadelphia plan goes far enough in that direction—whether it is not perhaps too practical. The fate of downtown shopping—and not only in Philadelphia—rests on that question.

The Market Street East project will provide a multi-level esplanade connecting all major department stores with a new transit terminal. The esplanade will bridge Market Street at intervals, as shown in rendering at left; along with a vehicle-free Chestnut Street mall, it will form a pedestrian connection between Society Hill and Penn Center (beyond City Hall, background).



SAN FRANCISCO:

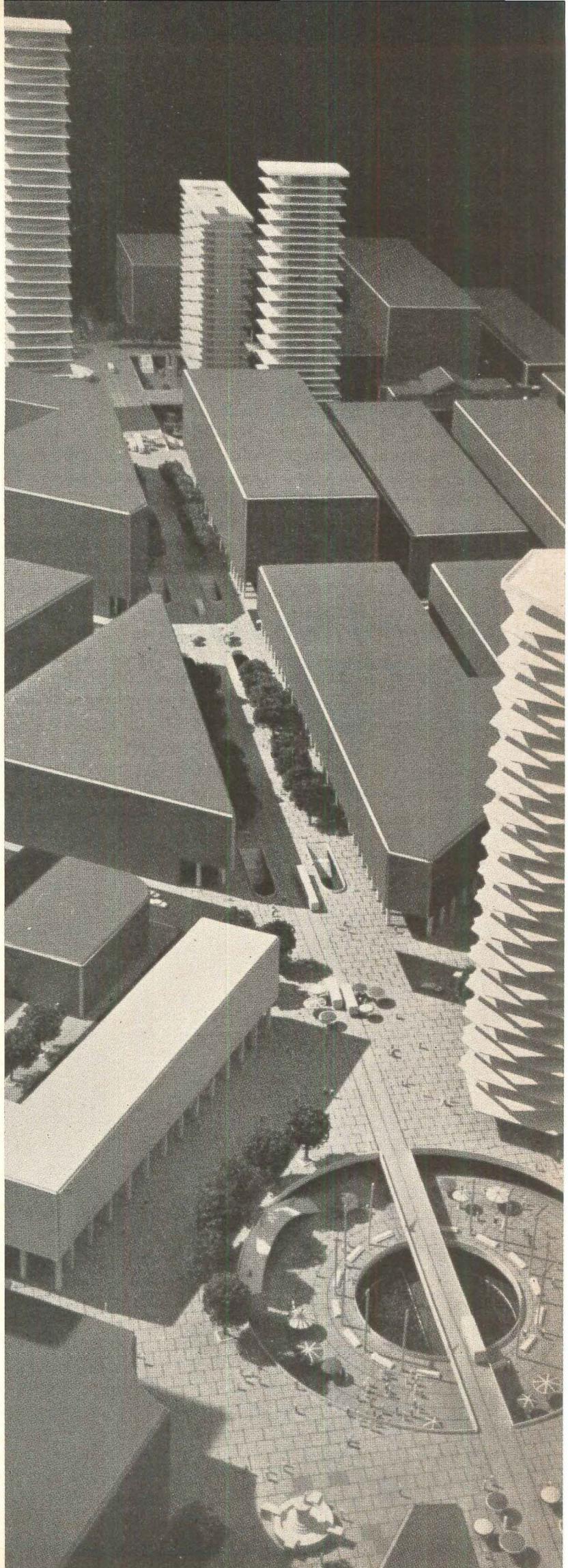
No American downtown is the object of more affection than San Francisco's—which may be why it has fared better economically than most downtowns. This, however, doesn't satisfy restless San Franciscans, for they are aware that if Market Street, the symbol of downtown, hasn't declined economically, neither has it grown as much as the whole region. Moreover, they are most painfully concerned about Market Street's appearance—it is, in the words of a study done by the San Francisco Planning and Urban Renewal Association, "congested, dirty and unattractive."

Most of all, Market Street is crowded, and San Franciscans last fall voted a most effective means of coping with this problem when they approved a \$1 billion rapid transit system, including a subway under Market Street. This will remove the 2,000 buses and streetcars that clog Market Street each working day.

But the latest plan for downtown San Francisco, by Architect Mario J. Ciampi, doesn't stop with just removing transit vehicles. It calls for the abolition of *all* vehicular traffic (except for small special buses) and would transform Market Street into a 20-block-long pedestrian mall. Walkers would be further encouraged by several intersecting malls stretching northward and punctuated with breezy plazas full of fountains and flags (model, right).

The Ciampi plan has already drawn severe criticism from planners and architects, generally on the grounds that more thought should be given to removing traffic from Market Street, and to the treatment of subway terminal facilities. It is also claimed that "the design is based on a rather blithe and bland assumption that things won't change."

The furor over San Francisco's plan indicates that economic success certainly does not breed esthetic complacency. And the plan has offered at least one opinion with which few would disagree: "Downtown should be compact, various, and vital, a place of heightened participation. It should be crisp, breezy, exhilarating; it should move with energy, even rush at times. And it should not be inevitably and always in the best taste." END



What It takes to be a client:

4.

HOW TO GO FROM CONCEPT TO CONSTRUCTION

By the time preliminary plans for his building are completed, the client has an imposing array of talent at his disposal. There are the architect and those members of his office staff assigned to the building. There are the structural, mechanical, and electrical engineers who are normally paid out of the architect's fees (and can easily account for a third or more of it). There may be any number of other consultants, at extra fees, called in for advice on everything from colors to elevators to the interior design of entire floors.

Finally, as the project moves from conception to execution, the largest group of all prepares to join this legion: the contractors who will do the buying of materials and equipment and the building tradesmen who will do the actual work of construction. While the consultants have been in on the countless decisions that gave shape to the building concept and have a clear idea of what the end product is intended to be, the contractors and workmen can only know what the client and architects tell them about the building.

One essential step remains, therefore, before they can begin their work: preparation of the architect's working drawings and specifications, which must describe the building in every detail and which have the full legal force of the construction contract. In line and word, they *are* the building until the real thing rises from the site.

Plans, sections, elevations, and divine details

"In general," says the newly revised *AIA Handbook of Professional Practice*, "information relative to design, location and dimensions of the elements of a project is the province of working drawings; and that having to do with quality of materials and workmanship belongs in the specifications." To state it another way, what can best be shown is put in the drawings, and what can best be told, in the specifications.

The drawings, when reproduced, are often called the "blueprints" for the building, although these days prints also come in other colors. They include plans; elevations, showing the walls head-on; sections, slicing the building open at various points; and details. There are also "schedules" of finish materials, doors, windows, and hardware, showing how much of each item goes into every part of the building. Along with the general drawings of the shell go separate sets for the structural frame and the heating, air conditioning, plumbing, and electrical systems. The *AIA Handbook* lists 32 categories of drawings for a typical project.

Their production involves a challenge in communications

This is the fourth article in the FORUM series on "What It Takes To Be a Client." The fifth and concluding installment will deal with the ground rules of construction, and the relationship of client, architect, and contractors during the building process.

between the architect and his consultants, most of whom are charged with production of working drawings of the building elements in their charge. It is up to the architect to see that, in the end, they come out even—that every time a part of the building is shown it looks the same, and that the elements in one set of drawings dovetail with those shown in another. Otherwise, to use an example that is not totally unheard of, the contractor may find that he is asked to put a heating duct and a beam in precisely the same place.

For all their communications aspects, the drawings are also acts of design. It is at this point that the details of the building, the places at which its various parts are joined together, are worked out; and in the current era of simplicity of surface, details are all important. The famous assertion by Mies van der Rohe that “God is in the details” may be dubious theology, but it underscores the loving care which today’s architects put into them.

The delicate art of the specifications writer

The writing of specifications is no less an art than the making of working drawings, but it is perhaps in a somewhat earlier stage of development. The drawings, to recapitulate, show *what* goes *where* in the building. The specifications define the “what” and provide precise instructions for putting every item in place. Their principal concern is quality: they must state the standards to be enforced for each item used in the building, and also for all important phases of the work itself.

The specifications writer, then, is in part a purchasing agent for the project, providing a shopping list covering each and every building component. He is also something of a judge, attempting to anticipate and settle in advance potential conflicts among contractors, suppliers, and the jealous principalities of the building trades.

The AIA *Handbook* lists the demands on the specifications writer in less metaphorical but no less formidable terms. He must, it says, “be trained and experienced in design and in construction observation, and be well grounded in construc-



tion laws. . . . He must be able to imagine himself in the place of the estimator, the architect’s and the owner’s project representatives, the fabricators of materials, the general contractor, each of the subcontractors, and each foreman on the job, and to so write that each of these will readily understand what he has written.”

Men of such talent and empathy are hard to find. The entire structure of the architectural profession and its schools, moreover, sometimes seems to conspire against their development. It is a rare school that does not give prime status to the talented designer—and an even rarer one that offers a sufficiently comprehensive curriculum in the writing of specifications. A similar situation prevails when the young archi-



tect enters practice: all too often he finds that specifications are regarded as a lesser form of drudgery.

The AIA *Handbook* sternly warns its members against this course. “Those responsible for such a practice are indeed tempting fate,” says the book, “and could possibly find themselves in court as defendants without valid defense.” The warning has not gone unheeded, partly because of the increasing professionalism of the specifications writers. They now have their own organization, the Construction Specifications Institute, which has striven effectively to upgrade its members’ output and underscore their importance to the delicate workings of the building industry.

The need for accuracy and completeness

The volumes produced by these specialized authors generally have as their foreword the basic ground rules for contractors. These include the bid invitations and instructions, the bid and contract forms, the bond requirements, and the all-important general conditions of the contracts (to be covered later in detail). The bulk of the specifications is

organized according to trades, and the sequence of trades is determined by the order in which they perform their jobs.

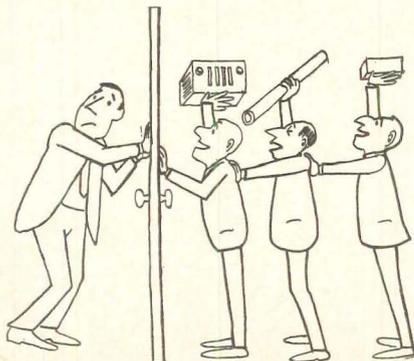
The trade sections of the specifications begin with a statement of the scope of the particular trade's work. The statement must make clear exactly where the jurisdiction of one trade ends and that of another begins.

Next come a list of the materials and equipment required for the work at hand; provisions for any shop drawings or samples required to be approved by the architect and client before these items can be installed; procedures to be followed in construction of all elements of the building for which the trade is responsible; stipulation of any tests to be made of the work; instructions for cleaning up after the trade is finished; and finally, the guarantees which will be asked of the contractor.

All of this may sound quite dry and technical, yet in a real sense the trade sections of the specifications tell the history of the American building industry. It is here, for example, that new and revolutionary methods that will change the course of the industry are often first recorded—for a lot of building research is promoted by individual projects. It is here that new products and materials undergo the acid test. It is here, too, that anachronistic methods of building are preserved and codified because the specifier knows that more progressive ways would meet resistance from building officials or unions or convention-bound contractors. And it is here that jurisdictional judgments are recorded which, by assigning work to one trade over another, can in the long run bring prosperity to the chosen group of contractors and craftsmen and eventual extinction to those excluded.

It is understandable, then, that the specifications are never prepared in a vacuum. While they are in preparation, the architect is beset with pressures, the vast majority of them perfectly legitimate. Fortunately for the client, sharing these pressures—knowing which suggestions and appeals to accept and which to reject—is part of the architect's job.

Some of the pressures come from salesmen of building products and materials, whose relationship to the architect and client is something like that of the lobbyist to the legislator:



the salesman is a special pleader, but he can also provide useful information. The salesman's goal is to get his product specified by brand name; failing that, he wants to be sure the architect does not name another brand to the exclusion of his. The architect's goal is to be sure he has considered all reasonable alternatives in his role as the client's purchasing agent.

It used to be that the specifications would be full of brand names followed by the term "or equal," but the trend, at the moment, is toward performance specifications—which, however, are tricky to prepare. Even though some trade associations and independent testing organizations have developed helpful standards for many large and basic items, it still takes great skill to apply these standards to the particular situation at hand.

Pressures also come from the contractors, once they get a look at the plans and specifications. They may have favorite products and materials, favorite ways of doing things, at variance with what the architect has prescribed; they may have had a bad experience with an item in the specifications; they may be reluctant to experiment with new building materials.

Architects, except for those few who assume omniscience, will give their suggestions careful consideration. Indeed, they often call in one or more contractors for advice while the drawings and specifications are still being prepared. There is no substitute for the know-how that comes from direct experience in construction, a fact which places special importance on the care with which the contractor is selected.

Competition, negotiations, segregation—and money

When public monies are involved, there is a tidy division between the completion of drawings and specifications and the choice of a contractor. The contract documents are prepared, a public notice is issued inviting responsible builders to submit their bids, and the one turning in the lowest figure gets the job.

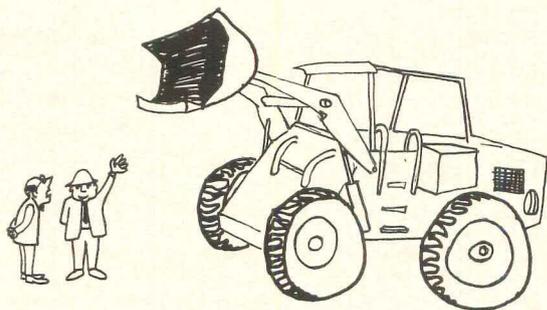
The system of open competitive bidding is a traditional part of the romance of construction. It is free enterprise at its freest and most frantic form. It virtually assures the client of getting the lowest available price tag on his building. It also has a great deal to do with the fact that Dun & Bradstreet reports a ratio of net profit (on sales) of only 1.18 per cent among building contractors.

If wide-open bidding is a perilous gamble for many contractors, it also has its chancy aspects for client and architect. The lowest bid is seldom the most realistic one, and a builder in danger of losing his shirt can find room for costly extras in even the most tightly drawn contract documents. More important, it makes price the prime basis of selection, eliminating the opportunity to weigh the contending contractor's comparative abilities to turn out quality work.

Two alternative methods are open to the private client: he may retain the benefits of competition but limit the contenders to a select list; or he can simply negotiate a mutually agreeable price with a chosen contractor.

The common element of these two methods, of course, is the screening of contractors in advance. Sometimes this simply means taking the architect's word that he has worked with a given builder and has found him capable and reliable. In other cases, however, it means looking into the success of the contractor's past projects, the size and length of service of his work force, his reputation as an administrator of construction, and even the kind of equipment in his corporation yard.

The negotiated contract has the considerable advantage of allowing the builder to become a valuable collaborator in the final stages of design. Obviously, however, he must be a man well known and thoroughly trusted by both client and architect. If no such man comes to mind and the client opens the project to bids, the use of a quantity surveyor can help to put



the bids on a more realistic basis (and also provide a preview of the eventual cost of the building while it is still possible to make changes). The quantity surveyor estimates the amounts of materials required for the building and sometimes the total man-hours of labor, putting a price tag on each. This extra service is the rule in England, and is becoming more popular in the U.S.

Another form of protection for the client who chooses to invite bids takes the form of deposits and bonds. Each contending contractor is required to submit a deposit with his bid. If he is the low bidder and for some reason decides to pull out, the client gets the deposit. The amount is usually a lump sum determined by the architect on the basis of his estimate of the project's cost, or, less frequently, a percentage of the bid. The successful bidder also is required to put up a performance bond, insuring that the work will be finished even if he goes out of business, and often a labor and material bond

guaranteeing payment of suppliers and subcontractors.

The contractor has been referred to in the singular, but, in actual fact, there are two basic ways to undertake construction: to engage a single general contractor who will subcontract whatever work his own force does not do; or to engage separate contractors for each major segment of construction. The latter practice, sometimes called segregated bidding, usually involves the letting of individual contracts for the shell of the building and for its mechanical and/or electrical services.

The controversial role of the general contractor

The relative merits of the two systems are the subject of continuing controversy within the construction industry. The general contractors claim that they are in the best position to captain the job from start to finish, and point to the advantages of having a single coordinator responsible for the entire project. The specialty contractors claim that this procedure no longer makes much sense in an era when mechanical and electrical systems account for an increasingly large part of the cost of buildings; they say that this procedure simply puts a superfluous middleman in the way of progress.

The decision between letting one or several contracts is usually determined by each specific building situation—the nature of the project and the customs of the local construction industry. If segregated bids are taken, however, the client should be prepared to pay the architect an additional fee for the close coordination that would normally be the task of the general contractor. And regardless of which system is used, the client and architect should exercise the same care in screening specialty contractors as they do in the selection of the general contractor.

The final decision to be made in choice of contractors returns the client to the familiar subject of money. Bids can be requested in the form of a lump sum, or the contractor can simply undertake the work on the basis of actual cost plus a negotiated fee. The first system is simpler and more clear cut, but can tempt the contractor to shave corners if he begins to realize he has submitted a disastrously low figure. The second puts the contractor on a more professional basis, but does not offer as great an incentive toward economy. Sometimes a combination of the two is used in which the contractor agrees to a cost-plus-fee arrangement, with a guarantee that the total will not exceed a stipulated "upset price." Savings are split between client and contractor on a predetermined scale.

With such decisions made, the time has again come for the client to sign his name. Earlier he contracted with the architect for a concept and a service, the net result of which was, to this point, a stack of paper. Now he is contracting for equipment, for materials, and for labor. The net result this time will be his building.

—DONALD CANTY



DESIGNER BERGSON

**In her USG interiors,
she shows
how to turn an office
into a testing lab**



Maria Bergson, the lady seen on location (above), has made a highly successful practice out of refusing to let well enough alone. In a postwar career devoted to planning and designing the offices of such firms as The Equitable Life Assurance Society, Leo Burnett, Inc., and The Denver United States National Bank, Miss Bergson has hardly ever left a file cabinet or a secretary's desk the way she found it. Whenever she was persuaded that the standard cabinet or desk found in a manufacturer's catalog could stand improvement, she has improved it; so that, today, an impressive portion of Miss Bergson's achievements is represented not only in the many interiors designed by her, but in the catalogs of manufacturers who have accepted and adopted the design changes first proposed by her in the course of a given assignment.

In short, she has used each of her office planning jobs to double as a test lab in which to examine and improve upon the equipment currently on the market.

17-story test lab

The most recent test lab employed by Miss Bergson in her pursuit of an elusive, ideal office interior is the 17-story headquarters of U.S. Gypsum, in Chicago, a building designed by Architects Perkins & Will. (Miss Bergson was retained to plan the 12

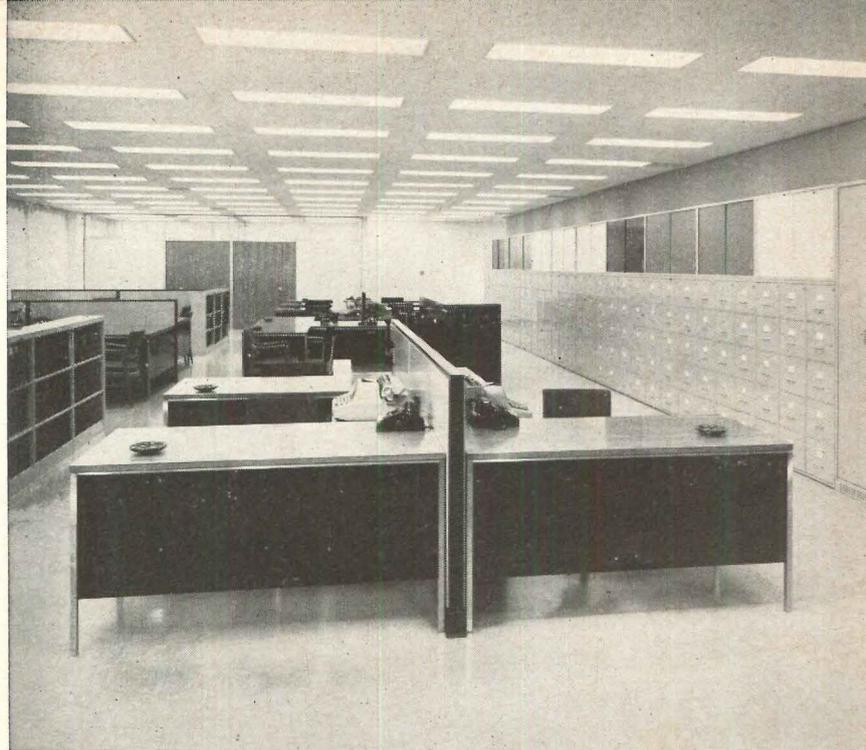
floors occupied by USG). As a result of the joint efforts of P&W and Miss Bergson, it is now (or will shortly be) possible for others to order the following catalog items not previously available:

- ▶ A movable drywall partition system that can be assembled into long, smooth expanses unbroken by exposed, vertical posts along the way (photo, opposite page);
- ▶ Metal overfile storage cabinets with multicolored doors, fitting tidily over any combination of standard files and opening on either one side or two (photos 1 & 2);
- ▶ Slender metal rails or bulkheads of medium height for partial division of office areas (3).

Each was developed to meet a need in the USG building, and only then put on the market. This is the way it usually works with Miss Bergson. "I hate it when people call me a furniture designer," she says with spirit. "We simply improve the implements we use to create environment."

Many of the improvements have derived from Miss Bergson's twin passions for "serenity and integrity" in line and surface. "Everything must read, everything must work together," she says in definition. "If something sticks out, then it's wrong."

The USG partitions are a case in point. They are taken from a standard line, made by USG of 5/8-inch layers of gypsum board



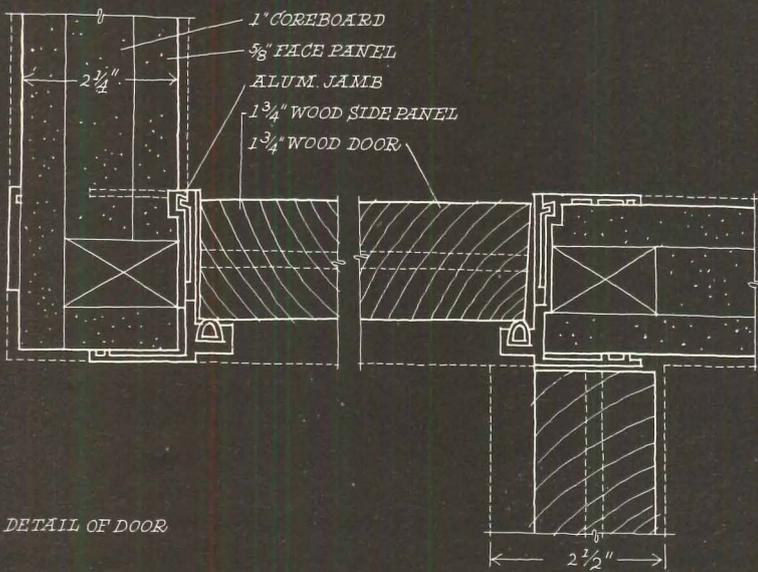
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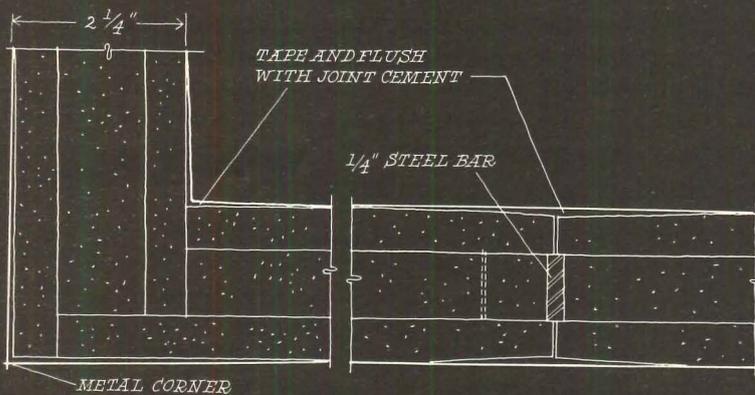
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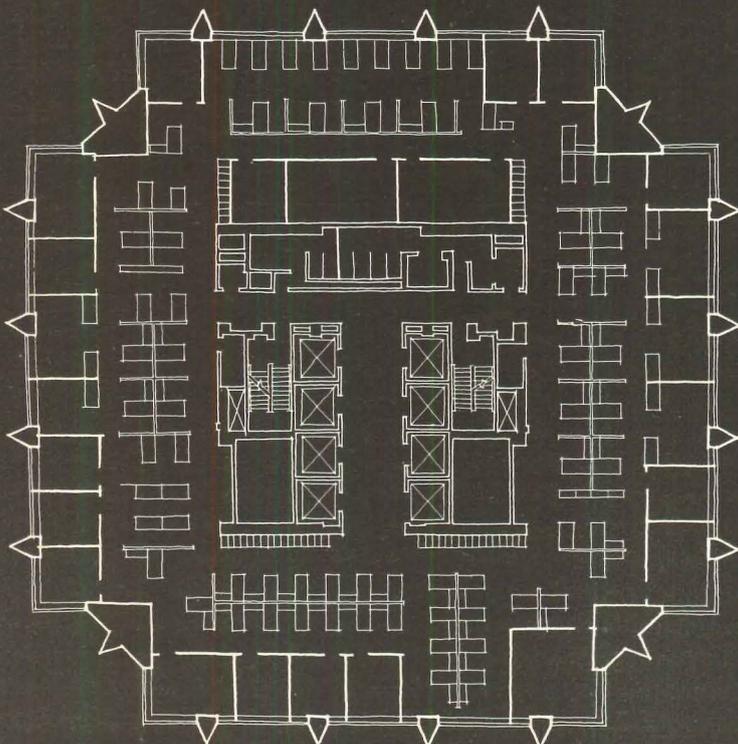
PHOTOS: HEDRICH-BLESSING



DETAIL OF DOOR



DETAIL OF PARTITION



TYPICAL FLOOR PLAN

laminated to a one-inch gypsum board core. To Miss Bergson and the architects, the vertical aluminum extrusions between aligned partitions seemed to "stick out" and visually break up the surface of the wall.

Their alternative was a taped joint (section left, center) which allows the vinyl surfacing to be spread across two or more partitions or to turn a corner without interruption. The partitions have proved to be still movable in lengths of 10 feet. The flush joint is now part of the standard system.

The offices enclosed by the partitions have wood doors flanked by wood side panels 13 inches wide. When the doors are open, the panels make room for an ingenious little hat and coat rack.

One-woman campaign

Semi-enclosed offices are created by banks of five-drawer files and Miss Bergson's overfile storage cabinets. The cabinets are a trademark of Bergson offices, but in the past they always had to be custom-made. They also had to be wood, because most metal shops cannot do this kind of work.

To Miss Bergson, the wood made the cabinets a separate element from the files, and the custom crafting made them quite expensive. She thus launched a one-woman campaign to get a manufacturer to market a metal version. When the USG building came along, one furniture manufacturer at first agreed to make the metal cabinets on a contract basis, and later, when it saw Miss Bergson's design, decided to put them in its catalogue.

The rails (6) are another favorite Bergson space-divider which had never been manufactured. They too, have joined the furniture company's line in the crisp metal design used at USG. Here they carry no wiring (the building has an underflow utility grid that can be tapped every six inches), but for use elsewhere they are made to take electrical and telephone lines to desk height.

The same company's furniture likewise was used at USG, but with relatively little modification. The reason is simple: Miss Bergson had refined many of the pieces (9) on previous projects.

A few troublesome details remained, however. The back counters had metal bars across the bot-

toms and the desks had none; exit the metal bars, permanently. The furniture manufacturer had no wood-finished executive desk and counter; enter such a set into its line. Back counters do not look well with low convectors such as those in USG's 10 by 15-foot offices. The manufacturer now offers a T-shaped desk-counter-cabinet (8), detailed by Bergson.

The little things count

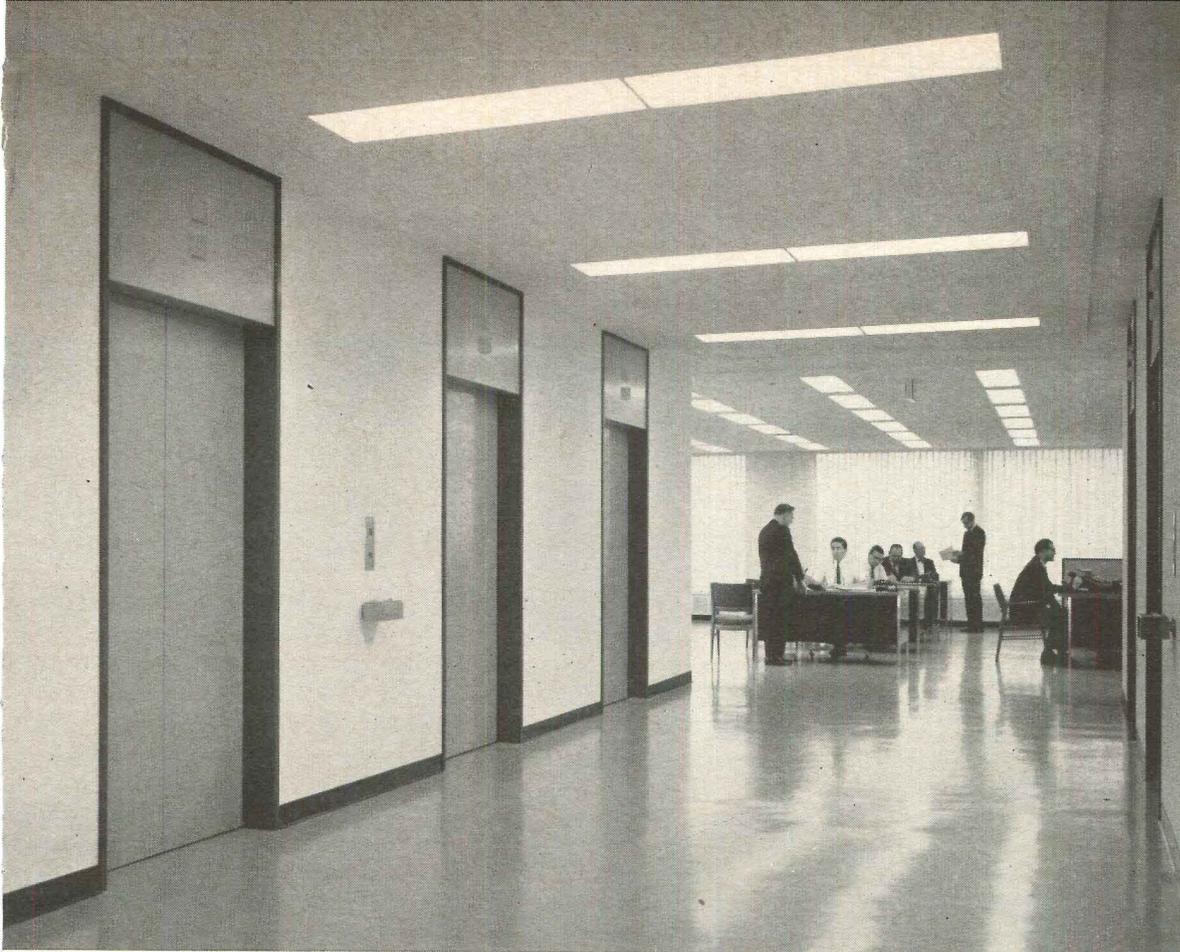
All of these may seem small matters, but Miss Bergson believes that small matters make a big difference. It was important, she feels, that in elevator lobbies the ash trays be carefully chosen and the door frames taken all the way to the ceiling (4); it was just as important that public telephones be integrated into a tidy composition that includes employee bulletin boards (7); and it was also important that vending machines be placed flush against the wall (5).

The success of the USG offices, in fact, testifies to the importance of caring for such details. But it also shows another of Miss Bergson's concerns, one which has had a great deal to do with her bent for design of office components: she likes to have everything line up in proper order.

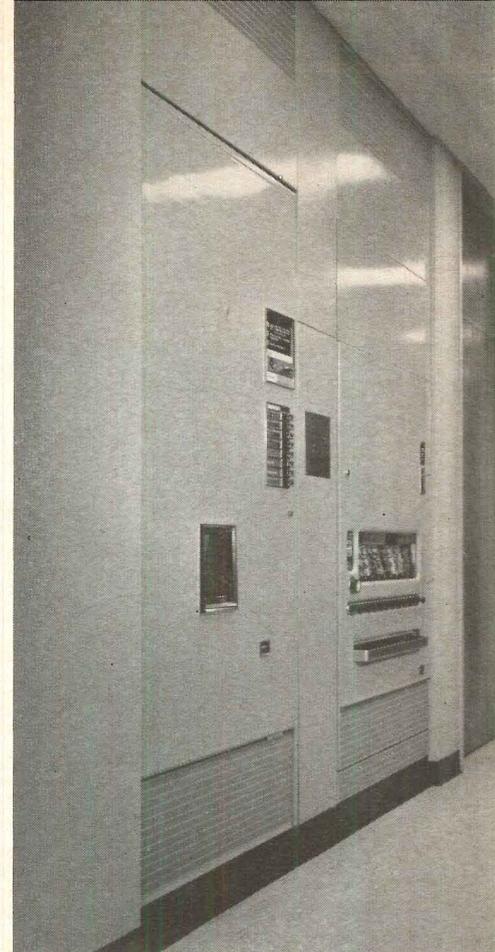
Thus, in the USG building, all baseboards are kept at a 4-inch height, on rails as well as walls. The next consistent horizontal line is at 43 inches, the height of the rails and of three-drawer file and storage units made to double as counter surfaces. Proceeding upward, there is a 7-foot line established by the partitions, office doors, and file-overfile units. And finally, as in the elevator corridors, door bucks in core walls are taken to the full 9-foot height of the ceiling.

This kind of consistency can seldom be achieved by using catalogue items as they come. "Every manufacturer designs his products as if he were alone in the world, instead of looking at the over-all problem," says Miss Bergson. "Then they are always amazed when a designer wants to make some changes to bring everything together in some kind of order.

"This is where I suffer so much," says Miss Bergson in mock despair. It is also where she is making a considerable contribution to the appearance of today's office environment.



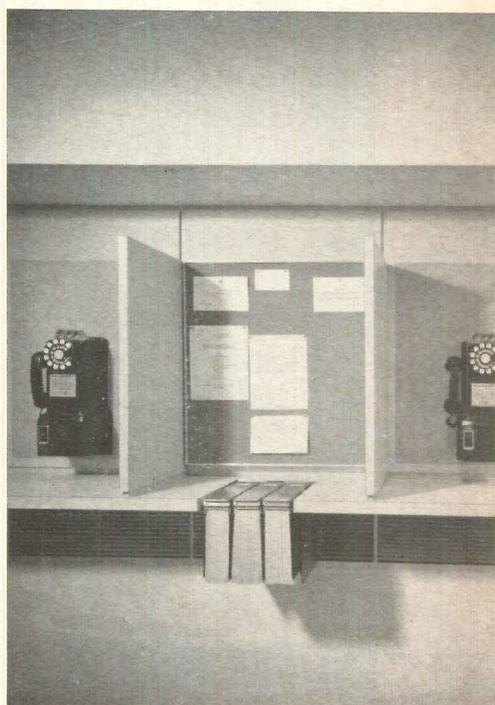
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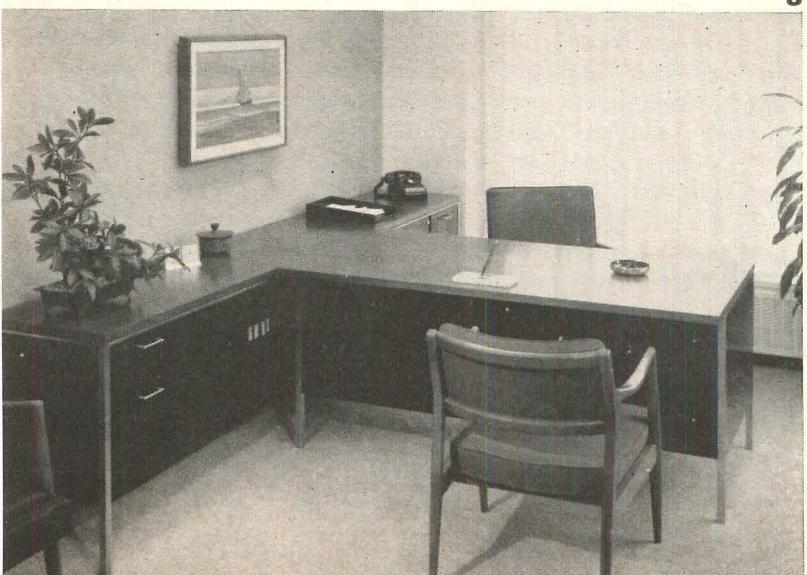
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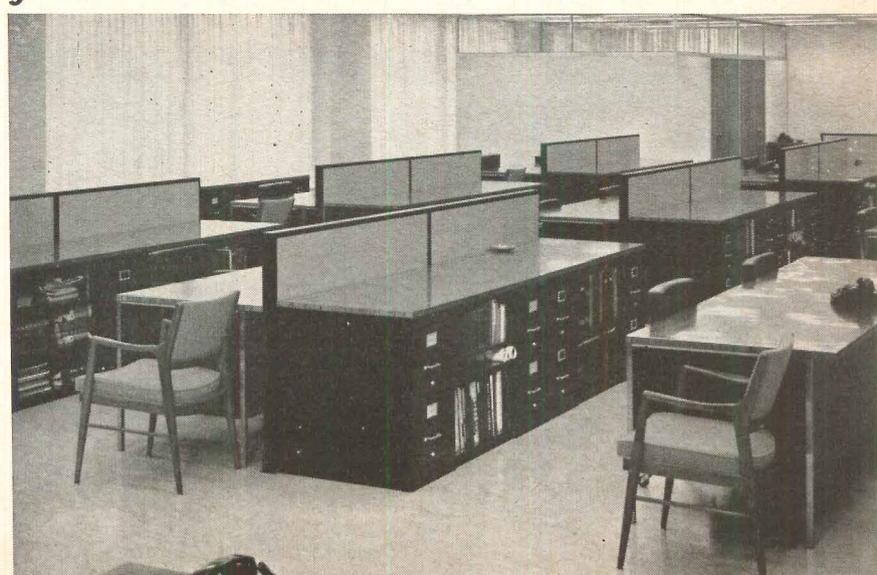
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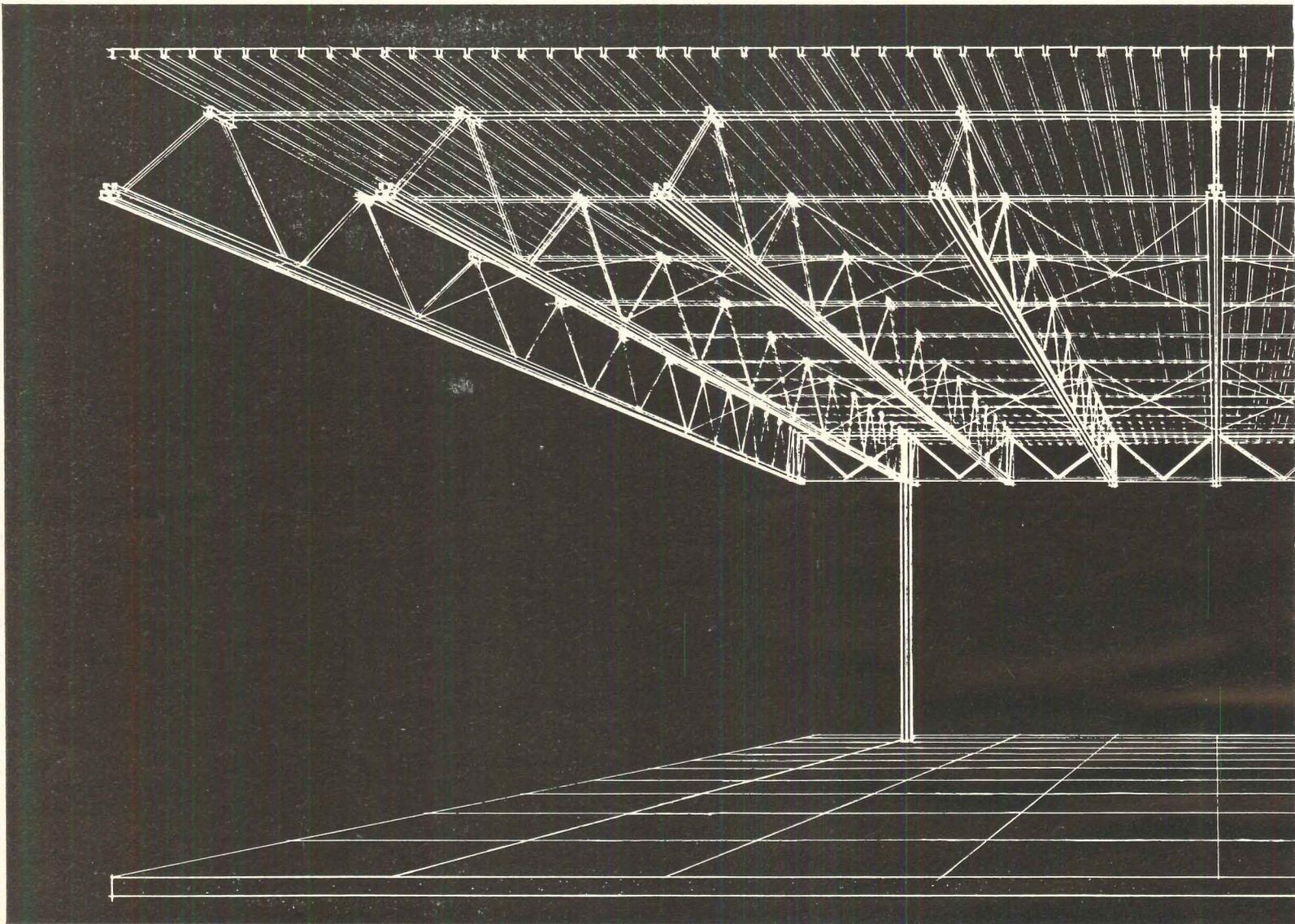
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SCHOOL COSTS CUT BY NEW COMPONENTS

BY BERNARD P. SPRING



RONDAL PARTIDGE

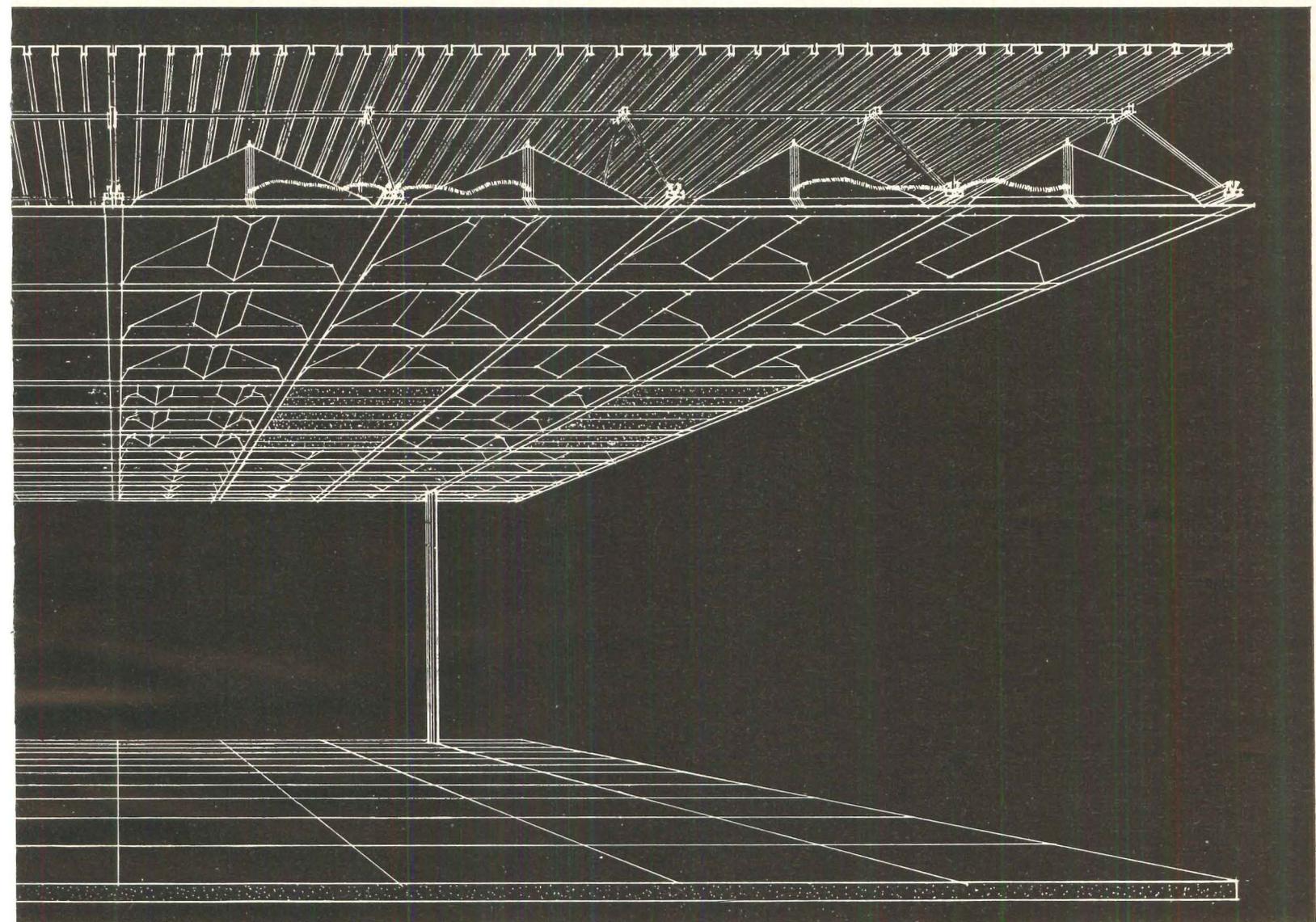
SCSD staff and advisors at work. Standing, from left: Ezra Ehrenkrantz, Christopher Arnold, Charles Gibson, Visscher Boyd, Jonathan King. Seated: John Boice, Walter Netsch, Jr. (partly hidden), Bert Ray, Vernon Bryant, Paul Hoyenga, John Lyon Reid, Charles Lawrence, C. Theodore Larson. Group met on Stanford University campus.

Can better schools be built with a system of standard components? Can such components include basic structure, as well as integrated ceilings, air conditioning, and partitions? And can such a system cut construction costs?

Last month, the answers to these questions came out of a unique experiment conducted by the School Construction Systems Development program, working with 13 California school districts (*News*, Sept. '63). SCSD, with the help of a distinguished advisory committee (photo left), selected five of the 26 companies that submitted new component designs and asked them to go ahead with manufacture. The contracts awarded were based on competitive bids for supply and installation in 22 schools involving a

total floor area of 1.4 million to 2.4 million square feet.

The 13 school districts had reason to be satisfied with their daring. They learned that they would be able to buy the newly developed components for structure and integrated ceilings (drawing above), plus air conditioning and partitions, at a good \$1.50 per square foot less than the same elements in a conventionally built school—a saving of 18.4 per cent. Together, the components, which account for one half of the total construction cost of a typical California school, will cost \$6.85 per square foot; SCSD calculated the cost of the same elements in 10 recent conventionally built schools at \$8.39 per square foot. Moreover, according to SCSD Project Architect Ezra Ehren-



krantz, each of the new components will give better performance than the conventional construction it replaces.

A full-scale trial

SCSD was set up two years ago at Stanford University by the Ford Foundation's Educational Facilities Laboratories. The move was sparked by a FORUM Roundtable (Nov. '61 issue) at which a group of top school builders urged that the component approach be given a full-scale trial. The wisdom of EFL's decision to back the project (to the tune of \$257,000) is now clear: the schools in the program will save almost four times that.

But the significance of SCSD's findings goes beyond proof of dollars-and-cents practicality. With

costs brought into line, these findings go on to show that:

1. Using components that are both modular and flexible, schools can be built to accommodate the changes in teaching programs foreseen by most educators.

2. With components, schools can also afford to build with far higher standards of lighting, acoustics, and air conditioning.

3. A vigorous product research and development effort by manufacturers can be seeded by a relatively modest outside investment to create clear-cut performance specifications.

4. Manufacturers can be brought together to design separate products that work as a single, integrated system, eliminating much waste and inefficiency.

5. Components need not cramp

the design freedom of architects and engineers; SCSD's choices, in fact, are architecturally "neutral" and adaptable. And they free designers of time-consuming detail for more basic planning work.

6. School districts willing to band together can use their combined purchasing power to change traditional building procedures standing in the way of better and less costly construction techniques.

How did SCSD manage this impressive list of achievements in just two years? Putting across such an unfamiliar program required endless rounds of conferences with often-skeptical school boards, architects, educators, and industry representatives. In the process, SCSD made a detailed assessment of the schools' educational and space needs before

specifications for construction systems were attempted.

By last summer, SCSD finally translated these needs into a 228-page tome of performance specifications. Of the hundred-odd manufacturers who showed interest in SCSD's proposition, 26 lasted through to the final bidding—spending an estimated \$2 million on research along the way. Even though they won no contract, a good number will market the new products they developed.

In the next step, full scale working versions of the winning components (shown in detail on following pages) will be combined in a 4,500-square-foot mockup on Stanford's Palo Alto campus. The first school is to begin construction in June 1965; the last of the 22 will be completed by 1967.

**LONG-SPAN STRUCTURE:
LIGHT FOLDING TRUSSES**

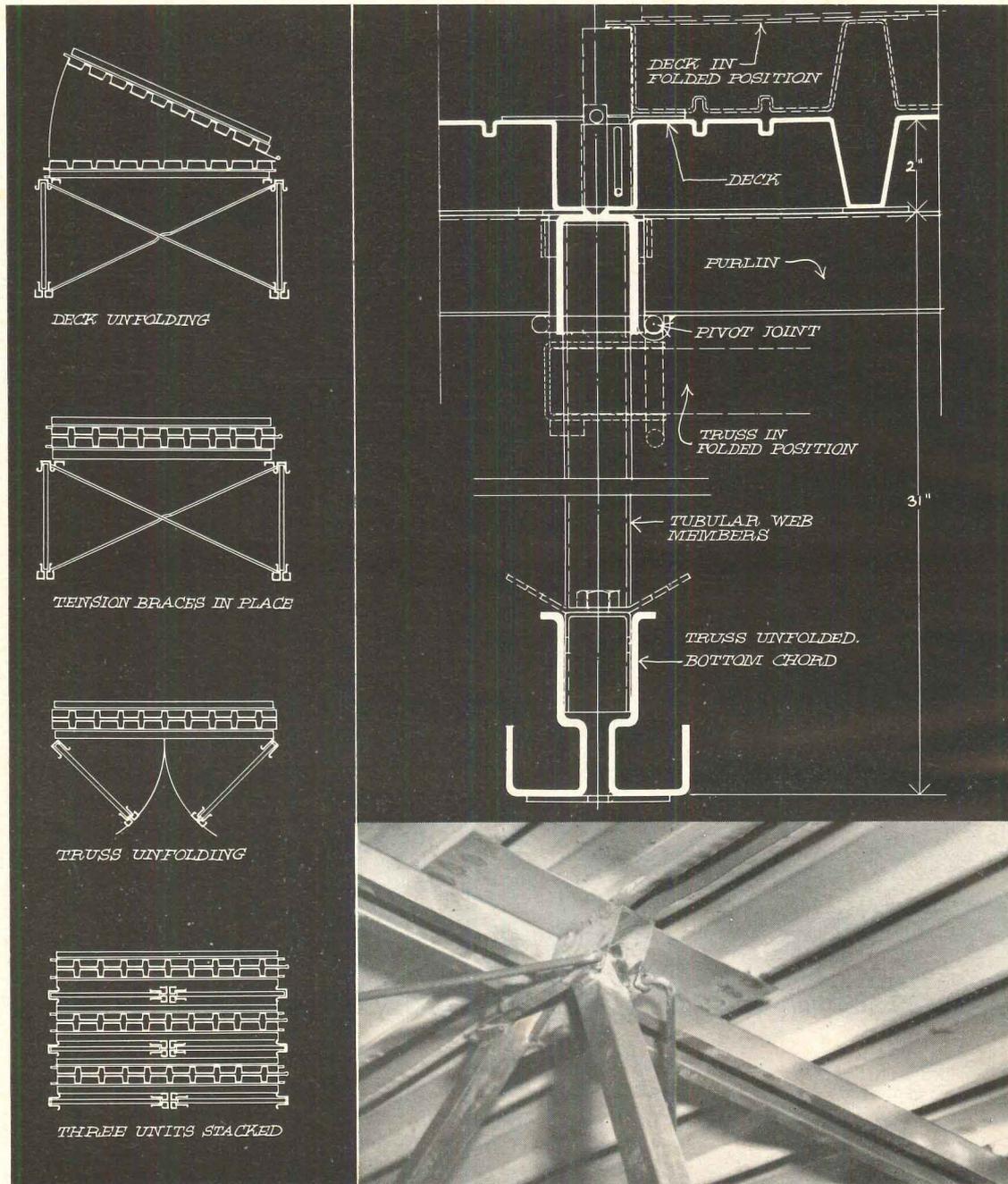
To get schools that could be readily rearranged inside for changing curricula, SCSD asked for long roof spans with a minimum of obstructing columns. The program called for spans of 30 to 110 feet, with 50 per cent of the area covered by spans of 55, 60, and 70 feet. All this was to be accomplished at less than \$3.24 per square foot, the average for a conventional California school with a roof span of only 30 feet.

Inland Steel Products Co. of Milwaukee met this seemingly impossible set of requirements with a scheme that pares away the last ounce of unessential material, and adds a unique fold-out method of erection. The design, by Architect Robertson Ward and The Engineers Collaborative, will be put in place for only \$1.81 per square foot—\$1.43 less than the target price!

At first glance, Inland's structure bears some resemblance to a conventional bar joist and steel deck system. However, the trusses, spaced 5 feet on centers, have no top chords (detail, far right). Compressive stresses usually carried by the top chord are transferred directly into the 20 gauge corrugated sheet steel deck. Result: Inland's structure uses less than 4 pounds of steel per square foot compared to about 6 pounds for a conventional system.

In order to ship the units in the smallest possible package, the designers devised pivot joints (photo) that allow each 10 foot wide, 33 inch deep structural section to fold flat. When lifted into place and unfolded, the units are made rigid by light tension braces (sequence drawing, right).

Runner-up in the bidding for SCSD's structural component was an elegant space frame developed by Butler Manufacturing Co. of Kansas City (bottom photo). It consists of rectangular pyramids made of steel angles, which stack for shipment. On the site these are joined together by bolting a top chord along a row of apexes and then bolting adjacent bases.



INTEGRATED CEILINGS: VERSATILE COFFERS

Of the four components called for in SCSD's "bluebook," the lighting-ceiling system had the widest range of jobs to perform. Three kinds of lighting (direct, semi-indirect, and luminous) and a flat ceiling panel had to fit with equal ease into any one of the basic 5 by 5 foot planning modules. And while the requirement of 70 foot candles was not difficult to meet, extremely low fixture brightness was called for to minimize glare.

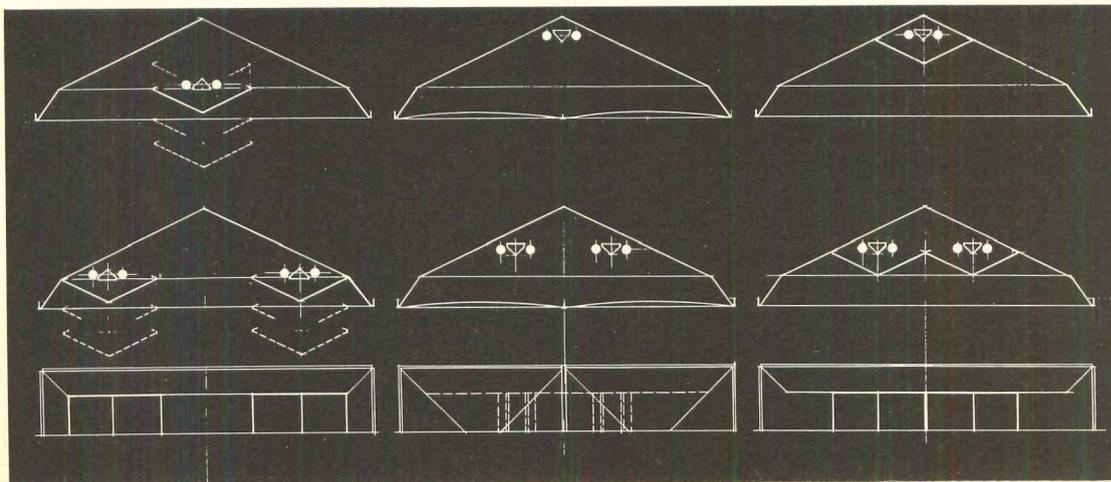
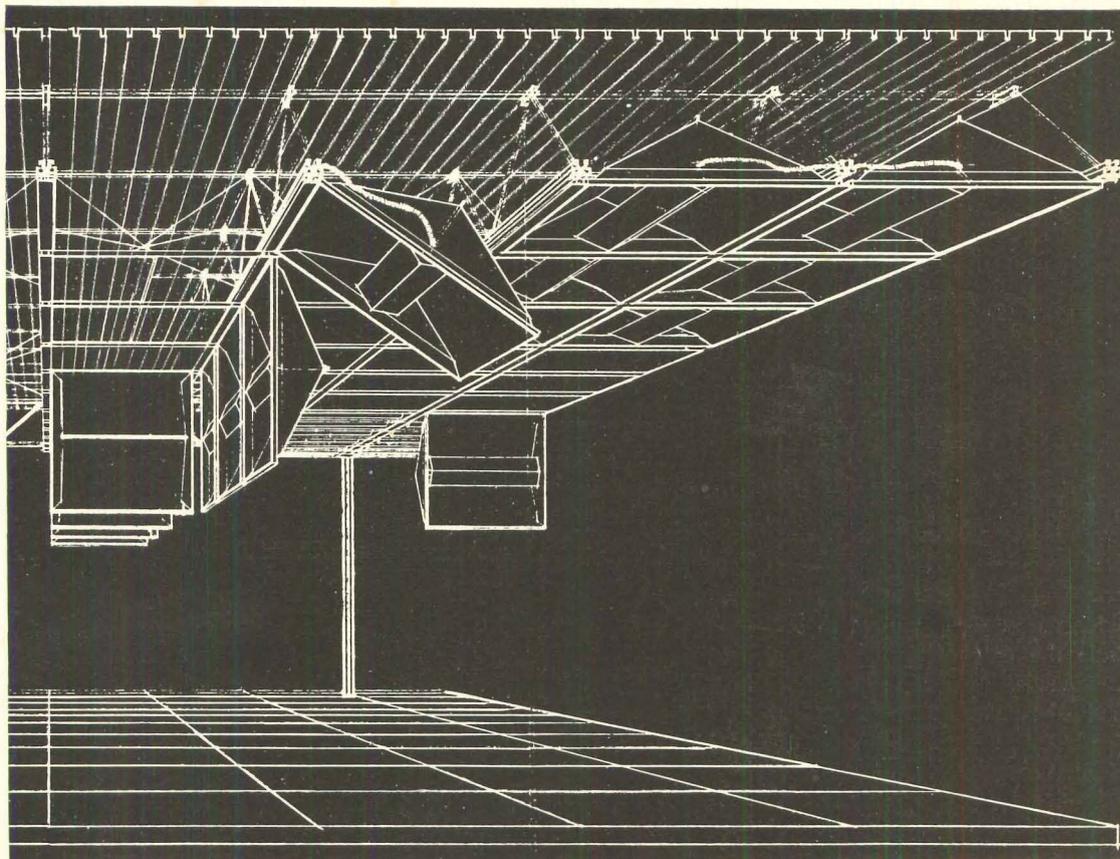
In addition to providing light, the ceiling component had to accommodate air distribution outlets, provide one hour fire protection for the structure, and also have sound absorbing properties. All of these functions had to mesh with the structural system within the 36 inch deep roof "sandwich."

Inland Steel Products, working with the same architect-engineer team that developed its structural system (opposite page), won the lighting-ceiling contract as well. Inland's price for this component, installed, was \$1.31 per square foot (target cost was \$1.67).

The support for Inland's ceiling (top drawing) is a series of channel-shaped members hung 3 inches below the lower chord of the trusses. One edge of each 5 by 5 foot sheet metal lighting coffer is first hinged onto the channels. After electrical connections are made, the coffer is swung into a horizontal position and the other edge snapped into place (photos). The coffer, a very light (26 gauge) prefinished steel sheet, is made rigid by the double curvature of its shape.

The three types of lighting required are achieved by varying the placement of one simple fixture (bottom drawings). Except in the luminous ceiling version, the two 4-foot lamps are shielded by a triangular snap-on diffuser.

Draped over the top of the ceiling coffers are 1 1/4-inch mineral wool batts which provide the necessary fireproofing. Where sound absorption is needed, the sheet metal panels are perforated to expose the batts.



**AIR CONDITIONING:
MODULAR ROOFTOP UNITS**

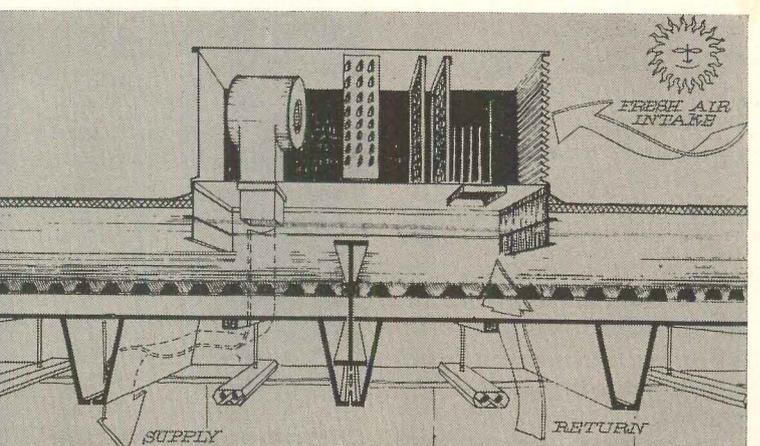
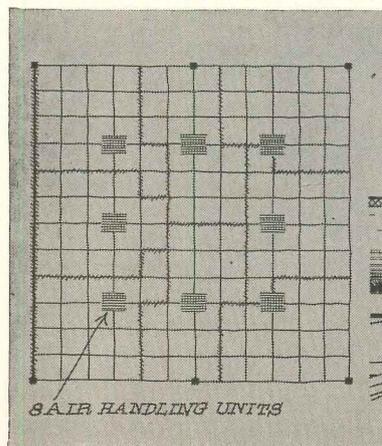
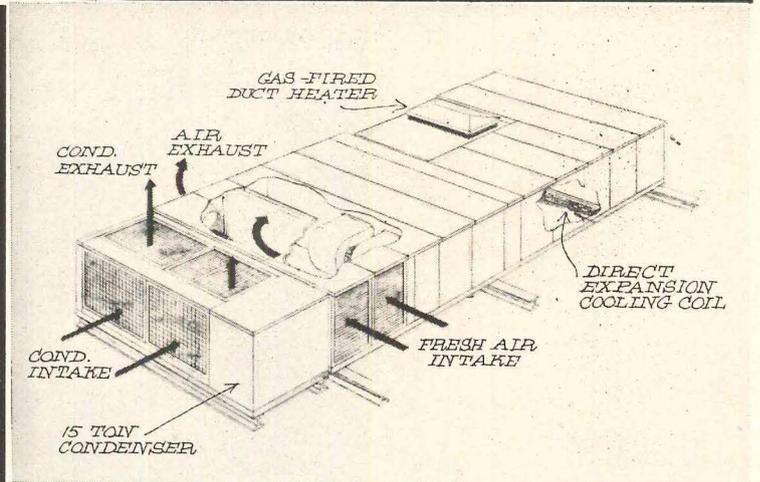
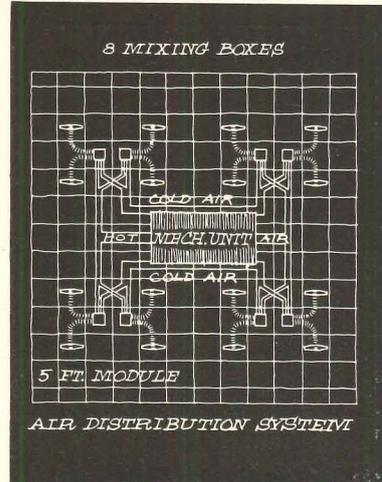
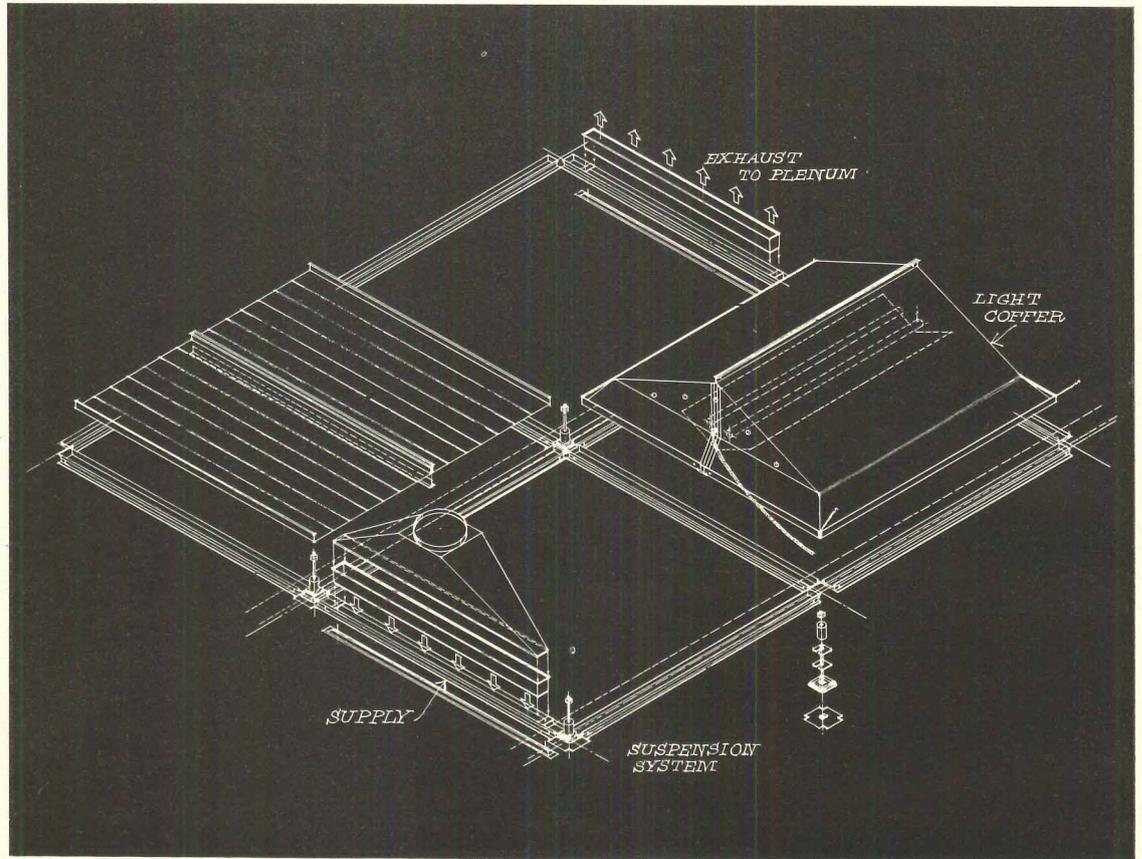
One component in the SCSD schools will not cost less than the conventional system it replaces. This is the heating-ventilating-air conditioning unit. Yet the schools are well satisfied with what they will get for the extra money.

In contrast to the bare minimum of air conditioning provided in the conventional schools used for cost comparisons, the SCSD schools will have 54 per cent of their area mechanically cooled. In addition, the new system will have an unprecedented degree of local temperature control—one zone for every 450 square feet. Bidders were also required to include the cost of a long term maintenance contract in their submission. Nevertheless, the winning bid, by Lennox Industries of Marshalltown, Iowa, was \$2.24 per square foot—only 34 cents above the target price. Without the maintenance contract, this difference is cut to a few cents.

The Lennox design provides a complete air-conditioning system for each of the 3,600-square-foot mechanical service modules called for. It is housed in a rooftop enclosure 8 by 16 feet by 42 inches high (center).

To get the required local control, a dual duct system of air distribution is used. A gas-fired heater supplies a constant stream of warm air in one duct. A second duct always carries cool air. This may be supplied by the direct expansion chiller or drawn directly from outside in cool weather. Mixing boxes in each of the 450-square-foot zones blend the two streams to the temperature called for by the zone thermostat. A flexible duct then carries the mixture to the air-diffusing slots in the ceiling system (top). The space above is a return air plenum.

The runner-up in the bidding for SCSD's air handling component was Westinghouse Electric Corp. (bottom, right). Westinghouse provided a separate rooftop unit for each of the zones. Rather than concealing the ductwork, the designers used it as an exposed grid to form lighting coffer.



**INTERIOR PARTITIONS:
NEAR-TOTAL FLEXIBILITY**

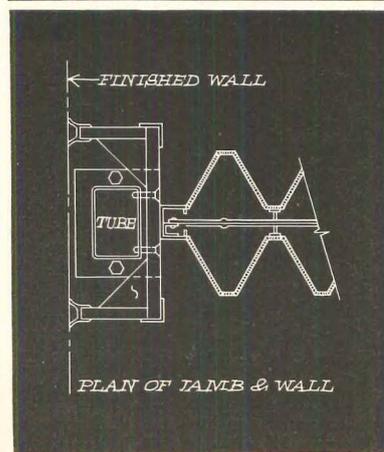
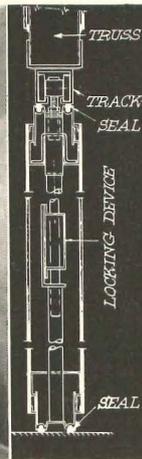
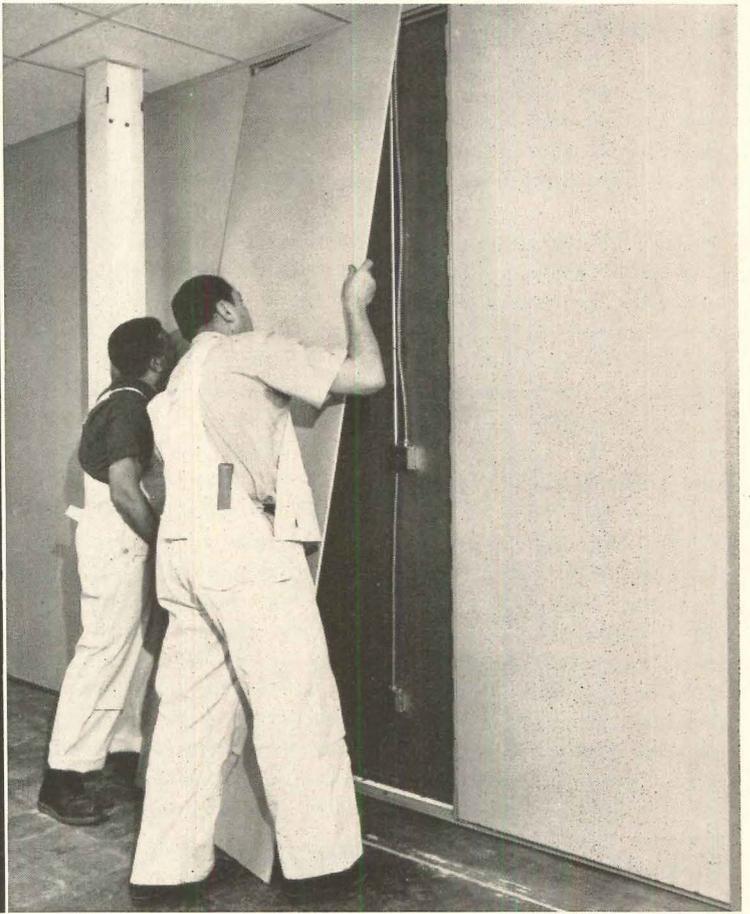
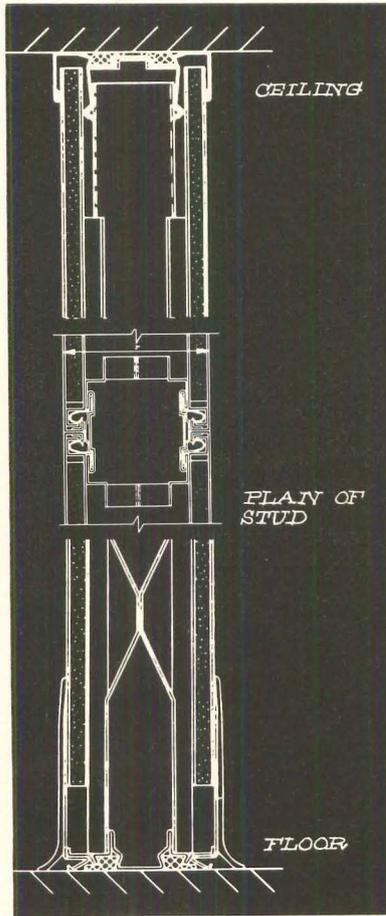
For interior partitions, SCSD applied to schools the office-building concept of easily movable walls. Instead of the 5-foot grid used for other components, it required partitions to fit anywhere on a 4-inch-square planning module. Even with this greater flexibility, the partition system came in 11 per cent under the target cost based on conventional partitions.

The specifications asked for both fixed and demountable walls (as well as operable ones—see below). But the bidders upset the assumption that fixed walls are cheaper; once they had devised their demountable systems, they found no saving in a separate fixed wall. This resulted partly from SCSD's two unique requirements for wall surfaces: working surfaces (chalkboard and tackboard) were to be included as integral parts of the partitions, and each side of a wall was to be independently changeable.

The fixed-demountable partition contract went to Cleveland's E. F. Hauserman Co., which submitted its "DoubleWall" (top photo), a product developed with SCSD standards in mind and first marketed last summer (*Products*, Sept. '63). Each face is a gypsum panel sandwiched between prefinished steel sheets, which clip into steel studs to form flush, single-line joints (details, top). An extension in the stud allows for ceiling height variation.

Both winners in the operable wall category—panel and accordion types—have their own column-and-truss frames so that no reinforcement of the building structure is required. The operable panel wall (middle), by Western Sky Industries of Hayward, Calif., has a simple internal cam device that expands to lock it to upper track and floor.

The accordion wall (bottom photo) by Hough Manufacturing Co. of Janesville, Wis. is a standard product, beefed up to meet SCSD's acoustical requirements. Like the panel wall, it can easily be moved to a new location in the building.

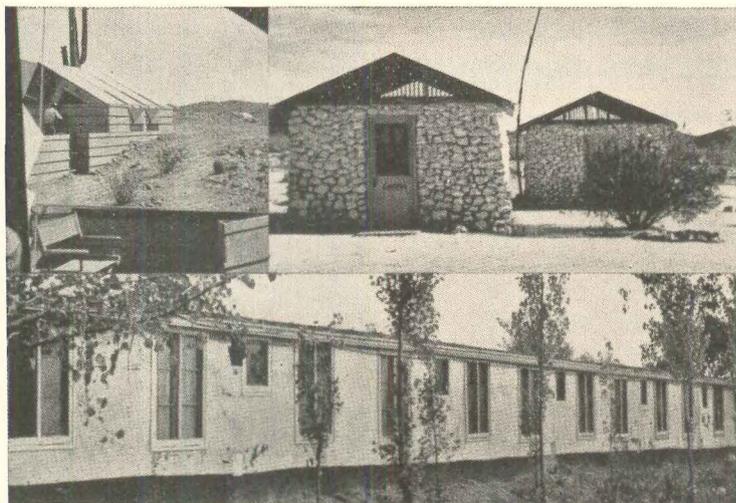
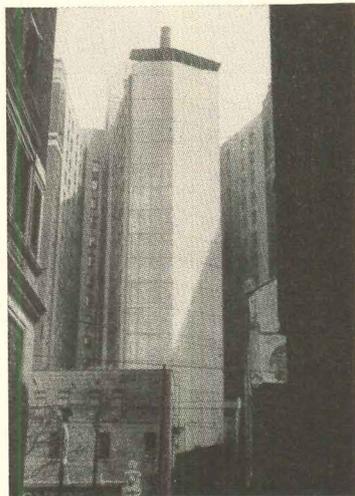


THE 40-STORY JOB

This is the first of three rapid little sets of notes on 40 years and a bit more; and it is preparatory to removing the present signature from the end of this page and letting the younger men carry on.

We never dreamt at the beginning of the 20's that our "modern architecture" would revolutionize matters as rapidly as it did, nor that the revolution would be so ambiguous, nor that some of the same guys would be talking so differently at the end of it. Fiske Kimball, who is the historian of Colonialism, had a famous chapter head, "Louis Sullivan and the Lost Cause"; Frank Lloyd Wright was having difficulty keeping ahead of the sheriff because of his debts and was accused by a placid New York group of architects of seeking nothing but publicity. Recently younger men not then born told us what we were all about, but they are wrong because in the systole and diastole of history they belong on the opposite beat and judge everything from the opposite beat. Ours was the expansive beat; architecture was pulling in new material from other fields. Now architecture is digesting, redigesting, regurgitating and re-regurgitating itself. Le Corbusier in the 20's was building ships on land and didn't hesitate to picture in "Vers Une Architecture" the French liners from which many of his ideas sprang. Eric Mendelsohn pictured American skyscrapers and also showed how much more beautiful the

skyscrapers were along their backs. Artists were trying to get motion into their studies and were reaching out into African art for a new primitive strength. Giedion talked learnedly about a fourth dimension, meaning time; but a young man named Lönberg-Holm (Danish-born, now in New York) had very much more practical ideas yet to be achieved — the idea that buildings should be licensed for definite periods after which the community would have full right to demand they be torn down. Writers were not snotty yet about the people. Henry Wright, the superb housing architecture pioneer, asked himself why people wanted to live in flats (and bad ones at that) when architects could fix them up so nicely in two stories—he found out and architecture benefited. Somebody had discovered that people had invented the balloon frame, the beginning of prefabrication. We were aware that the



people were creating new habits, and, paying attention to the vernacular, were very busy about motor courts, etc. growing up around the automobile. Frank Lloyd Wright's penthouses on the desert were in the same spirit as adjacent tourist cabins. In the end this led to the huge shopping centers, large industrial plants and other developments out in the country. Almost everybody was poor or felt poor because the big Depression came along in the 30's, and the job was to do the most with the least for reasons beyond philosophic ones. Philip Johnson joined with Henry-Russell Hitchcock in proclaiming that space ought to be caught up in a light envelope like a balloon. Philip's prose is still sparse, but his architecture today is often orotund, and he has gone clear around the spiral to eclecticism, except much more learned and disguised. There was a book, "America Can't Have Housing" by a fascinating young lady named Catherine Bauer who was in a tight group which intended that it should. Clarence Stein, Henry Wright, Lewis Mumford, and, believe it or not, even Robert Moses conjoined with a string of liberal New York governors and choice philanthropists, such as Mr. Heckscher, to pioneer what has since become the shabby imitation through FHA and the cancerous growth of highway spaghetti. The creative thinking about city plans led outward, and it really looked as if Ebenezer Howard, with his Garden City idea, had the answer

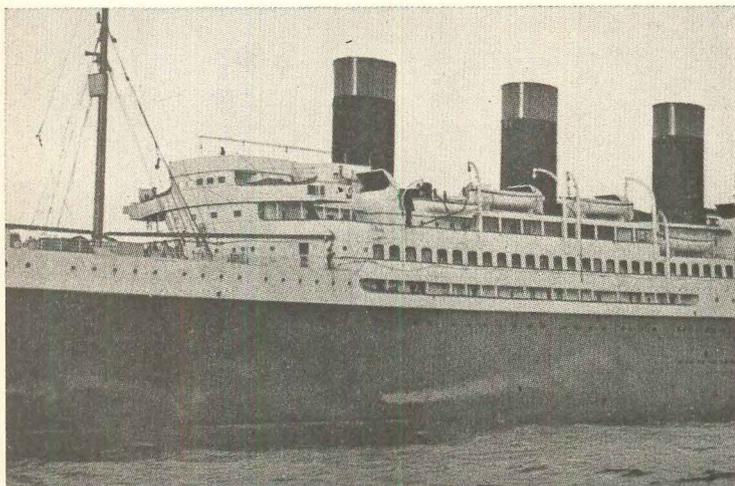
—something which since then has not been adequately rethought.

Things were new indeed, and optimistic, and although the ridiculous in the term "brave new world" has been an exploited plenty, this has not done justice to the bravery it had. And hope.

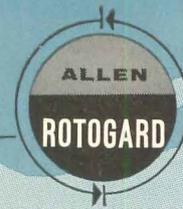
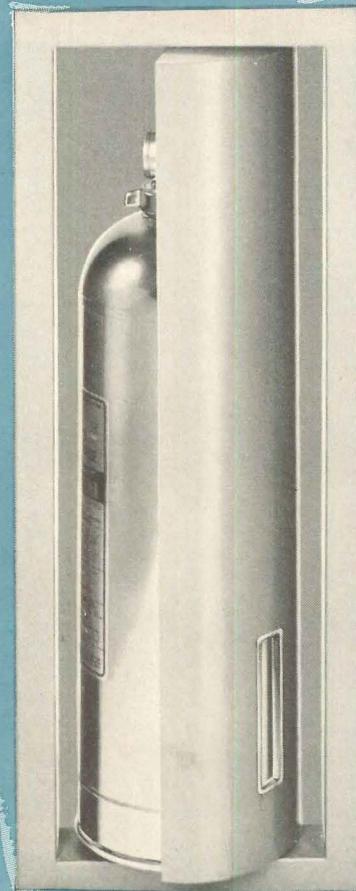
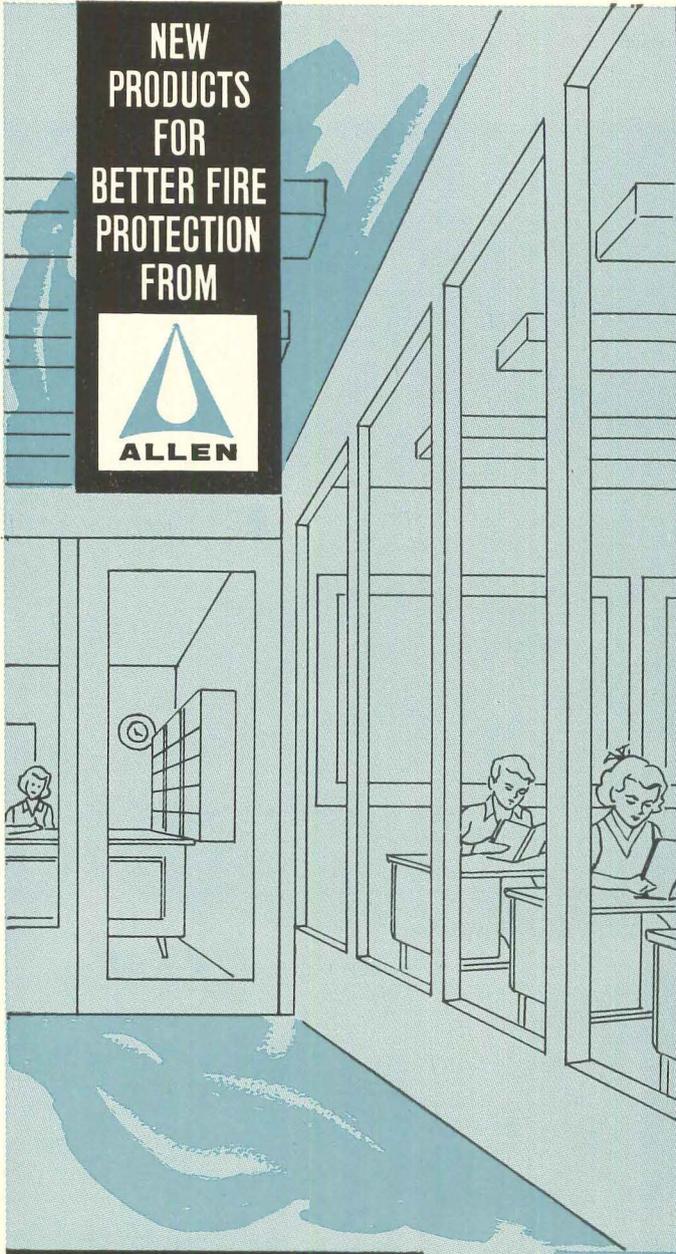
Just about every trend—sparse, taut, functional (those were the favorite words), or again expressive, romantic, drippy, symbolic—were all on hand. History ever repeats itself—only the emphasis changes. Frank Lloyd Wright, alone, insisted that architecture must be beautiful, and the first view of Taliesin, Wisconsin, by moonlight was enough to convert a young man for life. But we weren't quite so sure that this was all. There were those who contended that architecture was not even an art but, like medicine, served a healthy life. This led to the notion, expressed by me in a column in *The Nation*, that "the greatest architect would be he who could create a great space using no materials at all. This would be the earthly paradise, and our only difficulties would arise from an excess of perfection."

This I insist was the first public statement about total environment as architecture's goal. And just as Russell Lynes has said that new beauty starts as ugliness, many a deep truth starts as a joke.

Douglas Haskell



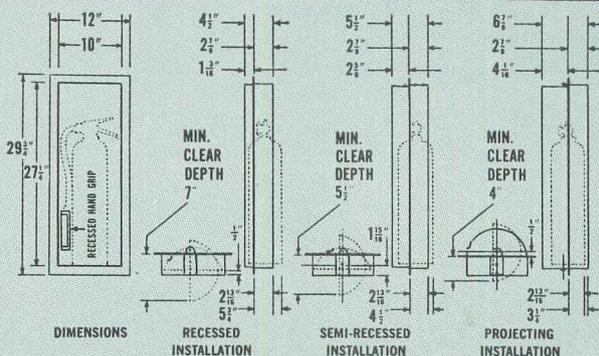
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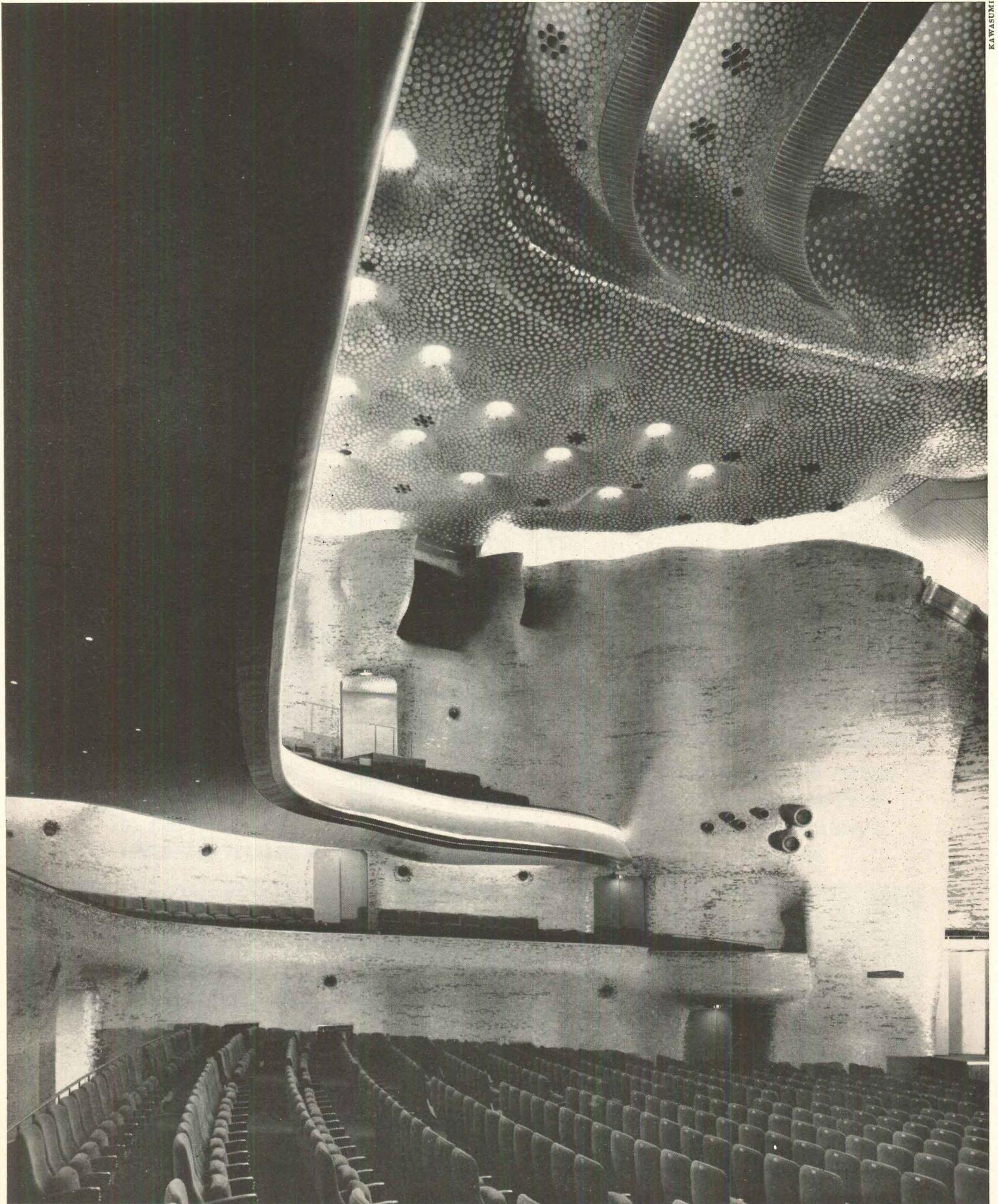
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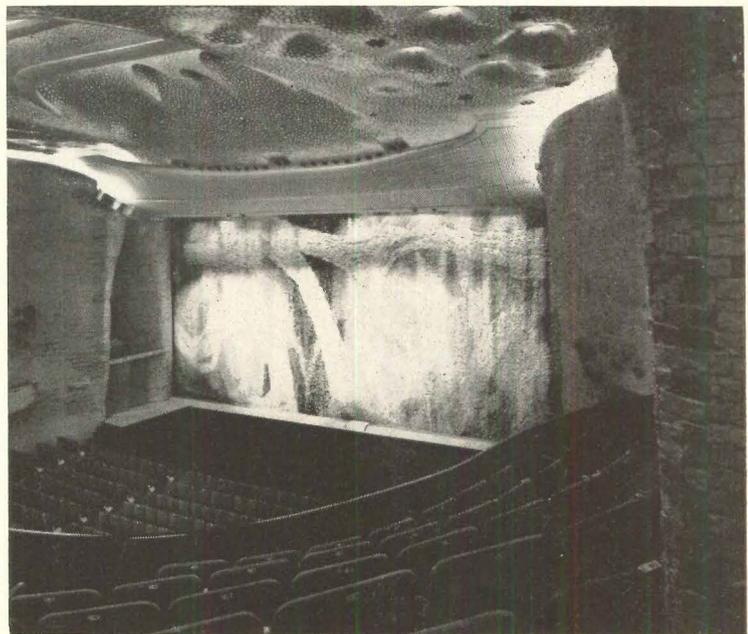
GROTTO THEATER IS PART OF TOKYO OFFICE BLOCK

Like the inside of Jonah's whale, the Nissei Theater in Tokyo is full of curves, but the theater boasts many more materials and colors than any whale ever did. The marine atmosphere, not inappropriate to an island country, is intensified by the grotto-like character of the interior details—cavernous spotlight booths in the rear, "gills" to shield lights, and flattened shells on the ceiling.

In addition to the curves of the two balconies, there are convex curves on the sidewalls which face the audience. Loudspeakers resembling small volcanic cones bedeck the backward slopes of the curves. The color scheme is al-

most as wild as the shapes used. Off-white and gold glass mosaic tiles overlay the curved walls. The gypsum ceiling is a reddish-tinged cobalt blue, to contrast with the pearly-hued shells. Seats are dark red. The drop curtain (photo at right) is a swirling abstraction which repeats the four basic colors.

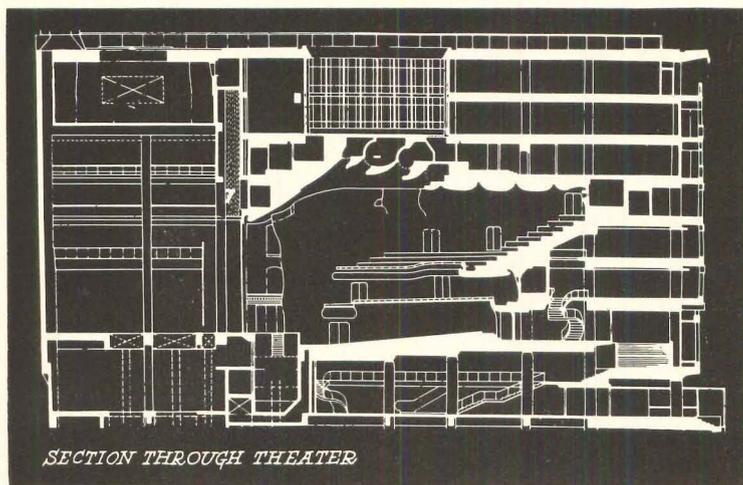
The convex curves facing the audience, incidentally, are not just fanciful; they diffuse the sound toward the listeners. A small model was used in the design stage to find out the exact curvature needed to obtain the desired sound effects for various kinds of performances. When the Berlin Opera Company performed in the hall at its inauguration last October, critics praised the acoustics.



KAWASUMI



M. ARAI



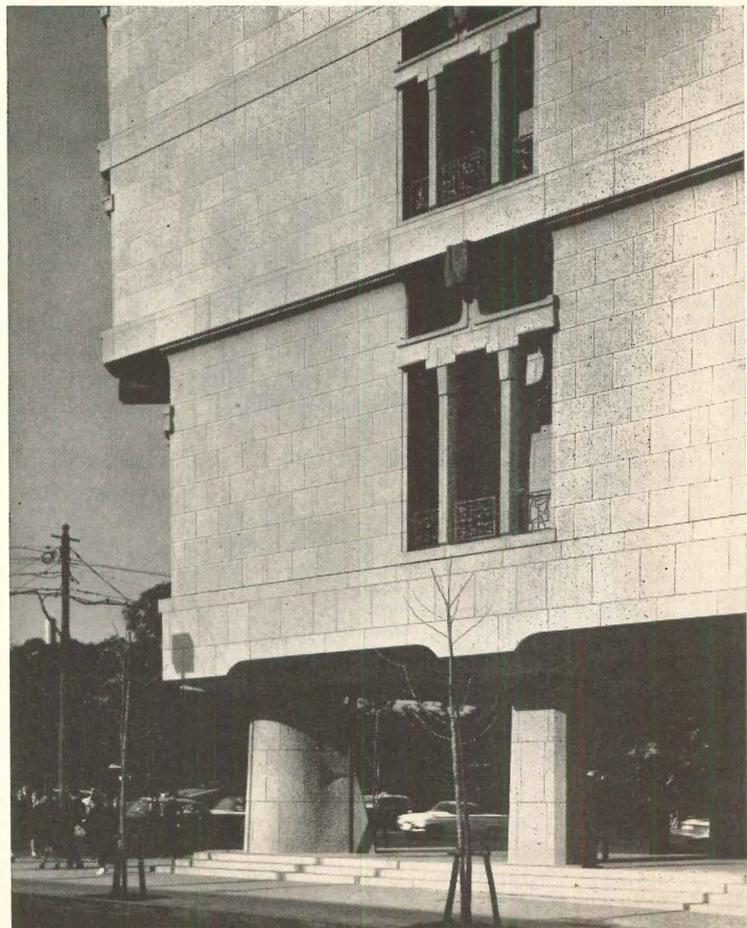
SECTION THROUGH THEATER

The 1,400-seat theater, large as it is, is only half the building; the rest of the 462,680 square feet of floor space is devoted to offices for the Nippon Seimei Co. The building is on a corner; one side (photo above) leads to the offices, while the other side provides entrance to the theater lobby. Offices are lined up along exterior walls on various floors and surround the

theater on several levels. There are also three office floors above the theater proper (top right in section above). Because of the building's dual use, the stage house is buried in the bulk of the office building, as shown in the section. Not shown are three underground parking floors and two sub-basements for storage and mechanical areas.

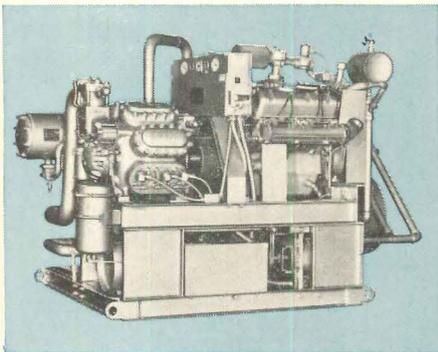
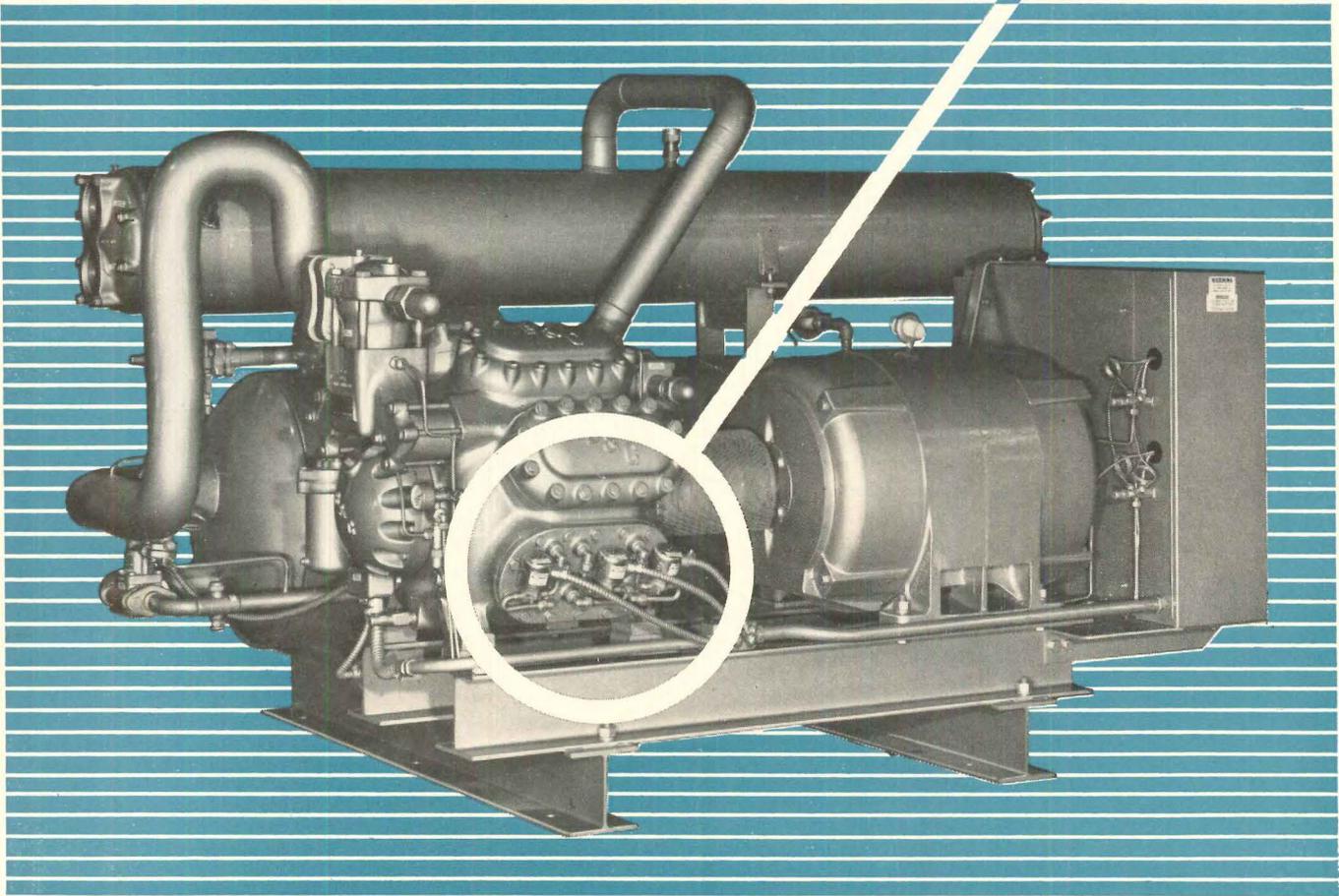
Since the Nippon Seimei Co. is Japan's largest life insurance company, it seemed desirable to make the new office building look as though it would last for all time; the directors also wanted to use a traditional Japanese motif to show respect for the past. The façade is of granite, with huge granite pillars on the entrance

floor providing arcaded entrances (photo below). The balconies, which bring light into the offices and the theater foyer, incorporate a stylized version of the *tori*, the gate found in front of all Shinto shrines. The severity of the façade is lightened by metal grilles in the balconies which serve as protective railings. END



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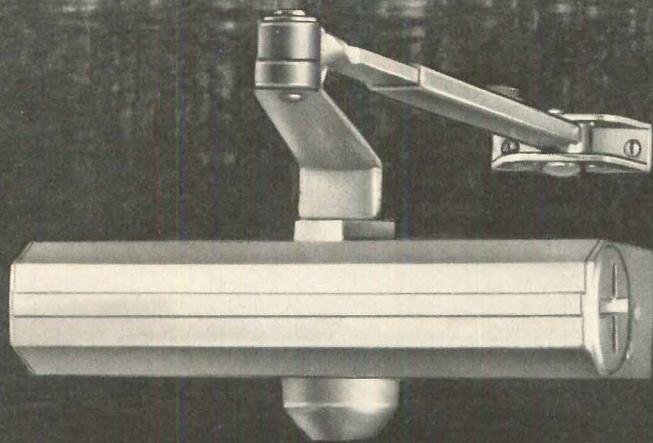
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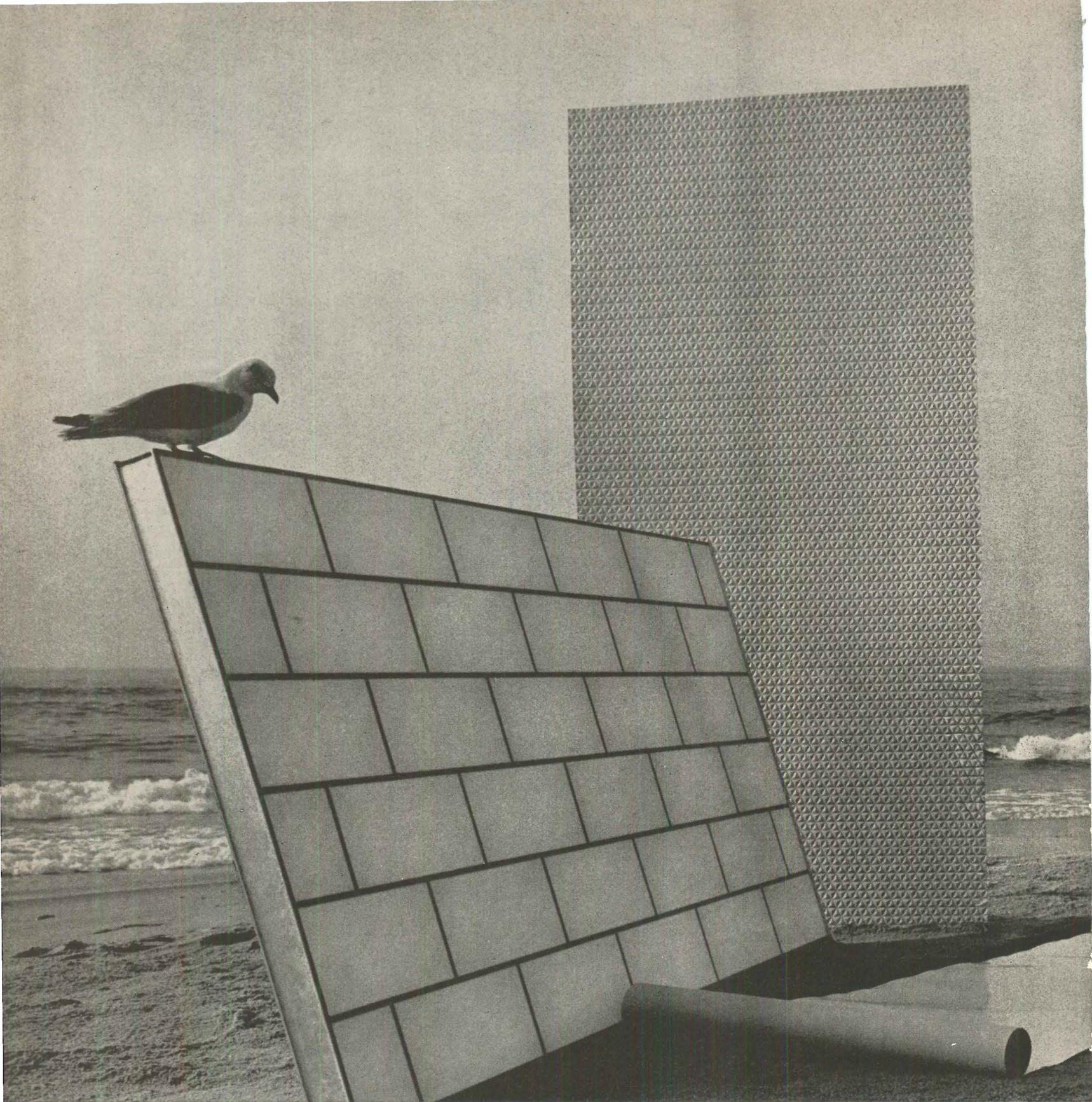
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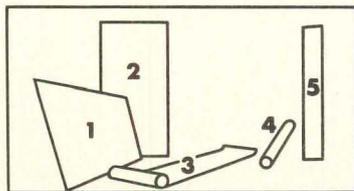
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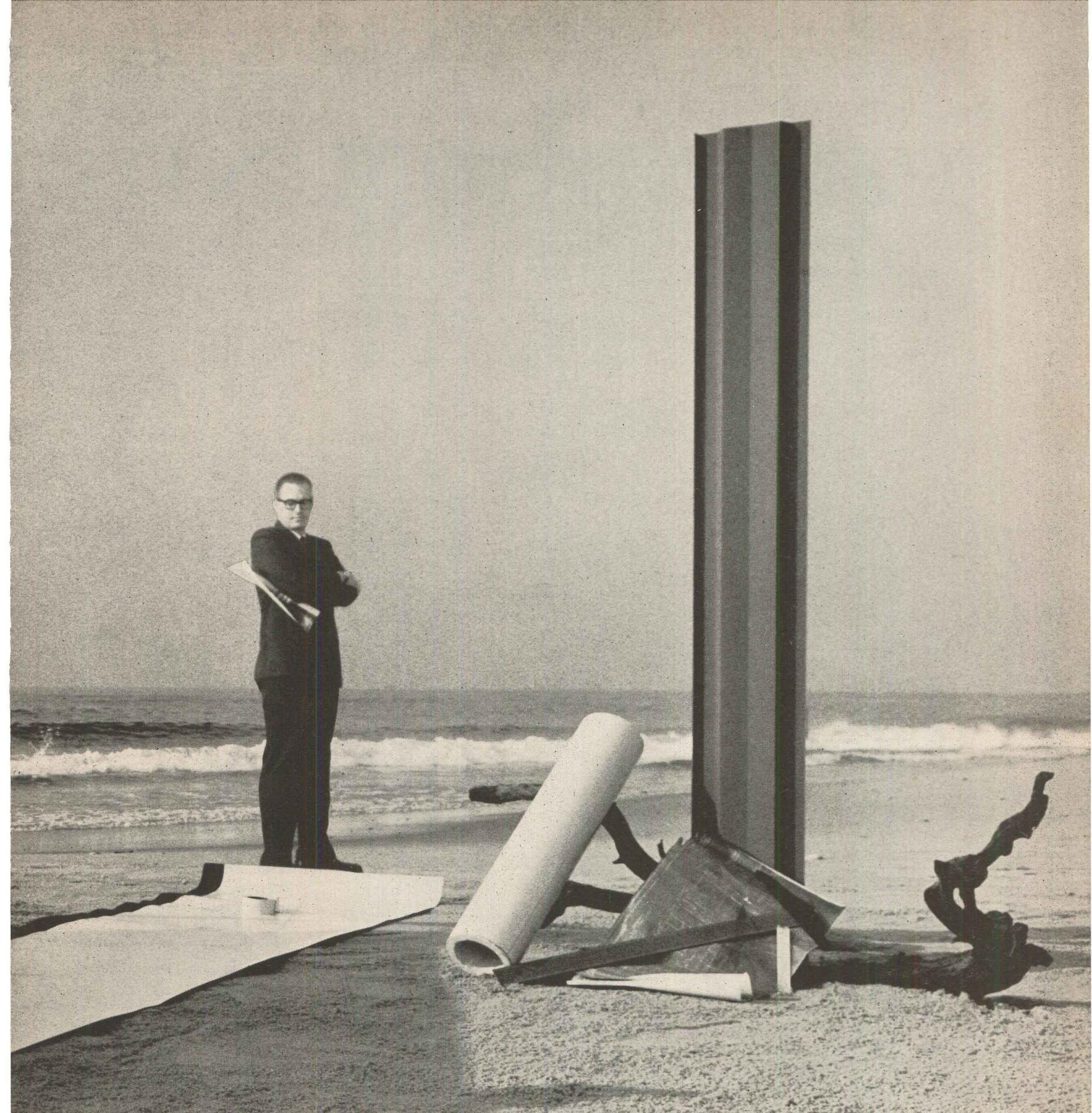
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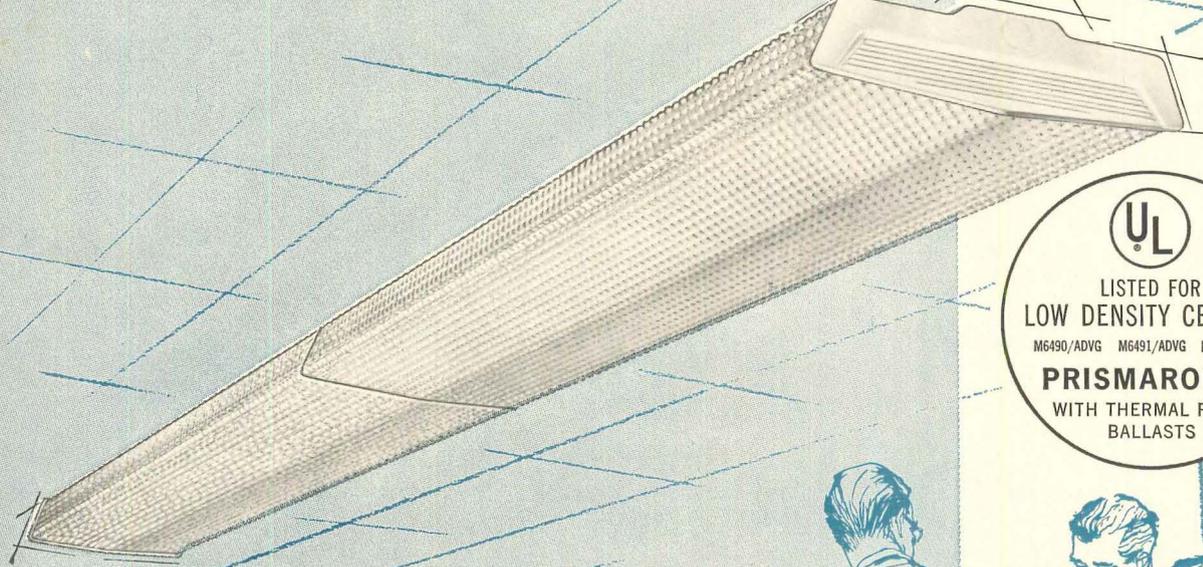
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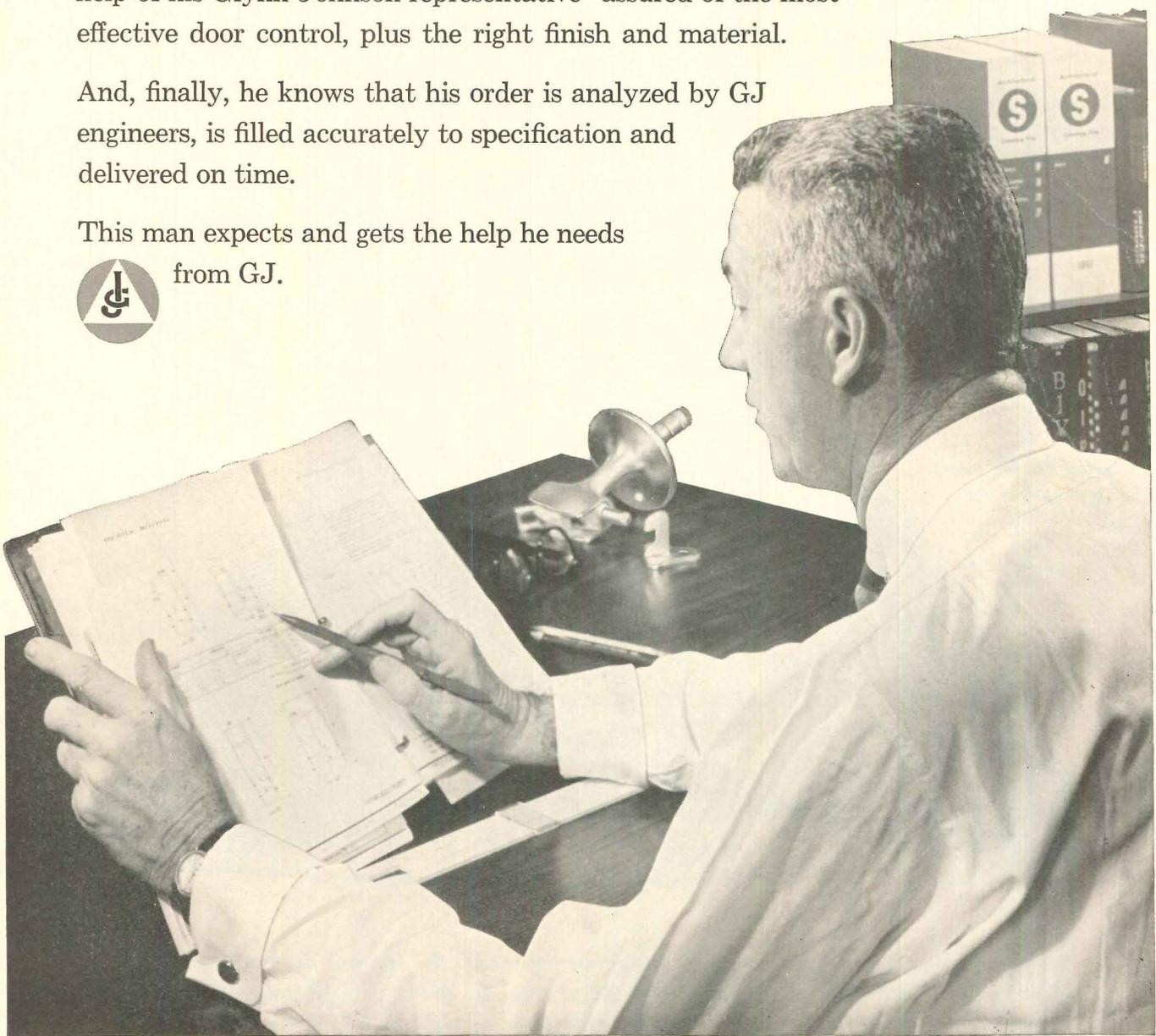
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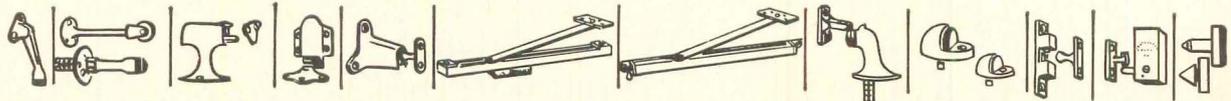
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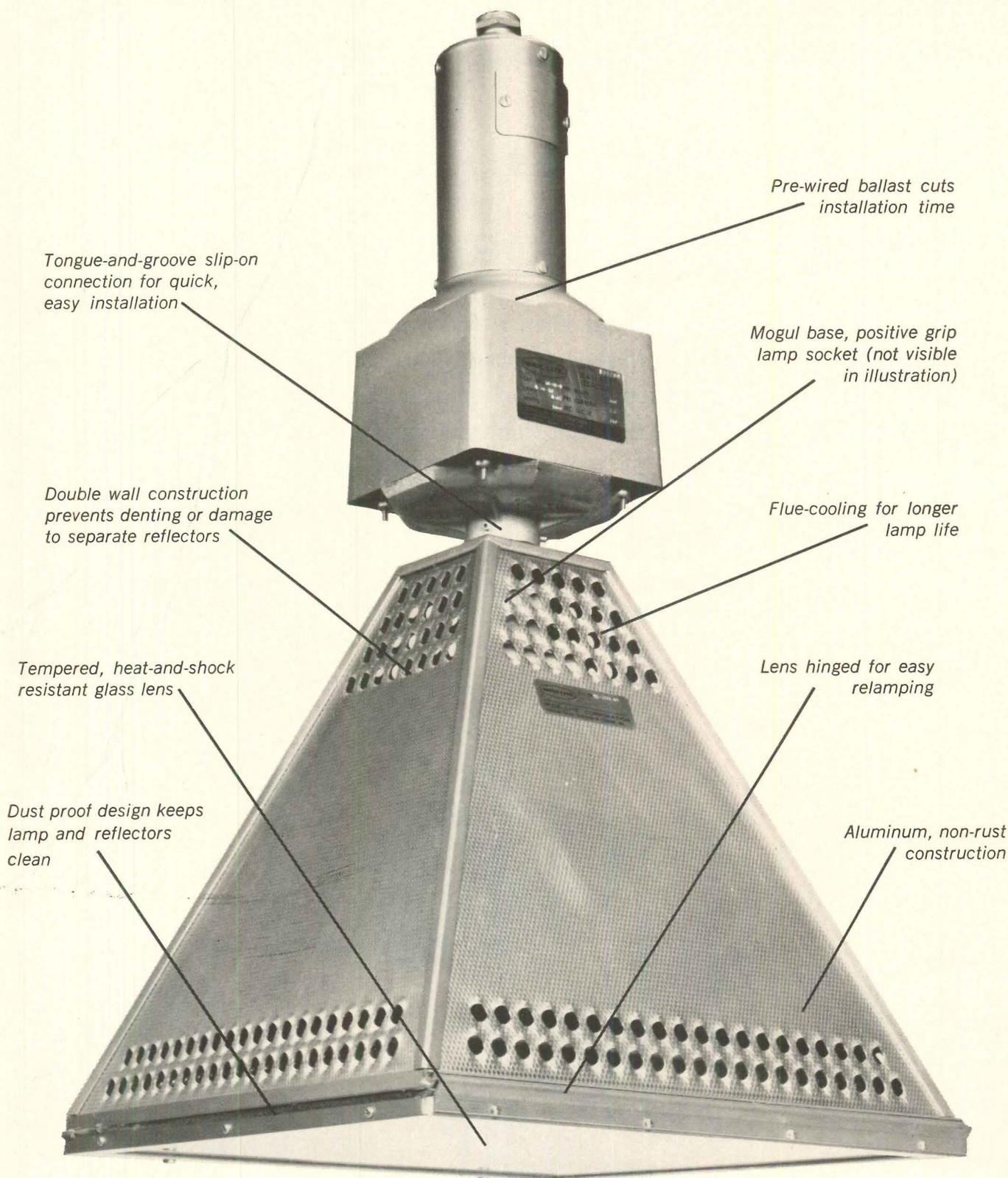
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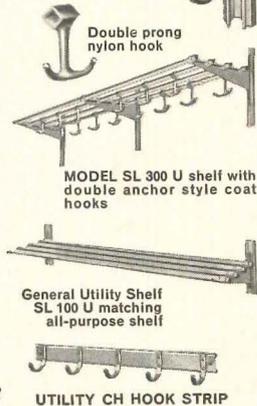
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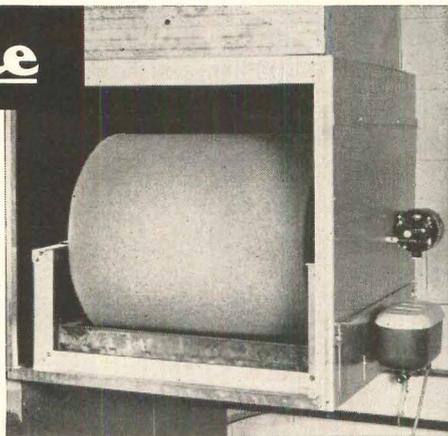


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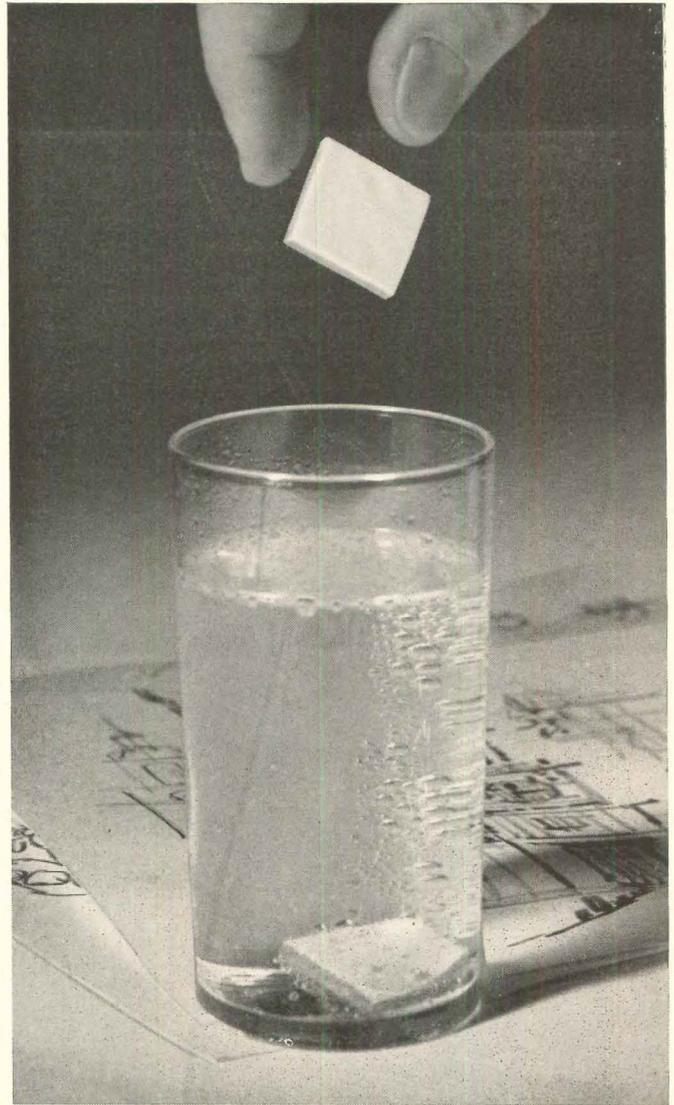
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In Canada: Wait-Skuttle Co., Oakville, Ontario



DESIGN HEADACHES?

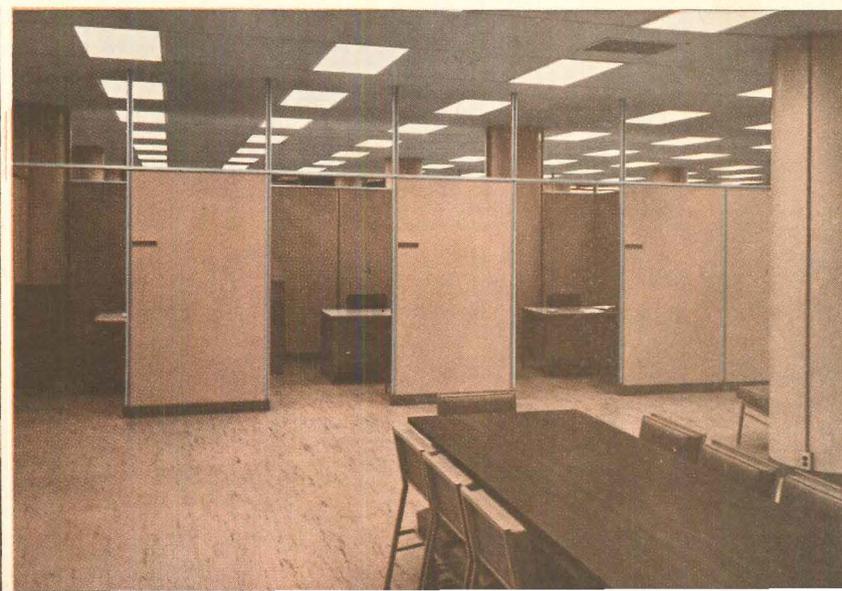
RELIEF IS JUST AN INQUIRY AWAY...when you send that inquiry to or call Cambridge Tiles' Design Department here in Cincinnati. You see the Cambridge design staff has had extensive experience in working closely with architects—translating their ideas into ceramic tile mosaics. Under the direction of George Limke, our design staff is ready and anxious to assist you with your tile design or layout problems. Send us your plans or elevations for suggested tile applications, or let us put your own tile designs into layout form. Address your inquiry to Dept. AF 42

THE CAMBRIDGE TILE MFG. CO.

P. O. Box 15071,
 Cincinnati 15, Ohio

Producers of SUNTILE wall and floor tiles, SUNTILE mosaics, HORIZON tile and CERATILE 800.





8 miles of ASI partitions on 17 floors of Montgomery Ward offices to be fully movable & interchangeable

*Problem of many different
office functions, varying ceiling
heights solved economically
with one basic partition system*

Modernization of Montgomery Ward's headquarters offices in Chicago involves the complete remodeling of 9 floors in one building, 8 floors in another. In planning this two-year project, Ward's management team and architects Childs & Smith set a unique requirement for movable partitioning. Partitions were to be completely interchangeable and reusable regardless of differences in ceiling heights and varying needs for privacy. Their aim: maximum economy—now and in future space reorganizations.

ASI's Custom Line partition system provides the answer, meeting all conditions with just two basic panel heights—a 7'-0" cornice height and a 3'-6" low divider. With glass added to ceiling height, the cornice-high partitions provide the privacy needed in executive offices. Without glass above, the same 7'-0" partitions are used throughout the general offices in combination with the low dividers. The latter are used both with and without 18" of glass above them. A standard 4-foot module width is employed and panels of like width are completely interchangeable in either of the standard heights. Further economy, both in the original installation and in future changes, is made possible by ASI's unique electrified aluminum post assembly. It provides a UL-approved integral raceway for power, control and communications wiring. Standard switches and outlets mount directly in the raceway; telephone boxes, thermostats and other devices mount on the posts with simple concealed fasteners. Partition panels need never be cut or drilled and all wiring is greatly simplified.

Beige vinyl-clad panel surfaces and extruded vinyl baseboards combine with ASI's etched aluminum joinery to create interiors in these new offices that are attractive, restful to the eye and, best of all, practically maintenance-free.

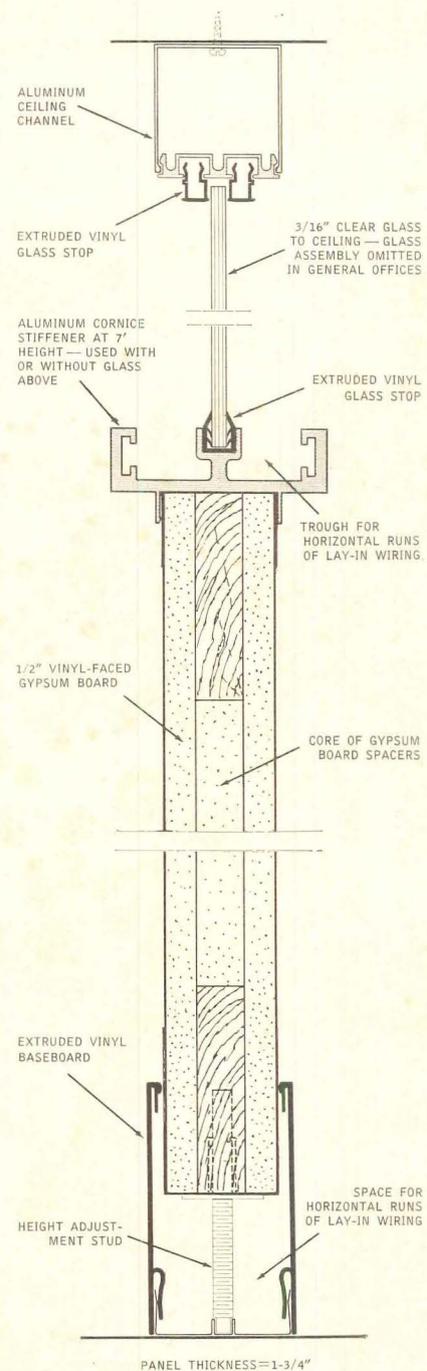
For your copy of the new Custom Line catalog, write us at 4303 36th Street, S.E., Grand Rapids 8, Michigan. Or for immediate details, call us at (616) 949-1050.

ARCHITECTURAL SYSTEMS

Division of
Westinghouse Electric
Corporation

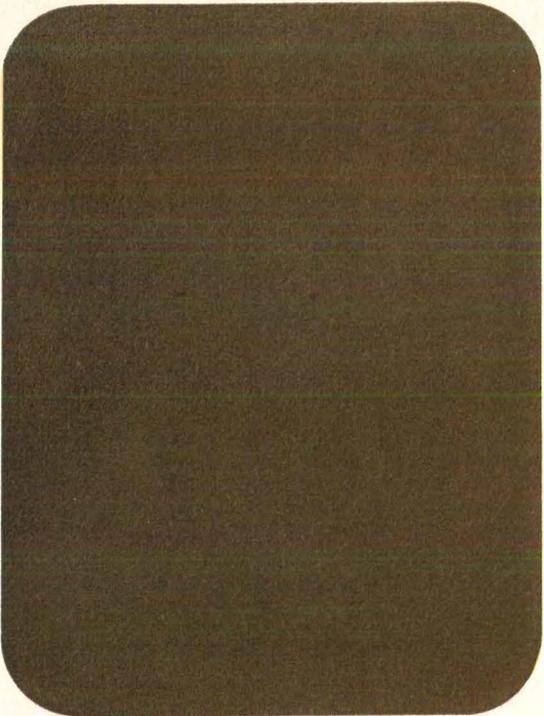


You can be sure . . . if it's Westinghouse



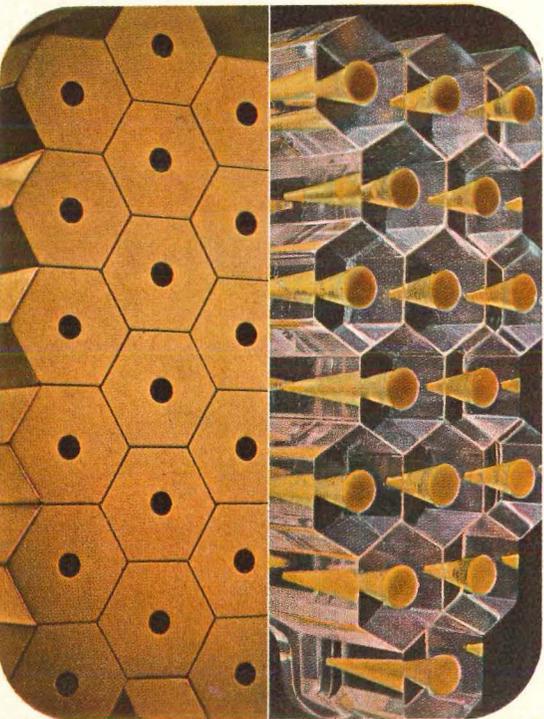
PANEL THICKNESS=1-3/4"

windows, solar screens, mullions, framing.

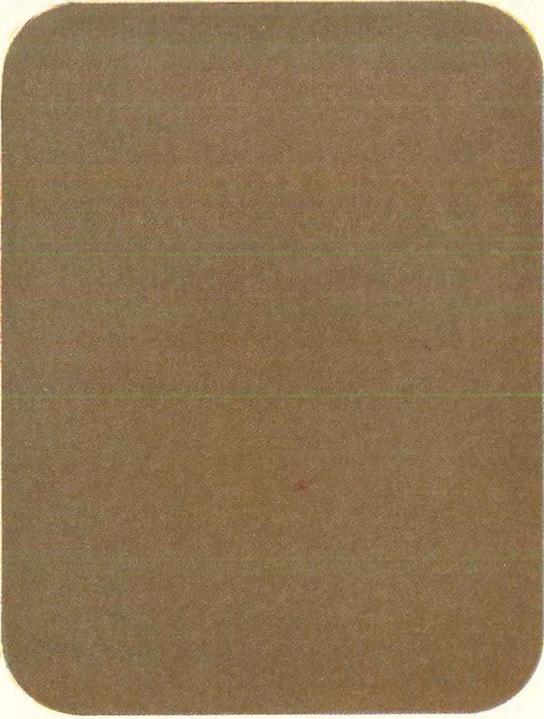


Duranodic 313S, Dark Bronze

Cell structure: anodic finish, Duranodic finish (see text)

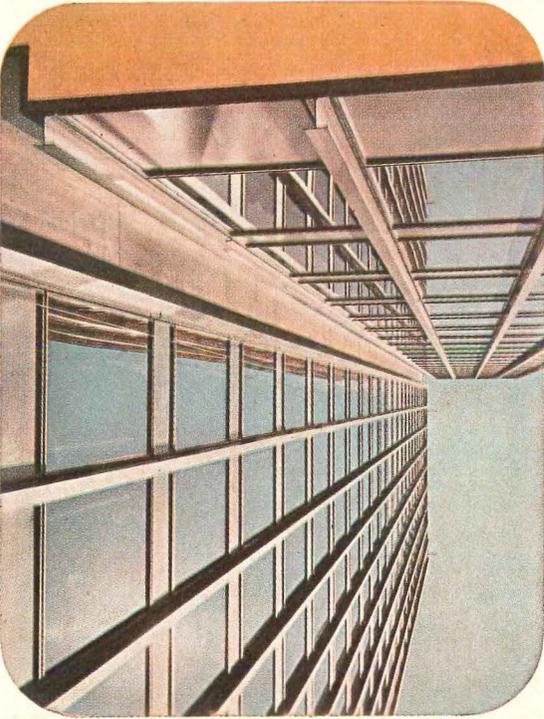


rich bronzes, onyx, gray. Specify colorfast

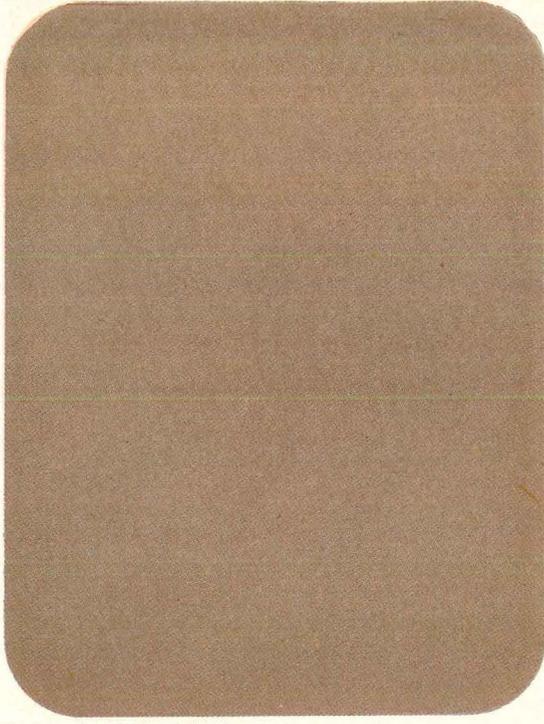


Duranodic 312S, Medium Bronze

Number One Charles Center, Baltimore, Md.

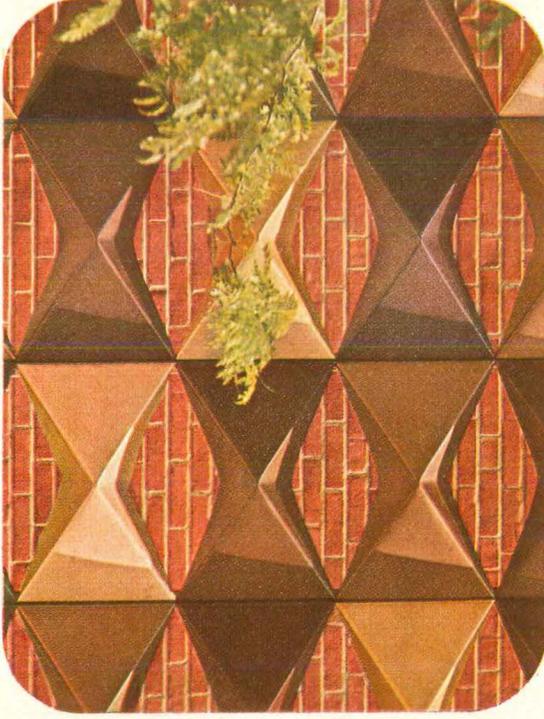


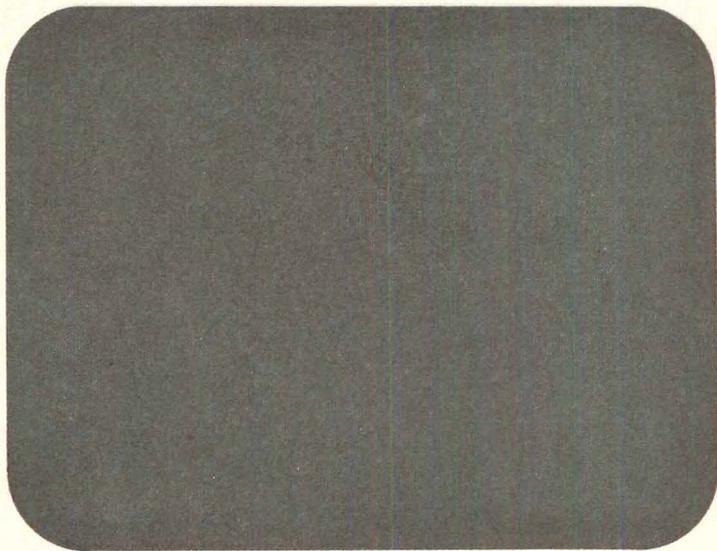
Here they are: the changeless colors of



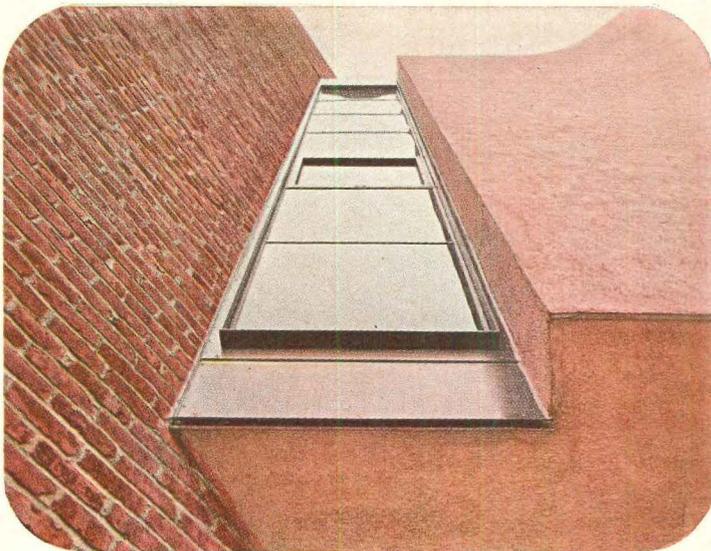
Duranodic 311S, Light Bronze

Alcoa Sol-Dec® II Screen in various Duranodic "300" colors

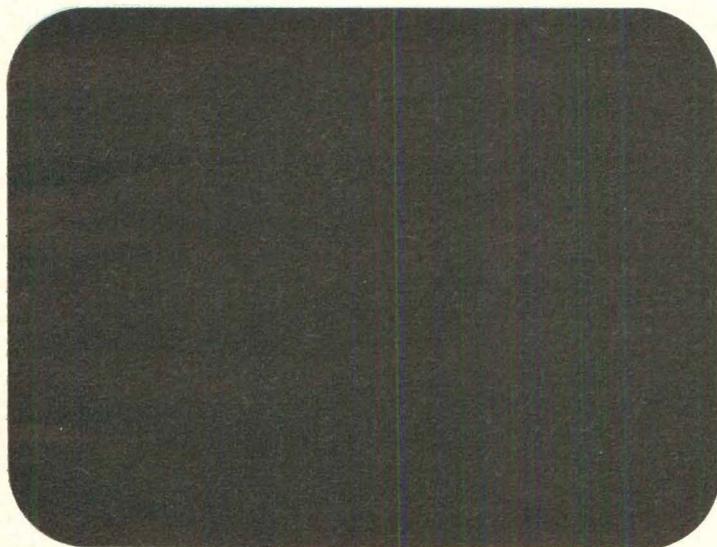




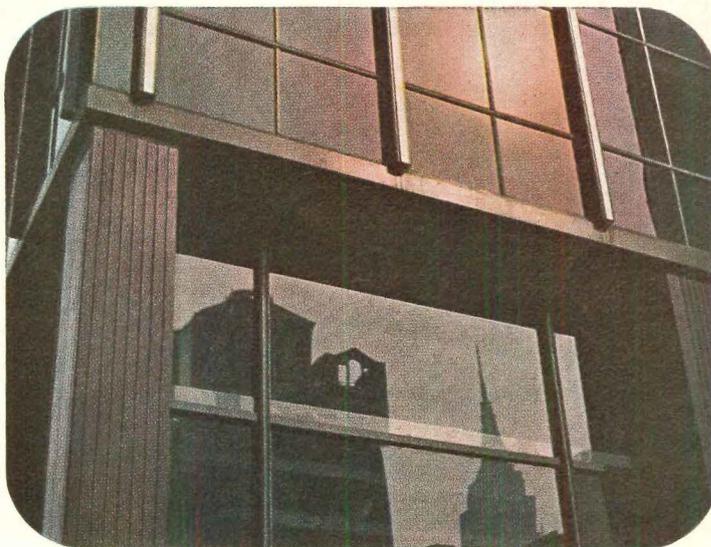
Duranodic 324S, Medium Gray
Holy Trinity Episcopal Church, Hicksville, L.I., N. Y.



Alcoa's new DURANODIC "300" finishes,



Duranodic 335S, Black
605 Third Avenue, New York, N. Y.



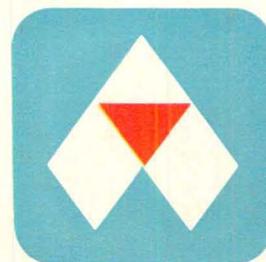
DURANODIC "300" finishes for panels, trim,

Salt air, hot sun, corrosive atmospheres—Alcoa® Aluminum with Duranodic* "300" finishes can take practically anything nature can dish out or man devise. And the color exhibits little or no change. Hard as sapphire, Duranodic "300" color finishes are inherent in the alloys and become integral with the metal during treatment. There are no dyes or pigments. Result: a color surface that's just about impervious to scuffing. See the enlarged model of an anodic cell structure to the left: The upper example has color added. Below it is the way cells in a Duranodic "300" finish look—color clear through! Call your nearest Alcoa Sales Office for complete information.

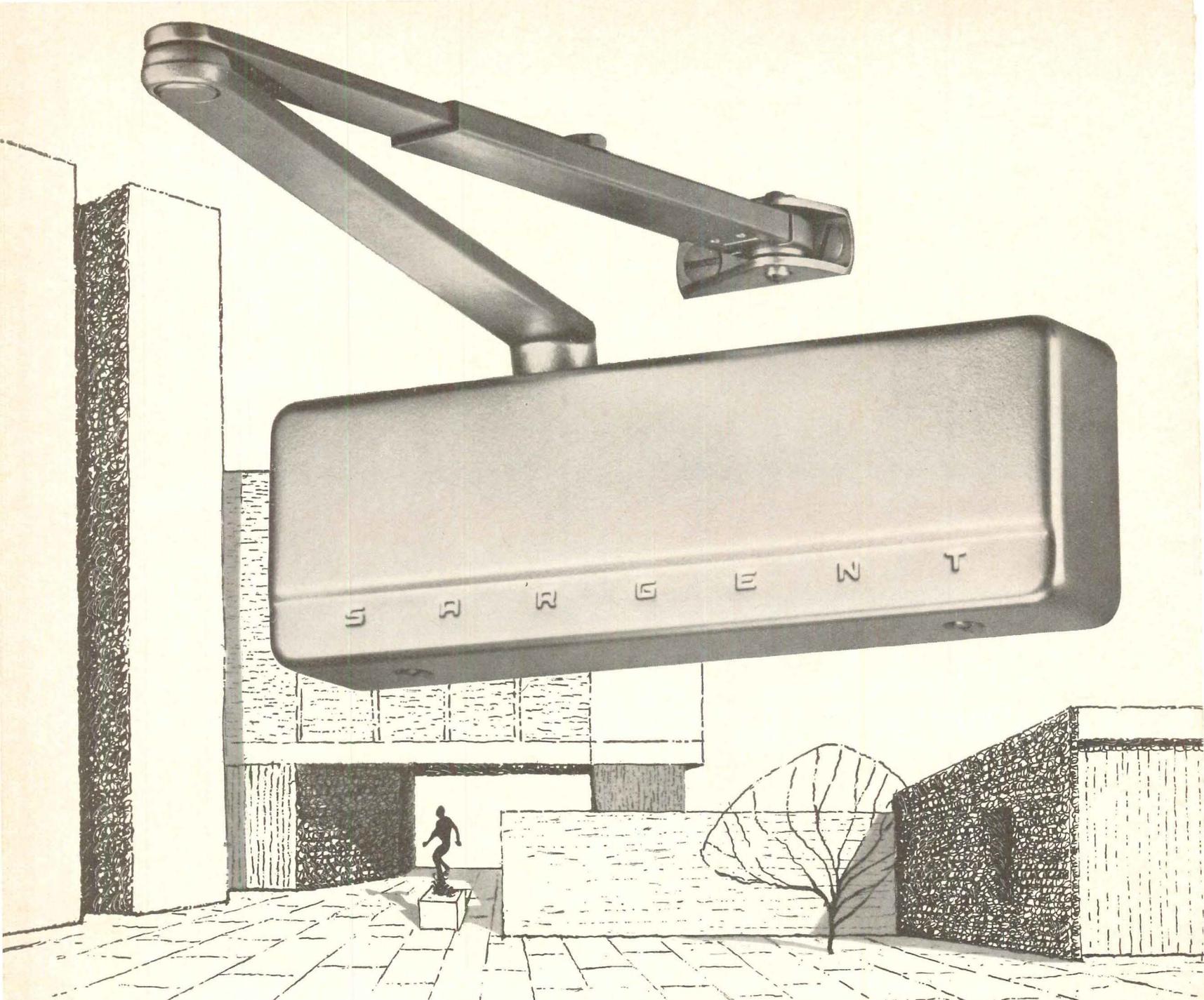
Credits—Holy Trinity Episcopal Church. Owner: Holy Trinity Episcopal Church, Hicksville, L. I., N. Y. Architect: Seth Hiller & Edward F. Knowles, N.Y.C. Duranodic Applicator: Electro-Color Corp. Fabricator: Samson Window Corp., 605 Third Avenue. Owner: Fisher Bros. Architect: Emery Roth & Sons, N.Y.C. Duranodic Applicator: Cupples Products Corp. Fabricator: Cupples Products Corp., One Charles Center Building, Baltimore, Md. Owner: Metropolitan Structures, Inc., Chicago, Ill. Architect: Mies Van der Rohe, Chicago, Ill. Duranodic Applicator: Cupples Products Corp. Fabricator: Cupples Products Corp. Erector: F. H. Sparks Co., Inc.

*Trade Name of Aluminum Company of America

ALCOA BRINGS YOU AMERICA'S FINEST NEWS SHOW . . . THE HUNTLEY-BRINKLEY REPORT, ON NBC-TV



ALCOA



Over tomorrow's threshold: today's door closers from Sargent

With the sleek geometric lines of the Sargent Powerglide, architects now have a fully matched, fully contemporary line of door closers — one for every conceivable type of closing application, for any door — interior or exterior, metal or wood. Now modern interiors retain their design simplicity . . . with Powerglide's simple grace belying its heavy-duty dependability.

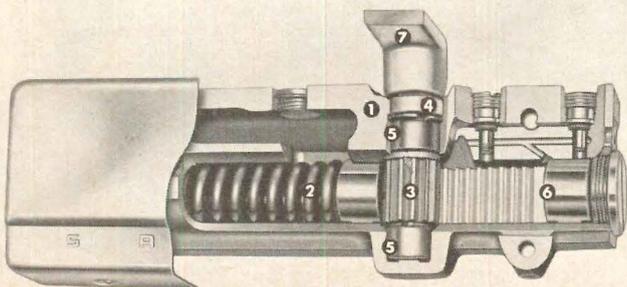
Under Powerglide's trim rectangular case lies a horizontal hydraulic workhorse — the simplest, strongest, smoothest closing mechanism you can specify. Powerglide eases

even the heaviest door to its jamb . . . silently and surely.

Where reliable door closer performance is important, specify Sargent—your single source of responsibility for quality closers, locksets, exit devices and other safety hardware. See your Sargent hardware supplier, or write Sargent & Company, New Haven 9, Connecticut. In Canada, Sargent Hardware of Canada Ltd., Peterborough, Ontario.

 **SARGENT**

The newest fashion in a complete line of architectural hardware

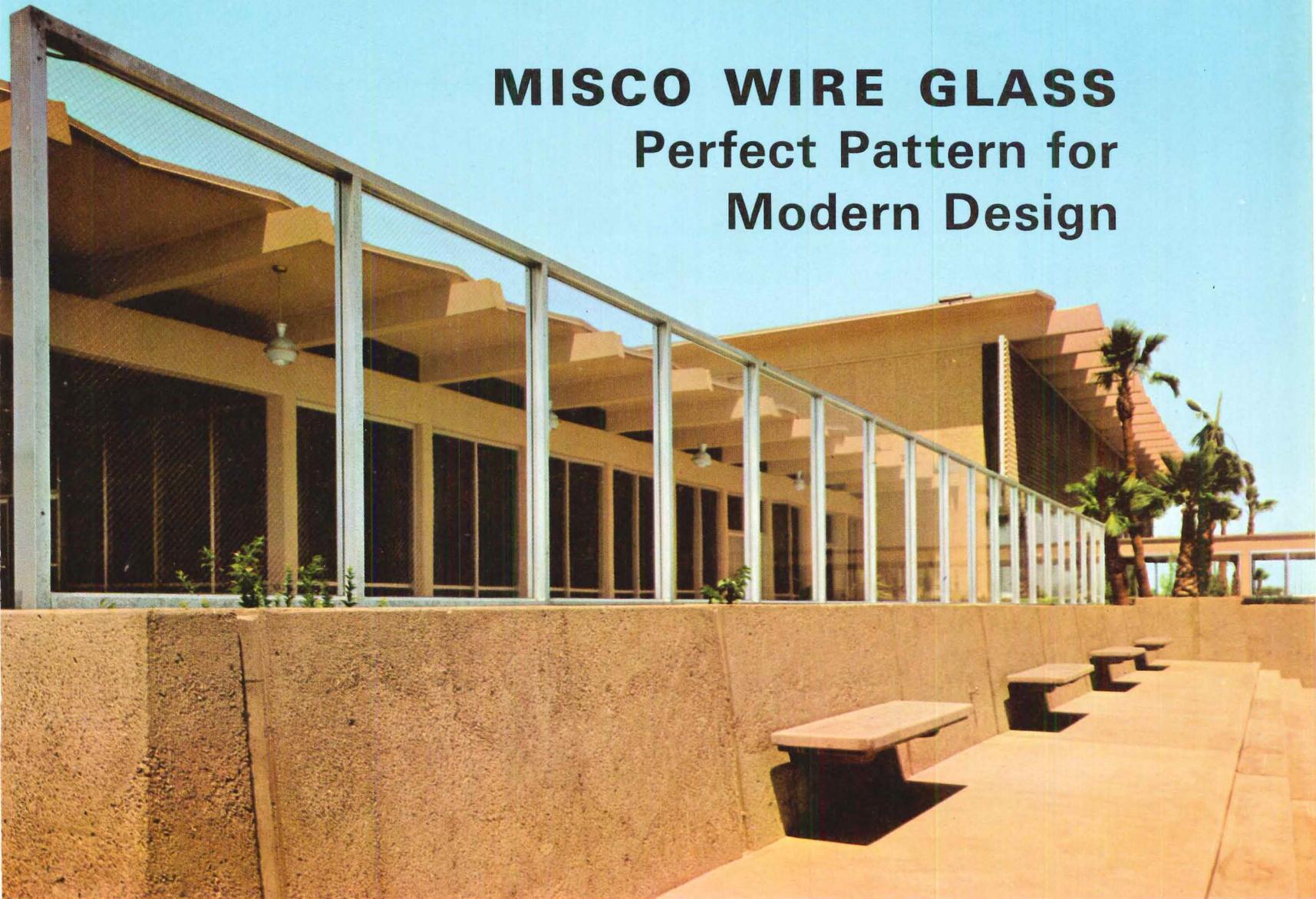


Part for part, the Powerglide closer does a bigger job better:

- 1 Cast iron case holds greater pressure, assures longer life
- 2 Heavier spring . . . longer chamber . . . less stress
- 3 One-piece spindle with induction hardened bearing surfaces
- 4 Spring-loaded lip type shaft seal — prevents leaking
- 5 Line bored bearing seats for perfect alignment
- 6 Precision ground pinion rack — double spring and plunger models for heavier door
- 7 Forged steel arms

MISCO WIRE GLASS

Perfect Pattern for Modern Design



Sky Harbor Airport, Phoenix, Arizona. Architects: Associated Airport Architects (Lescher & Mahoney, Ltd. and Weaver & Drover); Glass and glazing: Pittsburgh Plate Glass Company, Phoenix; General Contractor: Chanen Construction Company, Phoenix.

Acclaimed for outstanding design, the new Sky Harbor Air Terminal in Phoenix relies on Polished Misco as an effective windscreen for passenger protection and comfort while affording a fresh concept of wire glass design that adds beauty to function. With its distinctive diamond-shaped welded wire netting, Misco, Polished or obscure, offers proven breakage protection and serves as a recognized fire retardant. Available at better distributors of quality glass.



MISSISSIPPI GLASS COMPANY

88 Angelica Street, St. Louis, Mo. 63147

NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

NEW $\frac{7}{32}$ "
SPRAYLITE MISCO
TEAMS DECORATION
with
VISIBLE PROTECTION



Luxury and safety are twin features of this $\frac{7}{32}$ " Spraylite Misco installation by Theodore Efron Company, Chicago, shower door and tub enclosure manufacturer.



Today's bathrooms are not only more excitingly beautiful but safer, thanks to new $\frac{7}{32}$ " Spraylite Misco.* Fortified with Misco, diamond-shaped welded wire, tub enclosures and shower stalls are transformed into sheer elegance and luxury with assurance of proven shatter resistance. The bright mesh, clearly visible as a sturdy web of steel, serves as a constant reminder of its safety features. Only wire glass gives you both . . . decoration and visible protection. Write for literature.

* Meets all requirements of FHA code for tub enclosures and shower stalls (Interim Revision #13A).



NEW CATALOG
 Contains pattern descriptions, light distribution charts and transmission data. Send for your free copy today.

See our catalog in Sweet's 

H #3-63



MISSISSIPPI GLASS COMPANY

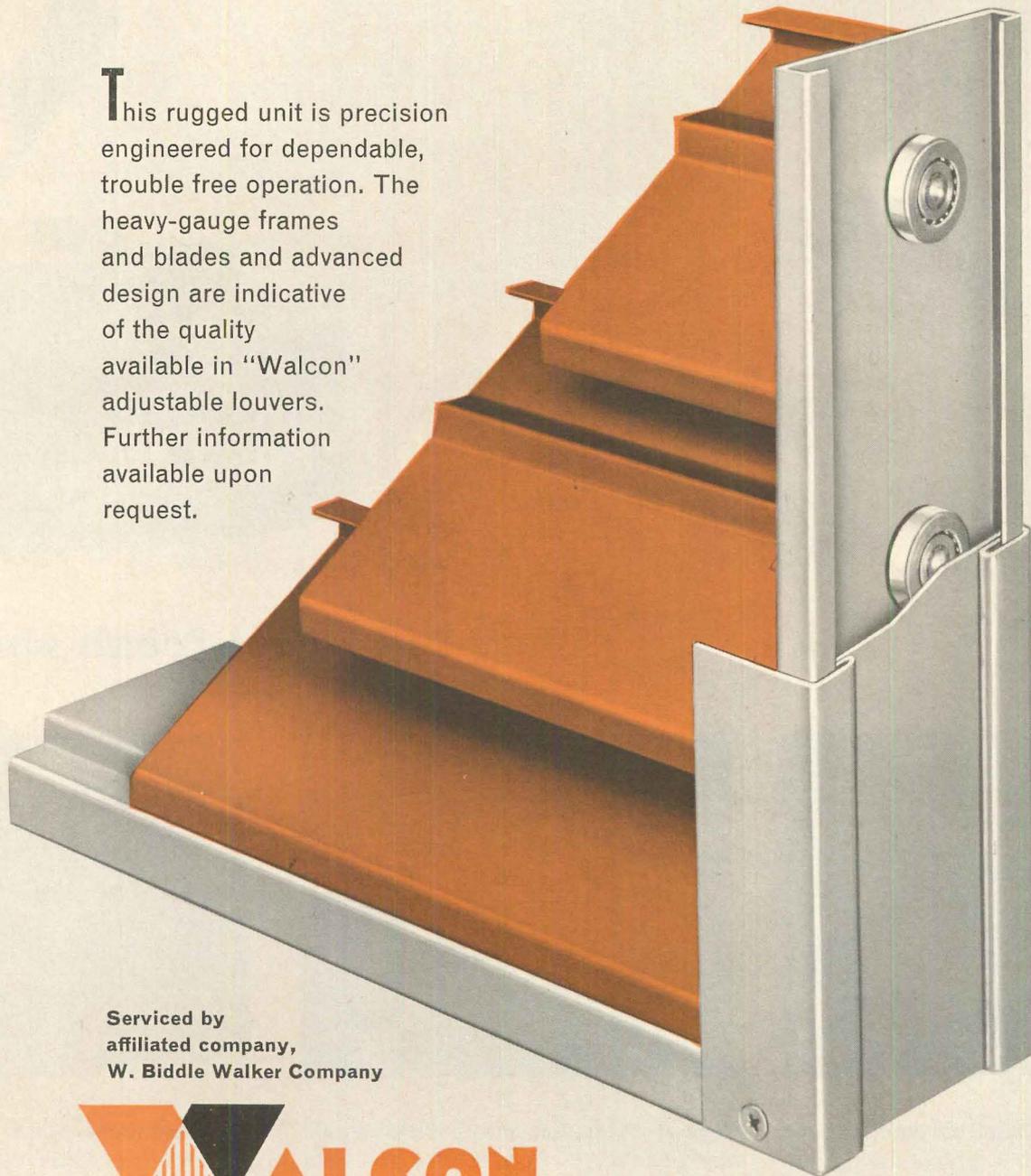
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LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

... you're looking at the best adjustable louver yet!

This rugged unit is precision engineered for dependable, trouble free operation. The heavy-gauge frames and blades and advanced design are indicative of the quality available in "Walcon" adjustable louvers. Further information available upon request.



Serviced by
affiliated company,
W. Biddle Walker Company



WALCON CORPORATION

■ 4375 SECOND STREET

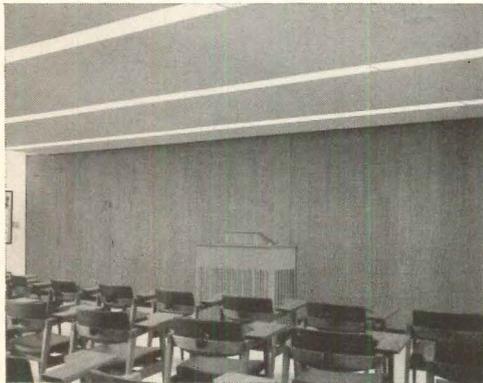
■ ECORSE 29, MICHIGAN

REPRESENTATIVES IN ALL MAJOR CITIES



They did some fresh thinking

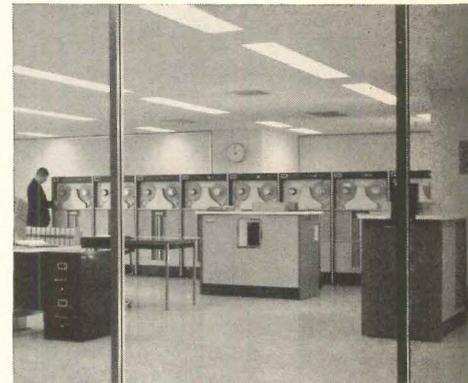
Here's how:



Fed up with stale air and smoke-filled conference rooms, this typical company† decided to do something about it. Their architects recommended the AIRSON Air Distribution System. The result was literally like a breath of fresh air!



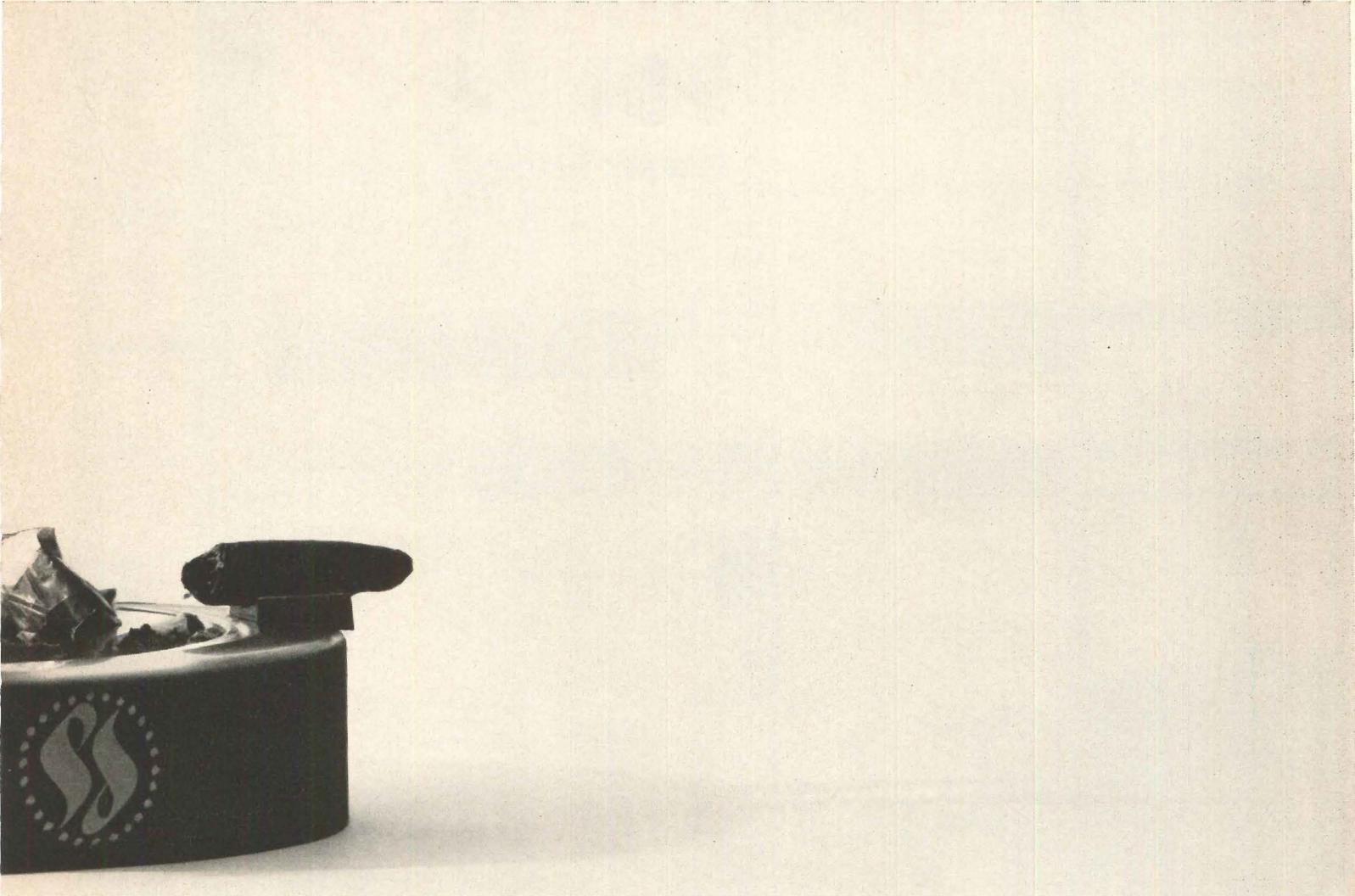
General offices, too, now enjoy the trouble-free benefits of AIRSON. Hot and cold spots have disappeared. And AIRSON permits easy relocation of partitions and room dividers. Remodeling no longer involves the costly relocation of diffusers.



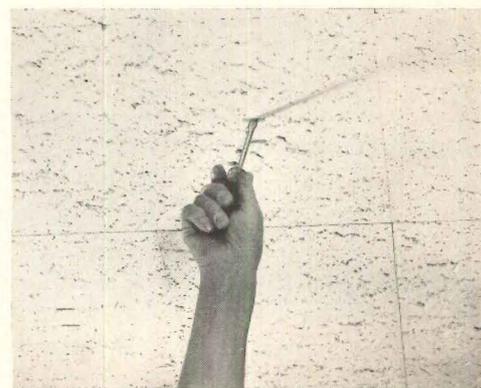
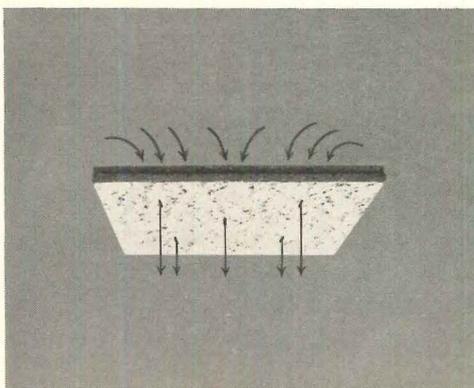
In trouble areas, where drafts and poor air distribution cause discomfort, AIRSON creates year-round comfort. AIRSON Systems provide wall-to-wall comfort for rooms with high ceilings, low ceilings, and special conditions such as glass walls.

†Address of AIRSON installation in your area on request.

*T.M. Reg. U.S. Pat. Off.



about air distribution



A Cube of Comfort surrounds you in every room, from wall to wall and ceiling to floor. The AIRSON Air Distribution System provides uniform air motion throughout the room. Air penetrates deep into the room—down where the people live.

Scientific design of an AIRSON System moves conditioned air under pressure from the plenum down into the room, through openings in the ACOUSTONE* Mineral Tiles. Air is delivered at exactly the right velocity for draft-free air motion.

Instant adjusting is an AIRSON exclusive. You can balance air motion to meet changing needs *without removing any tiles*. Ask your U.S.G. Architect Service Rep.; or write us at 101 South Wacker Drive, Dept. 147-7, Chicago, Illinois 60606.

AIRSON* by **UNITED STATES GYPSUM**
 AIR DISTRIBUTION SYSTEM THE GREATEST NAME IN BUILDING

This is the
Open World
of L-O-F glass

701
JEFFERSON ST.



Ohio Fuel Gas Company, Toledo. Architects: Richards, Bauer & Moorhead, Toledo

Why Tuf-flex[®] Doors? The reason is clear

**There are no frames to block
your view. None are needed.**

Because *Tuf-flex* tempered plate glass is heat-strengthened—up to 5 times stronger than ordinary plate glass of the same size and thickness.

L-O-F makes frame-free *Tuf-flex* doors of *Parallel-O-Plate*[®] in two thicknesses ($\frac{1}{2}$ "

and $\frac{3}{4}$ ") and in representative standard sizes and styles. They also are available in $\frac{1}{2}$ " regular Rough Plate, and in $\frac{1}{2}$ " *Parallel-O-Grey*[®] and *Parallel-O-Bronze*[®].

To open the doors, L-O-F offers a distinctive line of new hardware. Ask your

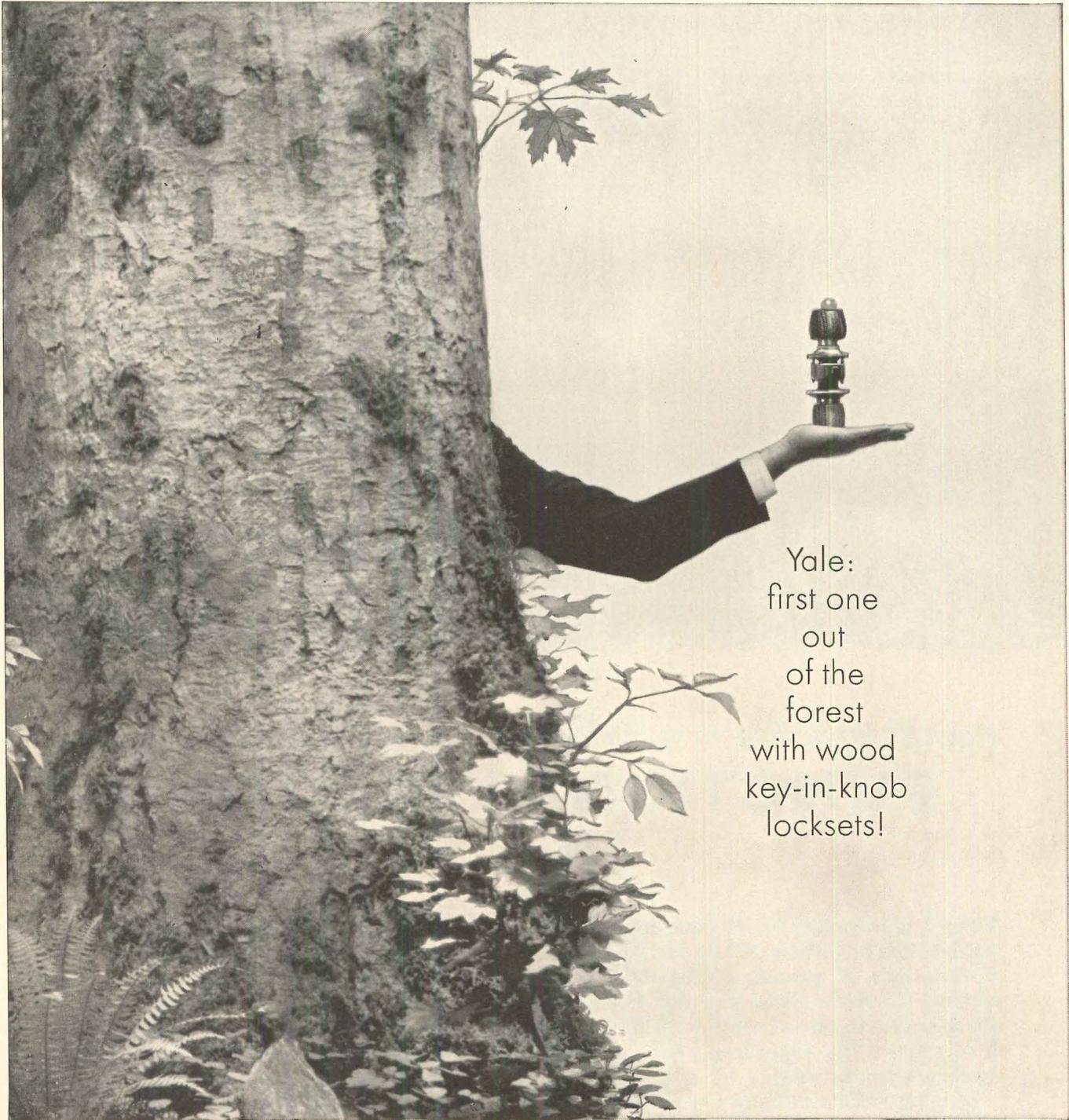
Libbey-Owens-Ford Glass Distributor (listed under "Glass" in the Yellow Pages) for a copy of the booklets, "Custom 300 Push-Pull Bars" and "*Tuf-flex* Doors". Or write

MADE IN U.S.A. L-O-F, 2024 Libbey-Owens-Ford Building, Toledo, Ohio 43624.

Libbey·Owens·Ford



TOLEDO, OHIO

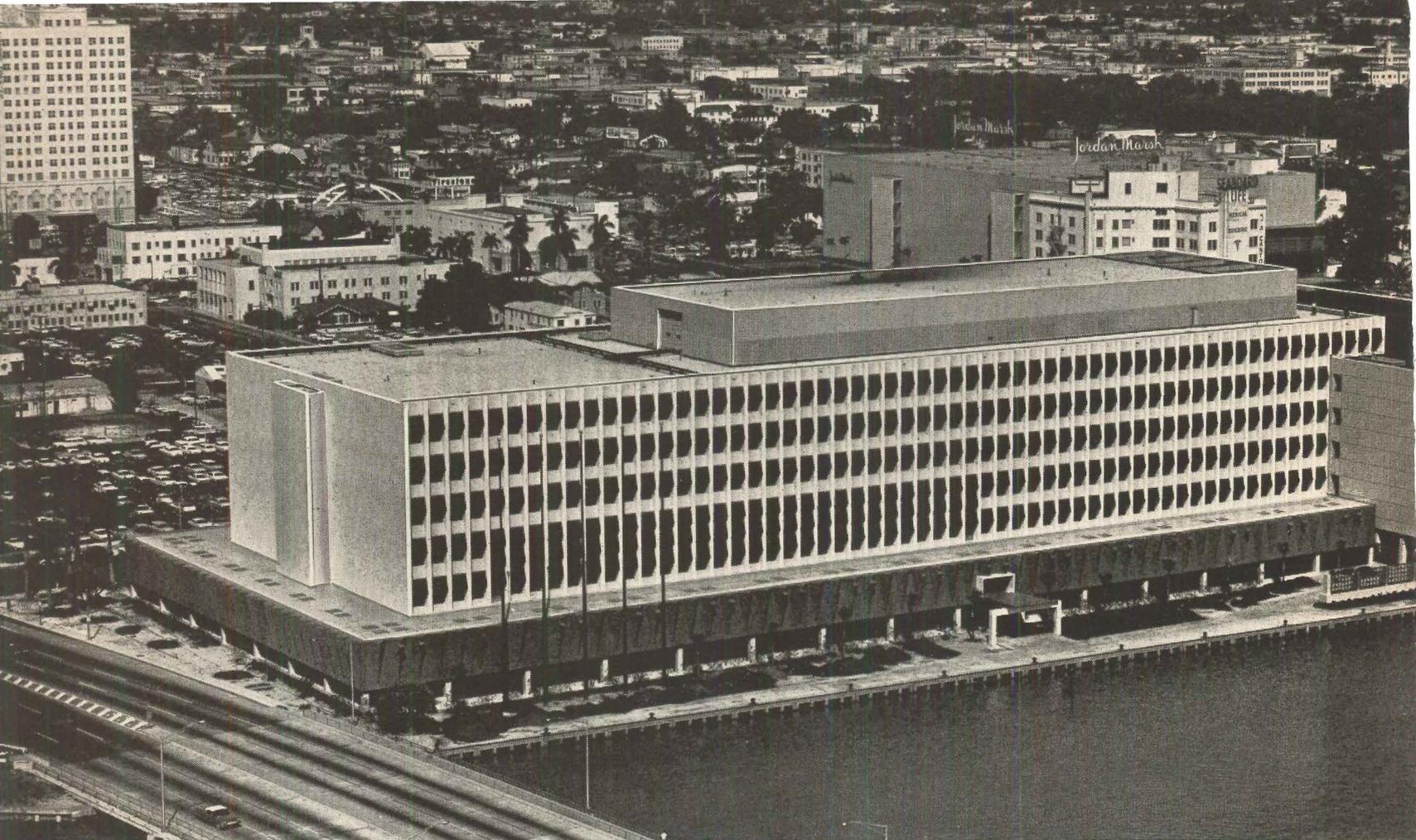


COURTESY, MUSEUM OF NATURAL HISTORY

Yale:
first one
out
of the
forest
with wood
key-in-knob
locksets!

Yale combed the forest, and came out with the first wood knobs for key-in-knob locksets. In four majestic woods, too—rosewood, stratawood, cocobolo, walnut. This is hardware in the Yale tradition: functional security combined with natural beauty ... integrity of design that lets you match door-knob to door, or both to paneled interiors. Yale wood knobs are durable, easy to care for, static-proof. There are seven popular designs for home and office. Each can be used with Yale Mortise Locks, Mono-locks and Cylindrical Locksets. A classic addition to the most complete, most advanced hardware line available anywhere.

YALE
THE FINEST NAME IN
LOCKS AND HARDWARE
YALE & TOWNE



How Republic Stainless Steel gives Florida's new Miami Herald Building...
FUNCTIONAL BEAUTY WITH

Look for no premature loss of value or beauty in this new landmark on Miami's Biscayne Bay. Hundreds of thousands of pounds of Republic Type 316 ENDURO® Stainless Steel give this building functional beauty inside and outside, with the promise of maximum life expectancy and maintenance economy over the years.

Built by Florida's Miami Herald, the building is believed to be the second largest newspaper plant in the United States. The stainless was used in the main entranceway and in window framing, in escalator and elevator components, wall panel divider strips and railings, column covers and newspaper chutes, kitchen and office equipment, and many other applications.

The unusual use of Type 316 chrome-nickel stainless steel assures a proven defense against corrosion attack, a serious problem in Miami's salt-laden atmosphere. This is the same type of stainless used in process applications to combat highly corrosive salts, acids, dyes, and other chemicals.

The metal's resistance to impact, abrasion, and scratching promises lasting beauty and utility in The Miami Herald's fast-moving, round-the-clock publishing operations. Maintenance costs will be low because stainless steel requires no paint or special finishes, and eliminates the need for scouring. Dirt won't cling—is removed with simple soap and water cleaning—because stainless is smooth and nonporous.

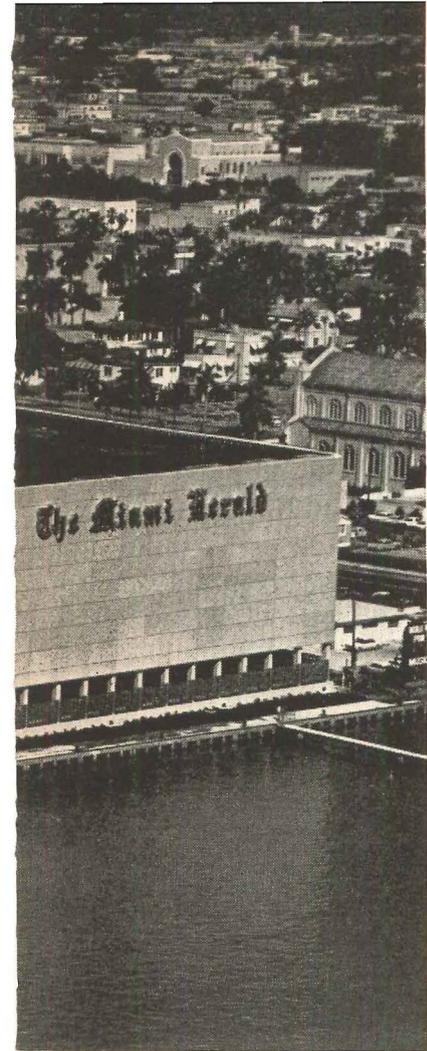
Leading producer of stainless and alloy steels, Republic will help you select and apply the stainless steel best suited to requirements. Republic produces 45 standard types of ENDURO Stainless Steel, tailors others to meet special customer requirements. For information, contact your nearest Republic representative or write: *Republic Steel Corporation, Dept. AF-7389, 1441 Republic Bldg., Cleveland, Ohio 44101.*

REPUBLIC STEEL

Cleveland, Ohio 44101

You Can Take the Pulse of Progress at Republic Steel





The Miami Herald Building, photographed from the air over Biscayne Bay. The building was planned by Naess and Murphy, Architects and Engineers. General contractors: Gus K. Newburg Construction Company. Architectural stainless fabricated and installed by Rippel Architectural Metals, Inc.

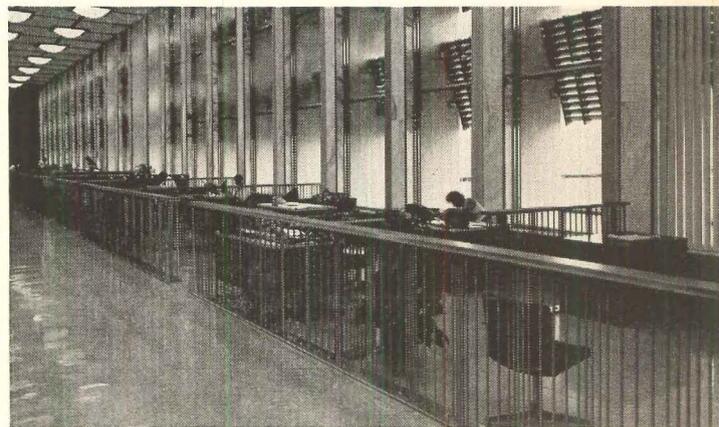
The building entrance at night. Note that vital storm-proofing is achieved by closely criss-crossing stainless mullions which anchor 1/2-inch-thick glass. Doors are stainless, too.



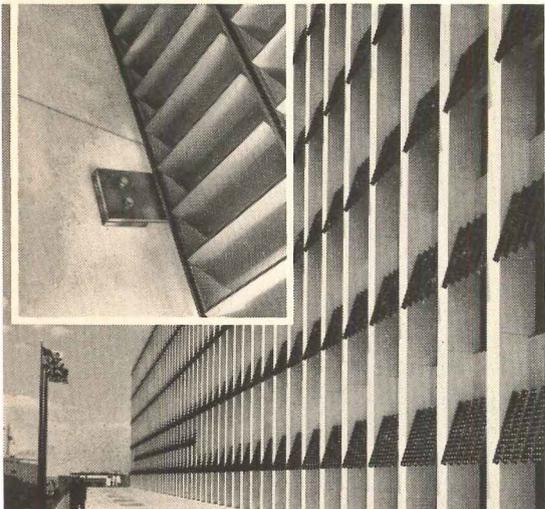
Strong, Modern, Dependable



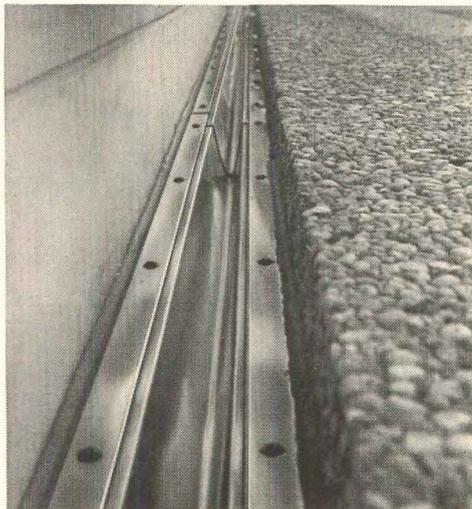
View of part of The Herald's business offices offers a close look at the sturdy stainless window frames and the lavish use of stainless in railings.



GREATER LIFE EXPECTANCY



Of the 17,487 stainless-framed windows in The Miami Herald Building, hundreds are equipped with sunshades secured to the building with stainless steel anchors, plates, and bolts.

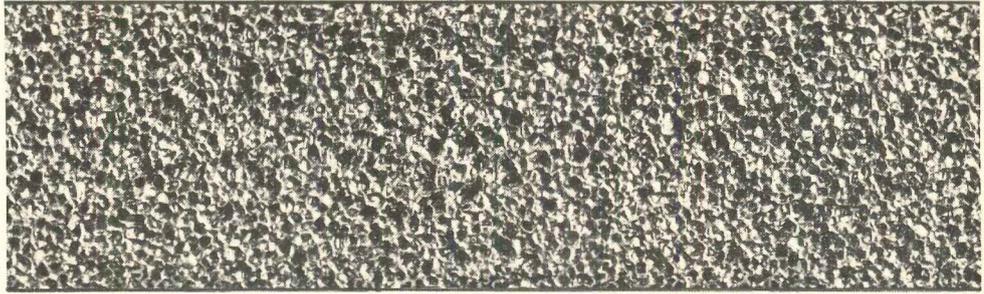


Worm's-eye view of a stainless expansion joint employed to seal the open space between The Herald's offices and press structure. Joint eliminates vibration caused when the giant presses roll.



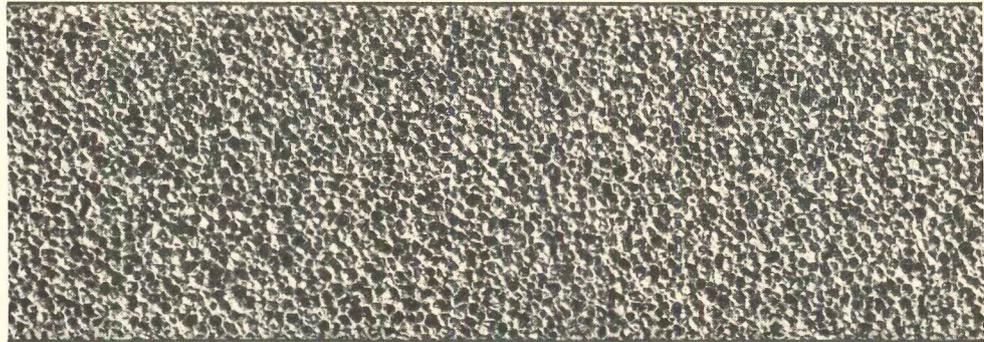
Stainless in kitchen and backbar equipment helps keep The Herald's beautiful cafeteria sparkling clean at all times. Railing in foreground is fabricated from Republic Type 316 ENDURO Stainless Steel Flat Bar Stock.

1 1/2"



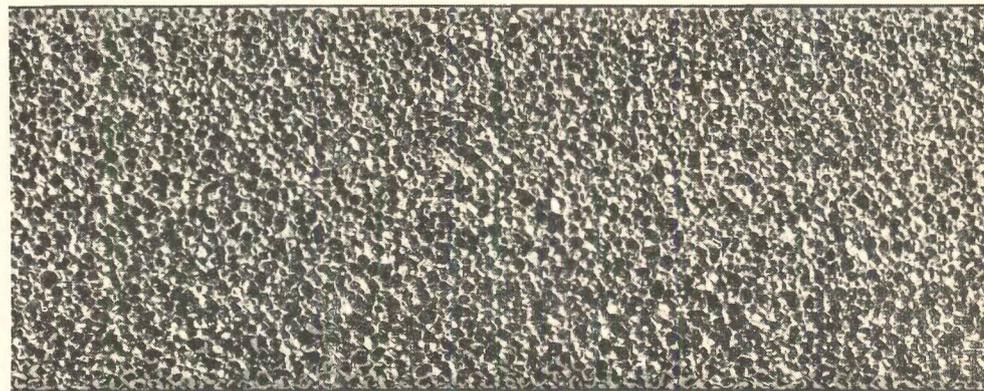
It used to be just this thick

1 3/4"



Now it's also this thick

2"



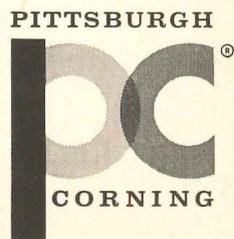
And this thick

Now you can pick
just the roof insulation thickness
you need with
FOAMGLAS®-BOARD

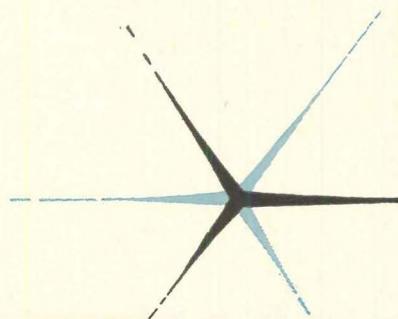
The 1 1/2" thick FOAMGLAS-BOARD roof insulation that's been available to date proved a good start. But only a start. It proved so popular we've had to add two new



thicknesses: 1 3/4" and 2". Now the quality and permanence of FOAMGLAS are available in three thicknesses—all in 2' x 4' roofing units. Only FOAMGLAS Insulation carries a written guarantee that it will not absorb moisture, will retain its original insulating efficiency and compressive strength and will remain incombustible—for 20 years. Write for our new FOAMGLAS-BOARD bulletin. Pittsburgh Corning Corporation, Department AF-24, One Gateway Center, Pittsburgh 22, Pa.



There is a difference in venetian blinds

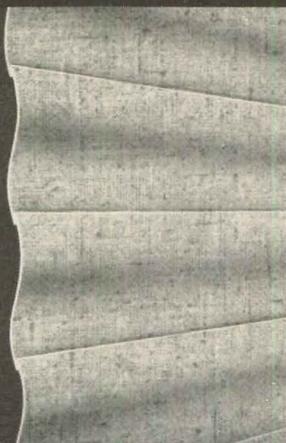


and the big difference is Eastern's Star!



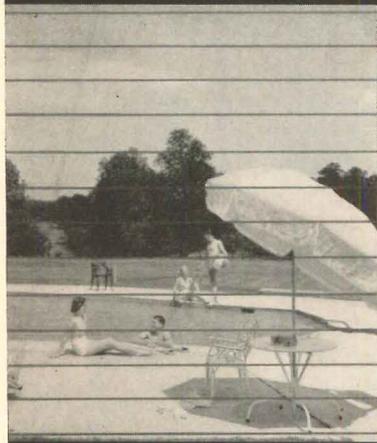
Exclusive DuPont "Ludox" finish ends washing!

Eastern's Star blinds stay clean . . . never need washing! They're the only blind finished with Ludox, DuPont's colloidal silica compound which guards against soil of every description, saves dollars in maintenance.



Wider, stronger S-shaped slat!

Interlocking 2½" double-arc slats create a graceful, flowing one-piece effect when closed. Combining extra strength with unusual flexibility, they provide exceptional resistance to abuse of all kinds. Now also in smart, new Vertical styles, Eastern's Star complements the most fashionable interiors!



Up to 38% more visibility when blind is open!

Eastern's Star's wider slats allow far wider spacing than other blinds . . . make a big difference in light and visibility. In addition, their unique S-shape acts to diffuse entering rays, eliminates all glare.



Eastern's Star is the ideal audio-visual blind!

When closed slats overlap perfectly. Even in direct sunshine, rays will not seep through. Installed with special side channels, Eastern's Star Audio-Visuals afford excellent dark-room conditions for screening of films, televiewing, etc.

Write for full details about Eastern's Star, the blind that's different . . . or see Sweet's 18d/Ea.

1601 Wicomico Street, Baltimore, Md. 21230
MAKERS OF ACOUSTICAL MATERIALS, DRAPERY HARDWARE,
METAL PRODUCTS FOR HOME AND INDUSTRY.

Distributors and warehouses in major cities

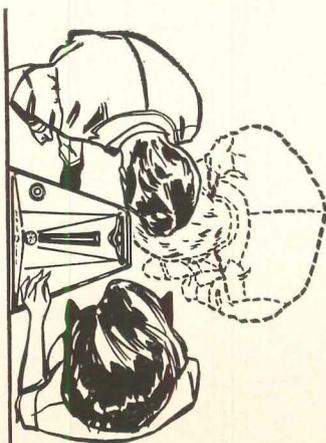




TRAPEZOID = A COMPLIMENT TO YOUR MOST MODERN DECOR

The Hartford Building, Chicago

Exclusive trapezoid shape of General Electric water coolers saves you over a foot of aisle space. Drinkers approach from either side, do not clog aisles. Both wall-hung and floor models mount flush to wall, hide plumbing for best appearance.

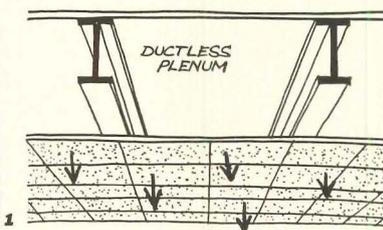
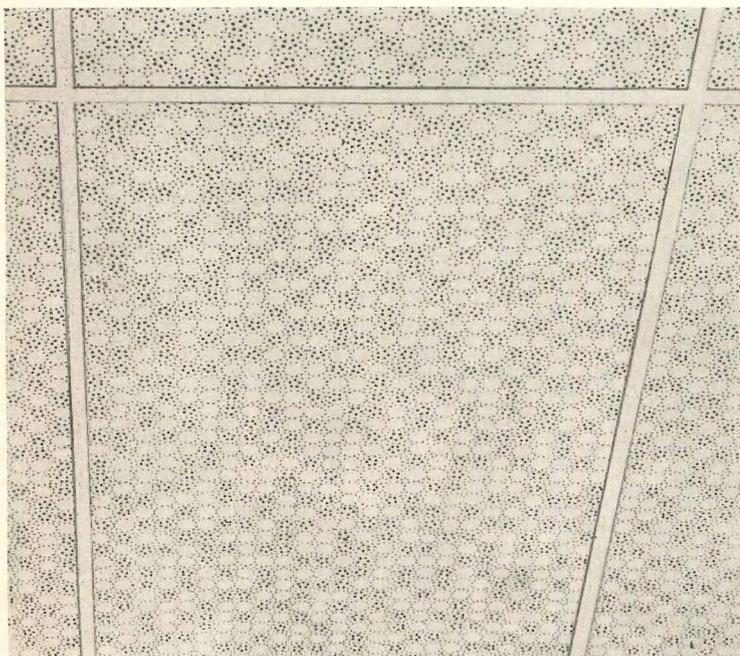


NEW General Electric Wall-hung Water Coolers

give you an exciting new shape in refreshment—exclusive trapezoid design. These attractive, flush-to-wall coolers are different in a truly functional way. The space saving trapezoid shape invites drinking from either side, keeps personnel out of aisle. Mount the smart-looking wall-hung models at any height for easy floor-cleaning. Ask your General Electric distributor for "Specifier's Water Cooler Guide," No. 67-2042. Or write Section 761-23, General Electric Co., Chicago Heights, Illinois.

Progress Is Our Most Important Product

GENERAL  ELECTRIC



THREE CEILINGS

1. Celotex Corp. has developed a ventilating ceiling called the *Celo-Flow* system, based on the use of its perforated acoustical tiles and 2 by 2 and 2 by 4 foot lay-in panels, plus a standard pressurized plenum (photo and diagram, left).

The mineral fiber *Celo-Flow* panels provide 2- or 3-hour fire ratings; the tiles are rated Class A Incombustible. Celotex also provides a variety of suspension systems.

The cost, including the panels or tiles and the suspension system, ranges from 75¢ to \$1 per square foot, installed.

Manufacturer: Celotex Corp., 120 S. LaSalle St., Chicago, Ill.

2. The E. F. Hauserman Co. has introduced its *Glowing Ceiling*, a system featuring perforated panels of Johns-Manville's Luminglas glass-fiber-reinforced acrylic.

The perforated panels provide a 25 per cent noise reduction coefficient; air distribution from the pressurized plenum is controlled by using different sizes and spacing of the holes, and inserting matching, nonperforated panels as needed. All the panels act as diffusers for direct or indirect lighting fixtures above them in the plenum space.

Cost of the complete system, installed and including lighting: \$4 to \$5 per square foot. The Hauserman Company acts as interior contractor.

Distributor: E. F. Hauserman Co., 7516 Grant Ave., Cleveland, Ohio.

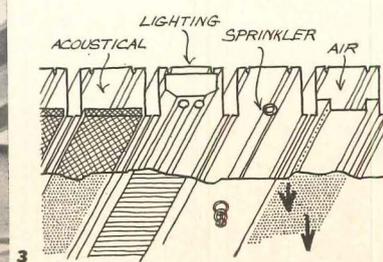
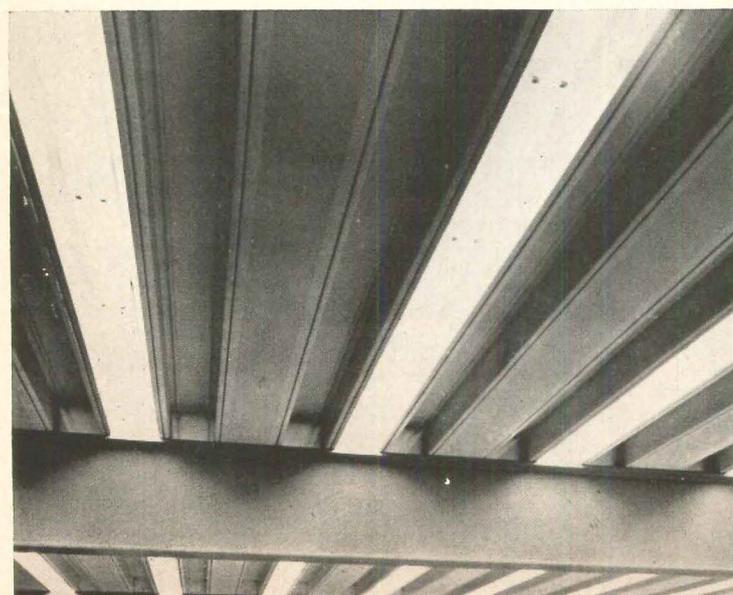
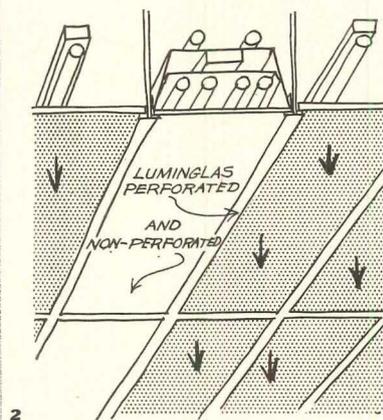
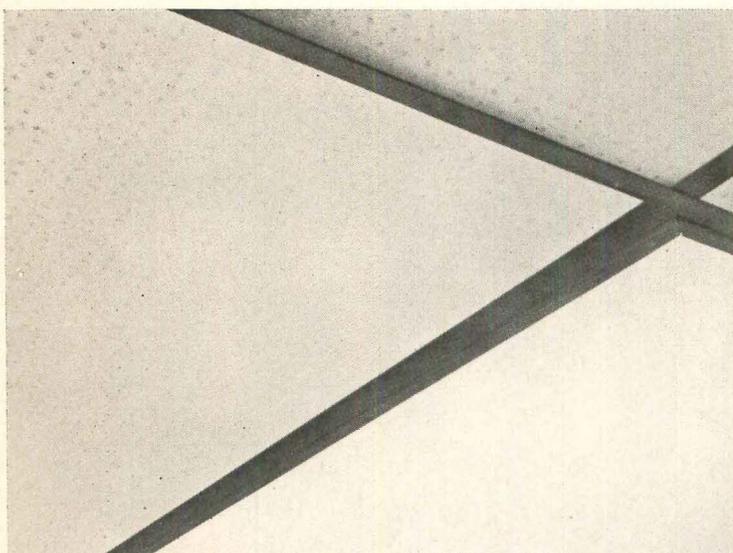
3. The new *Mahonaire* ceiling is a structural system which incorporates lighting, air distribution, sound control, and utilities.

The core of the system is a galvanized steel "cell" 9 5/16 inches wide and 6 or 7 1/2 inches deep. The cell can act as a duct, or, with a perforated lower section, as an air diffuser. It can be adapted to hold several types of lighting fixtures, or can be packed with sound-absorbing material. Finally, it can be a raceway for utilities (diagrams, left).

Cost of a complete *Mahonaire* system, installed (not including lighting): approximately \$1.70 per square foot.

Manufacturer: R. C. Mahon Co., Detroit 34, Mich.

continued on page 160





the
Prestressed
Concrete Institute
invites you
to enter

ANNUAL PCI AWARDS

FIRST AWARD WINNER • 1963

ST. RICHARD CHURCH
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MONTREAL, QUEBEC

Architect: Maurice Robillard
Engineer: Jean Dechesneau

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Purpose of the PCI Annual Awards program is to recognize creative design using prestressed concrete.

Any type of structure may be entered no matter what its size or cost. Entries will be judged on their contribution to the advancement of prestressed concrete. Originality demonstrated in architectural and/or engineering design involving applications or techniques of assembly, arrangement or use will form the basis of judgement. Any prestressed concrete project completed within the last three years, or substantially completed by March 31, 1964 is qualified for entry. Award Jurors will be nationally recognized architects and engineers.

Eligibility: All registered architects and engineers practicing professionally in the

United States, its possessions and Canada are eligible to submit one or more entries.

First Award winner will be presented with a plaque testifying to the value of his contribution. An all expense paid trip for two will be provided so the winner may attend the PCI Convention in Washington, D.C., September 20 to 25 during which award ceremonies will be held. Other distinguished entries will be recognized with *Award of Merit* plaques.

A Special Bridge Award will be made for best application of prestressed concrete in a bridge.

Get full details about the PCI Annual Awards program from your nearest PCI Active Member (see list below) or send in the coupon for your copy of the PCI Awards Rule Book.



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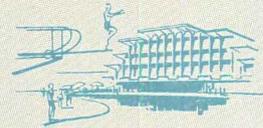
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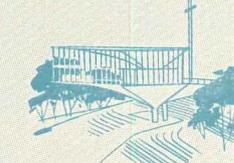
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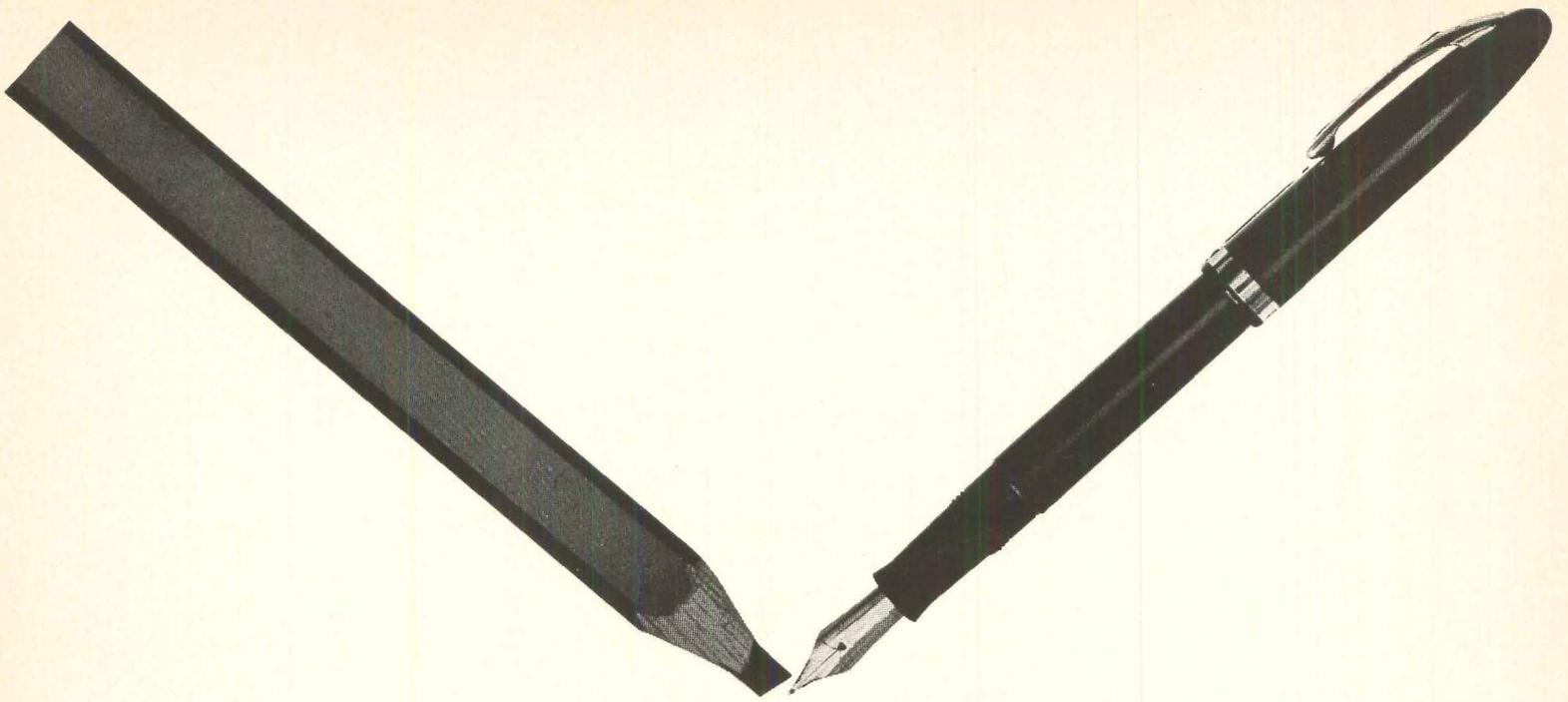
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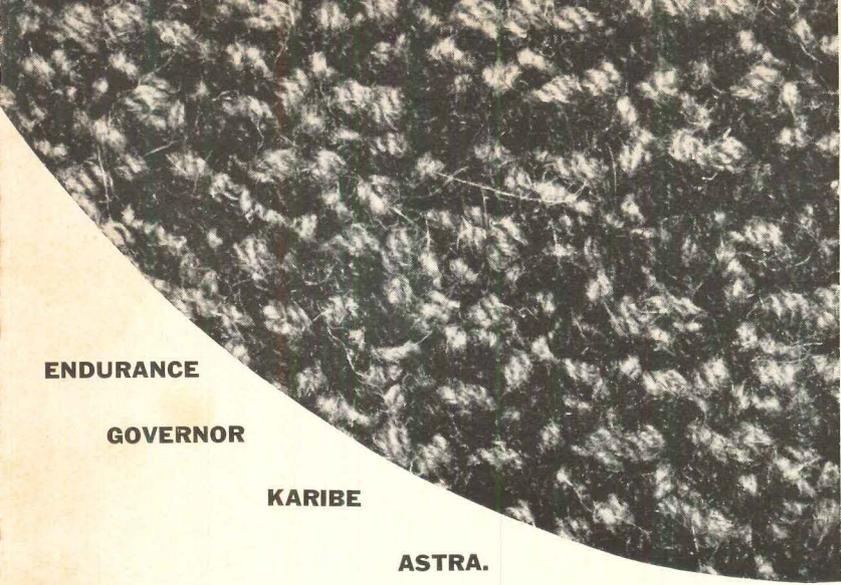
Every building project must satisfy three points of view: those championed by the architect/engineer, the contractor/subcontractor and the client/owner. Not until they put their heads together in agreement do buildings get built and products get sold.

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Lehighton, Pennsylvania

DURALOOM is proud to add another important company to its growing number of discerning corporate clients who have found the performance of its carpets unexcelled. DURALOOM stocks forty-eight numbers but it will welcome your inquiries for special weavings engineered to your colors and specifications.

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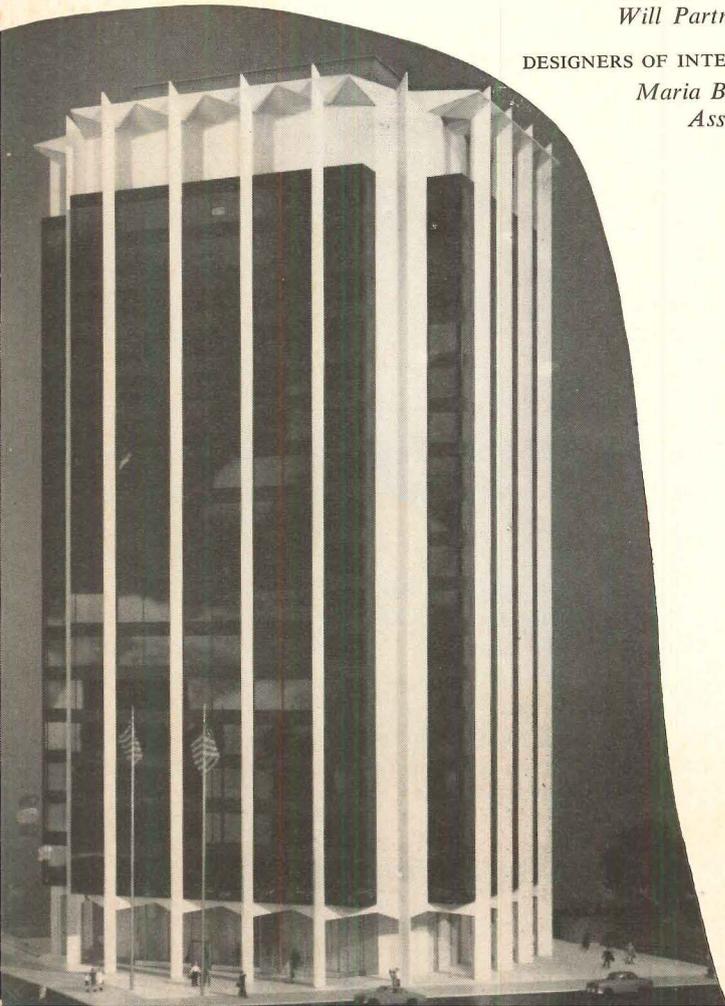
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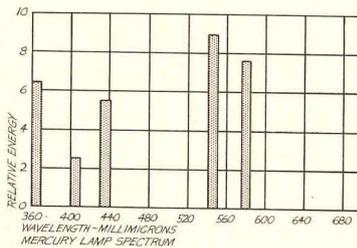
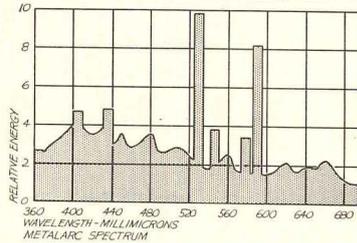
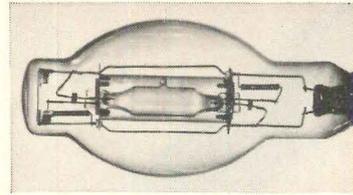
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*Maria Bergson
Associates*



PRODUCTS

continued from page 155



NEW VAPOR LAMP

Sylvania has announced the development of a new vapor lamp, the *Metalarc*, which provides a very efficient, high intensity light source suitable for the outdoor and large-area situations where mercury lamps are used. Rather than a mercury arc, the new lamp uses metal iodides, which produce a more continuous color spectrum (charts, left) and hence less color distortion. The *Metalarc* has an average rated life of 7,500 hours on a 10-hour on-off cycle, and produces an average of 80 lumens per watt.

List price of the *Metalarc* is \$24.50 in the 400-watt size; it will be produced in the same range of wattages as Sylvania's mercury lamps.

Manufacturer: Sylvania Electric Products, Inc., 730 Third Ave., New York, N.Y.

VINYL-CLAD WINDOWS

Ceco Steel has introduced a steel window with a permanent vinyl coating (*Products*, Aug. '62). The vinyl finish, called *Cecoclad*, comes in a choice of colors and eliminates the need for painting or any extensive maintenance.

The new window combines the strength of steel with extreme corrosion resistance; ASTM salt spray tests show practically no effect after 2,000 hours of exposure. The vinyl, 6 to 10 mils thick, is

applied by a special spray process combined with an electrostatic charge which causes extra thickness to build up on sharp edges where there is most wear.

Cecoclad windows come in a variety of styles and weights; the cost is comparable to that of galvanized steel or anodized aluminum windows.

Manufacturer: Ceco Steel Products Corp., 5601 W. 26th St., Chicago, Ill.

ADJUSTABLE DUCT

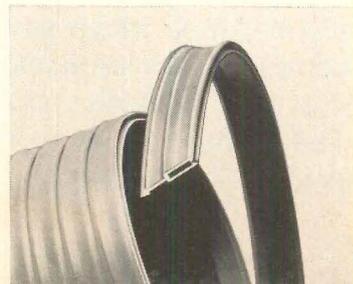


A new all-plastic duct called *Pliaduct* is made of an arrow-shaped strip of polyvinyl chloride that locks in on itself in a continuous spiral. Since the duct's diameter can be increased or decreased 25 per cent simply by twisting (photos, left) it can be attached to any other fitting, joint, or duct with ease.

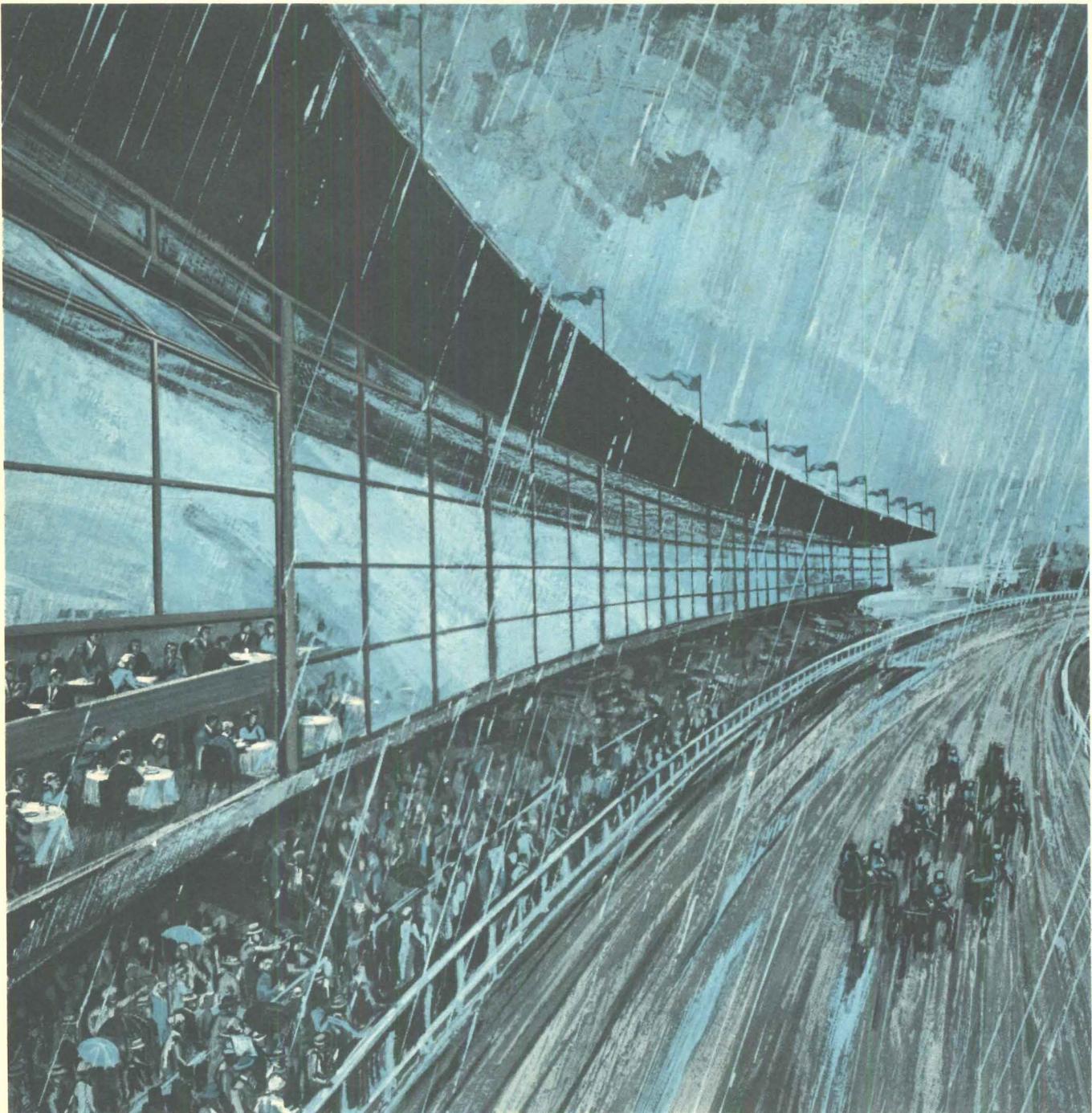
Pliaduct is also adjustable in length, and can be extended or compressed up to 45 per cent; it comes in standard lengths of 35 feet and diameters up to 20 inches, and other sizes on request.

The duct costs \$1 per foot in a 4-inch diameter. Ease of installation and fitting is expected to result in labor savings over conventional products.

Manufacturer: Dayco Corp., Dayton, Ohio.



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Panoramic aluminum "OVERHEAD DOORS" at Vernon Downs Racetrack, Vernon, New York

There's no closure problem you can't control with The "OVERHEAD DOOR"

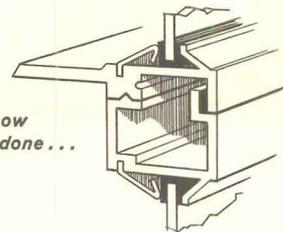
It's a safe bet you'll never face the need to protect clubhouse spectators in a race against the rain. But the odds are good you'll run up against some rugged closure problems. When you do, our Architect Design Service can help you solve them with skill and imagination, and the versatile "OVERHEAD DOOR."



made only by

OVERHEAD DOOR CORPORATION

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*Here's how
it was done . . .*

Architect James Curtin, Syracuse, New York, used the perfect weather seal of The "OVERHEAD DOOR" with extruded aluminum (#6063T6 alloy) stiles and rails. Details include vinyl channels, snap moulds, and built-in reinforcing struts. Anodized aluminum extrusions and panels have 30-minute 0.4 mil coating. Basic door features outstanding visibility and easy conversion as a movable weather wall.



Repoussé Tile Pattern © Kentile, Inc., 1963.

Two variations on a repoussé theme. Floor shown above makes dramatic use of new Kentile® Repoussé I (octagonal styling) and Repoussé II (circular styling) Solid Vinyl Tiles. 8 colors (shown here coordinated with White Solid Vinyl Tile).

New Repoussé—A.I.D.-Award-Winning* Solid Vinyl Tile.

Elegant, timeless Repoussé design is exclusively Kentile's. Use Repoussé Vinyl Tile to add an exotic accent to fine residential and commercial installations. Embossed surface helps conceal underfloor imperfections and spiked-heel dents. Long-wearing, easy to clean, greaseproof. Thicknesses: .080" and 1/8". Size: 12" x 12".

KENTILE
VINYL **FLOORS**

*Kentile Repoussé, selected for excellence in design in the American Institute of Interior Designers International Design Awards—1964.