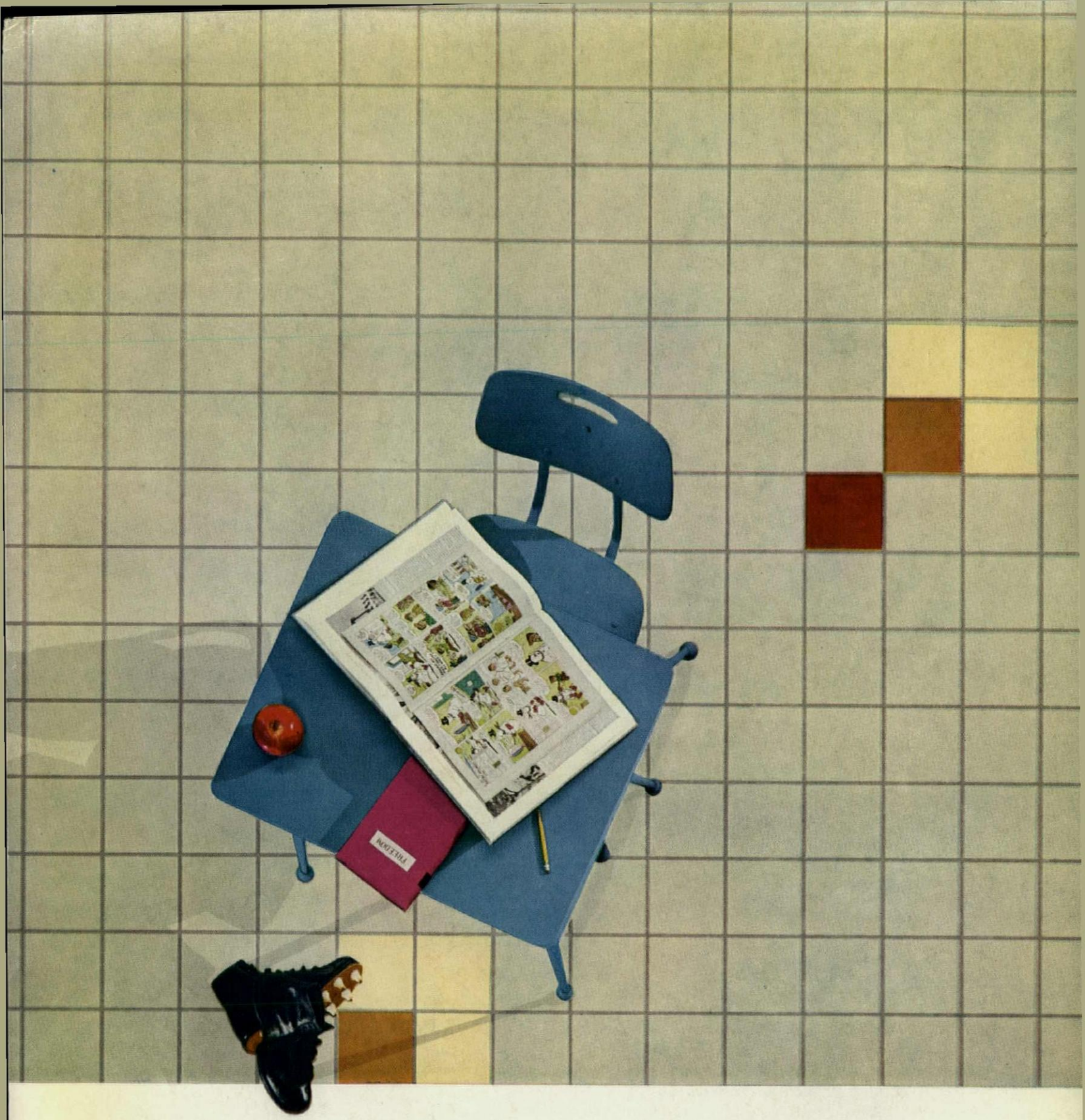
chitectural Forum the magazine of building November 1960

FORUM

High school developments



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Architectural Forum November 1960

VOLUME 113 NUMBER 5

Cover: Design by Ray Komai based on classroom layout for the new Stillwater high school (story, p. 105).

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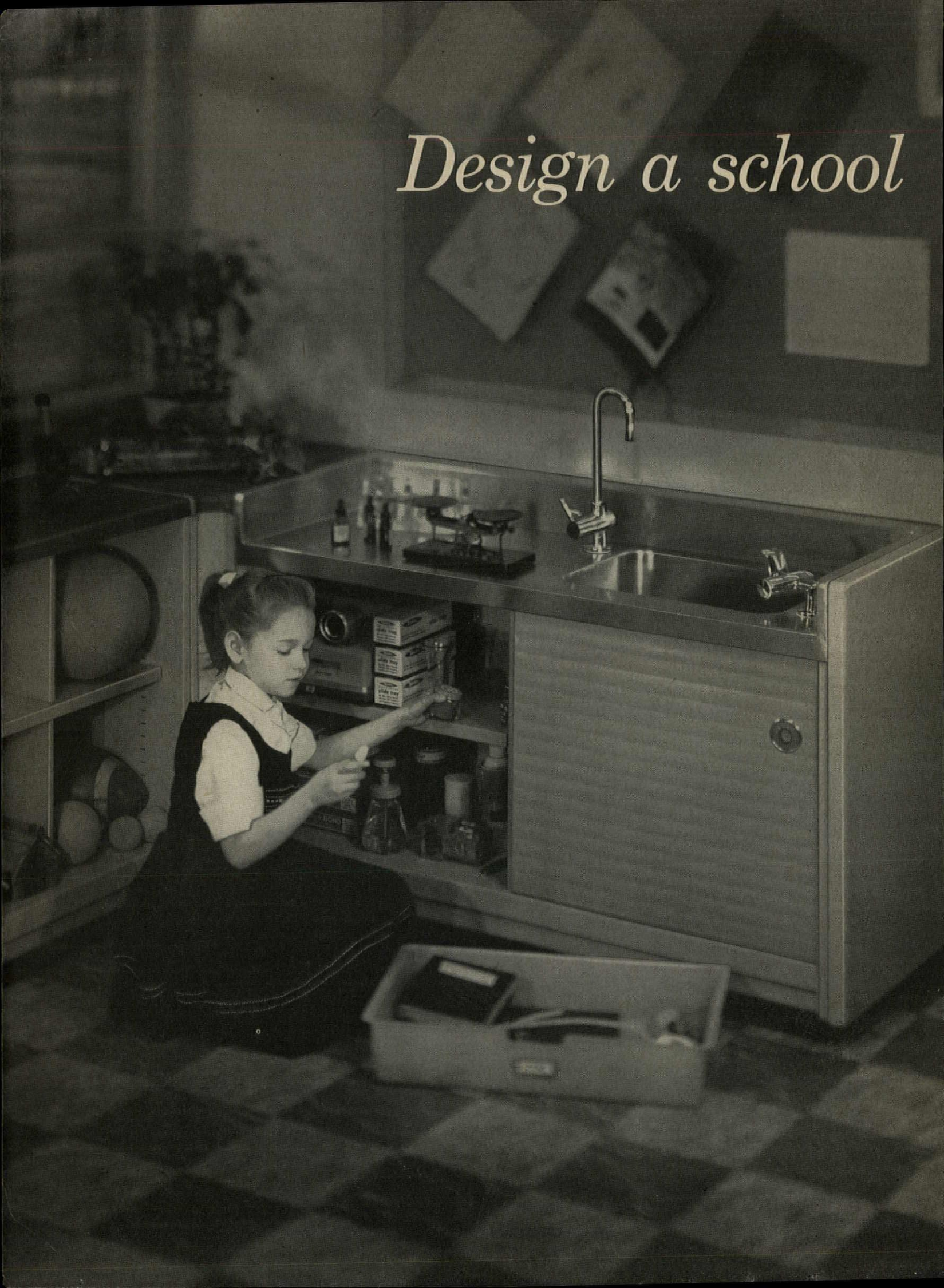
SCHOOLS

ART OF ARCHITECTURE

BUSINESS OF BUILDING

CITIES

TECHNOLOGY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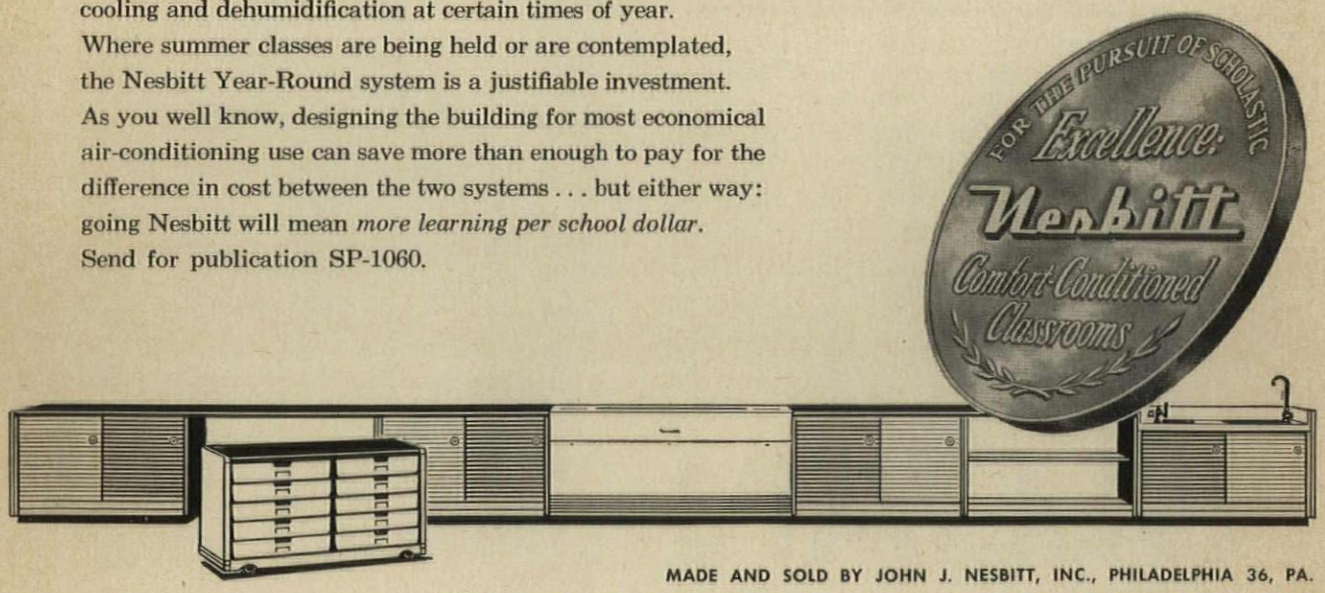

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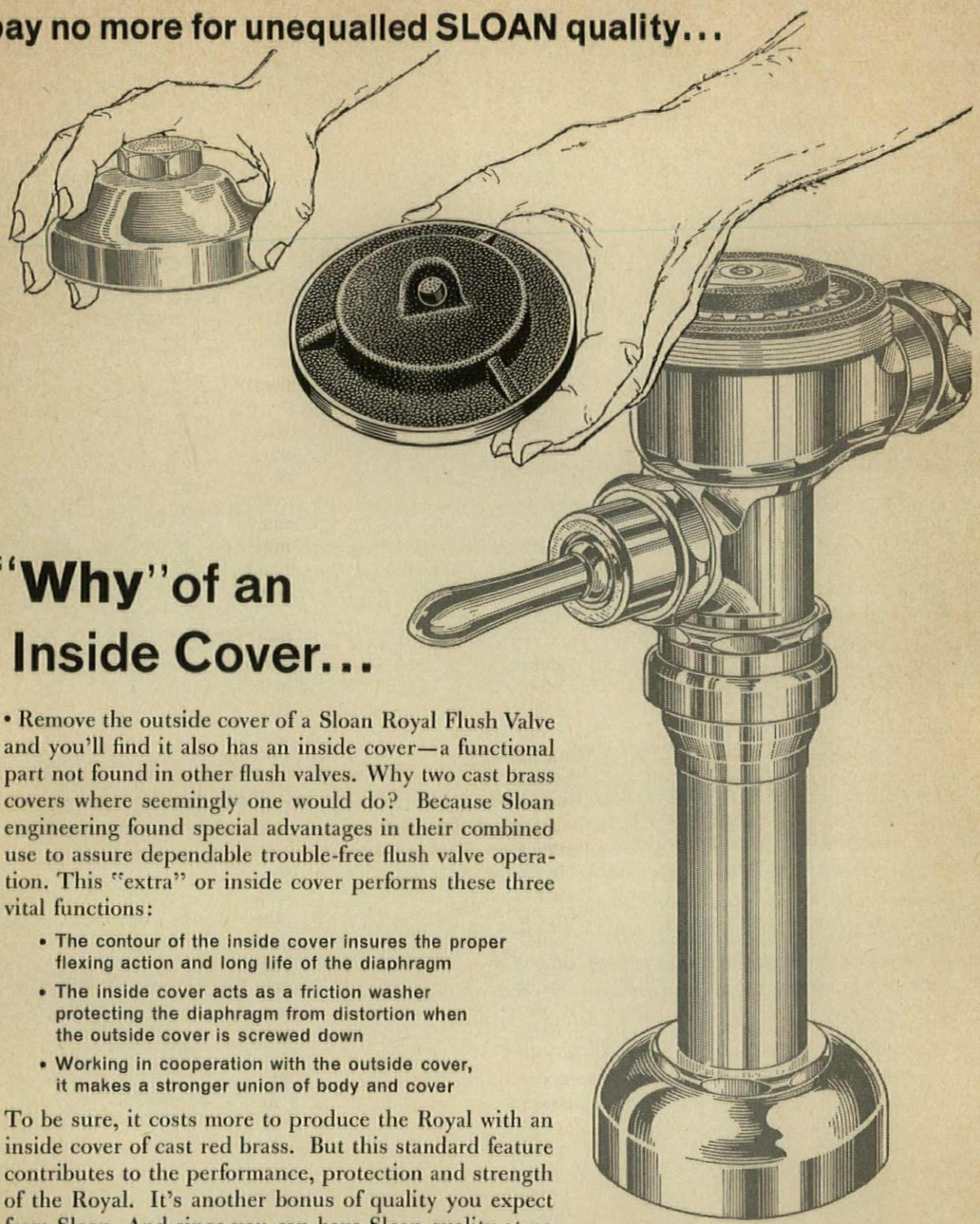

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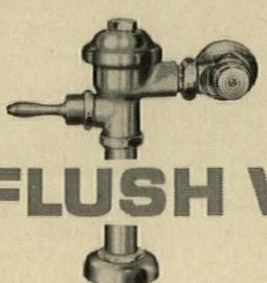

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NAHRO talks foreshadow more federal housing and renewal aid regardless of election outcome

Greater federal support for both public housing and urban renewal can be expected no matter which political party captures the White House this month.

Although they refrained from stating it so bluntly, that was the substance of the addresses of top federal officials to the annual convention of the National Association of Housing and Redevelopment Officials in Detroit last month—an election year NAHRO meeting that was remarkably free of political sniping or acrimony. Vice President Nixon sent the convention a message briefly outlining his ideas for a housing and urban renewal program based mainly on "teamwork of federal leadership, private investment, and state and local responsibility for area development and planning." Senator John F. Kennedy sent it a message favoring greatly expanded federal action in these fields, including the creation of a new Cabinet-rank federal department concerned with "housing and urban functions."

In a forthright speech, Bruce Savage, energetic new PHA Commissioner, indicated that he was prepared to recommend reorganization and expansion of the federal public housing program far beyond the narrow confines in which it has been held by the Eisenhower administration over the past 7 years. By February, said Savage, PHA probably will have exhausted its entire current authorization for 37,000 new public housing units, and will be forced to cut off reservations until Congress approves an additional allocation. "We are anticipating a banner year for total public housing construction starts. I am afraid there are going to be a number of cities which will go to the cupboard and find it bare all too soon."

In the interim, Savage reported, he is drafting an entirely new public housing act that he hopes to submit to Congress next year—"a fast-moving Jet vehicle of today to replace the creaking, aged DC-3 act of the late 30's that, while safe, is inadequate—sure in flight, but terribly limited in scope." If it is economically feasible, he added, next year's public housing bill also should authorize an additional $120 a year federal contribution to local authorities for each unit for the elderly.

Although he withheld the names of participants, Savage said he also hopes to hold the first meeting this month of PHA's development division and a new AIA committee appointed to help it "formulate plans for the lifting of some of our archaic and uninspired design standards that have been plaguing the housing industry for years."

HHFAdministrator Norman P. Mason also saw a "need to pump new ideas and new blood into the public housing program," but devoted the greater part of his talk to broader problems of urban renewal. Mason warned that "uncontrolled and unplanned suburban development" will bring blight to the suburbs the same as to central city areas. Decrying "wasteful and inefficient use of outlying land," Mason said suburban jurisdictions must gain control of their development and prevent speculation and unnecessary land inflation.

In a strong and undisguised defense of federal aid for urban renewal and redevelopment, URA Commissioner David M. Walker cited a recent URA study that showed that most projects yield a minimum increase of about 300 per cent in local taxes. "Any such program is not creeping or galloping socialism," said Walker, "it is just good economics—and any social gains are simply extra bonuses." Although he is opposed to unlimited urban renewal appropriations, Walker promised that he would fight for whatever sums local agencies are able to digest efficiently and economically. The federal government, he declared, owes local communities not only whatever fiscal support they require, but also must accept a large degree of the leadership that is necessary in urban renewal. He also plans to recommend to the new Congress that URA be allowed to spend ½ of 1 per cent of its appropriations for urban problem research programs, comparable to the federal highway appropriation research allowance. No ideas for solving urban renewal problems should be rejected for being "too bold," he said, and in another decade it should be possible to look back and marvel at the "old and cumbersome techniques of the 50's."

In the most incisive talk of the entire convention, Chicago builder Philip M. Klutznick, one of the first directors of the federal public housing program, scored those who oppose federal aid for public housing and urban renewal because it will "unbalance" the federal budget. Both of these are capital outlay programs, he explained, and until the US develops a separate capital spending budget the same as most cities and large corporations, such spending is bound to distort the picture when included in the single catch-all federal operating and capital spending budget. Of total spending necessary in these fields Klutznick said: "A failure to spend enough in each of the next ten or 15 years may be more wasteful and futile than a willingness to look at the whole task squarely and to budget and spend what is needed to rebuild our cities and shelter our people. In my judgment the expenditure of $3 to $4 billion a year will prove to be sounder economics and better social action than piddling away with one-tenth or one-fifth of that sum while solving nothing."

As president for 1960-1961, NAHRO installed Dr. Karl L. Falk, Chairman of the Housing Authority of Fresno,

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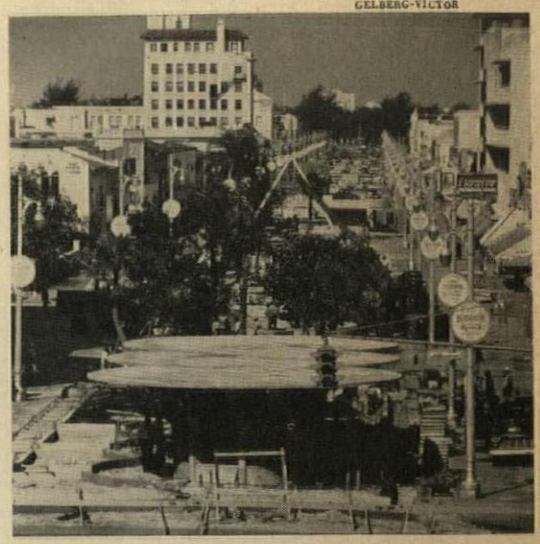
GELBERG-VICTOR



MIAMI BEACH JOINS THE MALL PARADE

In the face of sales losses to rival new shopping facilities, merchants along Miami Beach's fashionable Lincoln Road have decided they would fare better by converting their street into a traffic-free pedestrian shoppers' mall. The transformation, to be completed by Thanksgiving, is being financed with a $600,000 bond issue the city approved for this purpose, plus municipal landscaping services. Plans in the Miami idiom were executed by Lapidus, Kornblath, Harle & Liebman. The structure being erected in the middle of the road (foreground) is a group of three mushroom-shaped concrete forms to provide shelter from sun or rain. It will also have removable plastic walls to protect displays from looters.

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Calif., and president of the First Federal Savings & Loan Assn. of Fresno. As vice presidents for its three newly reorganized divisions it installed D. E. Mackelmann, Commissioner of Chicago's Community Conservation Board (codes division); Monsignor Leo A. Geary, Vice-Chairman of the Buffalo Municipal Housing Authority (housing division); and Albert J. Harmon, Executive Director of the Kansas City Housing and Land Clearance for Redevelopment Authorities (renewal division).

Gateway project awarded to Perini group

Seven months after receiving nine competing proposals for its $100 million Golden Gateway project (FORUM, April '60), the San Francisco Redevelopment Agency named the winning developer last month: Perini-San Francisco Associates, headed by Massachusetts builder Louis Perini. Architects for the winning plan were Wurster, Bernardi & Emmons and DeMars & Reay, with Pietro Belluschi and Milton Schwartz as consultants.

Design superiority was credited with tipping the scales in favor of the Perini combine, but financial considerations were not overlooked. Before getting the nod, the winner had agreed to pay a "fair reuse" price of $8.6 million for the site, an increase of $3.1 million over its initial offer.

In the last stage of the competition the agency had to select from among three proposals that had received favorable notice from an architectural advisory panel chaired by Architect Mario J. Ciampi. Under instructions from the agency, however, this panel had not "rated" the proposals in any formal order of merit. The two other finalists with the Perini group were: the Kern County Land Company and Del E. Webb Construction Co., which submitted a plan by Welton Becket & Associates, with Lawrence Lackey as consulting architect, and Tishman Cahill Renewal Associates, with a plan drawn by Architects John Carl Warnecke & Associates, Gardner A. Dailey & Associates and Victor Gruen Associates.

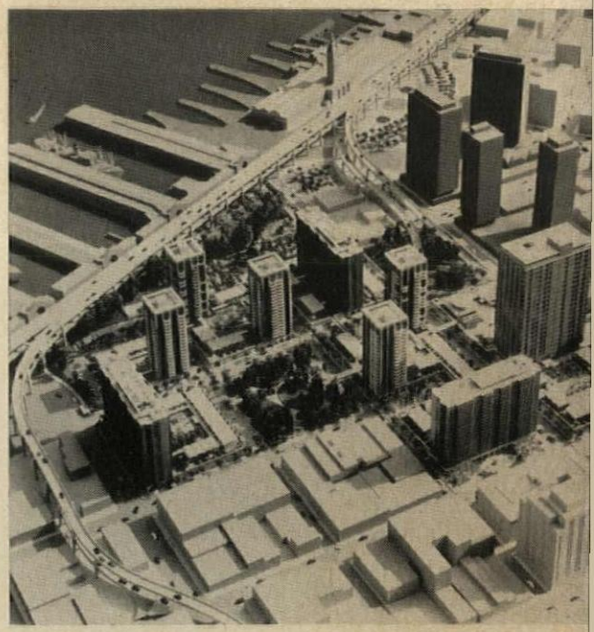
Complicating the task of the agency's commissioners in selecting the winner was a Kern-Webb offer to pay $2 million more for the residential section of the project than the $6 million fair reuse price for which this section will be transferred to the Perini group. Originally Kern-Webb bid $6 million for this section, plus an additional $6 million in another 10 years, or, if it preferred, $9 million more after 20 years. But Washington URA officials required that these deferred premium payments be offered on a present cash equivalent basis—which reduced them to $2 million, or a current total bid of $8 million. In the end, Tishman Cahill also offered $6 million to purchase the residential tract, and an alternative lease offer.

In a lengthy statement explaining its difficulties in reconciling the complex financial offers and the design merits of the three contenders, the agency noted that Kern-Webb's $2 million premium would have to be reflected in higher rents and in a delay in full occupancy. "It should not be assumed that the $2 million differential was not attractive. It was, but finally not attractive enough to outweigh what the agency considers to be 1) the superior attractiveness of design and 2) the lower rentals, the earlier marketability, and thus the earlier success and early $3 million a year tax return which should be achieved in the execution of the Perini proposal." As the agency also explained, the city would only be sacrificing $667,000 in rejecting the Kern-Webb offer, because the other $1,333,000 would be offset by the higher federal grant it would obtain covering two-thirds of the net cost of the project site.

On the other hand, the $6 million "fair reuse" price for the residential tract was believed to be considerably above the original "fair reuse value" calculated by the agency last March and approved then by the regional HHFA office in San Francisco. Redevelopers were never able to learn the fair values or prices for the separate residential and commercial tracts approved last March, and the local agency and HHFA office now say those were only "minimum" prices, and the ultimate final fair reuse values were not determined until all bids were received.

As a condition to being selected as the redeveloper, the Perini organization also agreed: 1) to engage at least two additional architects, subject to concurrence by the agency, to give its project "even greater variety among individual structures"; 2) to invest approximately $1 million in community facilities to be maintained at the developer's expense, and 3) to spend approximately 1 per cent of total construction costs for exterior works of art, murals, statuary and fountains in addition to basic landscaping.

The odds are that the winning architects will choose two of their defeated competitors to round out the design team.



CONTRACT-WINNING PLAN for Golden Gateway redevelopment (model viewed from northwest) was prepared for Perini-San Francisco Associates by Architects Wurster, Bernardi & Emmons and DeMars & Reay, with Pietro Belluschi and Milton Schwartz as consulting architects.

Zeckendorf-Alcoa plan aluminum "showcases"

To obtain a "showcase" of contemporary architecture that will afford it an "unprecedented opportunity to develop new uses for aluminum in apartment housing and other structures," the Aluminum Company of America has purchased a 40 per cent interest in the huge Century City development in Los Angeles planned by Webb & Knapp (FORUM, Sept. '59).

Said Board Chairman Frank L. Magee in announcing Alcoa's partnership with William Zeckendorf's realty and building organization: "We regard this venture as an invaluable challenge to the type of ingenuity which, in less than a decade, has made the building field aluminum's largest market. The aluminum curtain wall, now standard for schools, stores and office buildings, should hav an even greater future as an esthetic and practical facing for multiple-unit dwellings. We expect Century City to prove this conviction."

Subsequently Alcoa and Webb & Knapp announced that they also will be 40-60 partners for a $40 million glass and aluminum apartment and office development immediately north of the United Nations in New York. This will be designed by Harrison & Abramovitz, a leading member of the group that designed the UN buildings, and by I. M. Pei & Associates, consulting ar-

continued on page 9

New Dry-set Mortar

makes ceramic tile cost breakthrough!

What It Means in Savings

The new mortar, consisting of ordinary portland cement modified by polymeric additives, is making possible tremendous savings in time, materials and labor. Invented by the scientists of the Tile Council of America Research Staff, the new dry-set mortar is proving itself fast in both interior and exterior applications, on walls and floors, in schools and commercial installations.

How It Performs Better

Use of the new mortar permits tile to be applied directly on dry brick or cement masonry, cement plaster, poured concrete walls and floors and other approved surfaces. In many cases it completely eliminates lath and scratch coats. In contrast to the conventional ¾″ mortar bed, the new mortar permits much thinner beds—1/16″ to ⅜″ in depth on the average. Bonding strength is much greater than the regular cement bed. Mixing is simpler because of the small amount of mortar used. Tile does not have to be soaked, back up walls do not have to be sprayed—the whole job goes faster.

Why It Works Better

When the dry-set mortar is mixed with water on the job, the resulting mix is water retentive and trowels more smoothly with no sagging. Uneven surfaces can be leveled by adding screened sand to the mortar.

Manufactured by L & M Tile Products, Dallas, Texas; Permalastic Corporation, Detroit, Michigan; Technical Adhesives, Inc., Evanston, Illinois; The Upco Co., Cleveland, Ohio, the new mortar is available nationally. Look for the seal of approval. For more information ask your tile contractor or write to any Tile Council of America office listed below.

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chitects for Webb & Knapp. In Pittsburgh, too, Webb & Knapp has made an agreement with Alcoa to use its aluminum as the major facing for three new apartment towers in the Lower Hill redevelopment (Projects, page 61).

Steel has not been idle while the nation's top aluminum producers have been moving into client positions in urban renewal. Last month Armco Steel Corp. retained Carl Koch & Associates to develop prototype garden apartment designs that will make "maximum intelligent use of steel." Said Armco President Logan T. Johnston: "For the steel industry, housing represents a major, relatively untapped new market. We have great faith not only in the potential market for steel in residential applications, but even more in the construction economies, durability, convenience, and aesthetic potential of steel—skillfully and intelligently applied in housing."

Downs hits investors for dictating to architects

Unsophisticated real estate investors, typified by syndicates that are overly "profit-oriented or profit-driven" are making it progressively harder for the architect to control the destiny of his own building, insofar as he can design it as he wants to and specify the exact materials to be used. That was the observation of James C. Downs, Jr., Chairman of the Real Estate Research Corp., in addressing the annual meeting of the Producers' Council in Chicago last month.

In former years, Downs explains, most architects' clients represented "sophisticated capital"; they had accumulated investment funds in other fields and then they commissioned new buildings, giving the architect a free hand to specify practically every item of construction or equipment as he saw fit. But today such clients are a vanishing breed. Instead there are groups that are eager to build for as little cash as possible, and in doing so not only want to cut the architect's fee but also compel him to keep revising his plans to make use of one product or another that some one may be able to obtain under a "deal" that will reduce cash input.

Even in institutional construction, such as new home office buildings for large corporations, there is an increasing amount of pressure placed on the architect to utilize products that may serve the financial interests of the corporation or the side interests of some of its officers more than they will suit the design of the structure, said Downs. A more refined example of the lengths to which other interests may go to control or influence the use of their own particular products, Downs added, is the program of large producers such as Alcoa and Reynolds, which have undertaken renewal projects to expand the market for their products (above).

Other highlights of The Producers' Council meeting:

▸ A stimulating talk by AIA President Philip Will, Jr. touching on such wide-ranging topics as the "new era of urban renewal" that is dawning in America; the unfortunate plethora of so much "catalog architecture" that results from the convenience and persuasiveness of producers' catalogs, and the need for building material producers to assume the full responsibility for the performance of their products, instead of leaving it for architects to carry this burden.

▸ A prediction by Elmer A. Lundberg, newly elected President of the Council, that the 60's will be characterized by an increased demand for "excellence" and utility in all products, while those that try to cash in on newness or novelty alone will fall by the wayside. Lundberg is Director of Architectural Services for Pittsburgh Plate Glass Co. He succeeds H. Dorn Stewart, of Allied Chemical Corp.

Mayor and Council feud over plan for state office in Columbus, Ohio redevelopment project

Early this year, the Ohio State Public Works Department decided to erect a new state office building in downtown Columbus near the State House. The $11 million building was to be the first unit in a $70 million state complex to be developed over the next 20 years (see photo), and the site was to be within the Market-Mohawk Title I project of the Columbus Slum Clearance and Rehabilitation Commission.

Almost immediately, however, Mayor Ralston W. Westlake opposed the location. In a bitter knock-down drag-out row that has followed, Columbus has witnessed the spectacle of delaying tactics by the mayor that threaten to invalidate the state's appropriation for the building (which will lapse if the project is not under contract by next July). It has also witnessed, by a 7-0 vote, the creation by the City Council of a special committee directed to negotiate the sale of the site to the state because of the Mayor's refusal to allow the city's redevelopment agency to do so through ordinary procedures.

After a trip to Washington, this special committee won approval from the Urban Renewal Administration to revise the Market-Mohawk redevelopment for this purpose, by permitting a public rather than a private office building in this section of the project. But more adamant than ever against having the state office building in this location, Mayor Westlake has now re-won the support of the three Republican members of the City Council (the other four are Democrats) and has thus gained an ability to delay, but not prevent various routine council approvals still necessary for the project. When his fellow-Republican Council members were against him, the Council could adopt such measures on first reading if approved by at least six members; whenever the margin is less than that they must be laid over and it takes about 45 days for final enactment over a mayoral veto. Ostensibly, the mayor cannot block the project absolutely; but if it can be delayed and if Republicans should re-win control of the state legislature from the Democrats this month, he might be able to seek legislative action to thwart the plans of the State Public Works Department.

Mayor Westlake by conviction and tradition has been committed for years to the continued development of the present Columbus civic center along both sides of the Scioto River several blocks west of the State House and the central business district, in contrast to the Market-Mohawk project location just east of the State House. Planning for the riverside civic center began

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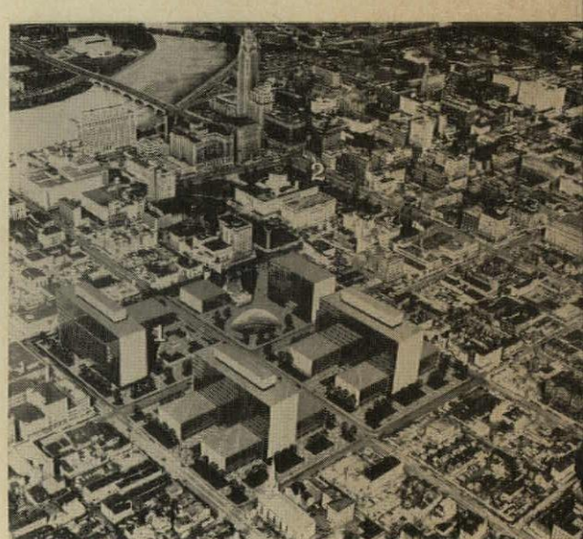

STATE OFFICE BUILDING (1) proposed as part of Columbus, Ohio, Title I project, would be first unit in eventual four-block downtown State Civic Center near State House (2).

after a serious flood in 1913, and as a member of the 1917 City Council, Mayor Westlake's father turned the first shovelful of earth when this project was formally launched in 1917. In lacklustre monumental style, this now contains the city hall, a federal building and another state office building.

For the state's part, Public Works Director Theodore J. Kauer objects to another state building in the old civic center area because, he says, 1) it is still subject to flooding, 2) foundation costs would be too high, and 3) so would site acquisition costs. On the positive side he favors the Market-Mohawk project site because of its closer proximity to the State House and the prospect of a lower land cost. In addition, he says, some 3,000 state employees in this area would help support the housing and commercial facilities in the rest of the Market-Mohawk redevelopment project, and in this location the state would also avoid the necessity and extra expense of building cafeteria facilities for its workers because of the abundance of nearby downtown restaurants.

Indirect support for the Market-Mohawk area came from an independent source last December, just before Westlake succeeded Democratic Mayor Maynard E. Sensenbrenner and several months before the state had indicated any interest in taking any portion of the project area and disclosure of its plans for a large-scale state civic center development. At that time the Urban Land Institute made a study of the downtown Columbus area at the urging of Columbus Realtor John W. Galbreath, former NAREB president. In discussing possible locations for new state office buildings, ULI's report recommended that such structures be located as close and as accessible to the core area of the city as practical, and, having only one in mind, recommended that it be located cater-corner from the State House, just one block from the site where the state now proposes to build the structure now in dispute.

JACK KRAUSKOPF

WRIGHT CHURCH RISES IN MILWAUKEE

Looking like a fortress under construction, the large circular Annunciation Greek Orthodox Church in Milwaukee (FORUM, Oct. '56) designed by Frank Lloyd Wright is scheduled for completion next June. To be topped with a blue dome, 106 feet in diameter, the structure will have sunken gardens each side of its entrance, and will cover only about one acre of its spacious 20-acre site.

FAA considers regulations on building heights

Under a proposed regulation of the Federal Aviation Agency, it may be necessary in the future to give advance notice to this agency of all plans for construction or alteration of any buildings, smoke stacks, water towers, or other structures that would rise more than 150 feet above the ground (or above water level if erected over water). In addition notification would have to be given of plans for any construction or alteration within 15,000 feet of an airport or other landing area, that would rise more than 1 foot above the ground or water for each 100 feet or fraction from the nearest boundary of the airport. In the case of

construction within 5,000 feet of a heliport, notice would be required if the height is to exceed 3 feet for each 100 feet of distance from the heliport.

These proposed aviation safety criteria would apply everywhere, and not merely to regular airport approach and takeoff zones, which are already subject to special regulations. Ordinarily they would not bar the construction of buildings that exceed these heights, but would give FAA authority to hold public hearings or resort to other formal actions to prevent any construction that it felt might constitute a hazard to aviation. The proposed regulations also incorporate previous air safety provisions covering the location and height of broadcasting industry antennae that have been administered through the Federal Communications Commission.

Chicago eases rules on prestressed concrete

Producers and users of prestressed precast concrete have won a number of concessions from the stern and cautious Chicago Buildings Department, which earlier last summer issued a disapproving "warning" about the use of such material (FORUM, Aug. '60).

After a lengthy industry advisory conference with the Buildings Department and study by the latter of a 400-page analysis of tests made in England, Holland, California and by the Chicago Underwriters' Laboratory, the city has now approved qualified use of such material for various types of construction except industrial plants with more than average fire risks, reports Randall M. Dubois, president of the Prestressed Concrete Institute. This sanction, says Dubois, "should help bring about greater utilization in the Chicago area of various design and construction features which have already proved themselves successful both here and abroad." Under the Building Department's new rules prestressed precast slabs, beams and girders may be used, provided they are tested and certified by qualified authorities, and provided that they have a minimum of 1½ to 2 inches of concrete surrounding their reinforcing steel.

Building Commissioner George L. Ramsey's formal announcement of approved uses reiterated his concern over fire damage hazards, however. "As a word of counsel and advice to the designing professions," he declared, "they owe to their clientele . . . conservative . . . application of this material to eliminate the need for replacement after the event of conflagration." Nor do the new regulations apply to designs employing post-tensioned concrete, he added. "At this time, because of the limited amount of information available and from what few tests have been made, the entire field of post-tensioned concrete shall be considered as a separate study."

People

When President *Philip Will, Jr.*, announced the resignation of *Edmund R. Purves* as AIA's Executive Director, he summarized the latter's prodigious contribution to the organization in three succinct sentences. "When he joined the Institute Headquarters staff in 1941 we had a membership of 3,000, lacked any form of contact with the Federal government, and enjoyed little or no recognition as a profession with a service of high value to the community. Today, we number nearly 14,000 members, maintain effective and widespread liaison with the government, business community, and

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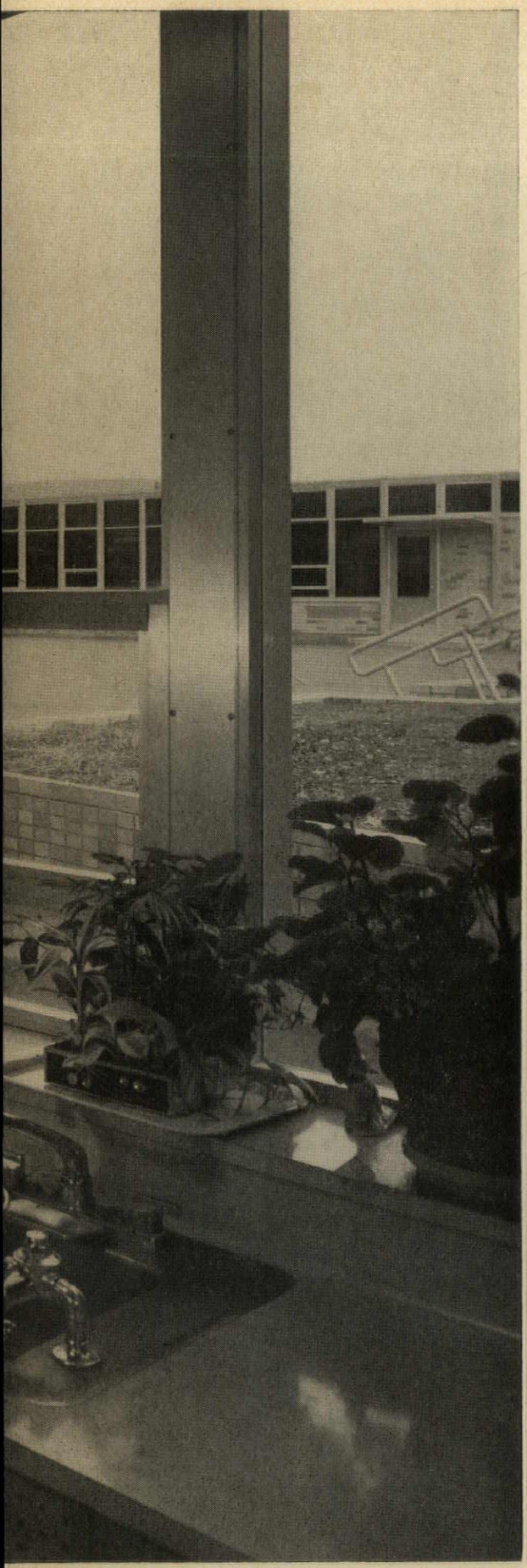

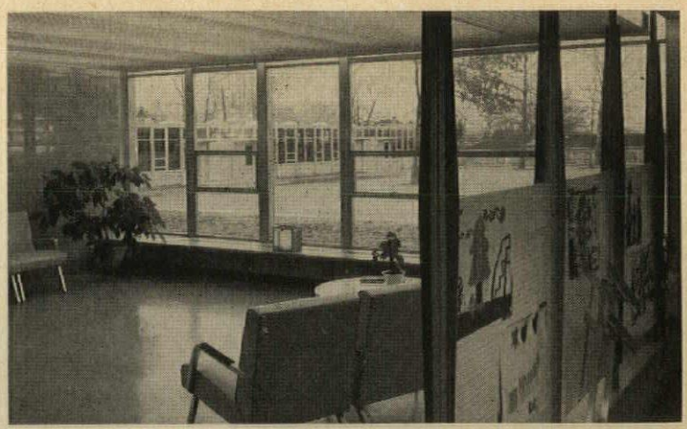

Architects: Woodie Garber & Associates, Cincinnati, Ohio
Contractor: Holt & Reichard, Norwood, Ohio
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SCHEICK (L) AND PURVES

building industry, and hold a prestige second to no other profession. In large measure, we look to Mr. Purves as the source of this strength and vitality."

Succeeding Purves will be **William H. Scheick**, 55, Vice President of the Timber Engineering Co., and former Executive Director of the Building Research Institute of the National Academy of Sciences. Architect Scheick, former University of Illinois Professor of Architecture, will join AIA headquarters on Nov. 15, and through 1961 will be advised by Mr. Purves, 63, while the latter serves the Institute for a final year as Consulting Director.

FOUR MASTERS SALUTE

A two-month program of seminars, lectures, and exhibitions to honor the four founders of modern architecture—**Walter Gropius, Le Corbusier, Ludwig Mies van der Rohe** and the late **Frank Lloyd Wright** will be held next spring by the Columbia University School of Architecture. For two weeks each, **Mrs. Frank Lloyd Wright**, speaking for her late husband, and the three architects will participate in the program, which, says Dean **Charles R. Colbert**, "is aimed at giving these great men a podium from which to address the world they have played such a large part in shaping. They have been honored in the past, of course—but never before together. Although the contribution of each has been world-shaking and unique, the four together have furnished the bedrock upon which all contemporary architecture rests. By bringing them together for the first time in history, we hope to celebrate this fact." Retrospective shows of each master's work will be held in the Solomon R. Guggenheim Museum and will be designed by Architect **Philip Johnson**, Sculptor **Costantino Nivola**, muralist **Gyorgy Kepes**, and FORUM Art Director **Paul Grotz**.

NEW YORK CRUSADER

To advocate a course of civic action in New York City as an individual, or without diverse, widespread support is usually about as effective as a voice crying in the wilderness. Undaunted, however, Architect **Nathan R. Ginsburg** set out virtually single-handed last summer to convince Mayor Wagner and the rest of the city that it should adopt a master plan for a huge City Hall area civic center along lines that he has proposed. If the city proceeds according to present ill-considered plans, he declares, it will end up with $60 million of new public buildings in the wrong places, located on the basis of "horse and buggy" thinking and without regard for contemporary traffic requirements. Energy personified, Ginsburg has bombarded the mayor, the press and various city agencies with letters and hefty releases outlining his ideas for a 5,000-car garage under City Hall Park, a crosstown lower Manhattan tunnel and expressway and other features to avoid having a new $20 million municipal building and a new $60 million Federal building become "newly created islands in a sea of traffic." Recently directors of the 600-member New York Society of Architects, of which he is president, endorsed Ginsburg's proposals. But his plan had not yet had extensive, serious study by professional planning organizations, and vigorous support for it from other quarters was yet to develop. Abolishing at one stroke, as it also proposed, the venerable Park Row of newspaper tradition, it tended to make one big traffic-surrounded island out of many little ones. Was that good? Nobody was finding out. Like many crusaders before him, it looked as if Ginsburg had set out too late, was enrolling adherents too few.

MILLSPAUGH TO BALTIMORE

The transformation of an urban renewal writer into a ranking, active urban renewal executive was completed last month, when **Martin L. Millspaugh, Jr.**, 34, took office as Deputy General Manager for Baltimore's $127 million Charles Center project. He succeeds **Dennis Durden**, 30, who received $24,000 a year in this position while on leave since early 1959 from the consulting firm of Larry Smith & Co., in Washington. Millspaugh, who was Assistant Commissioner in charge of the Office of Program Planning and Development at URA headquarters in Washington, will receive $17,000 in Baltimore, where scarcely three years ago (1954-57) he was an *Evening Sun* reporter specializing in urban renewal affairs and had received under $6,000 a year. Baltimore's Mayor receives $15,000 a year which also is less than the $20,000 paid to **Richard L. Steiner**, former URA Commissioner and now head of the Baltimore Urban Renewal and Housing Authority. Millspaugh is not an official city employee. Technically, he is a consultant to **J. Jefferson Miller**, who is engaged by the city as General Manager for the Charles Center project for $1 a year but also is allotted a budget of about

continued on page 16

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MILLSPAUGH

$40,000 a year including salaries for his personal aides. Millspaugh was born in Columbus, Ohio, but raised in Baltimore and served in the Air Force in the Pacific during the war. Princeton graduated him summa cum laude in 1949, and in 1958 he was the co-author of *The Human Side of Urban Renewal* with **Gurney Breckenfeld**, of HOUSE & HOME.

COMPETITION WINNERS

A two-man team from Michigan and Mississippi, Architect **Edward Colbert**, of the office of Ragland Watkins in McComb, Miss., and **Alfred J. Petrilli**, of the office of Minoru Yamasaki & Associates, Detroit, won the $10,000 grand prize in the second annual design competition of the Mastic Tile division of The Ruberoid Co. In the professional section of this $25,000 competition, the $5,000 second prize went to **Edwin F. Harris Jr.**, of the office of Charles H. Kahn, of Raleigh, N. C., and the $2,500 third prize to **Marvin Hatami**, affiliated with the office of Philip Johnson Associated Architects, New York. The three top student section winners were **John Scarlata**, Pratt Institute, Brooklyn; **Richard M. Foose Jr.**, Columbia University School of Architecture; and **Richard C. Marcantonio**, Pratt Institute.

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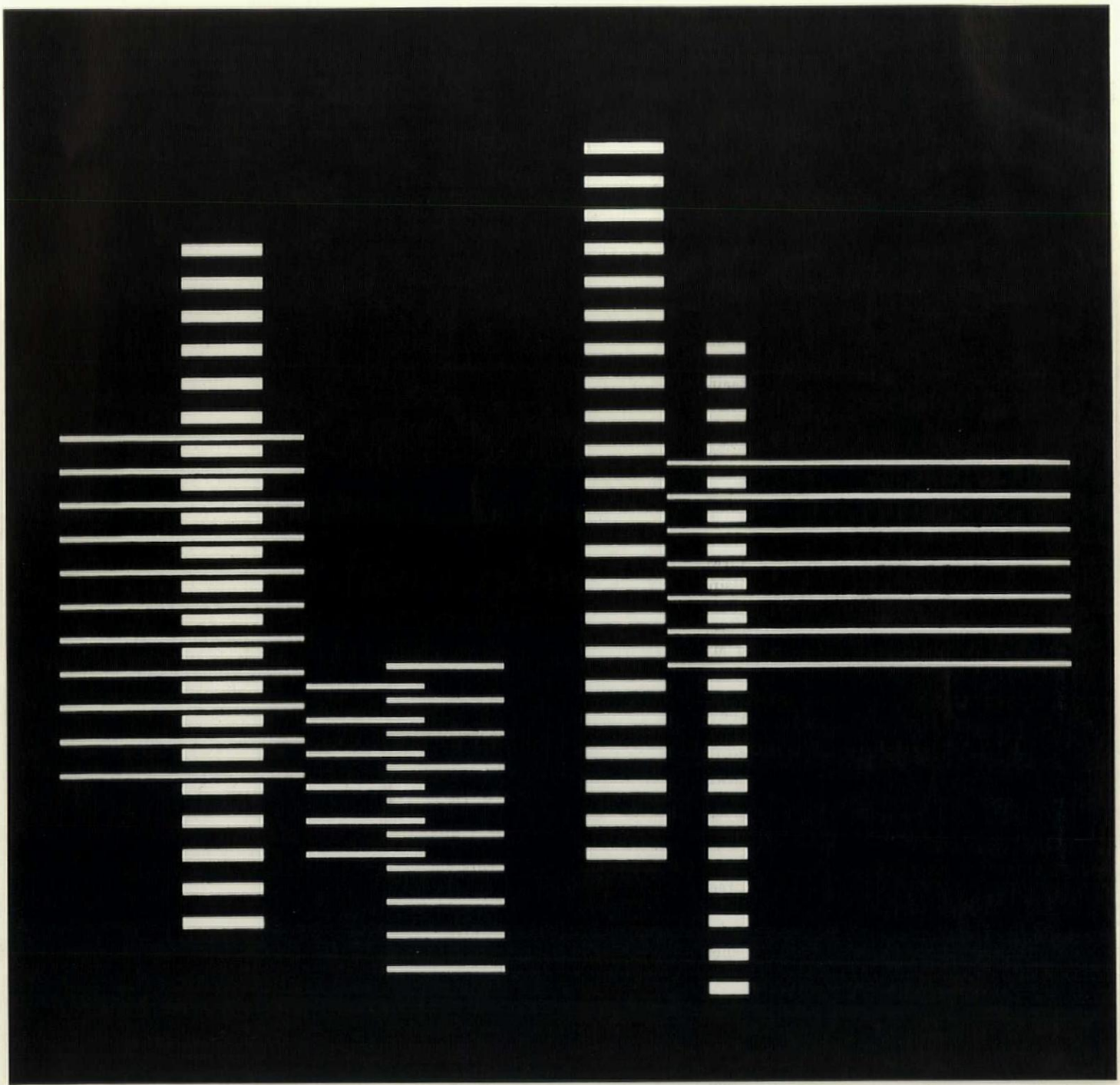
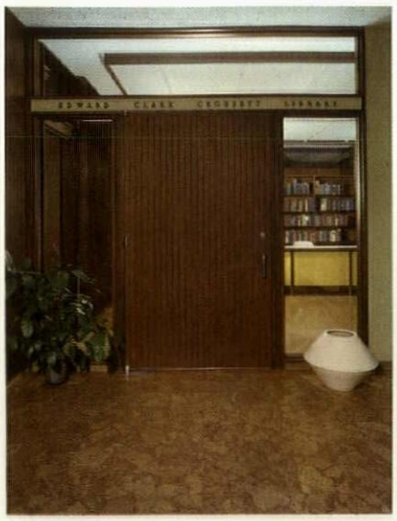
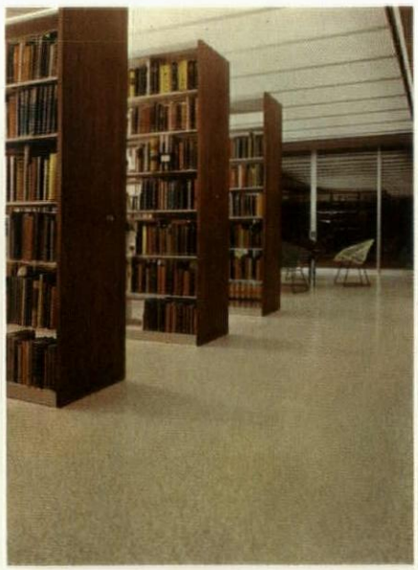


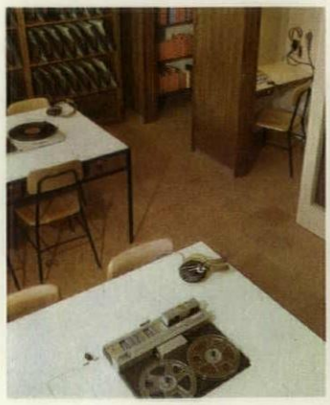
"Skyscrapers I," Josef Albers

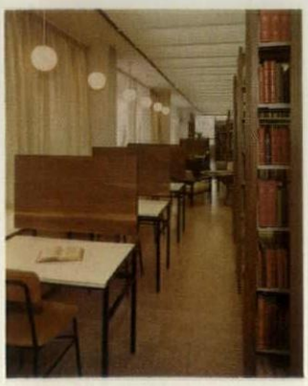
A PORTFOLIO OF MID-TWENTIETH CENTURY ARCHITECTURAL INTERIORS – WITH COMMENTS BY VITRUVIUS A 16-page collection of views of important new buildings. Quotations from Vitruvius' "The Ten Books on Architecture" suggest that, while there are always new architectural functions and forms, certain precepts and truths are inherent to good architecture in any period.

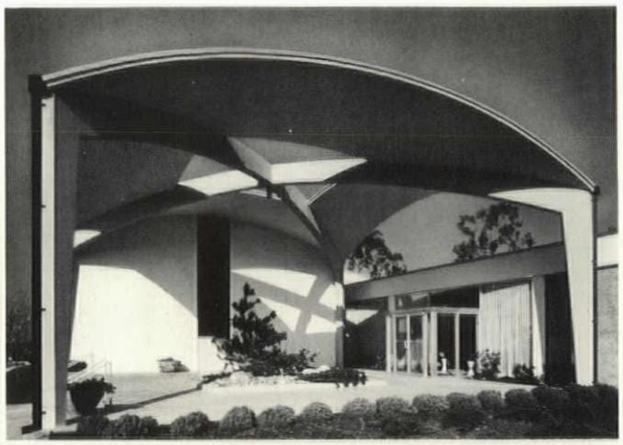




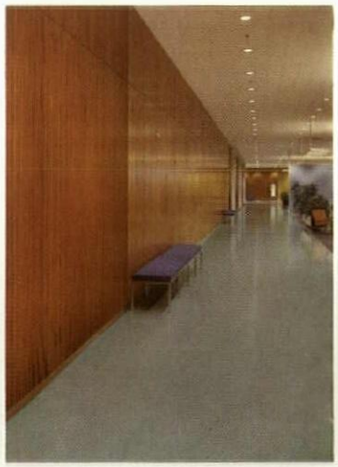
"Architecture," states Vitruvius, "depends on Order, Arrangement, Eurythmy, Symmetry, Propriety, and Economy. . . . Eurythmy is the beauty and fitness in the adjustment of the members." Bennington College Library, Bennington, Vermont. Architects: Pietro Belluschi and Carl Koch & Associates, Cambridge, Massachusetts. The floors: Armstrong Custom Vinyl Cork Tile . . . chosen for the remarkable way it combines the natural beauty of cork with the practicality of vinyl; Armstrong Tessera (sheet vinyl) Corlon . . . chosen for its expressively simple design and gentle colorings.

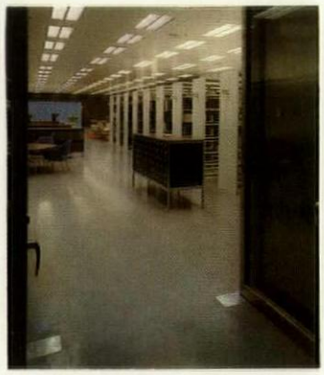


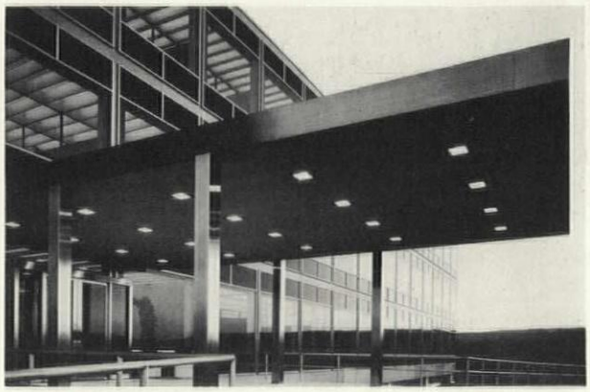




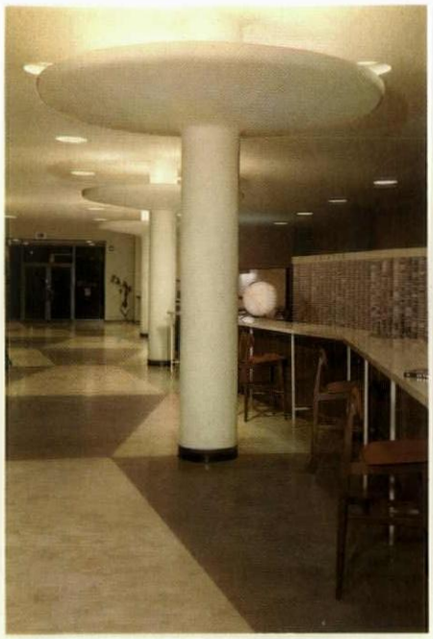
"Order gives due measure to the members of a work considered separately, and symmetry, agreement to the proportions of the whole. It is an adjustment according to quantity. By this I mean the selection of modules from the member of the work itself, and starting from these individual parts of a member, constructing the whole to correspond." Parke Davis, San Francisco. Architects: Minoru Yamasaki and Associates, Birmingham, Michigan; Associated Architects: Knorr and Elliott, San Francisco. The floor is Armstrong Excelon (vinyl-asbestos) Tile . . . chosen for its clearly modern styling, moderate cost, and its practicality for these busy offices.

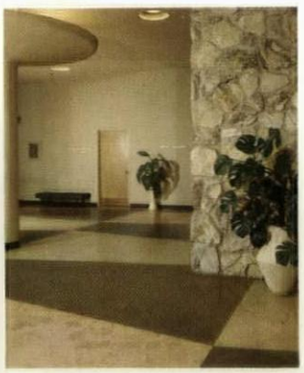




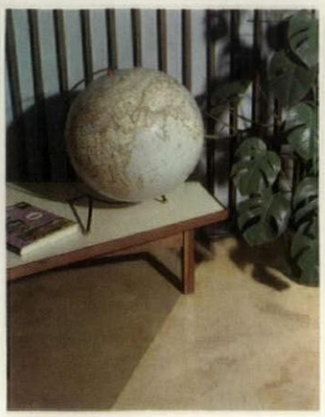


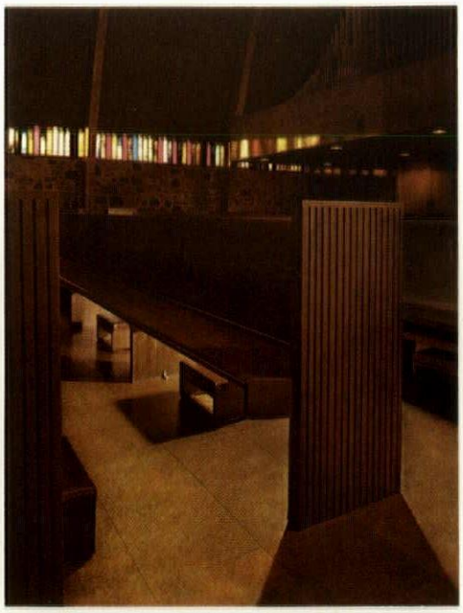
"For in all their works, they proceeded on definite principles of fitness and in ways derived from the truth of Nature. Thus they reached perfection, approving only those things which if challenged can be explained on the grounds of truth." Connecticut General Life Insurance Company, Hartford, Connecticut. Architects: Skidmore, Owings and Merrill, New York City. The Graphite Gray floor is Armstrong Linotile . . . chosen because, like fine leather, it has the unique ability to improve and mellow with wear and age.



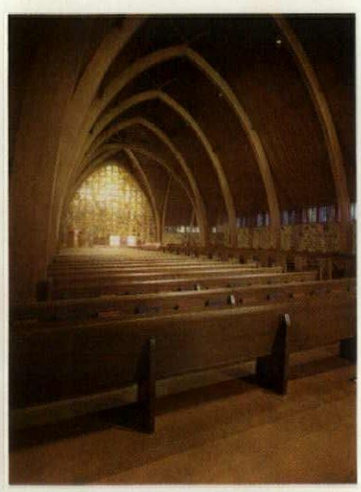


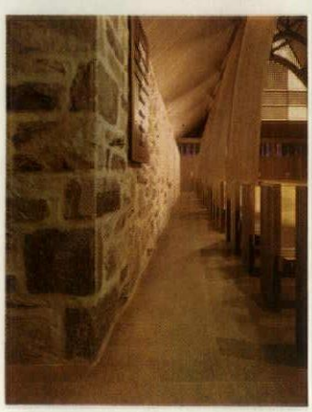
"Propriety arises from usage when buildings having magnificent interiors are provided with elegant entrance-courts to correspond; for there will be no propriety in the spectacle of an elegant interior approached by a low, mean entrance." Automobile Club of Washington (AAA), Seattle. Architects and Engineers: John Graham and Company, Seattle. The floor is Armstrong Textelle Linoleum . . . chosen because large-scale, trapezoidal designs could be easily installed with the minimum of seams.

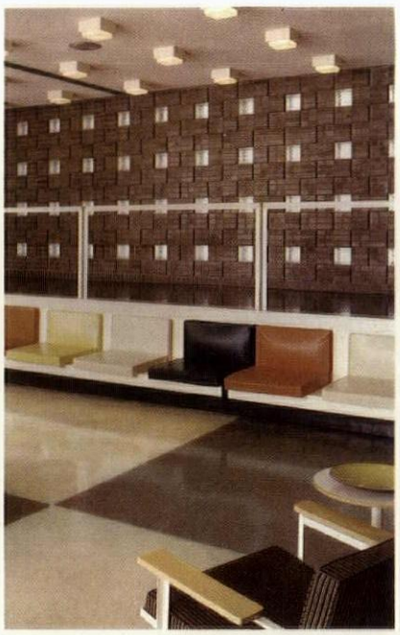




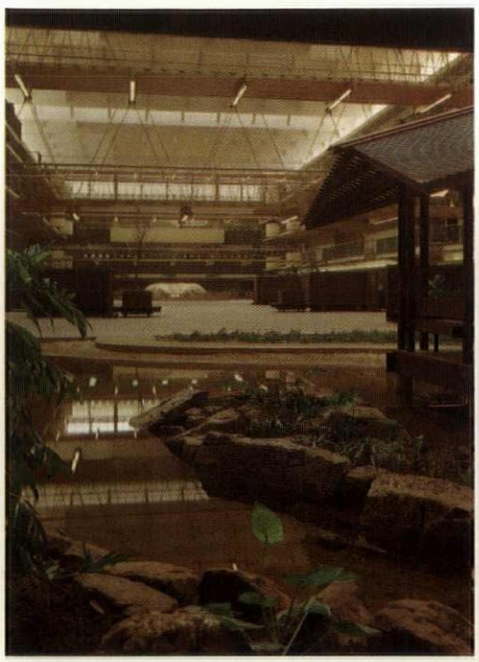
"The design of a temple depends on symmetry, the principles of which must be carefully observed by the architect. They are due to proportion. Proportion is a correspondence among the measure of the members of an entire work, and of the whole to a certain part selected as standard." Church of the Redeemer, Baltimore. Architects: Pietro Belluschi, Cambridge, Massachusetts, and Rogers, Taliaferro and Lamb, Baltimore. The floor is Armstrong Cork Tile . . . chosen for its rich, natural texture and the underfoot quiet and comfort needed for a church.

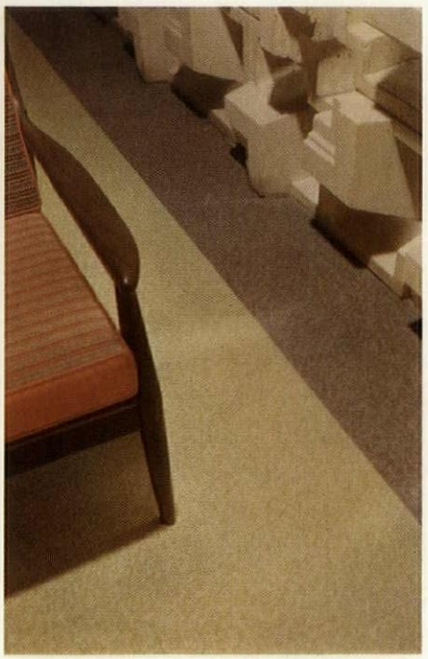




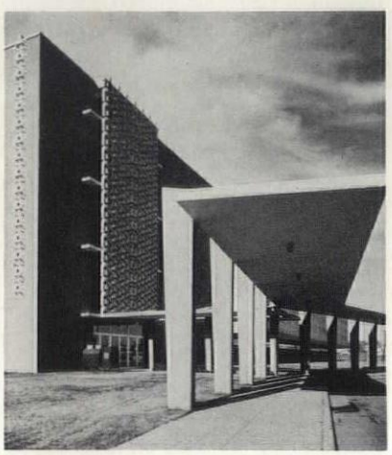


According to Vitruvius, "Symmetry is the proper arrangement between the member of the work itself, and the relation between the different parts and the whole general scheme, in accordance with a certain part selected as standard." International Minerals and Chemical Corporation, Skokie, Illinois. Architects: Perkins and Will, Chicago. The floors: Armstrong Linotile . . . chosen for the lounge because it gives a rich, smart appearance and assures fast, economical maintenance; Armstrong Custom Corlon (homogeneous vinyl) Tile . . . chosen for the cafeteria because of its clear, fresh colors, and its immunity to staining and damage.





"Invention, on the other hand, is the solving of intricate problems and the discovery of new principles by means of brilliance and versatility." Dallas Trade Mart. Architects: Harold A. Berry and Donald H. Speck, Dallas; consulting architect: Harwell Hamilton Harris, Dallas. The floor is Armstrong Tessera Corlon . . . chosen for its thorough-going ruggedness and its interesting, swirling patterns formed by colored vinyl chips set in clear vinyl.



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Excelon (vinyl-asbestos) Tile,
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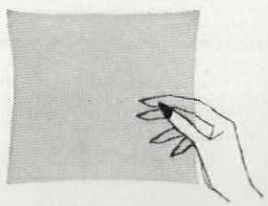

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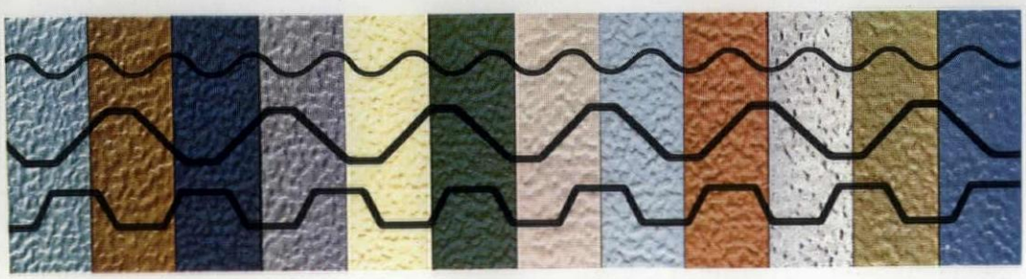
Building site, courtesy J. M. Straus Co., General Contractor, Newark, N. J.

. . . and holds the line on costs

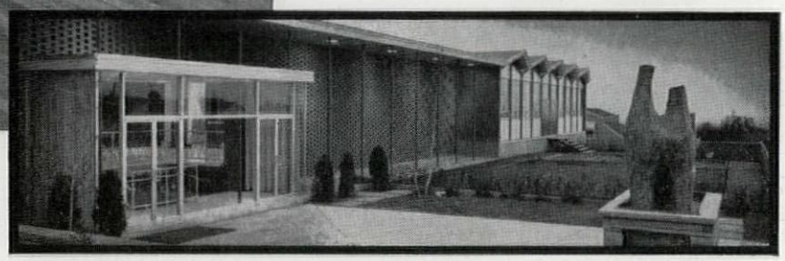


Alcoa has an established architectural consulting service for architects, owners, consulting engineers, contractors. For technical counsel on aluminum applications, contact your nearest Alcoa sales office.

ALCOA
ALUMALURE
FINISH
MADE BY ALCOA

PermaCushion hard maple floor system in Jewish Community Center, Salt Lake City, Utah. Arch: Robert Fowler, Salt Lake City. Gen'l Contr: Joseph Howe, Salt Lake City. Installer: Croft & Ottley Floor Co., Salt Lake City.

FOR MEETING OR COMPETING—



multi-purpose PermaCushion floor system*

For ladies' luncheons, group assemblies or basketball games, specify the versatile PermaCushion free-floating resilient floor system. Its Northern hard maple strips withstand the wear from luncheon crowds and the auditorium's assembled chairs. Its built-in resiliency means basketball players enjoy fast, lively action and suffer no sore ankles or leg muscles.

Of special importance to owner and architect, too, are the PermaCushion system's other advantages. To provide for natural expansion and contraction of the wood and assure permanent smoothness, the flooring is not anchored to structural members of the building. It actually floats on cushioning pads for uniform resiliency and prevention of moisture transmission.

The PermaCushion system is installed only by authorized flooring contractors and is guaranteed by both installer and manufacturer.

If you're looking for a floor that must serve many purposes — and serve them all well — find out more about PermaCushion. For information and name of your nearest installer, write Robbins Flooring Company, Reed City, Michigan, Attn: Dept. AF-1160.

*U.S. Pat. No. 2862255

ROBBINS flooring company

MAKERS OF MODERN MAPLE FLOORS

REED CITY AND ISHPEMING, MICHIGAN

Imperialine

EXTRUDED ALUMINUM GRILLES

TUTTLE & BAILEY

Imperialine

EXTRUDED ALUMINUM GRILLES

Featuring trim, attractive, straight-line styling, Tuttle & Bailey Imperialine EXTRUDED ALUMINUM GRILLES are the answer to architectural demands for air distribution equipment that will harmonize with, or accent, linear design concepts. Universal in application, Imperialine Grilles may be used on the supply or return portions of heating, cooling, or ventilating systems and are ideal for ceiling, sidewall, floor, or sill installation. A Tuttle & Bailey exclusive, the grilles are standard with satin anodized finish. Special finishes and colors are also available.

For complete catalog data on Imperialine Extruded Aluminum Grilles, ask your nearest T&B Representative or write direct.

TUTTLE & BAILEY
division of Allied Thermal Corp.
New Britain, Connecticut

TUTTLE & BAILEY PACIFIC, INC. City of Industry, California

Building: Cobo Hall, Detroit, Michigan. Architect: Giffels and Rossetti, Detroit

Would you have used *glass* in Cobo Hall?

When you put 12,000 lighting fixtures up anywhere, you don't take chances on panels that might warp with time. So, you use glass. It can't warp.

You've got to have light that's true to its source. You can't afford panels that could discolor with age. They have to be glass. Glass never discolors.

Maintenance doesn't come easy or cheap thirty feet from the floor. So, you install glass. Glass can't gather or hold onto dust. It has no static charge.

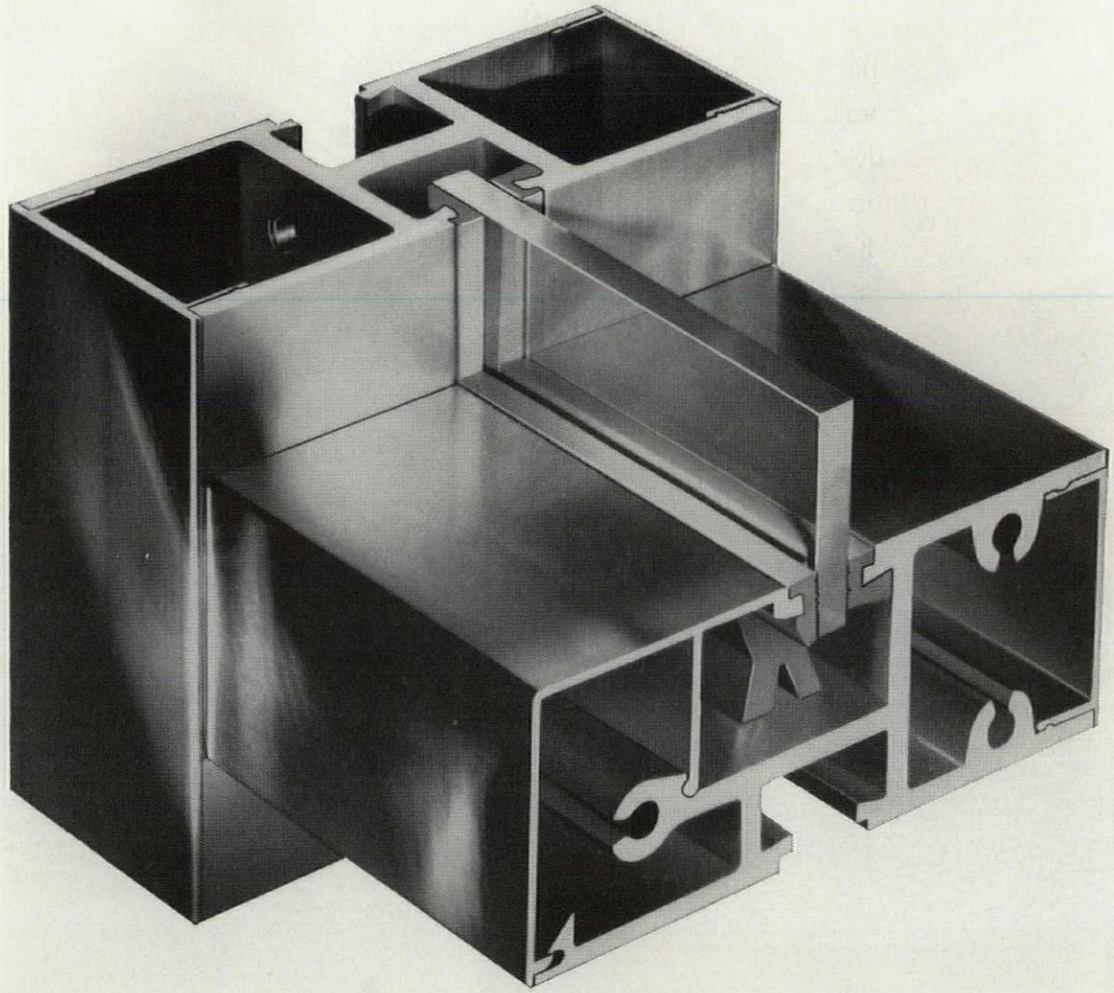
No other material could feed such unwaveringly even light across every one of the 300,000 square feet of exhibit area in this, the world's largest hall.

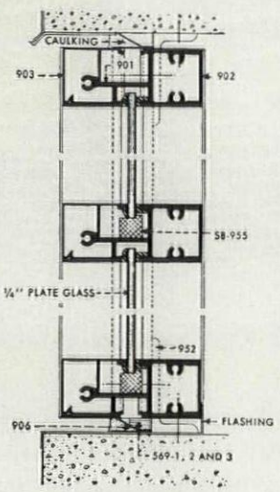
Texture and plain smart looks are vital when you use so much glass across such a wide expanse. You choose Corning's Alba-Lite,® Pattern 93.

If you would like to know all the many reasons you, too, would choose glass when you want lighting that lasts, write to us for "Commercial Lighting Application Guide." 64 Crystal Street, Corning, N. Y.

CORNING GLASS WORKS

CORNING MEANS RESEARCH IN GLASS



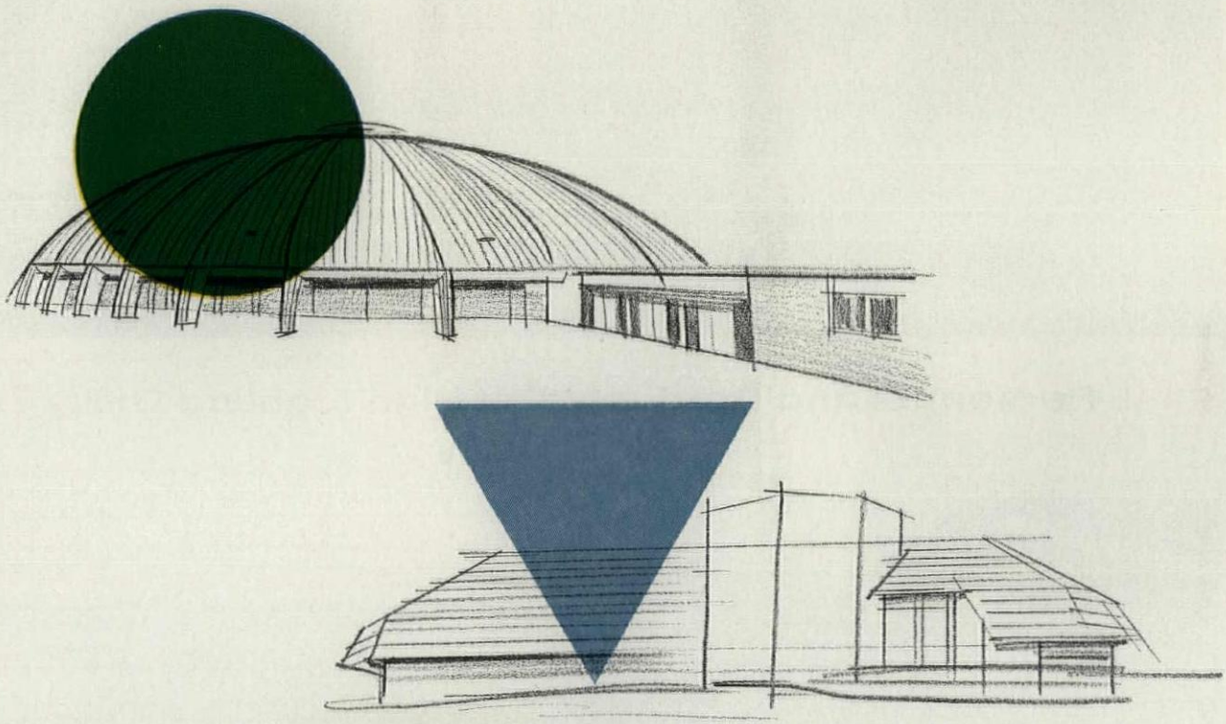


The new PITTCO® "900" Series—You can frame windows and glass-clad walls completely with the related components of the new PITTCO "900" series. It is provided with a drainage system. All members are aluminum; all fastenings are concealed; all glass is held in neoprene strips and recessed to increase daylight opening. And the clean beauty of every line is strikingly apparent. For details, consult your PITTCO Metal Representative.

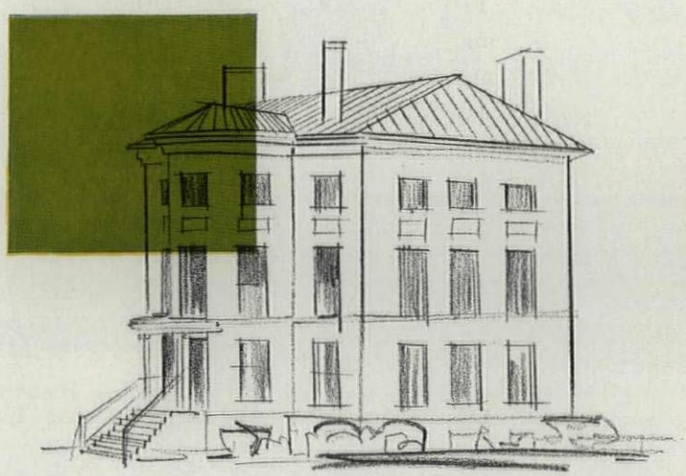
Pittsburgh Plate Glass Company

Paints • Glass • Chemicals • Fiber Glass In Canada: Canadian Pittsburgh Industries Limited

Consider roofing materials for a moment, along with the roof itself which is still the neglected step-child of contemporary architecture. There is a new concept here, and a material—terne metal—which permits this enormously important visual area to become an integral part of the total design concept. From the standpoint of FORM, terne makes available an almost unlimited range of linear effects, of subtle modulations in the interplay of light and shadow. From the standpoint of COLOR, it allows a freedom of expression as broad as the artist's palette. From the standpoint of FUNCTION, it is virtually unmatched among roofing materials, as many century-old installations dramatically attest. Your inquiry is solicited. **FOLLANSBEE STEEL CORPORATION**
Follansbee, West Virginia



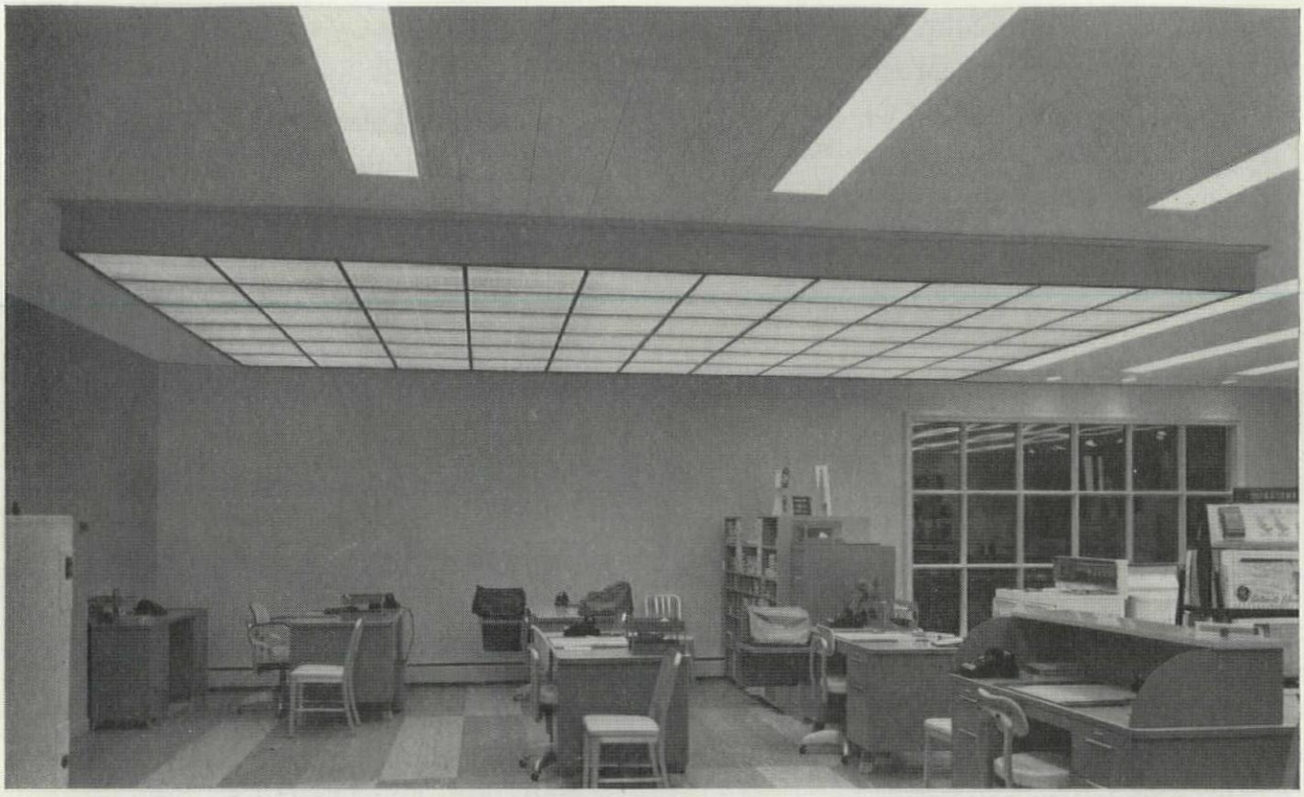
Follansbee is the world's pioneer producer of seamless terne roofing



ALEXANDER MEMORIAL ARENA BUILDING, GEORGIA TECH
ARCHITECT: AECK ASSOCIATES, ATLANTA, GA.
ROOFING CONTRACTOR: R. F. KNOX COMPANY, INC.

DR. FASBENDER CLINIC, HASTINGS, MINN.
ARCHITECT: FRANK LLOYD WRIGHT
ROOFING CONTRACTOR: SWANSON ROOFING & SHEET METAL

HISTORIC "OCTAGON" HOUSE, WASH., D.C.
HEADQUARTERS A.I.A.



Personnel and Products Get High Lighting Utility at This Utility

INSTALLATION: Cape & Vineyard Electric Company, Falmouth, Massachusetts
AREA SHOWN: Showroom and Office
ARCHITECT: Hillman & Wilson, Falmouth, Massachusetts
ENGINEER: Joseph Smith and Ned Hudson, Cape & Vineyard Electric Co.
ELECTRICAL CONTRACTOR: Quinn Electric Company, Falmouth, Massachusetts
DISTRIBUTOR: Finberg Supply Company, Lawrence, Massachusetts
DISTRICT SALES ENGINEER FOR LITECONTROL CORPORATION: Dallas G. Dearmin, 5 Hillcrest Avenue, Greenville, Rhode Island
FIXTURES: 1 — Luminous Lens Ceiling, using Holophane #6024 acrylic lenses; 40 watt Rapid Start strip fixtures on 24" centers. 1 — Luminous Ceiling using yellow Plastic Grid Louvers, 45° x 45° shielding; 40 watt Rapid Start strip fixtures 12" on centers, wired on dimming ballasts. Series 1500 two lamp Rapid Start troffers, using Holophane #6010 Concave Acrylic Lenses, in balance of area.
CEILING HEIGHT: Approximately 10 feet
INTENSITY: Average overall, approximately 200 foot-candles in service.

Perhaps this showroom and office of the Cape & Vineyard Electric Company can't compete with the scenic wonders of Cape Cod. But in the area of interior commercial lighting, the efficiency of this installation deserves a second look.

Note how luminous ceiling panels have been dropped 10" and framed to simulate a large area surface fixture. This is an imaginative and practical way of using lens ceilings where the ceiling cannot be lowered and demonstrates the flexibility of Litecontrol luminous ceiling systems. In the showroom, yellow plastic grid louvers provide color as well as an excellent intensity level which is variable by means of dimming ballasts and controls. Our series 1500 low-brightness lens troffers, with Holophane #6010 concave acrylic lens is also used. The shape keeps brightness down, maintains efficiency.

These fixtures are carefully designed and built for rigidity and good alignment. See the way troffers and ceiling panels are installed in perfectly straight lines. See *your* way to quality lighting at lower cost with Litecontrol.

LITECONTROL
Fixtures
KEEP UPKEEP DOWN
LITECONTROL CORPORATION,
36 Pleasant Street, Watertown 72, Massachusetts

DESIGNERS, ENGINEERS AND MANUFACTURERS OF FLUORESCENT LIGHTING EQUIPMENT DISTRIBUTED ONLY THROUGH ACCREDITED WHOLESALERS

Architect-styled beauty combined with unmatched GF quality... that's the new 1000 SERIES desk by GF. Designed by one of America's leading architectural firms, the 1000 SERIES matches the clean-cut "new look" of America's finest office buildings. Write for full information. The General Fireproofing Company, Youngstown 1, Ohio.

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GENERAL FIREPROOFING
BUSINESS FURNITURE

DOW | BUILDING PRODUCTS

MILLARD FILLMORE HOSPITAL, Buffalo, N. Y. Architects: Kidd and Kidd.

A. D. Pearson, vice president of Jewett Refrigerator Company, Inc., an Approved Insulation Contractor.

STYROFOAM®

Dow Approved Insulation Contractors offer design assistance to the architect and assure quality installation for low temperature applications

Economical, efficient cold storage rooms and other low temperature facilities have two important engineering requirements—efficient insulation and proper installation. That's why Dow established an Approved Insulation Contractor program for its outstanding low temperature insulation, Styrofoam†. Dow awards this approval only to carefully selected contractors capable of giving the architect technical design assistance, followed up by quality installation.

AIC installs over ¾ million board-feet!

Typical of the more than 90 Dow Approved Insulation Contractors is Jewett Refrigerator Company, Inc., Buffalo, New York. An AIC for three years, Jewett has installed more than three-quarters of a million board-feet of Styrofoam. To serve the architect, Jewett offers a design staff of engineers to make specific recommendations and detail out plans.

Combined cooling and deep-freeze facilities were constructed, using Styrofoam, for the hospital research institute. Low temperature rooms for meat, dairy products, fruit, vegetables and other purposes were constructed.

A typical Jewett job is the recent major modernization program for the Millard Fillmore Hospital in Buffalo. Styrofoam was used to insulate a variety of low-temperature facilities. Jewett designed and constructed combined cooling and deep-freeze facilities for the storage of enzymes, proteins, blood specimens and other substances under study in the adjoining research institute. Also part of the project was the building of refrigerated storage rooms for food service, and for other cold storage requirements as well.

Says A. D. Pearson, Jewett vice president: "Styrofoam impresses us with its qualities of lighter weight, easier handling, simplicity of installation and non-absorbency of moisture. Once it's installed properly, Styrofoam affords permanent insulation efficiency, and we never have to worry about the job."

For the names of Approved Insulation Contractors near you . . . for more information about Styrofoam for low-temperature applications or for comfort insulation uses, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1703LH11.

†Dow's registered trademark for its expanded polystyrene.

Other Dow Building Products

SCORBORD* (Pat. applied for) — Rigid expanded polystyrene insulation for foundation perimeters, slab floors. Exclusive pre-scored feature speeds installation.

ROOFMATE*—Rigid, lightweight insulation for built-up roofs—serves as its own moisture barrier.

SARALOY* **400**—Durable, elastic flashing material installs without prefabrication, can be conformed to irregular shapes.

POLYFILM*—High-quality polyethylene film for use as a moisture or vapor barrier and for temporary enclosures.

*TRADEMARK

See "The Dow Hour of Great Mysteries" on TV.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

CONTROL:

first step to comfort

The Proviso West High School, Hillside, Illinois. Perkins & Will, Architects and Engineers

Only precise control of indoor comfort makes space truly usable. That's why it's so important to integrate good design and comfort control right from the start in any type of building. You can depend on Honeywell to help your engineer specify the best system for each of your clients' particular needs. You'll find that Honeywell's 75 years of leadership in temperature control will go far toward assuring client satisfaction. Call your nearest Honeywell office, or write Minneapolis-Honeywell, Minneapolis 8, Minnesota.

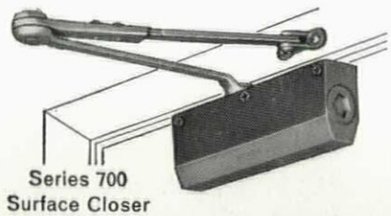
75th YEAR PIONEERING THE FUTURE

Honeywell

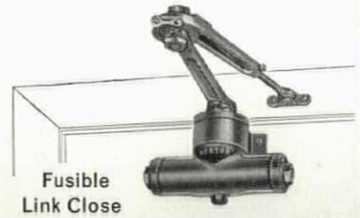
First in Control

SINCE 1885

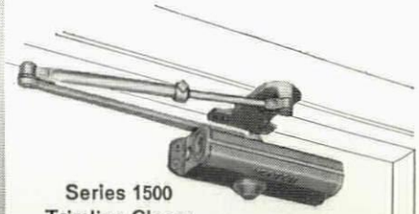
See us in Sweet's 1960 Architectural File, Section 30 D/Mi



Series 700
Surface Closer

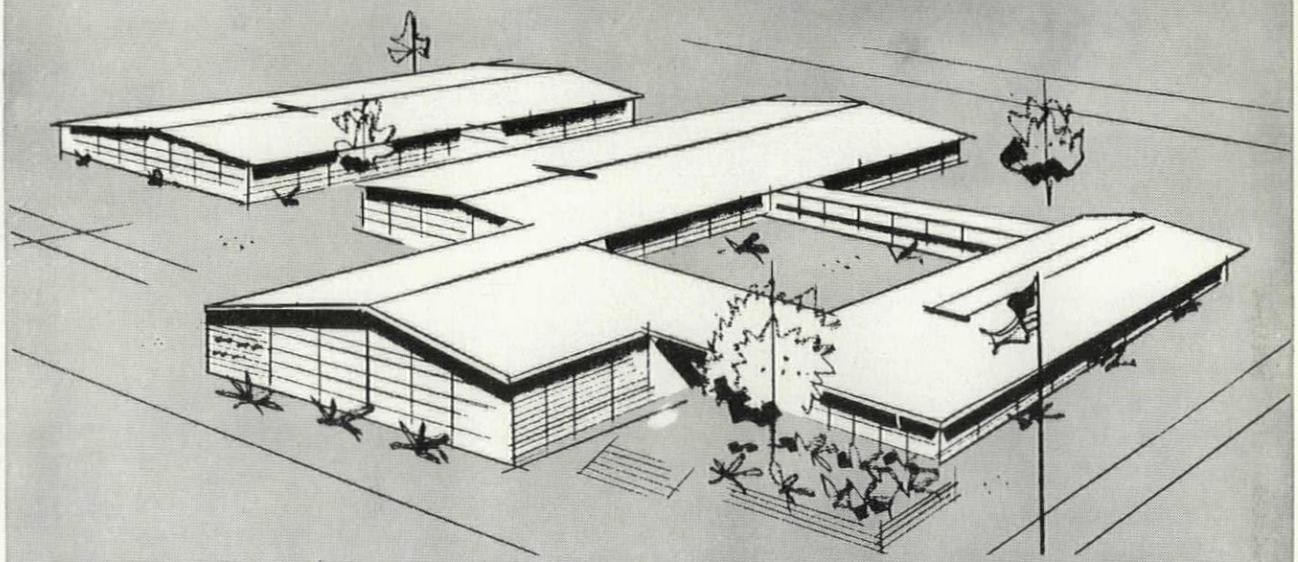


Fusible
Link Close

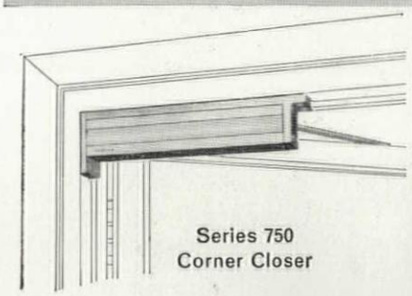


Series 1500
Trimline Closer

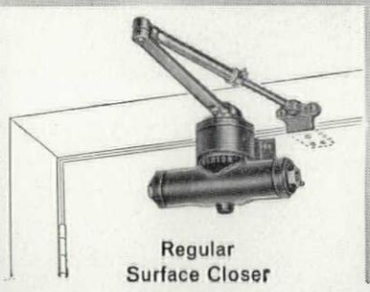
NORTON DOOR CLOSERS...



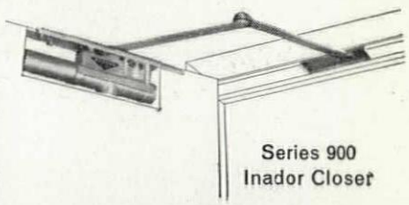
designed and built for every school building application



Series 750
Corner Closer



Regular
Surface Closer



Series 900
Inador Closer

• Regardless of whether you're planning new construction or remodeling, there's a Norton door closer styled and designed for every school door. More than seventy-five years of Norton door-closer engineering and manufacturing experience gives you positive assurance of quality, safety and dependability.

Each Norton representative is a "door-closer expert" well qualified to help you in selecting the proper closer for each location and available for "on the job" service to help you adjust closers after they are installed.

For complete information write for Manual S.

NORTON®
DOOR CLOSERS
Berrien Springs, Michigan

1008

NORTON DOOR CLOSERS, Dept. AF-110, Berrien Springs, Michigan
Please send me Manual S on Norton's Door Closer for school buildings

Name_____

Job Title_____

Company or School_____

Address_____

City & Zone_____ State_____

lighting to match the mood:

Here is lighting of unique versatility...capable of changing its very appearance or its lighting effect to capture the precise mood, to suit the occasion. Supplementary lighting effects and a wide variety of unusual shades permit you and your client to be the creator. These are but five examples from the myriad styles created by Lightolier...traditional, transitional, contemporary...now being shown by the authorized distributors listed at the far right. All reflect knowledgeable engineering and sensitive styling, the blending of function and aesthetics which is the hallmark of Lightolier.

Formality and function. Unique blending of style and function. A play of candlelights on colorful glass bobeches and gleaming brass... plus a concealed center downlight which provides beautiful accent for a table.

Create your own effect. Candlelights set the mood; separately controlled center uplight floods room with rich illumination. Muted, multi-colored glass bobeches add a lovely accent.

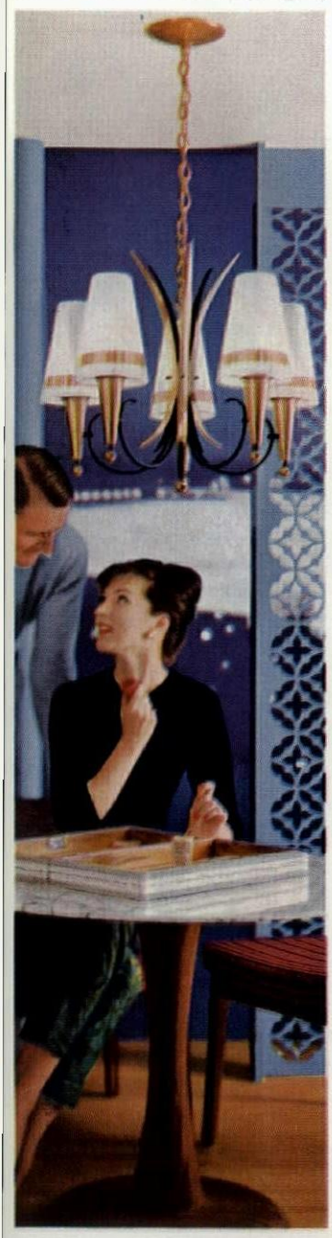
Design intrigue. Multi-colored glass rondels enrich the pure white light from the opal globe. A bold pendant ...yet light and airy.

Write in on your professional letterhead for your copy of the 44-page, full color Portfolio Collection Catalogue.

LIGHTO

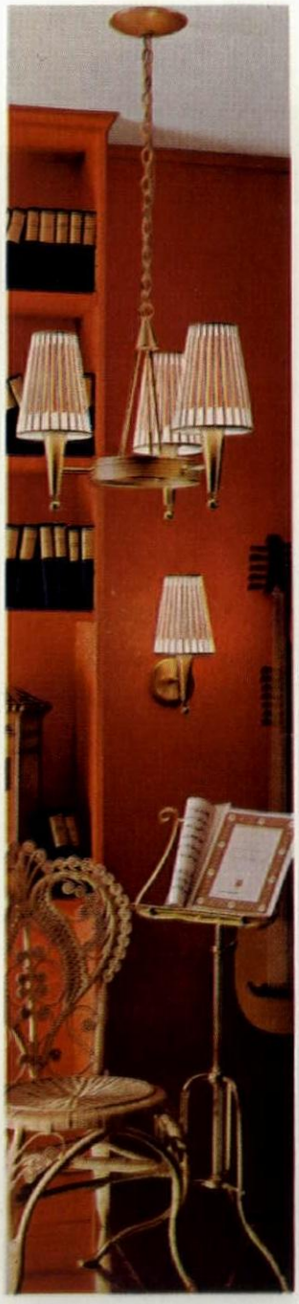
Jersey City 5, New Jersey • Showrooms: New York: 11 East 36th Street/Chicago: 1267 Merchandise Mart
Dallas: 1718 Hi Line Drive/Los Angeles: 2515 South Broadway

In a party mood. Brass flares catch and reflect light and color, enhance the rich illumination. Select the shade to suit the decor. (See right.)



The effect you want. Create perfect harmony with your decor. Select from any of these shades for either of the adjacent fixtures. Each provides well shielded illumination. Each will hold in perfect alignment on the fixture.

Study in light. Warm walnut is contrasted with polished and satin brass in a family of fixtures of varying sizes for wall or ceiling. Select the shade to suit the decor. (See left.)



You can see the Lightolier Portfolio Collection at these authorized distributors:

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Mobile: F. E. Smith Elec. Co.

ARIZONA
Phoenix: Regal Ltg. Fix. Co.
Tucson: Beacon Ltg. Fix. Co.

ARKANSAS
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Little Rock: Adcock Ltg. & Sup.

CALIFORNIA
Costa Mesa: Ken Ross Lighting
Glendale: Montrose Ltg.
Hollywood: Mazda Ltg.
Los Angeles: Vogue Lighting, Inc.
Pasadena: Incandescent Sup. Co.
Sacramento: Hobrecht Ltg. Fix. Co.
San Diego: Ratner Elec. Co.
Sunlight Elec. Sup. Co.
San Francisco: California Elec. Sup. Co.
Studio City: Valley Lighting

COLORADO
Denver: The Central Elec. Sup. Co.

CONNECTICUT
Bridgeport: B. M. Tower Co., Inc.
Danbury: Greene Elec. & Sup.
Hartford: Beacon Ltg. Sup. Co.
New Haven: Grand Lt. & Sup. Co.
New London: United Elec. Sup. Co.
Stamford: Marle Co.
Waterbury: Starbuck Sprague Co.
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DELAWARE
Wilmington: Art Craft Elec. Sup. Co.

DISTRICT OF COLUMBIA
Maurice Elec. Sup. Co.
National Elec. Whlses.

FLORIDA
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Jacksonville: Ace Electric Supply Co.
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West Palm Beach: Edison Elec. Sup. Co.

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Electrical Whlsers. Inc.
Noland Co.
Augusta: Hart Elec. Sup. Co.
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Elgin: Fox Elec. Sup. Co.
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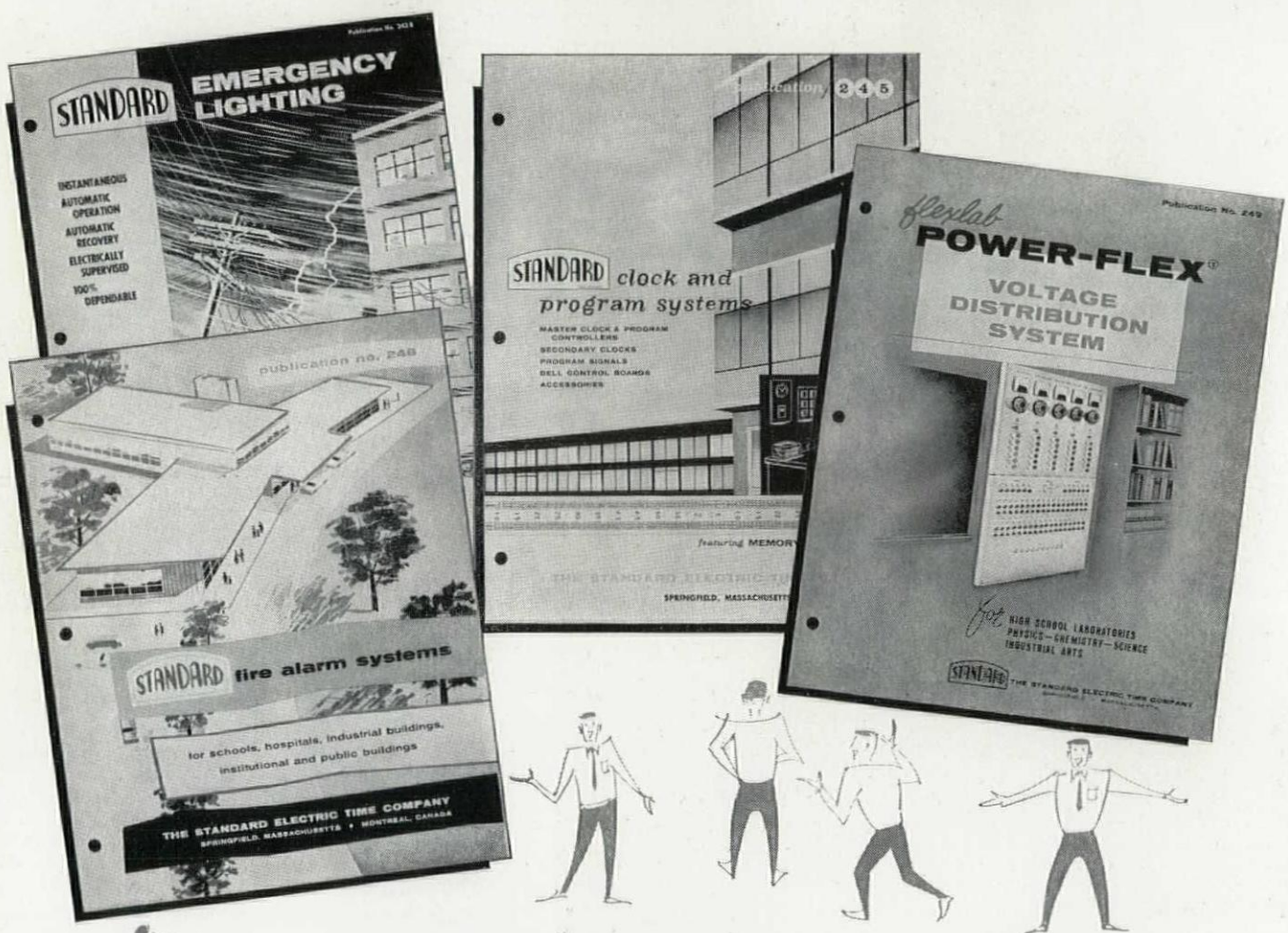

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Refaced with Alcoa® Aluminum "3-D" Sheet in its architectural debut, the 87-year-old Robinson Building has a colorful new lease on life. Now it's *the* prestige office location of downtown Elyria, Ohio.

Two elevations are sheathed with 185 patterned aluminum wall and spandrel panels, brilliant in blue porcelain enamel. This finish was applied to the *formed* sheet—routine for aluminum, tricky at best on steel. The lightweight curtain wall went up quickly, as did the rental curve—70 per cent occupancy even before work was completed. Long-lived aluminum—in both enameled panels and anodized window trim—will keep the building young looking and free of burdensome upkeep well past its centenary.

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BUILDING: Robinson Building, Elyria, Ohio
ASSOCIATED ARCHITECTS: John F. Lipaj, Herk Visnapuu and Robert C. Gaede, Cleveland, Ohio
GENERAL CONTRACTOR: The T. J. Hume Company, Lorain, Ohio
ALUMINUM SUBCONTRACTORS: Aluminum Grid System—Pittsburgh Plate Glass Company, Pittsburgh, Pa. Spandrel Panels—Erdle Perforating Company, Rochester, N.Y. Porcelain Finish—Porce-Alume Company, Alliance, Ohio

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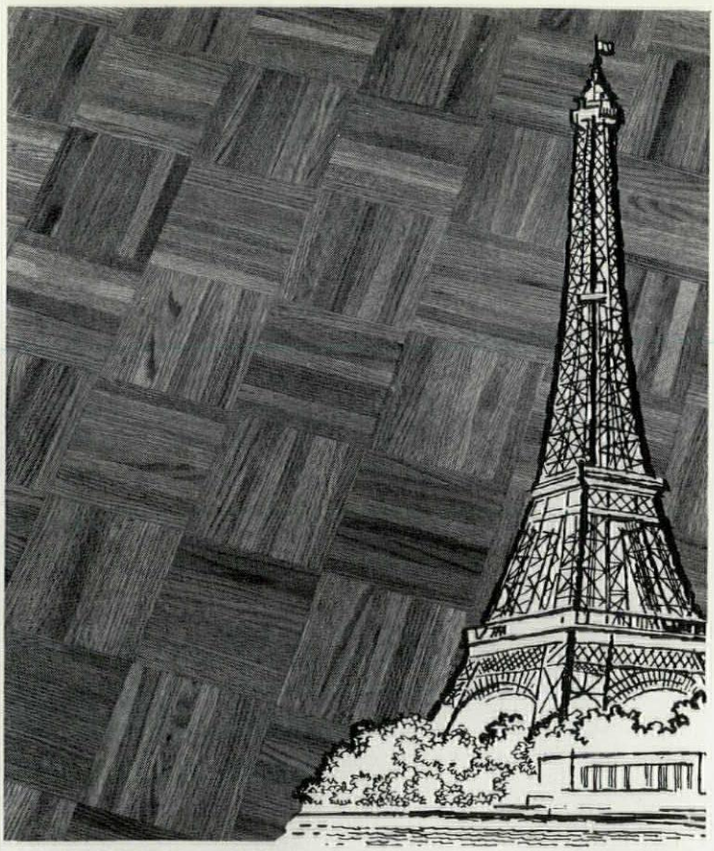

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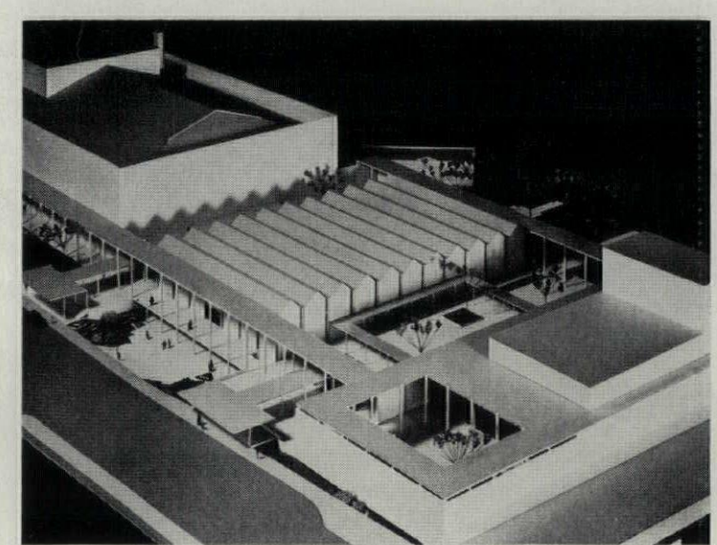
A roundup of recent and significant proposals

$4 MILLION ADDITION TO CALIFORNIA HOSPITAL

A wing taller than the original building will be added to St. Joseph Hospital in Burbank, Calif., to be built from plans by Welton Becket & Associates. Extending out from the main hospital, the new wing will be a five-story, six-level, rectangular structure. From it there will again extend out a one-story cafeteria (left) and a chapel of precast concrete (not shown). The large wing has projecting concrete columns and gray Venetian glass tile spandrels. Horizontal bands of blue Venetian glass used above window heads reappear as wide stripes around the top of the glass-enclosed cafeteria. On the upper floors of the new wing, above surgical suites on the second level, will be nursing units for 176 beds.



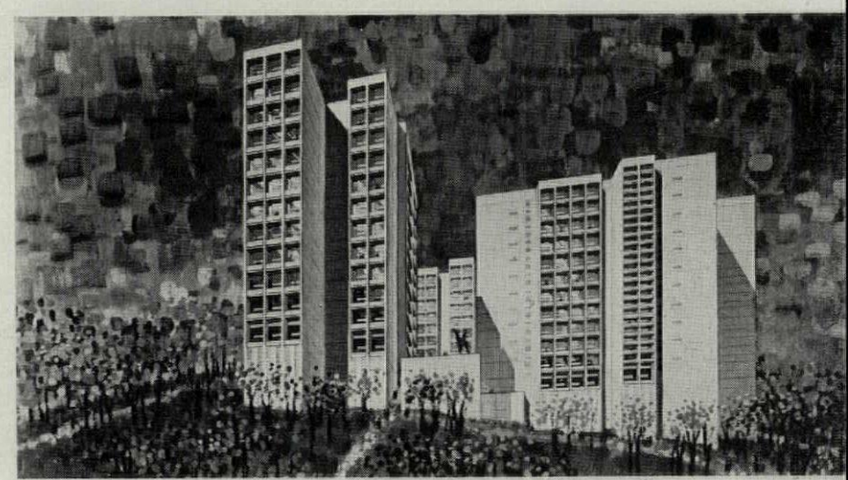
SEATTLE'S DOUBLE-PURPOSE CIVIC AND FAIR BUILDINGS

By remodeling the civic auditorium (left) and building two new structures adjacent to it, Seattle will add substantially to its space for the Century 21 Exposition and also have a complete civic center left when the exposition is over. The new buildings in the model photo above, by Kirk, Wallace, McKinley & Associates, are an exhibit-banquet hall under a roof of folded concrete plate, and an 800-seat theater (solid block, right), both buildings facing courtyards and plazas. Construction will start in February.

continued on page 63

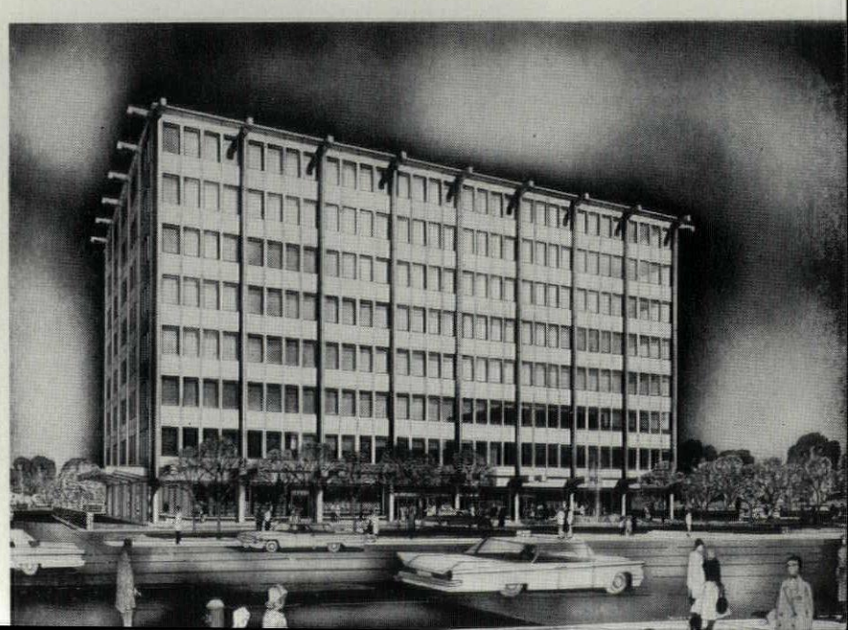
I. M. PEI APARTMENTS ON PITTSBURGH RENEWAL SITE

Webb & Knapp, Inc., has acquired a 10-acre chunk of Pittsburgh's Lower Hill renewal area, for which it proposes three apartment towers (below). Designed by I. M. Pei & Associates with Deeter & Ritchey, associate architects, the towers will contain a total of 935 apartments, about two-thirds of them duplexes, renting at an average of $50 a month per room. Webb & Knapp is endeavoring to make the project a showcase for Pittsburgh industry, using materials and equipment especially designed for it by Alcoa, Westinghouse, Pittsburgh Plate Glass, and U. S. Steel. All three towers, enclosed with metal-and-glass curtain walls, will sit on top of a garage, whose roof serves as a plaza.



ATLANTA INSURANCE COMPANY

For a site opposite Atlanta's Lenox Square regional shopping center, designed by Toombs, Amisano & Wells, the same architects have drawn up an insurance company headquarters (below). Hung from concrete outriggers, free concrete posts hold lighting fixtures which throw light in a crisscross pattern across the whole façade. The outriggers, base columns, and spandrels will be gray when finished; the window panels, white quartz precast concrete.



Great new things are shaping up in concrete block

Block shown is a product of Wurdig Industries, Bloomfield, Conn.

Atlas Masonry Cement provides the right mortar

This is "slump block." It is a decorative concrete masonry unit that resembles adobe brick or weathered stone. Usually integrally colored, "slump block" produces unusual effects in masonry construction. It is available from local concrete block producers in a variety of widths, lengths, colors and textures.

Whether "slump block" or other masonry units are used, ATLAS MASONRY CEMENT continues to be the preferred basic material in mortar. It makes a smooth, workable mix... gives a strong bond... provides durable joints that are uniform in color. Complies, too, with rigid ASTM and Federal Specifications. Literature on request. Universal Atlas, Dept. M, 100 Park Avenue, New York 17, N. Y.

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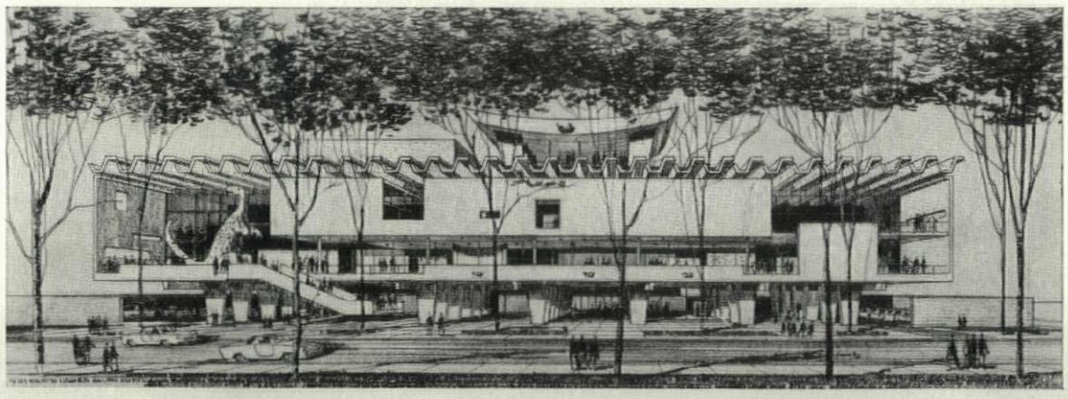
MINNESOTA ART CENTER

A three-part science museum, theater, and gallery, the whole project to be called the St. Paul Arts and Sciences Center, will get under way next spring. Architects Ralph Rapson and Ellerbe & Co. specified reinforced concrete as the major structural material, folded S-plate for the roof, and exposed or precast concrete for the exterior. A city bond issue will pay for the center, expected to cost $1.8 million.



STUDY CENTER AT HARVARD: A BLEND OF OLD AND NEW

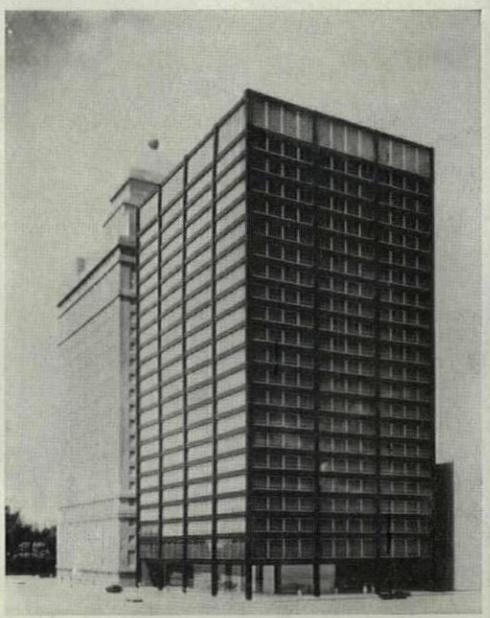
Work began last month on the Center for Cognitive Studies at Harvard University. The plan is, first, to remodel President Charles Eliot's house (left) and then to add a new wing and a connecting passage between the two. The center's purpose—to study human intelligence—requires an informal and comfortable atmosphere. Robert Woods Kennedy's plan makes the interior spaces small and blends the red brick, glass, and wood wing with the original house materials.

NEW YORK CITY FEDERAL BUILDING

Three New York architectural firms—Kahn & Jacobs, the Office of Alfred Easton Poor, and Eggers & Higgins—were picked by the General Services Administration two years ago to design New York City's federal building, the largest outside Washington, D.C. The chief element of their plan (below) is a 41-story tower, where 18 U. S. Government agencies will have their offices. In a smaller structure at the base, the U. S. Customs Court will have a large ceremonial courtroom and four district courtrooms. Cost: $76 million.

CHICAGO INSURANCE TOWER

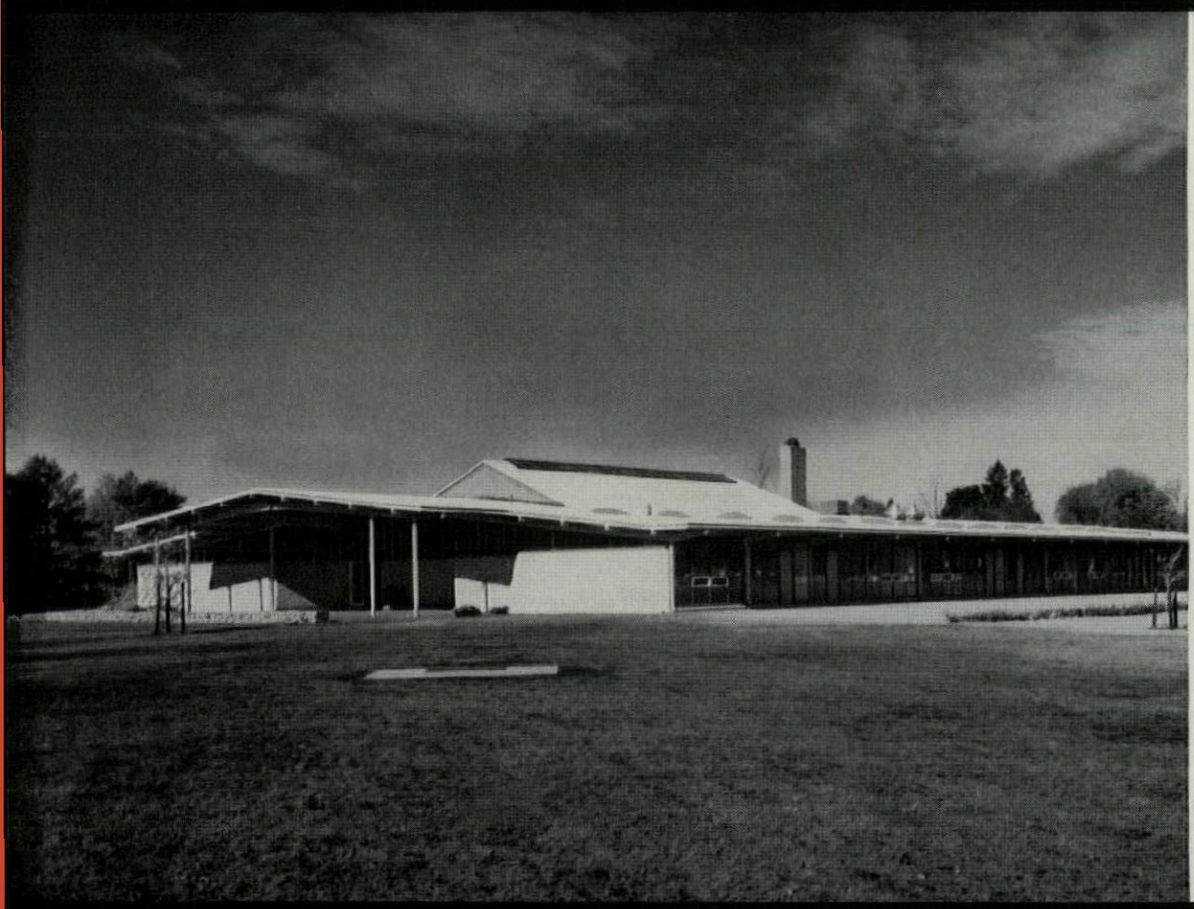
A 22-story tower (right) will show off its structure by balancing on a few slender columns having a total area of only 120 square feet. Architects Naess & Murphy, who designed the building for the Continental-National group of insurance companies in Chicago, wanted to express at once the strength of the steel girders and columns and the large column-free interior spaces which result from 42-foot spans. Welded steel plate ⅜ inch thick will sheathe exterior columns and girders, and between columns, stainless steel frames will hold large plate-glass panels, the glass set back from the column face. Bridges will join the tower to the companies' present building (left).



MANHATTAN APARTMENTS

For an Upper East Side site in Manhattan, Architects Pedersen & Tilney propose a 22-story apartment tower which will offer such built-in luxuries as a swimming pool, a restaurant, a garden, squash courts, and several other services. This will be a cooperative building, and tenants will choose their own space and have it arranged to suit themselves. The variegated window pattern expresses the architects' idea that most buyers will want duplexes; the living-room windows will be wider than those in the bedrooms. Built over a concrete frame, the exterior will be dark anodized aluminum, and balconies will project from both sides. In keeping with the luxurious character of this building, there will be a central air-conditioning system and, on the roof, a spacious penthouse. Cost: $10 million.

continued on page 65



This elementary school in Hamilton, Massachusetts, successfully puts everything under one large roof — classrooms, offices, gymnasium and cafeteria-auditorium. The pitch of the roof places it in the vernacular of surrounding architecture and provides the extra height needed to incorporate major spaces within the single-roof concept. The size of the roof area demanded daylighting to brighten interiors with the warmth of natural light.

SCHOOL BY HUGH STUBBINS...
DAYLIGHTING BY WASCO

Wasco Self-flashing Skydomes — transparent acrylic domes sealed to base sheets of fiber-glass reinforced acrylic — were chosen because the entire pitched roof is on display. Fastened directly to the deck and flashed into the roof, their low, almost invisible silhouette solved the appearance problem beautifully. The large Skydomes were uniquely positioned to daylight both classrooms and corridor.

Wasco offers a complete line of standard Skydomes, plus many new types suitable for fresh approaches to architecture. See Sweet's Catalog 20/Wa, or write for information.

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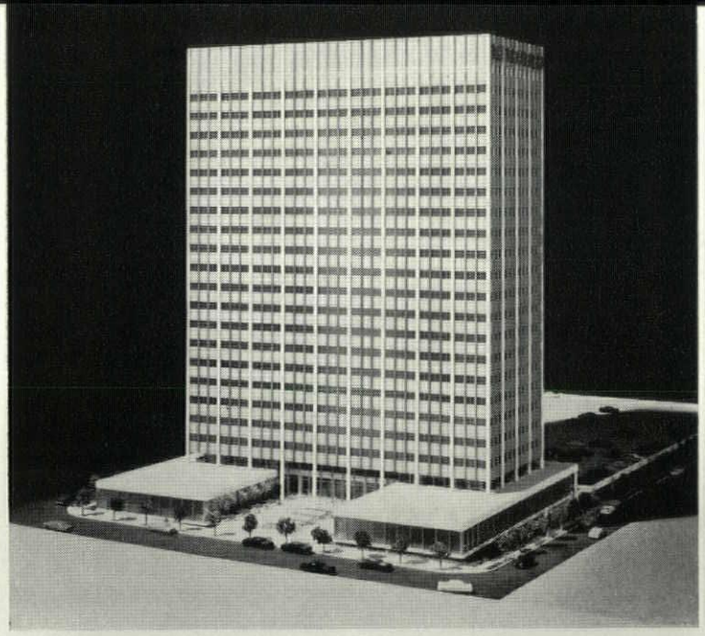


LOS ANGELES TOWER FOR TRAVELERS INSURANCE CO.

Occupying a full block in the mid-Wilshire district of Los Angeles, this Travelers Insurance Co. shaft is the largest project ever undertaken outside the company's home office in Hartford, Conn. Now under construction, it rises 22 stories from a landscaped plaza, contains a gross area of 453,000 square feet, and will cost more than $15 million. Textured concrete roofs of the one-story wings at either side of the main entrance will match the plaza's colored paving. Intermediate mullions will extend four inches from the window wall. Architects: Welton Becket & Associates.

INSURANCE COMPANY BRANCH IN NEW ORLEANS

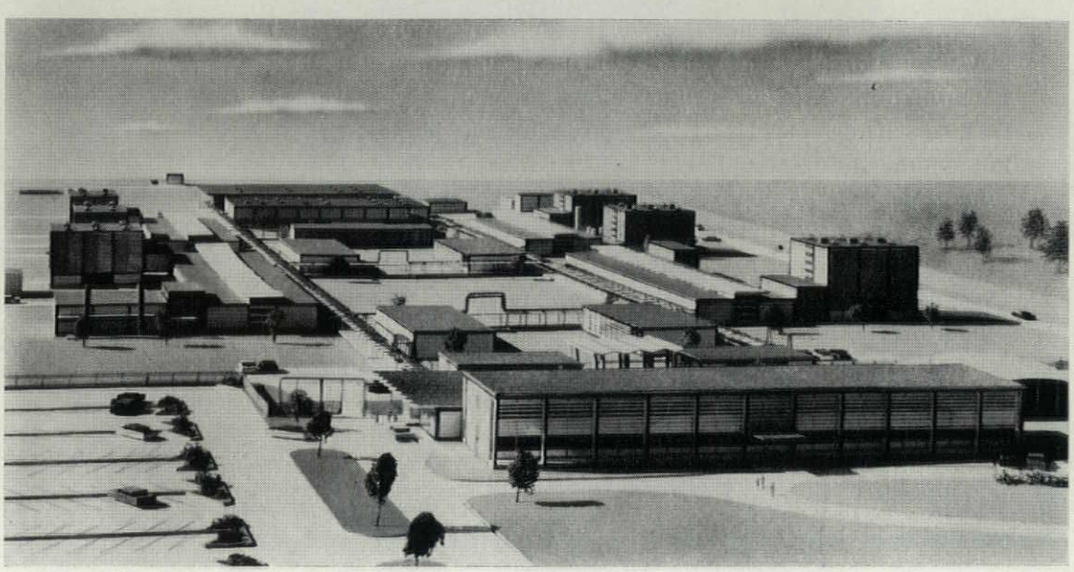
Though lacking honest-to-goodness balconies, the John Hancock Mutual Life Insurance Co. building in New Orleans will repeat the horizontal balcony theme in the city's Vieux Carré. The strongly horizontal look will derive from precast concrete overhangs, faced with fine quartz aggregate and extending 6 feet beyond windows of glare-reducing glass. This seven-story branch office will stand on Lee Circle, former library site. Architects: Skidmore, Owings & Merrill; Nolan, Norman & Nolan, associates.

ST. LOUIS MEDICAL CENTER

Within walking distance of a number of hospitals and a medical school, a St. Louis builder is starting construction of the Forest Park Medical Center (right). Two ten-story towers, of brick and precast concrete, are planned for dentists' and doctors' offices. A third slab, the Forest Park Inn, will be divided into efficiency apartments, six floors for elderly persons, and a general-purpose main floor. Architect: J. Richard Shelley.

TEXAS RESEARCH CENTER

During the next five years, Texaco Inc. will build a $7.5 million research center (right) in Port Arthur, Tex., to supplement its largest domestic refinery there. Spread over 35 acres, the center will consist of 15 separate laboratory and office buildings, six pilot-laboratory bays, service buildings, and enclosed storage areas, all connected by covered walks. In the model, the administrative buildings appear in the foreground, grouped around a quadrangle. Gray face brick and porcelain-enameled iron exteriors will be standard. Architects and engineers: Pitts, Mebane & Phelps. END



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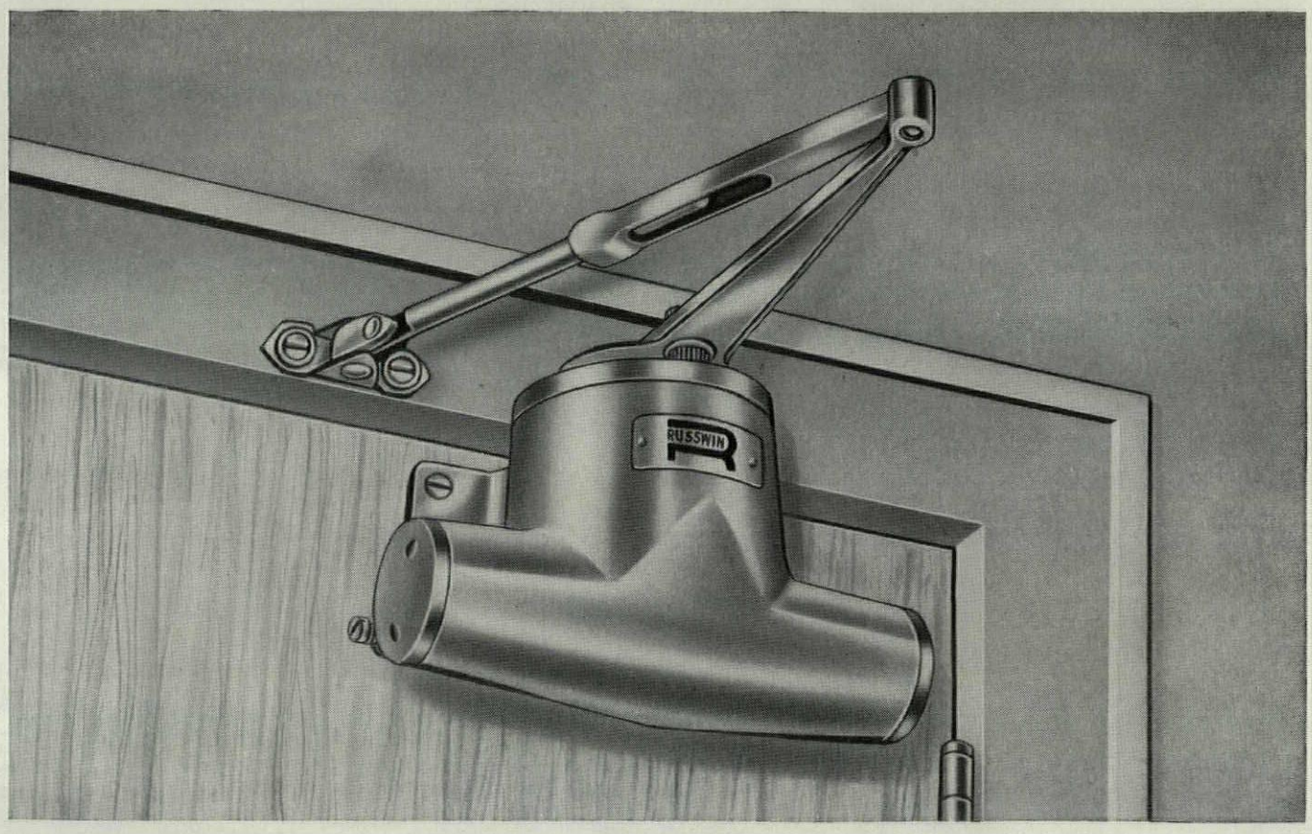


THE RUSSWIN No. 59 DOOR CLOSER with FULL RACK AND PINION

Russwin's attractive new No. 59 Heavy Duty Door Closer gives you **full rack and pinion design,** precision-machined parts of high impact strength metal . . . **turret-type arm,** teamed with an exceedingly strong one-piece spindle . . . **micromatic spring adjustment** that provides approximately nine times as many adjustment points as conventional ratchets . . . **spring over-wind protection** for built-in insurance against spring breakage . . . **controllable backcheck.** Delayed action control available for hospitals, factories, school bicycle rooms, etc. Many other advanced features. Moderately-priced. Fully field tested ("The finest door closer of its type", reports one of country's largest school systems!). Available in five sizes. Write for complete information. Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

Meet Federal Specifications
Types 3001, 3004 and 3009

RUSSWIN

Gun-applied plastic . . . epoxy floor . . . fire spotter

PLASTIC COATING

This three-nozzled gun was developed by B.B. Chemical Co. to apply *BB textured exterior coatings*, used for several years in Sweden and now being introduced to the U.S. These coatings for exposed masonry are urethane resins to which aggregates are bonded; the combination gives a tough, weather-resistant finish which conceals minor cracks or flaws in the surface beneath. The gun, which is brand new, sprays polyurethane and aggregate simultaneously. Separate hoses channel sand through the large center nozzle and urethane through the auxiliary nozzles mounted at either side; the three streams mix externally. If an extra sealing coat is desired, the operator shuts off the aggregate and sweeps the surface once more with polyurethane.

The aggregate and the method of application determine texture. With the gun, granules as large as ⅛ inch or as small as the finest sand feed through the hose. In Europe, before the gun's development, some coating textures on concrete had a rough pebbled surface. Such large aggregates cannot pass through the gun's hose, but they may be applied separately. However, gun application is so much faster and simpler that probably most coatings in this country will be by gun.

In Swedish housing projects and schools, the coatings were sprayed on the precast concrete exterior; but they adhere well to other surfaces, such as brick, cement-asbestos board, wood, and primed aluminum foil. They are also expected by B.B. Chemical to find a ready market as a protective and decorative topping on thin-shell concrete.

In some instances, the surface to be coated may need to be primed, but a single coat is often sufficient, since the aggregate deposits itself in layers, forming a coating 1/12 to ⅛ inch thick.

Five colors (and clear) are standard—yellow, blue, gray, white, and brick red, in glossy or semi-glossy finishes; special colors are mixed to order. Based on actual weathering in Europe and tests carried out in this country, a life of at least ten years is predicted by B.B. Chemical for these coatings. In-plant finishing costs less than 10 cents per square foot; job-site finishing runs from 30 to 35 cents per square foot.

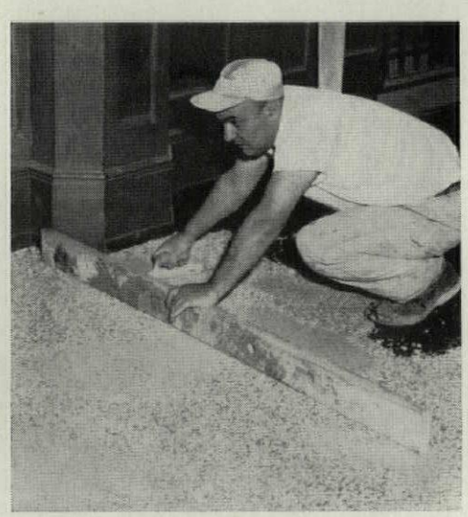
Manufacturer: B.B. Chemical Co., 784 Memorial Dr., Cambridge 39, Mass.

LIGHTWEIGHT FLOOR

Durazzo, a new flooring material, looks just like traditional terrazzo, but there is an important difference. In place of cement used as the binder, a matrix of epoxy resins holds the chips, forming a lightweight, long-lasting floor. Bits of marble, stone, glass, metal, fiber, and cork are possible aggregates, their size running from fine powder up to egg-size chunks.

The advantages claimed for Durazzo floors over conventional terrazzo are attributable to the epoxy binder. They include light total weight, averaging only 3½ pounds per square foot; resistance to stains, chemicals, and weather; quick curing; a high coefficient of expansion which prevents cracks and spalls owing to temperature changes. Because aggregates are locked in, vivid reds and blues, heretofore considered impractical for terrazzo floors, remain color-fast. Durazzo bonds tightly to almost any clean, smooth surface without requiring underlayment. Divider strips, though not necessary, may be used where they form part of the floor's design.

Generally, Durazzo is troweled directly onto the floor or wall (see photo, right), but it may also be precast to order. For job-site applications, factory-sealed containers arrive containing proper proportions of aggregate, colors, and so on; these are mixed with the binder and applied. Depending on the aggregate, the finished floor may be as thin as ⅛ inch, ground to a nonskid, nonglare surface. Large areas of Durazzo floor ¼ inch thick would cost about $1.40 per square foot.



Manufacturer: Durazzo, Inc., 623 River Dr., Garfield, N.J.

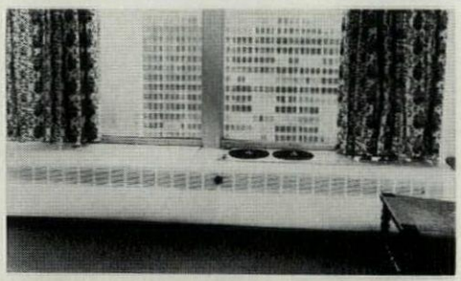
continued on page 68

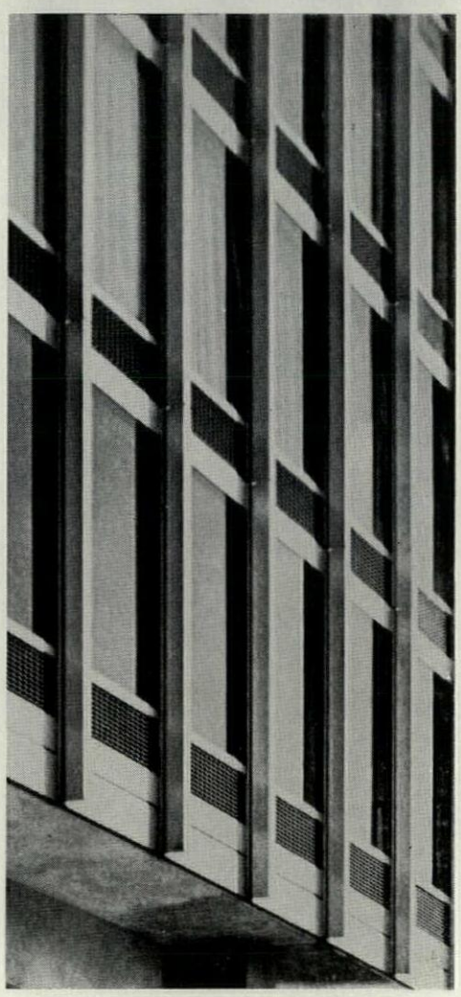
CUSTOM AIR CONDITIONERS

The oblong boxes under the windows of the Colonnade Park apartments in Newark, N.J. are waterproof air-conditioning cabinets built into the structure, a plan devised by Architect Ludwig Mies van der Rohe to keep the building's façade from being peppered with window air conditioners. To fit these boxes, Metropolitan Structures, Inc., the builder, asked an air-conditioning manufacturer to come up with a special long, narrow unit. The result is Amana's *curtain-wall air conditioner* which drops into the cabinet and plugs into the weatherproof connection already there. The only evidence visible from outside is the cast aluminum grille beneath each window for heat exhaust.

These special units are 12¼ inches high, 51⅝ inches long, 12⅛ inches deep, and weigh 135 pounds, with a B.t.u. capacity of 9,000. The list price for this kind of unit is about $300.

Manufacturer: Amana Refrigeration, Inc., Amana, Iowa.



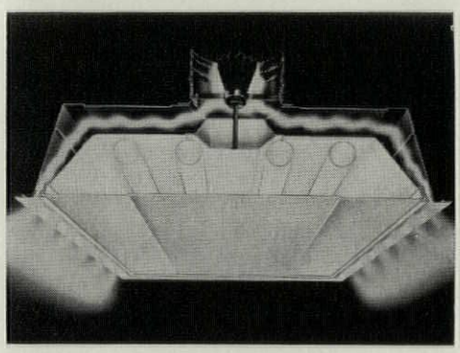


DOUBLE DIFFUSER

The photograph below shows a ceiling fixture that diffuses both light and air, a joint development by Day-Brite Lighting, Inc. and Barber-Colman Co. Air from the supply duct moves across and down either side of the fixture, but a sealed wall prevents its blowing directly over the lamps. Air supply and return elements are interchangeable.

Both companies offer these dual-purpose units in 12 by 48 inch and 24 by 48 inch sizes. Light enclosures may be panels of plastic or glass, or louvers of plastic or metal.

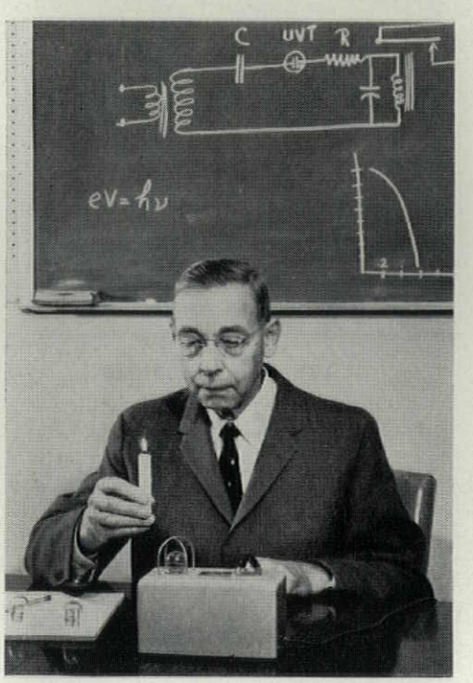
Manufacturers: Day-Brite Lighting, Inc., 6260 N. Broadway, St. Louis 15; Barber-Colman Co., Rockford, Ill.



FIRE DETECTOR

An electronic fire detector the size of a golf ball reports a fire by sensing the ultraviolet rays in the flame rather than by responding to heat, as sprinklers and thermostats do. In the demonstration photograph below, a candle flame activates the tube, mounted under protective wickets. Conversely, the same device reports the absence of flame in boiler fireboxes, furnaces, and other combustion chambers. In either case, detecting flame or its ab-

continued on page 70



sence, the *U-V detector* sends an almost instantaneous alarm, visual or auditory, to a centrally manned location or, in case of fire, directly to a fire station.

The small tube, 1⅛ inches in diameter and 1¼ inches long, including mounting pins, fits into an ordinary radio tube socket. The tube is insensitive to direct sunlight, light enclosed in glass, and cosmic and nuclear radiation; it is operative at temperatures from –65 to 200 degrees C. The cost of tubes, now in pilot-plant production, is estimated to be about $10 per tube in production quantities.

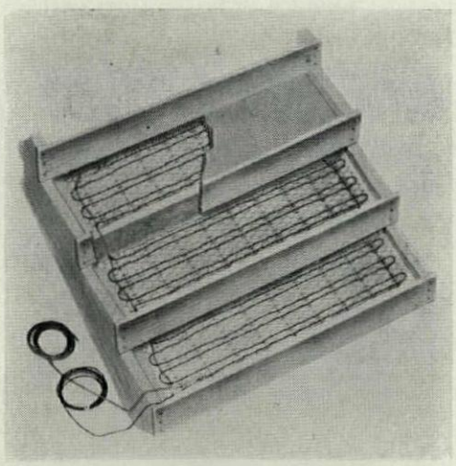
Manufacturer: Instrument Div., Thomas A. Edison Industries, McGraw-Edison Co., West Orange, N.J.

STEP HEATER

By embedding these electric heaters in concrete steps, snow and ice may be melted at the flick of an inside switch. Made in two-step and three-step models, the heaters may be combined to serve any number of steps. Each heater mat, of polyvinyl-sheathed cable woven with lightweight galvanized mesh, heats a section of step 36 by 8 inches. For stair landings, riser spaces between mats may be closed to form continuous, rectangular heaters.

Heaters are installed on top of freshly poured concrete, then covered with more concrete to a depth of 1 or 1½ inches. The two-step model costs $14.95; the three-step, $19.95. Each mat has an 84-watt rating, a 10-foot lead wire and a ground wire.

Manufactuer: Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8.



GLASS-FIBER BLINDS

Forty miles of *Triglas*, a new cloth woven of Owens-Corning Fiberglas, will shade the windows of the Chase Manhattan Bank's new building in New York City. Du Pont's Fabrics Division developed Triglas specifically for use in vertical blinds, which require an opaque fabric of great durability. The combination of materials in Triglas—a Fiberglas center coated on both sides with vinyl plastic—will not curl, twist, bow, or distort under any con-

ditions of hanging, Du Pont says. Triglas is, in addition, flame- and water-resistant, and is easily washed with soap and water.

For quantity orders, the blinds' manufacturer estimates his lowest price on a Triglas blind to be about $22 for a 4 by 8 foot module, depending on the mechanism and the width of the blade.

Fabric manufacturer: Fabrics Div., E. I. du Pont de Nemours & Co., Wilmington 98, Del.

Blind manufacturer: Sun Vertikal Blind Co. of N. Y., 2427 Merrick Rd., Bellmore, N. Y.

Briefs

▸ Six new chemical compounds, tradenamed *Phosgard,* give flame retardance to plastics, synthetic fibers, rayon, and wood products. Compounds are colorless, odorless, inexpensive liquids which become integral parts of the products to which they are added. Monsanto, which discovered the compounds, estimates that these could be used to protect about 400 million pounds annually of such polymers as polystyrene, polyurethane, acrylics, epoxies, and phenolics, which go into products where flame retardance would be a decided advantage if it were inexpensive and did not affect the polymers' other properties.

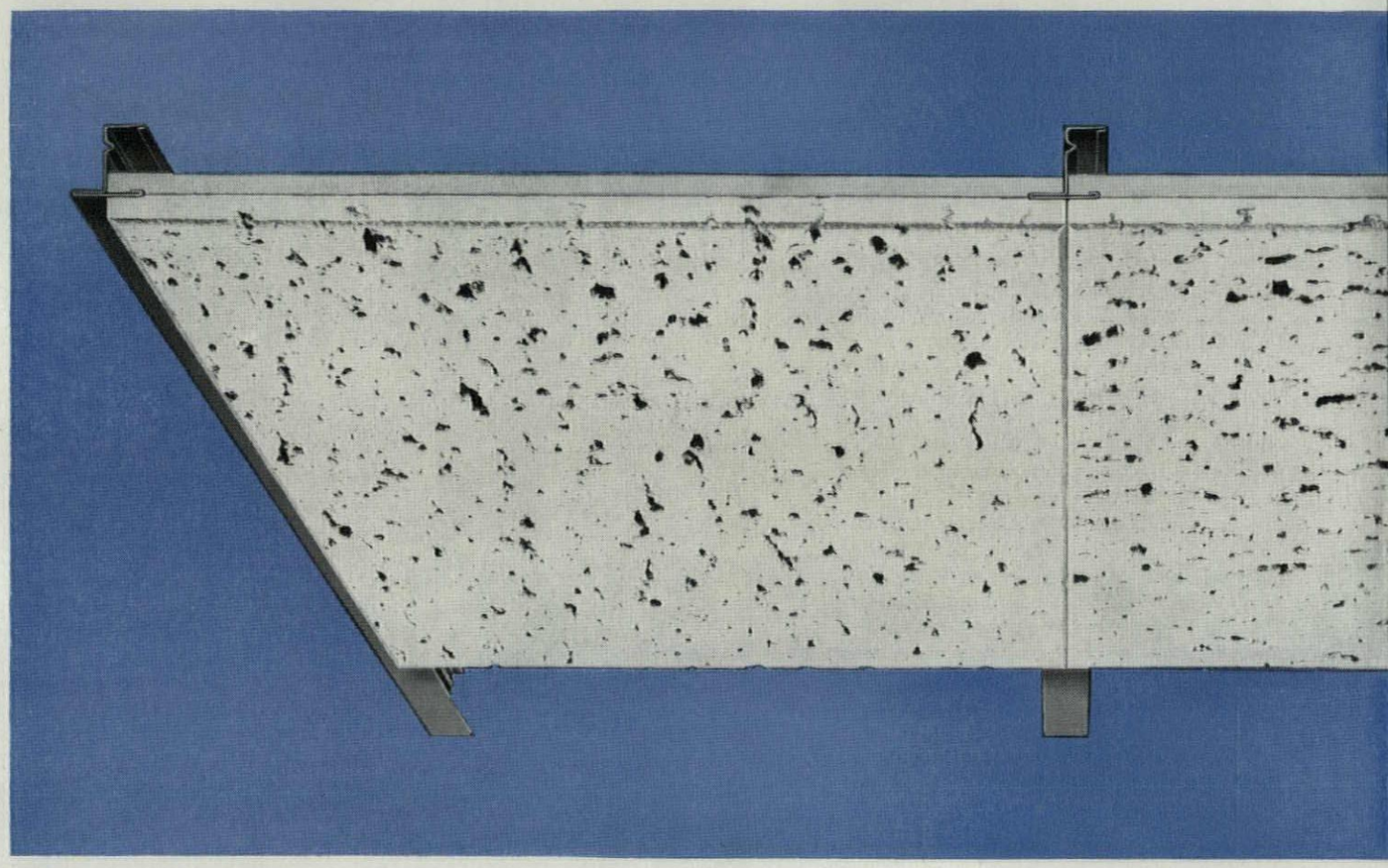
▸ Goodyear Aircraft Corp. is making a composite construction material about half the weight of aluminum of the same gauge but just as rigid. *Bondolite* is formed by sandwiching aluminum-foil honeycomb between extremely thin aluminum facings. First uses will be in aircraft floors and panels and such missile ground-handling equipment as trailers, cases, and platforms, where high strength and low weight are first considerations. However, Goodyear is investigating commercial construction uses and has already made Bondolite office partitions for its Akron headquarters.

▸ At Jones & Laughlin Steel Corp., metallurgists have developed a new series of construction steels that combine exceptionally high strength with easy welding and forming, enabling builders of heavy-duty defense and industrial equipment to increase product strength and save time and fabrication expense. These new steels will be available in a variety of shapes and sizes. END

Rule:

"Installation of acoustical materials should not be made when the building is excessively cold and damp or hot and dry. Temperature and humidity conditions closely approximating the interior conditions which will exist when the building is occupied should be maintained before, during, and after installation. All plastering, concrete, and terrazzo work (including grinding) should be complete and dry."

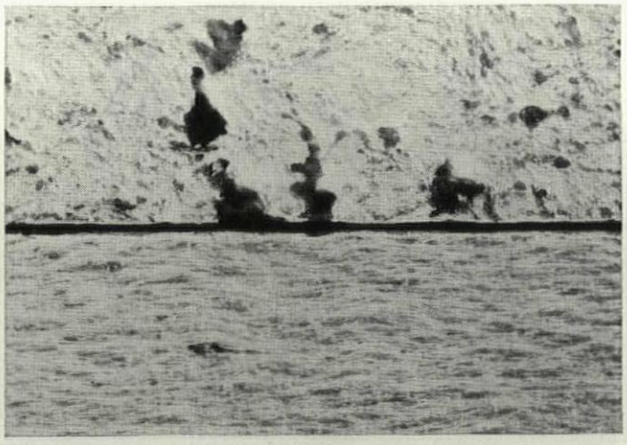
Bulletin XX—1960, Acoustical Materials Association



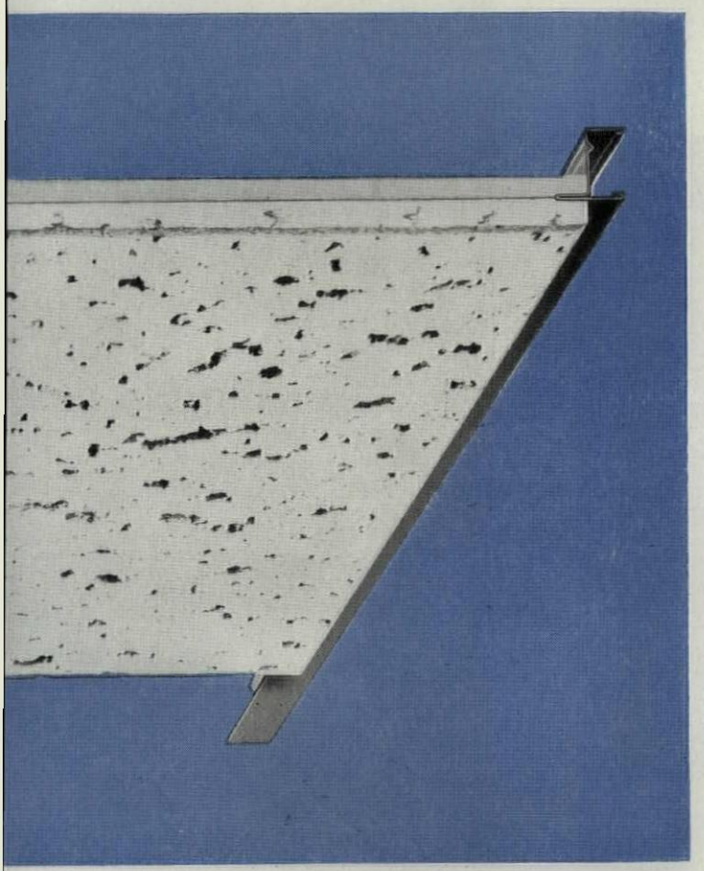
Exception:

New Gold Bond Acoustiroc, a felted mineral wool acoustical tile, is safe to install under most humidity conditions.

Conventional mineral wool tile is made without fibre directional control, resulting in an uncontrolled variation in fissuring (often undesirable) and less stability in the tile.



New Acoustiroc is made of longer mineral wool fibres, interlocked through felting for greater strength and humidity resistance. Fissure variation is in a controlled range, with no tiles identical.



Tiles don't sag. 12" x 12" Acoustiroc tiles will not sag or warp under temporary high humidity conditions. Ceiling can be safely installed before plaster or terrazzo work is dry. Completion time can be speeded by a week or more.

Felted for strength. That's because new Acoustiroc is made of longer mineral wool fibres, felted together for greater strength. Acoustiroc has 500% greater sag resistance, 100% greater dimensional stability and 50% greater strength than other fissured mineral wool tiles.

Mineral Wool panels now suitable for grid system. This extra strength means that 24" x 24" Acoustiroc panels will support their own weight in a grid system without sagging when installed under normally dry conditions.

Many patterns. Acoustiroc Panels are now available in fissured, textured and random perforated patterns. 12" x 12" tiles come in all panel patterns plus striated. Ask your Gold Bond® Representative for full details, or write Dept. AF-1160 for free samples and literature.

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- *Eliminates push and kick plates*
- *Unlimited decorating possibilities*

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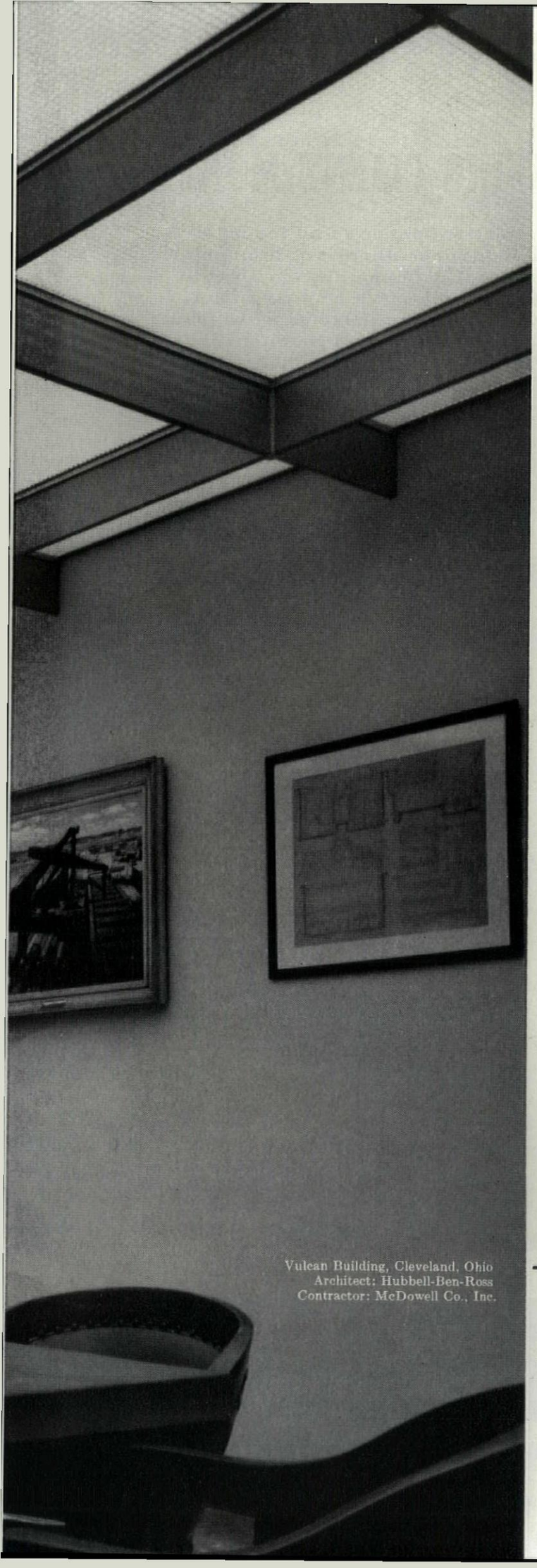

Vulcan Building, Cleveland, Ohio
Architect: Hubbell-Ben-Ross
Contractor: McDowell Co., Inc.

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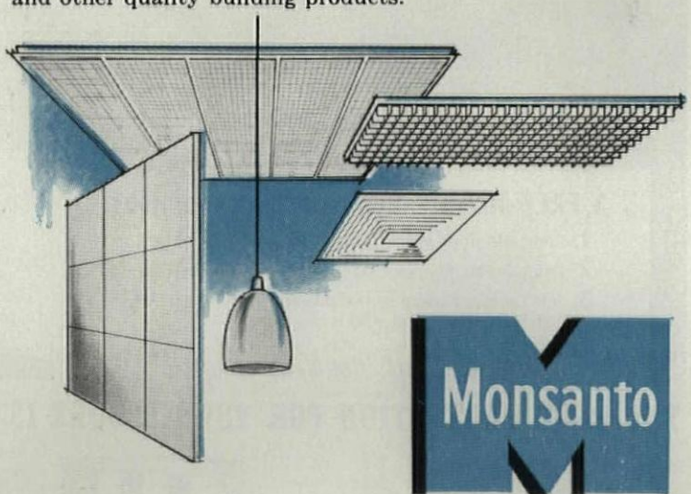

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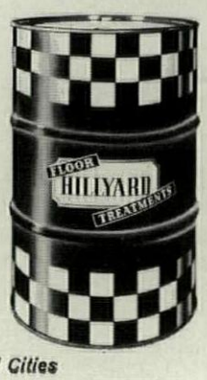

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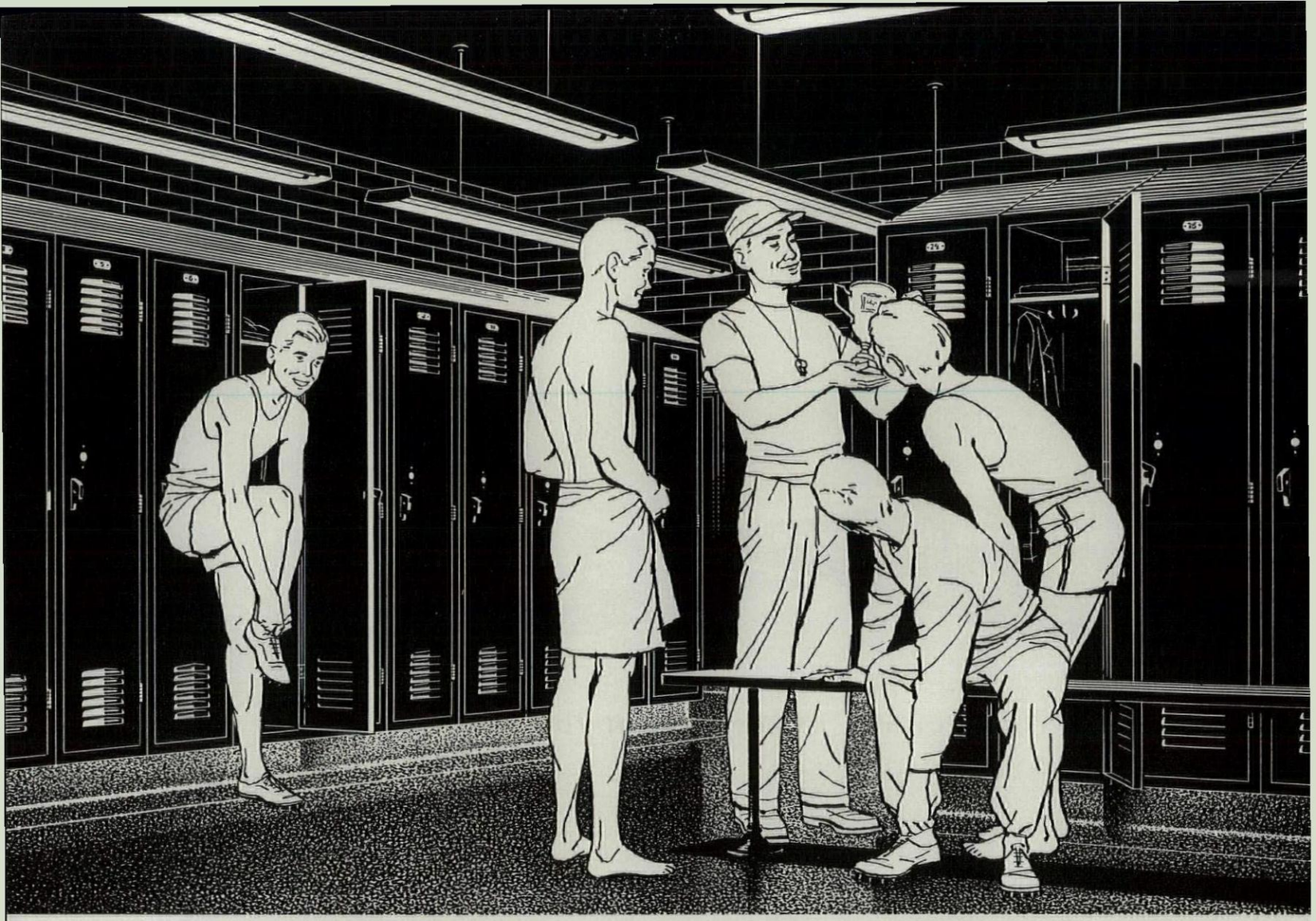

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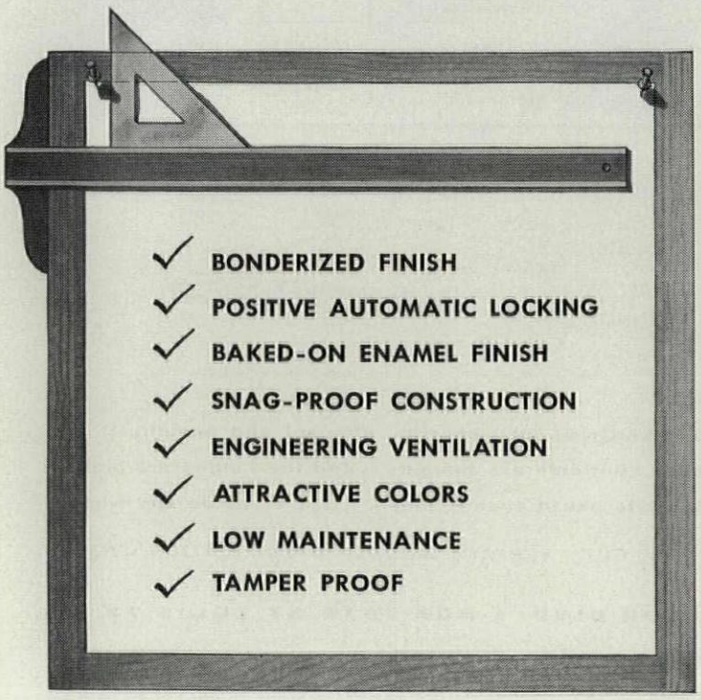

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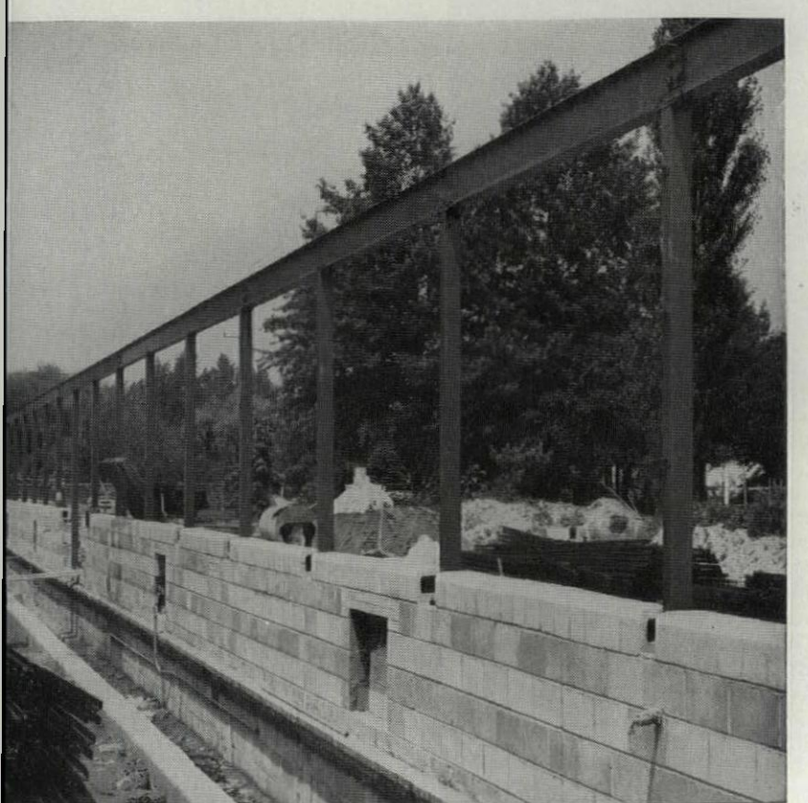

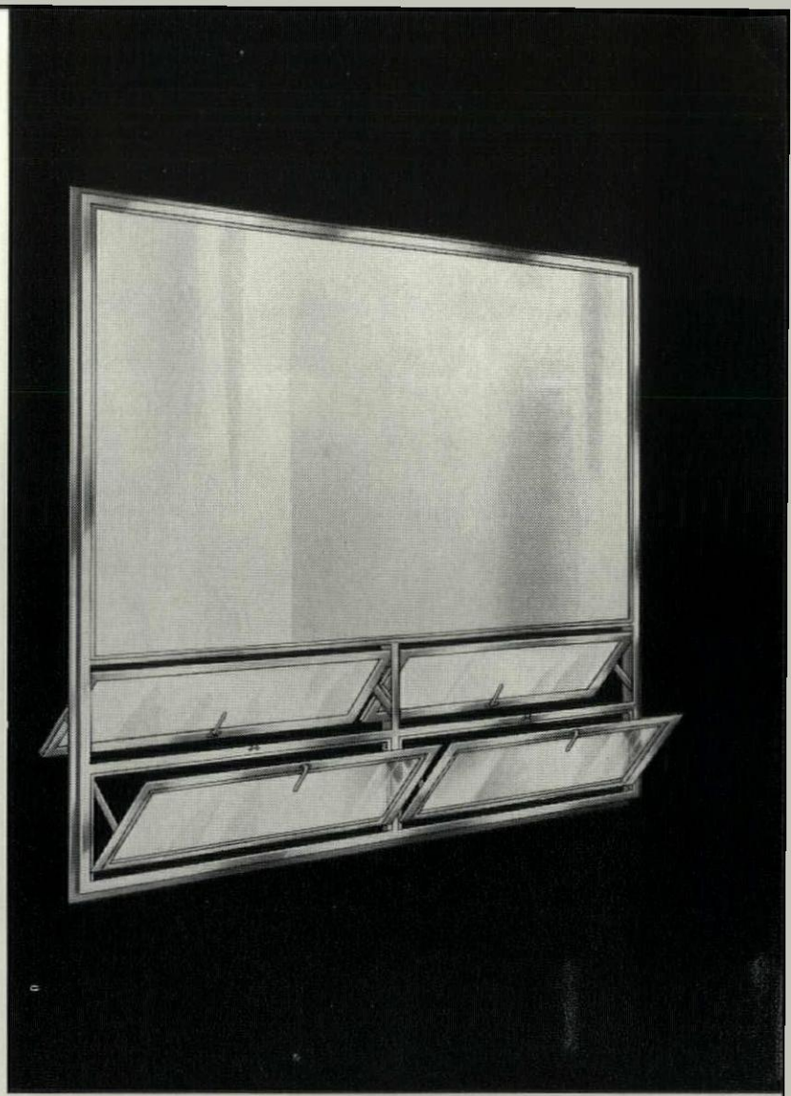

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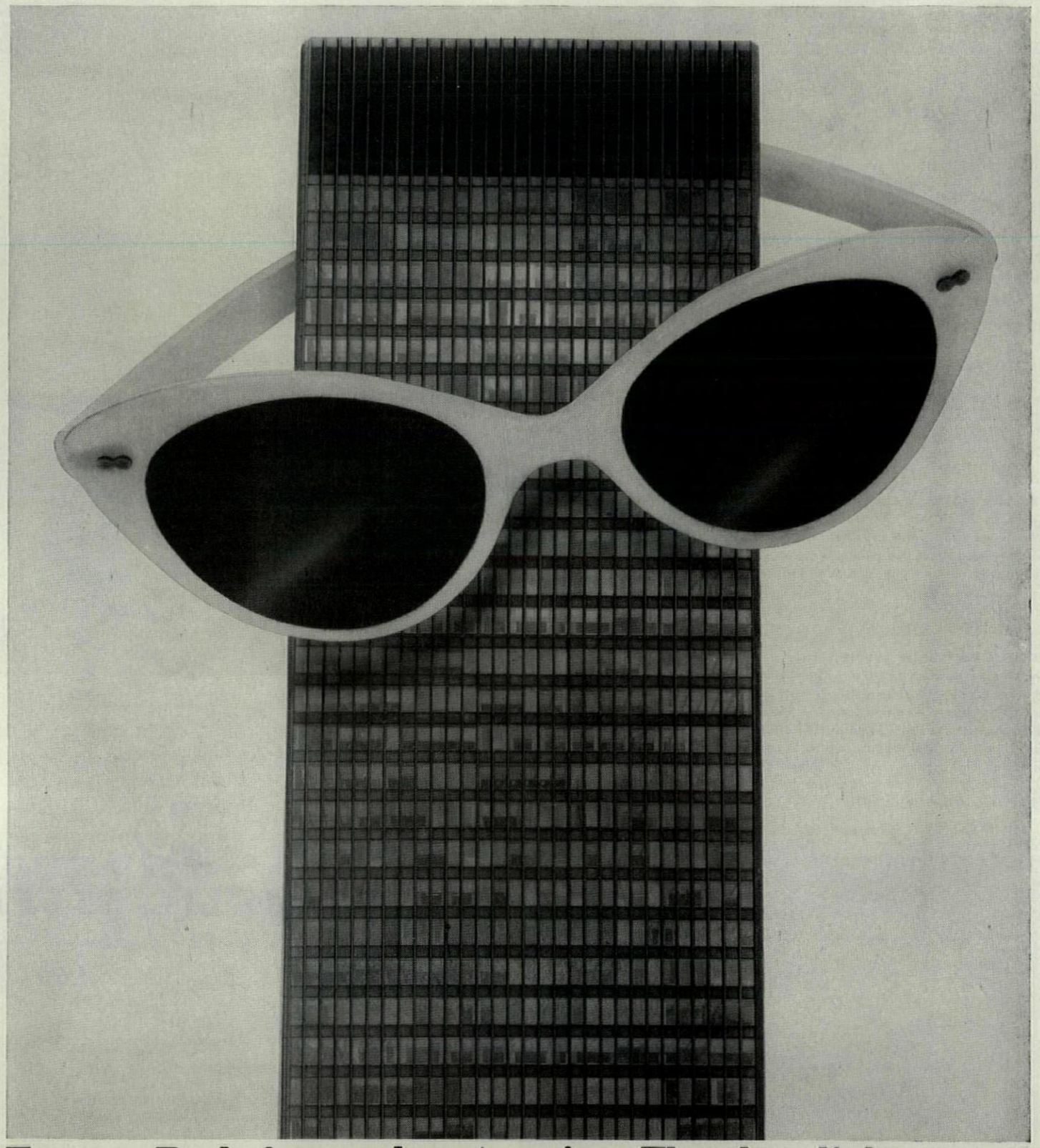

Famous Park Avenue beauty enjoys Flexalum light control

Regard the Seagram Building. What glamour it adds to Park Avenue! How shapely! How well-groomed! For its 3,676 windows, the architects naturally chose Flexalum Twi-Nighter venetians. What's more, Hunter Douglas engineered two custom features so that haphazard slat-tilts and blind heights wouldn't interrupt the symmetry of the building's facade. A special 3-stop action keeps the blinds fully raised, fully lowered, or set at one happy medium, while the unique tilt mechanism fixes slats at a 45-degree angle. No other window covering is so ideal for buildings with curtain-wall construction.

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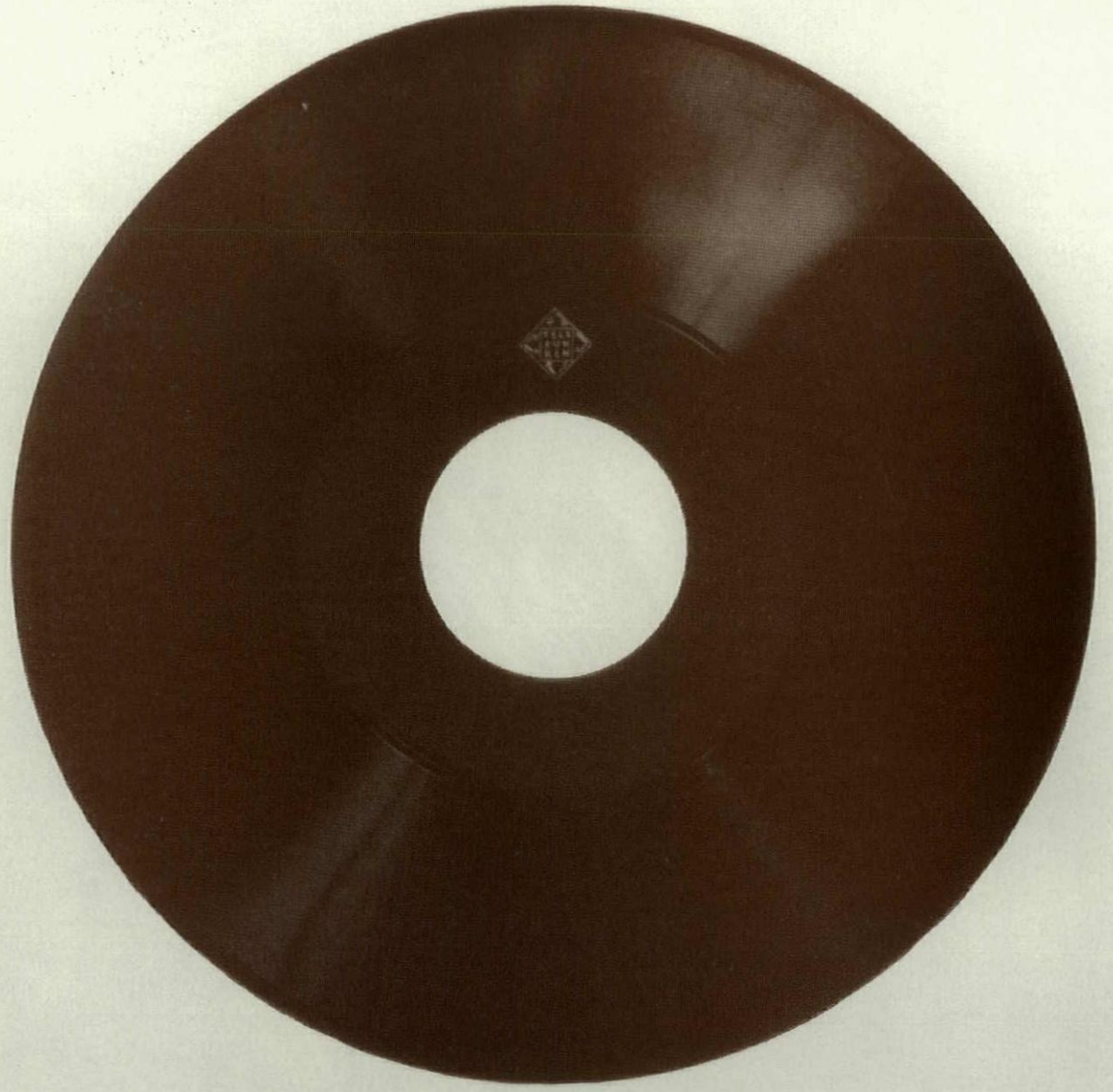
TWI-NIGHTER® VENETIANS



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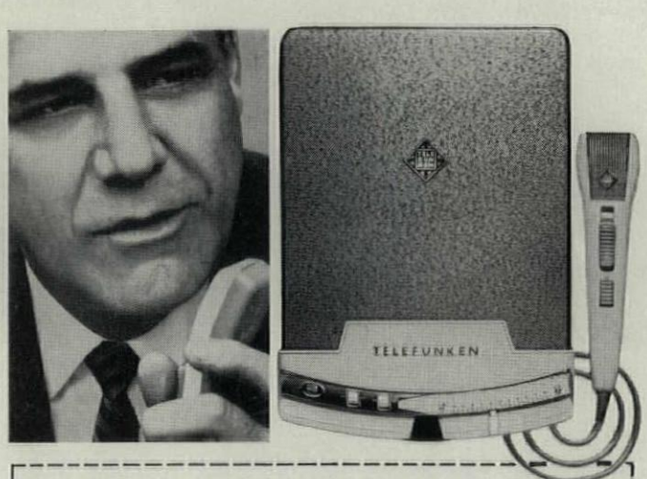

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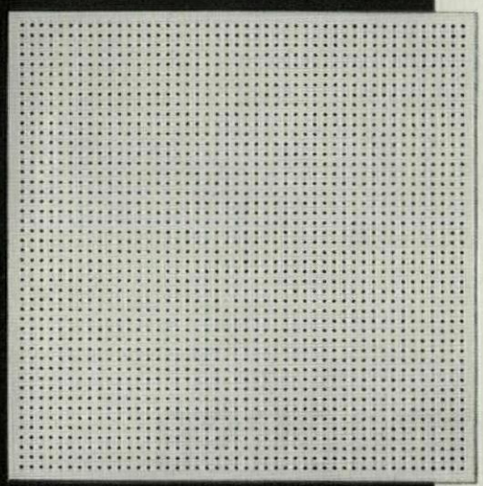

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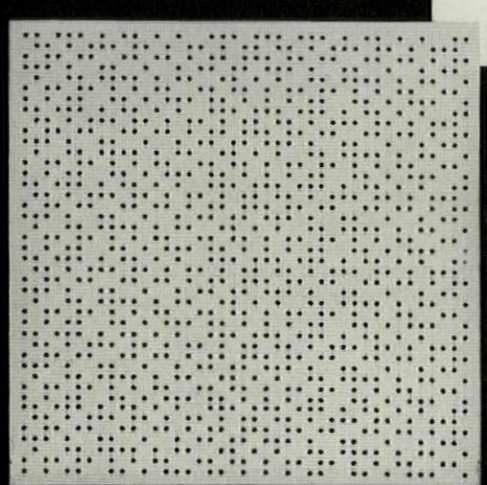

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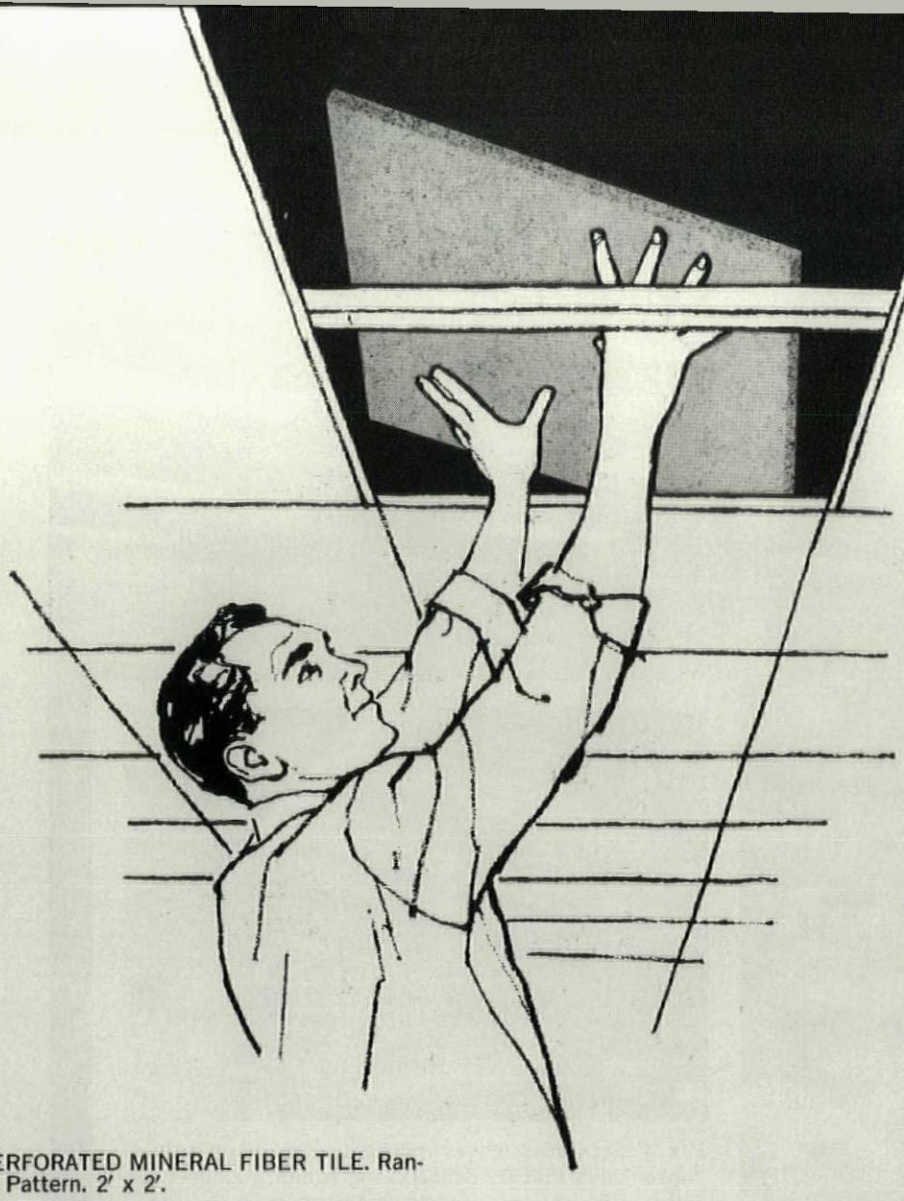

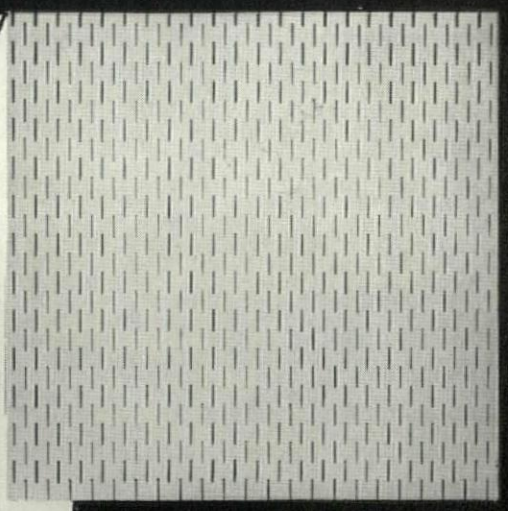

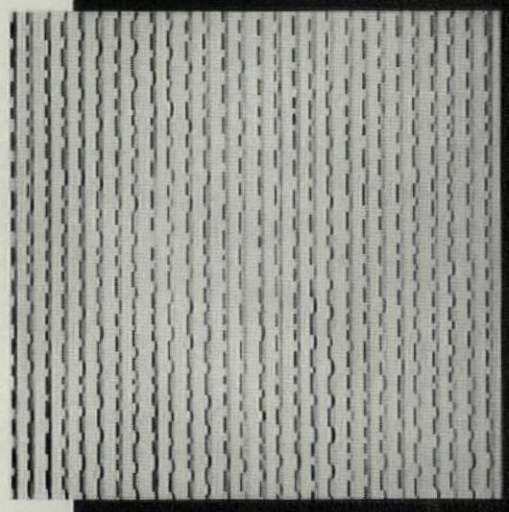

1. PERFORATED MINERAL FIBER TILE. Random Pattern. 2′ x 2′.

2. PERFORATED MINERAL FIBER TILE. Standard Pattern. 2′ x 2′.

3. CAVITY TILE*. Standard Pattern. Perforated gypsum base board; membrane backed. 2′ x 2′.

4. CAVITY TILE*. Random Pattern. Perforated gypsum base board; membrane backed. 2′ x 2′.

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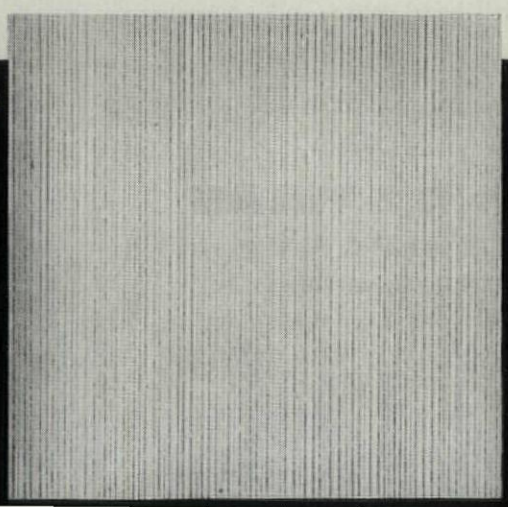

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1′ x 4′ PLEXIGLAS lenses mounted in continuous line, Ronkonkoma Primary School, Long Island. Architect for both schools shown: Frederick E. Allardt, Jr.

2′ x 2′ PLEXIGLAS lenses mounted in pairs, Southampton High School, Long Island.

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- crystal clear, assuring full utilization of light with complete visual comfort.

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Editorial

The great environment game

While the world powers young and old contend at the UN for control of mere continents, other forces, only dimly perceived, struggle elsewhere for a larger prize: control of "man's total environment." Through the fog of ideas and language that shrouds the fray, the several combatants are occasionally visible. There is Engineer, swinging his mighty theodolite; there is Designer, jabbing deftly with his compass; and there, bless him, is Architect, shielding himself with a decorative screen, striking out with a neo-classic column.

This struggle, like its microcosmic sister at the UN (but unlike day-by-day school contracts or damsites) is to be won not by the skillful use of professional talents, but by verbal artillery. Last month, up from behind the bastions of Massachusetts Institute of Technology, came one of the most thunderous salvoes yet heard in the struggle, deafeningly portentous, furiously obscure. The announcement boomed: "The theme of the approach to civil engineering education at M.I.T. shall be the fulfillment of human needs through the adaption and control of the land-water-air environment!"

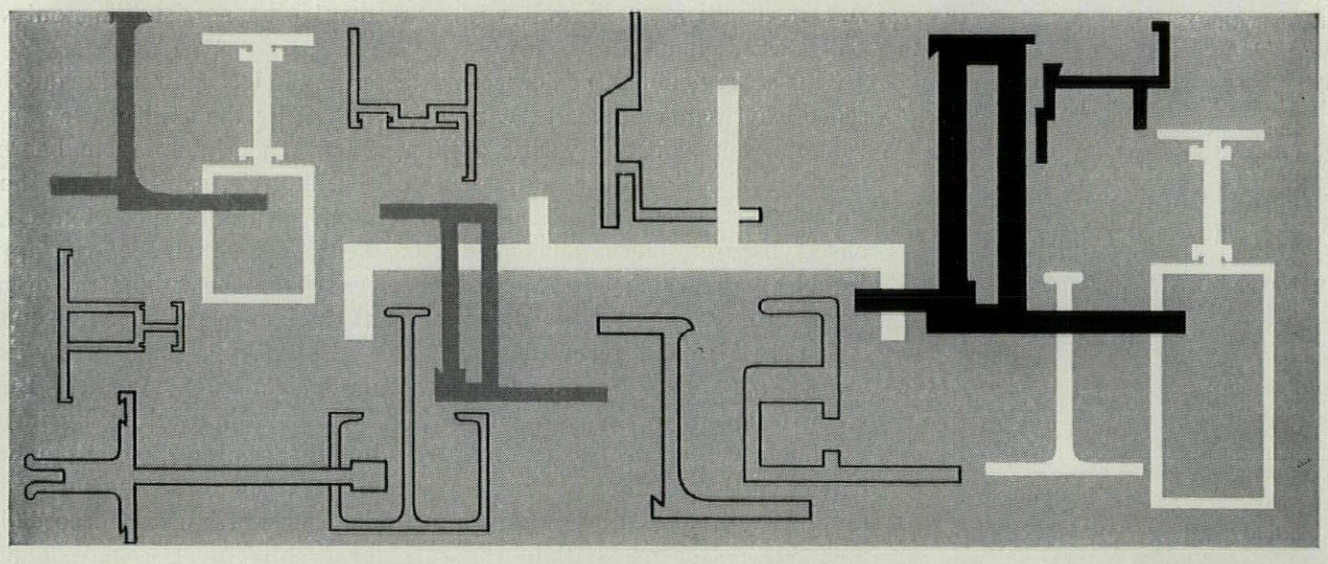
Industrial and interior designers are also making some pretty impressive claims about "Total environment" from jets to submarines. But they seem to have a weakness for lowering their guns and taking an incidental potshot at other professionals: "Warning to architects," reads a heading in one of their recent papers, "paradoxically the undistinguished work of architecture finished by a competent interior designer often succeeds better, and gets better press, than the superior architectural work." That kind of blast is, obviously, too small-bore for such a cosmic conflict.

If interior designers can descend from the empyrean and become too controversial, architect-engineer firms and package builders can err by becoming too specific. "Controlled conditions, including temperature, humidity, and a high level of lighting intensity at the working plane," promises one of these, confining the whole matter to efficiency and comfort. But how is the dreamy poetry of man's total environment going to come through when the objectives are so precisely defined and limited?

Architectural leaders, fortunately, have not fallen into these errors. Rather, with eyes set on the highest peaks and with a keen understanding that in war as in games it is good to win but better to observe the rules, they loose barrages that will surely confound all rivals (and a few clients). One of

continued on page 93

2000



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the most impressive of these came during the past summer. A.I.A. President Philip Will then declared: "I hold that the architectural profession should assume responsibility for nothing less than the nation's *total physical environment,* including the land, the waters, and the air, *an environment in which may be realized the aspirations of man.*"

Fortunately for architecture, on its way to all these higher things, Mr. Will and his partners have a deserved reputation for designing excellent buildings and building groups here and now.

Thank you, Mr. Purves

Every architect in the U.S. — particularly every member of the American Institute of Architects — is indebted to Edmund Randolph Purves who recently resigned as the AIA's Executive Director (see News). Nineteen years ago he gave up private practice to devote all his time and his very considerable energy to AIA and to improving the position of his profession. Today this improvement can be measured in several ways: by the 11,000 increase in the Institute's membership, by AIA's growing liaison with the Federal Government (nonexistent in 1941), and by the better standing of the architect in the community.

Purves' place will not be easily filled, but his successor, William H. Scheick, has filled difficult assignments before and is experienced in looking into the future. An architect-teacher-administrator, he brings to his new AIA assignment considerable experience in research, an activity of increasing importance to architecture. Thus the profession can look forward to still further growth from the seeds sown by Purves and to new growth in new architectural fields.

San Francisco leads the U.S.

The plaudits of all good men are due to San Francisco for doing what was considered impossible, and awarding a big redevelopment contract, for the Golden Gate project, uncompromisingly on the basis of excellence as established by the Redevelopment Agency's architectural competition (see News).

This magazine was among those who worried out loud whether this could be done. That it was done is cause for rejoicing.

The competition terms had been a bit loose, and there was fear lest it be decided that the chief consideration after all was financial, so the financially most tempting project would have to be accepted in the end. Of course in such a case there would have been pious words of regret that the best in quality could not be had, because in the United States we do live for money, do we not? And then there would have been the usual explanation that the financially tempting project was "just about as good" for citizens to live in anyhow.

Instead of that, the San Francisco Redevelopment Agency has put the city on the line for the unbeatable proposition that excellence is good, and worth having. Although neither the architectural jury nor other independent experts ranked the proposals, there is no real question that a preponderance of opinion considered this scheme the best.

Underlying such a good choice is a value too often denied by the short-sighted: that good architecture is the best economics in the end. In the end what cities depend upon for their very survival is being more pleasant places. That is what architecture creates.

This decision by San Francisco strengthens the hand of wise leaders in all other cities.

What's changing U.S. high schools?

PHOTO: A. Y. OWEN

C. E. Donart High School, Stillwater, Oklahoma

National stereotypes are dissolving as today's different local challenges form different kinds of schools. Eighteen pages of examples.

The school scene today is in a ferment not only of students but of new ways to teach—new class sizes, new machines, and thus new kinds of buildings. Paralleling this educational excitement is the quiet beginning of self-questioning by architects: have they really been designing the right kinds of buildings for schools in terms of character or architectural feeling? A third motivation is also moving minds in school architecture today: at last the sluggish big cities are beginning to arouse themselves administratively to solve the desperate human problems brought about by the deterioration of their public school systems, a decline which has accompanied—perhaps even led—the deterioration of the big cities themselves as places for family life.

So this past year's progress in school design cannot be traced significantly in terms simply of evolution of a plan type, or development of a single technique. Too much is happening all at once. To show what is happening in the three principal channels of change FORUM this month discusses in detail four diverse schools which seem to post the signals for 1961:

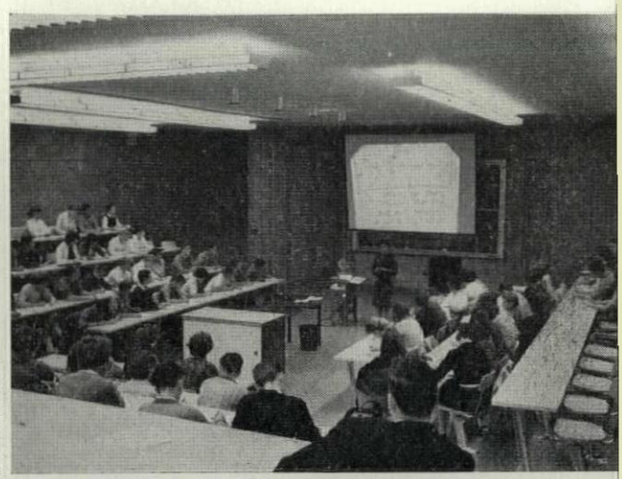
Educational change: In Wayland, Mass. and in Stillwater, Okla. are two school plants which are virtually fast photographs snapped of educational technique in motion. The floor plans of these two small high schools reveal how the standard classroom has been exploded into a variety of teaching spaces.

It is appropriate that Wayland and Stillwater are similar communities intellectually, the first a high IQ, high income suburb, the second a college town. Beyond that, however, and beyond the fact that both these schools have broken out of standard classrooms, there are great differences in design. Wayland's story begins on page 96, Stillwater's on page 105.

Architectural change: The new junior high school under construction in Columbus, Ind. is a startlingly strong and concentrated architectural attempt to impress the seriousness of education on a mild, uncrowded community. A bold statement (drawing, right), it will stand in muscular opposition to the graceful postwar trend in the physical personality of schoolhouses. And for this school's high level of architectural expression Columbus citizens are indebted to a private architectural patron, who has volunteered to pay the architectural fees for all such efforts in the city. Page 102.

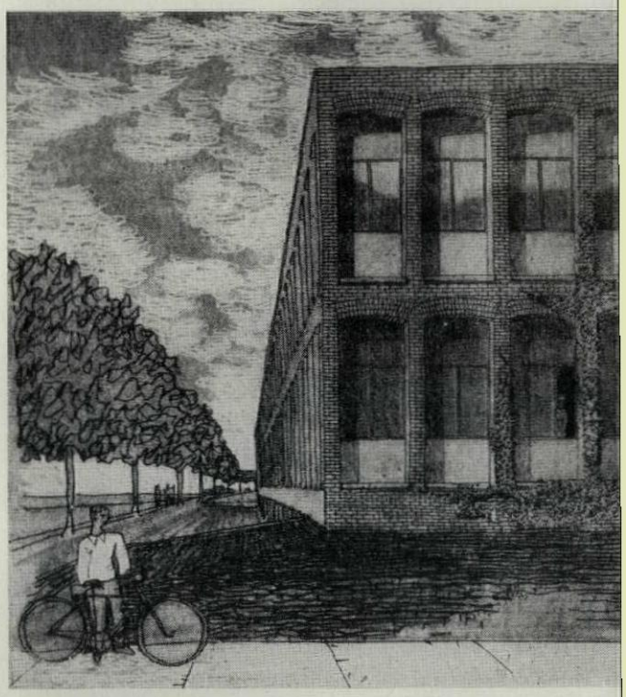
Organizational change: Finally, there is progress to report in the meeting of the most massive of American educational challenges, the development of a humane urban school. In Chicago (page 110) a determined, buildings-minded superintendent has brought private architects into the picture for the first time in the century—and is saving money as a result. He is also planting his big schools in or near parks and is otherwise integrating them into their communities.

Schools, of course, have always been a local problem. But in recent years school buildings have had a rather national flavor. It is good to see the stereotype begin to crack, even though it has been a respectable modern stereotype, for such a reform reemphasizes another decidedly democratic ideal: freedom of choice. Communities today are exercising it in architecture.

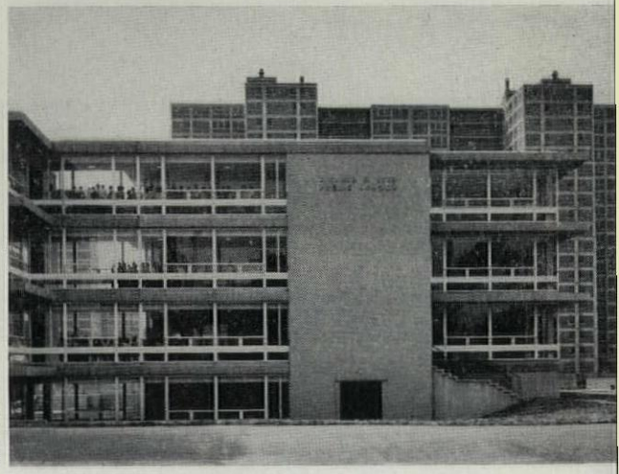


ROBERT STAHMAN

Senior High School, Wayland, Mass.



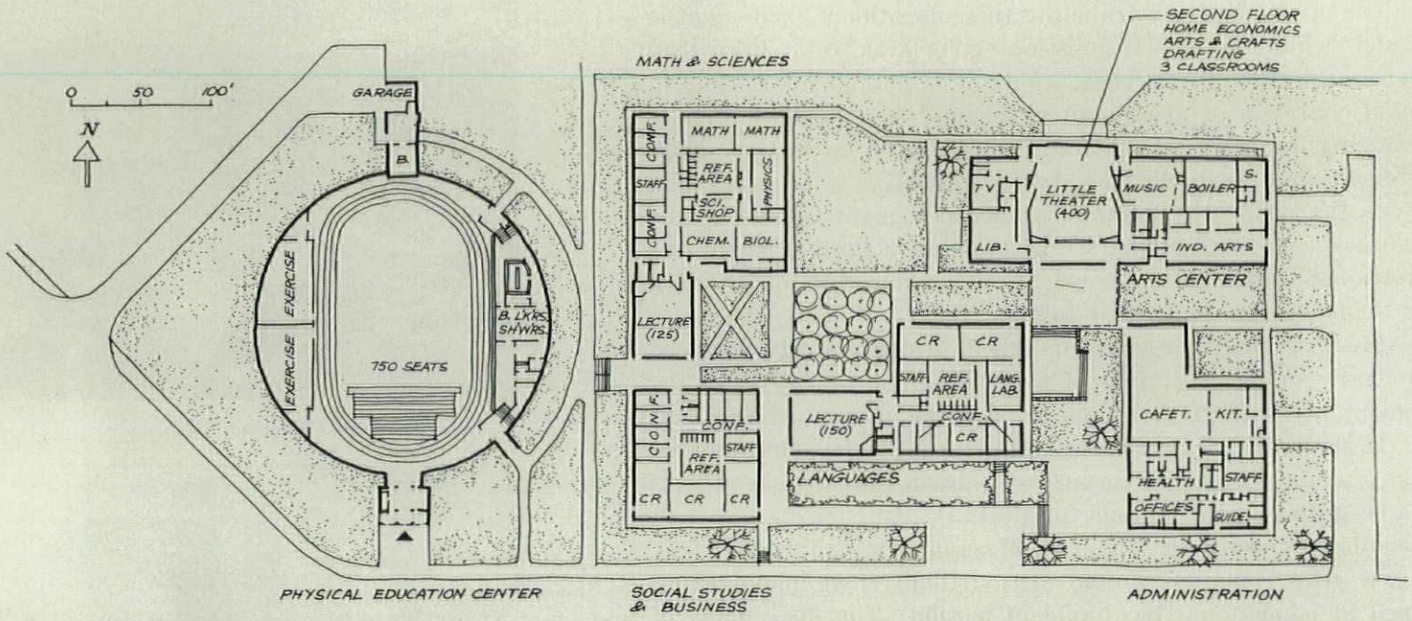
Northside Junior High School, Columbus, Indiana



ART SHAY

Richard E. Byrd Elementary School, Chicago, Ill.

Changing high schools



School and field house dome are raised slightly above a pastoral site leading down to the Sudbury River in the distance.

PHOTOS: ROBERT STAIMAN

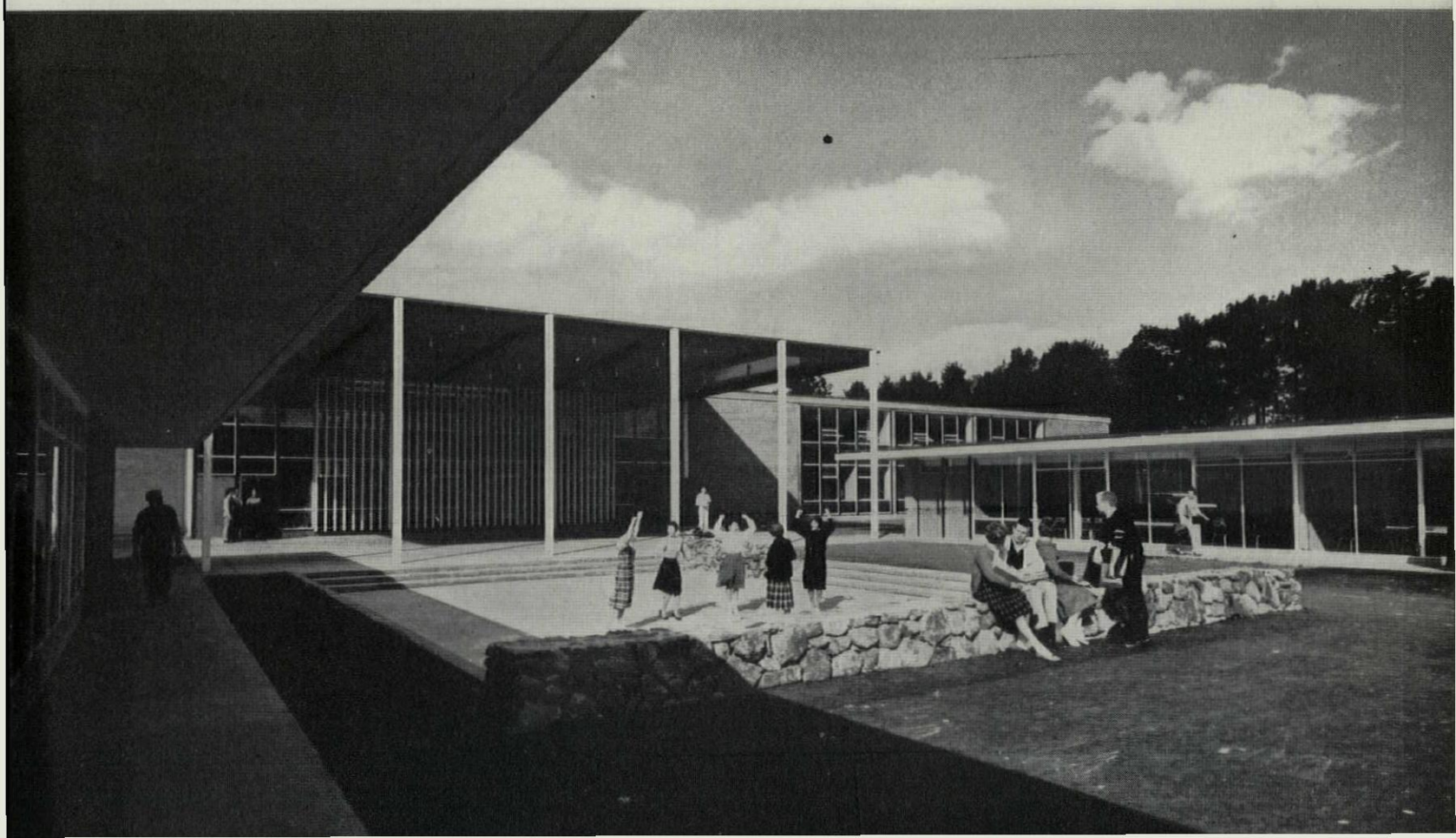
Wayland's lab for learning

In a college-minded high school, a variety of special learning spaces foster a college-like approach.

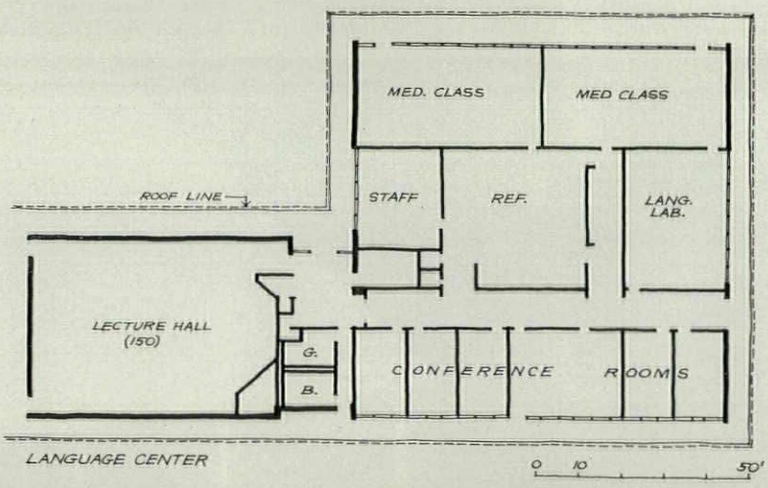
Probably the most talked-about school plant in the U.S. this fall is a collection of five flat-roofed buildings and a big white dome set down in a green pasture some 16 miles west of Boston. After a month in operation, the new Wayland, Mass. (pop. 10,000) Senior High School could hardly be expected to prove anything conclusive about its novel educational design. But out of the inevitable first confusions one educational goal is already coming to life: both teachers and students are discovering more individual responsibilities, and more opportunities, to develop on their own.

Key to this in the Wayland plan is a college-like variety of learning spaces, grouped by subject matter and closely embodying the principles of the celebrated "Trump Report" (which was actually published well after Wayland's final drawings went out to bid). The initial exposition of a subject can now be carefully prepared and delivered by a single teacher to 125 or 150 students at a time, in two large-group instruction halls (see overleaf). The large groups can then be broken down into smaller ones of various speeds and interests, to explore the subject further in classrooms seating 30-35, and in batteries of conference rooms seating up to 15. Further individual study is encouraged by central reference-resource rooms, little libraries where pertinent books, periodicals, maps, displays, and equipment are available for daily use. With the help of the school's guidance department, and a weekly conference with his teacher-adviser, each student follows a schedule closely tailored to his individual requirements. "When the system works properly," says Superintendent Edward Anderson, "it opens doors so that the student can travel in almost any direction at almost any speed. It also requires students to study; it isn't too easy to sit in a small discussion group when you haven't done your homework." Wayland's system of team-teaching and individual responsibility—actually started three years ago and now spread through all elementary and high-school grades—was fashioned by and for a strongly education-minded community (like their parents, more than 80 per cent of last year's graduates went to college). How closely Wayland's new plant is fitted to its program is seen on the following pages.

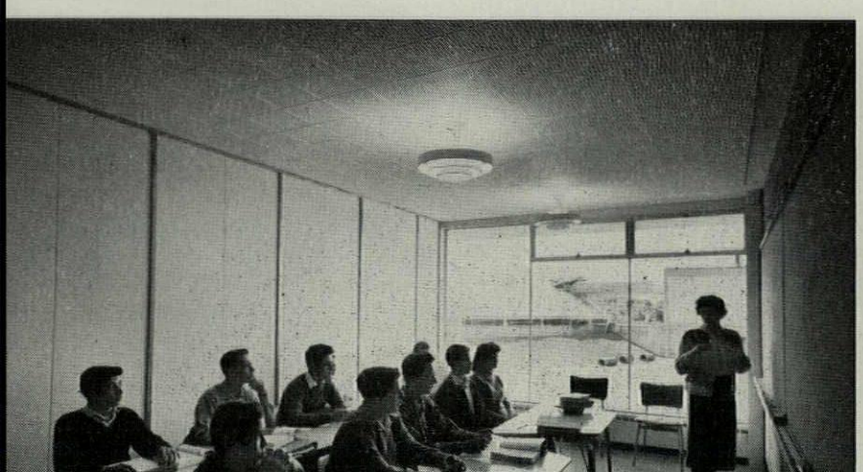
Cheerleaders practice in the sunken patio of the main entrance court; lift-slab canopies shelter outside "corridors" (left).

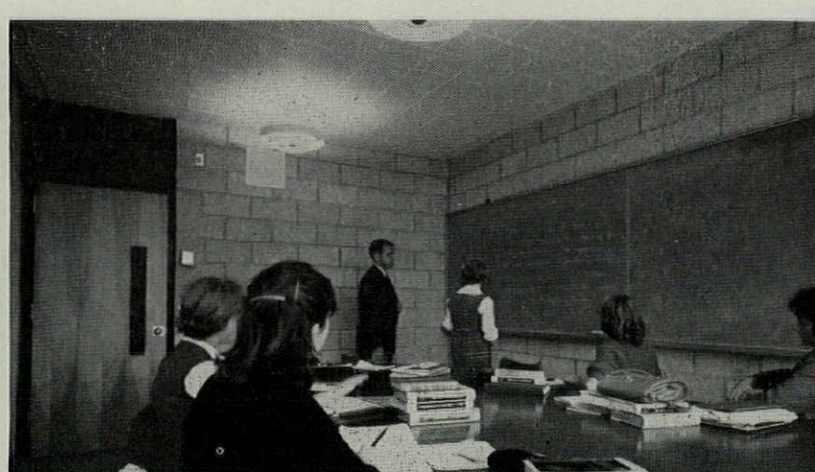


Large-group hall *in the languages building (plan, right) is windowless for easy use of audio-visual aids, seats 150 at continuous desks stepped down amphitheater-style for greater visibility. A projector will be installed in the ceiling for showing films and live demonstrations from the school's yet-unfinished TV studio, possibly from Boston educational stations and other schools.*



Small-group rooms *are used for classes of up to 15 students to develop material introduced in lecture halls, and for private conferences and tutorial work. Some have sectional table-desks (photo left), others, oval conference tables (right); still others have wedged-shaped tables focusing on one speaker. Inexpensive gypsum partitions may be torn out to combine two or more rooms.*

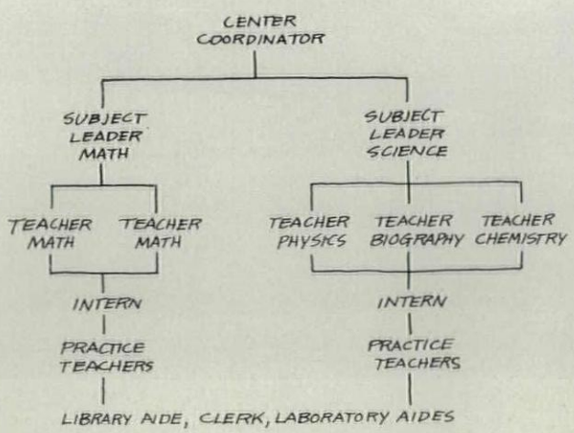




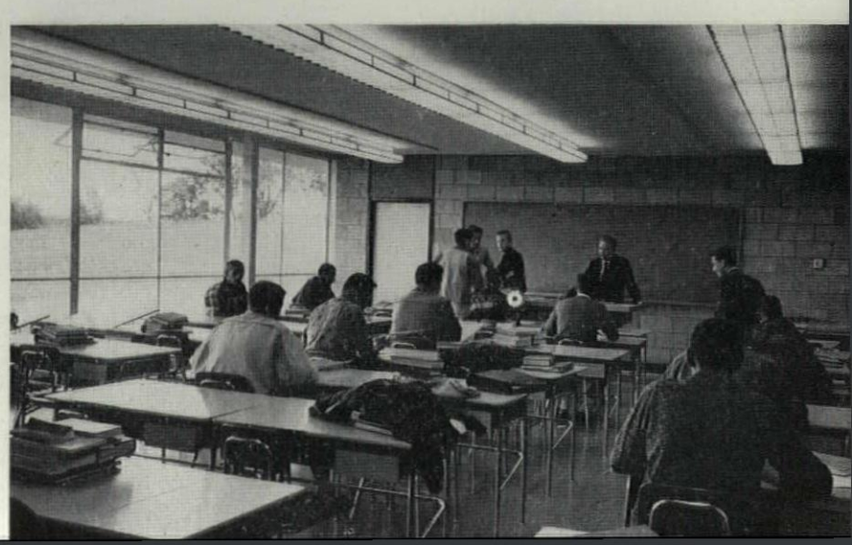
PHOTOS: ROBERT STAHMAN

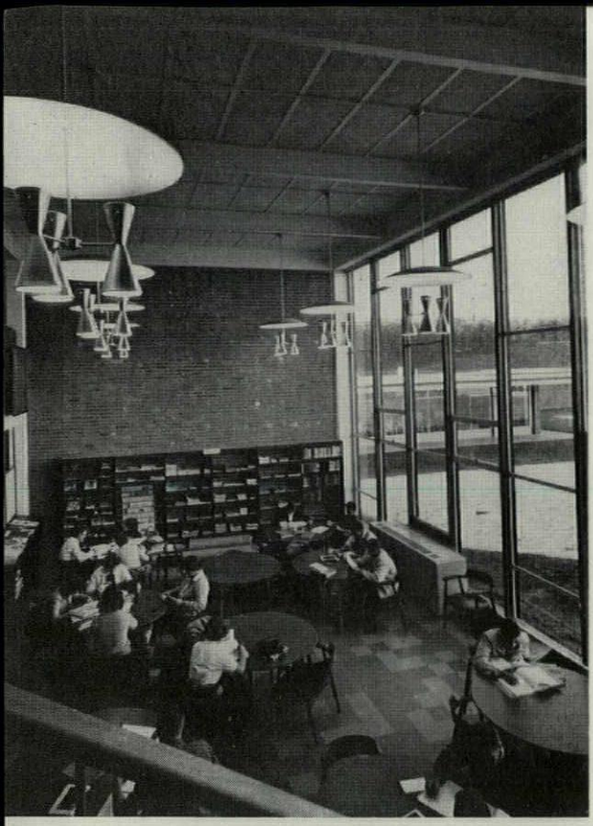
Reference center *in each building is centrally located under plastic skylights, stocked with current books, periodicals, displays and teaching aids, supervised by a library aide. Original closed booths were abandoned for open study desks separated by shields (background), since group study was felt more effective than isolation. To one side is a staff room for the teaching "team."*

TYPICAL TEACHING "TEAM"



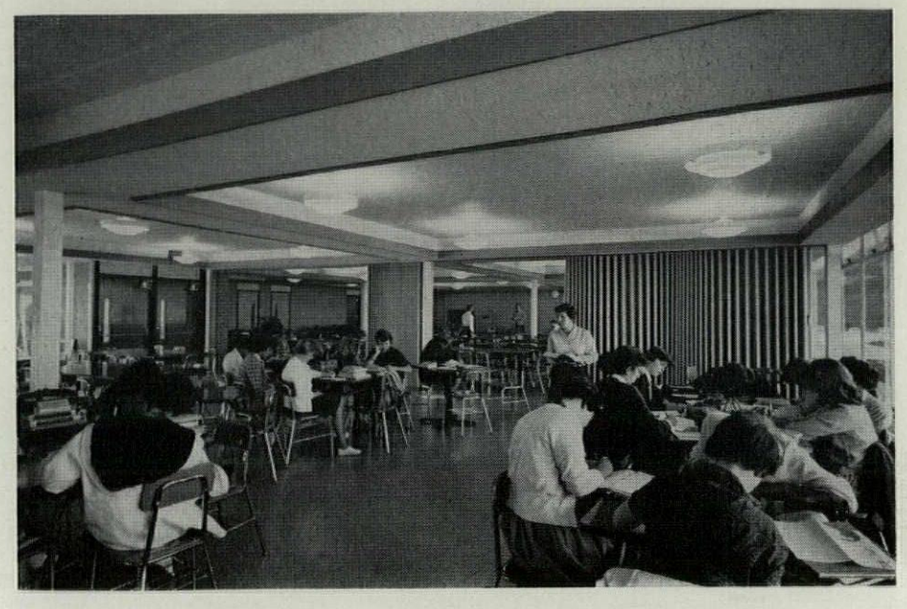
Medium-sized classes *(up to 36 students) meet in 10 more conventionally-sized rooms distributed through the school. Acoustical tile and lighting units are fixed directly to the lift-slab ceiling; plain concrete-block partitions will probably be painted here as in some areas to relieve a somewhat unfinished, industrial look. There are also special language, music, art and crafts rooms.*





Main library *has a two-story reading room facing northwest over a large courtyard at the rear of the school. On the mezzanine are bookstacks and desks for individual study; beneath are the library entrance and a special geography "corner." In the other buildings the reference centers serve as sub-libraries for current material in math and science, languages, social studies and business.*

Cafeteria *seating 300 is divisible by folding partitions into two smaller areas which can be used for study halls, meetings, after-hours school and community affairs. Here the lift-slab span is reinforced with ceiling beams which also help divide the large space into more intimate areas. Photo opposite shows the cafeteria and administration entrances from the portico of the little theater and arts building.*

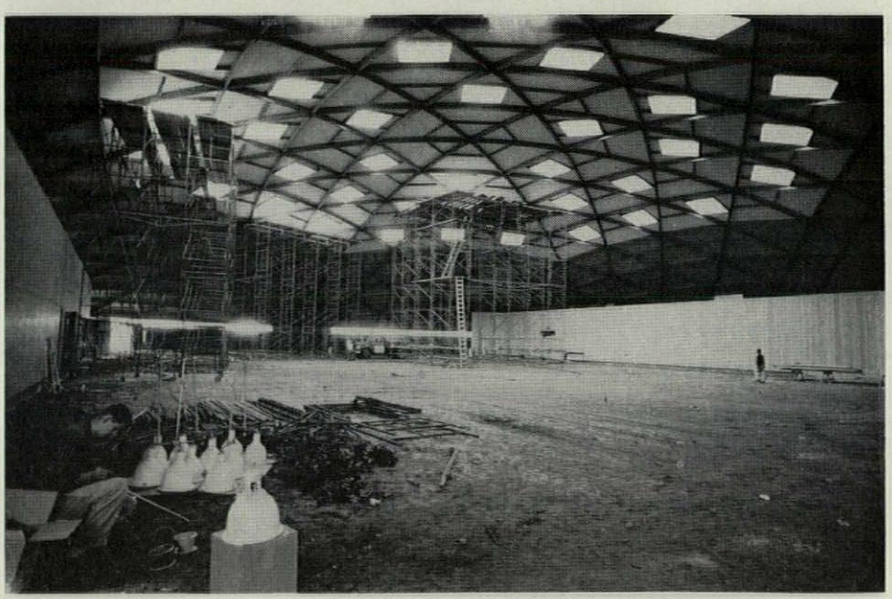


Financial Program:
School is the fourth built in a $5 million, five-year program, including three new elementary schools, conversion of the former high school to a junior high. Cost: $2,356,748 (see below). Bond issue passed, 598 votes to 89, on first submission in December 1958, was split into two 20-year issues: a 1959 bond of $1,175,000 at 3.5 per cent, a 1960 bond of $1,100,000 at 3.6 per cent. Fifty per cent of the cost will be reimbursed by the state.

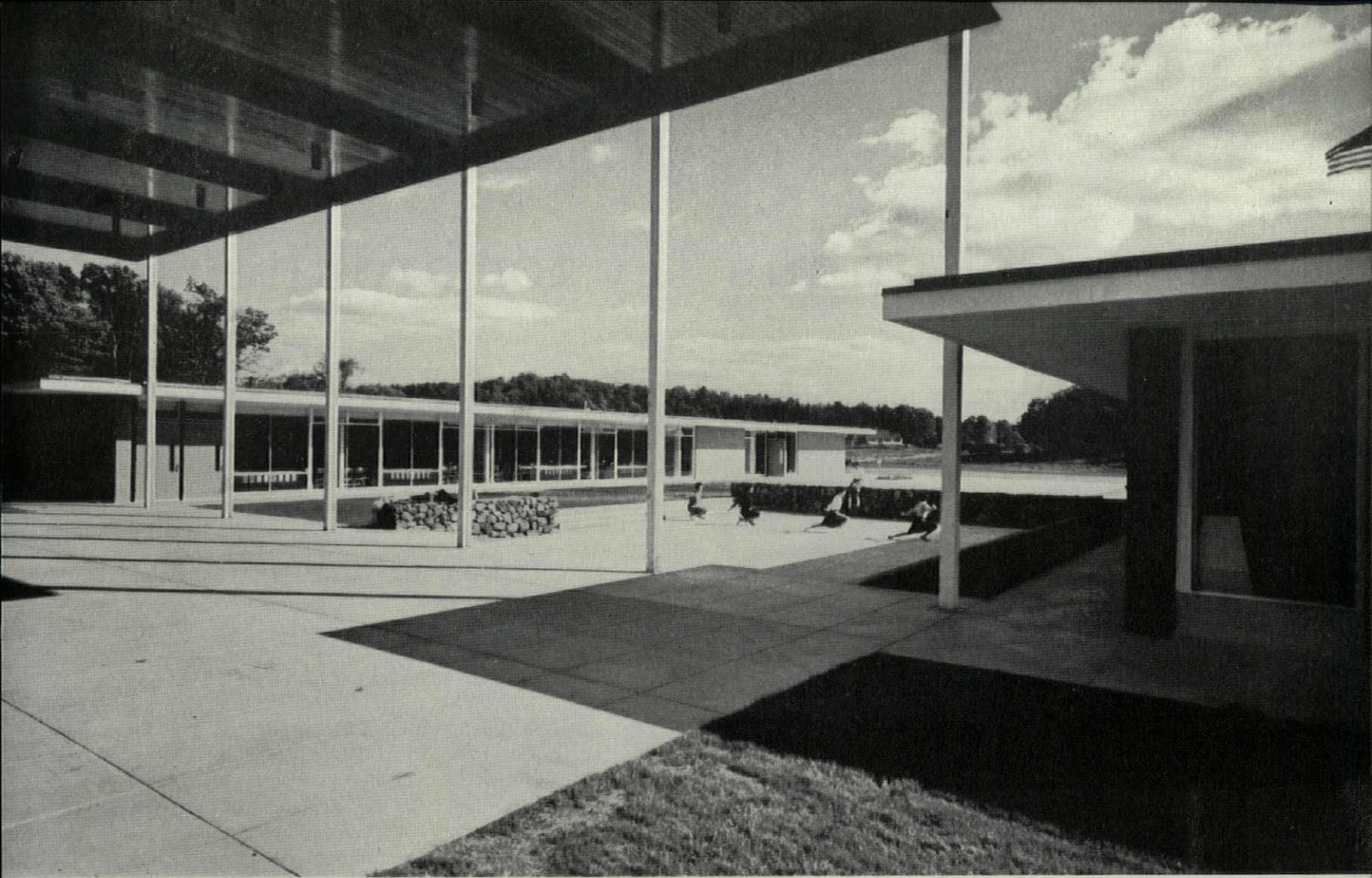
Cost Breakdown:
Main buildings (77,000 sq. ft.): $1,115,566; Field house (41,000 sq. ft.): $347,837; TOTAL BUILDINGS (118,000 sq. ft.): $1,463,403; Fees and clerk: $150,000; Site work: $273,184; Equipment: $350,000; Contingency: $57,161; Site cost (93.5 acres): $63,000; GRAND TOTAL: $2,356,748. Designed as a 850-pupil school. Present enrollment: 570. Eventual capacity: 1,200 (with cafeteria enlarged, two more classroom nuclei added).

Credits:

ARCHITECTS: The Architects Collaborative (John C. Harkness, partner in charge; Herbert Gallagher, job captain). EDUCATIONAL CONSULTANTS: Kargman, Mitchell & Sargent. ENGINEERS: Souza & True (structural), Reardon & Turner (mechanical, electrical), Bolt, Beranek & Newman (acoustical). CONTRACTOR: N.D.C. Construction Co., Inc.



Field house *spans 200 feet on 4 in. by 14 in. laminated timbers and a 2 in. wood deck. Lower walls shield special exercise areas and locker rooms. The treated dirt floor will have a running track, demountable basketball court and bleachers, room for an "all-sports, all-students" program during long winters and muddy springs. It may also be used for school assemblies and town meetings too large for the 400-seat little theater (not yet completed or photographed). In photo opposite, the field house dome is seen from the entrance to the school's little theater.*



PHOTOS: ROBERT STAHMAN

Columbus' try for architecture

Formidable in mass, a big brick junior high bucks the trend of the modern school style.

In 1957, Irwin Miller, an Indiana industrialist exceptional for his extracurricular careers in religion and other matters less direct than the diesels he manufactures, made a unique offer to the school board of Columbus, the town his family has lived in for generations. It was frankly an architectural goad. "Hire architects for your schools from a list of five suggested by an impartial authority," he said, in effect, "and you won't have to pay their fees. I'll pay their fees for you." He added that no one architect should be engaged twice in succession; the aim was not just architectural authority but diversity—even rivalry—as well. From this offer have come three commissions to nationally known architects, including an elementary school to John Carl Warnecke, and an addition by the Architects' Collaborative.

The community's biggest response to this unique offer, however, has come in a junior high school now under construction. The architect selected was Harry Weese of Chicago, who had done other work locally, most notably an apartment development located just across the street from the school site.

In Weese they found a designer with ideas as strong and direct as Miller's methods for motivating architecture. Weese was against sprawling, one-story, or campus-type schemes. "It has become difficult to distinguish them from one-story office buildings or even factories. The solution in most . . . is a light metal frame with one or another of the packaged, brightly colored curtain-wall systems . . . a narrowing range of esthetic expression." It is but seldom that an architect has the courage to talk to a school board about architectural character, but this architect had been picked to do it—however, his clients point out that because Patron Miller was not paying for the schools themselves, there could be no frills.

Architect Weese's design is large-looking; it is masonry; it is a firm statement of the dignity and prominence in the community that he thinks a school should possess. The structure will not only be two stories high but will sit arrestingly atop an earth platform—a subtly designed one. By elevating the first floor up above grade on the earthworks, the designer was able to gain almost a fully windowed lower floor for future classrooms; and by cutting to this level, he accumulated his fill to build the platform. When completed, the structure may well have the fortitude of some of the old textile mills that spread from New England in the nineteenth century—and their bluff charm, too. The school certainly carries little effort to sweeten the taste of education for its tenants, but is a forthright statement in the toughness of construction with brick, which the architect decided was the least costly material in which to build this school (see cost comparisons of wall systems, page 104).

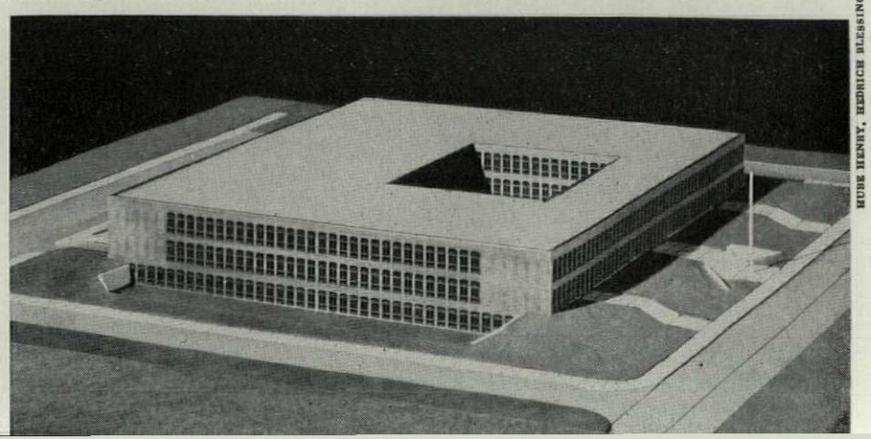
"The ancient and overlooked system of brick bearing piers and arches was a natural solution to the problem," the architect points out. The piers are 1 foot square, solid, designed to code minimum, with a bar joist built into the head of each one. The piers are repeated on the inner corridor, where the student lockers stand.

In arguing that schools should have a more mature atmosphere than is generally given them, Weese has opposed designs that strike him as flimsy, the technique his office calls the "ranch style." But his own choice flies in the face of the thinking of most of the experienced and accomplished school architects of America. The test of his theory likely will be his own skill in carrying it out, in avoiding running into a warehouse in his flight from the ranch.

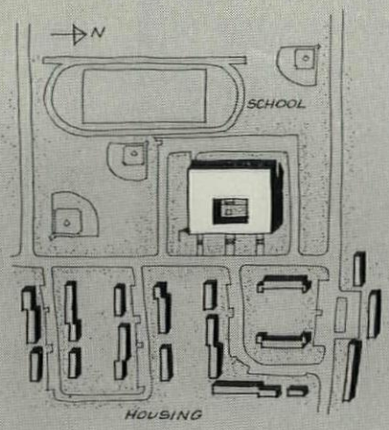
Large enclosed court, *to be paved, planted, and grassed in an orderly pattern, will be at the core of the new junior high school. Note the normal grade line, which was cut to expose windows of future expansion classrooms on the ground level, and filled to set the school on a platform overlooking its playing fields and the rest of the neighborhood.*

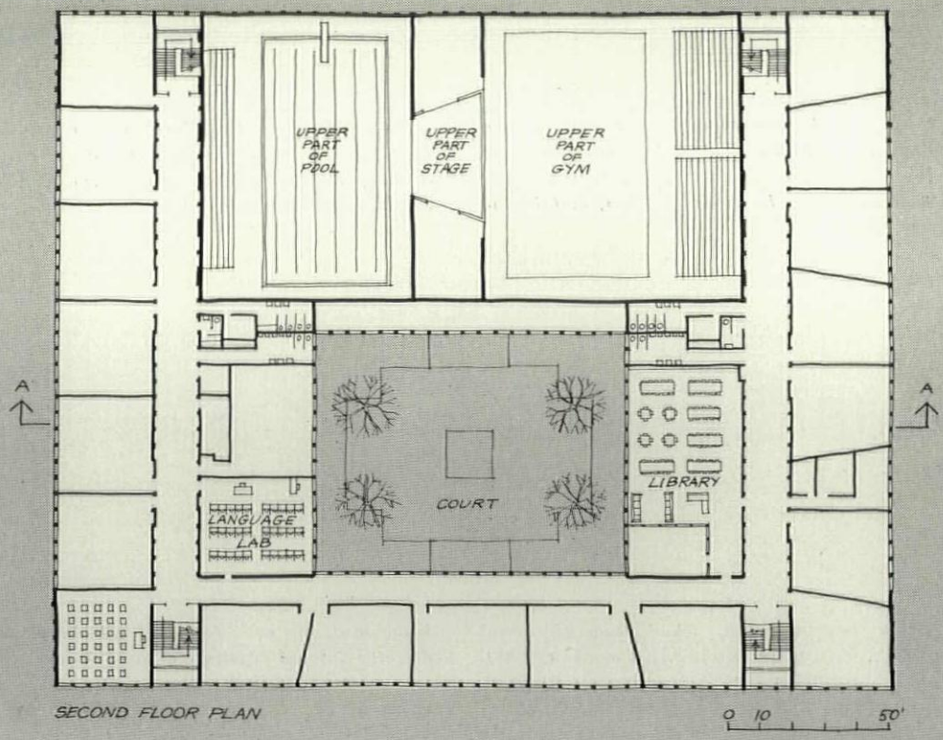
Repetition of brick piers, narrowly spaced, recalls nineteenth-century industrial pattern as shown in photograph of Lawrence, Mass. (left).

ALFRED EISENSTAEDT—LIFE

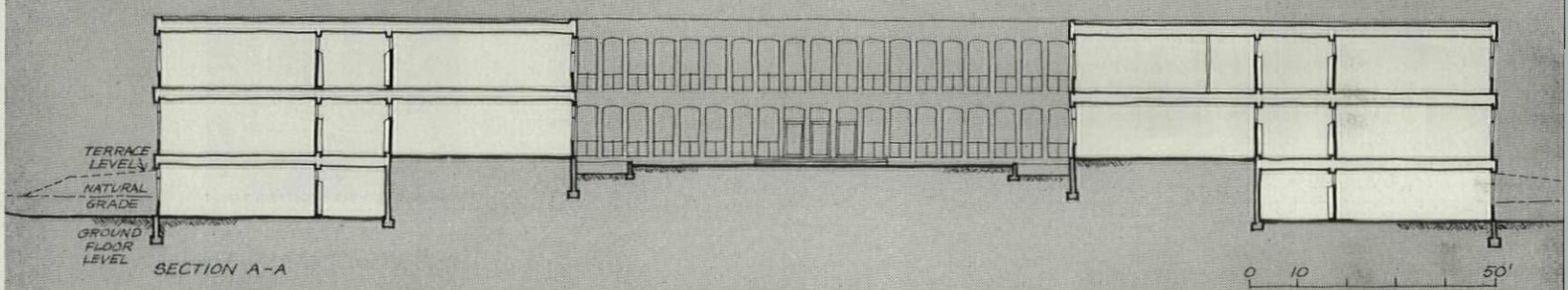


HUBE HENRY, HEDRICH BLESSING

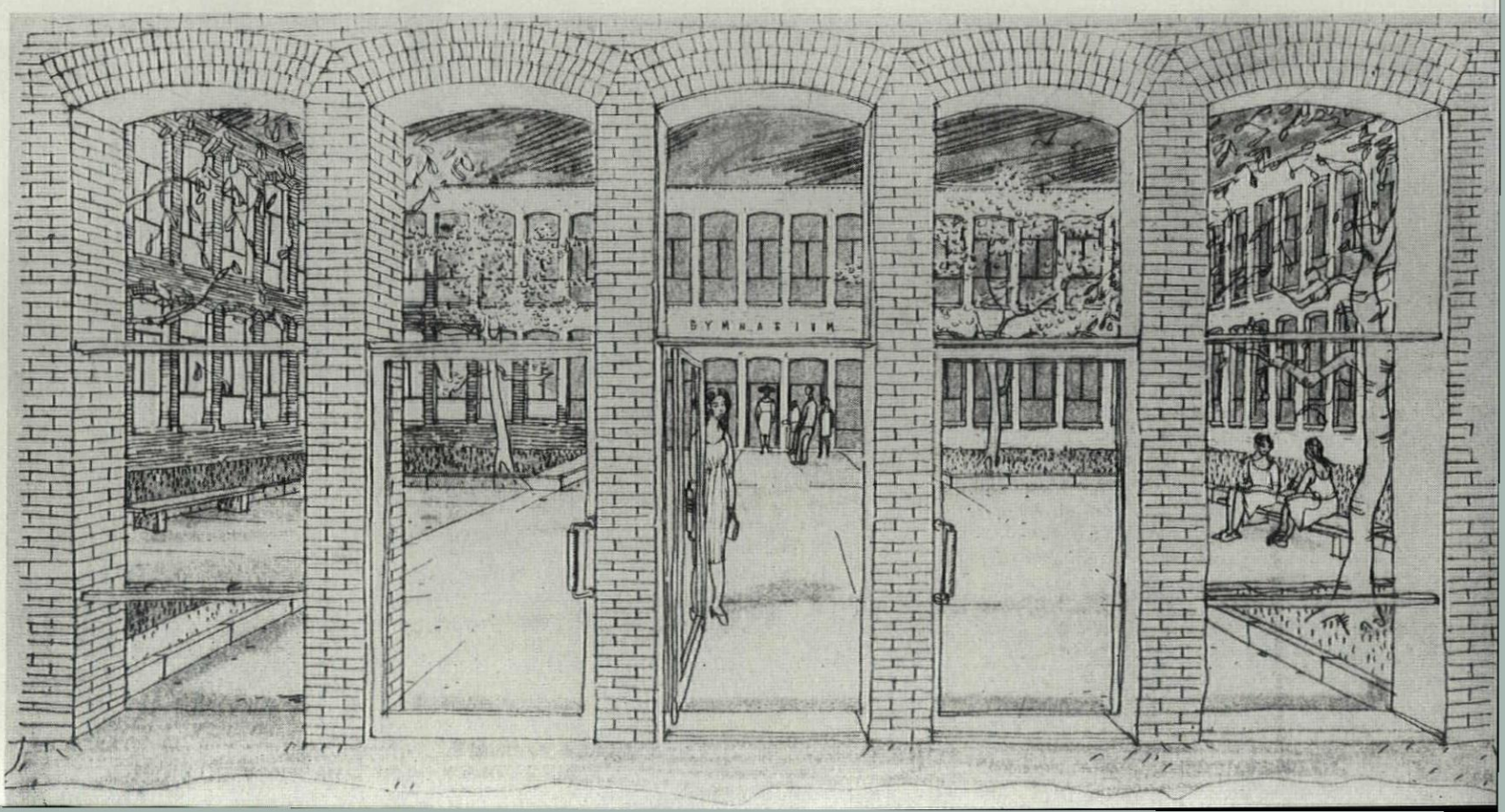




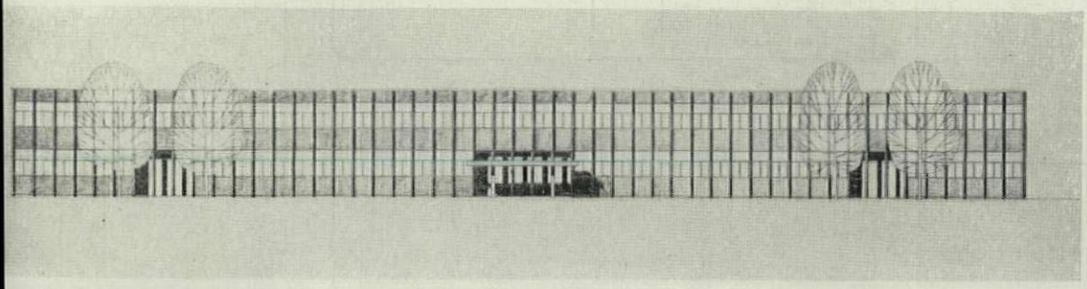
SECOND FLOOR PLAN

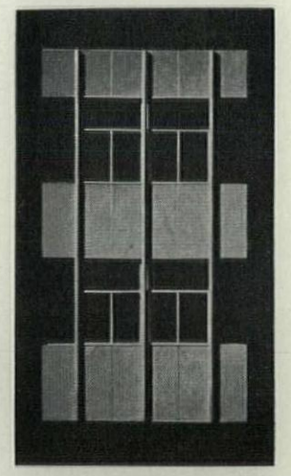


SECTION A-A

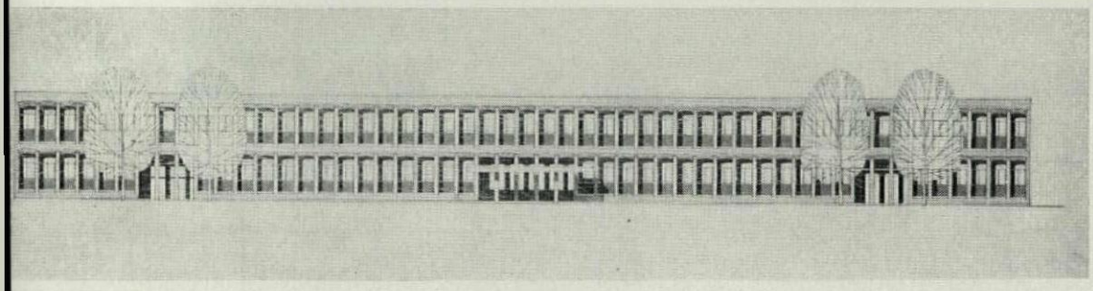


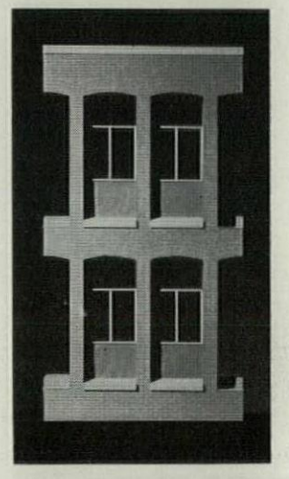
Curtain-wall construction *was one of the three methods studied for the construction of the new Columbus junior high school. For the wall shown in the model (right), and in the elevation (below), the Weese office estimated that the construction cost would be $4.27 to $5.25 per square foot, in place, excluding structural steel needed to support beams.*



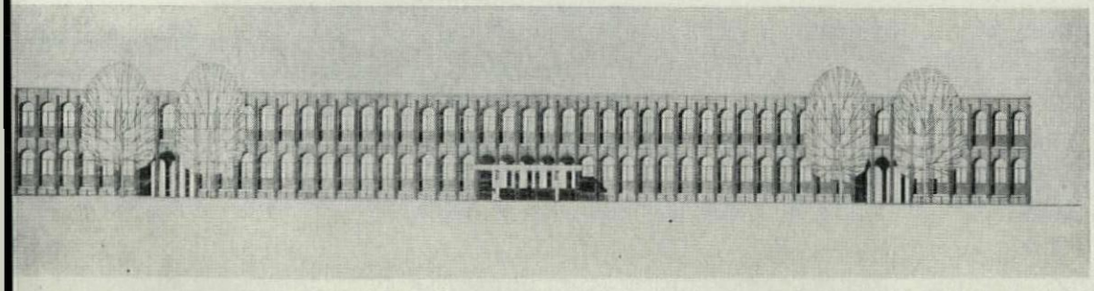


Brick bearing wall, *which was the final choice, with piers as shown in model (right), and in elevation (below), was priced at $3.05 per square foot, construction cost, in place. Window design calls for glazing to be placed directly into alternating grooved bricks and mortar joints. It was estimated that the brick could be grooved for approximately $700.*





Precast concrete wall *was the third alternate considered in the cost analysis by the Weese office. Like the brick wall, this would be a load-bearing construction. Based on experience in building a local factory, the cost computed for these units, in place, was $3.35 per square foot. Unlike some simpler tilt-up panels, these were not to be site-cast but shop-cast.*



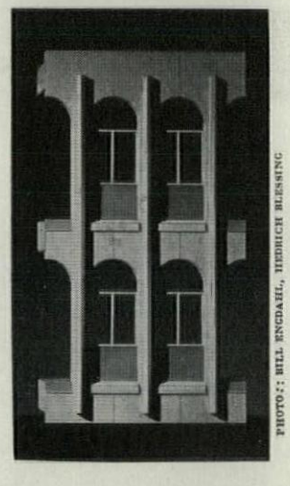


PHOTO: HEDRICH BLESSING

Financial program:
School is the second in a three-school building program totaling about $2.7 million, of which the school above cost $1.57 million. This school was financed without a bond issue from a cumulative building fund of the Columbus school board which comes from a levy of $1 per $100 of property valuation on all Columbus property. Remainder financed out of state loan at 2½ per cent interest: $847,000. Number of square feet: 109,567. Number of pupil stations: 1,000.

Cost breakdown:
Site development: $25,000; equipment: $75,500; professional fees: $84,248; general construction: $912,280; plumbing and heating: $330,280; electrical work: $114,573; cabinetwork: $5,000; painting and fabric covering: $20,000. Total: $1,566,881.

Credits:
ARCHITECT: Harry Weese & Associates. STRUCTURAL ENGINEER: K. Saether & Associates. ELECTRICAL AND MECHANICAL ENGINEER: S. R. Lewis & Associates. GENERAL CONTRACTOR: Repp & Mundt.

Noncommittal in elevation, the high school looks inward upon a landscaped court barely visible through gate at side entrance.

Changing high schools

Stillwater's plant for teaching

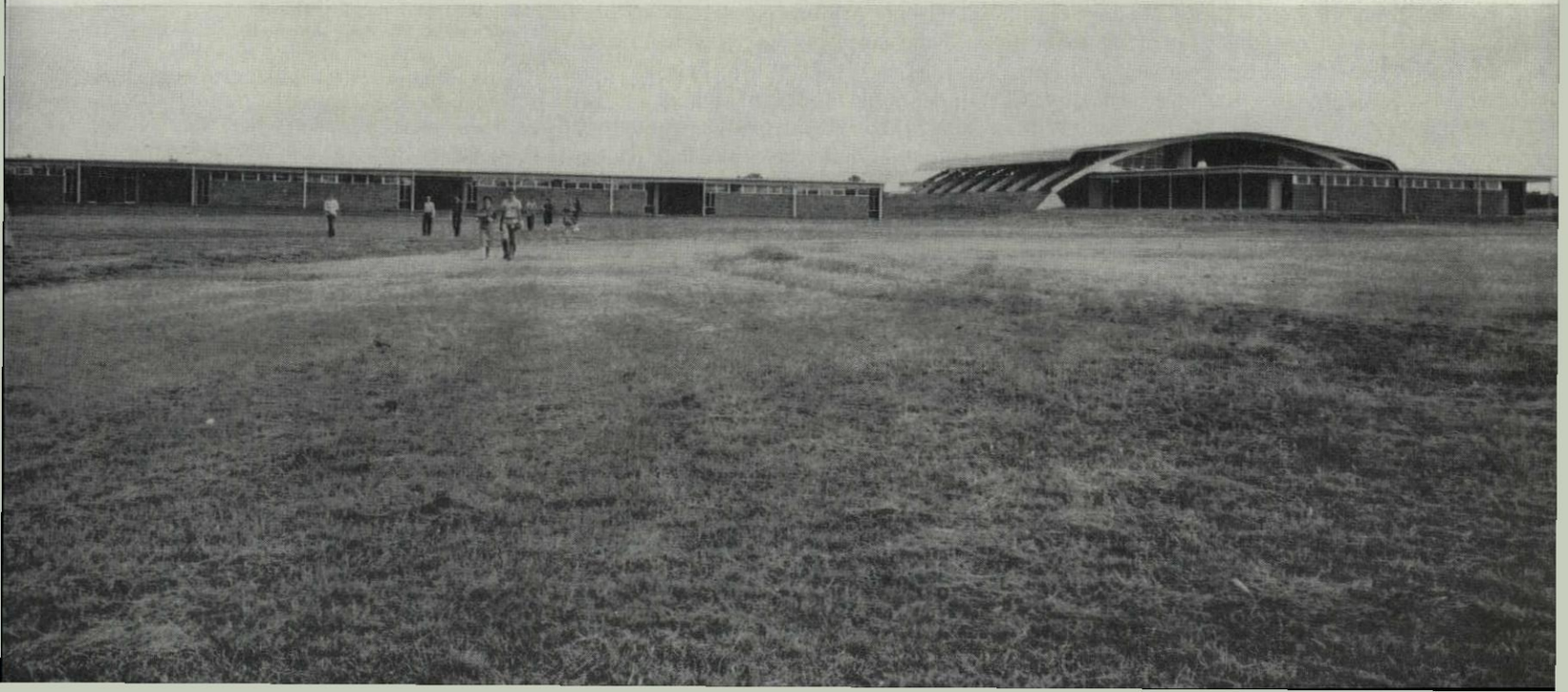
An "inside school" packed with surprise—and quality

In the gently scholastic town of Stillwater, Oklahoma, whose pleasant tree-shaded neighborhoods open to make room for the campus of Oklahoma State University, sits an unheralded, unexpected little high school which educationally is as ambitious, as progressive as any other in the United States, even including Wayland (page 96). Yet it all happened without fret, without a conventional fight. "The town wasn't very conscious of the Trump Plan, and we weren't either, really, "says Architect John Rowlett of Caudill, Rowlett and Scott, who designed the little loft type building in collaboration with Architect Philip A. Wilber of Stillwater. "But for some time we'd been teamed with Superintendent Reed Russell, building schools in Stillwater which the town seemed to like, and when the team came up with suggestions to change some of the patterns according to needs of individual students, the community figured it made sense."

What the community got for their trust and tolerance was a first class teaching machine which has classrooms of various (and flexible) sizes, includes seminar rooms, a library with loud and quiet rooms and also boasts that shiny accessory of today's forward-thinking school districts, a set of study *carrels* in which individuals or pairs of students can get off and work alone. There is more, besides. Usually it takes an extra step in architectural evolution before such relatively new education methods meet a budget by being grouped into a highly efficient building form; in this case, however, the architects dared to fit these various rooms into an economical loft-type plan, utilizing interior classrooms. Finally, the way they did this, with small courtyards for

A big gymnasium-auditorium sitting just above the school proper saves the exterior from anonymity as a building type.

PHOTOS: A. Y. OWEN



Front entrance is a covered walk through one wing, with a curved brick wall on each side.

visual relief and a long, pleasantly designed green strip between two of the school's wings, added great savor to the solution. Architecturally this is one of Caudill, Rowlett and Scott's most sophisticated and lively designs, a background as appropriate to the high school students as the latest teen age patter or skirt pattern.

This didn't happen quite so suddenly as its relaxed, up-to-date air might imply, of course; the school is a culmination of effort begun more than 20 years ago. At that point, William Caudill, who had taken his architecture at Oklahoma State (then Oklahoma A and M) under Wilber, and had worked a year in Wilber's office following graduation, went off to MIT to take a Masters. His thesis was a school program for Stillwater, a number of elementary schools leading up to a high school. It should come as encouragement to the hundreds of architectural Masters candidates who are today laboring to believe their theoretical theses, that the site he picked for the high school was the exact site where his firm and Wilber's eventually built this one. By that time Herbert Paseur had joined the Caudill firm and asked for this assignment. It seemed he had designed a high school for Stillwater as his undergraduate thesis at Oklahoma State in 1953, so another school seed was brought to blossom. Perhaps when Caudill, who is especially proud of this school, points out that it is an "inside school" he means more than a physical description.

That physical description is completely accurate, however. As the high school is approached, the gymnasium wing off to one side is the first element to come into view. It is a big structure with a curiously lidded look, its roof drooping like a worldweary pterodactyl. (The overhangs are bent deliberately to fend sunlight off the high windows.) Otherwise the rest of the exterior, the low wing, is long, lean and noncommittal, a single story brick ribbon with windows tucked up under its overhang, and nothing much else.

When the observer enters through a tunnel in this unexciting exterior, however, he immediately begins being presented its secrets. The first of these is the long green strip between the two parts of this academic wing, one housing administration, music rooms, shops and cafeteria, and the other the classrooms and library. Crossed by a bridge, canopied with deliberate decorative conceit, the strip has grass, paths, and handsome drainways.

This court proves its value as soon as classes break. When the high school students flood out of wings on both sides, they are not just confronted with each other, but with a pleasant, civilized space, which is all theirs, a vote of confidence from their elders. Under deep overhangs, rooms on both sides view this intimate landscape through full length glass walls, but the main set of classrooms is set back with little exposure. Halls are spacious enough to preserve an open feeling—and good air circulation—even in the core.

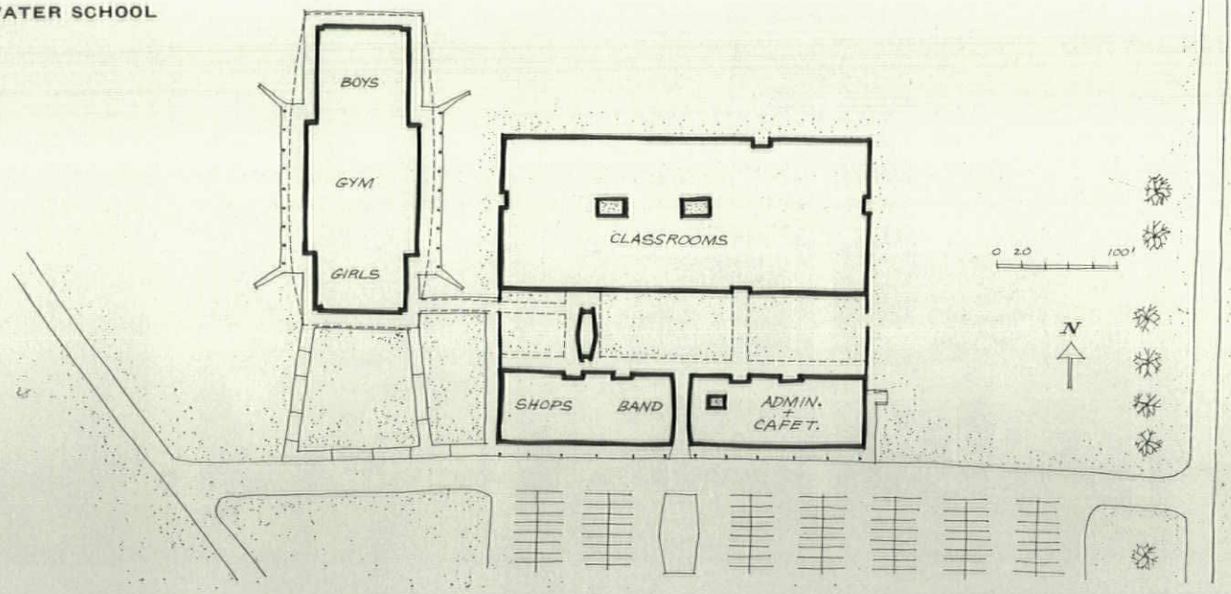
The financing of the Stillwater school was unique. A state limitation on school districts' bonded indebtedness locked the school board into a budget which could not include a gymnasium, no matter how it was stretched. But sports, particularly wrestling, are a valued part of local life, so the city floated its own bond issue to build a municipal "auditorium" which the electorate approved the same day they approved the school bond issue. Today it is that civic auditorium which sits beside the new high school in Stillwater. It is an auditorium with more locker room space than most auditoriums, and flatter floors, and more basketball hoops, and more wrestling mats, but there it sits, as casual as an Oklahoma drawl.

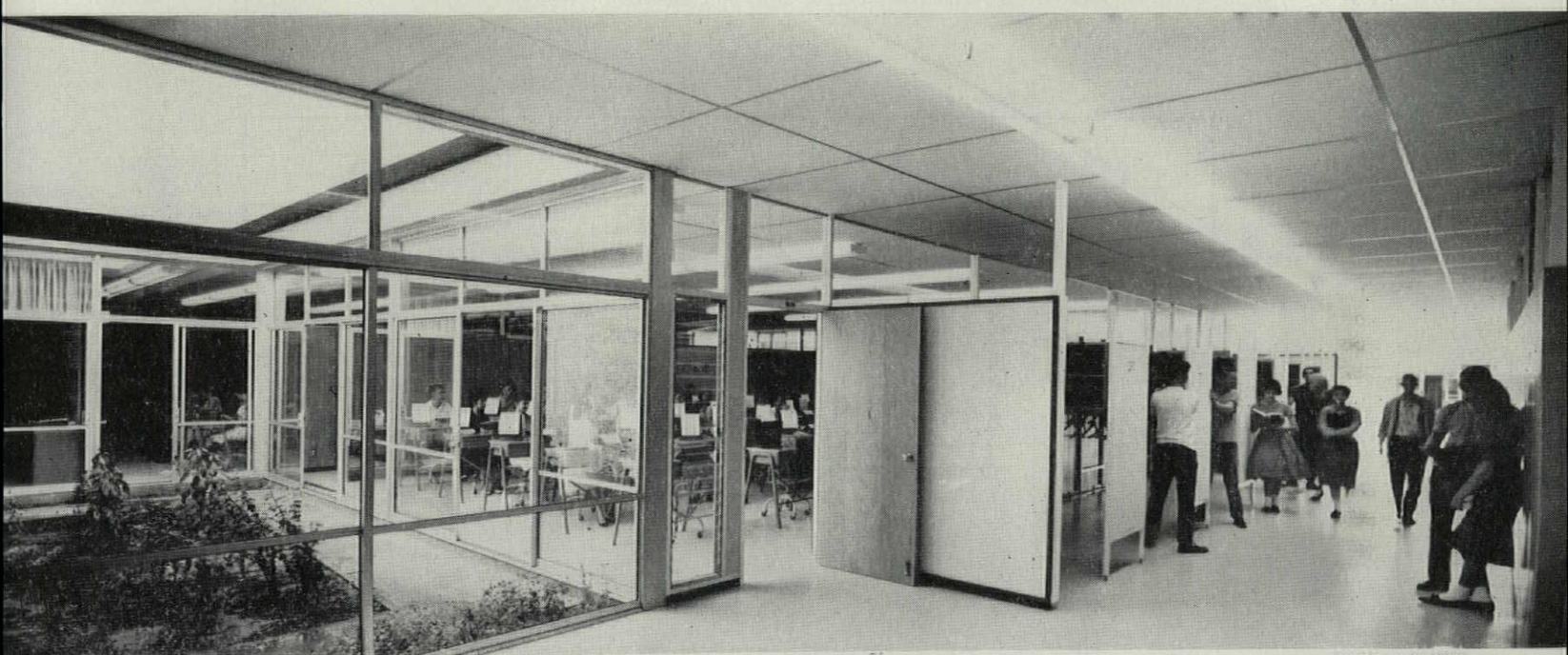
Financial Program:
School is the tenth in a series of eleven schools or additions by the same firm totaling $2.3 million of which the school and civic auditorium above cost $1.1 million. Two separate bond issues passed in June, 1958 in the amount of $936,000 for the school and $308,000 for the auditorium both at interest rates of about 2.8 percent. These bond issues raised the school district tax rate by 7 mills and the city tax rate by 3 mills. There was no substantial state aid. Number of square feet: 88,240. Number of pupil stations, 800.

Cost Breakdown:
Site development: $38,741; equipment: $72,095; professional fees: $64,567; general construction: $609,377; plumbing & heating: $159,264; electrical work: $126,394; cabinet work: $48,256; painting & fabric covering: $22,002. TOTAL: $1,140,698

Credits:
Architect: Caudill, Rowlett & Scott and Philip A. Wilber. General Contractors: Builders Construction Company and H. W. H. Construction Company, Inc.

STILLWATER SCHOOL

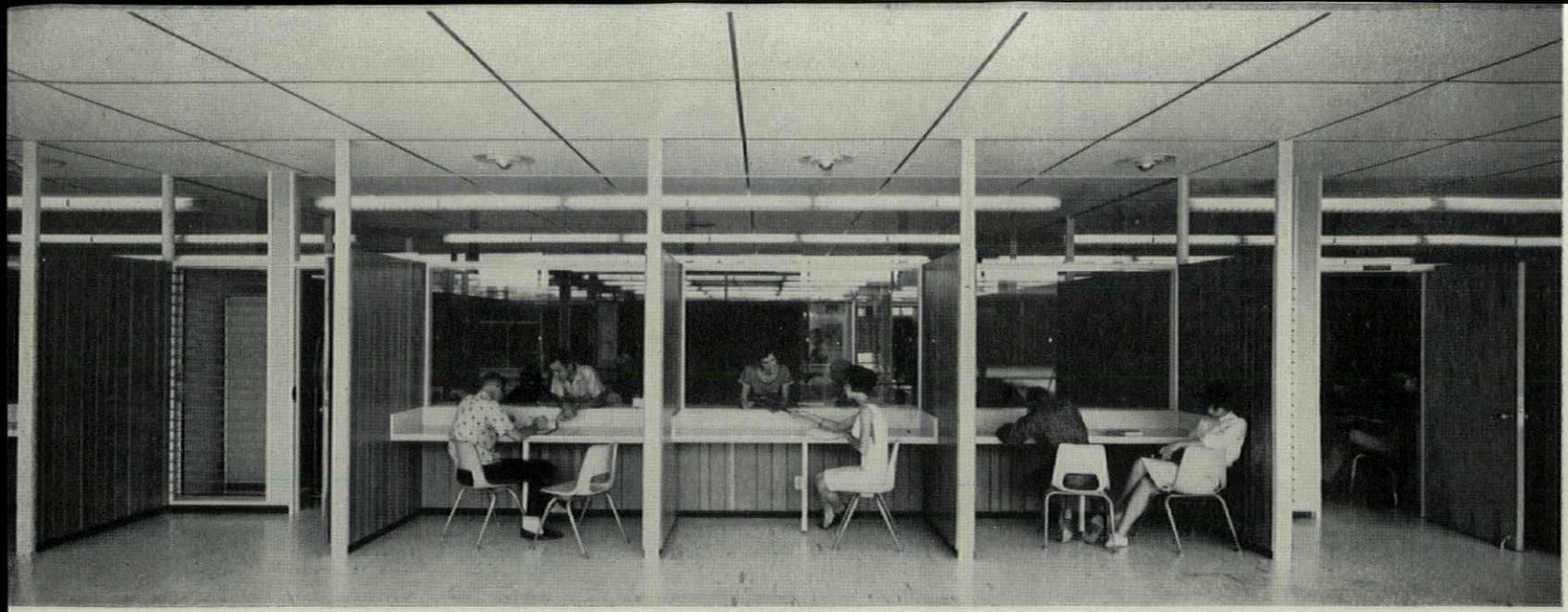




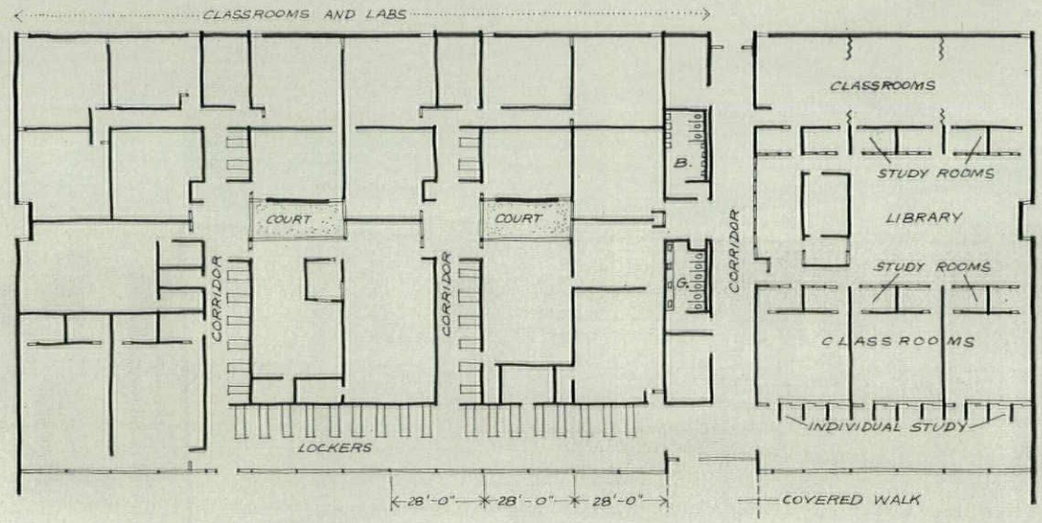
PHOTOS: A. Y. OWEN

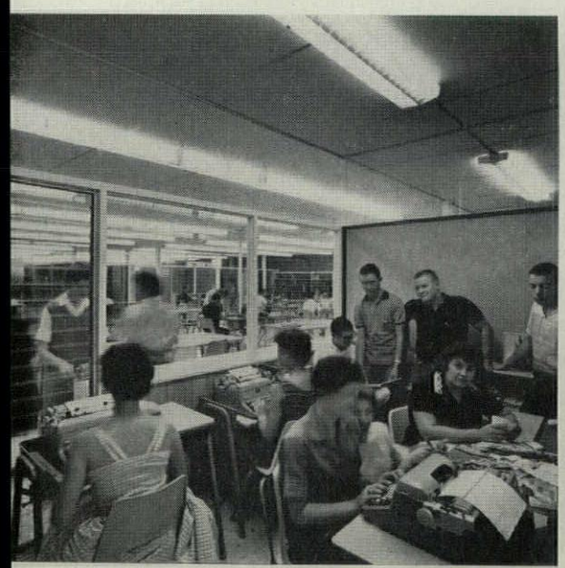
Enclosed courtyard, *whose landscaping has just begun, is one of three notched into the loft type wings of the school. It provides natural lighting and psychological breathing space for classrooms.*

Bigger breathing space *within the school is the long courtyard between the two wings, linked by playful walks and a canopy. On cool days students can sit here between classes, out of the wind.*

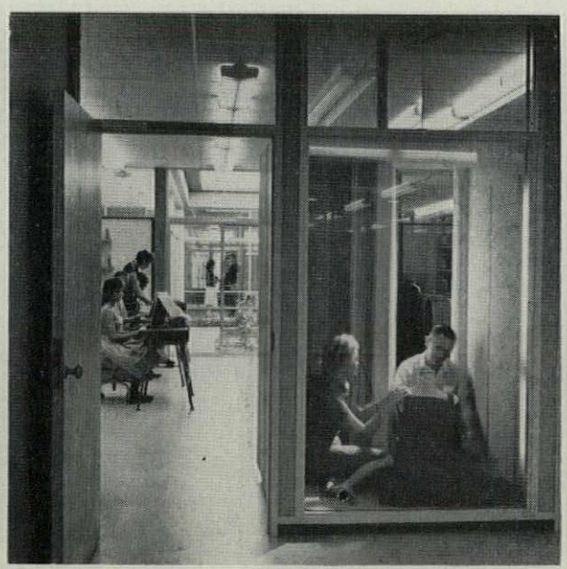


Individual study booths are separated from the main classrooms by walls of glass which can be slid open.

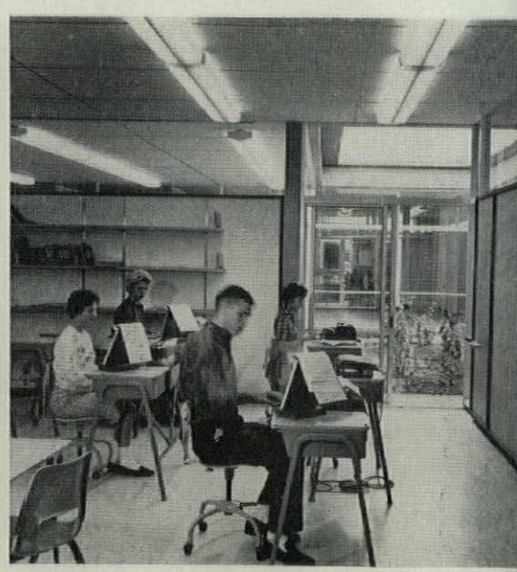




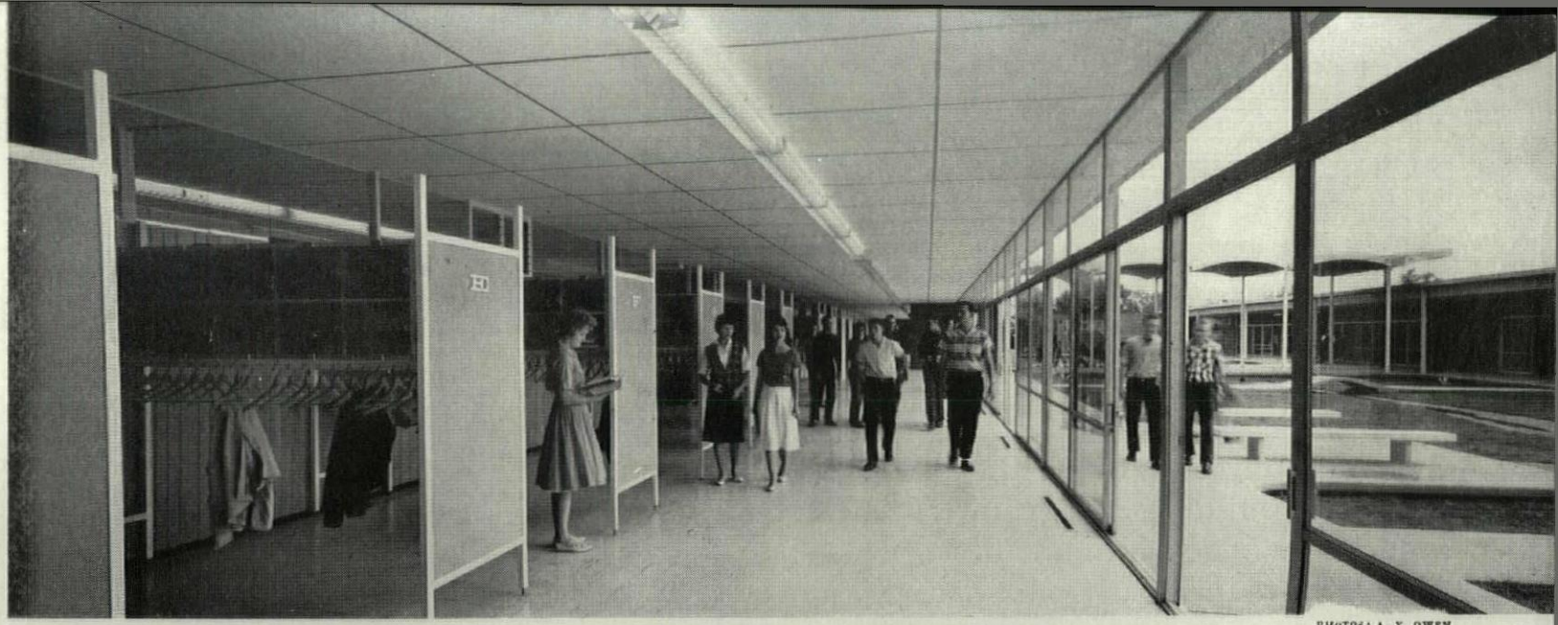
Room-within-a-room *is a walled area of the library which can be used for occupations noisier than reading. Yet supervision of this space does not require an extra teacher because of the glass wall.*



View from hall *penetrates classroom and crosses the enclosed courtyard through to the next corridor to keep this deep space from seeming claustrophic. Glass-walled closet is for exhibits.*



Classrooms *have relatively little glass area, whether they are located on an interior courtyard, as the one pictured above is, or are on the exterior edge of the loft space. Partitions are stud walls.*

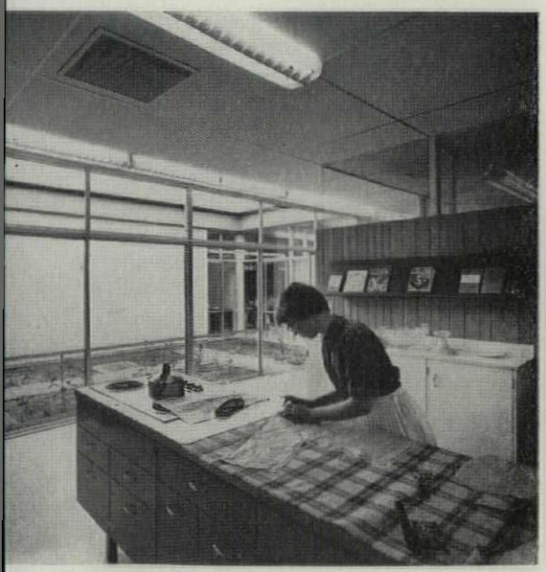


PHOTOS: A. Y. OWEN

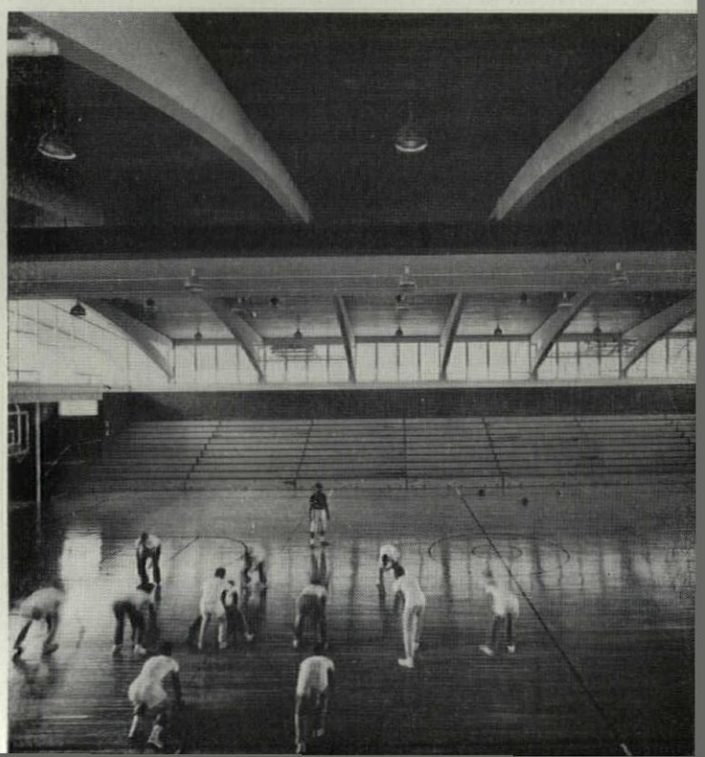
Storage shelves and coat racks are designed into the wide corridors of the classroom wing.

STILLWATER SCHOOL

Gymnasium *is roofed by a series of laminated arches between big concrete buttresses. Owned by the city of Stillwater, rather than the school district, it can be opened and operated independently of the rest of the school as a sports arena or as a municipal auditorium.*



Home economics *laboratory has a long wall on one of the interior courts but the opposite wall, which faces south, is bricked, to avoid the heat load of direct sunlight in the classroom behind it.*



Chicago's program for improvement

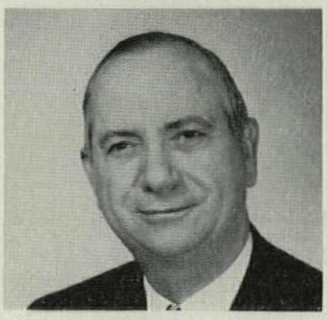
Superintendent B. Willis runs a building program huge in size, human in scale, low in cost

In the great postwar school building boom, America's attention has been riveted on the fast-growing suburbs, where PTA's have learned to be as conversant with building problems as with Dr. Spock. But the great cities have been caught up in the population rush, too, particularly those which had land for further residential development. Several of these cities have been building schools at least as fast as the most feverish suburb, but very few have built distinctive schools.

Probably no big city has been building schools faster than Chicago which, while many cities have been gradually losing population, has been growing at the rate of about 22,000 persons per year. More significantly, however, Chicago's school-age population has accounted for nearly 60 per cent of this growth; i.e. it has expanded at an average rate of about 12,000 per year in recent years. By 1965, assuming present rates of fertility and migration, about 30 per cent of the city's population will be under 15, compared to 23 per cent in 1950.

Chicago's population growth alone provides a solid reason for a vast school building program, but added to this are the problems of many over-age schools and a backlog of school needs stemming from insufficient building activity prior to 1953. That year is a significant one in Chicago's school development, for it was then that Benjamin C. Willis was lured away from Buffalo, N. Y. to become general superintendent of the city's massive, but still inadequate, school plant. Willis came into a staggering situation. There was already a backlog of 5500 seats—indicating 11,000 students on double sessions. Enrollments were already increasing at the rate of 10,000 per year, and conservative population projections indicated this rate would climb to as high as 15,000 within a decade. Moreover, the system contained 156 buildings over 50 years old, another 18 that were over 70 years old.

Today, Willis heads a vast organization with a staff of 27,500, and has a budget of nearly $300 million a year,



Superintendent Benjamin C. Willis

serving almost half a million pupils. Within the next year, the city will complete as many new seats (nearly 50,000) as it built in the first five years of Willis' tenure. The greatest school building program in the city's history is about midway through and is expected to reach completion by 1963. At that time, school building will probably drop to half the current rate.

By the start of the next school year, the first of Willis' goals will have been met: the city will be freed from double sessions except in areas of unforeseen population rise. At the start of last year, double sessions took in about 23,000 students (New York City still has 165,000 students on "short-time" or "special schedules"). Thus, by 1962, Chicago will be caught up with its own enrollment growth, and can start working toward some other goals: weeding out obsolete buildings and building enough new seats so classroom size can be reduced to an optimum of 30, from its present 35, and, as a corollary of this goal, cutting down the population of many elementary schools which currently have enrollments over 1,500.

Besides the problem of plant inadequacy, Willis faced the problem of relating the tremendous school-building job to the everyday lives of the city's people. Willis' answer: the school must function as an integral element in each community, become something more than a six-hour-a-day, five-day-a-week baby sitter. As a first step to achieving such integration with the community, Willis began a careful reorganization of the city's school districts, paring down the size of some of the fastest growing districts, and eventually creating 20 where there had been 14. He shook up the system's organization chart, and tied the district organizations more closely to their own communities, at the same time making them less reliant on the central school staff. District superintendents now have a great deal of autonomy and are key partners in any new building, from site selection and consideration of preliminary sketches right through final designs and architectural detailing.

With this sort of organization, it became easier to tailor new schools to specific community situations. In crowded areas near downtown, high-rise schools have been tried, both elementary and secondary, or existing buildings have been bought and converted for school use. In some sections of the city, elementary schools have a suburban look like the single-family, detached homes that surround them. One of the most singular of the newer schools is the George Washington school, built in an area that is really a self-contained community. As such, it called for a self-contained school, almost rural in character, in which pupils can accomplish their education from kindergarten right through high school.

In 1953, Willis realized that he could get neither the volume of building the school system needed, nor the variety and flexibility that his community school concept demanded, if he depended on the board's own staff of architects. After discussions with his aides, Willis

A well-analyzed, one-story school *for a ranch-house neighborhood on Chicago's North Side, the Mather High School was designed for 2,167 students by Architects Loebl, Schlossman & Bennett and built by the Board of Education to be used in conjunction with the Park District. To the city's surprise, the school came in $200,000 below budget (total cost: $2,725,475) despite its fine tailoring and its attention to a varied academic program. Also surprising was the amount of space left for the neighboring park and playground (photo at right, top). The architects made room by squeezing the school back into the neighborhood pattern at the rear of its 8.4 acre site (photo at bottom) and by arranging classrooms densely around two open courtyards, one for "academic" subjects, the other for "science."*

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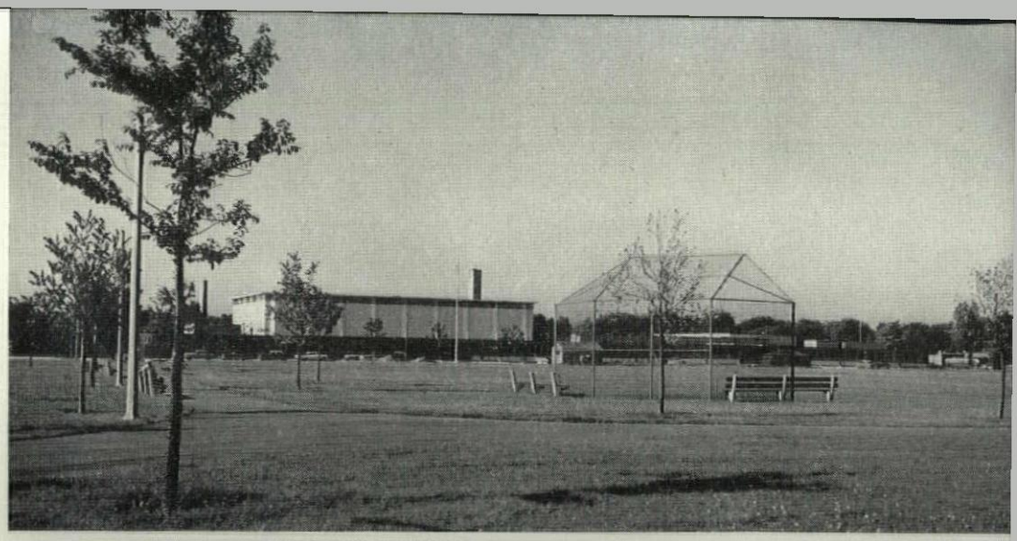
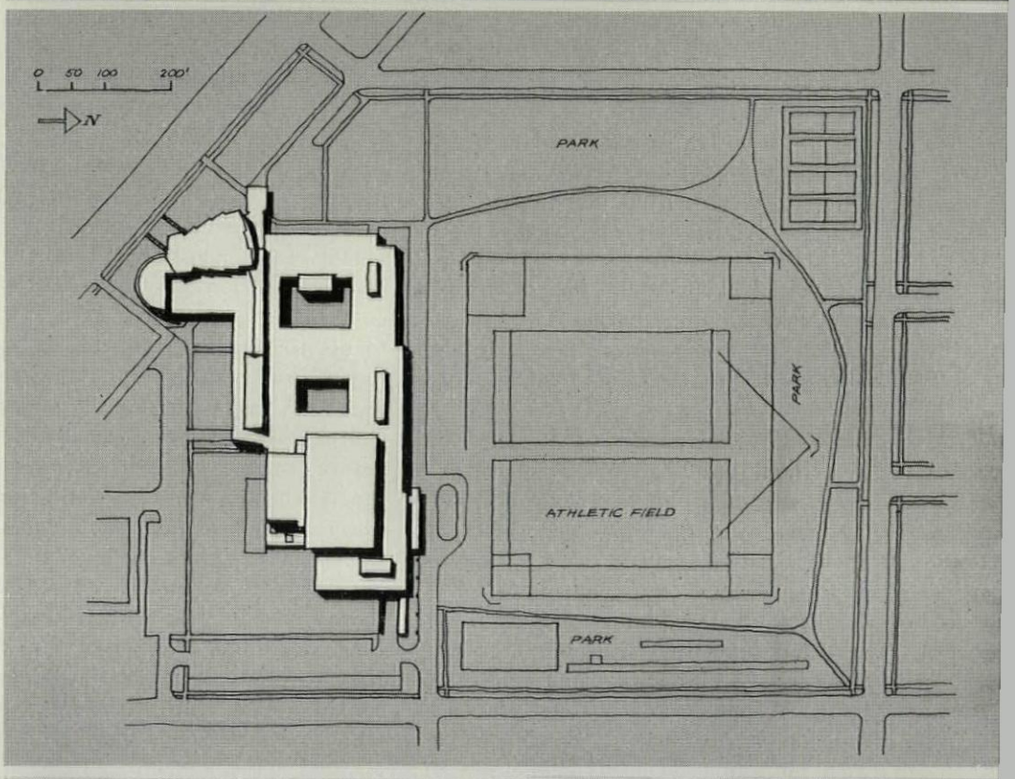
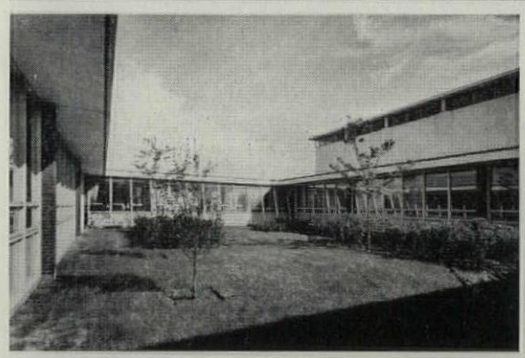
in 1955 invited about 30 architects to a dinner at the Bismarck Hotel to put before them a challenging opportunity. He was going to offer school jobs to private architects who would be recommended to the board. The response that night was enthusiastic, and the program got under way. Willis first asked each architect interested in designing a school to answer a questionnaire. These have proved a basic tool in appraising the firms' usefulness. Architects were asked, for instance, the number of employees, names of structural and mechanical consultants, what outside technical services would be required, which of the firm's principals would be on the job, and for a list of representative work.

Since the burgeoning Chicago school market was thrown open to private architects five years ago, about 35 firms have designed over 75 new schools. The board's architectural staff—numbering over 100 employees—still designs all additions and alterations to existing schools (mostly because they designed these schools in the first instance), some new schools and supervises the work of the private firms. But the staff is sure that, aside from considerations of reducing the work load and getting fresh thinking in design, it is also getting lower costs. While it has never tried to draw hard and fast contrasts between the work of its own department and that of the private firms, the staff once computed that "comparable fees" of its department would run about 8 per cent, against a top of 5½ per cent paid to private firms. Of course, the board is quick to point out that there are still many clerical and administrative costs







PHOTOS: ARTHUR SHAY

in its own department which private firms do not have to incur, and this is undoubtedly the source of most of the discrepancy, it says. And, by way of further defense, it points out that its own department does all of the higher cost rehabilitation work which, if farmed out, would command higher fees. For whatever reasons, however, it is significant that the staff is aware that private firms can design its schools even more cheaply than it can itself.

The question of fees has never become a problem for Chicago's school officials, although there was some uncertainty about it when the fee schedule was first announced. Ignoring standard A.I.A. recommendations of a 6 per cent minimum, Willis set a 5½ per cent maximum fee for schools costing $3.5-million or over, and a fee schedule down to 4 per cent for smaller jobs. Willis says, however: "I think the 5½ per cent fee is far too low for a $4 to $5 million building. When a job of that size comes along, perhaps we will take another look at our fee schedule." Such jobs may not be too far off, as today's elementary school population begins to create further demands for new high schools. The basic reason for the lower fee schedule, says Willis, is that the board's own staff provides complete educational specifications for each job and does most of the supervisory and clerical work, thereby saving the architect such expenses. Significantly, the firms doing the work have not balked at lower-than-standard fees, and have even uncomplainingly redesigned jobs that came in at a cost figure higher than the board would permit.

Planning for growth

Chicago's school-planning process is a combination of carefully prepared staff work and quick decisions by the hard-working Willis. In fact, any of Chicago's rather phenomenal success in school building is difficult to understand—and so are the giant strides it has made in the betterment of its whole educational process—without knowing something of the man. Although he is hard to fit to a mold, Benjamin Coppage Willis resembles, perhaps more than anything else, a hard-driving business executive, minus the usual club memberships. He works incredibly long hours, plays almost never, and wears out staff members considerably younger than Willis' 58 years. His energy has become a legend in Chicago. Just about all his associates have personal anecdotes concerning how Willis worked them under the table, and returned the following day as vigorous as ever—and earlier than anyone else. He is regarded as a tough, but fair, boss, and there is never any mistake about the fact that he is boss.

Willis occupies the pivotal position in the whole Chicago school-planning process. He may even spot needs for a new school or an addition before his own planning section has fully sifted all the data indicating such a need. (Willis, in his tireless attention to the sprawling Chicago school network, generally heads out every Sunday morning after church, sees several schools or sites before dinner.) But when it is clear that a school is needed, several sites are selected by Willis' planning chief, Thomas J. Higgins who, Willis says, "knows more about the city of Chicago than any man I know." Higgins, who forms the other chapter of the Willis-Higgins mutual admiration club, has served under four other superintendents, considers Willis tops. He surveys an area carefully, with an eye to land prices as well as choice locations, and then selects four or five sites. Then he and Willis look at them together, and weigh all considerations in Willis' chauffeur-driven limousine. Willis usually makes the decision on the spot, and it is later reviewed by the board.

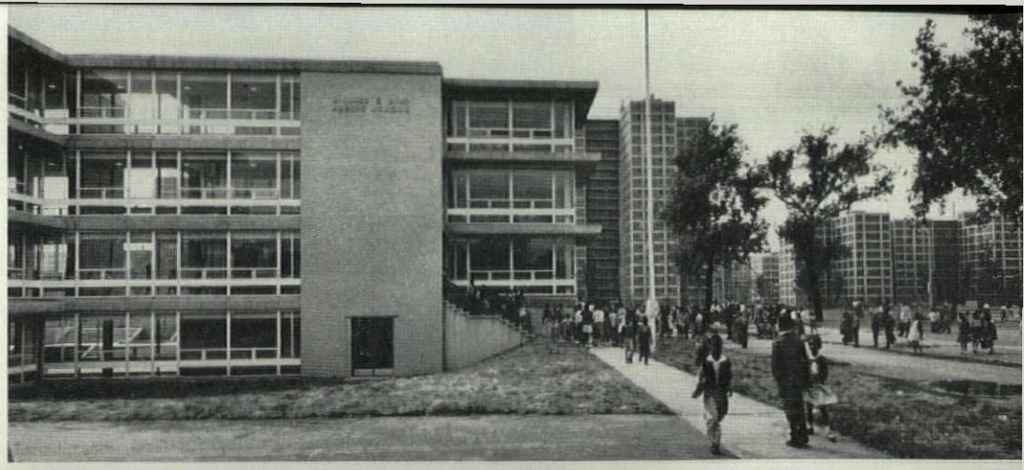
After the site has been obtained, generally through condemnation, for there is almost no vacant land left in the city, an educational plan for the particular school is drawn and an architect is selected. Here again, Willis is the keystone. He and several of his staff, particularly Associate Superintendent Edwin A. Lederer, explore the capabilities of many firms, some of which have done school jobs before, some of which may, in Willis' words, "have shown imagination and creativeness in other fields." As in site selection, however, the final choice falls to Superintendent Willis.

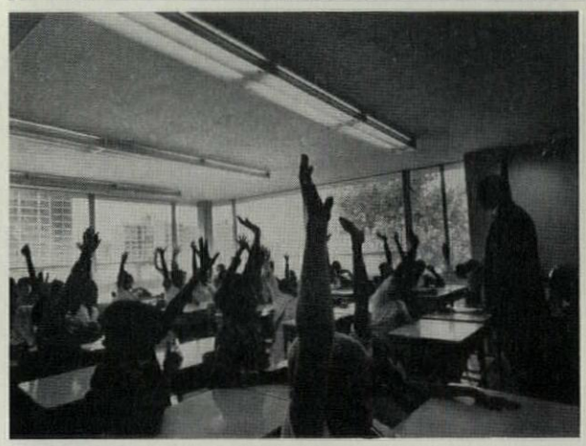
Chicago's new schools are not frilly. They are, for the most part, economy schools. "Our chief need right now," Willis says firmly, "is to get more seats." Budgets are usually thin, and total per-pupil costs are held to $1,000 or less if possible. This has left little room for experimentation with either new systems or new materials, and has meant that as much space as possible has been allotted to classroom use. Yet, even given the tight budget restrictions for most new schools, Chicago has fared surprisingly well. One fine elementary school, the Reavis School by Rudolph & Young, cost only $14 per square foot, and the Bogan High School, by Naess & Murphy, provides a complete plant for over 2,000 pupils (including a swimming pool, two gymnasiums, and three special music rooms) at a square foot cost of only $15.70. Two of the finest new schools have been built in conjunction with the city's schools-in-parks program, the Mather High School by Loebl, Schlossman & Bennett (page 111, and the Byrd Elementary School, by Perkins & Will (page 113).

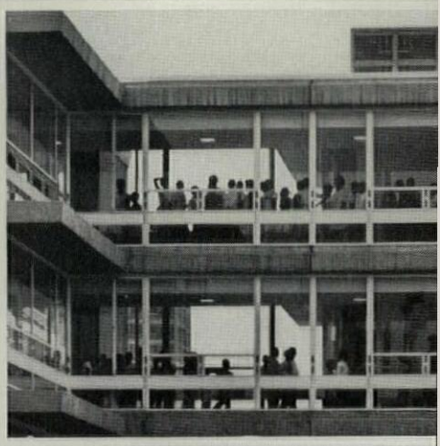
Schools in parks

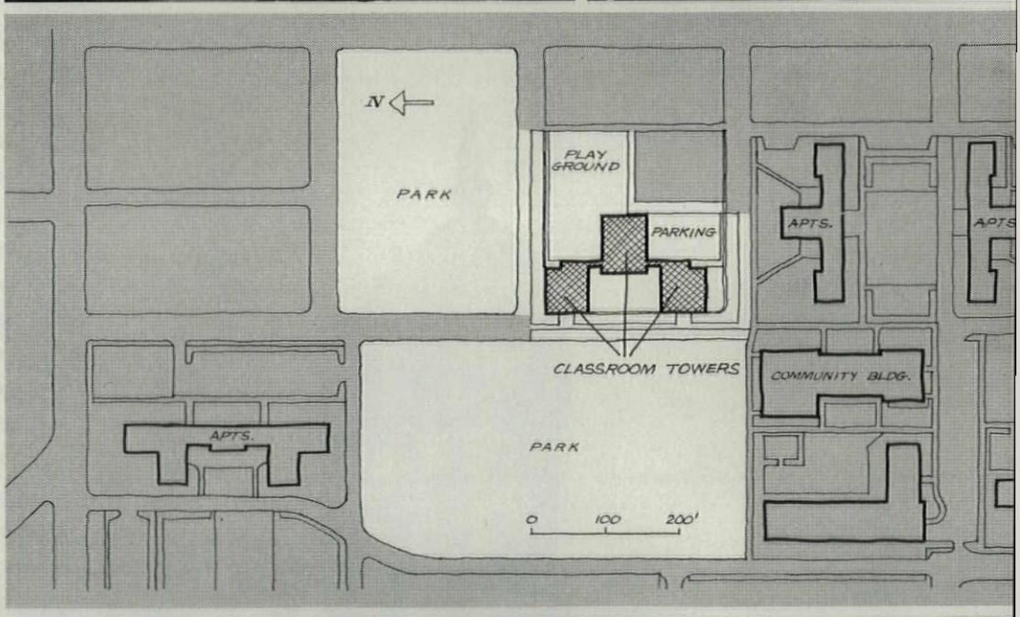
The unique schools-in-parks program reflects Willis' determination to have his buildings nuzzle comfortably into the community life, and at the same time to achieve more amenities at lower cost. Willis is extremely sensitive to school siting, has long insisted that a school building should sit well forward on the site, rather than be buried at its rear. (Associates still remember Willis' anger on seeing a school which was sandwiched between a public housing project and railroad tracks.) Several years ago, Willis struck agreement with the Metropolitan Park District on the joint purchase of new sites, and on the purchase of some existing park land for new schools. Since then, both methods have been used to gain about 35 new sites, 28 of which have been or are being built upon. In cases where park land is bought, the school board makes great savings, for it buys the land at the original cost to the Park Dept. And in cases where the two city agencies go in together on a site, the school board usually purchases no more than one-third of the site. The Park Dept. also

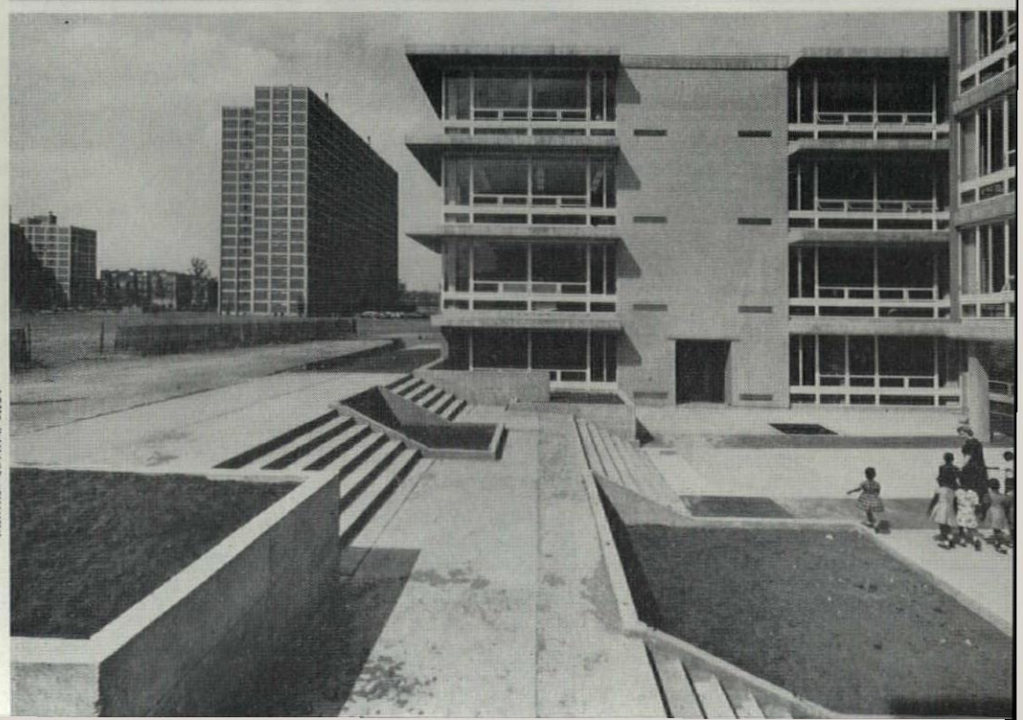
An upright elementary school *set down in the parks carved out of a high-rise public housing area on Chicago's North Side, the Richard E. Byrd School (photos at right) is a demonstration of what architecture and a willing school board can do in the city. It was designed by Architects Perkins & Will, but unlike their many sprawling (and occasionally domestic) suburban schools, this building for 1,200 students in 30 classrooms at $16.51 per square foot takes up less than an acre (see site plan) and uses its outjutting, reinforced concrete frame to assert its urban character. Each of the three four-story towers is divided into four fully flexible classrooms and connected to its neighbor by glassed, sunlit corridors. At ground level, half a flight below grade, two kindergartens look out on an intervening court (bottom photo) where small children's play may be separated from that of older children in the park beyond.*











gains greatly from this collaboration, for it can use the school's recreational storage, and office facilities after school hours. Willis estimates the Park Dept. has saved almost $15 million in the few years the program has been operating.

Growth through fiscal independence

A major reason why Chicago has been able to move as fast as it has on its school program, and at the same time get a great deal of flexibility and variety in planning and design, has been its sound financial program. School buildings are financed out of tax money and proceeds from bond issues, as in most cities. But unlike most school boards, Chicago's has what Willis calls "fiscal independence" and this enables it to operate outside the messy arena of partisan politics and away from fanatical budget wringers. The board must have approval of the state legislature to ask for a bond referendum, and the state sets tax rates for various major segments of the school budget (e.g., 11 cents per $100 of any district's tax valuations is available for new buildings or additions in the 1960 budget). But it does not have to submit its budget to any elected fiscal body for budget approval as many cities do. There have been four major $50 million bond issues approved by the city's voters since 1951, and, under Willis, the last three have been authorized for expenditure at the rate of $25 million per year. (The first was spread over a four year period.) The board will probably have to request another big bond issue, and then hopes to get on a pay-as-you-go basis once the peak building

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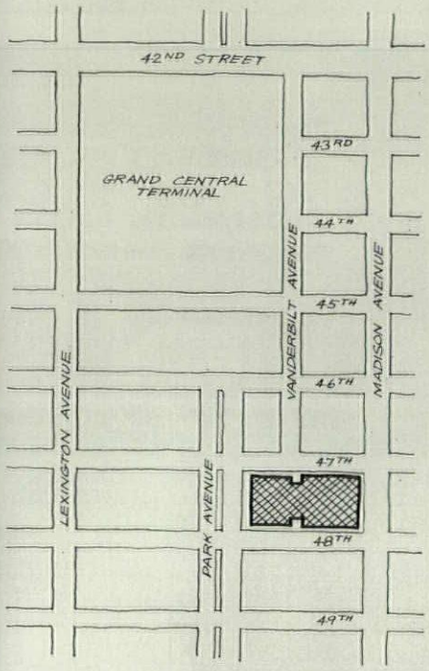

42ND STREET
GRAND CENTRAL TERMINAL
43RD
44TH
45TH
46TH
47TH
48TH
49TH
VANDERBILT AVENUE
MADISON AVENUE
PARK AVENUE
LEXINGTON AVENUE

Union Carbide's shaft of steel

This month, Manhattan's tallest building since 1933 is being fully occupied by some 5,000 employees of the Union Carbide Corp., its subsidiaries, and its tenants. The event is important not only because of the impressive statistics involved (see below); it is important, also, because the building sums up several trends in architecture, urban design, office planning, and real estate economics that have been debated vigorously ever since 1945.

About these trends, more on the next six pages. First, a brief look at the motley architectural parade that is Park Avenue today. Like many parades, this one has its honored veterans: the Racquet Club is the finest of these—it makes some of its younger companions look brash and flashy by comparison. Like many parades, this one also has its bright, young stars: Pepsi-Cola's aluminum gem, Lever Brothers' glass prism, Seagram's majestic bronze tower—and now Union Carbide, clad in stainless steel, a worthy newcomer to this select group. And like many parades, this one has its riffraff.

Those who like parades will find the new Park Avenue just about as varied as a parade can be. Those who like good architecture will rejoice in seeing as fine a building as this stainless-steel shaft join in the fun. But those who care about urban scale and order will regret that this building, with all its excellent qualities, marks the inevitable demise of the one *unified* boulevard on Manhattan Island.

The vital statistics:

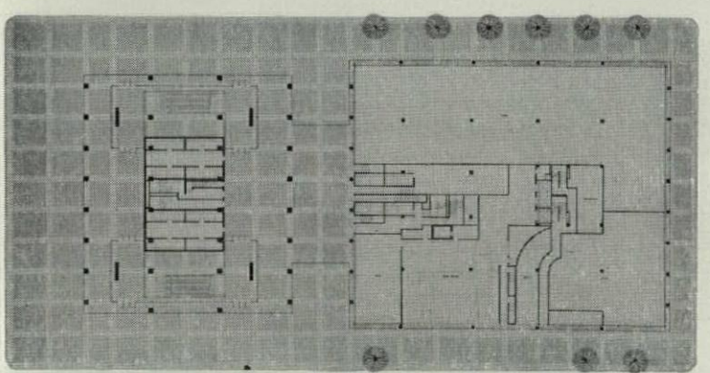
Site—*an 80,000 square foot block between Madison and Park Avenues, 3 minutes' walk from Grand Central Station. Few locations could be more desirable, and few more difficult to build on: for three-fourths of the site lies directly above two levels of New York Central tracks, which means that the building could have no basement under most of its bulk, and that its column-footings had to be poured between railroad tracks (while more than 500 trains roared by each day).*

Area—*1.5 million gross square feet of space, 1.16 million net. Yet, despite its bulk, the building is set back from three of its four property lines, has a street-level arcade bisecting its block, and thus "donates" some 35,000 square feet of open space (or 44 per cent of its site) to New York's pedestrians. (The Seagram Building sacrificed 50 per cent.)*

Bulk—*two blocks: a 707-foot-high tower on Park Avenue, with 52 floors at 17,500 square feet each; and a 189-foot-high annex on Madison, with 12 floors at 37,000 square feet each. The two blocks are connected by a narrow link. The 11th floor of the annex contains an employee lounge.*

Park Avenue sidewalk, looking south toward Grand Central, is widened 33 feet by the set back of the Carbide Building. PHOTOS: EZRA STOLLER ASSOCIATES

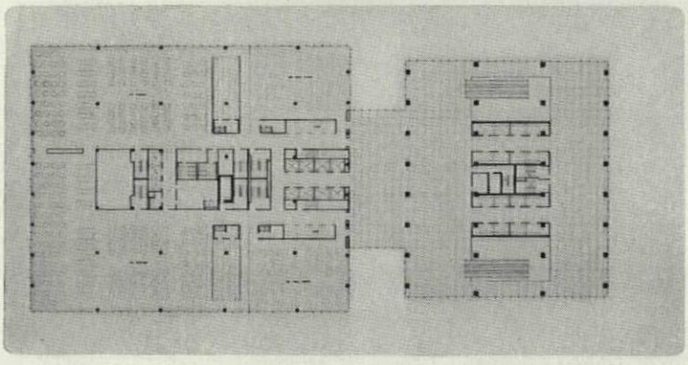
ESTHER STOLLER ASSOCIATES



At sidewalk level, *Union Carbide makes a generous donation of open space to crowded Midtown Manhattan, and thus emulates other, new corporate giants in need of good public relations. Along Park Avenue, the building is set back 33 feet from the property line, and the ground floor is recessed another 38 feet under the tower to form a deep, covered entrance area (see below). The resulting plaza off Park Avenue offers a welcome relief on a busy street. On 47th and 48th Streets, the tower is set back 23 feet (see above), and its 12-story annex to the west is set back 13 feet. Finally, along Madison Avenue, the building rises on the property line. Between tower and annex there is a 60-foot-wide pedestrian arcade that links 48th and 47th Streets, and forms an extension of Vanderbilt Avenue to the south. The annex has stores around its periphery, as well as a truck loading platform.*

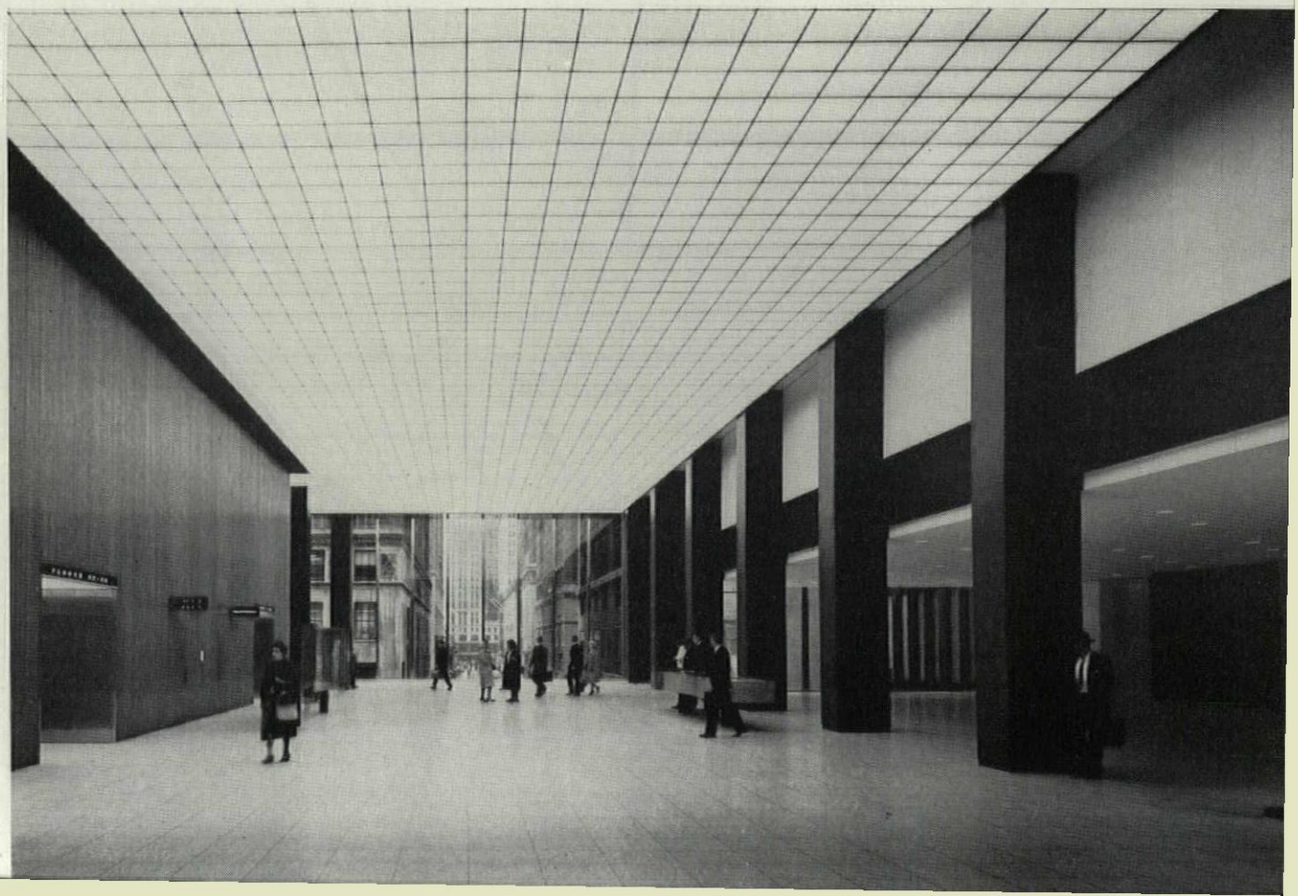
GEORGE CSERNA

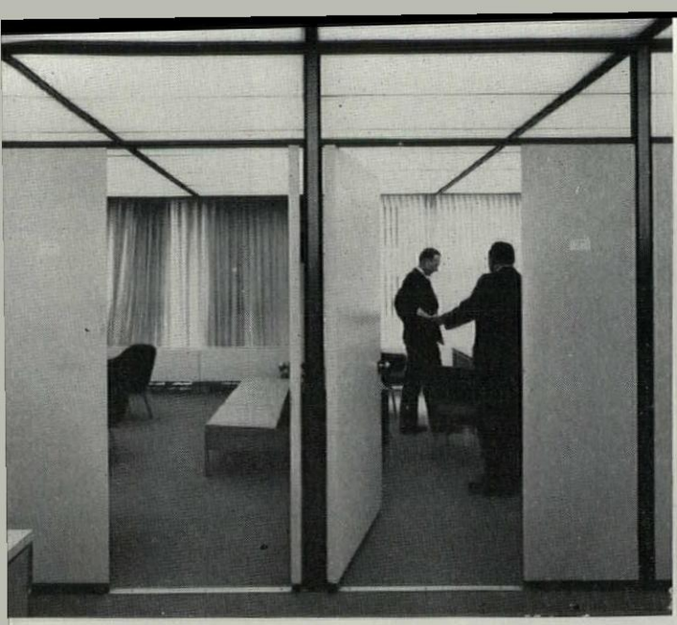
EZRA STOLLER ASSOCIATES



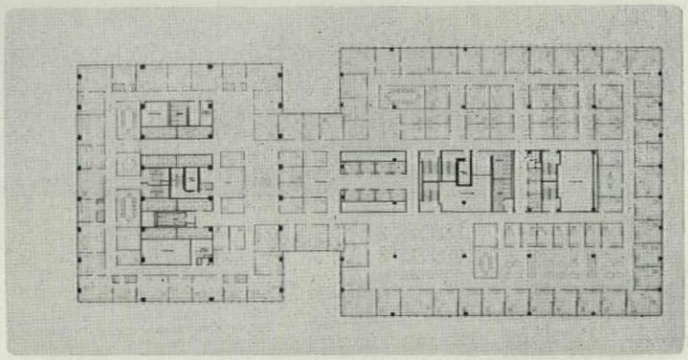
The upstairs lobby *is reached by two sets of escalators (see below). Because the railroad tracks are located directly below sidewalk level, the "basement" (which houses the elevator pits) had to be put up above grade, and Union Carbide's entrance lobby and first elevator stop had to be put on the second floor. The 25-foot high public spaces on this second floor include a 6,000-square-foot exhibit hall that overlooks Park Avenue. Here, too, Union Carbide follows a trend in providing permanent display areas as a major public attraction. The first exhibit will be on atomic energy. The 24-foot-long stainless-steel counter in the lobby (above) contains all elevator controls, and makes "Captain Jet's" dashboard look like that of a Hupmobile by comparison. Also on this floor, in the annex, is a 1,300 seat employee cafeteria. (Early kitchen layout, left, was later modified.)*

GEORGE CSERNA





Utmost flexibility *in office layout was demanded by Union Carbide. Considerations of column-spacing (betwen tracks) and office use dictated a 5-foot module. On this modular grid, the architects developed a beautifully integrated lighting, air-conditioning, and partition system: the ceiling runners do three jobs—they support the plastic ceiling, they lock the modular partitions in place, and they act as continuous strip-diffusers for the air conditioning. There is no plenum above the plastic ceiling; instead, the space is divided into modular cells, each an enclosed lighting fixture. As a result, there is no need for firestops or sound baffles in this space. (For details, see* FORUM, *June '60.) Union Carbide wanted 60 per cent of all office space to be within 15 feet of a window, actually got 65 per cent, including a large number of corner offices for key officials in its many divisions.*



PHOTOS: EZRA STOLLER ASSOCIATES

Union Carbide: an expensive building, cheap to own.

Cost figures on Union Carbide have not been released; but an educated guess, based upon known costs of similar, recent office buildings, produces this possible rough cost picture for the Union Carbide building:

CAPITAL INVESTMENT:	
Ground lease cost	$10,000,000
Building	70,000,000
Total	$80,000,000

ANNUAL COSTS:	
Ground lease rent	$ 250,000
Operating cost	2,500,000
Taxes	1,750,000
4 per cent interest on total $80 million capital cost that the corporation might have borrowed*	3,200,000
Total	$ 7,700,000

For the present, Union Carbide is renting out some 175,000 square feet of office space at an average of $7.50 per square foot, and about 27,000 square feet of store space at an estimated $20 per square foot. Income from tenants, therefore, amounts to about $1.8 million annually. Hence:

Total annual costs	$7,700,000
Tenant income	1,800,000
Total cost of space occupied by Union Carbide	$5,900,000

This means that Union Carbide would be paying about $6.55 per square foot for its own office space—somewhat more than it might cost the corporation to rent as much space in a run-of-the-mill commercial building, but, possibly, worth the premium because the new building is a distinct public relations asset.

In reality, however, the cost picture looks much more favorable for Union Carbide when certain all-important tax factors are considered. As things stand, Union Carbide can claim not only depreciation on the building, but also amortization on the $10 million cost of the lease. To understand how this might affect the cost picture for the new building, one should suppose, for a moment, that the entire depreciation and amortization could be taken in a single year (even though this would be legally impossible).

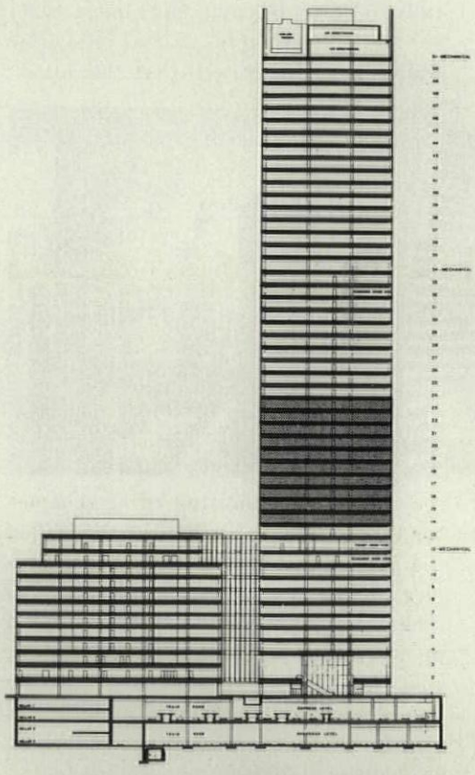
ANNUAL COST OF BUILDING (after $80 million have been repaid)	
Lease rent	$ 250,000
Operating cost	2,500,000
Taxes	1,750,000
Interest	0
Total	$ 4,500,000
Tenant income	1,800,000
Total cost of space occupied by Union Carbide	$ 2,700,000

This means that, *ultimately* (after the initial, capital cost charges against the building are repaid), Union Carbide would pay only $2.52 per square foot annually—plus a return or interest on its capital investment at that time.

Because of Union Carbide's special tax position, that capital investment is nowhere near $80 million. The corporation is probably in the 52 per cent tax bracket; if depreciation and amortization could be taken in full in a single year, the $80 million figure would shrink to a mere net outlay of $38.4 million—i.e., the cost of the building, to Union Carbide, would be only 48 per cent of its actual cost.

Assuming that the corporation placed a standing mortgage of $38.4 million on the building at 4 per cent (or, conversely, could earn that percentage on its capital position), this would raise the net cost of space to $4.70 per square foot annually.

There are several other things the corporation might be able to do—such as taking a rapid depreciation for eight or ten years, and then taking a profit on the whole deal by a sale-leaseback. But, in any case, it appears that this costly building may easily turn out to be a considerable asset in terms of real estate as well as public relations and esthetics. It is sure to be an asset in terms of improved efficiency: for Union Carbide's operations were previously scattered over some 14 different locations, and their concentration in one building is proving to be a godsend.



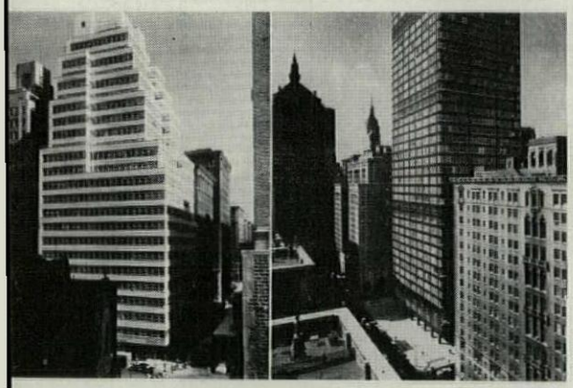
Section through building *shows two levels of New York Central tracks occupying most of the basement space. To counteract the vibration set up by trains passing under the building, all columns were set on vibration pads made of sandwiches of steel, asbestos, and lead. The building was designed so that an underground, pedestrian passage to Grand Central station could be installed at some future time. The ten tower floors shown shaded (14th through 23rd) are presently rented to tenants, but will be used by Union Carbide for future expansion.*

* This low interest rate is not out of line in the case of Union Carbide, since the giant corporation was able to borrow $300 million at 3¾ per cent in 1956, one year after this project was announced.

The Union Carbide Building is many things:

It is, first, a striking "corporate image." Unlike Lever, Seagram, Pepsi-Cola, or TIME INC., Union Carbide is not primarily in the retail business. So the new building represents "institutional advertising" of a very high order, and at a price that some other producers of basic materials might find too high. All the more reason to be grateful that a corporation of this sort considers good architecture to be worth a high price.

Second, this is a striking demonstration of how to build a lot of bulk gracefully. (Union Carbide has almost twice as much floor area as the Seagram Building up the street.) At the outset,



ADOLPH STUDLEY, LEFT; EZRA STOLLER ASSOCIATES, RIGHT

the architects submitted three schemes for this building: a ziggurat that filled the zoning envelope to the hilt; a simpler version that filled the entire site to a height of nine stories, then continued up with a 25 per cent, 48-story tower; and, finally, a recommended version similar to the one actually built. It was found that the ziggurat contained an additional 200,000 net square feet—but that these additional 200,000 square feet were hardly worth building, since most of them would be located far from a window (and, hence, command very low rentals). If this conclusion was accurate (and if it is applicable to less-complicated sites as well), it may go far toward destroying the case for ugliness made by many speculative builders of office buidings on Park Avenue and elsewhere.

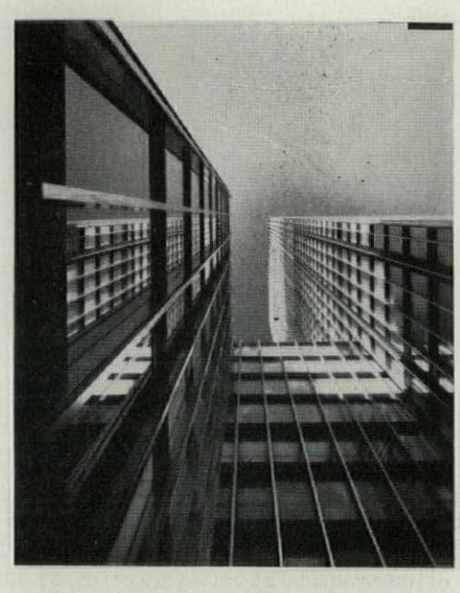
Third, the building is a demonstration of what might happen under new zoning proposals now being considered in New York. These proposals would give a floor-area bonus to builders willing to set back their buildings from the property line. Certainly, such proposals, are infinitely preferable to the ziggurat "cake molds" now in effect, but they are no cure-all. Union Carbide's tower is set back, especially along Park Avenue; but while one or two setbacks of this sort along a street might offer welcome relief, an entire street of variously set-back buildings is likely to be an urban disaster. Some blockfronts along Park Avenue clearly demonstrate this today.

Fourth, the building is a demonstration of certain techniques that are coming back into urban design. The arcading of sidewalks has never been easier than today, with steel and concrete structures requiring only a few supports. Pedestrian shopping arcades that bisect city blocks are a familiar device to city dwellers from London to

PETER BLAKE

Milan, and offer major advantages—both to pedestrians, and to owners of buildings, who can increase their rentable store frontage by such means.

Finally, the Union Carbide Building is a demonstration of the most polished detailing attained to date by the architects, Skidmore, Owings & Merrill. The detailing of office spaces (including the design of special furniture) has rarely

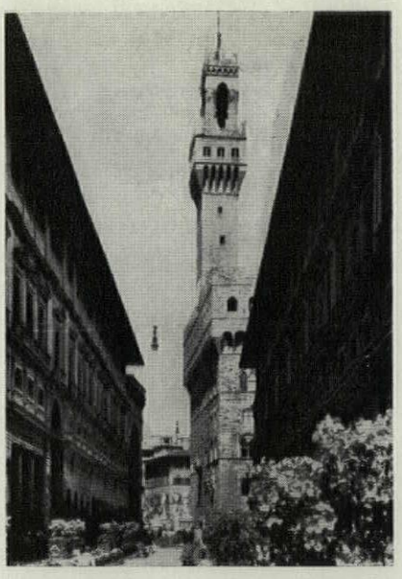


EZRA STOLLER ASSOCIATES

been handled with greater finesse; the curtain wall of black, rigidized stainless-steel spandrels and natural stainless-steel mullions is one of the neatest to date (FORUM, June '60); and while some may have reservations about a few of the curtain-wall details (especially the half-windows and absence of mullions at the corners), these are matters of taste. If anything, Union Carbide is still a little too sleek and hard for comfort: the building can use some sculpture, paintings, planting, and warmer surfaces—and present plans call for just that.

GEORGE CSERNA

View north on Vanderbilt Avenue *shows break between annex at left, tower at right. While it might have been more obvious to stop this vista by pushing the tower across the full width of Vanderbilt Avenue, the present relationship is a little more subtle: just as the Palazzo Vecchio in Florence peeks out a short distance across the vista down the Uffizi Gallery (below), so the Union Carbide tower attracts anyone walking down Vanderbilt Avenue by merely* suggesting *(rather than revealing) its form. Meanwhile, the pedestrian arcade between tower and annex forms an effective extension of Vanderbilt Avenue at sidewalk level.*



ARCHITECTS: Skidmore, Owings & Merrill; William S. Brown (partner-in-charge); Gordon Bunshaft (partner in charge of design); Robert K. Posey (project manager); Natalie deBlois (project designer); Jack G. Dunbar (interiors designer). GENERAL CONTRACTOR: George A. Fuller Co. STRUCTURAL ENGINEERS: Weiskopf & Pickworth. MECHANICAL & ELECTRICAL ENGINEERS: Syska & Hennessy. ACOUSTICAL ENGINEERS: Bolt, Beranek & Newman. OFFICE PLANNING CONSULTANTS: Rodgers Associates. KITCHEN CONSULTANT: K. Howard Post.

EZRA STOLLER ASSOCIATES

New hotel vs. old code

BY DAVID B. CARLSON

Hilton and his architect will go to court rather than let their San Francisco hotel be designed by code officials. Meanwhile, other cities modernize their codes.

"Practically every city in America has its own code governing building design and materials, and the codes vary enormously—and unpredictably—from city to city." So wrote Architect William B. Tabler, chairman of the A.I.A.'s national code committee two years ago in ARCHITECTURAL FORUM. Tabler was calling for a group of uniform codes that would make possible less-wasteful, lower-cost design and construction. In recent months several cities have been heeding Tabler's advice (page 125). But shortly after the article was published, the very unpredictability and variances of which he had written were impressed on Tabler himself, when his plan for a $27 million Hilton hotel became tangled in San Francisco's obsolete code restrictions and the rigid interpretations of single-minded building officials.

Ever since submitting his building plans last February, Tabler has been involved in a running debate with San Francisco's building and fire department officials, who would not grant any alternate systems or materials for 17 elements in the plans (after Tabler had redrawn or substituted over 124 other items that officials had disputed). Tabler went to the Board of Permit Appeals last June. That board voted 5 to 0 for his alternates and, after the city requested a rehearing, again backed Tabler 4 to 0, one member being absent. But Tabler still had not won; the Central Permit Bureau refused to issue a building permit, despite the directive of the Board of Permit Appeals to do so. Now, Tabler and Hilton have been forced to go to court in an effort to unscramble the jurisdictional snarl before they can start work, already more than a year behind schedule. At stake is not only a multimillion-dollar construction job, but also the legality of San Francisco's code enforcement apparatus.

At the bottom of Tabler's code problem in San Francisco is the unique concept of his hotel, which probably would cause some code difficulties in any large city. The 17-story building is a hollow-square hotel of about 1,200 rooms with a garage for 400 cars in the central core. The cars would be stacked on the seven floors of what would otherwise be an interior court above the ballroom, floor-to-floor access being provided by a ramp circling the "court." The top four bedroom floors would be arranged about an interior patio and pool, built atop the garage. Thus Tabler has proposed to combine the convenience of a drive-in motel with the luxury of a large city hotel, including an unobstructed view of the city.

Tabler anticipated some difficulties with San Francisco building and fire officials whose job it is to enforce the city's code. He considered the code to be at least 25 years out-of-date. It is a specification code (as opposed to a performance code), calling for specific materials or design details in many instances, and laying down firm ground rules governing the approval of possible alternates. This type of code is relatively inflexible, but because so many provisions are subject to interpretation by local officials, Tabler felt he could persuade them to accept many of the features of his design which did not fall within the limits of the code.

Tabler submitted his final plans only after months of preliminary discussions with city officials, particularly Superintendent of Building Inspection Robert C. Levy and Chief Fire Marshall Albert E. Hayes. These officials raised so many objections to his proposals that it was difficult for Tabler to retain his garage-hotel concept. But such plans were finally drawn to put discussions on a solid basis. After that, the enforcement officials found 141 items which they asserted were code violations. By revising his drawings Tabler whittled this list down to a hard core of 17, which he said he could not alter without affecting the operation of the hotel. For

The controversial San Francisco Hilton.

the key to the disputed items, see page 125. The total cost of the whittling, Tabler estimates, would add over $1 million to the initial cost of the structure. Thus Tabler, who is a long-time foe of rigid enforcement of obsolete codes largely on the grounds of cost and stifling of technological progress, found himself in a painful case study.

The smoke-tower squabble

Tabler has found his toughest opponent among city officialdom was Fire Inspector Hayes, a long-time caretaker of the city's stringent fire regulations, many of which are throwbacks to the dreadful days of the great 1906 fire, which leveled much of the city. Hayes is well-known for his strict adherence to these regulations, despite pressures from many quarters. His reputation is based upon his knowledge of the letter of the regulations ("I know them backward," he says proudly) and his zealous protection of them. He has always been a favorite of San Francisco newspaper reporters for he is quick to stir controversy and not adverse to seeing his name in large type. His critics, including Tabler, say he is publicity conscious, too quick with his charge of "firetrap" which he uses often, drawing attention to code difficulties that frequently are better ironed out without benefit of newspaper second guessing. (Late last year, Hayes characterized the Giants' new Candlestick Stadium as a firetrap and eventually forced the city to spend an extra $89,000 on its baseball arena, most of it for sprinklers and fireproof paint to insure the fire resistance of the stadium's steel posts.)

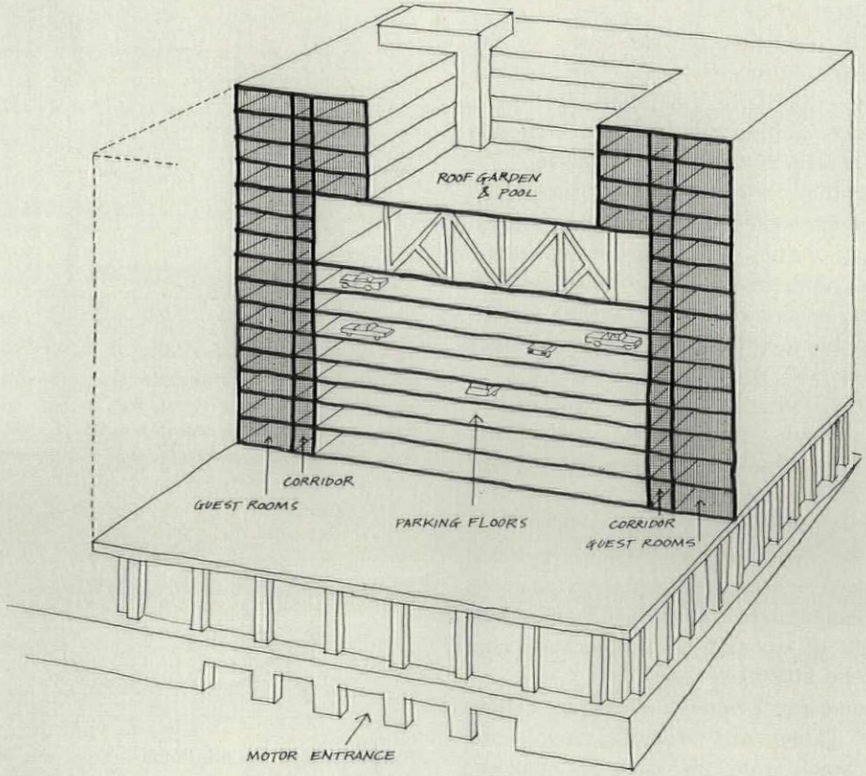
Hayes's chief complaint about Tabler's hotel design was that it did not include smokeproof towers. These are shafts usually located inside the exterior wall. They carry a stairway the full height of the building. At each floor there are openings to the outside. The object of these towers is to allow smoke to be drawn off to the outside, thus keeping stairs free for access by incoming firemen and as an exit for guests. The smoke-tower principle is one left over from the turn of the century. But a series of disastrous hotel fires in 1946 indicated that openings to the exterior, such as smoke towers, created draft conditions which fed flames with air and oxygen. Largely as a result of these fires, The National Board of Fire Underwriters eliminated smoke-tower provisions from their national building code.

In lieu of such towers, Tabler proposed interior exit stairways for each floor of the hotel, every stairway to be completely enclosed and compartmented between floors. A special venting system would remove the smoke hazard. His fire stairs were ruled safe by the National Board of Fire Underwriters and the National Fire Protection Assn., but these rulings and his arguments that smoke towers were not required in most other cities (particularly not in hotel-speckled New York or Chicago), and were actually banned in Detroit, did nothing to sway Hayes. Such towers were required by the San Francisco code, and since they were, he wanted the plans to include them. Tabler also argued that the city code is less specific about smoke towers than the state code, and the local code should prevail. But Hayes says his rule is always to apply whichever is the more rigid requirement in either of the two codes.

Hayes also disapproved of only four stairways per floor, said the hotel needed five fire escapes, at least one of which had to be in a smokeproof tower. Tabler, intent on keeping the exterior of his building uncluttered with fire stairs, argued that his plan met provisions of the National Fire Code, and was a suitable alternate to the city and state code provisions. Tabler later added one exterior fire escape at the request of the Board of Permit Appeals, however.

Hayes also insisted on strict enforcement of the code requirments for vestibules with two doors providing three hours of fire protection between the garage and the hotel corridor. These vestibules would have protruded into the garage space, and eaten up almost 35 per cent of the parking space. Tabler pointed out that the vestibules (20 of them to each floor) would be difficult to police, and warned that they could become "sex boxes" where guests might be molested. Instead of vestibules Tabler proposed a single door between the garage space and the hotel corridor, but a heavy door rated for at least 1½ hours of fire safety. To obtain the required three hours of safety, Tabler included the door to the bedrooms themselves, which would also be metal doors. These doors themselves are disputed items, for the local code specifies wooden doors, 1⅜ inches thick, for hotel bedrooms. Hilton prefers and has long—used metal Servidors, but the San Francisco code does not specify them; therefore, for that city's code purposes, such doors do not even exist. Tabler argues that the Servidor is much safer than the type of wooden door required by the code, and he even got the metal doors fire-tested by a testing laboratory, which found them equivalent to a "B label" door—sufficient to withstand at least 1½ hours of fire. Tabler also has provided a sprinkler over each door, at the request of the Board of Appeals. And, as with all of the disputed fire-safety items, Tabler pointed out that his design met the standards of the Fire Underwriters and national codes—but to no avail. Hayes, or Superintendent Levy, always fell back on the strict specifications of the code itself.

Other disputed items included overhead steel fire doors at every floor and the enclosing of the automobile ramp, which runs from the basement up the core of the building at a 12 per cent



Cutaway drawing *shows the most singular aspect of the $27 million hotel designed by William Tabler: the plan is to allow guests to drive directly into the core of the hotel, around which their rooms would be wrapped. Atop seven stories of parking garage would be a roof garden with a pool. The garage would hold 400 cars, the hotel 1,200 rooms.*

grade. Tabler claimed such enclosure would be impossible, and that, in fact, the city code does not make specific provision for enclosing such a ramp. The enclosed ramp controversy suggests how utterly the city's building inspection officials are set against Tabler. Even though the code provisions governing ramps are hazy and largely inapplicable to Tabler's design, Levy and other officials seem to have gone out of their way to interpret the code so that Tabler would have to enclose the ramp.

This sort of rigid interpretation, particularly where the code seems not to be specific, also afflicted Tabler on the question of fire exits from the ballroom floor and the necessity for enclosed corridors for stairs emptying to the street from upper floors. Even when Tabler pointed out that the city allowed the builders of the Jack Tar Hotel, another garage-hotel combination, to empty stairways directly into lobby space, and seemingly to violate the code in the matter of ballroom exits, he was rebuffed.

A victory vetoed

Tabler and Hilton attorneys finally decided to appeal to the Board of Permit Appeals, and had their first hearing last June. The board frequently overrules the city building and fire-inspection divisions on code difficulties, and provides the city with its chief means of achieving good building despite archaic codes and zealous enforcement of them. The board heard arguments for both sides, seemed impressed by Tabler's testimony that the Jack Tar had been permitted to use design details forbidden to him, and by his solid backing from the underwriters and other national protective organizations. The board unanimously agreed that Tabler offered suitable alternates in all the disputed items, and directed a permit to be issued. Chief Hayes, however, was unmoved. "They're not supposed to set aside standards of safety," he said righteously. "This is a specific law, and there is no such thing as a substitute." Although City Administrator Sherman Duckel had made it explicit that the city would abide by the decision of the board, it instead backed the truculent fireman.

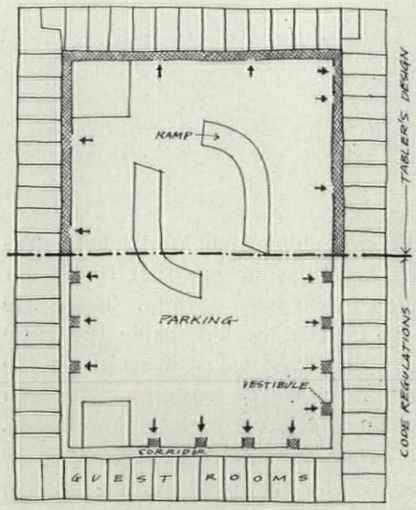
The question of whether or not there can be substitutes to San Francisco's "specific laws" has become the key issue now that Hilton has gone to court. The Board of Permit Appeals granted the city a rehearing last August, again upheld Tabler unanimously. The city, at that time, dropped its objections to Tabler's corridor ceiling heights and plumbing system. However, when Tabler requested a final list of disputed items so that he could see what compromises might be wrought before going to the courts, the city reinstated those two items, including them in the list still under discussion. Tabler regarded this maneuver as a lack of good faith, and felt that it proved his suspicions that the city inspectors, and Chief Hayes in particular, were deliberately obstructing progress on the Hilton. If this was not so, Tabler and Hilton wonder why the city is being so adamant about not allowing the alternates they have provided in their plan. They cite this section of code:

"No provisions of this code are intended to prevent the use of any material, appliance, installation, device, arrangement, or method of construction not specifically prescribed herein."

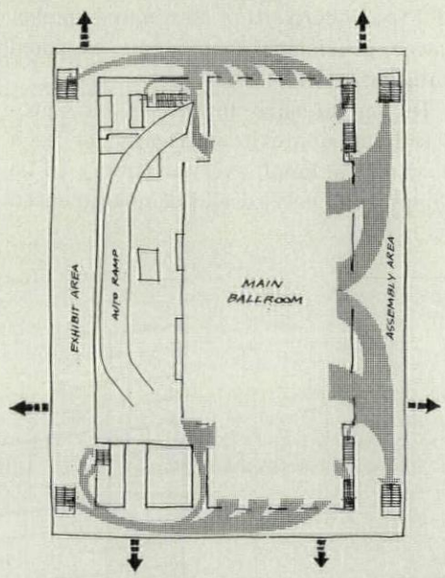
On the other hand, Levy, Hayes, and other city officials claim that this paragraph, rather than permitting materials and systems not listed in the codes, *excludes* such systems as substitutes because they are not "specifically prescribed" in the code.

This is the fundamental issue in Hilton's request for a court order enforcing the Board of Permit Appeals' directive to the city for issuance of a permit. But also at stake is the future of the board itself. Should the case proceed as expected and barring some settlement, the legal future of every board of appeals in the nation could also be at stake.

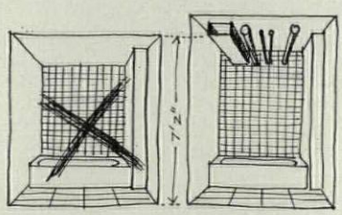
Some San Francisco observers believe that Tabler and Hilton's troubles do not stem from the code so much as from personal considerations. Hilton himself is said to believe that his surrender to a striking hotel workers un-



Bedroom access *from garage is a major item of dispute. Lower half of plan shows scheme favored by city code officials, which would provide entry via 5-foot vestibules with doors at each end. But this would reduce parking space by 35 per cent. Architect Tabler would substitute steel doors opening directly onto the hotel corridor (top half) which, with steel doors on bedrooms, would provide equivalent fire resistance.*



Second-floor exits *are also disputed. Code officials insist that stairways be enclosed and empty directly to the street, but Tabler, citing open stairways in a recently built San Francisco hotel, feels he meets code requirements with stairways directly to the lobby.*



Bathroom ceiling minimum *set by the code (7½ feet) would prevent Tabler from enclosing pipes and ducts (right), as he has done in 10,000 rooms he has designed for other cities, using a 7 foot 2 inch ceiling (left).*

ion several years ago in San Francisco (when he owned the Sir Francis Drake) so incensed other hotel operators in the Bay Area so that they are now trying to keep him from building his new hotel. President Ernest L. West, of the Board of Permit Appeals, noted a "terrific presure against this construction job" when he spoke at the beginning of the rehearing last August, but said: "I cannot put my finger on it." Bay Area architects are not audibly in sympathy with Tabler's plight, however, and few of them believe that the city's tough-minded building and fire officials can be influenced in any way. They defend Levy as not only a protector of the code, but also a leading figure in revising it to allow for technological change. He recently won approval for the use of prestressed concrete, for instance. One architect, a member of the local A.I.A. codes committee, says: ". . . most architects in the city would not go along with Tabler all the way. Most of us feel that he might have solved his problems more easily." (Presumably, the problems could only be solved by Tabler's complete surrender on the disputed items.) And John Bolles, who drew fire from Chief Hayes over Candlestick Stadium, says: "The code is workable." Whether Tabler has not compromised as much as he should have even though he had already redrawn 124 of 140 disputed items, or whether the city is obstinately backing an antiquated code, now seems moot in light of the larger legal issues which could affect code enforcement in every city.

New codes and old problems

Although San Francisco is currently generating more code controversy than most cities, others are becoming increasingly conscious of their code problems. Even among smaller cities this awareness is evident in the figures of the Building Officials Conference of America, which reports that a record 73 cities are known to have adopted the provisions of their national codes last year. In New York State, where code experts spent five years and $1.8 million dollars in devising a standard performance code mainly as a model for smaller cities, nearly one-quarter of all the cities in the state use it now, and more are adopting it each month. (New York City, however, still suffers from a fantastic snarl of overlapping codes which do not prevent as much building as might be expected because, as one leading architect says: "Payola is still the unwritten law of the New York city code.")

Payola, unfortunately, has long been the only answer to unworkable codes and letter-of-the-law bureaucrats in many cities. But some are cutting their way out of such a trap. In Kansas City, for instance, a new code, of the performance type, has been introduced to replace the old specification code. "It is written to accept all national standards on new methods and materials . . . it is more flexible and follows latest code thinking in the U.S.," says William Rowe, commissioner of Buildings and Inspections. The new code was under study for 2½ years, and for the past four or five months builders have been able to build under its provisions, although it had not been fully ap-

continued on page 208

The San Francisco Hilton code battle focuses on these items:

1. Bathroom ceiling heights. The code sets a 7′-6″ minimum, but Tabler says this would leave pipes and ducts uncovered. He asks a height of 7′-2″, with pipes covered.

2. Corridor beams. The code calls for 8′ minimum corridor ceilings, but Tabler's framing system drops beams to 7′-3″ at about every 25′. Ceiling height between beams is 8′-6″.

3. Metal vs. wooden doors. Tests show metal Servidor is fire resistant for at least 1½ hours, but city building officials stick by code requirement for 1⅜″ wooden doors, though admitting they are not fire resistant.

4. Doors from garage to hotel corridor. Code officials want every entry from garage space to inner corridor to be through a 5′ vestibule, with two fire-resistant metal doors. Instead of vestibules, Tabler would have metal doors opening directly from garage to corridor and provide the required 3-hour fire resistance between rooms and garage by use of Servidors on bedrooms. (The Board of Permit Appeals later requested—and Tabler agreed to provide—sprinklers at each door.)

5. Second-floor exits. The code requires 5′-wide stairways from second floor, the number to be determined by estimated occupancy. The city wants two additional stairways to street level, but Tabler says that this need is met by additional doorways from the large assembly area to exit stairs, and believes credit should be given for such horizontal exits, as it is in other cities and as San Francisco does for all other types of exits.

6. Stairway enclosure and discharge. The city says stairs from second floor must be enclosed and empty directly to street, but Tabler claims that stairs can safely empty into lobby or other public spaces, and that city has approved this system in another new hotel.

7. Fire exits and smokeproof towers. The city demands five fire exits on each floor (one more than Tabler has provided) and that one of these be coupled with a smokeproof tower, extending to top of building and open to the outside at every floor. Tabler says his exits meet city code requirements regarding occupancies and that his ventilated stairs are more efficient, less dangerous than smoke towers.

8. Enclosure of auto ramp. The city asks that the interior auto ramp be completely enclosed throughout its height and partitioned at each floor for fire protection. Tabler argues that the city does not even have a statute governing such a ramp and that national fire codes do not require such enclosure if the ramp is built of fireproof materials.

9. Fire doors between motor entrance and lobby. The city says doorways between lobby and motor entrance are technically exits and must have two doors and a vestibule providing 3-hour fire resistance. Tabler would substitute an overhead rolling steel door for fire resistance.

10. Plumbing. The city wants air chambers at the tops of all supply pipes, but Tabler claims there will be no noise, which air chambers are to eliminate, with new-type faucets. The city also required a venting system not consonant with the National Plumbing Code, which Tabler followed.

On the great mall: two rows of ministries; behind them the executive palace, senate dome, twin-tower of legislative offices, assembly bowl, judiciary

Brasília: a new type of national city

A CRITICAL REPORT BY DOUGLAS HASKELL

Now in use, Brazil's fast-built and spirited new capital shows some revolutionary concepts and a few shortcomings.

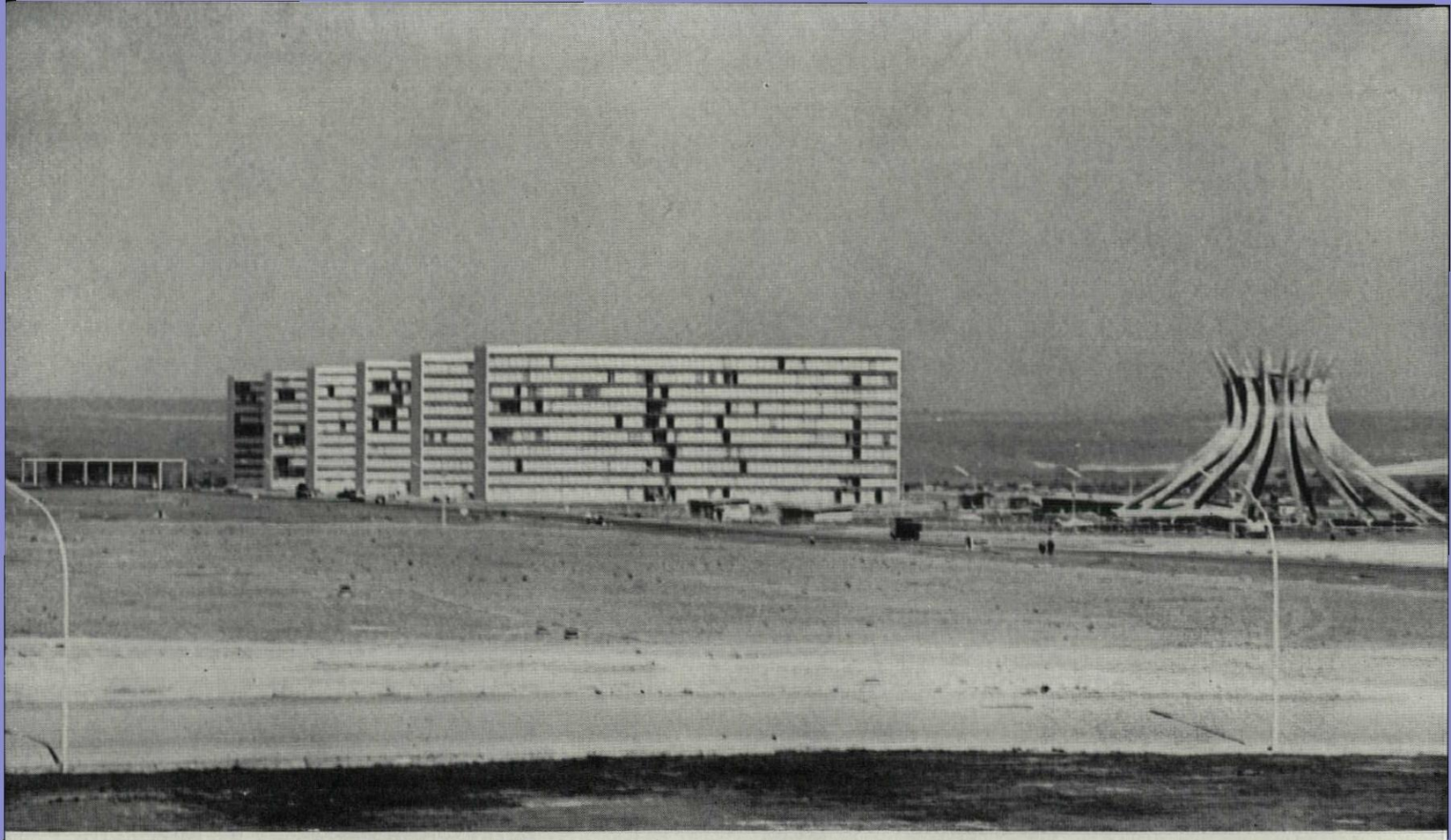
High on her red dusty plateau, 4,000 feet above the sea and 600 miles across the wilderness from Rio de Janeiro, Brazil's new capital city of Brasília stands fresh and clear in simple outline; still thinly occupied and unfinished, it is already fully operative.

The very idea of Brasília stirs emotion even independently of the unusual architecture. Nowhere else in these desperate black days has optimism and creativity produced anything so spring-like. But in many ways it is baffling; the visitor has to make an effort to understand the dynamics of a situation not paralleled in his own country—if he is from the U.S.—in more than a century; if he is from Europe, in more than a millenium.

At Brasília the people of Brazil, acting under strong leaders whom history may call great, have conceived, planned, and built, within the span of four short years, the urban framework for a new kind of city of 500,000. During the past year or more construction was on a 24-hour schedule, going on all night under floodlights. There is now on hand a quite complete government establishment both serviceable and monumental; plus new housing for 20,000 government people (with more rapidly coming); plus frontier-town accommodations for 100,000 more including the construction crew; all this alongside a new artificial lake 24 miles long and 15 square miles in area. And the new capital is hooked up already with some 6,000 miles of a new major highway network—the biggest part of the whole idea. In scope, scale, and velocity, Brasília may well represent the world's city-building record; certainly modern times have not seen its equal.

Nothing could be more futile than to examine the form of Brasília apart from the job it did. This job was nothing less than opening up a new continental area—the same size as the U.S. It was as if the opening of the West had been delayed a hundred years and then done with bulldozers. "After more than 500 years," said the great President Juscelino Kubitschek, at the beginning of his campaign, "enormous fertile lands are as empty as the Sahara while millions of Brazilians live in penury, clinging like crabs to the crowded shoreline," where all Brazil's burgeoning cities are.

Urgency led to the creation of Brasília since lack of occupation of the interior threatened the national unity itself. Urgency dictated the roads,



building, and, far right, cathedral spire. Paulo Muniz photograph.

which could not be built without the fact and drama of a new capital to give the roads a reason and a direction. Urgency, coupled with genius, and not dilettante fantasy, made Brasília the expression of this new mission, and made it a new kind of town.

A national, not a regional city

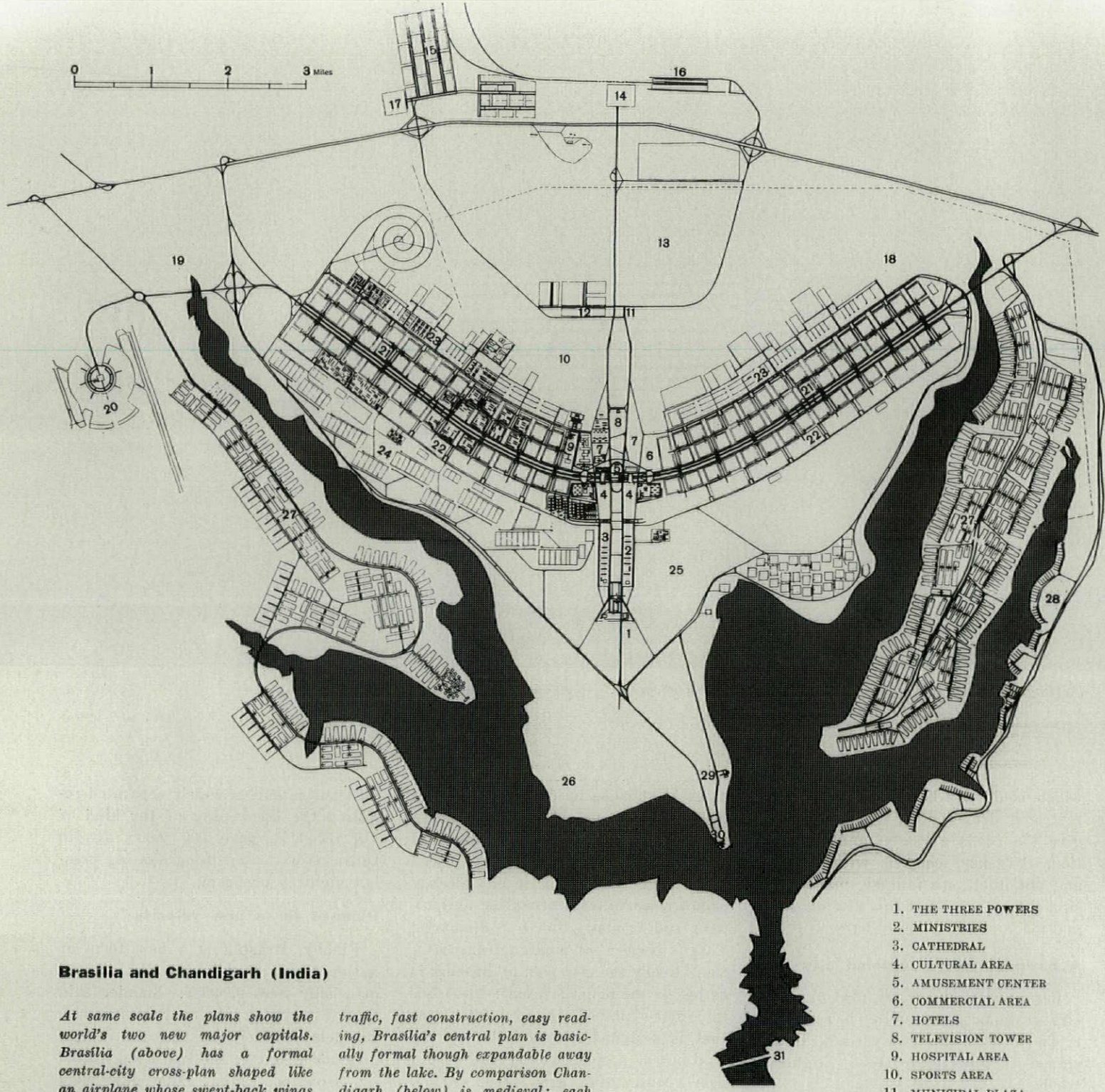
Because Brasília is the first big new city designed along with its roads, it is the first in which city traffic is designed to flow as freely as highway traffic.

Next, Brasília must be understood as a national city which skips beyond all the time-honored concepts that rule local or "regional" cities in their role as generators of industry and agriculture. This is highly important, for early in the game certain geographers mistakenly predicted failure, basing their "science" on the old notion that cities must be so placed as to operate within zones established by direct contiguity: i.e., by giving neighboring farmers a market and local workers an industrial job. Brasília on the contrary was placed close to "nothing," yet it has already begun powerfully to stimulate agriculture and industry, at big distances. This is because of modern transportation. Really the city plan of Brasília is as big as the map of Brazil: this capital is a new kind of urban establishment that is designed not as a dot on the map but as a spiderweb spread over a near continental area (see map). Therefore, complete new towns have sprung up along both ends of Brasília's Main Street, the Trans-Brazilian Highway; rice farmers along the way who received 17 cents a sack after paying for 20-day mule transportation now get $4; the whole "Sahara Desert" begins to blossom.

Emphatically this national city is a governmental administrative city, not a traditional industrial or commercial city, and this new character accrued again from the urgencies of the situation. Brasília had to be federal because no combination of industries was powerful enough to open up the interior unaided. To pull into pattern national resources widely separated required the telescoping of the kind of aid the U.S. gave 100 years ago to railroads with something like our present highway program.

Planned for a new velocity

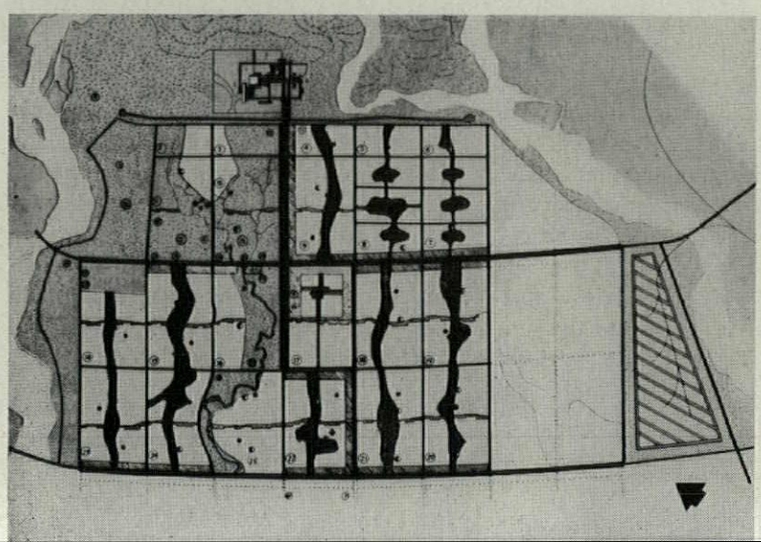
Finally, Brasília is a new form of national city that had to be created at wholly new velocity. Slander said that completion in four years was scheduled entirely for the sake of Kubitschek's vanity; the truth was stated by Brasília's great and supremely modest planner, Lúcio Costa, when he said: "We have to finish in five years or the forest will come back." Much as observers might wish that a new capital might have taken its form from slow steady "natural" growth, nothing but blockbuster tactics could produce it. And just as Kubitschek, lacking gold, had to reach for high-pressure financial improvisations, so Costa and Niemeyer, planner and architect, had to reckon with high speed: their security lay in using that kind of plans in which surveyors and workmen, fabricators, and future citizens, too, would find every line and shape simple and orderly, and quickly readable.



1. THE THREE POWERS
2. MINISTRIES
3. CATHEDRAL
4. CULTURAL AREA
5. AMUSEMENT CENTER
6. COMMERCIAL AREA
7. HOTELS
8. TELEVISION TOWER
9. HOSPITAL AREA
10. SPORTS AREA
11. MUNICIPAL PLAZA
12. PRESS AREA
13. PARK
14. RAILWAY STATION
15. INDUSTRIAL AREA
16. WAREHOUSING AREA
17. POWER AND LIGHT PLANT
18. CEMETERY
19. ZOOLOGICAL GARDEN
20. AIRPORT
21. RESIDENTIAL SUPERBLOCKS
22. TWIN SUPERBLOCKS
23. ROW HOUSING
24. EMBASSIES
25. UNIVERSITY CITY
26. ESTATES
27. INDIVIDUAL HOUSE AREA
28. UPPER-INCOME HOUSES
29. TOURIST HOTEL
30. PALACE OF THE DAWN
31. DAM

Brasilia and Chandigarh (India)

At same scale the plans show the world's two new major capitals. Brasília (above) has a formal central-city cross-plan shaped like an airplane whose swept-back wings are the living city and its fuselage, pointed toward the lake, is the civic center, raised on a dominant earth mound. Triangle (1) contains the chief government buildings. For fast traffic, fast construction, easy reading, Brasília's central plan is basically formal though expandable away from the lake. By comparison Chandigarh (below) is medieval: each enormous superblock virtually a self-contained village, low in traffic, slow in development, leisurely in habit, with the government center off to one side.



A national-city plan

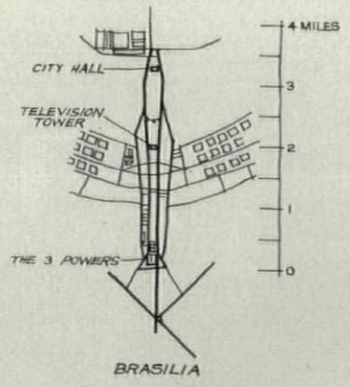
As the nerve center of a nation-wide transportation and communications network, Brasília is sited not at random but as recommended by the Ithaca, N.Y. development-engineering firm of Belcher & Associates, after surveys. The plan is a competition winner by Lúcio Costa, dean of Brazilian architect-planners.

The plan vividly expresses the "crossing" of the highways as the city's basis. True, these occur at by-pass interchanges outside, but the city too is a cross. The center rib of the "urbs" or city quarters is a bent 500-foot-wide multiple boulevard (which incidentally gives separate "tracks" to different kinds of traffic, an unfulfilled dream of Chicago). The "civitas"—a huge civic mall half again longer than Washington's—is raised on a great earth mound like a fuselage crossing the bent "airplane" wing of the "urbs" and connected to it by a great ramped interchange. Parking has not yet been thought out, but the vast traffic-space assignment assures future chances; and indeed if an unknown future should some day demand that jets land on the boulevards, a train of three could presumably come down on each track one behind the other. (Brasília is building one of the world's most advanced — and controversial — airports, with underground passages to planes from a round central hotel.)

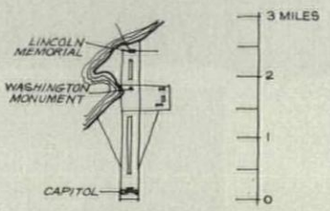
If Brasília's main crossing were in the U.S., nobody could assure symmetrical development each side of it; but Brazil planners dealing with a federal city have the necessary power and the controls, and anyway the Brasília mall is far less disruptive to its city than Washington's is.

The central-city area is on a gridiron pattern of superblocks, 800 feet square, to be developed by private enterprise in a varied individual manner (only a few pilot blocks have been done by Official Architect Oscar Niemeyer). Despite unending criticism of the "mechanical" grid idea, nobody has come close to suggesting a better alternate for handling the shifting uses of a central city.

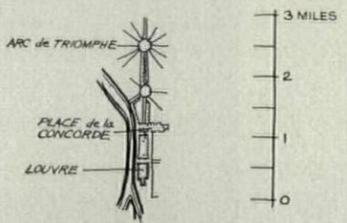
As for the outlying areas, they are handled fluidly enough for plenty of modification.



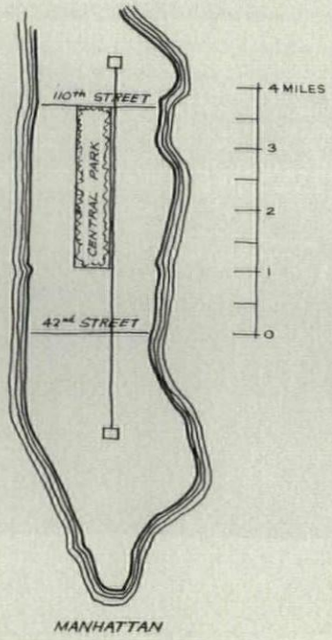
BRASILIA



WASHINGTON, D.C.



PARIS

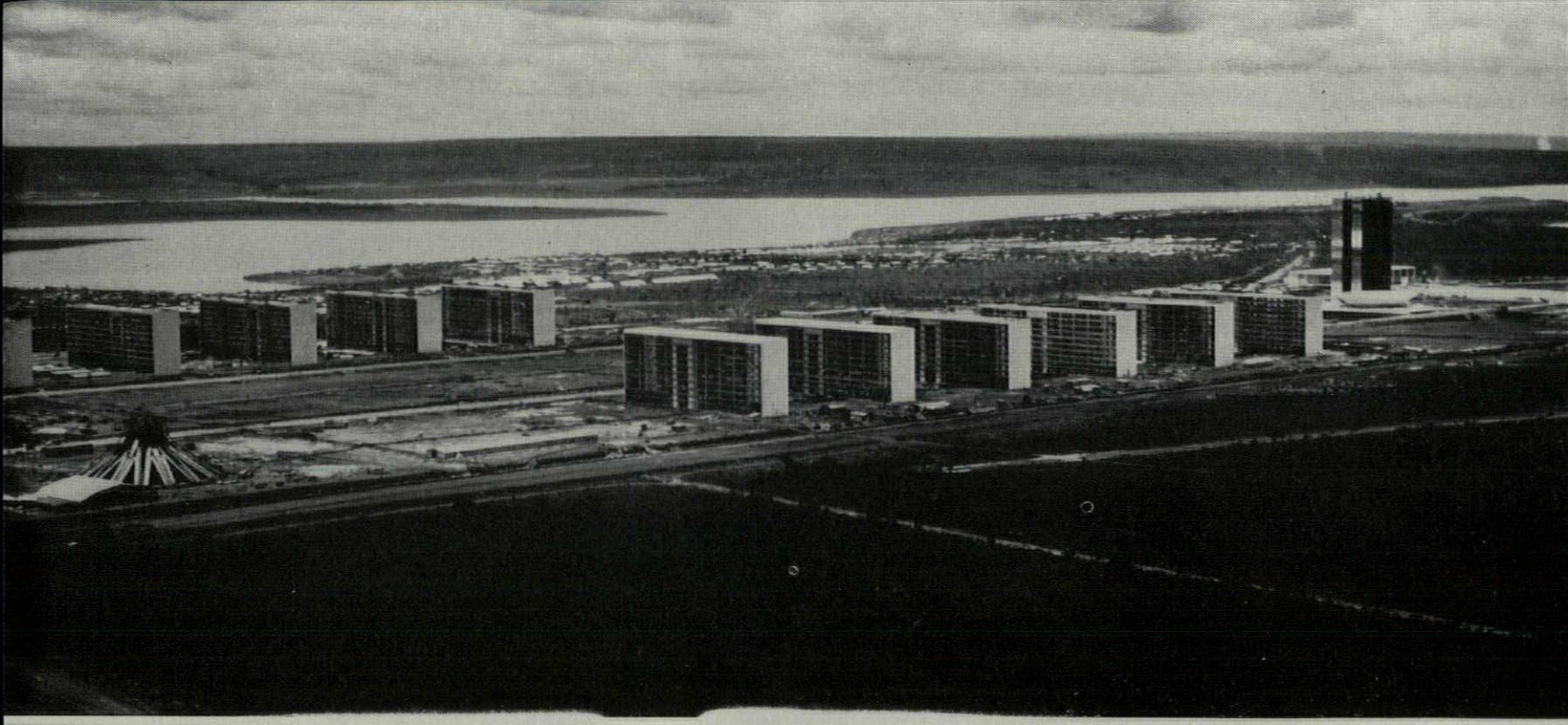


MANHATTAN

Capital malls at same scale:

Top left, Brasília; below it Washington Mall and Champs Elysées at Paris. Above: lower Manhattan; extending approximately 6 kilometers or a little under 4 miles from its point to the railroad, Brasília's mall is as long as New York's Fifth Avenue from 42nd Street to the head of Central Park at 110th Street. (Maps from a Harvard study.)
Below: Brasília seen from its dam, the government mall at top, left of center.


PAULO MUNIZ



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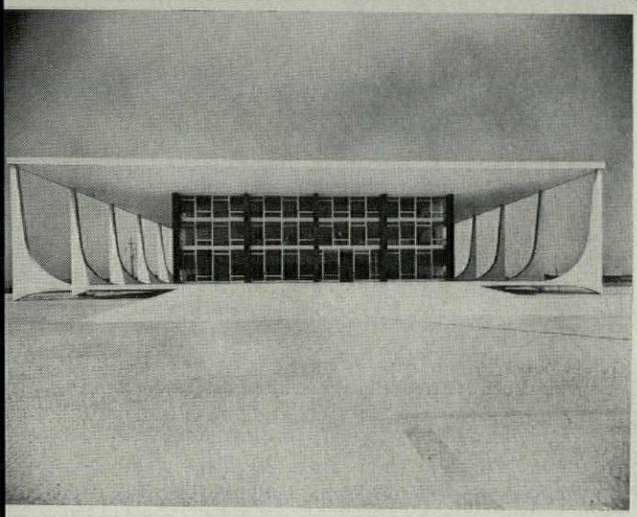

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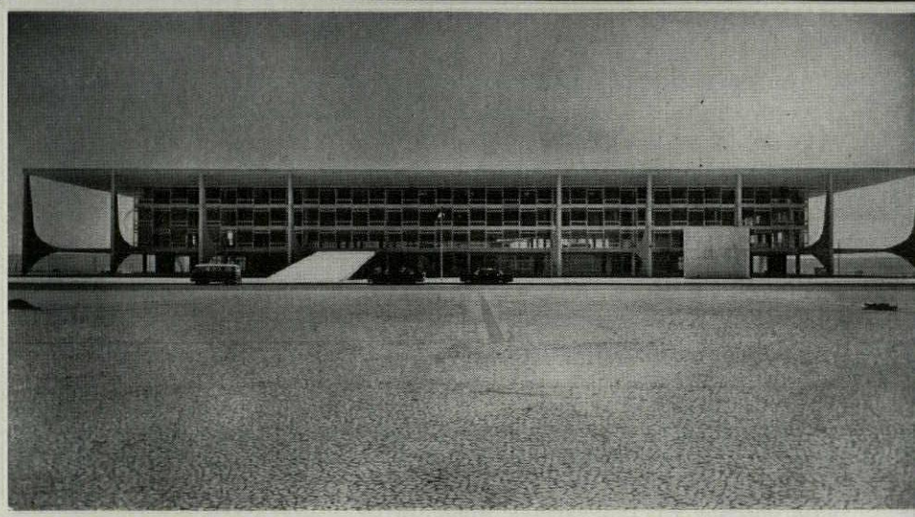

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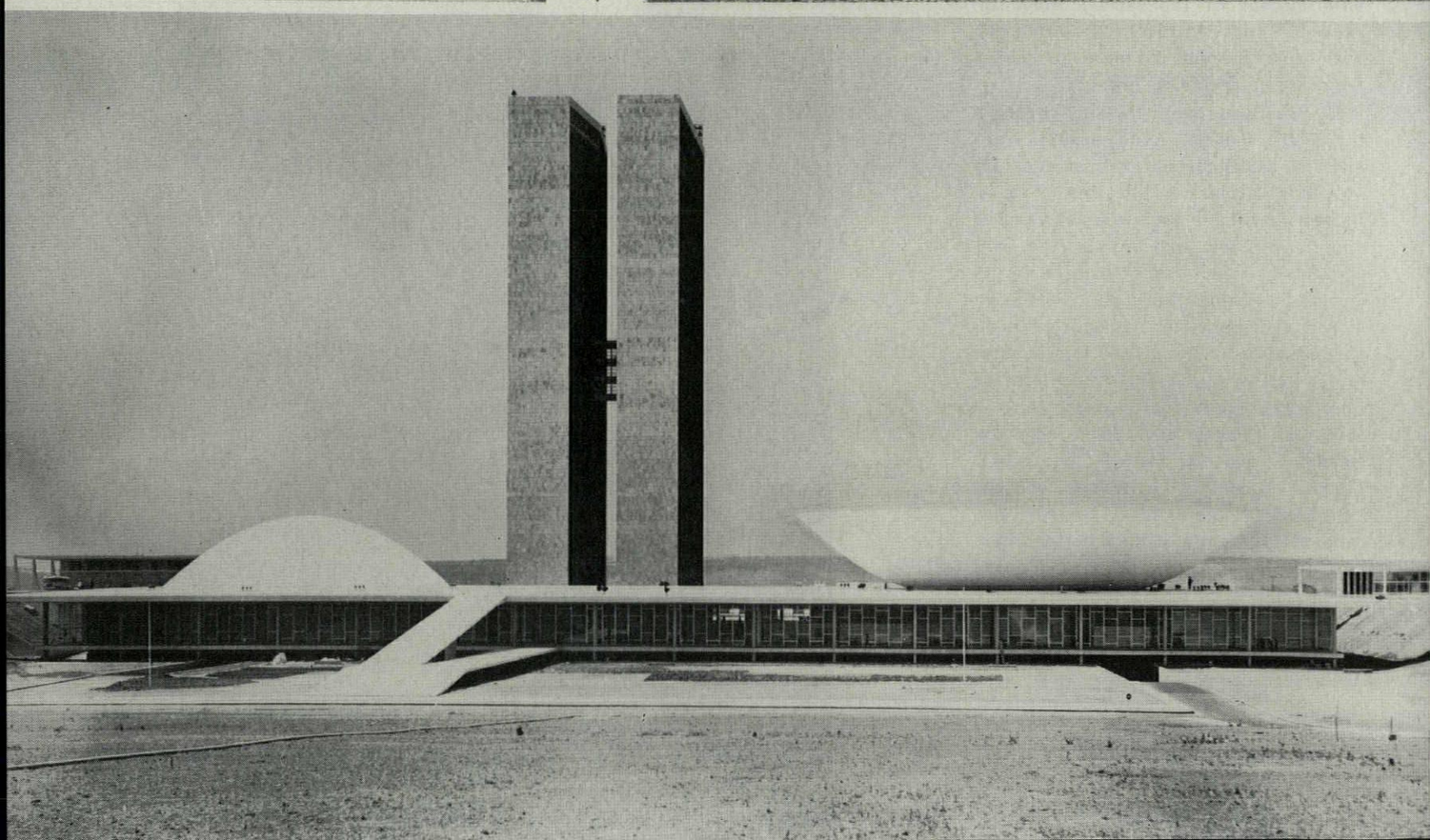


The government center

Just as the plan of Brasília symbolizes the city as economic nerve center, so the architecture of the civic mall expresses national governmental power.

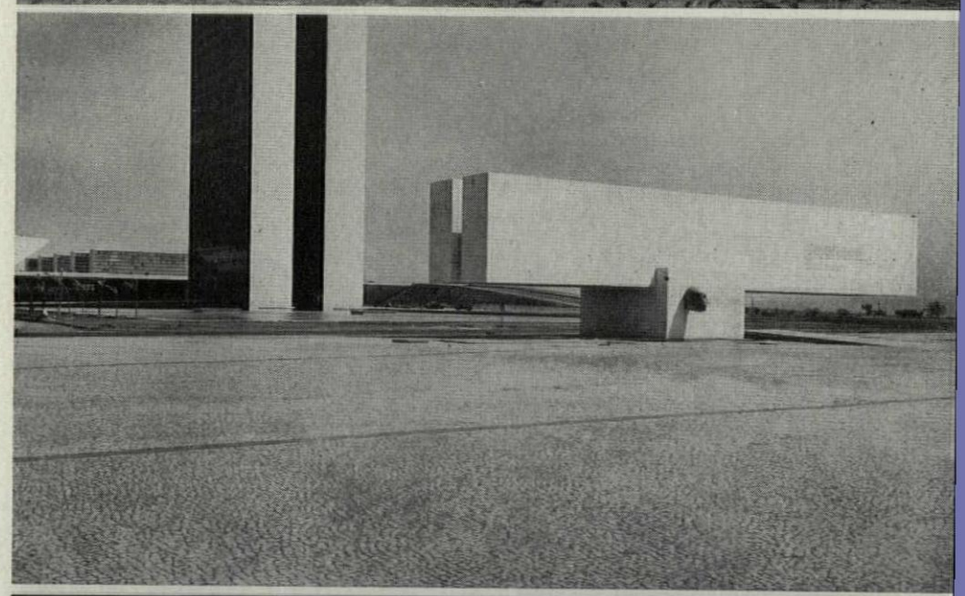
Among national monuments these are surely of the simplest, in clean geometry, sinuous and unpretentious, though roughly executed. The focal point is the "Triangle of the Powers" which has been criticized because it is dominated by a clefted tower containing only the senate and assembly offices (4). But, like the Secretariat of the UN in New York (much influenced by Niemeyer), this honestly reflects that today government is four-fifths organization and one-fifth declamation.

The Senate dome contains just enough space for a dished auditorium; the assembly bowl for the larger chamber is a full-fledged stadium. The smaller Judiciary Building (2) and the Administrative Palace (3) carry Niemeyer's architectural "order" of flared-out columns, graceful in shape and giving the smaller unit in particular the air of a flower or thistle—less obviously than the dome of the unfinished cathedral (5) whose interior will be below ground.

Surely nowhere else has a monumental capital carried an air so generally innocent, lyrical, and dancelike.

A feeling of vast emptiness keeps gnawing at the visitor nevertheless, not only because of the grim marshalling of gray ministerial buildings (1), but because all the civic buildings are separated by great deserts of cobblestone paving. The excessive dispersion also prevents any space-play from developing among the buildings, which all become self-contained "objects" on the landscape. This is probably an intuitive leap toward tomorrow's scale, and we of today are just as unprepared for it as the inhabitants of the medieval Ile de France were unprepared for the Champs Elysées and for Versailles. Perhaps, again, history will fill in the gaps of Brasília's graceful and spirited beginning—it is sharp and fresh but also just a little thin spread.

5



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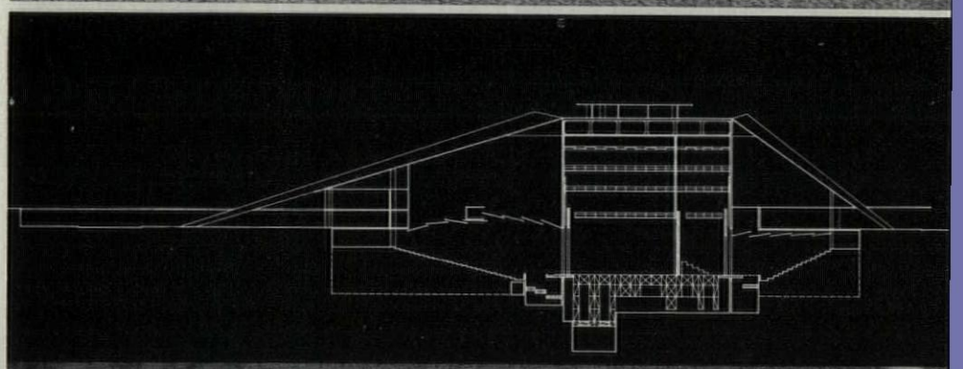

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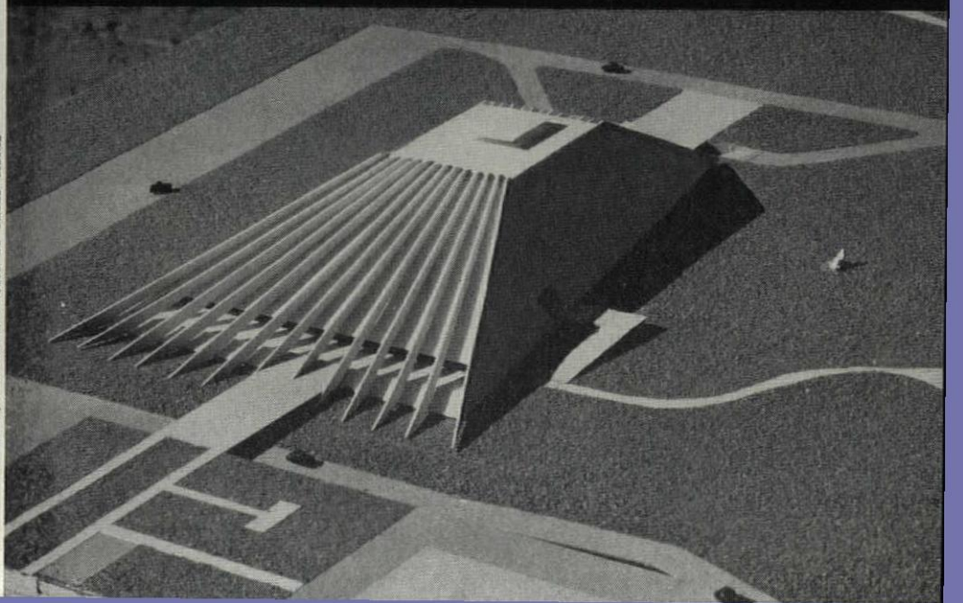
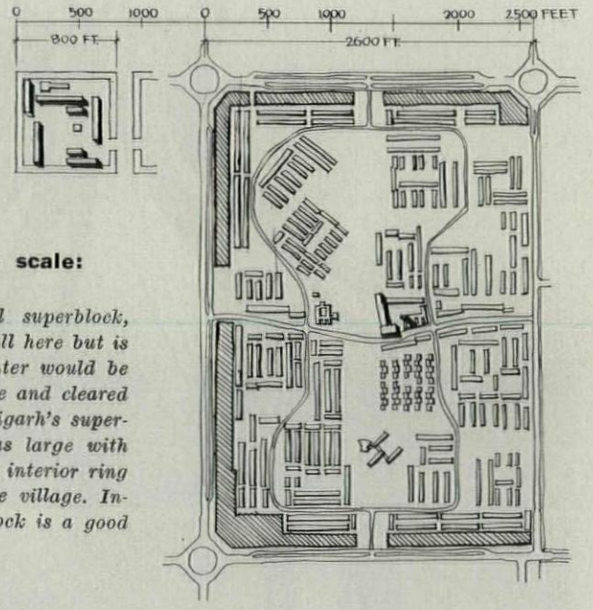


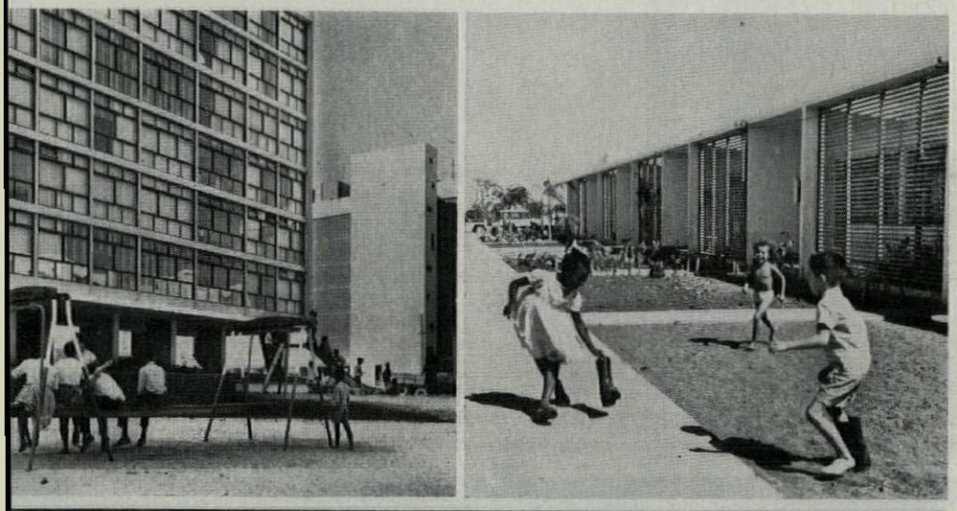
MARCEL GAUTHEROT, ALL OTHER PHOTOS BY PAULO MUNIZ

Civic buildings: *(5) Cathedral spire skeleton, to be filled with stained glass; church to be underground. (6) Monument to the builders; head is Kubitschek's. (7) Section and model of civic theater, under construction.*



Basic units, at same scale:

Above: Brasília's typical superblock, 800 feet square, looks small here but is as big as Rockefeller Center would be if squared on its long side and cleared of interior streets. Chandigarh's superblock (right), 16 times as large with only one crossing and one interior ring street, is actually a whole village. Intrinsically the Brasília block is a good modern unit.



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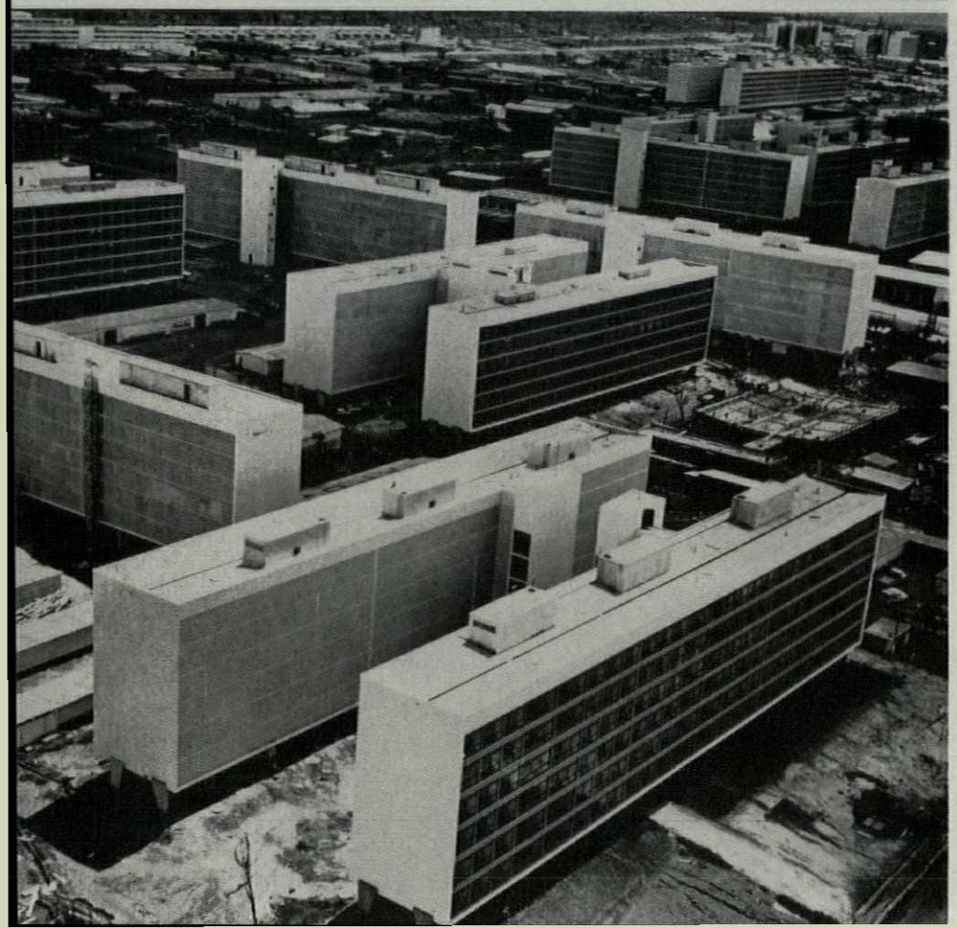


3

The residential city

It is as a place to live that Brasília starts wrong and drab; its housing is rigidly institutionalized, classified, and feudal. Sorting people into bins is a temptation to architects and was especially strong in a new city.

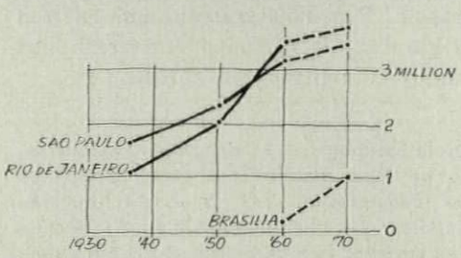
The superblocks of the central plan are not in themselves the trouble, and certainly not because they are regular and equal in outline. They are plenty big enough at 800 feet square to embrace grand interior variations: the size is comparable to Rockefeller Center in New York squared on its longer side and divested of all cross-streets. Fruitful variety in city areas does not depend on wavy meanders, nor would blocks have to change size to provide people from different blocks with necessary identification. Meanwhile the clarity of the grid system is an inestimable benefit to a city's unending flow of strangers and newcomers.

The real trouble is that Niemeyer's prototype blocks are of deadly uniformity in height, shape, and disposition (3, 4). Besides that, the over-all plan of the city goes in for rigid population stratification (see city map, page 128).

No doubt with time these rigid groupings will soften, for otherwise the fruits of the heroism and sacrifice of creating Brasília may fall to some South American Castro.

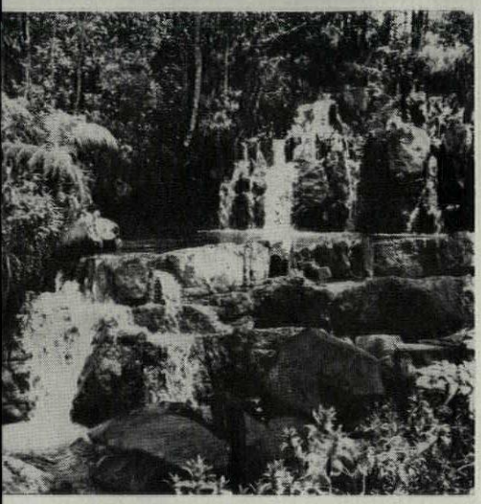
Meanwhile, those who have been talked into thinking that the plucky gamble of Brasília may not win had better mend their estimates. No matter what the new president's politics may be, declares *Time's* Rio correspondent, he would be lynched if he tried to move the government out of Brasília.

And the population estimate after 25 years is 2 million. As Pinheiro said in New York: "I cannot stop the child. I cannot stop the improvement in the conditions of life."



Rates of growth *of Rio and Sao Paulo among the world's fastest, help explain Brasília's vast construction and anticipated expansion.*

4



5

Residential facilities:

(1) a close-up of a typical Brasília apartment building by Niemeyer; (2) row housing in the city; (3) superblock close-up; (4) a serene but somewhat dull silhouette alongside the major boulevard. The rural scene (5) shows that Brasília, at the confluence of Brazil's major river systems, has some nice wooded scenes near it. The main bent boulevard system shows in (6) with apartments in left foreground, business towers, center, and the government mall right rear.

6

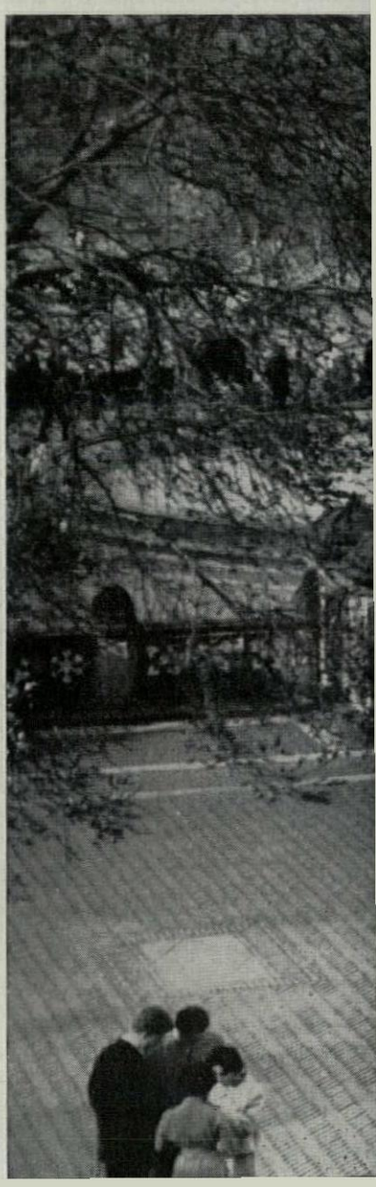
PHOTOS BY PAULO MUNIZ

Romance in the park

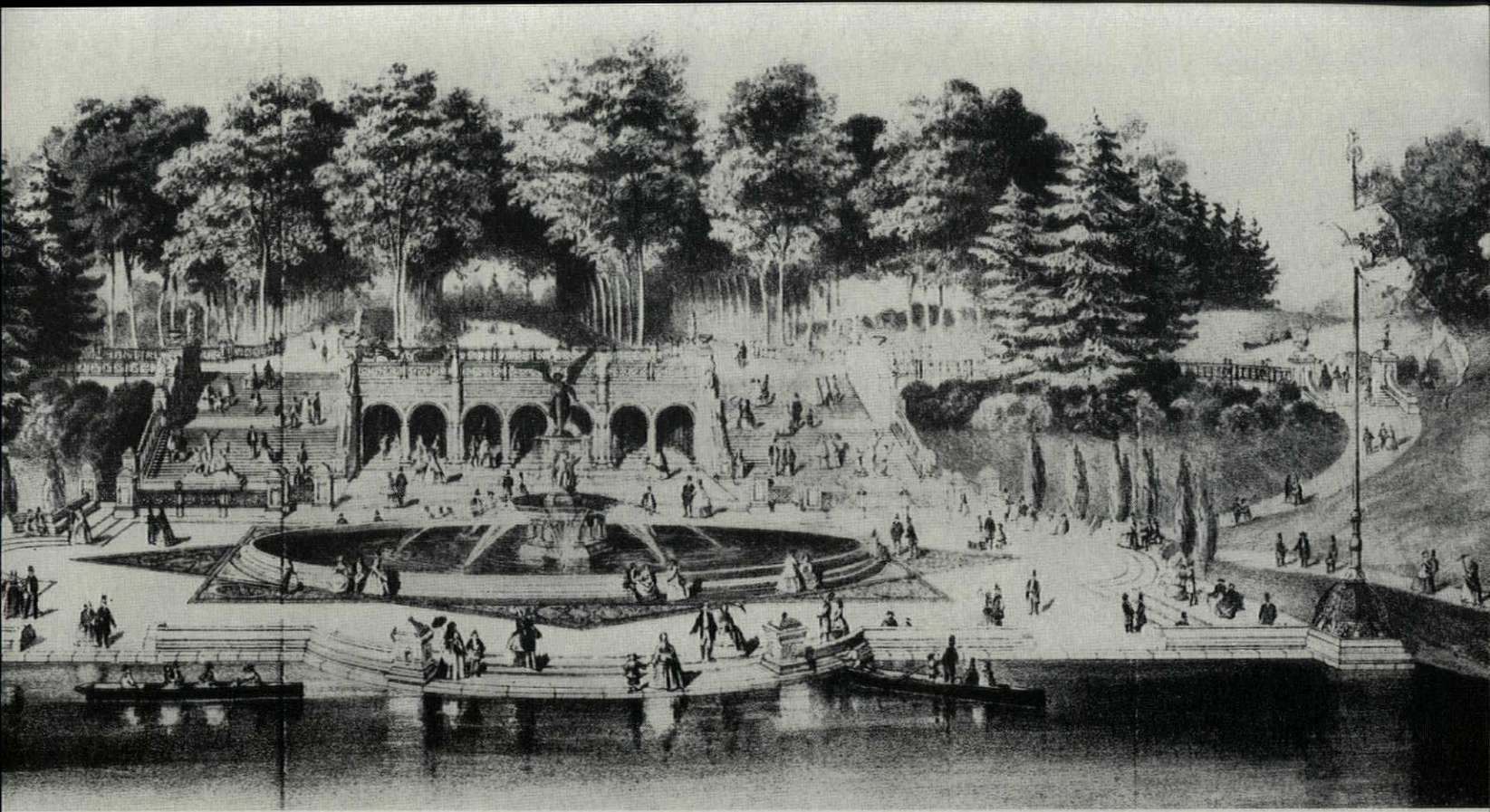
In the heart of Central Park, screened from the city's jagged, changing sky line by soft trees and outcroppings of rock, lies an island of European elegance that has delighted New Yorkers for close to a hundred years. The Bethesda Fountain and water terrace, designed by Olmstead & Vaux as the centerpiece of their grand park plan of 1858, offered Calvert Vaux his finest chance to demonstrate his London architectural training, his mid-Victorian love of the dramatic prospect and the decorative detail. Upon his terrace Vaux lavished broad, curving walks, monumental stairs, a formal arcade and tunnel to the mall beyond. At the center he placed a magnificent angel fountain with figures sculptured by Emma Stebbins. To either side were to fly special gonfalons emblazoned with the city's seal—the battle pennants of a mediaeval city-state where civic pride burned deep.

Today Vaux's masterpiece has the mellow, wistful charm conferred by history and weather, vandalism and neglect. Beneath pin oaks planted after the war, a plaque reads "Navy Terrace," honoring the sailors and their girls who lingered, and whose successors still linger, beside the boating lake.

An arcaded underpass leads from the terrace up to the mall.

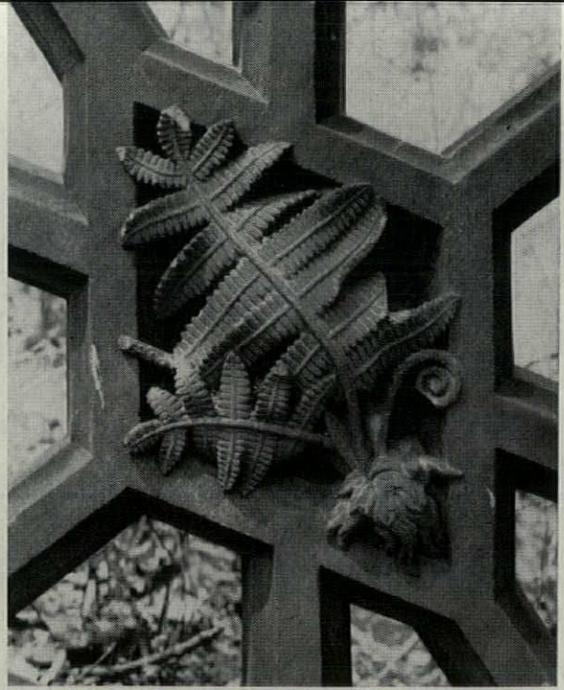


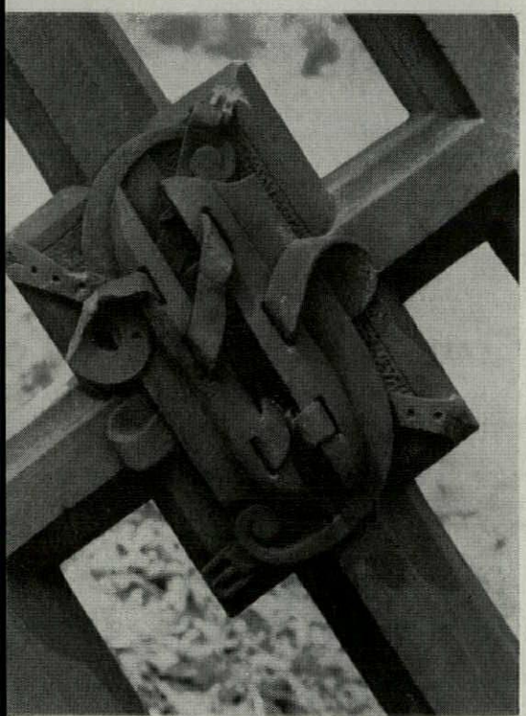
PHOTOGRAPHS BY BILL AND GWEN SLOAN

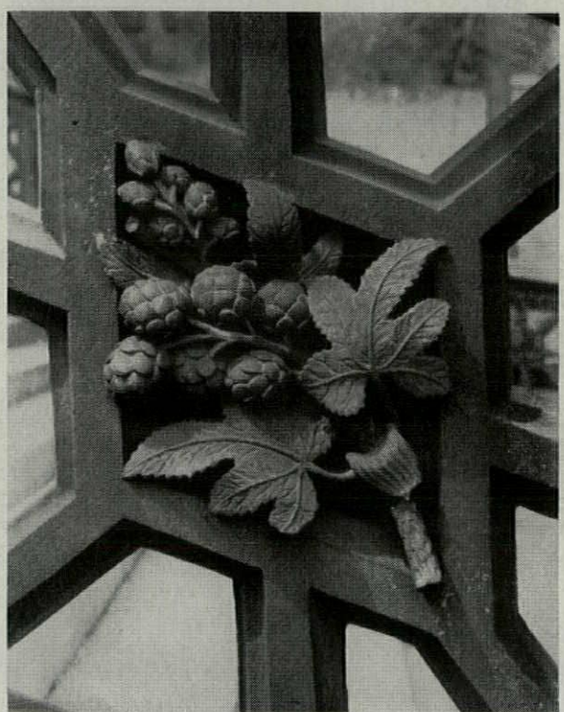


Olmstead & Vaux's plan for elegance in the park: graceful traffic, flying banners, an angel-watched lake.

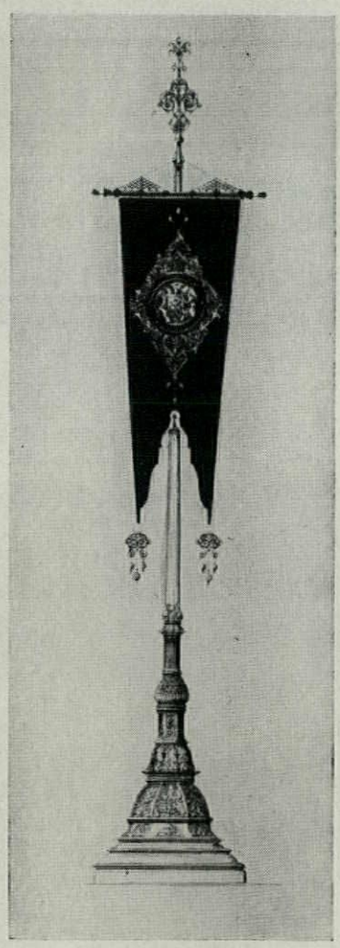
The park's water terrace today: a reversed angel, no banners, but an established pattern of leisure.





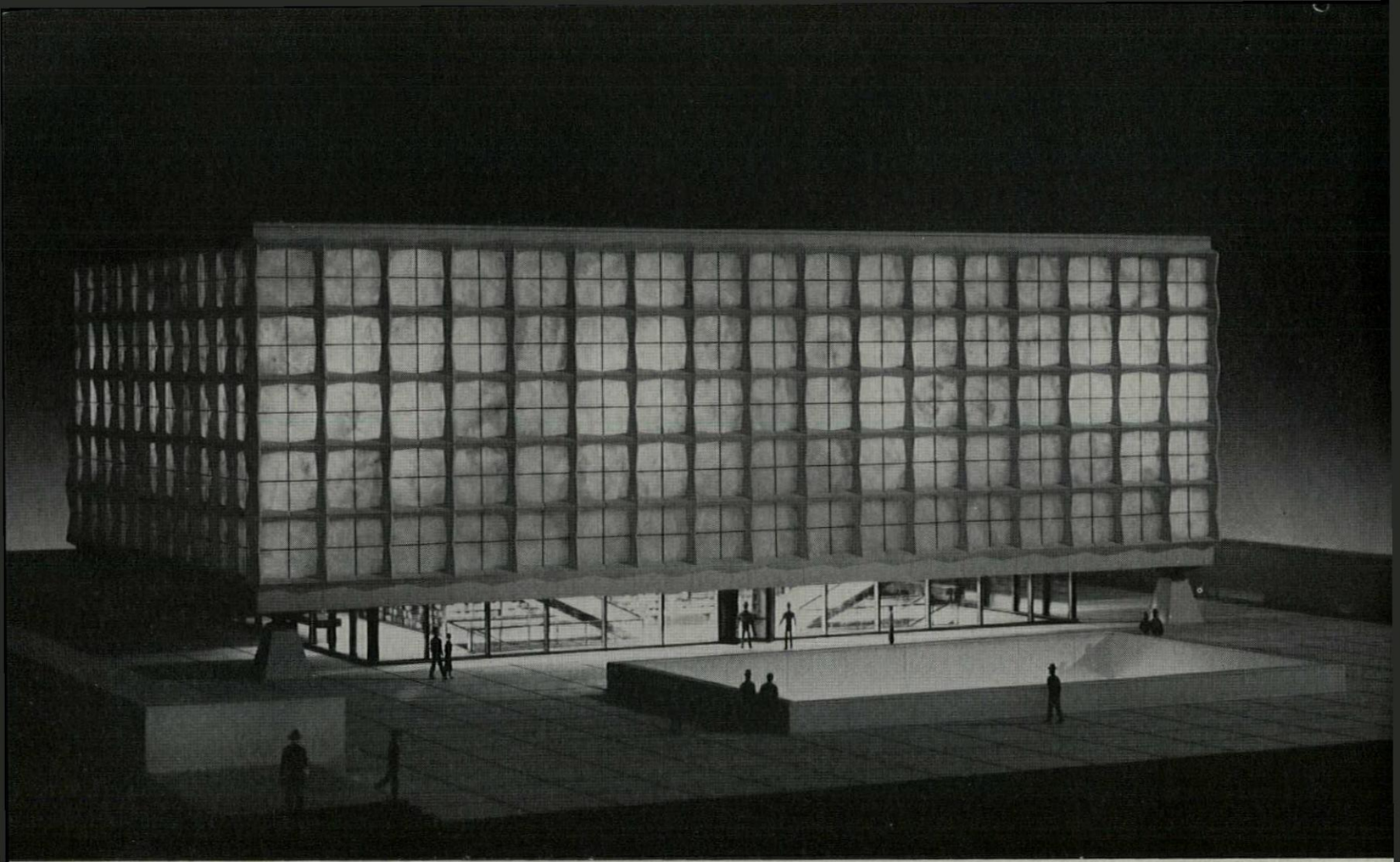


Stairway details speak of nature's claims in the city—birds, ferns, ice skates, hops.

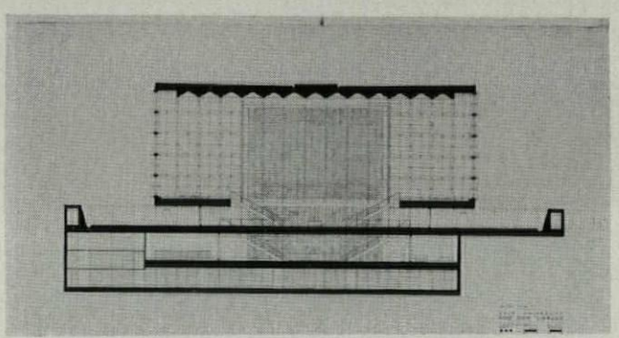


A heraldic banner, one of two designed for the terrace, proudly bore the city's seal.

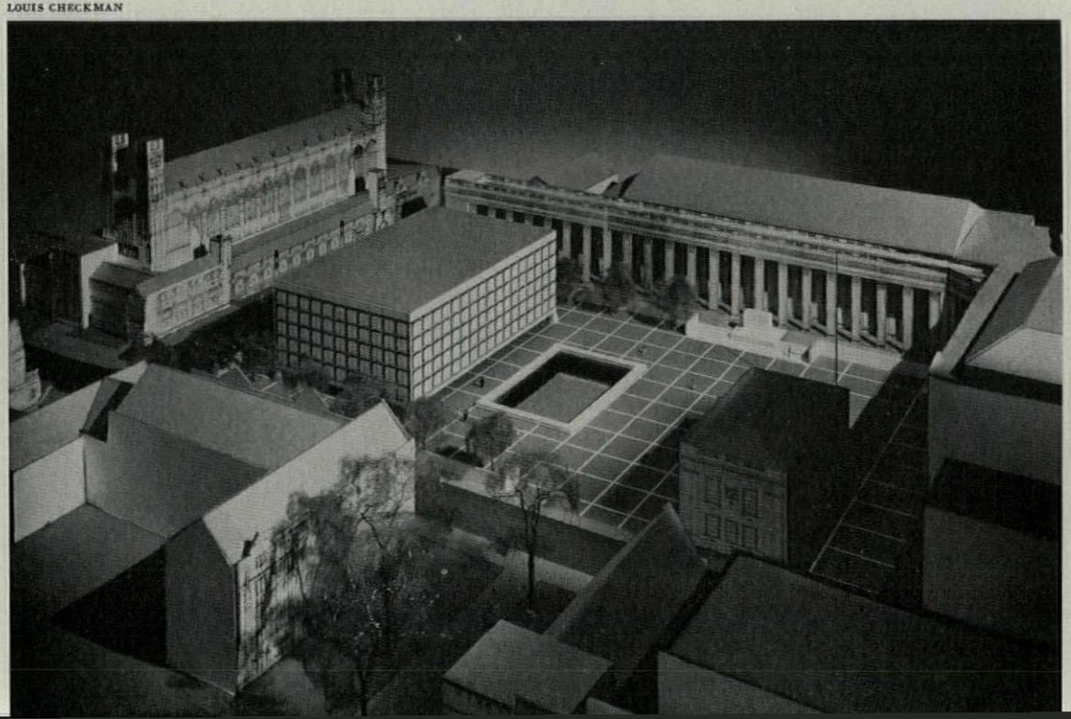
Above a cluster of monumental stone posts and a fountain drained for winter, the angel discourses with pigeons.



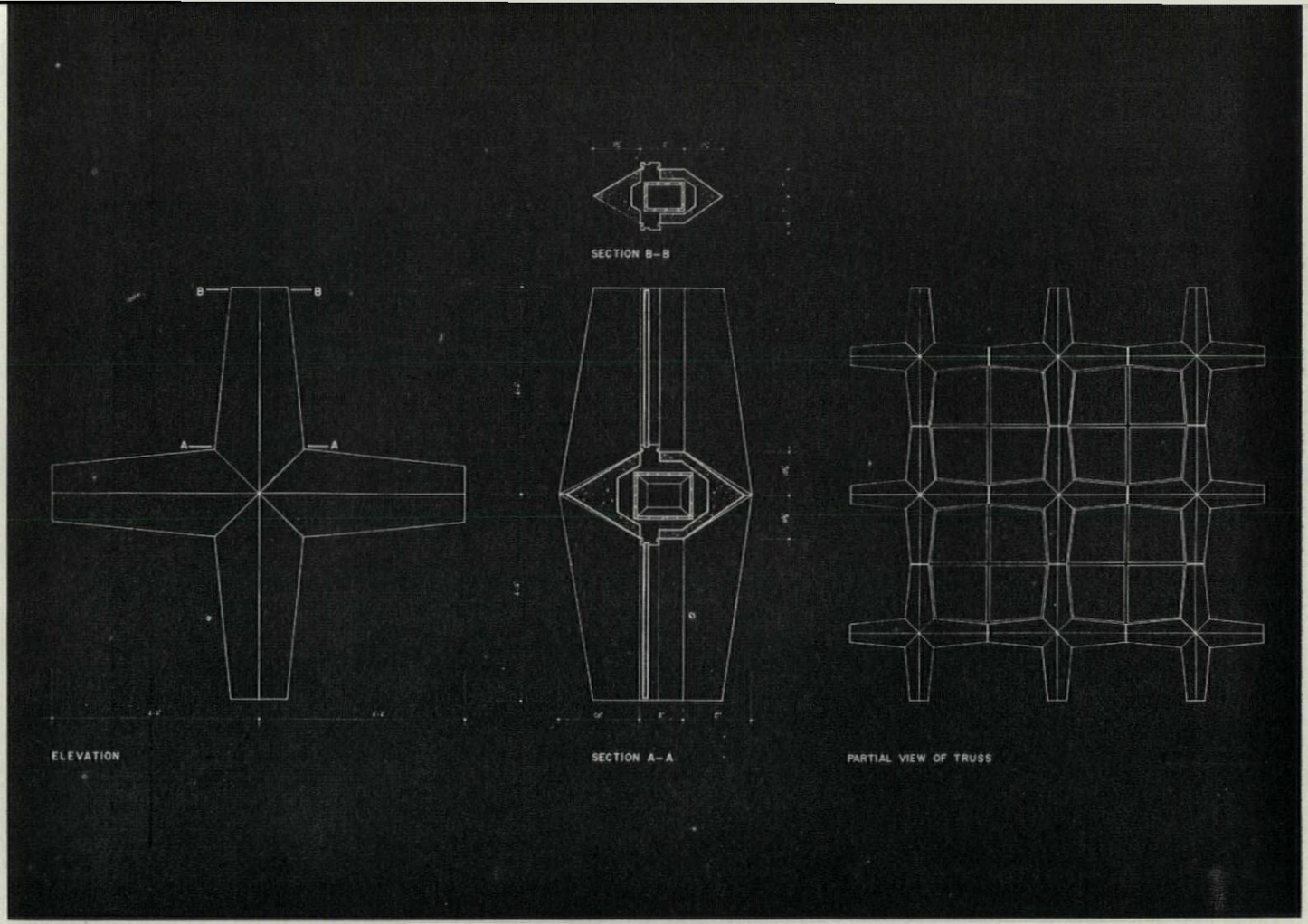
© EZRA STOLLER



LOUIS CHECKMAN



New library *is designed to be compatible with both the Gothic Law School and Berkeley College across the street (left, in photo), and the classical dining hall and Woolsey auditorium, whose cornice lines it matches (top, in photo). A broad paved plaza extending around the library and the old Woodbridge administration hall opposite will serve as the termination of a spatial axis starting at College Street some 1,500 feet to the south. Larger model (above) shows the library's trussed, onyx-windowed façade raised 8 feet above the plaza, allowing space to flow under the building through its recessed glass ground floor.*

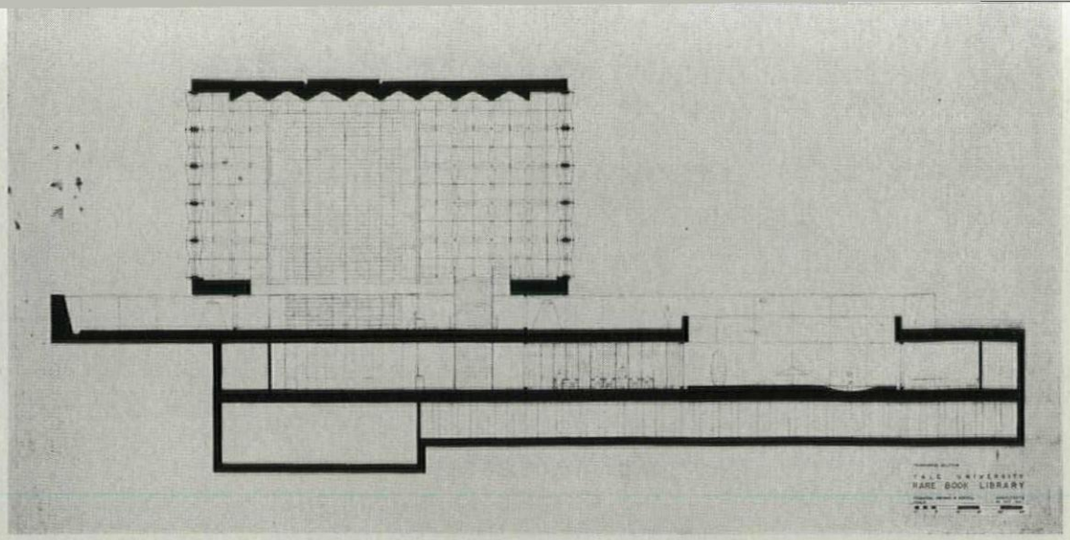


Rare building for rare books

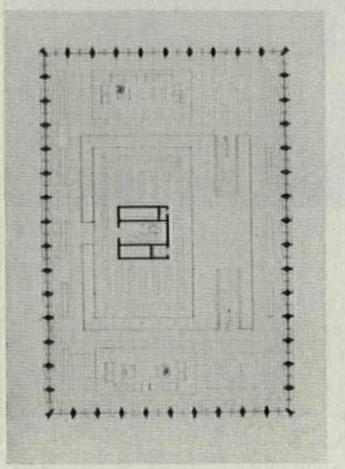
Yale's new library will have four giant trusses for façades, a glass vault for its treasure.

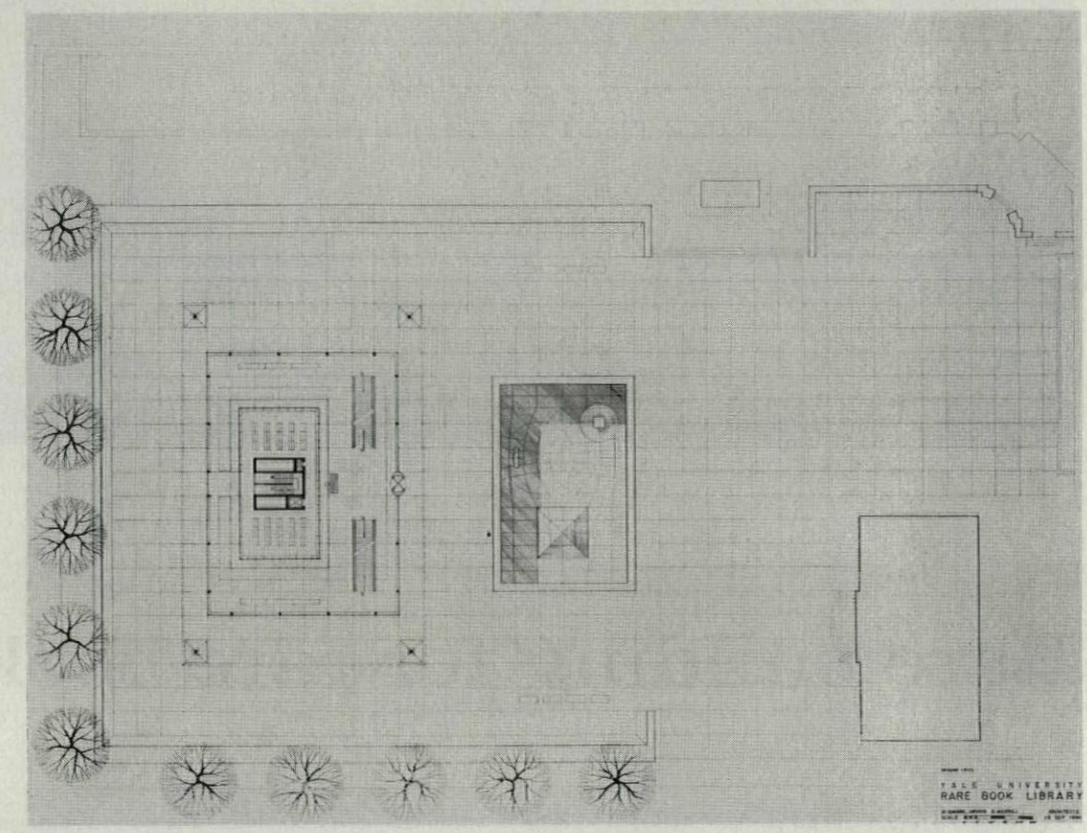
On the site of six old buildings at New Haven's Wall and High Streets, demolition was under way last month for one of the more structurally arresting buildings yet to adorn a traditional college campus. The exterior walls of Yale University's Rare Book and Manuscript Library, designed by Architects Skidmore, Owings & Merrill, will consist of four huge steel Vierendeel trusses 50 feet high and 131 feet across on the long sides, infilled with translucent onyx panels, and poised on four pinpoint corner piers. Inside the great exhibition hall thus enclosed will rise a freestanding, six-story shaft of 180,000 volumes—a spectacular glass-sheathed vault specially air conditioned to protect books valued as high as $150,000 each, and illuminated to display their rich pattern of bindings to visitors below (see section opposite). Beneath this stack will be the library's working heart: a research center containing a central control desk, offices, workrooms, reading and seminar rooms around a sunken sculpture court. In the basement will be storage stacks bringing the total capacity of the library to 820,000 books. All levels will be linked to each other by book lift and elevator, and by pneumatic tube and tunnel to Yale's main Sterling Library across the street.

In exterior pattern, the new library is a highly decorative outgrowth of SOM's departure into rugged, three-dimensional façades, particularly of the precast, cross-shaped units the firm worked out with Engineer Paul Weidlinger for the Banque Lambert in Brussels (FORUM, May '59). At Yale, however, the complex and considerable stresses set up in the long spans necessitated a shift during design from reinforced concrete to steel units. The crosses, 8 feet 8 inches in each dimension, and thickest at the center where the stresses occur, will be prefabricated, welded together during erection to form Vierendeel trusses, then faced and fireproofed with precast concrete or marble (the architects hope to use the same material for plaza paving and walls as well). Into each finished opening will be set slabs of translucent onyx. This modern recall of ancient alabaster windows will protect the rare-book hall from sun by day, and will make it glow at night like a giant stone lantern.

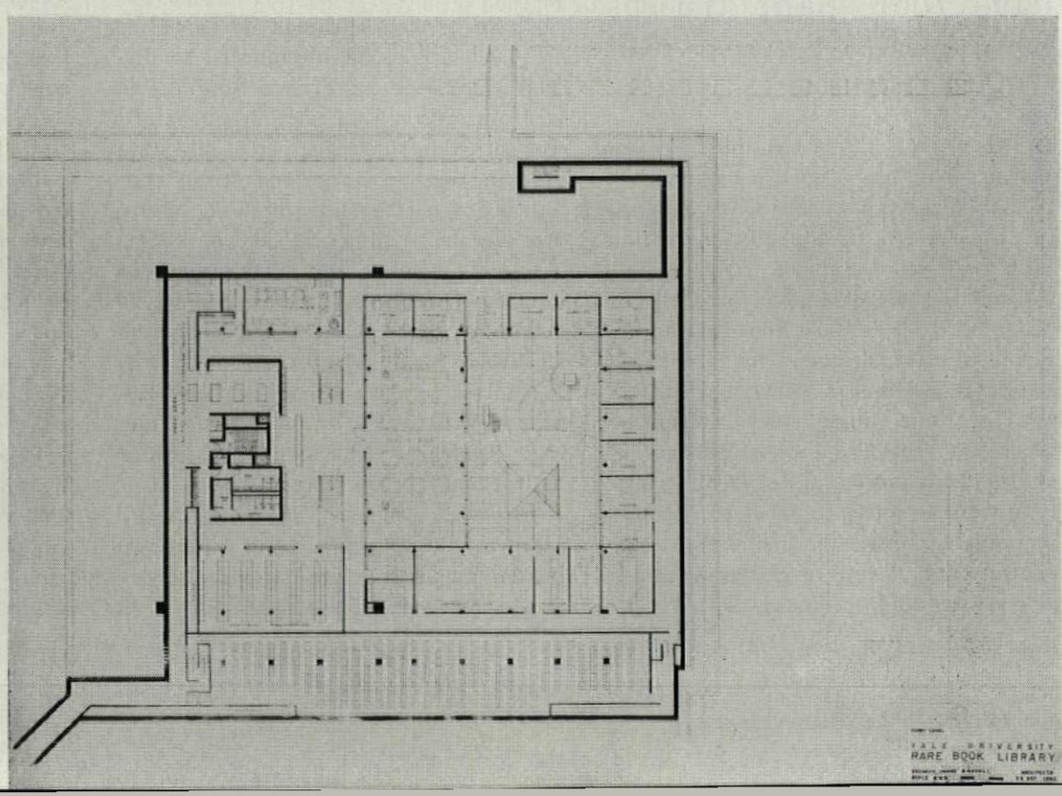


Glass "vault" *for rare books, manuscripts, and special collections will rise 50 feet within the library's great exhibition hall, helping to support a coffered ceiling containing general air conditioning and incandescent lighting (section, right). Outer bookshelves will be lighted to display the rich bindings; behind these will be standard book stacks, elevators, and book lifts. The whole central stack is to be enclosed by glass set in bronze and will have its own air-conditioning system to maintain the proper humidity and temperature*





for books. From the main floor, stairs will rise on either side to a peripheral mezzanine furnished as a reading and reception lounge (plan directly above). Beneath the plaza level (plan right, above) scholars may draw out rare books at a central control desk and study them in a reading room looking out on the sunken sculpture court (plan below).



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Letters

NEW YORK TUNNEL

"Visionless enterprise," your October editorial, was a nice comment indeed on the tunnel-vision of the New York Central System (FORUM, Oct. '60). Well said and well done.

JOHN CARLOS
New York Ctiy

MORE JAZZ

Forum:

I enjoyed reading "Jazz in architecture" (FORUM, Sept. '60). The revolt against what you call the "one-one-one" is long overdue.

In past years the first curtain-wall façades reflected the neon signs and cornices across the street; but now the "one-one-one" pattern reflects the other "one-one-one," and we begin to see what tomorrow may look like.

The best way to get an interesting variety in architecture is to make it an expression of life. If the emphasis is primarily on structure or abstract patterns, many possibilities of variety in design are automatically eliminated. The best and most lively architecture of all times is that which expresses an interest in things related to man and affirms this interest by using unconventional patterns.

I do not think we have learned in our schools the many lessons that popular architecture can teach us, its freedom of expression, informality, unpretentiousness, and gaiety.

JOSÉ LUIS SERT
Dean, Graduate School of Design
Harvard University
Cambridge

Forum:

What architecture would we call really jazzlike? First of all (and despite your misunderstandings) we would look for a *regularity* of structure—one with one-one-one rhythm.

Seagram's is a building (out of many others) pointing in this direction. Connecticut General is an even better example.

Still, in these examples, there is a rigidity and a sense of static completeness which is unlike jazz. The reason for this is, I believe, that the structure-module is given first, leaving only the "furnishings" and occupants the privilege of mutual accommodations. What is missing is a building system which would allow an architect, an interior designer, and an occupant to react to each other on an equal basis and throughout the life of the building. This would call for the development of structural systems (along with their very difficult concomitant problems of weatherproofing and fireproofing) as flexible as interior partitioning systems which we now have and the realization by architects that the interaction of these elements with the people they shelter forms the very marrow of their art.

CHARLES A. METCALF
Architect, Seattle, Wash.

Forum:

Up till now, the only musical analogies which have been drawn have been from such squares as J. S. Bach. S. St. John Hetherington has compared Bach's keyboard with the number pattern, as shown in the example below. This analogy led us to speculate whether the key of E minor would be as sterile in architecture as it has been in music.

Major scale—in "key" of C		
C—Base	=1:1	=1.00
D—Tone	=8:9	=1.13
E—Third	=4:5	=1.25
F—Fourth	=3:4	=1.33
G—Fifth	=2:3	=1.50
A—Sixth	=3:5	=1.67
B—Seventh	=8:15	=1.88
C—Octave	=1:2	=2.00

Number pattern dimensions

24″
27″
30″
32″
36″
40″
45″
48″

EZRA D. EHRENKRANTZ
Marshall, Leefe & Ehrenkrantz
San Francisco

■ *Go, man, go!*—ED.

FAIR HARVARD

Forum:

Your September issue just arrived with the excellent article on Harvard. It is fair, to the point, and very well illustrated. Architectural criticism is no easy matter—and I am sure you are getting attacked from all sides.

J. P. CARLHIAN
Architects, Shepley Bulfinch Richardson & Abbott
Boston

ALLAH IN L. A.

Forum:

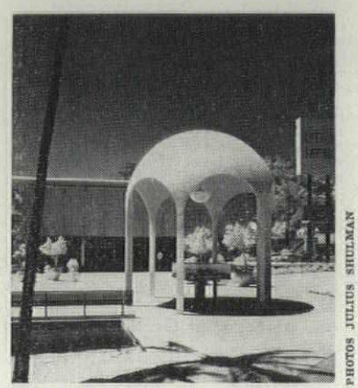
As noted in your editorial entitled "Continuity" in the September issue, we were indeed "beaten to the draw," although not to the drawing board in building the Lytton Savings and

Loan Assn.'s new headquarters. We couldn't get the job done as quickly as our neighbor, "The Plush Pup" (at right in photo above).

You chided that we had a chance to create "The Classy Cone"; but in reality we passed up the opportunity. I refer you instead to what was actually built on the other side of the Lytton Savings building (photo below). As you can see, the Lytton people are doing their part for community improvement.

We think you will agree that the Garden of Allah Pavilion provides the balance you suggested in your editorial even though it doesn't have a zigzag roof.

KURT W. MEYER
Architects, Hagman & Meyer
Los Angeles



PHOTOS JULIUS SHULMAN

BEYOND INDIANAPOLIS

Forum:

As opposed to Indianapolis (FORUM, Sept. '60), we in New Haven have tightly packed slum areas that were beyond salvation. The downtown was old, functionally and economically obsolete, and it was rapidly losing out in the race to the suburban shopping centers. New Haven's problems were indeed pervasive and not confined to "areas of scanty occupancy" or "islands of shacks." Our solutions had to be in terms of a comprehensive program of redevelopment and renewal projects, in addition to programs of code enforcement, traffic improvement, and highway construction.

New Haven thus has had to face the hard fact that the rebuilding of a city in a total and comprehensive way is going to take money and lots of it. And when we talk of lots of money in the context of our present-day tax structure, that means federal money as well as a utilization of all local resources available. The problem is too serious for New Haven to refuse a return of a portion of the federal taxes paid by New Haven citizens and corporations.

L. THOMAS APPLEBY
New Haven Redevelopment Agency
New Haven, Conn.

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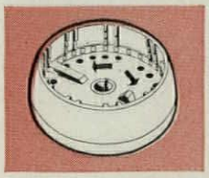

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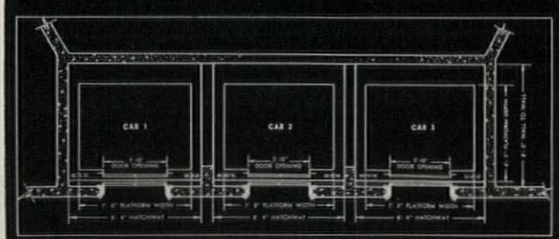

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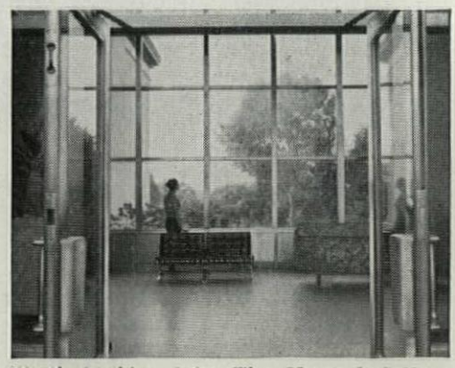

Worth Looking Into. The Classical Gallery, showing its attractive Nickel Stainless Steel doors and the windows beyond.

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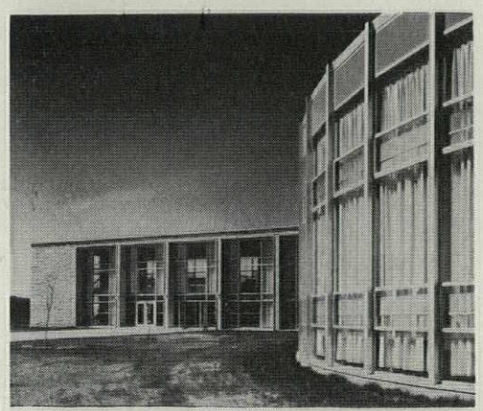

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*AWMA Aluminum Window Specifications—1960

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TYPE: DH-A1 SERIES: 100
SIZE TESTED: 3 8" x 5 0" CERT. NO. 400
MANUFACTURERS NAME
CITY AND STATE

(Top) Marmion Military Academy, North Aurora, Ill.
Architects: Belli & Belli

(Lower) Denver-Chicago Truck Terminal, Denver, Colo.
Architects: Toll & Milan

I.B.M. Office Building, Dallas, Texas
Architects: Harwood K. Smith & Partners

MEMBERS: Adams Engineering Co., Inc., Ojus, Fla.; Albritton Engineering Corp., Bryan, Texas; American Duralite Corp., Loudon, Tenn.; American Metal Window Co., Shreveport, La.; Arnold Altex Aluminum Co., Miami, Fla.; The William Bayley Co., Springfield, Ohio; Capitol Products Corp., Mechanicsburg, Pa.; Ceco Steel Products Corp., Chicago, Ill.; Crossly Window Corp., Miami, Fla.; Fenestra Inc., Detroit, Mich.; Michael Flynn Mfg. Co., Philadelphia, Pa.; Kesko Products, Bristol, Ind.; Mayfair Industries, Inc., Lafayette, La.; Miami Window Corp., Miami, Fla.; Porterfield Industries, Inc., Miami, Fla.; Reynolds Metals Co., Richmond, Va.; Rogers Industries Inc., Detroit, Mich.; The F. C. Russell Co., Columbiana, Ohio; Stanley Building Specialties, North Miami, Fla.; Truscon Div., Republic Steel Corp., Youngstown, Ohio; Valley Metal Products Co., Plainwell, Mich.; Windalume Corp., Kenvil, N. J.; Wisco Inc., Detroit, Mich.

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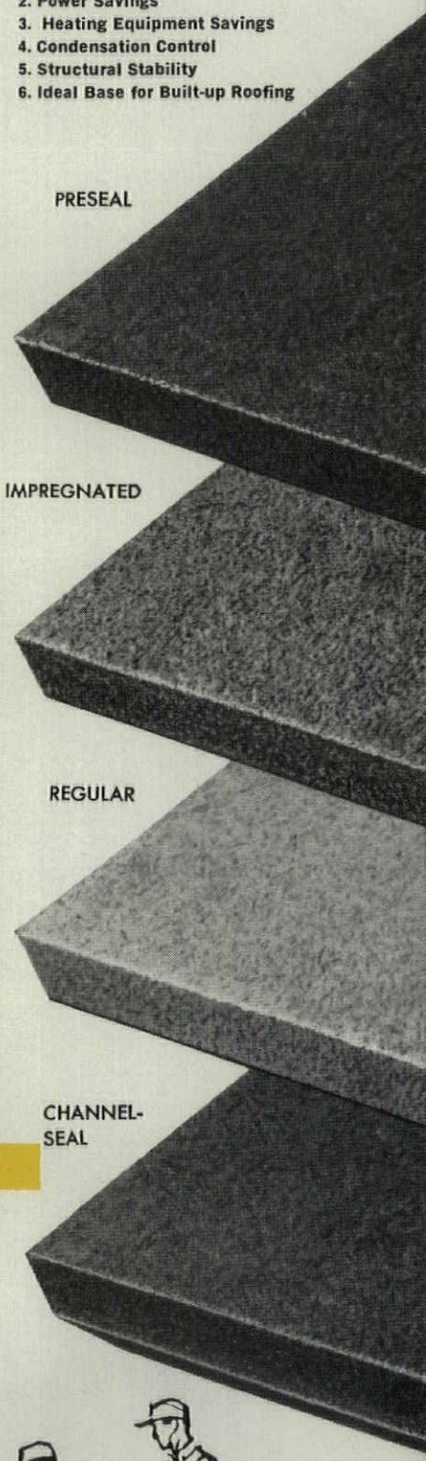

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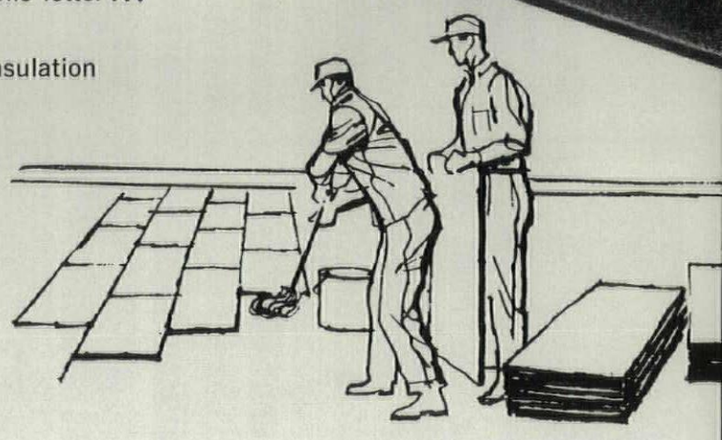

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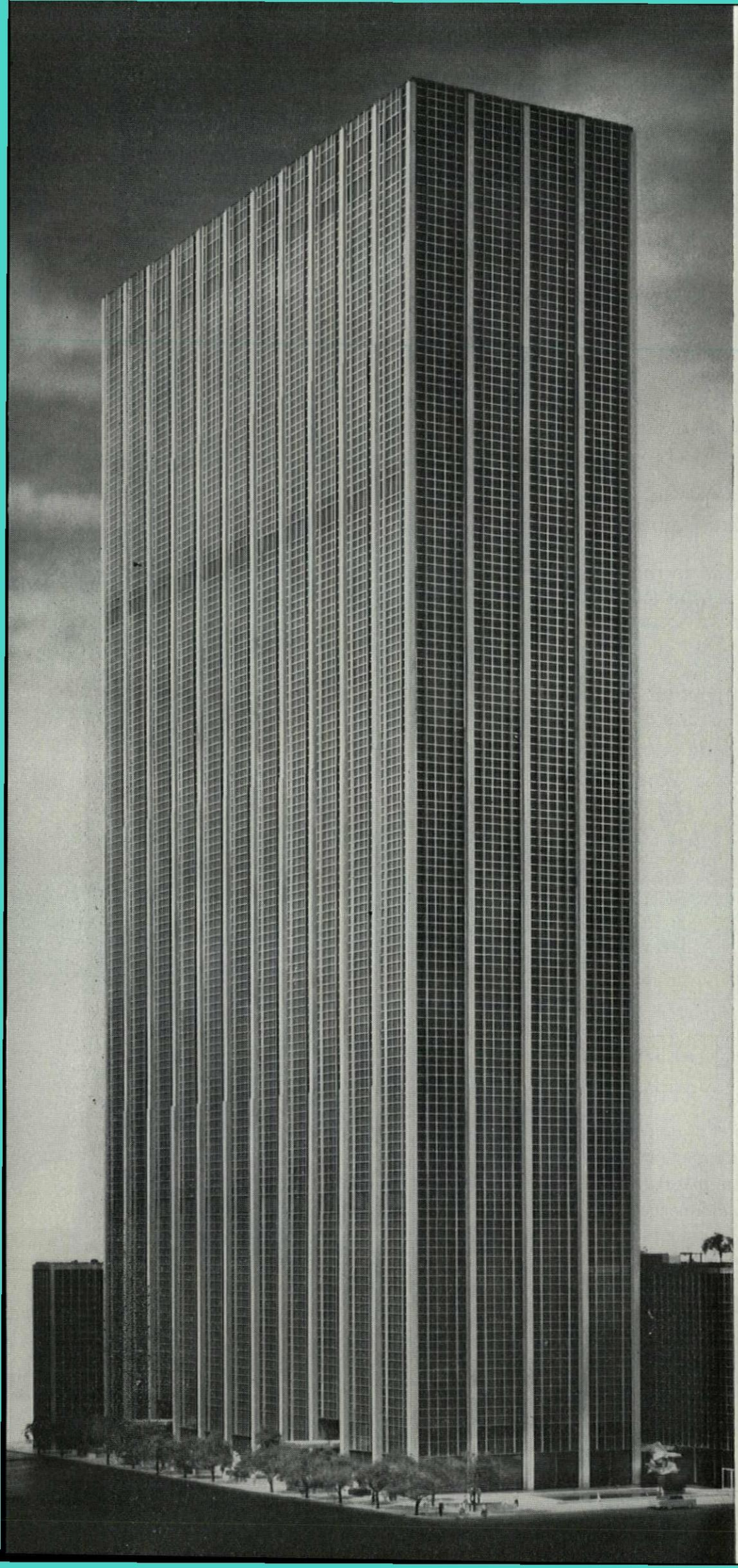

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Another New York skyscraper has been reinforced with USS American Welded Wire Fabric. This is Rockefeller Center's new forty-eight-story Time & Life Building, an outstanding example of contemporary architectural design. The exterior steel columns are 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. 0421, 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.

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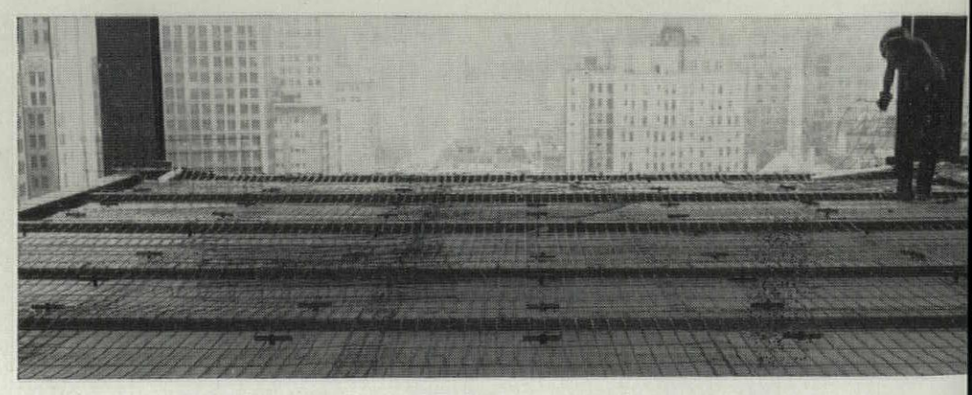
Short-span fabric-reinforced floor system in Rockefeller Center's Time & Life Building. American Welded Wire Fabric was furnished in long rolls and merely unrolled perpendicular to the beams and on top of the forms. It was draped from the top of the slab over the beams to the bottom of the slab at mid-span. 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.



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Fenestra's larger cells give access to many more cables from a single electrical access unit . . . require only half as many units (at up to $20.00 each) without sacrificing utility or flexibility.

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Saves up to 25¢ per square yard in a simplified system of drop hangers for suspended ceilings.

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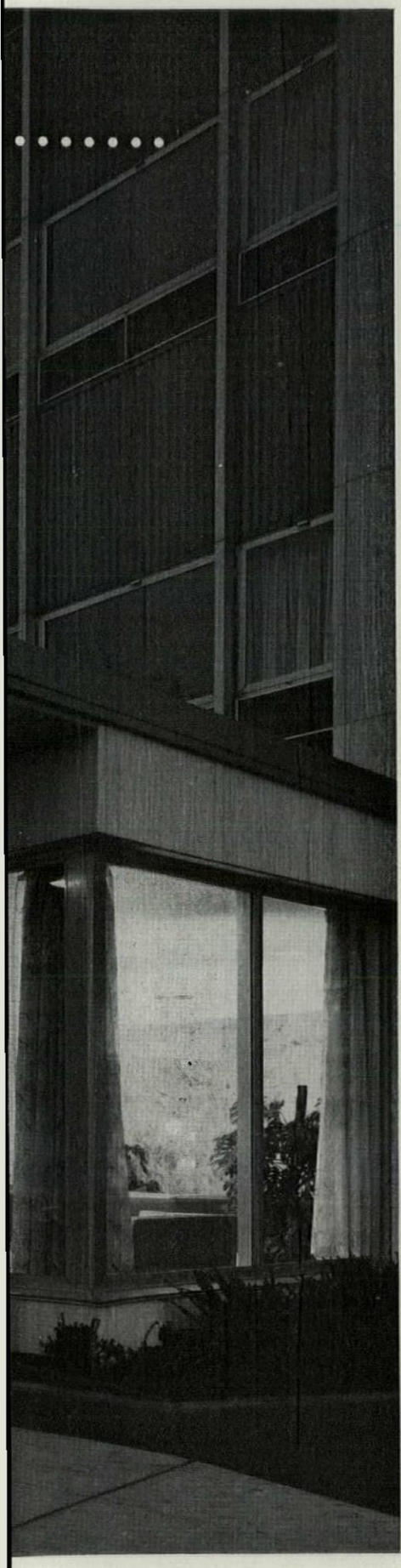
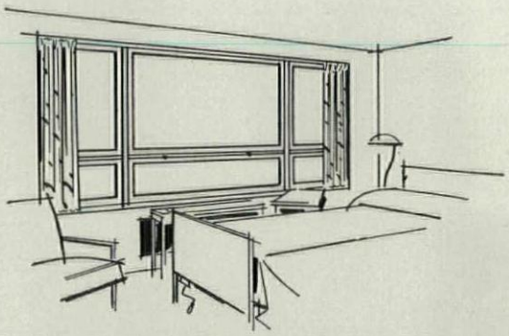


at St. Vincent's



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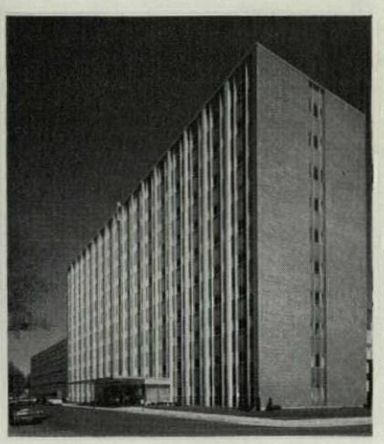

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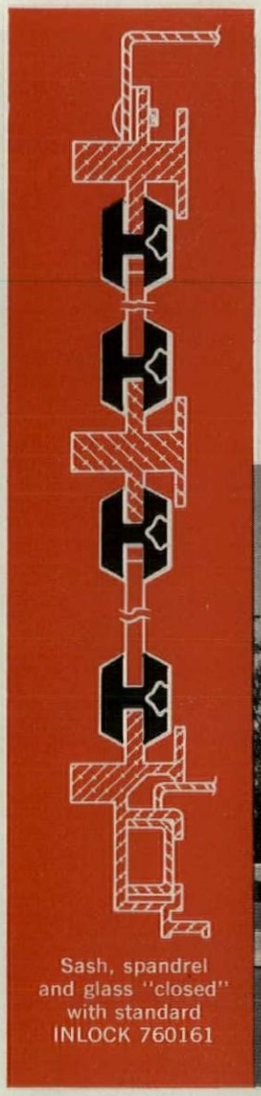

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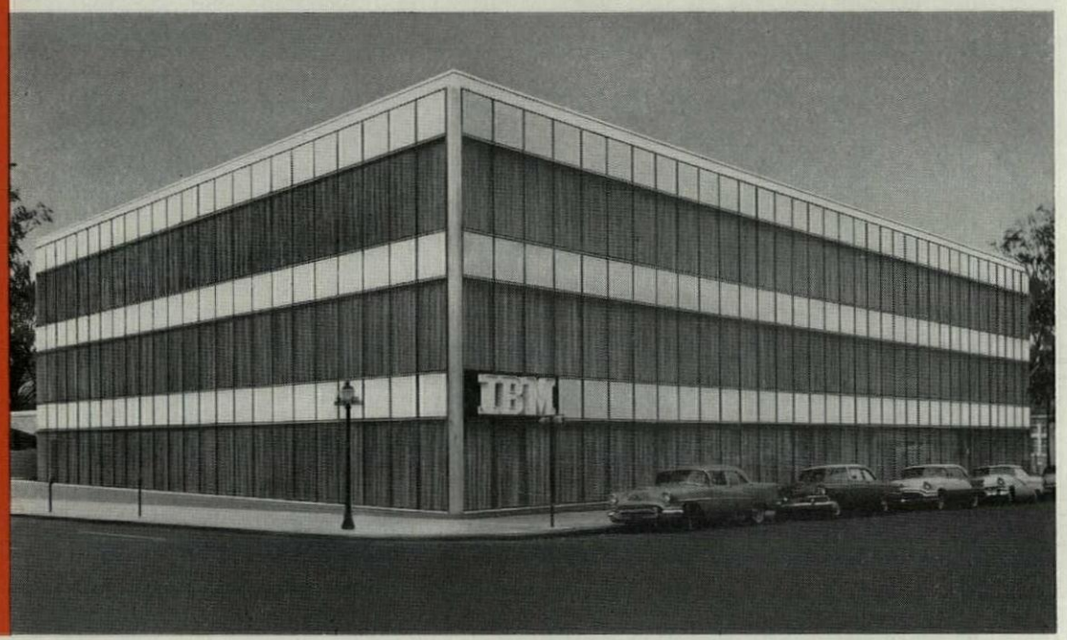
IBM curtain wall building uses INLOCK GASKETS for design simplicity and economy



Architect: Pedersen and Tilney, New York. **Contractor:** Kirby and McGuire, Inc., Baltimore

The new International Business Machines Office Building in Baltimore, Maryland, has individual Inlock Neoprene Structural Gasket assemblies to structurally seal its ¼" lights of glass and ¼" spandrel panels. The Building is an excellent example of design simplicity and economy, integrated into an eye-appealing curtain wall structure.

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Business Manager

Sworn to and subscribed before me this 20th day of September, 1960.

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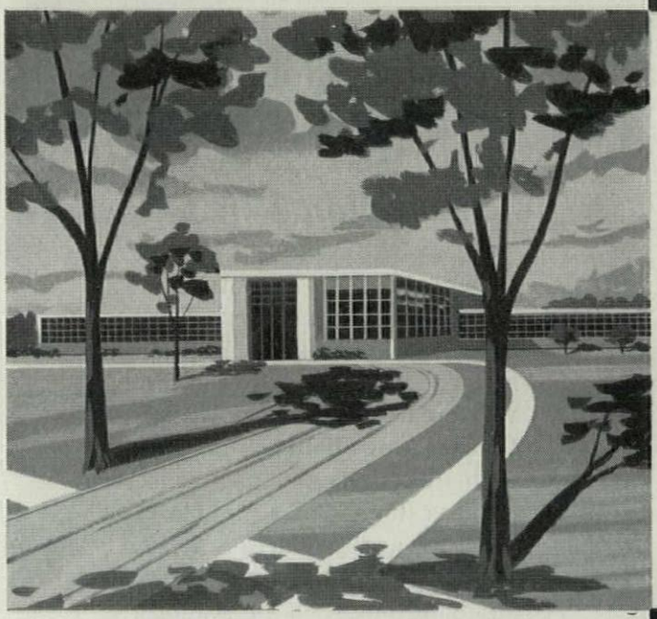

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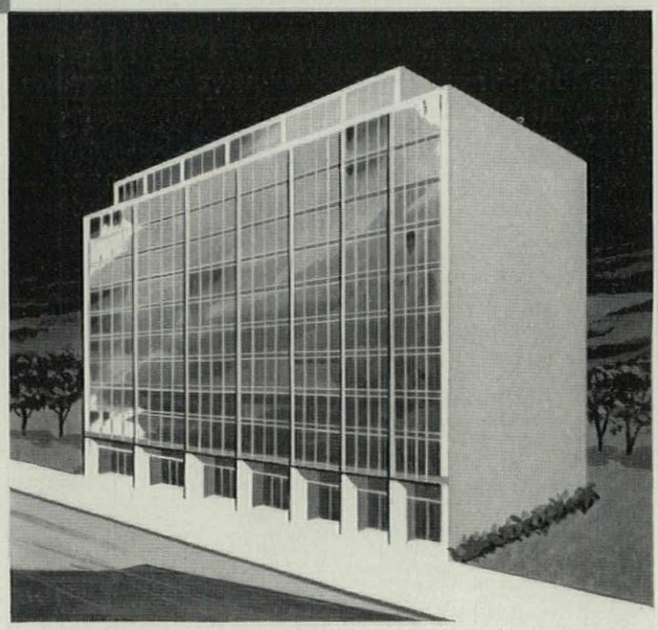

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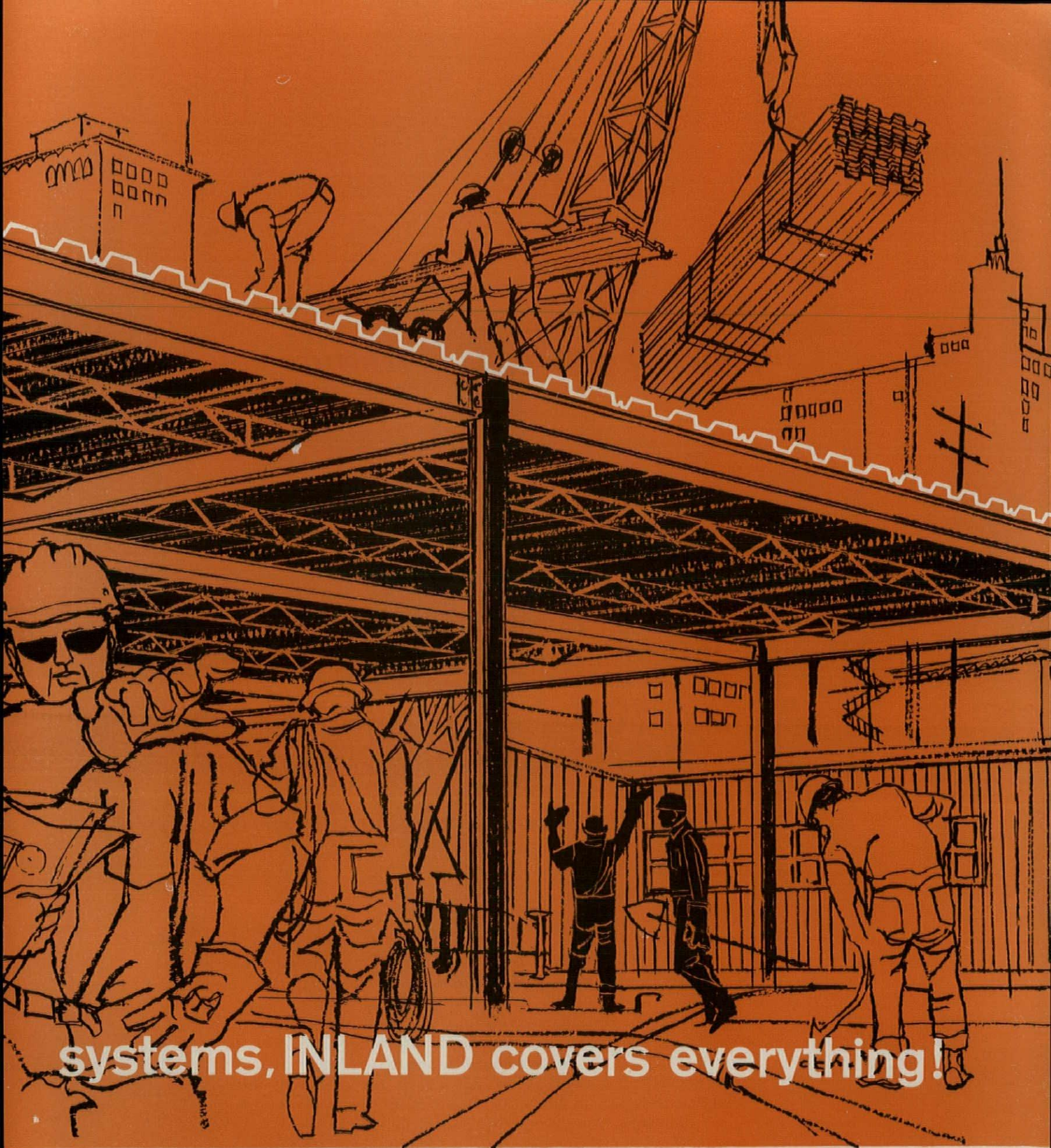

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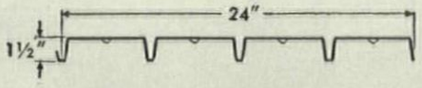

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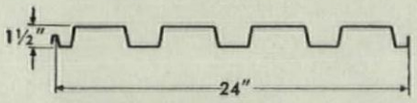
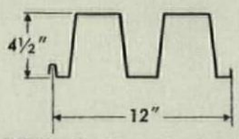
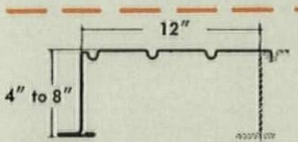


B-DECK—For spans to 10'0″. Wide rib distributes metal for greater structural efficiency—gives higher section properties per pound of steel — well suited for use as side wall panels.



C-DECK—Carries normal roof loads over spans up to 20'0″. Used extensively in canopies.



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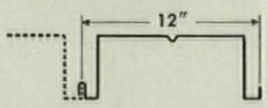

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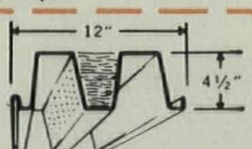

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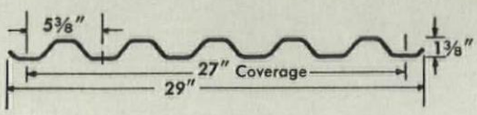
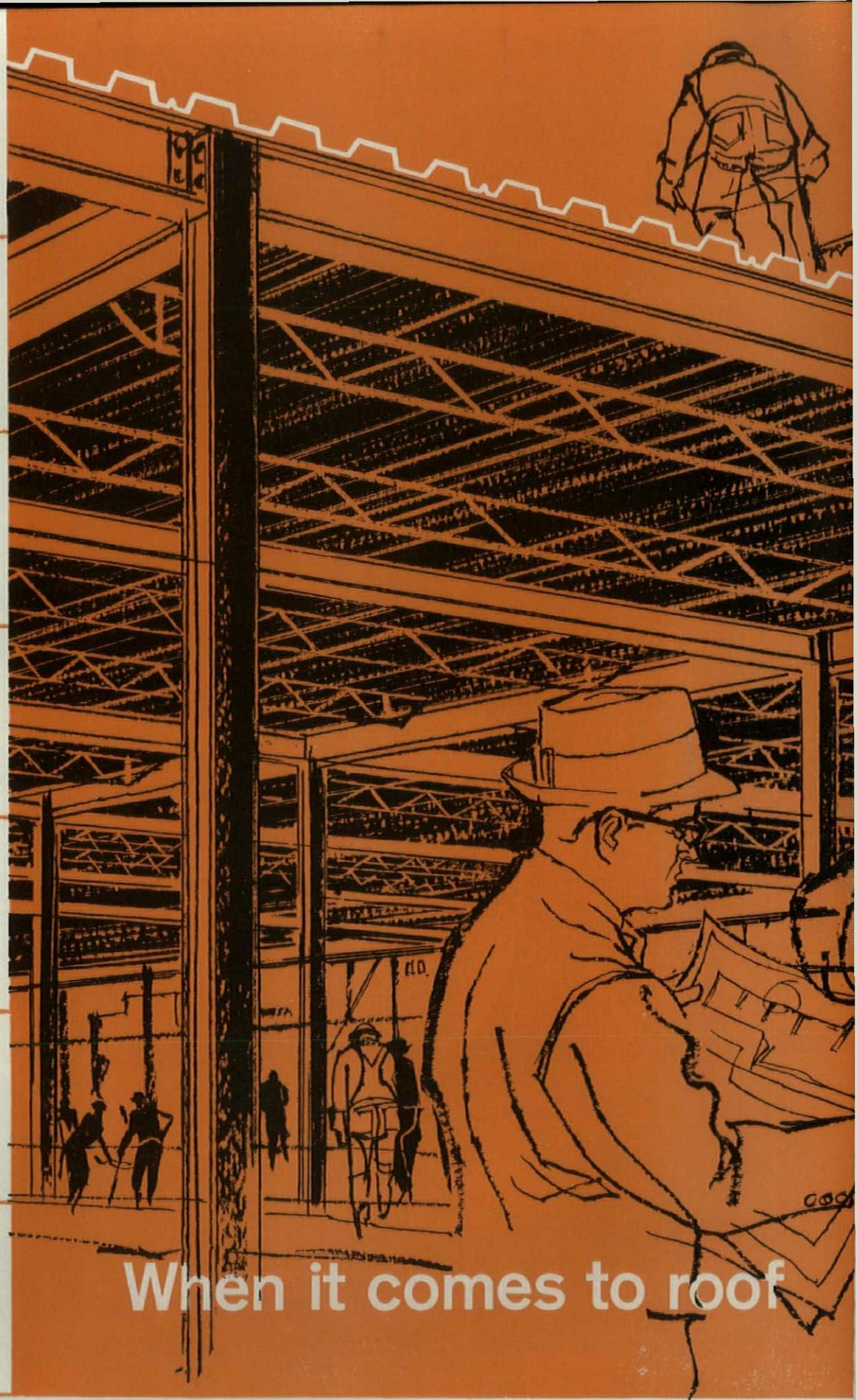


RIBFORM—High tensile steel form for concrete slabs over spans up to 8'0″. Three types: Standard, Heavy-Duty, Super-Duty (shown). Galvanized.



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Inland steel deck is lightweight — weighs less than half as much as poured-in-place or pre-cast construction. You can space joists wider than otherwise and use lighter framework, to save both time and money.

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proved at the time. (The biggest opposition to the Kansas City code revision came from labor, which feared it would open up new jurisdictional problems. For instance, electricians protested that under the new code, heating installation workers were given duties formerly done by electricians.) In St. Louis, a special code committee has been at work for six years, and has recently drawn up a new code following that of the Building Officials Conference of America. Architects and builders are hopeful that the new code will be adopted, and that it will mean increased activity in St. Louis. "Under the present code," says Architect George Kassabaum, "you could not afford to build a multi-story office building in downtown St. Louis."

The present St. Louis code was amended in 1954 to permit curtain-wall construction, but only in buildings of over 100,000 square feet. This sort of sop, which was intended to keep a large warehouse from being built elsewhere and still placate the masonry interests, makes a hash of codes. Yet it has also removed the obstacle to the new Mill Creek urban renewal apartment project, designed by Schwarz & Van Hoefen. These apartments use curtain walls, at a saving of $60,000 on the $5 million cost of the project, say the architects.

In Los Angeles, a group calling itself the Council for Better Buildings, which claims about 250 members, is stumping for an "escape amendment" to that city's aged code. The group favors a method whereby any qualified engineer or architect could certify any building system or material as to safety, strength, fire resistance, and other provisions of the code. Under it the city would have to prove a system is unsafe rather than force the architect or engineer to prove his method follows the code. While this proposal seems like a dangerous brand of construction anarchy to some, it is getting backing from many Los Angeles architects. The A.I.A. chapter for southern California is still officially backing a new performance-type code, however.

Although Los Angeles architects may disagree on what should be done to revise the city's present specifications code, most agree something should be done. Like the San Francisco code, Los Angeles' is a maze of restrictions, administered by officials who follow it rigorously. One structural engineer says the code "strangles all ingenuity and initiative," and adds, "a lot of engineers are terrified of the building department because of reprisals. They have been told if they don't conform and stop trying to get nonconforming items through, the department will make things rough for them." And yet department employees are seldom up to date on latest construction methods or materials, he claims.

In Los Angeles, as in Chicago and other cities, a major battle is being constantly waged over the use of prestressed concrete, particularly regarding its fire safety features. The American Cement Corp. has been prevented from building a 13-story office building by city insistence on complete fire testing, which means that every one of the 450 structural members would have to be subjected to furnace blasts. The testing would probably take eight months to a year, and American has started a court action to force a hearing on its position that the costly tests are unnecessary.

Even where newer, performance-type codes are in use, the stifling hand of bureaucracy can prevent modern building techniques. A Chicago architect says that one of the chief complaints in the city is that "the city building department does not keep up with the tests of the National Board of Fire Underwriters, so if a new product is developed and shows a certain fire resistance this is not recognized for a year." As in San Francisco and other large cities, officials are criticized for refusing to stray from the letter of the codes. Chicago, for instance, will not permit private builders to use prestressed concrete, but the city itself uses it for bridges. The same is true in Los Angeles, where public schools have used prestressed construction, although it is taboo in private work.

In the long run, Tabler's experience in San Francisco may do even more to foster the cause of sensible codes and code enforcement than his work as head of the A.I.A.'s code committee. And Hilton's refusal to abandon Tabler's design despite the heavy costs of fighting their case through the courts may prove to be a weighty factor in the larger battle for code modernization across the country. END

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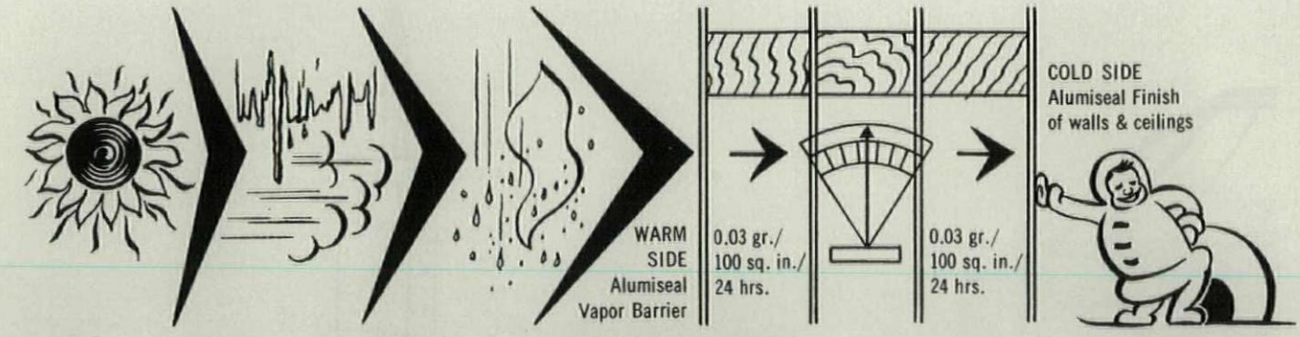

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CHICAGO'S PROGRAM FOR IMPROVEMENT *continued from page 113*

period has passed. The tax rate for buildings, and for other school items, is expected to continue to rise.

The board generally sells its bonds when municipal market conditions seem right, and invests whatever funds are not needed immediately in short-term government securities. Actual bond sales have only accounted for $160 million of the total $200 million authorized since 1951, but $175 million has actually been committed in terms of sites and schools already scheduled for construction.

Newest of Chicago's *sparkling elementary schools will be this one designed by Bertrand Goldberg Associates for 930 pupils. The school will have vaulted-roof classrooms of sprayed concrete arrayed behind a one-story glass-walled structure containing multipurpose and administration rooms. Total cost: $850,000, or about $17.10 per square foot.*

With 54,000 new classroom seats scheduled to be ready by January 1962, Willis believes he can see the end of the city's most pressing school problems. But he still wants to get classroom sizes down to an average of 30 (although he does not preclude team teaching, classroom TV, and other methods of handling very large groups) and to keep elementary school sizes down to an optimum of 1,200. Thus, Superintendent Willis will necessarily be involved in building schools for many years. In fact, the size of the Chicago school program alone makes Willis a bigger building client than all but nine of the 100 biggest on last year's list (FORUM, Oct. '59). As one of Willis' associates says: "Sometimes I think Willis is as interested in school buildings themselves as he is in the educational process." That exaggeration is probably the most cogent clue to Chicago's success in building a great many new schools—some of them very good —at low cost and in a relatively short time.

Willis himself is impatient to be out of the catching-up stage and get on to a fistful of favorite projects. Besides goals already mentioned concerning elementary and secondary schools, Willis has embarked on a junior-college program, in which seven high schools are being used by 22,000 students. This is an area where Willis believes great future educational development is in store, and where the school board must be prepared to meet the challenge. Willis is also enthusiastic about the city's new Teachers' College, now under construction, which will educate 2,100 teachers for the city's system, starting September 1961.

Chicago may not have found answers to all the problems of school building in the city, but it has at least been willing to meet them hand-to-hand. Certainly there is no major city that has so successfully attempted to bring meaning out of mass, to delineate human scale in the midst of urban congestion.

BALLOON FOR PEACEFUL ATOMS *continued from page 145*

strong consciousness of the architectural envelope." To be sure, his air-lock has a strong exterior image too, its form growing out of the functions it contains and the nature of air structures. But it is a pure shape, in that it fills three basic requirements, within the limits of an air structure:

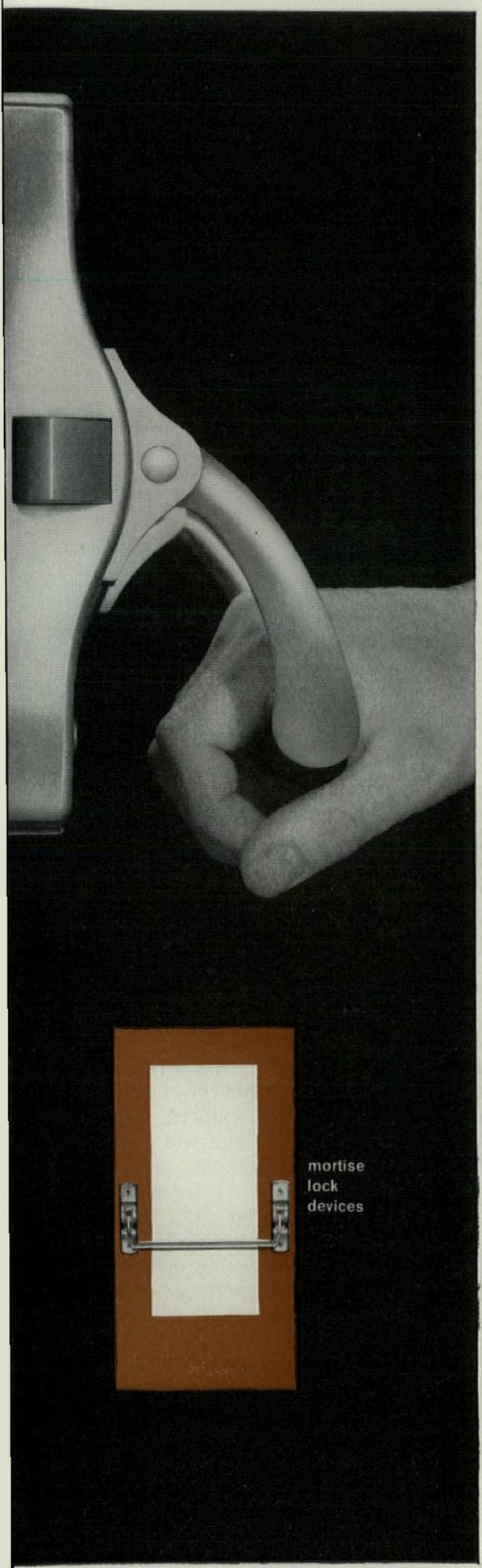
- Portability: it can rapidly be assembled and disassembled.
- Plan and section: the physical requirements of the exhibit are expressed by the building form.
- Acoustics: the roof configurations atop the interior areas are molded to avoid the reradiation of sound energy to the center of the exhibition areas.

The building's interior image is totally subordinated: Lundy illuminates the complete interior periphery with dark blue lights. The impression inside the exhibit is one of darkness, with a dark blue glow overhead on the vast vaults that outline the interior walls that undulate in both plan and section (see plan, p. 144). The exhibits themselves are brightly lit, so as to be dominant in their contrast with the darkness. Says Lundy: "The structure inside will be denied and the content of the exhibit will have a better chance of getting through."

Lundy's floor plan is a labyrinth, so organized that each visitor must walk past each element of the exhibit. The first stop is the 330-seat theater, where he will see a ten-minute film on a triple screen on the peaceful atom. Then he will move to a sweeping passageway, which will take him to the technical center. In the midst of the technical center is a working nuclear reactor, where the visitor will see scientists conducting experiments with small groups of students. A special, transparent, plastic bubble—an air structure within an air structure—encloses the reactor, extending almost to the top of the dome. The bubble will allow visitors to have a clear view of the equipment without allowing them access to the laboratory area.

The area surrounding the reactor bubble will contain a cobalt-60 irradiation facility and a variety of other nuclear equipment. And adjacent to the technical laboratory will be a series of lecture areas in which visitors can hear about such aspects of the nuclear science as the use of reactors in electric power production, the use of radioisotopes in industry, medicine, and agriculture. Finally, still following through the labyrinth, the visitor will enter an area devoted to safety and the peaceful atom: how workers are protected against radiation, how remote-control manipulators are operated behind leaded glass and concrete shields, etc.

South American scientists, engineers, technicians, and students will be encouraged to participate in this program, which is intended to provide them with the latest developments in harnessing the peaceful atom for the benefit of mankind. The envelope sheltering this exhibition should provide other groups of engineers and students, those involved in the building science, with ideas which are as stimulating in their way as the atom exhibit itself.



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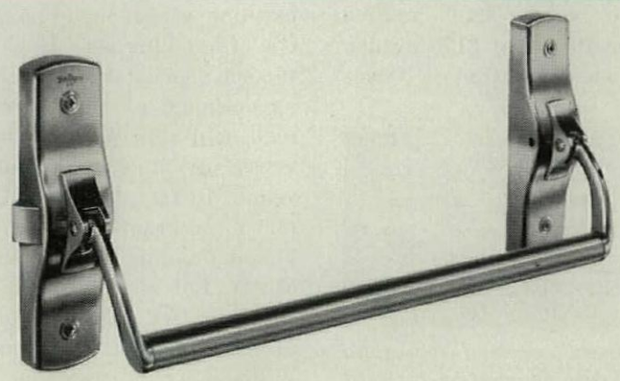

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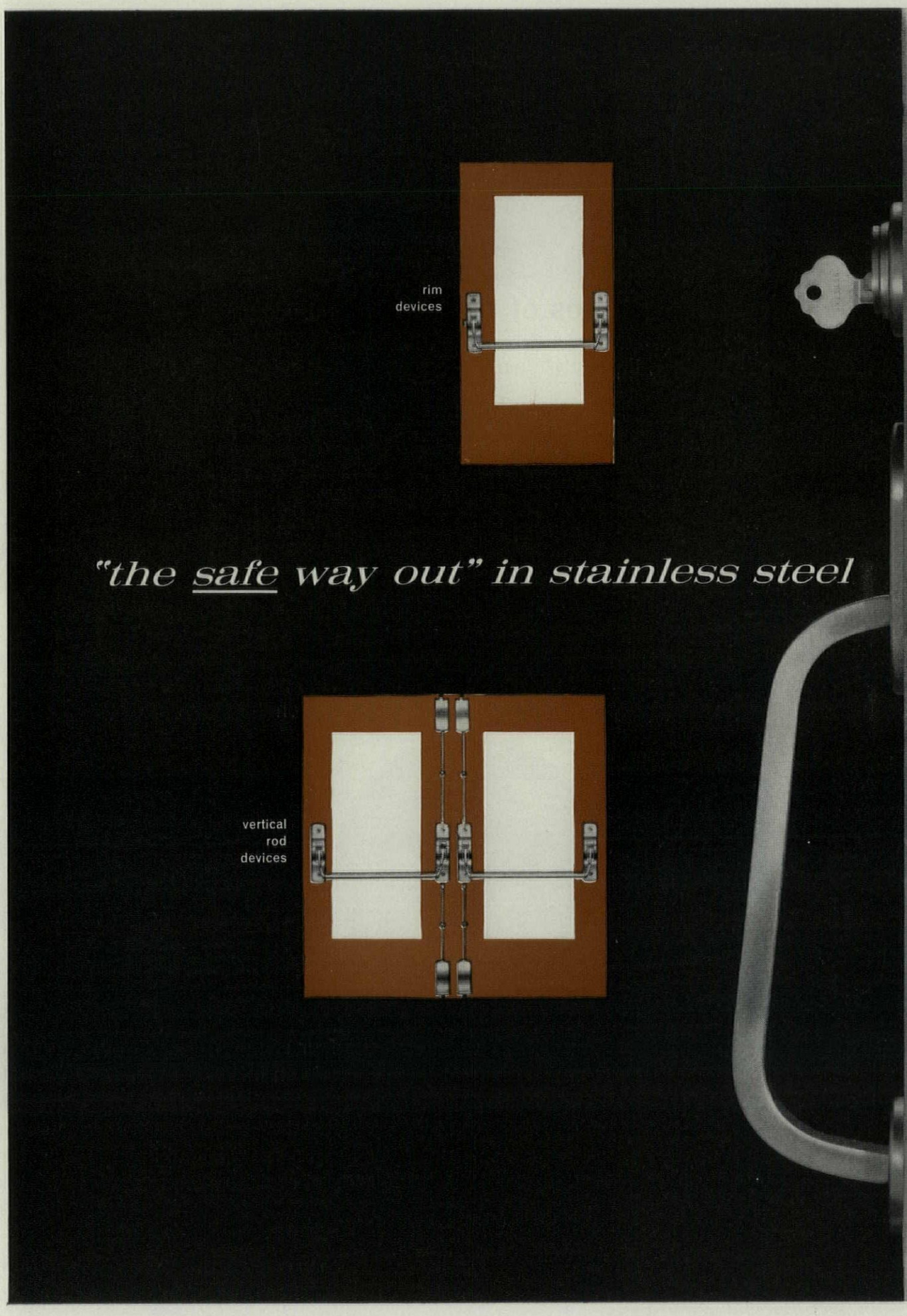
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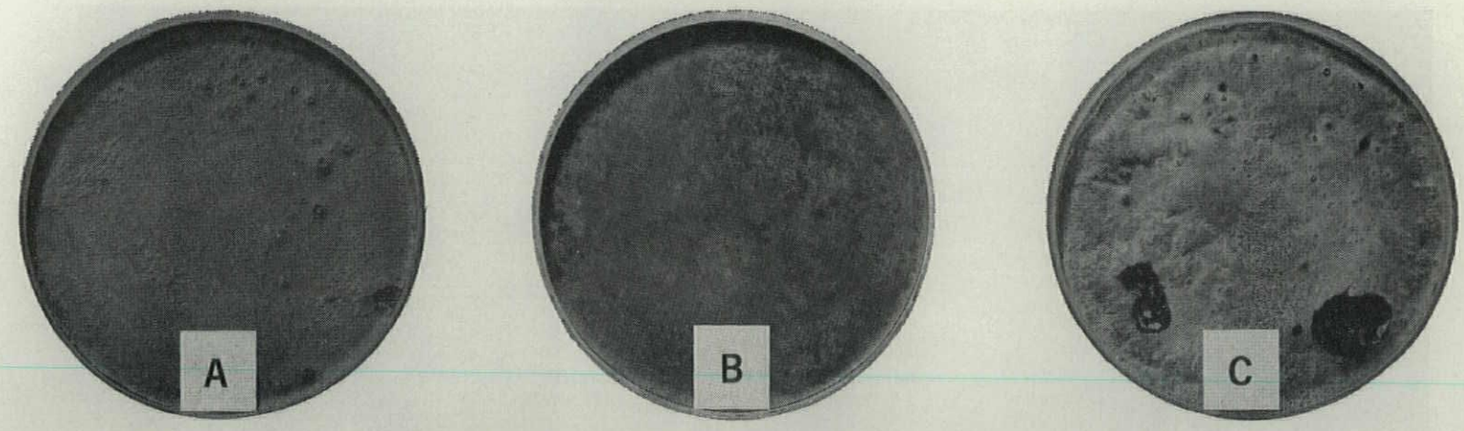
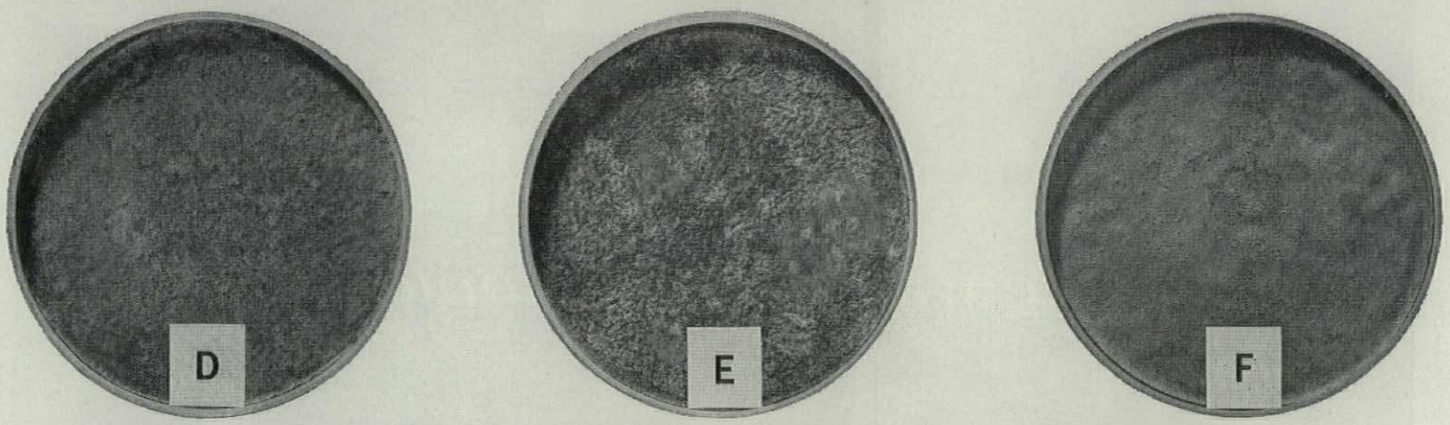
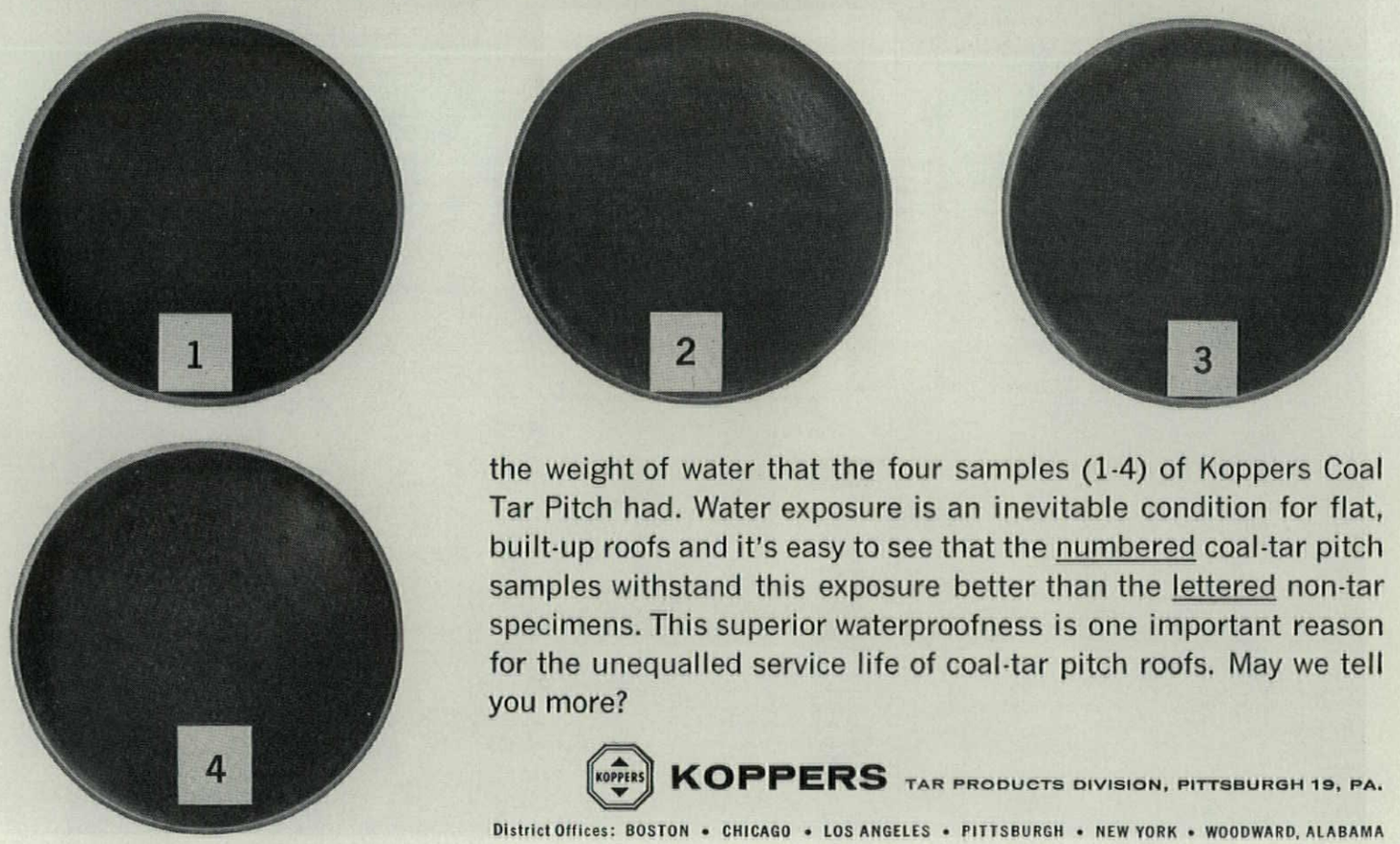


These are <u>not</u> photos of the moon, but unretouched pictures of 9/16"-deep Petrie dish samples of various types of bituminous roofing materials. Prepared in an identical manner, these 5½" diameter dishes were all subjected to 687 days of



continuous water immersion at 65° F. Periodically, they were removed from this bath and weighed: the six samples (A-F) shown above had soaked up, on the average, 11 times



the weight of water that the four samples (1-4) of Koppers Coal Tar Pitch had. Water exposure is an inevitable condition for flat, built-up roofs and it's easy to see that the <u>numbered</u> coal-tar pitch samples withstand this exposure better than the <u>lettered</u> non-tar specimens. This superior waterproofness is one important reason for the unequalled service life of coal-tar pitch roofs. May we tell you more?

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ness has risen only 5 per cent. State and local debt has increased in the same period by 309 per cent.

Only a federal-aid program, with matching provisions, makes it fiscally and politically possible for local and state officials to move ahead in such specialized and imaginative programs as urban renewal.

This is not a matter to be tagged as a "liberal" or a "conservative" program. But if I had to find a word for it, I would call it "truly conservative."

FUND FOR HOUSING

In Pittsburgh a new way through the obstacles confronting low-income housing has been found by ACTION-Housing's unique development fund. The fund, an object of envy for other cities, was recently described in a speech by ACTION-Housing's chairman, J. Stanley Purnell.

The development fund was established to increase the supply of sales and rental housing for moderate-income families in the Pittsburgh area by furnishing needed intermediate equity capital to private builders and developers. The development fund was launched September 1959, and given impetus toward its $2 million goal by grants totaling $350,000 from the three Mellon Foundations.

For several decades now, rental housing's prime problem has been the difficulty of attracting soundly motivated equity capital. The development fund, we believe, will show how such capital can be provided in Pittsburgh, and thereby serve as a pattern for other cities throughout the Nation.

As for sales housing, the fund will enable experienced, capable builders of proven ability, who are unable to finance land development on a large scale, to move into the mass market.

These are the objectives of the development fund: 1) to increase substantially the supply of good sales and rental housing for moderate-income families in the area; 2) to achieve significant advances in community and housing design by utilizing new housing materials and components, technology, production, and financing methods; 3) to complement the Pittsburgh Renaissance program.

Parallel with our efforts to cause new housing to be built is our work in the interests of upgrading and modernizing old, but still sound, houses and neighborhoods. We have half a million housing units in Allegheny County. This inventory is increased with new housing by only 1½ per cent in any current year. Our existing inventory is a crucial asset. It must be preserved and restored.

LET THEM LIVE THERE

A suggestion for the education of rule-ridden urban renewal officials was made by Architect Chloethiel Woodard Smith writing in the Chesapeake Bay Region "Architects' Report."

Perhaps every official in every agency remotely connected with urban renewal should have to spend several days living in each new project and have his official and nonofficial friends visit him there. Then he should have to write a report on why he did or didn't like living there and what his friends thought. Following this, he should be required to attend a conference with the developers and the architect, hear the full story of the project and how each agency and all agencies together affected its development. If the architect did not include certain features the "rules" wouldn't allow, he'd present these at this time. The conference would be attended by a goodly representation of people who live in the city but don't help build it—and who could ask questions. Finally, a top reporter would write all this up: is this project a better and more beautiful place to live; do people really want to live there and why or why not; is this how we want to rebuild our cities? END

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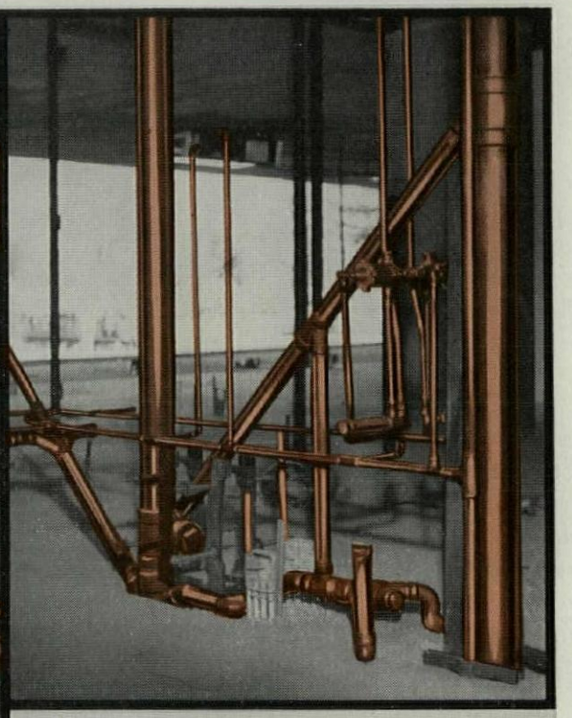

Since the entire supply and drainage plumbing systems are contained in the walls of the new Palo Alto apartments, the smaller size and lighter weight of copper are essential factors. One unique innovation in this piping system is that many of the lines which customarily would be run horizontally have been installed diagonally, thus eliminating the need for pipe hangers. (Note the photo above). Copper was also used for all heating and cooling lines in this modern structure.

Even complex plumbing assemblies can be quickly put together with a minimum number of joints when Streamline DWV copper tube and solder-type fittings are used. The work is faster and the completed job assures a life-time of clog-free, rust-proof, leak-proof plumbing service . . . and copper costs no more than rustable piping materials. More and more architects and engineers, builders, and owners are specifying Streamline copper tube and solder-type fittings . . . the modern plumbing material for supply and drainage systems.

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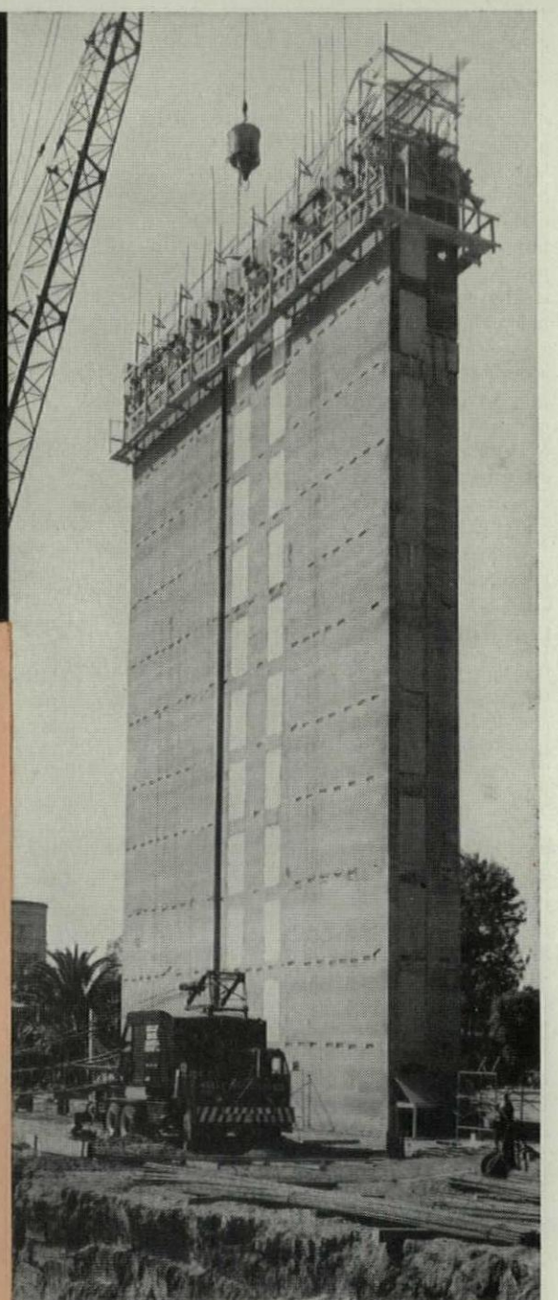

The first application of "slip-form" central core construction in the United States has been employed in the erection of the new 101 unit Palo Alto apartment building. With this method, the form in which the concrete is poured rides on high strength steel rods equipped with hydraulic jacks. The slip form is progressively lifted to each elevation after the concrete has been poured and allowed to set. By using this system, the 15 story core of the building was completed in 5 working days at an estimated saving of 8% on labor costs. Pre-stressed slabs, poured in place, serve as both floors and ceilings in the core. This Swedish-originated method has been used extensively in this country for bridge piers and storage silos, but is completely new in the construction of buildings.

Architect for the new Palo Alto apartments is William F. Hempel, AIA. The North State Builders Ltd. own and are constructing the 15 story building; engineering was by R. B. Welty of Modesto with H. B. Brewster, Fresno, consulting. The plumbing is being installed by the Herman Lawson Company of San Francisco. According to Mr. Hempel, the location of the utilities in the central core of a building sometimes creates problems in relation to local codes. But, in the case of the Palo Alto apartments, the city of Palo Alto changed code requirements so all plumbing in the building could be copper.

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Crossroads . . . liberal cities . . . conservative arguments

ARCHITECTURAL CROSSROADS

In his response to a request for an editorial for a student-edited number of "The Arizona Architect," A.I.A. President Philip Will Jr. included this thought:

The failure of a profession to discharge its responsibility is not long tolerated by a dissatisfied public. This is especially true of those concerns collectively recognized by the organized professional associations or institutes as obligations to the public welfare. A dissatisfied public appeals to government. Thus, for example, if the public feels its medical needs are not adequately met, the medical profession loses status, freedom, and independence to socialized medicine, doctors become employees of the state. Patients are assigned and the fees are fixed. The consequences to this nation's fundamental philosophies of government and economics are far-reaching, self-evident, and require no elaboration here.

We in architecture are at a similar crossroads.

LIBERALISM AND THE CITY

Charles Abrams, noted urbanist and housing expert, continues to regard cities as the wellsprings of our free society. His views were recently presented in the 1960 "Housing Yearbook."

The population of the U.S. is expected to double by the end of the century, and 97 per cent of it will be urban. Our teeming cities have only begun to teem.

The broad view of soil and sky will shrink for these people to a world of pavements and crowded houses. To escape freedom from want on a gullied acre, a man may acquire enslavement to a routine. To win liberation from boredom, he may find only the new vassalage of the machine. To gain security against a precarious tenancy, he may face enchainment to a usurious debt. But it is futile to debate which was the better life, for the die has been cast.

There can be no real freedom in the cities without relief from the frustrations of the city environment, and hope for those who are different. From the alien and sedition laws to the current racial crisis, the threat to freedom has been mainly an assault upon the rights of a minority. The chief test of freedom today will be the degree of freedom apportioned to minorities—not only Negroes but also Puerto Ricans, Latin Americans, and underprivileged whites.

Equal rights means more than just equal access to jobs, housing and public facilities. It means also an affirmative program to equalize the chances of minority children for sharing in life's potentials. This will require research into their needs and frustrations. It will call for encouragement of leaders who can help their fellows see their real goals and work to attain them. It will demand a reaffirmation of the city's role in the struggle to maintain freedom. Yet if the past is a guide, it will be the cities which will provide the impulse and the example.

THE CONSERVATIVE ARGUMENT

The argument that federal assistance to cities is inflationary and involves a loss of freedom was effectively countered by Gustave G. Amsterdam, president of the Bankers Security Corp., talking before a conservative Boston audience.

The federal establishment can well afford to commit itself to a long-range program moving up to $1 billion a year for urban renewal without destroying the solvency of the nation. Urban renewal is almost certainly a self-liquidating process for the federal and local governments. The statistics show that more than $5 in new private investment is spent for each dollar of federal expenditure. On the basis that federal and local taxes take more than 20 per cent of the gross national product, in which the stimulated investment in urban renewal is surely figured, the taxing bodies regain the public investment in the very early years of a renewal project's accomplishment.

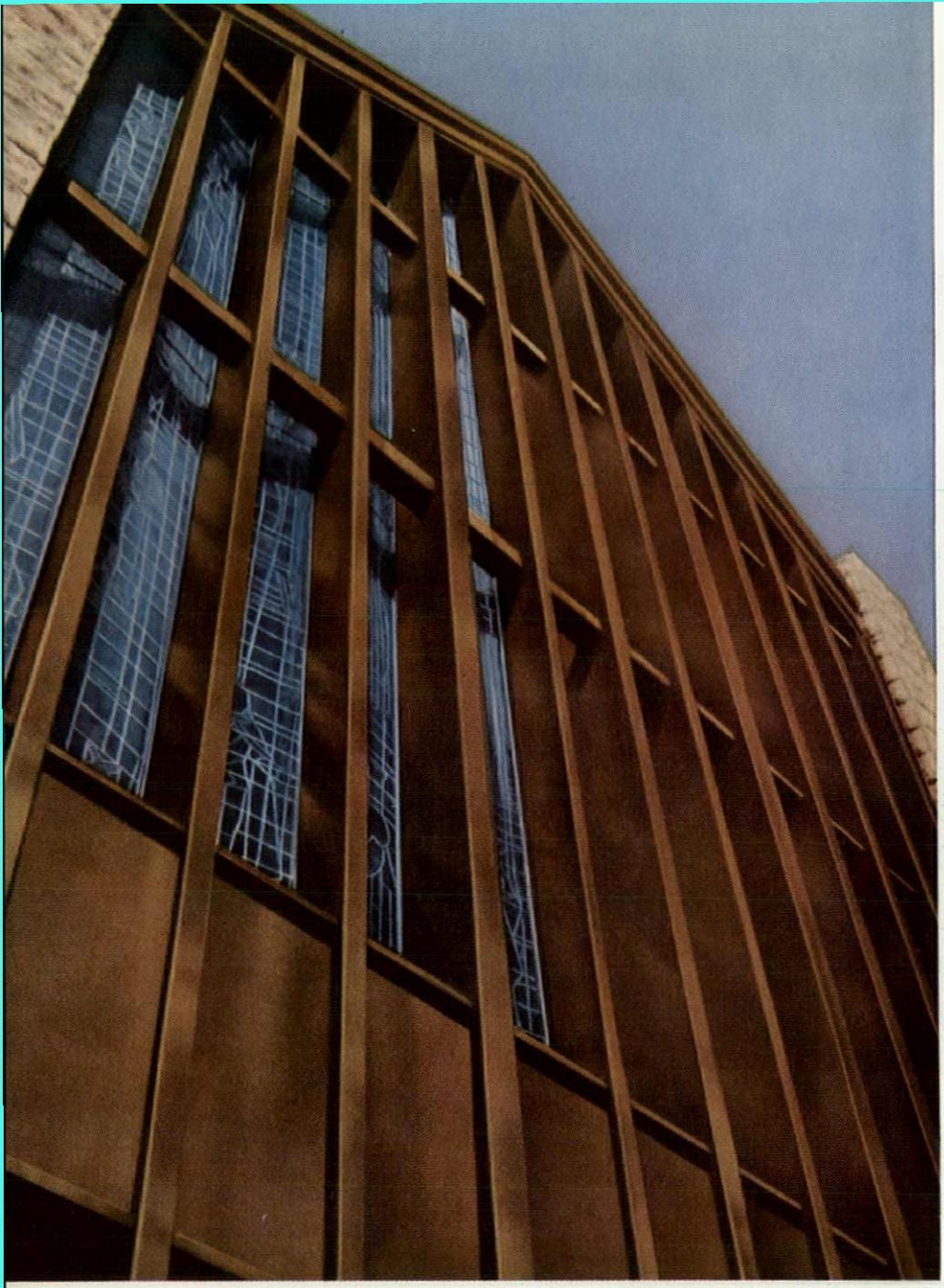
And the local taxing bodies continue to reap benefits for many years to come because of the gain in taxable values that well-planned urban redevelopment creates.

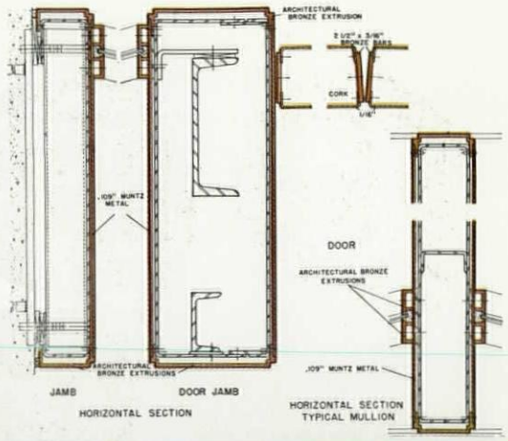
We cannot take refuge in a solution which advocates leaving the whole responsibility to state and local governments. I do not like to be suspicious of the motives of other people, but it almost always seems as if the advocates of this course actually do not care whether a given program is carried out or not, for it is, of course, no solution at all.

The states and cities have been hard pressed, and—if they are not at the end of their resources—they are heavily committed to operational costs for their present responsibilities.

To illustrate: since 1946, federal revenues have risen 74 per cent, which is less than the percentage of growth of the economy; meanwhile, state and local revenues have tripled. The federal government still collects 63 per cent of all tax revenues—but this is down from 77 per cent in 1946. Since 1946, federal indebted-

continued on page 200





St. Andrew's Episcopal Cathedral, Honolulu. Here bronze in the soft statuary finish complements the grace and dignity of a contemporary Gothic design. A wise choice of standard materials made substantial economies possible. Drawing above shows how Architectural Bronze extrusions were used for pilaster faces and corners. Flat surfaces are of Muntz Metal sheet. Bronze facing on doors is bonded to a reinforced sheet steel core. Architect: Carleton Monroe Winslow, Beverly Hills, Calif. Fabricator: Cochran-Izant & Co., Los Angeles, Calif.

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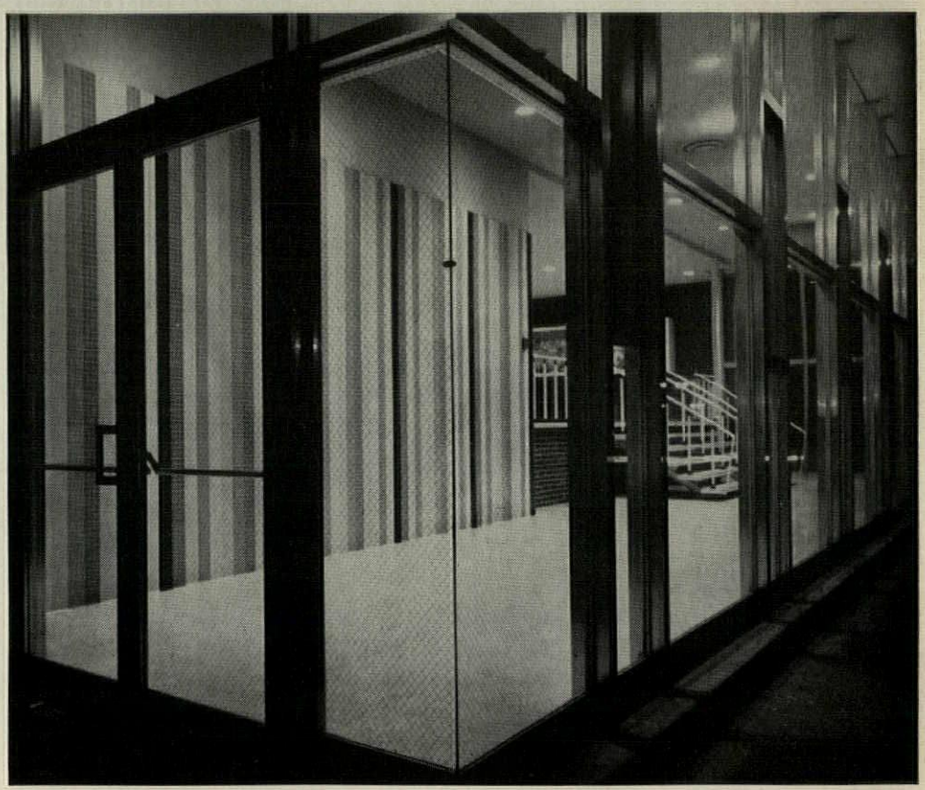

Polished Misco Wire Glass glazed in main entrance of Hellertown High School, Hellertown, Pa. *Architect*—Heyl, Bond & Miller, Allentown, Pa. *Contractor*—Gottlieb-Schneider, Bethlehem, Pa. *Glazing Contractor*—Penn Allen Glass Company, Allentown, Pa.

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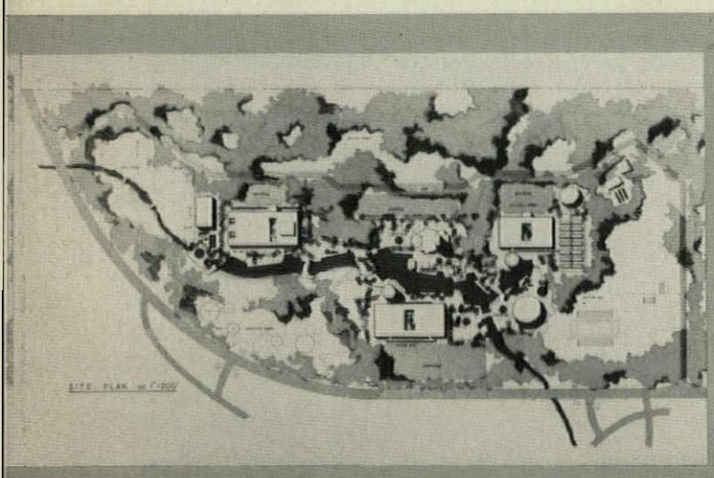
...from comments by the Jury

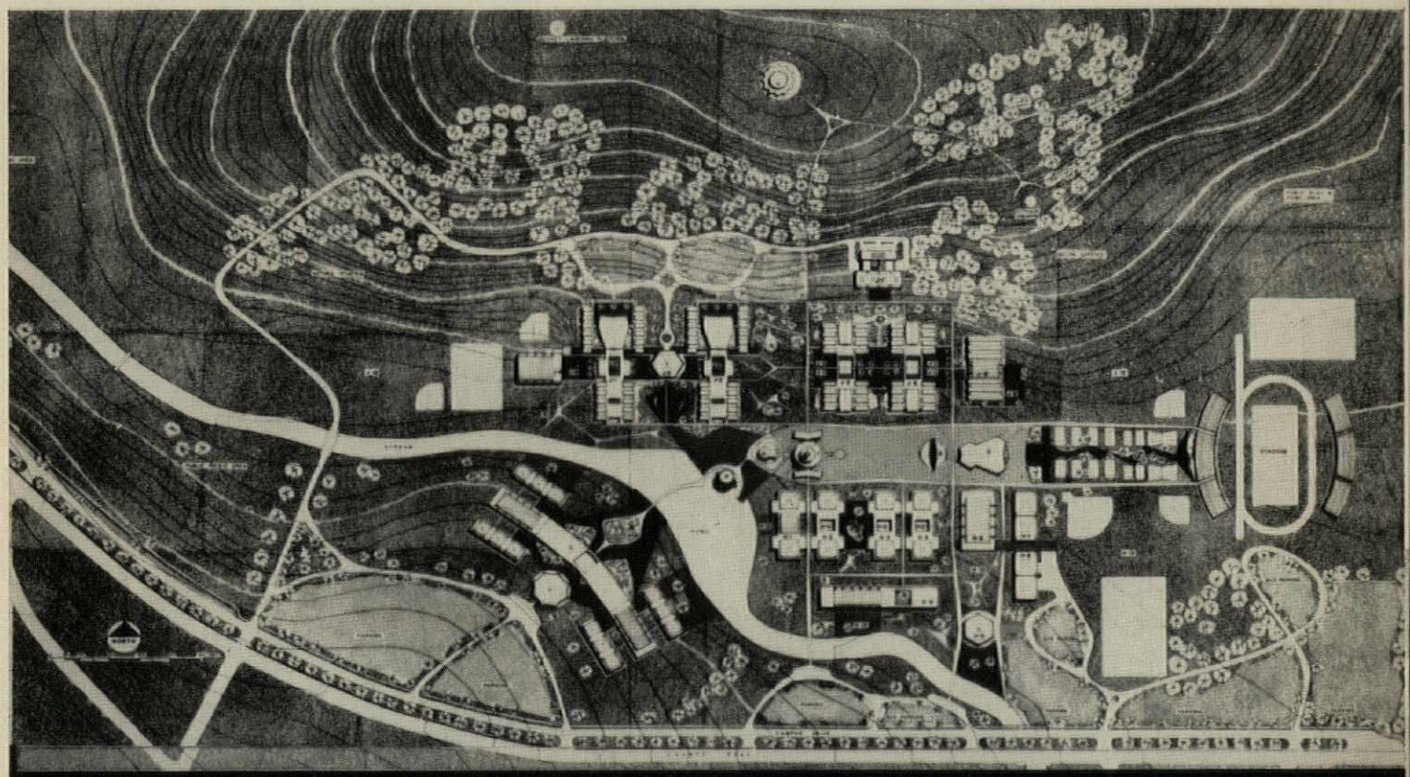


STUDENT DIVISION

1st prize

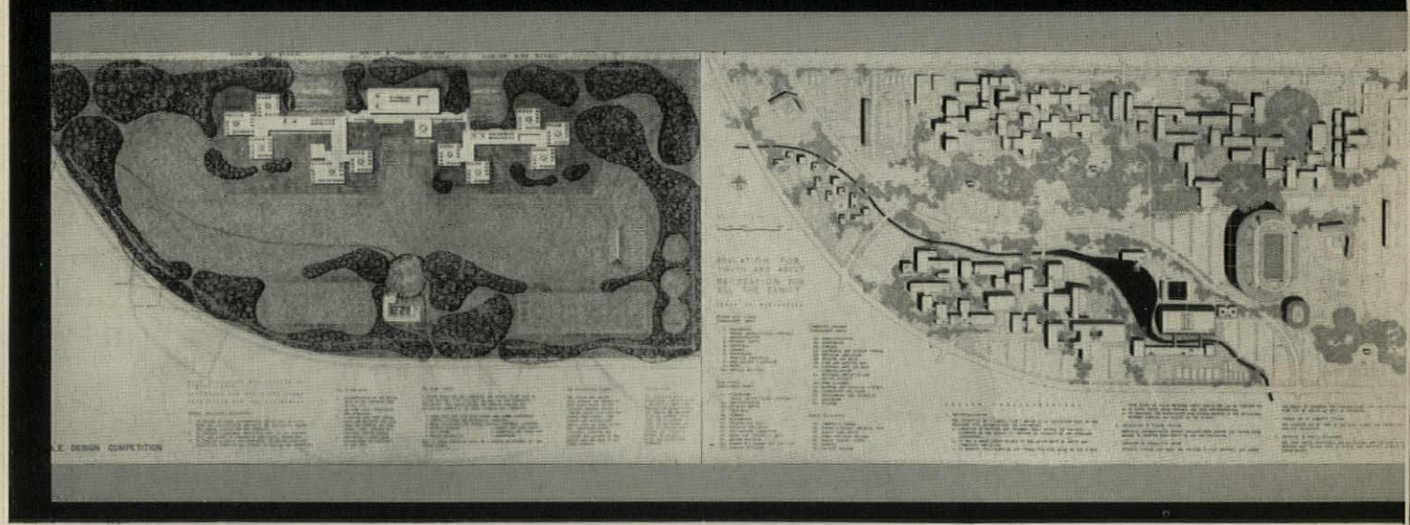
John Scarlata, Pratt Institute. — "The design was particularly liked for the development along the water's edge, and related the community and educational facilities very well."

1960 AWARD



GRAND PRIZE

Edward Colbert, A.I.A. and Alfred J. Petrilli. — "The main feature was the total plan, with center of plant revolving around the information center. Most impressive."

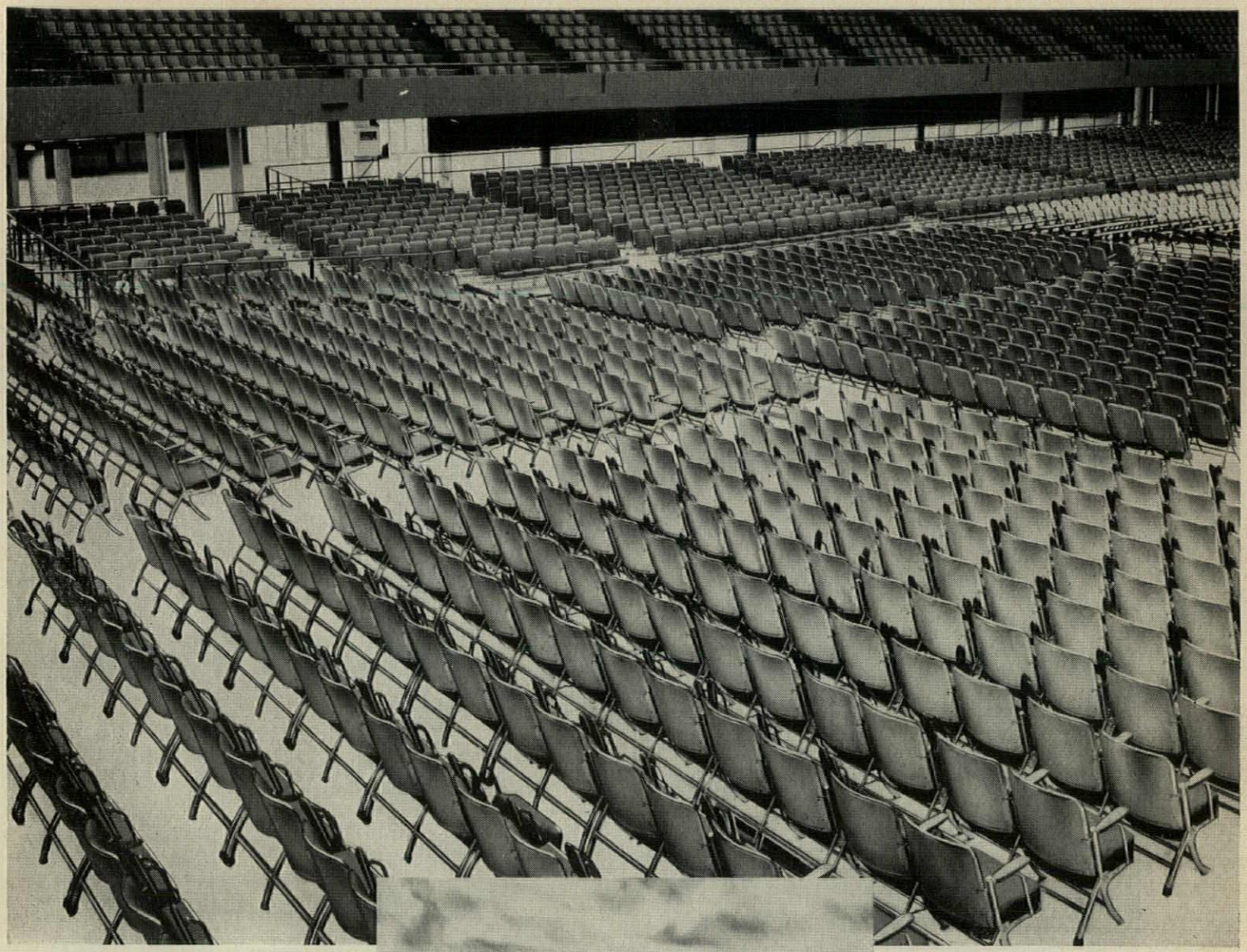


2nd prize

Edwin F. Harris, Jr. — "The accent is on planning, with Junior High School, High School and the College planned on one very large space module."

3rd prize

Marvin Hatami. — "It is one of the best decentralized plans; for instance, the Junior High School itself is ten or so buildings. A well-integrated job."



A partial view of the Arena floor with Heywood-Wakefield Portable Chairs. Architect: Welton Becket & Associates.

Seating arranged through B. F. Shearer Company: Los Angeles, San Francisco, Seattle, Portland.

Important Lesson from the Political Campaign

Right to Comfortable Seating Established at Los Angeles Memorial Sports Arena

Long after the tempest and turmoil of the present campaign are forgotten, those who attended the convention in Los Angeles Memorial Sports Arena will remember the solid comfort provided by Heywood-Wakefield portable chairs. Comparable to permanent seating in appearance—equipped with coil spring cushion and generously padded back—Heywood-Wakefield T 289 FA De Luxe Tubular Steel Portable Chairs are kind to the entire body. In addition, independent folding seat and arms permit close back-to-back spacing and storage in minimum space.

Write for new Auditorium and Theatre Seating Catalog.

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AUDITORIUM and THEATRE SEATING
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region's 15 million people live in communities which meet the minimum standards of 10 acres of park per 1,000 population. Item: the pace of park acquisition is actually declining in the face of growing population, per capita income, leisure time, and recreation demands. Item: to keep abreast of growth, the region will need 1,100 square miles of open space beyond the 590 now permanently set aside; of this figure, 860 square miles designated for public recreation would cost $1.9 billion to acquire at 1960 prices (the average annual cost per person beyond current expenditures would be between $3 and $4, hardly an insufferable burden for the average citizen to carry). The report recommends the creation of ten new regional parks from Montauk to the Delaware Valley, calls for a tripling of local recreation acreage by 1985. It also endorses principles of cluster planning and residential commons, the purchase of conservation easements to keep land in its natural state, and the creation of a privately financed foundation to acquire critical acreage until it can be transferred to public ownership. The New York region, and others, would do well to heed the call.

WENDEPUNKT IM BAUEN (Turning Point in Building). By Konrad Wachsmann. Published by Krausskopf-Verlag, Wiesbaden, Germany. Available through Wittenborn & Co., 1018 Madison Ave., New York, N.Y. 239 pp. 9½" x 10½". Illus. $12.

Konrad Wachsmann, the brilliant architect-engineer and structural innovator, has been busy, between trips around the world, putting together a remarkable statement of his beliefs about the present and coming revolution in building.

Wachsmann's book starts, approximately, with Paxton's Crystal Palace of a hundred years ago, pointing out that this was not merely a radically new sort of structure (iron and glass), but a radically new kind of assembly of prefabricated, identical parts. Bridges, towers, space-frames—all these Wachsmann analyzes in terms of the new technology they represent, and in terms of the new esthetic which is part and parcel of that technology. For Wachsmann is, in reality, a romantic artist merely disguised as an engineer (probably because this is a better time for engineers). So while he talks of the industrialization of building, he really dreams of the etherealization of structures. This, of course, is one reason why Wachsmann is such a good teacher, and why this is such a beautiful book.

Although Wachsmann pays occasional lip service to the sort of shell structure that seems increasingly possible as plastics become stronger, his heart really belongs to the space-frame and the beautifully complex joint which this weblike structure demands. "Wachsmann has a bad case of jointitis," one of his friends used to say. Possibly so; but Wachsmann's joints are lovelier than anything on view outside a paddock. END

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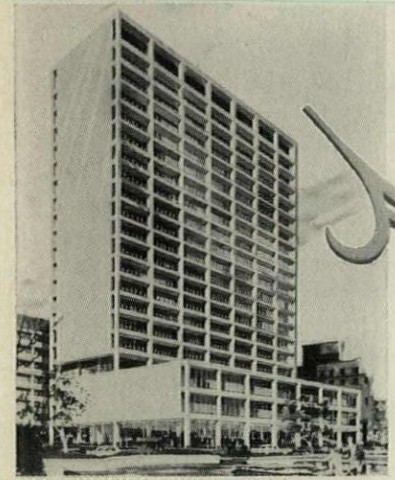
MD CORPORATION
Pittsburgh, Pa., Gerard & McDonald, Architects and Engineers; M. W. Stuldreher, Assoc. Arch.; Ragnar Benson, Contractor.



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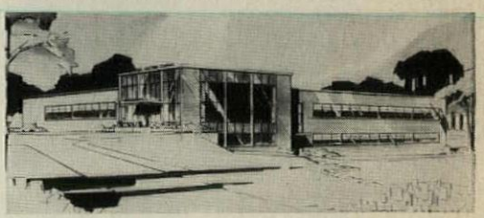

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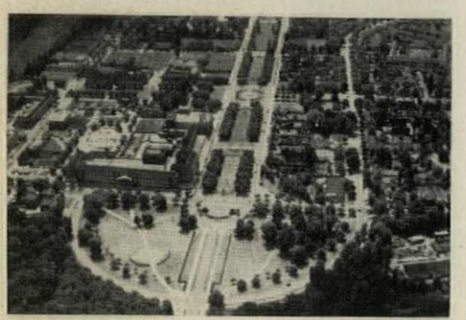
NEW HOUSING IN GREAT BRITAIN. By H. Bruckmann and D. L. Lewis. 131 pp. 8¾" x 10½". Illus. Text in English and German. Universe Books, Inc., 381 Park Ave. S., New York, N.Y. $9.50.

This is a handsome book, divided, roughly, into three parts: first, an introduction that chronicles the history of housing in England from the industrial revolution through the "Garden City" movement (the flavor of which may be caught from a



view of Welwyn Garden City, above) to the present; second, a pictorial record of new group housing, including several of the New Towns and some of the urban,

low-cost housing put up by public authorities (like Chamberlin, Powell, & Bon's excellent Golden Lane Estate, above); and, third, a collection of outstanding, modern, one-family houses built in England recently.

By far the most impressive part of this book is that concerned with New Towns and public-housing developments in existing cities (such as Roehampton, below, in metropolitan London). Almost nothing

has been built in the U.S. since 1945 that compares in quality with these buildings and developments done, during these same years, in England. Most of the material is familiar to FORUM readers, but the compilation in one book increases the impact of this body of work. If it does nothing else, this volume should stir up some of those who have been responsible for so much mediocre and ugly housing in the U.S. during the past few years.

GUIDING METROPOLITAN GROWTH. A statement of national policy by the Research and Policy Committee of the Committee for Economic Development, 711 Fifth Ave., New York, N.Y. 50 pp. 7" x 11". Illus. Paperbound. $2.

In a quiet, academic way this small booklet is a revolutionary document. Its authors, the Research and Policy Committee of the Committee for Economic Development, say in effect that something is radically wrong with the economic, social, and political underpinnings of the 192 U.S. metropolitan areas.

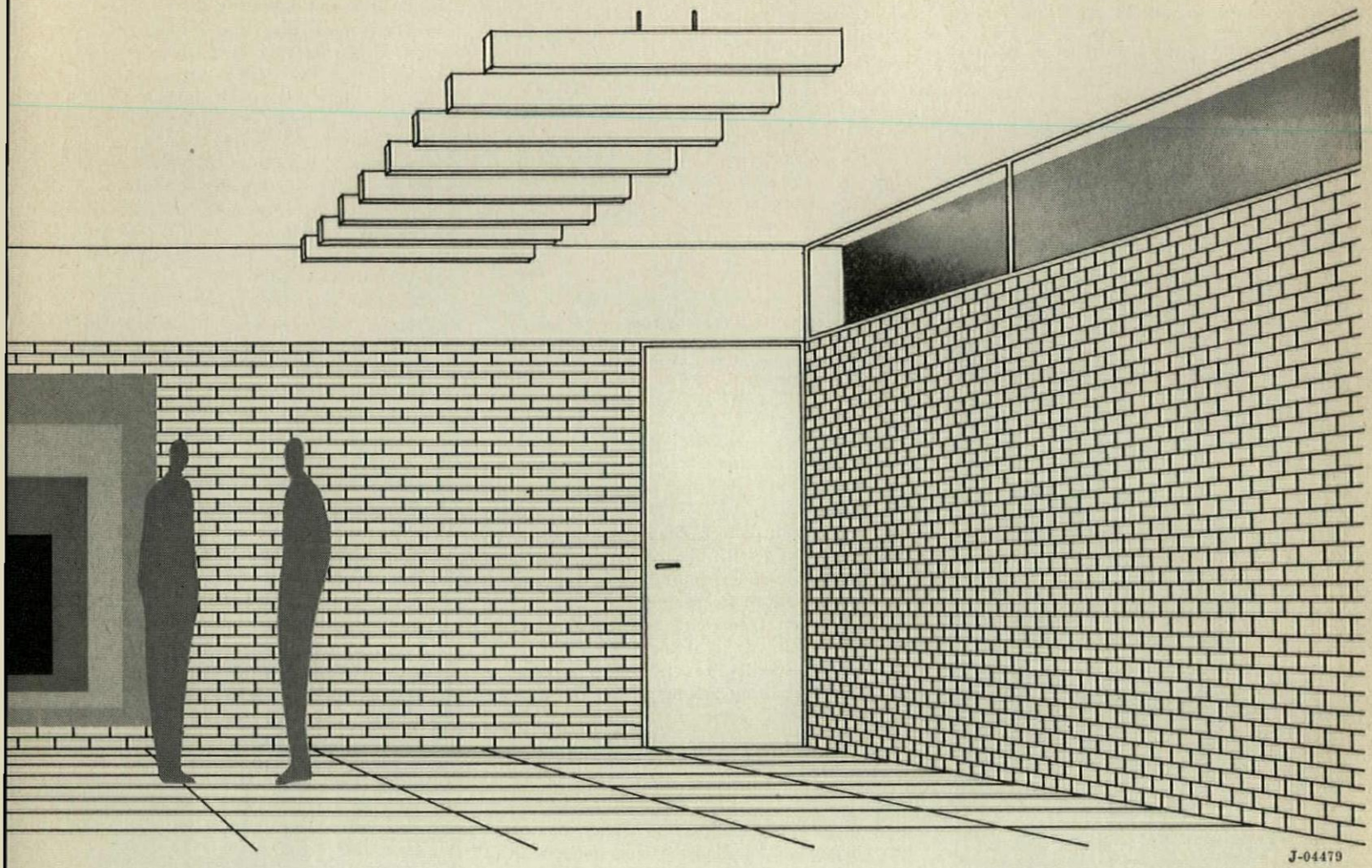
They go on from that irreverent (but well-substantiated) statement to make a number of equally revolutionary proposals. Most striking among them: the economic base of each metropolitan area should be thoroughly researched before renewal programs are attempted; urban renewal, as a national effort, should be severely revised (their word is "recast"); government in metropolitan areas should be reorganized to answer new needs and responsibilities.

The question is, of course, whether these sound proposals, which have been introduced as ideas by city thinkers for some time but never before put into the businessman's idiom, will now have a real effect upon the thinking of conservative, commercial interests in this country. And the answer is: quite likely. For the authors demonstrate that it is only by moving in this direction—not by clinging to the status quo—that U.S. businessmen will be able to maintain both their cash and their conservative principles.

THE RACE FOR OPEN SPACE. By Stanley B. Tankel. Published by the Regional Plan Assn., Inc., 230 W. 41st St., New York 36, N.Y. 95 pp. 8½" x 11". Illus. $4.

An index of just how far U.S. metropolitan areas are falling behind in meeting their park and open-space demands is contained in this fourth and final report of the two-year Park, Recreation, and Open Space Project jointly sponsored by New York's Metropolitan Regional Council and Regional Plan Assn. Item: only 4 per cent of the tristate New York

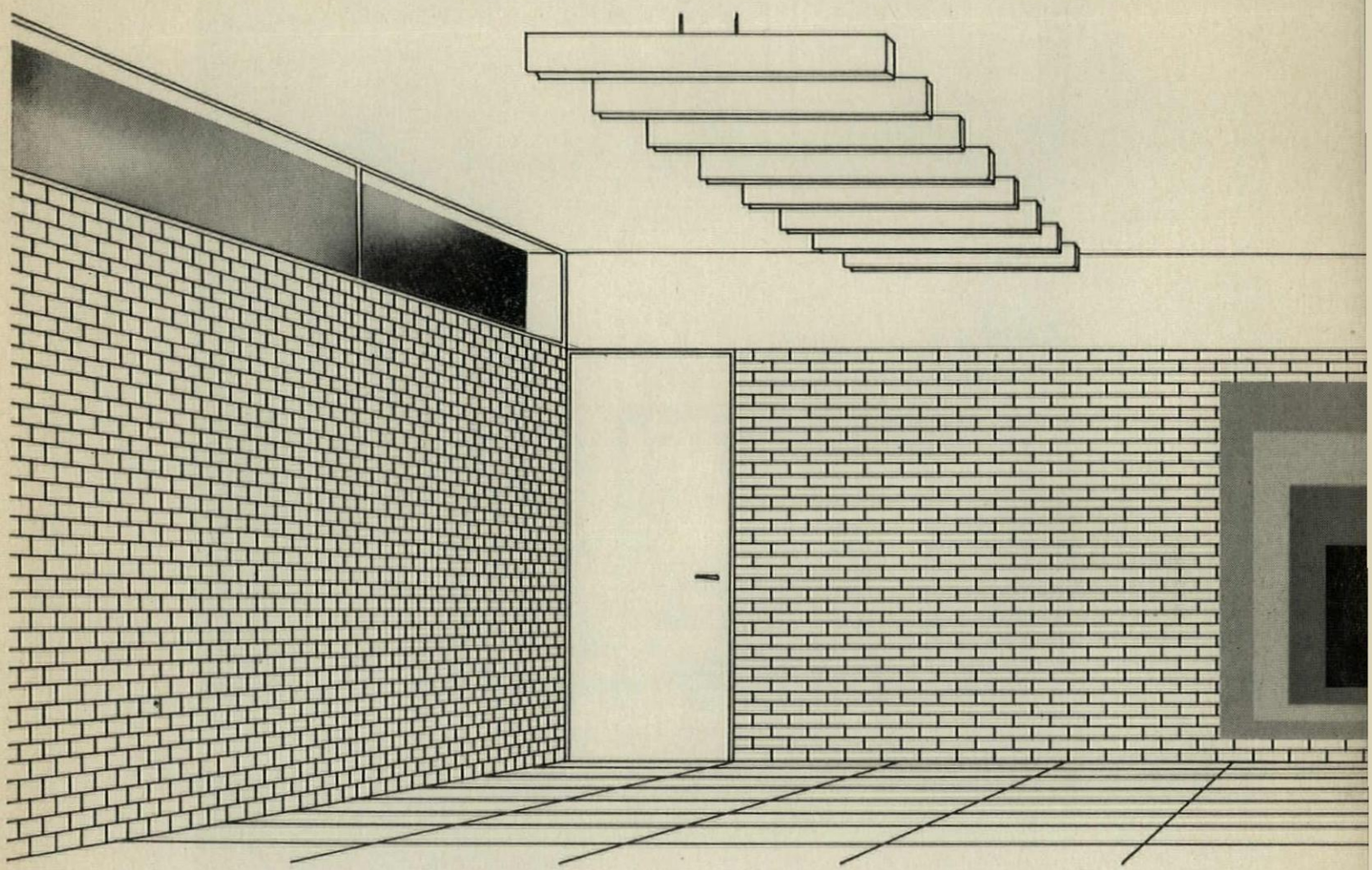
continued on page 184



are the source of that light. They're part of the space, the room, the comfortable feeling of good design.

Lighting Division, Edgewater Park, Cleveland, Ohio.

Westinghouse



The room: a circulation area. The fixture: new Westinghouse Corvaire.

Planes define a space and the space becomes a room. The room comes to life with light. Westinghouse fixtures

For more information on the Corvaire fixture write for AIA file No. 31-F-23-W1, Westinghouse Electric Corporation,

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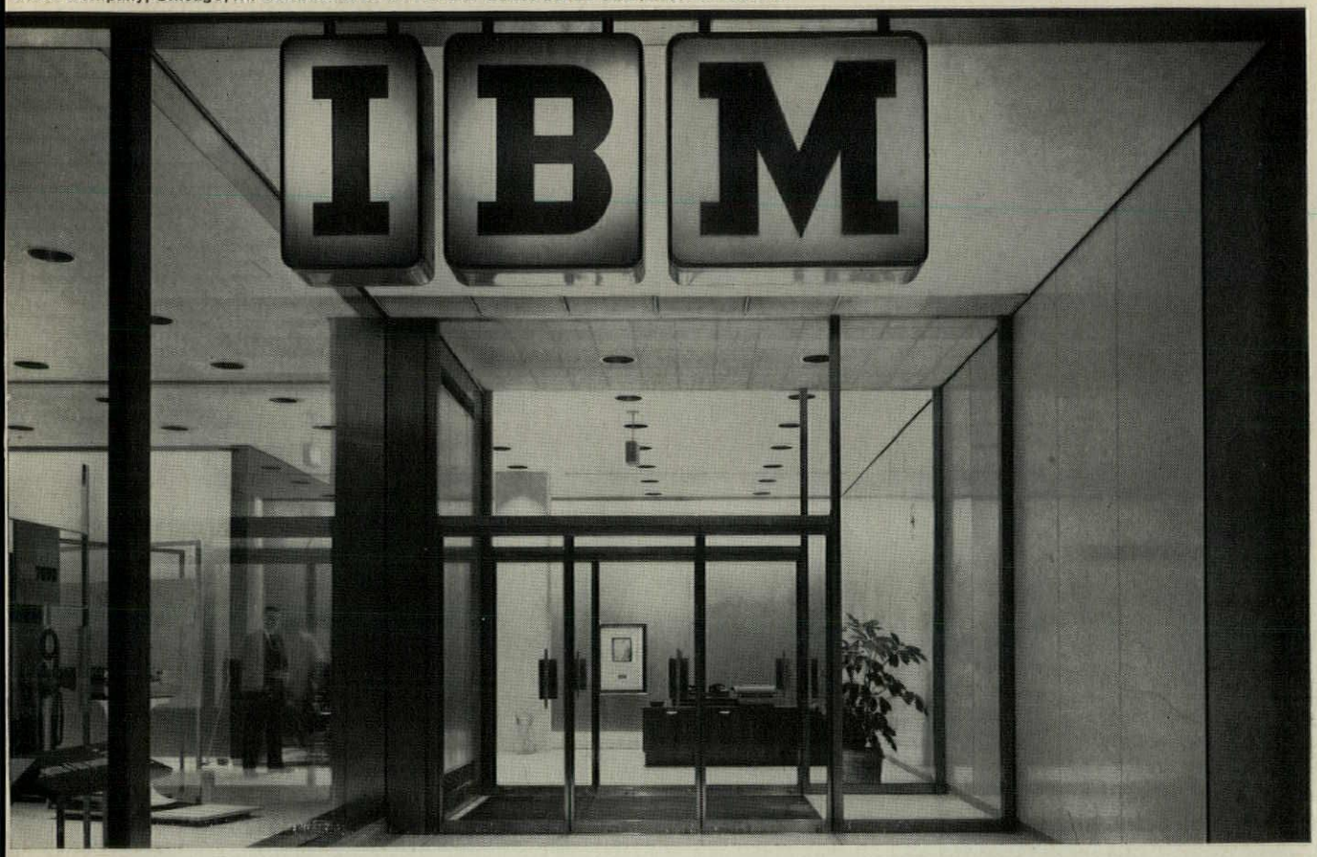

HERCULITE DOORS set in bronze Herculite door frame assemblies and sidelights—First National Bank of Topeka, Topeka, Kansas. Herculite tempered plate glass doors will last a building's lifetime without maintenance. These doors are handle operated by Pittcomatic—PPG's exclusive automatic door opener. Architects: Kiene & Bradley, Topeka, Kansas. Contractor: M. W. Watson, Topeka, Kansas.

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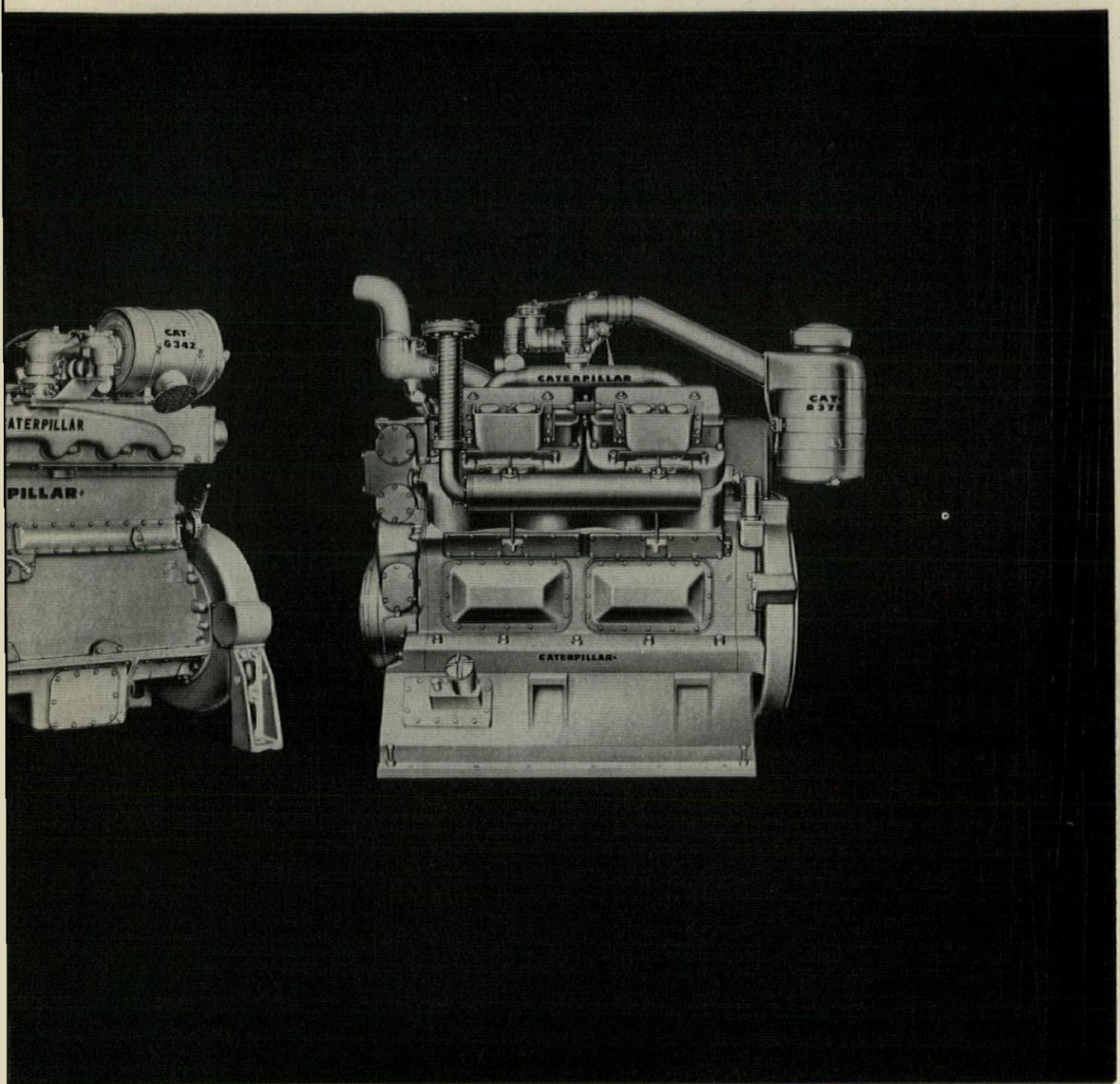

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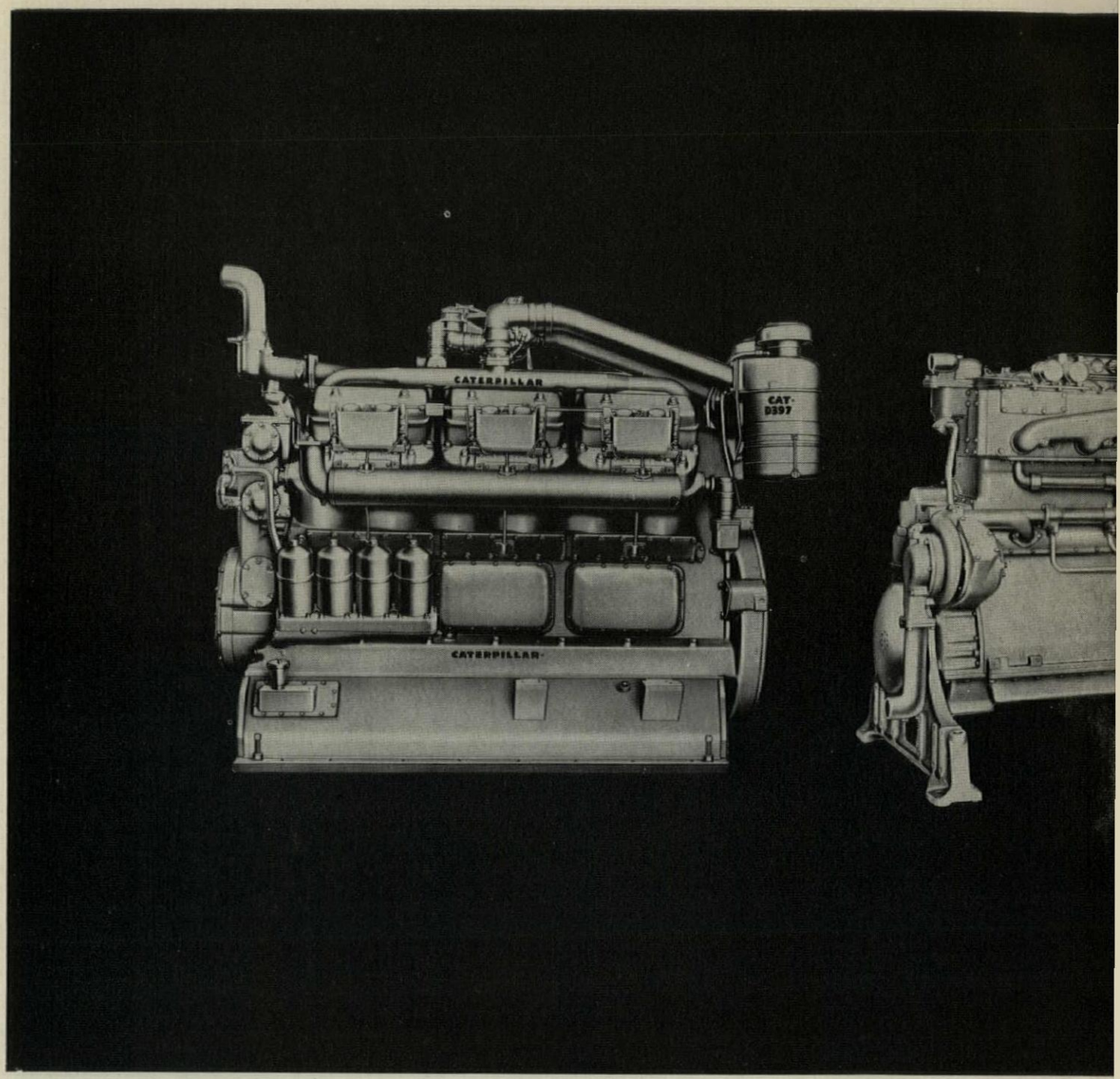

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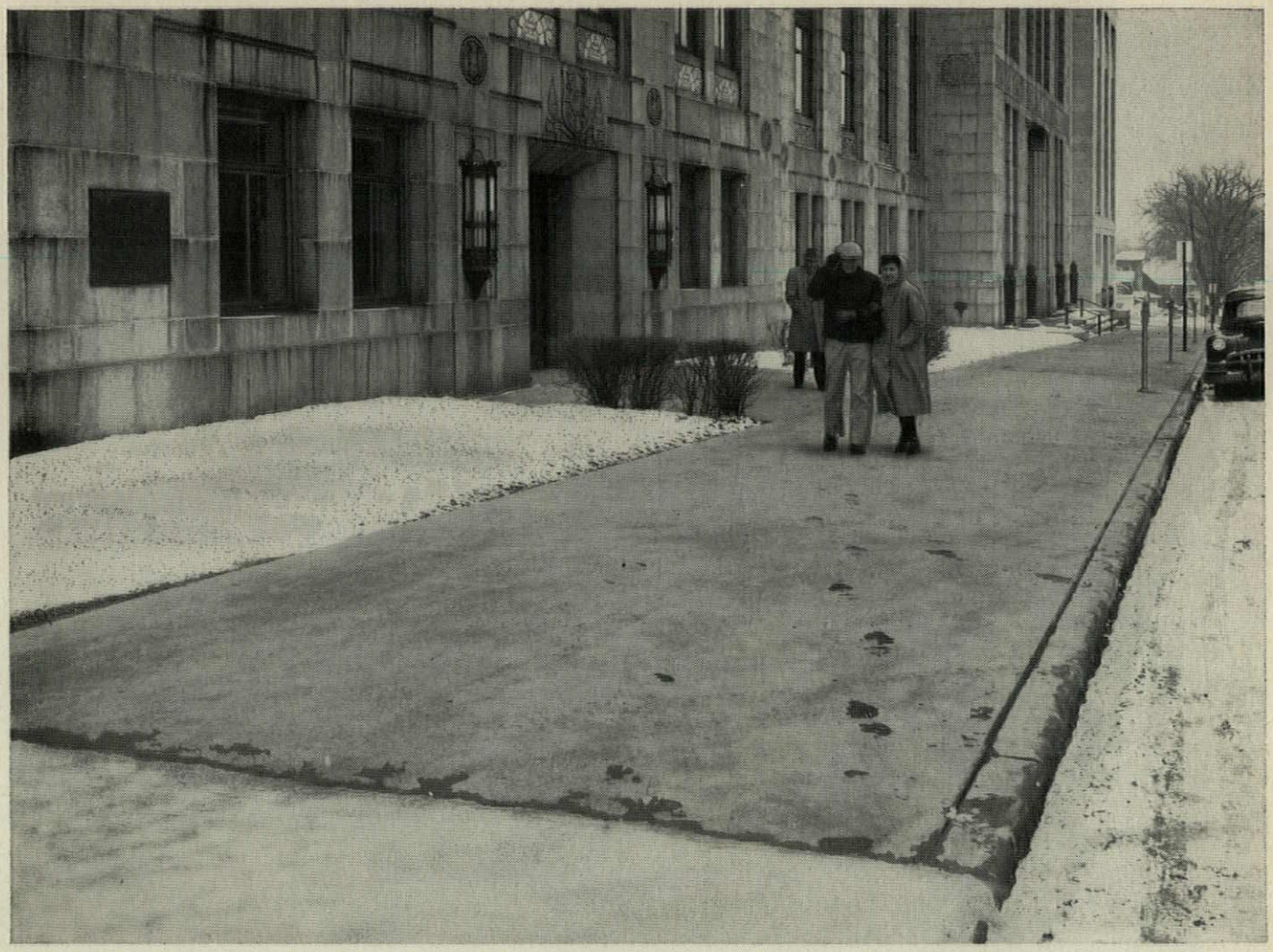

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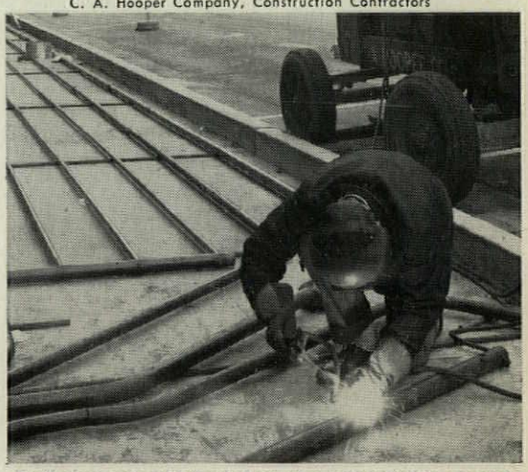

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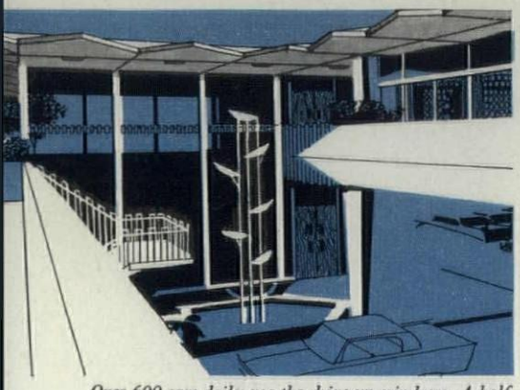
First National Autobank, Tulsa, Oklahoma. Architects & Engineers: McCune, McCune & Associates. Contractor: Tulsa Rig, Reel & Manufacturing Company, Tulsa.

Folded roof to glamour walls... concrete adds new attraction to drive-in banking



Over 600 cars daily use the drive-up windows. A half million transactions were handled at the Autobank the first year. Tom-Tom Room, to the right of two-story bank lobby, is provided for meetings of Tulsa civic groups. It's reached directly from upper parking deck.

Out of a need for drive-up tellers' windows, as well as parking facilities, came this handsome banking center. Tulsa's First National Autobank is a delightful example of the many ways concrete can combine structural practicality with good design.

Here, concrete plays a major decorative role in many different ways. You see everything from folded plate canopies over the parking arcade to walls and sunscreens in high-style masonry shapes. Drives are black concrete. Upper deck parking area is a hollow-core concrete deck.

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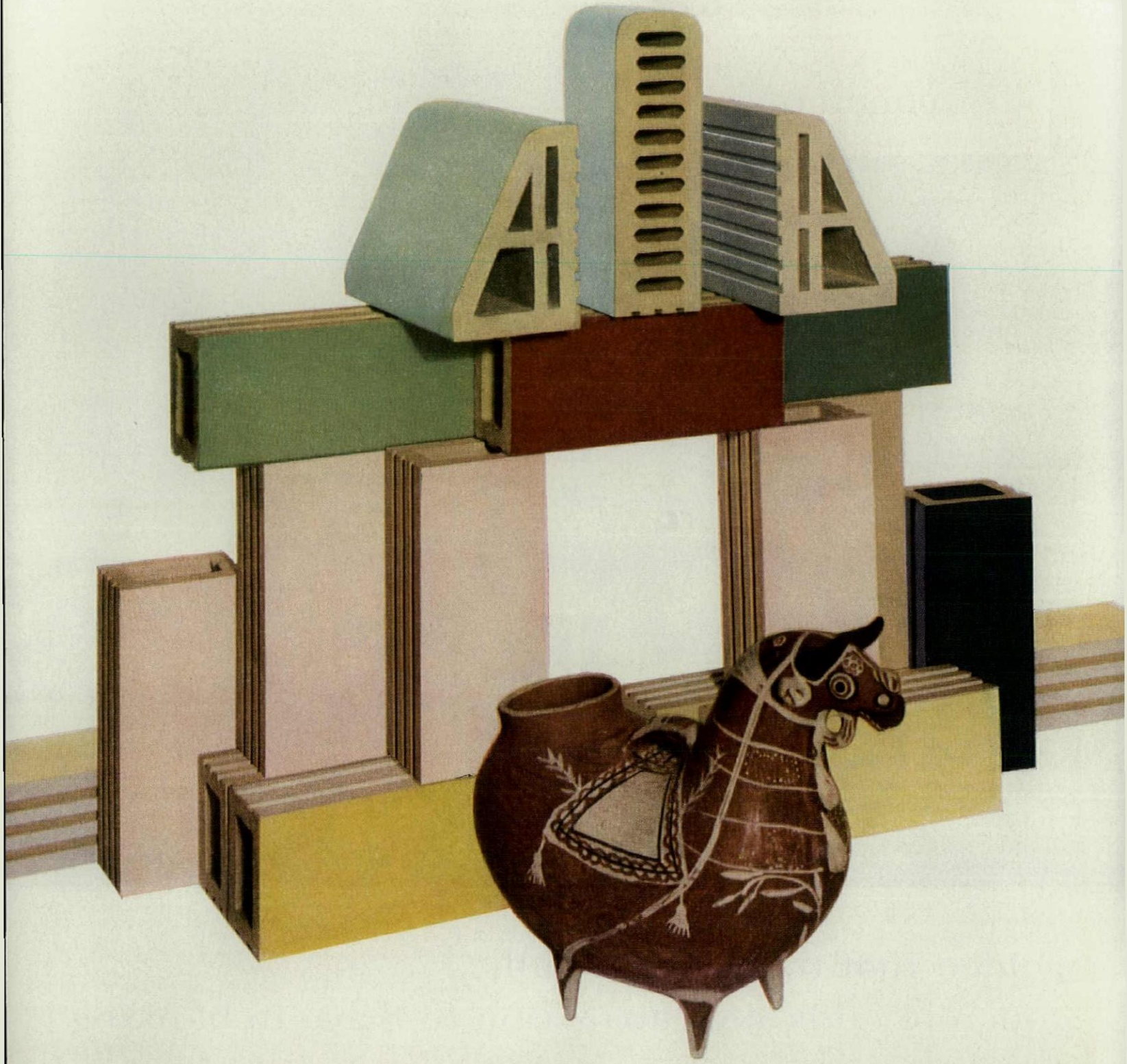

Ceramic, Courtesy, Visual Arts Section, The Pan American Union, Washington, D. C.

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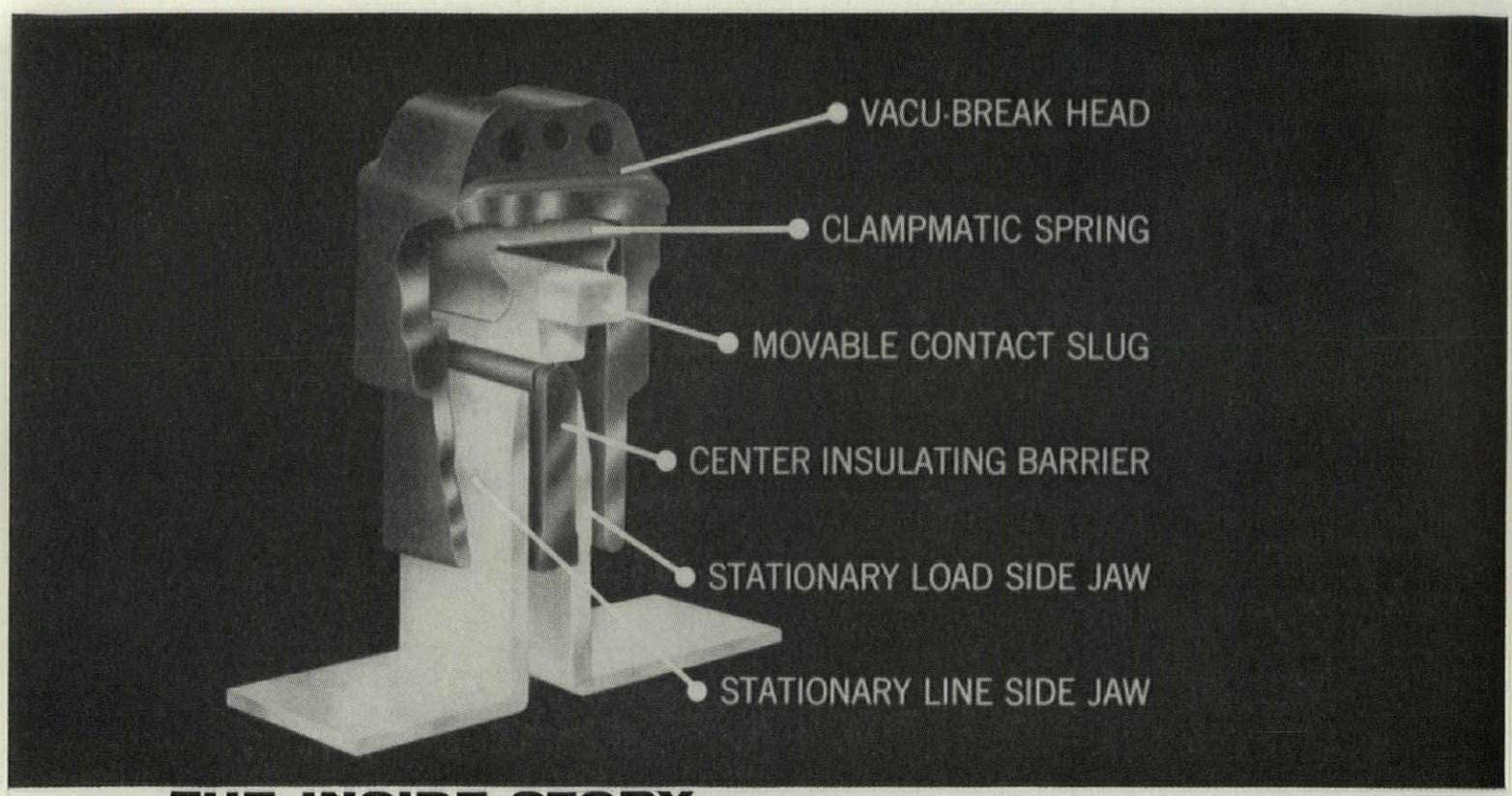

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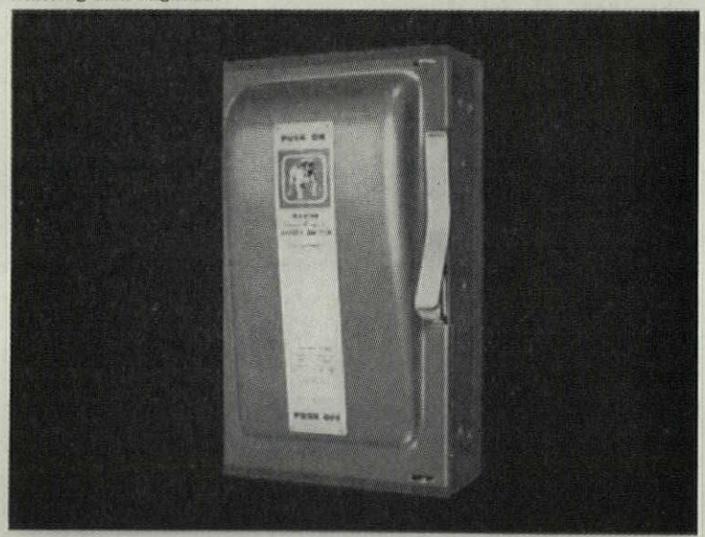

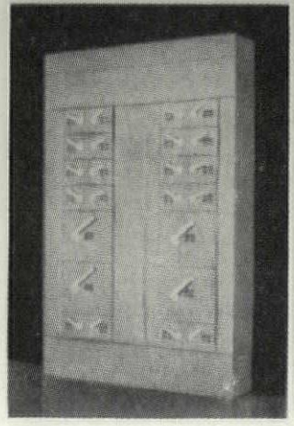

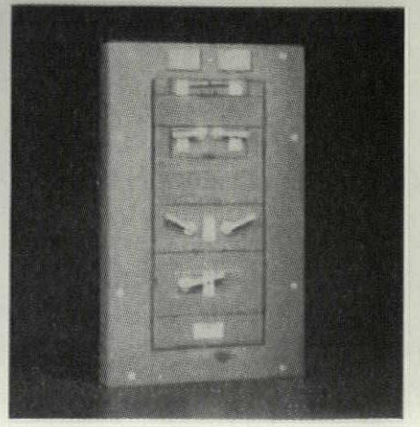

gift of light and air to Market Street

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BUILDING: Crown Zellerbach Building, San Francisco. ARCHITECTS: Hertzka & Knowles and Skidmore, Owings & Merrill, Associated Architects, San Francisco. GENERAL CONTRACTOR: Haas and Haynie Corporation, San Francisco. ALUMINUM SUBCONTRACTOR: Cupples Products Company, St. Louis.

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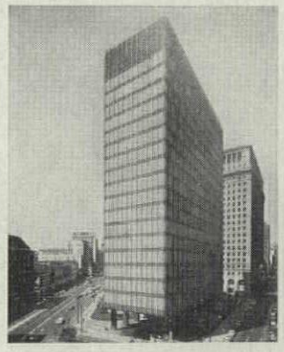

report to architects:

Aimed at influential businessmen readers of November *Fortune*, the Alcoa advertisement opposite emphasizes the architect's vital role in San Francisco's burgeoning urban renewal program. The Crown Zellerbach Building is light, airy, sensitive in design. Its facade is knit together by a grid of Alcoa® Aluminum mullions extruded from alloy 6063-T5. Anoclad® 40 trim is used in certain important areas.

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Crown Zellerbach's

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King & King, Architects — *Winco Constructors, Inc., General Contractors*

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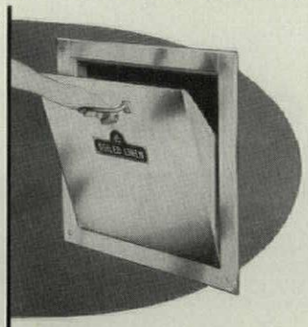

Wilkinson electrically interlocked chute doors automatically lock when any one door is opened. When this door closes and after a predetermined time delay, all doors are unlocked.

Electrical interlocking prevents the use of more than one intake door at the same time in multi-story buildings.

The advantages! First, it eliminates drafts when chute doors are opened—an important sanitary feature. Second, it prevents loading from two, three, or more floors at once—a decided safety feature.

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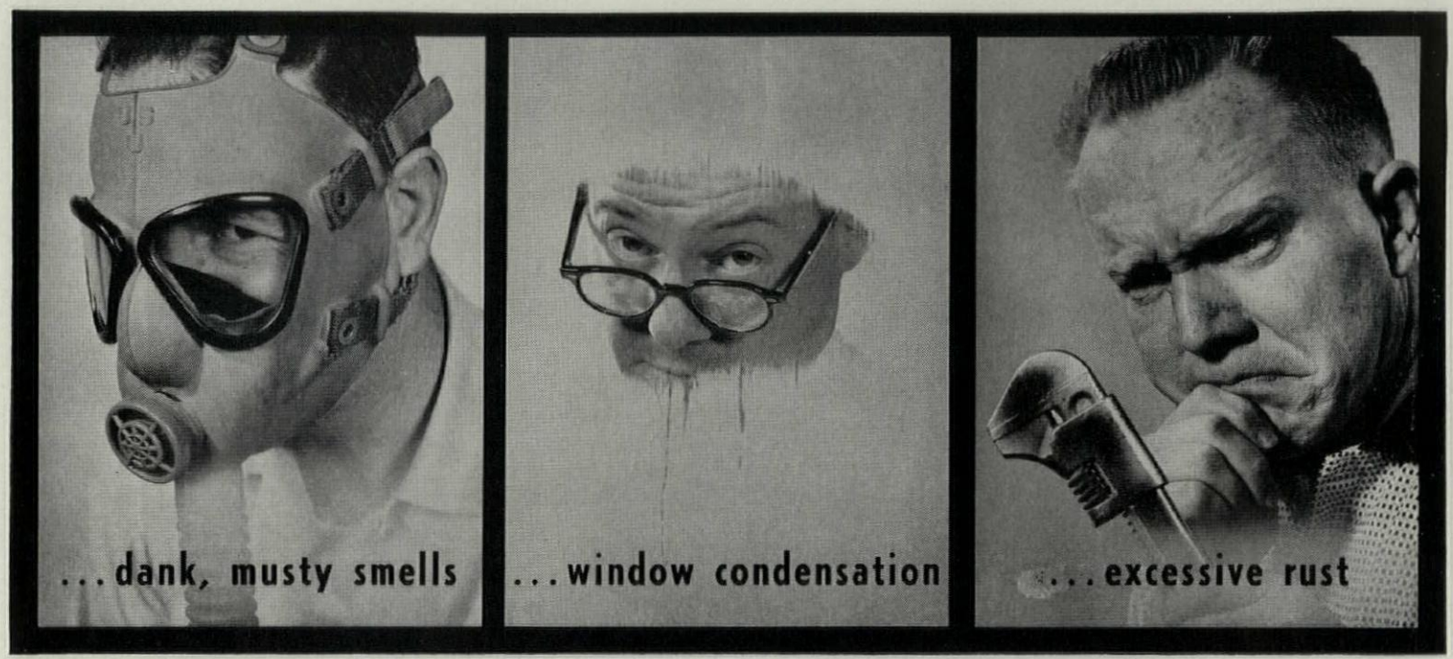

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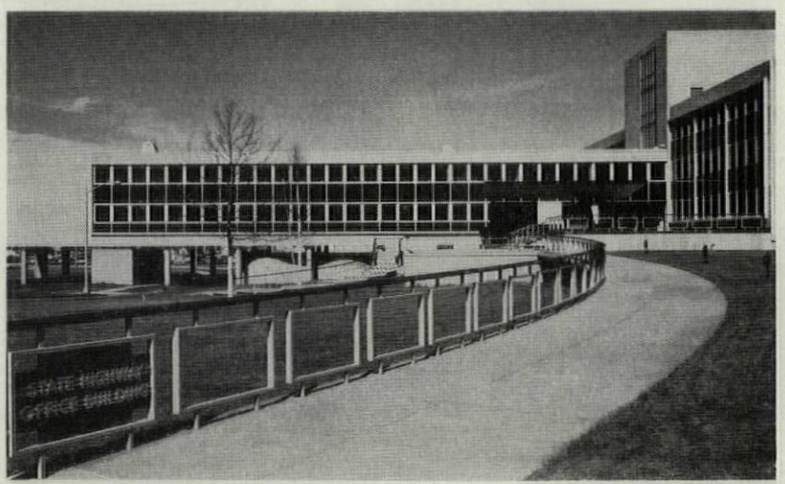
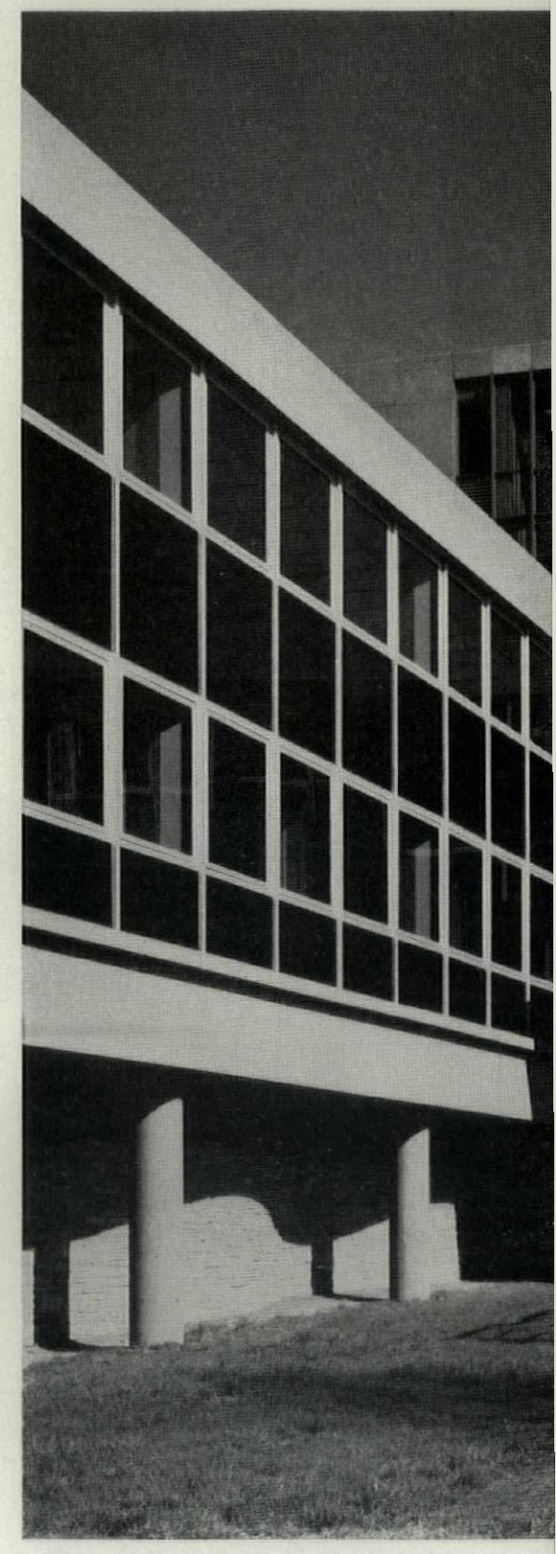
PENNVERNON GRAYLITE takes the glare out of sunlight, yet lets plenty of refreshing light come through the windows of the new Connecticut State Highway Department Building, Weathersfield, Connecticut. All elevations are glazed with PENNVERNON GRAYLITE "56"—PPG's neutral gray, glare-reducing heavy sheet 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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Armstrong Classic Minaboard is an efficient acoustical material used especially for installation in exposed grid suspended ceilings. Rated Class A (Incombustible). Carries Underwriters' Label. It has a noise-reduction coefficient range of .65-.75. Classic Minaboard offers insulation value. Its C factor is .62 at 70° F. The Minaboard lay-in units are installed quickly in an exposed grid system which supports the panels on all four edges.

For further information and complete specifications, call your Armstrong Acoustical Contractor or your nearest Armstrong District Office. Or write to Armstrong Cork Company, 4211 Rooney Street, Lancaster, Pa.

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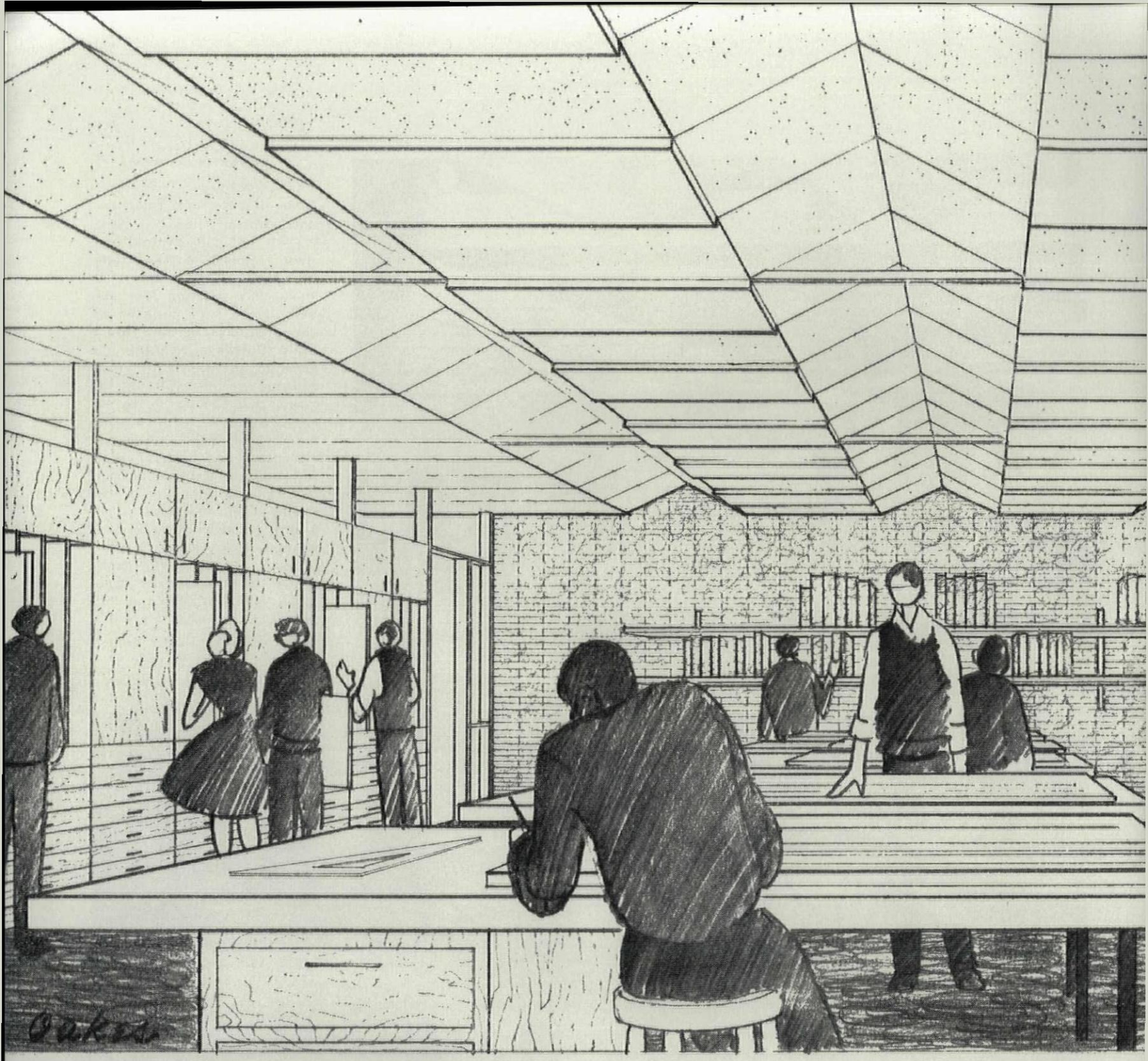


How the special density and composition of this acoustical ceiling give design flexibility to a classroom

Plan by Robert Billsbrough Price, A.I.A., Tacoma, Washington

"WE WANTED to design a flexible lighting and acoustical system for a school mechanical drawing room. We chose Armstrong Classic Minaboard, an efficient and attractive acoustical lay-in unit designed for use in exposed grid systems.

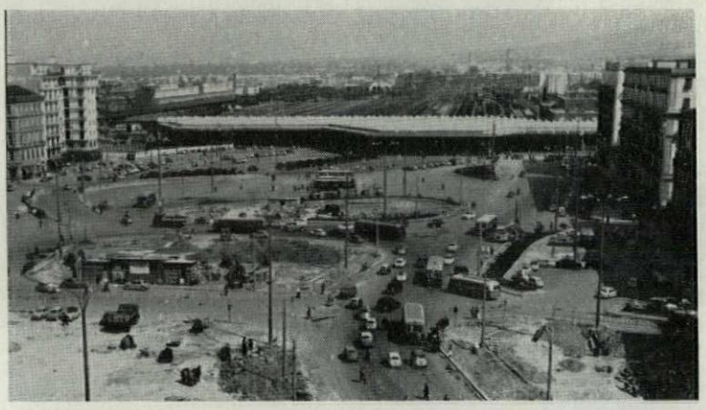
"The special density and composition of this ceiling give it advantages that low-density boards do not have. Classic Minaboard provides excellent resistance to sound transmission. To further control and break up the noise, we spaced Minaboard on the suspended grid system with boards tilted up every other four-foot module.

"We effected a flexible lighting system by spacing the fluorescent lights. The Minaboard grid allowed us complete freedom in setting up the classroom for any function."

PHOTOS: DUOPHOTO

HOODS IN NAPLES

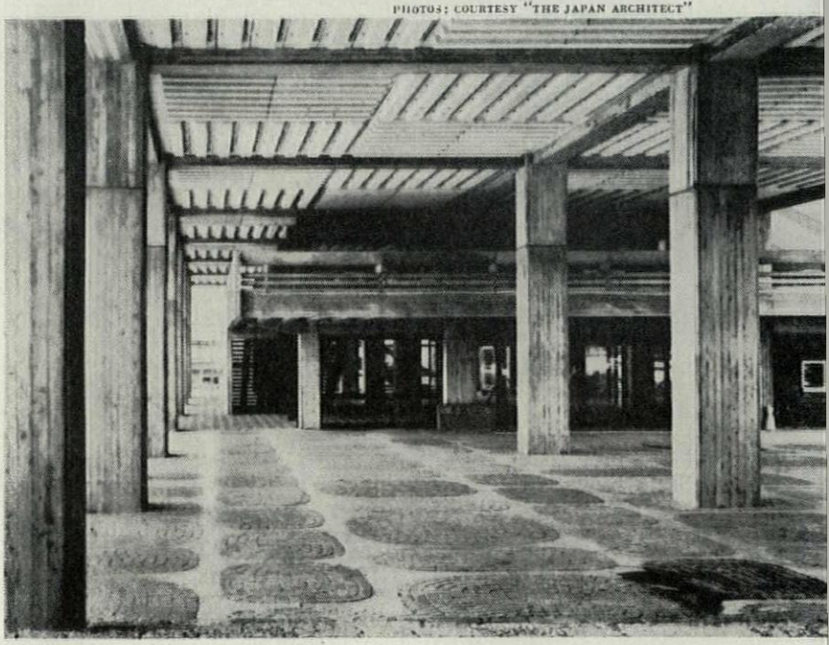
The new Naples railway station is the first link of a vast clearance project (photo at right, below) that will eventually include a number of other transportation facilities and a 16-story office building. The station, which was designed by the architects of the Italian State Railways, contains the ideas of three private architectural groups. Among the ideas: that the station be put on two levels, with waiting rooms and ticket offices at street level and departure platforms below. Columns to support the two slabs rise as tree trunks from the lower level, branch out above to receive the triangulated system of reinforced concrete roof beams. Above the triangles are pyramidal skylights (photo at left, below) which local wags call "monks hats."

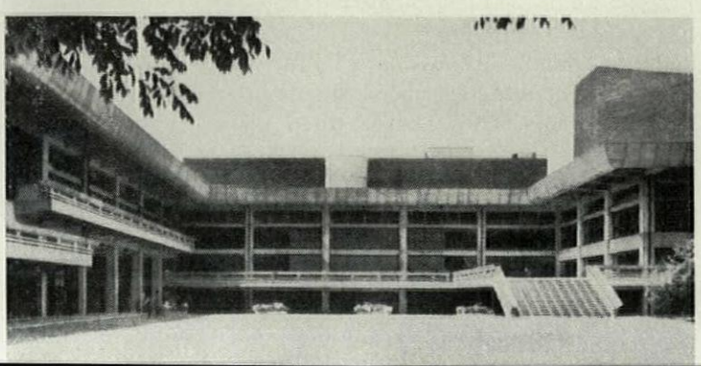


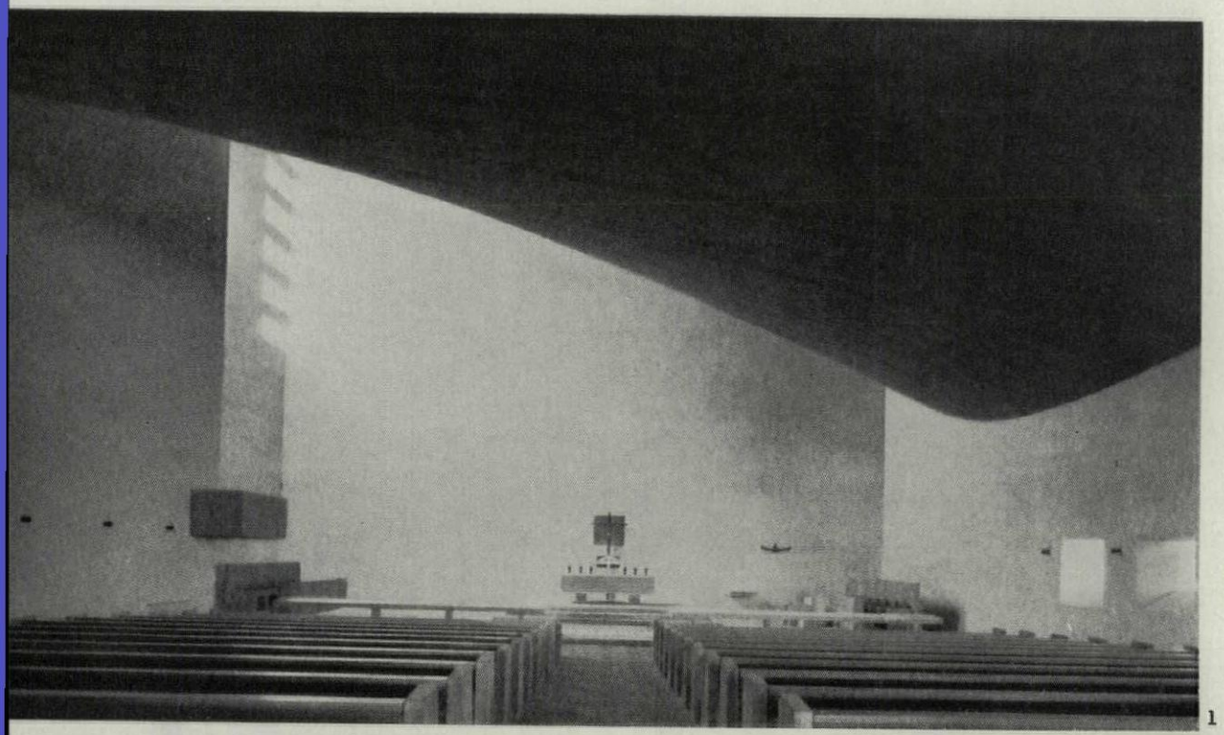
LOYALTY IN JAPAN

In Kyoto, at the heart of Japan's architectural traditions, Architect Kunio Maekawa has designed an appropriate civic center that manages also to be loyal to his own stylistic allegiances (Maekawa was trained by Le Corbusier) and to the functional demands of a three-theater hall. Maekawa's usual exposed concrete and brick style has been only somewhat softened by the building's gentle, upturned cornice (photo below). The problem of organizing the halls and ancillary meeting rooms was met by grouping them around a large central court and by connecting them with traditionally detailed passageways. The center's main lobby (photo at right) is already considered one of Kyoto's most imposing public rooms.

PHOTOS: COURTESY "THE JAPAN ARCHITECT"







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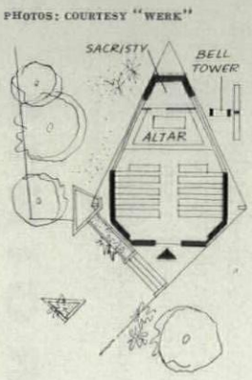
PHOTOS: COURTESY "WERK"



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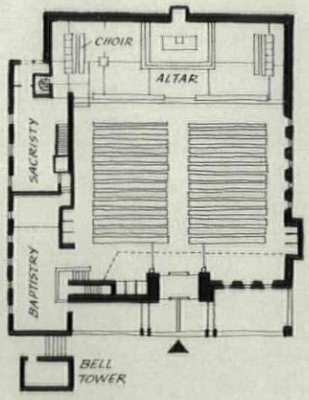
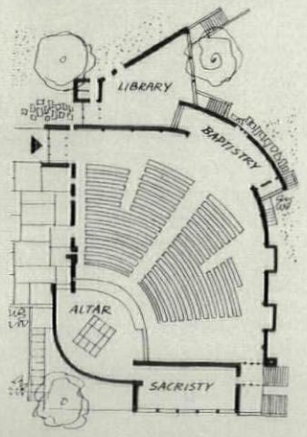
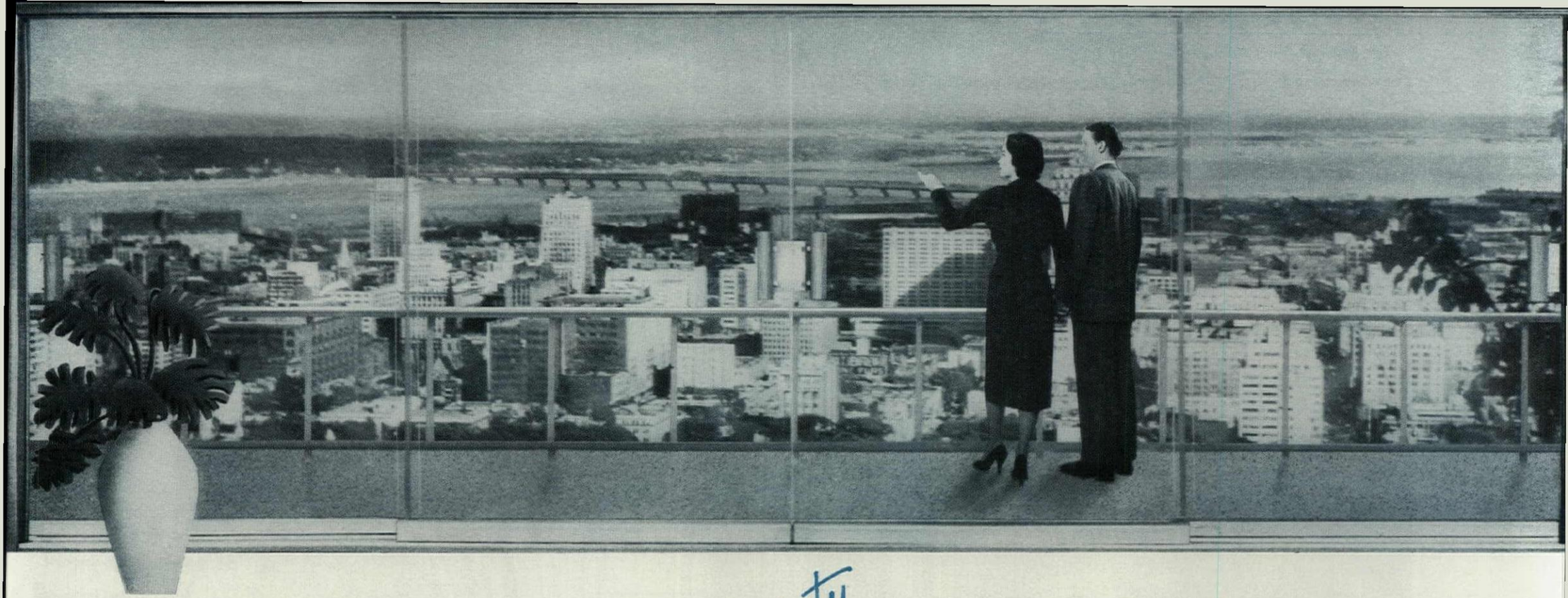


LIGHT IN SWITZERLAND

The argument that contemporary design is inimical to traditional Christian worship is not often heard in Switzerland, perhaps because of such forceful and enlightened church interiors as these three. The first, designed by Architect Ernest Brantschen for a church in an industrial section of St. Gallen, makes use of the drama of Christian worship. The square, static nave with its center aisle and symmetrical seating arrangement is roofed by a warped shell which swoops up at one corner to admit high light to the most important liturgical point of the church: the intersection of the choir and altar walls. Another forceful device is used by Architect Herman Bauer in a suburban church near Basel (2). Above a masonry wall as massive as Ronchamp floats an underlit roof that touches earth only at a few points. Architect Hans Guebelin has used art as well as light to make the attenuated apse of his little (60-seat) chapel in Nesselnbach (3) seem even longer and more significant than it is. The colored glass windows were designed by Hans Blaettner.





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Meticulously engineered in every detail, Virginia's frameless glass doors have been tested by the Housing Research Laboratory, University of Miami, and certified for compliance with the stringent specifications of the South Florida Building Code. These tests officially establish that Virginia sliding doors are well within required standards for air infiltration and water leakage in heavy wind, as well as highly resistant to the force of the wind itself.

They are ⅜" thick, and are made in a variety of panel combinations.

Other Virginia Tempar-Glas* Products include All-Glass Entrance Doors and Tempar-Glas* Spandrels. The Spandrels are available in no less than 22 standard, fire-fused colors—and are fully tempered.

For complete information on Tempar-Glas* Products, and availability of Tempar-Glas* for all uses, write to:

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Technical briefs

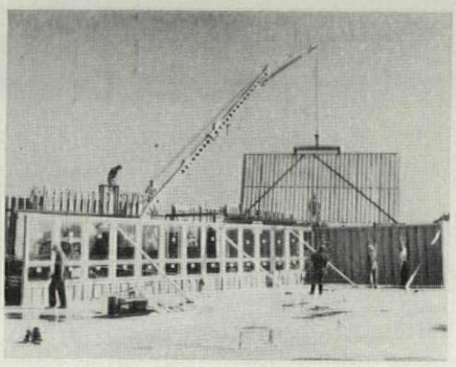
Prefab school

The standardized, prefabricated school, with its promise of decreased construction costs and tightened construction schedule, has appealed to many a school board. But success with this approach to school construction has been rare (FORUM, Nov. '57), despite the seemingly logical assumption which underlies it. Indeed, many school boards have found, for one reason or another, that standardization of building design is seldom a guarantee of economy.

But the school board of Sussex, Wisc. appears to have gained significant economies in its prefabricated Sussex grade school, just opened, which was built by Marshall Erdman & Associates, a Madison firm which has developed standardization and mass-production principles in the construction of houses (designed by Frank Lloyd Wright) and medical office buildings. Sussex is the fourth school of this type to be built. Its cost, $359,000—including site, building, and equipment—works out to about $14 per square foot; a conven tional school on the same site would have cost an additional $150,000, according to the school board's estimate.

Erdman used Herbert Fritz as con sulting architect for the Sussex school, but he believes that the entire responsibility for planning, manufacturing, and building must be lodged on a single producer. The Sussex school has a 350-pupil capacity: 11 classrooms, four offices, a library, kitchen, gymnasium (48 by 72 feet), rest rooms, storage rooms, and a 44 by 48 foot basement.

It is of frame construction, with panels made of two by fours, most of which are 10 feet high. (Gymnasium panels are 18 feet high.) Wall sections were manufactured in Erdman's plant, in Madison, then trucked to the site on six 36-foot semitrailers. They were raised in three workdays, and the entire building was enclosed within two weeks by a crew of eight men and a crane. The entire project, from the start of excavation to the completion of the gymnasium and kitchen, was completed in just over four months: May through September.



Erdman confines his standardization ideas to the small elementary school: "You cannot apply the same principles to large high schools or, for that matter, to large elementary schools. The school at Sussex is about as large as the principle will go."

Plastics in building

Once labeled a material for the future, plastics in building now account for over $500 million a year in such items as lighting fixtures, hardware roofing, and glazing materials. And a report recently issued by the Southwest Research Institute states that a far wider potential for plastics exists today, even within the framework of existing building codes.

Broader use of these materials is held back, the SwRI study says, by "a lack of understanding of the nature of plastics on the part of many building officials." The report points out that codes have been severely criticized for restricting the introduction of new materials, although not the codes but the officials are restrictive: "Even outmoded building codes provide a mechanism for the acceptance of alternate systems and materials." But before such acceptance mechanisms can be applied, "the building official must learn . . . to distinguish between plastics that look alike but differ widely in other important ways."

The real fear regarding plastics, of course, is fire. Indeed, many plastic building materials available today are combustible. What must be done regarding this, says the report, is to develop better understanding of plastics within the building industry so that the combustibility of a single material will not lead to the assumption that all plastics are hazardous. Insulating plastics, for example, might be used on fire-resistive constructions. The report recommends that plastics' fire-resistant potentialities be investigated: it is true that plastics, being organic materials, can be consumed by fire, but it is possible that some plastics, such as insulations, can protect steel and other heat-vulnerable materials so as to prevent collapse within the time limit prescribed by building-code regulations.

The preflexing technique

If full use could be made of their inherent strength qualities, high-strength steels would provide greater structural freedom to the building designer. Such steels would be used, for example, in the design of large, unobstructed areas in auditoriums, parking garages, and building lobbies.

At the Fritz Engineering Laboratory of Lehigh University, tests have been under way for the past six months of a European technique which does make use of the steel's greater strength. The technique is called preflexing; U.S. patents are held by Alpha & Co., of New York. In essence, the technique consists of encasing in high-quality concrete the tension flange of a steel girder (ASTM A-242 steel) after the girder has been temporarily loaded, i.e., preflexed, by means of jacks. The loading is applied in the same direction as subsequent design loads. This produces a pronounced deflection, introducing tensile stresses in the girder equal to those later produced by the design loads. The loading is maintained while the concrete is applied to the tension flange and until the concrete reaches its desired strength. Then the applied loads are removed and the girder tends to return to its original profile, forcing the concrete into compression.

The girder is shipped in this condition and the top slab concrete is poured at the job site. When actual design loads are applied, the compression in the concrete is reduced. The result is a much stiffer girder with appreciably reduced deflection.

Preflexing has been used in Europe for about nine years. The results of the Lehigh tests, now virtually complete, should clarify its future in the U.S.

The building goes up: *first elements to go into place are the rigid end frames (1), which will contain the revolving doors for personnel access and egress. After the exhibition area is attached to the end frames and pressurized (2), the entrance and exit canopies are attached and inflated. The periphery of the structure is bordered by a steel pipe to which the skin is attached (3); sketch (bottom of opposite page) shows this detail. The building can be anchored to soil or concrete. With the exhibition area pressurized and the canopy inflated (4), workmen make the final attachment of canopy to the end frame. Pressurization is achieved with blowers (5); one of these pressurizes the inner skin, and the other, the outer skin. Outer skin inflation was based on providing resistance to a steady wind of 70 miles per hour and gust loadings to 90 miles per hour.*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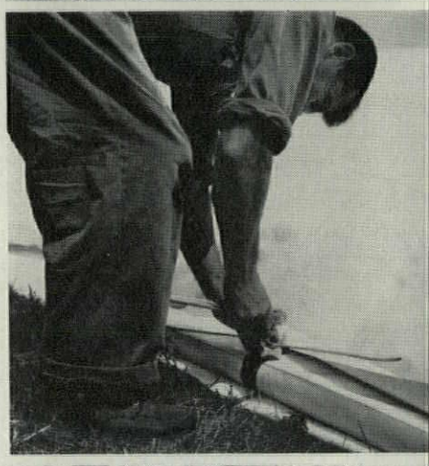
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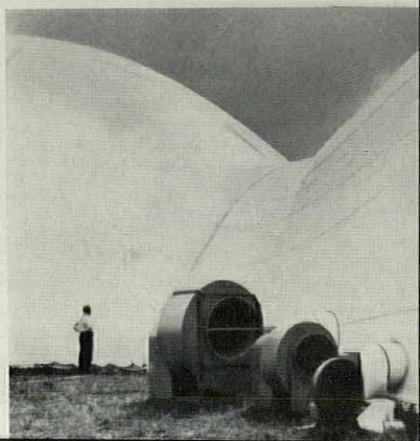
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ing doors. On the outdoor side of the end frames, two inflated arch-entrance canopies also serve as an airlock area through which bulky equipment can be moved without interfering with the pressurization system. The airlock consists of two temporary diaphragms, one attached to the outer end of the canopy and the other to the inner end, substituting for the revolving doors. When a large piece of equipment is brought into the building, the outer diaphragm is opened, allowing entry into the airlock, then closed again when the equipment is inside. Then the inner diaphragm is opened temporarily as the equipment is moved into the exhibit building. Before the exhibition is under way, the airlock apparatus is removed and the two canopies become entryways and exits.

The portable building

The show and exhibit area within the building covers more than 19,000 square feet of the 22,000 square foot total. Roughly half of the exhibition area is theater space and link, and the other half a technical laboratory and lecture area. The building is 300 feet long, with a maximum width of 126 feet, and peak length of 53.6 feet. Its total weight, including all hardware—end frames, doors, pressurization system, et al.—is about 28 tons. The structural fabric itself accounts for only about 20 per cent of this—less than 6 tons. Completely packaged for shipment, the structure's volume reduces down to 5,000 cubic feet, which is approximately the size of a standard railroad box car.

The building's cost is $99,870—about $4.50 per square foot—plus $70,000 for the exhibits and about $25,000 for sitework at each site, excluding the cost of site preparation. (Site preparation costs can vary widely, from $20,000 to $40,000, depending upon the amount of work necessary to prepare the site, as well as local labor conditions.) The building will be carried on an earth foundation or a concrete slab, depending on the site.

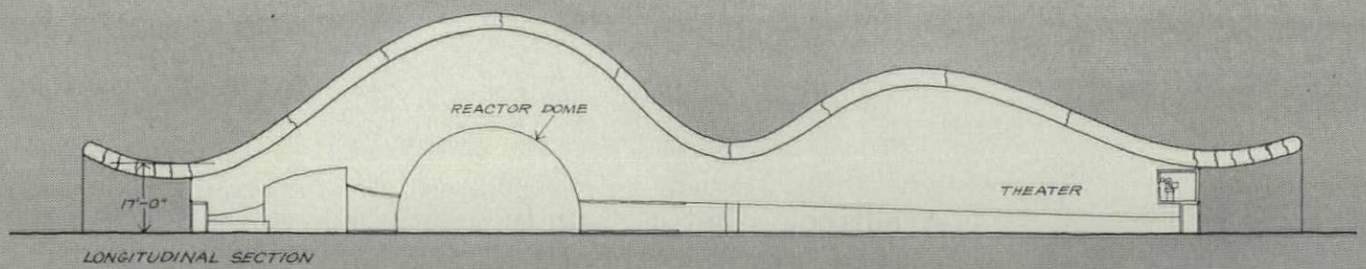
The time required to erect the building is three to four days, based on field experience in Buffalo. Lundy estimates this to be 1/5 to 1/20th the time required to assemble the other building types he considered. The design permits the entire building envelope to be assembled on the ground and erected under competent supervision by 12 relatively untrained men without special scaffolding or handling equipment. Except for the attachment of the fabric to the end frames and door assemblies, all installation work is accomplished at ground level. The structure is self-erecting in less than 30 minutes from the time the inflation blowers are turned on. Indeed, the assembly and inflation of this structure will be a show in itself.

Container versus content

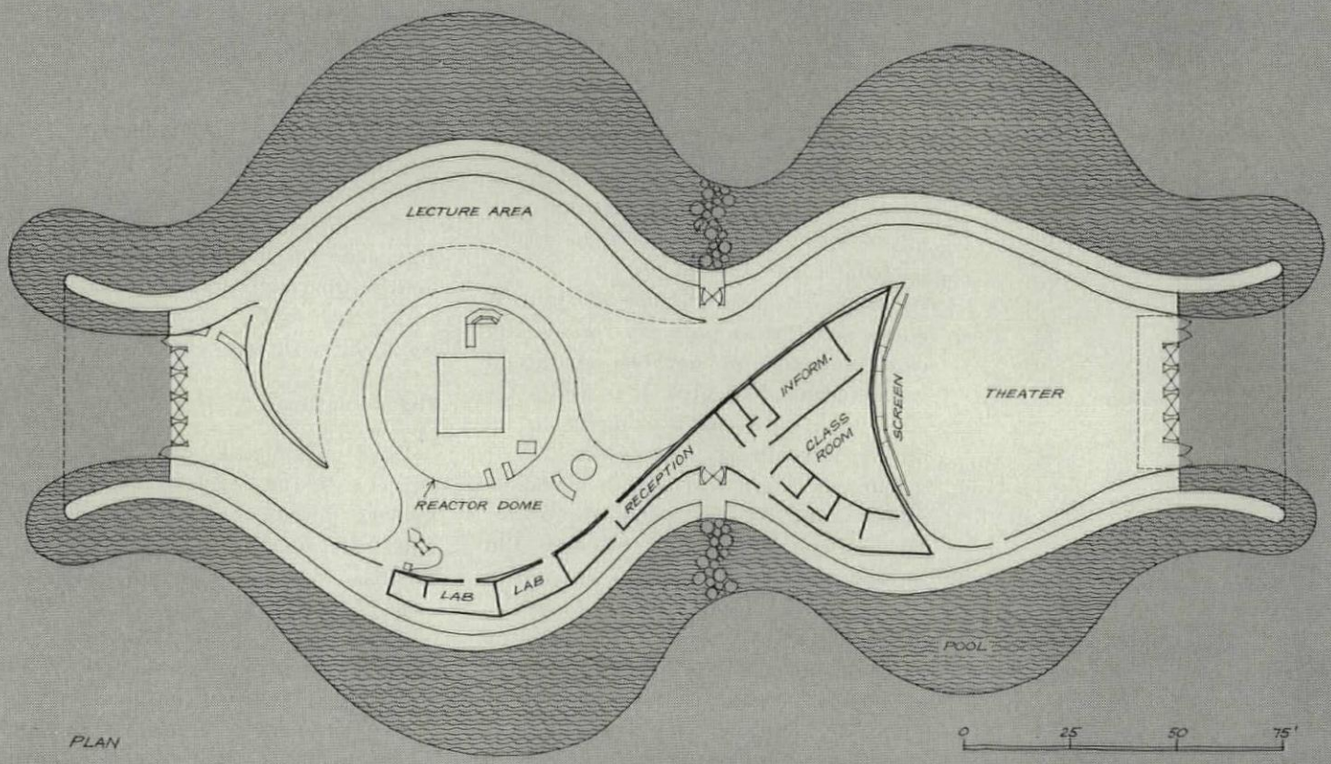
Many exhibit structures, in the view of Architect Lundy, set up a competition between themselves and the content of their exhibitions: "The building becomes the exhibit, calls attention to itself to such degree that the main message of content is obscured by the

continued on page 204

ARCHITECT: Victor A. Lundy. FABRICATOR AND STRUCTURAL DESIGNER: Birdair Structures, Inc. CONSULTING ENGINEERS: Severud-Elstad-Krueger Associates (structural); Cosentini Associates (mechanical); Bolt Beranek & Newman, Inc. (acoustical). GENERAL CONTRACTOR in Latin America: Christiani & Nielsen Corp. OWNER: Office of Special Projects, U.S. Atomic Energy Commission.

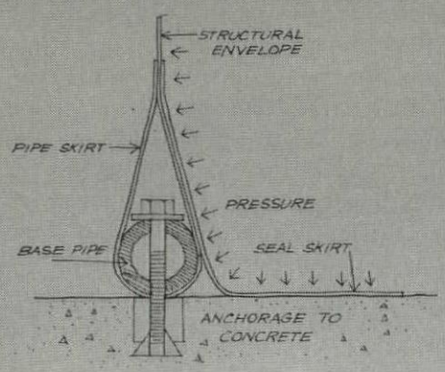


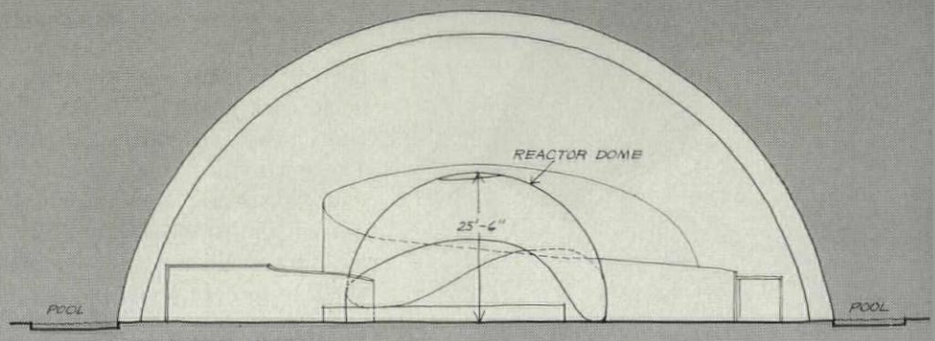
LONGITUDINAL SECTION



PLAN

Interior plan and elevation: *the sketches (above) show the undulating interior partitioning system; partitions undulate both in plan and elevation. The interior is "like being under the heavens at dusk," with dark blue lights shining against flat black, vinyl-coated nylon surfaces overhead. The building's envelope is actually two plastic skins (top), separated by a 4-foot air space. Reactor is housed in a small air dome (below). Left, below: detail of the envelope-pipe attachment at the building's periphery.*





TRANSVERSE SECTION

A great balloon for peaceful atoms

Technology

Architect Victor Lundy shapes an air-supported sculpture for the A.E.C.'s South American exhibit.

By DAVID ALLISON

Several months ago, Architect Victor Lundy was commissioned by the Atomic Energy Commission to design an exhibition building which could be transported from city to city in South America. The exhibit, part of the U.S. Atoms-for-Peace program, would include a complete, movable laboratory, with technical facilities showing the peaceful atom at work in medicine, industry, agriculture, and power.

Lundy's chief responsibility was to satisfy the AEC's specifications for portability, safety, and low cost. But beyond this, he wanted, in his words, "to make a major break-through in exhibit structure design." The building on these pages, whose roof weight never exceeds 5 *ounces* per square foot, is Lundy's solution: an air-supported structure enclosing 22,000 square feet of space. Its South American tour begins this month: six weeks in Buenos Aires, beginning November 1, then to Rio de Janeiro in March, Lima in July, and Caracas next October.

This is the first application of air-support principles to a building of architectural pretension. During these next months of rugged use, Lundy's air building should prove whether or not it makes a major design breakthrough.

In his preliminary research, Lundy considered many other building types to house the Atoms-for-Peace exhibit: a large, clear-span tent structure, supported by aluminum beams; a wood dome with a plastic-sheet roof; a steel lamella roof, and various geodesic types. The portability requirement ruled out most of these: some would have required the transport of 100 tons of building components from one site to the next, others would have taken many days to build and dismantle. In March, Lundy concluded that the air-supported structure would solve his problem best. In addition to its portability, structural efficiency, and ease of construction, to be described later, an air structure struck Lundy as a splendid example of U.S. technology: "I was convinced after visits to Brasilia and other South American cities, and out of my own knowledge of the high standards of design in contemporary South American architecture, that an antiseptic, 'safe,' rehashed solution would be a failure."

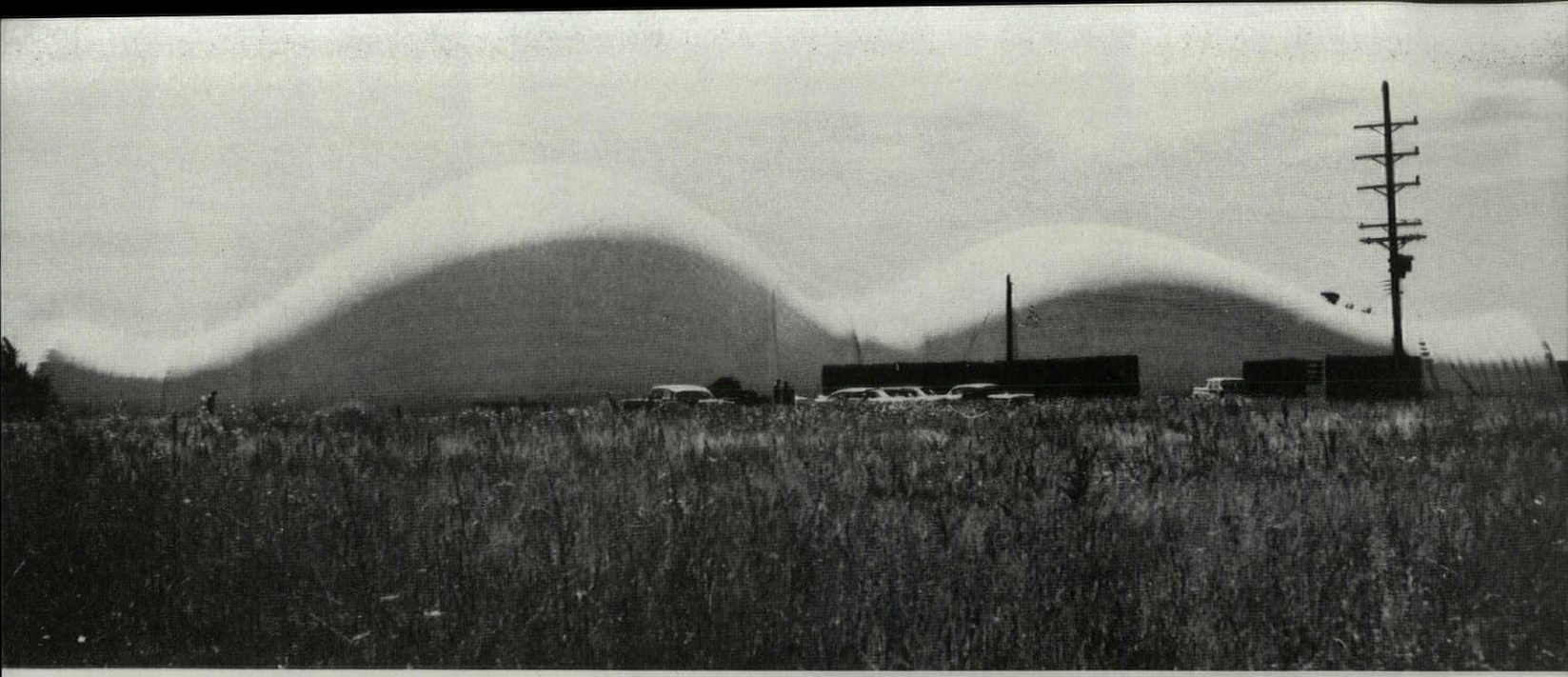
The structure

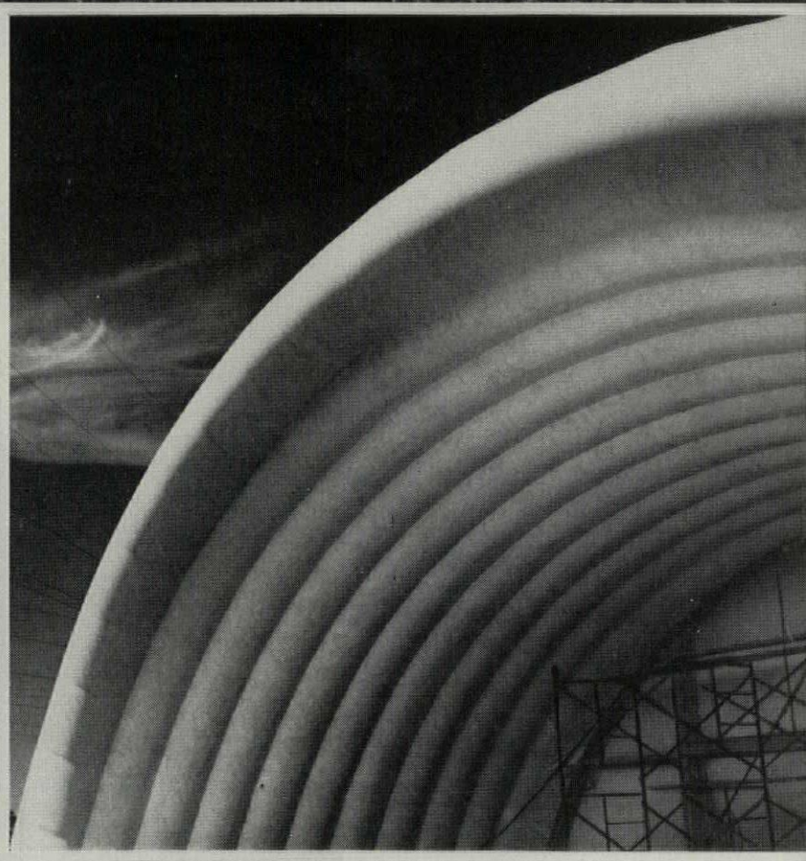
Lundy collaborated with Birdair Structures, Inc., of Buffalo, N. Y., the pioneer developer in the air-building field. In producing this structure, Birdair has introduced several structural concepts which had been conceived but not yet applied in air buildings as recently as a year ago (FORUM, July '59). For example, a conventional air-supported building is formed of a single membrane skin, held up by internal pressure. The new building, on the other hand, is made of two skins of vinyl-coated nylon, separated by a 4-foot air space (see sketch, p. 144). Independent pressure sources are provided for each: the inner skin is pressurized at 0.07 pounds per square inch above atmospheric, and the outer skin at 0.054 per square inch. The space between the inner and outer skins is separated into eight compartments (also shown in the sketch) so that if either skin should suffer damage, the relaxation of the damaged section would be confined to that single area. Moreover, the double skin offers increased occupant comfort. The 4-foot space between walls gives good insulation, rejecting solar energy that would otherwise require additional cooling equipment for the interior spaces.

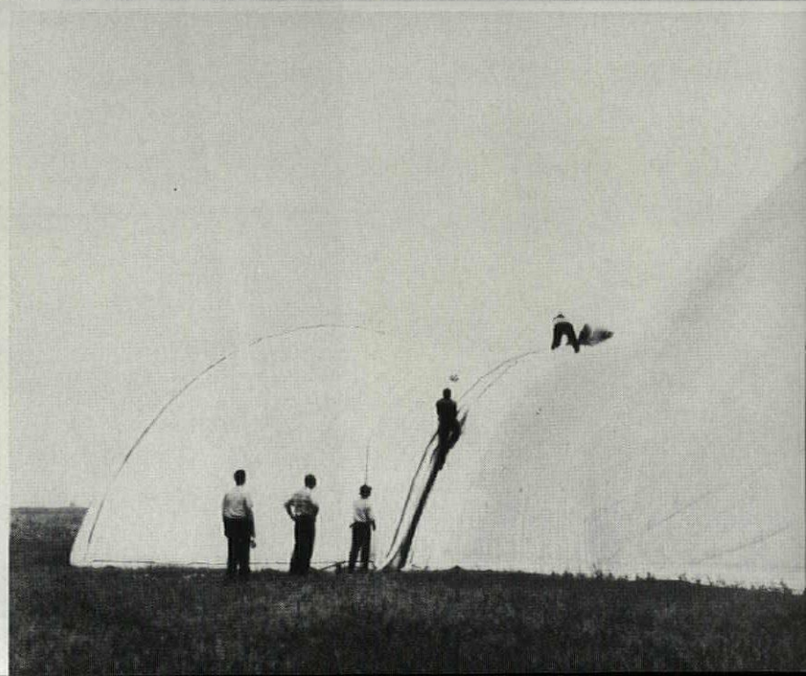
Each end of the building is supported and sealed by a rigid end frame (photo p. 145) which contains built-in revolv-

An idea develops: *earlier air buildings were usually hemisphere-shaped or vaulted. In this newest type, believed to be the first air structure designed in collaboration with an architect, the building envelope becomes a total, integral, malleable shape, molded to house two exhibition elements: a theater and a technical center (see model, below). The photos (left) show the integration of architectural components: the undulating exhibition area—enclosing 19,000 square feet—linking with arched canopies at either end of the 300-foot-long building. Canopies are air-inflated; unlike the main air structure, they need not be enclosed on all sides.*

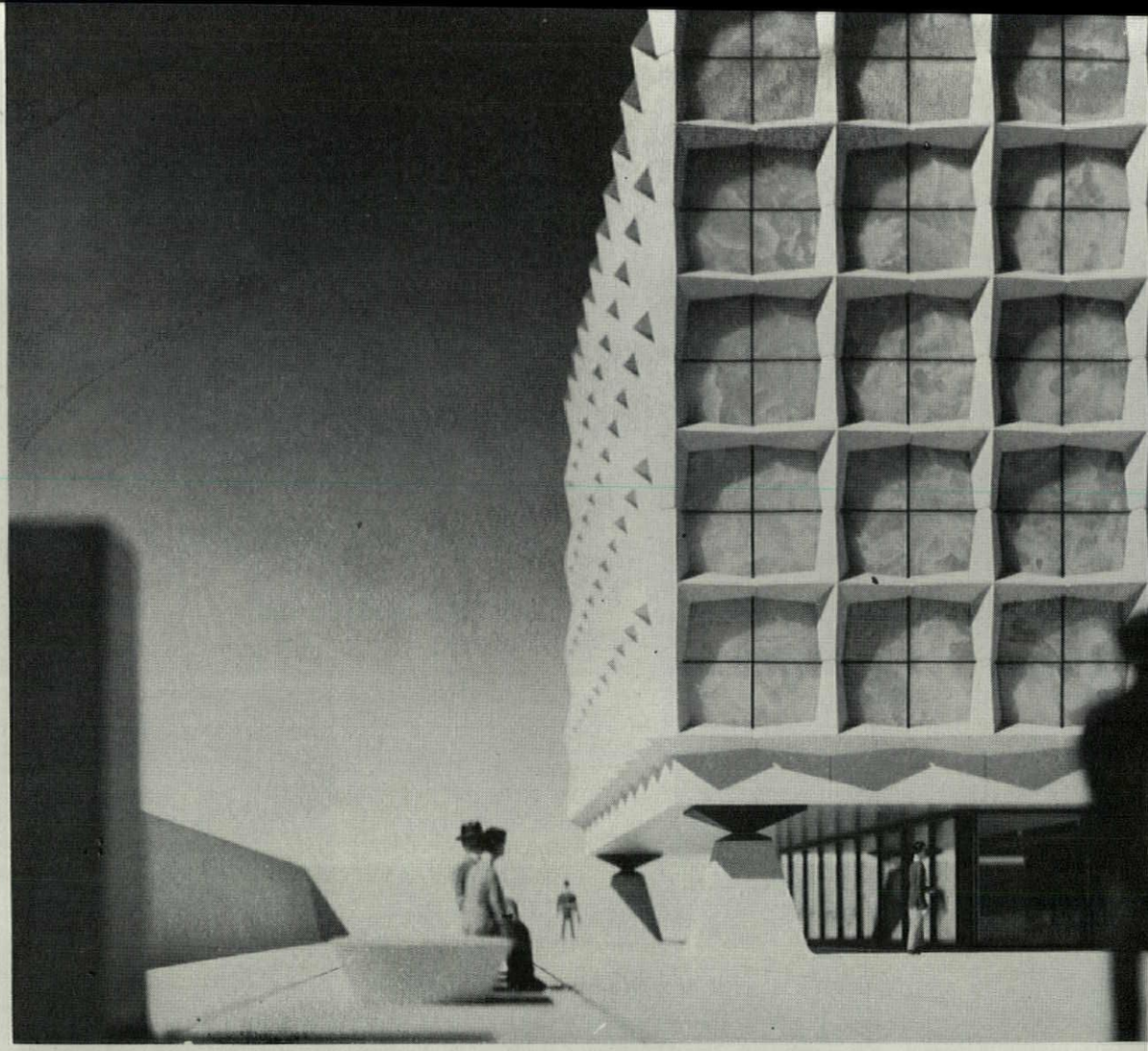
PHOTOS: GEORGE CSERNA







ARCHITECTS: Skidmore, Owings & Merrill (Gordon Bunshaft, in charge of design; David H. Hughes, in charge of coordination; Sherwood Smith, design assistant). CONSULTING ENGINEERS: Paul Weidlinger (structural); Jaros, Baum & Bolles (mechanical). GENERAL CONTRACTOR: George A. Fuller Co.



Corner *shows the ends of the big Vierendeel trusses resting on a bronze-covered ball and socket joint atop a tapered pier. Canted walls around the plaza will screen the open ground floor from the street and will be thick enough to contain exit stairs and air-conditioning vents.*

PHOTOS: © EZRA STOLLER

Sunken court *was designed by Sculptor Isamu Noguchi in abstract forms suggestive of the world and primal forces. Offices facing the court can be glimpsed in this photograph of the model.*