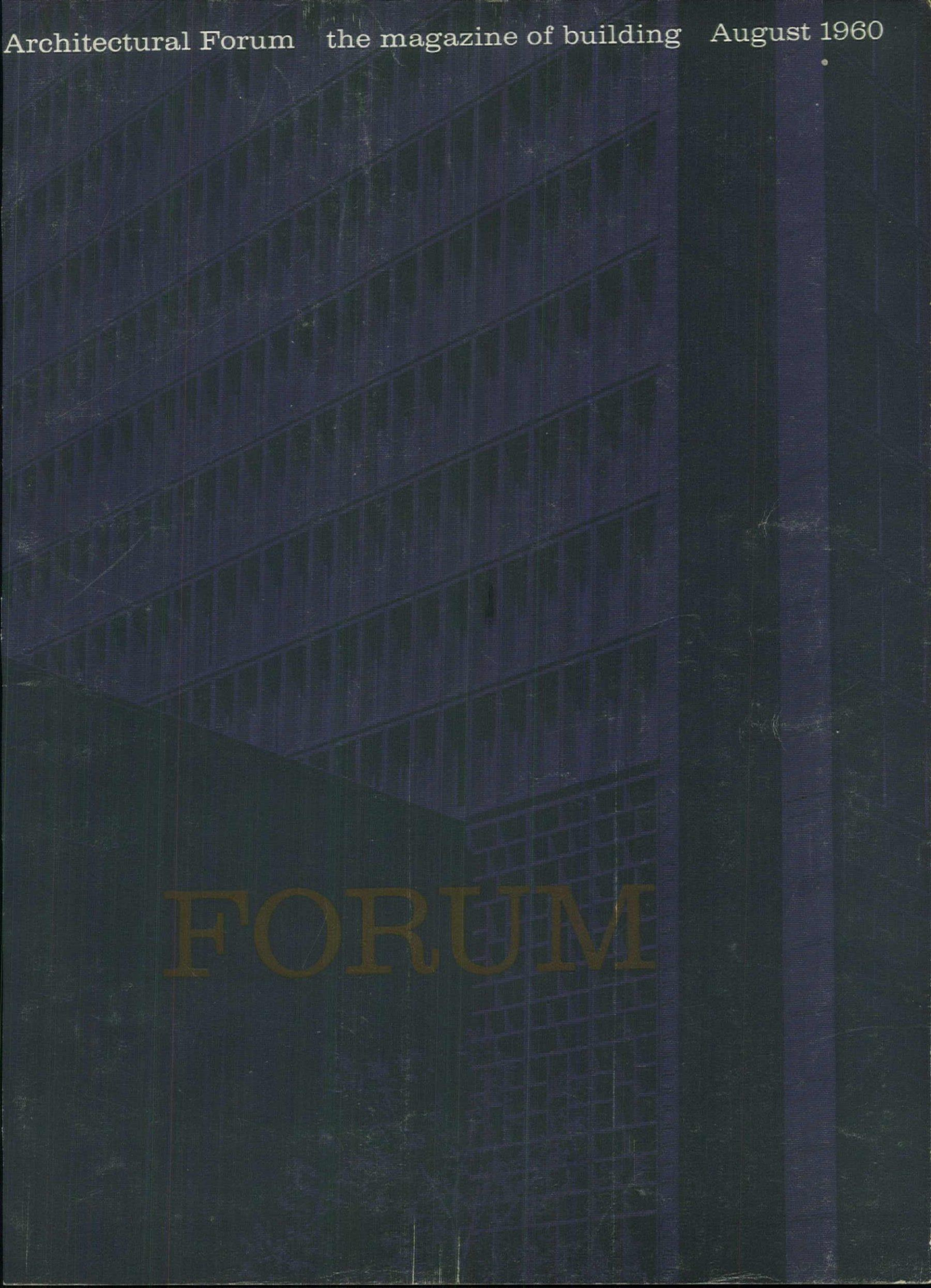
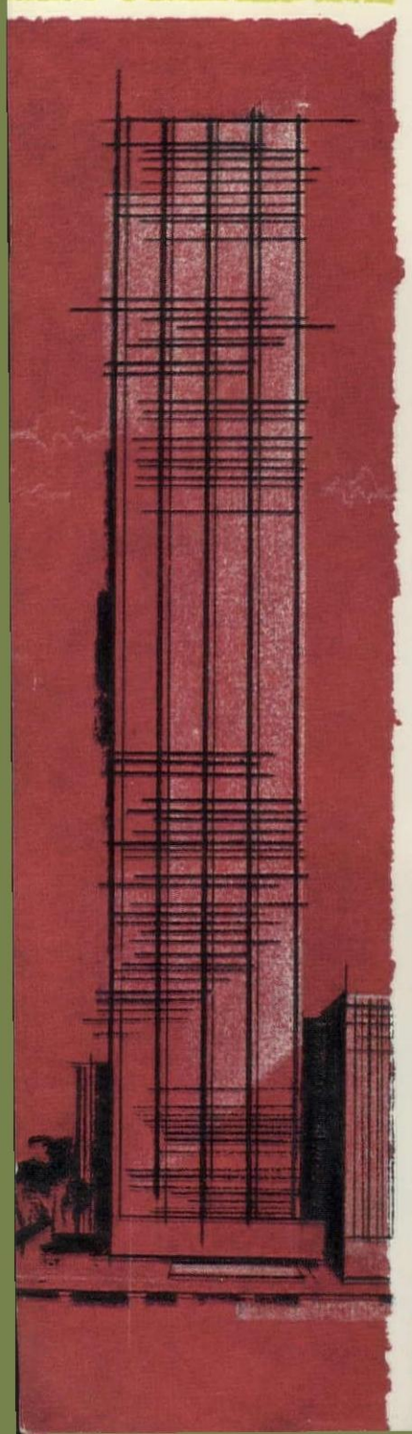
Architectural Forum the magazine of building August 1960



FORUM

Tyler elevator cars and entrances equip Rockefeller Center's new 48-story Time and Life Building



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Architectural Forum August 1960

VOLUME 113 NUMBER 2

Cover: Detail of I. M. Pei's Hotel Hilton, Denver, Col. Photo by George Cserna (story, page 94).

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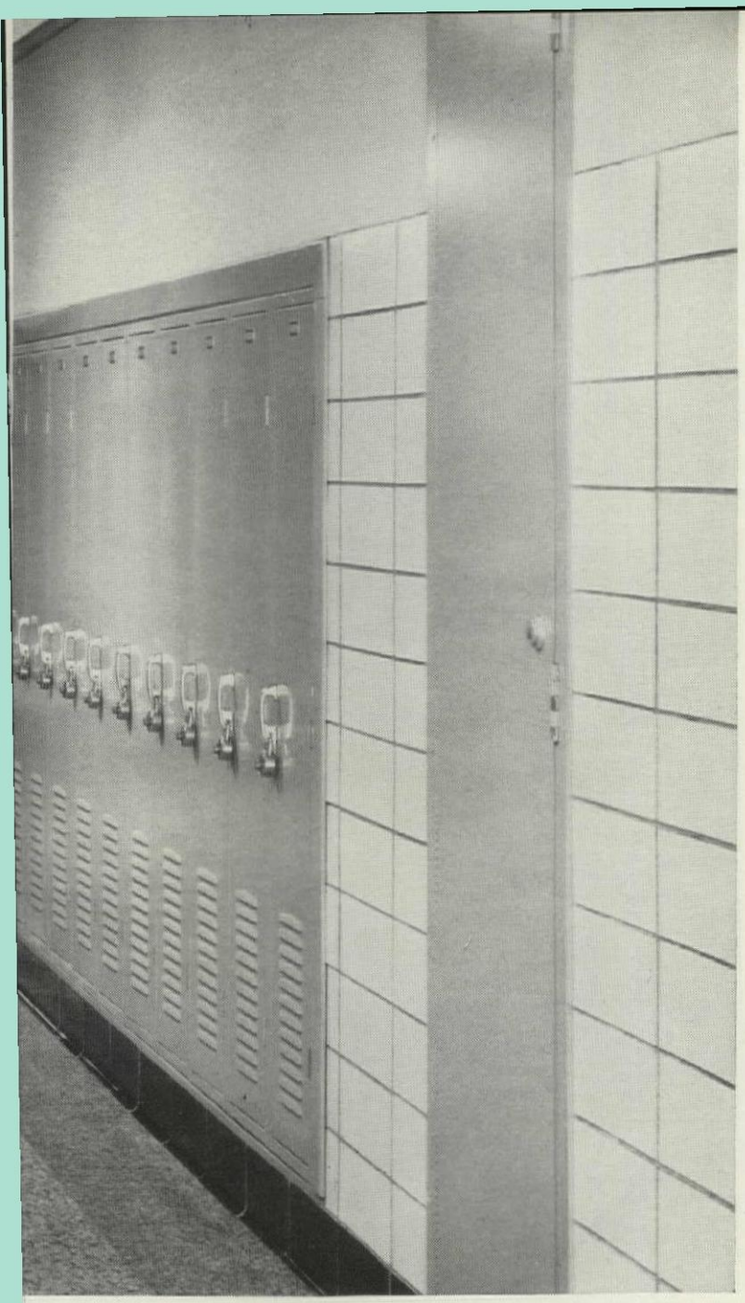

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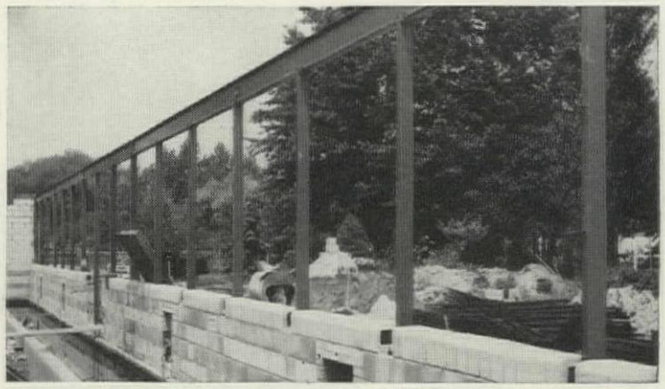

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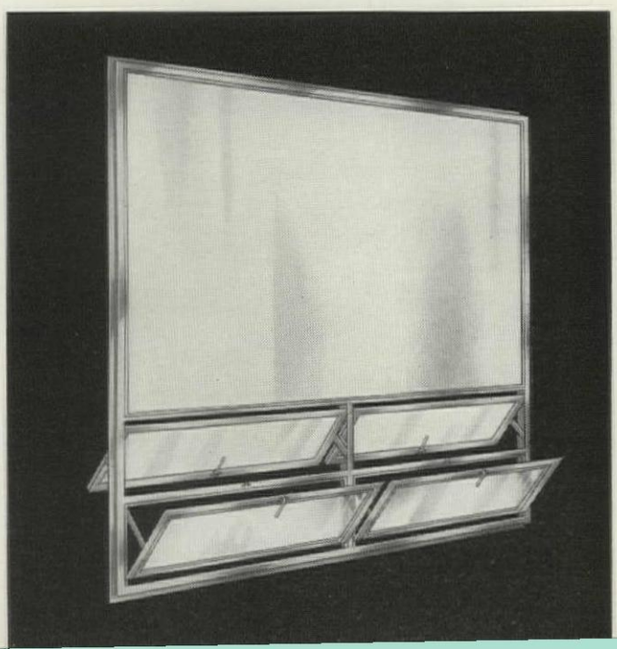

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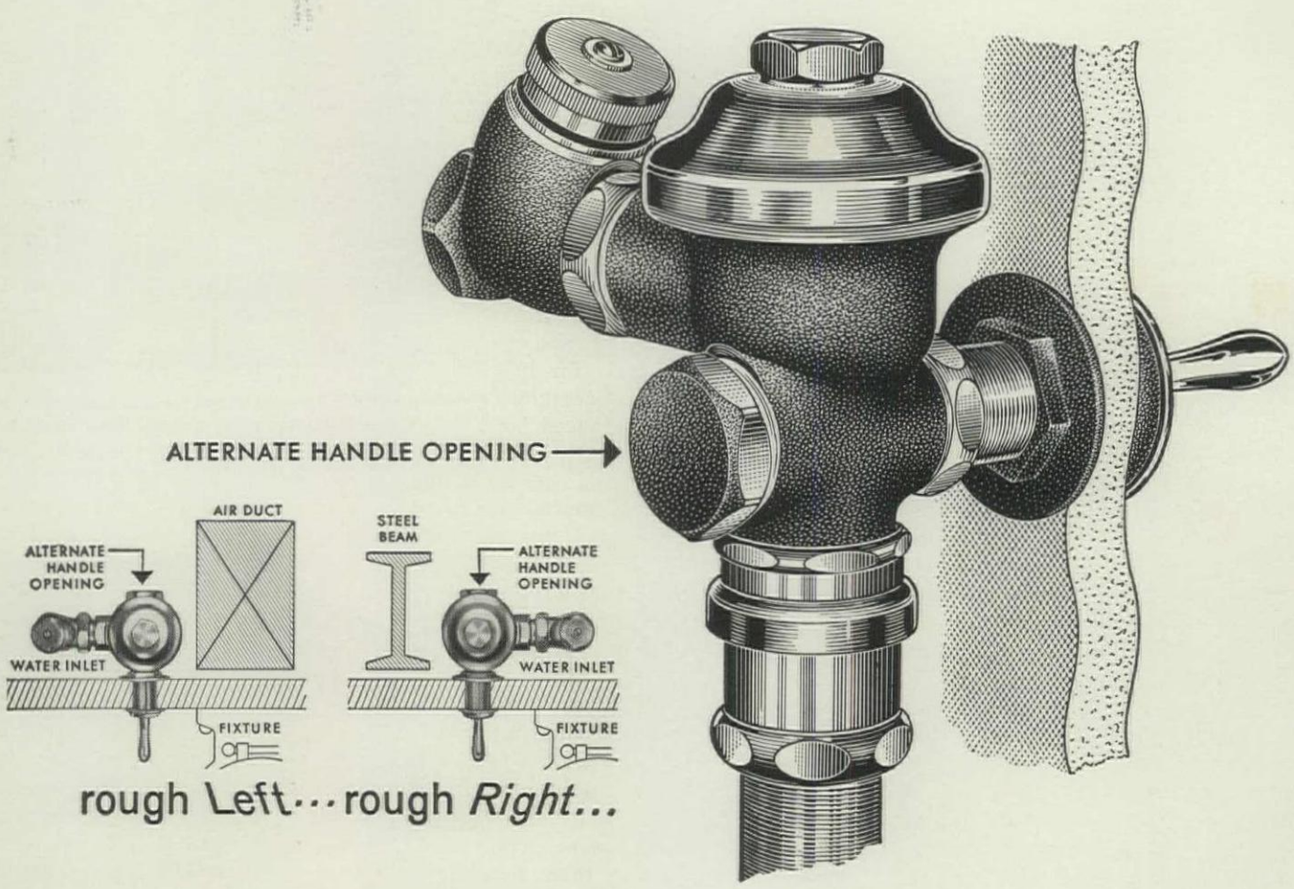

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San Francisco Golden Gateway design competition may be compromised by high land price offer

Is San Francisco's dramatic Golden Gateway redevelopment project (FORUM, April '60) going to be awarded primarily on the basis of the highest land price offer, rather than design merit?

Or, if the city ignores an exceptionally favorable land offer, will the Urban Renewal Administration or an economy-minded Congress curtail or restrict future federal renewal contribution?

These questions were pertinent for redevelopment interests everywhere last month because San Francisco had made the highest land offer one of the conditions in what most developers had regarded as primarily a design competition for the Golden Gateway project. Having received eight widely disparate land bids, the city was now confronted with a serious dilemma: how to reconcile price vs. design in selecting the winner. It has always been a Title I problem to decide to what degree federal and local funds should be used to write down land prices and thereby encourage redevelopment projects of superior design and esthetics rather than projects of generally acceptable standards. But the problem has never been so acute, or so sharply defined, as in the Golden Gateway project. And, ironically, the difficulty might have been avoided entirely if the local redevelopment agency had followed another procedure approved by URA and had simply established a single fixed price for which the land would be sold to whatever competent developer submitted the best project on the basis of design and amenities. This was the procedure Philadelphia used successfully in its Society Hill project.

ASSOCIATED PHOTOGRAPHERS

DEL WEBB

His payment plan added confusion.

Holding the Golden Gateway spotlight was the land bid of the Kern County Land Co. and Del E. Webb Construction Co. Their basic complex offer for the main 16.3-acre residential portion of the project was $6 million, plus an additional $6 million in another ten years, or, if they preferred, $9 million after 20 years. Normally Title I purchases must be paid for in full by the time a project is completed, and the complications introduced by Kern-Webb's deferred-payment offer only added to the confusion confronting local and federal renewal officials (below). Kern-Webb said this scheme would let the city share in the future appreciation in the value of the property. It was described as a formula used by Del Webb in various motel, shopping center, and other conventional building ventures when he wished to reduce the equity funds required in the early years of a project. He considers the land to be worth 100 per cent of gross annual income for the first ten speculative years, while the venture is seasoning, then considers that it will be worth 10 per cent of estimated gross income capitalized at 5 per cent.

The other bids for the residential tract before the redevelopment agency were: $6,320,080, by Barrett-Diversified-Lesser-Braemar; $4,575,000, by Utah Construction; $3,620,000, or else the fair market value, by Tishman-Cahill; $3,514,000 by Eichler Homes; $3,250,000 by Perini–San Francisco Associates; and offers of the official "fair reuse value" but no stated dollar sums, by Lewis Kitchen and Sidney Leiken Enterprises.

According to Executive Director M. Justin Herman, the San Francisco agency's official "fair reuse values" for the residential tract and an adjacent 3.4-acre parcel for a public garage and a single office or apartment tower were approved by the regional HHFA office only three or four days before the deadline for receiving all project proposals last March. But he refuses to divulge them, because this might "have an unsettling effect in terms of the other items of consideration" on which the award of the project might be based. The HHFA regional office also refuses to divulge them, but offers another reason: "They are subject to use in negotiations." During public hearings on the proposals, agency officials have asked redevelopers whether they would be willing to increase their price offers.

This combination of circumstances gives rise to two elementary questions: 1) If the award is to be made primarily for design merit, why is the agency talking with various developers at this time about revising their previously recorded bids? 2) If the award is not to be made primarily for design merit, what is the relative weight that will be given to the land bids?

Herman's replies are inconclusive. "My personal opinion," he said on one occasion, "is that whatever the agency does on the question of land price, I don't think it will make any compromise on what it considers to be the best design." But less than two weeks later he said: "The agency has never said it would take the best design. It has said it would give major emphasis to design, never exclusive emphasis." In effect, developers are competing on both design and price, he added, but any attempt to give a weight to the two factors "would not be meaningful."

Herman also confirmed that the architectural review panel will not rate the proposals by order of merit, but merely submit a general report on each one. Based on these reports, the selection of the best design will then be made by the five members of the redevelopment agency—a chemical engineer, an advertising executive, a telephone company division manager, a department store secretary-treasurer, and a laundry workers' union president.

In Washington, HHFA could shed no clear light on how it might act when it would be called upon to approve whatever contract the San Francisco agency makes with the redeveloper it finally selects. Deeply concerned about the matter, but lacking any details, URA Commissioner David M. Walker dispatched his agency's two top legal and land disposal experts to San Francisco to make a full study and report on the complex situation. Without prejudice to future action, however, Walker did offer a number of general but pertinent observations:

▸ Although price does not have to be the sole criterion for land disposal, if price had been made an element in

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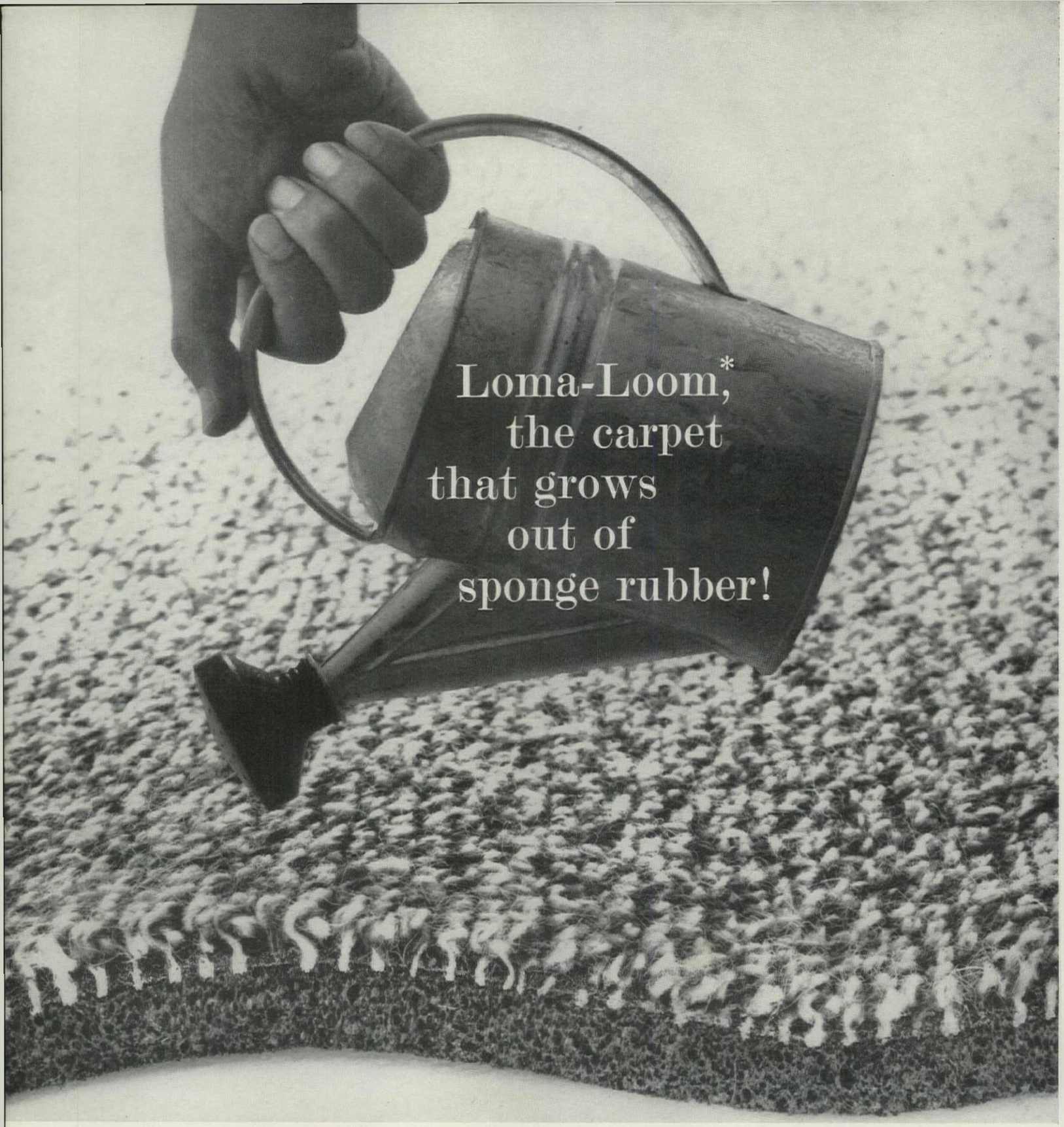

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a competition he might find it difficult to approve a sale at a price substantially below another bona fide offer covering a project of reasonably good design—unless it could be demonstrated quite clearly that the winning design was worth say "as much as a million dollars more" than another from the taxpayers' standpoint.

▸ But he also agrees with the position of some of the nation's leading redevelopers that they will soon lose all interest in bidding for Title I projects, if they are led to believe they can win them in design-superiority contests but, after investing in plans by top architects, they are then pressured to pay just as much for the sites as developers who would exploit them with projects of lesser-quality design.

Meanwhile, the solution to the San Francisco conundrum was being impatiently awaited by 19 of the nation's leading architectural offices which participated in the design competition: Anshen & Allen; Welton Becket & Associates; Pietro Belluschi; John Collier; Corlett & Spackman; Gardner A. Dailey & Associates; Daniel, Mann, Johnson & Mendenhall; DeMars & Reay; Victor Gruen Associates; Donald Kirby; Lawrence Lackey; Philip Langley; Loubet & Glynn; Jan Lubicz-Nycz; Angus McSweeney; Milton Schwartz; Skidmore, Owings & Merrill; John Carl Warnecke & Associates; Wurster, Bernardi & Emmons.

FHA eases its rules for center city apartments

Recognizing a growing demand for downtown apartments, FHA has liberalized its mortgage insurance rules for high-rise multifamily buildings in center-city areas.

Previously FHA required that all section 207 apartments be designed primarily for families with children. It had permitted no more than 20 per cent of the apartments in a project to consist of efficiency units, and it had refused to insure projects in otherwise acceptable locations if the neighborhoods lacked schools or were not considered entirely suitable for children. Now FHA is willing to insure projects in which a majority of the units may be efficiencies, and it will waive the test of suitability for children for projects in otherwise good locations. This will allow the construction in downtown areas of more projects intended primarily for young childless couples and for elderly persons returning from the suburbs after their children have grown and left them.

NABOM convention speakers disagree over public vs. private leadership for downtown renewal

As might have been expected, various aspects of building maintenance, management, and rental were discussed at the annual convention of the National Association of Building Owners and Managers in Philadelphia late in June. Greater concern, however, was expressed for the external environment affecting most city office and commercial buildings today—problems of downtown deterioration, downtown change, and downtown redevelopment.

At the opening session Edmund N. Bacon, executive director of the Philadelphia Planning Commission, touched a sensitive spot when he asserted that he was not in favor of having powerful business community committees take command of center city redevelopment programs. Normally this should be the city's responsibility, he said, provided it has competent, well-staffed planning and redevelopment agencies that can attack the problem on a comprehensive scale. If good municipal direction is lacking, it may be necessary for the business community to take the leadership, said Bacon, but otherwise this should be avoided. Other NABOM speakers argued this point with Bacon, however. Among them, Denver's Perry G. Anderson said the best approach to downtown revitalization would vary from city to city. Citing what he regarded as advantages in the program of the private-enterprise Downtown Denver Improvement Association, of which he is executive director, Anderson said: "We believe there is a sufficient spread between the cost of acquiring and clearing downtown land and what it will bring on resale to obviate any necessity of a write-down through a federal grant. We are planning a privately financed development corporation which will provide the 'seed money' necessary for our new growth. We believe this offers the greatest flexibility, freedom from restraints imposed by grantors, and full opportunity for our business community to realize the incremental values which will accrue as a result of what we are doing in Denver."

Philadelphia Real Estate Leader Frank G. Binswanger also favored predominantly private redevelopment where possible. He tacitly approved government action if private owners fail or are unable to promote or finance advisable demolition and redevelopment. But even then, private enterprise should still exercise a major role in the formulation and direction of any public redevelopment programs, says Binswanger. In some cities, including Philadelphia, he explained, government agencies "have wonderful vision in determining what the city needs, and tremendous energy in trying to do something about it. But I would caution them against projects that are not economically self-sustaining. Sometimes their plans seem to be beyond their ability to find tenants who will pay the price to make the projects economically possible. Members of NABOM should be called upon by these agencies so that the planners can get experienced advice on the economic factors of the projects they propose, to make sure they can be self-sustaining."

At other convention sessions:

▸ Gerald T. Hart, of Denver, urged improvement of NABOM's Building Planning Service studies by working out joint agreements with the A.I.A. and the American Institute of Real Estate Appraisers to have independent architects and appraisers, who would

continued on page 9

IMMENSE PORTLAND SHOPPING CENTER

Developers of the 50-acre Lloyd Center, which opened August 1, claim that it is the nation's largest and the regional shopping center closest to the central business district of any major city. It is only 1½ miles, or a five-minute drive, from downtown Portland, Ore. (in background just across Willamette River). This $30 million project designed by John Graham & Co. has rooftop truck-delivery facilities and 3,000 covered and 5,000 open parking spaces. Its 1.2 million square feet of rentable area include a 300,000 square foot department store, two others of 99,000 square feet each, and more than 100 small shops. It also has separate office and medical center buildings, and the 300-room Sheraton Hotel opened last September.

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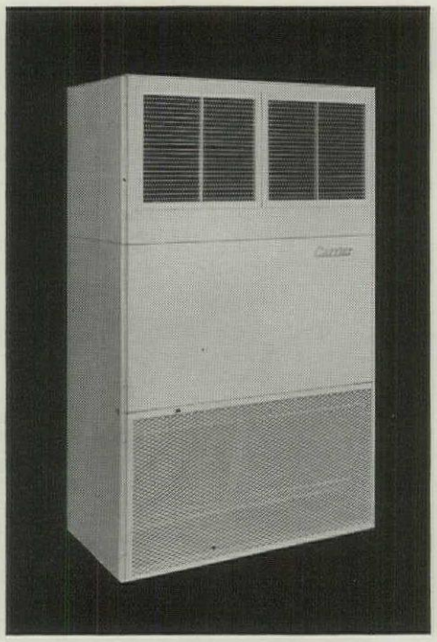

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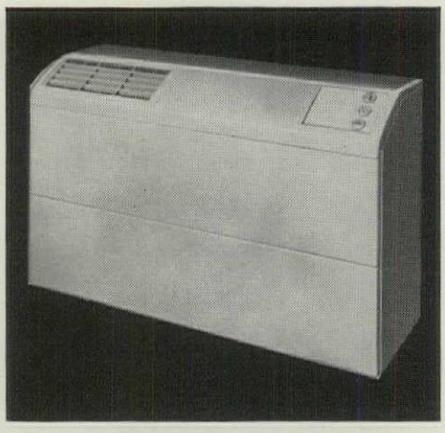

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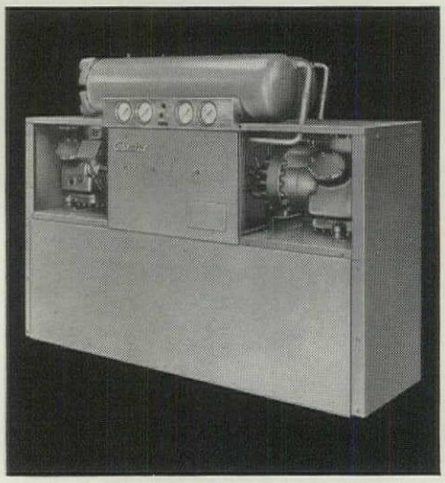

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have no affiliation with the projects under analysis, join in each advisory panel review of proposed new buildings.

▸ Federal Public Buildings Commissioner Karl E. Wallace said it would require a ten-year $3 billion construction program to catch up with current U.S. public building needs. Long-term master plan surveys, in about half of the 2,300 communities in each of which the government must accommodate at least 100 nonpostal federal employees, have already shown a need for 202 new buildings, 94 extensions, 9 conversions, 385 major repair and improvement jobs, the purchase of five existing private buildings, and the sale of ten surplus federal buildings.

▸ Former President Maynard Hokanson released results of the association's annual national survey of building income, expenses, and profits (below).

▸ John H. Williams, of Los Angeles, was elected president, succeeding John I. Hill, of Houston.

Building profit margins dipped again in '59

A continued narrowing in profit margins is reflected in the data published in NABOM's *Experience Exchange Report* for 1959. Based on confidential financial reports from 602 buildings in 104 cities, the average expense-to-income ratio edged up from 73.9 per cent in 1958 to 74.3 per cent last year, a new postwar high. Back in 1924 expenses averaged only 58 per cent, but climbed to 80 per cent in 1941. They declined during the full-occupancy and space-scarcity years that came with the war, and in 1950 averaged 68.2 per cent. Since then, however, they have been advanced steadily.

In dollar terms, average income from the total rentable space covered in this index, including store and basement areas, advanced from $3.60 per square foot in 1958 to $3.65 in 1959. But this 5-cent gain was wiped out by increased operating expense, which advanced 9 cents to $2.78 per square foot. Average income from rented store space dropped 4 cents to $4.04. Average income from rented office space rose 12 cents to $4.02 per square foot, but operating costs advanced the same amount, to $3.00 per square foot, and the expense-to-income ratio for office space alone advanced from 74.0 to 74.7 per cent.

Real estate taxes averaged 41 cents per square foot in 1941, but last year were 54 cents, up 3 cents over 1958. Average space per building occupant has been increasing, from 118 square feet in 1953 to 119 square feet in 1958 and 123 square feet last year.

Chicago building commissioner stirs up row by warning on use of prestressed concrete

Considerable strain marked the relations last month between producers of prestressed precast concrete and the Chicago Buildings Department headed by Commissioner George L. Ramsey.

The main cause of the tension was a statement Ramsey issued after a conference of the Prestressed Concrete Assn. on June 10 that was attended by representatives of both the Chicago Building and Fire Departments, engineers on the Mayor's Committees on Standards and Tests and Building Code Amendments, and Engineering Professors T. Y. Lin and G. E. Troxell, of the University of California, Berkeley, representing the concrete organization. Three days later a press release from Ramsey said: "The outcome of this conference indicated that engineering data and fire tests are completely lacking in an over-all understanding of what will occur in construction slabs to span lengths up to 100 feet. Underwriters' Laboratory tests at this time only provide for the testing of slabs of 17-foot lengths. In light of the fact that many structural shapes and designs can be created and that individual tests will have to be made to substantiate the values of various designs, city authorities feel that no prestressed concrete should be allowed in Chicago until a complete understanding of the actions of these slabs is agreed upon by the architectural and engineering professions, insurance people, manufacturers, and other interests involved in using this construction."

Ramsey subsequently made it clear that his statement was not a ban, but a warning on the use of prestressed precast concrete pending formulation of more precise building code amendments. Thus, under the city's existing code it can still be used in Chicago without fire protection for ceilings that are 20 feet or more above the floor, which allow more heat dissipation than lower ceilings. It also can be used as a substitute for wood or unprotected metal, and with one-hour fire protection for ceilings that are 14 to 20 feet above the floor. "The danger," said Ramsey, "is that prestressed is used for floors. You can get 6 inches of deflection in a 17-foot span due to heat. A lot of problems can happen to these slabs under heat, depending on how it is applied. In 10 minutes you can get temperatures of 700 degrees, which causes creeping, or expanding, of metal. Often you can get temperatures of 1,200 to 1,500 degrees in a couple of minutes. I call these rubber-band floors."

Ramsey cited several recent fire tests in the Chicago area in which prestressed precast units did not fail, but resulted in deflections of a magnitude that caused him concern. He also cited reports of other tests that have come to his attention, one of them of a slab that burst "like an explosion" under an extreme load, and others showing that "prohibitive deflections occur in prestressed precast slabs under fire." Referring to a series of 41 fire tests conducted in Holland, Ramsey said that some of the professional people who attended the June 10 conference "were amazed when it was revealed at the conference that the results of these tests have been withheld from the national picture."

Boiling mad, the proponents of prestressing regard Ramsey's stand as arbitrary, overcautious, and not based on fair evaluation and review. "We're disturbed about the whole development," said Paul Rosenthal, president of the

continued on page 11

LOS ANGELES CIVIC CENTER ADDITION
Floors projecting 12 feet beyond the windows will help self-shade this hilltop 15-story headquarters for the Department of Water and Power about to be erected in the Los Angeles Civic Center from plans by Albert C. Martin & Associates. Around it will be a series of large dual-purpose reflecting pools and fountains, which will circulate the water for a heat-pump system that will both heat and cool the building. Main dimensions of the structure, including floors of 32,000 net square feet, to accommodate the agency's largest single subdepartment on a single floor, were based on a comprehensive survey of the department's growth needs over the next 25 years made by S.U.A., Inc., New York space utilization analysts headed by Walter C. Jacobs, president, and William Smull, architect and executive vice president. This organization also made recommendations covering column spacings, a basic module to fit the department's own particular space needs, and areas to be given extra structural support for heavy electronic equipment.

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Illinois association. "We don't feel Ramsey's stand has any basis in fact in research, and there is a good deal of data available. Major architects and engineers have used prestressed all over the world with no questions about its quality. Its performance under fire is well enough documented to show it is reliable." In one Underwriters' Laboratory test one prestressed unit received a 2-hour fire rating, said Rosenthal, and in California some units have obtained ratings of 1 to 2 hours.

Asked if he believed that the steel industry had inspired the attack, Rosenthal said: "There's no question that prestressed concrete has hurt the steel industry competitively, but we would not say they instigated this."

Norman Scott, executive secretary of the Prestressed Concrete Institute, national body representing 127 prestressed manufacturers and engineering groups, said: "The institute is confident that based on available evidence, prestressed concrete can be designed to provide any degree of fire resistance. The Institute has submitted a comprehensive report to Chicago to supply authorities with evidence they need to satisfy themselves that prestressed concrete will provide the same high degree of fire safety long attributed to reinforced concrete construction."

Scott says prestressed concrete is also having some difficulties in Los Angeles, "because city officials there won't believe anything unless they see it themselves." After three Los Angeles tests, however, he added, prestressed construction is permitted there, "but under a pretty tight halter." Most other cities have been reasonable, said Scott, but some trouble is anticipated in New York, where prestressed has not yet been used extensively. In New York, he said, there will probably be hurdles to surmount not only on the fire angle, but also on load testing.

Colean now anticipates building drop this year

Total new construction this year will probably fall about 2 per cent below 1959 in dollar volume, and 3 to 4 per cent in physical volume, according to a statement issued last month by Building Economist Miles L. Colean.

This would be the first time since the war that dollar volume has trailed the previous year, Colean noted, but this should be only "a transitory phenomenon, and the uptrend will be resumed in 1961." Colean, who also said he held "at least a mildly optimistic view of the last half of this year," originally had forecast an increase of $800 million to $1 billion, or about 1.5 per cent, in 1960 expenditures over 1959 (FORUM, Oct. '59; Feb. '60).

Meanwhile Commerce Department estimates showed a $790 million or 3 per cent decrease in total new construction outlays for the first half of 1960, from $25.3 billion to $24.5 billion. But analysis of the Commerce estimates showed that the greatest deficits were concentrated in only two main building categories—home building and public construction. For the first six months of this year private nonfarm home building was off $820 million—a sum exceeding the total net decline in all new construction—while public construction was down $805 million, also a loss in excess of the total net decline. By contrast, substantial increases in virtually all types of private nonresidential construction more than offset the lag in home building. Private nonresidential building for the first half of the year totaled $4.6 billion, up $594 million, or 15 per cent (including a 34 per cent gain in industrial building, a 7 per cent advance in commercial, and an 11 per cent pickup in churches, schools, institutional, and other nonresidential buildings). Construction by public utilities was up $85 million, or 3 per cent.

Court nullifies suspension of five A.I.A. members

On June 10 the A.I.A. issued a set of corrections to its 1960 membership directory including instructions to add the previously "omitted" names of four Fellows, Ralph Walker, national president 1949-51, Stephen Francis Voorhees, also the national president 1935-37, Perry Coke Smith, and Benjamin Lane Smith, and Charles S. Haines 2nd—the five principals of the office of Voorhees, Walker, Smith, Smith & Haines of New York.

Two weeks earlier this nationally known architectural quintet had won an order from New York Supreme Court Justice Edgar J. Nathan Jr. that in effect ordered A.I.A. to rescind a suspension of these five members that A.I.A. had invoked last fall. Judge Nathan ruled that the method of suspension was not in accordance with A.I.A. by-laws or any other legal proceedings.

Although all parties were reluctant to discuss the details, the court-upset suspension had originated in a dispute between VWSS&H and the office of Moore & Hutchins, New York Architects. The latter claimed that VWSS&H had solicited a commission from New

continued on page 12

Bright idea: public building without any tax boost

How to finance public recreation buildings and facilities without increasing taxes.

Have a citizens' nonprofit corporation build the project with the proceeds of its own revenue bonds, with title to the facilities vesting in the city as soon as the bonds are retired.

Because of constitutional debt ceilings and tax limits, or resistance to higher tax levies, many municipalities have to forego the construction of recreation facilities. This frequently occurs if a community already has voted or borrowed large sums for schools and other public works.

In Greenville, Pa., however, a new winter skating rink demonstrates a method that can be used to finance almost any type of service-charge civic building without increasing the city's debt or taxes.

Total costs for Greenville's 85 by 185 foot open-air rink, including floodlighting for night skating and a service building housing the refrigeration equipment, a warming room, snack bar, and skate renting counter, were $70,000. To pay for it, a nonprofit corporation organized by the town's leading citizens sold revenue bonds in two denominations: $100 20-year 5 per cent notes, and $500 20-year notes that pay no interest but give the holder free skating privileges through each November-March season. The entire issue was sold out in four weeks. The corporation has the right to redeem bonds in advance of maturity, however, and the rink has proved so popular that it is now expected to pay for itself in full within five years.

Greenville's rink was developed on land already owned by the town and leased to the nonprofit corporation for $1 a year, and title to the building and all the equipment will automatically vest in the municipality as soon as all the bonds have been retired. Labor contributed by local companies, unions, and college students also helped to hold down the costs of the Greenville rink; if the community had found it necessary to purchase a site and pay full construction costs, the cost would have been about $150,000.

York State University for which Moore & Hutchins were already engaged and that this constituted unethical conduct. After proceedings before the local, regional, and national A.I.A. organization, the suspension of the five VWSS&H principals was invoked. After being suspended they brought suit to have this A.I.A. action nullified on procedural grounds.

A.I.A.'s Executive Director Edmund R. Purves says that the A.I.A. has no plans to appeal Justice Nathan's ruling. And, as far as could be learned, VWSS&H also intends to let the matter rest for the present.

People

In Washington last month, **William L. Slayton**, one of urban renewal's best known technicians, was taking on a variety of new assignments. As Webb & Knapp's large Southwest Washington redevelopment project moved into the execution stage, that company shrank its local administrative staff headed by Vice President Slayton and closed its downtown office in favor of a small on-site trailer office. Slayton will continue to guide the

HARRIS & EWING

SLAYTON

STAN RABADAN

EISNER

Washington affairs of Webb & Knapp as a consultant, but now will open an office of his own and serve as an independent urban renewal and planning consultant. Meanwhile Slayton, formerly a field representative for the Urban Renewal Administration and redevelopment section director for NAHRO, has started an 18-month's urban renewal study for the American Municipal Assn. to "define the nature and dimension of the total problem of slums and blight plus an appraisal and evaluation of federal, state, and local efforts to meet the problem." This work will be done under a grant from the Ford Foundation, which is also financing another AMA renewal and redevelopment study being made by **Frank P. Zeidler**, former mayor of Milwaukee.

Two other important appointments in the urban renewal field:

Lester Eisner Jr., 46, lawyer and former Assistant Housing Commissioner of New York State, has been named HHFA Regional Administrator for New England and New York succeeding Walter S. Fried, now a member of the New York City Housing and Redevelopment Board.

Dr. Jerome P. Pickard, research economist and former research director for the Washington Board of Trade, has been selected to head an expanded research program of the Urban Land Institute into "those dynamic forces in urban land use which make for the creation, preservation, deterioration, and recovery of urban neighborhoods."

LIKE FATHER, LIKE DAUGHTER

It was a new departure for Governor Mark Hatfield to appoint a woman, **Mrs. Ebba Wicks Brown**, of Astoria, to the Oregon State Board of Architectural Examiners in June. But it was only a repeat family affair for Mrs. Brown, whose father and senior partner in the firm of Wicks & Brown is **John E. Wicks**, 82, a member of the state's first board of examiners appointed in 1919, and a member on and off at various times for a total of 14 years. Daughter Ebba, 46, graduate of Oregon University and Cranbrook, was the first woman to become an Oregon architect by state examination, but waited until her father had retired from the board permanently before she took her exams in 1942. She also is a member of the Astoria City Planning Commission. Her husband is **Ernest E. Brown**, also an architect and the other partner in Wicks & Brown, an office that has designed hospitals, churches, nursing homes, and other nonresidential jobs all over the state. Asked whether the office had won any architectural prizes, Mrs. Brown replied: "Heavens, no. . . . We're not trying for any glory. We just try to do good jobs." END

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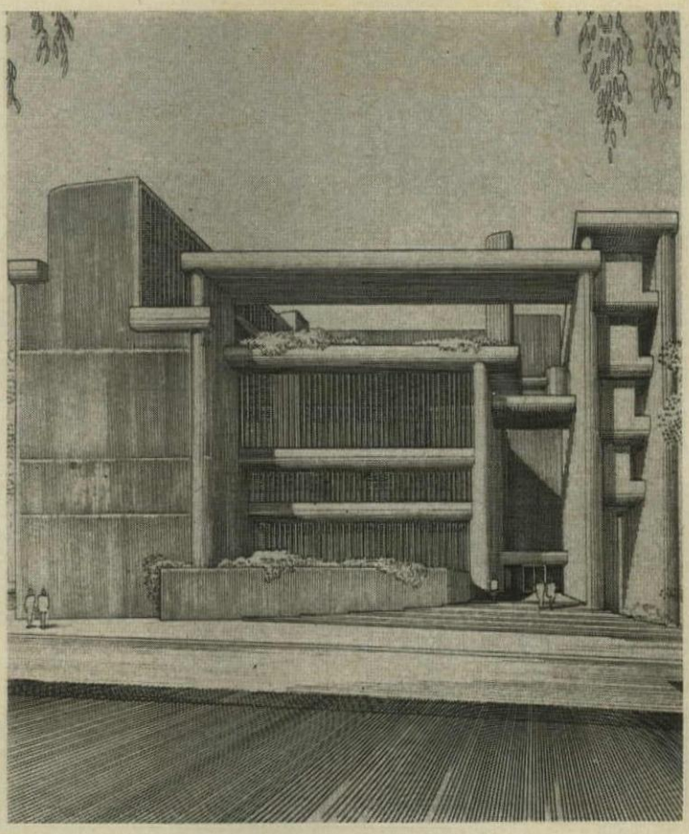
A roundup of recent and significant proposals



YALE'S NEW SCHOOL OF ART AND ARCHITECTURE

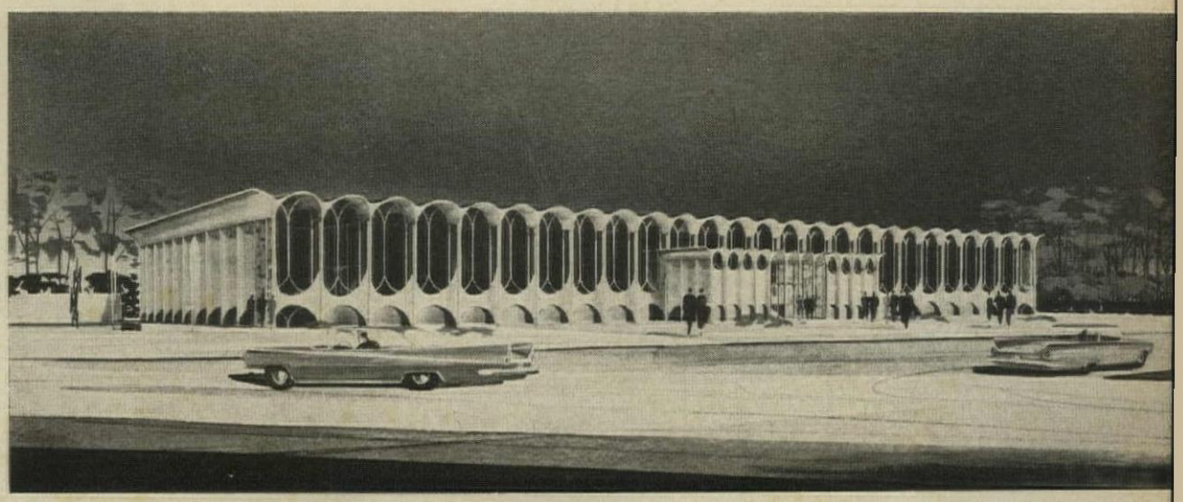
Yale picked a tenant to design new quarters for its School of Art and Architecture: Paul Rudolph, chairman of the department of architecture. Rudolph's design is a multilevel pile of bush-hammered concrete exposed inside and out, relieved by three levels of terraces and generous bands of glass (the narrow stripes across the front are inside louvers). In the building's midsection, spaces will be two stories high, for exhibits and drafting rooms; those on the perimeter will be one-story offices and smaller rooms.

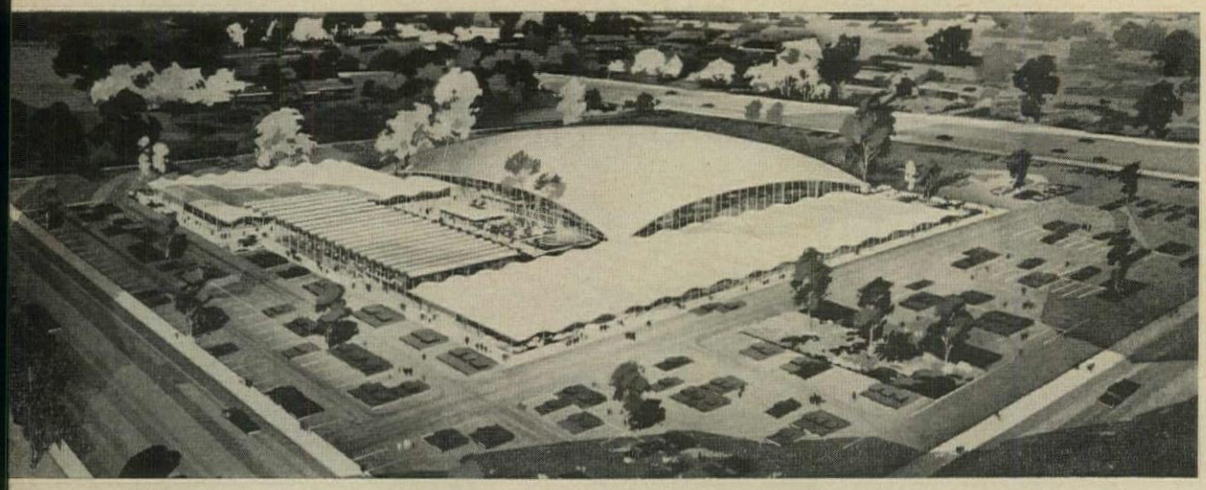
U. S. SCIENCE BUILDING AT SEATTLE EXPOSITION

The space age, and man's role in it, is to be the theme of Seattle's Century 21 Exposition. Participating to a greater extent than ever before in a home-grown fair, the U.S. government will spend a total of $9 million on its World of Science exhibit and pavilion (above), designed by Minoru Yamasaki and Naramore, Bain, Brady & Johanson. The pavilion's five sections, connected by walkways and built around gardens and pools, will be dominated by five open towers of concrete, 100 feet high, marking the entrance.

BOWLING ALLEY IN MICHIGAN

Asked to design a bowling alley for a quiet residential section in Royal Oak, Mich., Architects Hawthorne & Schmiedeke reasoned that in order to be acceptable, their design should look quite unlike most bowling alleys. Accordingly, "Yorba Linda's" 50 lanes will be screened by two-story concave vaults of cement plaster on four sides and further enhanced by a fountain and garden. Parking, too, will be discreetly hidden: there will be space for 80 cars inside, and 130 more behind.





CONCRETE ROOFS OVER CALIFORNIA SHOPPING CENTER

Concrete of several shapes will roof the stores in the Fox Northridge Shopping Center, Northridge, Calif. The largest unit, a single thin shell supported only at the four corners, will span a 37,000-square-foot market, the arches filled in with glass. Seventeen small shops in two strips will share undulating roofs, and a long, rectangular drugstore will have a folded plate roof. Architect R. Leon Edgar arranged the concrete-topped stores around a patio and pool and surrounded them with parking lanes. Cost: $2 million.

TWIN CITIES CENTER

By choosing a site on the Minneapolis–St. Paul border, Station KSTP hopes to attract visitors and firms with business in both cities to its $9 million office, hotel, and communications center (right). The plan's chief element is the hotel-office tower, 15 stories of reinforced concrete and glass, the curtain wall set 3 feet behind a precast grid. Wrapped around the base, an L-shaped structure will contain offices and studios. Architects: Hammel & Green, Inc.

HEXAGONAL ROOFS FOR CAPE COD CHILDREN'S MUSEUM

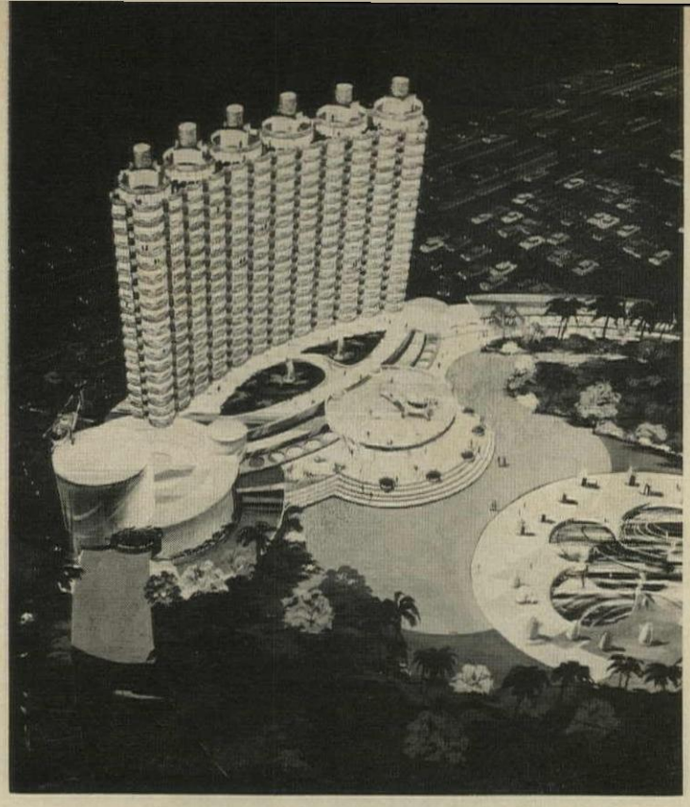
This small museum in Brewster, Mass. will give children firsthand knowledge of the Cape's natural history, for they will collect many of the exhibits to be displayed in it. To house the activities of this teaching museum, Architect Robert Woods Kennedy designed seven shingled tents of assorted sizes, each to shelter one activity: classes, exhibits, lectures, and an office-library. The roofs are hexagonal pyramids, the tallest 32 feet high, and the siding will be cedar. Cost, including furniture and equipment: $167,000.

MOUNT HOLYOKE ARENA

The class of 1961 at Mount Holyoke College, South Hadley, Mass., will be the first to collect its diplomas in the outdoor amphitheater (below), which will seat 2,500 spectators, 700 more than can be squeezed into the existing gymnasium. At the bottom, there will be a stage under a concrete canopy and, close by, a fellowship house. Architects: Carl Koch & Associates; Pietro Belluschi, adviser.

TEXAS HOTEL AND APARTMENTS

Downtown Dallas is the site of the double-tower development above, a 22-story hotel and an 18-story luxury apartment building. Between the two, and connecting them, a landscaped terrace will be inlaid with pools, gardens, and a putting green. One level underneath this plaza will be the shopping and service center for both towers, and, two levels down, parking for 360 cars. Each apartment and hotel room will have a private balcony terrace. Architects: Harrell & Hamilton of Dallas.



LAS VEGAS HOTEL

In Las Vegas, where good luck is highly prized, Architect Don Erickson based his hotel design on a four-leaf clover, using this motif for the hotel's six towers and a large pool. Each tower will enclose a round elevator and stair shaft emerging above an observation deck into a thimblelike stack. For some nighttime sparkle, colored light wheels will revolve behind the precast concrete grilles lining each balcony. Clustered around the hotel's foot is a casino, a round restaurant (under the helicopter), an 800-seat theater, and (near left) an angular two-story motel of 400 units. Erickson estimates the cost of the whole project, designed for the Hotel Continental Corp., to be $7.5 million.

CALIFORNIA CHAPEL

The small, scalloped chapel above is the heart of a plan for the First Methodist Church in La Verne, Calif. Around it, Architects Ladd & Kelsey will group classrooms, a fellowship hall, and a garden. The chapel's roof will be of reinforced concrete, the thin shells cast from a single form used six times. Both ends will be filled with glass, the windows at the chancel end facing an enormous camphor tree that exists on the site.

AUSTIN'S OWN QUARTERS IN CLEVELAND

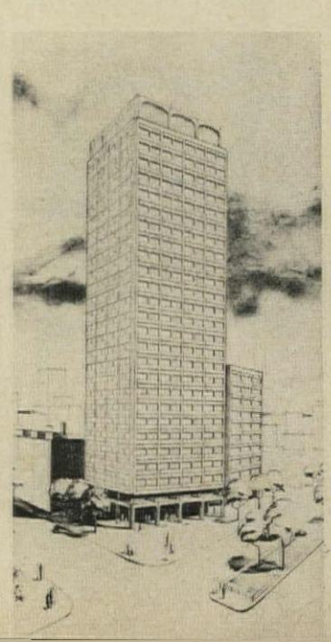
The Austin Co. is building two new office buildings for itself on a 151-acre estate in Cleveland Heights. The one shown above is the Cleveland district headquarters, designed to show what industrial building components can contribute to office buildings. Freestanding steel columns will support standard 100-foot H-section trusses spanning the interior, turning it into an entirely columnfree space. Running around the outside, a 5-foot portico will serve as a sunshade, faced with precast concrete panels.

MANHATTAN OFFICE TOWER

One of the first neighbors to crop up near New York's Lincoln Center for the Performing Arts will be this 26-story office building (below), which will be just across the street from the Juilliard School of Music. In keeping with the open space around the Center itself, this tower will rise, without setbacks, from a 3,600-square-foot plaza. Its façade will be of precast concrete to match the Center. Architects: Robert Bien and Jack Freidin.

FLORIDA DEVELOPMENT

In Jacksonville, Fla., Robert H. Jacobs, president of the S. S. Jacobs construction company, will build a $15 million, four-building complex on two downtown blocks he owns. On one block (right), there will be a branch of J. B. Ivey & Co., a department store new to Jacksonville, 14 office stories, and a medical building with a restaurant and cocktail lounge on the first floor. On the other block Jacobs will build a women's specialty shop and six-level garage. Architects: Ketcham & Sharp.



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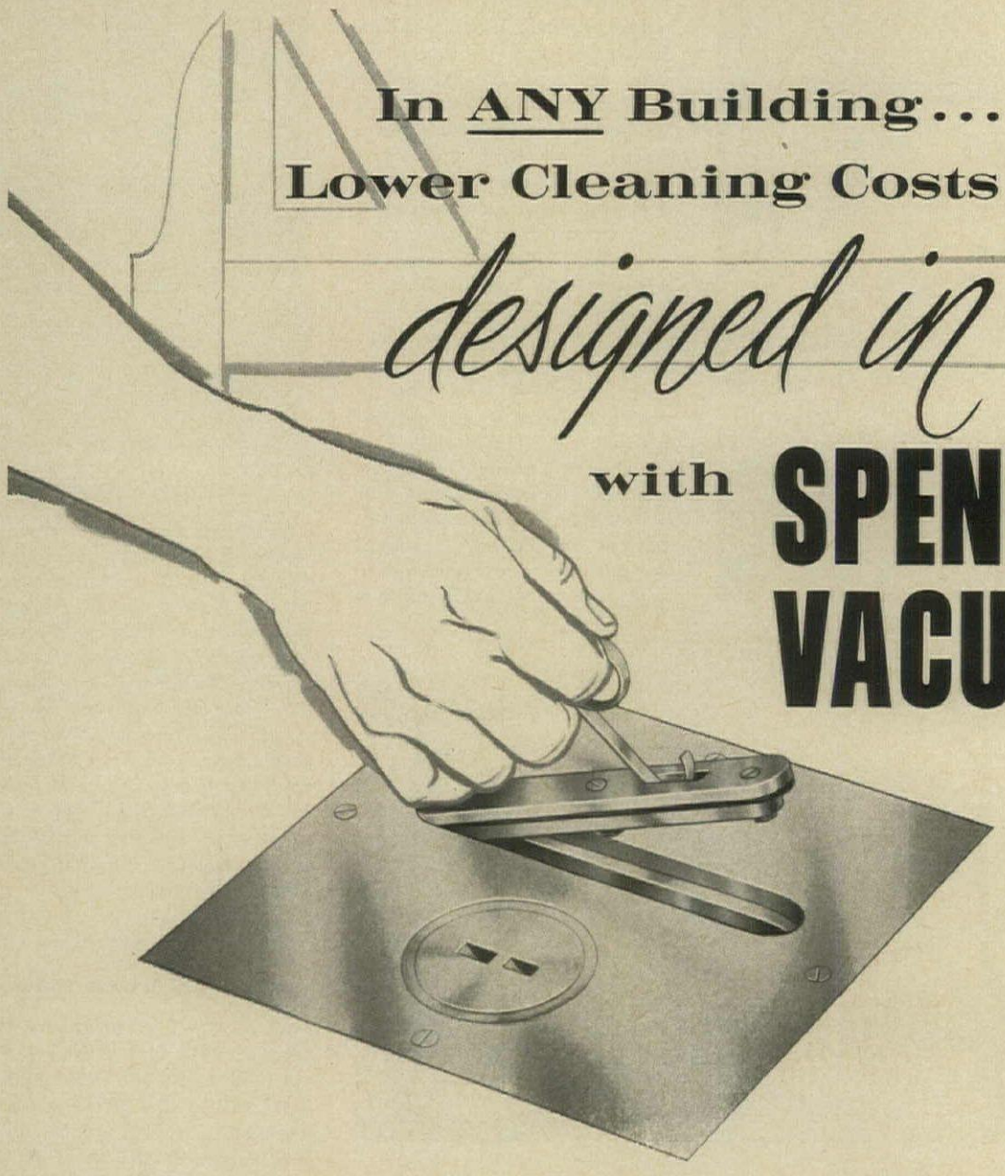

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Roof gun . . . rubber wrap . . . prefab roof . . . plastic curtain wall

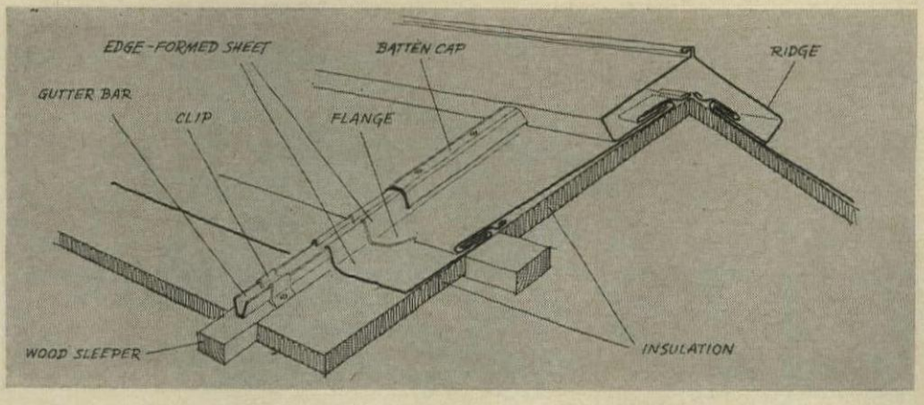
ROOF GUN

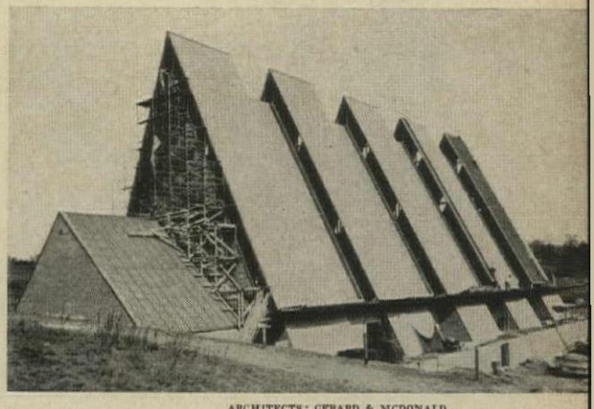
When Flintkote bought the outstanding stock of the SealZit Co., it acquired SealZit's long-nosed gun which shoots a mixture of glass fiber, asphalt, or other materials through its three nozzles. The gun is the key element in Flintkote's *Monoform* system for spray application of waterproof roofing membranes. Because the reinforcing glass fibers land on the roof at the same time as the asphalt, the two form one structural membrane over conventional roofs, either flat or uneven, or roofs of free-form design.

Application of Monoform requires a three-man crew: one man to handle the material and pump, one to look after the hoses, and the third to operate the gun. The gun carrier wears a pack of twisted glass fiber, its end running down into the gun's chopper. Flintkote says that the three-man crew can lay 3,000 square feet of roofing an hour, using the Monoform system, and do it at a cost 23 per cent cheaper than other roofing methods. Its use is not limited to roofing but is suitable, too, to side-wall, insulation, sound-deadening, and pipe-coating applications.

Flintkote will license the Monoform system and lease guns to building and roofing contractors.

Manufacturer: The Flintkote Co., 30 Rockefeller Plaza, New York 20.





ARCHITECTS: GERARD & MCDONALD

PREFAB ROOF

Alcoa Batten Roof is a complete, low-cost roof system particularly suitable for pitched roofs of any rafter length and slopes of 1½ inches in 12 inches or steeper. One of the first installations is on a Pittsburgh church (above right), where the batten roof extends 77 feet from ridge to eave, almost eliminating side walls.

Alcoa markets this system through licensed roof jobber-applicators who edge-form the sheet, supplied in widths up to 60 inches. All other components are fabricated before delivery to the roofer and come to him ready for application.

The roof goes up like this: first, a gutter bar is placed on the roof deck and a gutter bar clip, 2 inches wide, is screwed to the deck at 12-inch intervals to hold the bar in place and to anchor the final batten cap. Edge-formed sheet hooks over each side of the gutter bar, and a flange, near the hook, flattens out from a rolled seam. The last component is a batten cap,

continued on page 46

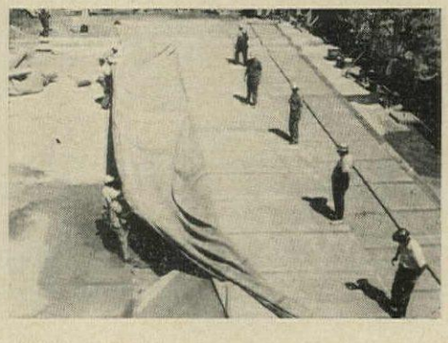
screwed on, that finishes off the roof.

Alcoa offers this system in mill finish, an embossed pattern, 11 Alumalure colors, a low gloss surface, and architectural Alodine, the latter a greenish color which resembles weathered copper's patina. The installed cost is about $1 per square foot.

Manufacturer: Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19.

RUBBER WRAP

Wrapped snugly in synthetic rubber from foundation almost to first story, the Humble Oil Co. building (by Welton Becket & Associates) going up in Houston will mark the first use of Butyl as a

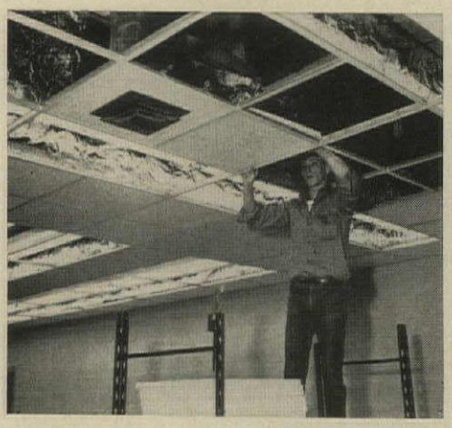


building foundation water barrier. Long sheets of Butyl were unrolled to cover the excavation bottom and, later, they will be drawn up along the retaining wall almost to ground level, enclosing four basements. The 44-story tower, estimated to weigh a hefty 144,000 tons, will rest on what is, really, a 230,000-square-foot rubber mat.

On this job, ⅛-inch Butyl sheets were laid over a thin concrete slab, then cut to fit and joined by a flap seam and vulcanizing cement. To make sure the seams were watertight, each was rolled. Seven inches of reinforced concrete went over the Butyl carpet.

Carlisle Tire & Rubber, which made this sheet from Humble Butyl, is producing sheets in any size required; the longest sheet under the Humble building was 20 feet wide by 164 feet long. Because of the building's massive weight, the carpet was thicker than would be required for most jobs. Usually a thickness of 1/16 or 3/32 of an inch would be thick enough. Depending on thickness, quantity, and shipping distance, prices run from 30 cents up to 50 cents per square foot.

Manufacturer: Carlisle Tire & Rubber Division of Carlisle Corp., College St., Carlisle, Pa.



PLASTIC CEILING

For use in suspended grid ceilings, an expanded polystyrene tile offers low cost, light weight, easy cutting, good insulation, and fire resistance. The tile is white and has a slightly ridged surface. Standard sizes are 1 inch thick and either 2 by 2 feet or 2 by 4 feet, though actual measurements are slightly less to allow for the T-bar. The cost is about 12 cents per square foot.

Manufacturer: General Foam Plastics Corp., 801 Mt. Vernon Ave., Portsmouth, Va.

PLASTIC WALL

Seaporlucent is, as its name implies, a translucent sandwich panel made by a well-known curtain-wall manufacturer, Seaporcel. This panel consists of two glass-fiber reinforced acrylic-polyester skins laminated to either side of an extruded aluminum grid, the whole framed in aluminum. The resulting sandwich is lightweight (a panel 3 inches thick weighs about 1½ pounds per square foot), shatterproof, and glarefree. By combining color-anodized grids (multicolored, if desired) and pastel skins, Seaporcel produces a variety of colored panels. Although intended primarily for wall systems, the panels may be used for canopies, interior partitions, and skylights.

Panels come in two thicknesses, 1½ and

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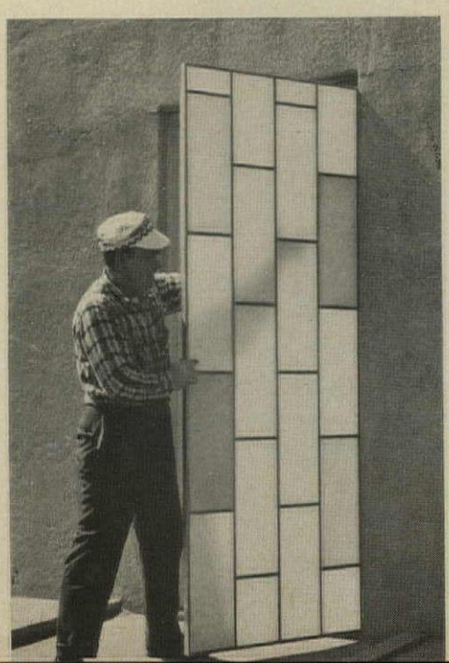


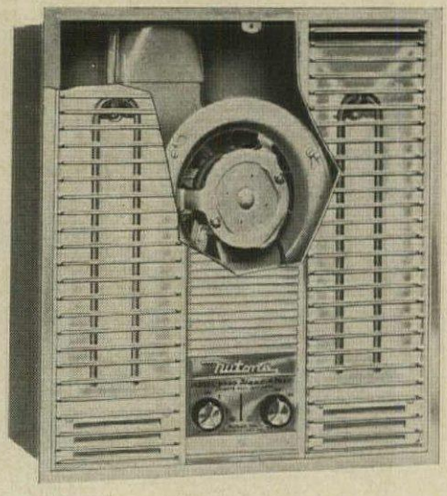
3 inches, and sizes up to 4 by 20 feet. Frames, to the architect's specifications, are factory installed. The cost for the 3-inch panel runs about $3.50 per square foot and installation costs add another 50 cents or $1, depending on area.

Manufacturer: Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City 1, N. Y.

HOT FAN

Heat-A-Vent 9300 is a combined wall heater and ventilator capable of either separate or simultaneous operation. Designed primarily for bathrooms, the unit may be installed in other rooms where extra heat and moisture control are needed. If more heat is wanted during a bath or shower, the heater may be switched on at the same time the ventilator is removing moist air. (In windowless bathrooms, the ventilator may be wired into the lighting circuit.) There are two radiant-heat elements, totaling 1,600 watts, and these work either one at a time or, for maximum heat, both at once.

The unit, finished in satin-anodized aluminum, is 16 inches wide, 18 inches



high, and extends 1½ inches from the wall. The housing for it is heavy gauge steel 4 inches deep. A spring mounting for the exhaust fan insures quiet operation. The list price is $56.95 per unit.

Manufacturer: NuTone, Inc., Madison and Red Bank Rds., Cincinnati 27.

CHALKBOARD SHEET

A mixture of asbestos, pigment, and cement pressed into a sheet makes *Colorlith,* a strong, dense, but lightweight chalkboard. Colorlith may be installed either flush or recessed, trimmed with aluminum or wood moldings, or a beveled edge. In addition to chalkboard, it may be used as a partition facing, door surface, or wardrobe panel.

Cameo brown, cyprus green, and charcoal gray are the chalkboard colors, and a fourth, white, is for projection screens.

Cost runs about $1 per square foot installed (without trim). It is available in widths from 42 to 48 inches and lengths of 4, 6, and 8 feet. Larger panels may be assembled with flush-butted joints.

Manufacturer: Johns-Manville Corp., 22 E. 40th St., New York 16.

BRIEFS

▸ Paper made from synthetic mica, which does not melt at temperatures below 1900 degrees F., is in pilot plant production at Minnesota Mining & Manufacturing Co. Called *Crystal M*, the paper is nonflammable, inorganic, and, when laminated to another surface, acts as a fire barrier and thermal insulator. Three M is testing it in such construction uses as wallboard facing, honeycomb cores, and structural panels, formed by spraying glass fibers and plastic on extremely stiff Crystal M paper. Other manufacturers are testing it for use as electrical wrapping and thermal insulation. Of the three types of paper being made, one is 100 per cent mica and the others contain pulp or glass fiber. Lightweight block and fine powder of Crystal M are also being tested.

▸ Using the *Soundshear* principle developed by Acoustical Consultants Bolt, Beranek & Newman Inc., several manufacturers are working on prototype panels which will be "structurally rigid but acoustically limp." They will consist of a specially engineered core sandwiched between thin, stiff skins.

▸ Mathematics by machine may be as close as 1961, the date when Encyclopaedia Britannica Films Inc. will be ready to provide schools with selected courses for an academic year at a cost of about $10 per student. The common denominator in the courses is a "self-instruction device." Already used in preliminary tests at Hollins College, Roanoke, Va., the machine will be of plastic or metal and measure about 9 inches wide and 12 inches long. Questions and answers feed from a paper roll in the machine, and a separate tape unrolls at one side, where the student writes. After he has jotted down his answer to the machine's question, he turns a crank, and both the correct answer and a new question appear. Simultaneously, his own answer disappears behind a piece of glass or plastic. Of special interest to architects is the Britannica's forecast that, using this system, one teacher will be able to supervise a classroom of 100 to 150 students. END

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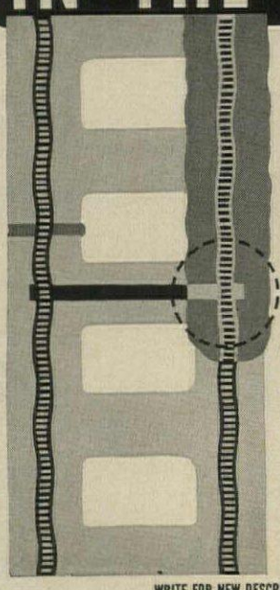

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Other reinforcing may be heavier but, Grade for Grade and dollar for dollar, WAL-LOK puts more steel *in the mortar* where it counts—19.2% more than competitive products. SUPERSTANDARD Grade has 8 ga. Siderods rather than the 9 ga. used by others and it's the Siderods that end up in the mortar. Ladder type construction means no wasted steel to get in the way of insulation, pipe or conduit in the walls • No extra freight on steel that serves no useful purpose. PLUS—many other features at no extra cost.

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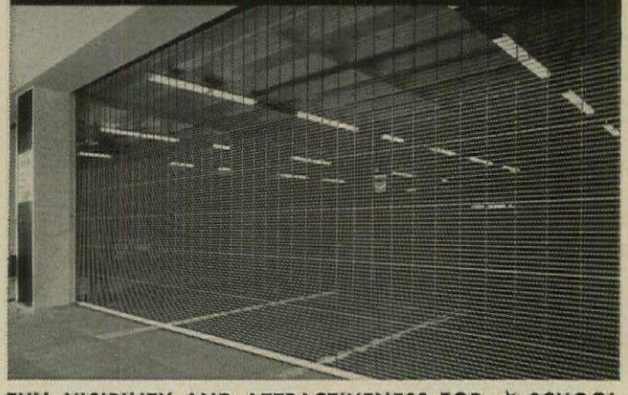

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Write for Bulletin 6004. Contains detail drawings and complete architectural specifications.

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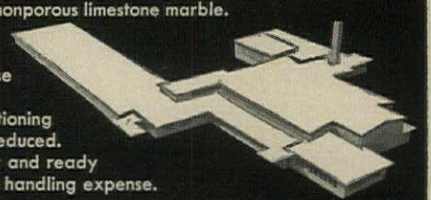

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where it counts...
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Get away from coatings and plating, and you have the solid-metal strength and durability that's needed in toilet compartment hardware.

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It's top quality, furnished without exception for every Fiat Enclosure installation because it's been tested and proved best for the purpose.

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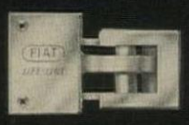
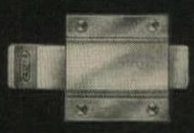
S-2 Alloy Wall Stirrups



S-2 Alloy Top Hinge Bracket

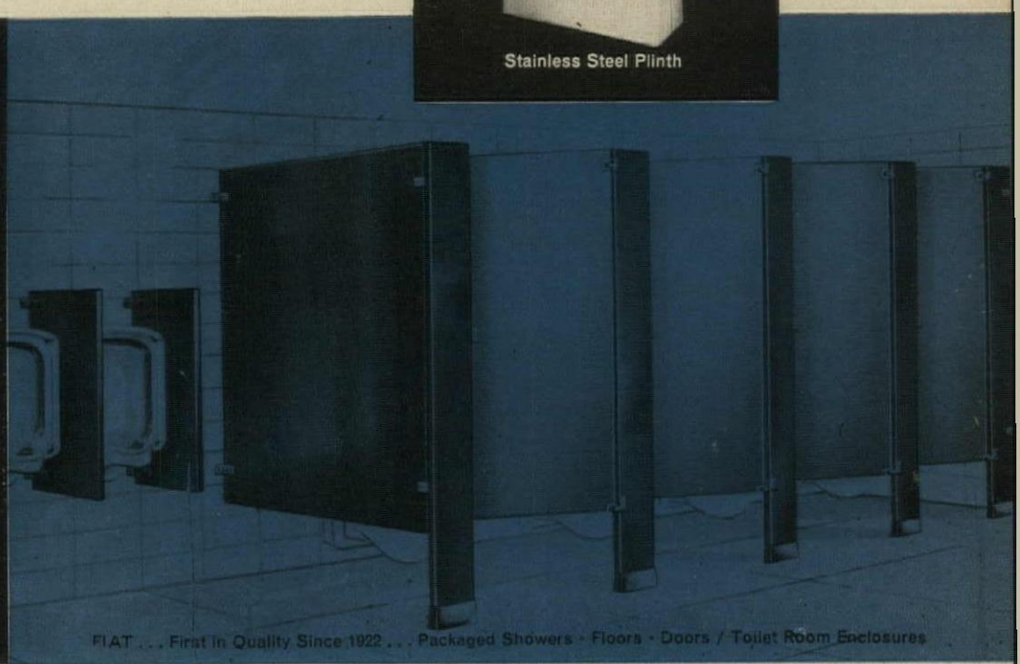
S-2 Alloy Bottom Hinge Bracket



S-2 Alloy Slide Bolt

Stainless Steel Plinth

Send for new Brochure: "Fiat Toilet Enclosures" to get the facts about the FIAT line, as well as architectural details and specifications.



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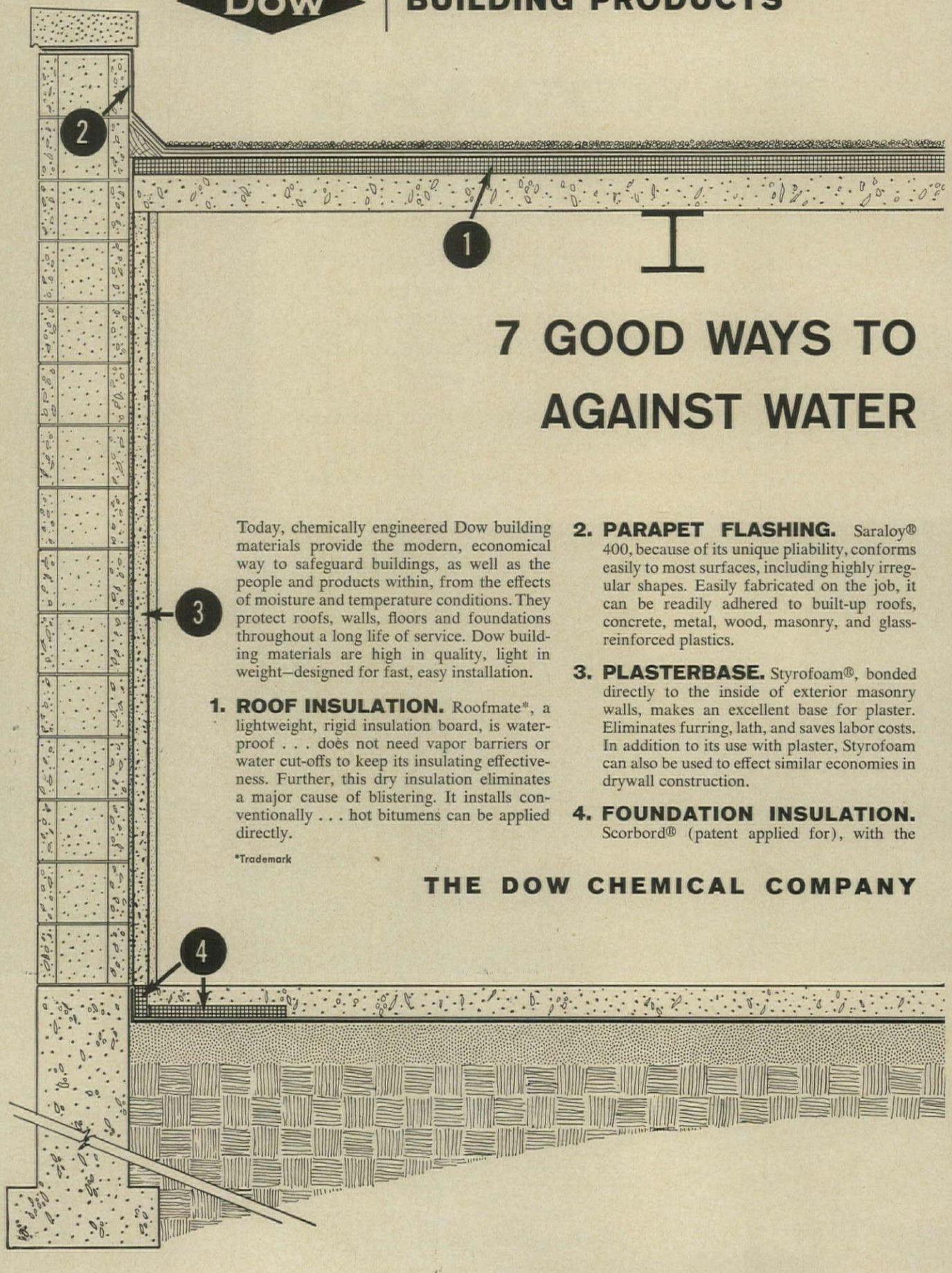

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Today, chemically engineered Dow building materials provide the modern, economical way to safeguard buildings, as well as the people and products within, from the effects of moisture and temperature conditions. They protect roofs, walls, floors and foundations throughout a long life of service. Dow building materials are high in quality, light in weight—designed for fast, easy installation.

1. ROOF INSULATION. Roofmate*, a lightweight, rigid insulation board, is waterproof . . . does not need vapor barriers or water cut-offs to keep its insulating effectiveness. Further, this dry insulation eliminates a major cause of blistering. It installs conventionally . . . hot bitumens can be applied directly.

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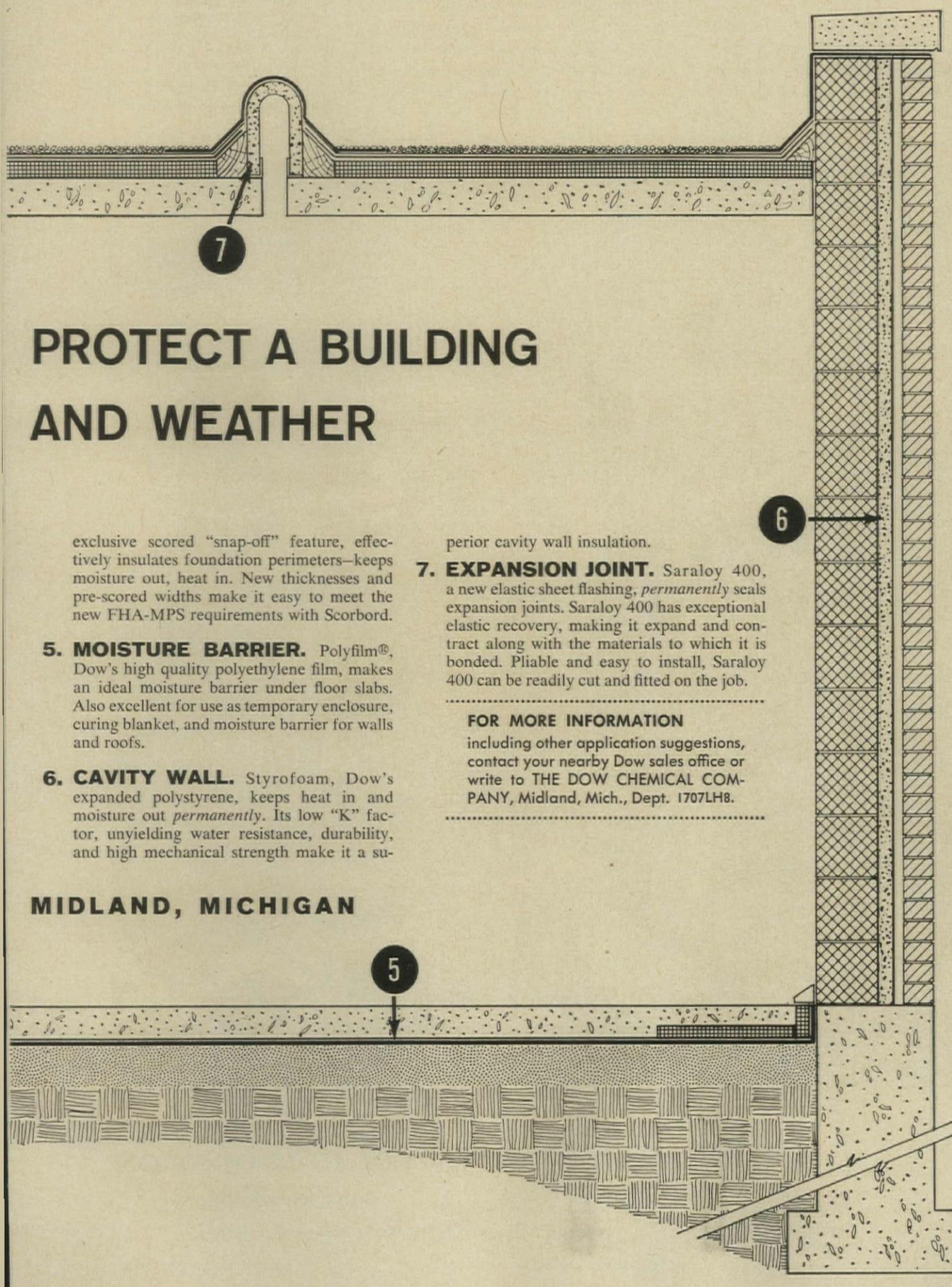
2. PARAPET FLASHING. Saraloy® 400, because of its unique pliability, conforms easily to most surfaces, including highly irregular shapes. Easily fabricated on the job, it can be readily adhered to built-up roofs, concrete, metal, wood, masonry, and glass-reinforced plastics.

3. PLASTERBASE. Styrofoam®, bonded directly to the inside of exterior masonry walls, makes an excellent base for plaster. Eliminates furring, lath, and saves labor costs. In addition to its use with plaster, Styrofoam can also be used to effect similar economies in drywall construction.

4. FOUNDATION INSULATION. Scorbord® (patent applied for), with the

THE DOW CHEMICAL COMPANY



PROTECT A BUILDING AND WEATHER

exclusive scored "snap-off" feature, effectively insulates foundation perimeters–keeps moisture out, heat in. New thicknesses and pre-scored widths make it easy to meet the new FHA-MPS requirements with Scorbord.

5. MOISTURE BARRIER. Polyfilm®, Dow's high quality polyethylene film, makes an ideal moisture barrier under floor slabs. Also excellent for use as temporary enclosure, curing blanket, and moisture barrier for walls and roofs.

6. CAVITY WALL. Styrofoam, Dow's expanded polystyrene, keeps heat in and moisture out *permanently*. Its low "K" factor, unyielding water resistance, durability, and high mechanical strength make it a superior cavity wall insulation.

7. EXPANSION JOINT. Saraloy 400, a new elastic sheet flashing, *permanently* seals expansion joints. Saraloy 400 has exceptional elastic recovery, making it expand and contract along with the materials to which it is bonded. Pliable and easy to install, Saraloy 400 can be readily cut and fitted on the job.

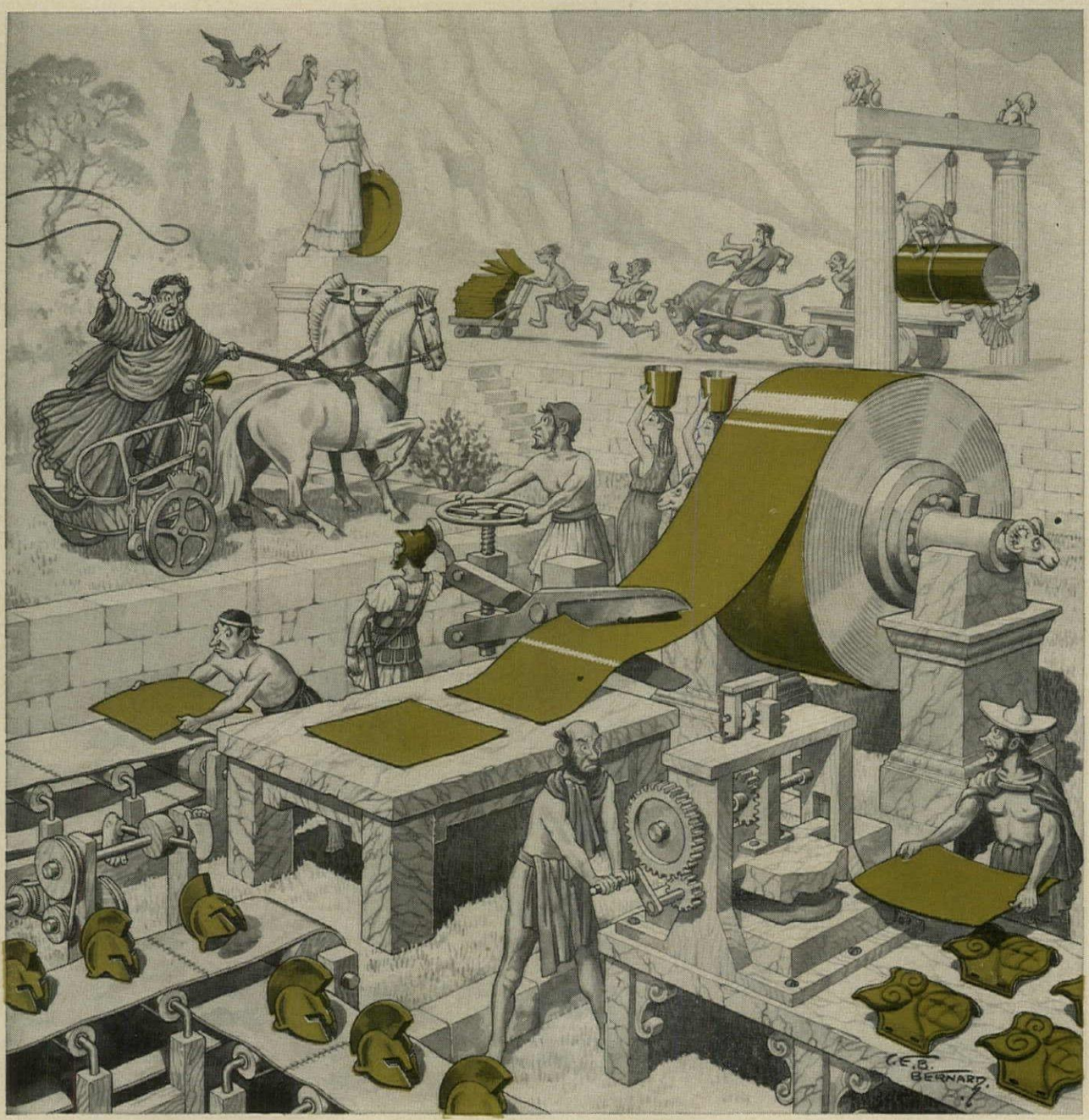
FOR MORE INFORMATION
including other application suggestions, contact your nearby Dow sales office or write to THE DOW CHEMICAL COMPANY, Midland, Mich., Dept. 1707LH8.

MIDLAND, MICHIGAN

Now it can be told

This engraved marble tablet recently uncovered in one of the long-lost Phrygian caves shows how Midas fooled the public. This stuff wasn't 14-karat at all. The "Midas Touch" is nothing but a myth. Midas used ColorRold* Stainless Steel, developed by Washington Steel Corporation. Gotta give the old charlatan a lot of credit though—he knew a good thing when he saw it.

MIDAS SPECS: 2 cubits × .025″ ± .001″ × coil, Type CCCII (302), Rb 82 max. Sunbrite gold, 50 glossimeter, 1 mil, paper interleaved, skidded for open oxcart only. 12 × 10^6 drachma max. wt. per coil.



ColorRold, an organic coated stainless steel, comes in eleven harmonizing colors, can be formed and drawn or textured and highlighted in an infinite number of designs and effects, now available for your architectural or product needs.

WASHINGTON STEEL CORPORATION

and ColorRold®

PRODUCERS OF *MicroRold®* STAINLESS STEEL

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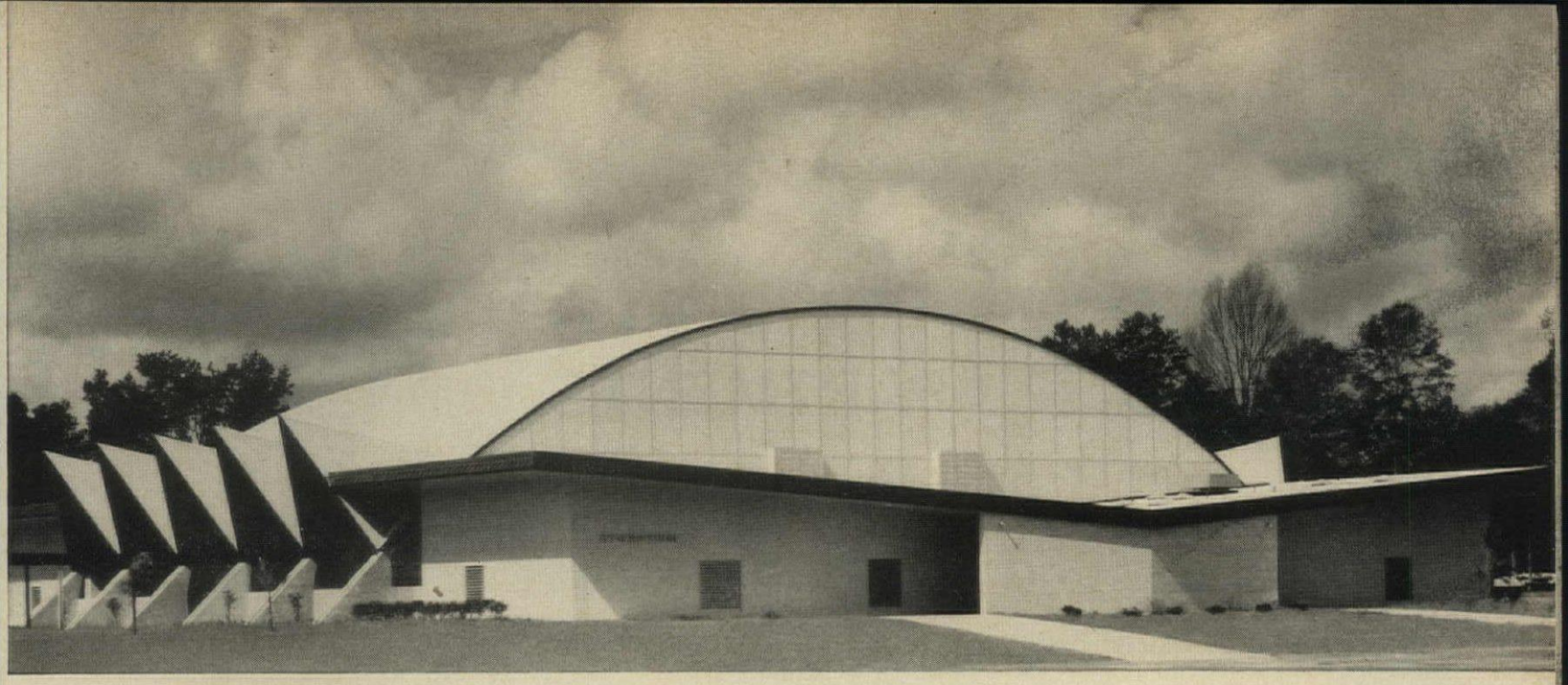

Louisiana school keeps maintenance costs down with child-proof Asbestone Panels

Kids can be pretty rough on a school building, inside and out. That's why the architects chose Gold Bond Asbestone Panels for this handsome school in Baton Rouge. They're easy to clean and almost maintenance-free. Sturdy facing sheets of Asbestos-Cement shrug off the worst effects of weather, humidity, salt air and high-spirited children. And the insulation core gives adequate heat insulation and sound isolation; makes the panel a complete interior-exterior wall.

With all these advantages, Asbestone Panel walls still cost less than other types of wall construction. Ask your Gold Bond® Representative for the full story, or write Dept. AF-860 for free samples and technical literature.

NATIONAL GYPSUM COMPANY, BUFFALO 13, NEW YORK

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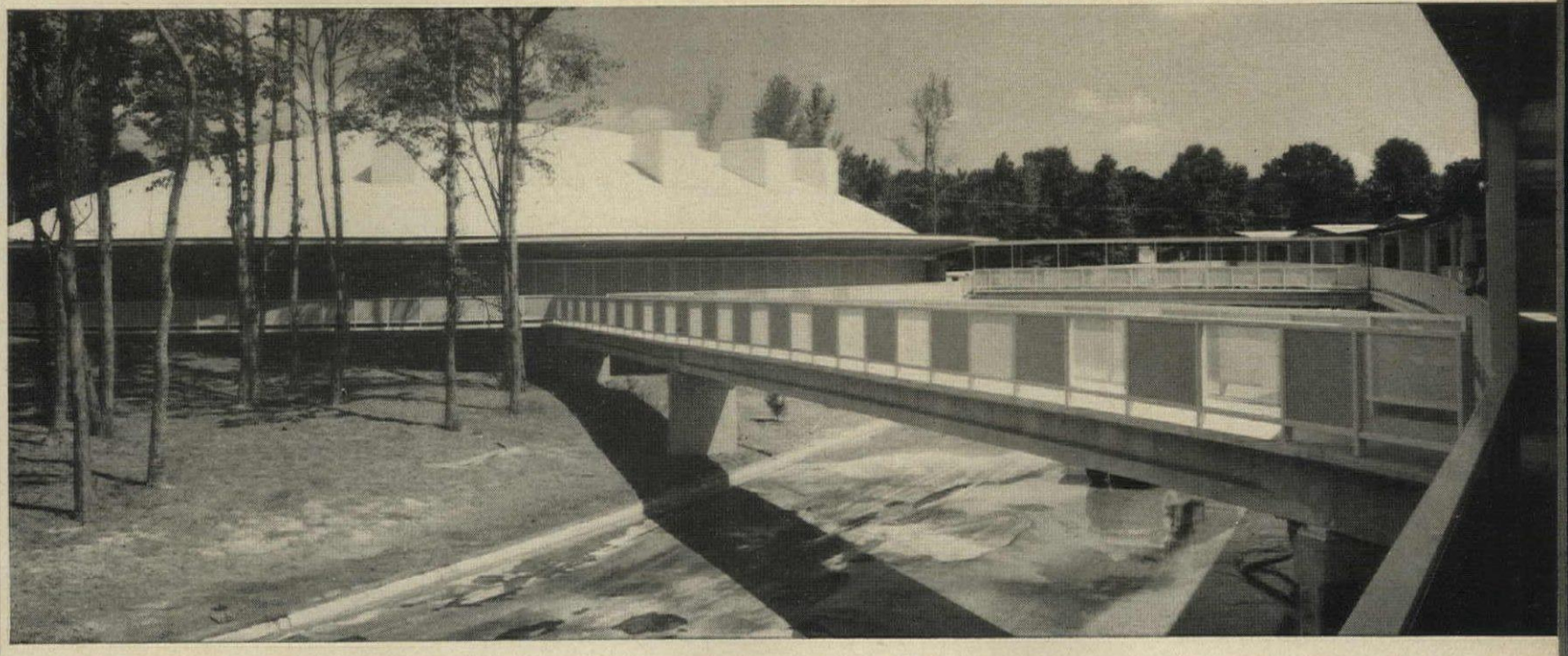
Gold Bond
BUILDING PRODUCTS

Architects: Miller, Smith & Champagne, Baton Rouge, La.



3 problems in designing GARDEN APARTMENTS ...and 3 practical Gold Bond solutions!

Architects, contractors and builders of Garden Apartments know how difficult it is to make effective use of living space and still keep control of noise between apartments. Here are three special Gold Bond Construction Systems that protect the apartment dweller from overhead noise and noise next door, and increase usable living space. Save this ad for handy reference on your next apartment job. For complete structural details see your Gold Bond® Representative, or write Dept. AF-860 for free samples and literature.

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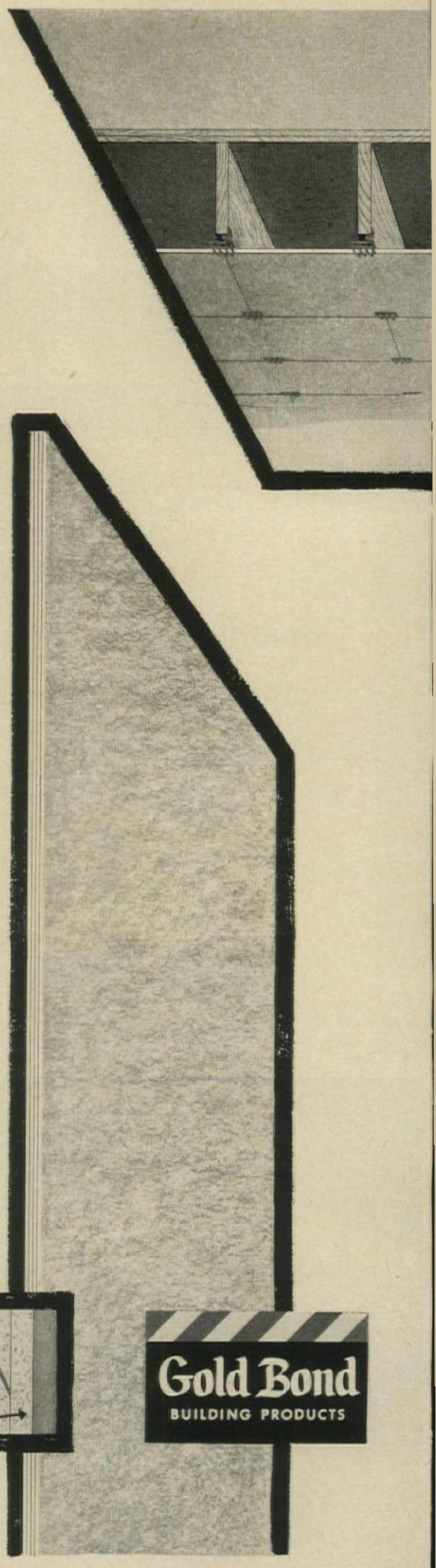
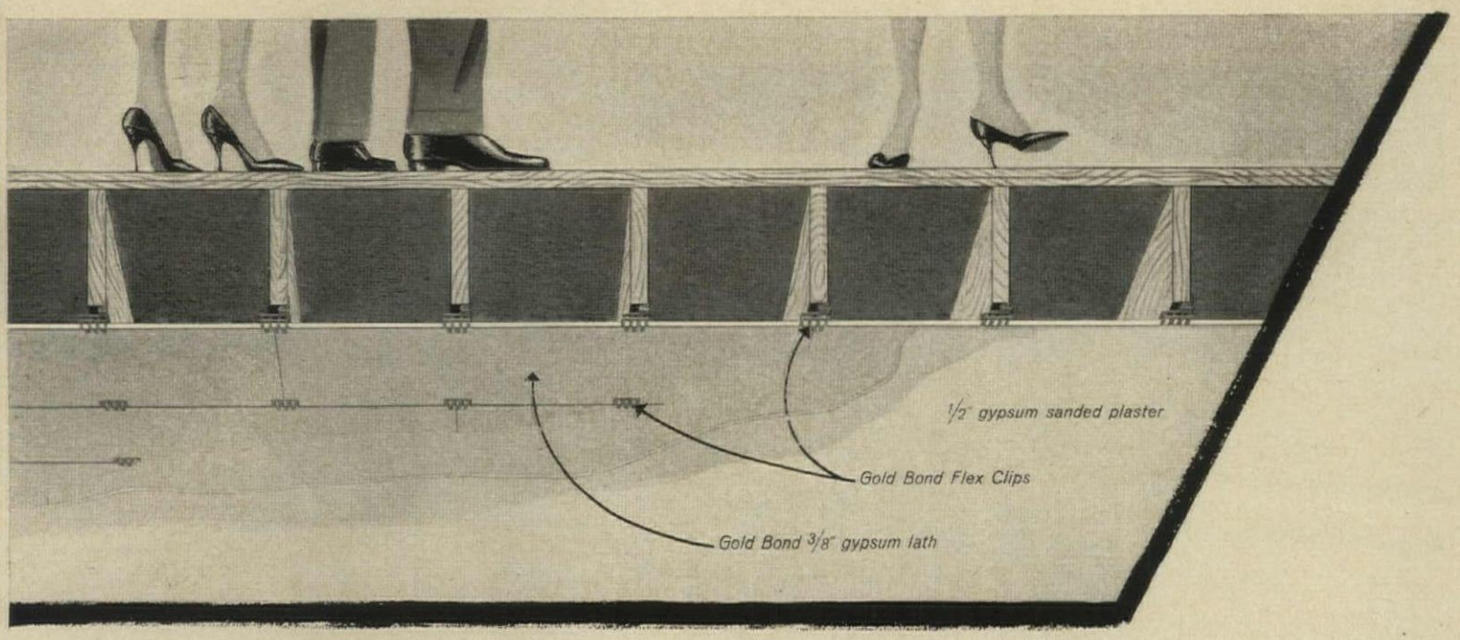


PROBLEM: *INCREASE USABLE LIVING SPACE*

SOLUTION: *GOLD BOND 2" SOLID LATH & PLASTER PARTITION WITH 1" CORE*

ANOTHER GOLD BOND EXCLUSIVE

This non-load bearing, structurally strong, space saving partition system (only 2" thick) increases floor area by approximately 1 sq. ft. for every 4 lineal ft. of partition compared to conventional construction. Partition has a one-hour Fire Endurance Rating and adequate Sound Transmission Loss (approx. 37 db.) No bracing up to 8 ft. is required—this speeds erection and reduces in-place partition costs.



PROBLEM: *OVERHEAD NOISES*

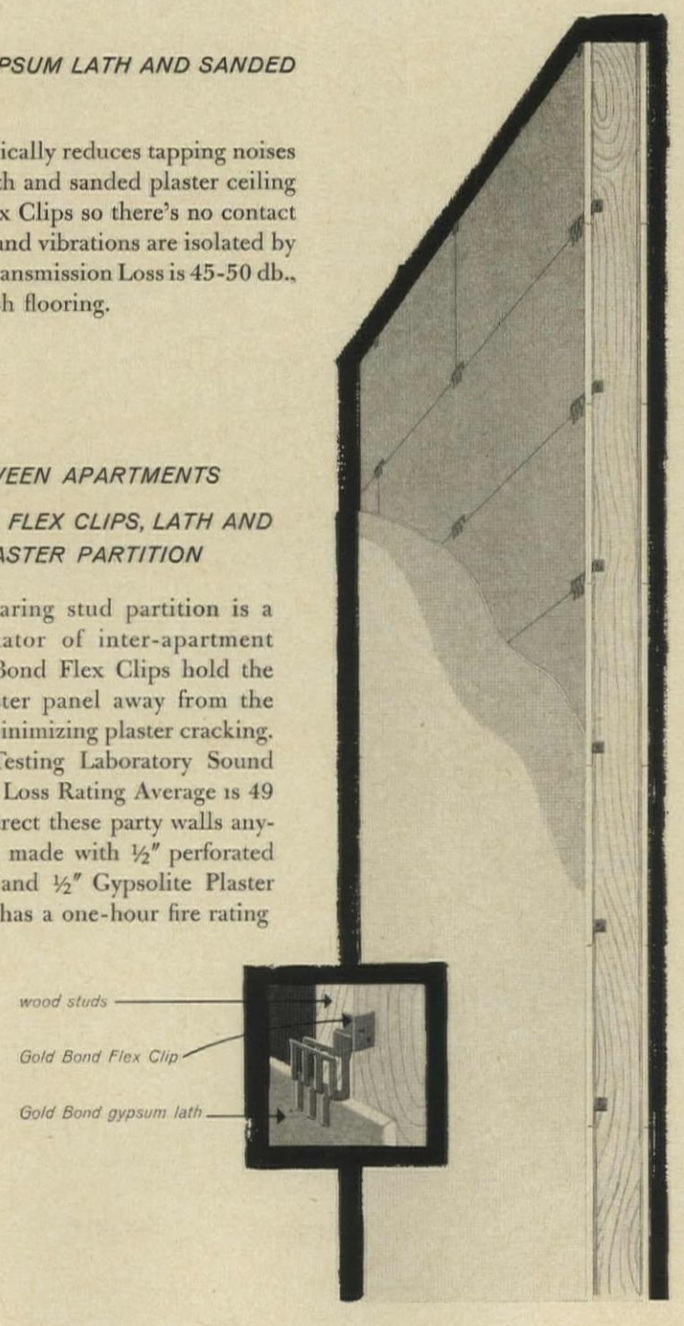
SOLUTION: *GOLD BOND FLEX CLIPS, GYPSUM LATH AND SANDED PLASTER CEILING SYSTEM*

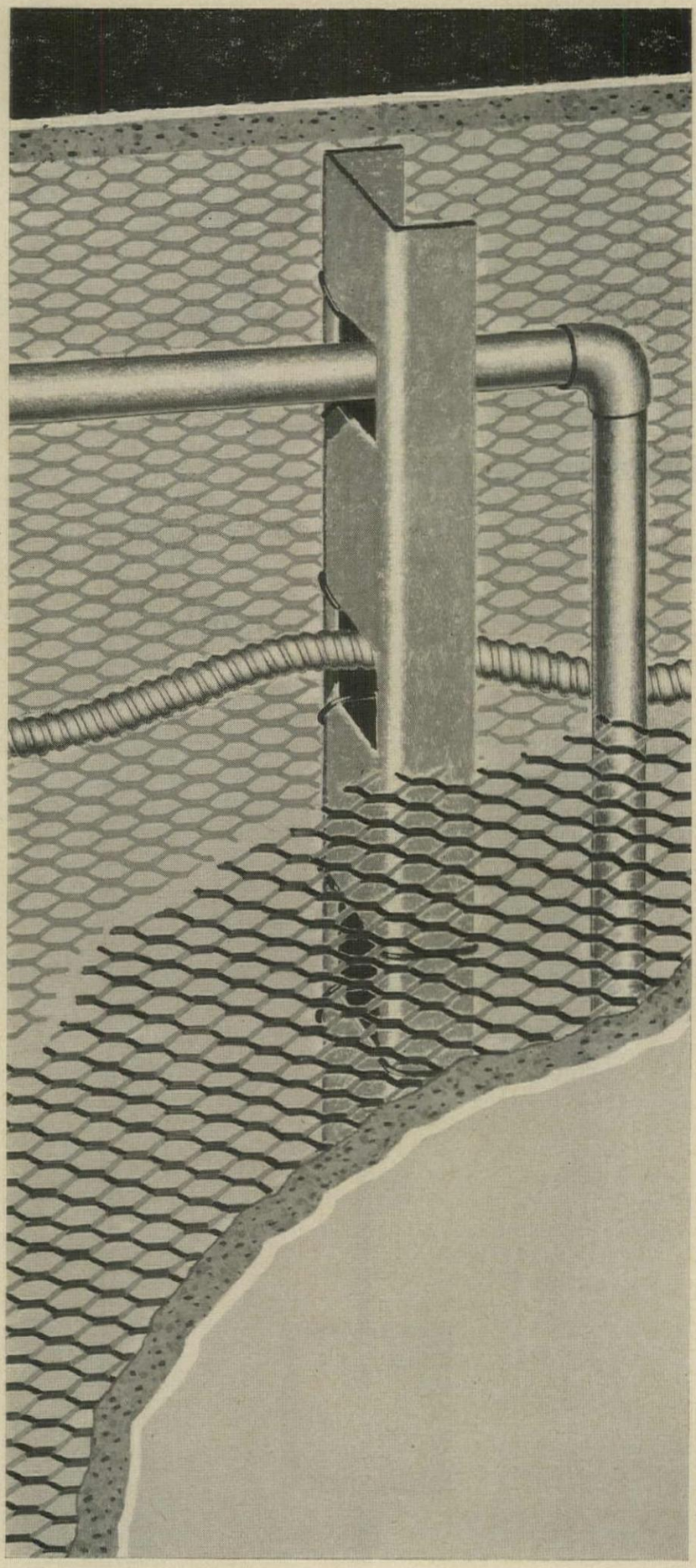
This unique ceiling system drastically reduces tapping noises from the floor overhead. The lath and sanded plaster ceiling is suspended by Gold Bond Flex Clips so there's no contact with the joists. Airborne noises and vibrations are isolated by these clips — estimated Sound Transmission Loss is 45-50 db., when used with rough and finish flooring.

PROBLEM: *NOISE BETWEEN APARTMENTS*

SOLUTION: *GOLD BOND FLEX CLIPS, LATH AND SANDED PLASTER PARTITION*

This load-bearing stud partition is a superior isolator of inter-apartment noise. Gold Bond Flex Clips hold the lath and plaster panel away from the wood studs, minimizing plaster cracking. Recognized Testing Laboratory Sound Transmission Loss Rating Average is 49 db. You can erect these party walls anywhere. When made with ½" perforated gypsum lath and ½" Gypsolite Plaster this partition has a one-hour fire rating





1⅝"

New slim stud saves space in utility walls

Now you can design utility walls as much as an *inch* thinner, and *still* have plenty of room for pipes and wiring! The new Gold Bond 1⅝" stud gives you a finished wall only 3⅛" thick, when metal lath is used. This can bring savings of several thousand dollars in apartment or school building costs. Yet the holes in the stud are large enough (1¼ x 1⅛") for pipes and wiring.

The 1⅝" stud comes with a full set of accessories. Construction is fast, simple and economical. Ask your Gold Bond® Representative for complete details, or write Dept. AF-860 for free samples and technical information.

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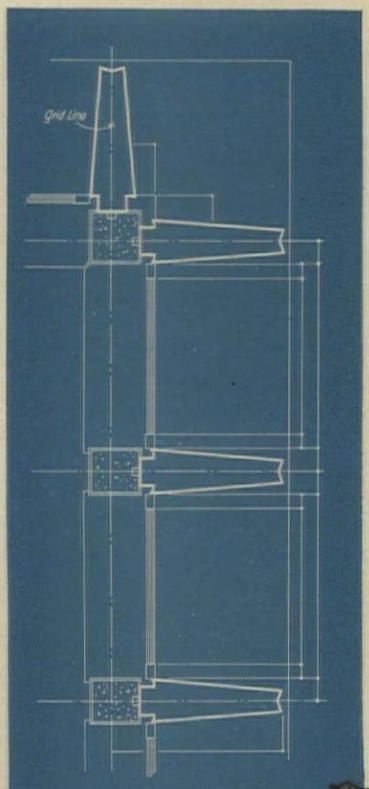
CURTAIN WALLS

IN ALUMINUM
by GENERAL BRONZE CORPORATION

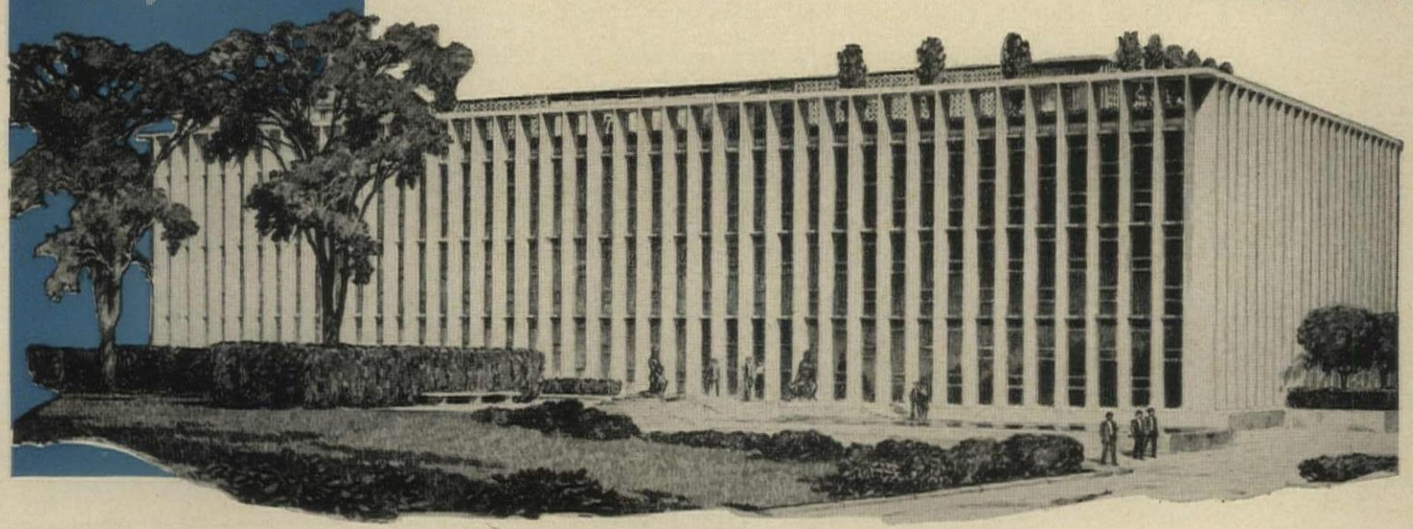


Here's an example of a beautiful classical-modern effect achieved through the use of narrow window bays and deep, vertical mullions of contrasting shades of anodized aluminum.

In designing the new Hunt Library at Carnegie Tech., the architects, Lawrie & Green, used Permatite fully reversible, vertically pivoted aluminum windows set in narrow, aluminum framed bays. Thirty-six inch deep mullions between windows not only act as functional sun shades, but also add to the distinctive architectural beauty of the building.

General Bronze's vast experience in designing, fabricating and erecting curtain walls covers every style of architecture and every type of material. On your next job call in the General Bronze representative. You'll find him ready and anxious to be of service. Our catalogs are filed in Sweet's.

Hunt Library
Carnegie Institute of Technology
Pittsburgh, Pa.
Architects: Lawrie & Green
Contractor: George A. Fuller Co.



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Another New York skyscraper has been reinforced with USS American Welded Wire Fabric. This is Rockefeller Center's new forty-eight-story Time & Life Building, an outstanding example of contemporary architectural design. The exterior steel columns are encased in stone-faced concrete which project from the walls and serve to accent the vertical sweep of the tower.

The frame supports short span, lightweight concrete slabs reinforced with USS American Welded Wire Fabric. Each slab is 8′0″ long and 4″ thick. When asked why the fabric-reinforced short-span design was selected for this structure, W. B. Scofield, partner in the structural engineering firm of Edwards & Hjorth, said "This system provides first-class, fireproof construction with a long record of satisfactory service in addition to its proven economy, speed of construction, and occupancy flexibility."

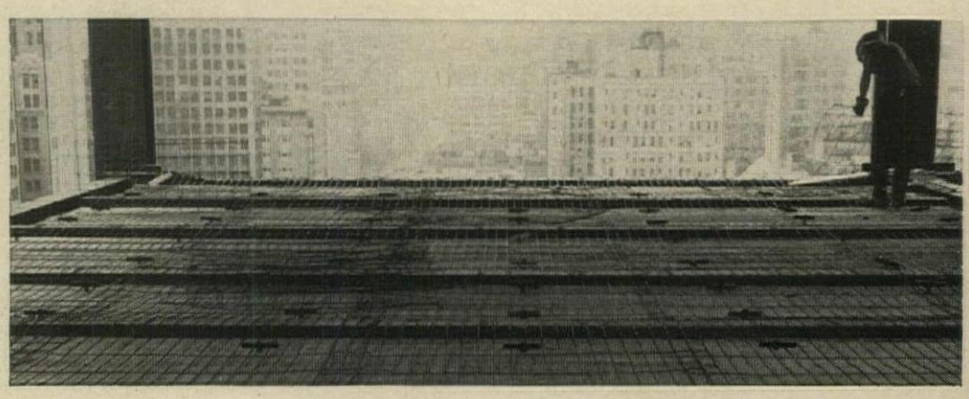
USS American Welded Wire Fabric was also used to reinforce the concrete fireproofing encasement of the columns, girders, and beams. Fabric is excellent for this application because the small, closely spaced members reinforced this thin concrete best. In addition, fabric is easily shaped to fit the contours and is sufficiently rigid to maintain the required shape.

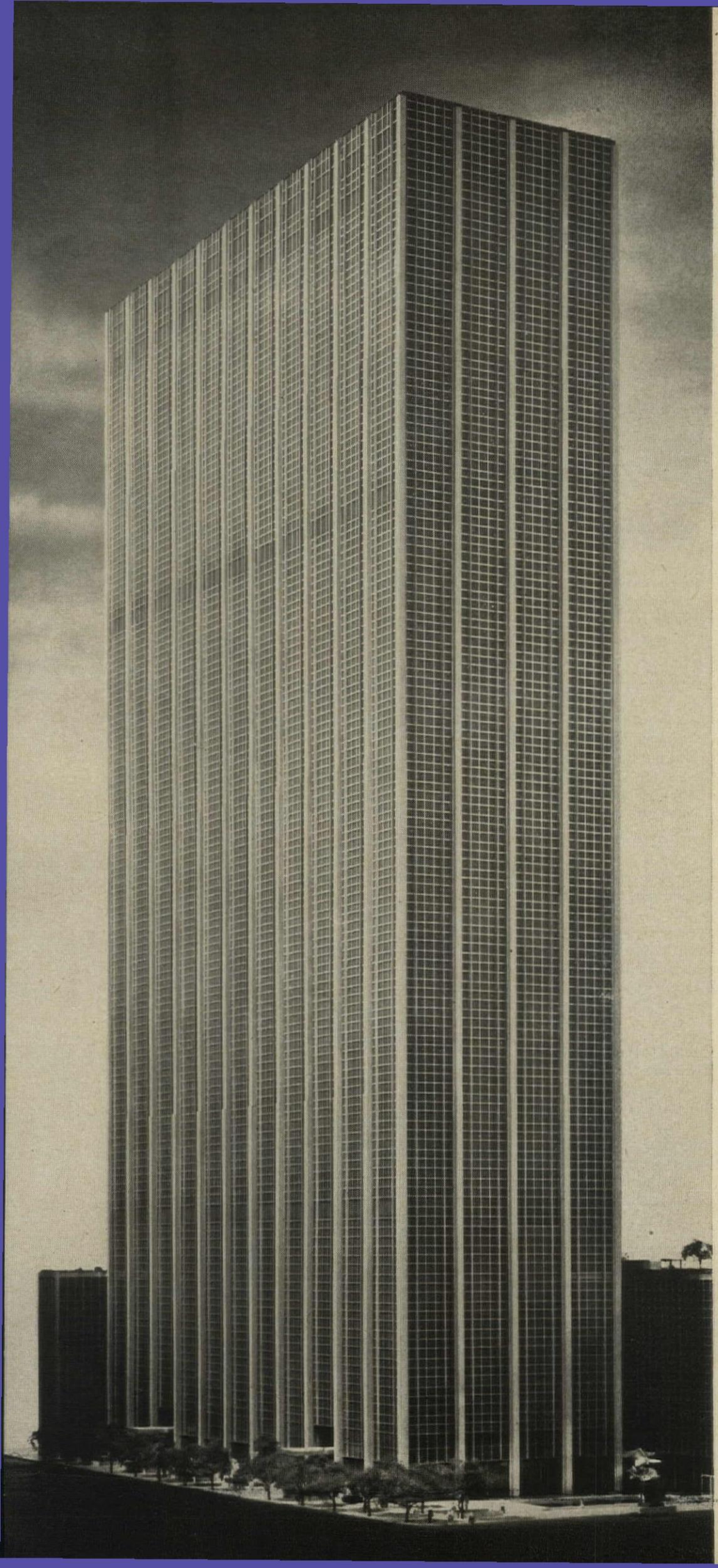
Please write American Steel & Wire, Dept. 0322, 614 Superior Avenue, N.W., Cleveland, Ohio or contact our nearest sales office for complete information on these or any other uses of USS American Welded Wire Fabric.

USS and American are registered trademarks

Short-span fabric-reinforced floor system in Rockefeller Center's Time & Life Building. American Welded Wire Fabric was furnished in long rolls and merely unrolled perpendicular to the beams and on top of the forms. It was draped from the top of the slab over the beams to the bottom of the slab at mid-span. Thus, the reinforcement is in position to best resist both positive and negative moments. The economy of steel placement is apparent. In total, over six million square feet of short-span slabs reinforced with Welded Wire Fabric have been used in New York's Rockefeller Center.

Owners: Rockefeller Center, Inc. and Time Inc.
Architects: Harrison & Abramovitz & Harris
Structural Engineers: Edwards & Hjorth
General Contractor: George A. Fuller Company
John Lowry, Inc.
Fabric Distributor: Fireproof Products, Inc.





American Steel & Wire
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"When it comes to maintenance painting, there are 2 ways to save money. Naturally, the first consideration is quality. Believe me, there's no substitute for paints like Du Pont—tough, durable and right for the job. And to make sure they *are* right for the job, our recommendations are based on a thorough analysis of your client's particular maintenance problem.

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There's a man like Ed Dickinson in *your* area, ready to provide expert technical help in selecting the right colors and paints for any job. To learn who he is, and to receive the 28-page booklet, "How to Put Color to Work," write: E. I. du Pont de Nemours and Co. (Inc.), Finishes Division, Dept. AF-68, Wilmington 98, Delaware.

* * *

Edward E. Dickinson has been with Du Pont's Finishes Division more than 20 years. As a Du Pont "Color Counsellor," he's had extensive experience solving problems of paint maintenance for schools and institutions throughout North Carolina. Personally responsible for the development of complete Color Conditioning programs in a number of newer schools, he's also initiated similar plans for various industrial installations.

DU PONT COLOR CONDITIONING PAINTS

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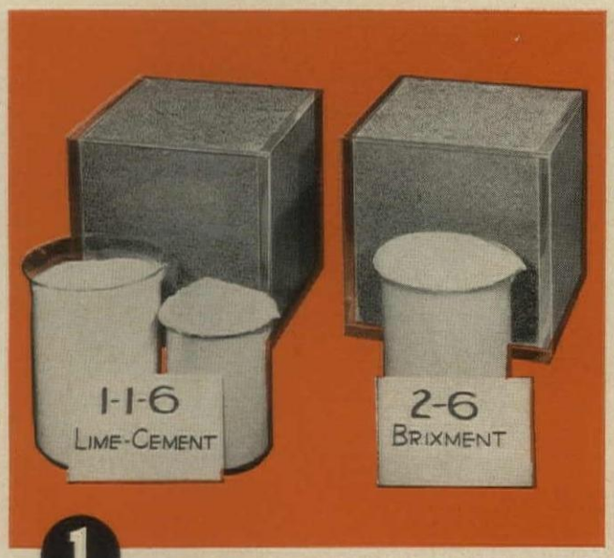
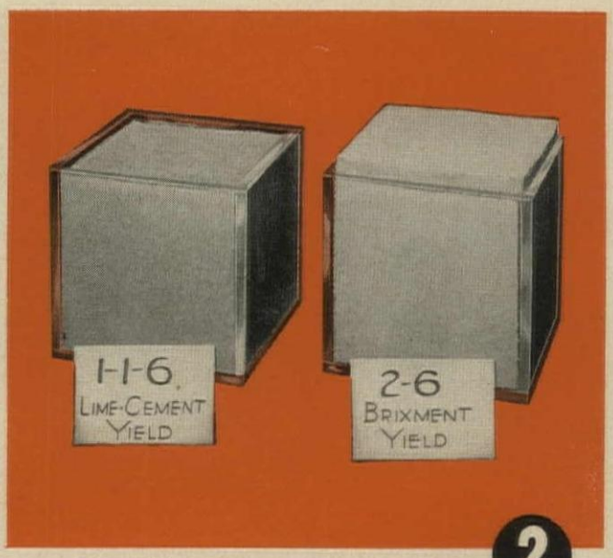


1 Carefully measure out 1 cu. ft. of damp, loose sand (80 lbs.) and ⅙ bag of hydrated lime (8⅓ lbs.) and ⅙ bag of portland cement (15⅔ lbs.). Also carefully measure out the same amount of sand and ⅓ bag of Brixment (23⅓ lbs.).



2 Mix each batch with sufficient water for good workable mortar, then place each batch into a 1 cu. ft. box (using "collars" on the boxes, if necessary to contain the mortar). Brixment yields 5% to 15% more mortar than cement and lime.

BRIXMENT produces greater mortar YIELD!

Because of its greater plasticity, Brixment will carry more sand than a 50-50 cement-lime mixture, and make strong, workable mortar.

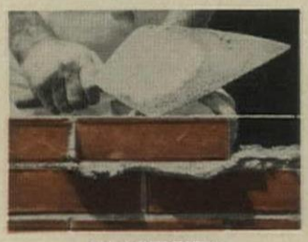
But even if the same amount of sand is used in both batches, Brixment will yield 5% to 15% more mortar°—and be much more plastic than the 50-50 cement-and-lime mixture.

But maximum yield is only *one* of the characteristics in mortar necessary to produce top-quality masonry *at lowest cost.* Several others are listed below—and *no other mortar combines ALL these characteristics to such a high degree as Brixment mortar.* It is this *combination* of advantages that makes Brixment superior to any mixture of portland cement and lime—and which also accounts for the fact that Brixment has been the leading masonry cement for over 40 years.

Louisville Cement Company, Louisville 2, Ky.

° The graduation of sand used in mortar has considerable effect on yield. This computation is the result of 131 field tests of Brixment with various sands, against a 50-50 cement-and-lime mix, over a period of four years.

BRIXMENT MORTAR ALSO COMBINES THESE 8 OTHER ESSENTIAL CHARACTERISTICS



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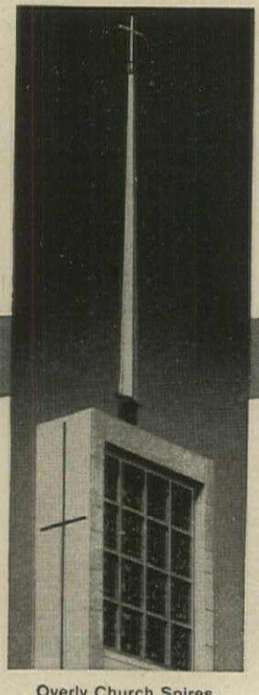
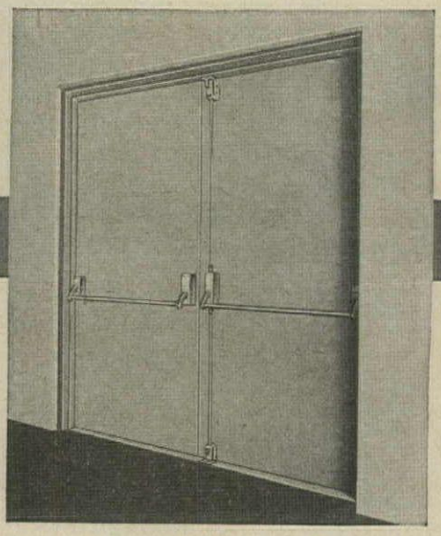
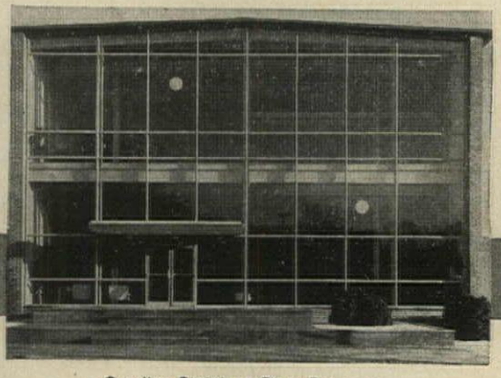
Reactor Building, Industrial Reactor Laboratories, Inc., Plainsboro, New Jersey
Architects: Skidmore, Owings & Merrill, New York City
General Contractors: Turner Construction Company, New York City



Overly Church Spires



Overly U/L Labeled Fire Barrier with Exit Hardware



Overline Stainless Steel Entrances

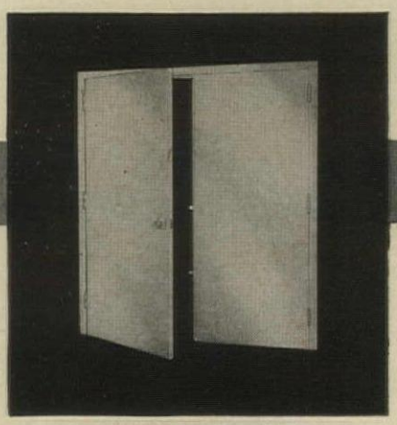
Atomic architecture crafted by Overly wins AIA award

Awarded a 1960 AIA "Honorable Mention," this Overly parabolic roof houses an atomic reactor at Industrial Reactor Laboratories, Inc., in Plainsboro, New Jersey. The graceful dome stands 87 feet high, and contains 14,500 sq.ft. of 16-gage, mill finish aluminum. Designed for lifetime service, this parabolic cover is constructed with Overly's patented mechanical watertight joints, which provide for contraction and expansion in all climatic conditions.

Overly's batten roof system has been specified by architects for almost every type of contemporary metal roof design.* The Overly system has been adapted for parabolic structures, domes, barrel vaults, groin vaults and to a host of other designs. And Overly is the only national roof fabricator to offer complete erection service *and* a 15-year warranty on mechanical batten performance.

Regardless of the shape or form of your next metal roof installation, Overly's *craftsmanship* will interpret your design with lasting beauty and accurate definition. Other architectural products crafted by Overly to serve the architect include: A complete line of over 90 styles of hollow metal doors and frames, labeled and non-labeled; Overline Stainless Steel Entrances, built to enhance the design of every building; Overly Fire Barriers, the only product that is U/L labeled for fire and panic protection; Overly Tilt-A-Front construction, an economical wall and entrance fabrication for one- or two-story buildings; and Overly Church Spires, carefully crafted in the finest modern or traditional styles. Overly serves architects across the nation with the finest in architectural products.

**Other current Overly batten type installations may be seen at the Moissant International Air Terminal, New Orleans, La.; the new addition to the U.S. Senate Office Building, Washington, D.C.; the Idlewild International Airport, New York City; the U.S. Naval Academy Gymnasium, Annapolis, Md.; and the University Field House, University of Illinois.*



Overly "A" Label, Type 50 Doors

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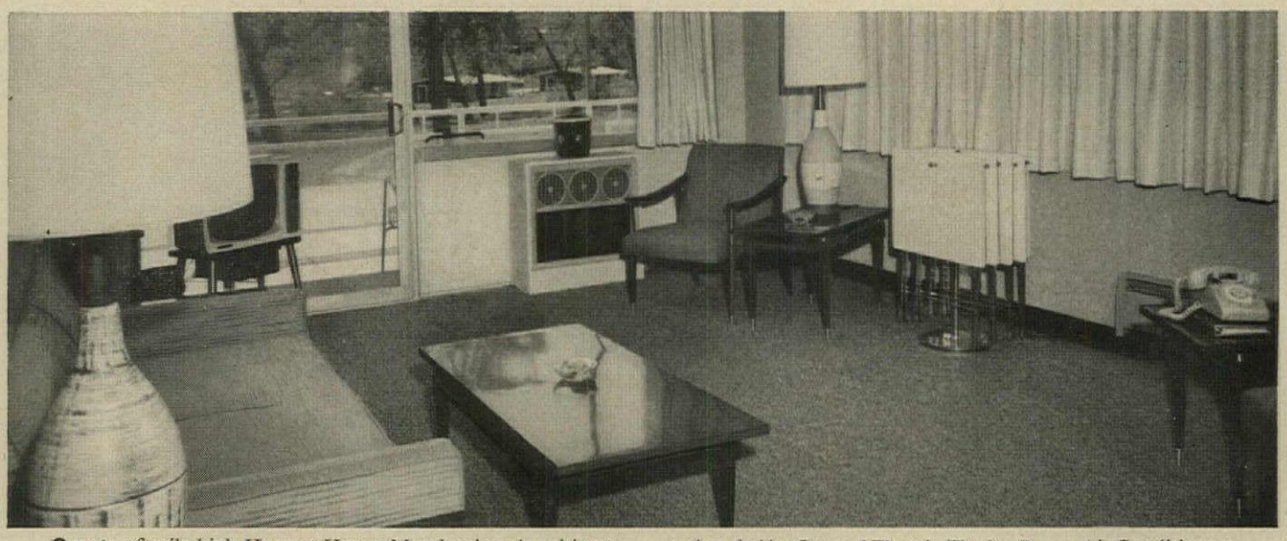


Guests of mile-high Harvest House Motel enjoy the ultimate in comfort. This well-appointed lounge, for example, is heated and cooled by General Electric *Thinline* Room Air Conditioners. Each guest room is equipped with a *Thinline*, too.

Even mountain air is fresher with air conditioning!

NEW COLORADO MOTOR HOTEL IS COOLED, HEATED BY 157 GENERAL ELECTRIC THINLINES

"Summer guests demand air conditioning, even at 6,000 ft. altitude," say the owners of the new Harvest House in Boulder, Colorado. "We've given it to them—and heat, too—by installing a General Electric *Thinline* in each room.

"Here in the mountains, a building can be uncomfortably hot on the sunny side and too cool on the shady side. That's why our architect, Ralph D. Peterson & Associates, recommended air conditioners that heat and cool . . . individual room units so each guest could control his own comfort.

"They specified General Electric because we have to have reliable performance and top quality service, too, if we ever need it."

General Electric's Golden Value Line of the 60's includes 18 room air conditioner models ranging from 5,300 to 16,000 BTU's*. There's one to solve every air conditioning problem; three that provide heat as well as air conditioning. And all models dehumidify, filter and ventilate, too.

See your General Electric representative for details. General Electric Company, Room Air Conditioner Dept., Appliance Park, Louisville 1, Ky.

*Cooling capacities are tested and rated in compliance with NEMA Standard CN 1-1958, and are stated in terms of British Thermal Units.

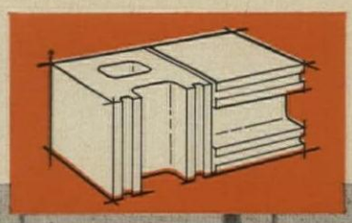
Progress Is Our Most Important Product

GENERAL ELECTRIC

Where are the air conditioners' rust-proof aluminum grilles? Behind the balconies that climb the handsomely modern façade.

Each bedroom has its own *Thinline*. The attractive modern inside grille is an interesting addition to the room's appearance.

Great new things are shaping up in concrete block



Wall designed by Architect Alfred B. Parker, Miami. Photo courtesy of National Concrete Masonry Association.

Atlas Masonry Cement provides the right mortar

A notable thing about the new look in concrete masonry is what is being done with standard block. Here, for instance, a closed-lattice effect is achieved by laying up "stretcher" type concrete block, so that the ends are exposed. This basket-weave pattern creates an interesting exposed masonry wall resembling hand-hewn stone. For laying up this block, or any concrete masonry unit, ATLAS MASONRY CEMENT continues to be the preferred cementing material in mortar. It produces a smooth, workable mix, provides a strong bond, gives weathertight joints that are uniform in color. And ATLAS MASONRY CEMENT complies fully with ASTM and Federal Specifications. For information on masonry cement write: Universal Atlas, Dept. M, 100 Park Avenue, New York 17, N. Y.

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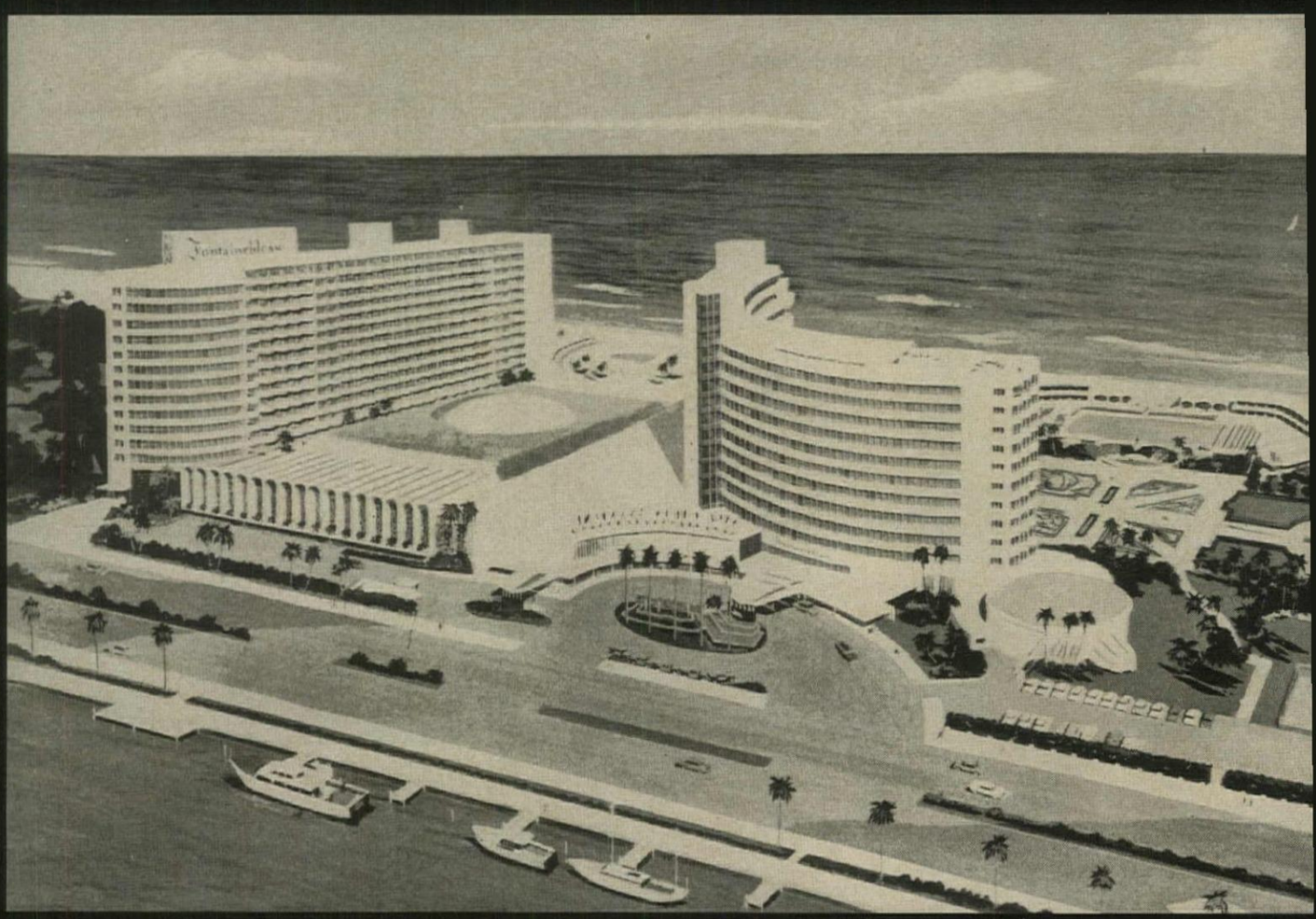
NEW ADDITION

TO THE FABULOUS FONTAINEBLEAU



Addition to Fontainebleau Hotel, Miami Beach, Florida

Architect: A. Herbert Mathes, Miami, Fla.
General Contractor: Taylor Construction Co., Miami, Fla.
Masonry Contractor: Kirkland Masonry Co., Hialeah, Fla.

FACTS ABOUT THE FONTAINEBLEAU ADDITION

The proportions of the new addition to the Fontainebleau are immense. For example, a ballroom that is 200 x 140 feet, the largest in the world. A theater-banquet room that will seat 4,000 at a dinner. Set up for a performance, it will seat 6,000. A new building with 400 hotel rooms is going up right alongside. A little over three miles of Keywall is being used as a masonry reinforcement in the new addition.

BUILT TO STAY YOUNG WITH

KEYWALL

galvanized masonry reinforcement

You can't be leaning over the shoulder of each mason all the time to make sure he uses the reinforcement right. Yet proper use of the reinforcement makes the difference between a building that stays young and one that ages fast. But what can you do?

Here's one man's answer. Masonry Contractor Hugh Kirkland says, "Lapping is the key to proper masonry reinforcement. Here's what I mean. Some masonry reinforcement is hard to lap. Too thick. By thick I mean an $\frac{1}{8}$ inch in diameter. Lapped, that's a quarter inch. So, with a $\frac{5}{8}$ inch mortar joint, you get little mortar around the wire. That means poor bond, poor embedment. So what happens? Most of the time reinforcement is butted, not lapped. That's even worse.

"We simply avoid the problem. We use Keywall. It comes in 200 foot rolls, not short lengths. So you very seldom have to lap it. And when you do, it's easy . . . easier than butting it. So of course, my men lap it. And when Keywall is lapped, there's still plenty of room for mortar.

"Keywall is a lot easier for my men to handle because it comes in rolls. It's easier to cut, too.

"But it's not only a matter of my men liking it. Keywall reduces shrinkage very effectively. And it's economical. What could be better than Keywall?"

KEYSTONE STEEL & WIRE COMPANY
Peoria 7, Illinois

KEYWALL · KEYMESH® · KEYCORNER · KEYDECK · WELDED WIRE FABRIC · NAILS

Just unroll it and you're ready to go. Joe Kuntz, Superintendent for the Masonry Contractor, Hugh Kirkland, shows how easy Keywall is to work with for the benefit of mason Fred Kinnaird. Keywall is made for wall thicknesses of 4", 6", 8", 10", and 12".

SINKO "Thin-Cell" LOUVERS made with EVENGLO®

The Sinko Manufacturing and Tool Company produces a colorful selection of plastic louvers ideal for all types of commercial establishments. Sinko THIN-CELL louvers molded from EVENGLO polystyrene come in a complete range of whites and pastels . . . molded-in for permanent beauty. A Sinko plastic louver transmits shadow-free, glare-free light into every corner of the room . . . it's the finest in softly-diffused illumination. EVENGLO polystyrene is a versatile Koppers plastic that can be molded in any size, shape, or color. EVENGLO is durable . . . economical. When you build or remodel, specify fixtures made from EVENGLO. For more information on EVENGLO polystyrene, or for a list of manufacturers using EVENGLO, write to Koppers Company, Inc., Plastics Division, Dept. AF-80, Pittsburgh 19, Pennsylvania. Offices in Principal Cities • In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario.

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ARCHITECTURAL FORUM
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Editorial

Toward a viable profession

A bid to face up to change was set before the architectural profession last month in the long-awaited report of the A.I.A. committee on the future of the architectural profession. The main point made by the group under Chairman James Hunter was that architects must meet changes in the way their clients think, act, and work. To do this requires changes in the profession itself—in terms of practice, education, and professional organization.

The prospect of actually achieving some of the changes is good, for, not only is A.I.A. leadership this year stronger than in many a year, the rank and file in the profession are more aware of the facts of professional life and more anxious to rearrange them than ever before.

In the ensuing discussion, architects will no doubt consider with special attention their committee's specifications. Society, the committee noted, generally considers an architect a businessman. And indeed, in one way or another, the business of maneuvering needs, land, and money into a building result is, in fact, the practice of architecture. But traditional notions about the practice of the profession separate the architect from these conditions, binding him too rigidly into a position in between a client and a builder. The concept that the architect is his client's agent, the committee points out, is the essence of the profession, but that is no reason to limit the agent's role.

Modern conditions, in fact, make such limitations more violated than observed. The committee would encourage the architect to work for the client in teamwork with a banker or a realtor and, further, would encourage the architect to purchase, negotiate, or solicit bids from vendors and contractors on behalf of the client. This would put the architect in a position to do many things not possible now. For one thing, it *could* enable him to guarantee costs; for another, it would allow him to widen his services to a client. Both of these changes would reduce materially the threat to the architect of package builders who contract to deliver a finished product for a stated price.

A second important series of recommendations is in the area of education. Calling for closer integration of educational institutions with the profession, the committee urged adoption of active professional programs of indoctrination and internship, spreading thereby the job of education equitably between the schools and the profession itself. Closer relations between school and profession would also mean more "refresher" education.

Finally, the committee called for a revitalization of the A.I.A. itself, in terms of organization, staff, and facilities, at national, regional, and local levels. Asking for selection of the "most articulate, respected, and best-known architects" to national offices, the committee recommended further

LEES carpet solves multiple motor-hotel problems for new Schimmel Inn, Wichita

This latest in the growing Schimmel chain of motor hotels was designed to fulfill two functions. It's a wayside stop for travelers AND its public rooms are gathering places for Wichita's business executives.

Problem: To provide dining room (Golden Spur Room) with deep-piled luxury AND long wear, and carry out Golden Spur motif

Solution: Lees exclusive Duracord carpet in modern skip-dot pattern. Patented process brings 50% more yarn to surface, packs it densely, heightens wear for traffic areas

Problem: To co-ordinate all elements of design around Kansas State flower (Sunflower) in the smart Sky Room Club

Solution: Highly flexible four-frame Wilton (Lees Palmsett carpet) permitting personalized interpretation of the sunflower pattern in the draperies

Problem: To mask soiling and spillage in the guest rooms

Solution: Inexpensive but smart gray-black tweed Chariot carpet

Claude Brommage, Vice-President of A.I.D., found after talking to Lees Commercial carpet specialist that Lees has the designing skill and engineering capabilities to meet any special requirements. Whatever your floor covering needs, write now, while you're in the planning stage, for the name of the Lees Commercial specialist nearest you, and for our free brochure.

James Lees & Sons Company, Bridgeport, Pa.

those heavenly carpets by *Lees*®

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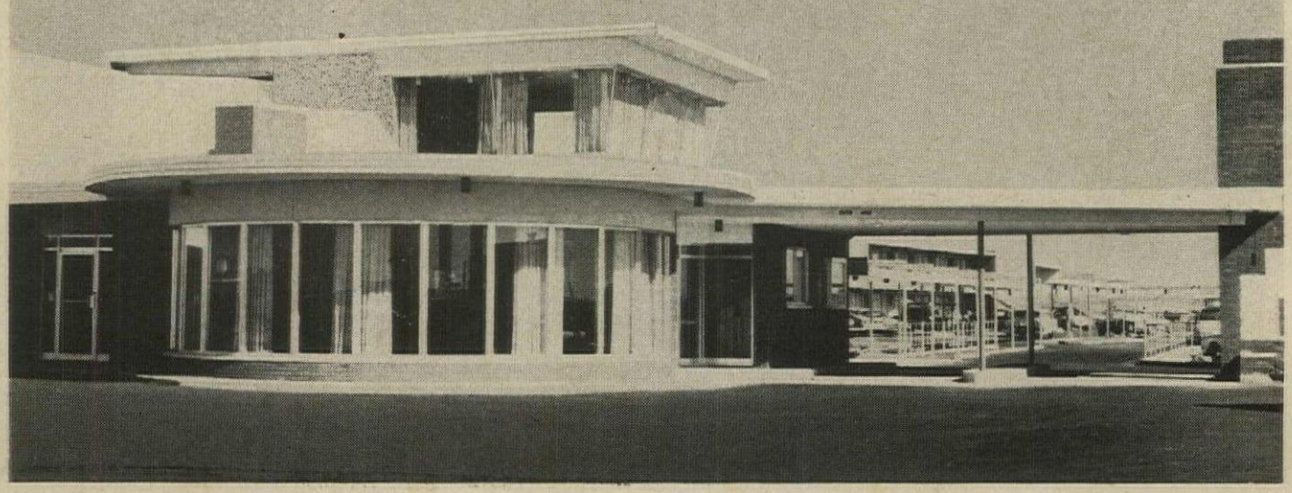
OR WRITE FOR COPY



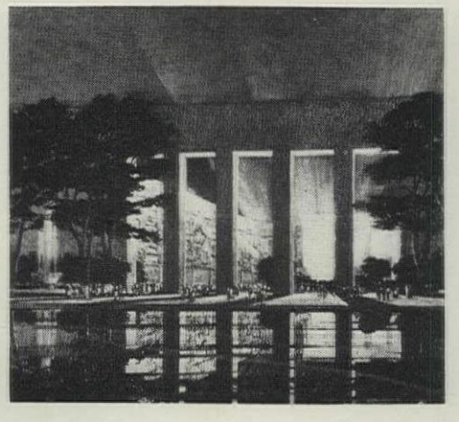
that regional directors be given the title of vice president. The committee felt that A.I.A.'s budget ought to triple, and that charges should be more equitably spread to the membership. The way to accomplish this, according to the committee, is that the cost of individual memberships should be reduced, and the difference and increase should be absorbed by pro-rata payments on an *office* basis.

The committee's concluding vision of a Federation of Design Professions housed in a national headquarters of the environmental arts is for architects, perhaps, the most stirring image in the report. Although, at the moment this project seems presumptive, by following the committee's other recommendations, the profession will grow up to it. The committee deserves a round of applause for starting things off.

Culture gap

In her capacity as an architectural critic for the *New York Times*, Ada Louise Huxtable has, in the past, patted some backs and taken some swipes—both, usually, with good judgement. Last month, on the *Time*'s front page, diminutive Mrs. Huxtable (5 feet 2 inches in her stockings) took on the biggest opponent of her fearless career: the proposed $24 million, 327-foot-long, 204-foot-wide, and 68-foot-high "Freedom Shrine" (see photo) that may be erected across the Potomac from Washington, D.C., next to the Arlington National Cemetery. Mrs. Huxtable's barbed questions: 1) Is this monument necessary? 2) How come it was designed by a consultant to a commission formed, in part, to select a designer? 3) Why was there no public design competition (as there is for the proposed Franklin D. Roosevelt Memorial)? And 4) why must the proposed shrine be so "flaccid . . . watered-down . . . innocuous . . . uninspired . . . empty . . . pompous"? That just about covered that.

FORUM congratulates Mrs. Huxtable, the *New York Times*, and the *Washington Post* (which has been fighting a similar battle, locally, for some time). We also suggest that the proposed shrine (by Architect Eric Gugler and Sculptor Paul Manship) might make a fine centerpiece for "Freedomland, U.S.A.," a new place for fun and games just inaugurated in the Bronx, N.Y. Meanwhile, the $24 million which the shrine is supposed to cost might, perhaps, be usefully employed to narrow the "culture gap" that seems to exist between some of our elected representatives (and their appointees), and the rest of the country.



Two-purpose tower

The new Time & Life Building weds a big communications plant to big rental office space, and both to the urbanity of Rockefeller Center.

Rockefeller Center built it, Time & Life gave it its name. The building's character reflects a joining of partners, a marriage of uses, a meld of design, and a union between New York's two generic office-building types.

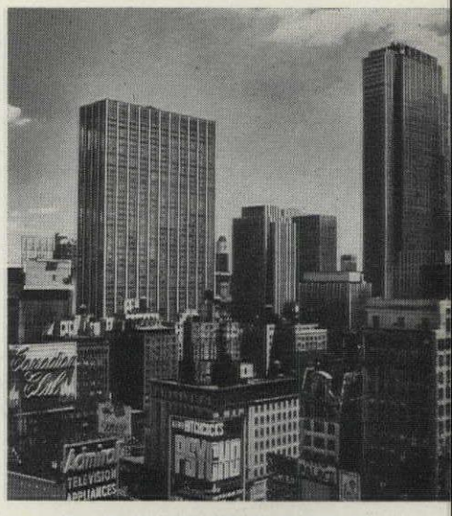
Unlike the early postwar architectural pace-setters, such as the Seagram Building or Lever House, the Time & Life Building is not a posh institutional job with small floors, with architecture honed Seagram-sharp at fancy cost, and with or without extra space for rent to make ends meet. Nor is it a cheap, crowded rental building by an operative builder, dressed in the biggest tenant's name. In skyscraper society, the Time & Life Building is upper-middle-class.

This is Rockefeller Center's first joint venture with a former and future tenant, the Center taking a majority 55 per cent interest, and TIME INC. the remainder in a building corporation called Rock-Time, Inc. It came about like this. The Center needed to jump across Sixth Avenue to the west to offset the drift of mid-Manhattan away to the east. TIME INC., having settled upon the necessity of re-establishing its complex production operation in midtown Manhattan, wanted to go no higher than necessary above its 22-year-old bargain rental rate of $3.50 per square foot. But renting new air-conditioned space in the Center would have cost almost $7 per square foot. To give TIME INC. a way to recapture some of the difference in rental rates (and to keep the company in the Center) it was proposed in 1955 that TIME INC. and the Center share in the ownership of a new Center building.

The tower that came out of all this was designed by Architects Harrison & Abramovitz & Harris as a tall, big-boned flat slab, 47 stories high, 308 feet long, and 104½ feet wide, rising straight up, with a "wrap-around" eight-story annex to the north. The tower is set back on the lot, leaving a 70-foot-deep plaza on Sixth Avenue and a 30-foot-deep promenade along 50th Street. If surrender of one-fourth of the plot to trees and pavement, sculpture (forthcoming), pools, and fountains was a calculated gift to the city, it surely earned the citizens' affection. The building itself contains 1.9 million gross square feet and 1.5 million rental feet. The construction cost before tenant improvements was a little more than $50 million, about $27 per square foot.

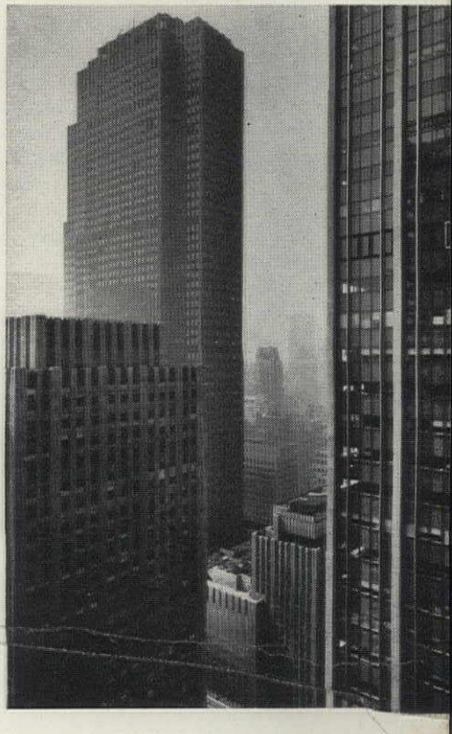
The architecture is conservative and in places wandering, but it is sturdy, and unquestionably the building is handsome. Originality was sacrificed to a more effective marriage with the Center, the city within a city. Purchase of the adjacent Roxy Theater's air rights allowed the tower to rise straight up as a large, simple slab, quickly identifiable with Rockefeller Center (see photos). And the combined effect of its big, projecting, limestone-faced columns and outside ducts, on glass walls trimmed with dark gray aluminum, is a surprising harmonization with the older buildings. For a report of the melding of uses, turn the page.

PHOTOS: ANDREAS FEININGER

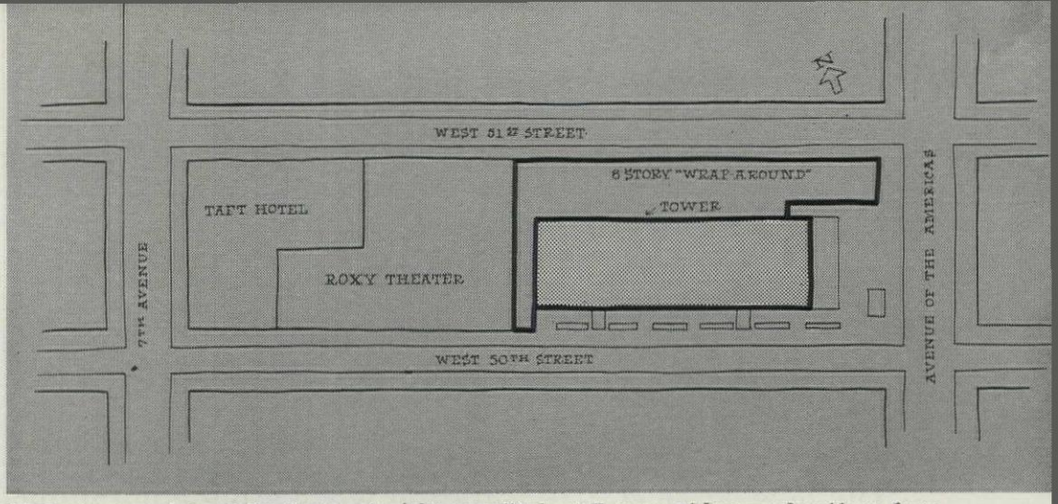


. . . extending Rockefeller Center west and . . .

happily marrying old and new.



The new Time & Life Building, a handsome tower in civic space . . .



Block plan: purchase of the theater air rights permitted a tall tower of large and uniform floors.

Plazas and fountains

In the early thirties when Rockefeller Center was planned, New York had all but forgotten about plazas and fountains. The story is told that when Rockefeller Plaza's famous Prometheus Fountain was proposed, the sponsors were appalled that it would use 26,000 gallons of water daily. But when Architect Raymond Hood asked, simply, how much would that cost, the answer was something like $10 — and the fountain was built.

The four mushroom fountains with jets in the 30½ by 109½-foot reflecting pool at the TIME & LIFE plaza, plus the twin jets in the six smaller pools on the promenade along 50th Street, cost an average of $50 a day for water, pumping, maintenance, and underwater illumination. The architects deliberately designed all pools with wide edges, seat-high, and the crowds love it (see photos). The mushroom fountain shape, more massive than jet types currently fashionable, is less easily scattered by wind, less likely to wet crowds.

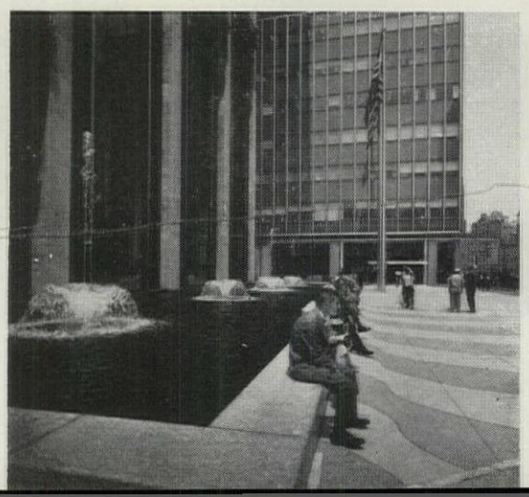
Trees along 50th Street, shrubs on Sixth Avenue above subway gratings, three flagpoles in front of the east entrance, a neat subway entrance which will be topped by sculpture — all these make the TIME & LIFE plaza a happy place. (One sad note: the undulating pattern of the terrazzo pavement of the plaza and the lobby—an idea which Harrison imported from the Copacabana in Rio de Janeiro — became a glaring distraction.)

Would the new plaza influence the city as a whole? Following Rockefeller Center's first superblock with open plazas, not another commercial plaza was built in New York until Lever House, even though a few speculative builders had in the meantime covered more ground, sidewalk to sidewalk, than the total area of the Center. They never became the urban princes that they might have been, had they learned to pool their land acquisitions.

"We are not Rockefellers," was their explanation.

Pool edges form comfortable seats; on windy days the taller fountain jets are turned off.

Front plaza between the pool and sidewalk is paved in a Copacabana pattern.



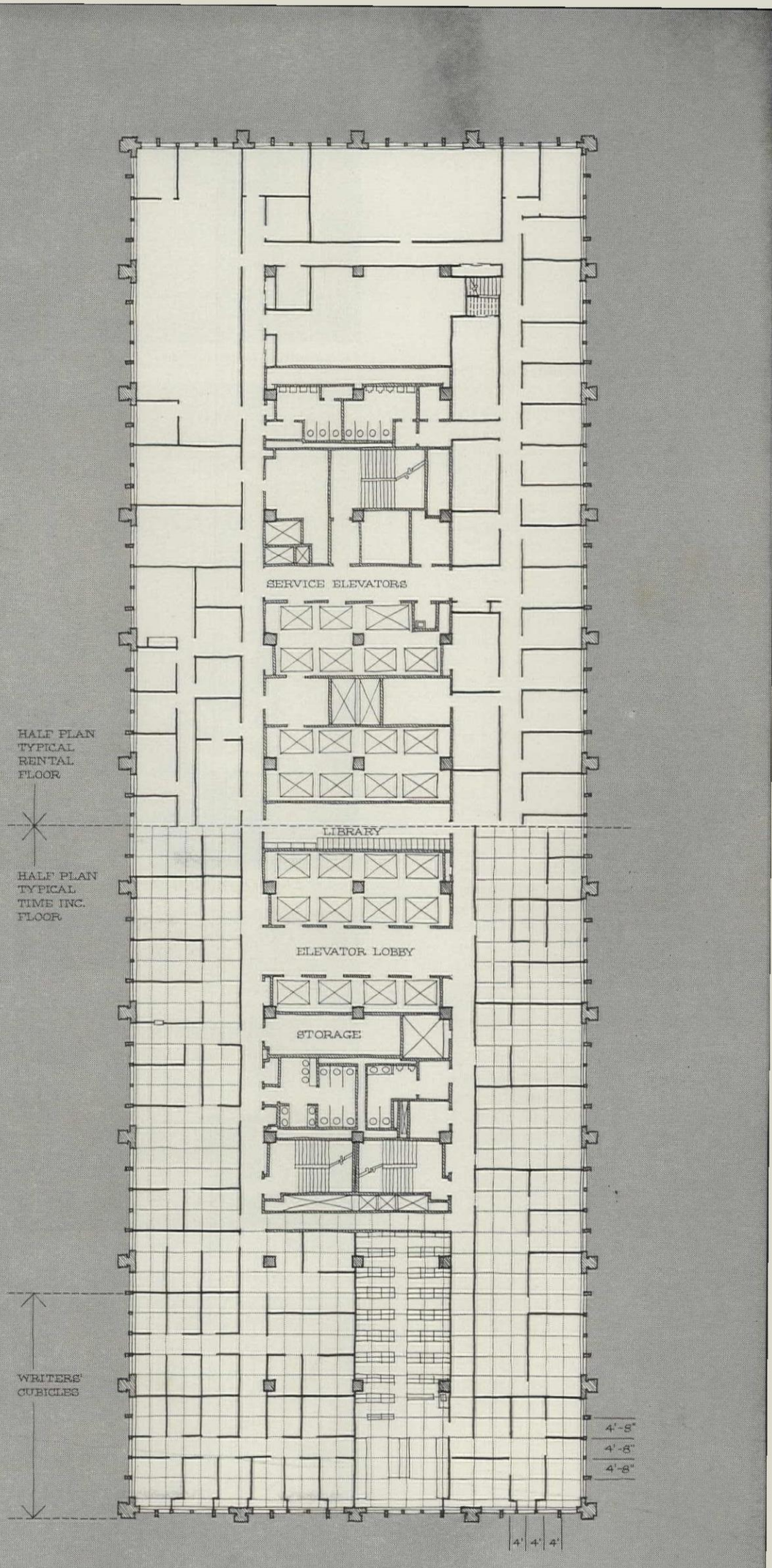
Big floors, little cubicles

The two half-plans at the right, one half showing space occupied by TIME INC. and the other typical office space occupied by another tenant, display the disparities that must often be met in "package" buildings serving a variety of users with different needs. TIME INC. is by far the biggest tenant; it rents 21 floors, six of which are being sublet pending future expansion.

The net 28,000-square-foot floors are really big (by comparison, the Socony Mobil Building's tower floors average only 16,000 square feet), and TIME INC.'s special problem was that it had to fit so many small rooms into these big floors. Other tenants left much of the big area open in "bull pens," as can be seen in the plan, and TIME INC. needed some of these, too. But TIME INC. also had to pack in large numbers of smaller-than-office-size writers' cubicles, measuring at a minimum only 75 square feet. An earlier issue (FORUM, Jan. '58) described the system worked out by Designs for Business, the interior planners of TIME INC.'s space. As the plan shows, the essential idea was to line up cubicles three deep in the 24-foot distance between the peripheral window wall and the main corridor surrounding the elevator core. Spur corridors, each serving six cubicles, end at light-giving windows (photos, bottom of next page).

All in all, it has worked well. Few of the highly articulate writers, struggling initially with the dangling extension cords required to bridge an occasional lighting or wiring eccentricity, entirely understood the problem. A tight system of exact little rooms, each needing everything—space, access, ventilation, light, wiring, and sound reduction—enormously complicates and runs up the cost of ducting, pipes, and conduits, above the ceiling, which in some parts of the building are as tightly packed as a submarine. Only in a few cubicles at the ends of the floors, where the modular spacing of the partitions could not quite match the nonmodular spacing of the mullions, did the system get really clumsy.

The structure was engineered by Edwards & Hjorth, built by George A. Fuller Co. and John Lowry, Inc.



Individualistic elevator lobbies: for SPORTS ILLUSTRATED *. . . and for* LIFE.

Variety, individuality

In the elevator lobbies, used as foyers, the different magazines sought to express themselves as individualities. But with a few exceptions (notably SPORTS ILLUSTRATED, by FORUM'S Ray Komai, top left), the results were more flashy than expressive.

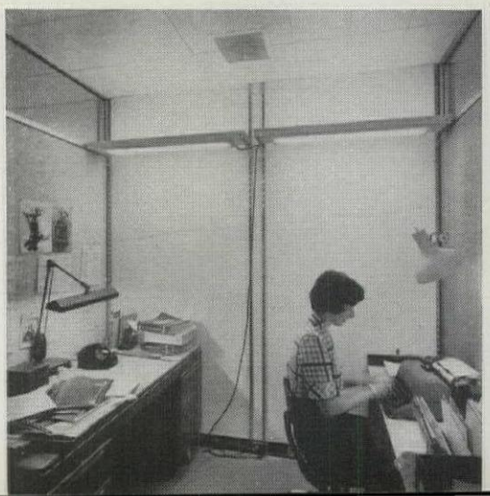
In the whole area of interiors and furnishings, TIME INC. has made no high-style effort but has contented itself with what Gerald Luss of Designs for Business could dream up, plus a few furnishings inevitably carried over from the old building. Luss's best stroke was probably his share in designing a new partition system which is integrated with the lighting, wiring, acoustical, and air-conditioning systems to make possible easy rearrangement of space without disturbing the floor and ceiling finishes. As the larger pictures on these two pages show, these partitions not only create a manageable sort of space across a wide diversity of uses and dimensions, but keep it looking airy and light-footed. The ingenious posts are square-section aluminum extrusions, with a channel on each face to receive neoprene gaskets, into which panels may be butted with no screwing except at crossbars. The panels, which are easily interchangeable even after the partitions are in place, are made up in an almost overgenerous variety with a wide series of alternate surfaces: oak, birch, walnut, or butternut plywood, thumbtack-able plastic, natural or painted burlap, milk safety glass, and unpolished plate glass, the latter two highly useful as a translucent facing for inside cubicles far from windows (bottom left). In some places, like the LIFE layout room (top, opposite), the posts are used as ingenious "space dividers," supporting nothing but shelves. A space-saving sliding door for offices was also developed as part of the partition package. The cost to TIME INC. for all its interior work was roughly $13 million.

Airy and flexible glass-topped partitions create pleasant interior offices.

Typical office for a FORTUNE *manager*

. . . and a conference room for LIFE.

An inside cubicle served by a spur corridor leading to a window.



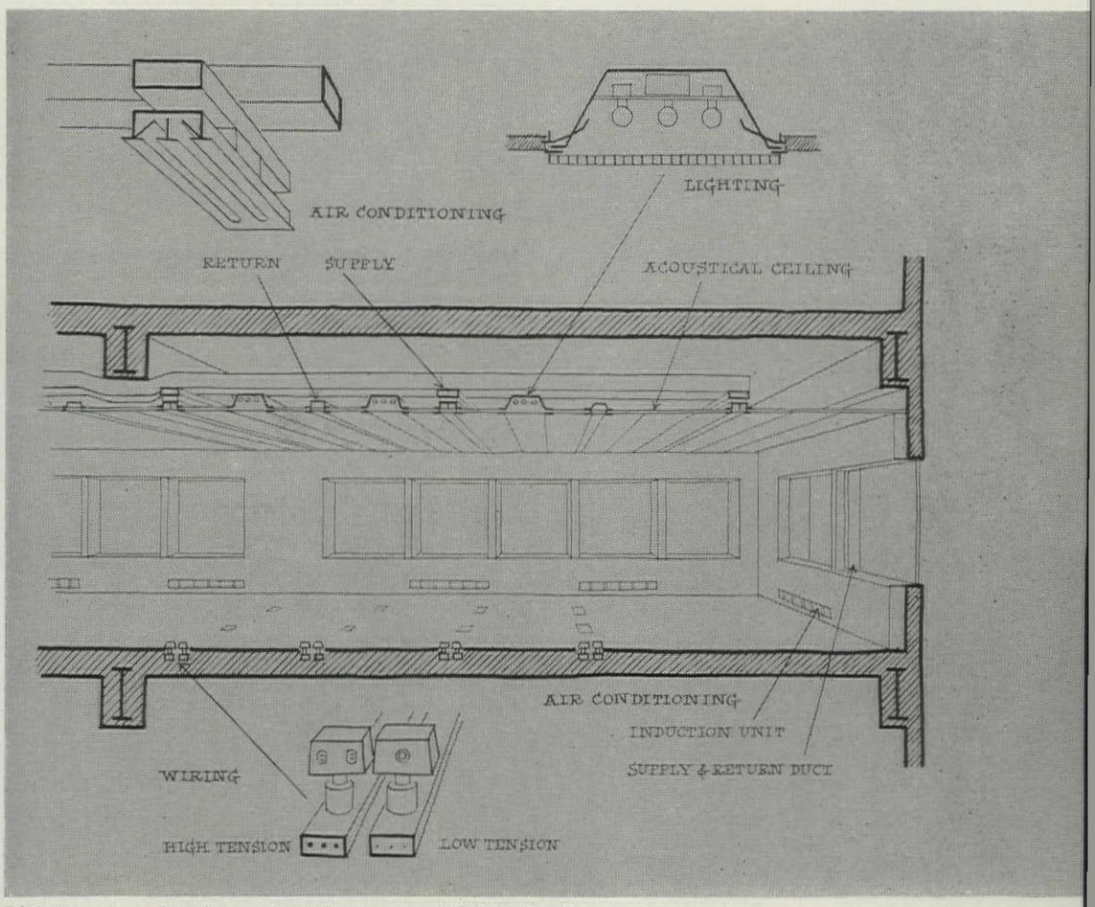
Light, air, sound

With very little to-do, Architects Harrison & Abramovitz & Harris have reversed the big-window trend set by Lever and Seagram, though they gave TIME & LIFE 369,000 square feet of glass-surfaced façades. The row-window openings are only 43 per cent of the wall. Astonishingly little, if anything, was lost thereby in interior pleasantness, while air-conditioning cost was cut a lot. The window glass is clear, not blue or green, mostly because of a demand by TIME INCers, many of whom work with color printing, for undistorted daylight.

The air conditioning by Engineers Syska & Hennessy (and Cosentini Associates for the TIME INC. space) has already been described (FORUM, Jan. '58): a central distribution system plus underwindow induction units individually controlled, with cooling air supply in risers on the outside face of the wall.

What has troubled TIME INCers most is the higher transmission of sound in a building with thin movable partitions instead of thick block walls. In field tests in a mockup of the building, Acoustical Experts Bolt Beranek & Newman had established that the new partition design stood about midway, acoustically, with others on the market. When, nevertheless, during the initial occupancy of the building even whispers could be heard from room to room in some places, attention was directed to that weak element in every building design —joints and openings, including ductways. During the building's shakedown period these acoustical problems are being solved by applying a mastic sealant to the joints between the factory-made partitions and the handmade walls and by adding denser neoprene gaskets to the offending joints in the partition system. The noise nuisance will be further tamed once the air-conditioning system is balanced and ready for the operation of that paradoxical expedient of acoustical engineers: noisemakers in the ducts to help blanket conversational tones.

In LIFE's *layout room partition posts on grid intersections support only space-dividing shelves.*

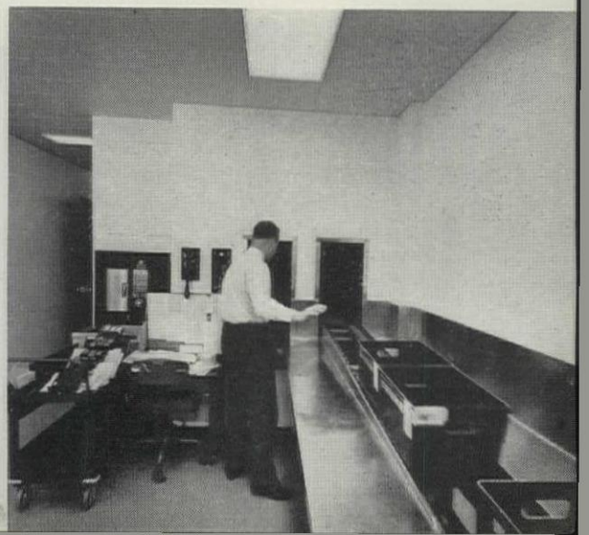


Lighting, air, and wiring are brought to every module on the floor.

Special rooms: the message-tube center

RICHARD H. ALTHOFF

. . . and a typical conveyor station.



Elevator stacks in the lobby are buttoned in stainless steel.

Lobby floor and below

Against the current trend, the lobby is built high (16 feet), wide, and handsome. Its chief entrances are on the cross streets, not on the avenue front, so as to sidestep the nasty problem of entering a long structure end-on. TIME INC.'s own reception center, 32 feet high, behind its four huge windows facing the plaza's reflection pool, is unorthodox too: it can be entered only from the building lobby.

In that lobby, Architect Harrison was unusually free to do as he preferred. He buttoned up the elevator shafts in stainless steel (top view), brightened the entire ends of the elevator core with murals, and cooled the wall of the surrounding stores with white marble (center view). The eastern mural, by Fritz Glarner, is all primary red, yellow, blue, plus two grays and black and white, cheering but puzzling spectators as a sort of skew-gee Mondrian. At the other end there is coming an equally abstract Albers. The ceiling (middle view) is a pin-lighted sheet of maroon that few will guess is opaque glass.

Side-stepping the elevators, with their automatic controls, electronic timing, 1,200-foot-per-minute speed, and mechanical music (to enrage the more savage breast), the rubberneck can find fresh interest, going down by escalator to the concourse below. Fronted in part by high-class commercial space (bottom left), and connecting to the rest of the Center, past the subway, these bright, clean passages show how nice civic underground space can be.

Down underneath there are two basements more, which rubbernecks will never see. They contain all sorts of mechanical devices and storage, not the least interesting item being two full-sized trailer-truck elevators and a turntable (bottom right).

Bright colors of Glarner mural at lobby entrance contrast with maroon glass ceiling, white marble walls.

Show windows in the basement concourse

. . . and the truck turntable in the subbasement.

The Ponti pavilion

Madison Avenue never had it so good. Atop the eighth-floor setback there was placed a set of rooms for meetings — many of them with advertisers. And here, although Italian Architect Gio Ponti never once reached for an obvious device of the Baroque, he hit it voluptuously aplenty.

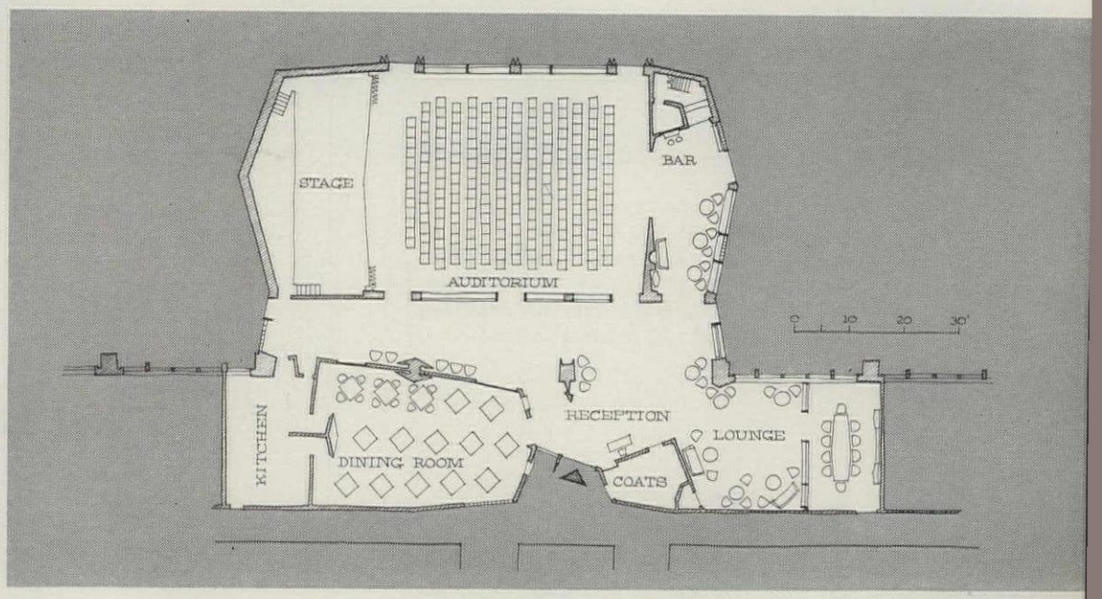
The roof-garden setting is not completed; but the interior is already busy. The auditorium and adjunct spaces (see plan) flow without a break between tower and pavilion; angular lines create irregular spaces nice and usable—rooms, foyers, nooks, bars (and a caterer's pantry)—all just right for informal conversations of all magnitudes.

The auditorium itself is audio-visually so equipped that probably nowhere else can the art of communication be made into so high-style a jamboree.

As for the atmosphere of the whole, even a Milanese colleague of the designer had to catch his breath, and could only gasp: "Well, that's Gio [pronounced Joe] Ponti." Ceilings when not all saucered as in the auditorium (top view) are a biz-baz of brass strapwork, embracing the lights in a variety of shapes which could suggest biological symbols nameable only in Latin (bottom views). Floors are a grand lava flow of marbleized sheet rubber in yellow with streaks of green, and dark blue—and on the bias. Walls are punched with panels of rich, luminous-colored glass block, and behung with rich Sicilian fantasy paintings — and daggers. Chairs, neo-*art-nouveau*, have as many joints as a praying mantis. The many-angled Italian cabinetwork, in blond wood, is beyond the capacity of American mechanical civilization.

Only the design-wily Italian Ponti could so dare the critics—but he knew his Madison Avenue audience.

Auditorium in Ponti's pavilion, used as dining space . . .



. . . the dining space used as a meeting room

. . . and the reception area, linking the two.

Paris: *the Champs Élysées today (below), and how it might look with the help of an aggressive Downtown Association and a couple of savvy traffic engineers (above). Note removal of bothersome trees to make new signs visible, use of excess boulevardage as a parking lot.*

PH. DE FLAUGERGUES

Paris perfected,

Among Americans who shudder at each new desecration of their surroundings, Architect Lewis Crutcher is not one to be satisfied with idle hand-wringing or holier-than-thou remarks. Author of several renewal schemes in his own home town (Portland, Ore.), Crutcher has persuaded more than one audience that such "improvements" as overhead wires, parking meters, billboards, and treeless housing tracts do not add up to an attractive, healthy, or stable community. Crutcher's secret weapon is a handful of his own sketches showing what

Venice: *the Grand Canal, as is (below), and as it might be more suitably geared to modern tourist traffic (above). Note posted speed limits and Rialto Bridge clearance, mooring meters for gondola jockeys, botels and pizza joints for the cabin-cruiser trade, and complete elimination of sidewalks.*

Venice revamped

might happen if the same influences prevailing in America were let loose on some of Europe's most cherished scenes: e.g., the Champs Élysées in Paris (left) or Venice's Grand Canal and Rialto Bridge (right). Actually too many continental cities have already followed such dubious commercial directions, as American tourists will discover again this summer. But Crutcher's ultimate absurdities make a point: people quick to deplore the ruin of Europe may also begin to wonder if there are not real improvements to be made at home.

JOHN PHILLIPS—LIFE

Bulldozer architecture

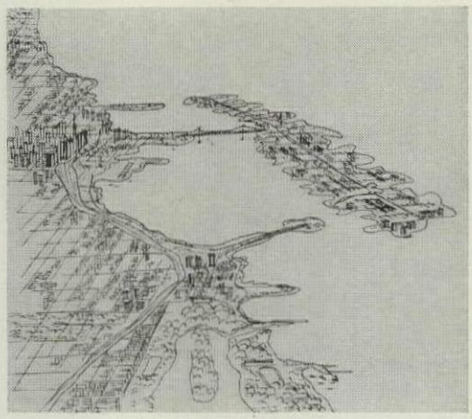
SPENCE AIR PHOTOS

The surprisingly low cost of moving and piling dirt is inspiring a new trend toward architectural earth shaping.

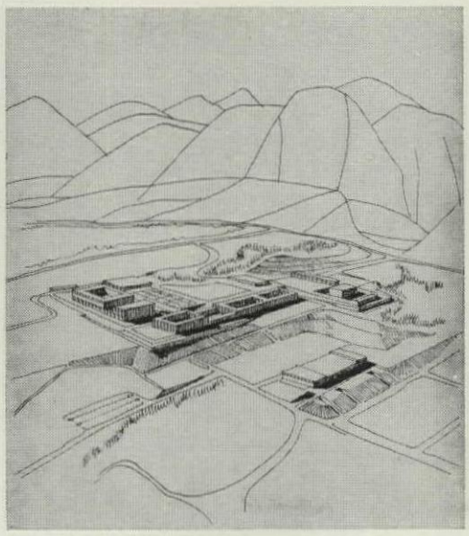
BY RICHARD A. MILLER

KLM AEROCARTO N.V., AMSTERDAM

Earthwork moat *and fortifications in a star shape (right) were built around the medieval town of Naarden in the Netherlands after the French captured the town in 1672. A second range of defenses were erected later, when the increased range of artillery made them necessary.*



Man-made islands *proposed by Architect Harry Weese for a position 1½ miles offshore from Chicago (right) would be built up 35 feet from Lake Michigan's floor by dredging operations. A 14-mile-long linear city would be arranged along a highway spine, spaced with parks, lagoons, and residential blocks.*



Platforms *for athletic fields and parade grounds and a terraced campus above (right) were cut like facets into the Rocky Mountain slope which is the site for the U.S. Air Force Academy near Boulder, Col.*

Shelves *for ranch houses (left) are cut into the mountainous terrain of the Doheny Ranch near Los Angeles. The dramatic step-up effect will be largely lost when more houses like those shown in the photo cover the site.*

Among the awesome feats of modern building are earth-moving operations ranging from shelving ranch-house lots out of mountain slopes in Los Angeles to cutting deep declivities in the flat Michigan terrain for Detroit's network of expressways. Now there are signs that these impressive operations are only the beginning of a modern-day revival of the art of earth moving in city building. Indeed, not since the building of renaissance fortifications like those at Naarden in the Netherlands (left) has there been so much thought about the conscious shaping of the earth for purposes both formal and functional. In architecture, buildings are artfully being situated on sites as impressive as an Inca ruin, like Machu Picchu in Peru. And sometimes the earth itself, for its own sake, is being shaped, terraced, and mounded like ceremonial Indian effigy mounds albeit for less urgent reasons.

Detroit is a case in point. Noticing that engineers estimated a cost of $40 million over the next ten years merely to remove expressway excavation earth from the city to outlying fill sites (at $1.65 a cubic yard), Detroit's director of city planning, Charles A. Blessing, is starting a program to use the fill on the river front and in city parks to build features ranging from sledding hills to an "Acropolis" replete with amphitheaters and stadiums. "In ten years," says Blessing, "we'd turn Detroit from a flat city to a hilly one, and save $11 million doing it if we could use that earth in town."

In Chicago in 1952, Blessing was one of the men behind a seemingly fantastic proposal to build a new city 14 miles long on two artificial linear islands 1½ miles off the Lake Michigan shore. The official city view was dim—the idea was branded utopian fantasy—but Chicago Architect Harry Weese, one of the original proposers, has been persistently advancing the idea which *he* considers eminently practical. Weese, who likes to suggest that half of the

city lies 35 feet under Lake Michigan waiting to become an "Atlantis in reverse," says that a 40,000 horsepower dredging plant (a giant version of the machinery used to make suburbs out of swamps in Florida) could deliver fill from lake bottom through a 42-inch pipe from as far as 5 miles away. The proposed islands would be built up from a shelf in the lake only 35 feet under water. Fill would be pumped into rock coffer dams built around the perimeter of the islands. Eighty thousand cubic yards of fill per acre of island could be delivered for something like 20 cents a yard for clay and 50 cents for sand. Land could be made ready for building for about $1.65 a square foot, including streets and utilities. While this is about four times the price of developed land 30 miles from Chicago, it is only one-sixth the cost of close-in apartment or townhouse sites.

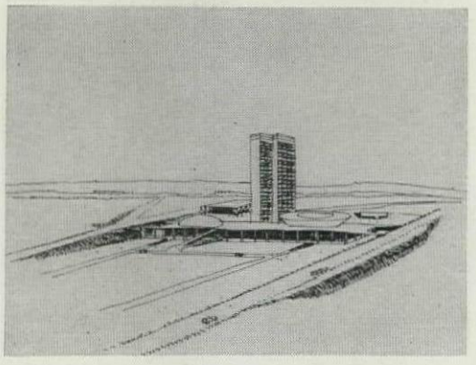
If the Weese island scheme is the Omega of modern earth-moving ideas, Skidmore, Owings & Merrill's Air Force Academy (with 5 million cubic yards moved at an average cost of 20 cents a yard can be considered the modern-day Alpha. Using giant scrapers (which can pick up and deliver from 10 to 35 yards of earth at a crack), contractors built athletic fields with ½ per cent slopes, and drill fields with 2 per cent slopes on land nature pitched at from 3 to 20 per cent.

In some respects, the Air Force Academy had site-development problems akin to a ranch-house suburb in Los Angeles. The differences, beyond mere scale, are primarily matters of design. Dramatic as the stepped platforms at Los Angeles are, the drama is largely accident. Worse, it is transient, as is evident from an inspection of the built-up lots.

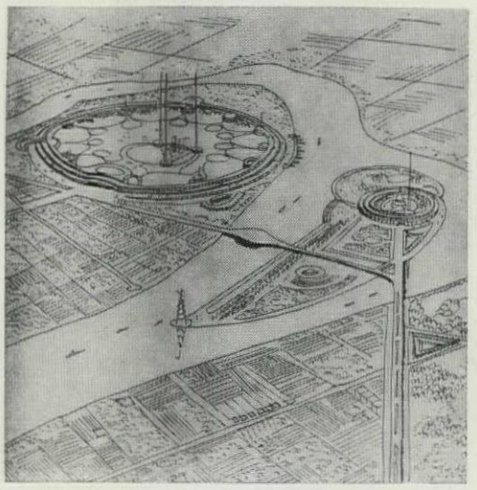
A hill town in Italy may be equally chaotic, but the structures and landscaping nearly always enhance the drama of the site instead of depreciating it. This enhancement is also evident

TOM HOLLYMAN

Terraces *combined with carefully fitted stone walls (left) made the site for the Inca city of Machu Picchu in the mountain valley of Urubamba in southern Peru. During their great age (1438-1532) the Incas terraced miles of agricultural fields and built great terraced cities.*



Elevated highways *on earth fill at Brazilia (left) lead directly to an upper-level terrace for the assembly building and secretariat. This building group by Architect Oscar Niemeyer is at the focus of the airplane-shaped plan for the new capital city.*



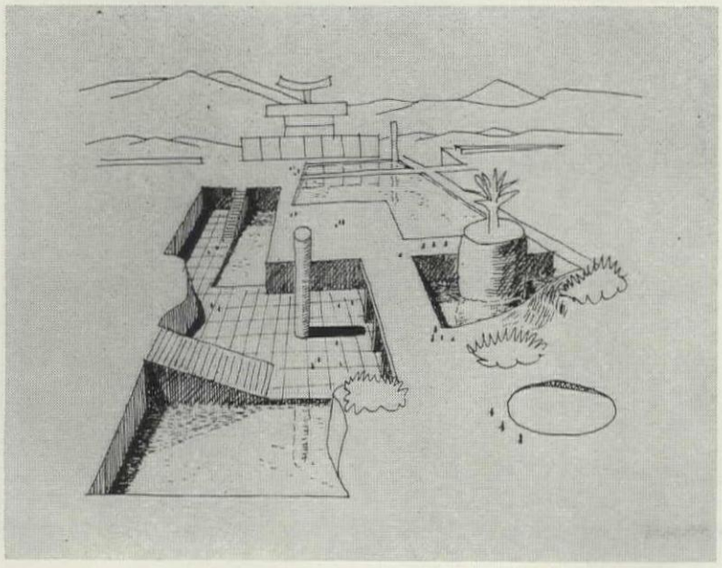
Earth-filled zigguarts *were to surround the opera house in Baghdad (left) proposed by Frank Lloyd Wright for an island in the Tigris River. The proposal, which included a suggestion for the university (far left), was based on a system of circular ramped roadways for parking which put buildings high above the river in the flat city.*

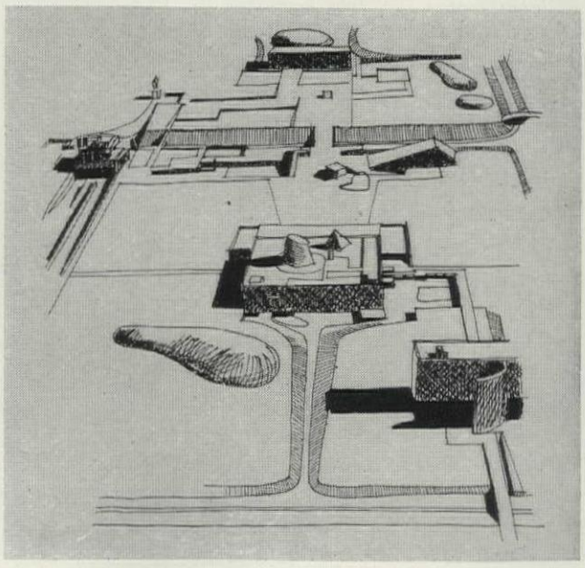
CHARLES TASNADI

Helicoid *shopping center (above) now being built in Caracas required moving 1.8 million cubic yards of rock to provide a winding continuous street of shops around the mountain peak.*

Depressed courtyards and pools *of Governor's Palace proposed for Chandigar, India (below) is only one of the earth-sculpture features of LeCorbusier's government center.*

Earth mounds *will help isolate and define Chandigar's government center (below) from the more casual city around it. The mounds also echo the Himalayan mountain background.*



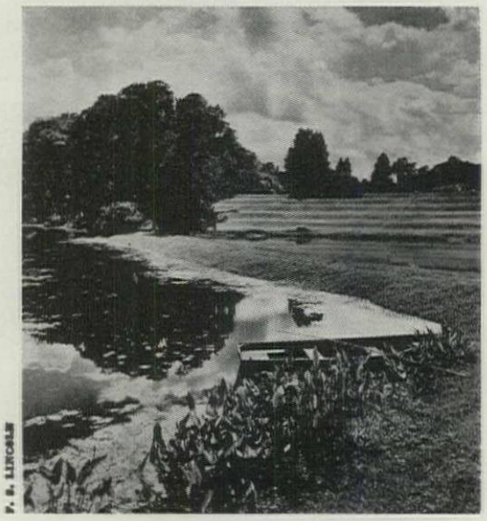


at the Air Force Academy. From the need to carve flat playing fields and parade grounds, the architects developed the earth platforms on which the austere and carefully organized building group is set and connected them by carefully graded ramps and slopes. Against the mountain backdrop, the impact of the rectilinear buildings and angled slopes is highly dramatic.

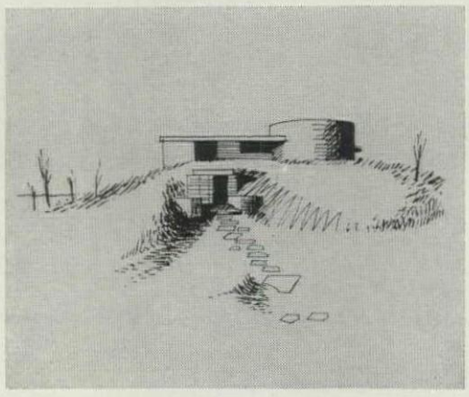
The architectural control of earth moving went even further. SOM Partner Walter Netsch carefully studied all proposed elevations and grades to make sure particular views occurred as anticipated. Approach roads from above were carefully graded to bring the eave line of the buildings horizontal against the flat prairie land beyond without making the roofs visible. Special care was taken to detail intersections where forms shaped by man met natural slopes, which were preserved in a natural state wherever possible.

Earth shaping, however, is not limited to projects so impressive as the Air Academy. (SOM, for example, at the Westinghouse Research Center near Pittsburgh, is moving nearly 400,000 cubic yards at about 50 cents a cubic yard.) Indeed, there is, and always has been, an almost irresistible urge for man to reshape the earth—for practical or impractical reasons. Remarkably, in an age of inflation, the urge can be indulged at bargain rates. The Bureau of Public Roads, for example, estimates that the cost of common excavation in highway work today (36 cents a cubic yard on the average) is only 1 cent above the 1925-29 price.

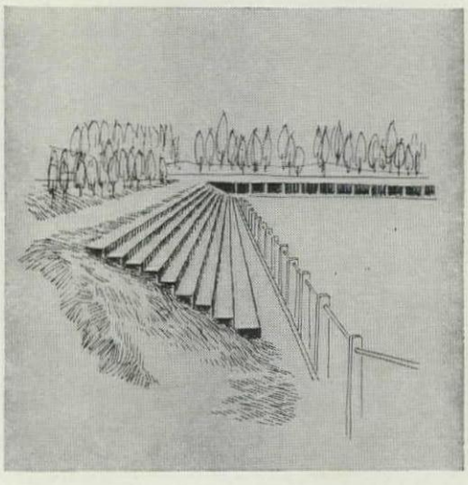
The reason for this economy—and for the increasingly large scale of earth-moving projects—is the increased productivity of equipment. The 1950 version of Caterpillar Tractor Co.'s DW21-No. 21 tractor-scraper combination, for example, had a horsepower rating of 225 and a level capacity of 15 cubic yards. Today's equivalent has 345 horsepower and 19.5 cubic yards capacity. This is a 53 per cent increase in



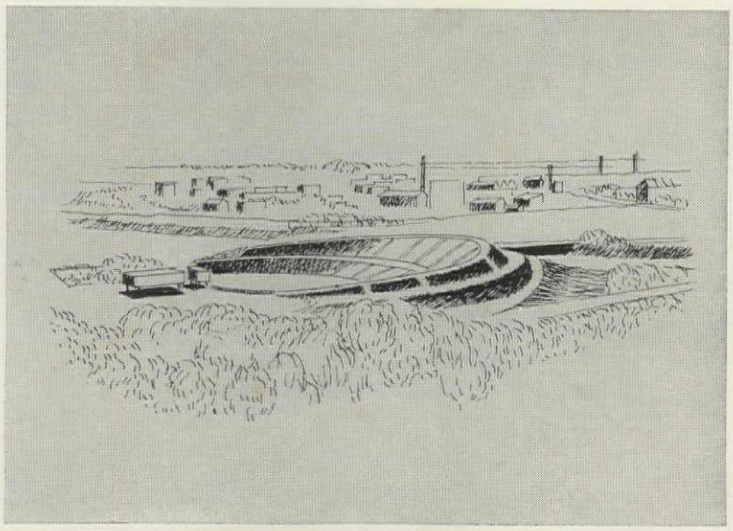
Banked slopes *at Middleton Place Gardens (left) on the Ashley River near Charleston, S.C. were built before the Revolution by slave labor. The plantation house is located in the background; in the foreground in the picture is an artificial lake.*



Arc-shaped house *for the Herbert Jacobs family (left) near Madison, Wisc. by Frank Lloyd Wright faces to the south. Around the rear an earth bank has been piled against the walls for shelter and insulation.*

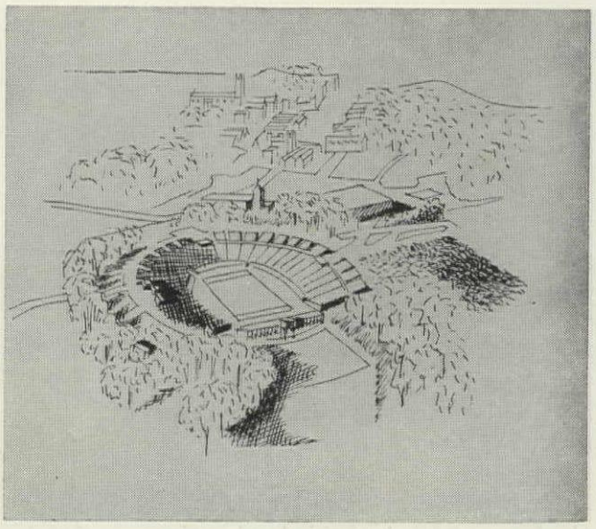


Handball field *at the Ulrich Haberland athletic field in Leverkusen, Germany (left), has grass-paved spectator stands held behind concrete forms. This is one of several spectator banks built with earth in this field.*



Rock mosaics *face the earthwork slopes around the outside of the stadium of the University of Mexico (below). The undulating top allows more seats at the center of the field than at the ends.*

Crescent-shaped *77,000 capacity stadium in Hanover, Germany (above) is built on a mound of rubble. More than 2.2 million cubic yards were used for the stadium and athletic fields.*



A draw *on the campus is the site for the Duke University Stadium at Durham, N.C. (above), built in the twenties to plans of the university and its architect, Horace Trumbauer.*

WALLACE LITWIN

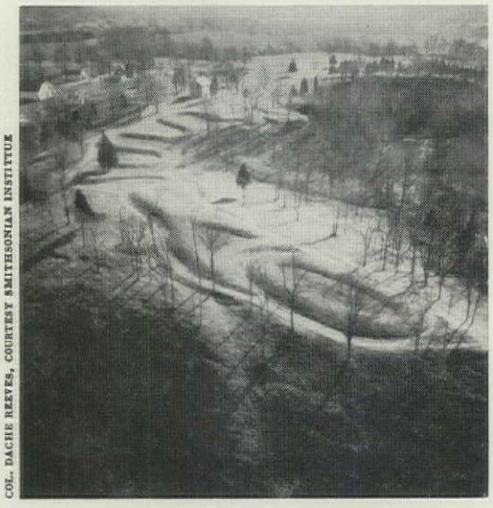
power and a 30 per cent increase in capacity. Thus, although the hourly owning cost of this equipment has gone from $9.41 in 1950 to $16.39 in 1960, the 74 per cent increase is offset by an increase in machine productivity ranging from 50 to 85 per cent.

The mechanical monsters that perform these efficient miracles are organized around two basic kinds of motive power: 1) the crawler tractors which pull or push loads, provide power for winches and hoists, and can be converted into a moving mount for bulldozer blades or buckets; and 2) rubber-tired motor equipment which ranges from powerful scrapers and dump wagons to traditional road graders. In tight locations or for especially deep operations, these pieces of equipment are augmented by the shovel and the crane, basically designed to operate from one location; and in water, earth is moved by dredge equipment.

The men who use this big and brash equipment themselves give the construction industry more dash and drama than possibly any other component. Where contractors in other trades are usually cautious conservatives, the earthmoving entrepreneur, often up-from-the-ranks himself, is generally an open, energetic individual with something of the air of a river-boat gambler about him.

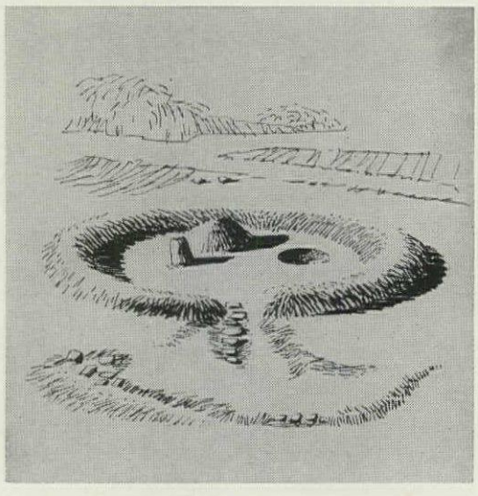
These three features of the business: economics, technology and men, make earthwork an art too easy to practice. In less than an hour one man and a single powerful machine can destroy a thousand years of natural growth in soil or trees, and in their places is too often constructed a new landscape that cannot work—a careless, formless, badly functioning world that never quite recovers from the shock.

But as always, there is another possibility. When earthwork becomes an art—as is now and again demonstrated on these pages—it is wondrous indeed. Many ancient constructions and a few contemporary projects show the way.

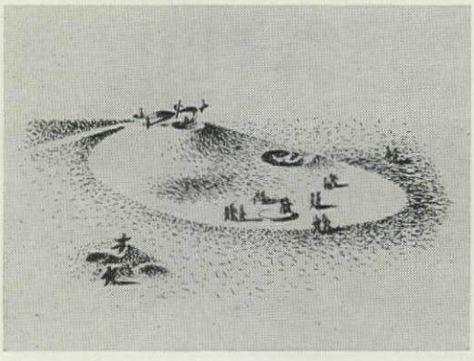


COL. DACHE REEVES, COURTESY SMITHSONIAN INSTITUTE

Serpent Mound *in southern Ohio (left) is the largest Indian effigy mound in the U.S. Composed of three large horseshoe loops and a close-coiled tail, the mound stretches more than 1,300 feet. In front of the head is an egg-shaped mound (bottom) 30 feet high.*

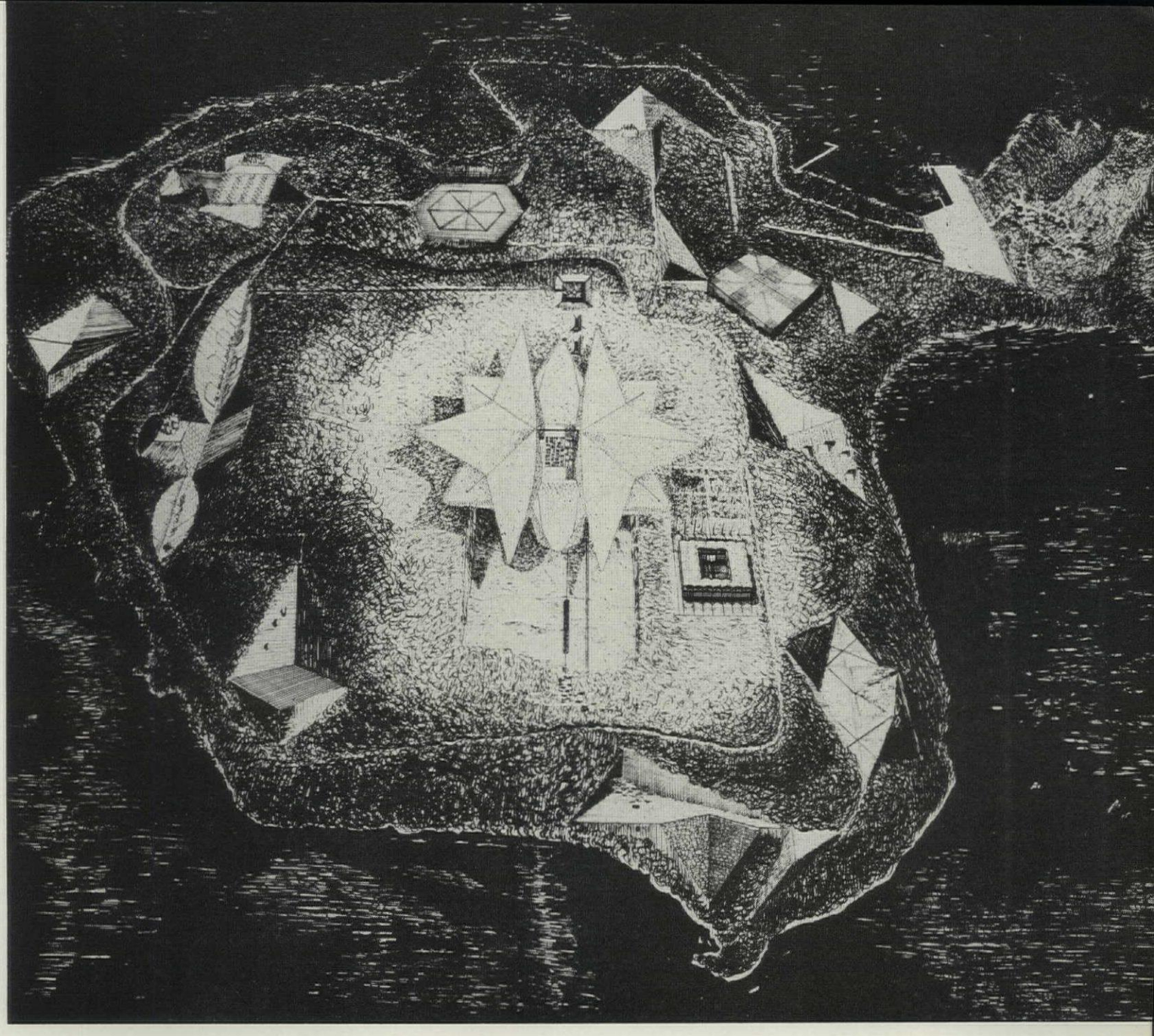


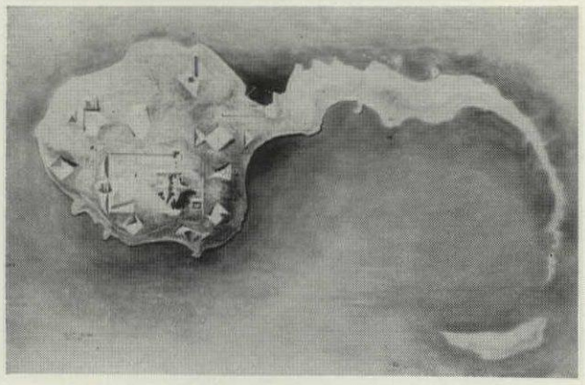
Sculptured island *(right) was the entry of Architects Katz, Waisman, Blumenkranz, Stein, Weber and Sculptor Costantino Nivola in the 1956 Corregidor-Bataan Competition. One of 10 finalist entries, the proposal treated the entire island as a piece of sculpture. Each plaza, cut to symbolize scars on the face of the mountain, was to commemorate one of the major battles of the Pacific war. They were to be connected by a continuous pilgrimage path which would have tunneled through the rock at several points. Climax of the monument was to be an upper terrace cut into natural stone containing a building for forums and conferences.*

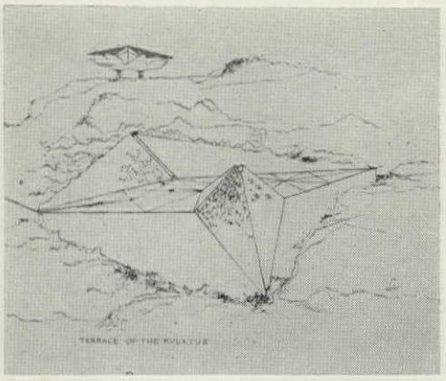


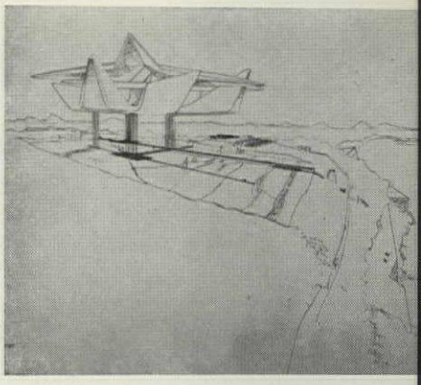
A mounded ring *enclosing an artfully placed rock and center mound (left) is centered on the dormitory at the Institute of Humanities at Aspen, Col. Project signers were Herbert Bayer and Fritz Benedict.*

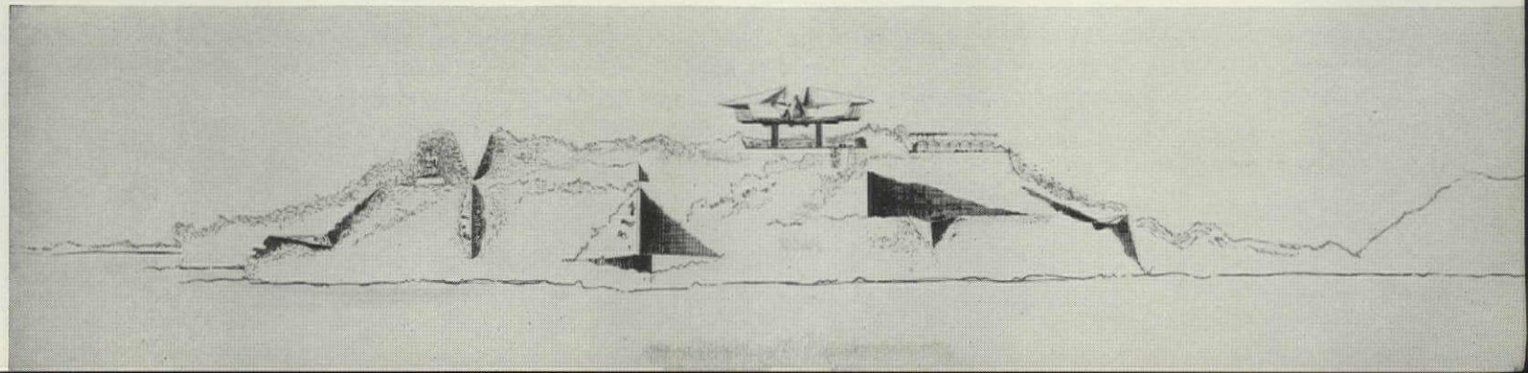
Dish-shaped earthwork *(left) was the entry of Swedish Architect Ralph Erskine in the Unknown Political Prisoner competition in 1955. To have been used for assemblies, the simple and freely open monument would also have been edged by low earth mounds and play sculpture.*











The changing hotel market

BY DAVID B. CARLSON

Rising costs and declining occupancy have prompted today's busy hotel builders to turn from the big city tower and the small wayside motel to the hybrid motor hotel.

One of the real surprises of last year's all-time record building volume was the big contribution made by hotel construction. Nearly $550 million was spent to build 132 new hotels with an aggregate of 32,978 rooms*. This was $100 million higher than the best previous postwar year, 1957, according to Ahrens Publishing Co., the industry's leading statistical source. Although it is well below the 342 new hotels built in the all-time peak year of 1925, it is a remarkable showing for an industry that had been written off pretty much since the debacle of the thirties, when more than 80 per cent of all hotels went into bankruptcy. Perhaps even more remarkable is the vigor of today's hotel builders, particularly the large hotel chains, which have stopped dodging their tough foes of the past 15 years, the motel builders, and instead have been directly competing with them, with generally salutary results. They have demonstrated forcibly, and will continue to do so, that a well-designed hotel or motel can be profitably located downtown serving a larger slice of the traveling public than was once thought possible.

Besides spending better than half a billion dollars on the building of new hotels, the hotelmen last year invested over a billion on other phases of construction and maintenance. The breakdown:

▸ Another $47 million was spent last year on additions to existing hotels.

▸ Some $86 million more went into hotel modernization and refurbishing.

▸ Although no precise figures exist for the far-flung motel business, it is estimated by *Tourist Court Journal* that at least 1 billion dollars was spent in 1959 on new motel construction, producing 183,000 new units of all kinds, at $6,800 per unit. The average motel consists of 55 units.

▸ Hotelmen also spent $62 million on building a new kind of inn which is a cross between the hotel and the motel, called the motor hotel. This new building type is usually bigger than a motel (an average of 130 rooms), more lavishly fixtured (a swimming pool, meeting room and restaurant is standard equipment), located on a choice site (often downtown), and supplemented by a parking lot or garage. Motor hotels cost, exclusive of land, about $11,500 per room to build on the average (some as high as $14,000—almost as high as for city hotels), and rent for as much as $18 per room per night. Last year's activity in this field produced 41 buildings containing 5,351 rooms.

The profit squeeze

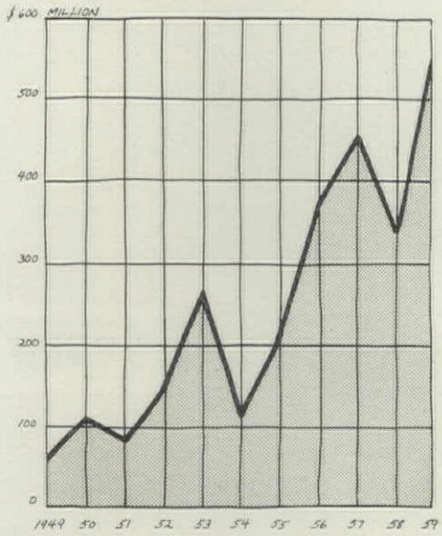
There are many reasons for the hotel chains to look to the motor-hotel market. Most important, the hotel business itself is not so strong as it might be, given the affluence of present society. Occupancy rates fell last year from 67 to 66 per cent, according to hotel accountants Horwath & Horwath. This is the lowest since just prior to World War II, and presents the most immediate problem facing the hotel industry. (Occupancy rates were 93 per cent in 1946, 81 per cent in 1950, and have declined steadily since then.) To make matters worse, while trade has been declining, hotel operating costs have been rising. Since 1946, total operating costs for 400 hotels have risen over 43 per cent, according to Harris, Kerr & Forster. Labor costs alone have risen 73 per cent since the end of World War II, and last year ate up 42 per cent of total hotel revenue, compared to only 36 per cent in 1946. This has happened despite a cut of roughly one-third in the total hotel labor force.

To counterbalance rising costs, hotels have raised room rates and, in many instances, reduced service. Room rates have more than doubled since 1946, rising from an average of $4.68 to a record high of $10.39 last year. This increase has not been sufficient to maintain earnings, however. Last year, profits before real estate taxes and depreciation totaled 22 per cent of sales; after these charges, profits totaled only 13 per cent of sales, lowest since 1954. The return on the "fair value" of hotel properties declined to 5.59 per cent, lowest since 1941. What makes the profit squeeze most pressing is the feeling on the part of many hotelmen that rates have been raised about as high as they can go. Consequently, hotelmen are looking for alternate sources of income, such as converting space to office or store use.

On the other hand, the occupancy and earnings picture for motor hotels is a cheery one. Last year, occupancy rose from 75 per cent to 79 per cent, and earnings were running two to two and a half times what could be expected from a typical hotel operation. Even more important, many of the new motor hotels were getting higher average room rates than hotels in the same areas, with no loss in occupancy. The annual operating cost per room for the biggest motor hotels is only $1,348, compared to an average cost of nearly $1,867 for large hotels.

The lesson of these statistics has not been lost on professional hotelmen. In five years, they have built a total of 229 motor hotels—a total of 23,588 rooms. While this is small compared with the estimated one million motel rooms built in the same period, the efforts of the hotel chains in this motor-hotel field are significant. The chains

* For one of the grandest of these new hotels, the Denver Hilton, see page 94.



Hotel building *boomed last year to a record $550 million, about 65 per cent higher than the 1958 mark. A total of 132 new hotels were started last year, the most since 1930.*

have had the money to buy the choice sites, and to meet the high construction costs of this kind of hostelry.

Going downtown

The future development of the motor hotel shows up clearly in a survey made recently by *Tourist Court Journal*. Whereas only about 15 per cent of all motels and motor hotels are now located in downtown areas, one-third of those planned will be motor hotels built on downtown sites. The survey also provided evidence of the trend toward bigger, better designed buildings. Whereas only 41 per cent of today's motor hotels were designed by architects, nearly three-quarters of all future motels will be professionally designed. Thus ends the era of the small home builder who went into the motel business because he had a cheap highway site and some leftover materials.

The announced plans of the hotel chains underscore the tendency to cross-breed motels and hotels. Hilton will have seven motor hotels by the end of 1960, perhaps as many as 20 by the end of 1964; Sheraton has four motor hotels, and Knott Hotels Corp. the same number. Hotel Corporation of America has ten of its Charterhouse Motor Hotels in operation, and seven more on the drawing boards. Most of these new facilities will either be built downtown or near major big-city airports. These airport motor hotels are more like adjuncts to downtown operations than direct competitors. Hilton's motor hotels at New Orleans and San Francisco have been tremendously successful, and Knott's 320-room International Hotel at New York's Idlewild airport has had occupancies as high as 113 per cent over some week ends. (Travelers trapped by snags in air schedules sometimes spend less than a night at the hotel.) Knott is currently building a 200-room, $3 million addition to this hotel. Hilton is building motor hotels at airports in Atlanta, Seattle, and El Paso, and Del Webb Motor Hotel Co. plans to open a $4 million 250-room motor hotel at Love Field in Dallas. All the chains believe that there are still expansion possibilities at some big-city airports, although several are already overbuilt.

Despite the activity around the airports, the major emphasis is still downtown, where population and traffic densities are highest and where, as one hotelman says simply, "the most people want to be most of the time." A typical example is the motor hotel in midtown Manhattan, at 10th Ave. and 42nd St., which has been successful despite a site in a marginal area. A few blocks west, the largest motor hotel yet planned for any city has been announced by Realtor Louis Glickman, who intends to build a $9.5 million, 448-room hostelry at the foot of 42nd St. near both an exit from the West Side Drive and the luxury-line piers. There will be five floors of garage space (for 350 cars) and 16 floors for guest rooms. Among the luxury features scheduled for this project are a swimming pool, restaurant, meeting rooms, shops, gardens, and a supervised recreation area for children.

The epitome of the in-city motor hotel is currently getting under way in San Francisco, where Architect Tabler has designed a 1,200-room Hilton hotel which will have 400 parking spaces in the main building itself, with 18 floors designed so that guests can park their cars on the same level on which their rooms are located (FORUM, Aug. '59). Adjacent parking facilities will give the hotel almost a one-space-per-room parking ratio, such as any highway motel would have. However, along with these unusual features for the Bay City's motorists and visitors will be the usual hotel conveniences—convention hall, ballroom, restaurant, and typical hotel service, rather than the usual do-it-yourself routine that goes with most motels.

Of course, giant motor hotels, situated on expensive downtown acreage, are not much cheaper to build than a luxury hotel would be, and certainly no cheaper to maintain. Glickman's project will cost about $18,970 per room, exclusive of land, which cost $37 per square foot. The San Francisco Hilton, built on land somewhat less costly than Glickman's Manhattan site, will still cost over $16,500 per room.

Too much luxury?

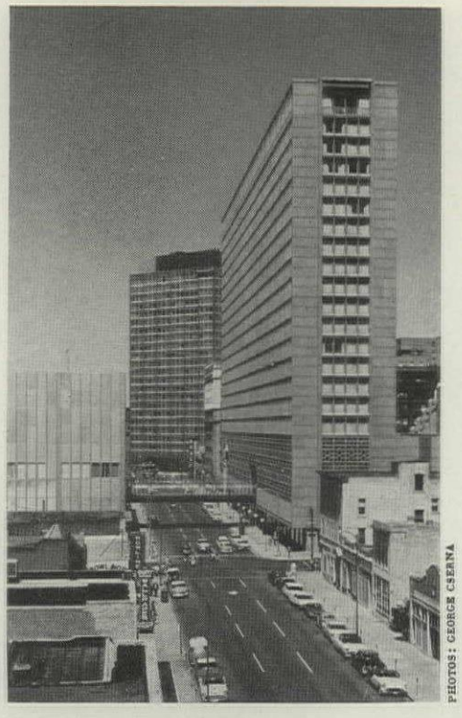
This kind of construction cost is causing some conservative hotelmen to question the wisdom of putting so much luxury into what is essentially an overblown motel on a downtown, or in-city, site. In some cases, land costs can be kept relatively low by building in marginal areas. Sheraton, for instance, is pleased with its new Baltimore motor hotel, which is across the street from the famed Johns Hopkins Hospital, and adjacent to an urban renewal site, in a neighborhood which Johns Hopkins is pulling up by its own bootstraps. Johns Hopkins helped out with the financing of the site and the hotel, essential considerations in Sheraton's decision to build there. Sheraton believes that it will pay to be in a location which is upgrading itself, and says it will look for such sites in other cities.

The question of luxury, however, comes back to what is basically an unchanged notion of the downtown hotel's

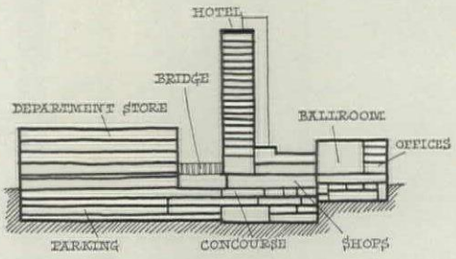
continued on page 164


CENTRE

Grand hotel–1960 style



PHOTOS: GEORGE CSERNA



Textured tower *of the new Denver Hilton (left) rises above the square bulk of the May–D&F store and the tentlike pavilion and skating plaza on busy 16th St. A transparent bridge (photo above) joins the hotel's grand, block-long lobby with the heart of the store, encouraging hotel guests to shop, and shoppers to use the ample lunchtime and evening facilities of the hotel. A block away is the handsome, dark tower of Mile High Center.*

The Denver Hilton rounds out "Zeckendorf Plaza" with a handsome precast tower and interiors on an elegant scale.

In a hotel-building boom more distinguished for its flash than its finesse (see page 92), the new 21-story, 884-room Denver Hilton stands out as the greatest design since the opulence of the twenties. Its big, richly patterned tower and elegant public rooms add a welcome note of character to the list of slick conveniences being built into more and more U. S. hotels. They also indicate that good architecture can be its own best decoration, with no need for added folksiness or fake elegance.

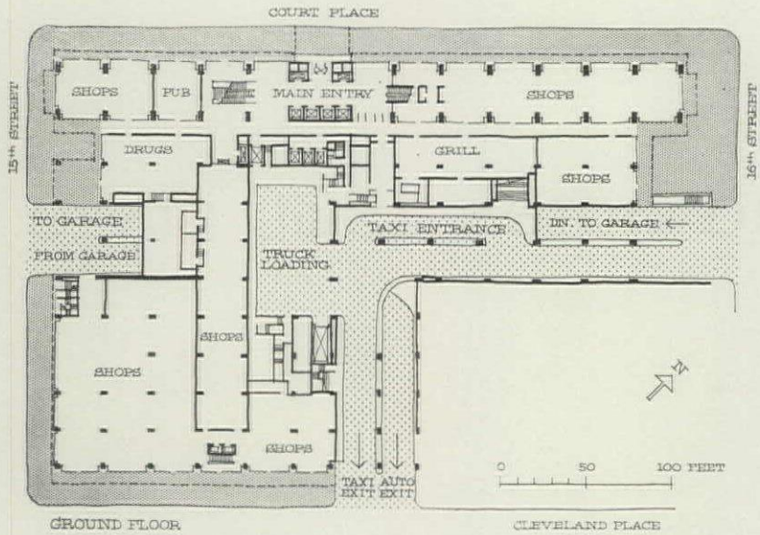
Linked across Court Place with Developer William Zeckendorf's earlier May-D&F department store, pavilion, and skating rink (FORUM, Nov. '58), the new Hilton has quite a few conveniences of its own, including underground parking for 1,500 cars accessible from both hotel and store, and an unusual variety of restaurants, services, and shops (section left, plans overleaf). The first major project integrating a department store, a hotel, and parking within the core of any U. S. city, it is already boosting Denver's convention trade and helping bring retail dollars back downtown.

Architecturally, the hotel marks a step beyond Zeckendorf's handsome Mile High office center up the street, also designed by Architect I. M. Pei. Where Mile High sleekly articulates structure and air conditioning in contrasting metal skeletons (FORUM, Nov. '55), the Hilton's precast concrete curtain wall presents a deeper, warm-gray grid of native gravel, which not only shields its windows from sun and rain, but also provides a rugged Rocky Mountain flavor that some Denverites prefer. (However, some local quipsters still call it "Cell Block No. 2.") The window pattern, elegantly vertical over the bulk of the tower bedrooms, is developed to give the building a richly tapestried base at lobby level, a definite cornice of large windows marking penthouse parlors, and, at both ends, tiers of squarish bay windows which terminate the building.

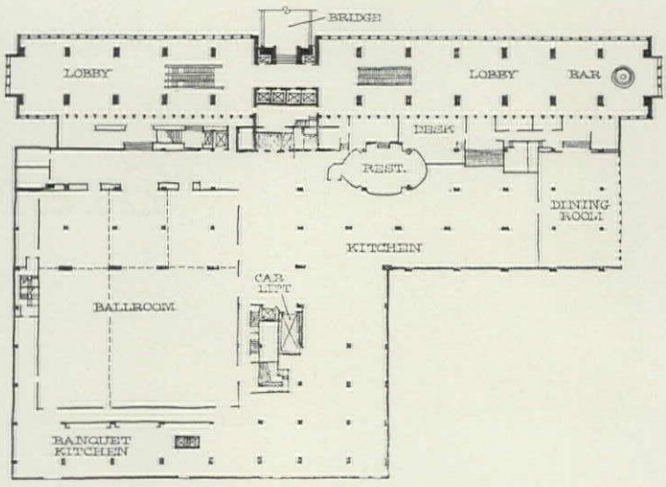
The Denver Hilton's spacious grandeur is reflected somewhat in its price. The over-all construction contract (excluding some $4.5 million in furnishings) came to $24.5 million, counting automobile entrances and parking ramps, a boiler plant for the whole center, and 100,000 square feet of retail and office space not ordinarily associated with a hotel. Not counting these extras, the cost per bedroom for the hotel was some $22,000, compared with around $14,000 per room for the new $12 million Pittsburgh Hilton.

Finished a full 15 years after Zeckendorf first acquired the old Courthouse Square site, the Denver hotel has survived more than its share of delays and money troubles. Its operation was finally turned over to the experienced Hilton chain to get completion money, its title transferred to Alleghany Corp. to pay off an old debt. When the Denver Hilton opened this spring, Big Bill Zeckendorf took a full-page newspaper ad which showed a picture of the finished building and the single sentence: "They said it couldn't be done!" Happily for Denver, and for hotel design, it was.

DENVER HILTON



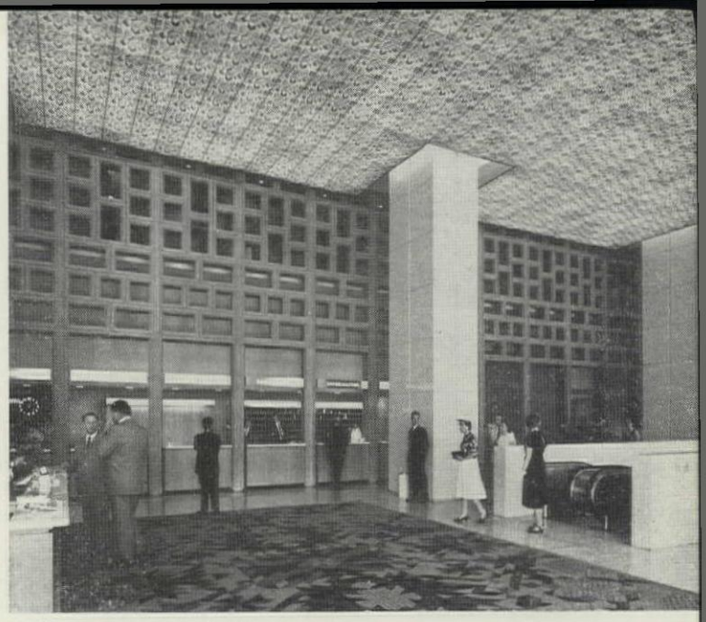
GROUND FLOOR



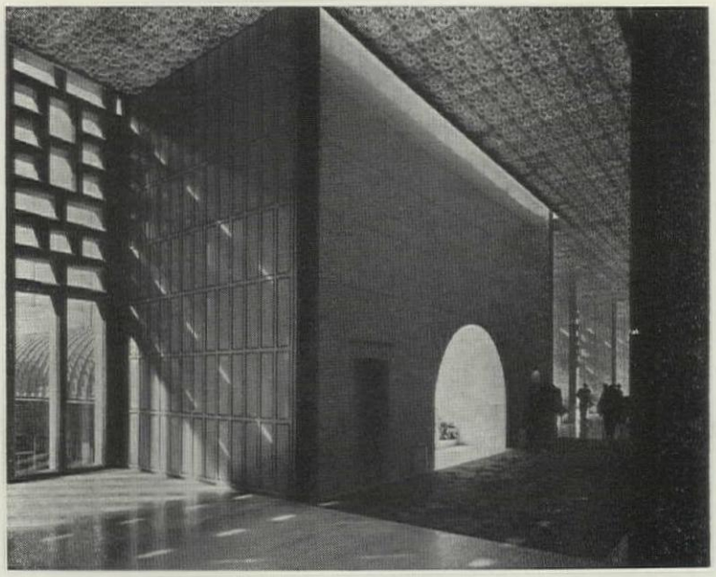
MAIN FLOOR

PHOTOS: GEORGE CSERNA

Bridge, *enclosed in clear plastic, links the department store with the hotel lobby (background).*



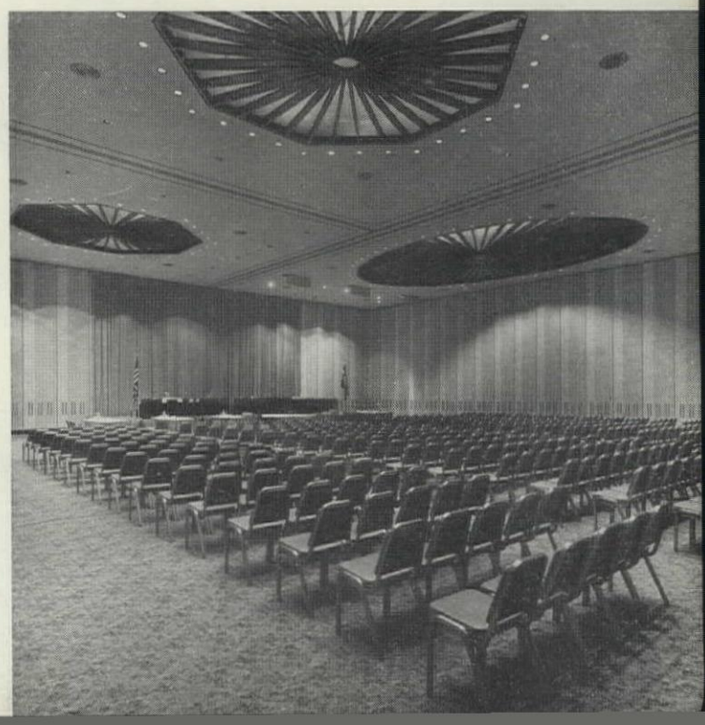
Main desk *is reached by moving stairways serving lobby floor. Grille echoes exterior pattern.*



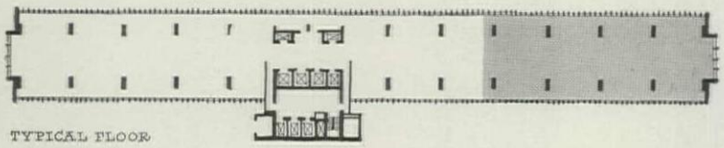
At hotel end, *the bridge opens to an elevator lobby and a brilliant rug by Alexander Girard.*

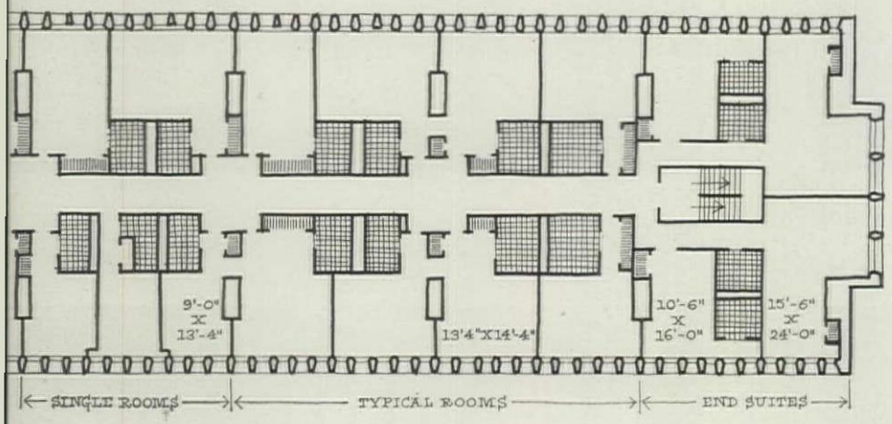
Block-long lobby *stretches 385 feet beneath a 25-foot hung ceiling of luminous gold. Ceiling panels, the idea of Artist Alexander Girard, are many-faceted squares pressed out of light plastic, sprayed in varied gold hues, and lighted from above. Public interiors were by Robert Lym of Pei's office.*

Columbine bar *at one end of the lobby (right, above) celebrates Colorado's state flower with a sculpture by Harry Bertoia above an oval counter.* **Main ballroom** *seating 2,000 (right) may be divided into smaller spaces, each with its own big decorative "skylight" in which colors can be mixed at will.*

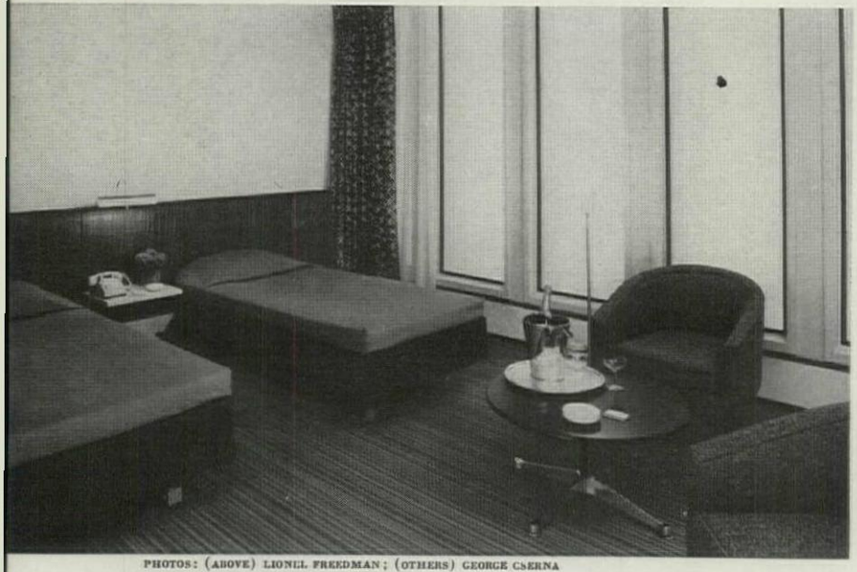


ARCHITECTS: I. M. Pei & Associates (Eason Leonard, partner in charge; Araldo Cossutta, in charge of design); Rogers & Butler, associated architects; William B. Tabler, consultant. ENGINEERS: Weiskopf & Pickworth (structural); Jaros, Baum & Bolles (mechanical, electrical); Moran, Proctor, Mueser & Rutledge (foundations). GENERAL CONTRACTORS: Webb & Knapp Construction Corp.

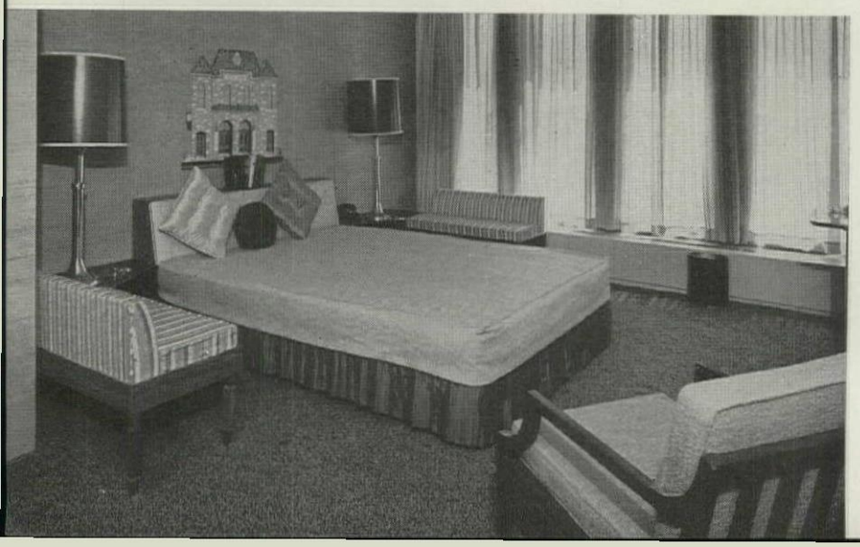


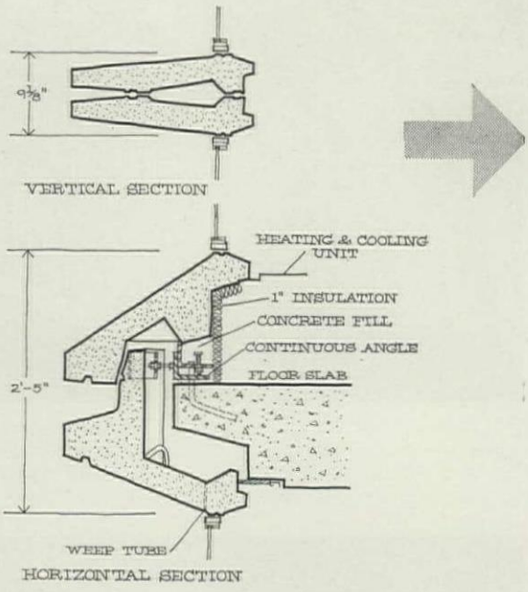


Bedrooms *of various types are arranged within the cantilevered structure of reinforced concrete (above). The architects, with Girard, designed handsomely integrated interiors for the "Hotel Zeckendorf," right down to towels and tableware (see bedroom mock-up below). These, however, gave way to mail-order-taste furnishings (lower photo) when Hilton leased the hotel.*

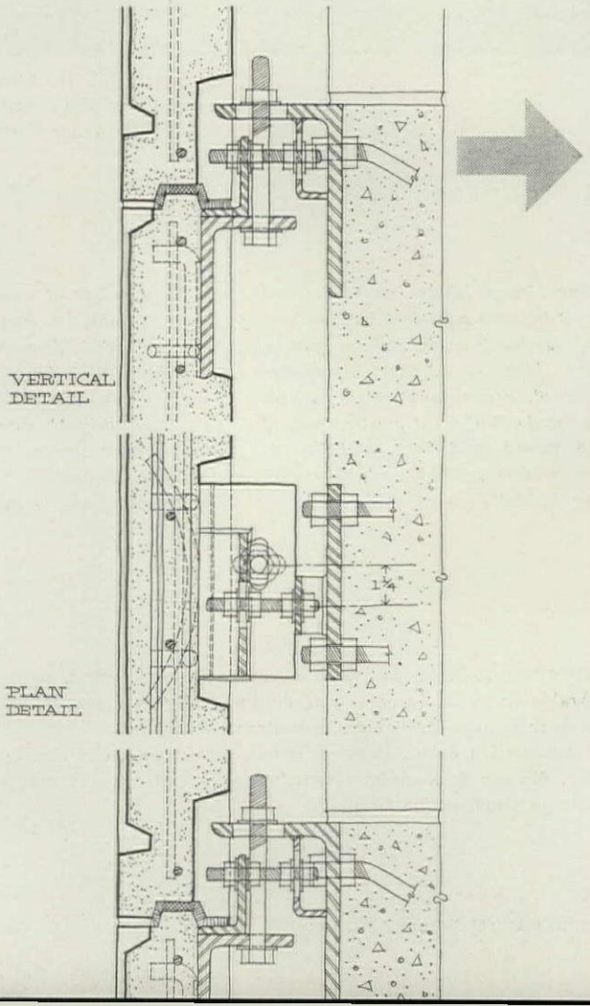


PHOTOS: (ABOVE) LIONEL FREEDMAN; (OTHERS) GEORGE CSERNA

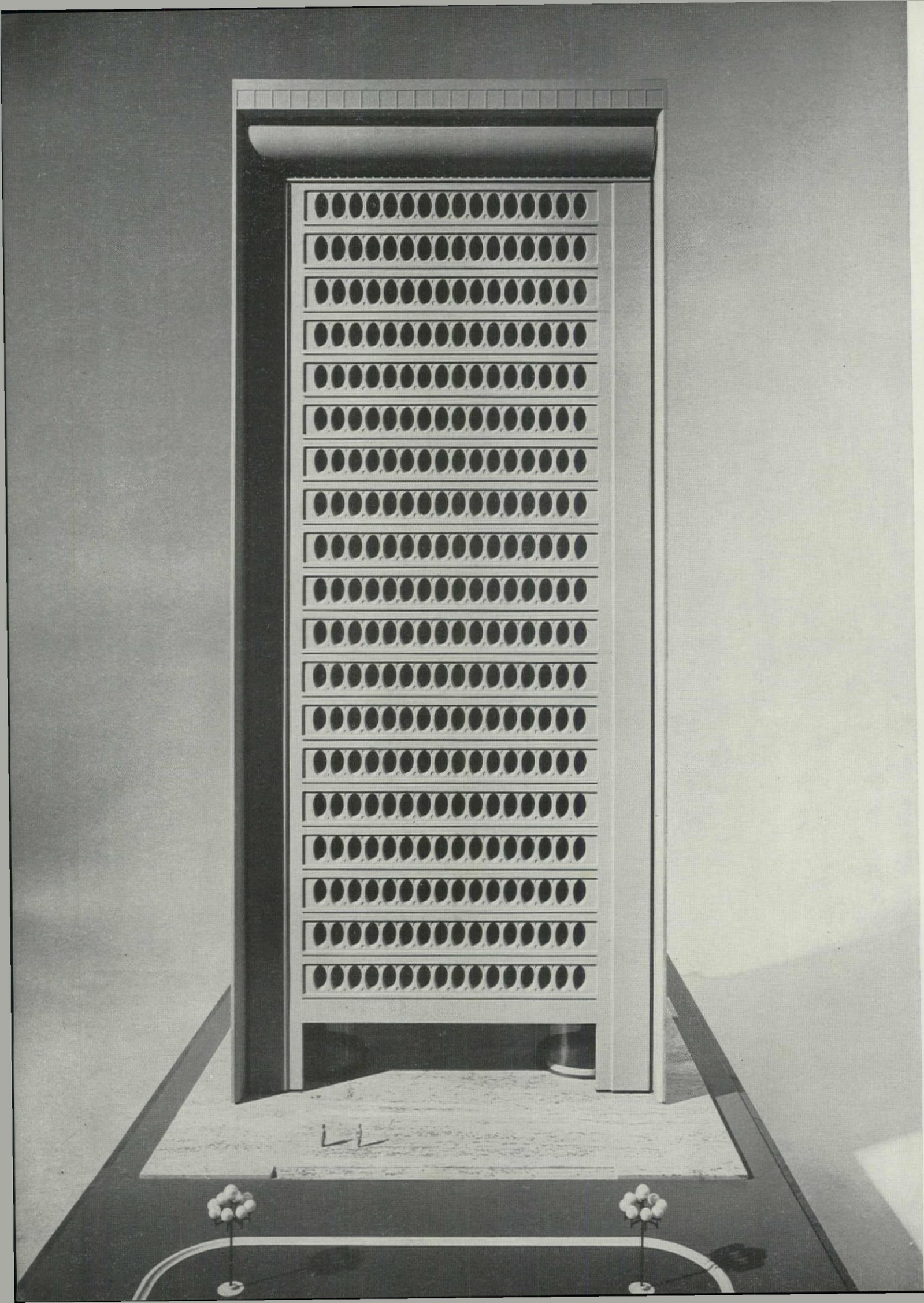




Patterned curtain wall *(right) is of red granite aggregate excavated from the site, cast in a Salt Lake City factory, acid-etched to bring out texture, and coated with silicones against weather. Window units with fine tapered section (above) serve as casement-window frames, sunshades, exterior (and in some places, interior) finish. Cast as double units weighing two tons, they were hung on the structure, overlapping in weatherproof "shingle" joints. Solid wall panels of ballroom wing were cast in a pattern of six to ten units each (section below). The curtain wall came to $7.45 per square foot installed, including glass, more expensive than the usual stock systems but also more solidly striking.*




AIRLINES



A tower built like a bridge

Instead of hiding its frame behind a fashionable glass and metal curtain, Pei's tower for M.I.T. puts the structure back in the walls.

Because the college building shown in the model at the left is tall, and because its window walls will be trusses instead of curtains, it will be a controversial building. It will please and displease, be praised and be damned. It will stir other architects to consider how *they* would have done it. But like a proposition of Descartes, it will be hard to dismiss, because its extraordinary design makes good sense.

When alumnus Ieoh Ming Pei was commissioned by the Massachusetts Institute of Technology to plan the $5 million Earth Sciences Center (for geography, geophysics, geochemistry, oceanography, and meteorology study) he was assigned an area outside M.I.T.'s great central building group dominated by the dome which, since 1913, has been the Institute's symbol. Pei's site was tight, like most sites at M.I.T. and other urban campuses. Part of an amorphous court, it was edged by as diverse and disorganized a group of buildings as may be seen anywhere. The buildings, like the obstreperous children of a strong-willed parent, bulked big and seemed independent without really being anything by themselves.

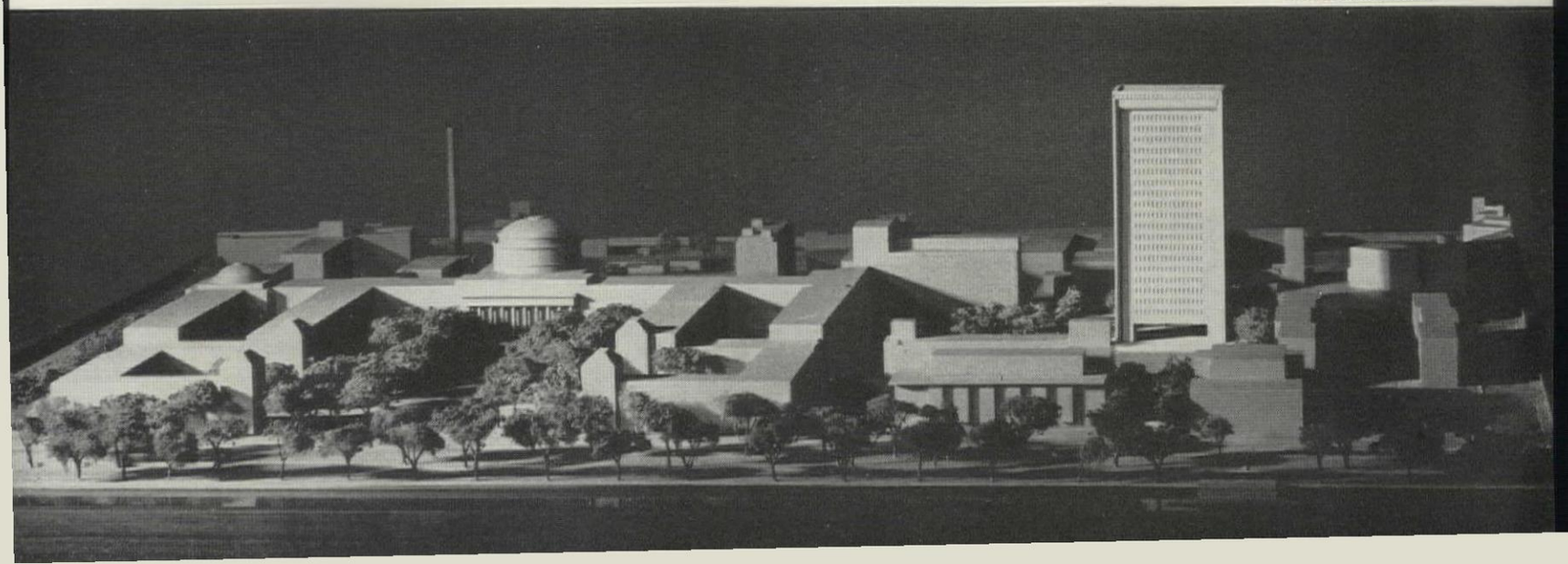
Pei's notion was to add his building to that area in such a way as to pull all the others together into some kind of organized composition without trying to supplant the dominant court and dome. The device was a tower of minimum floor area so placed as to bring the space around it to focus—like a flagpole in a public square. Once the idea of a tower was accepted (Pietro Belluschi and other M.I.T. planners now envision other towers around the original court and dome group), Pei and his associates studied the program for the building. What seemed to be required was a large single bay floor, strictly organized on a 5-foot module, which could be laid out variously for offices, laboratories, classrooms, or lecture rooms and changed as the future might require. Nineteen floors approximately 50 feet wide and 120 feet long seemed to suit this program (see plans).

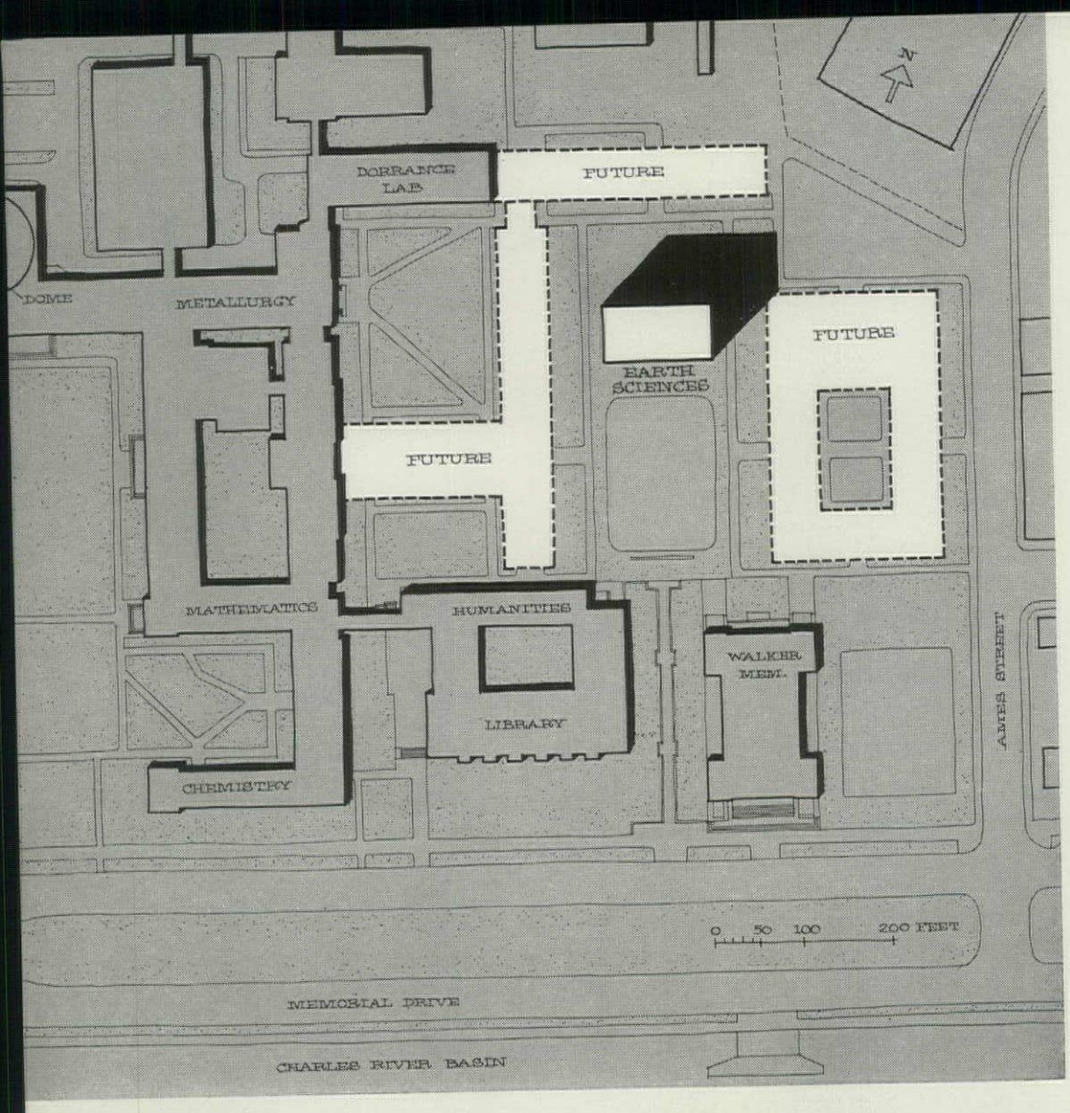
The problem then became one of locating the extensive mechanical services and vertical circulation to obstruct these flexible floors as little as possible. Obviously, the best locations were at the extremities of the building. Of course, the structural system could have been conventionally independent of these systems, but Pei reasoned that, because the inevitably heavy end elements *looked* structural, they ought to be so. Intermediate columns, indeed, looked quite superfluous. Therefore, Pei enclosed the ends in four heavy columns, braced by shear walls, and spanned the 85 feet in between with prestressed concrete floor-to-floor Vierendel trusses in place of the normal outside walls.

Pei realizes that there are several alternates to this truss, ranging from a deep spandrel beam to a system of Tee beams spanning end to end. But he chose the truss, and showed it to the outside with oval windows cut between the X's of the reinforcing. This, of course, makes an unusual looking building. Indeed, the entire exterior, with projecting end walls and a rooftop air scope looking like a heavy cornice, is unfamiliar as a form. But it is logical.

Earth sciences building will dominate a new court area adjacent to M.I.T.'s main building group around the dome.

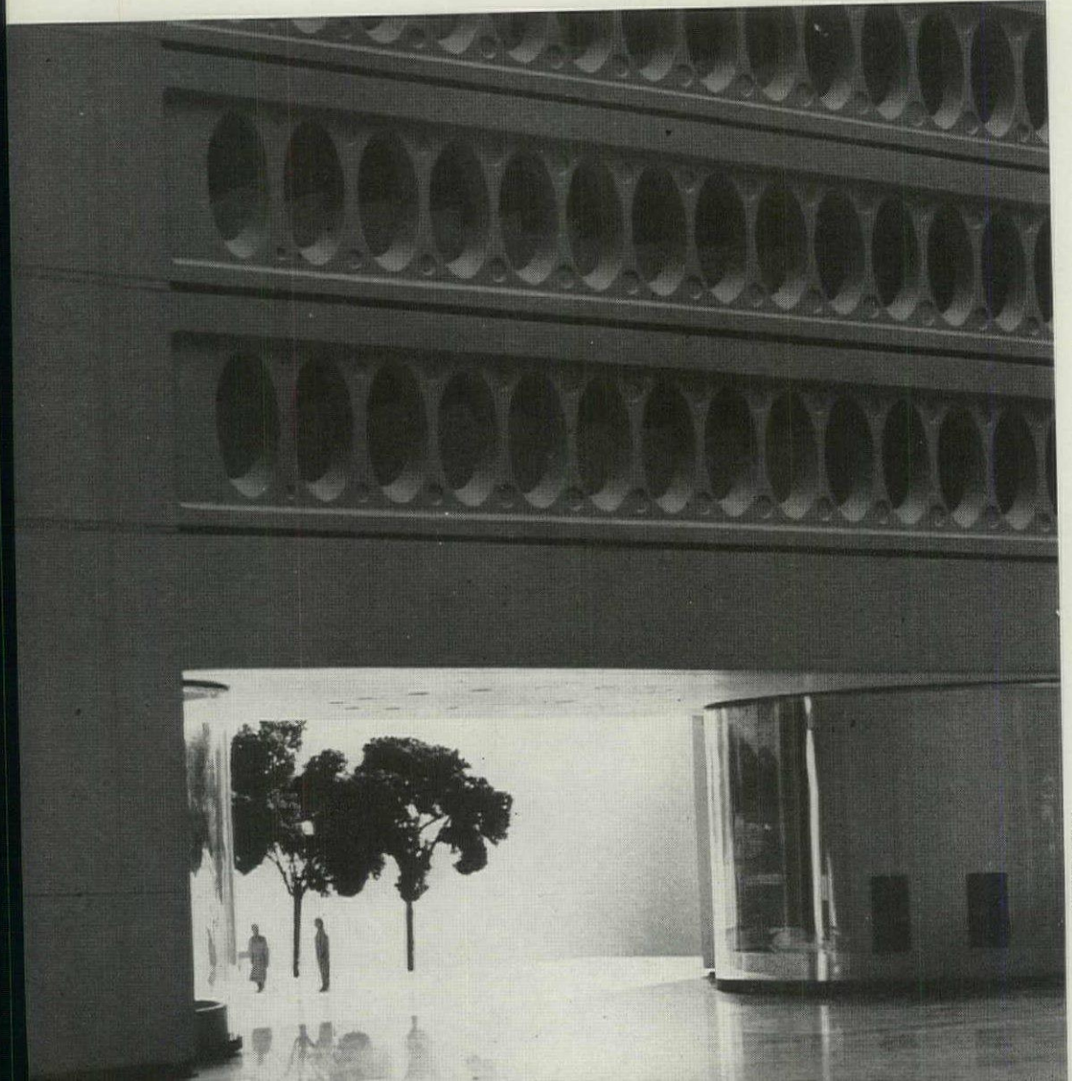
PHOTOS: GEORGE CSERNA





Future development *of part of the campus proposed by Pei envisions low buildings enclosing three tightly organized courts. Already scheduled by M.I.T. is an extension (by Architects Anderson & Beckwith) of the Dorrance laboratory (top of plan) which will form a back wall for the area.*

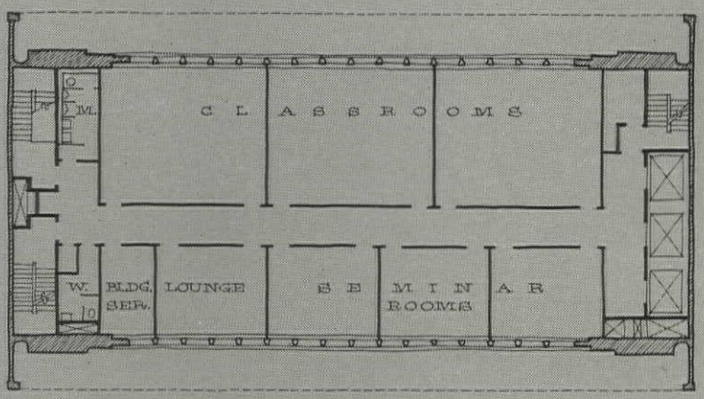
Tower floors *(plan right, above) are laid out wide enough to allow a double-loaded corridor with classrooms on one side and seminar rooms or offices on the other side. Floors can also be left open as* **lecture room** *(right, center), laboratory, or library spaces.* **Ground floor** *(right, below) is actually an outdoor concourse with two semicircular glass-enclosed lobbies built against the end walls. Between the end walls, precast concrete Vierendel* **trusses** *(see detail) span 85 feet. The floor-to-floor trusses are laid out on a 5-foot module; the interstices between reinforcing steel are filled with oval glass window units. Thus the structure is also an enclosing wall.* **Transverse section** *through the building (far right) shows the open concourse on the ground level and a roof above the mechanical floor loaded with radar and weather equipment for teaching and research programs.*



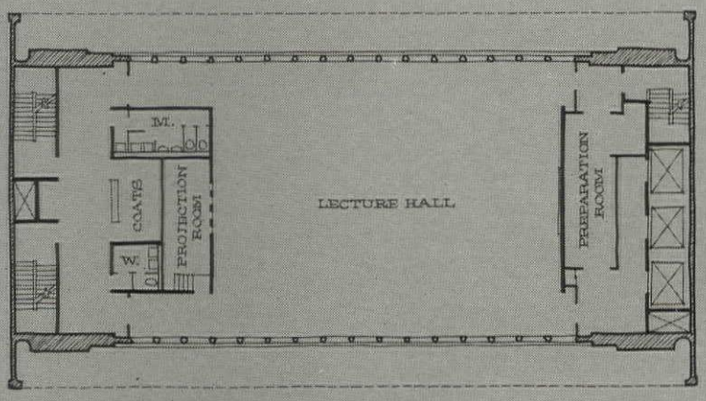
GEORGE CSERNA

Concourse *will preserve precious ground space as part of the campus. Small circular depressions above and below the oval windows in the truss wall decrease in size to symbolize the way vertical truss members are thickened at the ends to take increased bending and shear forces.*

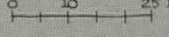
ARCHITECTS: I. M. Pei Associates. CONSULTING ARCHITECT: O'Neil Ford. LANDSCAPE ARCHITECTS: Sasaki, Walker & Associates. STRUCTURAL ENGINEER: Severud-Elstad-Krueger. MECHANICAL ENGINEERS: Syska & Hennessy.

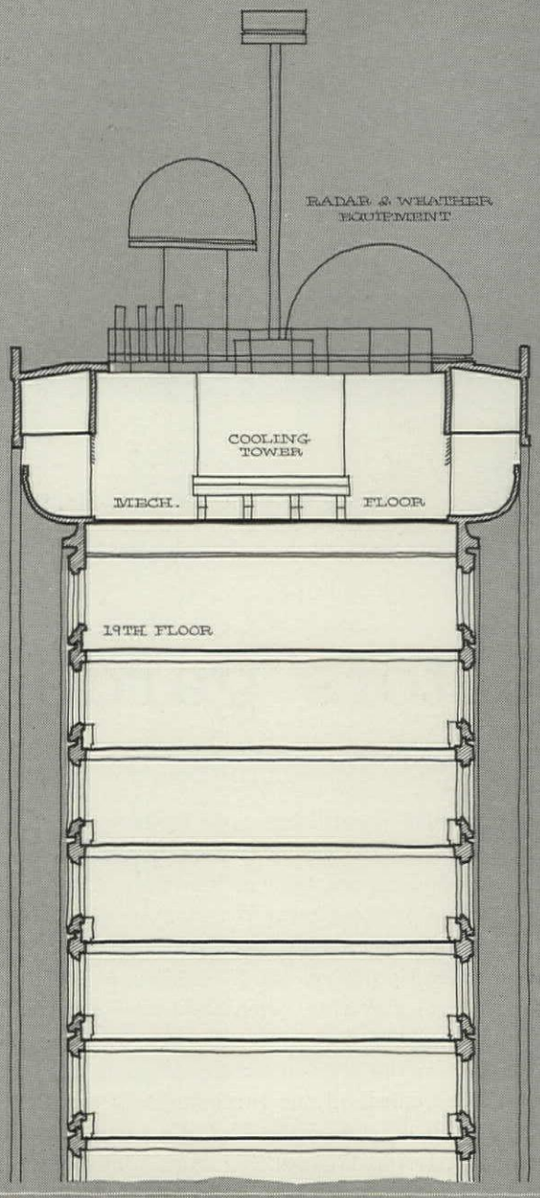


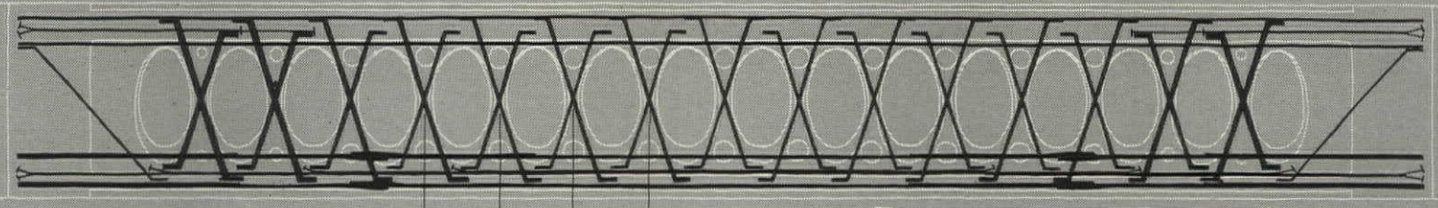
CLASSROOM FLOOR



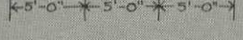
LECTURE HALL FLOOR

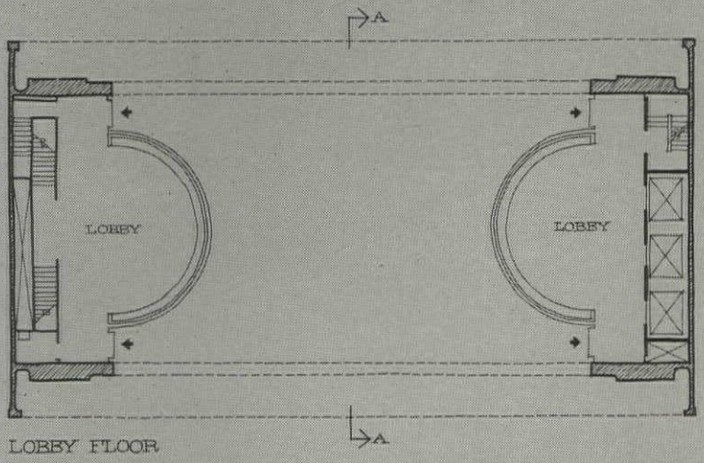




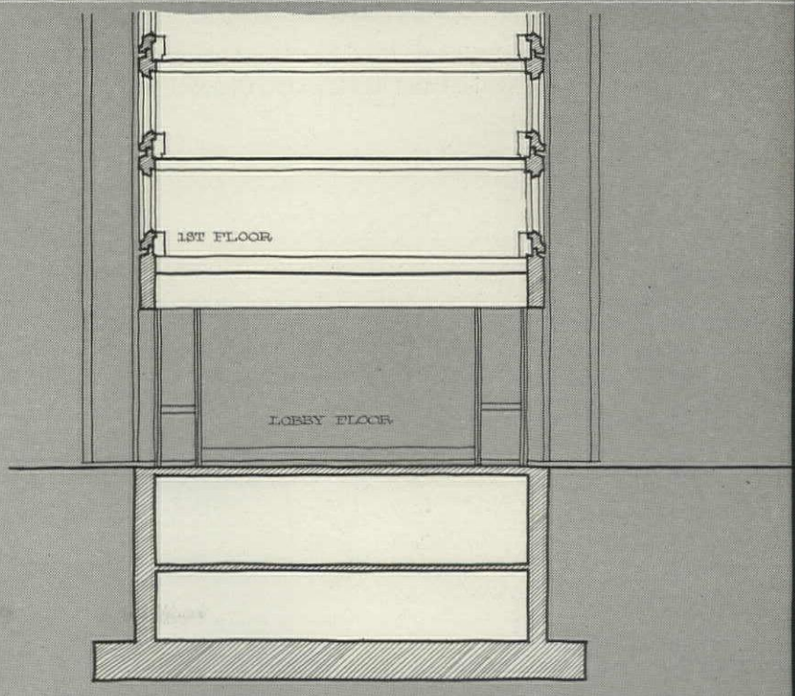


STORY-DEPTH CONCRETE TRUSS

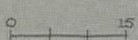


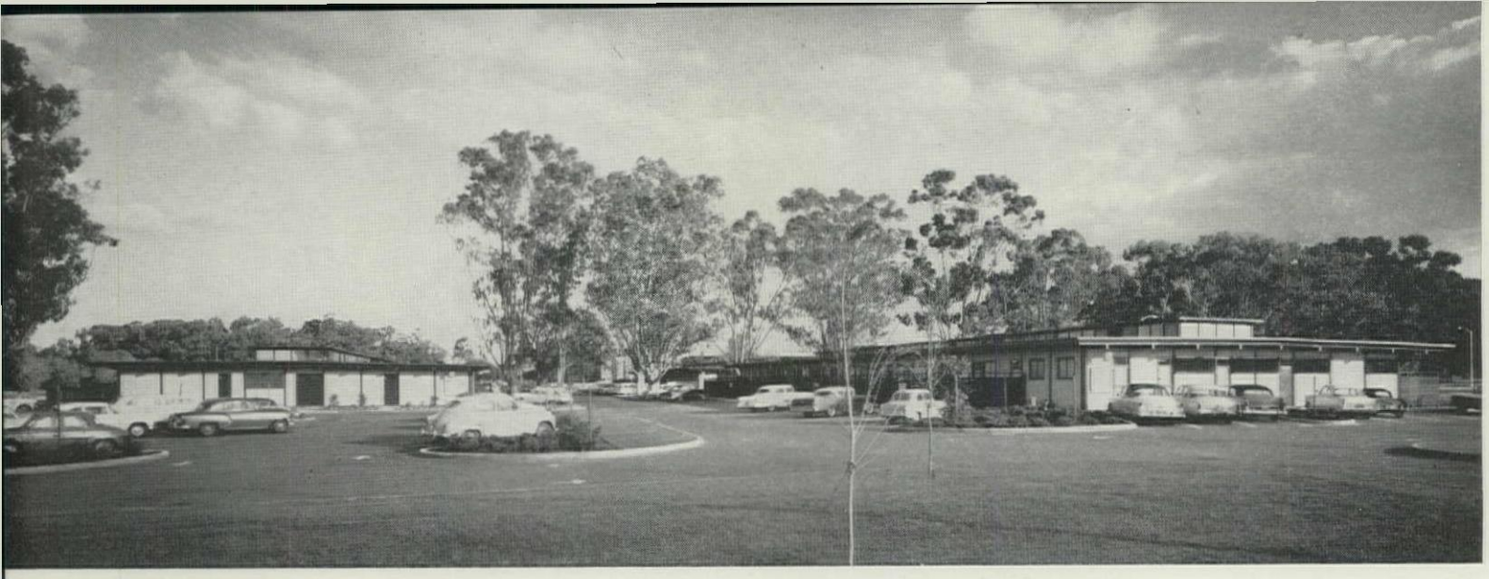


LOBBY FLOOR



SECTION A-A





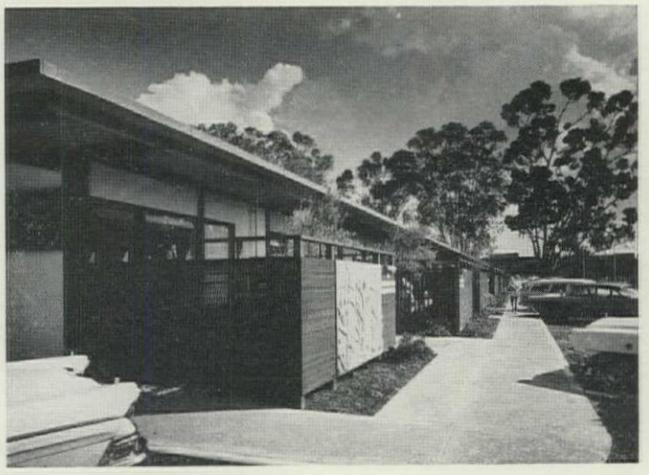
Doctors' garden

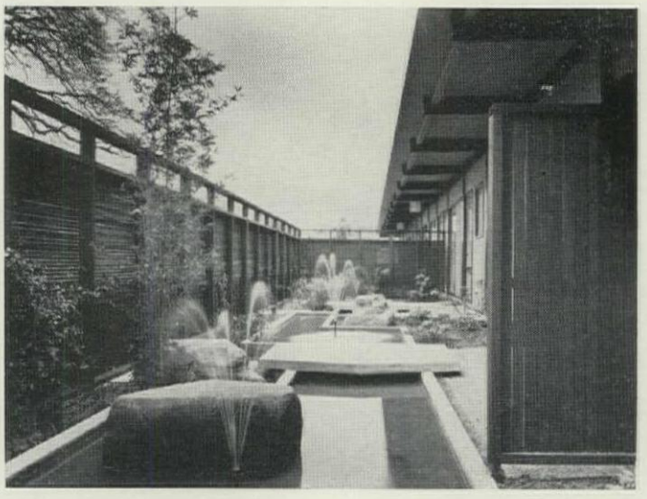
The line between architecture and landscaping, usually more noticeable in the Occident than in the Orient, has all but vanished in the case of the Palo Alto medical offices designed by Architects Wurster, Bernardi & Emmons and Landscape Architect Lawrence Halprin. Their collaboration has produced (at the modest cost of $18.38 per square foot) a private, oriental-flavored environment that somehow seems right for suburban doctors' offices.

As well as sharing views of a central, landscaped court, each of the 25 offices in the three-building complex has its own garden entrance; most of the common waiting rooms and individual consulting rooms have screened gardens beyond sliding panels. From within (right), the effect of private gardens and interior laboratories is as intimate and controlled as in a Japanese teahouse.

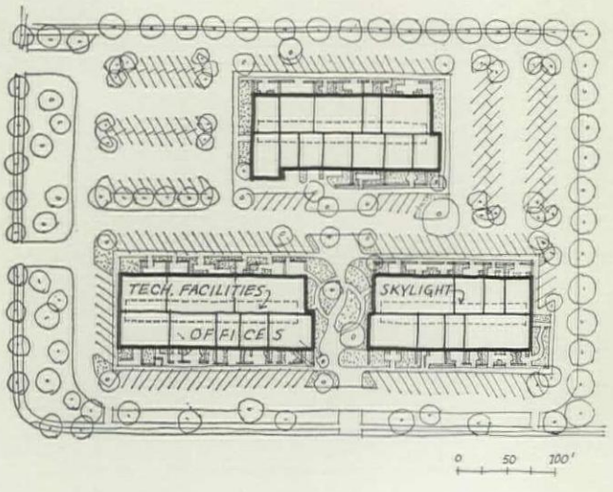
But from without (above), despite the handsome screens and the detailing of the stucco wall panels, the collaboration is not so effective. The well-planted charm of the complex gives way to the predominance of the automobile.

Engineers: William B. Gilbert (structural); G. L. Gendler (mechanical and electrical). General contractor: Wagner & Martinez.





PHOTOS: MORLEY BAER



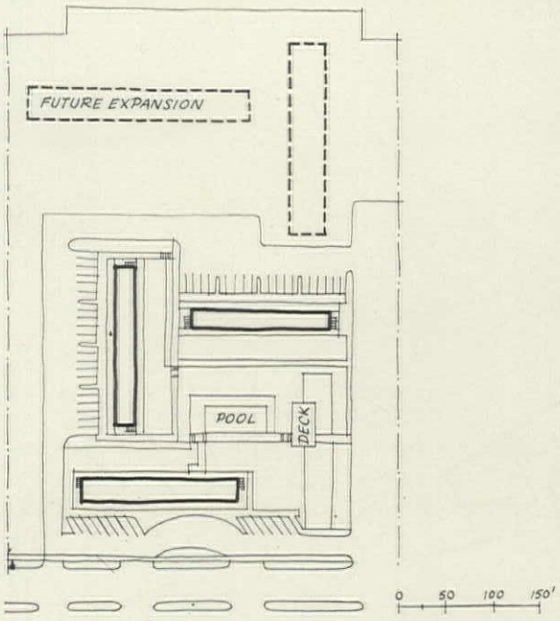
Highway club

Unlike most facilities which cater to the hopped-up instincts of American motorists, the Uplander Motor Hotel looks as if it belonged to an advanced, relaxed civilization. Its modest, country-club air is achieved through several subtleties: landscaping, the massing of the buildings, and the leisurely rhythms of its verandahs.

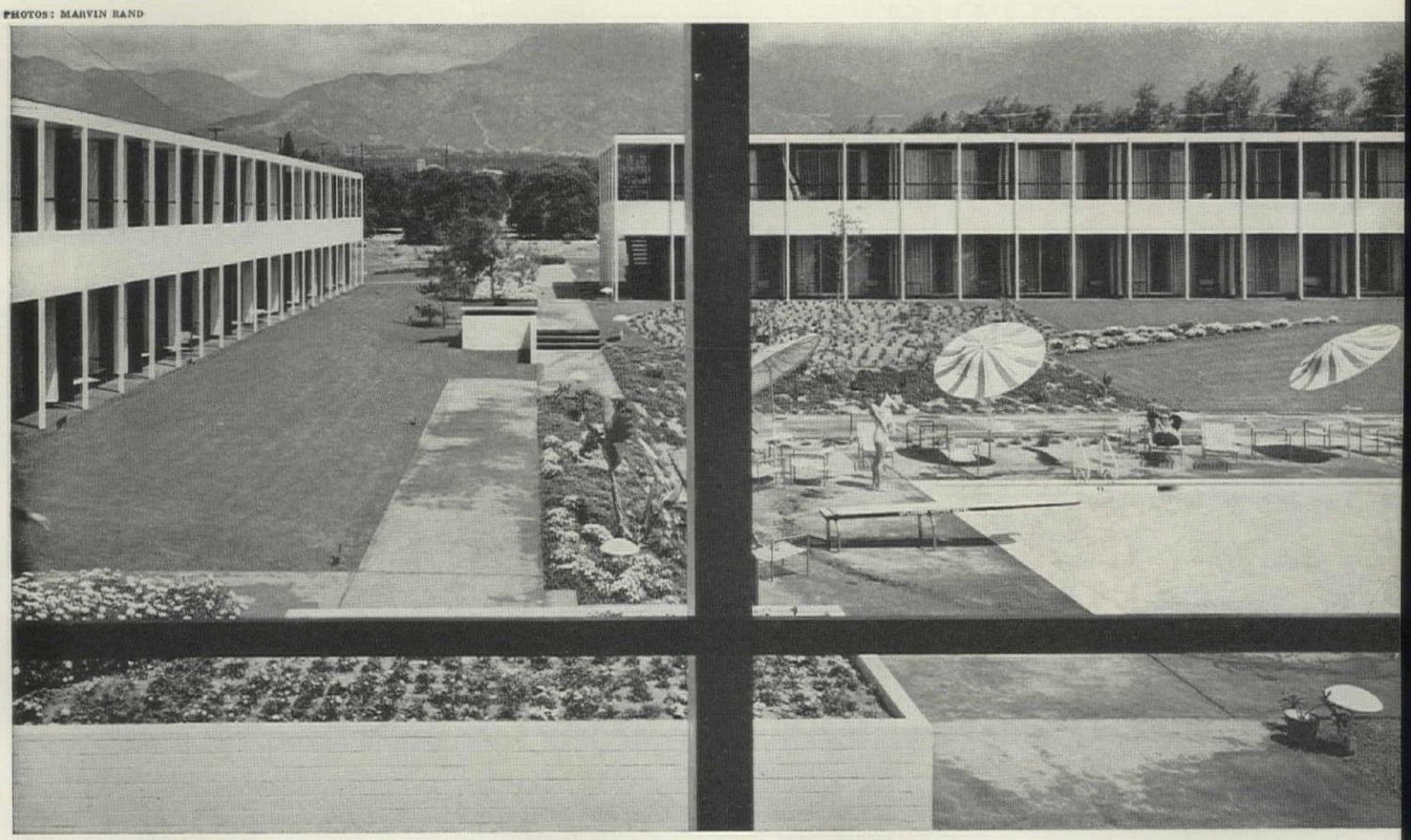
At the heart of the 4.5-acre plot along Route 66, in Upland, Calif., is a generously proportioned (64 by 28 foot) pool. The pool is surrounded by lawns and flower beds carefully fitted into the site's gradual contours. Overlooking the pool are the terraces of the hotel's three two-story buildings which contain a total of 58 units. Terrace privacy is insured by cabana-style curtains.

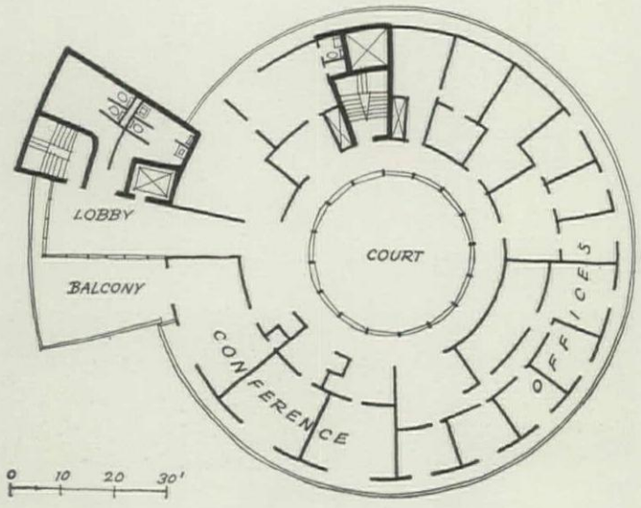
Architect John Field Kelsey of Thornton Ladd & Associates used another country-club trick to insure privacy from noise and traffic within the central court: the "front doors" of all the units, even those on the upper level, face the outside. Between-unit sound privacy is gained not only by staggering partition studs but also by introducing between the floors a second set of joists which are framed independently from and at right angles to the first.

Engineers: Carl Johnson (structural); Thomas Perry (mechanical); Thomas Saver (electrical).



PHOTOS: MARVIN RAND





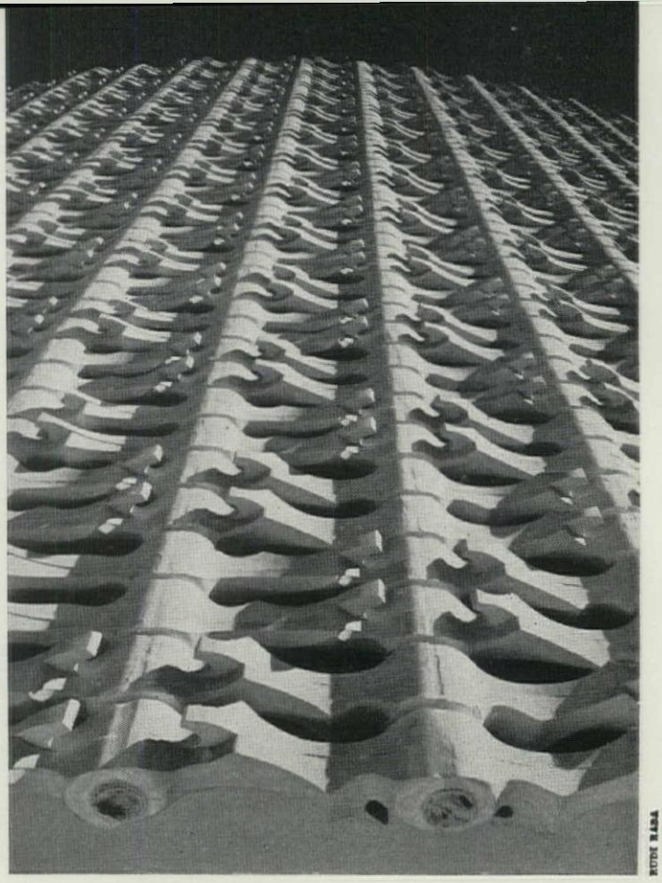
Lawyers' circle

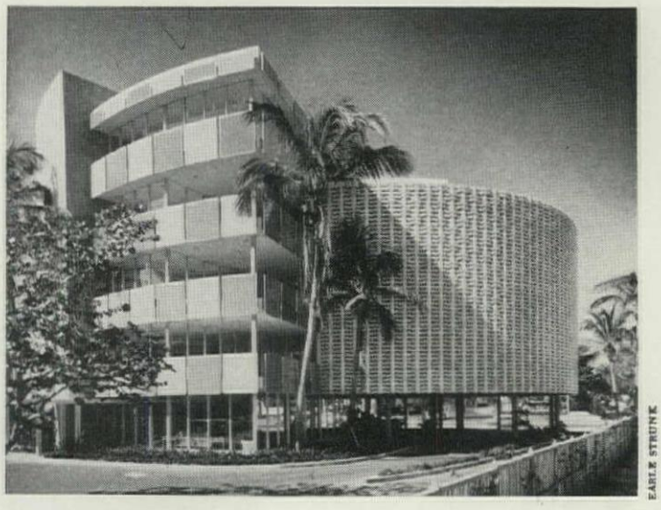
A circular and rather introverted building seemed the logical answer to the building requirements of a Miami law firm. The firm consists of a number of separate but equal "teams," which could be stacked above each other like doughnuts and which could preserve a modicum of intimacy by sharing the hole in the center. The central court is roofed over with a concrete and glass-fiber dome that is open at the sides to permit natural air circulation.

The structure, which employs steel pipe columns and precast concrete floor joists, is frosted on the outside with a textured screen which shields the building from the glare and clutter of downtown Miami. The architects, Polevitzky, Johnson & Associates, felt that a geometrically patterned screen would have been "unsympathetic" to the curved form, devised instead a screen of knobby cramic elements (see sketch, below).

Below the four office floors is a ground-level terrace and drive-through; above is a penthouse lounge and dining room. At the back of the building is a tower housing elevators, floor lobbies, and balconies for those who like their views without screens.

Engineers: H. J. Ross Associates (structural); J. E. Curley Associates (mechanical and electrical). General Contractor: M. R. Harrison Construction Co.


RUDI BASS


EARLE STRUNK


JAMES FORNEY

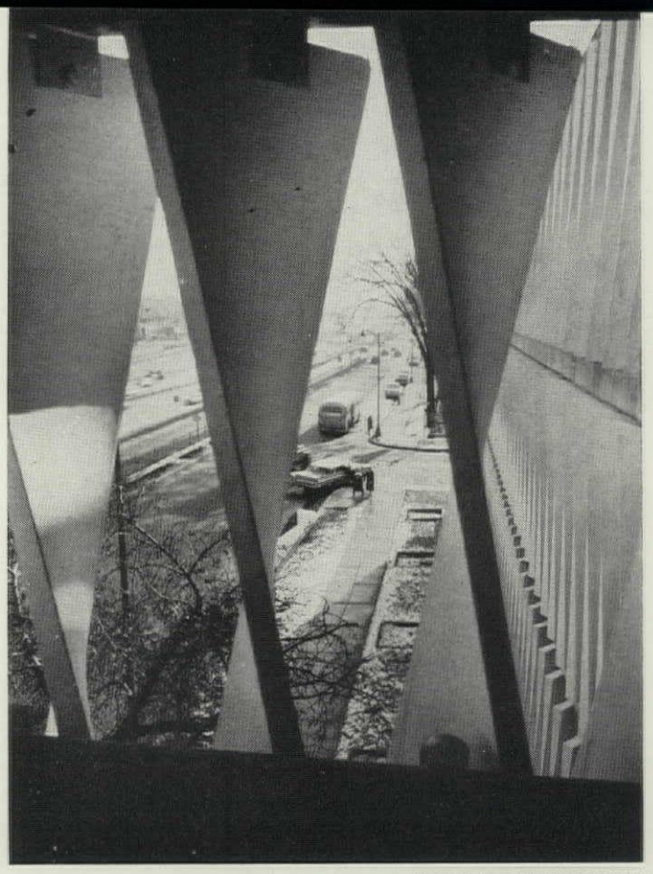
Auto hideaway

Drivers sweeping along the John C. Lodge Expressway catch a blurred glimpse of one of Detroit's most admirable contributions to the automobile age, a 870-car parking garage designed by Albert Kahn for the use of the Henry Ford Hospital. The blurred impression is created not just by speed but by the building's dominant architectural feature: 1,716 warped concrete panels are stretched between the garage's three parking floors and hide the cars from public view.

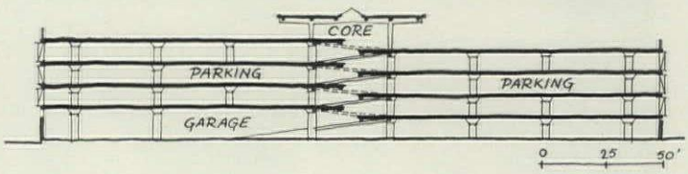
Each of the parking levels is staggered vertically (so that ramps climb only half a floor at a time) and is bisected by a skylighted core. The core also houses two passenger elevators and two stairways. On the ground floor is a brick-walled garage for repairing and washing the hospital vehicles.

Because of the time and cost savings made possible by the prefabricated panels bolted to the flat-slab structure, the building was completed in seven months for a square-foot cost of $3.70.

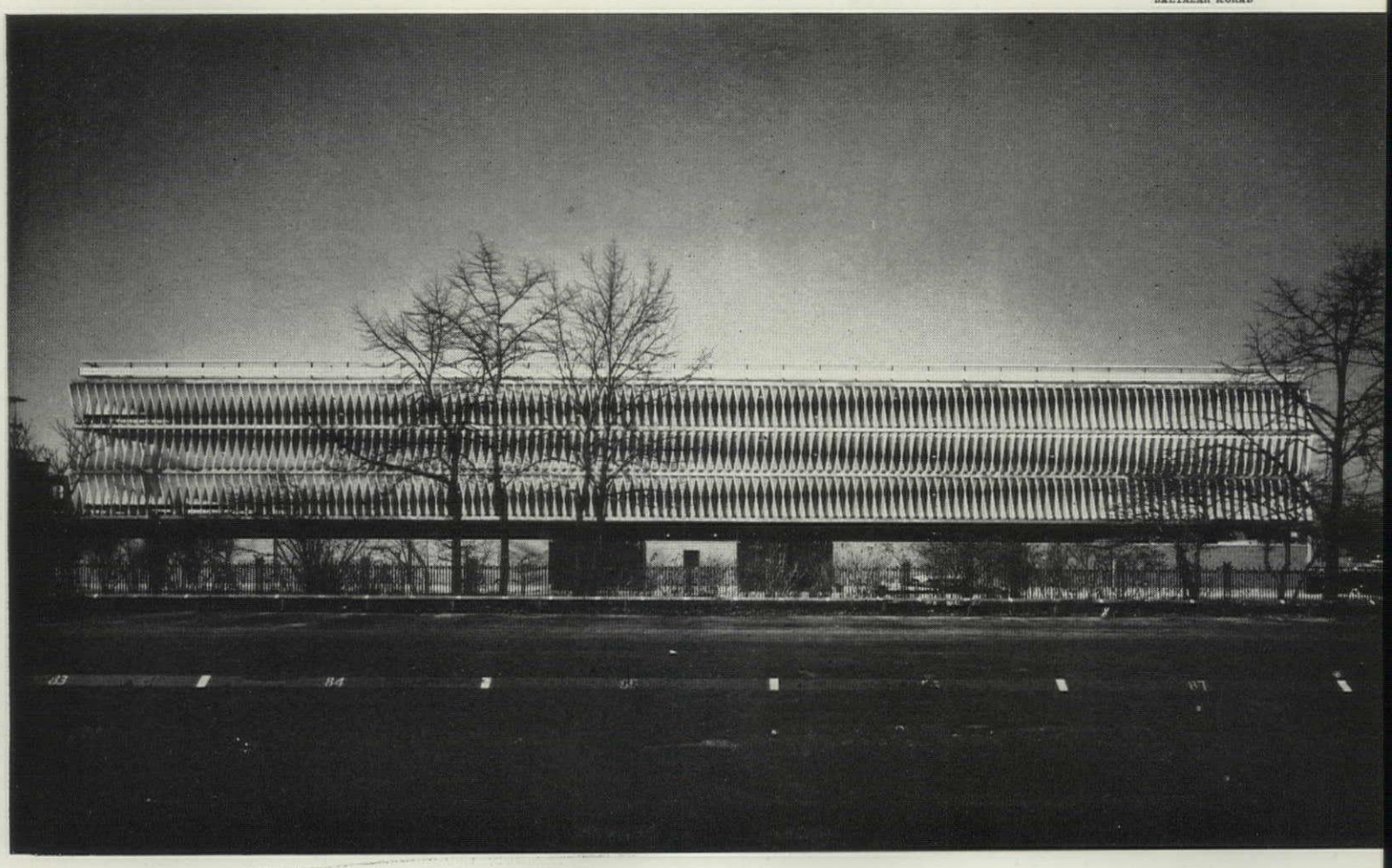
Engineers: Hyndon-Brand Co. (electrical); The Robert Carter Corp. (mechanical). General contractor: Darin & Armstrong.



EDWIN C. LOMBARDO, DETROIT NEWS



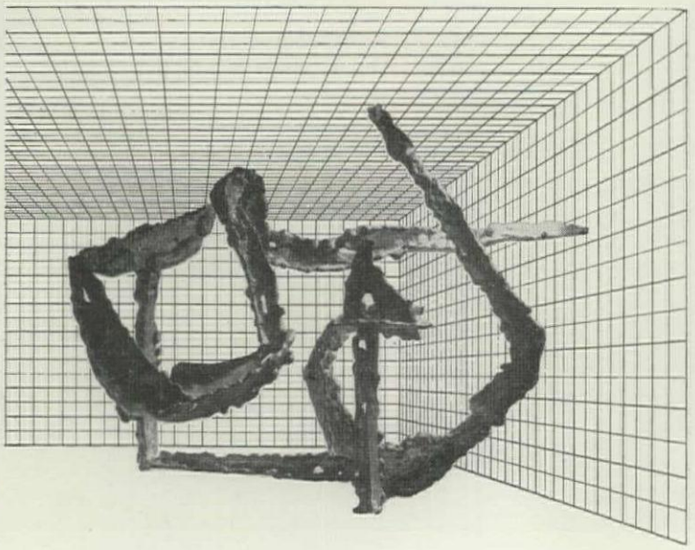
BALTAZAR KORAB



Sculpture for walking through

HEINO ELKAN

Artist Ferber *inside sculpture for Millburn, N.J., synagogue.*



HANS NAMUTH

"The reality of the vessel," Frank Lloyd Wright used to say, "is the space within it." To partake of that reality—and to help animate it—New York Artist Herbert Ferber has been experimenting with room-sized, abstract sculpture held up in the air between ceilings and walls, and big enough to walk under and through. Some results are shown on these pages.

The idea came to Ferber in 1951. "I had finished a large sculpture for a wall (photo left), and found that, while it still stood on the ground, I could actually walk into it. But when it was put up high on a wall, out of reach as it were, it seemed to have irrevocably lost its *presence*. Instead, it had become an image." To recover this "presence," Ferber began to make "roofed sculpture" similar to the piece shown at right. This, in turn, became enclosed sculpture designed almost to fill an entire room (photos, page 110).

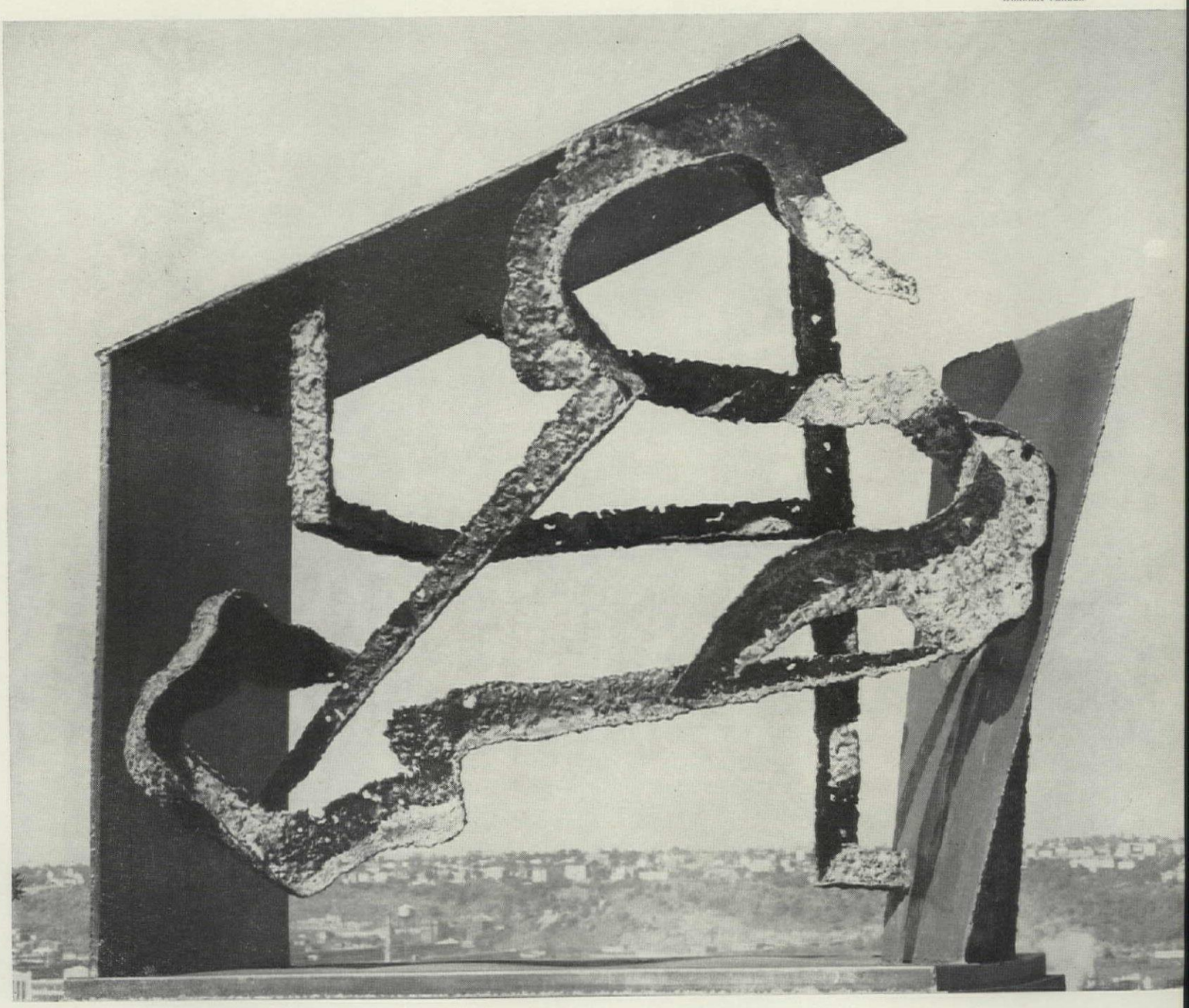
Traditionally, sculpture has been used only in two ways: applied to buildings or freestanding. Ferber's suggestion is a third alternative: to let sculpture help create a certain quality of space. Some of the best modern buildings, Ferber believes, have large, public lobbies that are little more than giant voids with no character of their own. His sculpture is meant to animate those voids and to supply that character.

Many architects will disagree, on the grounds that creating space is a job primarily for them. (To which many sculptors might answer that creating sculpture is a job for them—and that some architects have been sticking their noses into that recently.) However this may be, Herbert Ferber's experiment is a lively contribution to a debate as old as art itself.

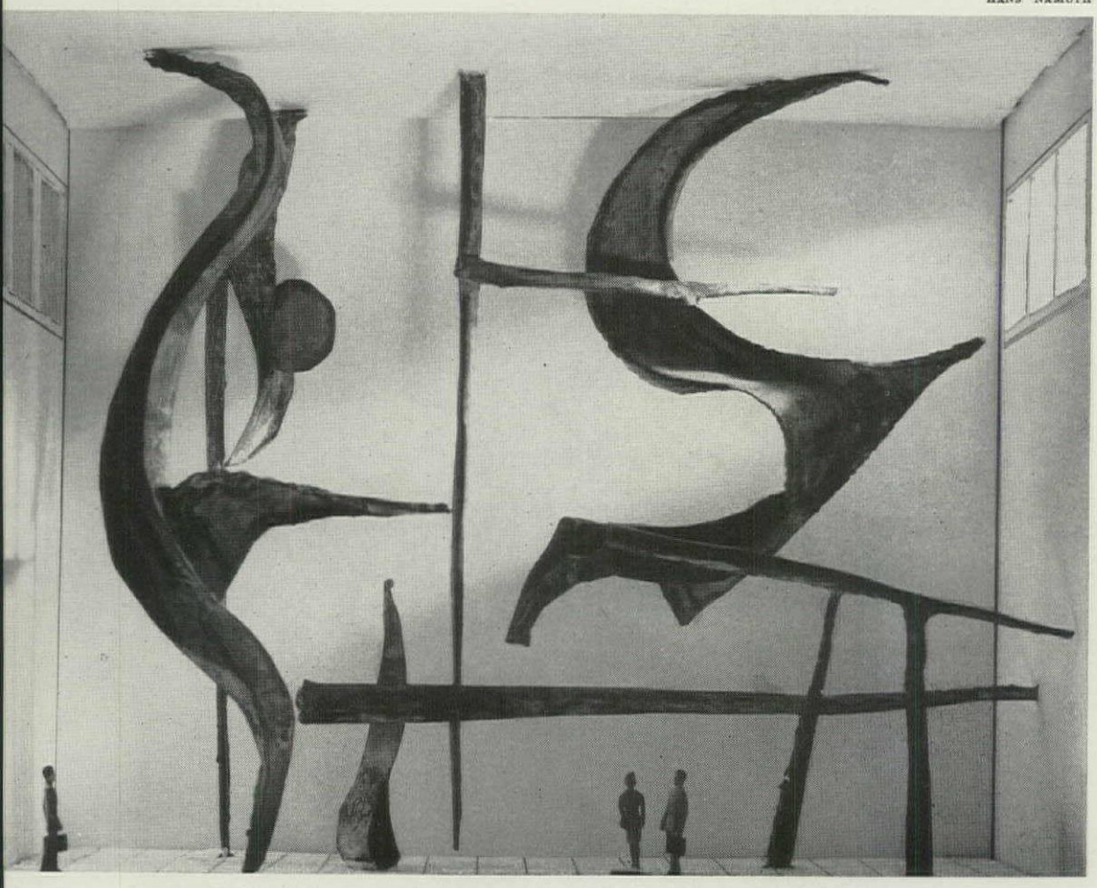
Room-sized sculpture *(left), shown in an abstract architectural setting, is meant to be almost 30 feet high, and largely supported between ceiling and walls.*

Idea of enclosed sculpture *came to Ferber by way of smaller pieces like the one shown opposite, which has a suggestion of roof and walls.*

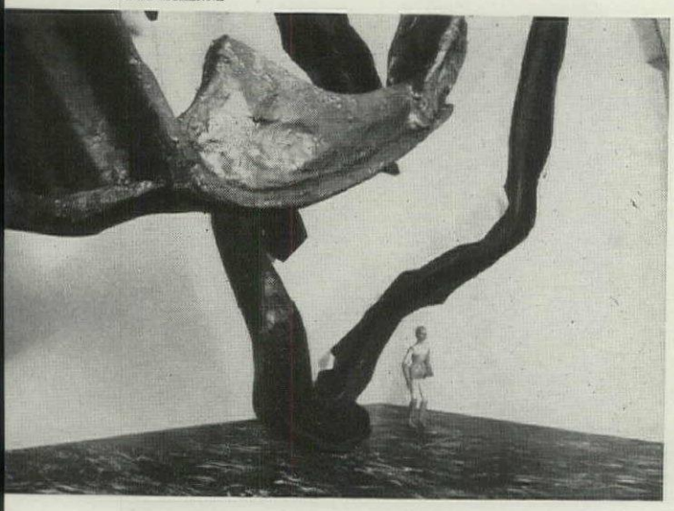
HERBERT FERBER



HANS NAMUTH



ROLLIE MCKENNA



Stalagmites *and stalactites help support abstract shapes in model above. Sculpture barely touches the floor, has enough headroom to permit free circulation below.*

Roomful of sculpture *of another variety is shown in model photographs at left and right. Instead of letting the spectator be an outsider who observes the sculpture from afar, Ferber tries to draw him into the spatial and plastic experience by "weaving the space and the forms into an inseparable whole."*

ROLLIE MCKENNA

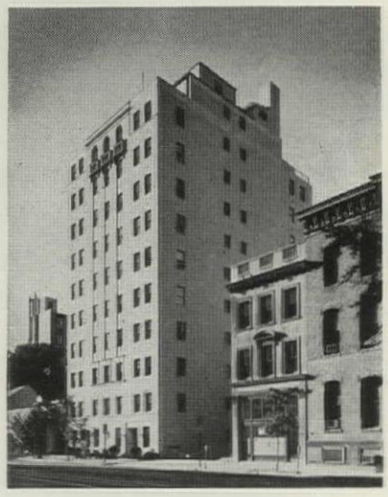
Lobbyists in limestone

The National Grange, a farmers' outpost in Washington D.C., gets rewarded for further spoiling federal architecture.

BY WALTER McQUADE

Half a block west of the corner of H Street and Jackson Place in Washington, D.C. sits an unimposing 11-story structure, like an office building with touches of a city club. But it leads to a double take. The passer-by suddenly notes that this structure—which he has meanwhile identified as the new headquarters of the National Grange—has an all-limestone left side wall **(1)**. But the right side wall is buff brick **(2)**. Why, then, the difference? Why the shift? Why "side" on the left side, and on the left side alone? Nor does that left-hand wall appear to have been specially designed; like its companion it looks as if it had been conceived simply as another "party wall"—one with a few windows in it where no neighboring construction might be expected in quite some time. The windows look as if they had been simply dropped in as convenience might dictate. That party wall is no façade at all. Why, then, the costly stone—repeated, moreover, at the back?

The irksome little question arises how all this might have come about, and the search for an an-



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PHOTOS: ROBERT C. LAUTMAN

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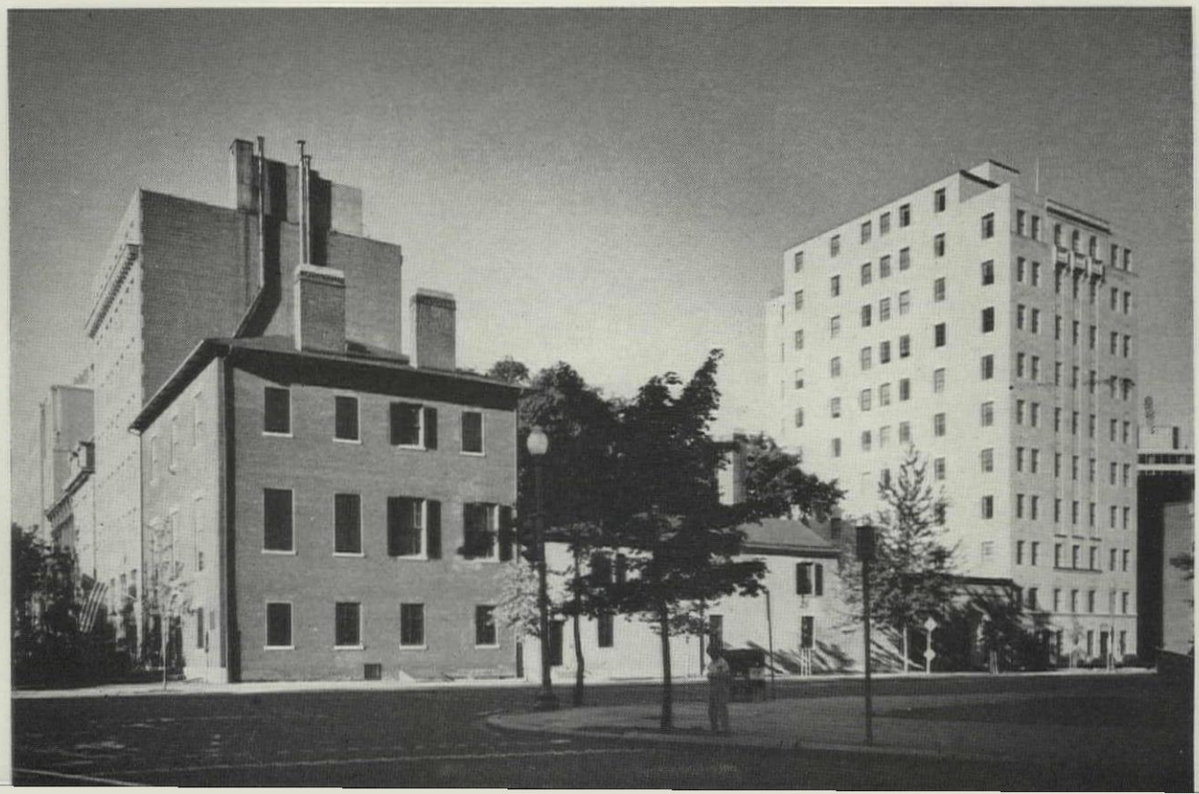

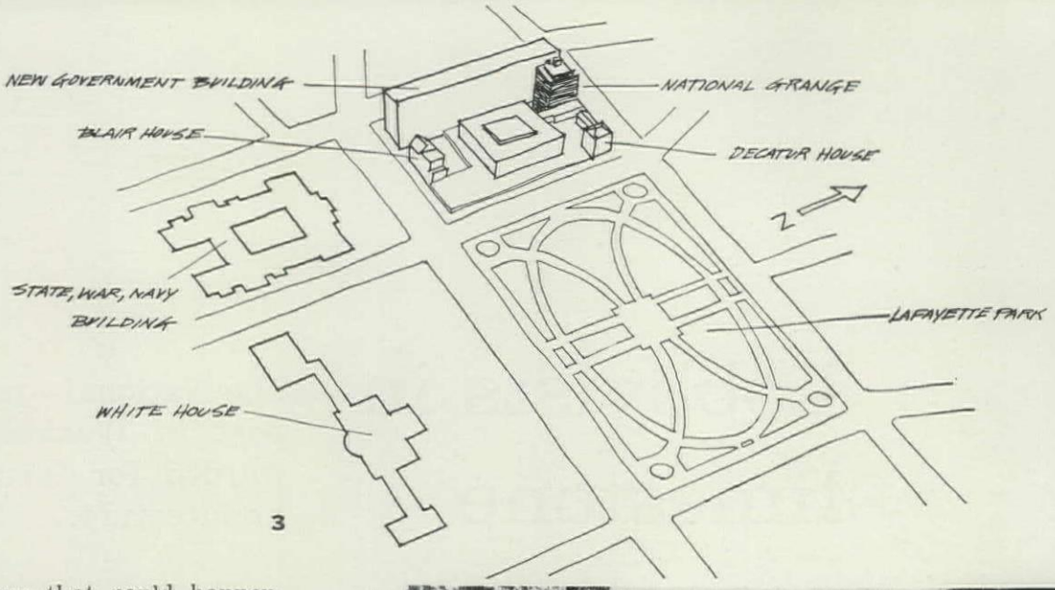

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swer leads into a little story that could happen, presumably, in Washington alone.

The central fact is that this block lies directly west of Lafayette Park **(3)**, one of the capital's pleasantest green squares—a thoughtful dell north of the White House, where Bernard Baruch has done some of his most important park-bench sitting **(4)**. The block alongside was marked in 1958 by the General Services Administration as the site of a new composition of government buildings.

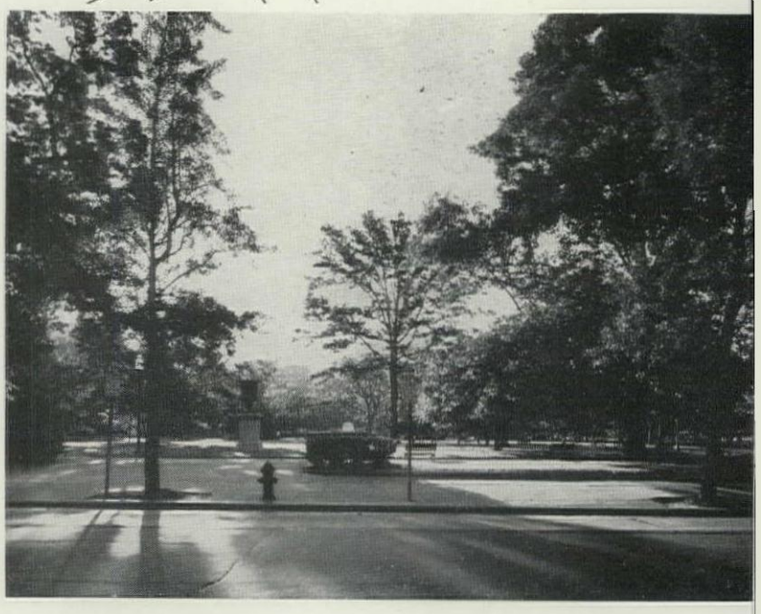
Everything in the block was to come down except Blair House on Pennsylvania Ave. **(5)**, and the house on H Street which Latrobe created for Stephen Decatur **(6)**, with a naval museum behind it.

Early massing designs for the area called for a tall wing of government offices stretching across the west end of the block, as a backdrop for lower wings toward Lafayette Park, and with plazas and the historical buildings neatly disposed to the fore.

But then the planners learned that one of the substantial tenants in this block at Washington D.C. was the National Grange, representing 800,000 members out on the farm. The planners' intent was no secret at the time, and the subsequent activity of the National Grange, patrons of husbandry, rapidly became almost as public. The farmers' representatives rushed up Capitol Hill in defense of their real estate; soon congressmen from the farm states were offering riders to any condemnation legislation, of a sort that would have pulled its teeth. Other organizations sited on this block had been served notice and had already left, quietly and patriotically —the Brookings Institution was one—but none of these had 800,000 members in the farm belt.

The result in Washington was all too easy to predict: deadlock, deal, compromise. The Grange traded its site within the block and south of Decatur House for another, still within the block and *west* of Decatur House; that was apparently all. But not quite.

A model in the hands of the Capital Planning Commission indicates what an architectural invasion the shift of this one private institution perpetrated



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upon the entire public complex that was planned for this block **(7)**. In front of that broad simple backdrop of multifloor office space—muscling in from the side but with no architectural lines to read —is the same party wall of the National Grange.

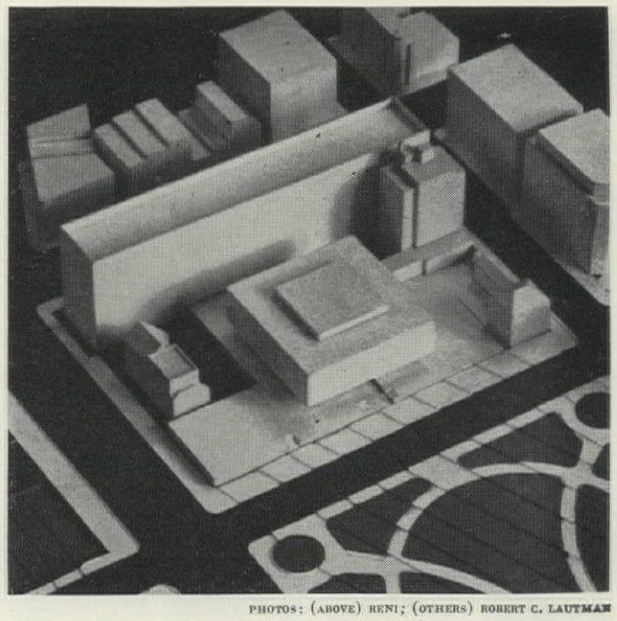
So the secret is out: this "party" wall is finished in limestone because the Fine Arts Commission pleaded that it had to be done, to try at least to assimilate this intruder to the background. Who paid for the limestone on this cast wall—and on the rear wall as well? The taxpayers did!

Why and how the taxpayers put nice white limestone on one side and the back of a private building of the National Grange, representing 800,000 dues-paying members and offering space privately for rent, all stands in the pages of that bible of Washington, the *Congressional Record:*

> *Senator Magnuson:* I suppose they don't want to be sticking out like a sore thumb down there.* As I remember, they gave me a brief estimate that it [the stone] runs around $70,000, or $62,000 to $70,000.
>
> . . .
>
> *Mr. Floete [Administrator of General Services]:* I don't think we have any authority to assume any part of that cost.
>
> *Senator Magnuson:* It would be a little simpler, if we thought the thing was just, to put it in your budget than to pass a private bill on it. . . . 'Earmarked for that purpose.'
>
> *Mr. Floete:* This can be done.

Done and done. The Grange not only got a building with windows on all four sides, most of which may one day overlook generally pleasant plazas, and will never be blocked—thus assuring this structure of prosperous expectations in the rental market—but the federal government bought the facing. The single buff-brick wall that remains is just the one at which, some day, government employees will stare across a narrow alley; their view will be hooded by the Grange. Or hoodwinked **(8)**.

* Because the sides and rear would have been brick.—ED.



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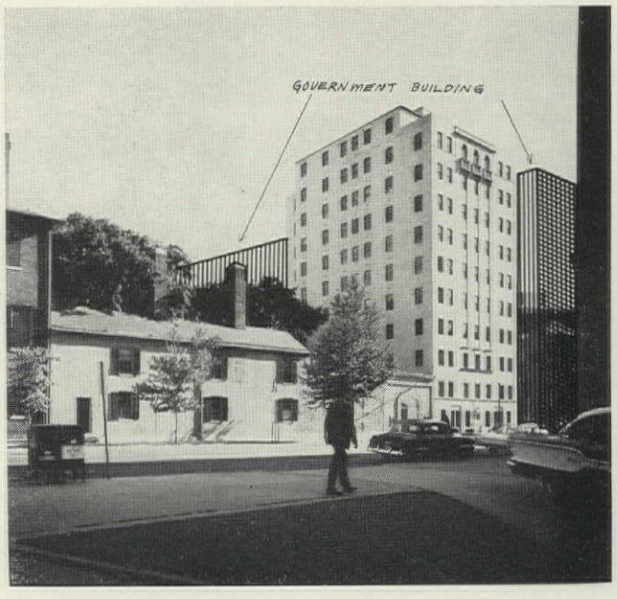
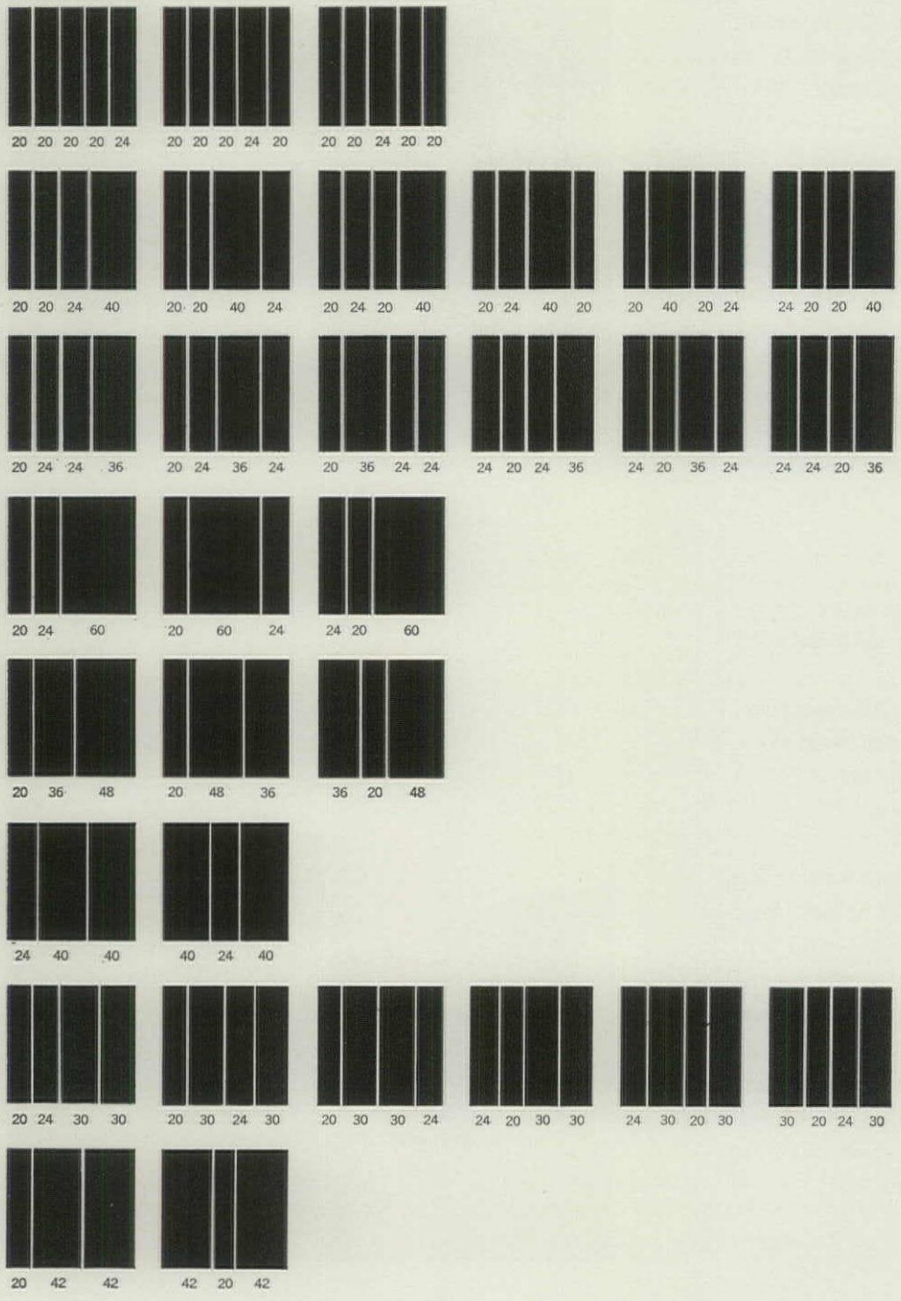
PHOTOS: (ABOVE) RENI; (OTHERS) ROBERT C. LAUTMAN



8

How to make things fit together

BY EZRA D. EHRENKRANTZ



Modular design flexibility *is shown (left) in all the possible basic combinations of movable partitions to fit a space of 8 feet, 8 inches, using only eight panel widths selected from the modular number pattern, page 116. This example shows the combinations at only one increment of the 2-inch flexibility contained in this product-size range.*

Modular coordination—the relating of all building products and component sizes to a standard U. S. module of 4 cubic inches—is gaining in acceptance. In an informal survey of 298 dimensional products advertised in ten leading architectural and building journals last October, the Modular Building Standards Assn. reports 245 were modular to the 4-inch standard, with allowances for joints and tolerances. And another M.B.S.A. survey shows that some 11 per cent of new buildings in the U. S. are being designed on the modular grid.

But many architects, particularly leading ones, still resist the 4-inch standard as being too monotonous and limiting. Several years ago, Ezra D. Ehrenkrantz, now assistant research architect at the University of California at Berkeley, proposed a flexible system of modular coordination (FORUM, *Nov. '58) to correct this. It includes the 4-inch module (to retain all the advances in modular design thus far), but adds a select number of other modular sizes for greater freedom and variety, based on a coordinating, mathematically astute Modular Number Pattern (see page 116). Currently, further research is being done on how closely existing manufacturing practices and products fit into the system, with the next step to promote its use in actual building.*

In this article Ehrenkrantz shows from recent research studies how manufacturers and ultimate users, without attempting to understand the mathematics of the system, can use these selected dimensions to eliminate wasteful sizes, get coordinated components, and promote construction efficiency, while still allowing esthetic freedom and variety.—ED.

A flexible modular system allows manufacturers and architects to select a minimum number of coordinated building product sizes for maximum freedom in design.

The practical reason for using modular coordination is efficiency, and the ideological reason is one of order. Industrialization has wrought a radical change of efficiency in the production and use of building components. Whereas products made by hand could once be designed to any size or shape within the limitations of the material, components made today by machine must have a limited number of fixed sizes and shapes. An efficient system depends on the selection of this limited number of sizes and shapes in such a way that they may be fitted together interchangeably. Machine-made products must be incorporated in a building without modification at the site, otherwise costs mount sharply.

Even the strongest opponents of modular coordination will readily admit the merit of such efficiency. However, the loss of design freedom is too high a price to pay, they say, and if design freedom is considerably reduced, they may well be right. Therefore, modular coordination has to prove itself on the ideological as well as the economic level. It has to be shown that a range of standard components can be developed that will serve as an esthetically neutral basis for design. There are analogies for this in music, where the frequencies of notes and scales are fixed; in literature, where words must have fixed meanings to convey ideas; in painting, where the artist uses a range of standard colors.

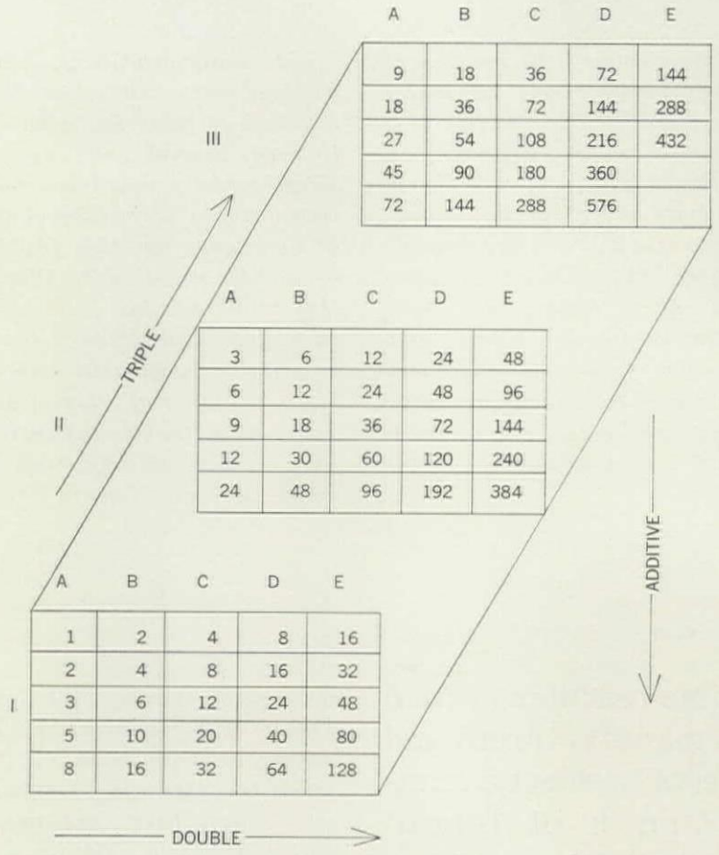
If a system of modular coordination is to work, it should 1) encourage the efficient construction of buildings, and 2) provide a flexible keyboard for design. To ignore the second prerequisite is to court professional disaster because any type of standardization tends to be self-perpetuating and self-duplicating because of its efficiency.

The modular roots

As nearly everyone knows, the idea of modular coordination goes back to Alfred F. Bemis and volume three of his *The Evolving House*, published in 1936, wherein the concept of a base module was first put forth and explained. He discussed in this book modular coordination as it applied to house building in the thirties. He explained that if all building components were multiples of a single base module, then all the products could be put together quickly and efficiently.

It must be remembered, however, that Bemis was thinking in terms of masonry construction using the then standard 9-inch brick and of stud construction based on a spacing of 16, 18, or 24 inches. In masonry construction, it is easy to see how a window or a door of three, four, or five brick lengths can fit into a brick wall. Bemis' base module is essentially a masonry concept using a hole-in-wall approach, where the wall is made up of a great number of small elements, while larger elements, which are even multiples of these smaller-sized units, are fitted into voids left in the wall. As soon as thinking shifts to larger wall components, the concept of the base module breaks down. How can components that are 7, 10, 11, and 16 multiples of the base module be fitted together, if no products one or two base modules in size are used to cement the larger components together? Bemis originally suggested two dimensions—3 and 4 inches—as having equal merit for use as base modules. The 3-inch base related to the best and most natural sizes for masonry components, and the 4-inch base served well for timber construction. Bemis did not see any way of using these two base modules together and therefore made no decision as to which size would be preferable.

In 1945, the American Standards Assn. chose the 4-inch base module as the U.S. standard system, called "modular measure." Thus, a masonry approach was made to standardization without using the best size for masonry. As time passed, building components increased in size, making it no easier to relate building products of 72, 76, 80, and 84 inches than it was to relate bricks of 8, 8½, 9, and 9½ inches. This has led to difficulties in sizing components on random multiples of 4 inches. Hence, while all multiples of 4 inches are modular, some multiples are more modular than others, leading to the popularity of the 4-foot grid.



The modular number pattern *(above) is the mathematical key to the flexible system of modular coordination devised by Ezra D. Ehrenkrantz. It is composed of three number series: a doubling series (1, 2, 4, 8 . . .), a tripling series (1, 3, 9, 27 . . .), and an additive or Fibonacci series (1, 2, 3, 5, 8 . . .), each of the latter being the sum of the two previous numbers. These series are placed on three transparent plates, as shown, in an ingenious arrangement so integrated that they display all dimensional relationships.*

A study of the plates will reveal how they work. To double, move to the right; to halve, move to the left. To triple, move backward from Plate 1; to third, move forward from Plate 3. To find the sum of two unequal dimensions, or find two unequal dimensions to equal a given sum, add two numbers downward or upward on each plate. These series contain both the 4-inch and 3-inch modules, as well as other useful modular dimensions, and show exactly how product sizes may be related to one another.

By selecting small groups of dimensions from the series that may be combined in a number of ways, the number pattern guides the selection of sizes for product ranges. One method provides a maximum of six sizes, starting with the largest size that may be efficiently manufactured and handled, one half of that, one third, two thirds, and finally the pair of additive numbers in the vertical series having the largest size as its sum.

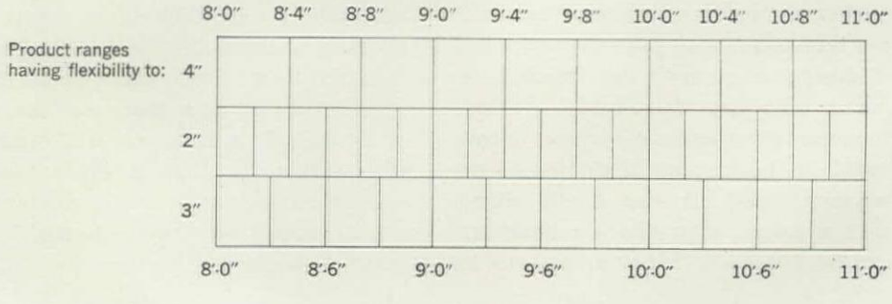
The architectural implications of designing all buildings on a 4-foot grid are frightening.

This supermodule came into being quite naturally. With the selection of the 4-inch module, the brick size was reduced from 9 to 8 inches in length. As bricks are frequently used with masonry blocks, the 18-inch block was also reduced to 16 inches, which soon became the standard stud spacing, eliminating the 18-inch stud spacing that is so useful for doors. Thereupon, larger sheet materials had to be multiples of 16 inches. But 32 inches was too narrow to be practicable and 64 inches was too wide for easy handling, hence 48-inch sheets became the favored size. Once this happened, half this size, or 24 inches, also became popular. Thus, from an esthetic standpoint, the 4-inch module or 4-foot grid, instead of offering a flexible keyboard for design, settled into a rigid system that can only increase and justify opposition to modular coordination.

Toward a flexible system

In painting, the use of only one color—blue, for instance—makes everything a monochrome. Picasso may have had great success with this in his Blue Period, but he moved on to more fertile fields. Simply adding yellow increases the artist's range more than twofold, and adding red on top of this makes the creative bounds limitless. Similarly, if an architect has only one size to work with, such as 4 feet and multiples thereof, his work will obviously become repetitive and dull. If components of 3 feet are added, the designer's flexibility is increased to increments of 1 foot, and the addition of a smaller number of other sizes

Scale showing how 2", 3", 4" increments of flexibility relate to one another.



immeasurably expands his flexibility.

According to the mathematical theory of partitions—mathematical, not building partitions—flexibility is increased by using sizes which do not have a common denominator. For example, the flexibility obtained with three products 4, 8, and 12 feet long is only to multiples of 4 feet, which is also the lowest common denominator. But if products of 3-, 4-, and 5-foot length are used, the flexibility is increased to a single foot. There are 36 sizes that are multiples of a 4-inch module between 4 inches and 12 feet. If all of these are used, the design flexibility achieved is only to increments of 4 inches. This still does not give sufficient flexibility for the design considerations of wall thicknesses and column sizes. If only one additional size in a multiple of 2 inches is added, a flexibility to increments of 2 inches is achieved, as shown in the numerical table on page 160.

There are many combinations of dimensions using two or more modular sizes that can give design flexibility to small increments. Tables similar to the one on page 160 may be worked out for 3-inch flexibility and 4-inch flexibility. While it may be difficult to relate together individual products of, say, 44 and 48 inches, it is not difficult to work with products which have flexibility to 2, 3, or 4 inches. How these may be coordinated is shown in the box scale on page 116.

A system of modular coordination is easily developed containing the considerable flexibility provided by increments of 2, 3, and 4 inches under present conditions of manufacture. Only one non-4-inch size was added to provide 2-inch flexibility in the table on page 160. Similarly, only two additional sizes provide 3-inch flexibility. There are many other examples that can be developed using the present 4-inch modular approach as a basis. Most of the present sizes considered modular would still be modular, but a small number of 2-inch and 3-inch multiples would be added for flexibility.

In turn, a number of 4-inch multiples would be eliminated in order to overcome the difficulty of integrating product sizes that do not mesh, such as 17 and 18 multiples of 4 inches. Of these, the 17 multiple would be the more appropriate size to eliminate, because 17 cannot be divided evenly. By such a selection, all the prime numbers and their multiples would be eliminated in order to obtain a mathematical relationship that would give the optimum conditions of flexibility. The product sizes obtained from this approach would be reduced simply to this master table:

inches	*inches*
1	*three feet*=36
2	40
3	45
4	*four feet*=48
5	54
6	*five feet*=60
8	64
9	*six feet*=72
10	80
one foot=12	81
15	90
16	*eight feet*=96
18	*nine feet*=108
20	*ten feet*=120
two feet=24	128
27	135
30	*twelve feet*=144
32	

This group of dimensions should be considered as the complete stock of dimensions that may be used for all product sizes. By selecting sizes from this stock, one may design to any increment of 1 inch. The full explanation of the flexibility and mathematical derivation of this range of sizes will be found in *The Modular Number Pattern* by the author (published by Alec Tiranti, London, 1956), while a brief note on the system appears on page 116. At first glance, the use of the number pattern may not appear so simple as the use of a single product size or single base module, but the single element that appears to do everything may not in fact do anything well.

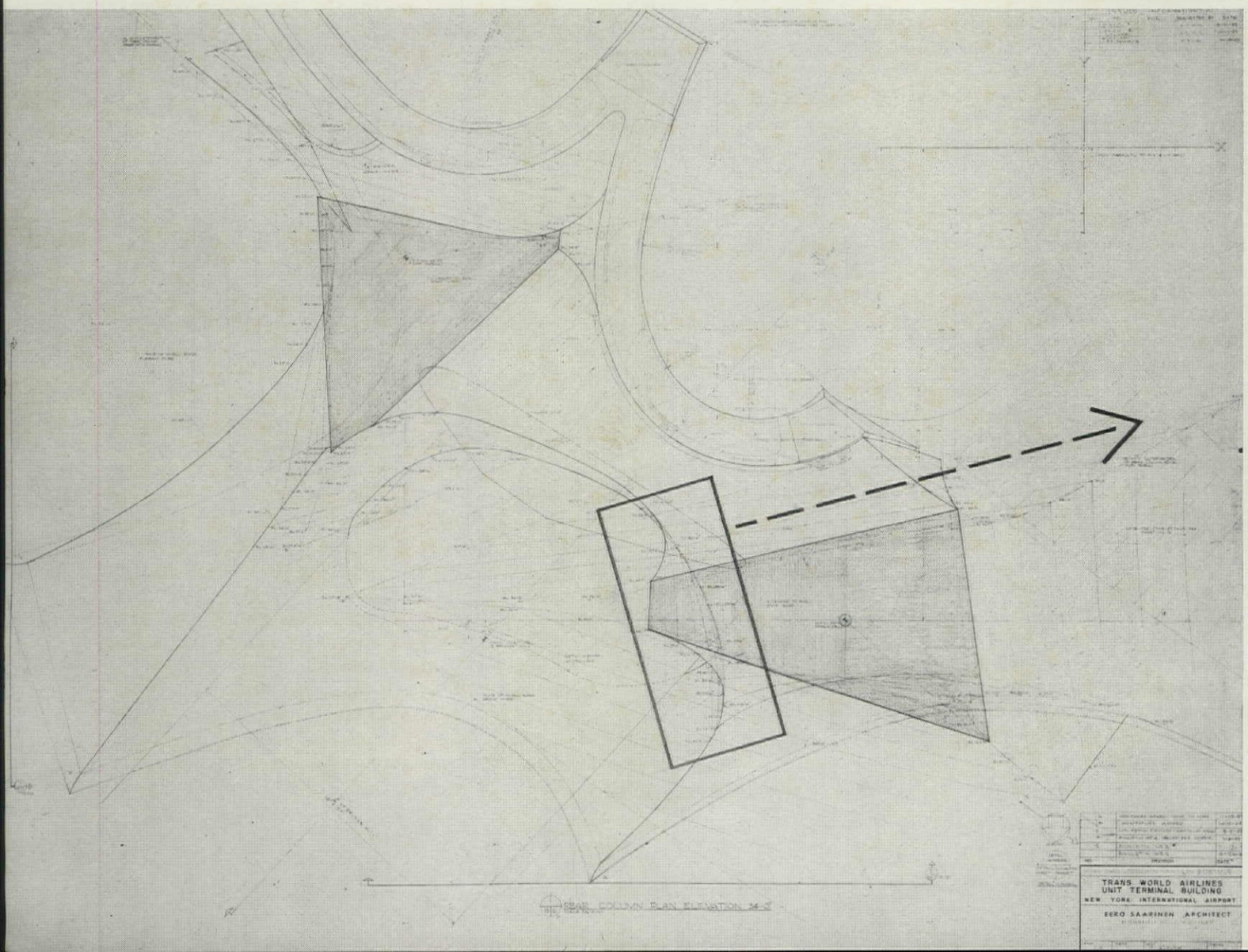
How it works

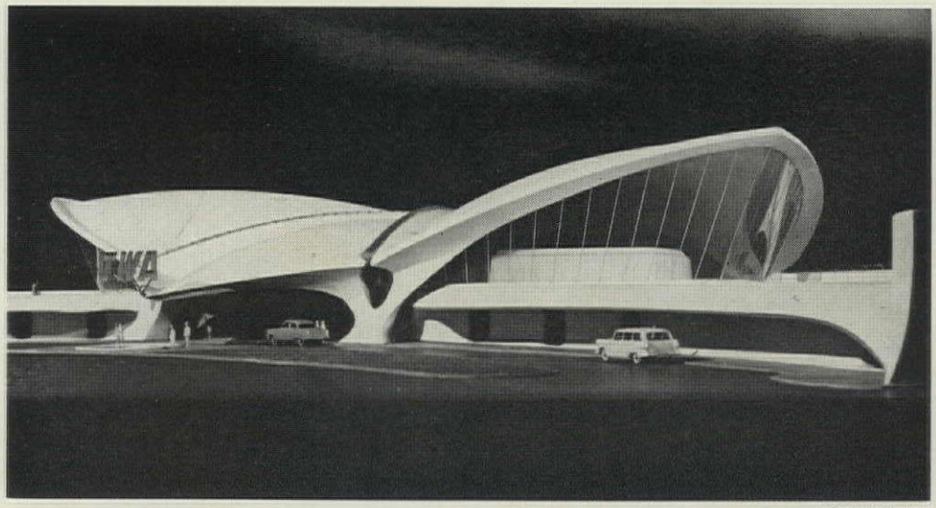
To see how a product range designed on the modular number pattern might work, a study and analysis was made of the standard product sizes made by four major manufacturers of interior movable partitions. All produced panels whose widths ranged upward in multiples from 6 to 60 inches, giving ten different sizes, while one producer had an additional 5-inch product range in multiples from 10 to 60 inches for a total of 19 sizes.

Employing the modular number pattern principles, it is possible to make up from these stock sizes a reasonable product range of 6-inch design flexibility using only six panel sizes, another range to 4-inch flexibility, also using only six sizes, and a range containing 2-inch flexibility using eight sizes. Four of the product sizes in the 6-inch and 4-inch ranges are identical, and the 2-inch range includes all the panel widths used to design the 4- and 6-inch ranges. One example of the design va-

continued on page 160

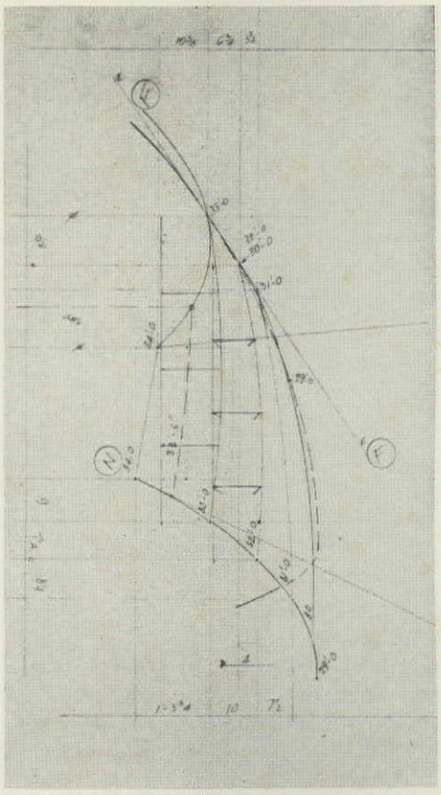
GEORGE ADAMS JONES





BALTAZAR KORAB

Shaping a two-acre sculpture



Stages of form-building: *the work of the contractor began with architectural drawings of a special type (left); this is a contour drawing of one of the building's four buttresses, indicating the shape of the sculptured buttresses at 1-foot intervals. From it, the contractor made some 200 drawings, to be used by the carpenters in building the forms. A typical form drawing is shown above. Working with these and with assembly drawings, the carpenters constructed the buttress formwork, as shown in the photo (left, above).*

The art of form-building stands out at Saarinen's new terminal for TWA.

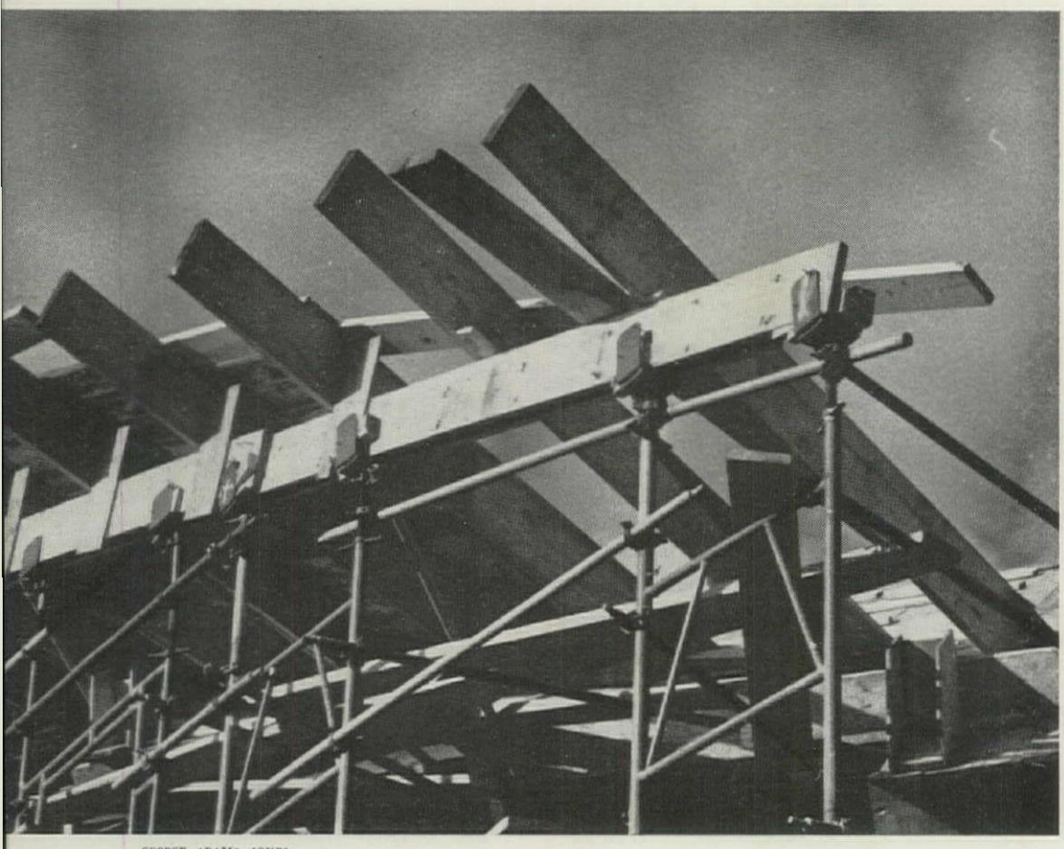
How does a contractor actually build a "free-form" building, shaped like a big bird? The new TWA terminal at Idlewild Airport, by Architect Eero Saarinen, has a shape so much like a huge piece of sculpture that the problem of constructing it was unprecedented. In fact, not even the architect or the structural engineers, Ammann & Whitney, were able to start the job with conventional drawings. Rough working models came first. For example, the reinforced concrete buttresses, which will support the 6,000-ton roof, were first shaped in wire and cardboard. "Then," Saarinen explains, "we were able to make drawings of what we actually had."

Since accurate drawings, with dimensions indicated, are ultimately the only practical guide that can be given to building workmen, the problem of translating the three-dimensional vision, first from models into architect's drawings, then from contractor's drawings back into three-dimensional construction, was phenomenal.

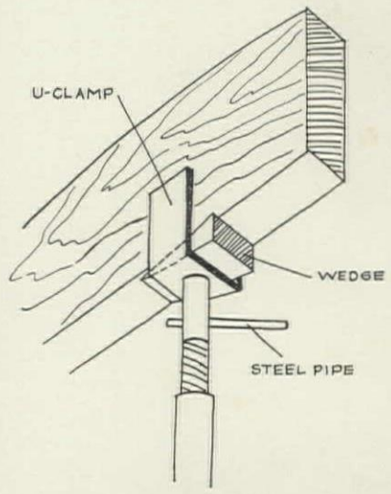
This is the story of the remarkable contribution made by the contractors, Grove Shepherd Wilson & Kruge, in working out the ultimate drawings—and with them the techniques—from which such a building can be built.

The fact that the contractors were obliged to produce literally hundreds of their own drawings does not mean that the architect's work was skimped. Not only did the Saarinen office supply some 130 architectural and structural drawings, but these, as typified by the large example opposite, were of a new and special sort. This one, for instance, shows a section of one of the four buttresses, and it contains all the information needed by the contractor to design and install the formwork in which the buttresses are shaped. Note that the drawing is not simply a plan view of the buttress but rather a view of a chosen horizontal section cut through it. This is supplemented by contour lines which indicate the progressive shape of the buttress at 1-foot intervals. Conventional plan and elevation drawings would not have given enough dimensional information. The Saarinen drawings were essentially contour maps of each of the building's major elements. In all, their production required some 5,500 man-hours of work.

From these "contour maps," the contractor had to develop still more elaborate drawings to show every rib and connection for the actual formwork needed to hold up the concrete on the site. This meant collecting the data off the architect's drawings and making further elaborate computations.



GEORGE ADAMS JONES

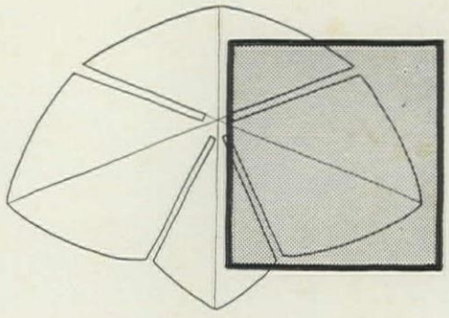


Building the roof: *the roof forms are supported on a conventional scaffold grid system. The photo and sketch (above) show the method of joining scaffold and roof stringers; U-clamps, atop steel-pipe scaffolding, carry the form's stringers. Prefabricated wedges fit between the stringer and the base of the U-clamp.*

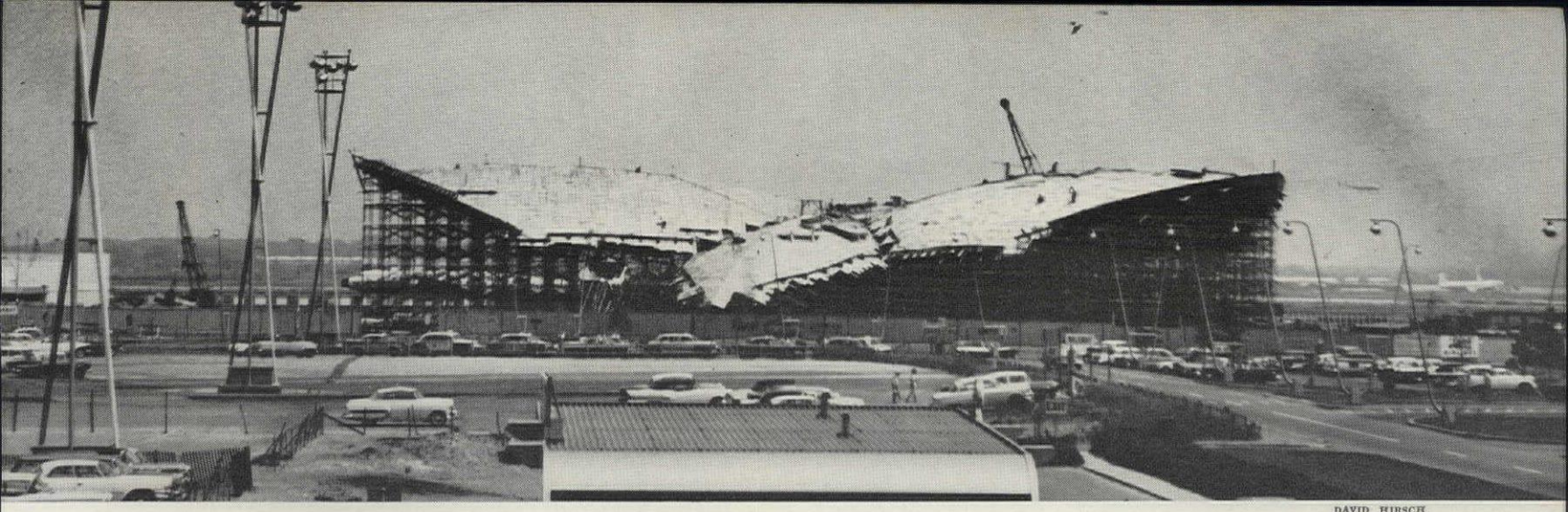
It also meant that the step-by-step process by which these forms could be put together had to be kept in mind. Curiously enough, the important art of form-building is neglected in building literature. There are few books on the subject: contractors pass the knowledge from mouth to mouth.

Grove Shepherd Wilson & Kruge broke the job down into four basic procedures, as shown on this page. First, the area under the shell was built up with steel-pipe scaffolding, such as may be seen surrounding many a new building structure, but in this case the verticals were most accurately placed on a specially designed grid system. Within this grid are some 1,800 supports made up of some 5,500 tubular scaffold frames—4,000 standard tubes, each to carry a load of 6,500 pounds, and 1,500 heavy-duty tubes, each supporting up to 10,000 pounds. Second, atop each vertical of the scaffold was placed a U-clamp or stirrup, suited to holding the ribs and beams of the form. The height of each tubular support had to be calculated and fixed with the utmost accuracy, for the ultimate elevation of the roof shells depended upon the correct placement and height of each of the 1,800 tubular supports. Third, these ribs and beams, calculated for curvature and reduced to standard lengths for easy handling, were laid with the help of prefabricated wedges so as to fit firmly on the stirrups. The adjusting wedges numbered more than 2,500 for all four shells, in 27 different shapes. Fourth, ordinary wood sheathing was nailed atop these ribs with no further ado, except that some boards had to be cut on the slant and some kerfed and soaked to take the stronger curvatures.

All these procedures were figured out so closely as to allow not more than ¼-inch deviation from the architect's plans—a process which called for a whole book of computations, supplied in part by a computer company and in part by the project engineers at the site, ending up with neat columns of figures translating everything into feet, inches, and fractions in multiples of ⅛-inch. This complex procedure was carried out by the contractor, aided by a resident architect, and the whole was executed with surprising finesse by carpenters hired straight out of the hiring hall and possessed of no special skill. They were



Scaffold grid system: *sketched above is a plan view of the building, indicating the outline of the four roof shells. The area in the shaded square is enlarged in the contractor's drawing (right), which shows a section of the scaffold grid system and the points of support along the front stringers. Each of these points—more than 30 for each arch, some 1,800 in all for the entire roof—was determined by computer and by engineers at the site, then adhered to with the utmost accuracy when the scaffolding and roof forms were put into place. The photo (above, right) shows the maze of scaffolding required to carry the roof forms. The building's reinforced concrete roof will weigh 6,000 tons. Most of the tubular frames within the scaffolding have a capacity of 6,500 pounds each; others, some 1,500 tubes of a heavy-duty type, will support 10,000 pounds.*



DAVID HIRSCH

309

BUTTRESS FORM

LEGEND

STANDAR

HEAVY DUT

PIPE

STRINGER

SHEATHING

R185

WEDGE

SCAFFOLD GRID SYSTEM

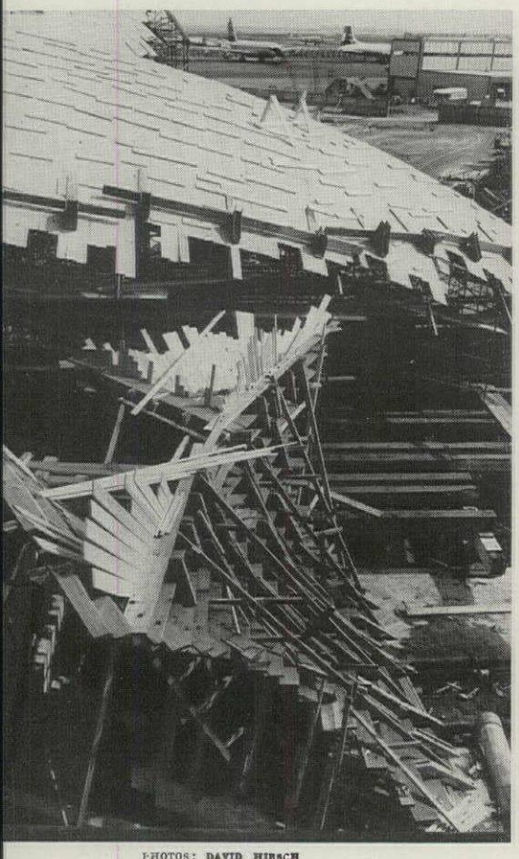
DETAIL OF HALF ARCH

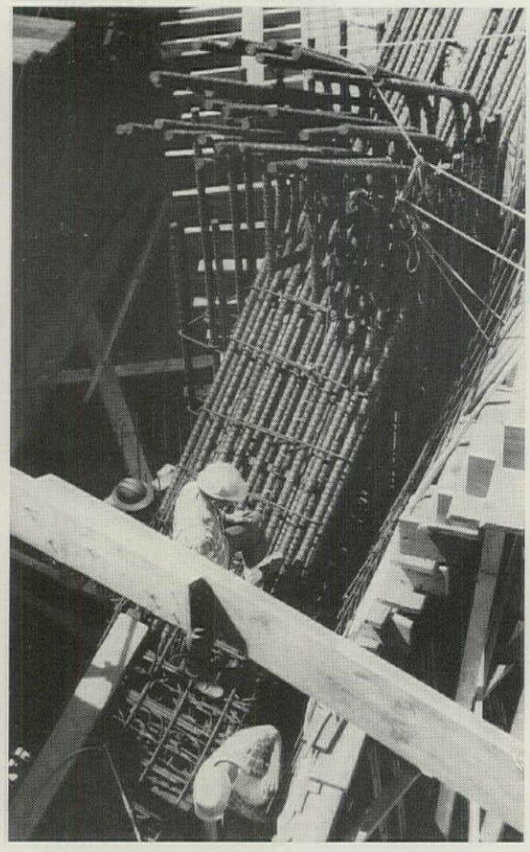
PLAN OF HALF ARCH

SIDE SHEL

NOTES

1. LAYOUT IN THE VI
WILL BE SHOWN
LAYOUT
2. HORIZONTAL PIPE
AS SHOWN IN





PHOTOS: DAVID HIRSCH

Buttresses *presented the most difficult forming problem. Shown at the far left is the formwork for the left-front buttress. Most of the buttress formwork was preassembled at the site, then lifted into place. The photo at near left looks down into the buttress, showing the tightly packed steel reinforcing rods which were inserted in a predetermined sequence.*

Front of terminal: *forming for one of two front buttresses stands nearly complete at juncture of roof's left and front shell. Concrete will be poured in the base of the buttress, then in the transition area between buttress and roof and, finally, on the roof itself.*

Rear of terminal: *the formwork for the rear buttresses was more difficult to design and install, because of the tunnels (one of which is shown in the photo, right) which will extend from the terminal building through the rear buttresses, and out to the ramp houses, where passengers will enplane. Along the side shell (at left in photo), an edge beam is seen beginning to take shape; note the scaffolding holding stringer beams in place, with ribs extending out over the stringers. Edge beam framework, in more finished form, is seen in the upper photo (right), just beyond the front shell.*

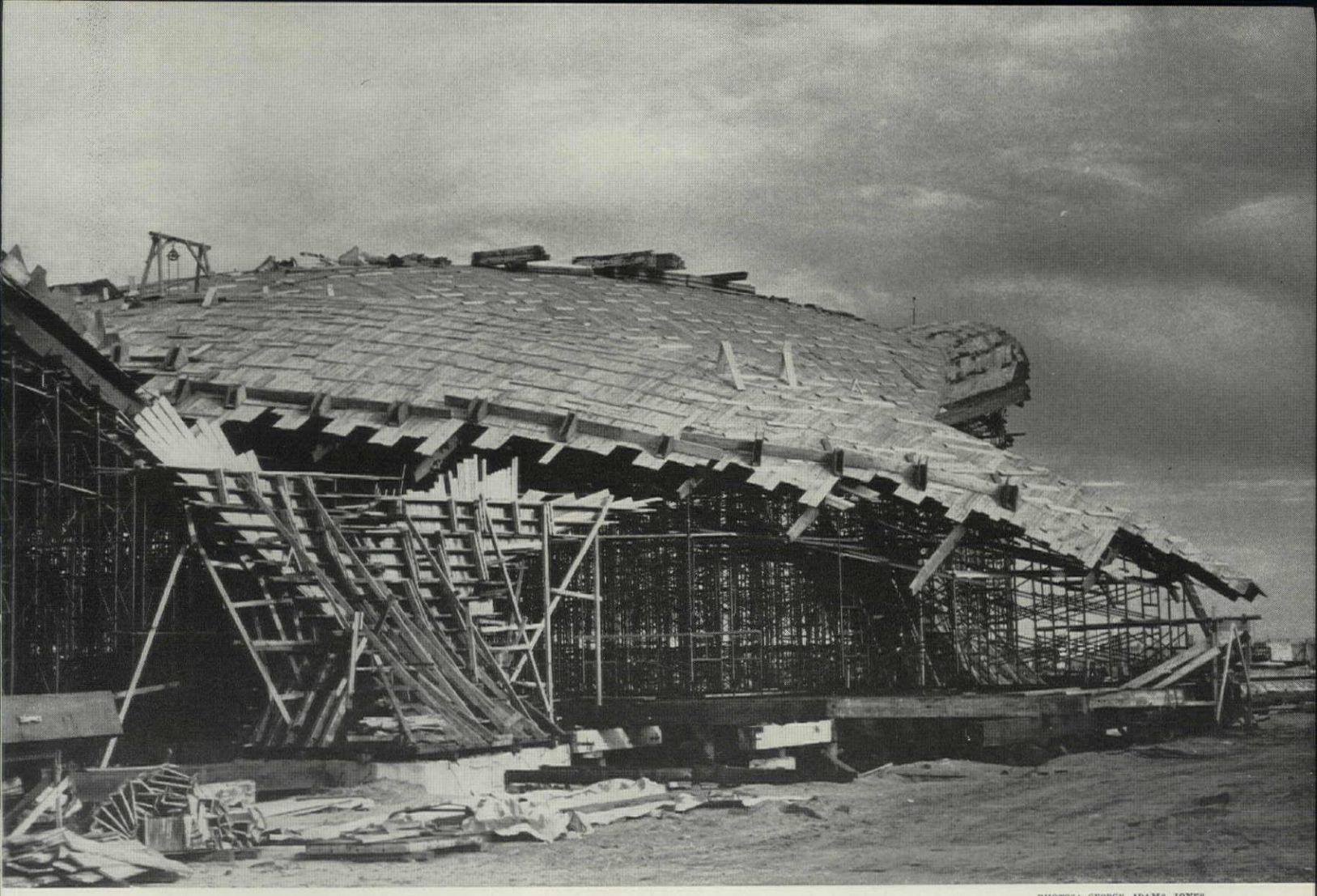
stirred to enthusiasm, however, by the prospect of being able to see, for the first time perhaps, their own individual work in the completed building as it was uncovered—something that virtually never happens with formwork.

The design of the formwork for the four supporting buttresses was even more complex because of the complexity of shapes. Actually, separate drawings were first made of the buttresses' 400 framework panels, requiring some 200 drawings, then more than a dozen assembly drawings were made to guide the carpenters in putting the forms together.

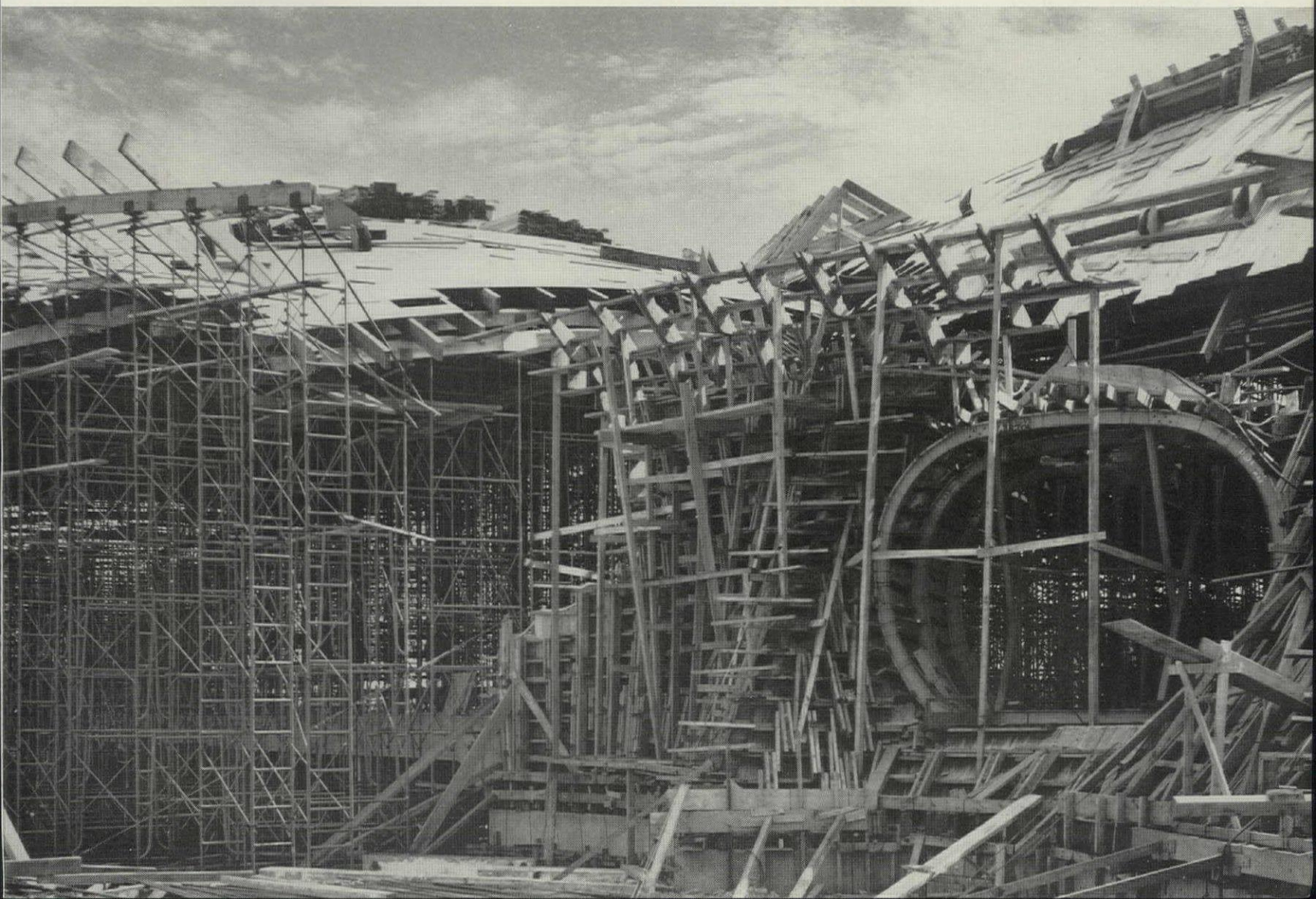
The roof concrete, a lightweight type (110 pounds per cubic foot), thickens from a depth of 7 inches next to the edge-beams to about 11 inches along the crown, and to about 40 inches at the juncture of the four wings of the building. At the buttresses it is about 3 feet thick. The buttresses are stone concrete. In the four transition areas, where the steel reinforcing must be sufficient to transfer the roof's 6,000-ton dead load down into the buttresses, the steel rods from the roof had to be so closely placed that a specific order of insertion had to be followed in crowding the rods together in the 35-inch-wide sections.

In a few weeks, this massive piece of concrete sculpture will be unwrapped. The wood forms will be carefully and progressively withdrawn and the maze of scaffolding will disappear from beneath the 2-acre concrete roof. What will remain—the graceful integration of 700 tons of steel and 4,000 cubic yards of concrete—will be hailed by many as symbolic of the bold architecture attainable when imaginative client meets imaginative designer. Others, to be sure, will worry that the building is "too heavy and elaborate for the problem it seeks to solve," as Pier Luigi Nervi has already observed. But few will ignore this building: its daring form and busy site defy oblivion.

One point which may be overlooked, however, is the skill and resourcefulness of the contractor and the splendid workmanship of the carpenters. The structure they have helped create must be regarded as a symbol of craftsmanship—a word seldom heard in building these days.



PHOTOS: GEORGE ADAMS JONES

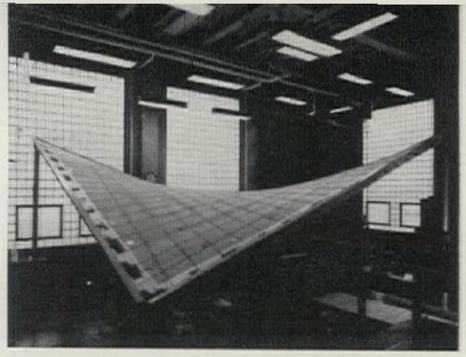


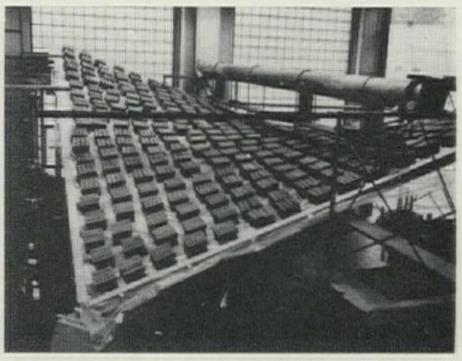
Plastic forms for shells

How fast the technology of thin-shell construction is developing is illustrated by this entirely new method, developed at Purdue's School of Civil Engineering, for constructing thin shells with a minimum of formwork or, in some cases, no formwork at all. The technique was perfected in the short time since the design was set for the thin-shell TWA terminal at Idlewild Airport (page 118), which was built on more or less conventional wooden formwork.

The new method uses foamed plastic planks as a form for the sprayed-on concrete. When the concrete cures, the planks remain bonded to it, providing a permanent insulation and vapor barrier. The photographs show the technique applied to the construction of an experimental 20 by 20 foot hyperbolic paraboloid. First, wire lattices—above and below the plastic planks—are strung across a peripheral frame, the only "formwork" used. The wires are tightened, causing the roof to warp into its hyperbolic-paraboloid shape. When the warped form is loaded with concrete (the bricks in the laboratory test—photo, right—weigh 19.2 pounds per square foot, equivalent to 2 inches of lightweight concrete), maximum deflection is less than 3 inches. A ¼-inch-thick skin of mortar, applied to the top surface before the load is imposed, reduces deflection to ½ inch.

The Purdue experiment was carried out under a grant from the Plastics Technical Service of The Dow Chemical Co., which provided the planks of foamed polystyrene, Styrofoam. Looking to the future, the engineers see a variety of possibilities in combining foam planks and concrete, such as the assembly of eight hyperbolic paraboloids into a spherical shell (right) and the construction of a scalloped dome (right, below). Another possibility is the placement of foam planks over sculptured earth, casting reinforced concrete atop the planks, then lifting the finished roof into place.

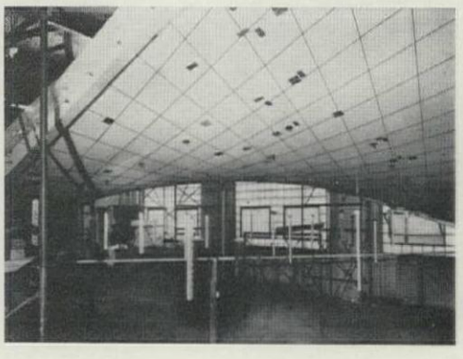


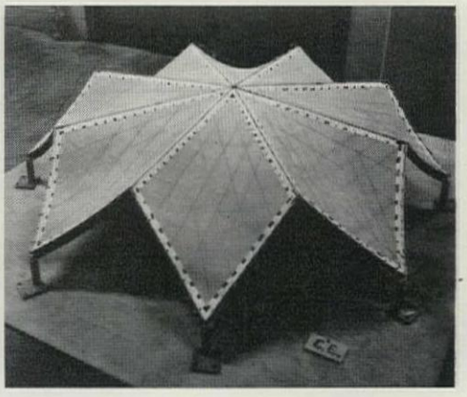


Technique: *the first problem facing the Purdue engineers was to find a method for supporting the foam boards. The solution was a double lattice of wires—one set above the boards and the other below. Instead of being strung straight across the panel, the wires were offset some 3 feet, thus setting up a system of opposing forces between the two lattices. As the wires were tightened, they held the boards in snug alignment and warped the flat square form into a hyperbolic-paraboloid shape.*

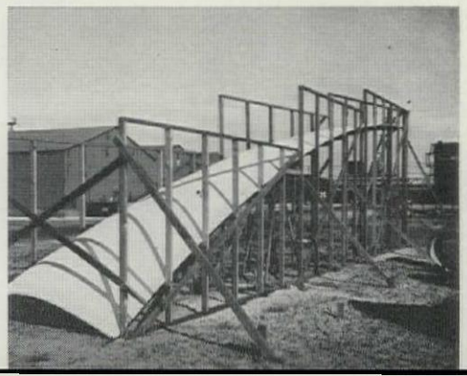
The foam boards used in the model were 3 inches thick, 2 feet wide, 8 feet long. To fit them tightly together, a system of higher-density foam-board wedges was placed around the edges of the shell, inside the edge beams. The boards themselves were aligned by sheet-metal clips.

After testing the structure, the Purdue group concluded that "this is a highly satisfactory, relatively simple, and inexpensive technique for providing large unobstructed spaces under a graceful and attractive roof structure."





New shapes: *the Purdue engineers are now considering adaptation of the forming system to other structures, such as a spherical-type shell (right), composed of several truncated and skewed hyperbolic paraboloids. At the present time, the technology of this construction is not sufficiently developed for use in structures like Saarinen's TWA terminal. However, similar foam boards are being used in a more limited way at TWA: as insulation within the corridors extending from the terminal to the loading areas.*



Scalloped dome: *another application of foam boards is the scalloped-dome roof, a section of which is shown at right. Here, a series of foam boards is arched in place before spray concrete is applied. A 100-foot-diameter roof would be made up of 32 sections.*

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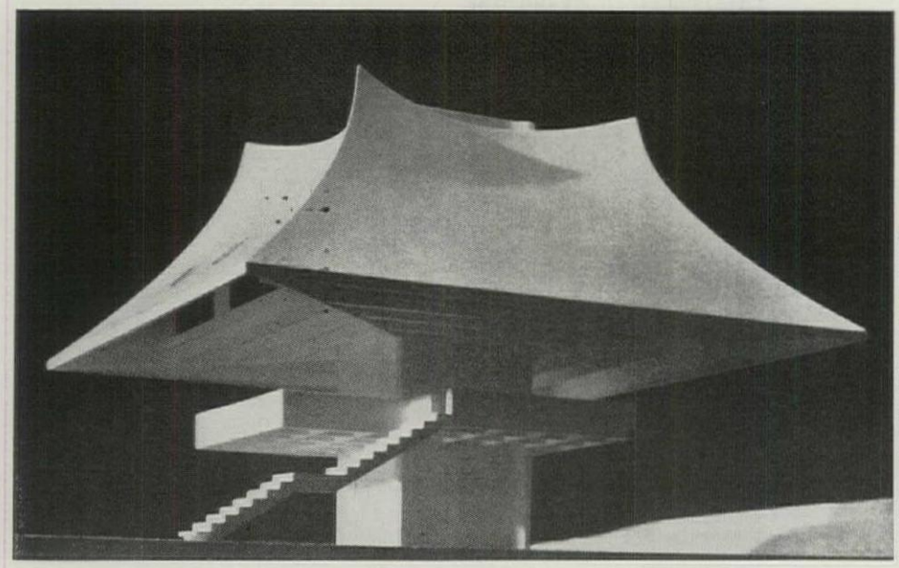
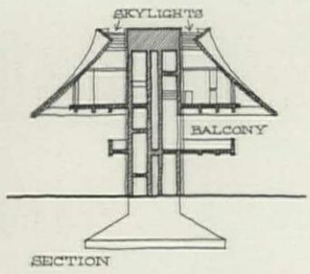
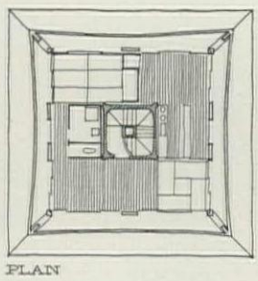


EITARO TORIHATA, COURTESY "KOKUSAI-KENTIKU"

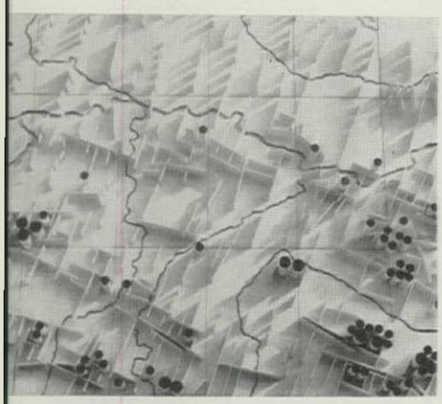




JAPANESE MUSHROOM

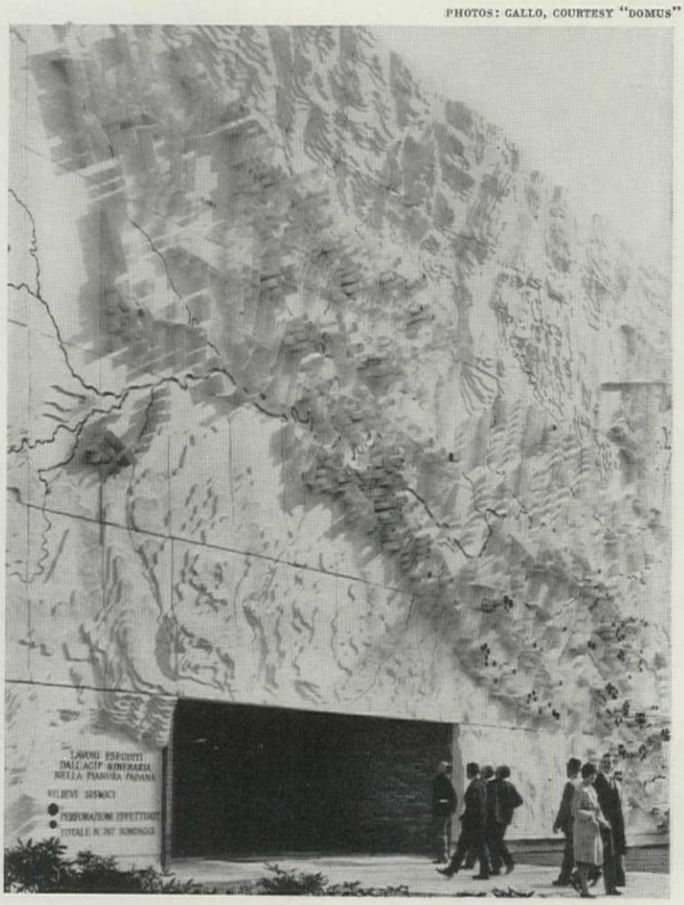
Architect Noriaki Kurokawa, a protégé of Japan's Kenzo Tange, is building this mushroom-shaped house for his family. Because of recent floods, as well as the continuing need to preserve arable ground area in Japan, Kurokawa reasoned that building in the air was necessary. The house is set on a 14-foot concrete column; stairs run up to a balcony from the outside, proceeding into the house through the center of the column. The house, 42 feet on each side, is lighted primarily by a skylight fixed between the central column and the concave concrete walls (see section, above).

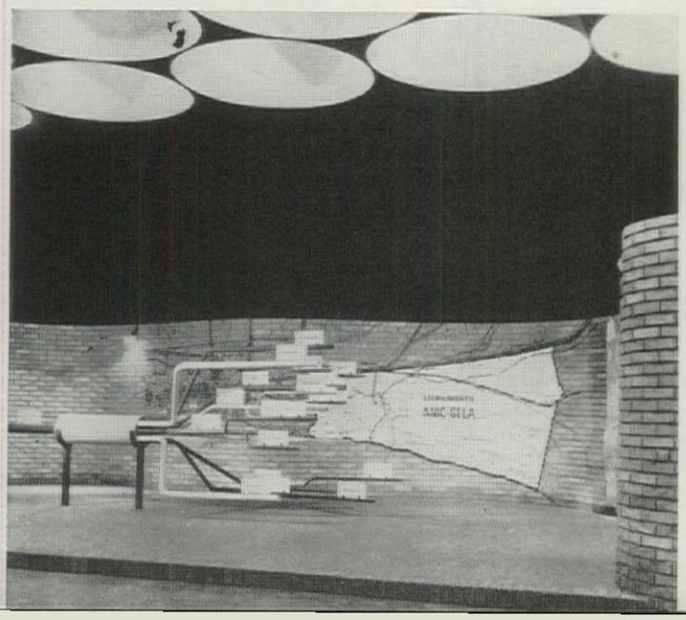
PHOTOS: GALLO, COURTESY "DOMUS"



ITALIAN RELIEF

For this year's Milan Fair, the National Oil Authority (E.N.I.) has built a cube-shaped pavilion whose façade (photo at right) is a giant-scaled relief map of the Po Valley. When seen closer to (left), the blue and red-tipped tubes can be recognized as wells punctuating the valley's topographical structure. Within the pavilion, Architect Errico Ascione has devised brick-walled display booths.

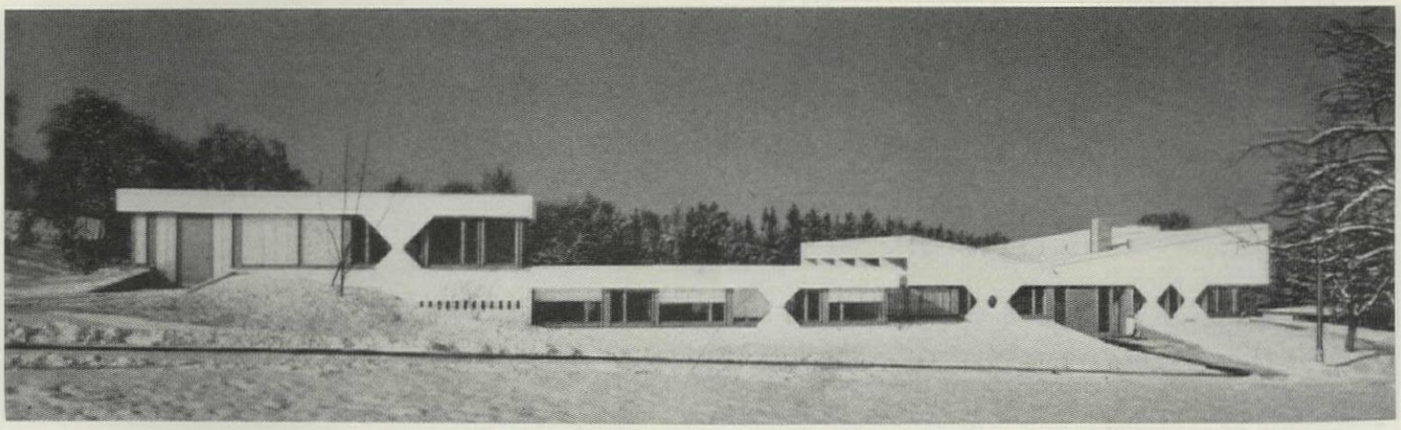




COURTESY "HOCHTIEF NACHRICHTEN"

GERMAN ATHLETICS Essen's new, 8,000-seat sport and assembly hall, built on the foundations of a smaller hall destroyed during the war, is actually four separate constructions: the playing field and stands; the two end additions (one of which, visible in the photo above, is used for a restaurant); and the roof. Architects Brockmann & Lichtenhahn, with Engineer Helmut Pfannmüller, assembled the roof on the floor of the hall, raised it by hydraulic jacks. The two main longitudinal beams of the roof rest on central columns at either end of the hall; the wing-tip edges are cantilevered out for a total span of 250 feet. The interior result is a vast columnfree space in which spectators can ignore the structural athletics.

PHOTOS: COURTESY "WERK"



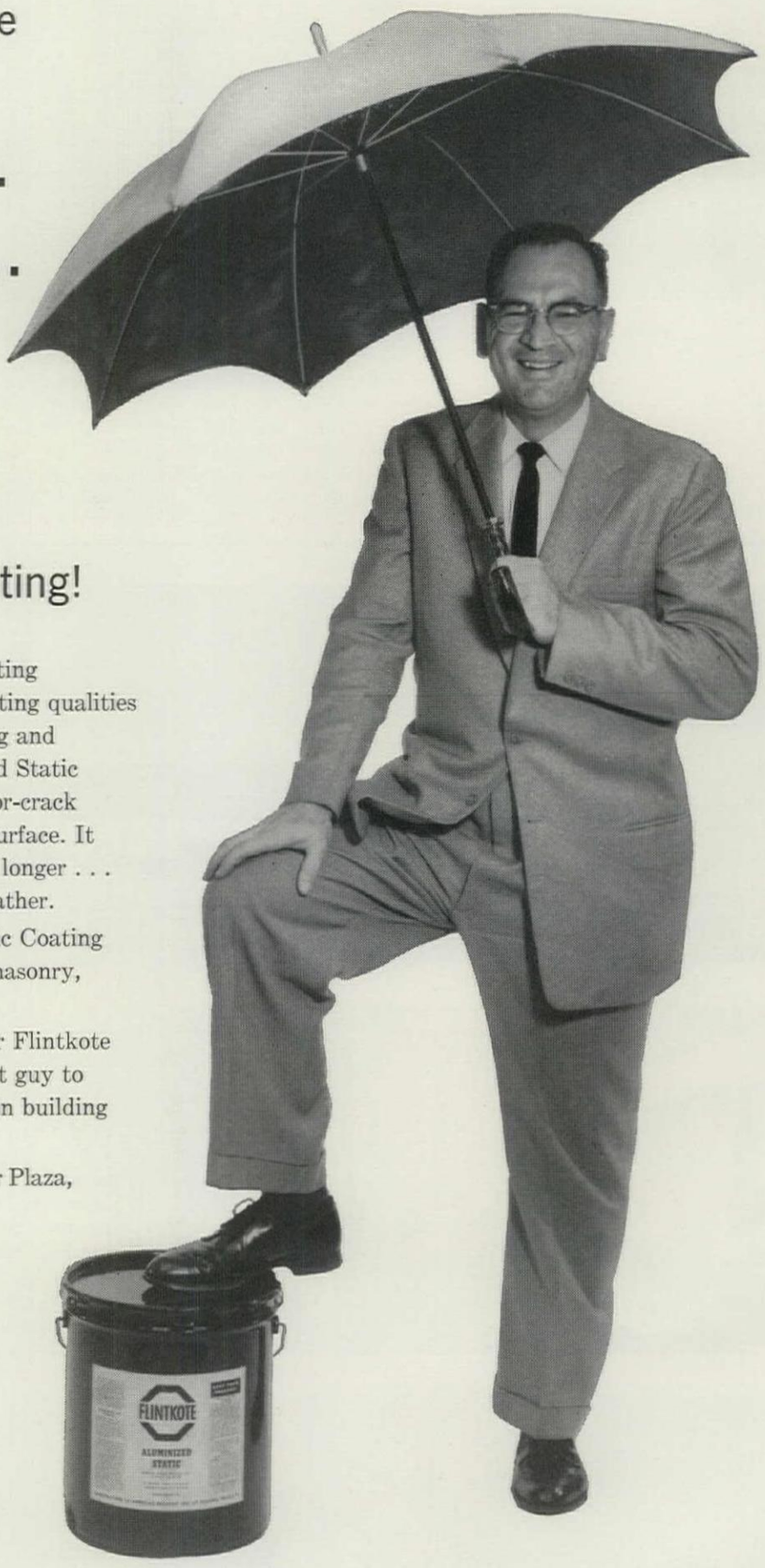
SWISS DIAMONDS

Outside of Zurich in Gockhausen, Switzerland, an artistic community is being created of which this many-leveled studio is the first building. The studio, designed for an advertising agency by Architect Rudolph Brennenstuhl, steps gradually downhill, following the north slope of the land. The upper portions are for reception and conferences, then come business offices, finally the studios and drafting rooms. The shields around the north-facing studio windows (below) keep out all direct light; the pervasive diamond-shaped design of the building holds it together despite its several functions. Other structures now built or being designed for the exurban community are an architect's home and office and workshops for painters, craftsmen, and sculptors.

Flintkote Built-Up
Roofing Representative
Tony Plonski says...

"Let it rain... let it storm...

No other known form of bituminous roof coating—when exposed to weather—will outlast Flintkote's Aluminized® Static Coating!



"Aluminized Static is a protective coating that gives all the high reflective insulating qualities of aluminum—PLUS the waterproofing and durability of asphalt static. Aluminized Static can't burn . . . doesn't stain or alligator-crack over any normal type of asphalt sub-surface. It retains its brilliance for five years and longer . . . and won't flow even in the hottest weather.

"Protective, long-life Aluminized Static Coating can be used—beautifully—on metal, masonry, glass or asphalt-covered surfaces."

For particulars and literature, see your Flintkote Representative. You'll find he's a great guy to work with . . . and he knows his stuff in building materials.

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- **Versatility.** TRANE Unit Ventilators provide just the type of system needed. Five basic types to meet the requirements of any school, any climate. Same space-saving cabinet used for all types.
- **Exclusive *Kinetic Barrier* Action.** Provides continuous powered ventilation and heating or cooling from room-wide outlets. Eliminates window downdrafts, sleepy corners . . . provides an ideal climate for learning all day long!

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The new TRANE Unit Ventilator is 21% thinner than other makes of heating units . . . 29% thinner than other makes of heating-air conditioning units. (Other makes of units are as much as 16⅜″ deep.) Same space-saving cabinet design is used for all systems—water, steam, electricity.

Waialae Bowl, Honolulu, Hawaii/Architect: Takashi Anbe, A.I.A.

"Yes...this is a 'packaged' building...

but we recommend that clients retain an architect"

The franchised contractors who construct Butler "packaged" buildings also actively *sell* them. As a group, these independent Butler Builders are seasoned craftsmen in the construction business. They have learned to properly evaluate the contribution of the architect to Butler construction, and understand the ethics of the profession.

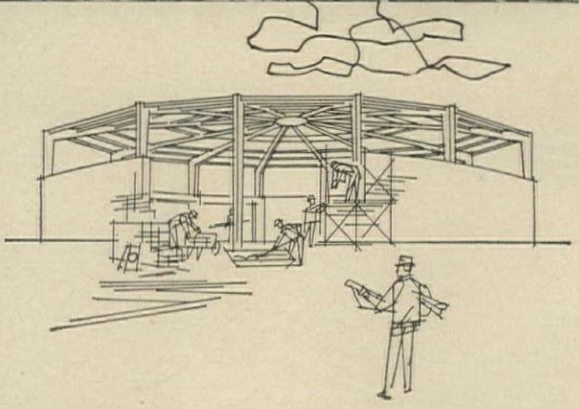
Where Butler structures are not merely utilitarian, Butler Builders recommend that their clients retain an architect . . . that is, unless all nearby architects are simply not interested.

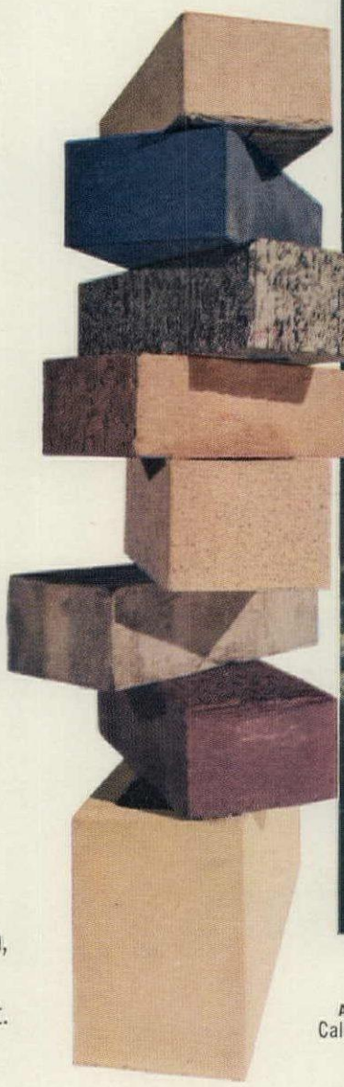
But architects *are* interested—in far larger numbers than you might imagine. The good and satisfying ways in which they have designed on the basic Butler structural, roof and wall systems are astonishingly diverse and individual. We at Butler encourage this association, and predict that it will grow at an accelerating speed in the near future.

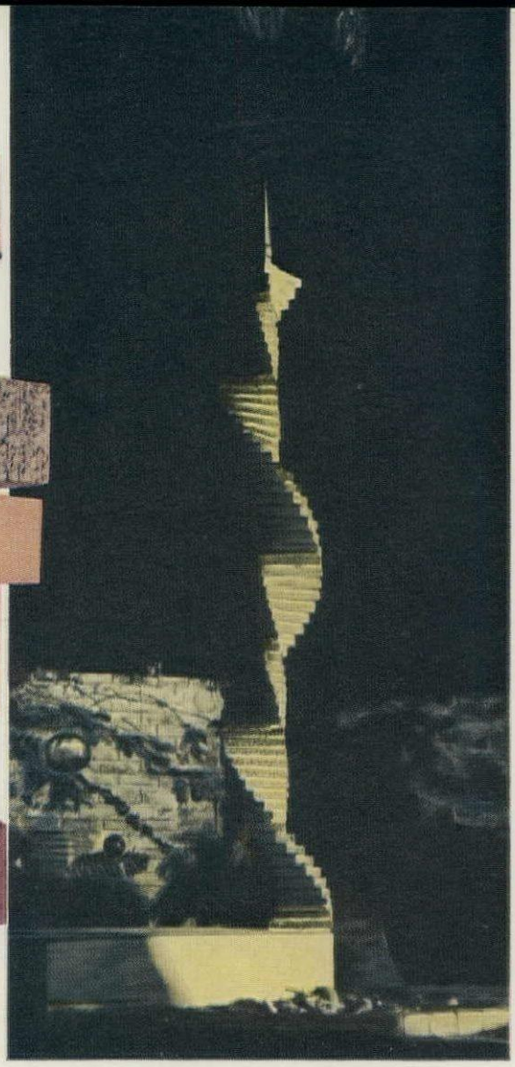
The share of market enjoyed by Butler "packaged" buildings is significant today. Yet this young industry is only on the threshold of its technical possibilities. But we are not the advocates of canned design. A nation of individuals can only express its spirit adequately through individual design genius.

Accordingly, we invite you to contact your nearby Butler Builder, and have him call on you at your convenience. We promise you that you will find his building system a useful tool in the construction of business and community buildings. He can help in financing too. Or write direct to Butler Manufacturing Company, 7336 East 13th Street, Kansas City 26, Missouri.

Charles B. Ferris and Associates, New York City, used Butler rigid frames in this structural spider web to effect substantial cost savings for the gymnasium-auditorium, St. Pius X School, Plainview, Long Island.





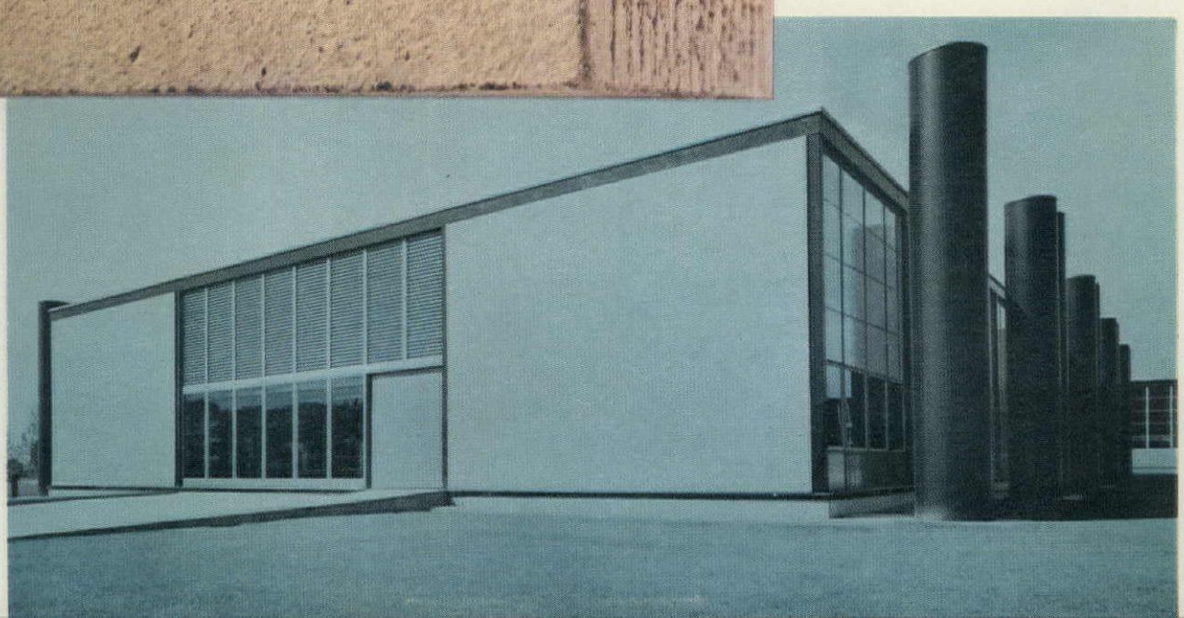


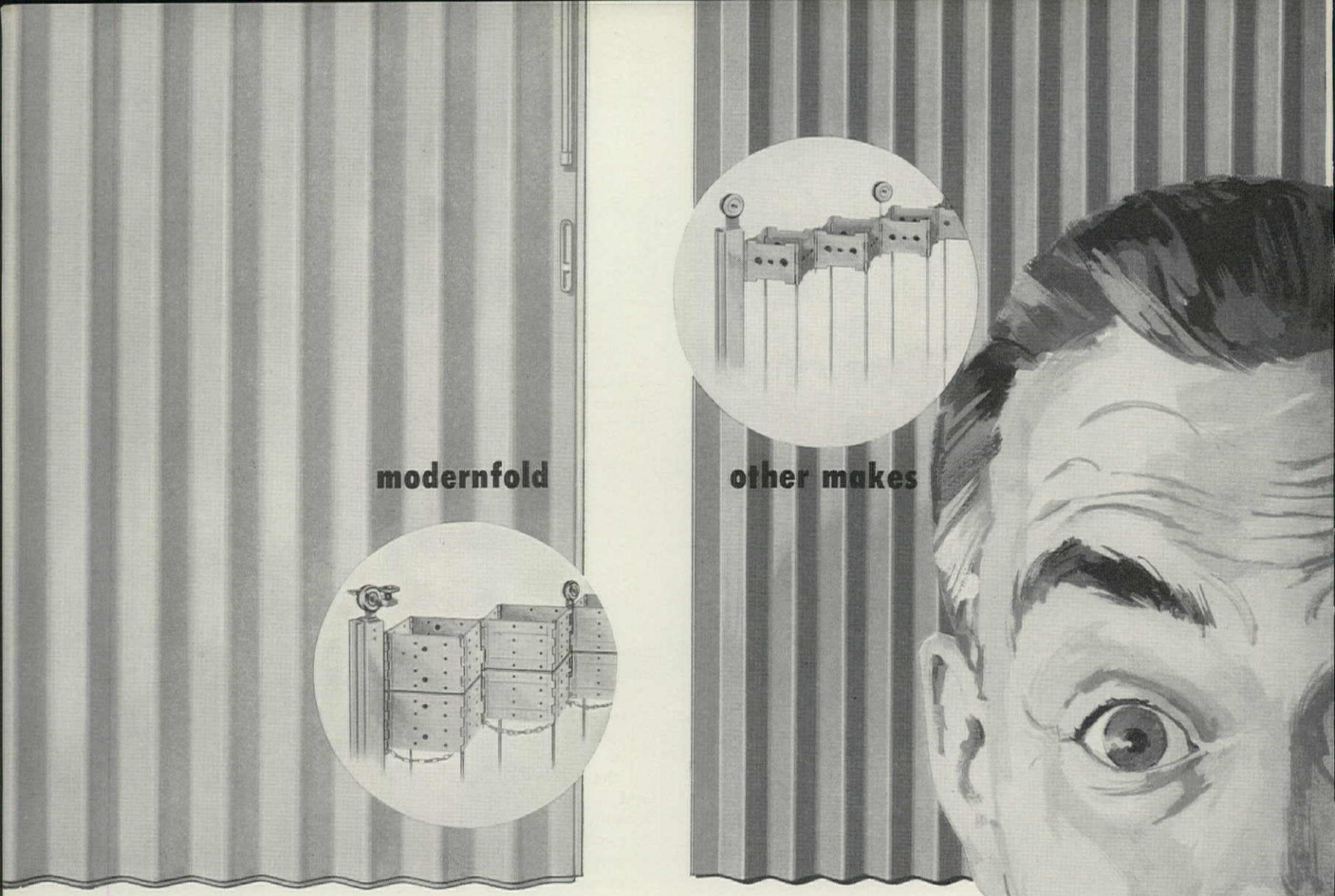
COMMODITY
FIRMNESS
DELIGHT

Commodious as industry, delightful as levitation, the beauty, enduring strength, and infinite flexibility of brick and tile are expressed eloquently through timeless art. Form changes; the Vitruvian principle remains.

ARTISTS AND THEIR WORKS: Free-standing sculpture, California State Polytechnic College, student project under George Hasslein. General Motors Technical Center, Eero Saarinen and Associates, Architects.

Structural Clay Products Institute
1520 18th St. N.W. Washington, D.C.





You mean they're both heavy duty?

• There's no mistake. They're both listed as "heavy duty." And that's ridiculous. The whole trouble is that no one ever set up a yardstick for folding partition specifications. Anything heavier than standard is called heavy duty.

We think heavy duty should mean just one thing: a partition designed and built . . . from top to bottom . . . to handle all the stress, weight and abuse you get on big jobs. That's our yardstick. And we've spelled out ten particulars. We've pinpointed what a partition needs to be heavy duty. We've illustrated what we offer. And what competition offers. All in a four-page book that's yours for the asking. Just fill out the coupon below.

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THE DIVORCED AMERICAN

Ian Nairn, assistant editor of the "Architectural Review," recently wrote an examination of the U.S. scene for "Punch" in which he tried to diagnose the real "disease of the American environment." But what he came up with is more like a diagnosis of all the world's (including Great Britain's) automobile-dominated metropolises.

No country in the world is doing much to unify architecture and town planning, to build an environment that really expresses the life in it. But in the U.S. the divorce of habitat and inhabitants seems almost total.

The issue is complicated by what seems to be a sadly typical American pattern, that of building a superb building in a new style at the first attempt, and then not bothering to experiment any further, or even to profit from the merits of the lone swallow.

The outstanding example of this singular and strangely sterile sort of splendor is Gordon Bunshaft's Lever building in New York. It was the first of the curtain-wall slabs, built in 1951. It was humane, elegant, beautifully proportioned and detailed. And nothing nearly so good has been put up since, even by the same firm. There have been imitations aplenty, but evidently nobody has thought to imitate in quality as well as in quantity. All that happens now is that the architects simply order so many bays of Number So and So from the catalogue, and curtain-wall manufacturers make the operation even easier by providing special bays to get over the little bits that may occur at the ends of awkward sites.

Something similar has overtaken all the new structural forms that ingenious engineers are bestowing upon architects. The novelties are used seriously once or twice, taken up en masse for a year or so, then thrown away for the next fashion, all with their true qualities unexploited, yet with the form so debased by repetition that nobody can ever use it again with freshness.

Wright, the only architect to take hold of the imagination of the American public at large, is an enigmatic disappointment. His late buildings, like the Price Tower and the Guggenheim Museum, seem to have been built in spite of both man and materials—oddly enough, coming as they do from the protagonist of organic architecture. Saarinen, alas, is another disappointment.

Much of the best American architecture never gets into the public eye at all. There are the real wild men of architecture, too wild for the magazines to handle—but not poseurs—accepting with both hands the really marvelous variety of forms and materials which technology has made available, and putting up buildings as exciting as any in the world. I have seen the work of only one, Bruce Goff, and his architecture is very wild and very good indeed. There is Louis Kahn, whose work displays naturally and from inside all the excitement and personality that Saarinen has had to apply externally. And over a huge area of America there are the entirely anonymous barns and other agricultural buildings, each one with the precision and solidity and elegance that most architects take years to achieve. The barns were my biggest and pleasantest architectural surprise in America, and they helped to keep me sane on the superhighways.

I am inclined to think that the diseases of the American environment are a disaster of the same magnitude as an H-bomb explosion—but, alas, far more subtle. All we shall see, and we are seeing it already, is a smoothing down into sameness and monotony and unrelatedness of every type of human activity, and hence slowly, gently, insidiously, of people themselves.

METROZENS?

Those who try to speak the rather private language of urban development have a new word to learn. It was contributed to the vocabulary by ACTION Chairman Roy W. Johnson writing in "The Inland Architect.

How can a man give due allegiance both to the mother city that gives him his livelihood and to the community where he lives and brings up his family? Businessmen must think beyond municipal boundaries for their markets, for raw materials and supplies, for personnel. Can we not look to this kind of thinking in the operations of business for the affairs of the city? Perhaps we should coin a new term for this citizen of the metropolis and call him a "metro-zen."

HOW TO CUT SCHOOL COSTS

In looking for a formula for reduction of educational costs, Pennsylvania Architect Herbert H. Swinburne made a quixotic point: to build higher-production, higher-cost schools is perhaps the only way to make significant savings.

School costs have not advanced as much as the costs of other forms of construction. This is due to the dedicated energy

continued on page 148

of all of those involved in school planning and building to keep costs down.

Considering a state-wide program, no significant reduction in school costs is going to be made on a square-foot unit-price basis. Using different materials, or different structural or mechanical systems (assuming the quality of a consistently well-built school), will cause a cost fluctuation of only minor proportion. The same is true if the cost of construction is related to the student.

But lump together these costs: construction, teacher salaries, administration, and operation. And arrive at a figure of unit cost per student projected over a period of several years. This is the real test of how the cost of a building dovetails with other costs.

Now consider an enormous increase in students to be taught at all levels of schooling. Next consider constructing a school building within which it is possible to deal with variably sized activity groups in flexible spaces saturated with teaching aids and geared to the new concepts of using television in education.

This is the way to get the cost of education down. It may result in buildings far more expensive than those we have today. But it will drastically reduce the cost of education per student. It may also bring a better education and at the same time make it possible to handle larger numbers of students.

AUTHORITY FOR CHANGE

More criticisms of New York's Port Authority are being made as the need for some similar device becomes apparent in other cities. All of them make two negative points: that the P.A. is too concerned with making money and is excessively favorable toward the automobile. A criticism in the June "Harper's" by Edward T. Chase went beyond those points to make a number of positive suggestions.

The P.A. must be reorganized to fulfill its original mission. It must be directed to take responsibility for all systems of transportation within the area, including rails. If deficits result, the states' public credit and funds must be used to protect the P.A.'s bondholders.

A comprehensive long-range transportation study must be made of the entire tri-state metropolitan region. From such a study we may learn, among other things, how best to use the pricing mechanism in transport. Parking charges, for instance, can be manipulated so as to encourage drivers to leave their cars in new public parking areas on the city's periphery and use mass transit for the final leg into midtown or downtown. To moderate the peak-hour crush on expressways, tolls might be lowered during off-hours.

Similarly, graduated fares might be instituted in the subways. The flat 15-cent subway fare, unrelated to length of ride, is a further aggravation, resulting in inadequate revenue per passenger mile.

Hopefully, the new P.A. would experiment with transportation zoning, whereby areas of supreme congestion and fabulous shops, such as midtown Fifth Avenue in New York, would be reserved for pedestrians only. And to moderate the peak-hour crush, the P.A. might promote staggered working hours for business.

The P.A.'s Commission must include younger men more sensitive to the public's, as opposed to the business community's, needs. It should include one or more outstanding planners, a social scientist of stature, and a figure from organized labor. Thus reorganized, the new P.A. would face the fact that how land is used determines traffic magnitude.

All these questions are among the most pressing that will face urbanized America in the immediate years ahead. If constructive criticism of the P.A. sparks action in New York, the whole nation will gain. END

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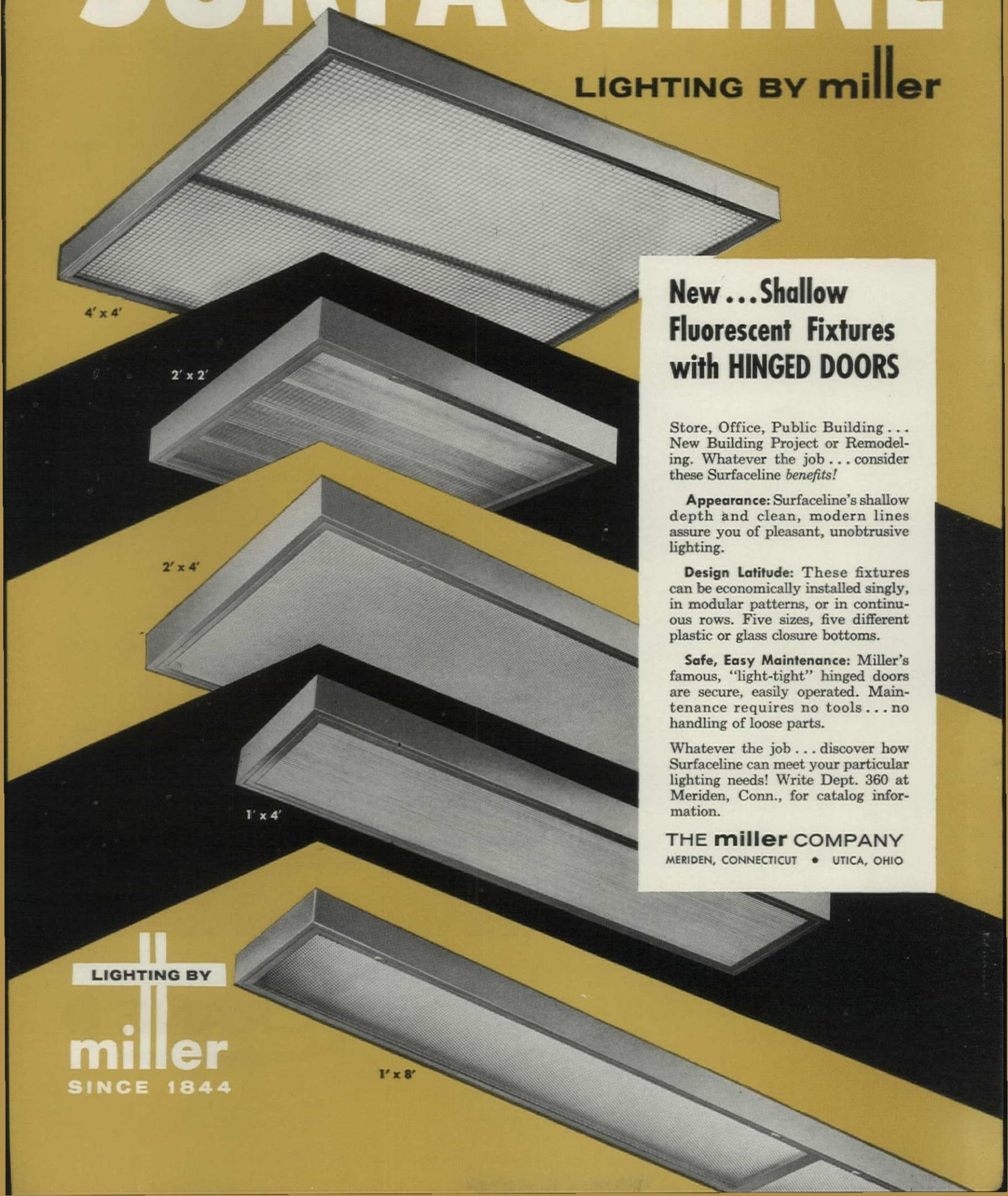

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Safe, Easy Maintenance: Miller's famous, "light-tight" hinged doors are secure, easily operated. Maintenance requires no tools... no handling of loose parts.

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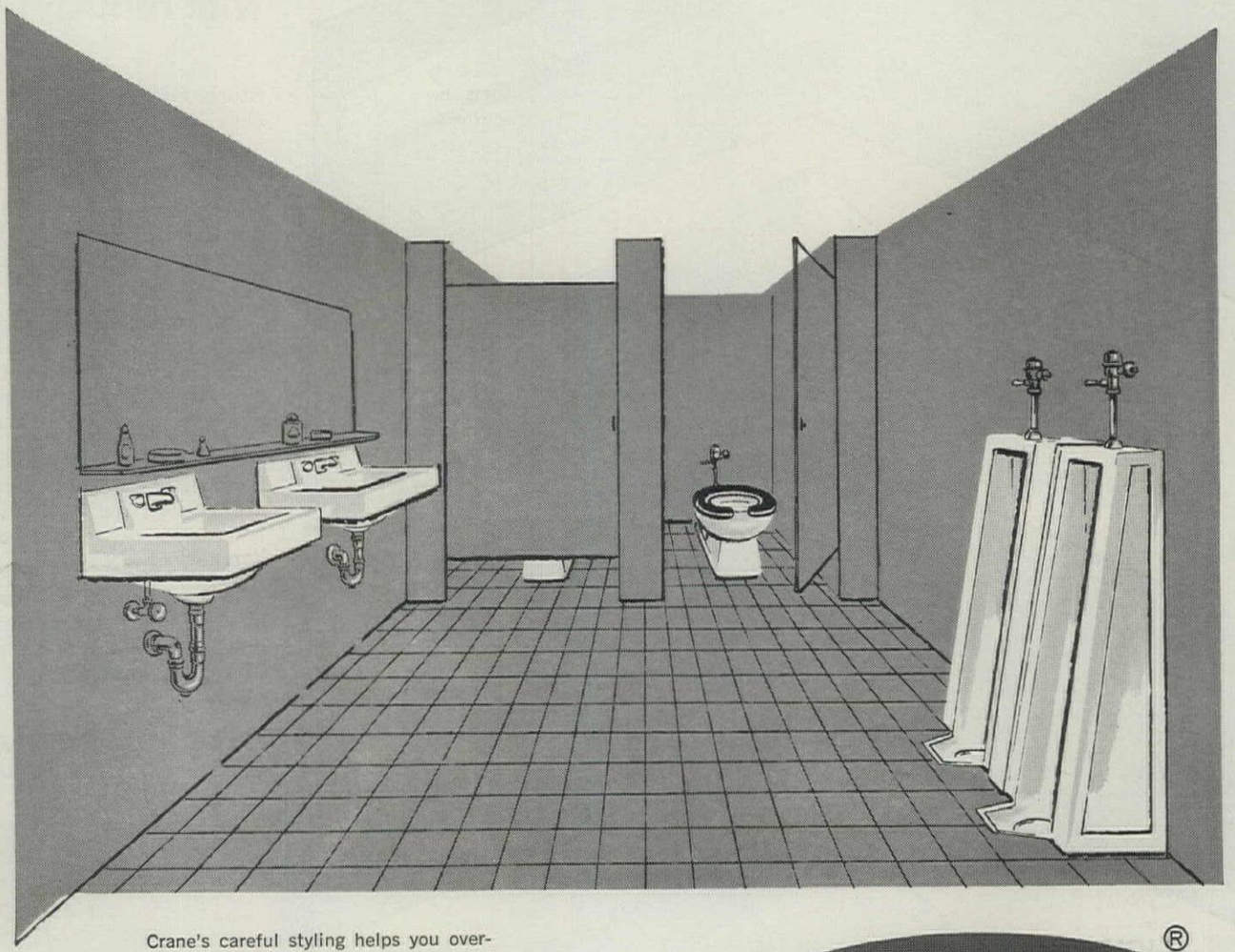


Crane's careful styling helps you overcome the cold, austere atmosphere of many washrooms. Simple lines help expedite cleaning and care, too.

CRANE®

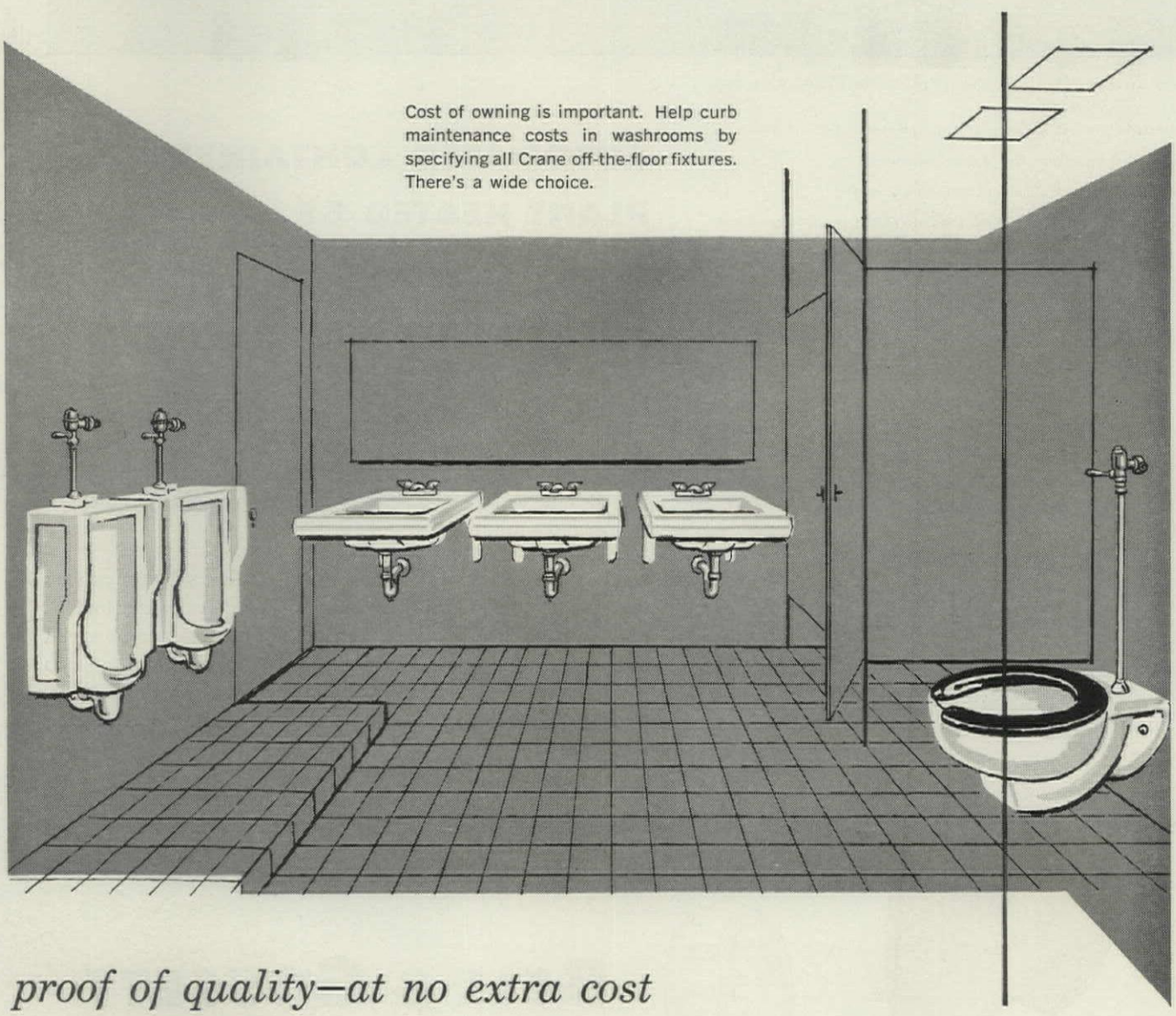
design it into your commercial buildings at no added cost...with Crane plumbing

Some of your commercial clients know how to judge design and specification quality. Others have no basis for comparison. Both kinds of client rely on the brands you specify to indicate the level of quality.

Crane helps you add *proof of quality* in your designs. Crane is the brand most widely regarded as "best" by consumers. It's a standard for judgment. And Crane plumbing costs no more than other brands which don't match Crane's quality image.

You'll find precisely the fixtures you need for every installation in the Crane catalog. And beneath the handsome functional styling is sound mechanical design. Crane withstands the rigors of hard use without constant care and repair.

Design *proof of quality* in your next commercial building. Ask your Crane representative or plumbing contractor for help whenever you need it. Either one will gladly help you achieve the installation you want.



Cost of owning is important. Help curb maintenance costs in washrooms by specifying all Crane off-the-floor fixtures. There's a wide choice.

proof of quality—at no extra cost

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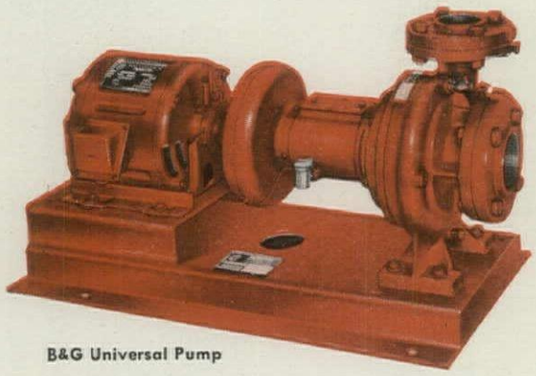

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AUTOMATED CONTAINER PLANT HEATED BY B&G *Hydro-Flo*® FORCED HOT WATER SYSTEM

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The selection of B&G Booster and Universal Pumps was dictated by the record of these units for quiet, vibrationless and dependable operation. They are not ordinary commercial centrifugal pumps, but are specifically designed and built to meet the exacting requirements of circulated water systems. Over 3,000,000 are operating today in heating and cooling systems.

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They're all yours in the Von Duprin 66, the exit device that introduced the industry to the practical beauty of stainless steel.
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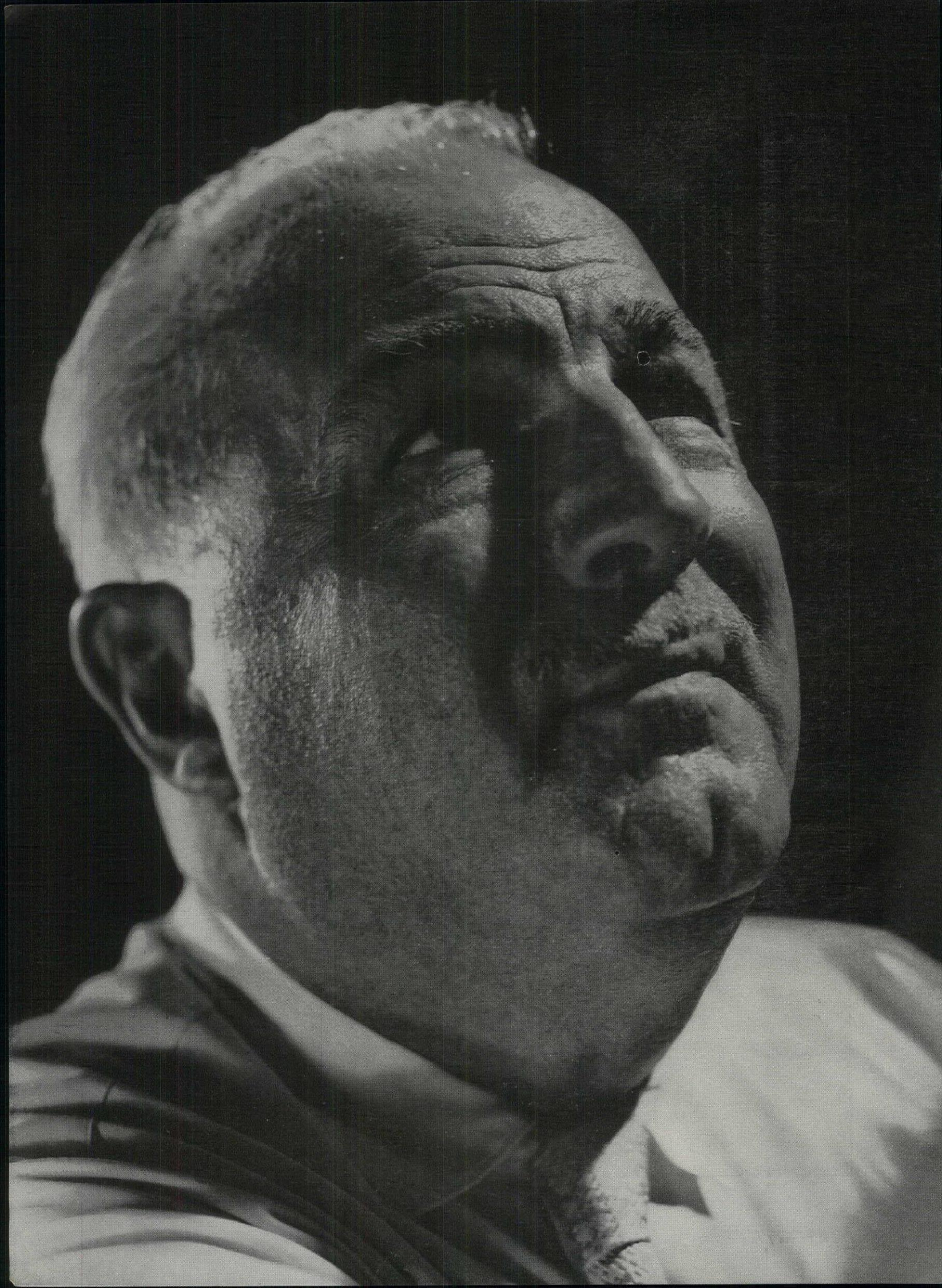


Clap your hands in the average room and listen . . . Do you hear a pronounced echo? . . . a distinct sound "flutter"? . . . or does the sound of your handclap seem to fade and die instantly? Each of these sound phenomena instantly signals a room in which poor acoustical balance frustrates sound intelligibility. Our purpose here is to tell you why—and what can now be done about it.

To hear and be heard in a room: Sound intelligibility is the only valid measure of satisfactory room acoustics. It depends entirely on achieving the proper balance of sound reverberation and sound diffusion in the room.

Let's take sound reverberation: Not all of the energy of sound in a room reaches a listener directly. That makes it necessary to have the room's surfaces reflect back portions of the original energy to reinforce the sound. The amount of reflection is critical. Too much—and the reverberation time increases to a point where echo, flutter and other confusions of the first sound occur. Too little—and the room is dead. Sound falls away at once.

And consider sound diffusion: When sound energy spreads through a room and rebounds from its surfaces, it creates a pattern of sound pressure throughout the room. A relatively uniform sound pressure pattern represents good diffusion—the second critical consideration in room acoustics. Improper diffusion of sound leads to poor efficiency of absorbing materials in the room—and to poor intelligibility.

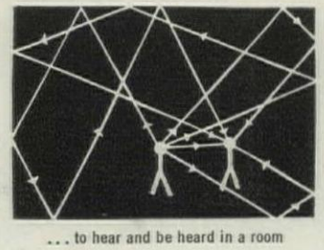
The problem of control: Sound absorption can control both important factors in room acoustics: reverberation time and diffusion. Reverberation time is controlled by the *amount* of absorption, diffusion by its *distribution*.

Present controls are only partial measures: Commonly used acoustical treatments rely entirely on a continuous mass of absorbing material placed on one surface of a room—generally to cover the ceiling. This reduces the probability of achieving good acoustical balance in a room. One reflective surface is eliminated completely and the others are not controlled at all. The room is acoustically lopsided. A handclap will reveal it every time.

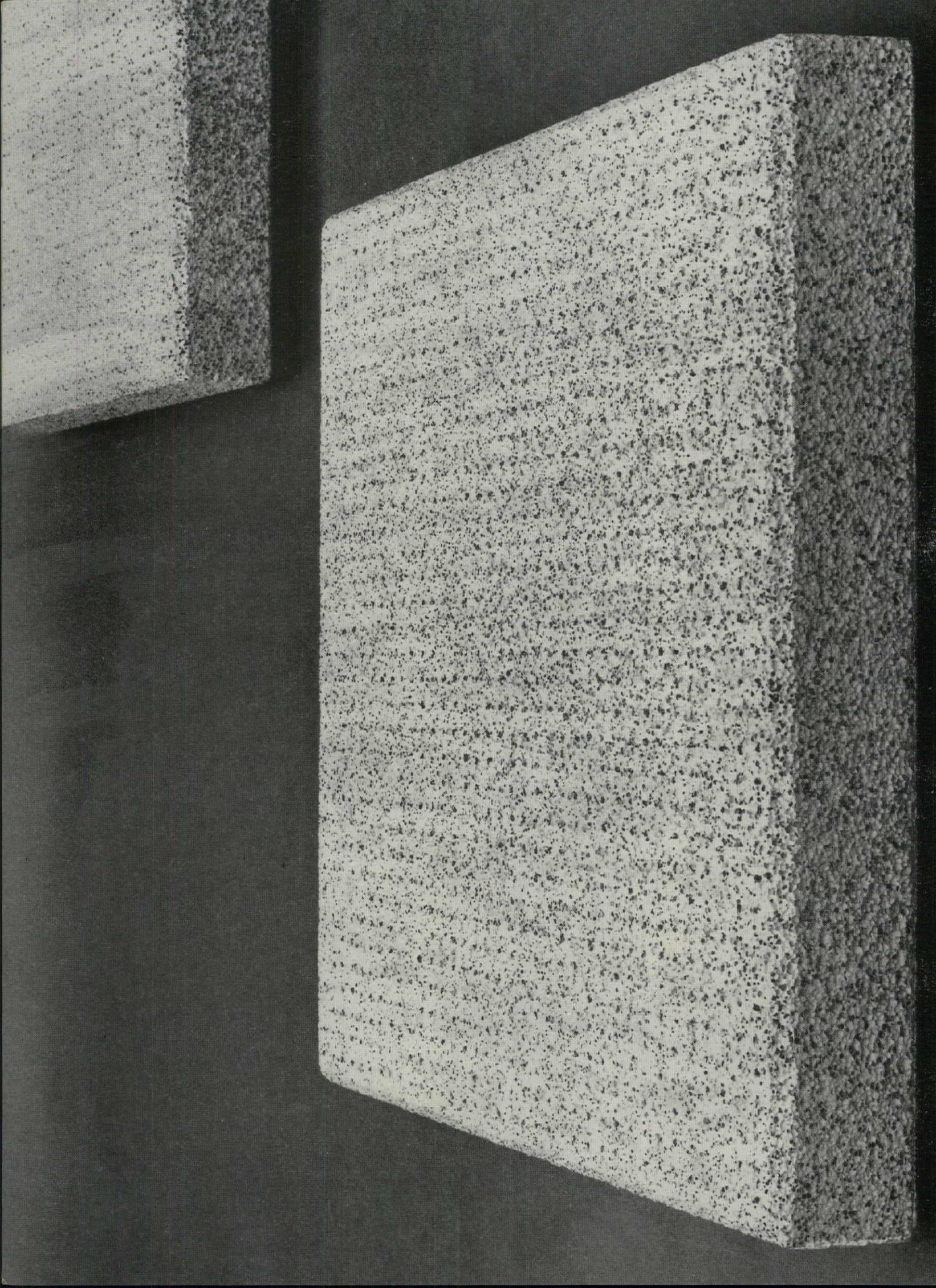
The solution has long been known: The key is

(continued)

GEOCOUSTIC: A material and a method



. . . to hear and be heard in a room



(continued from preceding pages)

placement of patches of absorption on a room's reflective surfaces to take advantage of the so-called area effect. The result is a balance between reflection and absorption that promotes controlled reinforcement of sound.

Orthodox acoustical treatment has made it virtually impossible to take advantage of the patch technique. Practical application of the patch technique requires higher unit absorption efficiency than commonly used acoustical materials provide. Thus, you have until now been unable to utilize the most effective means of achieving good acoustics in a room. *Now you can do something about it.*

Pittsburgh Corning announces

GEOCOUSTIC

A material—cellular glass for high unit absorption

A method—distributed absorption to control *both* reverberation and diffusion

It all began ten years ago when PC's senior physicist questioned a published statement that cellular glass had no significant acoustical properties. His argument: open its normally closed cell structure to expose the intricate labyrinth of chambers within the material. Do this, he said, and cellular glass could be used as the first material to make practical the patch technique.

Now, that goal is a reality—with GEOCOUSTIC.

The secret of Geocoustic units lies in the rigidity and complete dimensional stability of the cellular glass from which they are made. These important physical qualities make it possible to penetrate *both* surfaces of the basic 13½″ square x 2½″ thick units . . . with perforations of precise diameter and depth to insure maximum absorption efficiency per unit.

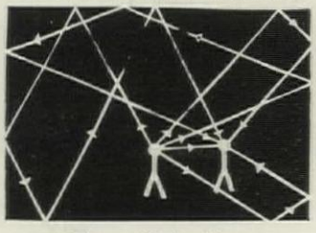
The result is over 2 full Sabins of absorption for every unit . . . and this extraordinary absorption opens up the hitherto impractical use of the patch technique. Now, full surface coverage is no longer needed.

The net effect is this: acoustical designs in which surprisingly few units distributed in a room achieve near perfect acoustical balance at costs often below those of standard treatments.

This, then, is the premise and the promise of Geocoustic . . . to hear and be heard in a room more clearly than ever before. Clap your hands in the Geocoustically treated room and hear that promise fulfilled.

We hope you will want a fuller explanation. If so, simply write for our new literature which describes in depth the theory and practice of patch absorption—and the remarkable new Geocoustic units which give them practical application. Address Pittsburgh Corning Corporation, Dept. E-80, One Gateway Center, Pittsburgh 22, Pa.

GEOCOUSTIC: A material and a method



. . . to hear and be heard in a room

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Wood has successfully warded off weather for centuries. Here, naturally durable or specially treated woods offer maximum resistance to the elements, and adapt beautifully to difficult terrain demands. Carl Graffunder, architect—Graffunder and Nagle.

When durability is a design requirement

for new answers...look to WOOD

Homes of wood have been traditionally correct for good reason—wood construction wears well physically *and* emotionally, stands up with a minimum of maintenance. Joseph Esherick, architect.

Wind, water, wear and willful neglect stand ready to challenge the mettle of your best design efforts. But in wood you find a natural ally. Wood stands undisputed in its time-proven position as the one construction and finishing material that will withstand the buffeting of the elements—untarnished, uncorroded—actually mellowing with age. No other material offers such diversity of individual shapes and sizes in stock or such a favorable ratio of weight to strength. And what other material is so workable, so amenable to expressive design? For more information on designing with wood, write:

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for freedom of design, look to **wood**

Wood's wide range of stock components and portability make possible *economical* construction by ordinary carpenters of even the most advanced designs. Robert Ratcliff, architect.

MODULES

continued from page 117

riety thus obtained is shown on page 114. In the instance of the manufacturer making an additional 5-inch range of panels, it is possible to cut his 19 product sizes in half and still obtain 2-inch flexibility, with no less than 52 possible panel-width combinations in 2-inch increments between 8 and 9 feet, showing the design versatility inherent in the system.

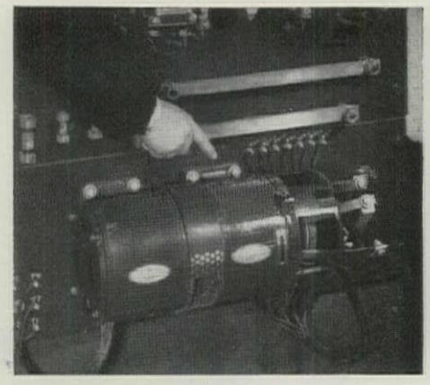
The same increment of flexibility may be secured with other groups of dimensions in which the largest product size might be something quite different or larger. If a number of manufacturers produced product ranges all having the same increment of flexibility, one can see how they could be used together easily. If other manufacturers choose related product ranges to work with, such as those which have flexibility to 2, 8, or 12 inches, it is also possible to see how these ranges might relate to those of 4 inches. As the modular number pattern shows how all product sizes may relate to one another, so it also shows how to relate product size ranges containing various increments of flexibility. Manufacturers working with such a system would be advertising not only their products but the combinations and ways in which their product ranges may be used. Indeed, they might set up their catalogues on this principle, showing on separate sheets the combinations possible at every increment of flexibility.

This would permit the architect to work with standard components, yet allow him to select the desired combinations to suit each particular function of his design by choosing from all that are possible rather than by resorting to chance arithmetic. It is not necessary to know the mathematics of numbers series behind all this, just as it is not necessary to know how all the complicated engineering formulas are derived in order to use an engineering handbook. If all manufacturers provided information on how their products fit together, and if they developed their products in terms of small increments of flexibility, it would be possible to use components from a range having 3-inch flexibility together with those having 4-inch flexibility. Thus the great problem that faced Bemis could be solved, and with it the esthetic problem of variety within standardization. END

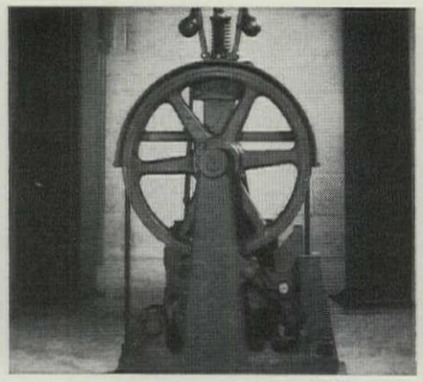
8′ – 0″	24 + 24 + 24 + 24
	36 + 24 + 36
	20 + 20 + 36 + 20
	20 + 36 + 40
	36 + 60
	30 + 30 + 36
8′ – 2″	24 + 24 + 20 + 30
8′ – 4″	20 + 20 + 30 + 30
	30 + 30 + 40
	20 + 20 + 20 + 20 + 20
	36 + 24 + 20 + 20
	20 + 20 + 20 + 40
	40 + 20 + 40
	36 + 24 + 40
	60 + 20 + 20
	60 + 40
8′ – 6″	36 + 30 + 36
	24 + 24 + 24 + 30
8′ – 8″	20 + 24 + 30 + 30
	24 + 20 + 20 + 20 + 20
	24 + 20 + 24 + 36
	24 + 20 + 40 + 20
	40 + 24 + 40
	60 + 20 + 24
8′ –10″	30 + 36 + 20 + 20
	30 + 36 + 40
9′ – 0″	24 + 20 + 20 + 20 + 24
	24 + 24 + 24 + 36
	36 + 36 + 36
	30 + 30 + 24 + 24
	60 + 24 + 24
9′ – 2″	30 + 20 + 20 + 20 + 20
	60 + 30 + 20
	24 + 36 + 30 + 20
	30 + 30 + 30 + 20
9′ – 4″	24 + 20 + 24 + 20 + 24
	40 + 24 + 24 + 24
	40 + 36 + 36
	20 + 20 + 36 + 36
9′ – 6″	60 + 24 + 30
	30 + 30 + 24 + 30
	36 + 24 + 24 + 30
9′ – 8″	36 + 20 + 20 + 20 + 20
	36 + 20 + 24 + 36
	20 + 40 + 36 + 20
	36 + 40 + 40
	60 + 20 + 36
	24 + 24 + 20 + 24 + 24
	20 + 30 + 30 + 36
9′ –10″	24 + 30 + 40 + 24
	24 + 30 + 20 + 20 + 24
10′– 0″	20 + 20 + 20 + 20 + 20 + 20
	20 + 20 + 20 + 20 + 40
	20 + 20 + 40 + 40
	24 + 36 + 20 + 20 + 20
	24 + 24 + 24 + 24 + 24
	24 + 36 + 24 + 36
	24 + 36 + 20 + 40
	40 + 40 + 40
	60 + 60
	60 + 20 + 20 + 20
	60 + 36 + 24
	60 + 20 + 40

An example of 2″ flexibility using products of 20″, 24″, 30″, 36″, 40″, and 60″.

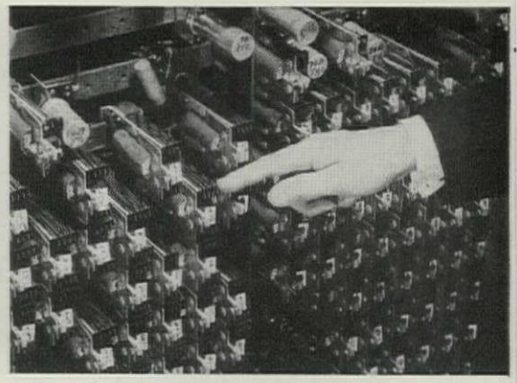
SAFETY UNLIMITED . . . You'll see why safety performance is exceptional in a Westinghouse Operatorless System. In addition to the many other safety features, should elevator speed become excessive, powerful steel jaws grip the guide rails and bring the car to a quick, smooth, comfortable stop.



HAPPY LANDINGS . . . Courtesy of Rototrol®—A Westinghouse-exclusive speed regulating system. Encased in this compact unit are electronic thinking devices which control elevator speed patterns through the entire cycle from start to stop. Rototrol is the heart of the Westinghouse landing system. It controls a four-ton elevator with incredible ease, landing it lightly as a feather.



MEET THE GOVERNOR . . . Here's the "boss" of the "safety" shown in the large illustration above. This Westinghouse governor is constantly alert to car speed and its normal function is to stop the car at the next floor landing in the event of overspeed. However, should overspeed be excessive, its trigger-like reflexes will activate the "safety" immediately and automatically.



SHUNTLESS RELAYS... Relays are vital parts of elevator control systems. Relays with small shunts (wires) connected to moving contacts break down because of repeated flexing. Result: erratic operation, elevator shutdowns, annoyance to passengers and building management. You'll see how Westinghouse solved this problem by *eliminating all shunts* from these relays.

space to transient space, such as William Zeckendorf's refurbishing of the old Lincoln (now renamed the Manhattan), where the real estate operator bought the aging and decrepit Eighth Ave. building for $4,600 per room and spent another $3,000 per room modernizing it.

Until the past few weeks, Zeckendorf still hoped to build the most luxurious superhotel since the Waldorf-Astoria was finished in 1931. He announced plans for a huge, 2,000-room luxury hotel on the Avenue of the Americas, adjacent to Rockefeller Center. Estimated cost of the goliath: $66 million, including land. But last month the huge excavation was empty and idle, as Zeckendorf, now desperately short of cash for his far-flung building ventures, tried in vain to get Sheraton or Hilton to take the project off his hands. When neither chain showed willingness to get into the act, Zeckendorf reportedly was angling to lease the site to Uris Bros., the city's biggest office builders.

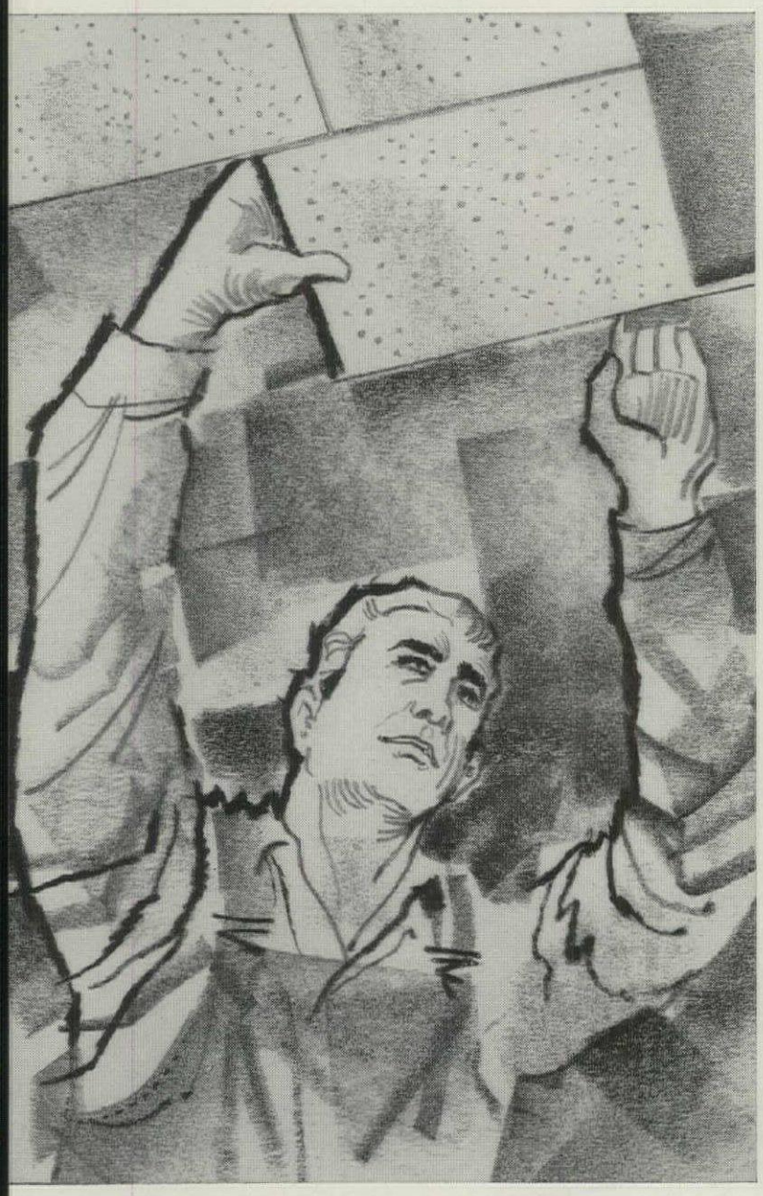
The major problem in building a new hotel in New York City, where occupancy rates are as high (80 per cent) as in any big city in the nation, is the high cost of land. Aside from the two motor hotels, one yet to be built, only the ill-starred Zeckendorf project and a recently announced 800-room East Side hotel by Loew's Theaters, currently headed by Hotel Builder Laurence Tisch, have been announced for the big town. However, New York is being ringed by lavish new motor hotels, many of them sizeable.

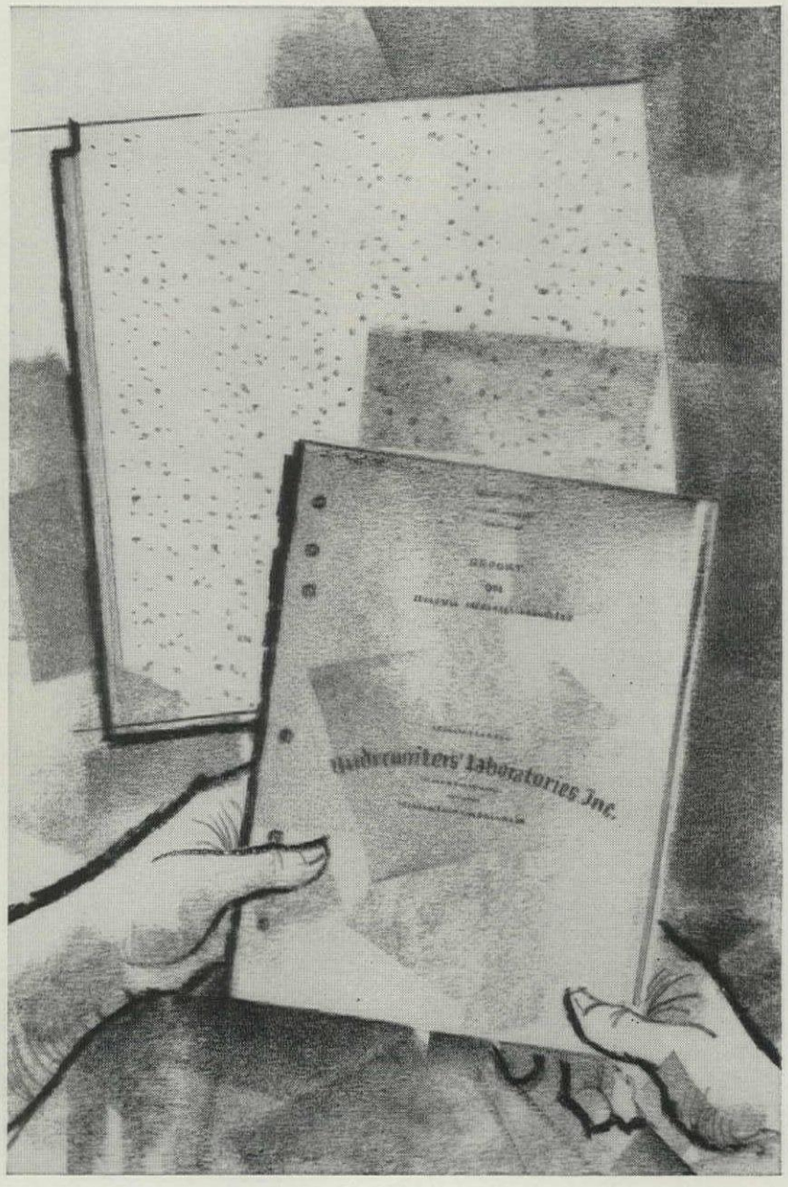
Tomorrow's motels

Given the record volume of hotel construction, veteran hotelmen are worrying about an old hoodoo—overexpansion. Most of them believe that motel builders have made serious mistakes in clustering too many facilities on prime highway sites, and feel that the same thing could happen downtown. One hotel expert says flatly that 20,000 of the existing 60,000 motels will probably be out of business within a decade, due to the shifting of highway traffic, intensification of competition for the best sites, and just plain poor construction in some cases. (The average life of a motor court is only about nine years, a key statistic in the

How to save construction time with

Acoustical Fire Guard, a remarkable new construction time—and it gives Under





Dry installation—

Armstrong Acoustical Fire Guard—the first time-design-rated acoustical ceiling tile—saves construction time because it is installed by a completely dry operation. No messy spraying or plastering. No intermediate fire protection.

Single material—

Acoustical Fire Guard has earned fire-retardant ratings of one to four hours in official tests conducted by Underwriters' Laboratories, Inc. This tile—without costly intermediate protection—will meet the nation's strictest codes.

new Armstrong Acoustical Fire Guard

ceiling tile, can save as much as six weeks'
writers' Laboratories rated fire protection.

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Dry construction can be done during or between business hours. There is never any "Closed for Alterations." The factory-finished ceiling requires no painting. Schools open sooner. Office buildings and stores earn revenue earlier.

Other trades can proceed—

Other trades don't have to mark time, waiting for the interior to dry. To learn more about Acoustical Fire Guard, contact your nearest Armstrong District Office or write to Armstrong Cork Co., 4208 Rooney St., Lancaster, Penna.

Armstrong ACOUSTICAL CEILINGS

1860-1960 Beginning our second century of progress

HOTEL MARKET

continued from page 165

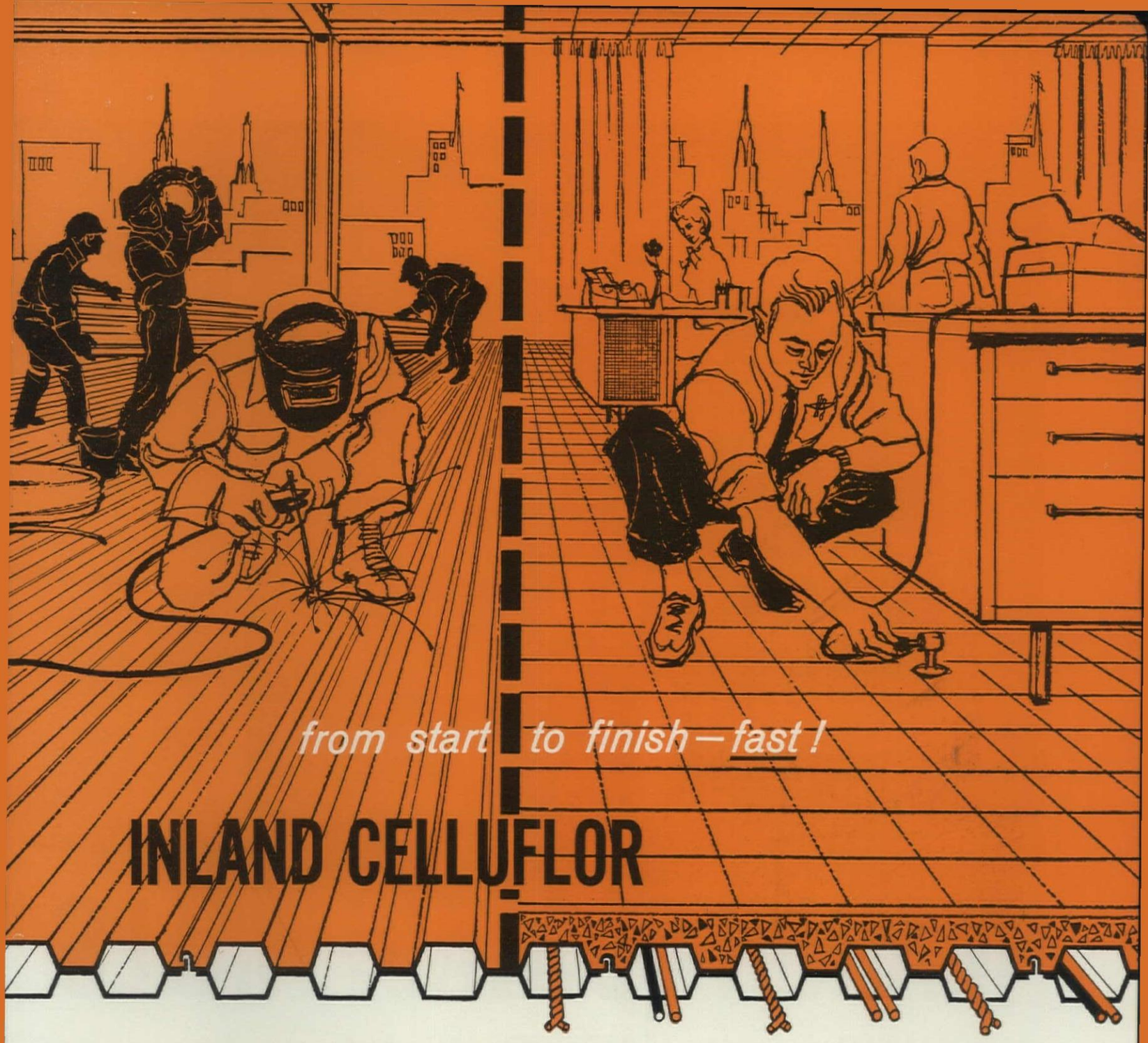
generally luke-warm attitude of lenders toward motel loans.)

In some cities, overexpansion of hotel space is already a reality. In Cleveland and Detroit, for example, where there has been an outburst of in-town motor-hotel development, average occupancies are 58 per cent and 61 per cent respectively, and not many big hotels can do much better than break even at these figures. In Texas, where there has probably been more conventional hotel space built than in any other state (California and Florida are postwar leaders by dint of the huge amounts spent on resort facilities), the occupancy rate for the state had dipped from 90 per cent right after World War II, to 72 per cent by 1954, when the first big hotels were finished in Dallas and Houston, and down further to 62 per cent last year, as both cities had just about exhausted their conventional hotel expansion potential.

While professing fears of eventual overexpansion, the large hotel operators nevertheless still show an eagerness to locate in areas of growth—significantly, the hotel chains invariably mention the same cities when talking about the likeliest locations for future hotel or motor-hotel space. The shift of emphasis in the motel boom from the highway to downtown will benefit not only the biggest cities, such as Philadelphia, San Francisco, and Chicago, but also smaller cities, such as Minneapolis, Rochester, and Portland, Ore. In fact, these cities, where population and income growth is faster, may well become the focus for more activity than the larger metropolises.

All in all, the future for new hotel space whether on the highway or downtown appears brighter than it has been for over three decades. Hotel builders point out that while increasing attention is now being paid downtown areas, the federal highway program still is a long way from being finished, and thus highway hotel construction cannot be counted out. Conservative observers see at least the present level of hotel building holding for the next decade, and more optimistic hotelmen see last year's $550 million being exceeded. Either way, hotel and motor-hotel building might total between $6 billion and $10 billion in the next decade.

END



combines erection speed today with extra electrical capacity for tomorrow

As structural steel is erected, Celluflor installation follows closely — only one or two floors behind. This provides a safe work platform for all trades and eliminates the need for staging.

By using Celluflor for the 77,700-sq. ft. sub-floor, a West Coast company* saved over six months on the job schedule for an 8-story office building.

Celluflor has other advantages over poured construction, including substantial savings in structural steel and footings. The greatest saving from Celluflor, though, accumulates over the years, because of the electrical flexibility it provides. Service outlets can be installed anytime without expensive alterations.

Complete information on Celluflor is given in Catalog 270. Write for your copy—or see Sweet's, Section 2b/In. For help on specific problems, call your nearby Inland office. A trained sales engineer is available for consultation.

*Name upon request

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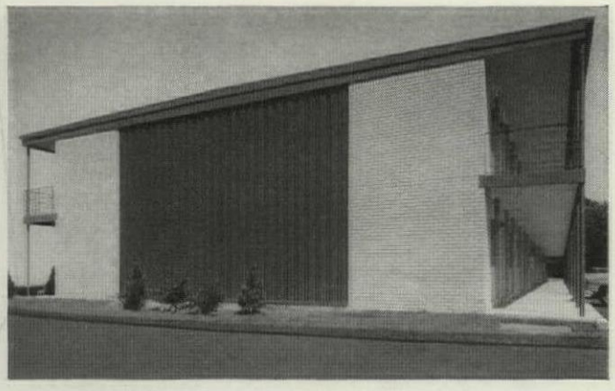
MAHON CURTAIN WALLS

IN NATURAL OR COLORED METALS

provide an ideal combination— high design potential... low-budget installation

Mahon Curtain Walls of charcoal-gray enamel are functionally and attractively used in this new motel at Plymouth, Mich., General Contractor: Don Primo Co.



Even used with dissimilar building materials (as shown in this rear view of the Hines Park Motel) Mahon Curtain Walls integrate easily for modern design expression.

The design flexibility of Mahon Metal Curtain Walls gives you a practical answer to many architectural and construction problems. Walls for the long runs of a giant industrial plant . . . for the touch of individuality in small commercial buildings or for the vast sweep of modern, multi-story buildings . . . exterior walls that glisten in clean metal or glow in dynamic color . . . walls that decorate, protect and solidify. Mahon Curtain Walls will meet your every requirement. They can be erected up to 60 feet in height without a horizontal joint . . . vertical joints are invisible. Quality Metal Walls from Mahon cost no more when specified nor do savings stop with installation—maintenance is low, durability is long. To learn how Fiberglas-insulated Mahon Curtain Walls fit into your project, contact your local Mahon representative, write for descriptive catalog or see Sweet's Files.

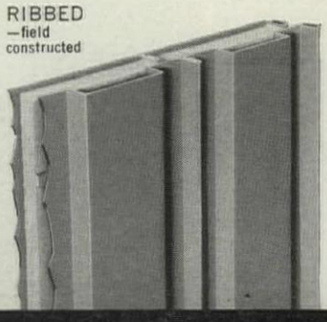
MAHON BUILDING PRODUCTS

- Aluminum or Steel Curtain Walls (in natural or colored metals)
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Metalclad Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions and Roof Decks
- Permanent Concrete Floor Forms

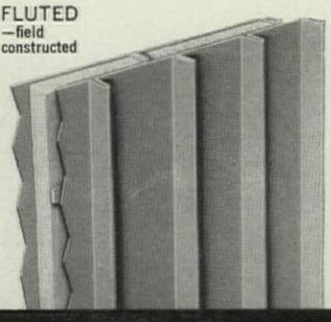
CONSTRUCTION SERVICES

- Structural Steel-Fabrication and Erection
- Steel Fabrication-Weldments

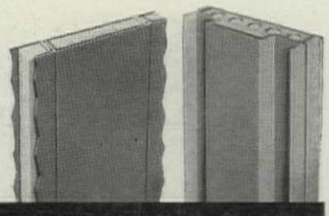
RIBBED
—field constructed



FLUTED
—field constructed



FLUSH or FLUTED
PREFAB PANELS



Mahon Curtain Walls are supplied in galvanized, porcelainized, enameled or stainless steel, and aluminum in many finishes, each in three types

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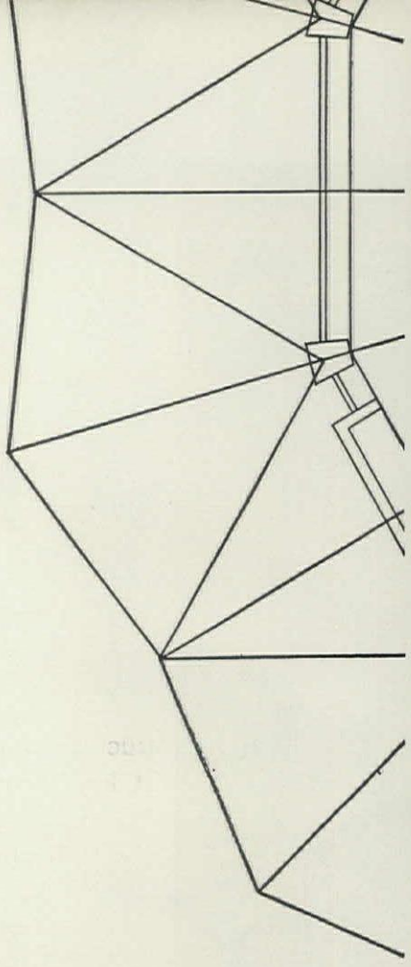
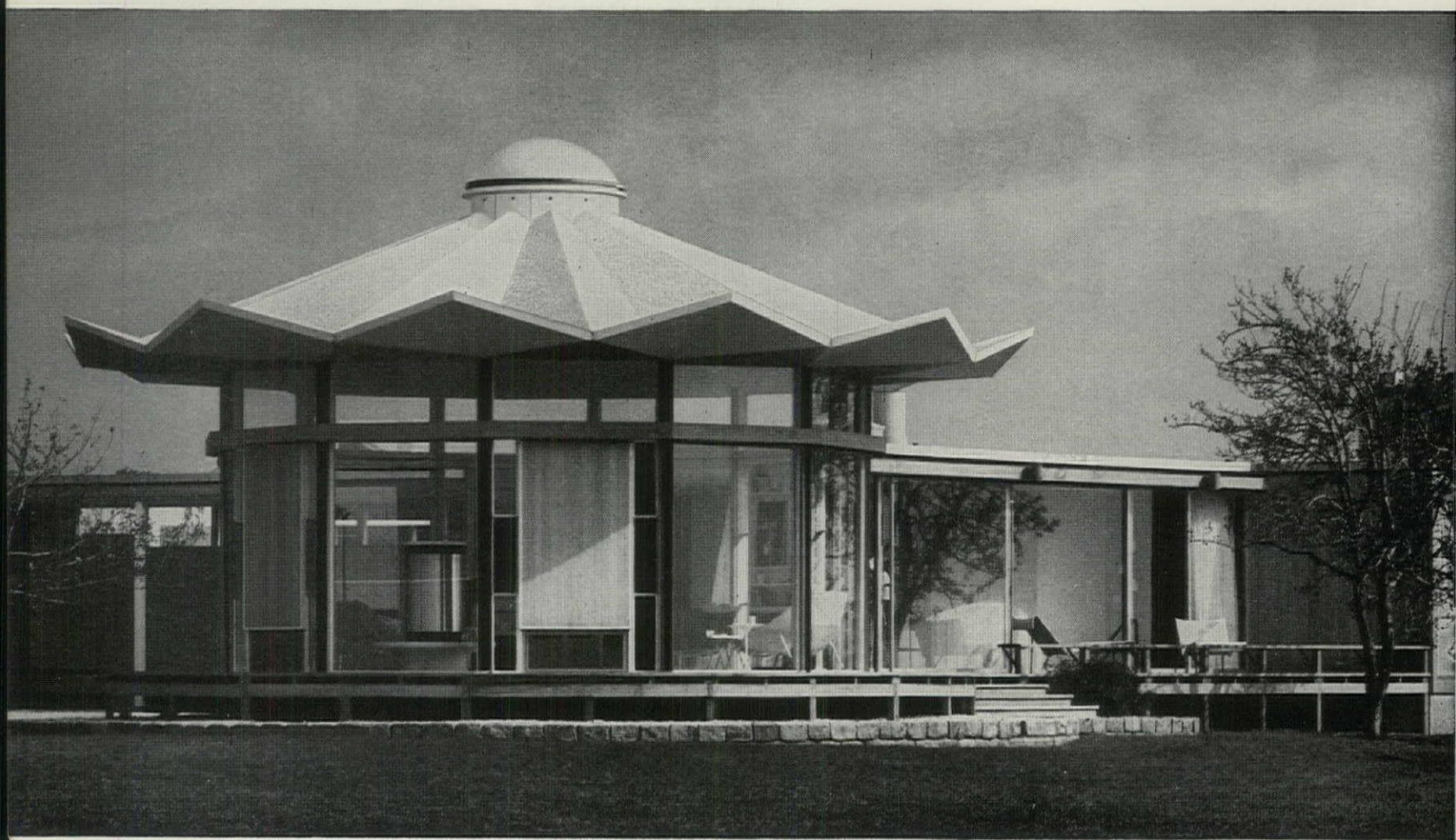
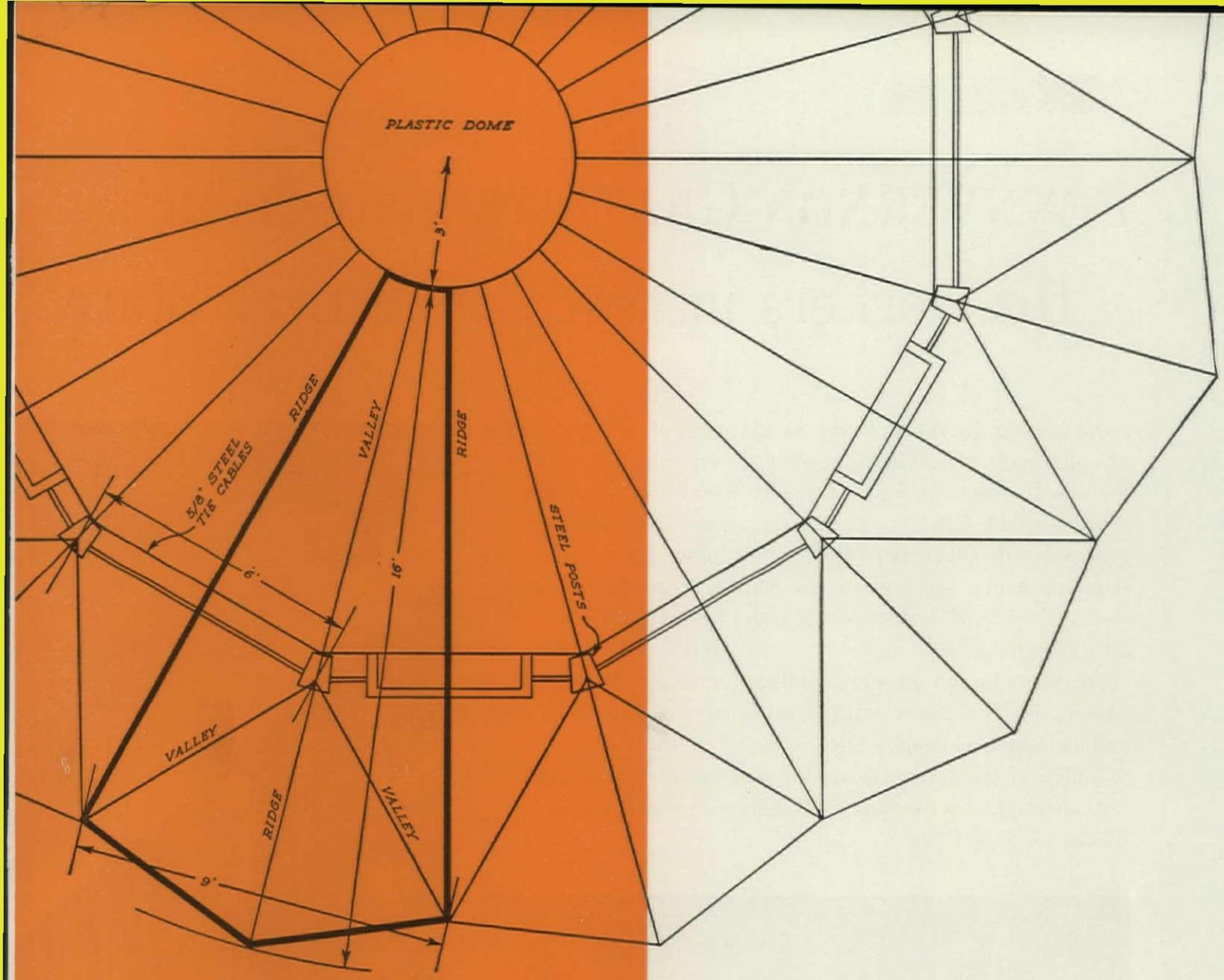
MAHON

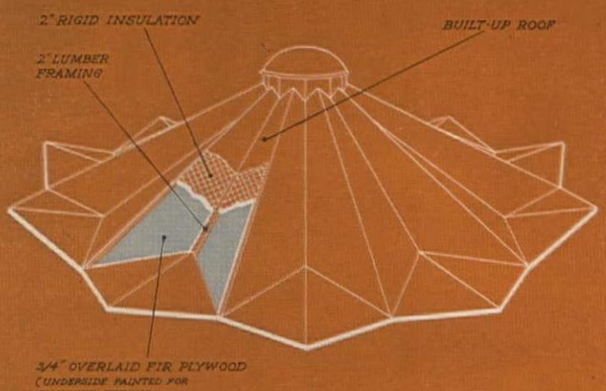


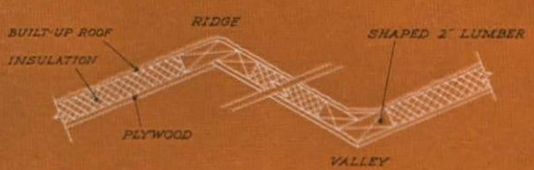
new approaches to structural design with fir plywood



EZRA STOLLER







ARCHITECT:	Alexander Knox LaFarge, Knox & Murphy, New York, N.Y.
BUILDER:	Charles Rush, Amaganset, Long Island
LOCATION:	Bridgehampton, New York

THE PLEATED ROOF that crowns this pavilion-like living room is a prime example of the bold and imaginative forms derived from the basic fir plywood folded plate principal. Shape rather than mass is the key to its strength. The distinctive sawtooth configuration capitalizes on fir plywood's high diaphragm strength to create, in effect, a series of rigid, lightweight "V" beams. Intermediate posts, trusses and bulky framing are eliminated.

In this sophisticated circular design, the plywood folded plates provide a dome, spanning 26 feet, wall to wall. No central support is required. Where desired, far greater spans could be achieved utilizing the same basic system.

The roof itself is composed of 12 basic "boat-shaped" fir plywood components which were crane-lifted into position atop the steel supporting columns. Each component, in turn, is made of four triangular pieces of ¾" overlaid fir plywood, perimeter framed and interconnected with shaped two-inch lumber. Alternate projecting and recessed stiffeners along the ridges connect each component with its neighbors. Each component combines roof deck, insulation and finish ceiling.

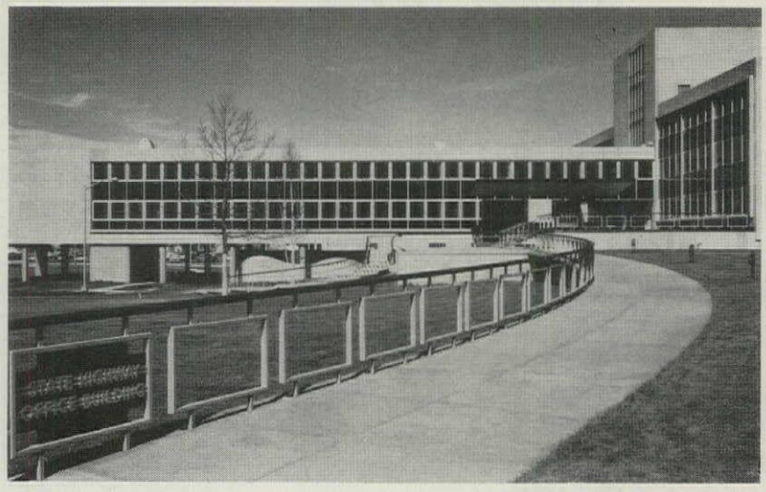
For basic design data or other information, write (USA only) Douglas Fir Plywood Association, Tacoma 2, Washington.

PENNVERNON® GRAYLITE™ glare-reducing for workers in new Connecticut State

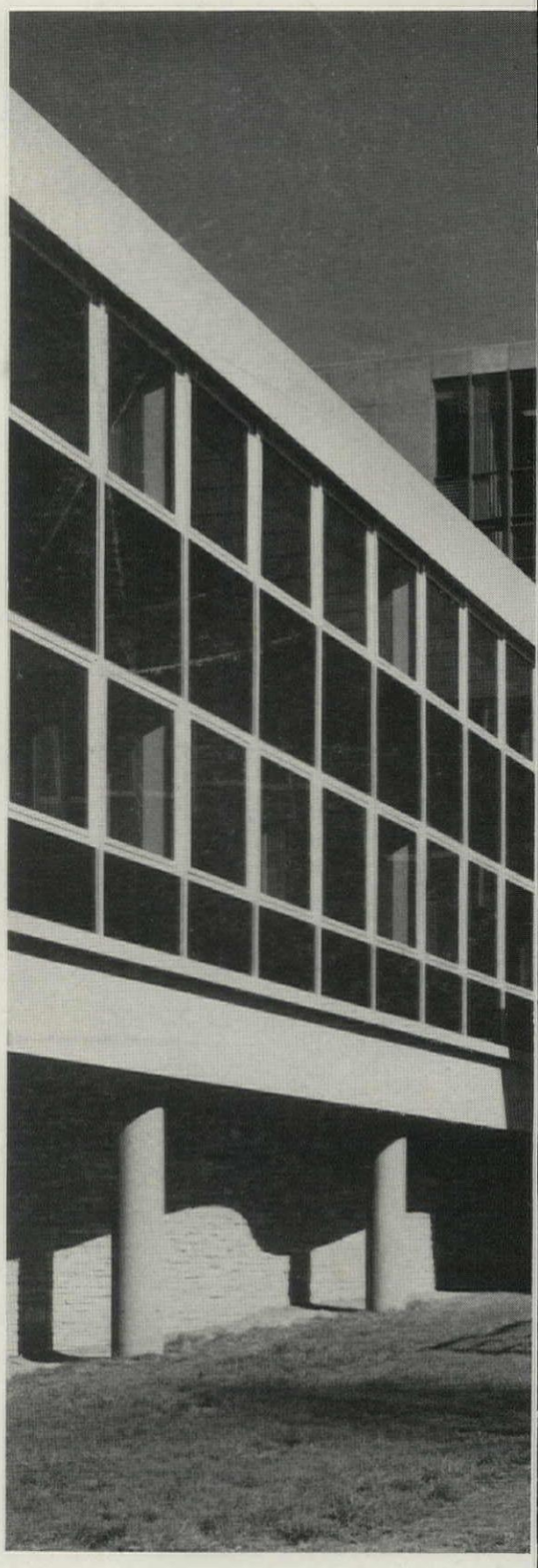
PENNVERNON GRAYLITE takes the glare out of sunlight, yet lets plenty of refreshing light come through the windows of the new Connecticut State Highway Department Building, Weathersfield, Connecticut. All elevations are glazed with PENNVERNON GRAYLITE "56"—PPG's neutral gray, glare-reducing heavy sheet glass. Its neutral gray tint doesn't change the hue of outdoor colors, doesn't limit your choice of interior colors.

GRAYLITE has an unusually brilliant, unmarred fire finish —both sides. Because it is drawn under careful control, wave and distortion are negligible.

Talk over the distinct advantages of PENNVERNON GRAYLITE sheet glass with your PPG Architectural Representative, or see Sweet's *7a/Pi.*



Architect: Henry F. Ludorf, A.I.A., Hartford, Conn.
Contractor: Felix Buzzi & Son, Inc., Torrington, Conn.
PPG Products installed: PENNVERNON GRAYLITE "56", Polished Plate Glass, HERCULITE® heat-tempered Glass Doors and Sidelites, TWINDOW® insulating glass units, and Mirrors



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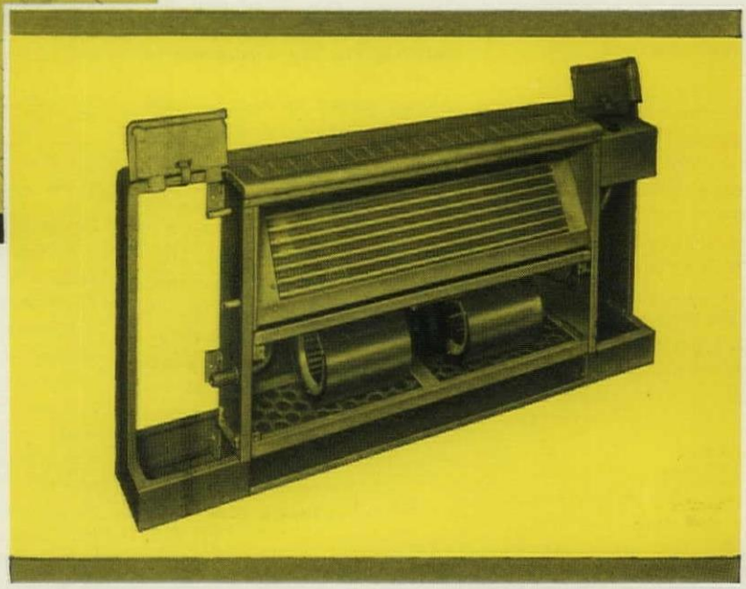

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8½" thin, 25" high

McQuay thin-line design Seasonmakers are extremely versatile, dependable and exceptionally easy to work with. That's why engineers, contractors and building operators alike appreciate them most. These remote, individual room units are ideal for apartments, motels, hotels, offices, hospitals or any installation utilizing a central station heating and cooling system. They are available in four types in seven sizes. Floor and basic models are made in sizes from 220 to 1240 cfm; hide-away and ceiling models from 220 to 640 cfm.

Investigate the many advantages these thin-line design McQuay Seasonmakers can offer you on your next job. Contact your local McQuay representative, or write McQuay, Inc., 1609 Broadway Street N.E., Minneapolis 13, Minnesota.

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Letters

CIVIL DEAFNESS

Forum:

It takes a lot of courage to lift the veil of terror surrounding our completely inadequate civil defense; your July editorial "Building against fallout" is one of the first responsible, thorough analyses available in a country with stopped ears.

DIANE E. GEYSER
Pittsburgh

GREAT PERFORMANCE

Forum:

I was fascinated by your articles on "Building for the performing arts" (FORUM, June '60), and I compliment you on the great service your magazine is doing for the theater.

Your articles suggest that the so-called "fabulous invalid," in spite of the strike that has just ended as I write, is indeed still a healthy one; and that is very consoling.

MOSS HART
New York City

Forum:

. . . much interesting information and conjecture.

HENRY HEWES
Executive Secretary, The Board of Standards and Planning for The Living Theater, New York City

Forum:

Your articles on building for the performing arts are lucidly analytical of the situation. They point out the major conflicts and problems with good supporting arguments and state very well the challenges which face the architects and theater planners. However, the technical articles are perhaps a bit too scant. I therefore look forward to the full treatment of Izenour's Loeb Theater devices.

EDWARD C. COLE
Yale School of Drama
New Haven, Conn.

• *The Loeb Theater will be treated in full in a later issue of* FORUM.—ED.

CORRECTED REGISTER

Forum:

After such a generous and complimentary review of the A.I.A.'s *Building Products Register* (FORUM, June '60), it hardly seems courteous, let alone grateful, to criticize the article.

There are, however, a few points which seem to need clarification.

1. Your readers might be left with the impression that the information in the *Register* has been compiled over the last ten years. The technical data was collected from the manufacturers in the summer and autumn of 1959 and compiled in December and January.

2. You state that the *Register* attempts to analyze "all available building materials in the many different phases of construction." This is the ideal, but the *Register* may never cover all materials; it may take years to cover most.

3. In regard to the necessity of establishing uniform testing procedures, it should be emphasized that the A.I.A. will not become a testing, approving, or certifying laboratory.

4. And last, the A.I.A. definitely needs assistance from sister professional societies, in addition to industry associations, in the development of meaningful product criteria, and in objective reporting to promote the best use of manufactured products into sound building.

THEODORE W. DOMINICK
The American Institute of Architects
Washington, D.C.

THE MEEK TRIANGLE

Forum:

I quite agree that Pittsburgh's Triangle has been getting third best and taking it all too meekly. The "architecture" near the Point is a display of cigarette lighters. In the past, Pittsburgh has done very handsomely by importing its culture and adding original ideas of its own. Cram, Richardson, Harrison & Abramovitz, etc. have done distinguished work, to the mutual benefit of the city and themselves. But this time, when it should have been the best happening of all, the good thing failed to take place. Even the Hilton, I think, is superficial, and its slab requires some heroic landscaping in front of it to make it less domineering.

WALTER C. KIDNEY
Pittsburgh, Pa.

BAROQUE TO THE RESCUE

Forum:

I was particularly interested in your article on German Baroque entitled "Architecture with a flourish" (FORUM, July '60). This shows one of the great eras when architects were architects even if one of them was a court jester.

I have been truly appalled at the great lack of imagination in today's great office buildings. If architects are going to continue to function at all, they will have to pick up the ball and begin to put life, beauty, humanity, and esthetics into their work.

Be not deceived, the engineers have already taken over, and it will take some doing for the architects to recapture their place in the American scheme.

DON B. SCHUYLER
Architect, Tuscaloosa, Ala.

SLUM PROFITS

Forum:

I was delighted with your articles on "The new urbanites" (FORUM, June and July '60).

However, I take issue with you on one point. You state that: "The only people who profit from this pattern [Negroes taking over white homes] are the slum lords and unscrupulous real estate dealers who help break down previously white neighborhoods to get housing prices considerably higher (25 to 30 per cent higher in some cities) than those that white home buyers will pay." The real estate broker is not the only one who benefits. The lending institution also profits. Directly, or indirectly through the correspondent, it finances the nonwhite buyer home seeker who moves to suburbia.

R. A. THOMPSON
Housing Secretary
Atlanta Urban League
Atlanta, Ga.

Forum:

At one point you say that New York's public housing has "greatly augmented the supply and quality of housing for the least privileged . . ."

This is not true. A lot of public housing has been built on slum sites, dispossessing many more families than are accommodated in the new projects.

The process of slum clearance by public housing, as well as Title I and other public improvements, has worsened the slum situation by pushing thousands of families into the remaining overcrowded depressed neighborhoods.

An obvious answer to the problem would be to increase, rather than decrease, the housing supply available to these families. This can be accomplished by building housing projects on vacant and underutilized land, halting the demolition of existing low-rental dwelling units, opening certain low-rental neighborhoods that are now racially restricted and stepping up the construction of low-income public housing projects.

SEYMOUR POSNER
Public Relations Director
Urban League of Greater New York
New York City

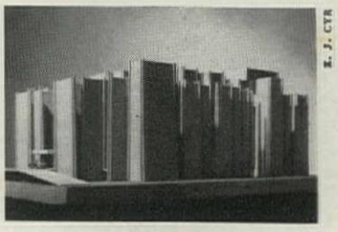
HAWAIIAN SURPRISE

Forum:

Your article on our local building program, "Pile drivers in paradise" (FORUM, June '60), though short, is comprehensive and amazingly correct.

VLADIMIR OSSIPOFF
Architect, Honolulu

Erratum: FORUM *regrets that in its brief description of the Clowes Memorial Hall at Butler University (July '60) credit was not given to its associated architects, John M. Johansen and Evans Woollen, III.*—ED.



E. J. CTR