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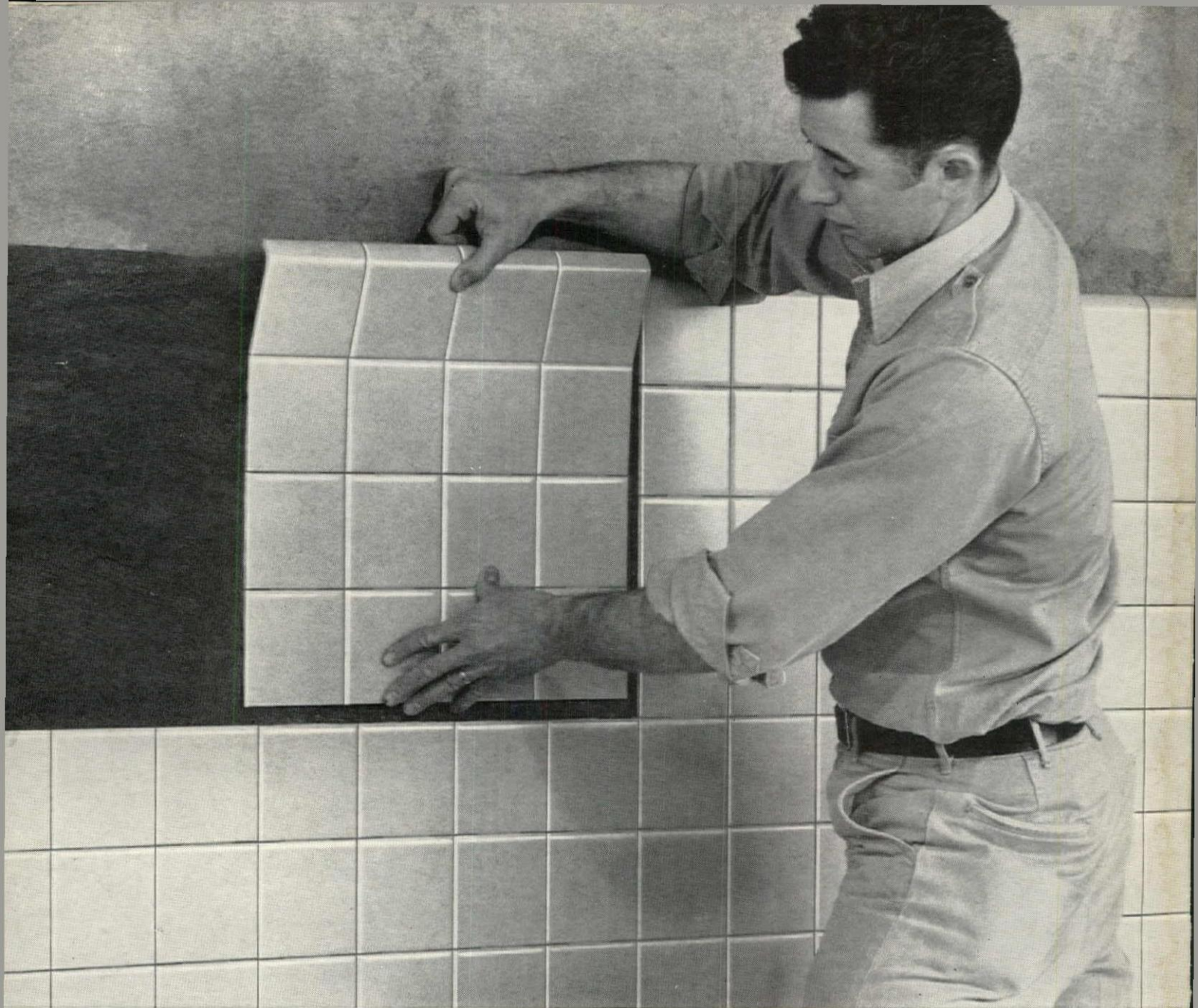
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ARCHITECTURE AS TOTAL COMMUNITY

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FULL CONTENTS ON PAGES 4 & 5



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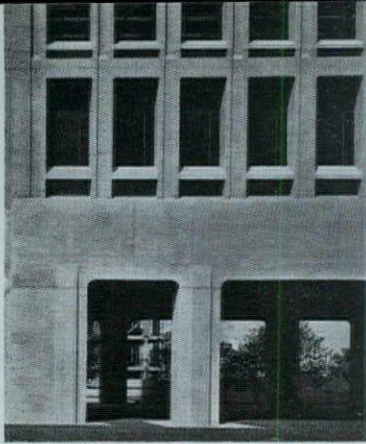
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ARCHITECTURE AND THE HOUSE

Perhaps in the end there is no building type more endlessly intriguing to architects than the house, and none more likely to invite the most sensitive interpretation of design convictions by the creative designer. A great new house and some related house designs will provide an architectural view of architectural development in the work of Edward Larrabee Barnes.

CAMPUS PLANNING FOR THE ENROLLMENT BOOM

The trend toward expansion of existing colleges and universities through development of distinct new campuses, not to mention the proliferation of new institutions of higher learning, is creating vast new opportunities for architects; and current projections of enrollment prospects over the next 15 to 20 years suggest that the boom is only beginning. Next month's Building Types Study will analyze various approaches to the design of new campuses represented in California's mammoth campus expansion program and will offer a look at some of the first architectural results.

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Housing Design Policies of Unconfused Accountants

As they have been at pains to tell architects (*ARCHITECTURAL RECORD*, August) the Federal Government's housing chiefs are actively campaigning for better design. But the HHFA and the PHA have had their collective knuckles rapped by the Comptroller General of the United States. In a 68-page published report (*ARCHITECTURAL RECORD*, September, page 10) he charges that "... the Public Housing Administration has inadequate criteria for identifying and eliminating elaborate or extravagant designs or materials in constructing and equipping projects. As a result, the costs of constructing and equipping projects in many cases have been higher than necessary and the objective of statutory limitations on costs has not been fully accomplished."

If there are determinations to be made, perhaps in the White House, as to governmental architecture, housing policies, environmental standards, aids to the country's ill-housed third, there is no indecision in the government's accounting offices. Minimal costs are the objective; the report points the scornful finger at such "excesses" as "outside ornamentation . . . hardwood floors . . . cast iron plumbing fixtures . . . ornamental walls and planter curbs. . . ."

Let's have no such nonsense, says the Comptroller General. Is it possible for this arbiter to be wrong? At a recent conference on leisure, this bewildered observer listened to a philosophy that awarded leisure to the poor, the Appalachian miners, and so on. The computer-automated assembly line would produce luxuries for all. Scientists, business leaders, planners, professional men (especially psychiatrists, one presumes) would be so pressed keeping everything moving that they would not have much leisure time. But we should need all possible "consumers" to absorb the output. So we might just as well make up our minds to accept a consumer class which would be occupied with enjoying the fruits of the system. School them to be good consumers.

A college professor recently put it

another way: Obviously we had to cut back on armaments. We already had a superabundance of nuclear weapons. We were getting so saturated with arms that it was inevitable that we taper off. We should, then, to keep up that consumption, turn our efforts to housing. We had a big housing job to do; let's get on with it. All the displaced scientists would leave their laboratories and start teaching other displaced workers. Give them better housing and better education. And since consumption was the goal, I suppose we should not be niggardly about it.

There is a sizable group right there in Washington, sometimes called liberals, or economists, or Harvard professors (in the political campaign they will be called something worse) who believe that the Federal Government should keep pushing out the stuff to keep the economy in high gear. Poverty is to be abolished. Everybody is to have a job. Everybody will earn money and spend it. Yes, it does seem old-fashioned to have to work for it.

Our own Bucky Fuller is not stuck with that anachronism. He says (*Saturday Review*, August 29) that computers will soon supply enough wealth for all mankind. To maintain the necessary purchasing power (he uses quotes) we shall pay all of humanity to go back to school, to learn and to develop higher living standards. Armaments Bucky regards (American armaments, that is) as the irrigation system that feeds the flow of money. Washington lobbyists and labor unions are "seeking ways in which to keep the economic irrigation system fed from the top" as disarmament progresses.

Born 30 years too soon, I was. What a good consumer I might have made, if only they had paid me to study it in school.

If this slaving spendthrift is bemused or bedazzled, the Comptroller General is not confused. He charged the PHA with "greater emphasis on environmental and esthetic aspects of housing rather than on promotion of economy as provided by the housing act," and he's against it.

—Emerson Goble

FEDERAL ARCHITECTURAL POLICY: WILL IT BE WORTHY OF "THE GREAT SOCIETY"?

Two years ago the Kennedy Administration brought forth a historic document: a "Statement of Federal Architectural Policy" (July 1962, pages 23 *et seq.*) designed to spur a Renaissance of creativity in Federal architecture.

Today the effort has produced some heartening results even if it has yet to reach all the goals set for it.

Some imaginative new buildings have gone up across the country, but many other new edifices look like the same old safe, stolid structures designed to offend no one except those interested in architectural progress.

General Services Administration, which is responsible for most buildings except post offices, military and Capitol Hill, is making a notable effort. Chief architect Karel Yasko believes fervently in the need for creativity and high standards in government building, and makes a constant and determined effort. But the sheer bureaucracy of government building programs—and sometimes lack of real comprehension by the local architects hired to do the job—are frequently defeating.

Daniel P. Moynihan, Assistant Secretary of Labor who wrote the original statement of policy, is disappointed in the results.

"Most of the bureaucracy has been absolutely indifferent," he says. "The basic fact is we are an old conservative country and can't do things quite as imaginatively as others. Look at Brasilia and the new capital of Malaysia; these are the beautiful capitals."

The same committee which brought out the policy statement produced the comprehensive new plan for redevelopment of Pennsylvania Avenue in Washington. A decision on whether to go ahead with that plan is now on President Johnson's desk and will be made some time after the election. Whether it is adopted will be one test of how conscientiously the Administration pursues the stated goals.

President Kennedy, according to an informed source, had come increasingly to think of the Pennsylvania Avenue plan as one of the important projects of his Administration, one of major significance.

The architectural policy statement was based on three principles: (1) buildings were not to innovate for the sake of novelty, but should "embody the finest contemporary American architectural thought"; (2) development of an official style must be avoided, and design should reflect the region where the building is located; and (3) choice and development of site should be an essential part of the design process. Ideas were to flow *from* the architectural profession to the Government, not vice versa.

The Federal policy is to get local architects to do the job. Yasko calls them in, drums the principles into them ("this thing has become our creed, our guide, our charter") and tells them: "We want the last ounce of your creative blood." Sometimes the architects come through, sometimes they do not.

General Services has built some 100 buildings since the policy statement, and Yasko estimates that "most" of them reflect the effort.

One example is a new Federal building and court house in Roswell, New Mexico. A solar screen surrounds the building as protection against the hot native sun, and an Aztec design is worked into the screen. Yasko calls it "an example of regionalism with a contemporary solution."

Another Federal building in Portsmouth, New Hampshire, adopts an arched concrete beam found in other buildings of the area and window projections native to the area. In Carson City, Nevada, a new building will feature unusually wide proportions of doors and windows. The reason is that Chinese laborers of the 19th century often used their own Asiatic concept of proportion in construction of that period which is common to the territory.

Now in the design stages are other buildings Yasko considers are results to the new principles: an air and space museum in Washington, the Spokane, Washington, Federal Building, a Philadelphia Federal office and courtroom building.

Yasko always emphasizes to architects that the ideas must come from them, that the "cold eye of criticism"

will be the Government's—but not the inspiration.

Asked why there are no domestic buildings that have created the stir that some of our new foreign embassies have, Yasko emphasizes that the Government is not trying to innovate. It is trying to adopt the best of "proven" contemporary design. "You will not find the novel in Government building but you will not find uniformity now either," he says.

Yasko emphasizes that good design need not be more expensive and that there have been no complaints from Congress about wasting money on design. The design must be kept within the square-foot cost limits set by Congress, but that leaves plenty of room for creativity.

Since the policy statement was brought out, GSA has undertaken a policy of setting half of 1 per cent of the building cost aside for fine arts. The guiding principle is that the art work must not be simply something applied to the building after it is finished but that it must be considered as an integral part of the architectural design.

Moynihan feels that despite the best efforts at the top the program is falling short too often. He notes that buildings like Lever House in New York are now an accepted part of contemporary American architecture, not merely an innovation, but that such concepts are not often reflected in current Government building.

One of the most criticized buildings is the new House Office Building on Capitol Hill, which looks like a high stone fortress. Moynihan ridicules it as "a symbol of a declining civilization." But that design was picked by Congress, which is not subject to the policy statement for buildings under Executive branch control.

The set of guidelines produced in 1962 was the first effort in history toward a comprehensive Federal policy on architecture. How much solid impact it will now have depends on how successful top administrators are in proclaiming and implementing the policy—and how much interest is shown by the new occupant of the White House.



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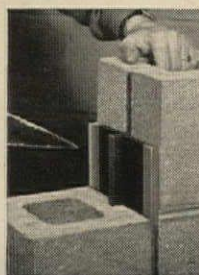
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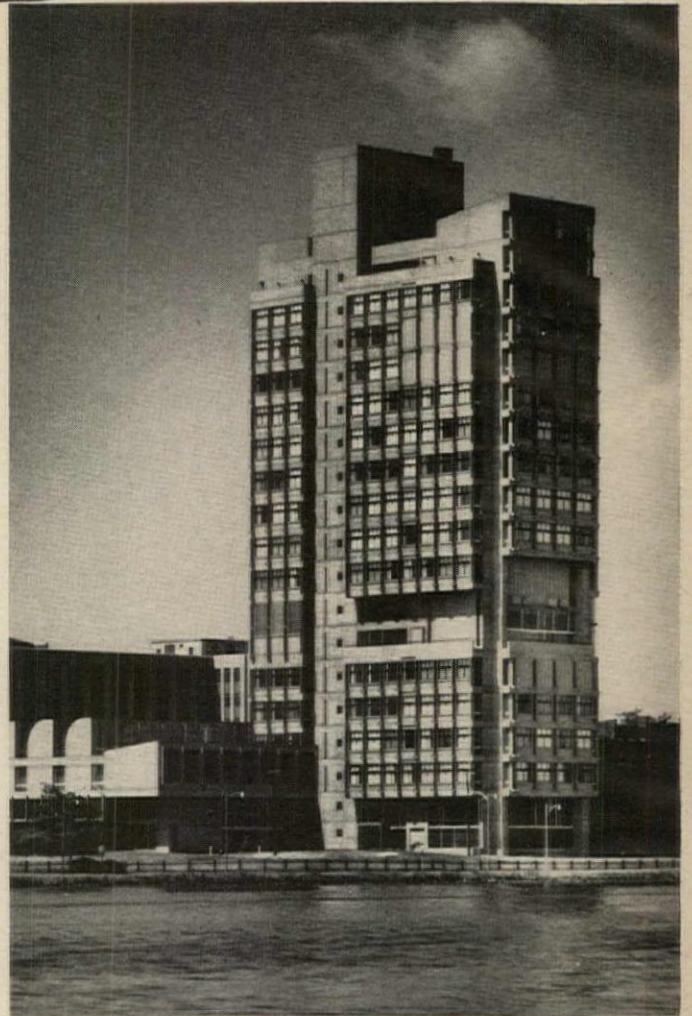


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EIGHT GET AWARDS IN BOSTON ARTS FESTIVAL

Design Awards have been presented to the architects of eight buildings from the architectural exhibition of this summer's Boston Arts Festival. Photographs of the pre-miated buildings are shown on these pages.

The jury for the Festival awards was composed of Prof. Lawrence B. Anderson, chairman of the Department of Architecture at the Massachusetts Institute of Technology; landscape architect Philip H. Lewis Jr., director of design and recreation, Resources Division, Department of Resource Development, State of Wisconsin; Prof. Mario J. Romanach of the Department of Architecture at University of Pennsylvania; and Jan C. Rowan, editor of *Progressive Architecture*. Earl R. Flansburgh, of Earl R. Flansburgh and Associates, Architects, Cambridge, Mass., was chairman of the Festival's Architecture and Landscape Architecture Committee.



Boston University Law and Education Tower and Law Library
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Structural Engineer: Paul Weidlinger
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Structural Engineers: Dormer & Mulcahy
General Contractor: Frank N. Gustafson

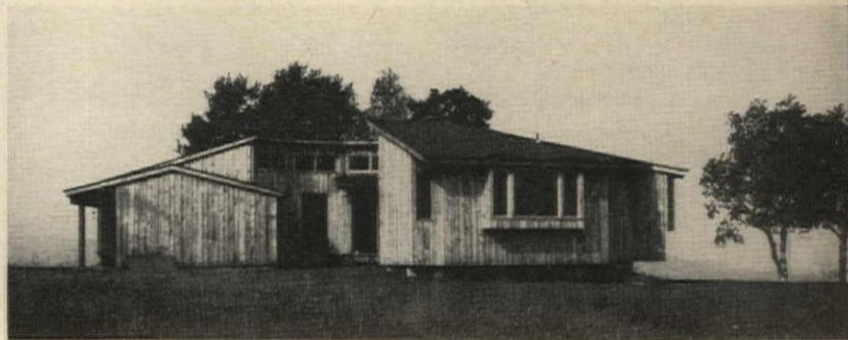
Phokion Karas



Residence in Cambridge, Massachusetts
Architect: F. Frederick Bruck
General Contractor: Newton Builders Inc.



Hoffman Laboratory of Experimental Geology
Harvard University, Cambridge, Massachusetts
Architects: The Architects Collaborative
Structural Engineers: Souza and True
General Contractor: Wexler Construction



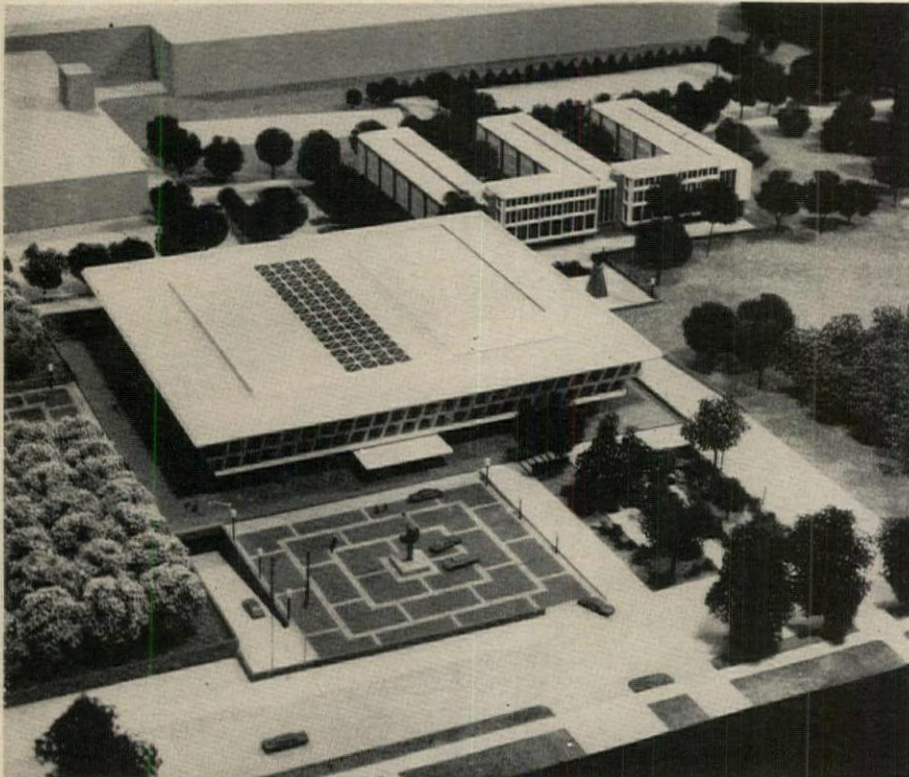
Residence, West Stockbridge, Massachusetts
Architect: John B. Rogers



Landscaping of Residence in Greenwich, Connecticut
Landscape Architect: Arthur Edwin Bye Jr.
Architect: Ray Johnson

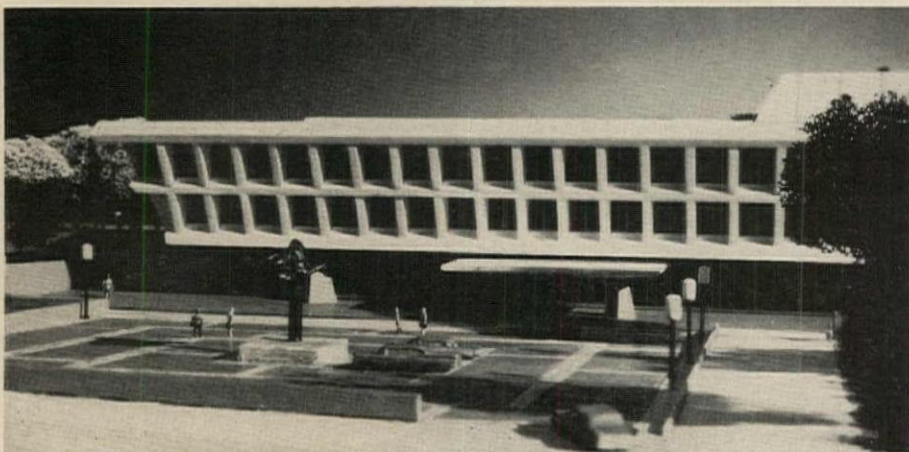


Wyman Street Office Building, Waltham, Massachusetts
Architects: Anderson, Beckwith and Haible
Structural Engineers: LeMessurier and Associates
General Contractor: George B. H. Macomber

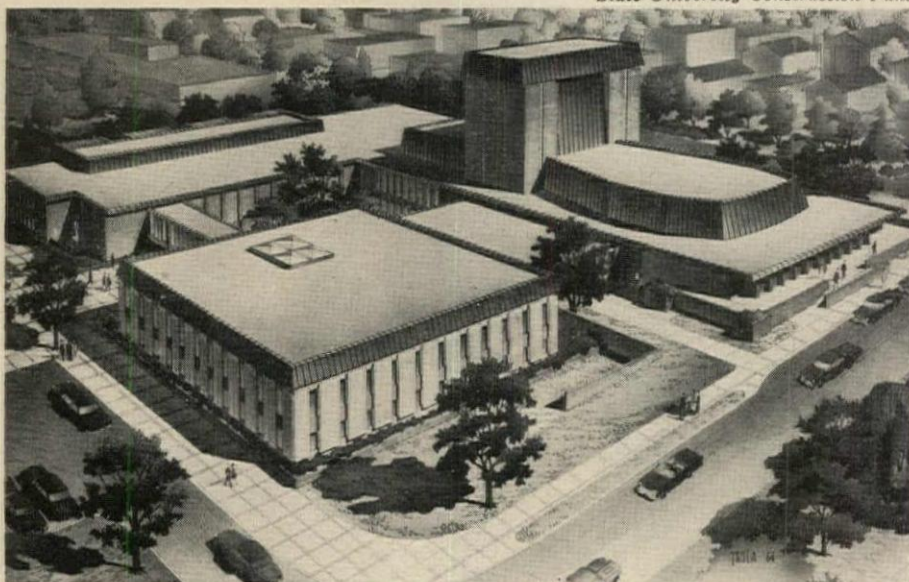


GM Institute Expands

Two new buildings to be built in the first stage of a long-range campus expansion program at General Motors Institute, Flint, Mich., are shown in model (*top left*). In foreground is four-level Student Activities and Conference Building, shown also (*lower photograph*) in closeup; in right background is men's residence hall, first dormitory to be built at the Institute. Exposed red brick in patios and portions of new structures will relate them to existing campus. Tarrapata-MacMahon Associates, Inc., are architects for the Institute's master development plan and the first two buildings



State University Construction Fund

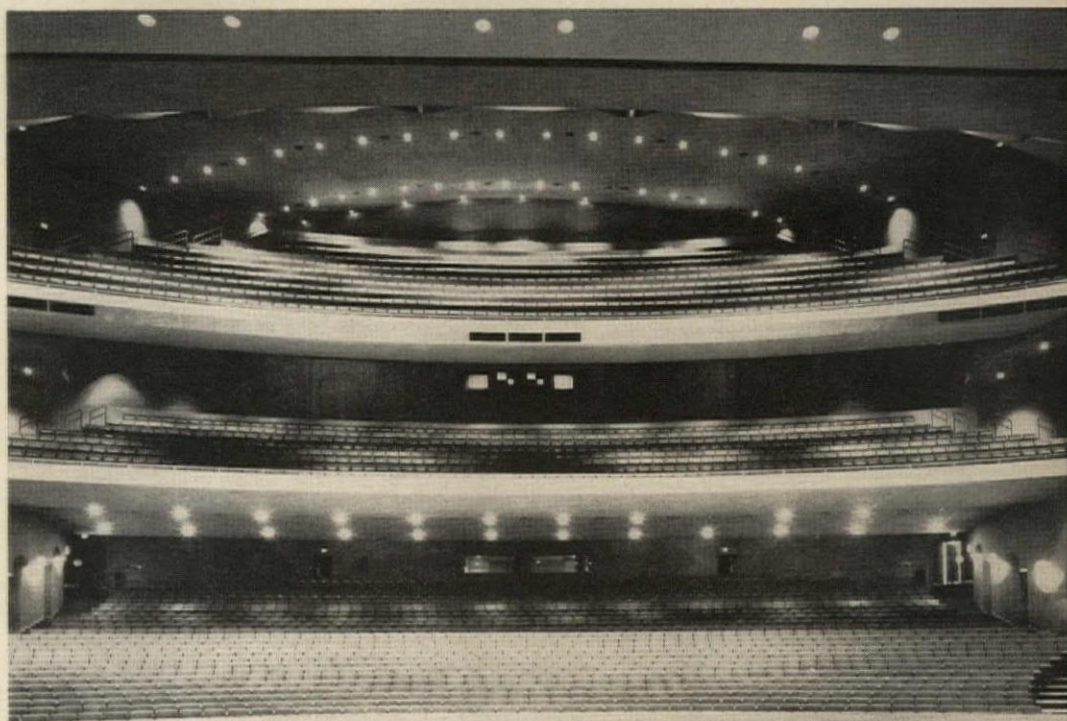


Fine Arts at Geneseo

A \$2.4 million Fine Arts Building has been designed for the State University College at Geneseo by Edgar Tafel, one of the three principal architects who formed MST Architects and Planners Associates to develop the comprehensive plan for the Geneseo campus. The building, intended to serve community as well as college, is designed in three sections—Music Instructional Wing (left foreground); Art Wing (left background); and Drama Wing (right), including a 400-seat theater. It will have brick exteriors and a lead-coated copper roof

FLW at Arizona State

One of the last buildings designed by Frank Lloyd Wright was completed last month—the Grady Gammage Memorial Auditorium at Arizona State University, Tempe, Arizona. The brick, steel and concrete structure was designed as a nucleus for the university's cultural center and will combine the functions of theater, auditorium and concert hall. It measures 300 feet long by 250 feet wide by 80 feet high, with two pedestrian bridges extending 200 feet from each side. A 3,000-seat auditorium of 90,050 square feet will seat 1,642 people on its tiered main floor, with accommodations for 89 on the forestage lift; 601 in the first balcony; and 668 in the second balcony. The farthest seat on the main floor is only 100 feet and the most distant balcony seat only 115 feet from the forestage. Taliesin Associated Architects, with William Wesley Peters as chief architect, completed the plans for the building from Wright's designs. General contractor was Robert E. McKee, Inc.

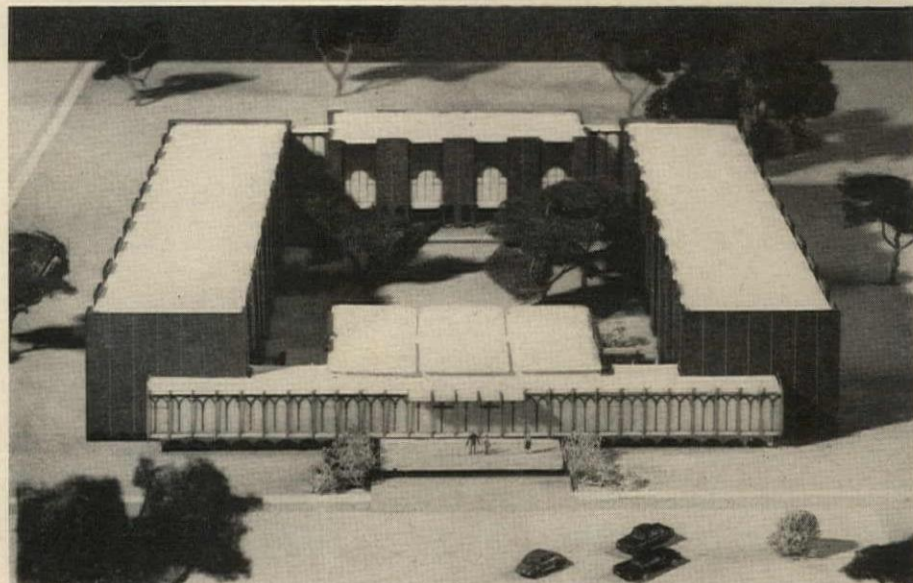


A V Photographic Service photos

Frank Lotz Miller

Dormitory for South

A three-story steel-framed structure designed around a courtyard and providing some 73,000 square feet of floor area will be built at Southeastern Louisiana College to house 400 women. Special study rooms will complement the student rooms, and two housemother suites will be provided adjacent to administrative areas. Exterior walls will be brick and glass, interior walls brick and wood paneling, ceilings acoustical tile and floors vinyl-asbestos tile. The building will be air-conditioned. Architects are Simoni, Heck & Associates; general contractor, J. M. Brown Construction Company






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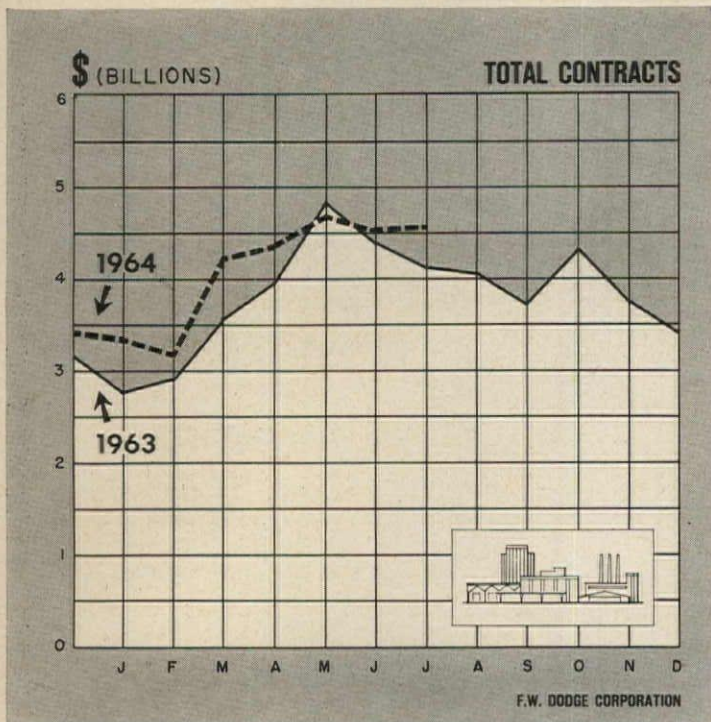
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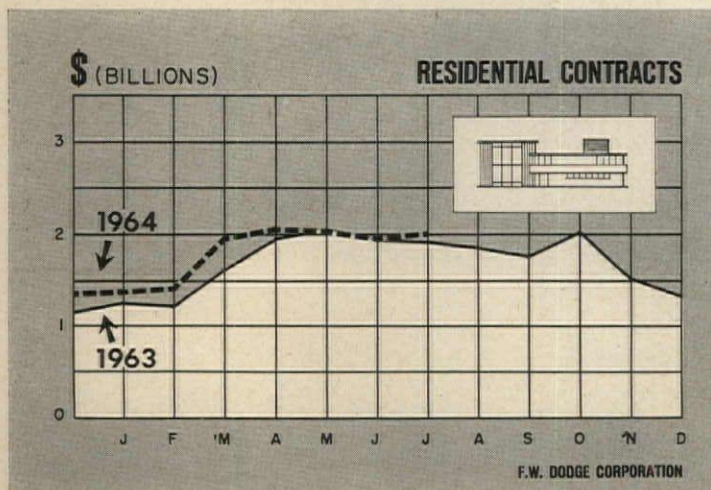
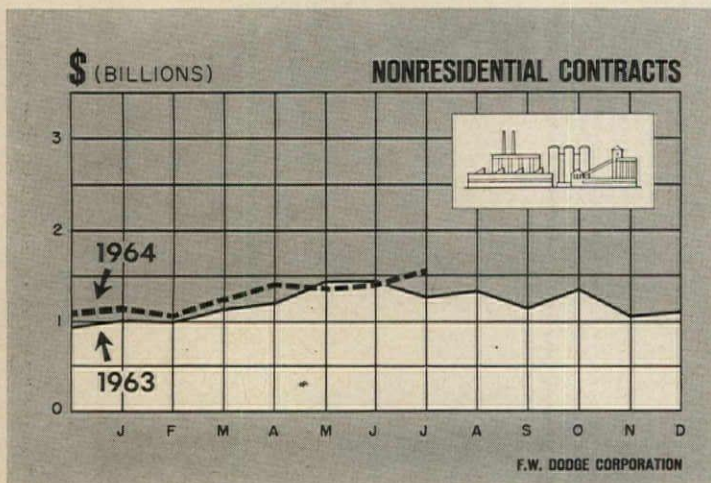
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Total contracts include residential, nonresidential and non-building contracts



GAINS IN BUILDING ACTIVITY REPORTED BY F. W. DODGE

After a period of some hesitancy, construction contract figures were again compatible with many other buoyant economic indicators when F. W. Dodge Company, a division of McGraw-Hill, Inc., reported its totals for July.

A strong gain in nonresidential building brought the month's total of all construction contract value to \$4,601,334,000, an advance of 12 per cent over the July 1963 level. At the end of seven months, 1964 contract value was 8 per cent ahead of the comparable 1963 period.

The seasonally adjusted Dodge Index for July, at 140 per cent of its 1957-59 base period value, scored the first month-to-month gain of the current year. The two-point increase followed a full quarter of level performance at 138.

All Sectors Share Increase

While nonresidential building contract value, at \$1,547,531,000 up 22 per cent over the 1963 month, registered the largest gain, residential and nonbuilding construction contract values also increased, by 3 per cent and 14 per cent respectively. And for the seven-month period, residential contract value showed a 6 per cent increase and nonbuilding construction a 13 per cent increase over the 1963 period.

Stores, warehouses, factories and electric utilities all played a large part in the July gain, which was attributed chiefly in the analysis of Dodge Economist George A. Christie Jr. to a broad advance in industrial and commercial building activity.

Manufacturing buildings, with a July-to-July gain of 46 per cent, led the several nonresidential building categories. Stores and other mercantile buildings also made a strong showing, with an 18 per cent gain, while warehouses led the year-ago volume by more than 30 per cent. Office buildings, the only weak category for the month, ran behind in contract value by 20 per cent; and at the seven-month mark were 10 per cent under the volume for the 1963 period. Large percentage gains were also shown by several other nonresidential building types—school buildings, up 29 per cent; hospital buildings, up 40 per cent; and public buildings, up 36 per cent.

Apartment Contracts Up

Residential building contracts for the month totaled \$2,000,168,000. Single-family housing, which accounts for the largest part of the total, was just equal to the year-ago volume; but apartment contracts were up 2 per cent. The balance of the increase was accounted for by hotels, motels, dormitories and other non-housekeeping buildings. The number of dwelling units included in the July contract total was 4 per cent less than last year's unit count for the month.

In the non-building construction category, the total contract value for the month was \$1,053,635,000. A 6 per cent decline in the largest individual construction type, streets and highways, was more than offset by substantial gains in most other types—electric power and heating systems showed an increase of almost 150 per cent, and missile and space facilities contracts were up 600 per cent.

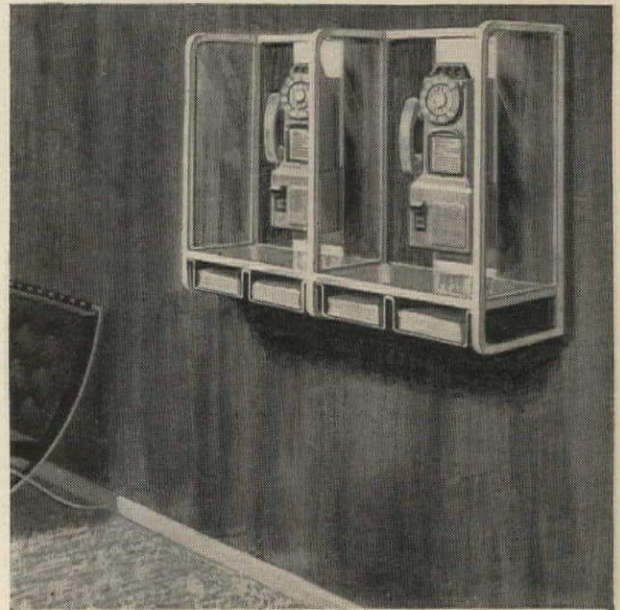


...AND

HOW MANY?

WHICH?

WHERE?



For general information on telephone planning, see Sweet's Architectural File, 33a/Be.

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Building Construction Costs

By Myron L. Matthews

Manager-Editor, Dow Building Cost Calculator,
an F. W. Dodge service

The information presented here permits quick approximations of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). The tables and charts can be used independently, or in combination as a system of complementary cost indicators. Information is included on past and present costs, and future cost can be projected by analysis of cost trends.

A. CURRENT BUILDING COST INDEXES—SEPTEMBER 1964
1941 Averages for each city = 100.0

Metropolitan Area	Cost Differential	Current Dow Index		Per Cent Change Year Ago Res. & Nonres.
		Residential	Nonresidential	
U.S. AVERAGE—21 Cities	8.5	265.7	282.9	+2.31
Atlanta	7.1	299.8	318.0	+2.98
Baltimore	8.0	263.6	285.7	+2.22
Birmingham	7.4	246.3	264.9	+2.63
Boston	8.4	239.7	253.7	+2.92
Chicago	8.8	295.3	310.6	+2.17
Cincinnati	8.8	256.2	272.4	+2.21
Cleveland	9.3	268.2	285.1	+2.22
Dallas	7.8	251.2	259.5	+1.66
Denver	8.3	272.9	290.1	+2.43
Detroit	8.9	266.9	280.2	+2.29
Kansas City	8.3	238.9	252.9	+1.13
Los Angeles	8.4	268.9	294.2	+2.17
Miami	8.4	263.9	277.0	+1.90
Minneapolis	8.9	266.6	283.4	+2.11
New Orleans	7.9	239.4	253.7	+1.01
New York	10.0	275.1	295.9	+2.55
Philadelphia	8.7	264.6	277.8	+1.93
Pittsburgh	9.1	251.4	267.3	+2.60
St. Louis	8.9	259.0	274.5	+2.93
San Francisco	8.5	339.8	371.7	+3.36
Seattle	8.5	243.1	271.6	+1.85

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

1941 average for each city = 100.0

Metropolitan Area	1952	1957	1958	1959	1960	1961	1962	1963 (Quarterly)				1964 (Quarterly)					
								1st	2nd	3rd	4th	1st	2nd	3rd	4th		
U.S. AVERAGE 21 Cities	213.5	244.1	248.9	255.0	259.2	264.6	266.8	269.4	270.3	273.4	275.0	274.7	276.8				
Atlanta	223.5	269.6	277.7	283.3	289.0	294.7	298.2	302.0	303.0	305.7	307.5	310.0	312.3				
Baltimore	213.3	249.4	251.9	264.5	272.6	269.9	271.8	272.3	272.9	275.5	277.1	277.2	279.3				
Birmingham	208.1	228.6	233.2	233.2	240.2	249.9	250.0	251.3	252.0	256.3	257.8	258.0	259.9				
Boston	199.0	224.0	230.5	230.5	232.8	237.5	239.8	240.4	241.2	244.1	245.6	246.1	247.9				
Chicago	231.2	267.8	273.2	278.6	284.2	289.9	292.0	296.4	296.4	301.0	302.8	302.2	304.5				
Cincinnati	207.7	245.1	250.0	250.0	255.0	257.6	258.8	260.0	260.7	263.9	265.5	265.1	267.1				
Cleveland	220.7	258.0	257.9	260.5	263.1	265.7	268.5	272.3	272.8	275.8	277.4	276.3	278.4				
Dallas	221.9	228.4	230.5	237.5	239.9	244.7	246.9	251.5	252.2	253.0	254.5	253.7	255.6				
Denver	211.8	245.6	252.8	257.9	257.9	270.9	274.9	275.0	275.4	282.5	284.2	282.6	284.7				
Detroit	197.8	237.4	239.8	249.4	259.5	264.7	265.9	267.1	267.9	272.2	273.8	272.7	274.7				
Kansas City	213.3	230.5	235.0	239.6	237.1	237.1	240.1	242.3	242.9	247.8	249.3	246.2	248.0				
Los Angeles	210.3	248.4	253.4	263.5	263.6	274.3	276.3	279.1	279.7	282.5	284.2	284.0	286.1				
Miami	199.4	234.6	239.3	249.0	256.5	259.1	260.3	262.4	266.7	269.3	270.9	270.1	272.1				
Minneapolis	213.5	235.6	249.9	254.9	260.0	267.9	269.0	271.4	272.1	275.3	276.9	275.0	277.1				
New Orleans	207.1	232.8	235.1	237.5	242.3	244.7	245.1	246.5	246.5	248.3	249.8	247.1	248.9				
New York	207.4	240.4	247.6	260.2	265.4	270.8	276.0	280.9	280.9	282.3	284.0	284.8	286.9				
Philadelphia	222.3	255.0	257.6	262.8	262.8	265.4	265.2	265.6	265.6	271.2	272.8	271.1	273.1				
Pittsburgh	204.0	234.1	236.4	241.1	243.5	250.9	251.8	255.0	256.1	258.2	259.7	260.8	262.7				
St. Louis	213.1	237.4	239.7	246.9	251.9	256.9	255.4	260.1	262.4	263.4	265.0	266.8	268.8				
San Francisco	266.4	302.5	308.6	321.1	327.5	337.4	343.3	350.1	350.1	352.4	354.5	358.2	360.9				
Seattle	191.8	221.4	225.8	232.7	237.4	247.0	252.5	256.5	257.8	260.6	262.2	260.1	262.0				

HOW TO USE TABLES AND CHARTS: Building costs may be directly compared to costs in the 1941 base year in tables A and B; an index of 256.3 for a given city for a certain period means that costs in that city for that period are 2.563 times 1941 costs, an increase of 156.3% over 1941 costs.

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

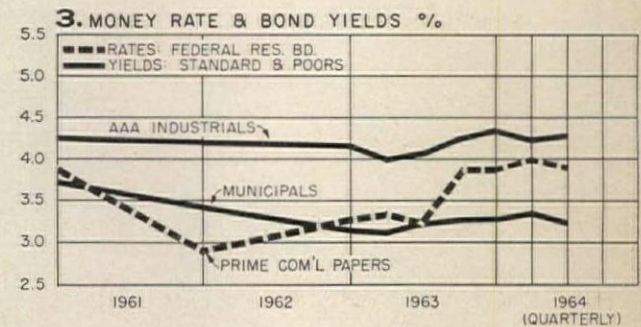
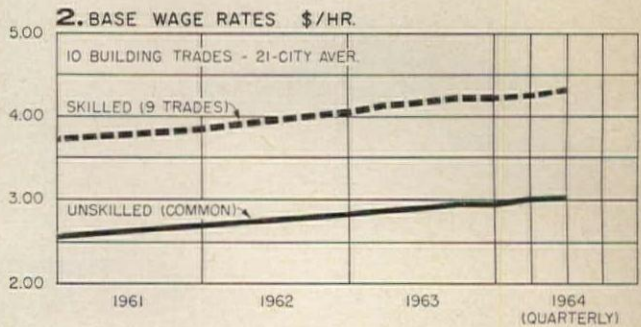
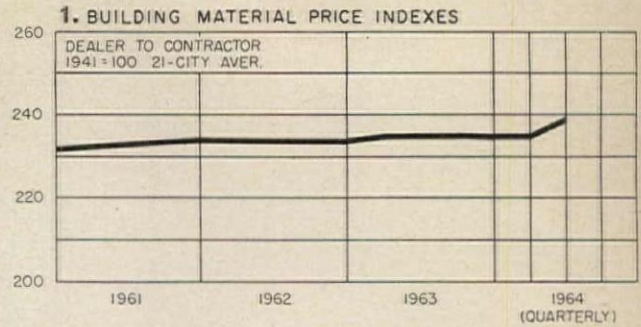
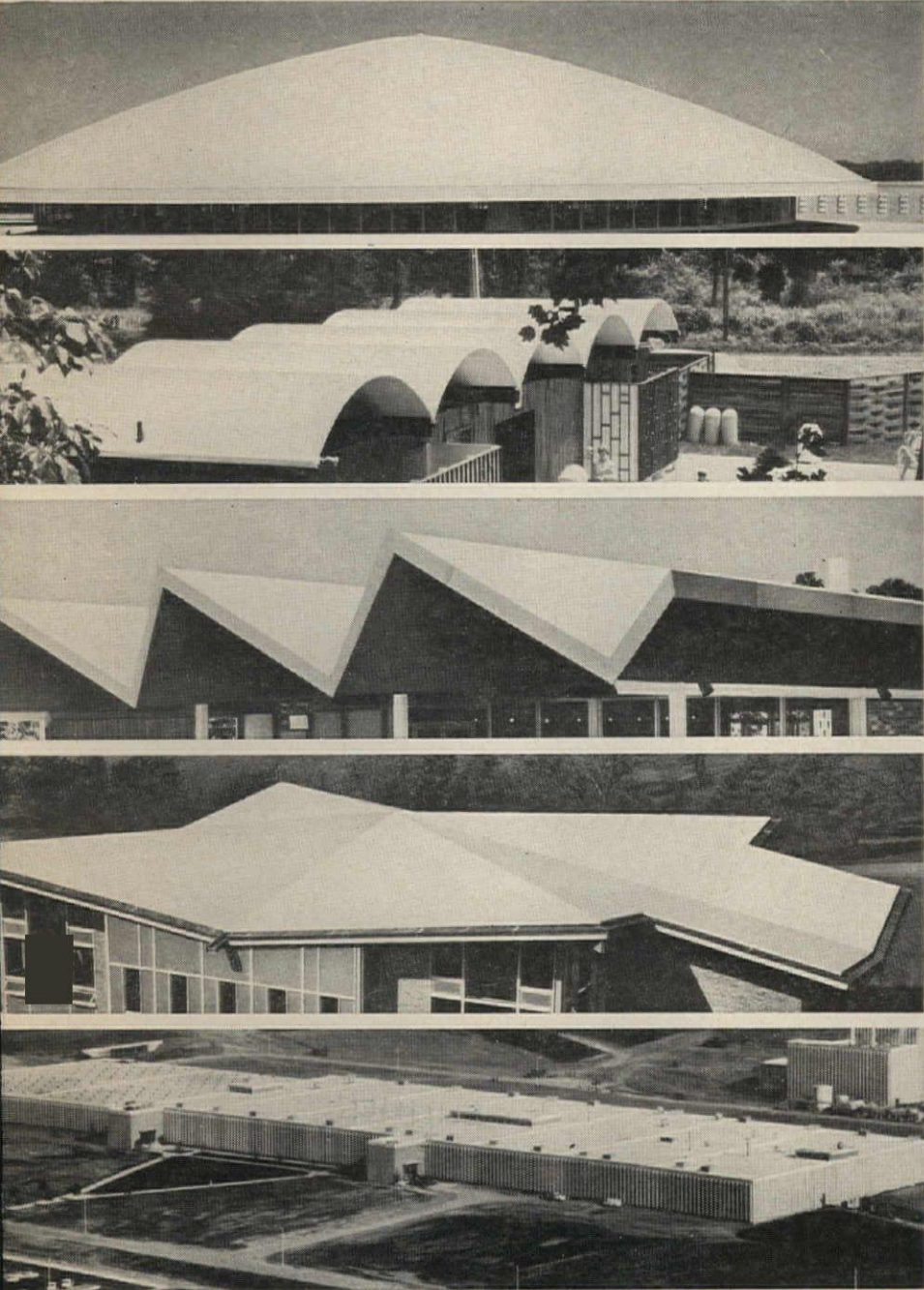


TABLE B. Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other: if index for a city for one period (200.0) divided by index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than those of the other. Also, second period costs are 75% of those of the other date (150.0 ÷ 200.0 = 75%) or 25% lower in the second period. CHART 1. Building materials indexes reflect prices paid by builders for quantity purchases delivered at construction sites. CHART 2. The \$1.20 per hour gap between skilled and unskilled labor has remained fairly constant. CHART 3. Barometric business indicators that reflect variations in the state of the money market

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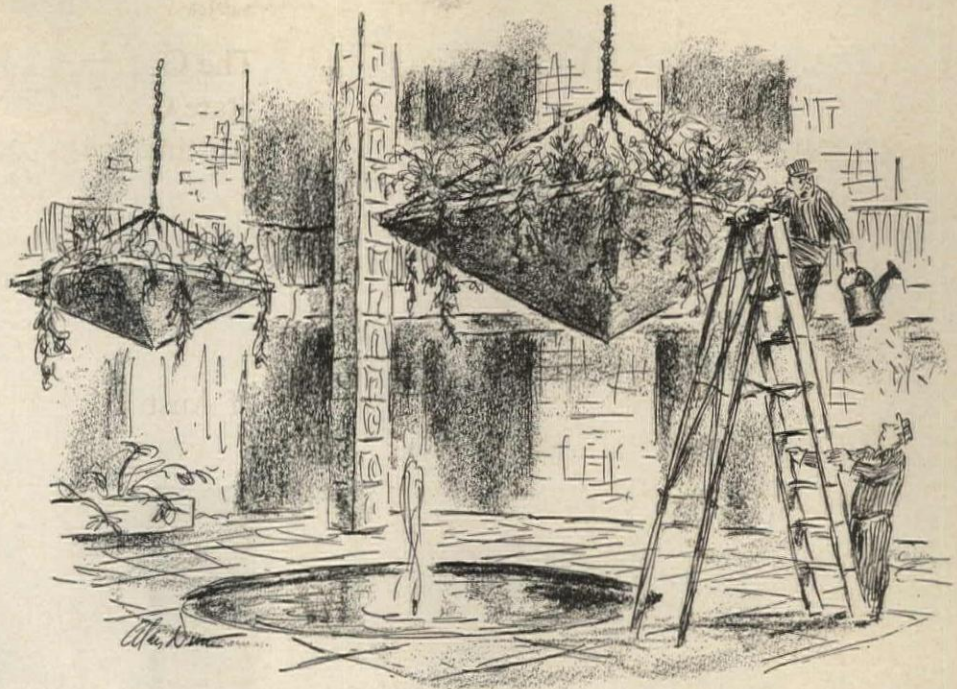


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—Drawn for the RECORD by Alan Dunn

“Now this is where Ed Stone and me go our separate ways!”

CONGRESS AND CONSTRUCTION: AID TO HOUSING, HOSPITALS—AND POVERTY

President Johnson built a large part of his political reputation with his ability, as Senate majority leader, to get the most out of Congress. On the record of the past 10 months, it is now apparent that he has not lost that touch—has even sharpened it from the White House.

Under the President's pressure, Congress has passed a number of bills that at first glance seemed doomed. Of particular interest to architects and engineers are such as a housing bill that was far from the “bare bones” measure once thought possible, a sizable expansion of the Hill-Burton Hospital Aid Program and the new Anti-Poverty Program.

A good deal of this type of social legislation is made possible, of course, by cuts in military spending; this year's military budget is \$1.5 billion less than last year and spending is expected to drop about \$1 billion a year for the next five years.

So, if President Johnson wins the November election, more social legislation is bound to find its way to Congress. If Senator Barry Goldwater wins, a cutback in such legislation undoubtedly could be expected.

Assuming a Democratic victory, one of the major administration drives next year will be for enactment of the “New Towns” provision that was dropped from this year's housing bill. This is designed to spur private construction of whole new “satellite” communities near big cities, with lots of green space, transportation to city center, and planned areas for commercial and industrial development.

The proposal would allow the Federal Housing Administration to insure loans up to \$50 million for any one new community—covering such as land purchase, streets and utilities. These would be completely planned communities, including schools and churches.

The President has said that “in the next 40 years we must rebuild the entire urban United States.” He speaks of “a place where the city of man serves not only the needs of the body and the demands of commerce, but the desire for beauty and the hunger for community.”

Even without this provision, the 1964 housing bill made significant advances in government support of housing. New starts is one of the few

weak spots in the economy at present, and the administration brought all the pressure it could to bear on Congress to make certain a strong bill emerged. The goal: raising construction of housing units from the present 1.6 million a year to 2 million or more a year by the end of this decade.

Key points of the housing bill include an increase from \$25,000 to \$30,000 of the maximum amount insurable by FHA, and a liberalization of terms under which national banks and insured savings and loan associations may issue mortgage loans. In the bill, Congress also authorized an expansion of programs in public housing, rural housing, rental housing for the elderly and urban renewal.

An important change for architects to note: sites over tunnel entrances, bridges and railroad tracks now are authorized for use as urban renewal housing locations for low and moderate income families.

New Hill-Burton Focus

On an even larger scale, the 1964 session of Congress broke some new ground in the Hill-Burton program

continued on page 26

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of Federal aid for hospital construction. Most important, perhaps, the House and Senate authorized a new category of aid for the modernization and replacement of obsolete hospitals, most of which are in big cities.

In extending the Hill-Burton program for five years through June 30, 1969, Congress voted \$20 million for this modernization and replacement program in fiscal 1966 (beginning next July 1), \$35 million in fiscal 1967, \$50 million in fiscal 1968 and \$55 million in fiscal 1969.

During that same period, regular Hill-Burton funds will decline slightly. But the addition of modernization-replacement funds makes the over-all authorization for the next five years considerably larger.

Another new Hill-Burton provision is the appropriation of \$2.5 million for the current fiscal year and \$5 million for each of the next four years to be disbursed in the form of grants to state agencies and metropolitan planning units to plan for im-

proved hospital facilities and services in areas of overlapping political jurisdictions.

Poverty and Construction

The Johnson Anti-Poverty Program will generate a good deal of construction work. Some of it will be done by the 15,000 to 20,000 youths, aged 16 to 21, who will be enrolled in the program and some by contractors, particularly facilities needed at the 150 work camps soon to be set up.

Interior Department officials say about \$250,000 will be invested in new facilities at each of the 150 camps, with about half of them getting permanent frame or cinderblock structures. Enrollees will do only unskilled work.

So far as government construction is concerned, the Army Corps of Engineers got a substantial boost of more than \$100 million this year for continuing projects and 63 new construction starts that eventually will cost nearly \$900 million. This year's

appropriations for the Corps total over \$1 billion.

Other big gainers are the Army's construction budget, up 50 per cent over last year, and the Navy's construction budget, up nearly 25 per cent. However, virtually every other Federal agency took a budget cut in the construction area.

This year's Congress did impose quite an added burden on architects and consulting engineers who help prepare bids on government contracts, in addition to placing another cost burden on the contractor. It amended the Davis-Bacon Act to require all contractors to pay "bona fide" fringe benefits as well as prevailing wages on government projects.

This will add an estimated 25 to 35 cents an hour in employer payroll costs for work on government contracts. It also will have the effect of making it more difficult for non-union contractors to underbid union contractors on Federal projects.

SYSTEMS APPROACH TO BUILDING THEME OF ENGINEERING FOUNDATION RESEARCH CONFERENCE

Evidence mounts that more and more scientific methods will be applied to building design and construction, and that the building industry is undergoing a not so quiet revolution in this direction. That these scientific methods, such as systems analysis, may have a long-reaching effect on building design was a strong implication of a five-day "Conference on the Building Construction System—A Challenge to Innovation" held August 17-21 at Proctor Academy in Andover, New Hampshire.

Invited to the conference, sponsored by the Engineering Foundation, were some 80 people, including theorists from inside and outside the building industry, professionals and professors from architecture and engineering and construction, and several researchers from manufacturing organizations.

Subject areas covered by the conference included systems analysis applied to building design, changing patterns of education, structural design, the internal physical environment, prefabricated building components, integrated mechanical systems

Two of these areas—systems analysis and prefabricated components—attracted greatest attention of the conferees.

Systems analysis was discussed as it has been employed by the military and industry, and how it might be used to aid architectural programming—to make the process at once more thorough and objective.

Even though Christopher Alexander's presentation of a mathematical concept for architectural programming undoubtedly left many questions unanswered, it was obvious that he set many conferees to wondering just where this technique might lead. Alexander, who is both a mathematician and an architect, presently with the department of architecture at the University of California, stated his belief that architectural form could be determined by this process in a general, conceptual way. (It could determine a "family of noses, but not necessarily a particular nose.") The important thing, he said, was to determine the important needs of a building in a more orderly way. (A review of Alexander's book, "Notes

on page 50.)

Many of the conferees wondered out loud actually what the word "systems" meant in the context of the meeting, and indeed the semantics did change from program to program.

In the systems analysts' lexicon it was defined as broadly as embracing all the factors that interact in occupants' use of a building, to including merely the familiar building sub-systems—walls, structural system, mechanical system, and so on.

How such sub-systems could be prefabricated to improve performance, reduce costs, while maintaining individuality of design, was discussed by Ezra Ehrenkrantz, who heads the School Construction Systems Development (SCSD) project in California. He brought the audience up to date with the progress of the project.

The conference program obviously was intended to stimulate thinking about building research in new directions. Topics on the program emphasized those areas currently causing greatest concern and cross holding



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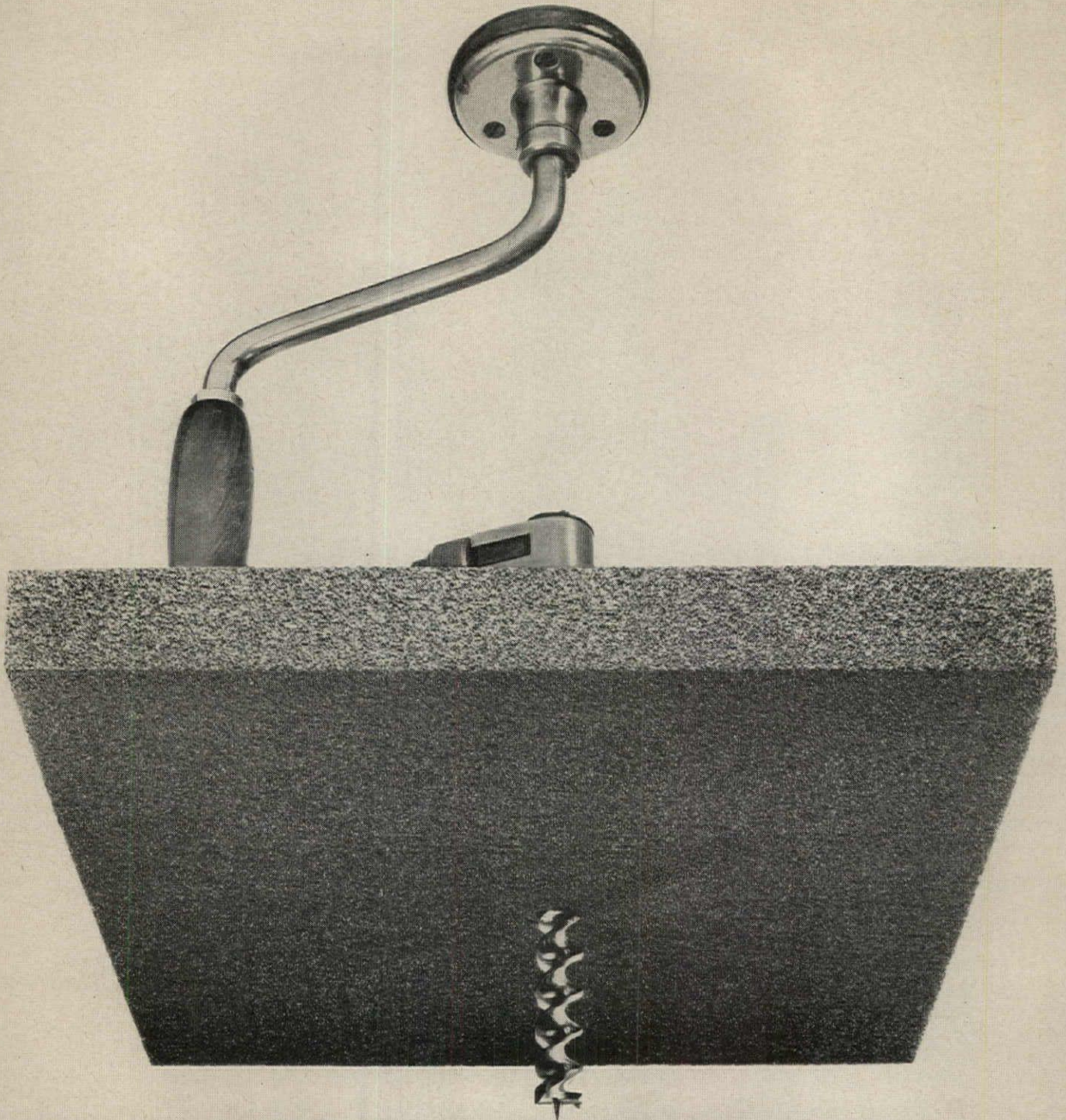
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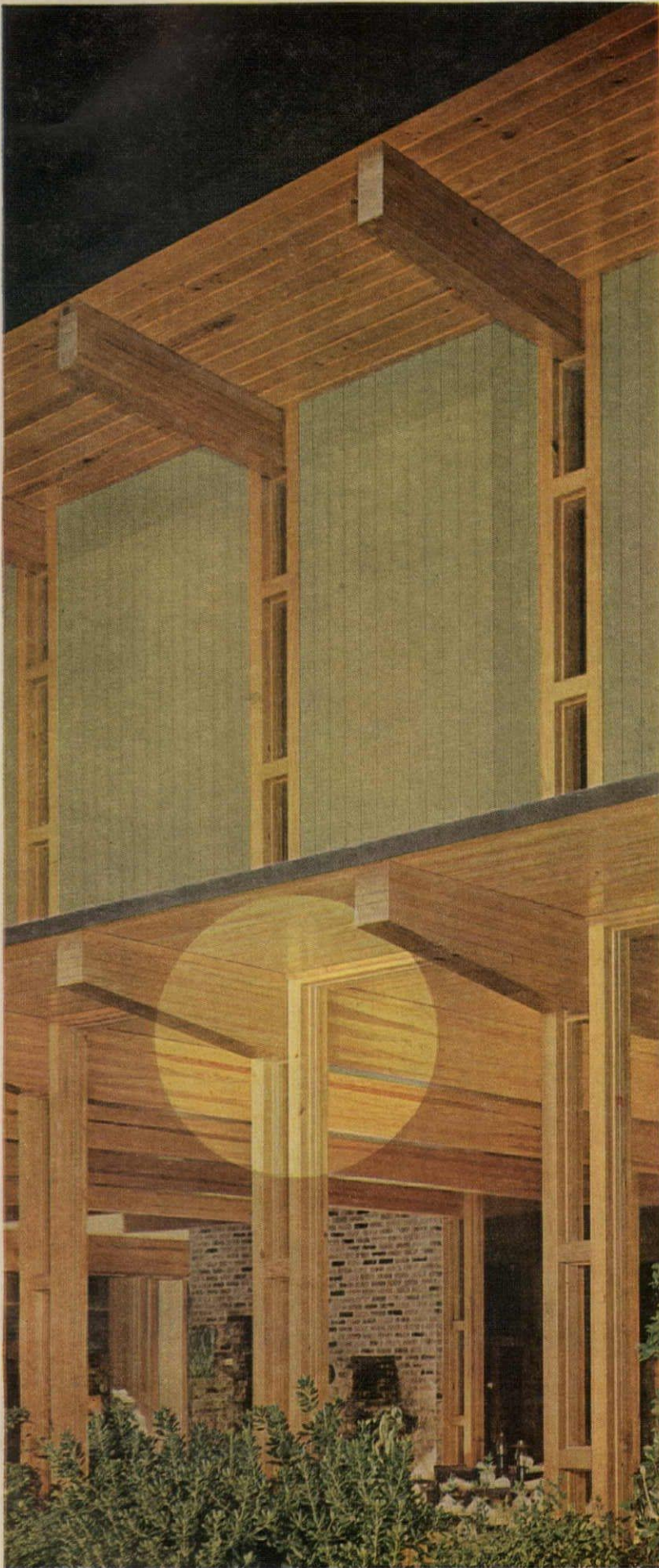
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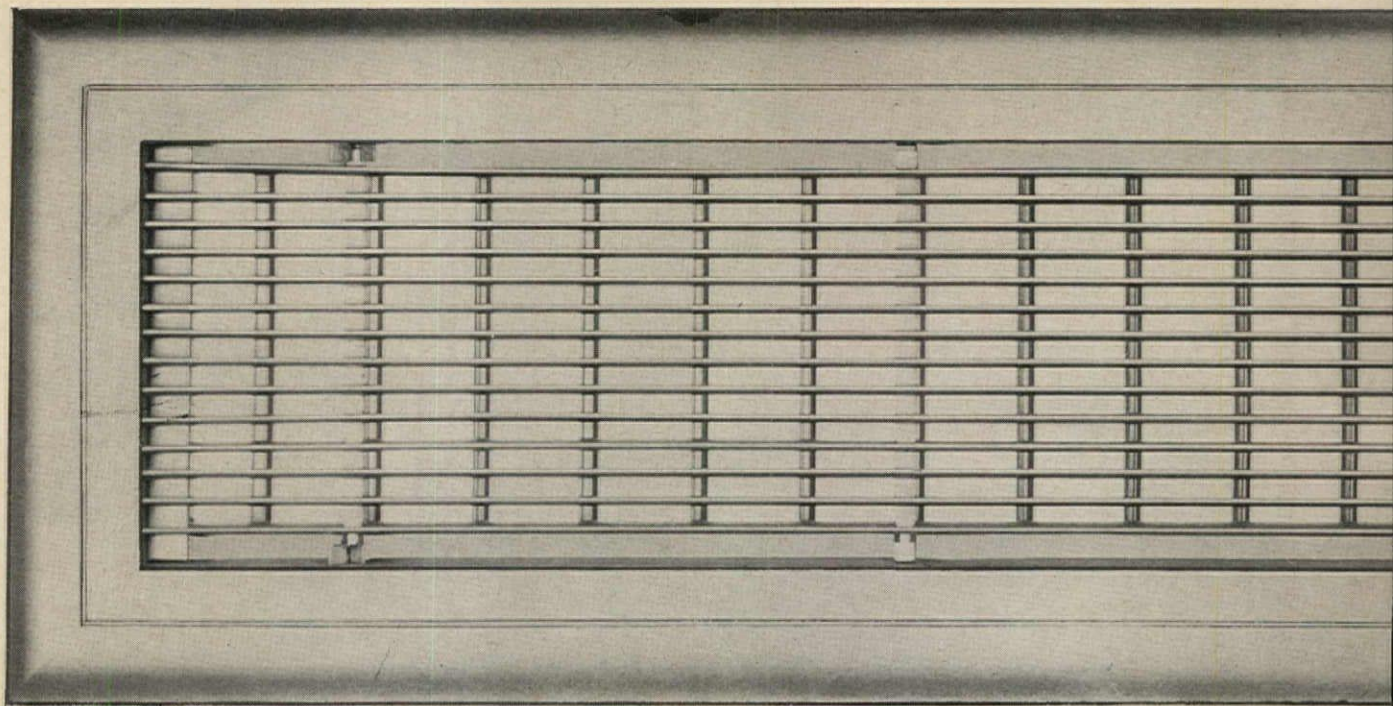
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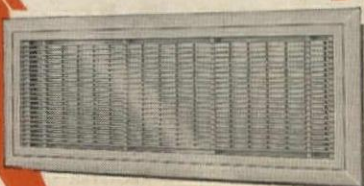
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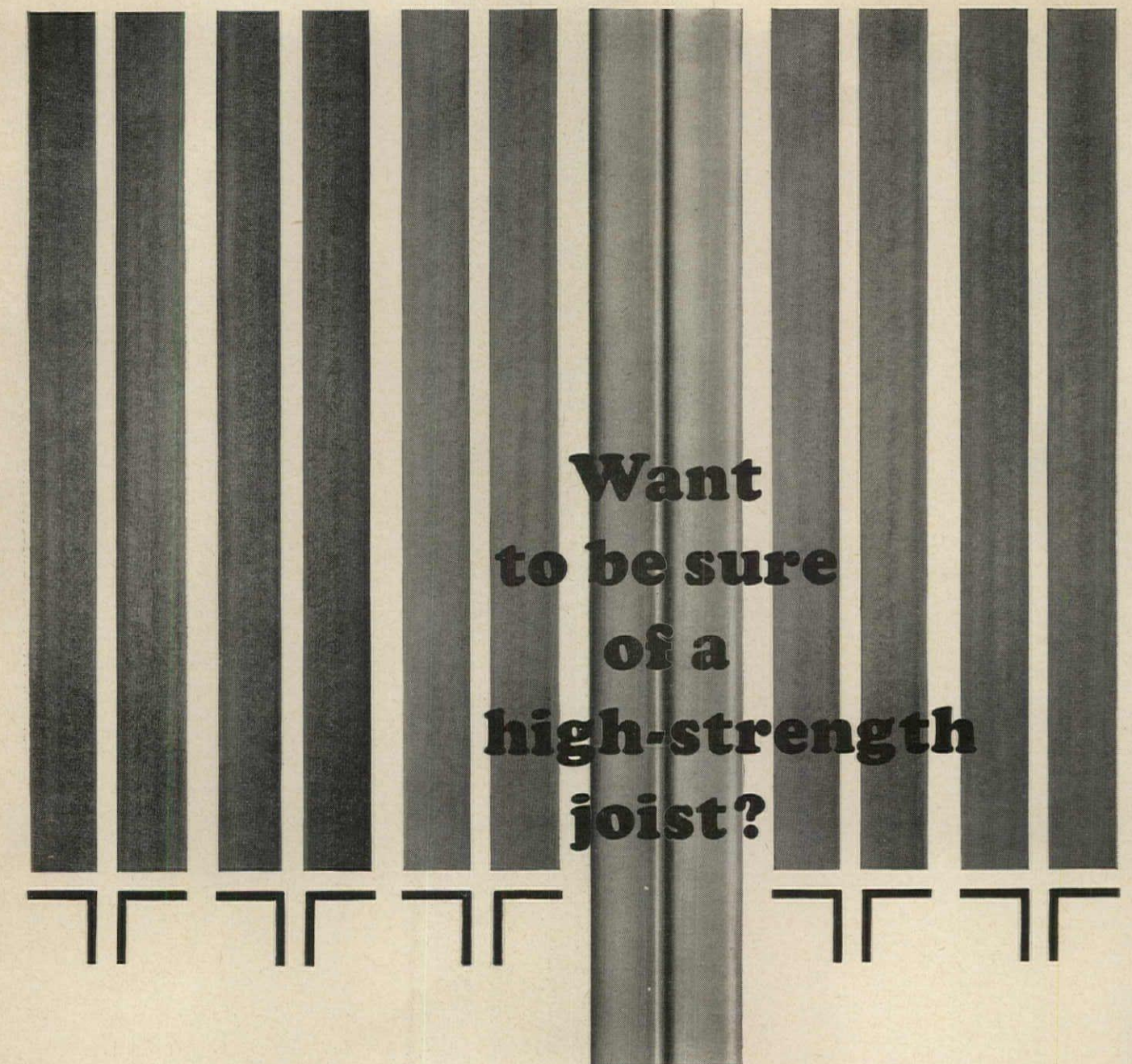
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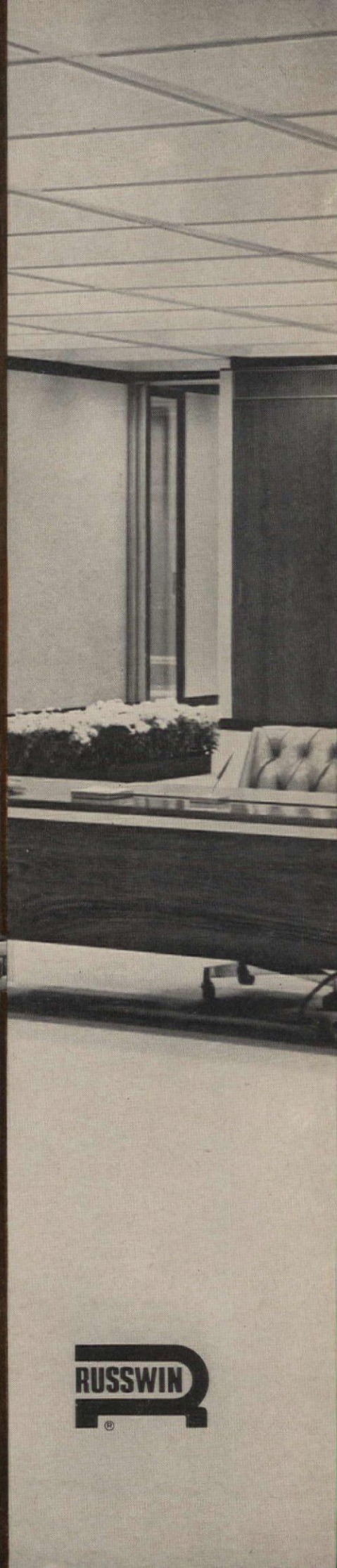
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Towards a Science of Design

A critique by engineer Paul Weidlinger of a book which proposes a complex, formal method of relating functional analysis to design

NOTES ON THE SYNTHESIS OF FORM.
By Christopher Alexander. Harvard University Press, Cambridge 38, Massachusetts. 216 pages. \$6.75.

The author of this book is trained in both architecture and mathematics and is presently teaching in the Department of Architecture at the University of California. In his book, he undertakes the rather formidable task of developing a rational, or what is probably equivalent to it, mathematical method of designing or maybe planning. Let me say at the outset that the book is an important book. This should be kept in mind, although I may have some harsh comments to make about it later on. In order to discuss its contents I will attempt to give a brief summary of the thesis presented by the author, even at the risk of oversimplifying his carefully worded and sophisticated concepts.

The book suggests that the process of design is distinct in various societies. In a primitive society, or what the book calls "unselfconscious society," the designer, maker and user is the same person and, consequently,

any errors or, as the book calls them, "misfits," in the design relative to its context are brought forcefully to the attention of the designer, resulting in its almost immediate correction. This feedback is lost in modern, or what the book terms "selfconscious," societies, since the designer and user are not the same person. The loss of this feedback, or as the author more picturesquely calls it, "loss of innocence," together with the much more complex demands on design, resulted in the current process of designing by rules: i.e., instead of correction of errors through this negative feedback, the design process is attempted by following certain rules prescribed or learned which are supposed to lead towards satisfaction of the design requirements.

The book now analyzes the process of designing of the simplest or even the most complex objects and proposes that the design process nevertheless must essentially consist of recognizing, organizing, and finally satisfying the various design requirements in such a manner that these requirements will fit the context; i.e., the function, of the design. More spe-

This Month's Reading

REVIEWS

- Christopher Alexander, Notes on the Synthesis of Form ... 50
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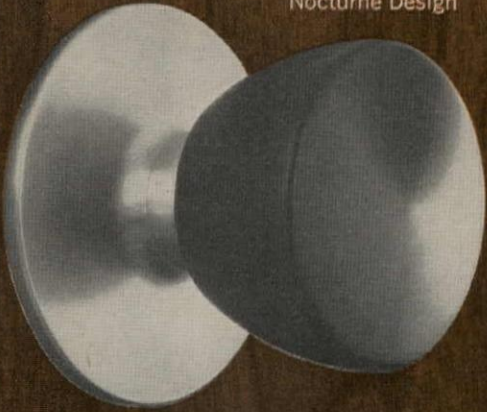
cifically, the book proposes that the individual (and usually very numerous) design requirements which he terms "misfit variables" are linked to each other; i.e., they interact. This means that the satisfaction of a certain design requirement (misfit variable) may imply the simultaneous satisfaction of one or other requirements, but also it may imply the non-satisfaction of some other ones. The author proposes that we visualize the requirements as a set, the members of which are linked to each other in a rather complex fashion. The linkage may be strong or weak, it may be positive if the satisfaction of one requirement implies the satisfaction of the other, negative if the opposite occurs, and finally there may be no linkage if interaction does not exist.

At this point the author proposes that because the large number of design requirements and the richness of interactions or linkages, it is extremely difficult to arrive at a satisfactory design because the process of adjusting or satisfying some of the requirements immediately influences numerous other ones. He suggests that traditional view on design is synthetic and, therefore, an effort is made to cope, preferably, with all requirements simultaneously. Because of the large number of variables and the richness of interaction, this process is beyond our normal intellectual capability and recourse is taken to an intuitive solution of design problems.

The book now proceeds to its main
continued on page 57



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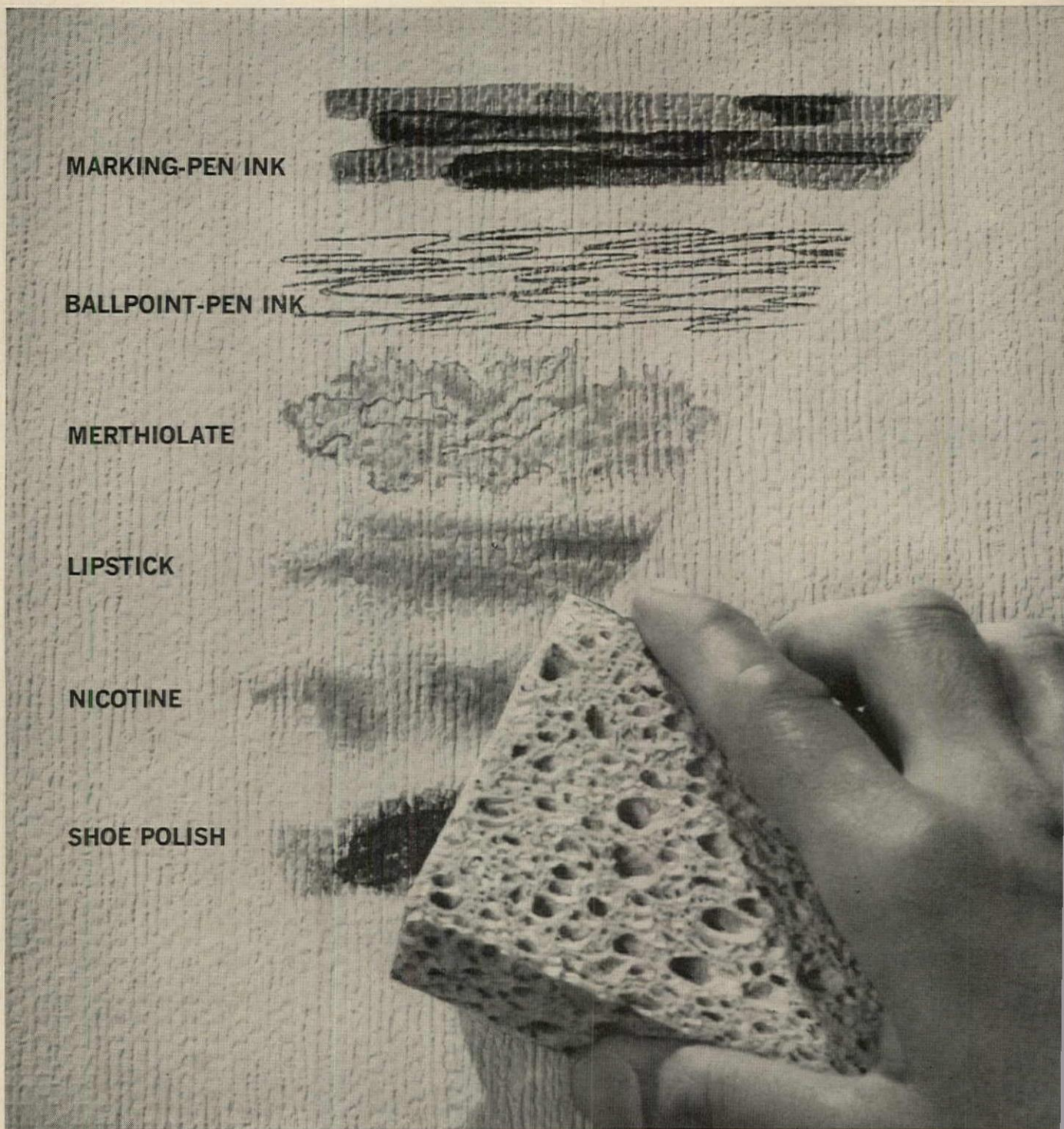
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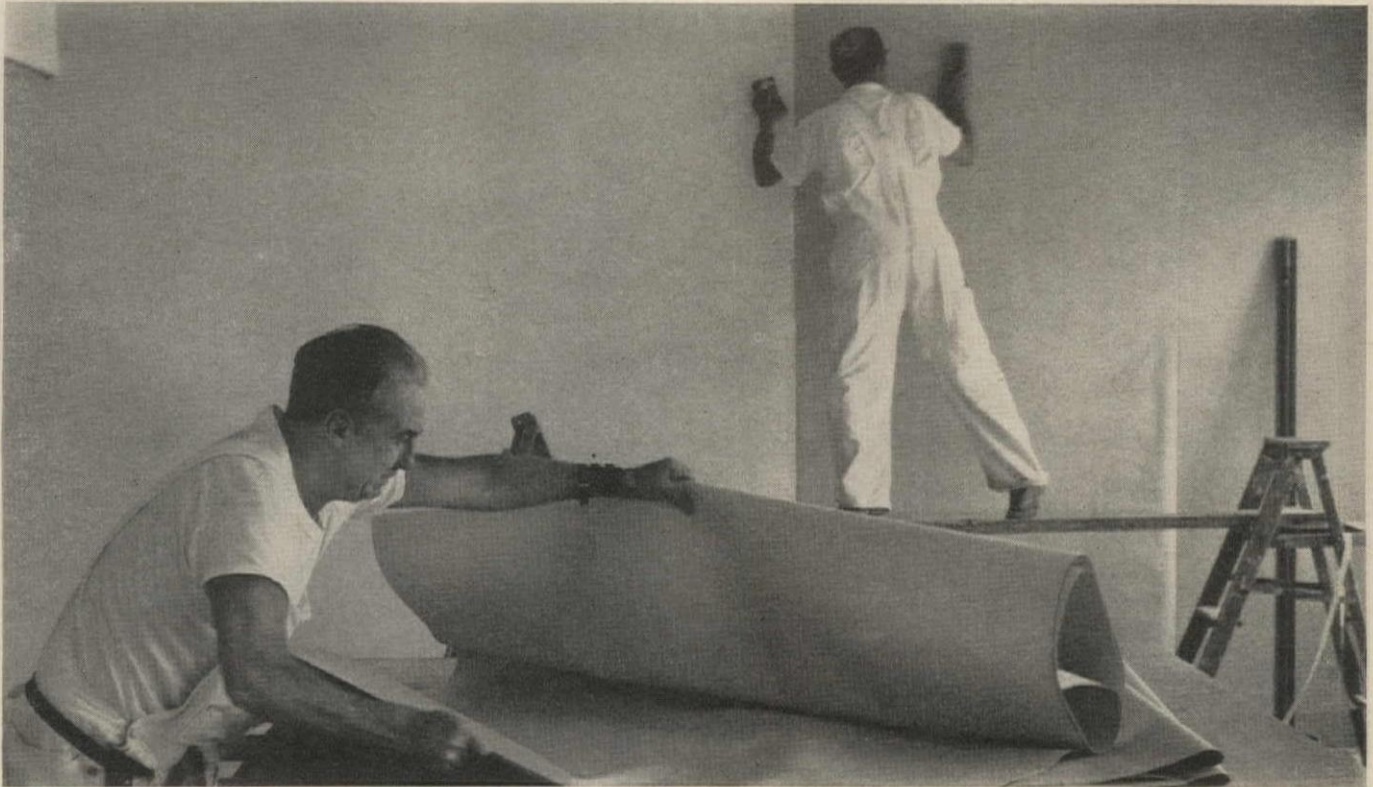
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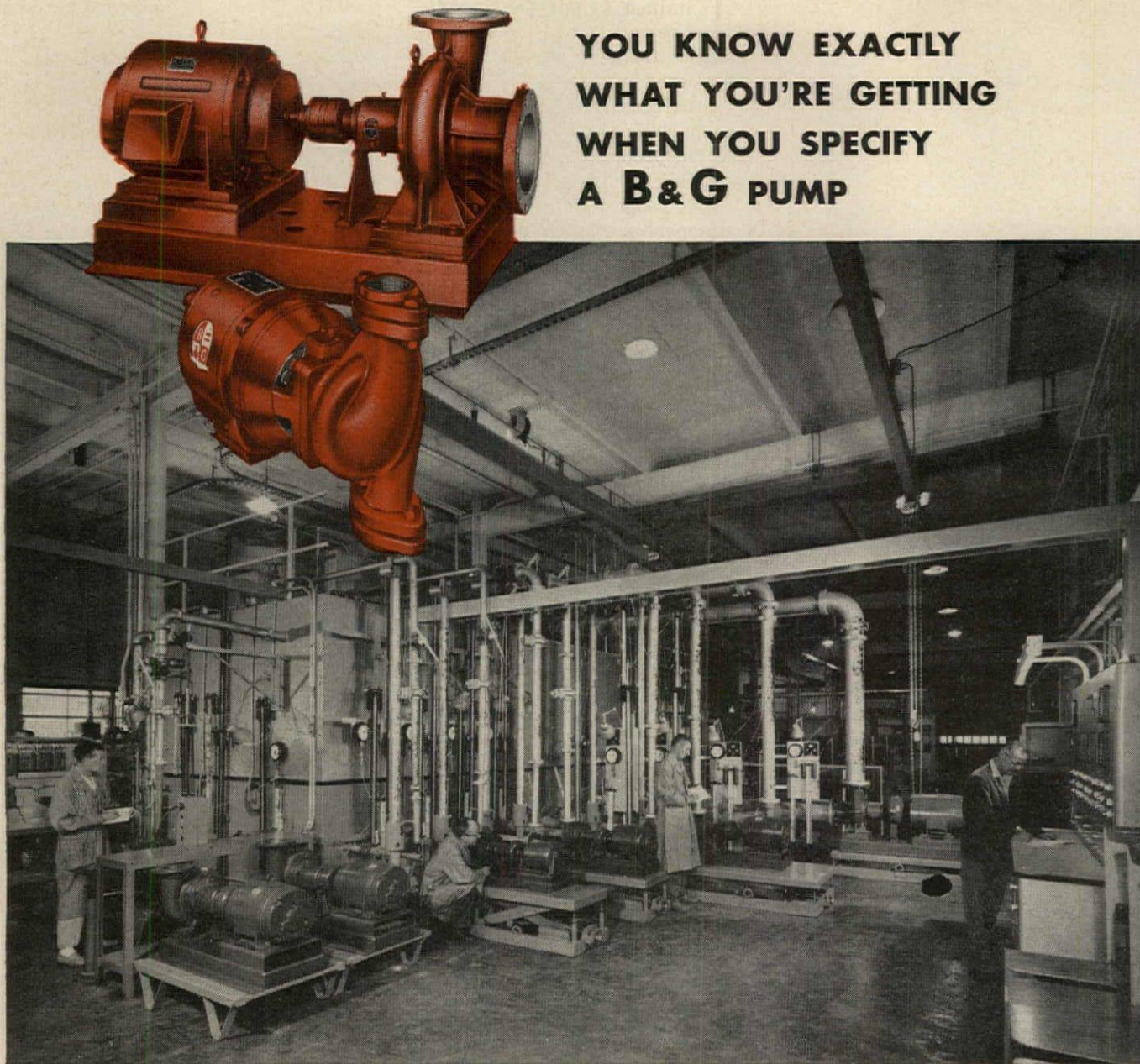
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Required Reading

continued from page 50

thesis in suggesting that, although there is a complex and rich interaction between the members of the set consisting of design requirements; i.e., misfit variables, it is possible to discern individual subsets. The interaction between the members of these subsets is very strong but the linkage between the subsets themselves is very weak, or at best nonexistent. He further proposes that the subsets can be organized in a hierarchical order; i.e., we must visualize the subsets as a tree, or maybe as a pyramid, starting with one subset at the top, this one being linked with some other ones at the lower level which in turn, are linked with more numerous sets at increasingly lower levels. The author contends that once this hierarchical organization is recognized, we will find that it has broken the design problem into its natural components. Each subset will contain elements which are closely and naturally linked to each other. The satisfaction of the requirements within the subset itself will only weakly influence the require-

ments contained in other subsets and, therefore, permits us to proceed in a systematic fashion in solving the problem posed by the design.

The book contains two appendixes. In one appendix a worked example is shown. The problem treated is that of the planning of an agricultural village of 600 people in rural India. The second appendix contains the mathematical treatment of the decomposition of the design requirements in the previously described hierarchy.

It is clear that the objectives of the book are extremely ambitious and, if it had succeeded reaching these objectives, it could have properly claimed a major breakthrough in the solution of the eternal design problem. Unfortunately, but also not surprisingly, the book does not accomplish its stated objectives. In fact, it deals with an extremely difficult problem which is being attacked at the present time on a very broad front ranging from social sciences, the science of warfare, economics, to biology. The problem of design is essentially "non-structured" and the solution of such problems presents formidable difficulties and, in fact, is probably one of the central problems

in the forefront of mathematical research. This is why it is not surprising that the author has not really succeeded, but it is for this very same reason that the book itself is important to the extent that it represents a very serious effort.

I think that the validity and the impact of the book is weakened by the manner in which it is presented; it should have been either considerably more intensive or much more extensive. The book covers an extremely wide range of topics, and I have wondered at various points whether the author's knowledge was equally sound in all of his subjects. These doubts, I think, inevitably must arise in any book which is inter-disciplinary to the extent to which this book is. The book begins with certain anthropological conjectures which are insufficiently supported or at least leave a great deal of doubt in the reader's mind. But these excursions into anthropology are really not essential for the support of the thesis of the book. There follow some comments addressed to architecture and the interpretation of the intents of several outstanding architects. These

continued on page 72

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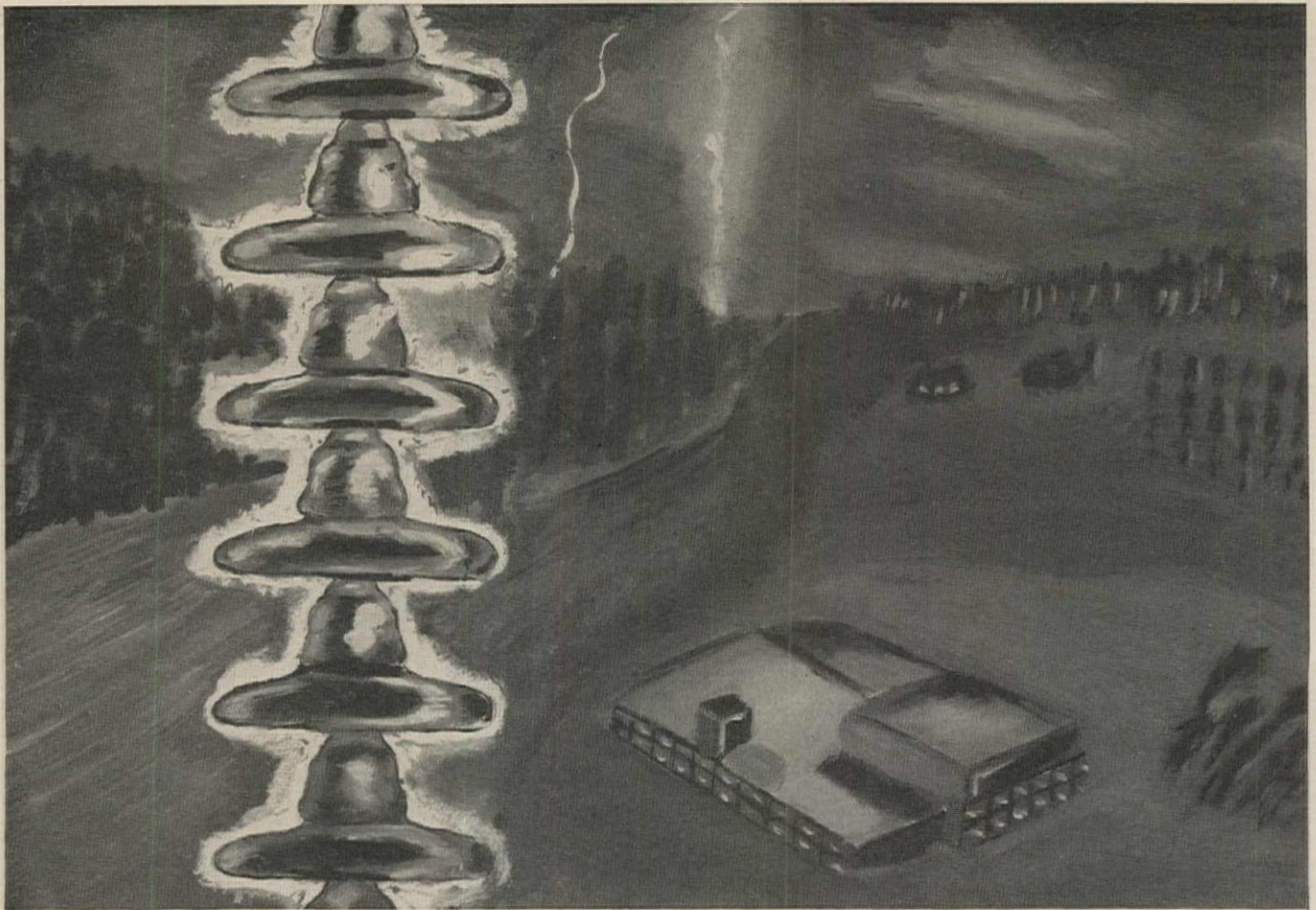
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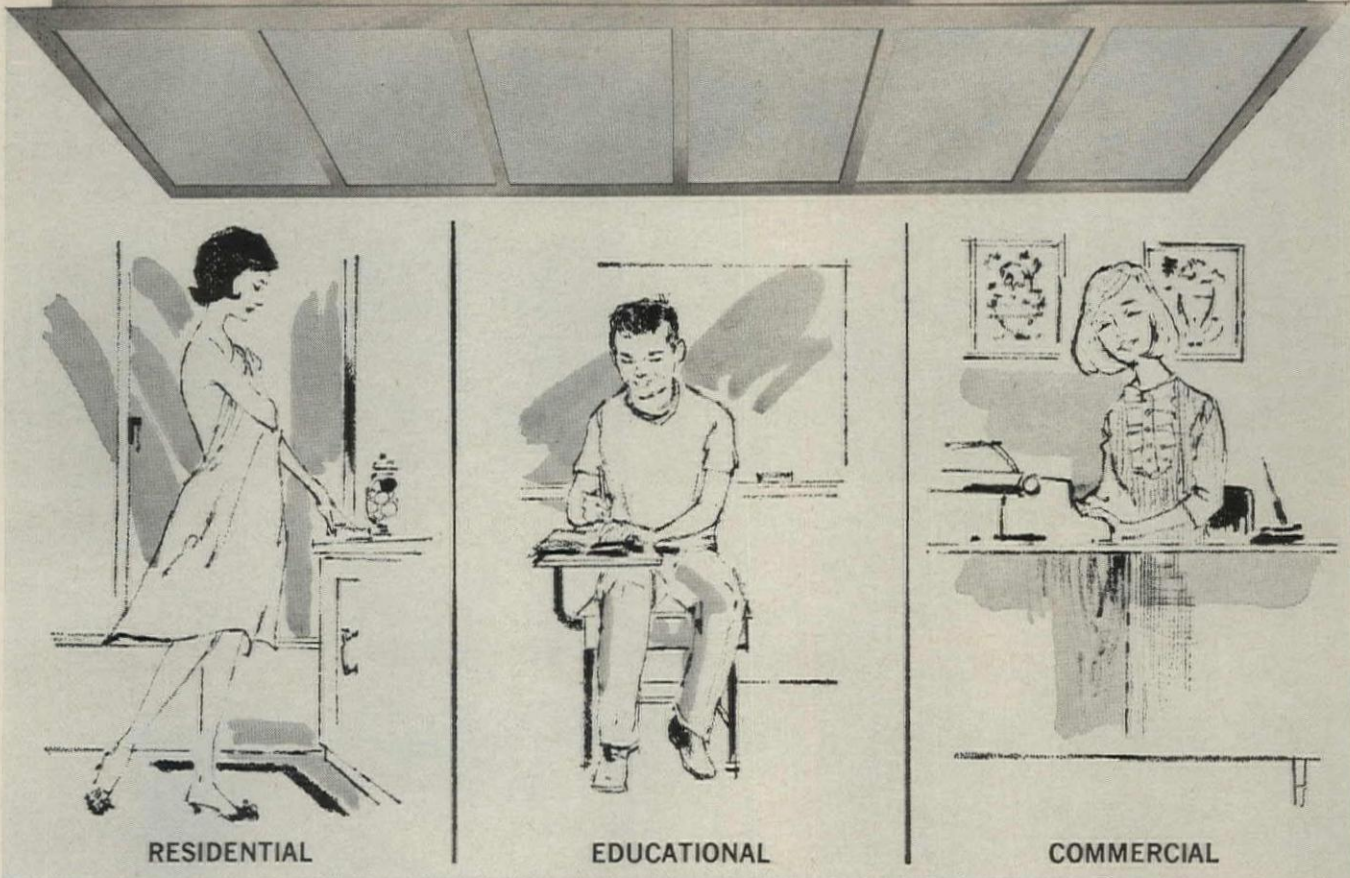
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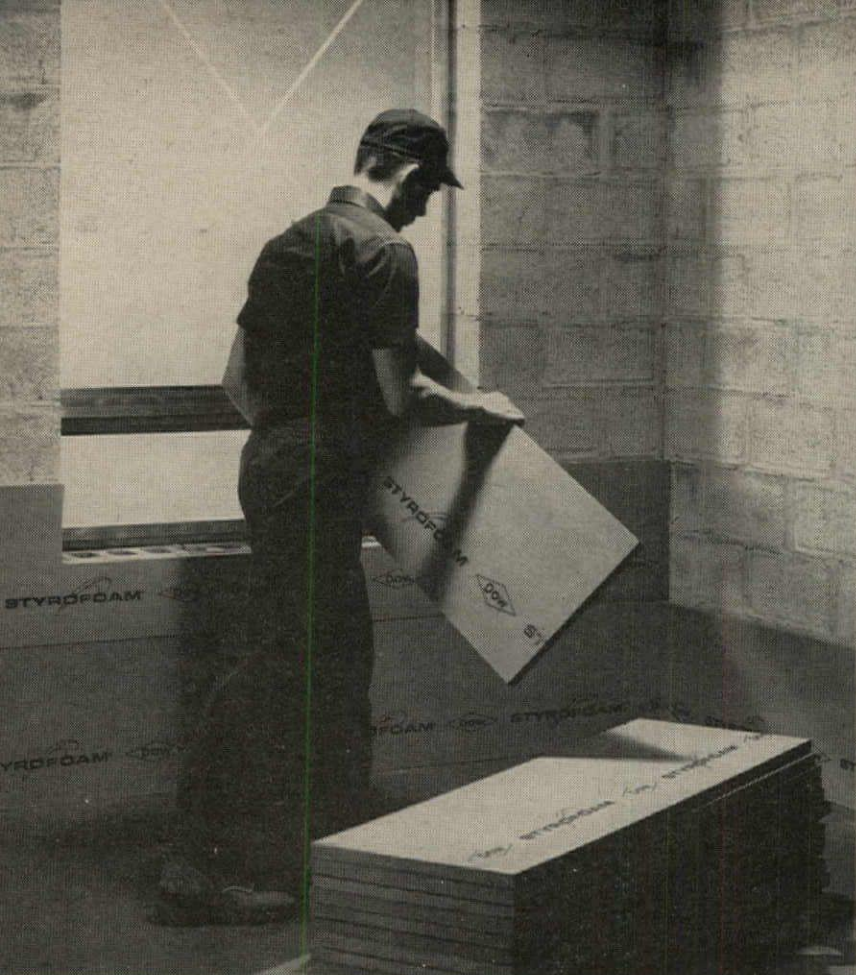
PRODUCTS RESEARCH COMPANY
CORPORATE OFFICES AND WESTERN MANUFACTURING DIVISION
2919 Empire Ave., Burbank, Calif. (213) 849-3992
EASTERN SALES AND MANUFACTURING DIVISION
410 Jersey Ave., Gloucester City, N.J. • (609) 456-5700



PRODUCTS RESEARCH COMPANY, DEPT. AR-104
2919 Empire Ave., Burbank, California

NAME _____
FIRM _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____
 HAVE REPRESENTATIVE CALL

For more data, circle 47 on Inquiry Card



Remember Styrofoam for masonry walls.



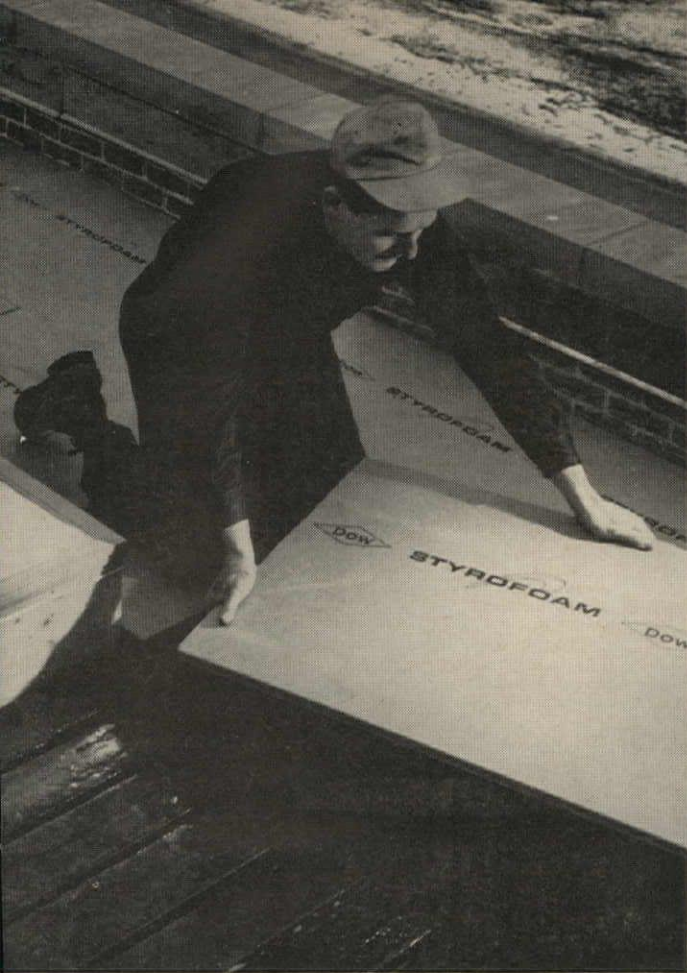
Then forget it.



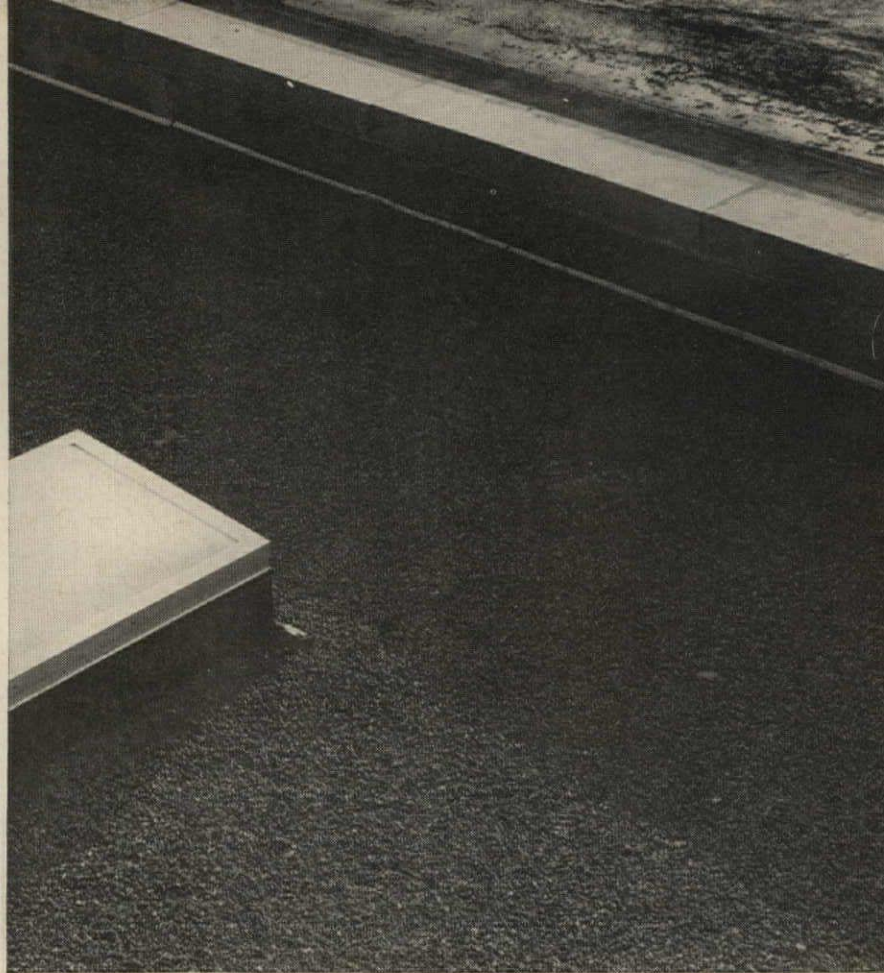
Remember Styrofoam for slabs and foundations.



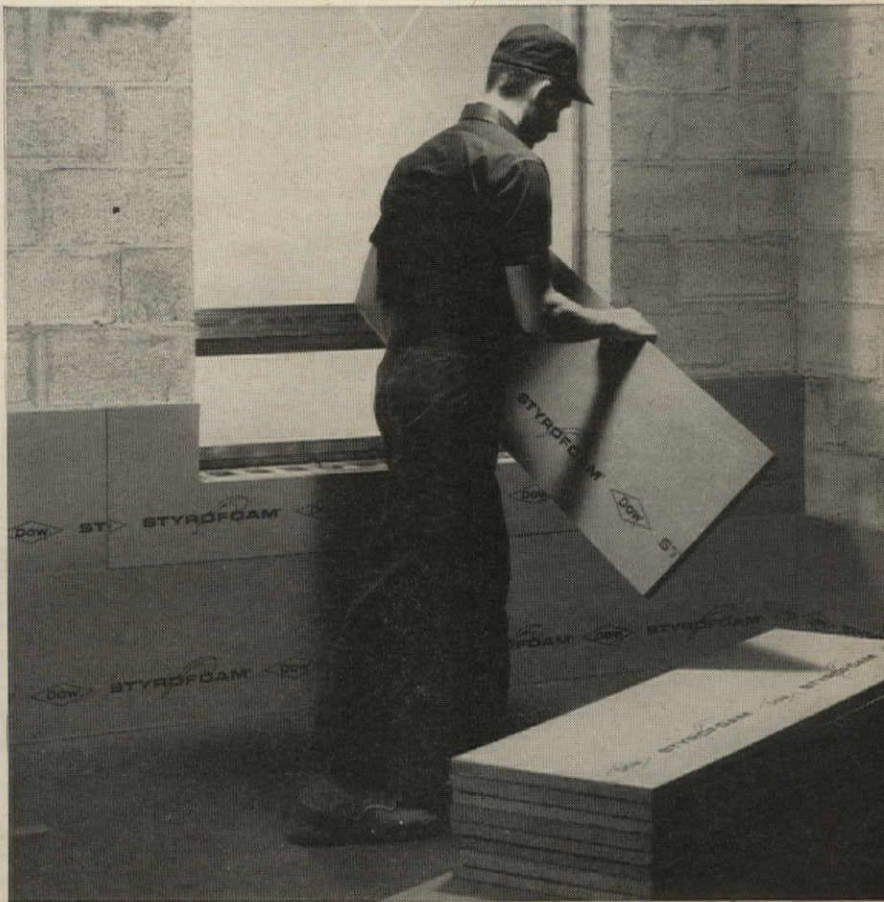
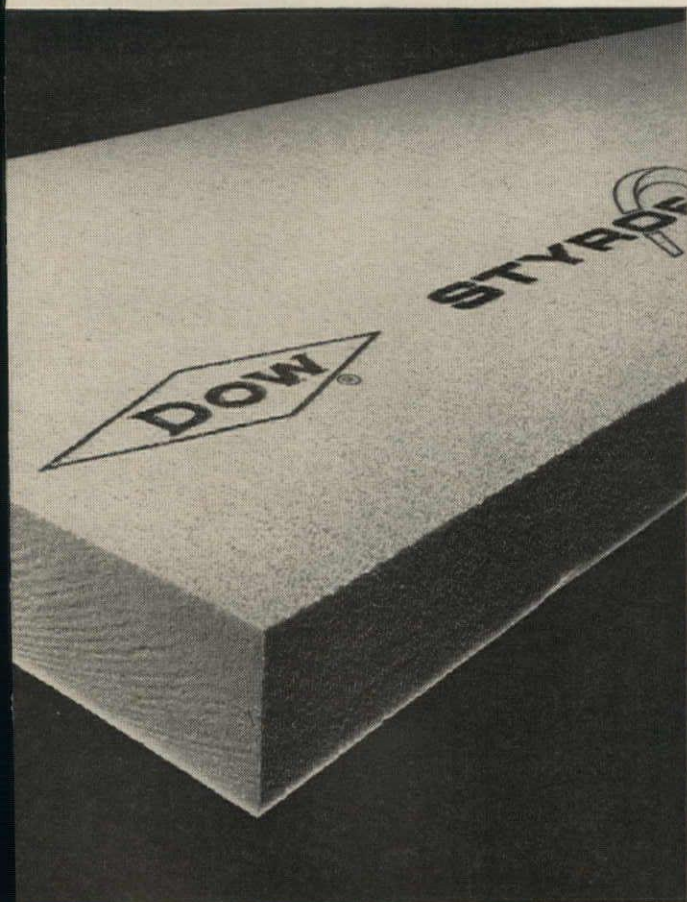
Then forget it.



Remember Styrofoam for built-up roofs.



Then forget it.

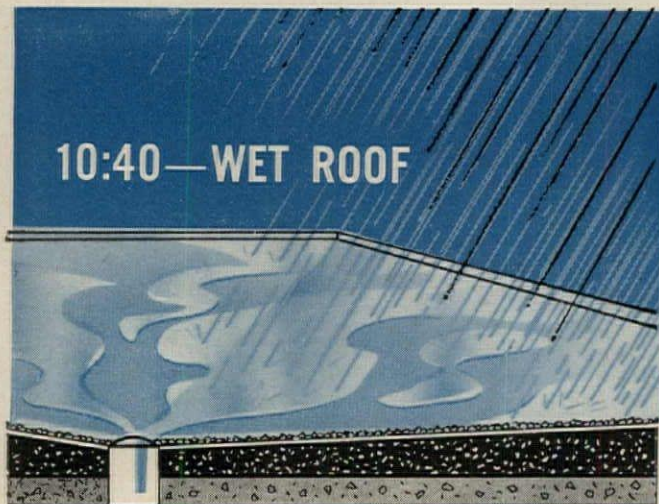


Remember Styrofoam® brand insulation board when you want an insulation with a permanent low "k" factor, that serves as its own vapor barrier, that can't absorb water, that you can install and forget—forever.

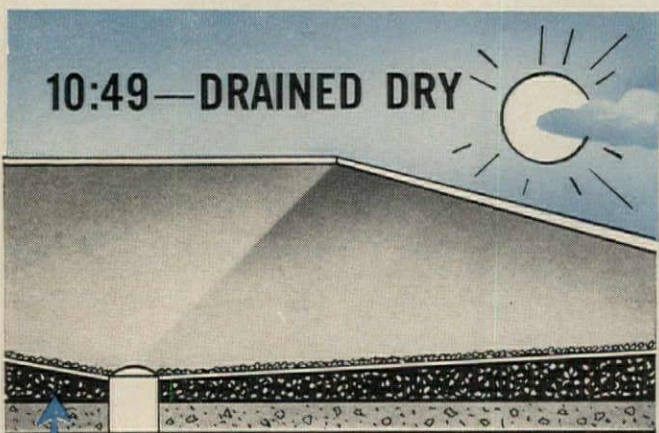
Then remember it (on your next job). See Sweet's Architectural File 10a/Do. The Dow Chemical Company, Midland, Michigan.



For more data, circle 48 on Inquiry Card



10:40—WET ROOF



10:49—DRAINED DRY

the only dry applied roof deck insulation that can be contour sloped to drains!

All-weather Crete®

ROOF DECK INSULATION

The unique ability of All-weather Crete roof deck insulation to be pitched to drains, evenly and smoothly, allows for rapid water run-off. Its uncommon but precise combination of volcanic glass rock and thermoplastic binder, mixed on the job and applied hot and DRY, produce a jointless roof deck fill with a K-factor, .40, better than any other poured roof deck insulation.

And winter does not stop the All-weather Crete franchised installer... since it is completely workable and can be applied in below freezing temperatures.

Use All-weather Crete for all flat roofs, parking decks, re-roofing, and ice rink bases. No expansion... cannot damage surrounding walls. Eliminates any possibility of vapor pressure build-up. Contains no water... cannot freeze out or be rained out. Underwriters approved... for metal deck construction.

Write today, for a complete 12-page brochure.



5901 WEST 66th STREET • CHICAGO, ILLINOIS 60638 • RE 5-3322

For more data, circle 39 on Inquiry Card

ALL-NEW COMMANDER SHOWER DESIGNED FOR DORMITORY, CLUB, INDUSTRY AND INSTITUTION

DOUBLE BARRIER SEAMS of anodized aluminum are permanently leakproof, smooth inside and out. Preassembled and pre-caulked.

COVE CORNER INTERIOR is sanitary, easy to clean. Four corners have 1" radii... no grime gathering corner joints.

Wonderwall SANDWICH PANEL bonds 1" of polystyrene between rustproofed metal to form sound-deadened wall that withstands heavy use.

DEEP TERRAZZO FLOOR is leakproof, sanitary and foot-gripping. High shoulders keep wall joints well above water line.

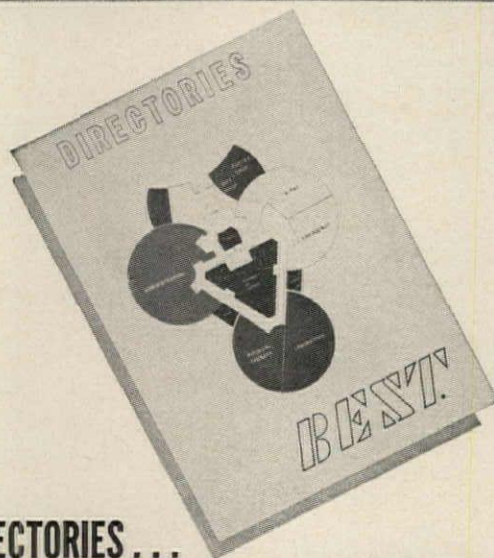
Three factory fabricated panels, plus headrail, complete the cabinet. Cuts installed cost. Combines with Dressing Enclosures, singly or in battery.

See Sweet's 26c FI or write for literature.

NEW YORK CHICAGO LOS ANGELES SOUTHEAST CANADA

FIAT METAL MANUFACTURING CO., INC.
Michael Court, Plainview, Long Island, N.Y.

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DIRECTORIES... CUSTOM DESIGNED FOR ANY BUILDING

Coded In Your Choice of Colors and Wood grain Patterns.

Newest development in directory design. The Best Directory "idea book" can solve your directory problems.

Write for your free copy today.



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the hue
is blue . . .

the light is white

Halo "Coilex" Baffle Downlights team brightness control with apparent colored hues to produce unusual lighting effects. The "Coilex" phenolic baffle gives the illusion of producing "colored" light, because the light, hitting its coiled surface, creates a soft pastel "glow" on the baffle. The light actually emitted is white, high intensity downlight. "Coilex" baffles are available in blue, pink, gold or black. "Coilex" is but one of many Halo architectural lighting ideas that combines the use of color with optical performance. See them all. Send for full color catalog today.



Surface



Semi-Recessed



Standard



Flush

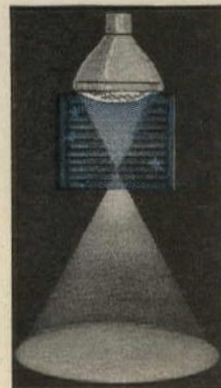


Mini-Trim



Rimless

Halo "Coilex" Baffle Downlights available in six styles



For more data, circle 60 on Inquiry Card
HALO LIGHTING INC. 9301 West Bryn Mawr Avenue • Des Plaines, Illinois



ARCHITECTURAL RECORD October 1964



HERE COMES THE 9:15 HEAT WAVE (Right on Time)

It happens every morning in buildings across America.

This food-burning, fur-bearing space heater (and all her sisters) pour in, switching demand from heating to cooling in minutes.

Add lights, machines and motors and you have a real winter-time heat wave.

How to beat it?

With a LENNOX POWER SAVER™!

Instead of running a compressor you simply move the outside coolness in. At any temperature below 60°, January or June, cooling can be free as air.

That's LENNOX POWER SAVER.

Your mechanical air conditioner hibernates while POWER SAVER cools. (No wear, no compressor power, no low ambient problems.)

POWER SAVER is one matched component in a LENNOX all-season roof top system.

It's the most modern system on the market. Light-weight, low silhouette.

Write for brochure that tables year-long temperature hours for 95 cities. From Albany to Yakima. Estimate the power savings possible for your area.

Write Lennox Industries Inc., 249 South 12th Avenue, Marshalltown, Iowa.



LENNOX

AIR CONDITIONING • HEATING

For more data, circle 61 on Inquiry Card



IMMACULATE CONCEPTION CHURCH, HIALEAH, FLORIDA / ARCHITECT: MURRAY BLAIR WRIGHT, A.I.A., MIAMI, FLA.

A few years ago, this roof might have died on the drawing board

(but today, there's J-M Last-O-Roof)

Imagination gained a new lease on life when Johns-Manville introduced Last-O-Roof*. This single-membrane, plastic elastomer roofing material turns "impossible" roof designs into beautiful realities.

Take the above roof, for example. That two-way slope would have been very difficult to cover with hot roofing materials. But Last-O-Roof was installed quickly, cleanly. And it's a complete roofing system of totally compatible components . . . roofing

membranes, cements, flashings and finishes. All are applied cold and all are covered by one specification.

This roof design posed another problem, too. Because of a lightweight, three-inch deck, a light roofing material was vital. And what's lighter than Last-O-Roof? Nothing we can think of. As a matter of fact, it's three times lighter than smooth-surfaced roofs and ten times lighter than gravel roofs.

Looks? Look for yourself. See how

that clean, white, reflective surface glows with dignified beauty. And white is only one of the colors you can choose from. J-M Last-O-Roof can also be finished in aluminum, green, blue or rose.

So go ahead and create your most dramatic roof designs. There's nothing to stop you. For further information and technical data, write to Johns-Manville, Box 111, New York, New York 10016. Cable: Johnmanvil.

*TRADEMARK

Johns-Manville



For more data, circle 62 on Inquiry Card

ANDERSEN PROVIDES THE WINDOW SOLUTION FOR ANY TYPE OF LIGHT CONSTRUCTION





Yarmouth High School Yarmouth, Maine
Architects: Wadsworth & Boston, Portland, Maine

How a Maine architect used stock windows to complement a good school design

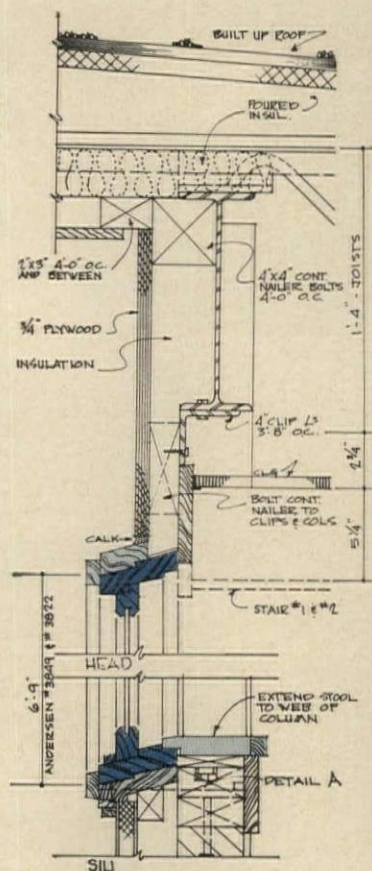
Andersen's broad line permits creative freedom for any design solution

By selecting stock units from Andersen's complete line . . . 7 styles, 30 different types, over 600 cataloged sizes . . . Wadsworth & Boston was able to get the "right" window combination. A combination that provided superior design at a sensible cost.

They took advantage of Andersen's tremendous size and style range . . . flexibility that contributed to—rather than inhibited—their creative freedom of design.

A combination of stock operating Flexivent® and fixed Flexiview® Windows permits a sweeping glass area . . . flooding each classroom with natural light and fresh air. Yet, they're so remarkably weathertight (up to 6 times tighter than the industry standards), they keep students in draft-free comfort (economically) during Maine's most bitter winter weather.

For added information, check Sweet's File—or contact your Andersen distributor for Tracing Detail File. Andersen Windows are available from lumber and millwork dealers throughout the United States and Canada.



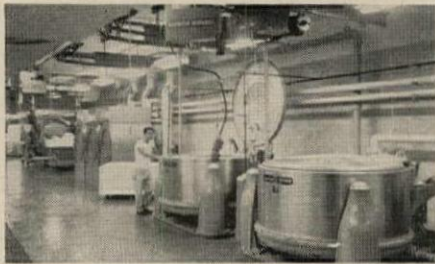
Andersen Windowalls

TRADEMARK OF ANDERSEN CORPORATION



America's Most Wanted Windows

ANDERSEN CORPORATION • BAYPORT, MINNESOTA



Top: Automatically controlled Washers
 Middle: Rugged, big-volume Extractors
 Bottom: Wearing Apparel Press Units



Top: High-speed Flatwork Ironers
 Middle: Automatic Flatwork Folders
 Bottom: Shirt Finishing Units

American laundry planning and equipment

choice for
 Denver Hilton
 Hotel

The Denver Hilton boasts one of the most efficient institutional laundry operations in the country. This installation is an outstanding example of the comprehensive laundry planning service American makes available to architects everywhere. ■ This installation also indicates American's wide selection of modern, highly automated laundry equipment especially designed to achieve the maximum benefits called for in the over-all laundry plan. ■ So, when your building project includes a laundry department . . . rely on American for expert planning assistance and the finest laundry equipment. Call one of our nearby offices or representatives (see the Yellow Pages), or write for complete information.

You get more from 
American
 American Laundry Machinery Industries
 Cincinnati, Ohio 45212

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**These
cabinets must
resist endless
bumps...
thumps...
knocks...
smears...
spills...**



...so National Industries specifies Nevamar!

Cabinetry by National Industries not only defies time . . . it ignores it. The secret is in Nevamar laminated plastic surfaces. Round-the-clock punishment won't faze Nevamar . . . even repeated dousings with boiling water and disinfectants can't mar its gleaming beauty. Here at last is cabinetry for school, hospital, church and kitchen that is completely and everlastingly maintenance-free. □ Quality features like this have helped make National Industries, Inc. the world's largest manufacturer of laminated plastic cabinetry. One inspection will tell you why National Industries specifies Nevamar. For literature and specifications, write: National Industries, Inc., Odenton, Maryland. □ Look for the Nevamar label. It is your assurance of enduring beauty, uncompromising quality, and trend-setting new finishes.



The NEVAMAR Company, Odenton, Maryland A Division of National Plastic Products Company, Inc.

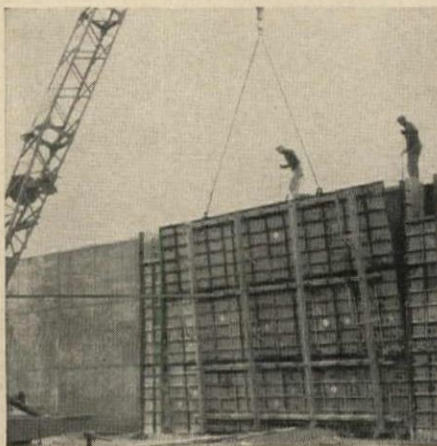
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Progress in Concrete



SYMONS GANG FORMS

SMALL CREW AND INGENUITY
MAKE QUICK WORK OF BIG JOB



Concrete subcontractor, Alsan Masons, Inc., North Brunswick, New Jersey, averaged 56 linear feet of 18 ft. high, 12 inch thick basement walls (including two projecting concrete pilasters) each working day. The job: A two-story and basement department store (260 by 560 ft.) in Woodbridge, New Jersey, shopping center.

BOTH FORMS AND STEEL GANGED

Alsan ganged both Symons Steel-Ply Forms and steel mesh, and cast the heavily reinforced walls in repetitive bays, each 28 ft. by 18 ft. divided by unreinforced concrete pilasters, 2 ft. 4 in. wide and projecting 1 ft. from the inside wall face.

INGENIOUS STRIPPING

For quick stripping of Symons Gang Forms, Alsan used the stationary drum in the crane's cab. A steel hook, attached to the stationary drum, was hooked onto the second line of walers in the gang form. After carpenters pry the top of the gang away from the concrete the crane finishes stripping in one motion by pulling upward with boom hitch and outward at same time with hook from stationary drum cable.

Complete information furnished upon request, also information about Symons Forms rental purchase plan.



CONCRETE FORMING EQUIPMENT
SYMONS MFG. COMPANY
122 EAST TOWHY AVE., DES PLAINES, ILL. 60018

MORE SAVINGS FROM SYMONS

For more data, circle 65 on Inquiry Card

Required Reading

continued from page 80

Economics of Aging

AGING AND THE ECONOMY. Edited by Harold L. Orbach and Clark Tibbitts. The University of Michigan Press, Ann Arbor, Mich. 237 pp. \$7.50.

An editing of papers and panels of the University of Michigan's 15th Annual Conference on Aging held in June 1962, this book offers a broad approach by social scientists, business and labor leaders, government and organization representatives to facts and opinions about the economic status of people over 65.

Wilma Donahue, who has organized all of these annual conferences, points out in a preface that OASI payments increased from \$524 million to \$13 billion per year in the 15 years ending in 1962. Private pension reserves increased about five-fold in the same period. The conference covered income resources of the aged and their implications; economic, social and political.

Angkor

ANGKOR: AN INTRODUCTION by George Coedès. Translated and edited by Emily Floyd Gardiner. Oxford University Press, Amen House, London E.C. 4. 116 pp., illus. \$2.00.

Of particular interest to the traveling architect, this book provides a religious and historical background of Angkor and of the Khmer civilization, as it is recorded in the monumental architecture of the ancient capital.

There are 25 photographs and maps of the Khmer Empire and of Angkor. Coedès' presentation of a complex theology and centuries of history is admirably clear and concise, with primary emphasis on the artistic importance of Angkor's traditions.

In the preface to the first edition, Coedès wrote: "I have tried to let these great stone structures speak for themselves, because in the minds of the Khmers, they were never just inert buildings without souls, but monuments with a vital quality that still attracts all who see them."

continued on page 102

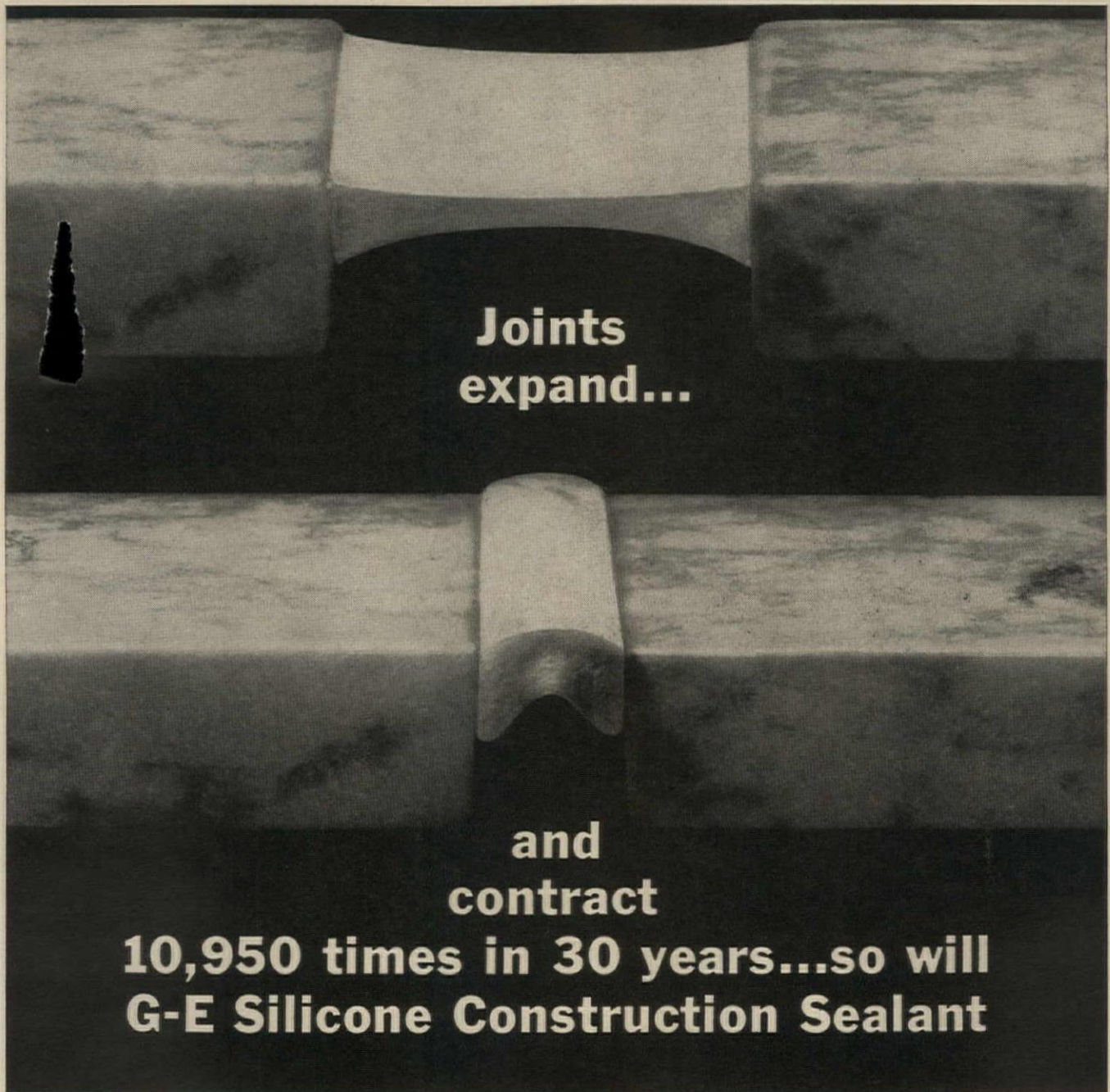


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S & S SALES CORPORATION
404 North Second Street, Milwaukee 3

GENERAL  ELECTRIC

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**Joints
expand...**

**and
contract**

**10,950 times in 30 years...so will
G-E Silicone Construction Sealant**

Construction joints go through the expansion-contraction cycle at least once a day, and far more often in modern curtain wall buildings. This is the major cause of sealant failure. In the past, even the best elastomeric sealants have been subject to early failure under severe compression-extension conditions. Because these sealants take a "set" during compression, they put a severe strain on the bond during extension. G-E silicone sealant, with almost 100% recovery after severe compression, withstands repeated cycling while maintaining an effective seal.

General Electric Silicone Construction Sealant will take this punishment for years because silicone rubber doesn't lose its elastomeric properties through exposure to sunlight or ozone, the deadly enemies of organic rubber sealants.

It is unaffected by ozone in any concentration over thousands of hours in accelerated aging tests. It withstands

weathering, intense heat and sub-zero cold superbly. In fact, our tests support conservative estimates that it will last at least 30 years, much longer than *any* other type of sealant on the market.

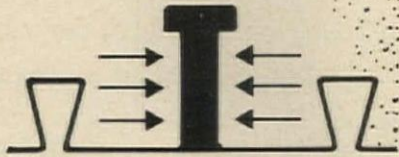
G-E Silicone Sealant comes in a variety of non-fading, non-staining, non-bleeding colors including almost invisible translucent. It needs no pre-mixing or catalyst—bonds securely to all common building materials—can be applied easily, efficiently and quickly at any temperature.

For more information, check the listing of distributors. Or write, General Electric Company, Silicone Products Department, Section BG10113, Waterford, New York.

GENERAL  ELECTRIC

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What's New in Composite Design

Standard A.I.S.C. design for Composite Beams may now incorporate Fenestra's Holorib Reinforcing Forms with no change in the design procedure or slab thickness. Independent laboratory tests confirm that Holorib slab may be considered solid concrete in the computation of Composite Beam section properties.

Advantages of the Holorib System—The "Key-bond" action of the triangular ribs replaces reinforcing steel and allows longer spans without shoring than any other system using an equal thickness of concrete. Stud shear connectors and temperature mesh are installed after other trades have finished. Holorib electrical cells are factory installed to occur where the design requires.

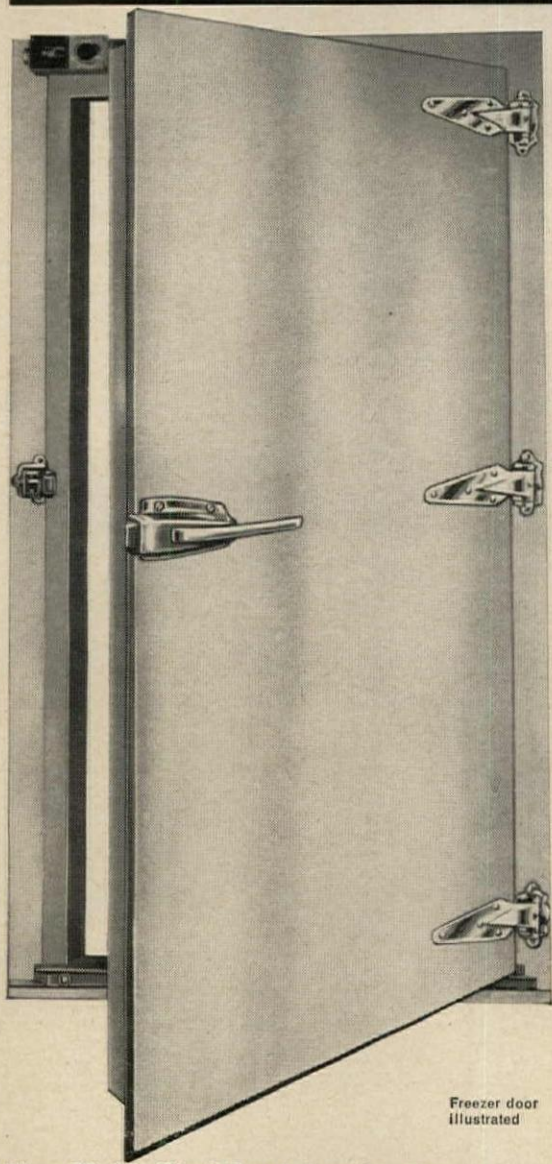
"Composite Floor Systems," a 20-page brochure giving test results and design data, is available upon request. Call your Fenestra Representative or write Fenestra, Inc., P. O. Box 1085, Buffalo, New York 14240. Fenestra engineering is at your service.

FENESTRA

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Jamison Food Service Doors Carry NSF Approval

National Sanitation Foundation Testing Laboratory, Inc. awards seal of approval to Jamison Metal Clad and Jamolite® Food Service Doors as meeting High Public Health Standards

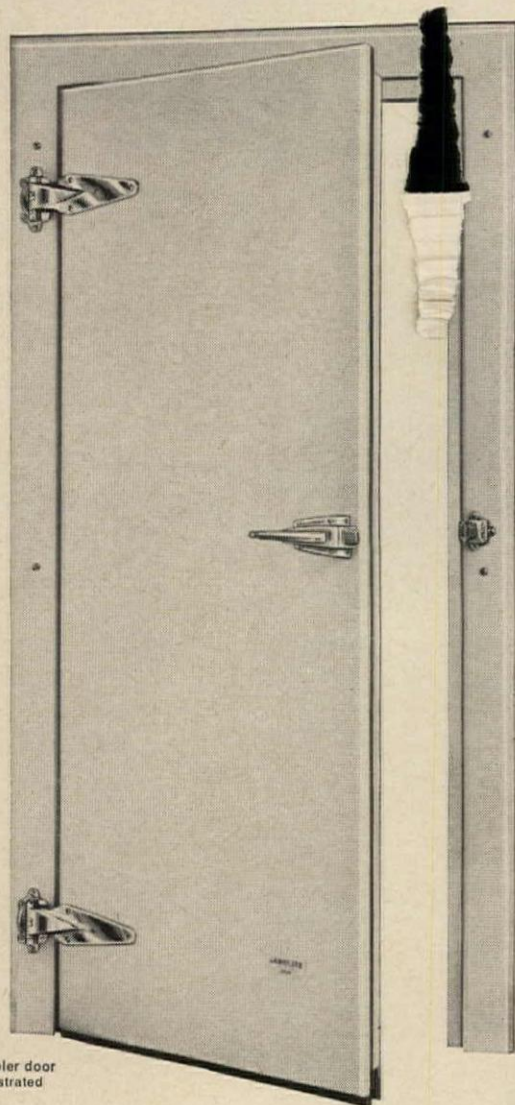


Freezer door illustrated

New Metal Clad Food Service Door is available in either stainless steel or clear anodized aluminum cladding.

- door and frames completely metal clad
- compact design—cooler and freezer doors only 4" thick
- safety release supplied as standard equipment on walk-in doors
- Jamison Frostop® to prevent icing supplied with freezer doors
- lightweight efficient insulation is foamed-in-place polyurethane

Write today for all the facts on these NSF approved Food Service doors to Jamison Cold Storage Door Co., Hagerstown, Md.



Cooler door illustrated

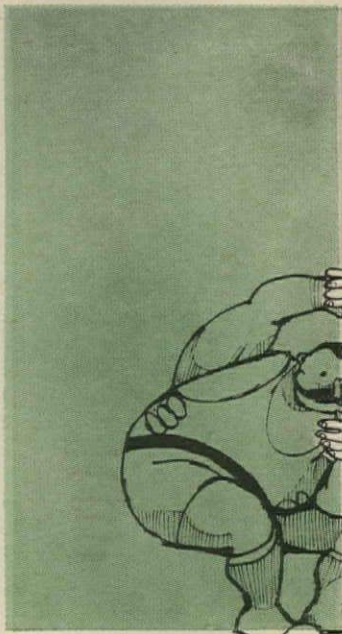
Jamolite Lightweight Plastic Food Service Door is impervious to moisture and vapor—will not warp

- flush fitting—for easy cleaning, better appearance
- foamed-in-place polyurethane insulation—only 4" thick for cooler and freezer doors
- weighs only 4.5 lbs. per square foot less hardware and frame
- safety release supplied as standard equipment
- Frostop supplied with freezer doors

JAMISON

COLD STORAGE DOORS

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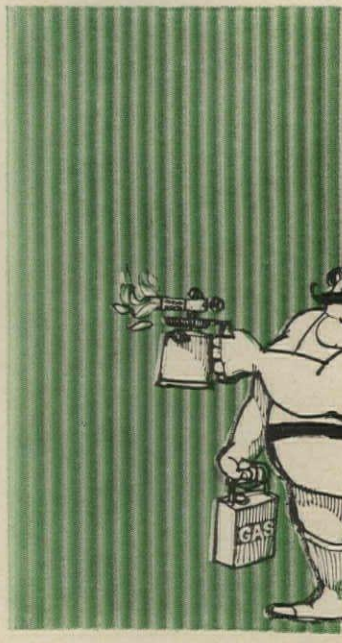
It's translucent.



It's flexible.



It's tough.



It's non-combustible.



It's strong.



It's non-corrodible.

It's Lustra-Span* from Monsanto.

Skylighting or vertical glazing, anyone? Then look through Lustra-Span Vinyl Panels. They combine more exclusive features than any other daylighting material. And at less cost. Panels are non-combustible (you should check their special "self venting" feature). Immune to industrial fumes. Bend around corners or lengthwise



on 100" radius. Stand fast against 100 mph winds. Lightweight, so they're easier and faster to put up. Need no maintenance—won't chip, blister, peel. Choice of colors and translucence in corrugated or flat sheets. Write: MONSANTO, Building Products, Dept. 804XJ, 800 N. Lindbergh Blvd., St. Louis, Missouri 63166.

*LUSTRA-SPAN TRADEMARK MONSANTO COMPANY

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Don't pull off any big jobs without calling in our stick-up man.

Wouldn't you like to gang up with a guy who was in on, say, the \$50 million Americana job in New York?

Or the \$20 million First National Bank stickup in Minneapolis?

Or the big \$20 million Illuminating Building caper in Cleveland?

Then contact our stick-up man.

(Also known, more formally, as a Ramset fastening specialist.)

His job is to rub out costly, time-wasting, antiquated construction methods by convincing builders to use the Ramset fastening system.

And his *convincer* is that Ramset powder-actuated fastening tool he has in his hand.

Say you've got to fasten steel beams to concrete, or 2x4's to concrete or steel, or steel to steel.

It's a cinch with the Ramset tool. Just a squeeze of the trigger.

Whammo!

In a split second it sets a threaded stud in concrete, or pierces as much as an inch of steel with a drive pin.

It's actually *eight times* faster than ordinary methods requiring drilling and plugging. (Do you have any idea the effect this has on construction costs and time schedules?)

So, our man's convinced you.

Then what?

Well, he cases the job. And figures how many fastenings it'll take.

He recommends which tools and fasteners to use. And has special fasteners and tool fixtures made, if needed.

(No fastening line is as complete as Ramset's. There are powder-actuated, piston-operated, and hammer-in tools; 125 styles of fasteners; and masonry anchors; even a recoilless hammer.)

He also instructs workers how to use Ramset tools (nobody can operate them without first passing our training course).

And when you're all set to go, does our man leave you alone? Heck, no.

He keeps a lookout on the job. Just to make sure there are no snafus. Okay? Now. Pulling any big jobs?

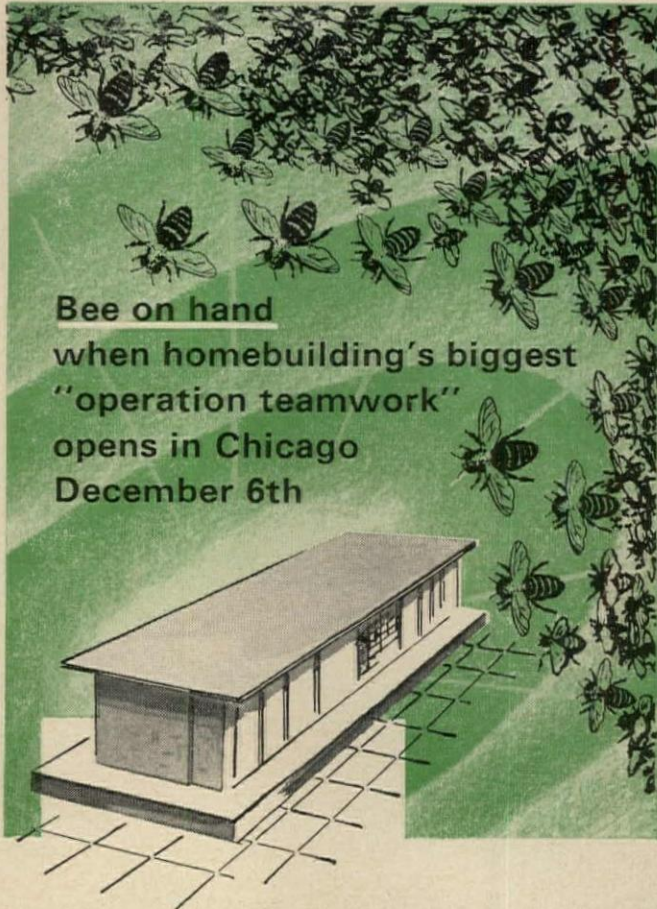
Our stick-up man's number is listed in the Yellow Pages.

No, not under "Thugs."

Under "Tools."

Ramset[®]

WINCHESTER-WESTERN DIVISION **Olin**



Bee on hand
when homebuilding's biggest
"operation teamwork"
opens in Chicago
December 6th

*Inspect the most complete array of
home building materials, equipment
and services ever assembled*

Make your plans now to "team up" with the cream of the home building industry when the 21st annual convention and exposition of the National Association of Home Builders opens its doors for five days from Sunday, December 6th, through Thursday, December 10. Note the earlier date and the Sunday opening for this year's show.

At no other time...no other place is it possible for you to join 30,000 or more fellow builders, architects, engineers, building material dealers to participate in a choice of 40 different programs. These will cover all phases of the industry.

Plan to "bee on hand" at fabulous McCormick Place and see with your own eyes a myriad of new ideas in building techniques from over 450 manufacturers. For advance convention and hotel reservations contact your local Home Builders' Association or write:

NATIONAL ASSOCIATION OF HOME BUILDERS

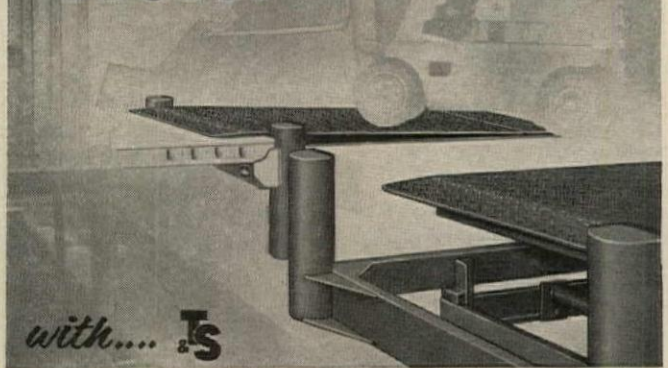
140 South Dearborn Street, Chicago, Illinois 60603

Make your reservations
NOW
**21st Annual
NAHB Convention
December 6-10**
McCormick Place, Chicago

PLAN TO ATTEND

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REDUCE LOADING COSTS!



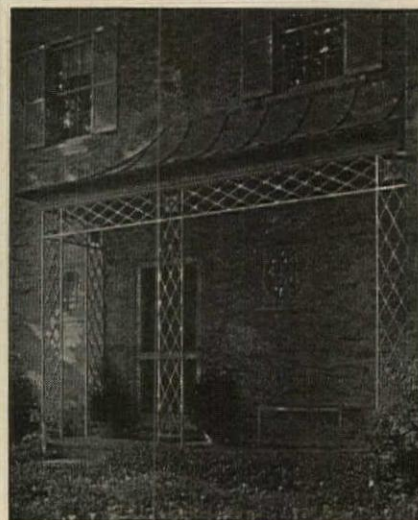
with... **DOCKLEVLER**

Efficiency • Safety • Economy

Write today for full information.

T&S EQUIPMENT COMPANY
968 AUSTIN AVENUE • ALBION, MICHIGAN
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Architects: Senor Javier Carvajal, Madrid, Spain; Kelly and Gruzen, New York, N.Y.

The Mormon Pavilion incorporates Mo-Sai precast concrete curtain wall panels that can later be used in permanent chapel construction.

Architects: Fordyce and Hamby; Harold Burton, Advisory Architect

The Vatican Pavilion features decorative panels in which all of the fine detail of the original bas relief sculpture mold was captured in the precise Mo-Sai casting.

Architects: Kiff, Colean, Voss, and Souder; Luders and Associates; and Raymond P. Hughes.



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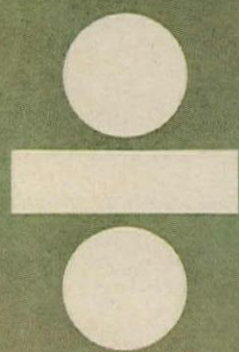
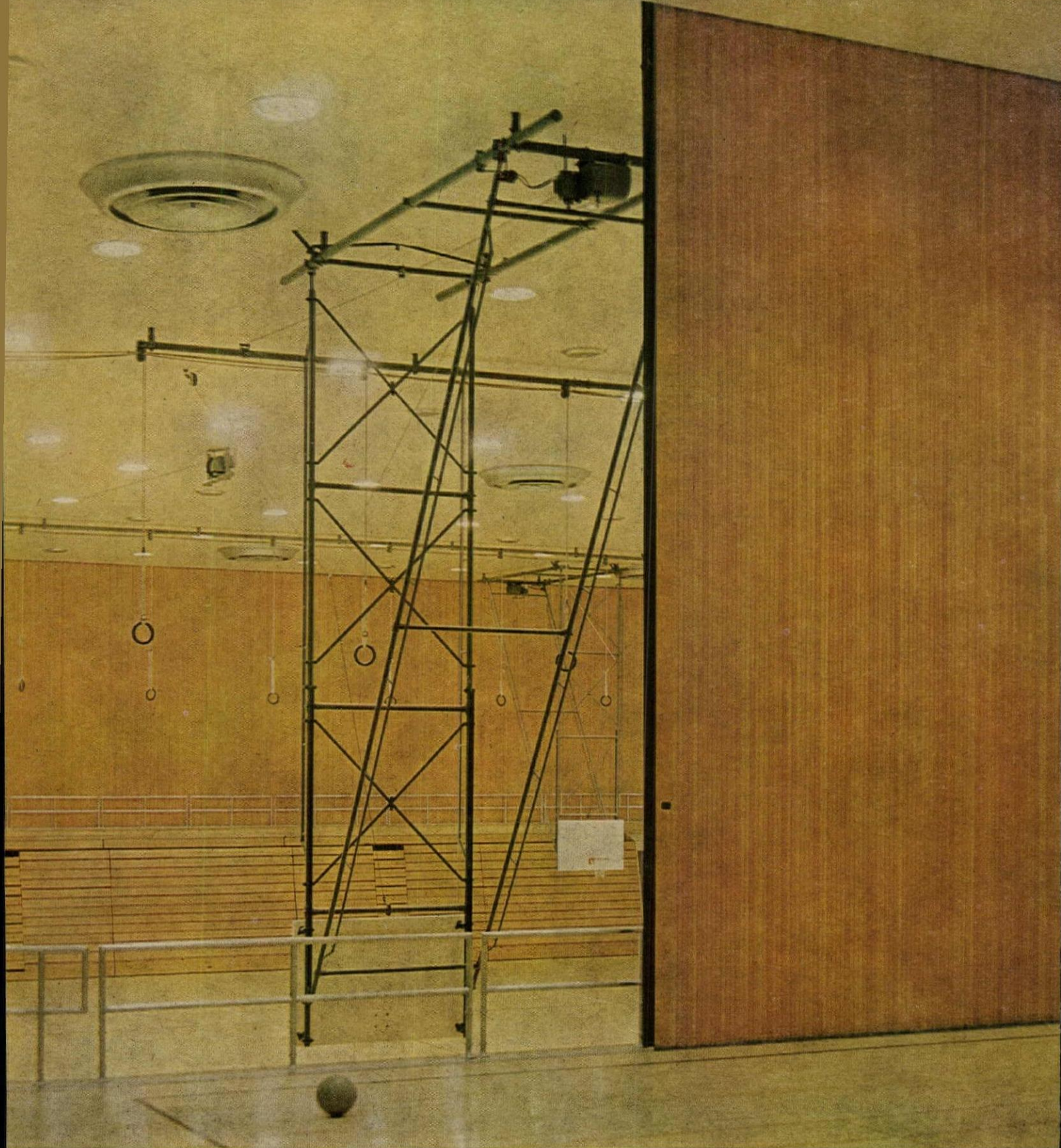
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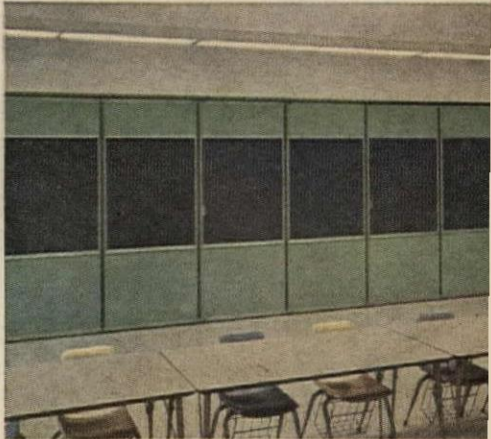
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Required Reading

continued from page 90

New Editions

CYBERNETICS. By Norbert Wiener. The M.I.T. Press, Cambridge, Mass. 212 pp. \$6.50.

The first edition of this book in 1948 gave a name to an area of study which has directed many disciplines

on to the problems of communication and control.

This present edition includes the classic first edition, a survey of the development of the field over the last 13 years and two new chapters on learning, self-organizing systems and brain waves, and speculation about the nature of reproduction and the possibility of self-reproducing machines.

EXPERIENCING ARCHITECTURE. By

Steen Eiler Rasmussen. The M.I.T. Press, Cambridge, Mass. 245 pp., illus. \$7.95.

This is the second English-language edition of the Danish best-seller by Mr. Rasmussen, who is professor of architecture at the Royal Academy of Fine Arts in Copenhagen as well as a practicing architect.

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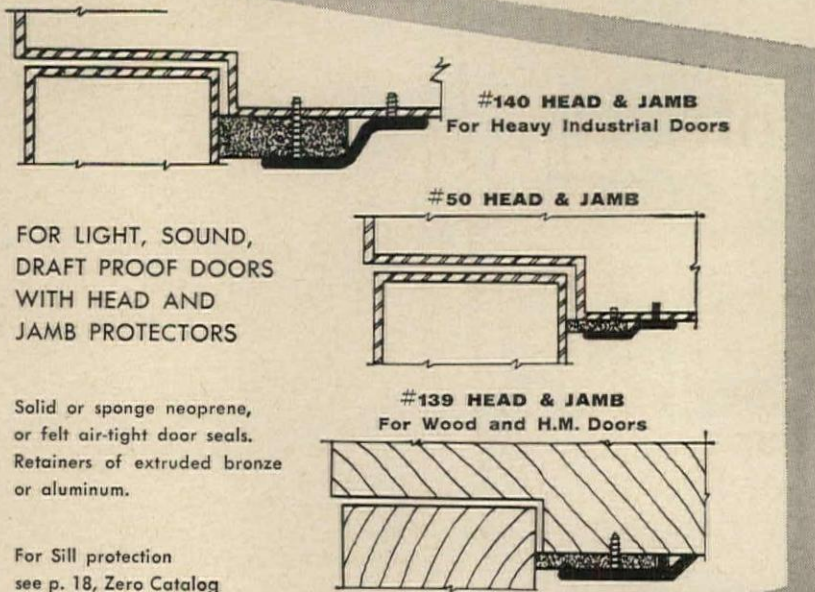


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Books Received

CONDOMINIUM: HOUSING FOR TOMORROW. By Burke, et al; group of 10 graduate students at The Harvard Business School. Management Reports, 38 Cummington St., Boston, Mass. 94 pp. \$1.50.

THE GOTHIC REVIVAL. By Kenneth Clark. Penguin Books, 53 W. 43rd St., New York 36. 218 pp., illus. Paperbound, \$1.45.

DRAWINGS BY ARCHITECTS. By Claudius Coulin. Reinhold Publishing Corp., 430 Park Ave., New York 22. 144 pp., illus. \$12.75.

CONCRETE: PLAIN, REINFORCED, PRESTRESSED, SHELL. By R. H. Evans and C. B. Wiley. American Elsevier Publishing Company, Inc., 52 Vanderbilt Ave., New York 17. 252 pp. \$8.50.

ARNE JACOBSEN. By Faber Tobias. Frederick A. Praeger, Publishers, 111 Fourth Ave., New York 3. 176 pp., illus. \$17.50.

ARCHITECTURE IN NEW JERSEY. By Alan Gowans. D. Van Nostrand Company, Inc., 120 Alexander St., Princeton, N.J. 161 pp., illus. \$3.95.

DESIGN AND FORM: THE BASIC COURSE AT THE BAUHAUS. By Johannes Itten. Reinhold Publishing Corp., 430 Park Ave., New York 22. 190 pp., illus. \$12.00.

BULFINCH'S BOSTON 1787-1817. By Harold Kirker and James Kirker. Oxford University Press, 417 Fifth Ave., New York 16. 305 pp., illus. \$7.50.

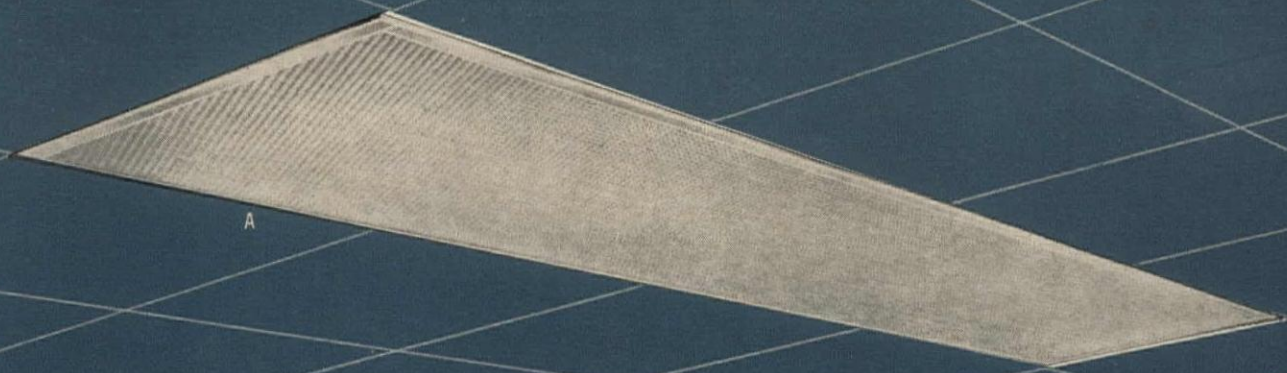
LAWSON PERSPECTIVE CHARTS. By Philip J. Lawson. Reinhold Publishing Corp., 430 Park Ave., New York 22. \$5.00.

A COMMUNICATIONS THEORY OF URBAN GROWTH. By Richard L. Meier. The M.I.T. Press, Cambridge, Mass. 184 pp. \$6.00.

MATISSE. By Jean Selz. Crown Publishers, Inc., 419 Park Ave. South, New York 16. 95 pp., illus. \$3.50.

PROTESTANT WORSHIP AND CHURCH ARCHITECTURE. By James F. White. Oxford University Press, 417 Fifth Ave., New York 16. 224 pp. \$6.00.

ELASTIC STABILITY OF POST-TENSIONED PRESTRESSED MEMBERS. By Charles Bryan Wilby. American Elsevier Publishing Company, Inc., 52 Vanderbilt Ave., New York 17. 46 pp. \$4.50.



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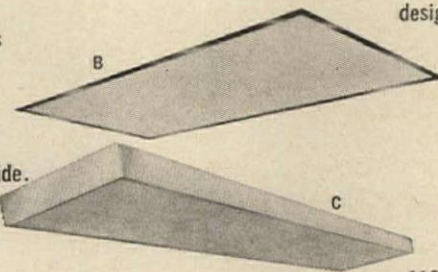
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(B/below): 12" or 24" lay-in troffer for exposed grid ceilings.

(C/bottom): Shallow, surface-attached series; 12" and 24" wide.

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Har-Mar Mall Regional Shopping Center, Roseville, Minn.
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Montgomery Ward store, Apache Plaza Shopping Center, St. Anthony Village, Minn.
Architects: Thorsen & Thorshov, Inc., Minneapolis, Minn.



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Parke-Davis & Company building, Cherry Hill, N.J.
Architects: Alexander Ewing & Associates, Philadelphia, Pa.

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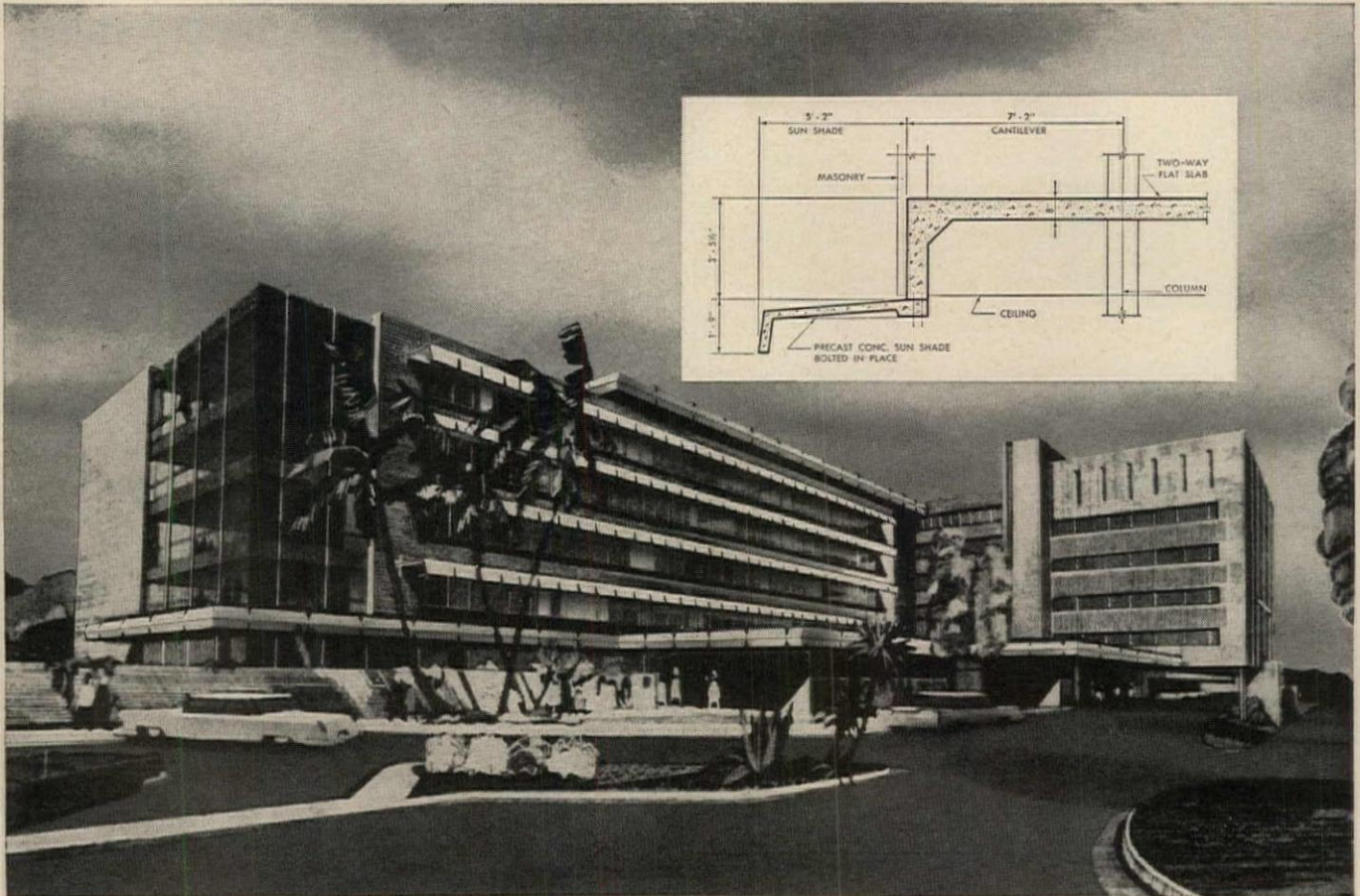
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Owner: Sisters of Mercy, Sister Mary Adele, R. S. M., Administrator
 Architects and Engineers: Page, Southerland, Page & Whittet
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7'-6" Cantilever on 8" Slab Supports Wall and Precast Shades

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Architectural solutions for the 100 bed addition to Mercy Hospital, Laredo, Texas, called for special structural considerations; support of heavy masonry walls and precast concrete sun shades at the perimeter of the floor slab was required. Mechanical problems in the addition and low floor to floor heights in the existing building dictated a slender structural system. A flat slab seemed to offer the best solution.

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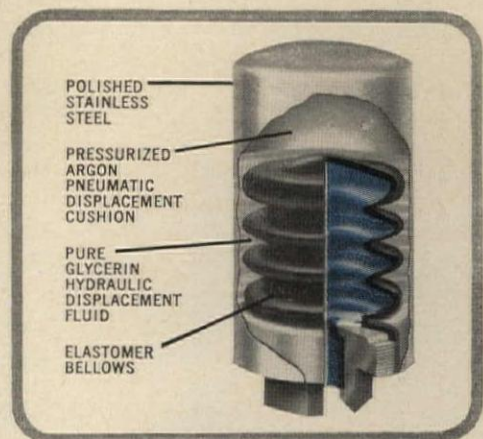


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Now . . . Josam can state without reservation that it has developed the completely effective means of controlling hydrostatic shock pressures and water hammer — — with the new ABSORB@TRON Shock Absorber. Josam makes this statement after years of testing under the most rigorous conditions ever endured in any shock absorber. In all cases, the ABSORB@TRON units are functioning as quietly and efficiently as the day they were installed. They have the unqualified endorsement of users who never before found any satisfactory solution to their water hammer problems.

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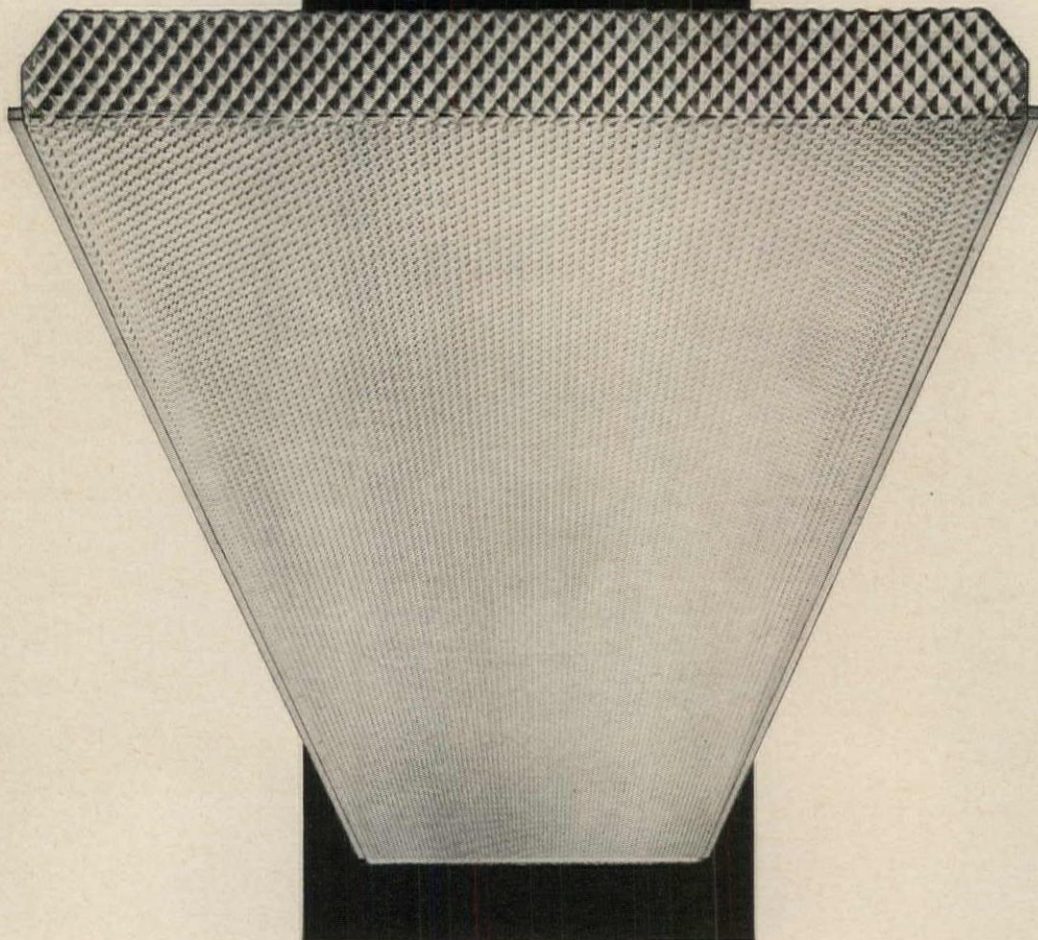
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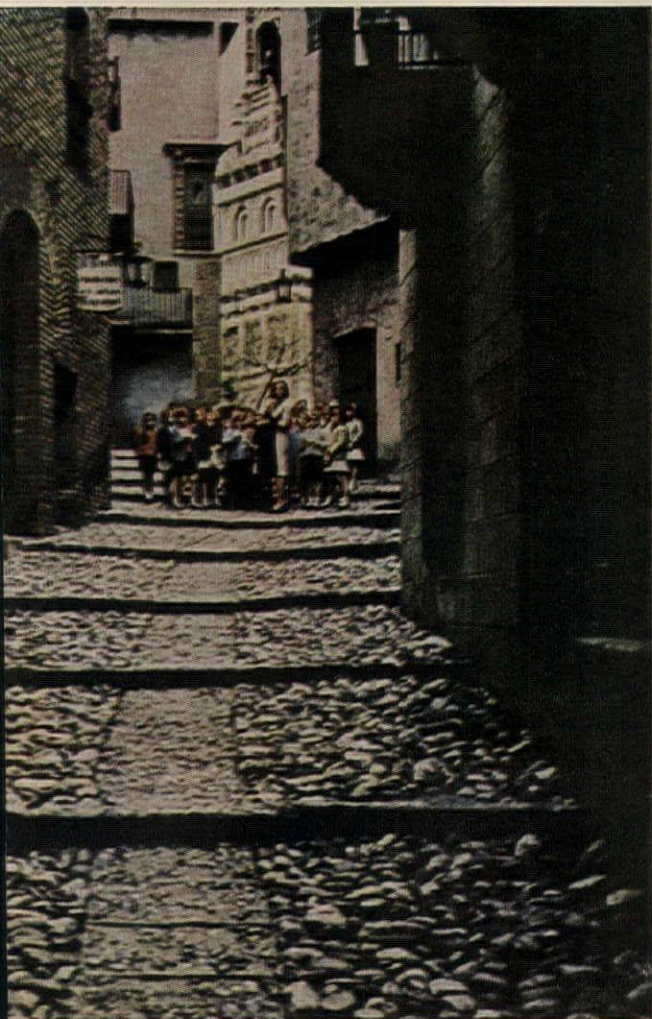
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DESIGN OF STADIUM FOR CITY OF MEMPHIS EYES FUTURE EXPANSION

A municipal stadium for the city of Memphis has been designed by the firm of Yeates and Gaskill. It will be built on a 10-acre plot adjoining the fairgrounds, where a coliseum and baseball field are already under construction.

A circular plan was chosen by the architects of this 50,000 seat football stadium as the logical way of providing for the most desirable seating arrangement. Thus a maximum number of seats will be located on the sidelines, with the end zone areas reduced to a minimum.

The major features of the design were directed toward the goal of facilitating future expansion to a 70,000 seating capacity, yet maintaining in the first stage of development a "completeness of form and gracefulness as well." The architects envision the addition of a "floating tier" of seats placed above the now lower sideline section of visitors' seating that will not interrupt the curving rim-line. The home team side will be limited to its present size by the location of the press-box above it.

The playing field has been dropped 20 feet below grade level, thus placing spectator entrances from a berm walk area 25 rows above the field, and also reducing construction costs.

The locker rooms and field storage rooms are located under the walkway and can be reached by drive-in ramps. An elevator will carry members of the press up to their quarters. Spectators will enter the stadium through four ticket gates and mount to the berm level by ramps.

The architects have selected concrete as "the most suitable material for the sculptural form of the stadium because it is a plastic material and requires a minimum of maintenance." The walls of the adjunct facilities will be of a contrasting gray brick.

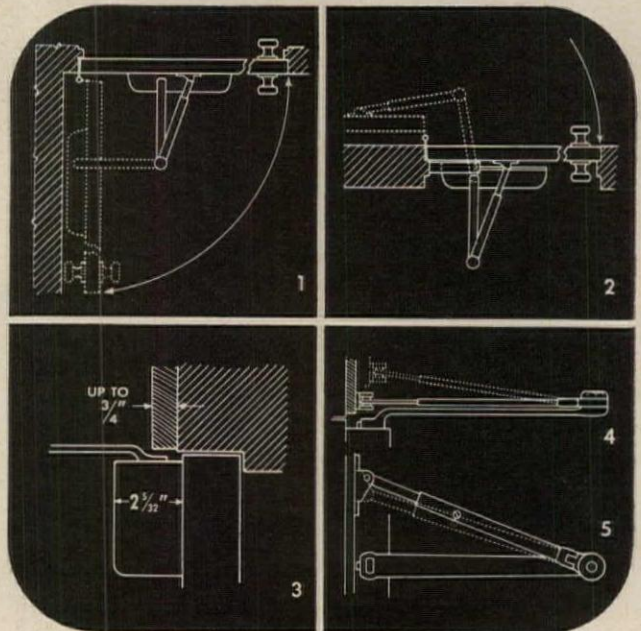
ADDENDUM

Philip Sheridan Collins, A.I.A., of Princeton, N.J., was architect of the New Jersey Pavilion at the New York World's Fair, as the winner of a statewide architectural competition sponsored by the state of New Jersey. Norman J. Sollenberger was structural engineer; Bliss and Hanle, mechanical engineers; Richard Cripps, landscape architect; Yang/Gardner Associates, exhibition designers. The RECORD regrets that design credits were incorrectly given in its July article.

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for Series 4010 SMOOTHIE® door closer
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(See diagrams below)

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- 3 Arm of "Smoothie" is formed to avoid conflict with almost any trim
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- 5 Power of closer may be increased or decreased by reversing position of shoe and/or varying spring adjustment



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Yount, Sullivan & Lecklider, Architects
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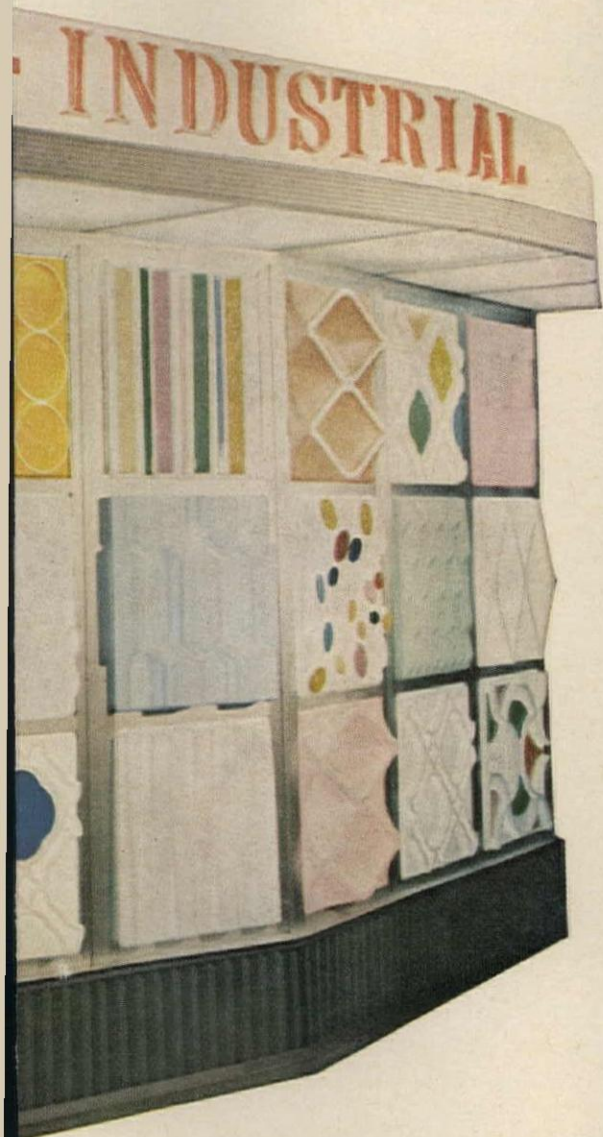
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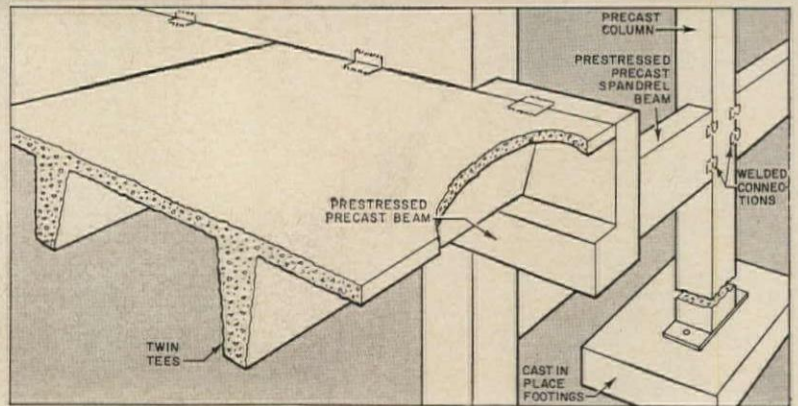


For more data, circle 84 on Inquiry Card



Prestressed concrete speeded construction of this efficient new home of the Railroad Building, Loan and Savings Association of Newton, Kansas. Architects: Thomas, Harris, Calvin and Associates, Wichita; Structural Engineers: Hartwell, Baxter and Associates, Wichita; Contractor: Koehn-Wells Construction Co., Inc., Newton; Prestressed Concrete Fabricator: Prestressed Concrete, Inc., Newton.

Sketch (right) illustrates detailed view of typical framing. Double-tees easily adapt themselves to different roof levels and cantilevers. In this instance they were 6' wide and either 16" or 20" deep.



With prestressed concrete... a roof over this job in only two days

Prestressed concrete structures go up fast in all kinds of weather, permitting early cover for interior work. Speedier erection chops construction costs. Savings also pile up in the form of lower insurance rates and reduced maintenance to name just a few more dividends you get with prestressed concrete construction.

The structural elements for this attractive building—columns, beams, double-tees and girders—were precast in the casting yard, meaning no appreciable amount of work had to be done at the job-site. Precast columns were shipped with bottom bearing plates attached. They were erected by setting in place and bolting to the cast-in-place footings. All double-tee slabs rest on beams or girders. Steel connection plates were precast in all members. Field connections between members were made by welding steel plates to each other.

CF&I-Roebling, pioneer in the development of prestressing wire and strand, has years of practical experience in the manufacture and application of this modern construction material. If you will tell us *what type of structure* you are considering we will be glad to supply up-to-the-minute data and names of prestressed fabricators in your area. The Colorado Fuel and Iron Corporation, Denver 2, Colorado; Trenton 2, New Jersey. Sales offices in principal cities.

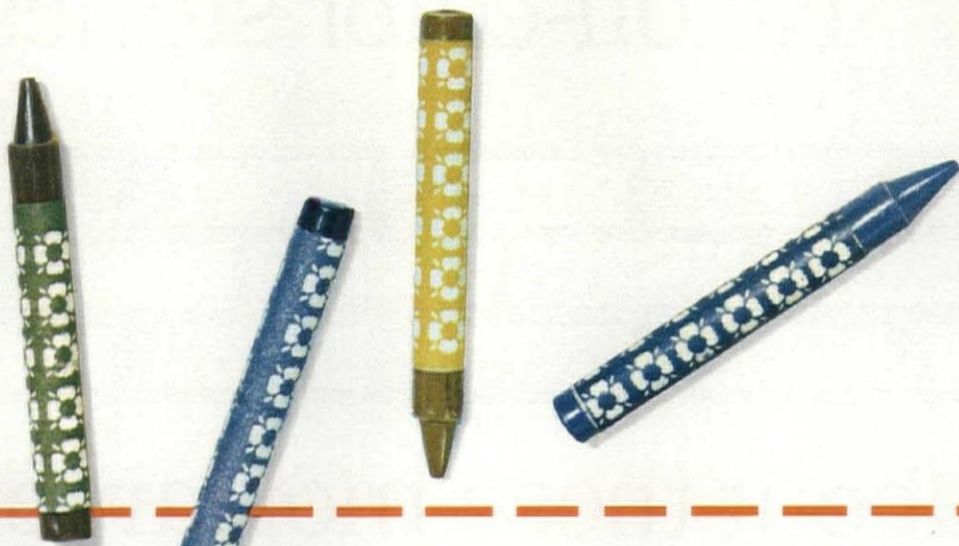


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Go creative...with Barwick's Colorset

Ever wished for a carpet that didn't exist? Felt a need for a truly unusual design? Then you've been waiting for COLORSET . . . Barwick's *electronic* method for making plush patterned carpet. COLORSET is the first *real* advance in creating multicolored designs in carpet since the Jacquard loom in 1804.

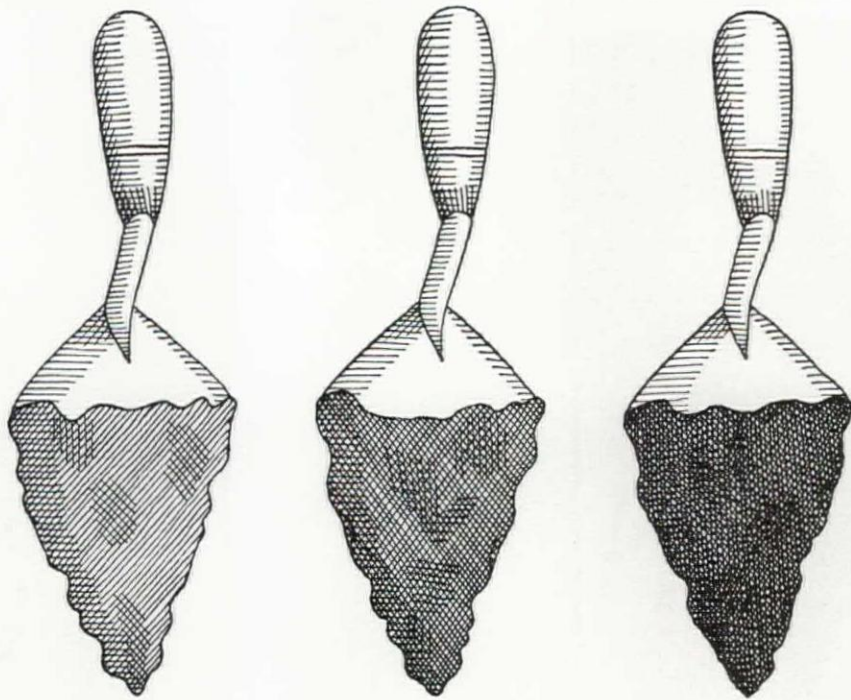
COLORSET designs take any shape or form . . . any number of colors . . . any yarn. At an electronic speed that's hard to believe, COLORSET transforms elegant designs into deep-pile, permanently patterned Barwick carpet . . . so beautiful and yet so rugged and resilient. Designs flow through the entire thickness. Pre-metalized dyes assure long years of color clarity.

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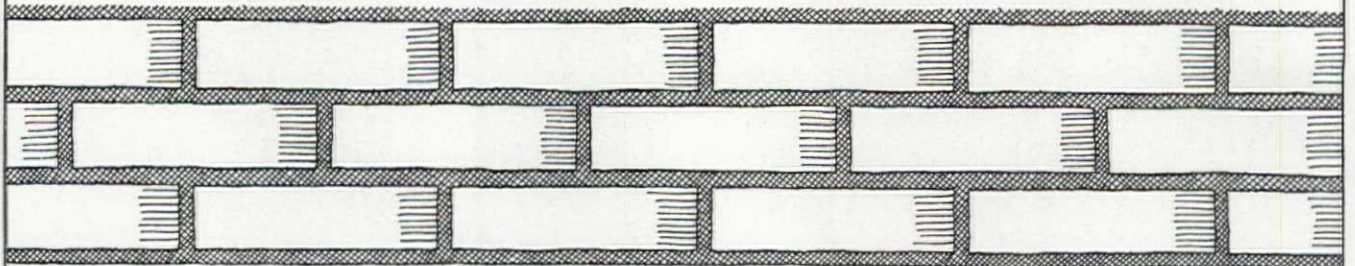
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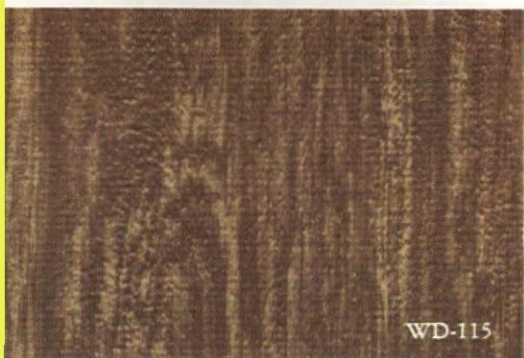
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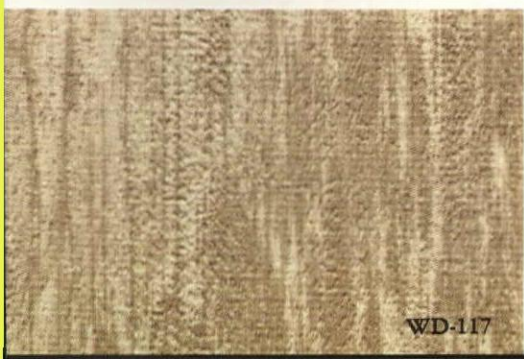
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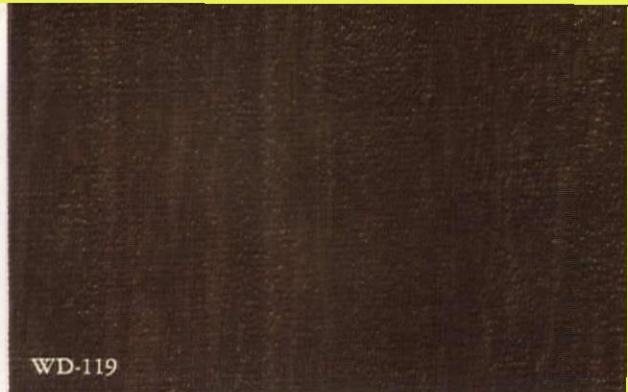


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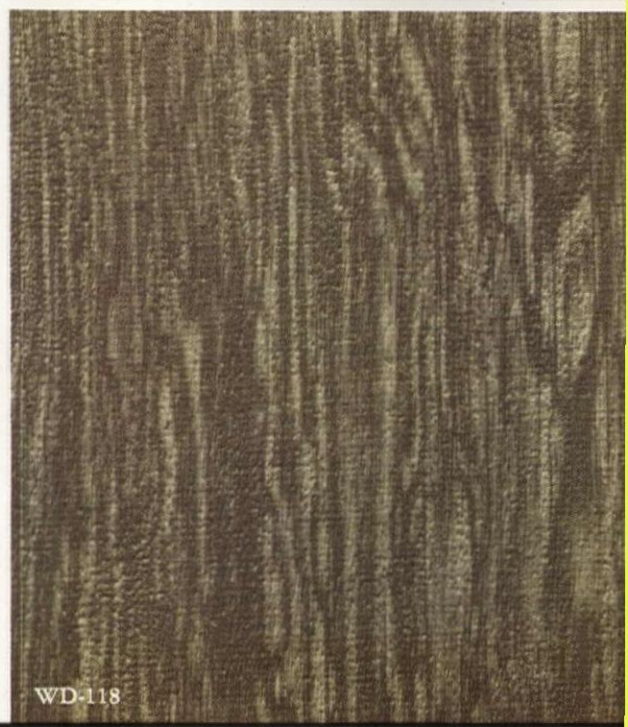


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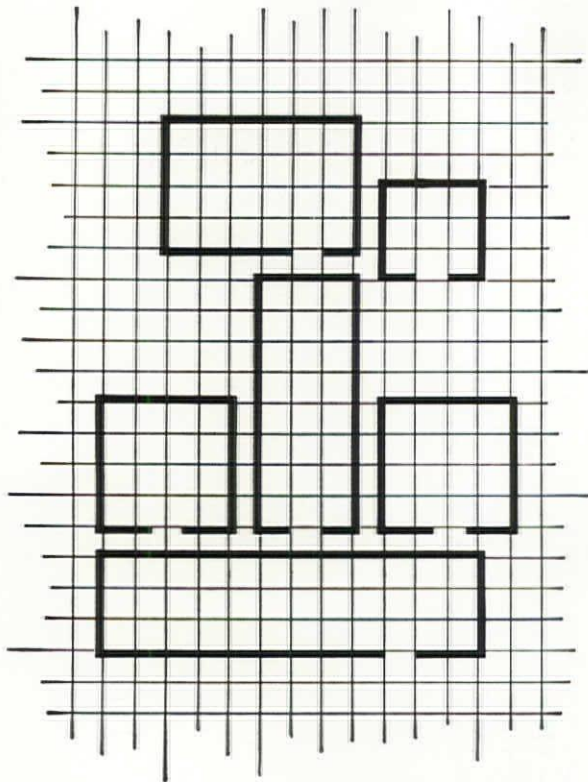


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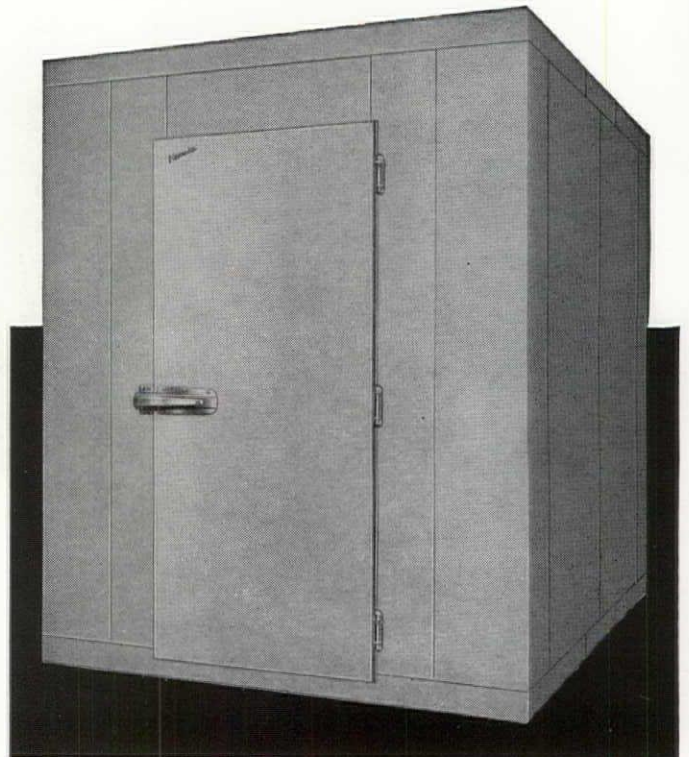
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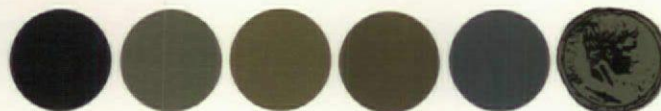


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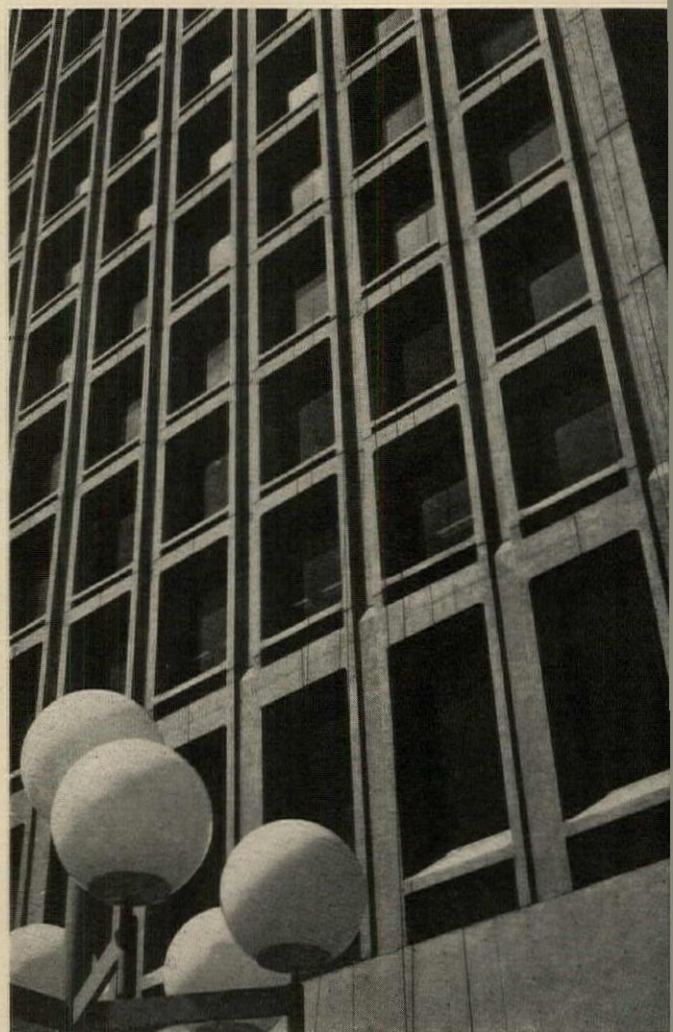
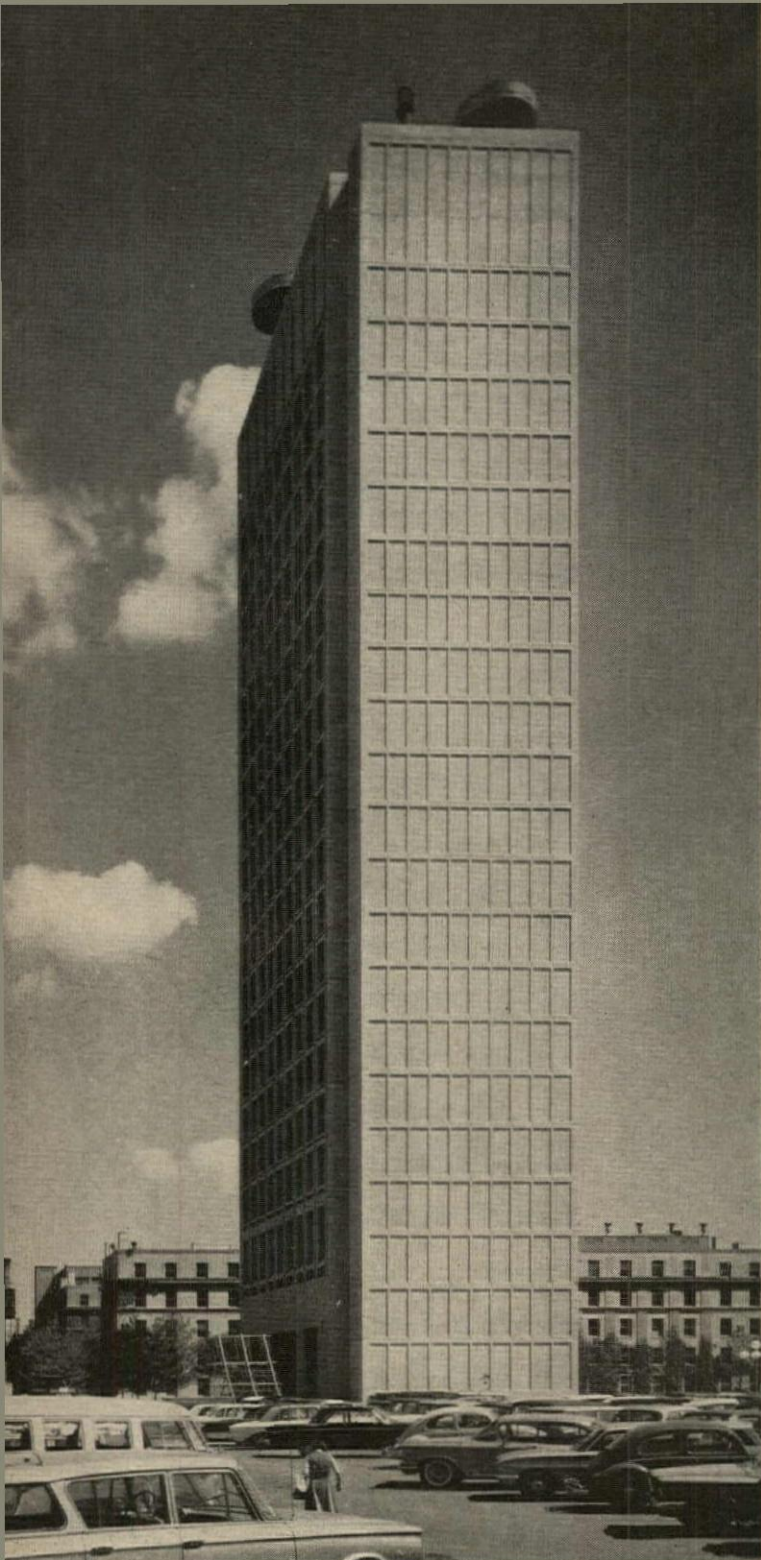
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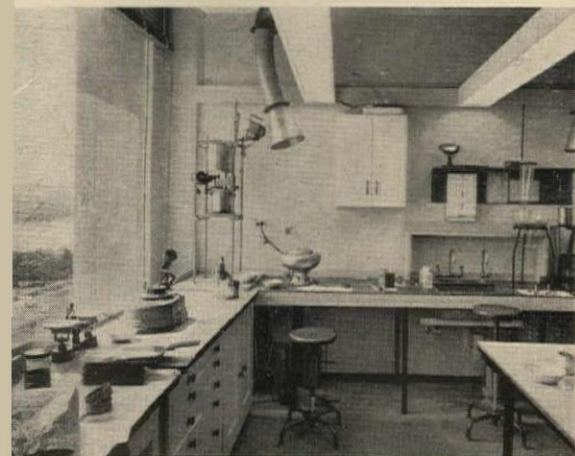
FIRST TOWER AT M.I.T.

New Earth Sciences Building, designed by alumnus I. M. Pei,
rises 20 stories to create a strong vertical dominant
in the Institute's low spreading skyline

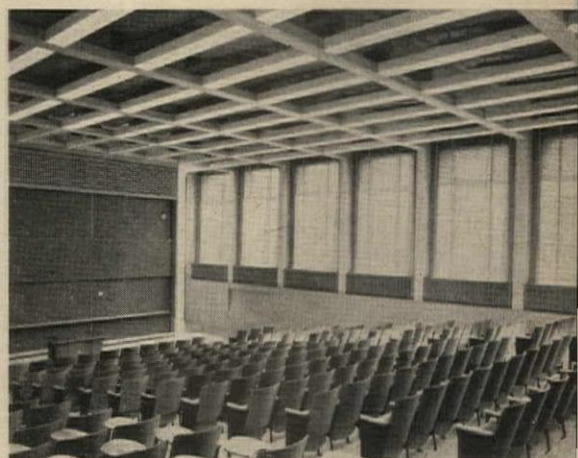


Joseph W. Molitor photos





Above: A typical laboratory, corridor and seminar arrangement. Troffers alternate with beams for corridor lighting



Above: The library, library carrels and auditorium. Adjustable acoustical reflecting panels occupy spaces between girders

FIRST TOWER AT M.I.T.

The first tower on the campus of the Massachusetts Institute of Technology rises over 300 feet to make a strong vertical mark in the low, spreading, M.I.T. skyline, dominated for 50 years by a dome symbolic of the school. The high-rise, the Earth Sciences Building, is located in a large, more or less formless open space at the eastern end of the campus, bounded by a group of diverse buildings of limestone and buff brick. The new tower is constructed of *in situ* concrete of notable quality, sympathetic to neighboring structures in color. Pei's concept for the space will not be realized until future low structures he has designed will transform the now amorphous east campus into a series of three compact courts of varying sizes and shapes. The tower will

then consolidate the whole. And, if M.I.T. decides to build additional tower complexes, the dome could again become the visual center of the whole.

The building is simple in plan, with laboratories, seminar rooms, and classrooms flanking a double-loaded corridor on typical floors. Windowless shafts at the ends of the plan house stairs, elevators and mechanical shafts. The exterior expression of function and circulation thus rings true. At ground level, a central open space becomes an outdoor gallery, flanked at each end by glass-walled lobbies for elevators and stairs. A library for the earth sciences, with carrels at windows, is located on the second floor, which houses also a large lecture hall seating 300 at the other end of the structure.

FIRST TOWER AT M.I.T

The \$5 million Earth Sciences Building is the tallest in Cambridge, creating a favorable situation for meteorological radar and other atmospheric probes. The concrete bearing walls are glazed with solar glass, bronze in color, set in recesses to eliminate exterior metal frames. The mullion-columns of the structural wall are gathered by a girder at second floor level, supported by heavy piers, as shown in the photograph (*below*)



*The Cecil and Ida Green Building, Center for Earth Sciences
Massachusetts Institute of Technology, Cambridge, Massachusetts*

ARCHITECTS: *I. M. Pei & Associates*

I. M. Pei and Aldo Cossutta, collaborating partners

CONSULTING ARCHITECT: *O'Neill Ford*

LANDSCAPE ARCHITECTS: *Sasaki, Walker & Associates*

ACOUSTICAL CONSULTANTS: *Bolt, Beranek & Newman, Inc.*

STRUCTURAL ENGINEERS: *Severud, Elstad, Krueger Associates*

FOUNDATION ENGINEERS: *Moran, Proctor, Mueser and Rutledge*

MECHANICAL AND ELECTRICAL ENGINEERS: *Syska & Hennessy*

GENERAL CONTRACTOR: *Turner Construction Company*

ARCHITECTURE AS TOTAL COMMUNITY: THE CHALLENGE AHEAD

A series of seven articles examining the contemporary crisis in human environment and presenting strong, frequently controversial, convictions on planned development as guiding principles for community order with diversity, beauty and humanity

By ALBERT MAYER

in consultation with CLARENCE STEIN

7. SYNTHESIS AND SUBLIMATION: THE ROLE OF THE ARCHITECT

What, Finally, Are We Seeking?

We have been through an Odyssey of words and concepts. We have tried to visualize a coherent set of objectives and steer a course toward and into them, at the various interlinked scales of modern living.

We have introduced the principle and practice of distinguishing between genuinely inevitable trend, which I believe covers much less of an arc on the whole horizon of the future than we habitually assume: between this and our field of choice, and, finally, our chosen directions.

We have worked out the elements of attainable and better, purposefully changed, physical-ecological environments, from the city neighborhood through a to-be-changed metropolitan complex; and beyond into fresher pioneering regional alternatives. We have covered substance, arrangement, reasons, aspirations.

The thesis of this whole presentation is two-fold:

First, that we have it within our grasp to create substantively better environment. This will, however, not come in any automatic way from our increased and increasing technological equipment, but only if we then in moral terms master the essentially amoral new implements, choose among them with connected insight and determination. We must be not victims of an uncontrolled cacophony, but composers of a great symphony.

And second, that however excellent is the development planning that flows from such victory and thinking-through, it does not alone achieve ultimate consummation in human terms. To achieve this, it must be infused with architectural quality and con-

viction and an architectural synthesis at every scale, architectural interrelation and sublimation. It is only this combination and interpenetration which speaks with fully emotional power to the human spirit. The architecture is not superior to the plan or to the social operation. But unless the three are inextricably intermeshed, none of them reaches its full flowering.

Consider now, two illustrative cases: the one, large and famous, a major and esteemed contribution; the other of an almost anonymous nature in any large prestige sense. In this chapter, these and a few later examples must act as symbols or representatives of the whole range. To do much more would take a text-book devoted to our thesis only (and in particular, the design-consummation of New Towns which play so large a part in our thinking and strategy, cannot be carried further here).

New York's Central Park

The first case is Central Park in New York City, a major city recreational asset, a precious and loved civic ornament in the highest sense.

The establishment, a hundred years or so ago, of so large an in-city public park, the first one in this country, was a major act of civic-social statesmanship. Whoever had been entrusted with its design would of course have carried out the program, and created an important recreational and park resource. But let us see what extraordinary dimensions Olmsted brought to it, not parts of the stated program, that have made it incomparably more use-



Peter Fink

Central Park: civic impulse, purpose and program fructified, enhanced, multiplied by architectural intuition, understanding and pre-vision of their still undisclosed future. Architect: Frederick Law Olmsted. *Left:* Prophetic anticipation and gifted topographic fulfillment. *Right:* Nature preserved and enhanced

ful and emotionally releasing, a genuinely re-creative experience rather than just an area for recreation.*

A few specific points, which is all we have room for, will bring these phrases alive. The competition program contained the requirement that there had to be four through-traffic arteries from east to west, through the Park. Of all the 32 submissions, Olmsted's was the only one which grade-separated this through-traffic from pedestrian park circulation. And this, some 35 years before the first automobile! An architectural-planning-inspired anticipation, and so skillfully and masterfully designed into the topography that from within the park one is not visually or aurally aware of the cross-traffic. That is: vast enhancement on two planes by the architectural contribution.

First, then: intuitive foresighted enhancement of the program. Second: permeation of architectural synthesis.

Now, for other brilliant self-injected and pervasive elements, turn to Olmsted himself: "... The park is to be surrounded by an artificial wall twice as high as the Great Wall of China, composed of urban buildings. Wherever this should appear across the meadow view the imagination would be checked abruptly at short range. Natural objects were thus

required to be interposed which, while excluding the buildings as much as possible from view, would leave an uncertainty as to the occupation of the space beyond. . . . The constant suggestion to the imagination of an unlimited range of rural conditions . . . to the visitor, carried by occasional defiles from one field of landscape to another in which a wholly different series of details (experiences) is presented, the extent of the park is practically much greater than it would otherwise be."

And then: "... The time will come when New York will be built up, when all the grading and filling will be done and when the picturesquely varied rocky formations of the land will have been converted into formations for rows of monotonous straight streets and piles of great buildings. . . . Then the priceless value of the present picturesque outlines of the ground will be more distinctly perceived . . . the constant suggestion of an unlimited range of rural conditions. . . ."

And so he left, and indeed in many places and in many ways enhanced, the rockiness of nature, the quietudes and the contrasts of nature, in the heart of the crowded city.

One knows how vastly important and how vastly successful Olmsted's contributions have proved to be. Thus, to start with, there was the grand civic



Bruce Davidson

impulse and concept and action as the jumping-off place; and how incomparably fructified by the architect. This is the kind of inter-penetration of understandings and excellences and skills and motivations of various character and levels that we must demand of ourselves in order to create a happier 20th-century environment; and why I consider this chapter to be the climax of the quests of the earlier chapters.

A Small Community Center — Anywhere

Now, turn to a quite different situation and scale, for our urban symphony comprises both, in a sort of moral and social continuum. Consider the community facilities appurtenant to a low-cost housing development. Individually-physically, small: a great contrast in scale to our great Central Park. This is precisely why I have selected it, precisely why I have placed it here in seemingly dramatic juxtaposition to the monumental enterprise. Actually it is, in one major sense, a seeming contrast only. There could be no better illustration of a "minor" design job not at all minor in the intensity of its social importance. Indeed, from that viewpoint it is quite major, for better or for not so good or for worse; and also in

the cumulative effect on our national life, of the thousands of such situations around the country. There could be no better illustration of my thesis for "decentralization of excellence," of the thesis that these "small," rather prestige-less, situations cry out for the best skill, imagination and devotion that we command.

The functional and space program for the community center in such a development generally calls for so many square feet, divided into classrooms and committee-rooms, craft-room, kitchen, maybe a larger room for auditorium. Or, whatever; more, or less, elaborate. This is the jumping-off place, the bare bones, the obligation met. What is its function? Briefly, a social and social-educational focus for the life of the community. Sometimes this is met by finding the square feet in one or several basements, with no daylight, or gray light from area-way windows. Sometimes it is raised to the first floor level where the column spacing, determined of course by typical-floor columns above, produces different peculiar conditions. In general, an outsider doesn't too readily locate these centers because there is usually no identification, to say nothing of the kind of stirring

* As it nearly was, and would have been, had the initial design of Egbert Viele, the park engineer, been used



New York City Housing Authority



Ed Bagwell photos

Local social-focus design: two examples by Albert Mayer. *Left:* East Harlem Plaza, New York—a people's place for "some of the least of these." *Right:* Southwest Redevelopment Area, Washington, D.C.—a "mall" was evolved as a district social center from a discontinued street between housing and playfields

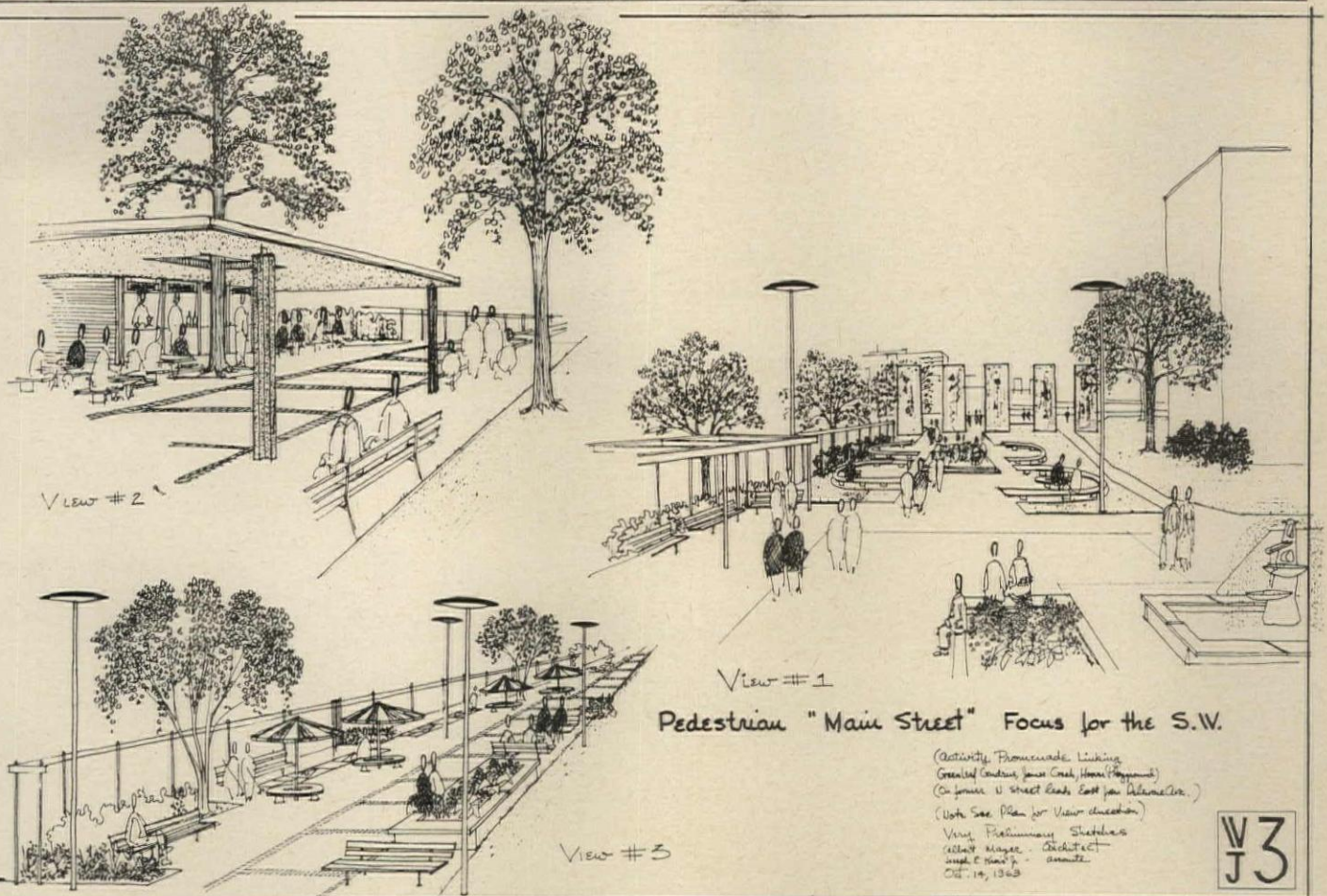
identification that would be commensurate with their stirring function and potential. In much rarer cases, there is a separate wing; and in a very few, a separate building.

But whatever it is, my close observation over a long period is that to most architects¹ the community center is an appendage, a small mechanically-laid-out element hung on to a large project: not a challenging social-architectural obligation and opportunity. And this is exactly what it should be, must become—even granting the minimal budget and hence maybe inadequate fee. The architect must want to create an aura, a sense of pride and allegiance, a visible invitation to those within the development and beyond. He must want to sit down with local social workers, neighborhood people, absorb as raw material their thinking and experience and outlook, sublimate their mute or latent aspirations, produce DESIGN, HUMAN EVOCATION. He must live these through at first-hand, not merely accept pre-digested "requirements."

To put a point on what I am getting at, I refer to an experience. I was once called in as a consultant by a neighborhood organization, to comment on the community center in a large low-rental development. I will leave aside the elements involved of interior layout and function and relationship to other site

and surrounding elements, which to make vivid would take too much space. I will note only two points which to me symbolize the situation and the crucial attitudes:

The two-story community element was attached to one of the tall residential buildings, not because there was any functional or three-dimensional rationale in this, but just because this was a convenient thing to do. The site plan had been arrived at without particular regard to the small community element, and this then seemed to be the most convenient arrangement. But to have allowed this to stand would have been equivalent to saying that visually and spiritually this was just an appendage or afterthought; whereas we considered it the heart of this development and of the neighborhood. We felt that its location and *separate identity* must express that. After a considerable hassle, and numerous alternative sketches as challenges, this end was finally achieved. But the building was still of the same dull red brick as the total job. Again a setback to the building's identity and symbolic importance. Again a hassle to establish the viewpoint that this was well worth bothering about, well worth arousing the public client's attention about; and then bearding him. So, finally one attained, not the stirring design-crystallization of a deeply important



function, but at least not a denial and a denigration.

One isn't here thinking of something fancy, which might indeed be out of place: but of something really significant to people. Bear in mind, too, that this half-way case is better than all but a very few such. And bear in mind that in the case of the open space community equivalent we are scarcely this far, except in a negligibly small number of cases. And in the vast "non-project" areas in our cities, and generally even in the urban renewal rehabilitation areas, we do not set up those little social plazas and community activity foci so modest in cost, so pregnant in effect, for which I have particularly pleaded in the urban renewal article.²

Architecture at Regional Scale

I now want to talk about architecture in the great new dimension: the crescendo toward and into the regional scale. I am not talking about "regional architecture" in the accepted sense, fine and important as that is, *characteristic* of a region, stemming from its climate, materials, expression of local-regional living. Examples are the 18th-century houses of New England streets and towns, possibly the ante-bellum architecture of the South, the work of

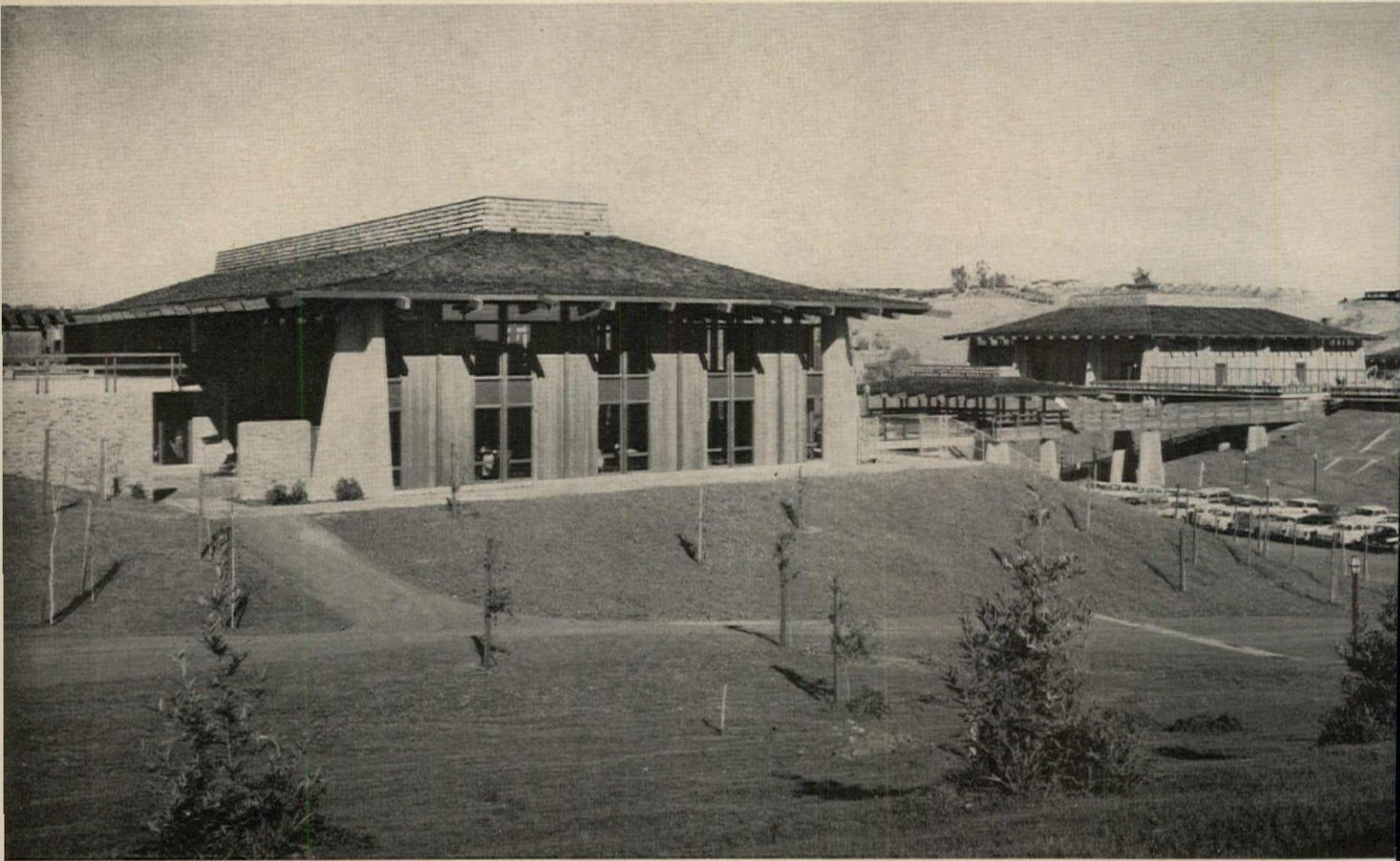
Maybeck and his followers and architectural descendants in the Bay Area in California, perhaps Frank Lloyd Wright's prairie architecture. The reason I do not talk at any length of this inspiring work is because it is well known, has been often and intimately discussed and permeates our consciousness; though I will in a moment take up one special current case.

It is the new regional *scale* and *opportunity*, of which there are few examples because the regional challenge, the regional plan-and-synthesis are only emerging, the implications and integrations from multi-faceted requirements and factors that are beginning to crystallize. I will present the two illustrations that I know something about.

But first, there is one instance I know of, a locality within a region, which seems to combine very important factors: planning-social crystallizations; tenacious-mobilized public opinion-and-action, with an architectural climax resulting from a close im-

¹ Or, rather, to most architectural offices, because in general the architect himself doesn't fool around with this small matter

² Architectural Record, May 1964, page 150, "Creative Dispersion of Urban Renewal." The fact is that among the only, or maybe the only such, that have been completed, are the East Harlem Plaza and several others by me. The East Harlem Plaza has won a surprising number of awards due to merit (of course) and in great part due to feeble or no competition



aginative understanding by the architect, and his expression of it in the "regional architectural" terms I have just above discussed. This is the Los Altos area, adjoining Palo Alto. The illustrations are of its crowning element (on a height): Foothill Junior College by Ernest Kump.

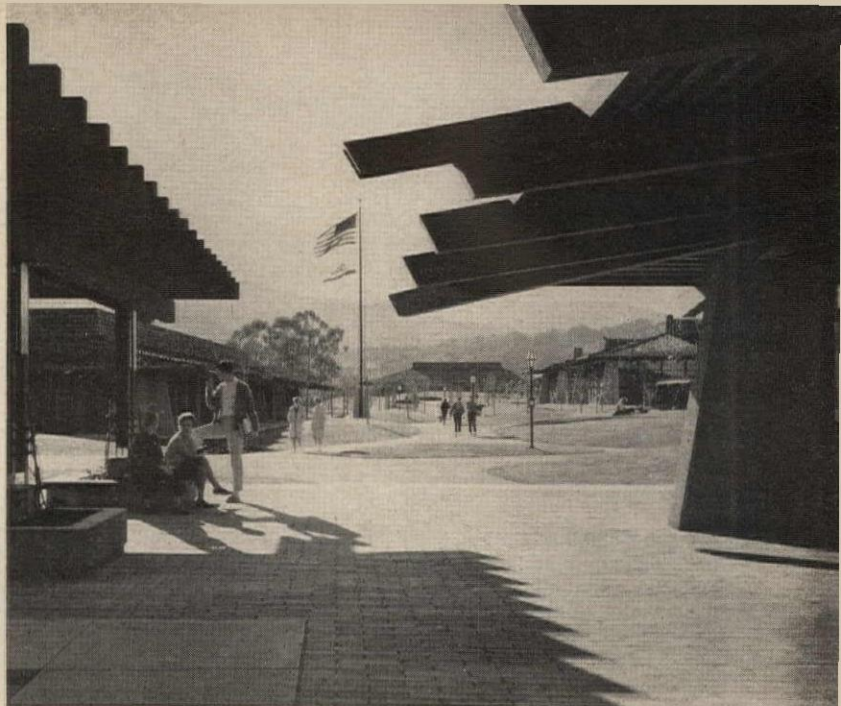
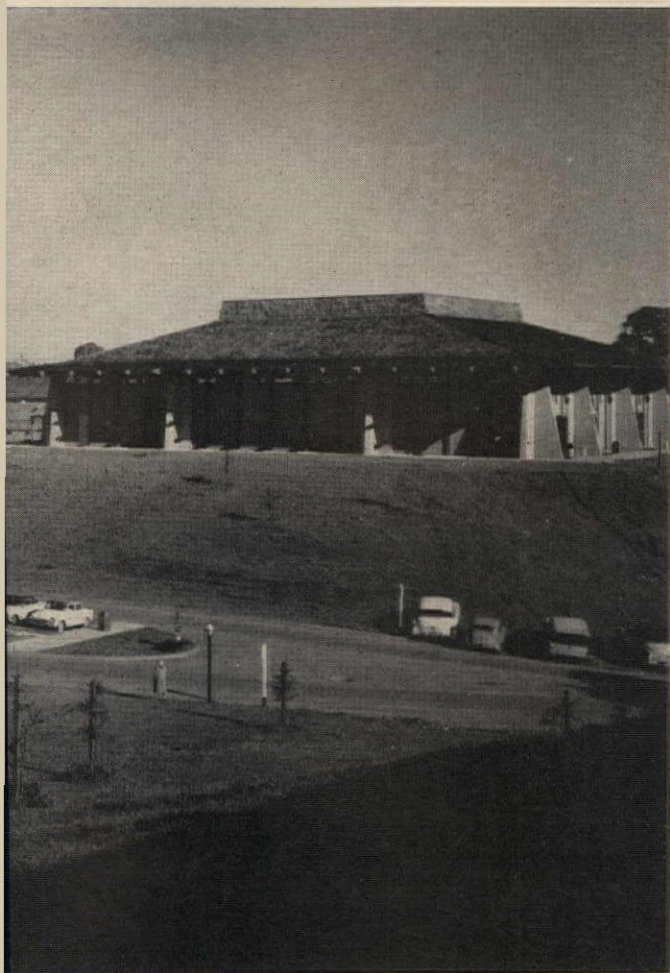
I visited it only once briefly, and was struck by it. The following paragraph characterizing it, abbreviated by me, I owe to Karl Belser, director of planning of Santa Clara County:

"As you rightly recall, there is a real community cohesion in the Los Altos area, which is the site of the Foothill Junior College. Its Los Altos Rancho Shopping Center (Lawrence Gentry), its civic center (also by Kump), several fine church facilities, and its close association with the academic and scientific community at Stanford University, all seem to demonstrate a rather unique life style and quality of appreciation. I really believe this area deserves much more study than it has received so far. I don't know just what made it happen, but from my first year's work in the area I have been continuously impressed with the tenacity with which the community has fought to secure its natural environmental context. The outside pressure for encroachment has only served to unify the community on the issues of policy."

This appeals to me as a happy piece of self-development and imaginative local integration in a rapidly changing region subject to the usual anarchic pressures. It seems worth including here, though as I've said, I don't know too much about it. I hope it isn't characterized by the opposite-polar impulse of exclusivism. The presence of the community college would seem to argue against this.

Now as to the larger-regional examples. One is from the Tennessee Valley Authority, for which the architectural expressions nobly exist, and are shown here. The other is from the Northeast Illinois Metropolitan Region. It exists only as a stirring presentation of idea and constituent elements, an idea waiting to be transmuted into social-physical-ecological-technical-architectural form; waiting the magic process from the gleam in the eye, to splendid birth. This can only be presented as a word-challenge, as imminent potential I hope, as culminating climax, as example of the still-to-be-accomplished.

Consider the TVA, a noble integrated concept of region on the multiple planes of total-river development; awakening and creation of untapped hydroelectric power; conservation and enhancement of natural resources and of productivity; social-economic awakening and development of people in their living, their resourcefulness, and sense of resource-



Morley Baer photos

Regional architecture: a college for the community, in a community tenaciously seeking a pattern of development in the hurly-burly of a region of great increase and mobility of population, with all the resulting tensions and pressures. Foothill Community College in Los Altos, California, is regional architecture in both the senses used in this article. Architects: Office of Ernest J. Krump and Masten and Hurd

fulness; and imaginative administration to encompass all this while becoming and remaining close to the people. One could of course say a great deal more on this plane. But one wants to say only enough to evoke the situation and the aspirations of the TVA concept and spirit of execution.

In accomplishing this great inclusive concept, massive physical instruments were involved and evolved; river diversion, dams, power houses, impounded lakes. These were the mental concepts and the raw physical materials. Architecture, or architectural infusion, was the creative means for sublimating these into unforgettable visual-emotional experience. Of course ANY big dam is an important experience. But the indigenous-integral expression and embodiment of bold architectural content permeating the TVA structures is unique, an enhancement. Why, and how?

Roland Wank was the built-in regional architect, for 15 years, who in that whole period was intimately connected with the thinkers, the planners, the engineers, the hydrographers: worked and argued and lived with them. He absorbed their thinking, their language, their aspirations, posed his own analysis, infused into them his own feelings and interpretations. Thus, what would have been an impressive manifestation in any case, takes its place among

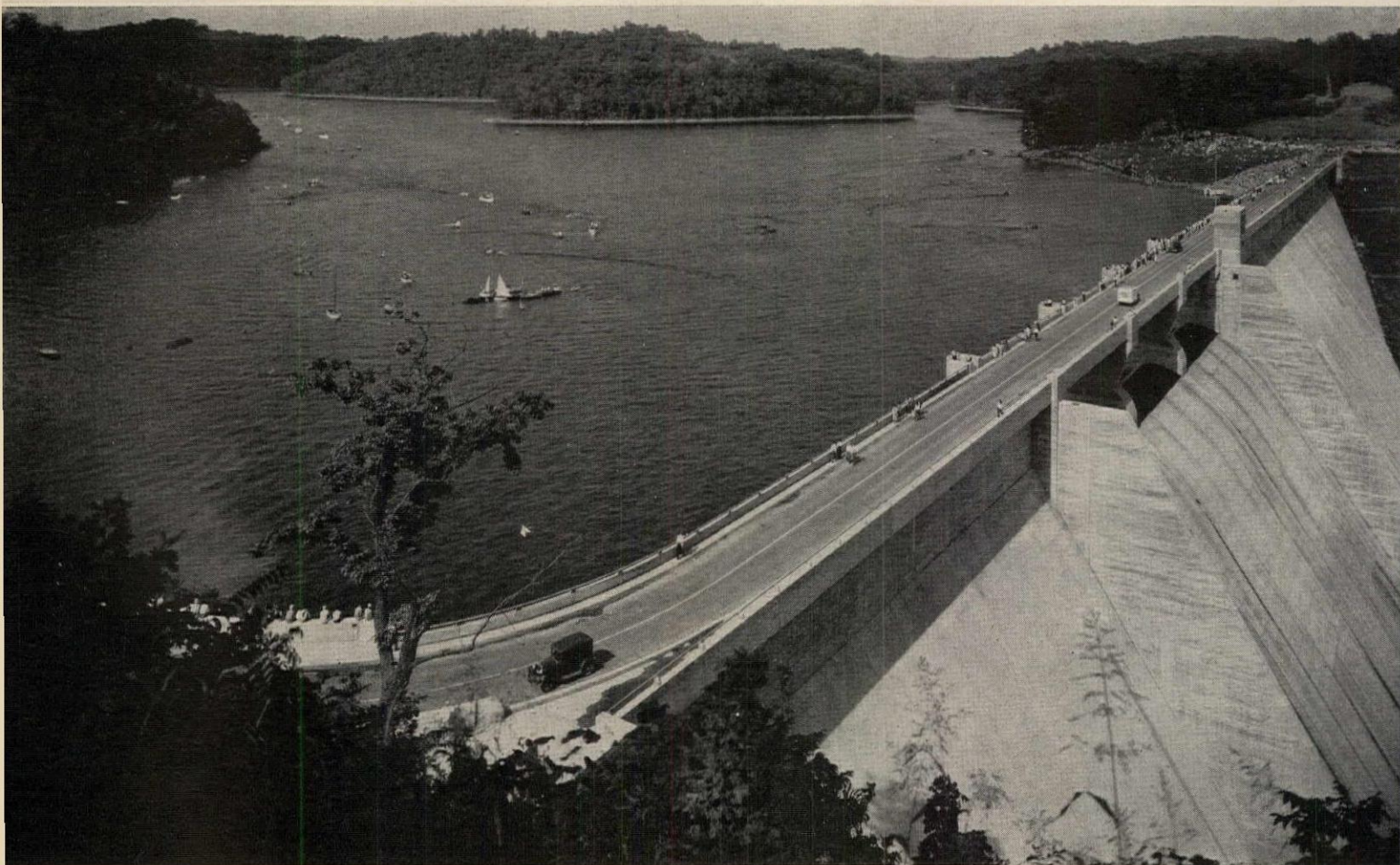
the great architectural-natural syntheses of any time.

The Beginnings of a Challenge

Quite appropriately for this series, the second, last case here presented, for regional opportunities for architecture, does not yet exist. It is a formulated challenge or problem, a hypothetical-actual program. It is a memorandum to the Planning Committee of the Chicago Chapter of A.I.A., by Matthew Rockwell, director of the Northeast Illinois Metropolitan Area Planning Commission. It deals with a universal, endemic problem arisen in the last two decades, which will be instantly and ruefully recognized. The presentation here is quotation:

"Specifically, we suggest that the Committee recognize the short-comings of a major highway interchange like the confluence of the Congress and Tri-State Expressways. Within the hundreds of acres of 'dead' land (or efficient concrete) lies a design potential which, embodying lakes, hills, auditoria or other features, could augment use and attractive quality of a man-made environment of great variety, use, interest and large dimensions.

"The general area has periodic flooding problems.



TVA photos

. . . For our economic advantage and for that of our downstream neighbors, we must detain all [the water] we can as long as we can. This in turn provides additional benefits, for as long as we detain the water it can be of service to us. As soon as the water has passed on downstream it is gone for good. . . . The management of surface run-off can be designed to preserve and sometimes augment the natural recharge to the sub-surface reservoirs. . . . The water that falls as precipitation is 'free' water and an effort should be made to maximize the benefits that can be realized from it. In addition to recharge, we might arrange also for impoundment of storm run-off in excavated (man-made) lakes. . . .

"Six communities of differing size and characteristics meet at the interchange. Each taken separately has certain recreation needs—and similarly there are 'collective' recreational aspects.

"The extensive land islands that result at such an interchange can be developed as a recreational area or areas. . . . The bordering lands would become most desirable for walking, hiking and picnicking. An outdoor amphitheater is also a possibility, as would be swimming facilities or other community requirements.

"The sanitary landfill method of refuse disposal can be used to add variations to the relatively uni-

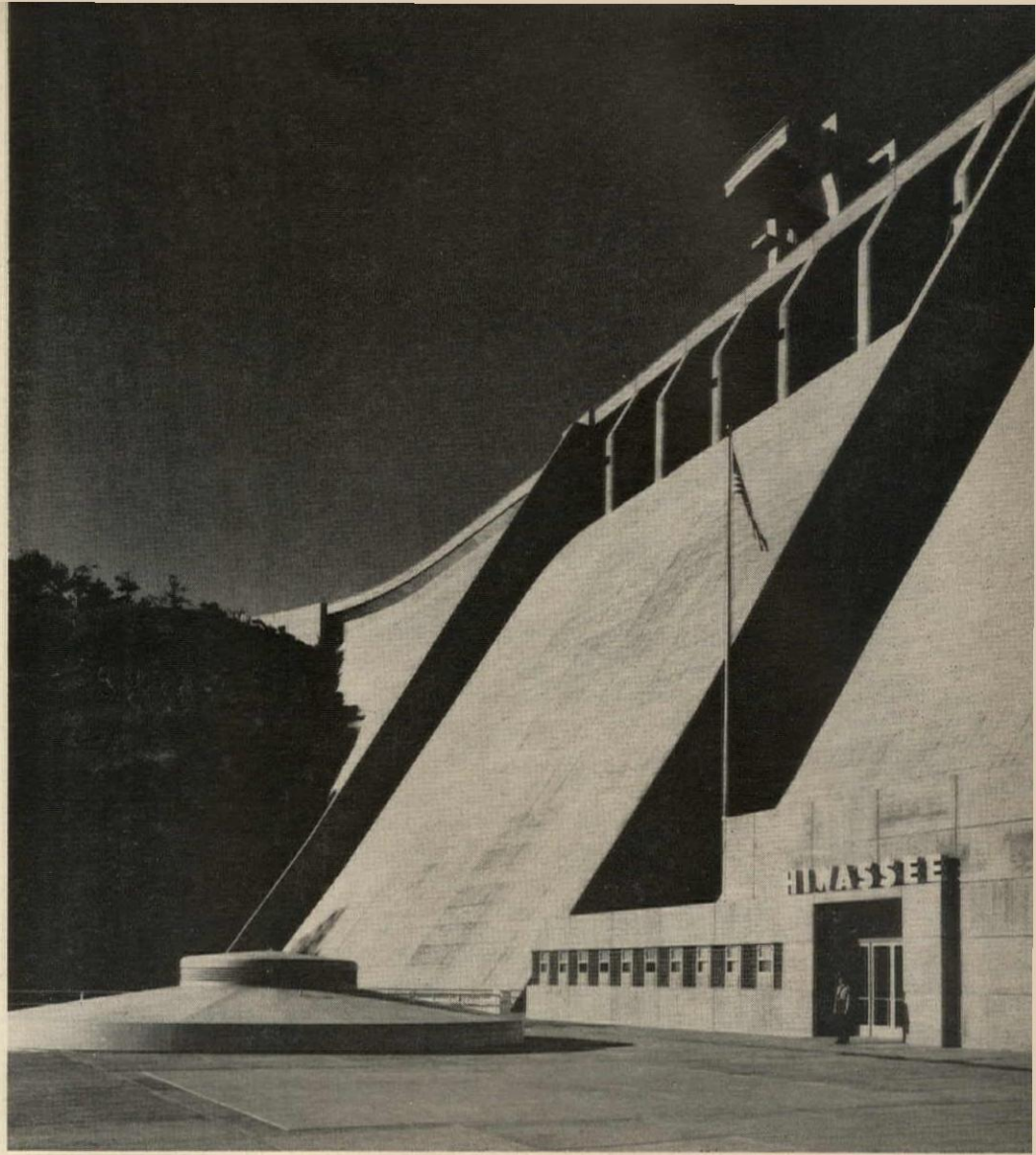
form topography of Northeastern Illinois. . . . Such a program would tie in very closely with recreation, as the hills formed could be used to reduce or eliminate traffic noise in the amphitheater and could provide also hills on which toboggan slides and other recreation facilities could be provided. . . .

"From the above, it appears that many benefits may be obtained if the land trapped within a major expressway interchange is properly developed and managed. Preliminary estimates suggest that such development would provide economic returns which would more than justify their construction."

In the TVA situation there is a not often repeated opportunity for inspired architectural infusion and interpretation on regional scale. The situation posed by the Northeast Illinois planning body offers a more commonly characteristic regional type, and in a sense a deeper dimension for the architect. It involves for the architect, landscape architect, and their consultants both the opportunity for the inspired sublimation-formulation of program in a field indeed ripe and waiting for it, and then inspiring interpretation.

Charles Blessing, director of city planning in Detroit, has recently written me of a still higher regional challenge: "Representatives of both HHFA and the Bureau of Public Roads have been unable to cite a sin-

Architecture at regional scale: Tennessee Valley Authority—a noble integrated concept of region. The great dams are symbol and actuality of conversion from unharnessed potential to concentrated and disciplined action—in juxtaposition to nature, taking their place as powerful elements in perfecting nature's processes



gle example in which a creative study of the form of the region, based on natural and man-made visual assets, has been made. We are trying to introduce a section in our Detroit Metropolitan Area Program Design covering this phase of the work." Perhaps this is excessively ambitious at the present stage of our social-physical-ecological-economic understanding. But it is an active or latent challenge. I am very sympathetic to this idea of trying and anticipating, NOW. Tempering my circumspectness as a planner, I often think of Napoleon's remark: "On s'engage. Puis on voit." Translated: "One moves into battle. Then one takes a look around."

Many Scales, All Regional:

The Architect as Antaeus

In urban and regional development there is thus a myriad opportunity and need, at many scales, many social-physical levels, from the apparently small to the full regional enterprise. All these cry out for the same penetration and dedication, the same searching for and winning of the internal social-physical-spiritual meaning; and then, expressing it. Of course, that substantive meaning must have been achieved to begin with, that soul-and-life-satisfying

set of interconnected scales culminating in regional synthesis. To work out some such substantive synthesis is of course what all the preceding articles have been concerned with.

It seems to me that the ultimate expression and creation in architecture can be of the highest, if and when the architect fully grasps all this substance, is fully attuned to it, has a deep sympathy with it (helps to arrive at it, or helps to change it if he feels impelled to). I have noted that the TVA work came from a 15-year dedication to this region, of absorption in it. I believe that every gifted architect should be strengthened by such a regional-local absorption and attempt to fully understand it, be steeped in it, belong to it. This may be in terms of a town or a city district or a sub-region or whatever. And I believe that no matter how many office buildings and cultural centers he designs in how many parts of the world, he ought to have this firm base.

I think of the legend of Antaeus, who could not be vanquished while his feet were firmly on earth. Hercules finally conquered him, after he had managed to get him to leave that source of his strength. Not only does this deep local attachment, in my feeling, strengthen the architect. But of course it gives to the grass roots or to the asphalt purlieus the benefit of the high talents which they deserve.

There is a great deal of stirring, among architects and citizens at large, even among officials, about beauty in architecture and environment, and the lack of it. The Atlanta Chapter of the American Institute of Architects published a striking illustrated pamphlet "The Mess We Live In." It showed our normal gas stations, projecting sign wildernesses, telephone and electric pole-and-wire jungles; and some examples of better handling. The New Mexico Chapter 1963 annual conference was devoted to "The Ugliness Around Us." A major citizens-architects' meeting in New York a couple of years ago was devoted to this. And how many others. All of this is symptomatic and in a hopeful direction. There are disgust and revolt and groping, widespread alarm, at a visual level, and steps being adumbrated or definitely proposed, or even taken, to deal with the miasma.

There are Kevin Lynch's and Gordon Cullen's alertings and deeper observations, photographs and analyses. In 1958, the New York Chapter, American Institute of Architects, New York's Regional Plan Association and the American Institute of Planners put out a succinct book "Planning and Community Appearance," with this important proposal: "Recognize the need to provide over-all neighborhood context for the work of the ultimate designers of individual structures by creating and adopting generalized, three-dimensional district plans as integral parts of the municipal master plan."¹

On quite another plane, Eugene Sternberg has suggested and personally done a good deal about educating the public by lectures and "educating the new generation with a completely new outlook in our schools." He and his wife plan a book on this.

All these symptoms, efforts, recommendations are essential, and I am delighted that these strivings are gaining momentum. They create and intensify a necessary atmosphere. But they are not involved with the organic matrix, nor in the organic process of creating new rational, underlying conditions-and-environment out of which a satisfying and challenging and developing organic architecture-environment will flow. Certainly let us have handsomer street lights; certainly let us bury electric poles; certainly let us have non-hideous gas stations, with flowers even; certainly let us have a designed skyline and not a competitive shambles. Certainly let us shout for joy at the Supreme Court's great dictum: "The concept of the public welfare is broad and inclusive. The values it represents are spiritual as well as physical, esthetic as well as monetary. It is within the power of the legislature to determine that the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled."²

All these cited efforts and developments are indispensable. But note the inherent limitation. In Nature, appearance is the ineluctable product and manifestation of organic process and structure. The equivalent of this in architectural expression is social process and understanding total plan-and-form development. So, the proposals and actions to set up better guides and rules, opinion and activity enforcing them, can be effective only when this organic process is vitally under way. In a sense, and I say this with the fullest respect for all these attitudes and actions, they are "end measures," the medicine in the situation. Underlying these there must be the growth and the ferment which this series has been trying to present and make vivid.

The Magic Ingredient: Organic Wholeness

And we must grasp the truth that all this handsomeness can only flow out of a rationalized humane total environment, from the small neighborhood nucleus to the total region, and that this we can attain only by devoted and determined formulation and continuous effort to see it through. We must think and act in terms of local and decentralized and permeating excellence, local peaks and subpeaks and right up through the regional challenges and masterpieces. Nor dare we settle for only the glittering central projects—which are in any reckoning of great significance of course—but which absorb too much of our effort and energy, and give great and delusive satisfaction to the prestige and pride of the powerful; nor even for rationalization and beautification of all the signs and stores on Main Street. We have got to place far more emphasis on the establishment and gifted design-involvement of each of many thousands of small parks in obscure neighborhoods; and many, many, many small local social plazas and community-galvanizing places, where even "the least of these" is awakened and eager and significant.

We are, thus, emphasizing two indispensable elements. First, the "equality" of the lower peaks and the great peaks in architecture. And second, that to achieve *any* peaks there has to be a struggled-for and participated-in basic agreed matrix. And then, close interpenetration or organic indivisibility of civic-social vision and action, of development planning and of architectural impulse, producing the structure and verdure from this matrix. And we have got to greatly struggle toward the birth of the total regional organism and framework of which the great and small elements are to be a living active-cellular part.

In physics, it is of course understood that the great visible mountain range is a visual and analyzable entity, in terms of the all-important, all-pervasive atom and its sub-constituents. I don't feel it is excessively forcing things to draw on this as an analogy to life and the region.

¹ Page 7

² 1954—Justice Douglas's opinion in *Berman v. Parker*, 348 U.S. 26

Until some grand, all-embracing social and esthetic coherence begins to emerge as "The Great Society," architecture in the United States will pursue a limited, eccentric course. It is not that we lack the ability or the vision to "make large plans." It is that, too often, current circumstances allow us to execute only small plans.

But as a whole, United States architecture, lacking either the political prestige or the economic power to make a frontal assault on Chaos, now seems to be too much concerned with the creation of virtuoso prototypes. The long-term influence of these performances is dubious. Ranging in quality from the admirable to the abominable, it is questionable indeed whether they will simply breed jumbled masses of more prototypes, or finally demonstrate by example, the urgent need for master-planning on a national scale.

Whichever the case, "The Great Society" once fully articulated, will not be denied. Of course it will not arrive overnight. Nor will it be realized during the incumbency of this or that political party. But sooner or later, it will be *desired* by the people, nourished in the halls of Congress, and implemented, among other places, in the august board rooms of large corporations. Then, because much of "The Great Society" will be expressed in terms of its environment, United States architecture will be charged with its ultimate responsibility: the creation of a national "plant and structure" that will speak eloquently for the dignity of the people, that will humanize the present in order to enrich the future and which, in so far as possible, will help guarantee the long-term economic, spiritual and social well-being of the nation.

On the following pages are six examples of some of my recent work. Of course, in the present context, they too are "prototypes." Nonetheless, they are sincere attempts to exemplify certain of the ideas expressed above. And inasmuch, as each project has considered the exterior form, the interior planning and decoration and the landscape development as a *single* design problem, these solutions may be looked upon as illustrations of architecture conceived as environment . . . a few musical notes perhaps, coherently interpreted as I, personally, read the score.

—EDWARD DURELL STONE



© Ezra Stoller photos

National Geographic Society Office Building, Washington, D.C.

Recent Work of EDWARD DURELL STONE



Recent Work of Edward Durell Stone

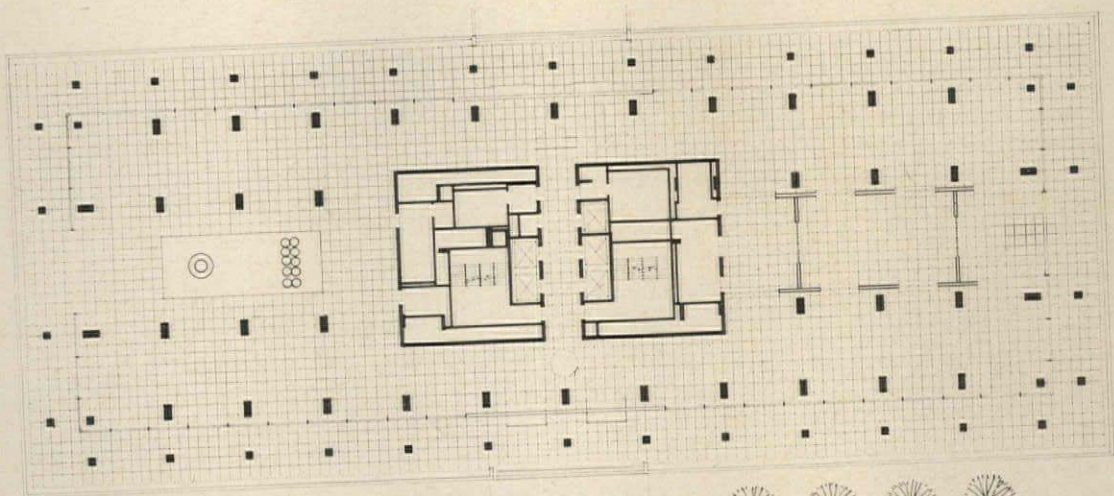
**NATIONAL GEOGRAPHIC SOCIETY OFFICE BUILDING
WASHINGTON, D.C.**

The executive, editorial, photographic, cartographic and business offices of the National Geographic Society are housed in this handsome building, which consists of 10 stories, a basement and sub-basement. Three underground parking levels provide space for 120 cars. The sub-basement is equipped as a fall-out shelter with its own well and power, ventilation and sanitation systems. An equipment penthouse extends some 17½ feet above the roofline.

Dramatic use is made of white Vermont marble in the column-like fins on the exterior of the building. Vermont marble is repeated inside the building for the elevator lobbies and the entrance hall columns. By contrast, the spandrels between the floor levels are formed from black Swedish granite. Both spandrels and windows are framed in bronze with a statuary finish. Construction of the building is reinforced concrete frame.

Some 600 employes are housed in the building, which also contains a considerable amount of highly specialized equipment; a modern photographic laboratory occupies the whole of the second floors. A feature has been made of the entrance or "explorers" hall, which is designed as a "museum of science and discovery." An 11-foot globe mounted over a black granite reflecting pool is the central exhibit.

Oil-fired steam boilers and a 960-ton air-conditioning system provide heating and cooling in the building, which is divided into 14 independent heating and air-conditioning zones. Many mechanical systems are duplicated so that if one fails a reserve can take over. The boiler room houses two 375 horsepower steam boilers, each capable alone of heating the building. Structural engineer: Henry Gorlin; mechanical engineers: Cosentini Associates; landscaping: Boris V. Timchenko.





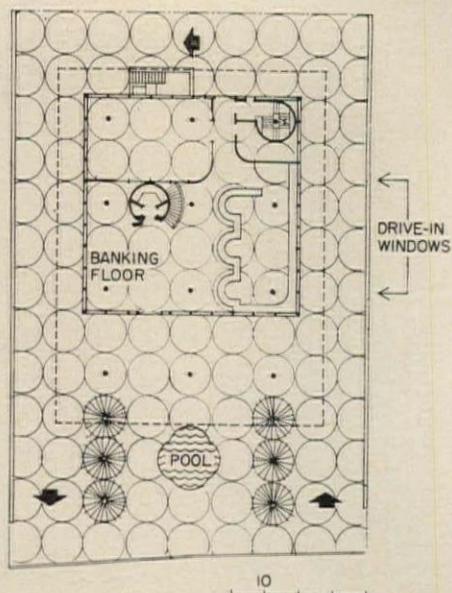
Recent Work of Edward Durell Stone

NATIONAL GEOGRAPHIC SOCIETY OFFICE BUILDING
WASHINGTON, D.C.

Edward Durell Stone's office was also responsible for the interiors. The executive suite on the ninth floor includes offices, a lounge and a conference room. The four lamps in the lounge (*above*) are made from 19th-century Chinese vases and are used to define the central seating area. Wool damask over flannel covers the walls of the conference room. Two concealed folding wood walls can be used to close off lounge areas at either end of the room. The table of Carpathian elm burl is wired to accommodate individual microphones. Executive offices are paneled in French walnut; shelves and cabinets are specially chosen to coordinate with desks. Access to the terrace on this floor is through sliding glass doors. Melon red glass mosaic tiles add color to the 10th floor cafeteria.





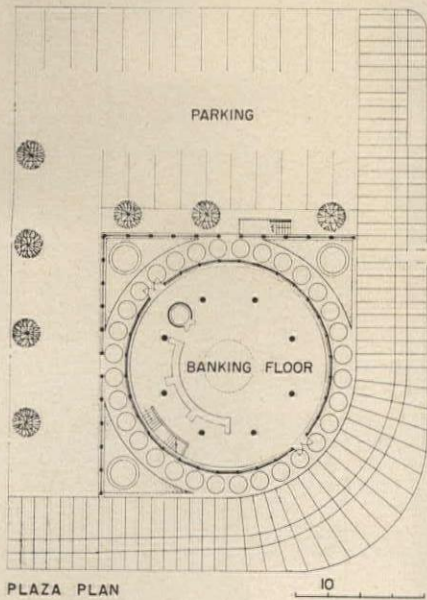


This small bank is handsomely sited on a landscaped plaza, featuring a fountain 20 feet in diameter. The building is a 62- by 62-foot square, enclosed by a glass curtain wall supported by a reinforced concrete structure. A large roof provides an entrance portico and wide overhangs on the other sides. The main banking area has positions for seven tellers; two drive-in and walk-in windows are provided outside. A mezzanine provides offices, and a basement accommodates lounges, accounting, clerical areas. Landscape architect: Edward D. Stone Jr.; Engineers: Henry Gorlin (structural), Paolo E. Squassi (mechanical); Contractor: Damon G. Douglas.

Recent Work of Edward Durell Stone

**CITY FEDERAL SAVINGS AND LOAN ASSOCIATION
UNION, NEW JERSEY**





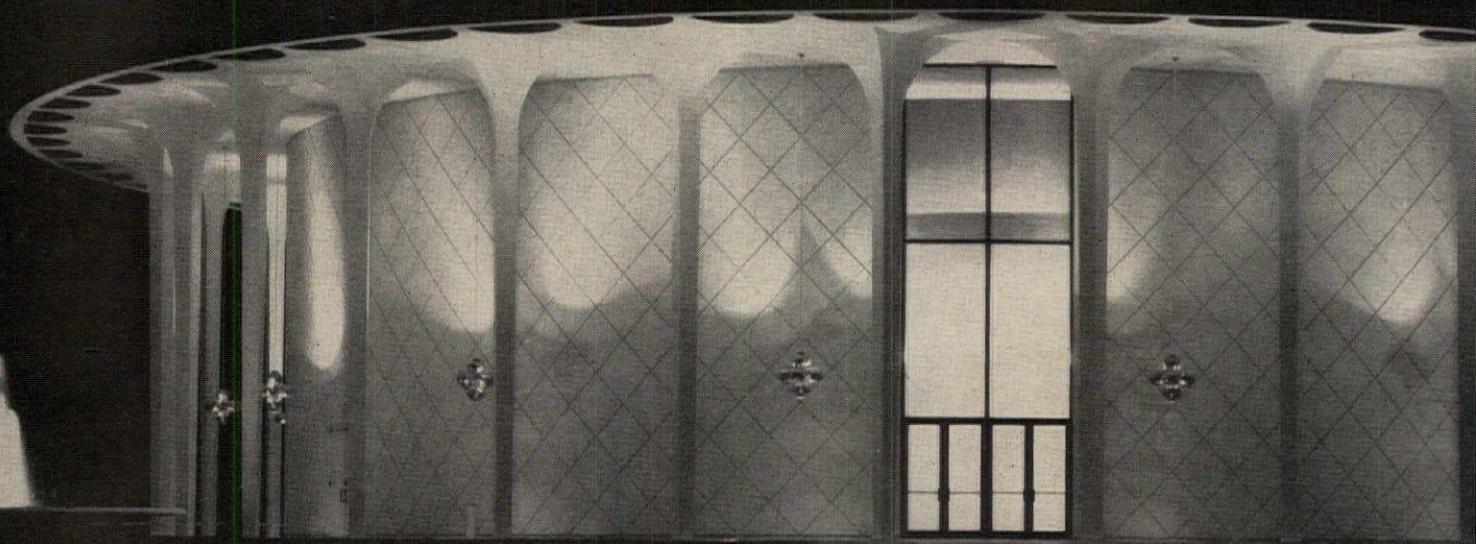
A circular structure, 65 feet in diameter, was devised for this branch bank. The structure is poured-in-place concrete. Lightweight floors were formed by using 6-inch cardboard tubes, spaced 9 inches apart, and sandwiched between upper and lower mats of reinforcing steel in a 12-inch slab. One interesting design feature is the lighting effect achieved by bulbs located in each structural column and skylight dome caps. The surrounding plaza is paved with gray terrazzo patterned with white circles. The arched screen wall has a marble-textured concrete surface, gold fencing. Engineer: Pregnoff and Mathieu; contractor: C. L. Peck.



Recent Work of Edward Durell Stone

**PERPETUAL SAVINGS AND LOAN ASSOCIATION
BRANCH, LOS ANGELES**



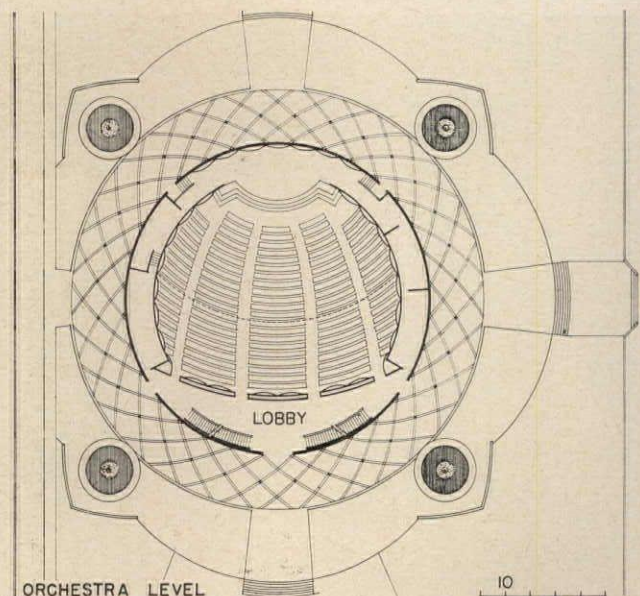


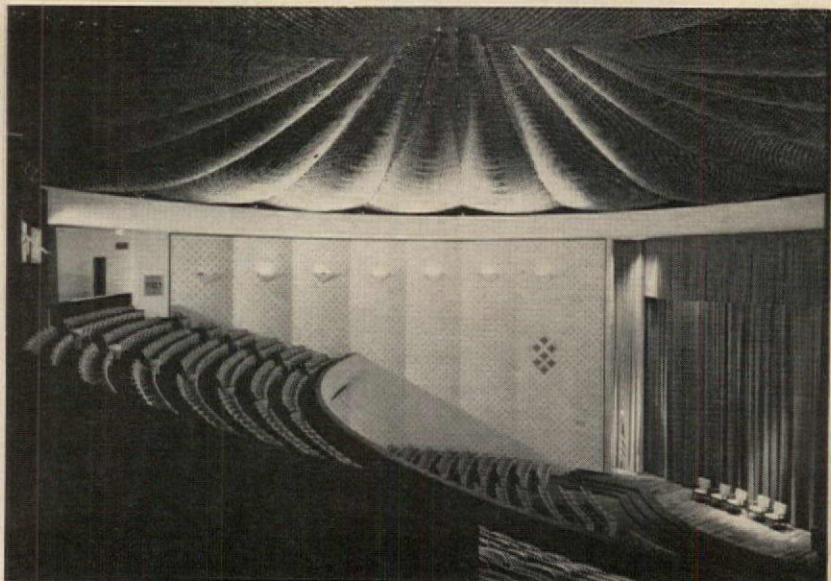
Recent Work of Edward Durell Stone

BECKMAN AUDITORIUM

CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA

This elegant auditorium for an expanding college campus stands on a fountain-dotted podium approached by a mall lined with olive trees. The main auditorium seats 1,150 people; several rehearsal and conference rooms are in the basement. The exterior of the building is surrounded by a circle of 32 diamond-shaped columns which expand into "capitals" to support the overhangs. The color scheme throughout is black, white, red and gold. The conical roof is white, decorated with a pattern of gold circles. The diamond pattern on the exterior is repeated at smaller scale inside. The mesh-ceilinged auditorium is equipped with a high fidelity stereophonic sound system and full range speakers. The lighting for both stage and auditorium is controlled by a highly flexible dimming system. The entire building is air conditioned. Engineer: Pregnoff and Matheu; contractor: M. J. Brock.





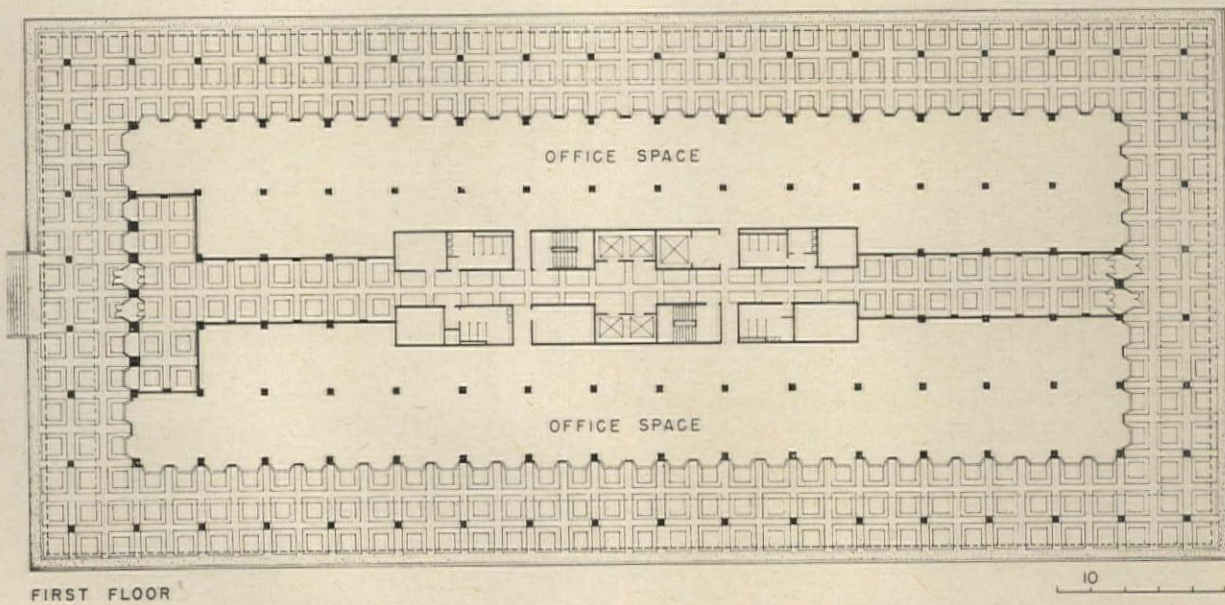


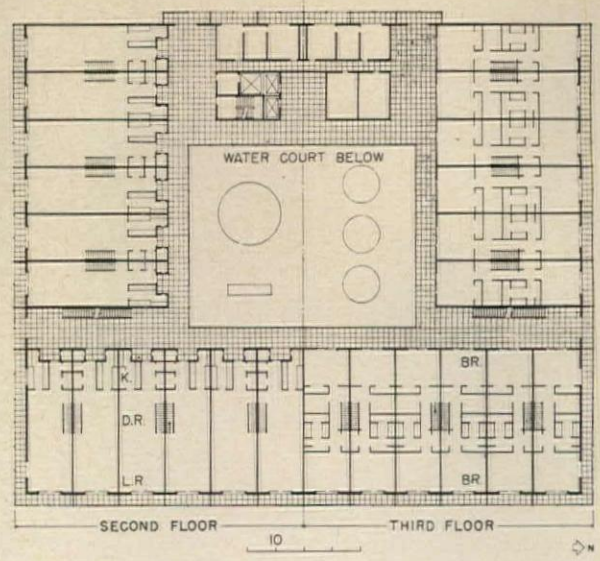
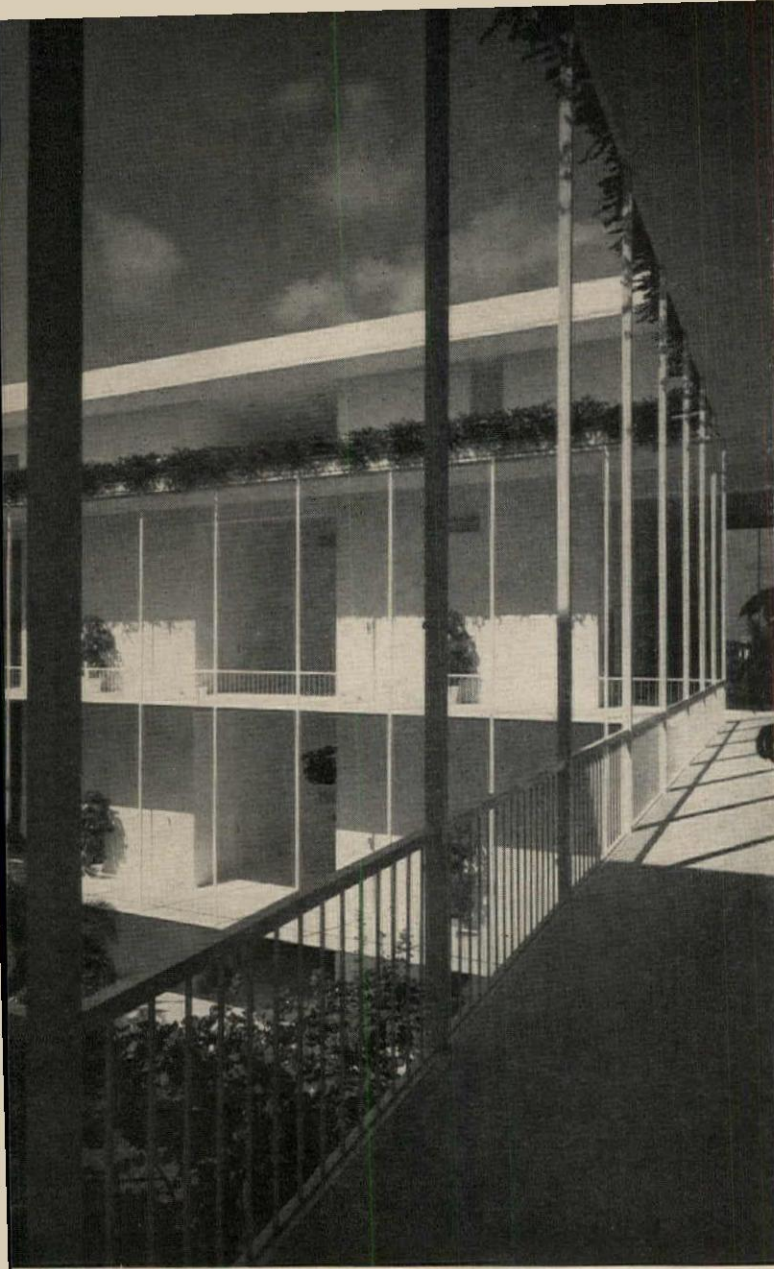
Recent Work of Edward Durell Stone
NEW TOWN FEDERAL BUILDING
HYATTSVILLE, MARYLAND

A dominant feature in the design of this office building is the concrete panel outer facing, which has a corrugated or waffled appearance to give a strong shadow effect. The panels were lifted into place by truck cranes, set on concrete haunches integral with the floor slab, and secured to columns for final support.

The building is a column-supported, reinforced concrete structure, with a ground floor level measuring 365 by 165 feet. All floors, except the roof, are flat slabs carried on spandrel edge beams and columns 20 feet on center in both directions. Foundations for the heavy clay soil are drilled-in concrete caissons. Interior ceilings are dropped acoustical tile panels with aluminum foil backing, and double as the bottom surface of a plenum chamber. This also allows the entire ceiling area to be tapped at most any point for cooling and ventilation.







This five-story and penthouse apartment house provides 64 two-bedroom units, many of them in duplex arrangements. Circulation on each floor is by open corridors around a central water court, with fountain jets and islands of planting. The building also features a swimming pool, party room and sun deck. The structure is reinforced concrete, with exteriors of stuccoed concrete block. Aluminum hurricane sliding shutters flank each opening. A basement provides parking for 96 automobiles. Associate architect: Miles Gordon; consulting engineer: B. J. Shaw; landscape architect: Edward D. Stone Jr.; contractor: Arnold Construction Company.

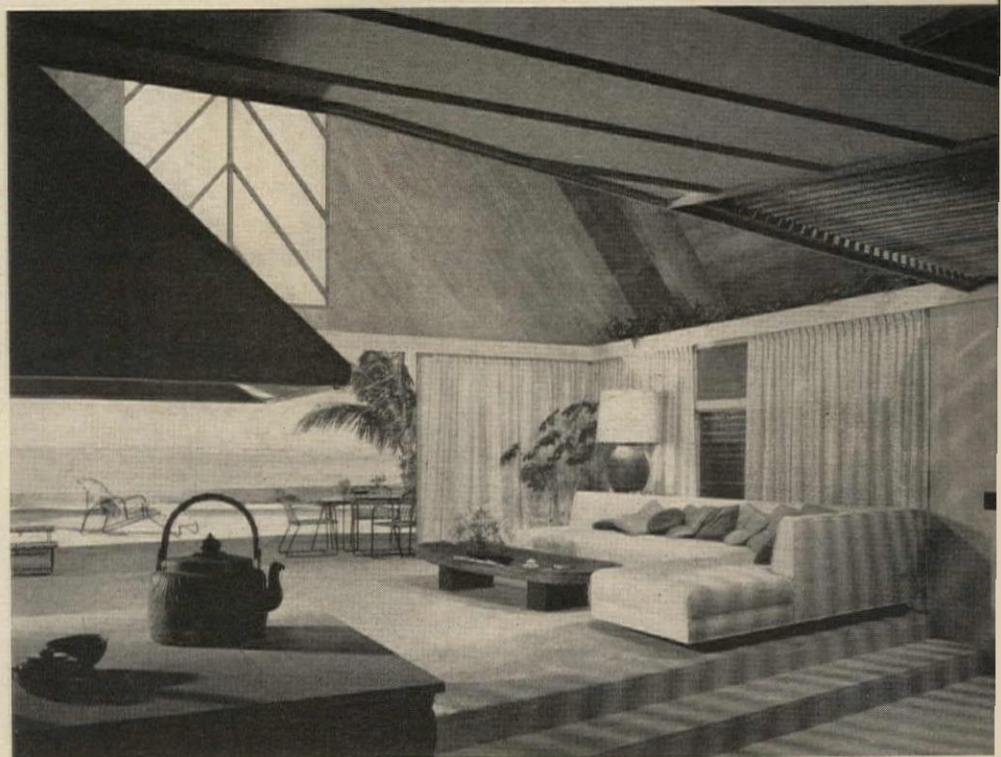
Recent Work of Edward Durell Stone
400 SOUTH OCEAN BOULEVARD APARTMENTS
PALM BEACH, FLORIDA



FOUR HOUSES IN HAWAII

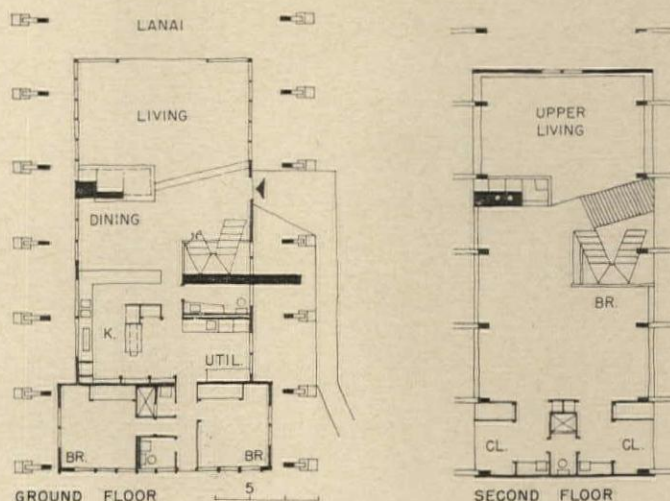
This A-frame house was designed to meet the clients' requirement for "a modern interpretation of the old Samoan long house adapted to the needs of a fairly typical American family of four." The design does in fact incorporate many of the basic ideas of the old Polynesian houses. "The concept of a building in these Pacific Islands" said the architects "is that of an expressive sheltering roof. Not a close clipped roof, but a broad eaved one so that the house may remain open during rainstorms." As can be seen from the photos, the house blends quietly with its natural setting.

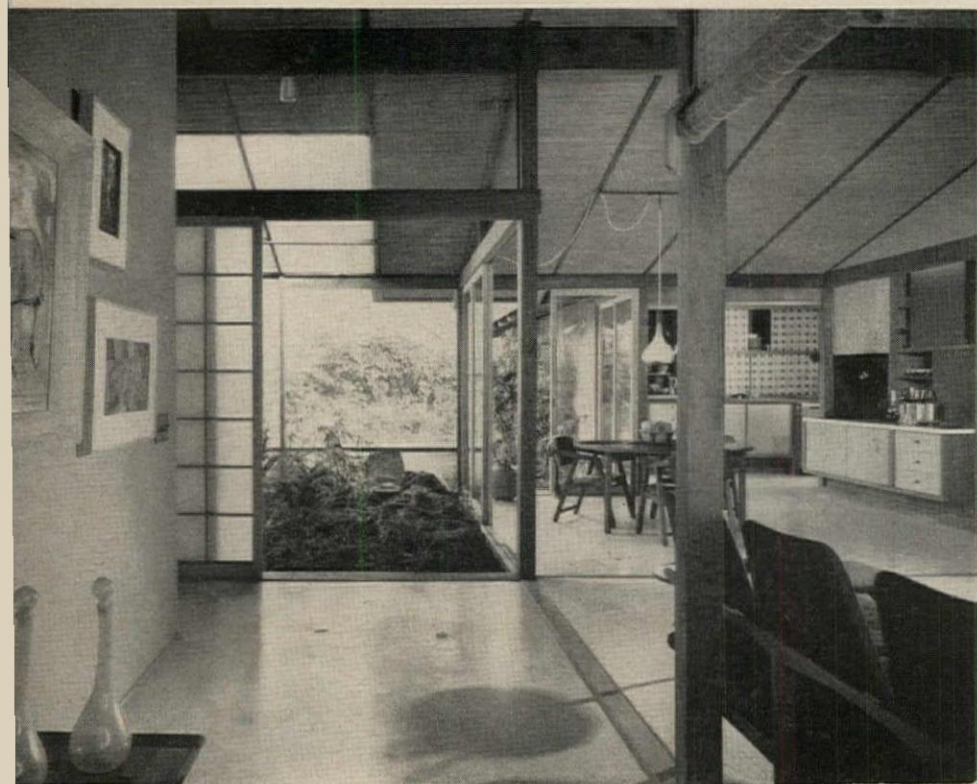
The house is on two levels, with the master bedroom suite on the upper floor, and the living area penetrating both levels, to give a sense of "soaring space." Describing how this sense of space was achieved, the architects said "the manner in which natural light is admitted adds to the sense of height. The chevron pattern of glazing in the end wall, gives a sense of upward movement." Construction is of exposed timbers and decking on concrete spread footing with a roof of hand split cedar shakes.



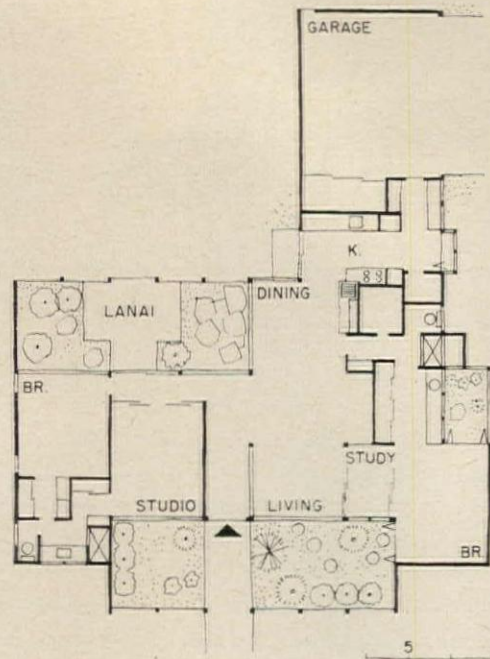
R. Wenham photos

Residence for
Mr. and Mrs. Edmund Fitzsimmons
Honolulu, Hawaii
ARCHITECTS: Wimberly & Cook
CONTRACTOR: Edmund Fitzsimmons
LANDSCAPE ARCHITECT: George S. Walters





R. Wenkam photos



*Residence for
Mr. and Mrs. L. Harold Whitaker
Honolulu, Hawaii*

ARCHITECTS: *Design Associates Ltd.*
DESIGNER IN CHARGE: *L. Harold Whitaker*
CONTRACTOR: *M. Yoshimoto*
LANDSCAPE ARCHITECT: *George Walters*

A number of Oriental ideas have been incorporated in the design of this one-level house, which was built on a corner lot in a fairly new residential area. The architects say that "the most striking feature of the house is its dramatic focus on inner gardens which adequately substitute for a wider view." Each room opens through sliding shoji doors on to a completely screened court or garden, landscaped in the formal Japanese tradition. The entrance garden is sheltered from view by opaque glass panels set in a redwood frame; a screened top allows sun and wind to filter into the garden.

The construction of the house is redwood and Douglas fire frame on a concrete foundation. Exterior and some interior walls are of redwood; the remaining interior walls are gypsum board. Japanese reed ceilings and the use of Japanese matting on some of the floors carries the Oriental flavor through to the interior. The total cost of the house was approximately \$33,000.

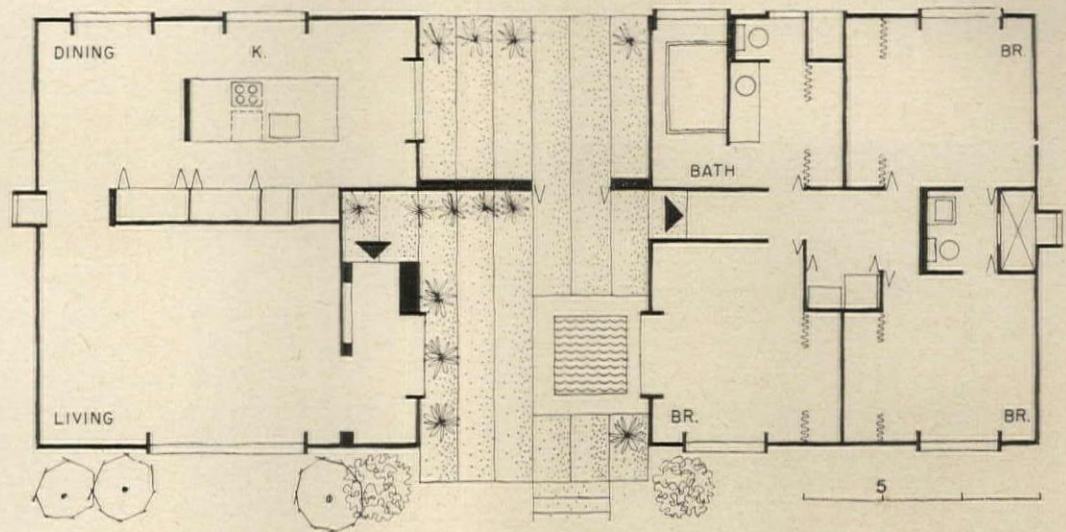
Residence for
Mr. and Mrs. John Tatom
Honolulu, Hawaii
ARCHITECT: John Tatom

This pleasantly informal house on a hillside overlooking the ocean was planned in two distinct wings with sleeping and living areas separated by an outdoor court and entrance patio. Heavily textured white cement walls give the house a Mediterranean atmosphere and form an effective background for the rich foliage surrounding the house.

Describing the interior of the house, the architect says: "The

whitewashed cement walls are treated freely as sculpture, creating high and low spaces, nooks, ledges for plants and art objects, turning and returning upon themselves to make deeply recessed door openings."

The wood roof framing is supported by 2-inch pipe columns buried in the walls. Partitions are of 2¼-inch solid cement plaster applied to galvanized lath on ¾-inch steel channels. Construction cost was \$22,500.

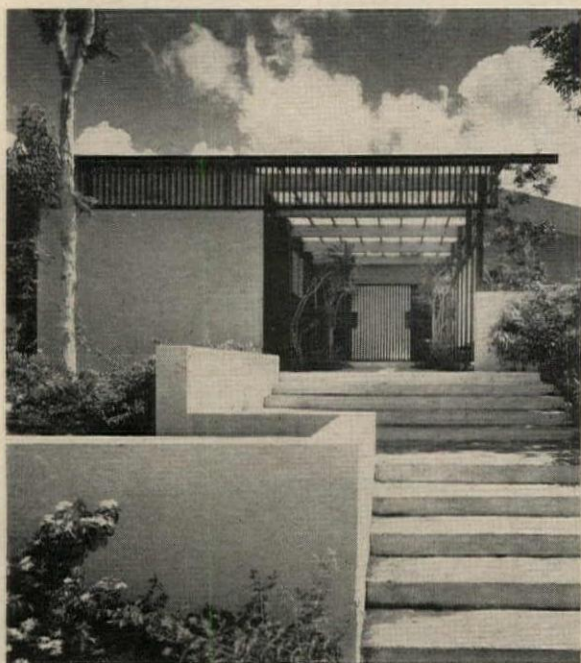


Nelson & Zellers photos





R. Wenkam photos



Residence for Mr. and Mrs. Harold Y. Ishii
Honolulu, Hawaii

ARCHITECTS: Bradley & Wong

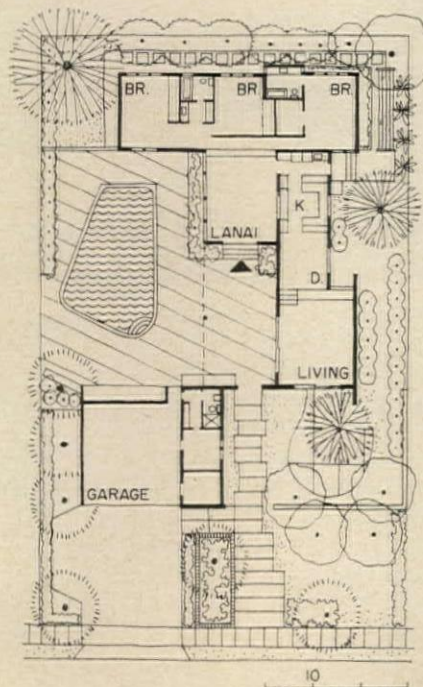
CONTRACTOR: Harold Y. Ishii

LANDSCAPE ARCHITECT: George Walters

INTERIOR DESIGNER: Sumie Yoshioka

The zoning of the plan was of particular importance in this house, as the clients wanted provision for simultaneous adult and teenage activities, and as much privacy as could be achieved on a restricted site. The solution places the bedrooms and living areas in separate units, flanking a lanai and covered patio with a swimming pool beyond. The architects said that they were able to give the owners of the house "the feeling of being in their own little domain despite the proximity of their neighbors, by creating small private exterior areas with the use of garden walls, sculpture and planting. An interesting feature of the house is the redwood and fiber glass front door which pivots at the center.

The structure is wood frame on concrete foundation. Exterior walls are painted concrete block and stained tongued and grooved redwood. Construction cost was approximately \$60,000.



HOTELS



HOTEL TAKES PART IN DOWNTOWN RENEWAL

Hotel America, Constitution Plaza, Hartford, Connecticut

ARCHITECT: *Curtis and Davis*

Charles DuBose, co-ordinating architect for Constitution Plaza

STRUCTURAL ENGINEERS: *Weiskopf and Pickworth*

MECHANICAL ENGINEERS: *Syska and Hennessy*

LANDSCAPE ARCHITECTS: *Sasaki, Walker and Associates*

LIGHTING CONSULTANTS: *Seymour Evans Associates*

GENERAL CONTRACTOR: *F. H. McGraw and Company*



RESORT HOTEL FORMS OWN ENVIRONMENT

The Barbados Hilton, Bridgetown, Barbados, West Indies

ARCHITECTS: *Warner, Burns, Toan and Lunde*

in collaboration with Hilton Hotels International

STRUCTURAL ENGINEERS: *David Key and Partners*

MECHANICAL ENGINEERS: *Cosentini Associates*

LIGHTING DESIGNERS: *Wheel-Garon, Inc.*



TOURIST HOTEL ON AN ANCIENT COAST

Xenia Hotel, Island of Poros, Greece

ARCHITECT: *Aris Konstantinidis*

STRUCTURAL ENGINEER: *D. Koutsodimitropoulos*

MECHANICAL AND ELECTRICAL ENGINEER: *Ch. Gioulbabas*

GENERAL CONTRACTOR: *Stef. Koulandrou*



HOTEL PLANNED AS URBAN FOCAL POINT

The Portland Hilton, Portland, Oregon

ARCHITECTS AND ENGINEERS: *Skidmore, Owings and Merrill*

STRUCTURAL ENGINEERS: *Moffatt, Nichol and Taylor*

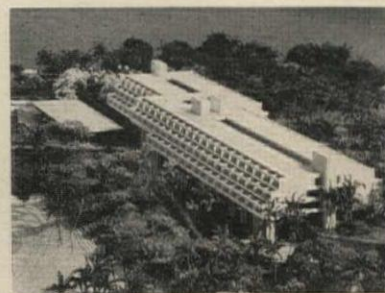
LANDSCAPE ARCHITECT: *William Teufel*

CONSULTANTS FOR THE HOTEL:

INTERIORS: *David T. Williams*

LIGHTING: *William Richardson of Jaros, Baum and Bolles*

INTERIOR OF 22ND FLOOR RESTAURANT: *Roland Terry*



HAWAIIAN HOTEL OPENS TO LANDSCAPE

Mauna Kea Beach Hotel, Island of Hawaii, Hawaii

ARCHITECTS AND INTERIOR DESIGNERS: *Skidmore, Owings and Merrill*

CIVIL ENGINEERS: *Belt, Collins Associates*

GOLF COURSE ARCHITECT: *Robert Trent Jones*

LANDSCAPE ARCHITECTS: *Eckbo, Dean, Austin and Williams*

RETAIL SHOPS DESIGN CONSULTANTS: *Becker and Becker*

LIGHTING CONSULTANT: *Jean Rosenthal*

GENERAL CONTRACTOR: *Haas & Haynie*



DUBLIN HOTEL IS TIGHTLY PLANNED

The Dublin Intercontinental Hotel, Dublin, Ireland

ARCHITECT: *William B. Tabler*

John C. Mayer, associate in charge

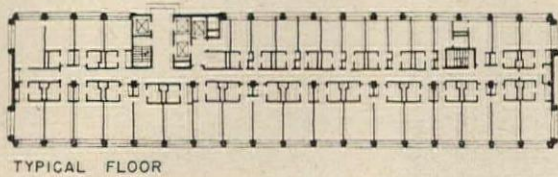
CONSULTING ARCHITECT: *Michael Scott*

STRUCTURAL ENGINEER: *Wayman C. Wing*

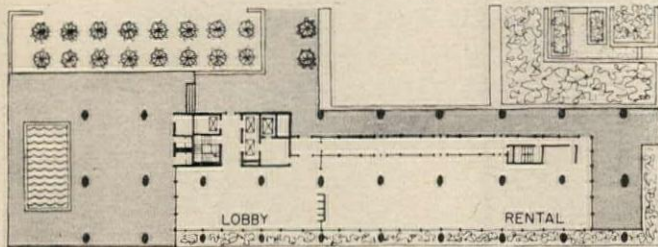
MECHANICAL AND ELECTRICAL ENGINEERS: *Jaros, Baum and Bolles*

CONSULTING LANDSCAPE ARCHITECT: *S. F. Maskell*

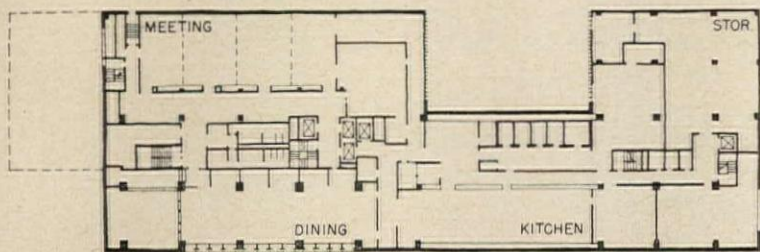
GENERAL CONTRACTOR: *G. & T. Crampton, Ltd.*



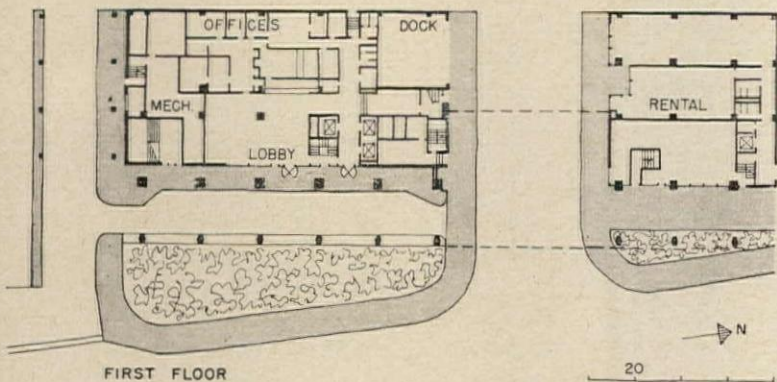
TYPICAL FLOOR



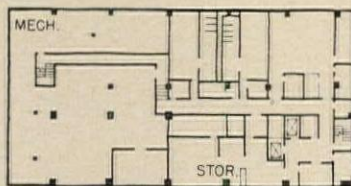
PLAZA LEVEL (THIRD FLOOR)



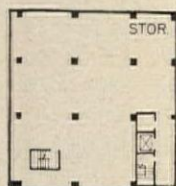
SECOND FLOOR



FIRST FLOOR



BASEMENT FLOOR



STOR.

Right: Drawing shows relationship of hotel to street and plaza. Across-page, top: Hotel viewed from plaza level; (center) hotel from highway near the river which runs directly to the airport; (bottom) section through portion of hotel located under plaza

HOTEL TAKES PART IN DOWNTOWN RENEWAL

Hotel America

Hartford, Connecticut

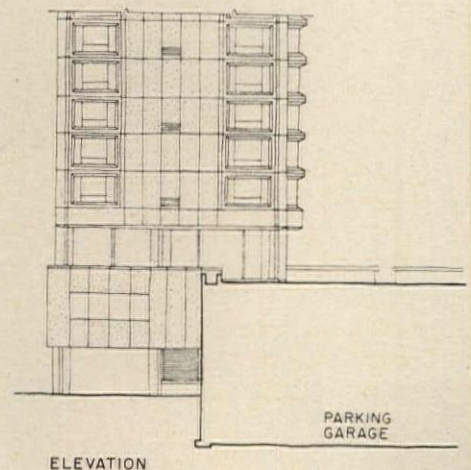
ARCHITECT: *Curtis & Davis*

*Charles DuBose, co-ordinating architect
for Constitution Plaza*

The Hotel America bridges the street that runs between the two halves of the Constitution Plaza development in Hartford, Connecticut (March 1964, page 178). Guests can enter the hotel at the street level motor entrance, directly from one of the parking garages that serve the entire complex, or from the plaza level. The public facilities are necessarily spread out over three floors, with the speciality dining room, cocktail lounge, and meeting rooms located at the intermediate level.

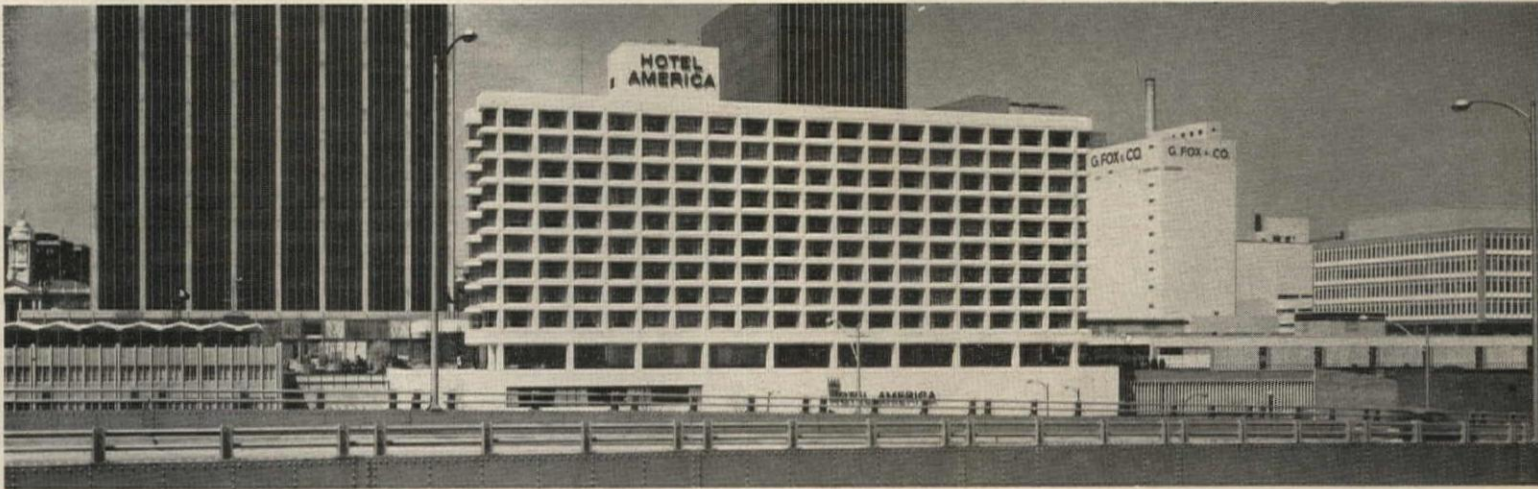
The hotel has a total of 312 guest rooms on nine bedroom floors. The suites at each end of the building have been provided with what the architect calls "sun parlors," glazed-in balconies which provide panoramic views. Ordinary rooms have good views also, either of the landscaped plaza and downtown Hartford, or out across the Connecticut river.

The building is of flat plate construction, with the rubbed slab forming the interior ceiling in the bedrooms. Exterior walls are of tinted glass set in a precast concrete curtain wall. Guest room heating and cooling is through induction units with separate controls in each room.

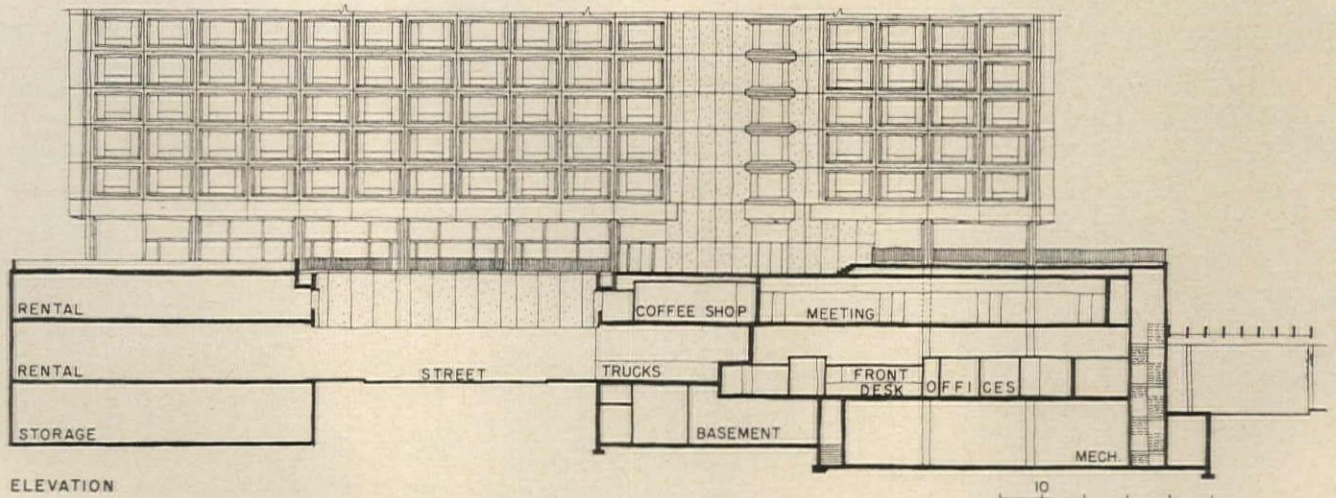


ELEVATION

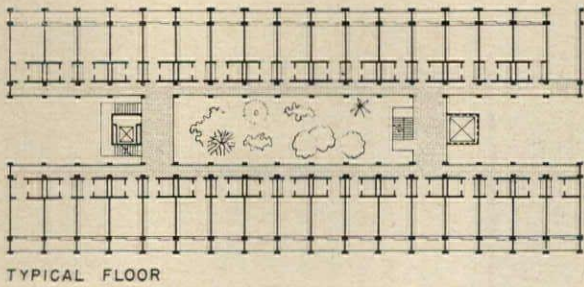
PARKING GARAGE



Alexandre Georges photos

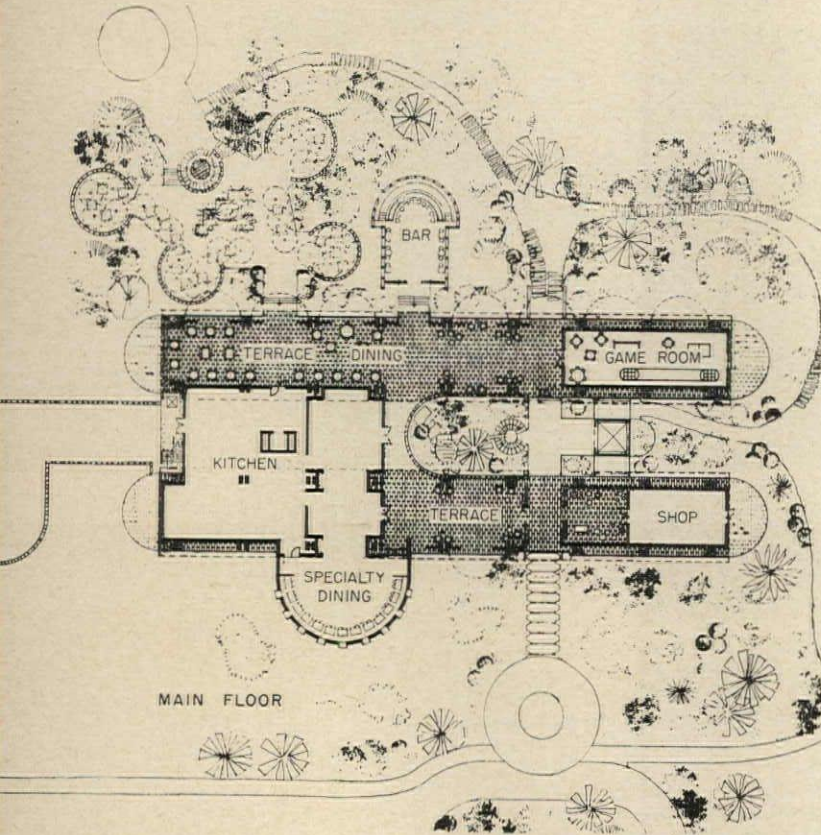


ELEVATION



RESORT HOTEL FORMS OWN ENVIRONMENT

The Barbados Hilton
 Bridgetown, Barbados, West Indies
 ARCHITECTS: Warner, Burns, Toan & Lunde

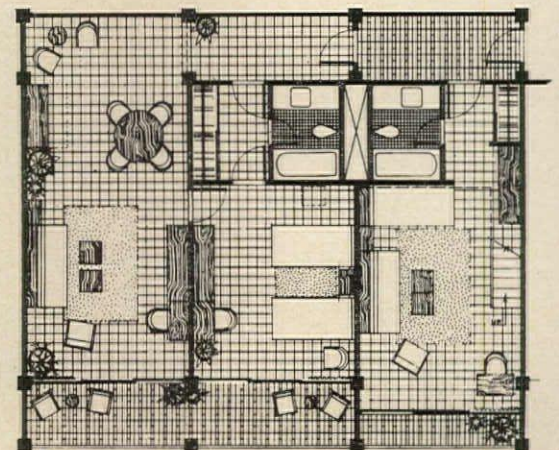
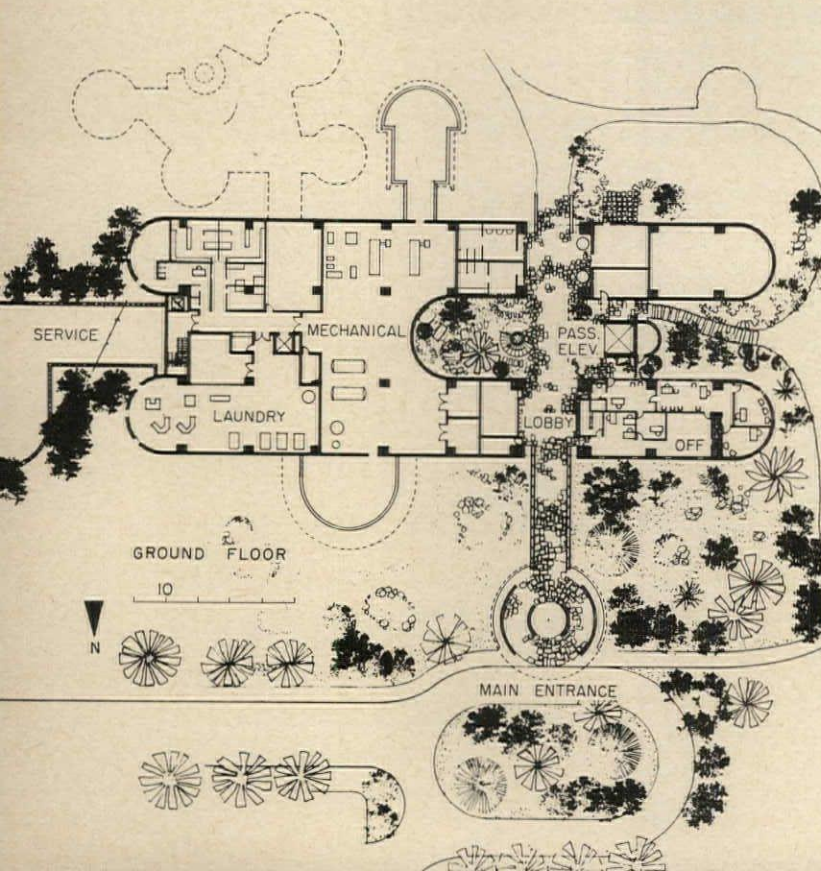


The Barbados Hilton stands on a promontory in Bridgetown harbor directly opposite the city. It is built upon the remains of an old fort, the fortification walls and the lighthouse at the end of the point becoming an integral part of the hotel itself. The two files of bedrooms face north and south, toward the best views, and are separated by a roofed-over garden court the full height of the hotel. The service elevator and the passenger elevator are placed at opposite ends of this court, permitting clear separation of service and public facilities on the lower floors.

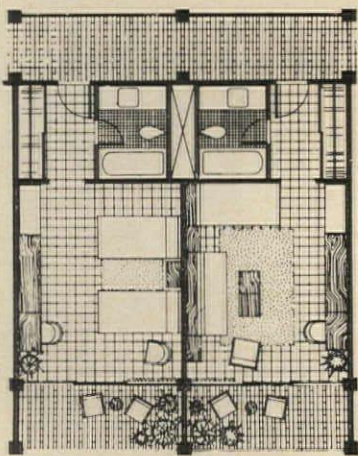
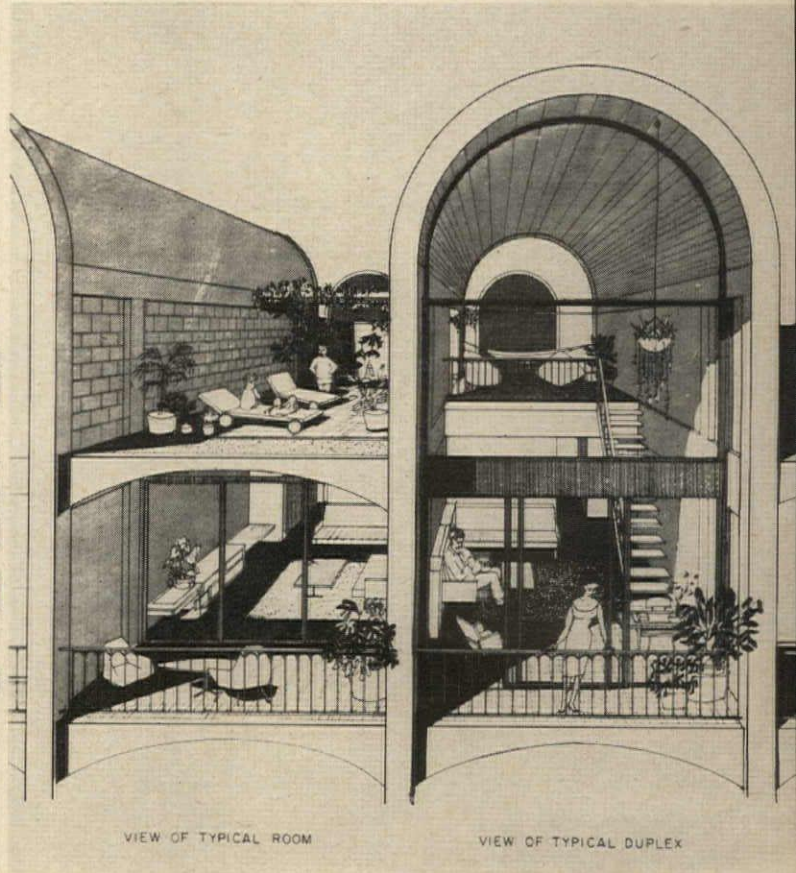
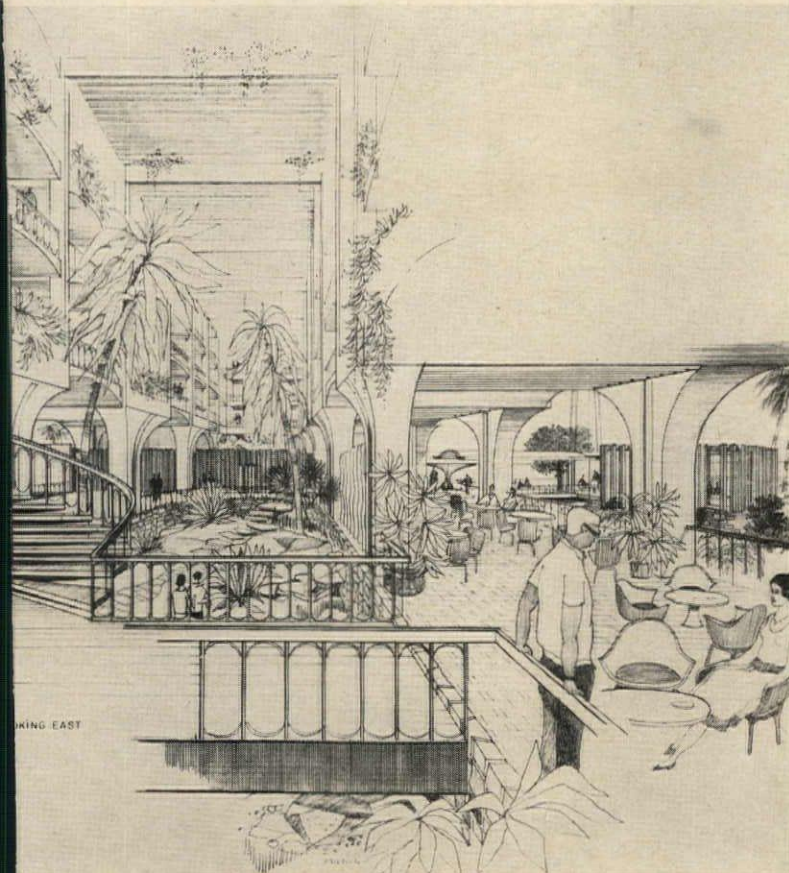
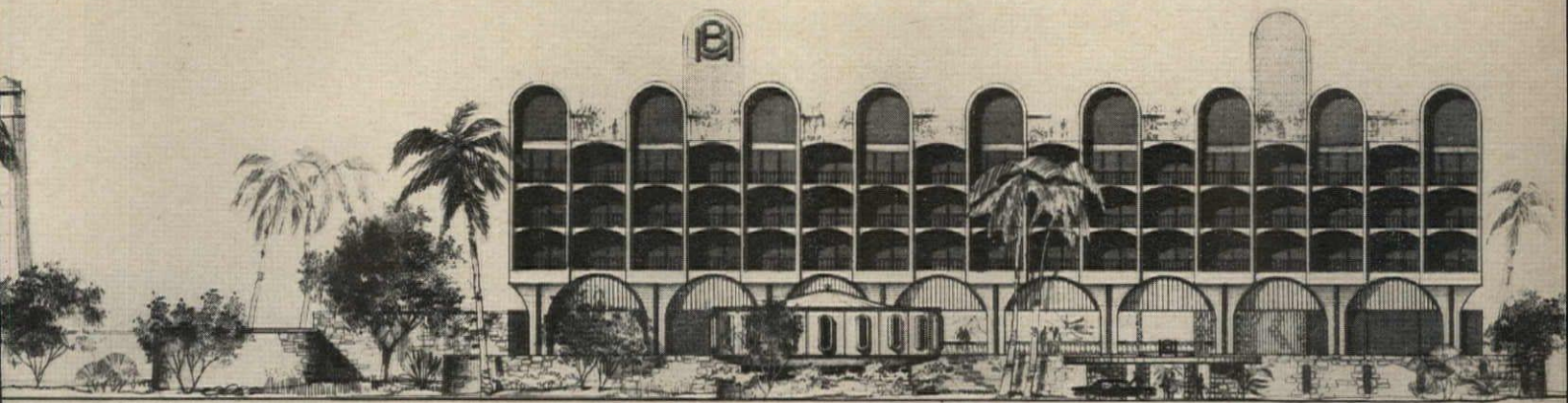
The hotel is entered between heavy stone walls, with the reception desk at this ground floor level. The entering guest then proceeds into the garden court and from there can go either to his room or to the main public spaces located at the loggia level a floor above.

On the top floor of the hotel is a series of vaulted duplex suites whose upper levels utilize the space over the corridor on the floor below.

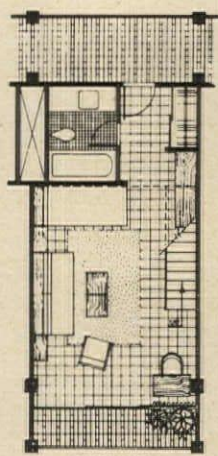
Construction will be of precast concrete, for better control over the finish. Completion of the hotel and 50 associated cottages is scheduled for the spring of 1966.



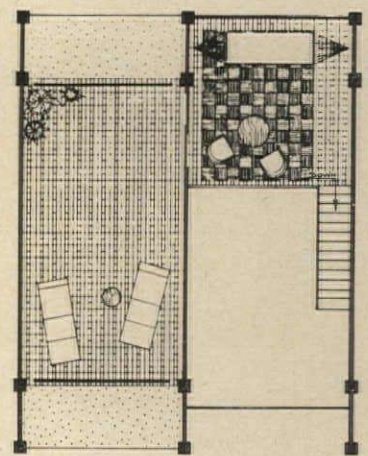
DELUXE SUITE (UPPER LEVEL SAME AS TYPICAL DUPLEX)



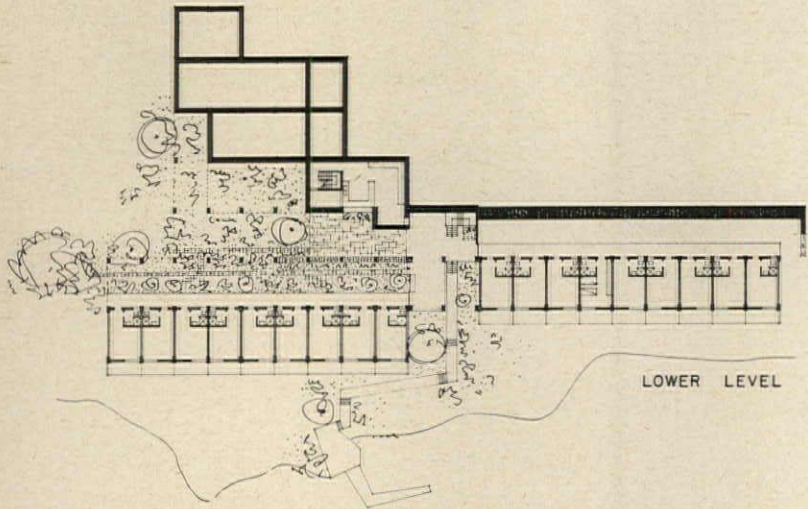
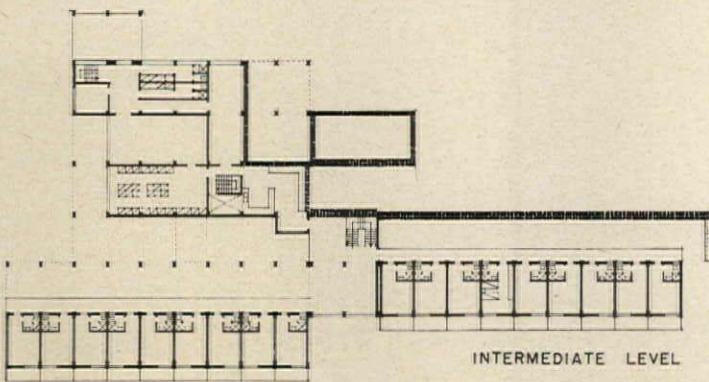
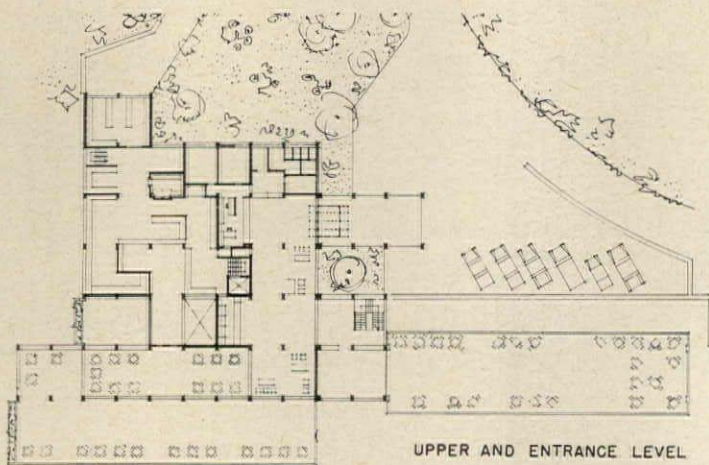
TWIN BEDS STUDIO
TYPICAL GUEST ROOMS



LOWER LEVEL
TYPICAL DUPLEX



SOLARIUM BALCONY



TOURIST HOTEL ON AN ANCIENT COAST

Island of Xenia Hotel

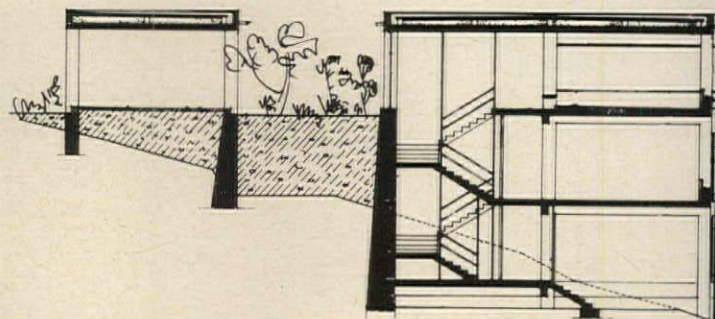
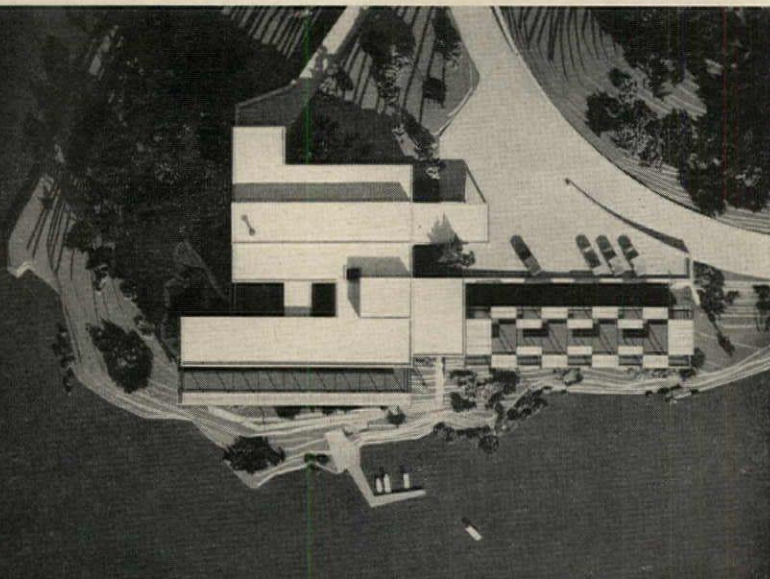
Poros, Greece

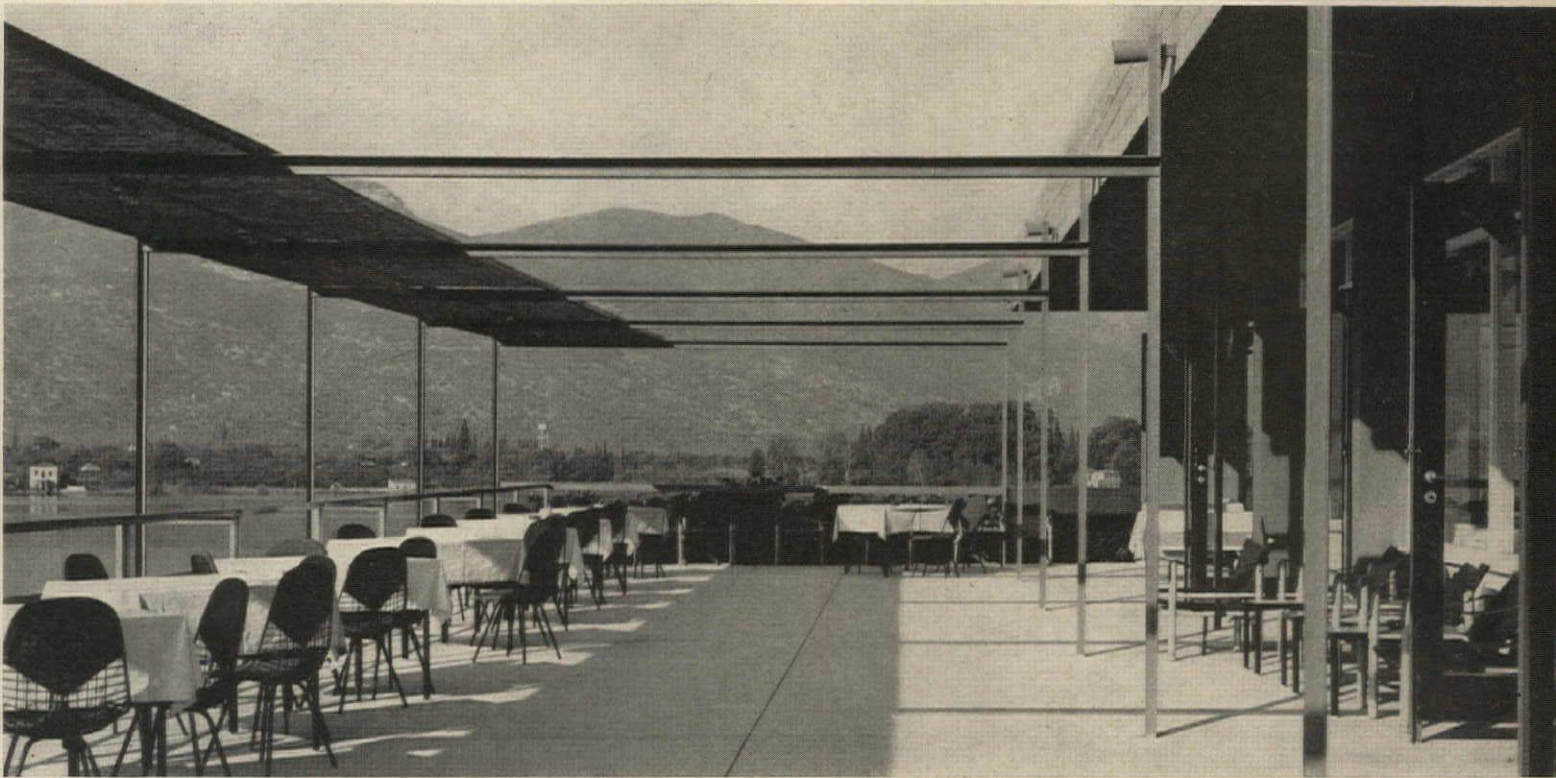
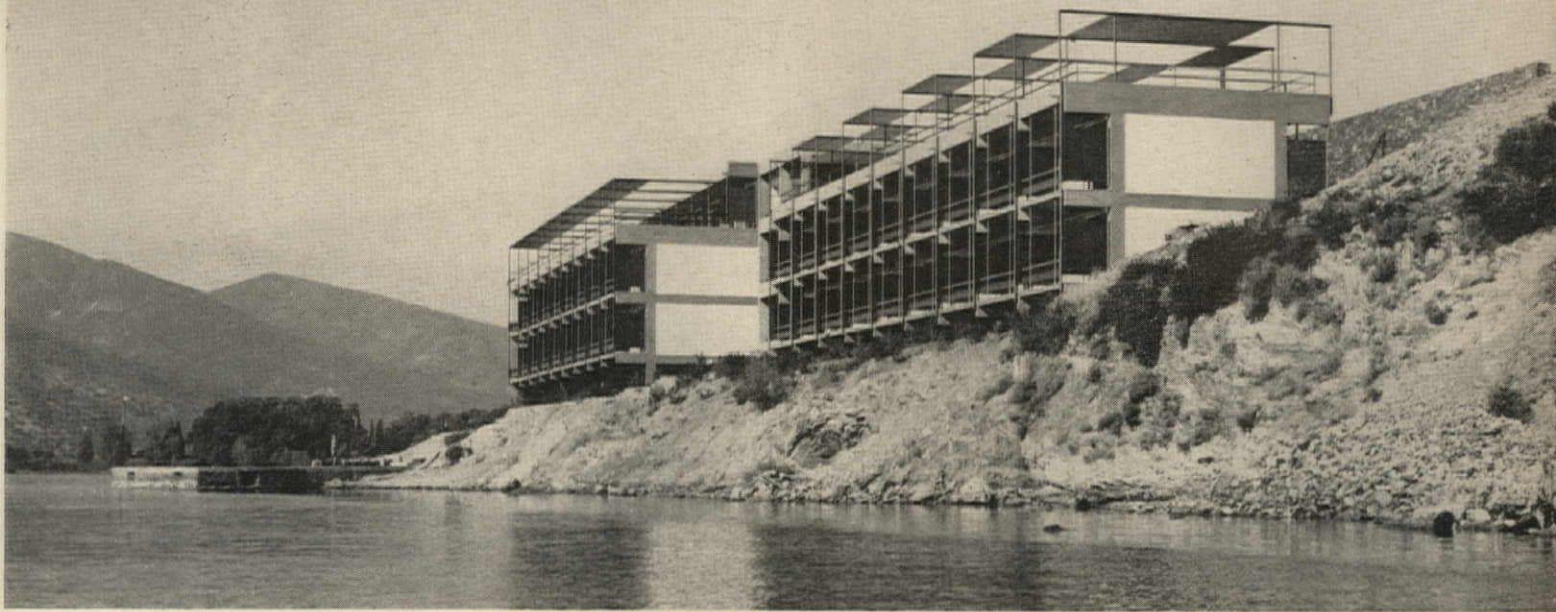
ARCHITECT: *Aris Konstantinidis*

Placing a modern tourist hotel in the midst of a scenic area inevitably runs the risk of spoiling the scenery that the tourists have come to visit. The architect of this building, Aris Konstantinidis, discussed some of the philosophical implications of this problem in a recent issue of the English periodical, *Architectural Design*:

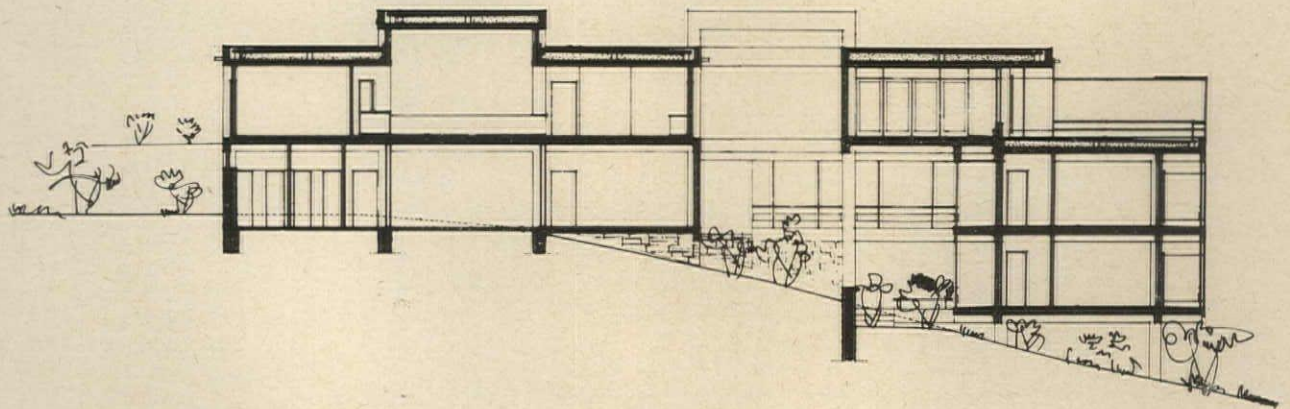
"Today we love landscape and nature . . . not as an image, but as a living space. We live with nature, as we live indoors. So, the new element in contemporary architecture (and this is entirely new) is that we aim to link the interior and exterior as one harmonious unit. Interior and exterior space (the natural surroundings, the landscape) become an organic unity . . .

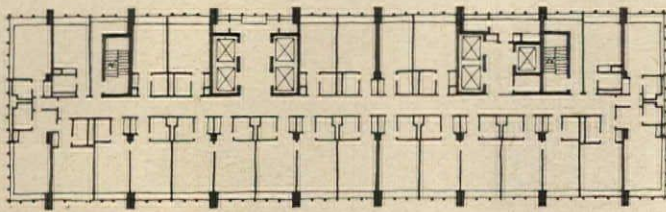
"I can build with the most modern materials (iron, concrete, and with the artificial materials of contemporary building construction) a building which will be related harmoniously with the character of the landscape. . . . We shall choose our material not only according to the standards of economy and pure science but with the spirit of emotional freedom and artistic imagination."



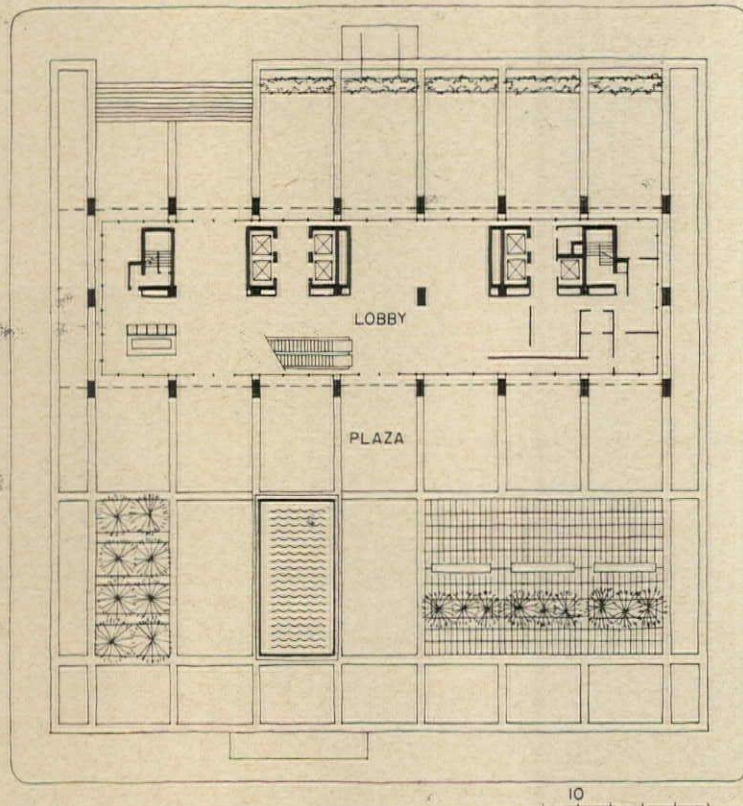


Aris Konstantinidis photos

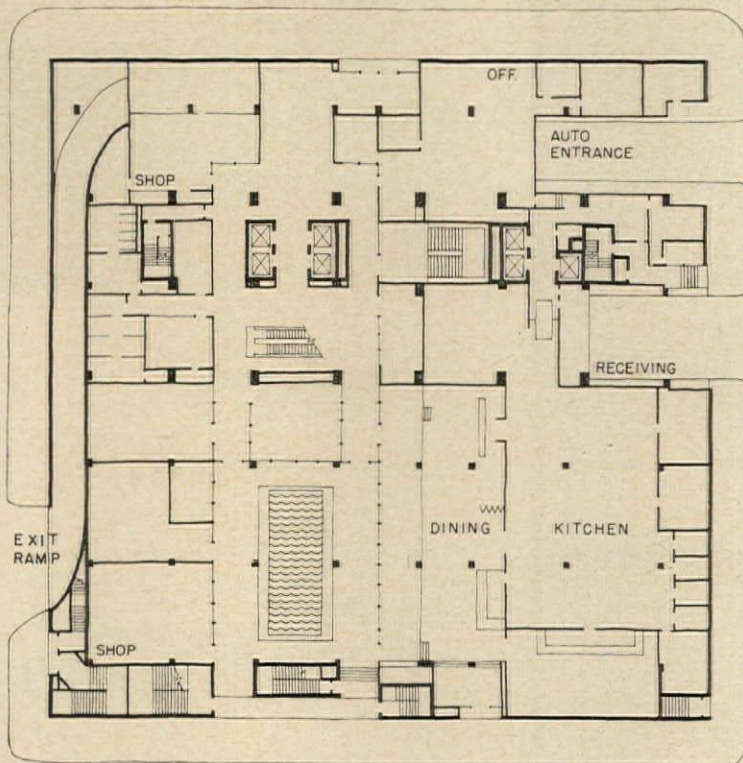




TYPICAL FLOOR



PLAZA LEVEL AS ORIGINALLY DESIGNED



STREET LEVEL AS ORIGINALLY DESIGNED

HOTEL PLANNED AS URBAN FOCAL POINT

The Portland Hilton

Portland, Oregon

ARCHITECT: Skidmore, Owings & Merrill

This hotel utilizes dining and service facilities as a podium for a large plaza which was intended as a civic space not unlike that adjoining the Chase Manhattan Bank Building in New York City. As originally planned, guests entering the hotel from Sixth Street would walk into an atrium surrounded by restaurants and shops, then, continuing on, would take an escalator to the reception desk in the main lobby, which was at the plaza level. Lobby and plaza would also be accessible by a monumental flight of steps from Broadway.

In the end, however, this generous allocation of space for purely urbanistic effect did not turn out to be feasible. The circulation pattern was reshuffled to place the reception desk and a smaller lobby on the entrance level, and the former lobby area became a restaurant. The plaza is intensively utilized by the hotel itself, providing space for a swimming pool and a low pavilion housing banqueting facilities.

There are 500 rooms on 19 bedroom floors, a roof-top dining room for 200, and a garage for 179 cars is located in the basement.





Morley Baer photos

View of atrium

Restaurant at plaza level



HAWAIIAN HOTEL OPENS TO LANDSCAPE

Mauna Kea Beach Hotel

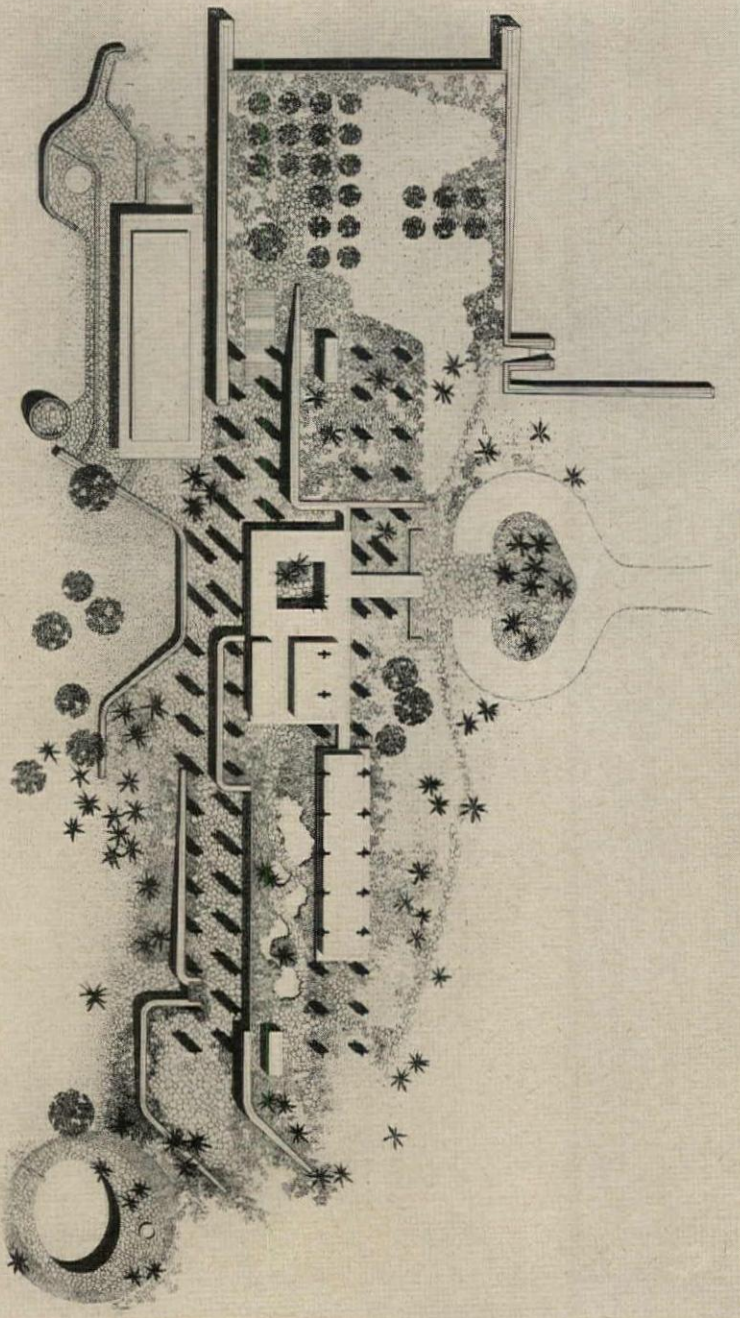
Island of Hawaii, Hawaii

ARCHITECT: *Skidmore, Owings and Merrill*

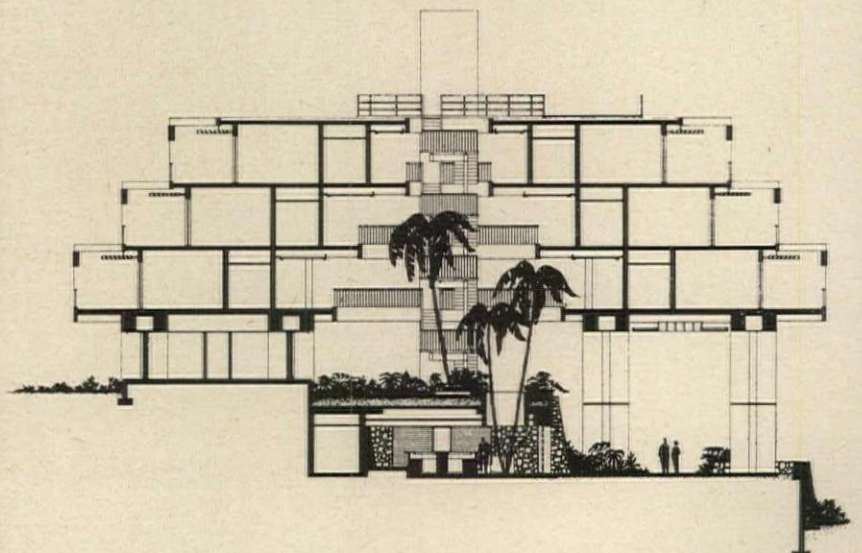
This hotel has been designed to preserve the greatest possible continuity with its surroundings. The rows of bedrooms have been separated in a manner which makes an interesting comparison to the Barbados Hilton (page 168), and staggered in section to create an open garden court with a high degree of protection from direct sunlight. The two wings of the hotel meet to form a wider central courtyard, which is on axis with the main entrance. These garden courts are directly connected to the landscape through the loggias at ground level. The open structure should provide good natural ventilation to major public areas and rooms, although air conditioning will be available in bedrooms if guests desire it.

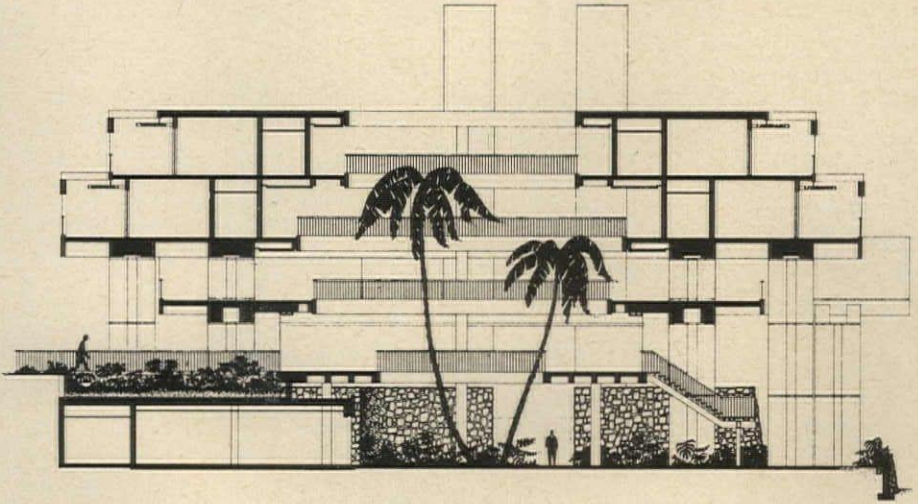
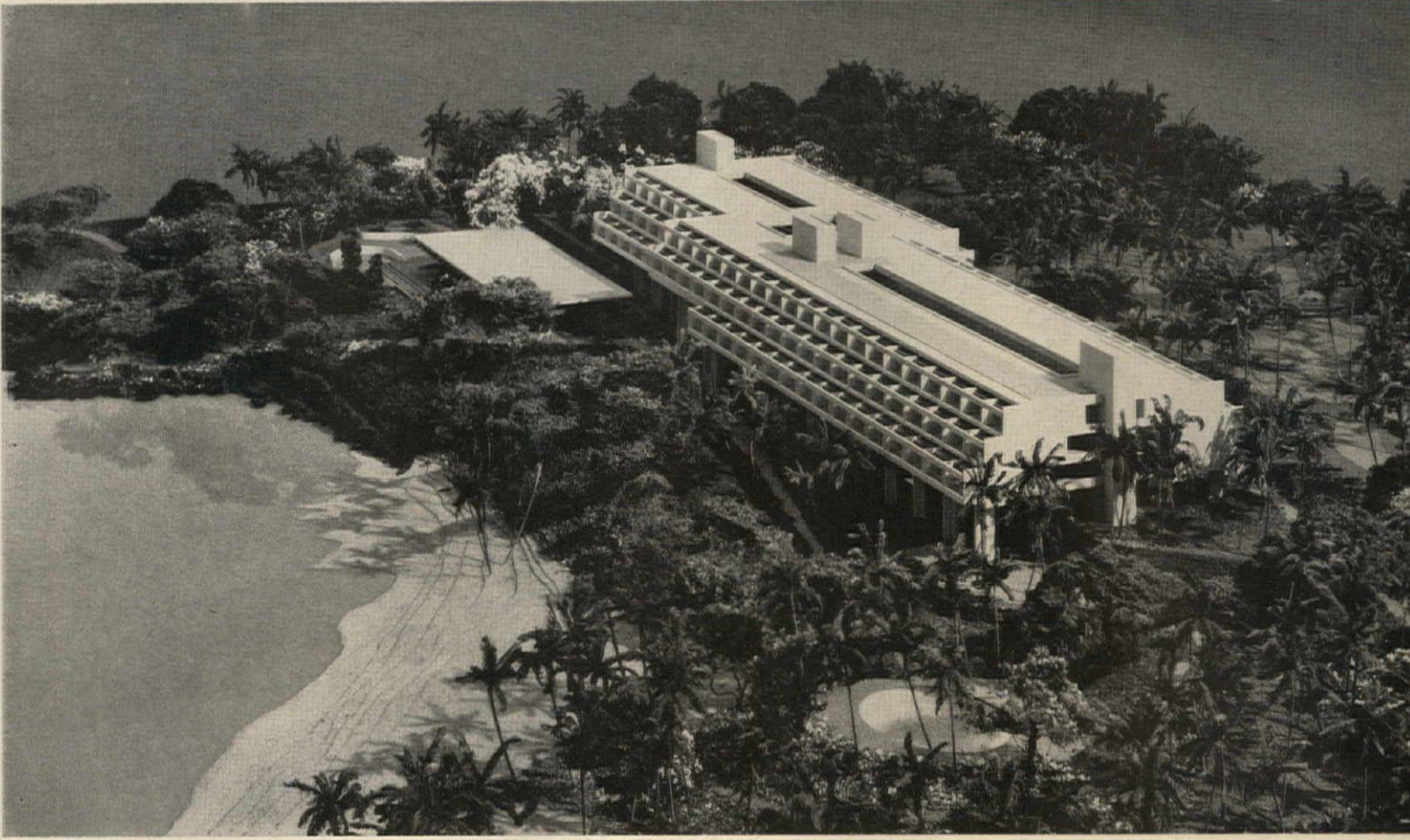
The dining room is a free-standing pavilion at the main terrace level, with service facilities out of sight below. Some 30 acres surrounding the hotel will be landscaped, and, in addition, there will be an 18 hole golf course designed by Robert Trent Jones. The hotel will contain 154 bedrooms on its completion in the spring of 1965, but there is provision for adding 100 more.

The construction material is reinforced concrete, with formwork and tie-voids expressed.



Above: Diagrammatic plan at ground level. Dining pavilion is at upper left; main entrance court at center, opposite driveway. *Right:* Section through bedroom wing. *Across-page:* Section through main entrance court







DUBLIN HOTEL IS TIGHTLY PLANNED

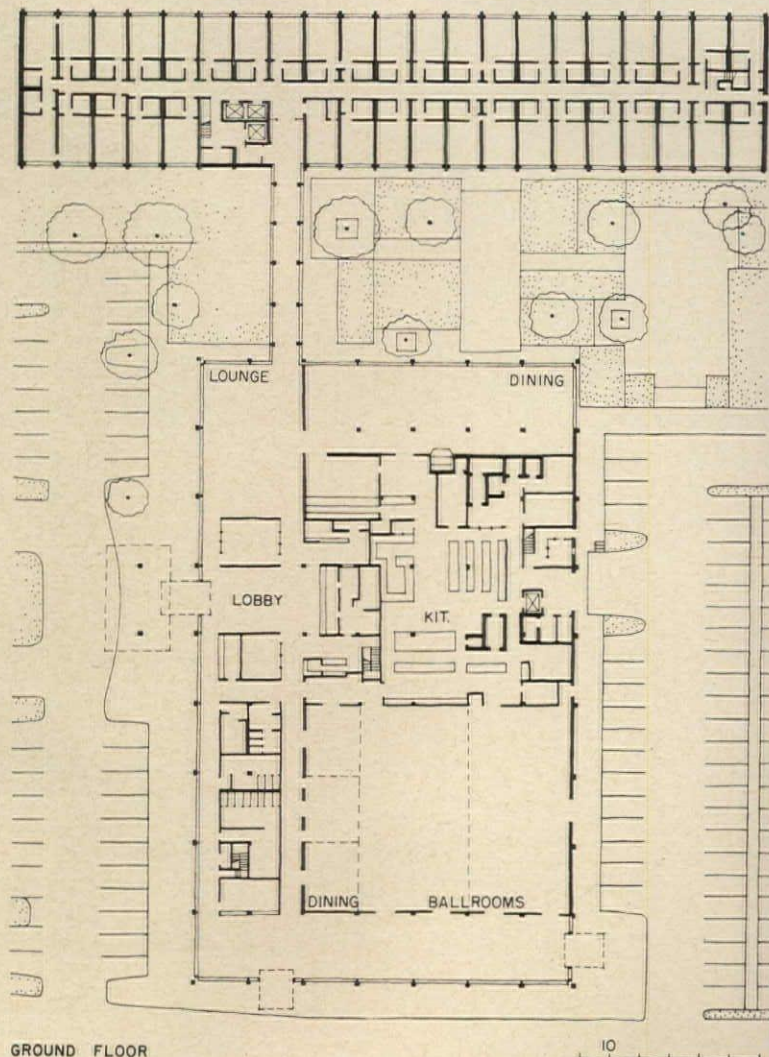
The Dublin Intercontinental Hotel

Dublin, Ireland

ARCHITECT: *William B. Tabler*

This 316-room hotel demonstrates the efficient and economical planning for which William Tabler is well-known. Every element is studied with the aim of eliminating waste and duplication. For example, the eight stories of the bedroom wing are carried on load-bearing concrete partitions only six inches thick, stability being provided by concrete shear walls that replace ordinary partitions at selected locations, and by the block corridor walls.

The other hotel facilities, which naturally require a different type of structure, are housed in a compact, two-story block of their own. Its main level houses the lobby, reception desk, shops, restaurant and ballroom. Mechanical equipment, staff lockers, and so on, are located above. There is a service link to the bedroom wing at this second level.



HOSPITALS

General hospitals, large and small, designed for expansibility
Hospitals for children have positive roles in therapy and research
New ideas and shapes for nursing unit flexibility and efficiency
A new book details the functional bases of hospital planning

Hospital designers today confront changing requirements that are making some of the familiar planning yardsticks difficult if not dangerous to apply. Increasing population and advances in technology, both medical and mechanical, are basic factors in those changes.

Population increase in itself might simply multiply the numbers of beds and institutions to house them were it not for fundamental changes in the character of the total population sample. Not only are there more older people with their need for long-term care facilities, but all age groups are more fully insured and more demanding of amenities than ever before. Hospital additions, then, are not merely extensions of old buildings multiplying old patterns. They are proving grounds for new appraisals of higher single room ratios, more toilets, air conditioning, intensive care, day care, ambulatory patient housing, etc. They are, in fact, as often as not replacement facilities for hospital buildings where obsolete area ratios and traffic patterns have rendered the older building inoperable.

Upon these urgencies for new construction, technology has superimposed its own demands for new planning considerations. As Rex Whitaker Allen has pointed out, demands for new kinds of specialized treatment, diagnostic and surgical spaces (hyperbaric chambers, cobalt radiation suites, rehabilitation and physical therapy spaces, and many others) have exerted an upward pressure on the familiar ratios of gross area per bed, while at the same time their basic equipment and structural demands have made costs per square foot untranslatable by any application of familiar indexes.

Similarly, contrivances for transport, communications, packaging, sterilizing, air conditioning, etc. contribute their savings or make their demands for space as the case may be. Major effect of these is on the size and distribution of nursing units and derives out of their fundamental reason for being. That is, they are devices for multiplying the effectiveness of nursing personnel in the face of soaring costs and decreasing supply. Hence new planning imagination that goes into nursing unit flexibility and effectiveness. As hospitals become more truly general, new space criteria apply.

W. B. FOXHALL

HOSPITAL DESIGN AND FUNCTION

Extracts from a new book¹ by E. Todd Wheeler

In this book, the attempt is made to explain methods which will enable the architect to translate almost any combination of specific program requirements into a workable and acceptable building design without stifling imagination. An elementary exposition of function as it affects plan moves on to show how a functional solution, or many such, in fact, can be evolved by the application of reason and intuition. It is not enough to cut and try. There must be an understanding of the methods by which the variables in a program can be isolated, evaluated, and reflected in the final building plan, all in proportion to their relative importance.

Logically it should be possible to develop a body of data and a series of formulas for translating program into plan. However, the plan finally chosen is but one of a score or more of possible solutions, and conscious choice affects the design process at a significant number of points.

A competent architect can design any space or combination of spaces if he knows: (1) what is to be done in the space; (2) what persons are expected to do it; (3) what special equipment and physical conditions are required. The hundreds of planning choices, when grouped thus for reference, become susceptible to orderly analysis permitting both reason and intuition to function harmoniously.

Architects believe, and repeatedly demonstrate, that a useful building can also be beautiful, that beauty has therapeutic value, and that beauty is worth paying for. This belief, embracing the broadest concepts as well as the smallest detail and transcending functionalism, poses the challenge for all architects engaged in hospital design, namely to satisfy the highly demanding functional requirements and still to create a beautiful building.

(Chapter 1, *The Hospital and Its Personnel*, details the role of the hospital in the community, its various organizational and financial manifestations and the effect of its size, organization and diagnostic categories on planning approaches. Much of the ground covered will be familiar to architects, but the extent of detail provides useful check points. There are, for example, tabulated averages of personnel required in each department of hospitals of graduated sizes from 100 to 500 beds. There are outlines of different admitting and treatment procedures and sketches showing their effect on traffic patterns. The following extract is from a short segment of this chapter.

¹HOSPITAL DESIGN AND FUNCTION. By E. Todd Wheeler. McGraw-Hill Book Company, 330 West 42nd St., New York 36, N. Y. 289 pp., illus., index. \$13.50. Except where indicated by parenthetical passages, the accompanying text is a condensation of samplings from the book

In translating the requirements of persons, equipment and functions into a building plan, there will be encountered a wide range of spaces required for various tasks (in addition to patient care). Experience gives the architect judgment on much of this, but for the sake of verification there have been evolved certain net floor areas which seem to work well in practice. Units shown are assignable square feet (ASF) of net floor space per person within the specific room:

Office personnel at desk work	100-150
Laboratory for routine determinations . . .	200-250
X-ray	300-350
Central sterile supply excluding storage . .	150-250
Physical therapy	350-500
Occupational therapy	300-400
Kitchen	200-300
Pharmacy	150-300

The wide ranges result from variations in equipment requirements, degree of luxury, expansion plans and staffing policy.

These net areas can be translated into gross departmental areas by adding together the net areas for all work rooms listed in the architectural program and increasing the total by 50 per cent for corridors, stairs, elevators, toilets, shafts, etc. This assumes 67 per cent efficiency.

Trends: It seems certain that there will be a reduction in quantity and a steady increase in quality of hospital personnel. Technology continues to substitute machines for people wherever a job can thus be done better, but this also demands greater knowledge on the part of those who operate or service the machines.

Thus, the future measure of hospital effectiveness may shift from the number of hours of nursing care per patient day to the length of stay per patient which is where it properly is even today.

Planning Methods

(Chapter 2 details how a planning team initiates a hospital project and develops, through consultation and survey of community needs, a functional program establishing the number of beds and their general distribution among services, number of operating rooms, expected loads on emergency and out-patient facilities, extent of adjunct services, teaching, housing, and all items which determine the size and character of the physical facilities. From this functional program and any available budget information, the architectural program is developed and preliminary planning is begun.)

Table 1.—Suggested ranges of gross floor area (SFG) per bed by departments

Departments	100 beds		200 beds		300 beds		400 beds		500 beds		
	Low	High	Low	High	Low	High	Low	High	Low	High	
Total hospital	528	745	506	720	494	701	486	698	470	678	
A. Nursing services	295	432	287	423	284	418	290	434	286	427	
1. Patient care divisions	240	350	240	350	240	350	250	370	250	370	
a. Medical and surgical	250	320	(Extra educational facilities)								
b. Obstetrics, including nurseries	330	380									
c. Pediatrics	220	300									
d. Psychiatry	300	330									
e. Others	270	300									
2. Operating suite, recovery	35	50	30	45	28	42	25	40	22	35	
3. Delivery suite including labor rooms	10	16	9	14	9	14	8	12	8	12	
4. Emergency	10	16	8	14	7	12	7	12	6	10	
B. Adjunct facilities	58	77	54	73	56	79	53	75	50	73	
1. Laboratories	20	26	19	25	18	24	17	23	16	22	
2. Radiology	24	30	23	29	22	28	21	27	20	26	
a. Diagnosis	(24)	(30)	(22)	(27)	(21)	(26)	(20)	(24)	(19)	(23)	
b. Therapy	0	0	(1)	(2)	(1)	(2)	(1)	(3)	(1)	(3)	
3. Physical medicine	8	12	7	11	8	13	8	12	7	12	
a. Physical therapy	(8)	(12)	(7)	(11)	(6)	(9)	(6)	(8)	(5)	(8)	
b. Occupational therapy	0	0	0	0	(2)	(4)	(2)	(4)	(2)	(4)	
4. Pharmacy	6	9	5	8	5	8	4	7	4	7	
5. Medical social service	0	0	0	0	1	2	1	2	1	2	
6. Medical illustration	0	0	0	0	2	4	2	4	2	4	
C. Service departments	125	166	117	159	108	144	99	133	92	126	
1. Dietary	35	45	33	43	30	38	26	33	24	30	
2. Housekeeping	5	7	4	6	3	4	2	3	2	3	
3. Laundry	12	15	10	14	9	13	9	13	8	12	
4. Central sterile supply	9	12	8	11	8	11	7	10	7	10	
5. Central general stores	25	35	25	35	24	32	23	30	22	30	
6. Employe facilities	9	12	9	12	8	10	8	10	7	9	
7. Building maintenance and operation	30	40	28	38	26	36	24	34	22	32	
D. Administration	50	70	48	65	46	60	44	56	42	52	
1. Offices	31	43	31	40	31	37	31	35	30	32	
2. Medical records	8	10	7	9	7	9	6	8	6	8	
3. Public space	6	10	6	10	5	9	5	9	4	8	
4. Auxiliary	5	7	4	6	3	5	2	4	2	4	
E. Ambulant patient facilities (not in hospital totals)	0	(40)	0	(40)	0	(35)	0	(50)	0	(60)	

These units vary with the service—
little with the size of hospital

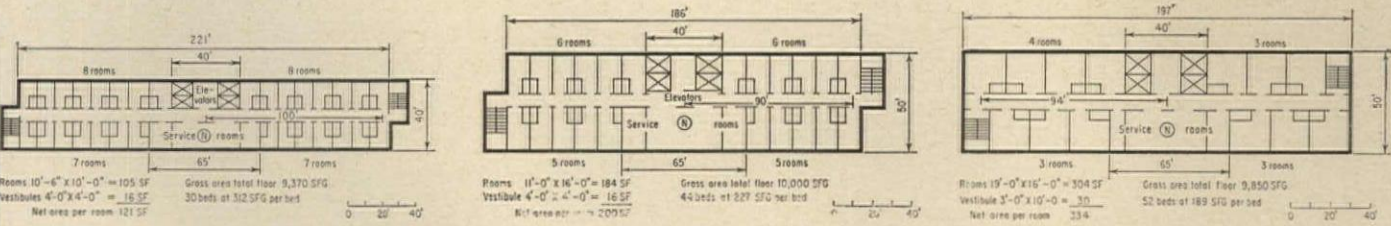
A useful tool in preliminary planning is the technique of subdividing the hospital into working departments and determining the gross floor area desirable for each (in a manner similar to but in much greater detail than that shown in Chapter 1). In these ranges of area, judgment is called for in establishing the relative affluence of space to be provided. The method can work backward from an established budget or start with the program and build toward a total area estimate and construction cost. The key to using it is a knowledge of areas in square feet gross per bed for various hospital departments, which comes from analysis of hospital plans. There are several uses for gross floor area analysis.

The first is in appraising an existing hospital to which additions are proposed. An analysis of plans can be tabulated showing gross area for each department as listed in Table 1 and the areas per bed calculated. From ranges given in the table, an appraisal can be made of departments which appear

either deficient or oversized (and appropriate action can be taken).

A second application is to the sizing of new construction. Suppose a total budget of \$2 million has been established. Three quarters of this or \$1.5 million should be available for construction; the rest for site, site development, movable equipment and supplies. After determining the relative quality of building programed, the architect can choose a unit cost per square foot and thus derive the total square feet of building which can be constructed within the budget (50,000 SFG for the example at \$30 per square foot). This total can then be divided into the programed departments, using the areas per bed in each case and adjusting appropriately. The total for this example indicates a hospital of 85 to 100 beds. The percentage of single rooms affects the area per bed, with minimal figures (500 to 590) providing relatively few single rooms.

A third use of the gross floor area method is to start with the program and calculate the floor area



Effect on gross area per bed of using (left to right) all single rooms, all double rooms and all four-bed rooms

Table 2. Functional programs for operating suites

Item	100 beds	200 beds	300 beds	400 beds	500 beds
Surgery beds, including pediatrics	48	105	135	160	190
General operations per year	2,400	4,400	6,000	7,000	8,000
Operations per room per day	3-2	3-2	3-2	3-2	3-2
General rooms	3-5	5-8	7-11	8-13	9-14
Cystoscopy rooms	...	1	1	1-2	1-2
Orthopedic rooms	...	1	1-2	2-3	2-3
Eye and ENT	1	1-2	1-2
Total rooms	3-5	7-10	9-15	12-20	13-21
Department area, SFG	3,500-5,000	6,000-9,000	8,500-12,500	10,000-16,000	11,000-17,500
Area per bed, SFG	35-50	30-45	28-42	25-40	22-35
Recovery beds	6-10	14-20	18-30	24-40	26-42
Cast rooms	...	1	1	1-2	1-2
Doctors' lockers	15	22	30	35	40
Nurses' lockers	20	30	40	45	50
Persons on day shift	22	41	55	62	69
Gross area per user, SFG	200	180	250	210	210

needed to meet it, thereafter estimating the building cost—again on the basis of relative luxury.

The outstanding quality of the method, its range of flexibility, must not be abused. Findings must be taken only as a guide to be verified by accurate plan layout from the precise program. Analysis of gross floor area is no substitute for planning, merely a guide to early schematic planning and budgeting.

(From early schematics, through preliminaries, working drawings, detailed budgeting, construction and equipment, the rest of Chapter 2 lays more or less familiar groundwork for detailed analysis in later chapters of each of the departments listed in Table 1. In Chapter 3 on nursing departments, for example, there is the following approach to establishing the number and kind of operating rooms.)

The most fundamental factor to be established in the functional programming of the surgical suite is the total number and kind of operations, and the second most significant is the schedule of operations by days and hours. Variations in practice can justify a range of 50 per cent or more in the number of rooms for a given number of beds. The usual pattern can be illustrated by an example.

For a hospital of 400 beds of which 160 are surgical, the estimated number of operations a year, assuming a five-day average stay and 85 percent occupancy, would be: 160 by .85 by 365/5; or 10,000 per year. Hospital records and policy would indicate per cent distribution of these among general surgical, orthopedic, eye and ear, gynecologic, cystoscopic, etc., and would establish whether special rooms or

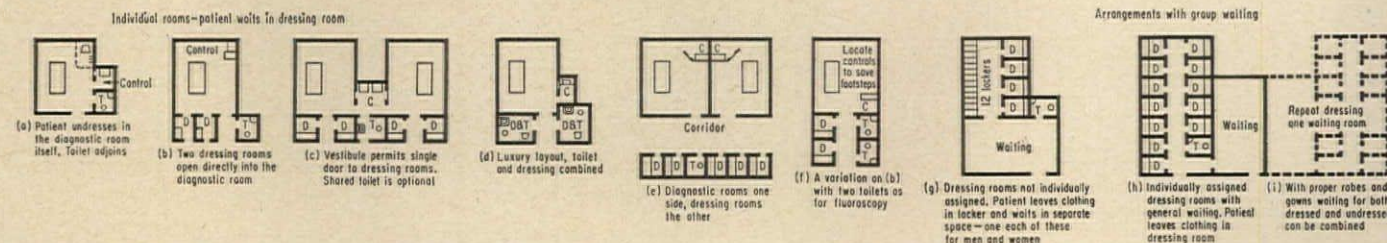
separate locations should be assigned to any of these.

The number of general operating rooms can then be calculated as: $(OPY)/(DY \times OPRD)$; where OPY is operations per year, DY is days per year surgery operates, OPRD is operations per room per day.

If only morning operations are scheduled (as a matter of local policy or custom) average capacity for each room may be from 1.5 to 2.5 operations per day; for 8-hour schedules, 2.5 to 3.5 per room per day. These factors are taken from analysis of existing hospitals. Teaching hospitals tend to have longer, more difficult operations, hence their capacities per room are in lower ranges. (Simple calculations show that half-day schedules are a luxury that can almost double the number of operating rooms required. Table 2 provides a basis for early schematic contemplation and translation of the functional programs of operating suites.)

(Similar approaches to determinations for other departments are included in this book. Those for radiology suites are especially detailed, to which the author appends this qualifying note:)

It would be a happy situation if we could give an exact formula by which radiology (and other suites?) could be programmed; but this is not the way hospitals are designed. Thus the purpose has been to suggest methods which will reflect good practice generally, as well as local requirements. In the end, the decisions will be based on both judgment and calculation, recognizing actual conditions and hence reflecting actual needs.



Various arrangements of dressing rooms for radiology



Gerald Rattie

THOUGHTFUL LAYOUTS FOR EFFICIENT NURSING

*French Hospital
San Francisco, California*

OWNER:

*La Societe Francaise
de Bienfaisance Mutuelle*

ASSOCIATED ARCHITECTS:

*Rex Whitaker Allen
and Associates*

John Carl Warnecke & Associates

LANDSCAPE ARCHITECT:

Michael Painter

STRUCTURAL ENGINEER:

Eric O. Moorehead

MECHANICAL ENGINEERS:

Kasin, Guttman & Associates

GENERAL CONTRACTOR:

Swinerton & Walberg

The problem of constructing a new building without interruption of services while demolishing older buildings on the same site was the assignment at the French Hospital. The master plan calls for completion of a building of 103,700 square feet occupying 20 per cent of a site 600 by 240 feet, a whole city block. First stage of construction is a 183-bed unit with full services. Before beginning construction of the new unit, three partially occupied existing buildings, an old age home, X-ray storage vaults, and a contagious disease unit were emptied into emergency quarters and demolished. On completion of the administration, nursing and out-patient facilities in the new building, emergency quarters were reassigned, and all other buildings on the lot except a nurses' residence, power plant and laundry were demolished to provide parking areas.

The hospital is a three-story, T-shaped building superimposed on a rectangular basement and first floor, located in the central portion of a large plot and set back approximately 360 feet from the front property line. Bar of the T is the front of the building and overlooks a garden court and visitors' parking area. The rectangular basement extends 40 feet beyond the front of the building into the garden court area. Its roof is the floor of the main entrance. It also extends about 200 feet toward the back to a line somewhat beyond the end of the stem of the T.

Floor-to-ceiling glass walls of the first floor are recessed behind columns to provide an outdoor shelter related to waiting space in the lobby.

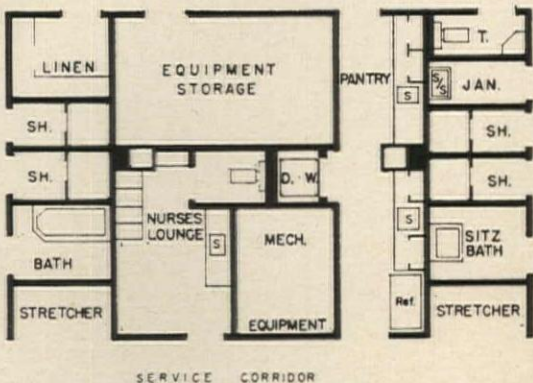
The front facade is a rhythmic pattern of glass and metal between pre-cast concrete panels. Above and below each window are decorative bronzed

grills giving the effect of balconies and providing sun control for tall windows.

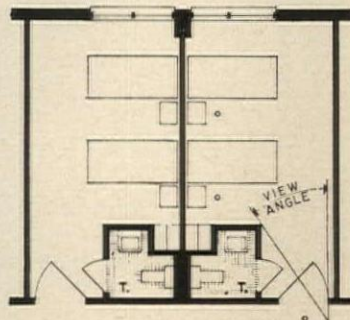
The T shape of upper nursing floors of the building was designed to take advantage of a central core area in the stem for location of nurses' stations and delivery of materials by dumbwaiter from central services in the basement. This provides administrative and operational control, reduces nurses' traffic and allows economical staffing, especially at night. Each core station serves two 33-bed nursing units which can be combined at night.

Almost all private and semi-private rooms are on the front side overlooking the garden court.

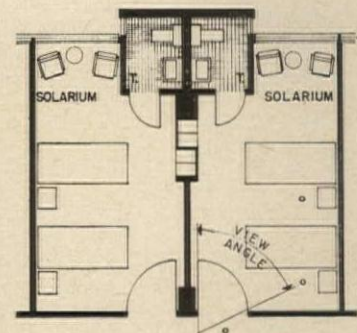
Toilet rooms for each of these rooms are placed at the exterior wall, providing an adjoining sitting room space by the window and permitting improved visual and circulation controls.



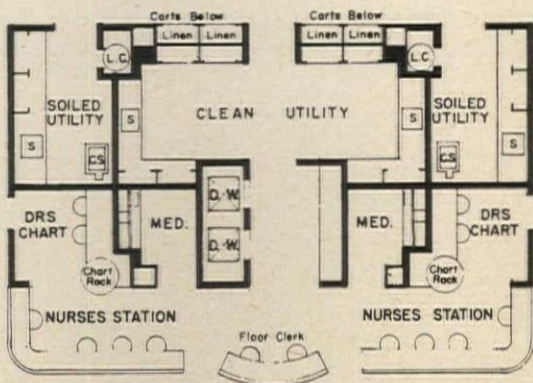
SERVICE CORRIDOR



CONVENTIONAL
TOILETS ON CORRIDOR WALL



FRENCH HOSPITAL
TOILETS ON EXTERIOR WALL



TYPICAL SERVICE CORE

220 ^{sq}	TOTAL AREA	220 ^{sq}
22 ^{sq}	TOILET AREA	22 ^{sq}
198 ^{sq}	NET AREA OF ROOM	198 ^{sq}
154'	CIRCULATION	133'
78%	PERCENT OF CIRCULATION	67%
15'	DISTANCE TO FIRST BED	9'
21'	DISTANCE TO SECOND BED	15'
36°	MAXIMUM VIEW ANGLE	64°
0	AREA OF SOLARIUM	30 ^{sq}

*NURSES POSITION FOR MEASUREMENT OF DISTANCES TO BEDS



COMPARISON OF TYPICAL TWO BED ROOM

A PLAN FOR VERTICAL EXPANSION

*R. E. Thomason General Hospital
El Paso, Texas*

ARCHITECTS:

Garland and Hilles

CONSULTING ARCHITECT:

William H. Metcalf Jr.

HOSPITAL CONSULTANTS:

Gordon A. Friesen & Associates

MECHANICAL ENGINEERS:

Herman Blum & Associates

STRUCTURAL ENGINEER:

Donald J. Neubauer

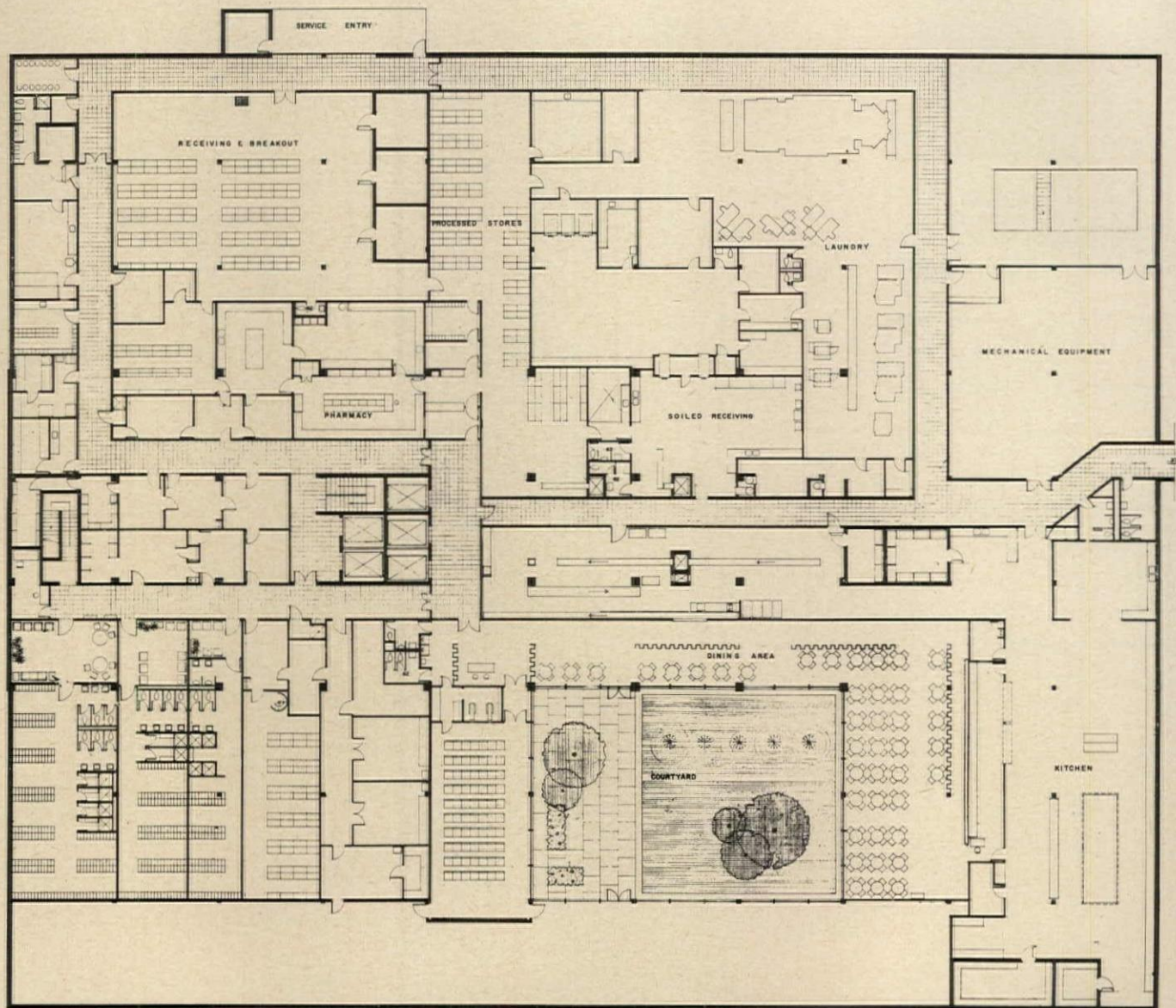
GENERAL CONTRACTOR:

Robert E. McKee

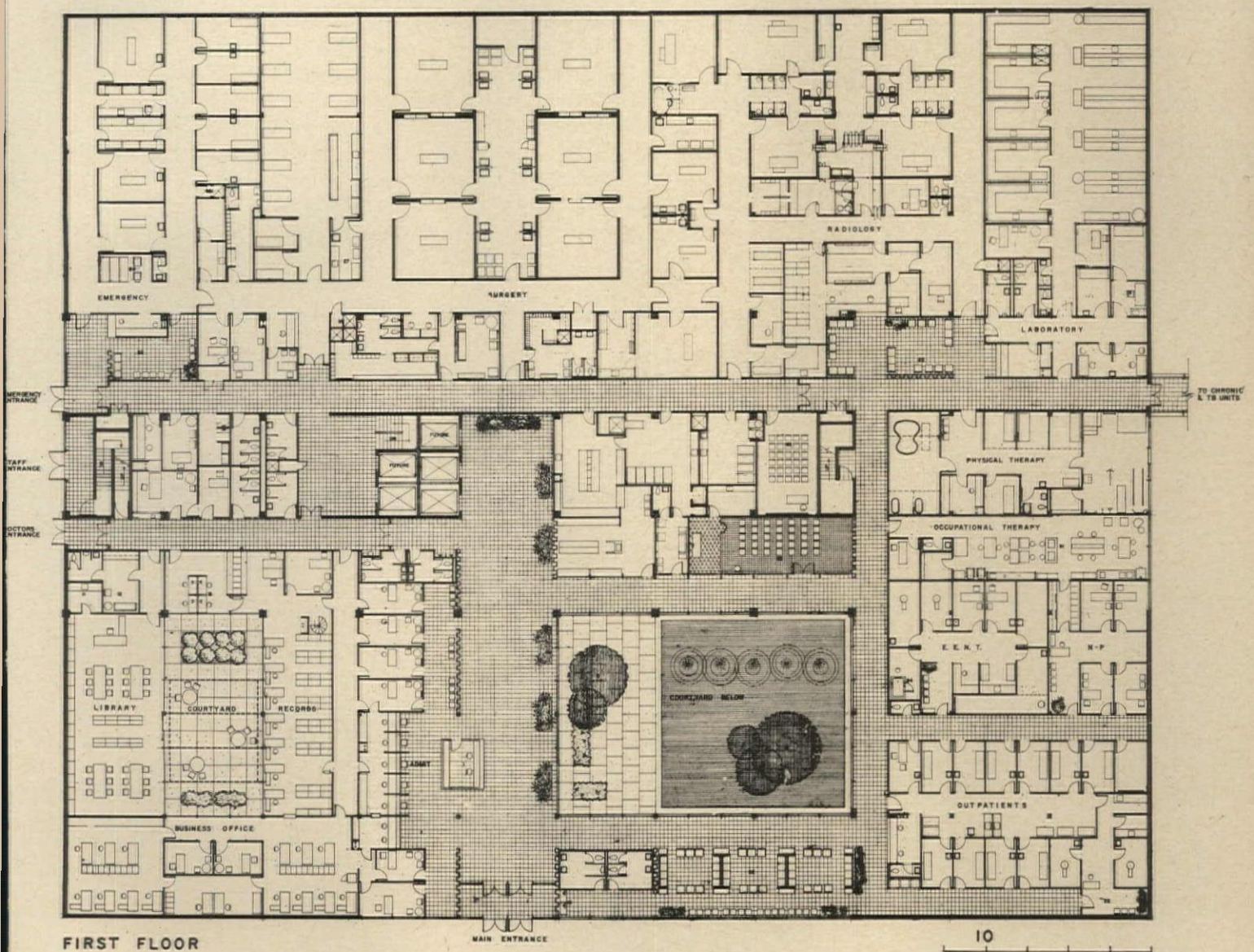
The program for R. E. Thomason General Hospital called for a new building of 250-bed capacity to replace existing facilities for 133 beds. In addition, two existing buildings were to be converted from "spill-over" duty to house TB and chronic care units of 40 patients each. Budget for the project was \$5.3 million.

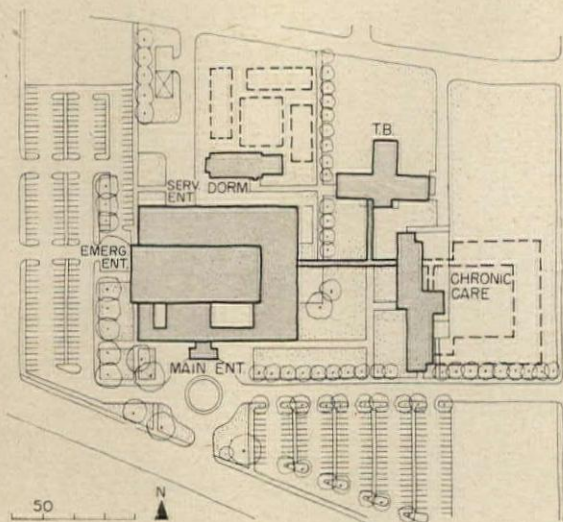
The new building consists of a basement and seven stories for 250 patients structurally planned for ultimate expansion by added floors to handle 400 beds. The current program provides for all kinds of in-patient care, including psychiatric, and a large out-patient department which will handle 60,000 visits per year.

The first floor houses an emergency department (capable of handling over 30,000 cases a year), administrative departments, physical and occupational therapy, laboratory, radiology and surgery. The basement consists of service facilities including a master dispatch center, central sterilizing, pharmacy, laundry, kitchen and cafeteria. Mechanical equipment for air conditioning is housed on the second floor which is inset to form a



BASEMENT FLOOR



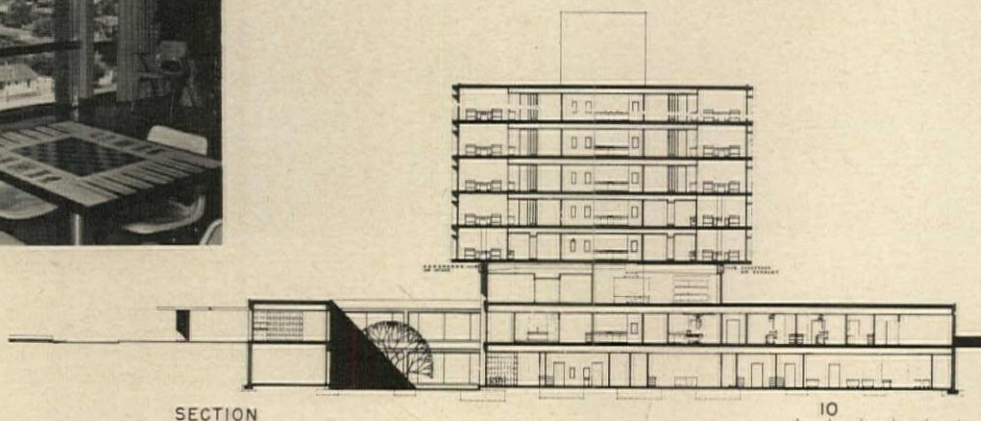
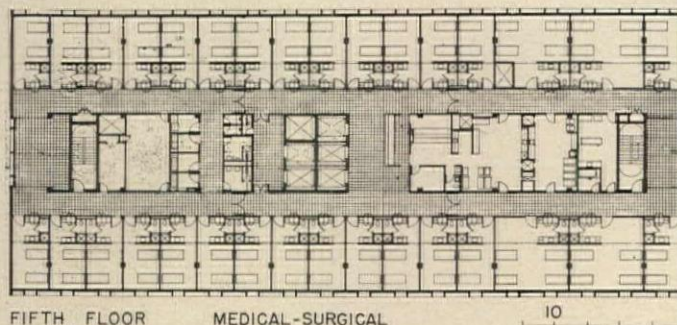


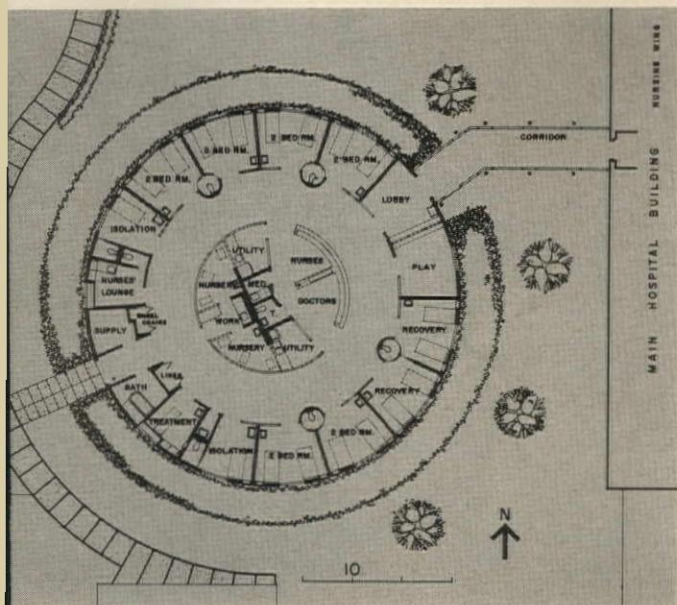
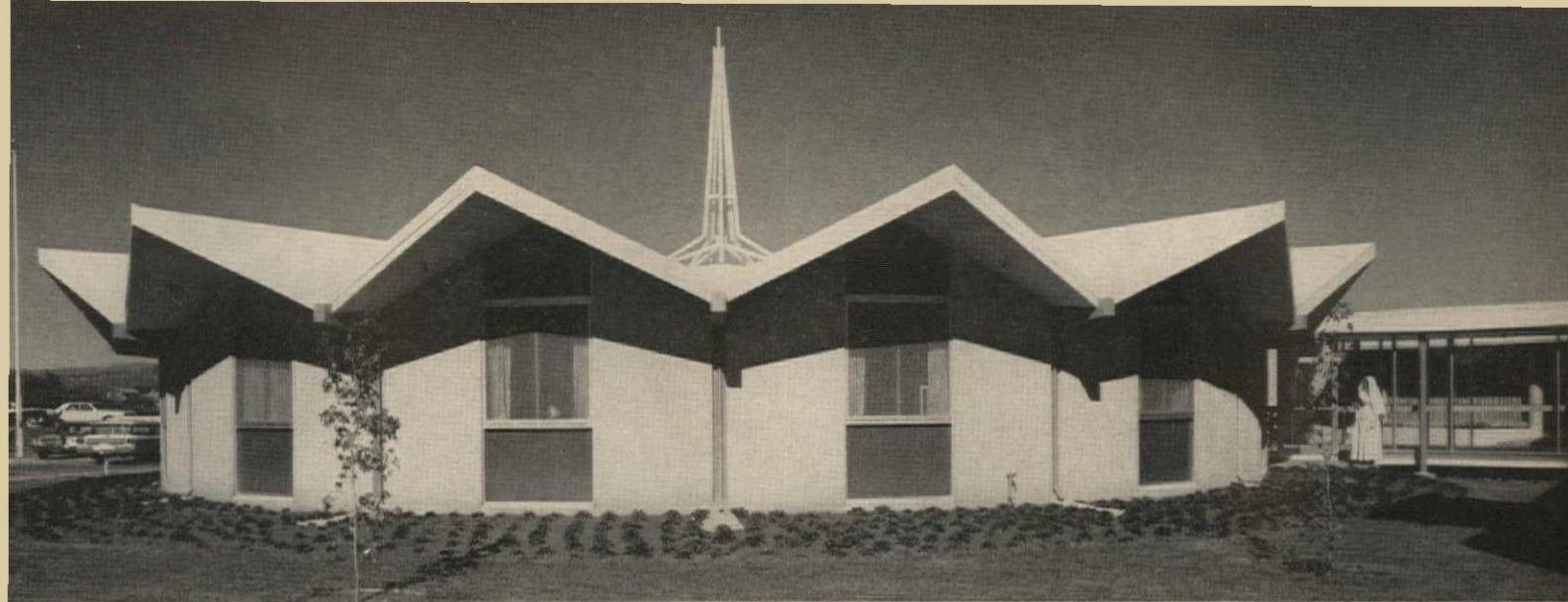
pedestal supporting the five nursing floors above.

Extension of the basement and first floor provides space for reception area and library on the first floor and cafeteria in the basement, both overlooking a two-story courtyard with plantings and reflecting pool.

Clean supplies and food are delivered to nursing floors by a tray conveyor with an automatic unloading device at each floor. The same system is used to return soiled linens and dishes to laundry and dish-washing areas in the basement.

The structural system consists of a flat slab of reinforced light-weight concrete poured in place on 24-foot bays with no dropped panels or beams. There is a structural steel grill in each head at the top of each column. Elevator and stairway enclosures are poured-in-place concrete bearing walls to achieve lateral stability. Foundations of the main building consist of reinforced concrete caps supported by poured-in-place concrete piles. This insures a minimum difference of settlement between the tower section and the two-story section of the building.





CHILDREN'S PAVILION IN THE ROUND

*Pediatrics Pavilion
Addition to Mercy Hospital
Redding, California*

OWNER:

The Sisters of Mercy

ARCHITECTS:

Rex Whitaker Allen and Associates

STRUCTURAL ENGINEERS:

Pregnoff & Matheu

MECHANICAL ENGINEERS:

Kasin, Guttman & Associates

ELECTRICAL ENGINEER:

Mel Cammisa

GENERAL CONTRACTOR:

William A. Drennan

An unpretentious but imaginative circular building that looks like a carousel is the 24-bed Pediatrics Pavilion of the Mercy Hospital in Redding. The circular design, according to Rex Allen, was utilized for two reasons: to solve some of the difficult problems of supervision and communication inherent in pediatric nursing; to provide an interesting, gay and imaginative environment for its young occupants.

Arriving at the hospital, a child's apprehension is quickly dissipated, for the exterior of the pavilion stirs the child's imagination and curiosity. When the child enters the pavilion, he sees fifteen wood beams radiating from the center of the ceiling like the spokes of a giant wheel. There is a fully stocked playroom, and he can see other children through the part-glass partitions of their rooms.

Toilet rooms are circular and accessible from either of two rooms by curved, folding doors.

A basement area houses purchasing, central supplies and mechanical equipment. The structure is of reinforced concrete foundation with wood frame floor, exterior walls, partitions and roof. Exterior wall surfaces are textured cement plaster. The pavilion is completely air-conditioned. Oxygen, compressed air and vacuum are piped to each bedside.

NEW APPROACH TO NURSING UNIT FLEXIBILITY

*Franklin County Public Hospital
Greenfield, Massachusetts*

OWNER:

Franklin County Public Hospital

ARCHITECTS AND ENGINEERS:

*Shepley Bulfinch
Richardson & Abbott*

MECHANICAL ENGINEER:

R. G. Vanderweil

ELECTRICAL ENGINEERS:

Thompson Engineering Company

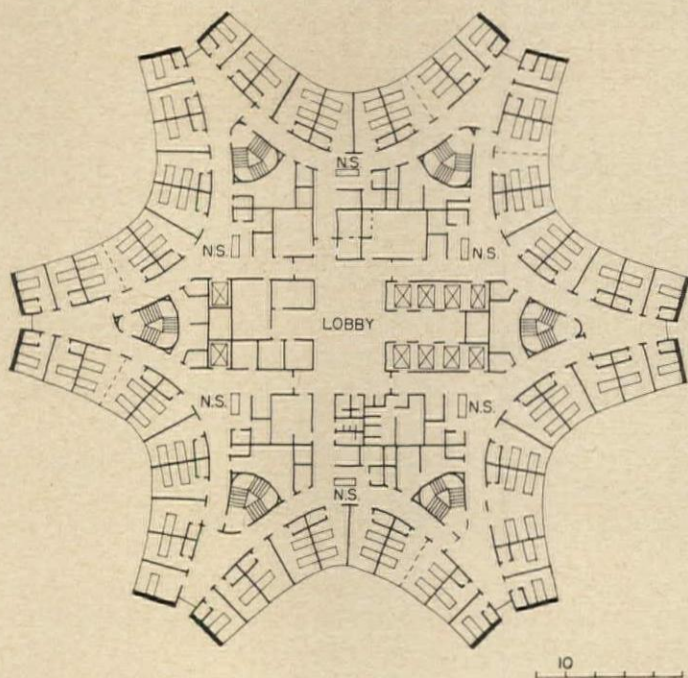
HOSPITAL CONSULTANTS:

Hamilton Associates

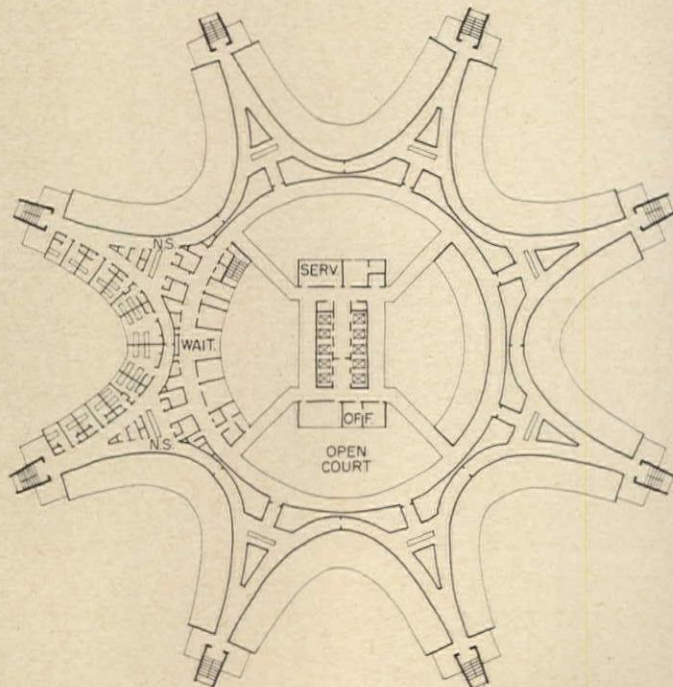
This approach to total flexibility in nursing unit size grew out of a train of thought generated at an A. H. A. workshop in 1961. Sherman Morss and other architects were talking about a theoretically optimum size for nursing units. There was such lack of agreement as to size criteria, or even as to the existence of an optimum, that Mr. Morss became intrigued by the architectural implications of a requirement for complete flexibility in patient assignment without the constraint of any fixed size of nursing unit at all.

Developing the notion of a non-conventional hospital where all beds are in a single nursing division, Mr. Morss envisioned a long, single-loaded corridor without conventional nursing stations or any physical barriers between diagnostic nodes of occupancy. These nodes could then be shifted at will as admissions required. Supporting facilities, utility rooms and simple charting stations could be spaced at various intervals according to reasonable walking distances. Since certain facilities, such as elevators and central services, are not feasibly repetitive, ultimate logic suggests winding the long corridor of any number of bedrooms and occasional utility rooms in a helix with accesses at rational intervals to a central core of non-repetitive facilities. Mr. Morss points out that this would generate the opposite of the "layered constraints" of current circular hospitals.

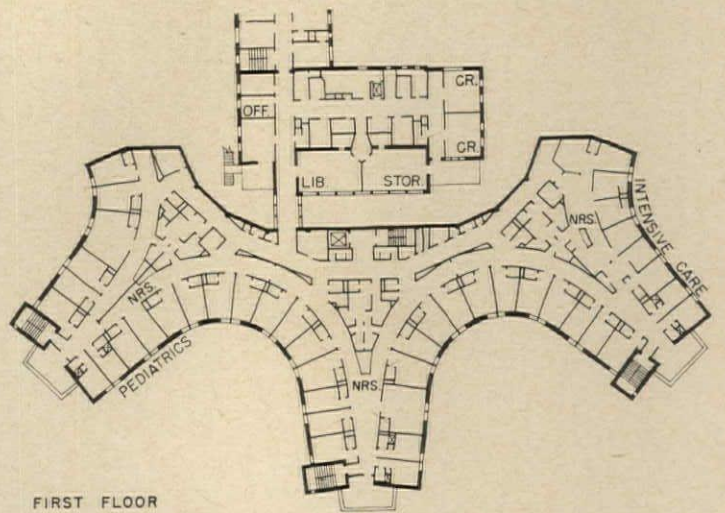
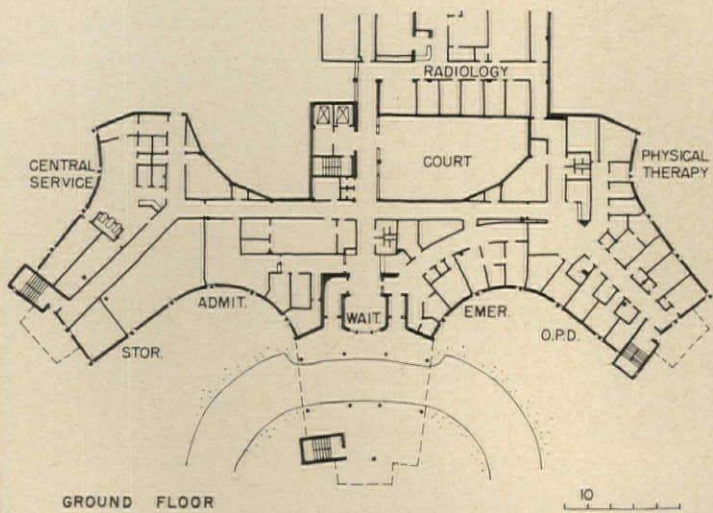
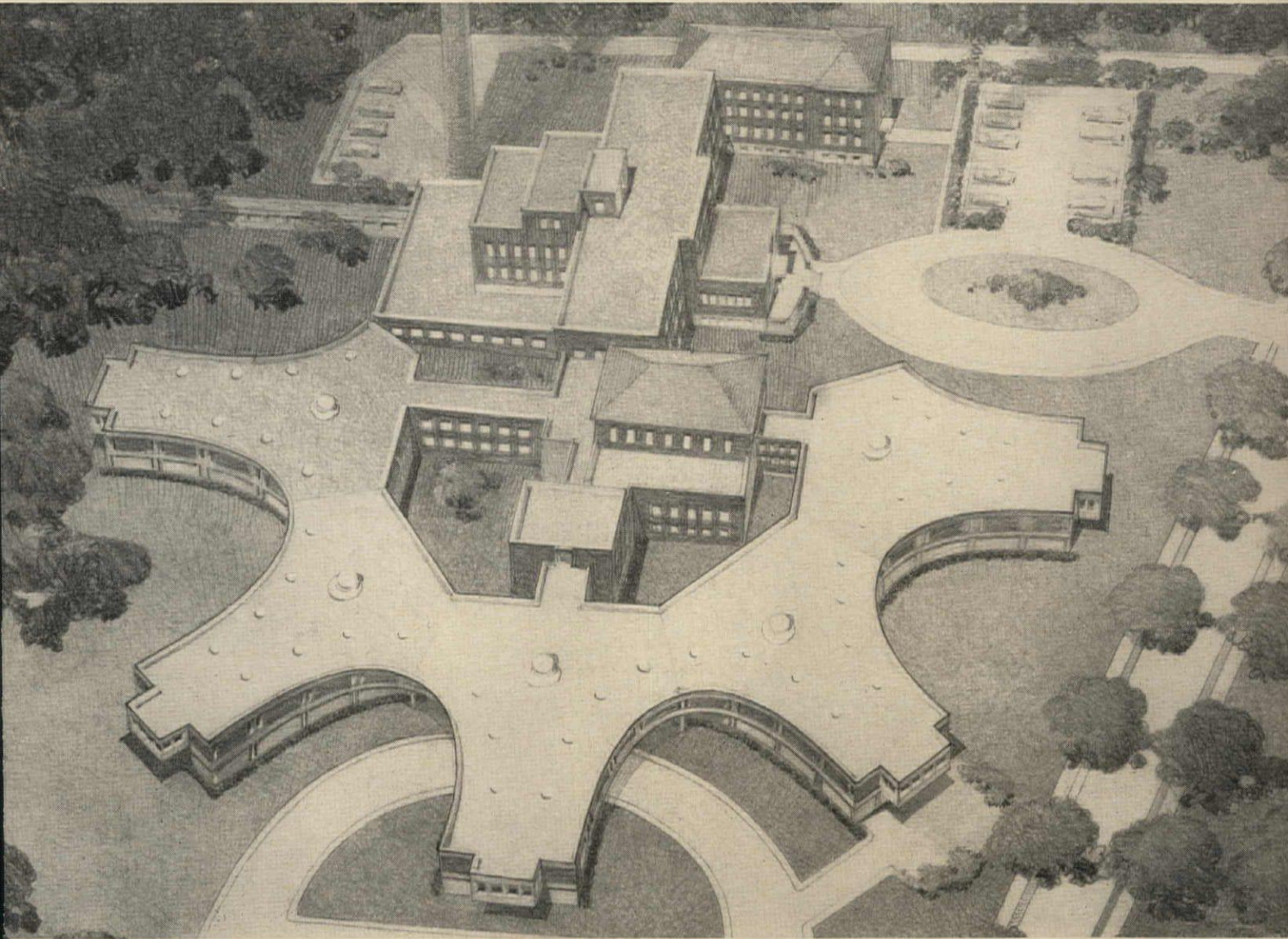
Reduction of these ideas to practice awaited the time when the administrator of Franklin County Public Hospital invited his planning group to take "new and different" approaches to plans for a 170-bed replacement wing. Although thus freed from preconceived ideas as to shape, the "logic" of the helix soon gave way to the ungainly presence of an existing service building and a conservative wish for level floors. The concept of the continuous long corridor gradually evolved, as illustrated here, into a series of convex fluted loops forming a quiet perimeter zone around an intermediate zone with separate by-pass corridor for occasional support facilities and a central courted service interior with diametric accesses to the intermediate zone. Each floor has a manager with clerical aids. Nurses tend to patients.



Early plan constrains center, has traffic problems



A step forward: stairs moved out; zoned traffic; courted center



Three-lobe plans show as-built development with alternative attachments of central buildings

EFFICIENT NURSING UNIT IN A TRIANGLE

*The Lane Pavilion
of Point Pleasant Hospital
Point Pleasant, New Jersey*

OWNER:
Point Pleasant Hospital

ARCHITECT:
Gordon Powers

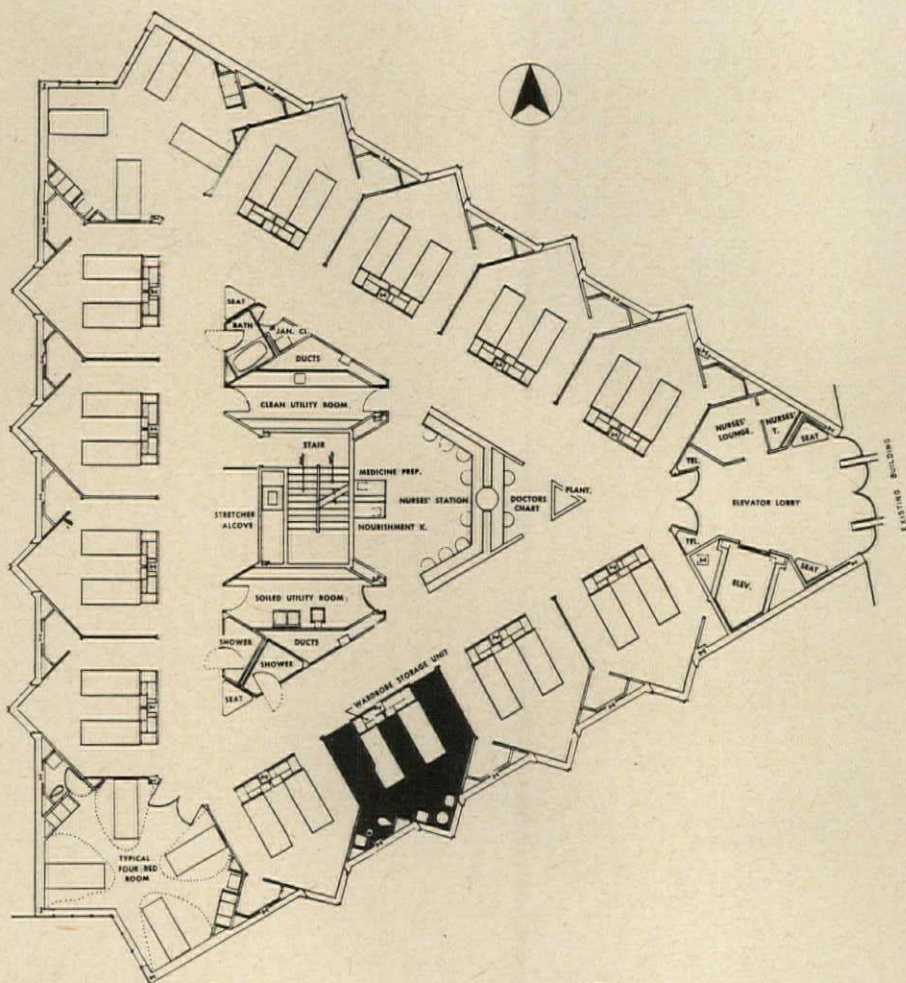
STRUCTURAL ENGINEERS:
Garfinkel & Marenberg

MECHANICAL ENGINEERS:
Vogelbach & Baumann

GENERAL CONTRACTORS:
A. A. La Fountain, Inc.

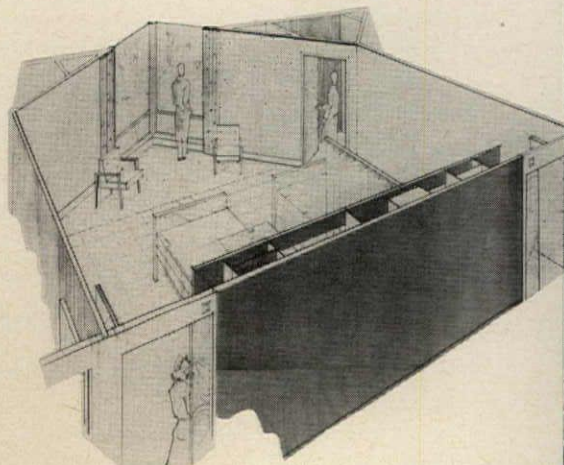
Program for this hospital addition called for a two-story nursing addition to provide 64 beds of which 75 per cent were to be semi-private. Triangular shape of the building developed out of research which considered the Yale Index method of measuring operating efficiency, especially in reduction of staff walking distances. The triangle lends itself to economical sizing of service core areas in relation to nursing units of any size, unlike the circle which rapidly generates excessive core space as perimeter bedrooms are added. Straight lines of the triangle also serve to reduce construction costs (about \$10,000 per bed here) as compared to circular units.

The shape was also convenient for the five-sided, semi-private bedrooms, a preference of the hospital's director, Arnold S. Lane, who had had previous experience with similar rooms in a nursing home which he and Mr. Powers had developed. The Point Pleasant configuration is an adaptation of the nursing home experience and incorporates a multi-purpose wardrobe and nurses' work station unit built into the corridor wall. Placement of toilets against outside walls creates triangular chases for utility risers. Convergence of outside walls in a windowed bay establishes a triangular sitting area or private day room in each bedroom. The five-sided room provides separate entrances for each bed, and a folding partition between beds generates a sense of privacy not offered by conventional curtains.

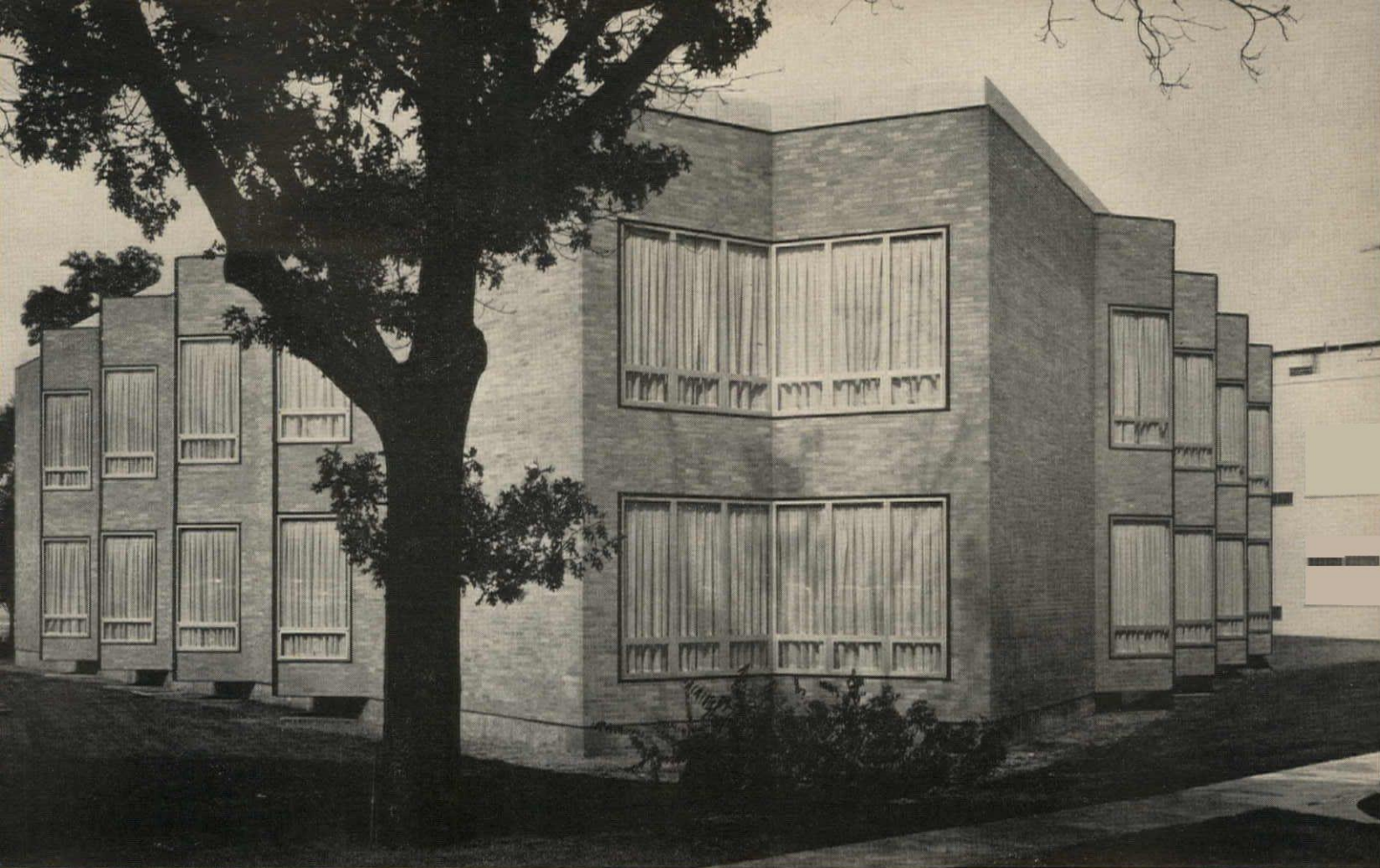


TYPICAL FLOOR

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Triangular shape of the nursing unit is not necessarily dictated by use of the five-sided room which could obviously fit the rectangular form as well. In this case of the 32-bed unit, the triangle has advantages of visibility along corridors and economy of utility core spaces required for this annex. Further, similar additions can be attached to the existing main building at corridor end points without sacrifice of existing wall



Joseph W. Molitor photos



AN EXPANSIBLE REGIONAL HOSPITAL

*New Hanover Memorial Hospital
Wilmington, North Carolina*

ARCHITECT:
Leslie N. Boney

CONSULTANTS:
Joseph Blumenkranz & Associates

CONSULTING
MECHANICAL ENGINEERS:
Mechanical Engineers, Inc.

CONSULTING
ELECTRICAL ENGINEER:
John Bolen

CONSULTING
STRUCTURAL ENGINEER:
Gardner, Elsevier and Kline

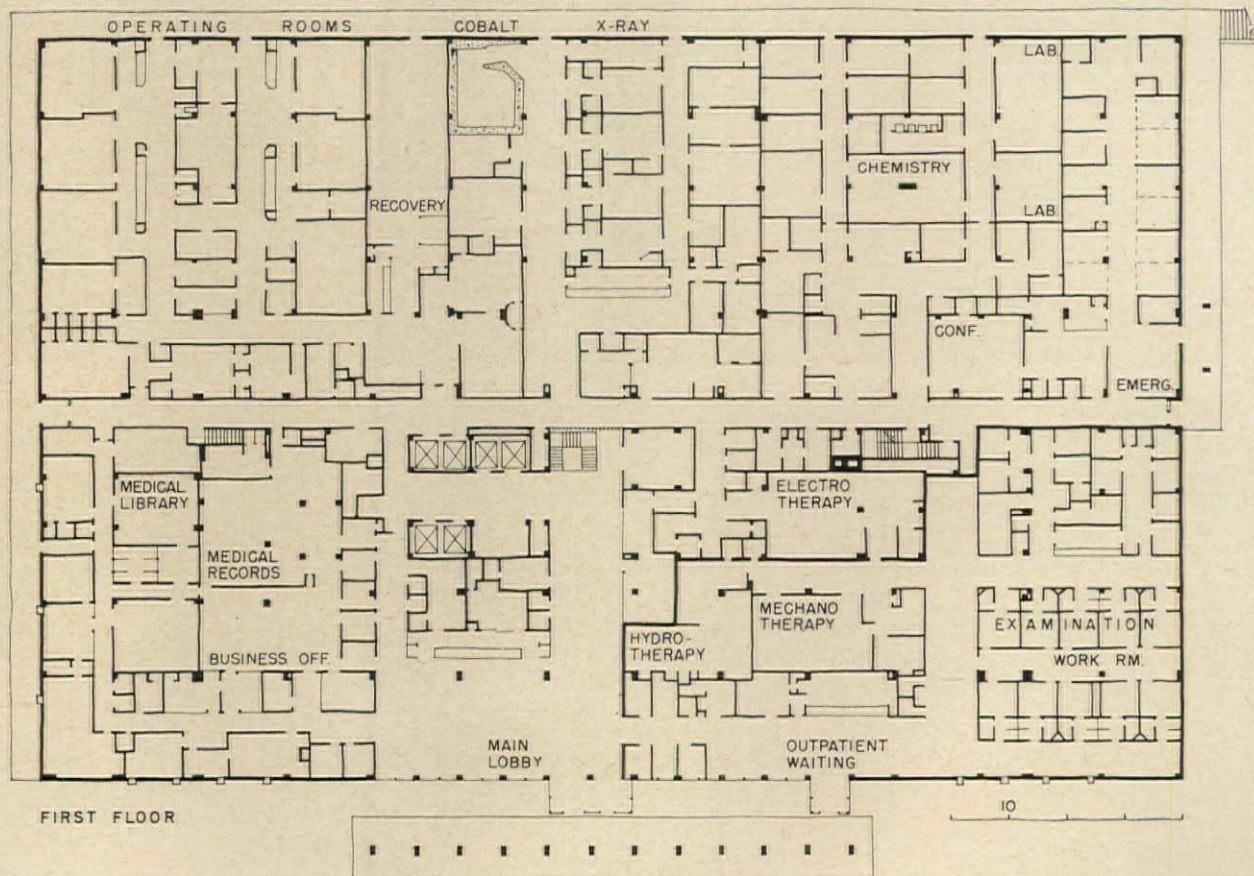
DIRECTOR OF THE HOSPITAL:
Emery Nicholas Grubbs

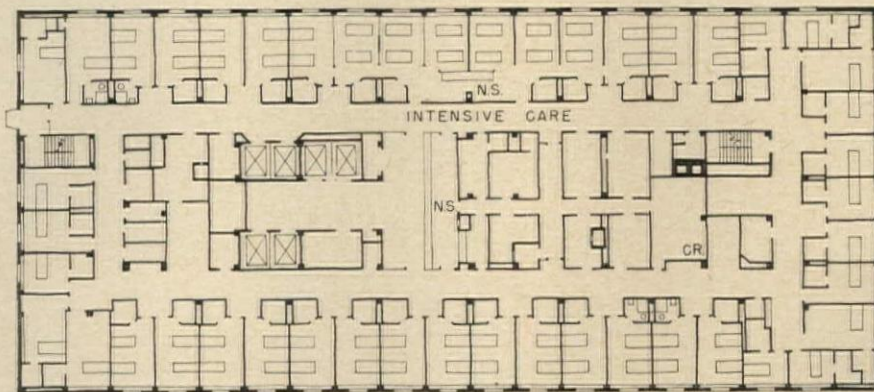
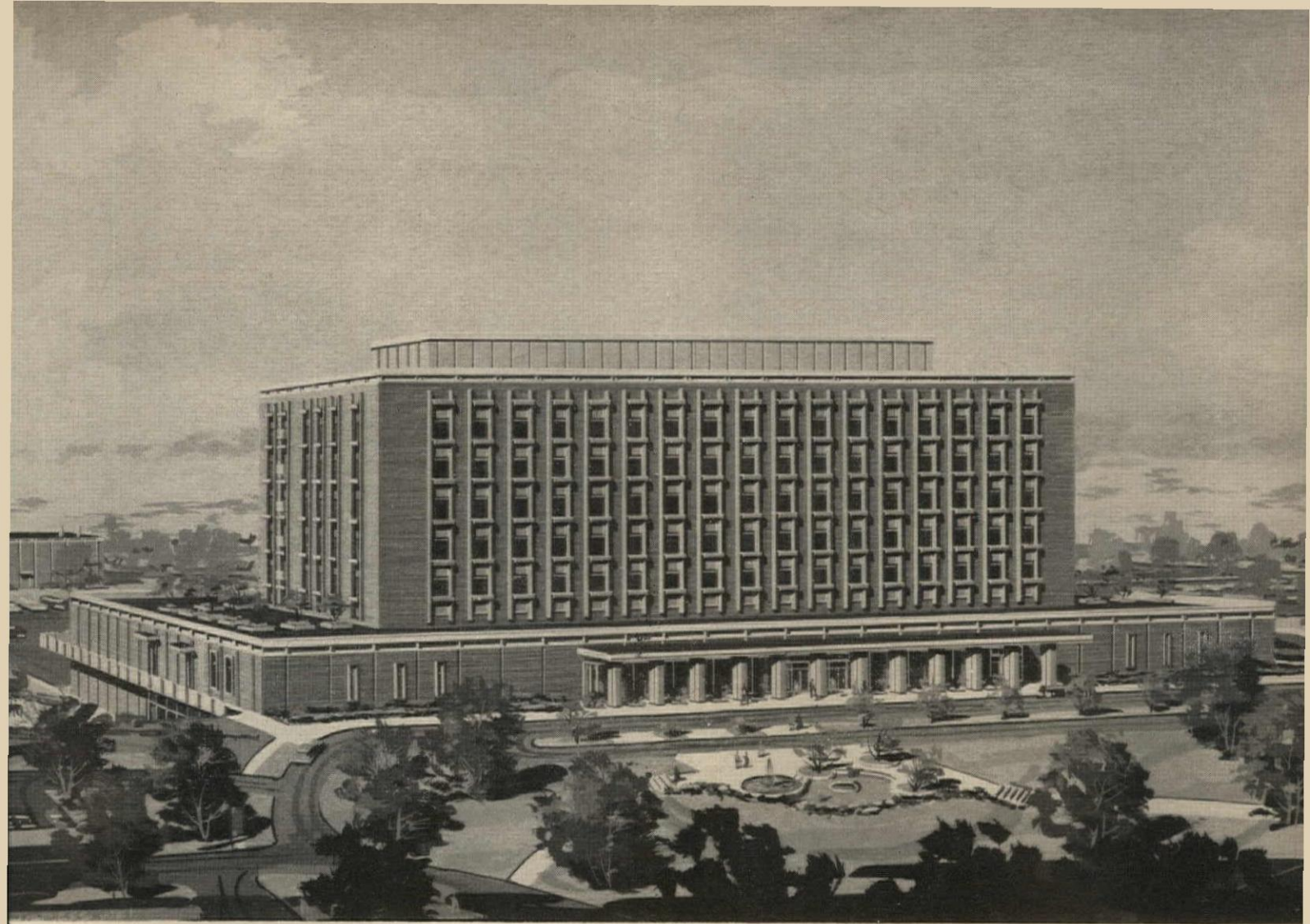
This regional hospital serving southeastern North Carolina is on a 50-acre site master-planned for a future development as a comprehensive medical center. Facilities for long-term care, for mental health care, and for a public health unit will be eventually incorporated into the program.

The new building, now under construction, will be an eight-story structure of 308,500 square feet gross with an initial capacity of 400 medical, surgical and psychiatric beds; it will also provide an extensive emergency department, as well as an out-patient clinic. The building is planned for an expansion to 600 beds. The two broad chassis floors, near the ground, are designed for horizontal expansion; the component departments are so arranged that each could be expanded independently of any other department. Moreover, such expansion will be feasible by building on from the outside, so that disruption of functions will be avoided. Expansion of bed capacity will be vertical by addition of nursing floors in the tower. Foundations, structural elements, and utilities have been designed to take care of ultimate loads and demands.

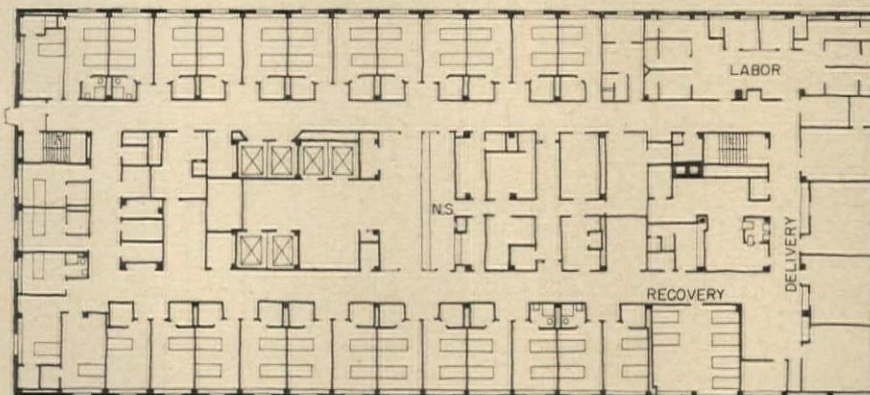
The tower floors have a loop corridor system, making use areas accessible from two directions, thus permitting an "ebb and tide" variation in bed assignment by service categories. Another advantage derived from the loop corridor system is the creation of an area of refuge on either side of corridor cut-off doors. Such a horizontal exit system cuts the required number of stairs in half, while at the same time it permits emergency evacuation of occupants from one area of refuge to the other on the same floor.

Movement of food trays, specimen, sterile and soiled supplies, records, etc. will be by selective conveyors and via pneumatic tube system.





FIFTH FLOOR (ADULT NURSING & INTENSIVE CARE)



THIRD FLOOR (OBSTETRICS, GYNECOLOGY, NURSING)

HIGH-RISE FOR RESEARCH IN PEDIATRICS

*Children's Medical and
Surgical Center
The Johns Hopkins Hospital
Baltimore, Maryland*

ARCHITECTS:
*The Office of
James R. Edmunds Jr.*

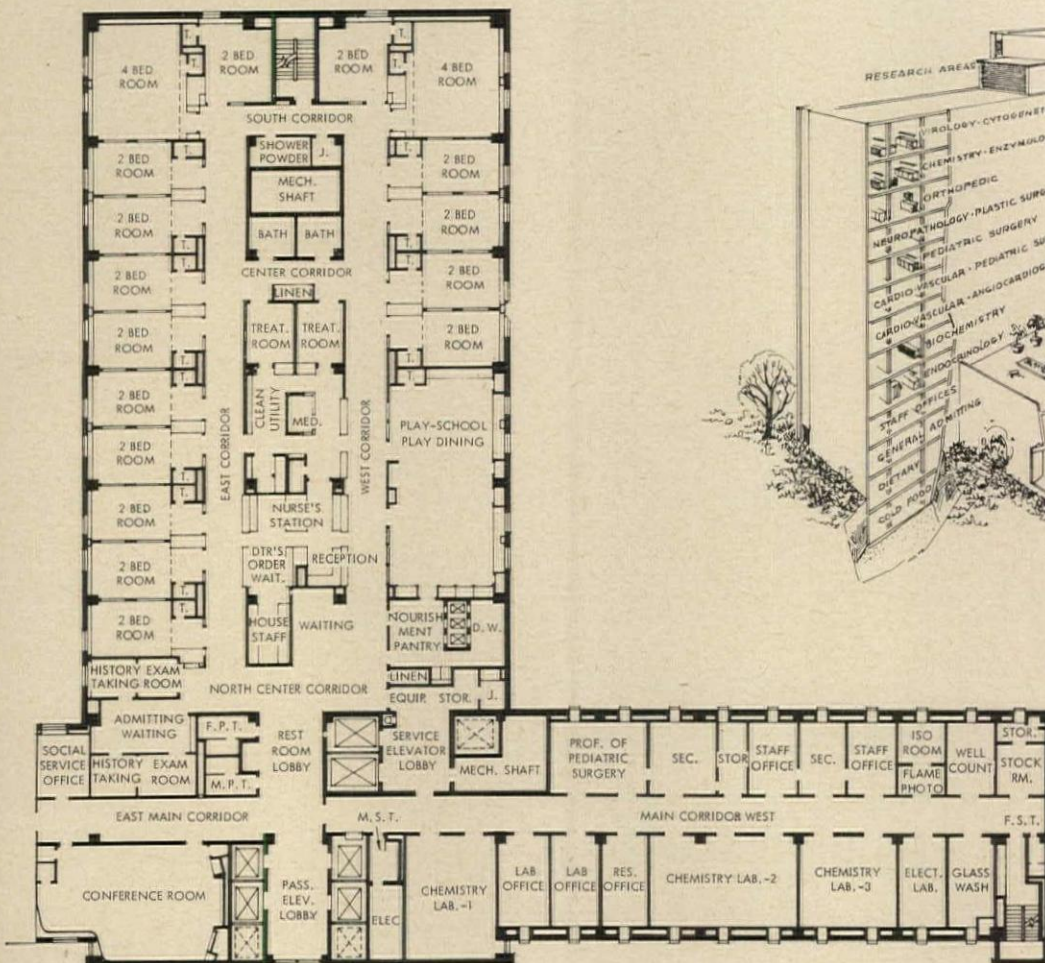
STRUCTURAL ENGINEERS:
Crout, Snyder & Crandall

MECHANICAL &
ELECTRICAL ENGINEERS:
Henry Adams, Inc.

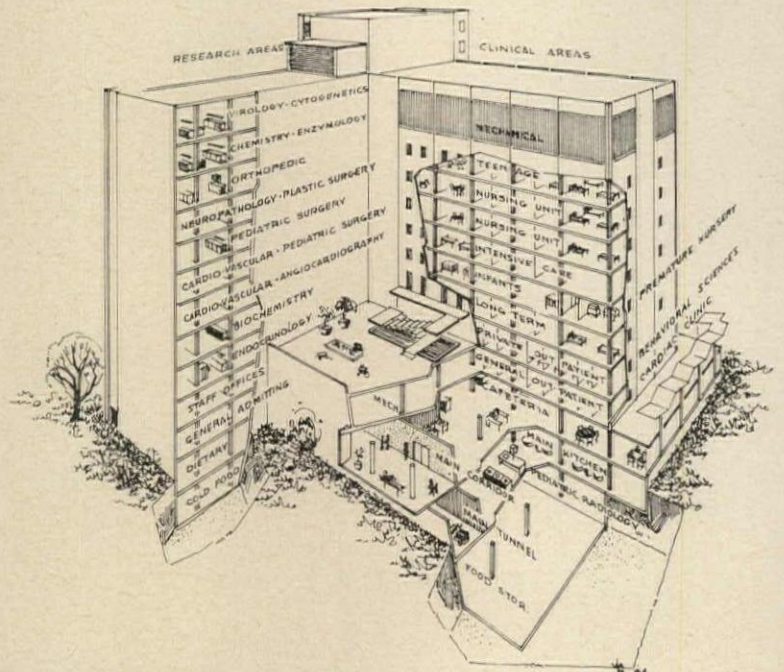
The Childrens' Medical and Surgical Center at the Johns Hopkins Hospital is actually two buildings joined in an L; a clinical wing which contains 270 beds and a research building which contains laboratory and office spaces for various research disciplines related floor by floor to diagnostic categories of patients.

In spite of a difficult siting problem, nestling the building among and joining it to existing older structures as well as making it compatible with long range plans for future facilities, the architects have resolved rather complex traffic problems and achieved a general feeling of openness and light. Pediatrician-in-chief Robert E. Cooke points out that sick children are not small replicas of sick adults in that their recovery may be actually hindered by the kind of privacy an adult might prefer. The child wants things to be like home and he wants to see other children. Hence, partitions between rooms are glass above a 3-foot dado. Curtains can be drawn for nursing or medical privacy.

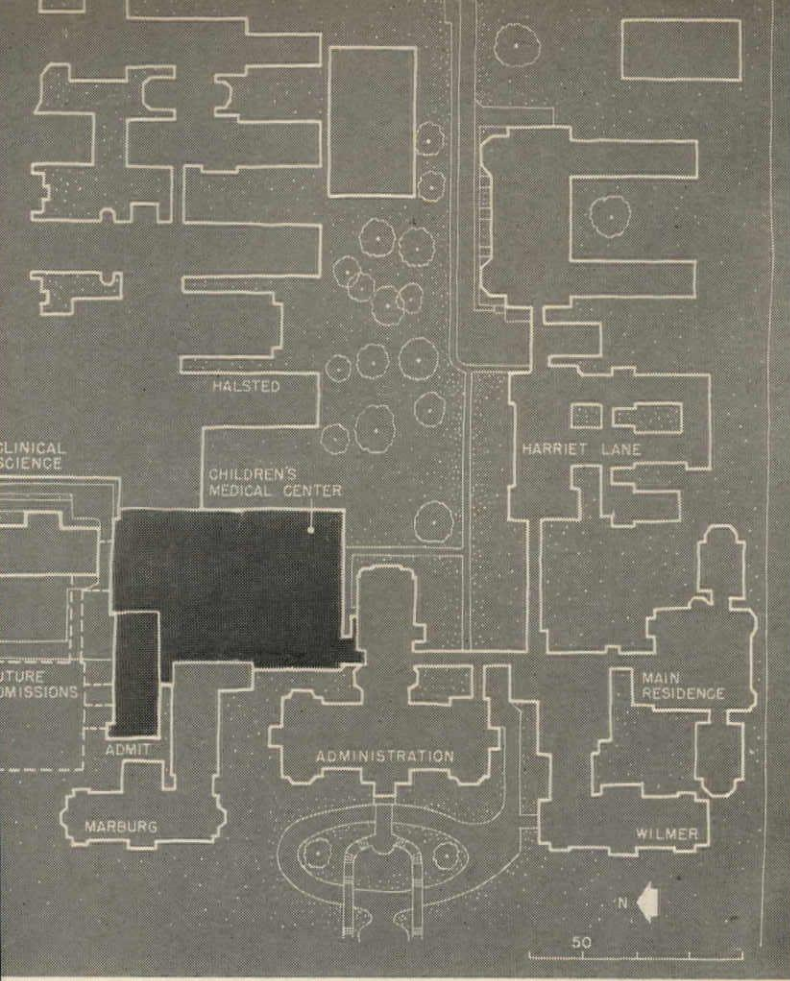
Each room will have a television set with pillow speakers to cut down noise and double as nurse intercom. Children can lock their private toilet rooms just as they do at home. Doors can be unlocked from the outside and are designed to swing both inward and outward. A tack board beside each bed displays the child's drawings or paper figures. Special guest chairs designed by Colin Campbell McLean of Hospital Furniture, Inc. can be



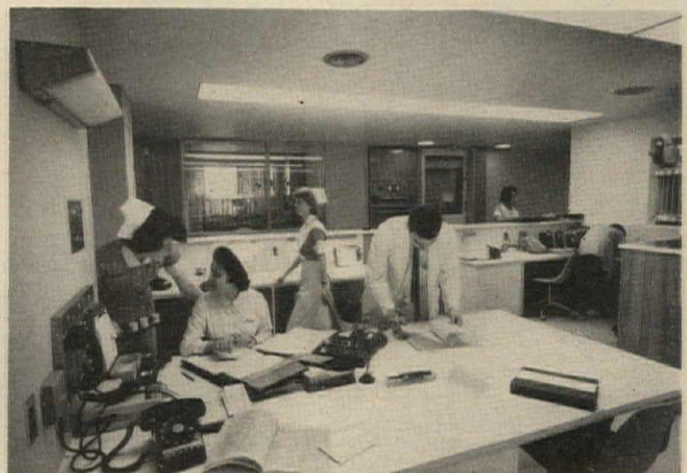
TYPICAL FLOOR



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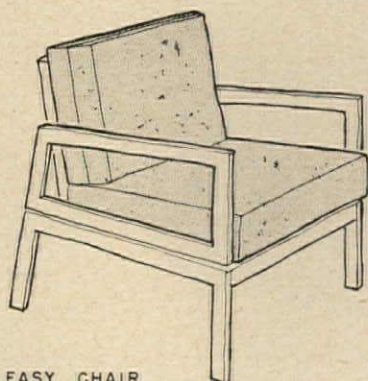


Blakeslee-Lane, Inc.





Medication room can be closed for privacy



EASY CHAIR

folded out into beds for mothers to stay overnight on occasion.

Playrooms which double as dining rooms for children who can walk are gaily colored and have special furnishings.

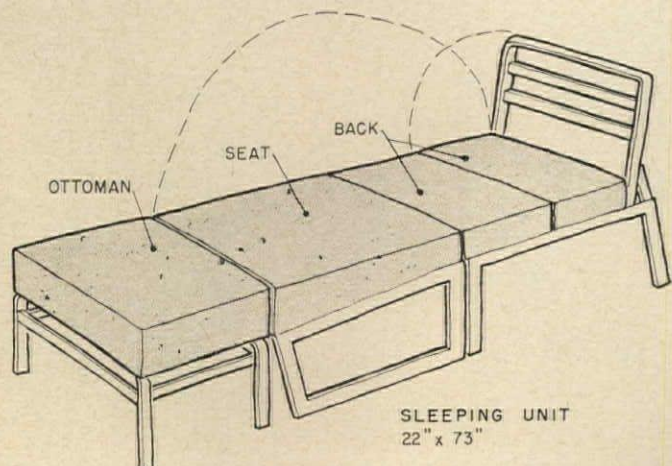
Ground floor of the building houses a huge main kitchen to serve all buildings of the hospital as well as a central cafeteria on the first floor. First floor lobby is also central and contains the admitting offices for the entire complex. The children proceed from here to their own areas which have specially decorated waiting rooms. Waiting room on the second floor, for example, has a carousel and a milk bar designed as an animal cage.

The premature nursery on the 5th floor is specially designed with six rooms for the isolation of infants. Each of these rooms will be filled in rotation, four babies to a room. As each room is emptied, it is thoroughly cleaned before a new group of babies is brought in. Babies are electronically monitored.

Intensive care units on the 6th floor are also specially equipped with physiological recorders, hypothermia equipment, pace makers, etc. Each bed has its own vacuum air and oxygen outlets. Special high humidity rooms will replace old style vaporizers in the care of upper respiratory diseases.

Structure is steel frame with reinforced concrete floor slabs. Brick exterior walls have slag block backup. Building is air-conditioned with high velocity double duct system with no recirculation of air in patients rooms.

This extensive investment in research and care facilities was made possible by pooling the resources of four Baltimore organizations: The Johns Hopkins Hospital, The Harriet Lane Home for Invalid Children which has functioned as the Johns Hopkins pediatrics department, The Hospital for Consumptives of Maryland (now closed), and the Robert Garrett Foundation for the Surgical Treatment of Children. The 10th and 11th floors are being constructed with the aid of a million dollar grant from the Joseph P. Kennedy Jr. Memorial Foundation. They will be devoted to the study of mental retardation but will have no patient care facilities.



SLEEPING UNIT
22" x 73"

Architectural Engineering

What Buildings For the Moon?

What kind of structures would work as moon shelters for astronauts? Scarcely anything resembling an earth-bound building, that seems for certain. The most promising shape suggested by a recent feasibility study is a truncated cone, rib supported. The study, directed by John A. Campbell, research engineer at Illinois Institute of Technology Research Institute, suggests a structure that looks and works like one of those collapsible metal drinking cups that campers use. The large end of the cone is a rigid dish against which a folded shelter could be packed. While an inflatable structure might seem possible, the fact that it could not support concentrated loads and that it would collapse if the pressure failed indicated the need for rib bracing.

The shelters could be arranged in a circle with air locks facing inward and interconnected by a compartment in the center. The study notes that since the force of gravity is only 1/6 of that on earth, the astronauts should be able to lift or push heavy shelter components about without undue fatigue.

The structure must also provide adequate thermal protection for its inhabitants. Radiation is the only source of heat on the moon since there is no atmosphere. An efficient reflecting surface will shut out the sun's heat. Strangely enough, with lunar surface temperatures as low as -250 F at night, the shelter interior will have sufficient heat from people and equipment to require cooling, according to the study.

Industry Notes

A pneumatic nailing machine, now being field tested, is reported to drive masonry nails as rapidly as 40 per minute into concrete and masonry. The nailing machine, developed by the United Shoe Machinery Corporation in collaboration with the Independent Nail Corporation, can be used for fastening sills, partition plates, screeds, furring and the like.

The first centrifugal refrigeration machine which was developed by Dr. Willis Carrier in 1922 and installed in the Onondaga Pottery Company in Syracuse, New York has been placed on display in the Museum of History and Technology of the Smithsonian Institution. It was retired in 1960 after 38 years of service. The most recent centrifugal units vary from a special lightweight unit for the DC-8 jet which has a centrifugal wheel not much larger than a silver dollar to a 4,500 ton machine used for a central plant of the Hartford, Connecticut Gas Company.

Five lumber manufacturing companies have established a temporary organization called the EMSR Machine-Graded Lumber Committee to promote the understanding and use of electro-mechanically stress rated lumber.

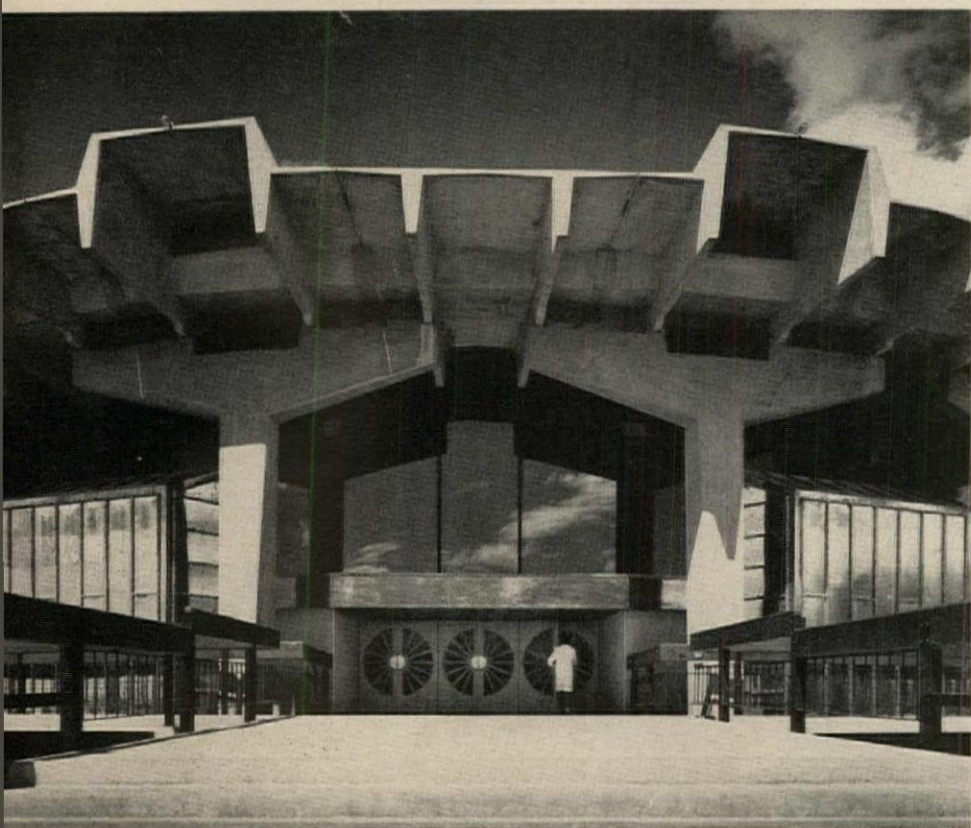
All five companies use the same basic electro-mechanical stress rating system, and expect to produce nearly 100 million board feet in EMSR by the end of 1964. These committee members are: Bohemia Lumber Co. (Rickini Div.), Culp Creek, Ore.; Boise-Cascade Corp., Boise, Idaho; Frank Lumber Co., Mill City, Ore.; Potlatch Forests, Inc., Lewiston, Idaho; and Simpson Timber Co., Seattle, Wash.

Concrete Coatings

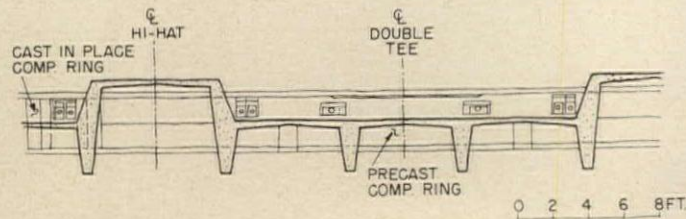
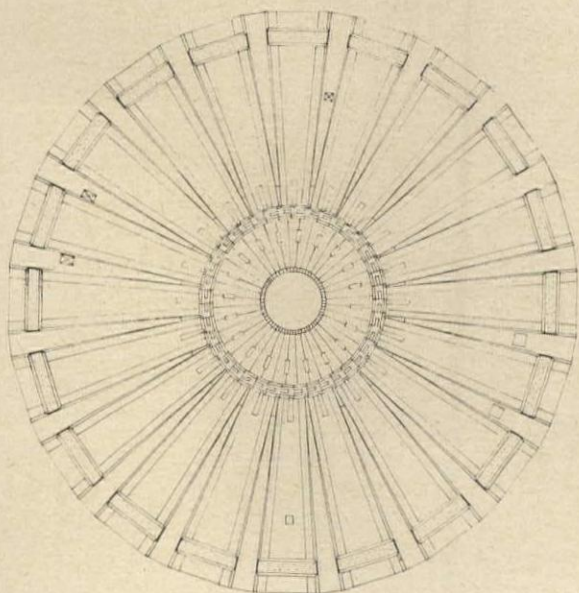
Protective Coatings for concrete, published by the Department of Commerce, is a selected bibliography that gives brief annotations and a summary of the state of the art. The report is concerned exclusively with the protective function of coating, the decorative one entering only slightly. The report may be obtained from the office of Technical Services, Department of Commerce, Washington, D.C. 20230. Title and price: AD 602 727N, price \$3.00; microfiche 50 cents. "Protective Coatings for Concrete," Purdue U. for Army, Sept. 1963, 57 pp.)

This Month's AE Section

PRESTRESSED PANELS FORM INVERTED DOME, page 198. *ENVIRONMENTAL CONTROL FOR HOSPITALS*, page 202. *BUILDING COMPONENTS: Heat From Lights Reused for Economy*, page 211. *Products*, page 213. *Literature*, page 215.



Julius Shulman photo



Two basic types of pie-shaped, double tee precast, prestressed units (40 altogether) form the roof structure. The 5½-ft-deep double haunched tee, called a "high hat" weighs 45 tons and the 3-ft-deep double tee weighs 30 tons. These members overhang the 179-ft diameter compression ring by 9 ft and the 60-ft diameter tension ring by 20 ft (which leaves room for a 20-ft diameter skylight). The roof is supported by 20, 34-ft high T-shaped columns which were precast in wood forms and left with the rough texture of the form boards, suggesting flow of forces. Prestressing was performed in two stages: first in individual members before they were released from the forms, and second between tension and compression rings

PRESTRESSED UNITS FORM INVERTED DOME

Circular structure, 200 ft in diameter, is comprised completely of precast elements.

The architect expressed this by articulating interaction of the roof and column members

Visual expression of the structure for a new convention center in Phoenix—a natural outgrowth of the system employed—provides a building that is at once both striking and logical. These merits were cited as major reasons for the selection of the building as winning entry in the 1964 Prestressed Concrete Institute Annual Awards Program (September RECORD, page 12).

The roof is an inverted concrete dome comprised of 40 pie-shaped precast, prestressed elements. These roof elements, which are 88 ft long, span from a 179-ft diameter compression ring to a 60-ft diameter tension ring. These units cantilever 9 ft beyond the compression ring and also 20 ft beyond the tension ring, which leaves a 20-ft opening for a skylight in the center.

Twenty, 34-ft-high T-shaped columns are the sole vertical support for the roof. Legs of roof units nest in notches cast in the columns. Two types of double tee members were used—20 5½-ft-deep double haunched members, called “high-hat” double tees, and 20 3-ft-deep double tees.

Early studies in the preliminary design showed that a 180-ft diameter clear span was required to solve differing requirements: conventions for 2,000 people, theatre for 2,300, banquets for 1,800, separate meeting rooms for at least 12 groups. Sliding partitions could be used to divide the large open space into combinations of smaller spaces. In addition, removable platforms could be placed in the building to provide a stepped floor for in-the-round theatrical performances.

In order to determine how the 180-ft clear span might best be provided, the architect met early with his consulting engineers. Based largely on acoustical requirements, the decision was made to use an inverted dome to avoid focusing of sound waves, with large tees spanning from a central ring to an outer one. Also the radial

fins act to break up the sound waves. The design was further refined to meet mechanical and electrical requirements.

Precast and prestressed concrete was selected for a number of reasons, among which were: (1) the highly specialized shapes could be cast in re-usable forms, eliminating almost all falsework; (2) the concrete would serve as roof deck and fireproofing; (3) Phoenix has good quality cements and aggregates and experienced contractors.

Why the two kinds of roof members, and why the double-arm columns? The architect, Perry Neuschatz explains the reasoning as follows: “We could have used flat tees throughout, but arbitrarily alternated them with the high-hat tees to double the height of the facia, but more important to quadruple the horizontal scale of the stems.

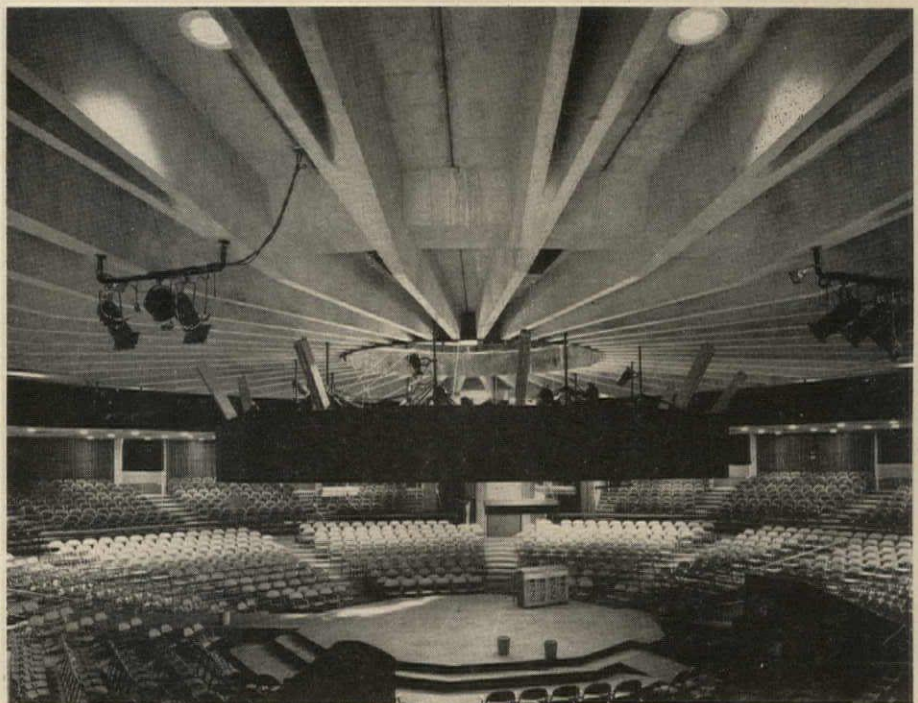
“Had we used all flat tees there would have been 80 stems of equal height; this way one sees 20 landmarks. We felt this choice to be in

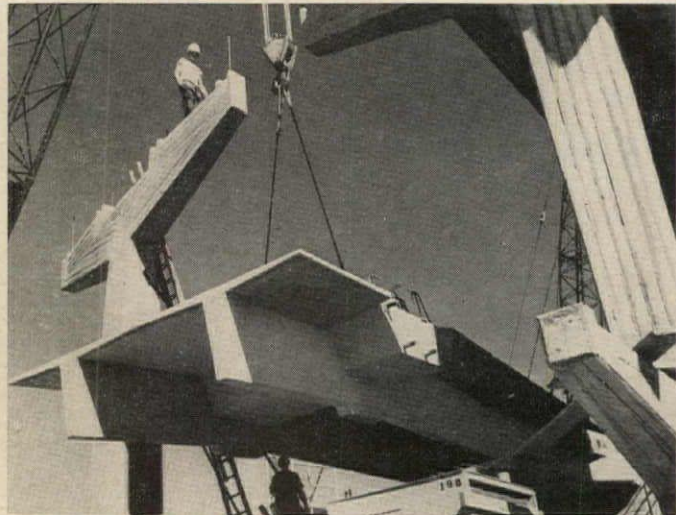
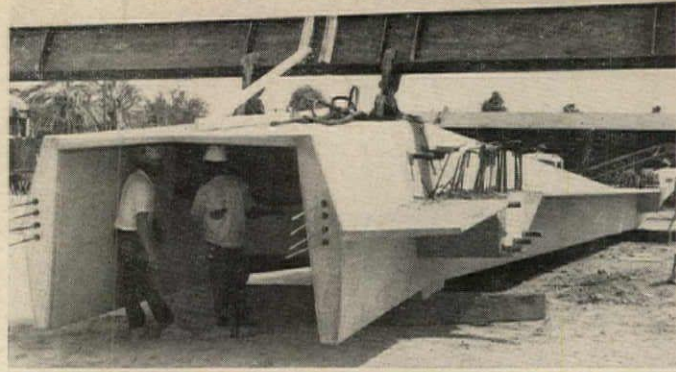
closer keeping with the scale of the rest of the building. In addition, the high-hats form natural channels for smoke exhausts at the perimeter.

“The double arm columns were used because we wanted to express the ring as a ring, and not to give it any spanning significance. The columns, then, have arms in order to reach all of the stems that need support. The arms also are expressive of the frame action of the columns in the tangential direction, which is the principal means of lateral support.

“Most important in our minds, however, was the desire to let the building look as if it were made of precast parts, without the look of poured continuity. For this reason the connections are made at points, as distinguished from large areas. The columns each have four little “hands” that grip swellings at the bottoms of the tee stems.

“Continuity was expressed only along the paths of the two rings, which are detailed with reveals to separate them from the tees.





Above left: Close-up of tension ring shows both radial and longitudinal post-tensioning cables. Above right, top: High-hat double tee unit is ready to be hoisted in place; note post-tensioning cables at end and precast section of compression ring on the side. Above right: Shallower double tee being lifted to a position atop column arms

"There is also a non-bearing-wall enclosure, even without mullions, between the top of the copper "pod" and the transom to clarify the nature of the structure."

The roof members were prestressed by post-tensioning in two stages. The first series of prestressing cables was tensioned at ground level to enable roof members to carry their own loads. The second series of cables was tensioned after the panels were in place to transmit their full dead load to the supporting rings as well as hoop tension from the tension ring. The double tees weigh 30 tons each and the high-hat tees weigh 45 tons each. Each tee is a composite, having one stem near the center and

branching at the tension ring into a double tee. Economies were realized by cantilevering the panels at both ends beyond the rings, permitting some balancing of bending moments.

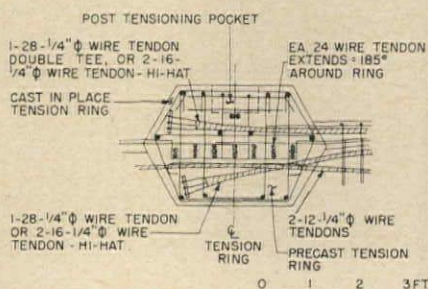
The roof panels were joined to each other by shear connections (nine No. 4 bent bars spaced 5 ft apart and welded to bars in adjacent panels) and by the compression and tension rings.

The tension ring was prestressed axially by a force of 3,200 kips to resist the tensile forces that would tend to pull it apart and crack it, and to limit deflection of the dome. Prestressing of the ring tends to raise the center of the dome and partly

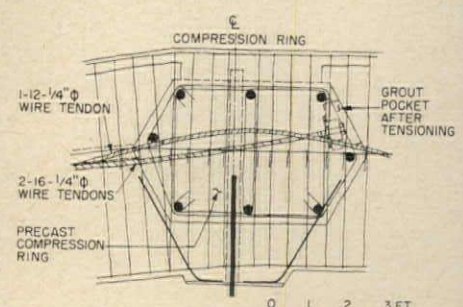
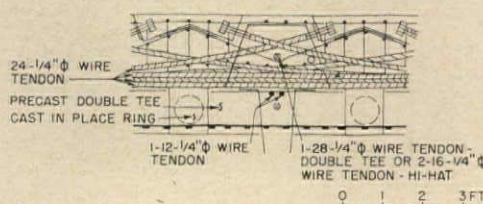
balances the downward deflection caused by shortening of the compression ring.

The tension ring is believed to be the heaviest of its type ever built. There were 280 strands used, in 20 pairs of sets of seven strands each, stressed in a prescribed sequence with the second stage of prestressing of the roof panels.

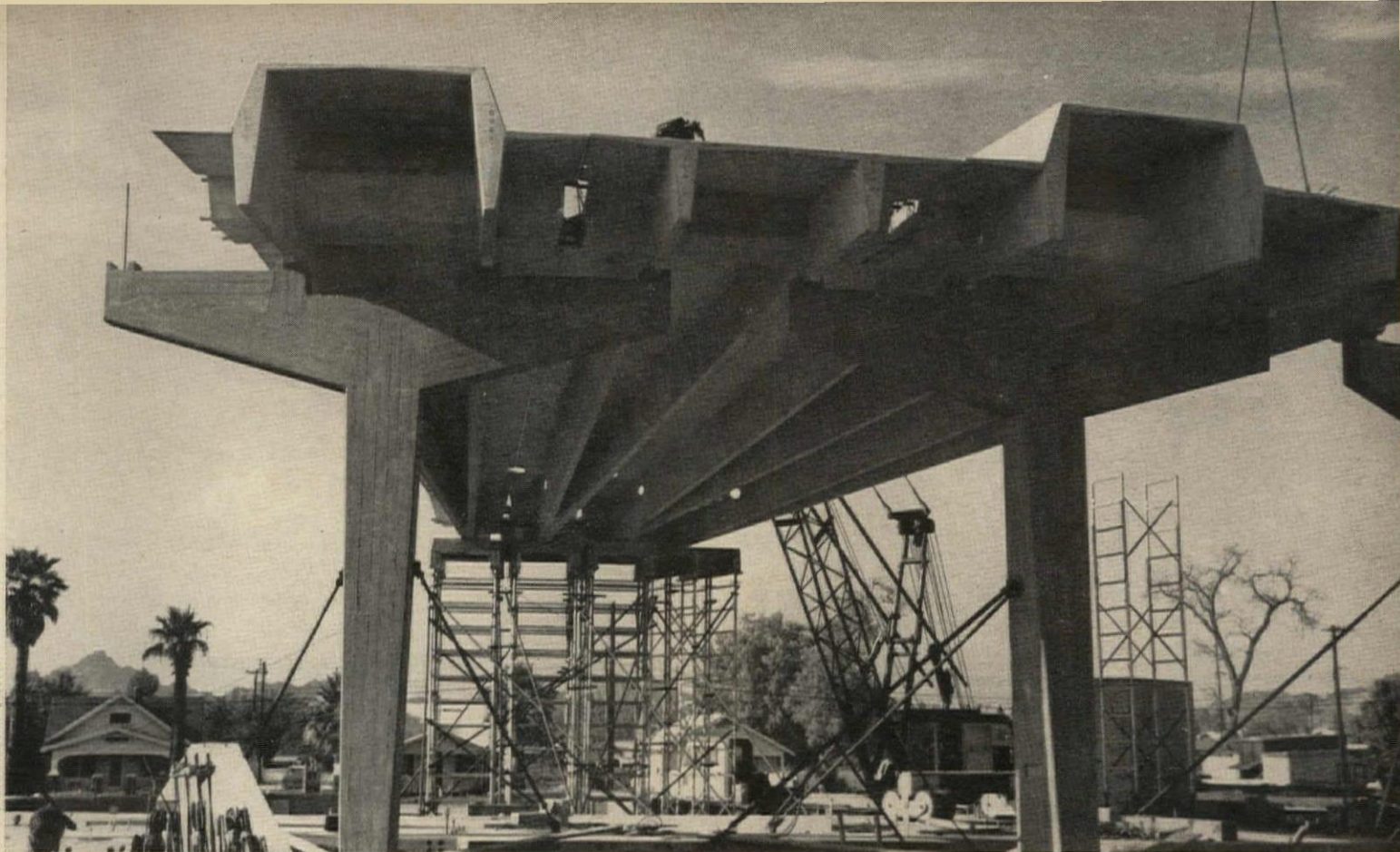
A wide range of construction methods and materials was employed, with each one best suiting its part in the building: (1) the roof members were precast and post-tensioned using 5,000 psi lightweight concrete; (2) the upper floor deck, 12 in. thick, spanning 30 ft and carrying a live load of 100 psf, was cast in place,



Left: Cross section of tension ring
 Below: Longitudinal section
 Right: Compression ring cross section



Perry Neuschatz photos



First step in the construction process was to erect two columns at the perimeter and scaffolding at the center which would then support two high-hat double tees and one of the shallower double tees. The process then continued on around the circle. The lower halves of the compression and tension rings were precast, upper halves cast in place

using post-tensioned hardrock concrete; (3) the columns and tilt-up wall panels were precast hardrock concrete with mild steel reinforcing; (4) the peripheral walls were pre-tensioned in a plant using hardrock concrete.

Molds for the roof panels were cast in concrete at slightly below grade level so that they could be buried rather than requiring demolition after all members had been cast. The columns were poured in traditional wooden forms which gave a rough surface in contrast to the smooth finish chosen for the more delicate roof members.

The columns take lateral forces in a perpendicular direction through the

moment formed by their attachment at the base and at the upper floor level; and in the tangential direction by forming a rigid frame with the compression ring.

The non-bearing walls are clad with sheet copper laminated to cement asbestos board. The non-structural nature of these walls is exemplified visually by their billowing with changes in temperature.

The only shoring used was that required to support the tension ring until the second stage of post-tensioning had been accomplished. This was estimated to have saved from 50 cents to \$1 per sq ft over a poured-in-place dome. Cost of the roof structure was approximately \$4 per sq ft.

*Convention Center for Hiway House Hotels
Phoenix, Arizona*

ARCHITECTS: *Perry Neuschatz A.I.A., Gary Call Associate*

STRUCTURAL ENGINEERS: *T. Y. Lin & Associates, Raymond Itaya and William E. Gates in charge of project*

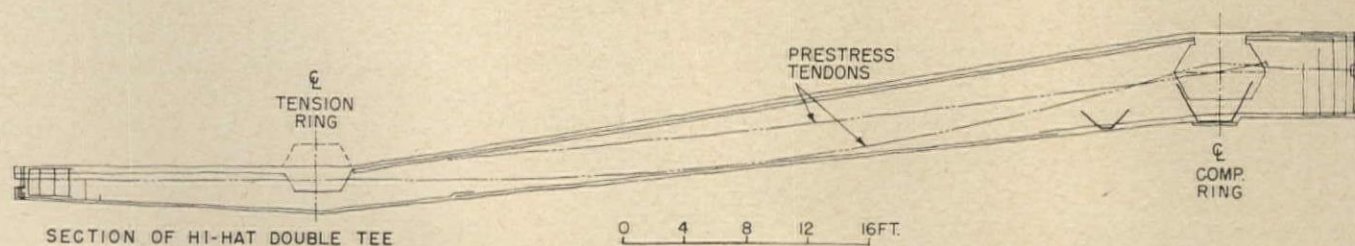
MECHANICAL ENGINEERS: *Hellman & Lober*

ELECTRICAL ENGINEERS: *John E. Silver & Associates*

ACOUSTICAL ENGINEERS: *Bolt, Beranek & Newman, Inc.*

GENERAL CONTRACTOR: *E. L. Farmer Construction Co., Inc.*

PRESTRESSING: *Western Concrete, Inc.*



Longitudinal section of high-hat double tee shows tension and compression rings and two sets of prestressing cables

ENVIRONMENTAL CONTROL IN HOSPITAL DESIGN

Cleanliness of hospitals has become an increasingly serious problem. The efficacy of present and future engineering techniques for promoting asepsis are examined here

By Alfred Greenberg, P. E.*

The areas of engineering which will have an affect on quality of asepsis are as follows:

1. Air distribution between areas.
2. Air filtration and quality of air.
3. Design of electrical and mechanical components to minimize potential contamination.
4. Design of hospital transportation and communication systems to minimize the possibility of contamination between different areas connected by these systems. These systems are generally the pneumatic tube system, general transportation conveyors, food service systems, contaminated materials and trash handling systems, vacuum cleaning systems, and elevators and dumbwaiters.

The word asepsis is defined as the condition of being free from putrefaction and toxic or pathogenic bacteria. To this, the qualification must be added that the movement of toxic or pathogenic micro-organisms between areas must also be controlled to maintain the proper aseptic atmosphere.

This article will be broken down into two sections. First we will probe those broad areas which appear to offer potentialities for providing breakthroughs in aseptic techniques and applications.

The second section will cover those methods now available for direct application on projects to improve aseptic controls in positive and effective ways.

What Breakthroughs?

Many disciplines are involved in the proper design of a hospital. Strangely, seldom does an expert in chemistry get involved in attempting to improve hospital aseptic

*The author is a consulting engineer who has been recently involved with environmental design in a number of major hospitals in which the latest techniques in asepsis have been employed. This article is based on a talk presented at the National Planning Conference on Designing for Asepsis held in New York City last May

characteristics. If the chemists could develop a solution or aerosol which would effectively asepticize the environment without any harmful or annoying side effects, then our problem might be solved.

Conceivable approaches to asepsis, some of which may seem fairly remote possibilities, are:

1. We might completely pervade the general atmosphere with a disinfectant. To my knowledge this cannot be achieved presently.
2. We could, on the other hand, use the isolation technique of shielding the supplies and personnel being moved from the contaminated to the non-contaminated area. This could be done either by locally treating the environment to contain or prevent the spread of contamination; or the personnel and supplies could be containerized or sealed. In the former method, as the supplies or personnel move from place to place, the surrounding atmosphere may be treated locally with a disinfectant or other agent.
3. The hospital could be designed in such a way that clean supplies would only go through clean areas and soiled supplies only through soiled areas, with interchange occurring at localized points which are specially treated to prevent cross infection or contamination.
4. People could be "containerized" so that they would not spread micro-organisms into the atmosphere. Each person entering the hospital might conceivably be encapsulated within a self-contained environment and effective means for working and treatment developed which would not break the seal.

The possible adverse characteristics of chemical disinfectants are as follows:

1. Possible odors which will affect efficiency and comfort.
2. Possible deleterious effects on some patients, staff and materials.
3. High cost of chemical treatment.
4. Possible errors in use due to ne-

cessity of using different chemicals in different areas or at different times.

5. The possibility that micro-organisms might become immune to a given chemical.

The last point is more valid if the over-all hospital is treated. If, however, the localized push-aside or spray method is used effectively then it may not be as critical.

Ultrasonics is at present used in central supply rooms to clean equipment and supplies. Perhaps greater use may be found for this technique in conveyor systems and other pathways handling supplies.

Nuclear radiation is finding use in sterilization of suture materials and other prepackaged operating room supplies. Thus it may have merits as an aseptic agent in the hospital atmosphere.

For processing materials and supplies, the following are presently used: chemicals; steam; hot water; ultrasonics; radiation (ultraviolet and nuclear); heated gases.

Another possible technique is ionization of the environment. It has been definitely established that some micro-organisms are killed when put in an ionic field. Ultraviolet is an ionization process.

Possibly the most important area where aseptic research can produce positive results is in the human environment itself. People most likely are the predominant carriers of hospital contamination. More infection probably is spread by people than through supplies, which are generally properly non-contaminated and packed so that their surfaces, at any rate, do not cast off contaminants during transportation and proper handling. It is difficult to know who is a carrier and who isn't, and it is difficult to effectively treat everyone.

It has been suggested that people in hospital areas wear efficient facial masks. The use of high-efficiency filtered face masks has been

tried and in several instances has been highly recommended and established as standard practice in operating suites. Many doctors and laboratory workers, however, feel that they cannot perform as efficiently by using these masks as presently designed. Of course if masks are unquestionably effective, personnel could become used to them. But if it is imperative that these people operate unfettered, without masks, then we must treat the environment so that any contamination that they may spread into the atmosphere is immediately destroyed.

I should like to come back to the possibility of enclosing patients, supplies, and personnel during transport from one area of the hospital to another. In this space age era, space helmets and suits are being developed which are becoming more and more compact and comfortable to the wearer. In a hospital it is easy to enclose or containerize supplies and materials. Enclosing the patient and staff members is more of a problem, although not an insurmountable one. Premature infants live quite well in a very aseptic atmosphere in incubators. Patients being transported to and from the operating suite could also be transported in a self-contained or sealed environment. The personnel who move them could conceivably wear head masks which would prevent any contamination entering the atmosphere.

In France, experiments are being conducted with operating tables similar to bacteriology hoods, with the patient sealed in and the surgeons working through gloved openings. The point is that it should be simpler to directly control the sources of contamination than to attempt to control the atmosphere after the contamination has entered it, and is stirred up by air and personnel movement.

The Engineering Techniques

While the ideas just discussed are possibilities for exploration, even now we can attain quite high proficiency in the engineering areas mentioned earlier: (1) air filtration; (2) air distribution between areas; (3) design of electrical and mechanical components; and (4) design of transportation and communication systems.

Air Filtration

At present it is possible to obtain air filtering efficiencies in excess of 90 per cent cleanliness based on the National Bureau of Standards discoloration or dust spot test using atmospheric air. It is even possible to obtain supply air which contains less than one micro-organism per cubic foot of air, thus reducing the possibility of contamination from the primary air source to an almost negligible degree. The potential high quality of the air filtering system makes it, if properly designed, probably the strongest link in the aseptic chain today. In fact, although we generally recommend the use of 100 per cent outside air for hospitals, we would not hesitate

considering the use of large quantities of return air if the best filtering methods were employed. At present, many codes and authorities do not allow the use of return air in many hospital areas.

Air Distribution

Not quite as commonly accepted, but nevertheless a relatively positive tool for maintaining an aseptic atmosphere, is the use of a perforated type ceiling panel air distribution system. This type of air distribution system enables the control of the air within the space so that all air movement is directed from the ceiling. And if return or exhaust registers are located near the floor at the corners of the room, the air

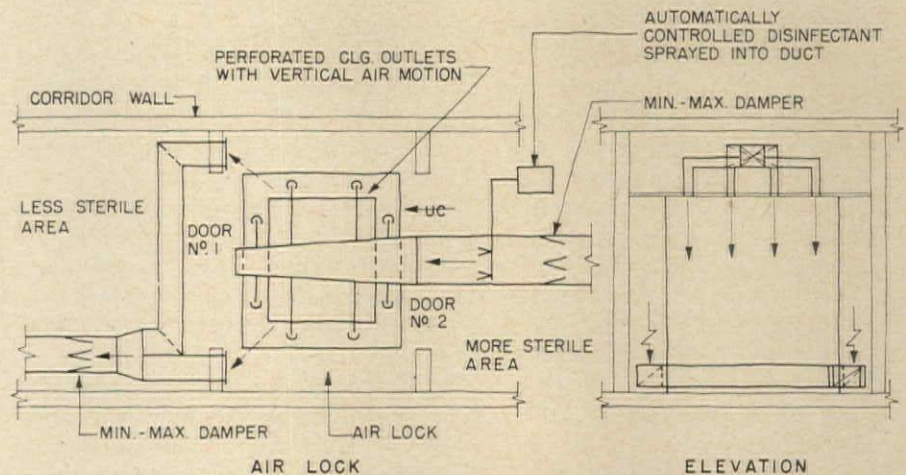


Figure 1: Air locks can be used to maintain the integrity of very clean areas. The objects within an air lock are bathed with extremely clean air to shake off contamination. The air lock must be designed so that the door into the clean area cannot be opened until the door into the less clean area has been closed

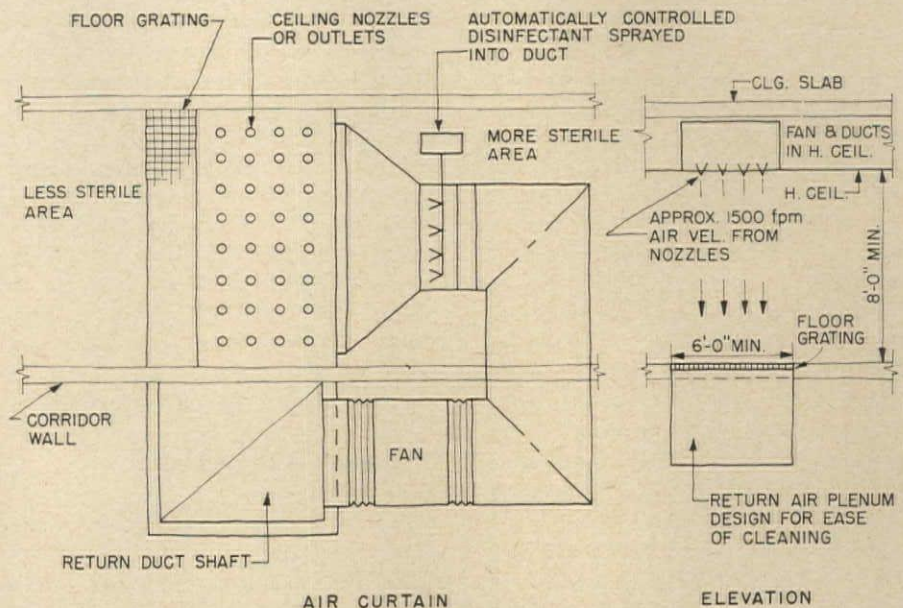


Figure 2: An air curtain will block off separate areas of the hospital. In order for air curtain to be effective, air velocities must be relatively high

movement is thus controlled so that it moves in a piston type fashion from top to bottom, minimizing air turbulence and undesirable air movements, assuming all items in the rooms are stationary.

Features of a duct supply system terminating in perforated ceiling distribution panels are desirable because the air comes into the room at specific points and it is easier to maintain the ductwork in a clean condition as compared to a complete ceiling plenum system. This balance, of course, is upset when people in the space are moving about, as they must do, to perform their jobs effectively. To prevent air movement from carrying particles and rustling paper, the velocity of the air should not exceed 50 ft per minute. From a more practical point of view, it is preferable to keep this velocity below 30 ft per minute especially in critical areas. However, people walking at a normal pace of 2 to 3½ miles per hour create an air motion equivalent to 150 ft per minute or more, depending upon the air movements, the type of clothing, and the speed at which they are walking. This illustrates that the air distribution system in general is seldom the most critical factor in creating turbulent air motion.

The most important physical aspect of environmental design in the processing and movement of patients and supplies is the constant movement from one area to another, creating possible cross contamination. The most effective way of maintaining the integrity of a very clean area is to have isolation of specific areas by means of air locks located between the areas involved. (See Figure 1.) In an air lock, the action is to bathe the equipment within the air lock with extremely clean air, thus tending to remove contamination which might be on the surface. This could be modified to include aerosols, ultraviolet lights, chemicals and other antiseptic means to assure an aseptic condition for the personnel and equipment entering the clean atmosphere. For an air lock to be effective, it is necessary that the door to the clean area not be operable before the door from the less clean area is fully closed. In addition, the cleansing air must be completely purged before the clean side door can be

opened. This would thus require a timed cycle in the air lock. Where air locks are not feasible, serious consideration might be given to air curtains (Figure 2) which will adequately blank off separate areas of the hospital but will not cleanse equipment and supplies as effectively as an air lock. In order for the air curtains to be effective, the air velocities must be relatively high, which might produce a sensation of discomfort for some patients if they were not containerized.

Another consideration with regard to the air environment is the quantity of air used within the hospital area. In operating suites, large quantities of air are furnished in order to maintain a pressurized condition within the space and obtain maximum dilution so as to preclude as much as possible the settling of contaminants on patients and supplies. Minimum air quantities are generally desirable in most other areas because they lessen the possibility of undesirable uncontrolled air movement. Of course the air quantities must always be adequate to take care of proper comfort conditions and ventilation requirements.

In order to know exactly what the condition of the air movement may be within various hospital areas, air pressure gauges are being recommended for installation in all critical areas. (This principle has been accepted and used by the Veterans Administration.) These devices indicate by means of gauges, lights and alarms when the air pressure within the space is not what it should be and enables corrective measures to be taken. Very often various doors, windows or cabinets have to be opened. These movements may disrupt the established air distribution pattern in a manner which will allow relatively unclean air to go from a septic to an aseptic area. Use of the gauges helps to pin-point the situation, alert personnel and suggest in most cases, simple and effective action.

Mechanical and Electrical Equipment

The next area of environmental design which has a pronounced effect upon the aseptic conditions of a space is design, selection and location of equipment. Lighting fixtures, for instance, should prefer-

ably be recessed without any protruding flanges. The light control devices on the lights should be of a solid type which does not allow dust to settle on the upper surfaces due to convective air motion. Any type of ceiling which is particularly susceptible to collection of dirt should be avoided. Non-aspirating type air outlets should be used. In general, all equipment should be recessed with flush covers wherever possible. This refers to valves of all types, gauges, telephone and light receptacles, and other such equipment. All items should be easily accessible for cleaning and inspection.

Transportation and Communication

The design of transportation and communications systems also will affect the quality of asepsis. Transportation systems include elevators, dumbwaiters and conveyor systems. Conveyor systems may be categorized as central vacuum cleaning, contaminated materials and trash handling, pneumatic tubes, food conveying systems and general equipment supply conveyors. We should not forget that stairways also are a transportation system. Elevators, dumbwaiters and stairways are known to upset the proper air movement within a building. Terms such as down drafts, back drafts and up drafts are used to convey the image of air circulation moving in undesirable ways, especially in shaftways.

The control of air movement through stairways in which doors are opened is difficult unless adequate measures are taken to insure that the air is balanced at all levels into which the stairways open. Self-closing doors are a must. Perhaps it may be feasible to provide alarms in case a door is kept open too long. Double doors appear to be a feasible solution. Interlocking of doors so that only one door at a time may be opened is possible, but this obviously presents some safety hazards or at least an inconvenience.

The pneumatic tube system provides many openings throughout the hospital, generally in working areas that are relatively clean. The tubes are always under a negative pressure, inducing air into the tube openings at the various stations. This might allow contamination to enter the tubes

and to collect at various points within the piping system. Tube carriers are not designed to be readily cleaned and made aseptic. Therefore, it is difficult to keep this system in an aseptic condition unless special precautions are taken at terminal points to sterilize air and carriers.

Conveyor systems should be designed with positive separation between the soiled and the clean sides of the system. All carrier boxes for conveyor systems should be covered at all times, with positive means for distinguishing between clean and soiled boxes. The system should be easily accessible for maintenance and cleaning. Cleaning of shafts is probably best done by using a steam hose. The tote boxes should be of the permanent, automatically sterilizable type. All components of the conveyor system must be made in such a way as to minimize the collection of dirt and bacteria. All areas must be easily reached for cleaning purposes. In order to irradiate the moving portions of the conveyors, it may be desirable to place ultraviolet lamps at the top of the vertical shafts.

Conveyor systems should be designed with openings for the system located within separate rooms provided specifically for this purpose. This allows more effective control of the environment and system operation. The Veterans Administration has supported pioneering studies on automatic conveyor systems in connection with a fully automated hospital now being built in Washington, D.C. The principles developed are being applied to several other hospitals throughout the country.

Food handling systems in hospitals require much more thought in relation to asepsis. Starting with the air distribution systems to kitchens, general practice now allows the use of transfer air from areas presumed non-contaminated into the kitchens so that sufficient air is available for exhaust through kitchen hoods over dishwashers, ovens, steamers and griddles. It is difficult to be sure that the transfer air coming into the kitchen is in an aseptic condition. Therefore, if transfer air is used it should be brought into the kitchen in a controlled manner and properly filtered to insure a high standard of cleanliness. Kitchen hoods are

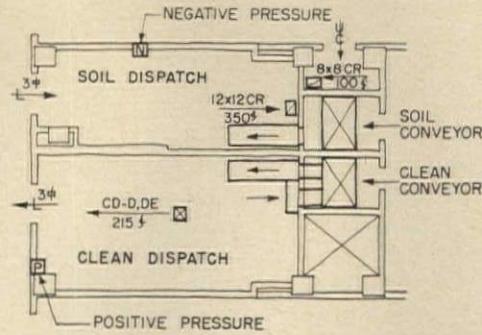


Figure 3: Conveyor systems should be designed with soiled and clean sides of the system separated. Air pressure should be negative into soiled side, positive on the clean side

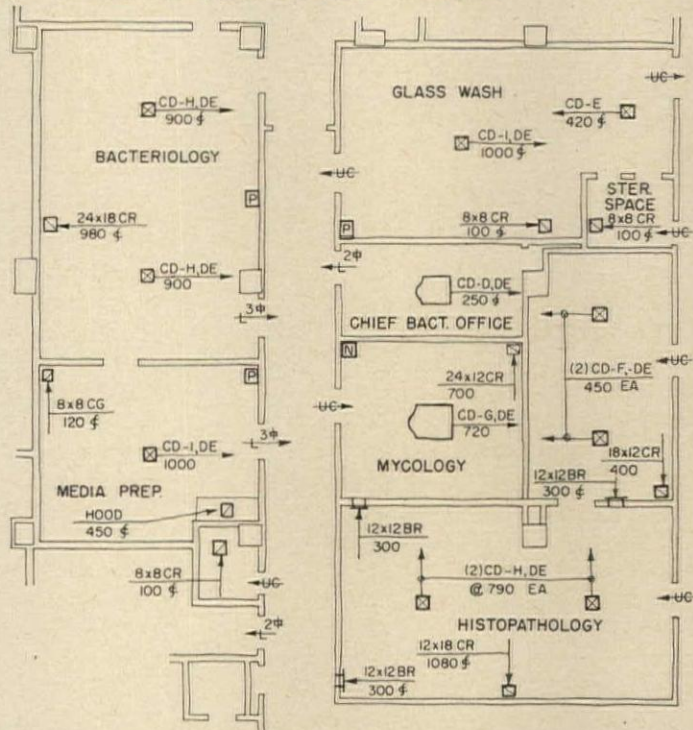


Figure 4: Spaces which will have contaminated or odorous atmospheres should be under negative pressure to prevent spread of these effects. Positive pressures, on the other hand, prevent contaminated air from entering a clean space

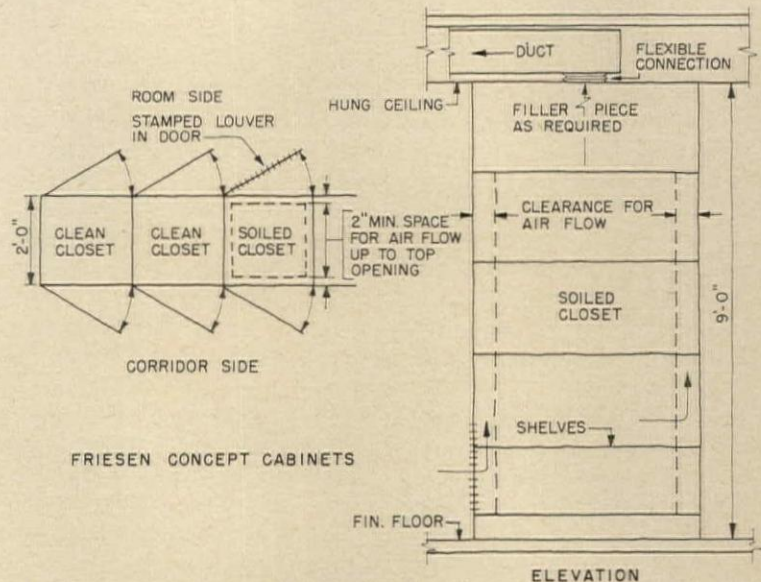


Figure 5: Soiled and clean cabinets in patients' areas help minimize contamination. Soiled cabinet has direct exhaust

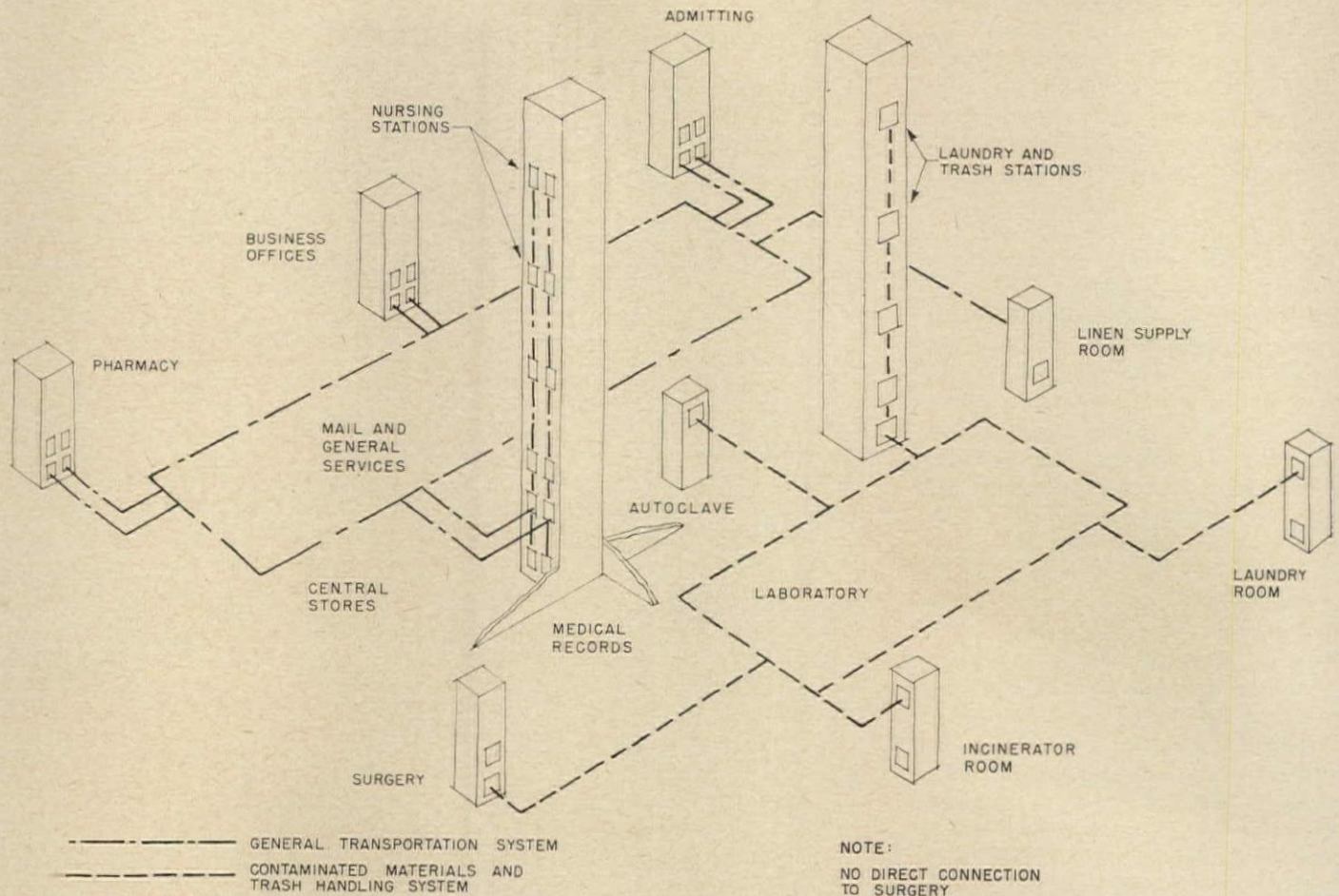


Figure 6: Diagram of an automatic transporting system, applicable to new or existing facilities

available that use less air quantities than standard hoods. These low air quantity hoods should be used wherever practicable. Very often they are even more effective than the hoods requiring larger air quantities.

Food conveyors must be designed so that there is complete separation between soiled and clean sides of the systems within the pantries and serving areas themselves. Proper handling of clean and soiled food in the kitchen must be maintained in order to prevent the contamination. Conveyors should be designed so as to minimize down drafts and other undesirable air current effects. This may be achieved mechanically or electrically to insure that the doors are closed when not in use or to prevent more than one door from being open at any given time. Kitchen personnel operations and movements must be very carefully organized and controlled, if aseptic conditions are to be maintained.

Linen chutes and incinerator chutes should never be used unless the chute doors are interlocked in such a way that only one door may be opened at any given time. In addition, the chute doors should be located in a completely closed anteroom so that anyone using the chute is not exposing public areas to any possible contamination when the chute door is opened. More effective practice is to have separate conveyor systems for dangerous or highly contaminated wastes.

The use of soiled and clean cabinets in patients areas (nurse servers) as developed by Gordon Friesen are a positive contribution. (See Figure 5.) Direct exhaust from the soiled cabinet is a necessity. The intelligent development of flow of materials and supplies to optimize operations helps to minimize spread of contamination.

Another aspect of maintenance in which cleanliness could be improved is the floor cleaning facilities. Portable type cleaning systems are not

adequate unless very high efficiency filters are used within the equipment, because these cleaners take the dirt, suck it through the cleaner into a receptacle or bag and then discharge the air back into the environment. Unless the filter efficiency is very high, a large percentage of contamination could get back into the "cleaned" areas. The use of central vacuum systems, wet and dry types, is considered to be a far superior method of cleaning hospital and controlling contamination.

Ultraviolet lamps have been tried in many unique and distinctive ways to attempt to sterilize the hospital environment. The success of ultraviolet lamps has been rather mixed because it is not always possible to get a sufficient density of ultraviolet light where personnel are present. Specialized intermittent use of ultraviolet lamps in certain areas such as air locks and certain procedures and operations should always be seriously examined for greater usefulness.



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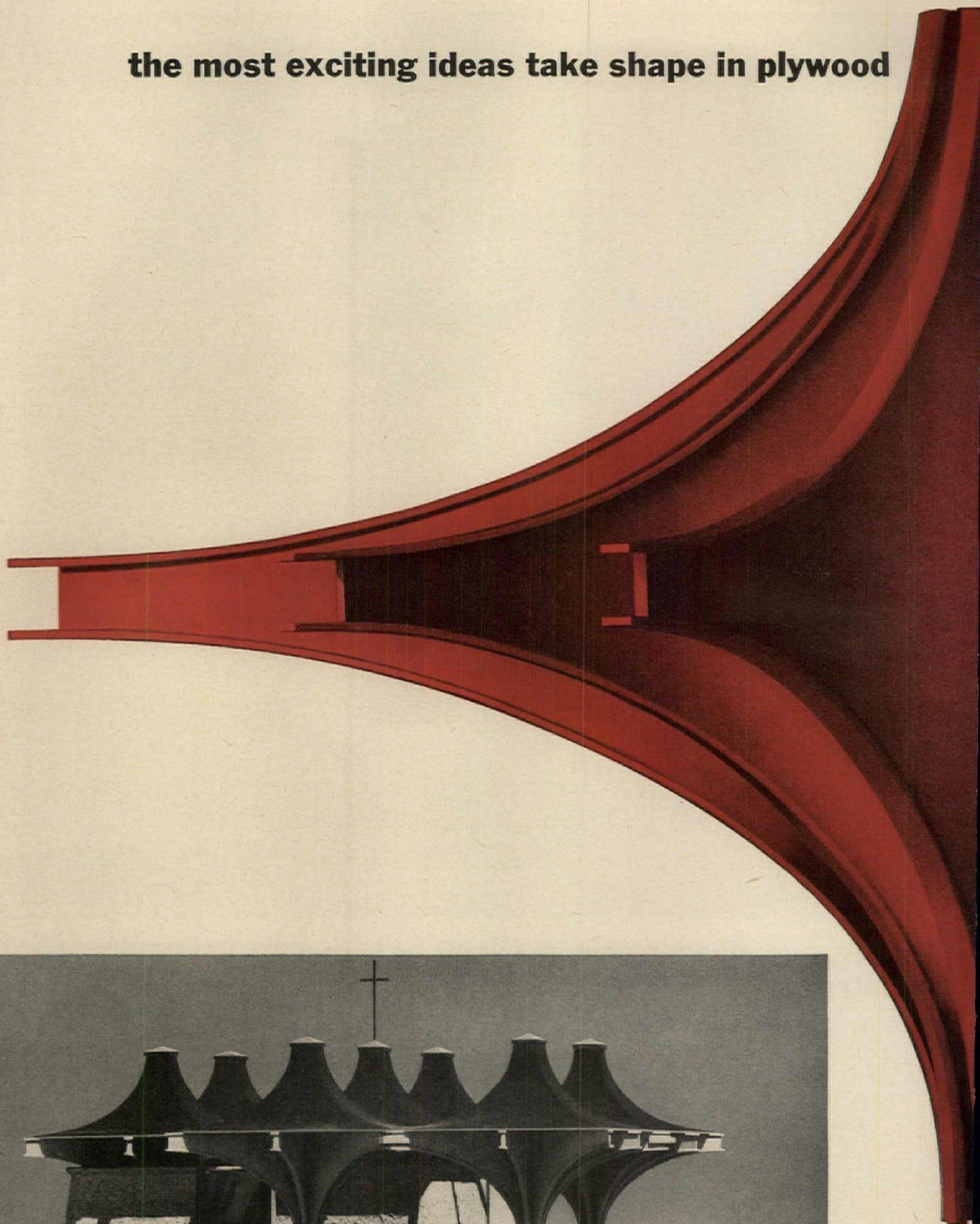
General Offices and Manufacturing Division: Hartford City, Ind. Manufacturing Distributors: Dallas, Tex.; Portland, Ore.; Oxnard, Calif.; Cortland, N.Y.; Hillside, N.J.; Lewiston, Penna.; Nashua, N.H. In Canada: Oakville, Ontario.

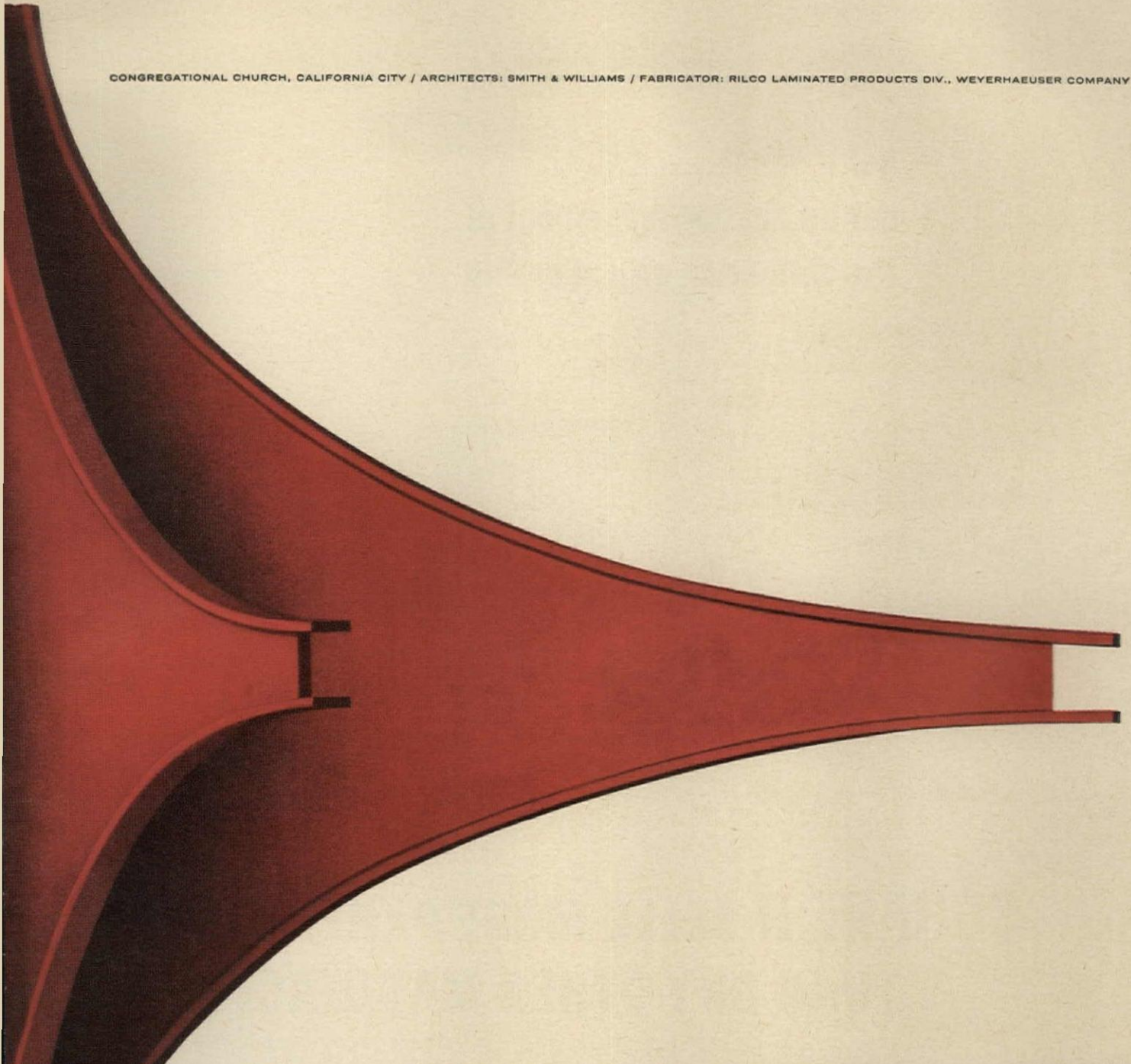


How steel and fiberglass work together
Fiberglass mid-sections permit building interior to be bathed in soft natural daylight, provide durable weather-proof protection. Steel top and bottom sections absorb mechanical stresses, support door load without vertical sag, resist the effects of rough handling.

For more data, circle 102 on Inquiry Card

the most exciting ideas take shape in plywood


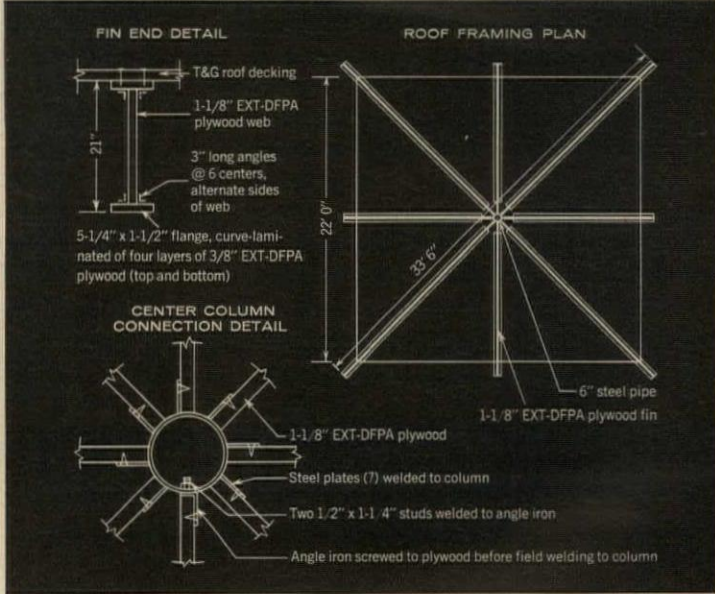


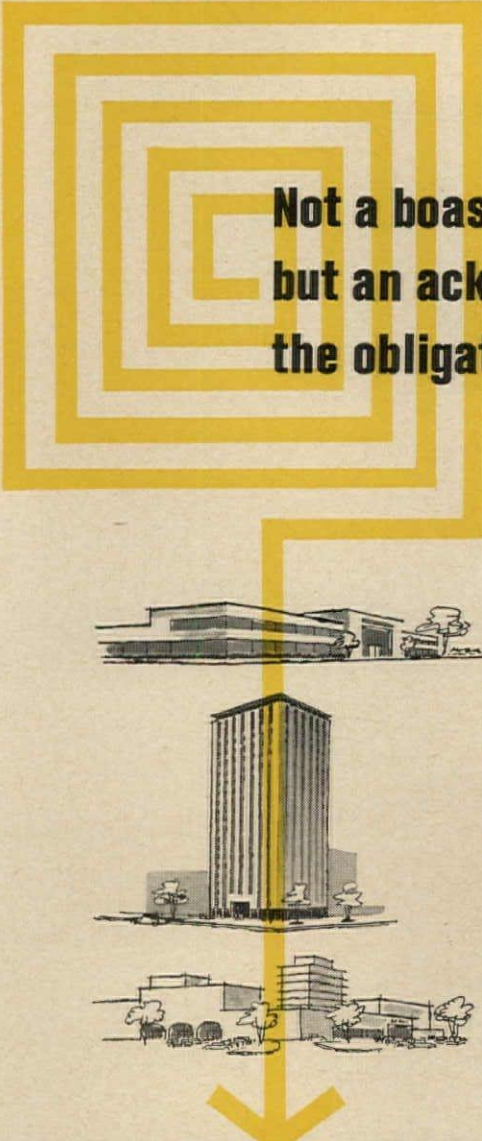


Each roof element in this manmade oasis in the California desert is supported by eight graceful plywood fins. They act as vertical diaphragms cantilevered from a center column. ■ Plywood was used instead of steel to carry out this complex design because: 1. It cost half as much. 2. It is more stable in extremes of desert heat. 3. It could be shaped to fit right at the site with ordinary tools. ■ This church is a typical example of the way plywood can cut costs and do a better job in executing sophisticated designs. For information, write us at Tacoma, Wash. 98401 (USA only).

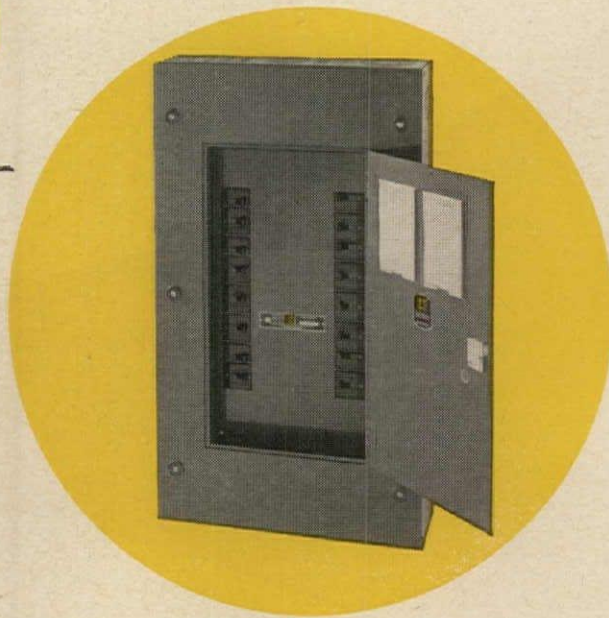
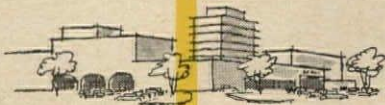
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**Not a boast...
but an acknowledgement of
the obligation of leadership**



SQUARE D SELLS MORE PANELBOARDS THAN ANY OTHER MANUFACTURER

• There are three reasons for Square D's predominance in the panelboard field...

First, the line is complete. Whether the requirement calls for AC or DC or both; lighting or power distribution or both; fusible or circuit breaker; plug-in or bolted construction; Square D has the right panelboard for practically any given job.

Even more important is the quality which

is built into every Square D panelboard—difficult to define but a very important combination of many details.

Availability is always an important factor—and here Square D rates especially high. Regional manufacturing and assembly facilities for "specials," combined with a national network of stocking distributors for standard panels, provide exceptional delivery and service.

**write for Bulletin SD-126. It tells the quality story in detail
Square D Company, Mercer Road, Lexington, Kentucky**



SQUARE D COMPANY

wherever electricity is distributed and controlled

For more data, circle 103 on Inquiry Card

HEAT FROM LIGHTS RE-USED FOR ECONOMY

By Robert B. Darling, Executive Sales Director, Barber-Colman Company

With levels of lighting becoming higher and higher, the heat generated by the fixtures is now often greater than the heat lost by the building in the winter. Oftentimes heat from lights is the greatest factor in determining the cooling requirements in winter as well as summer.

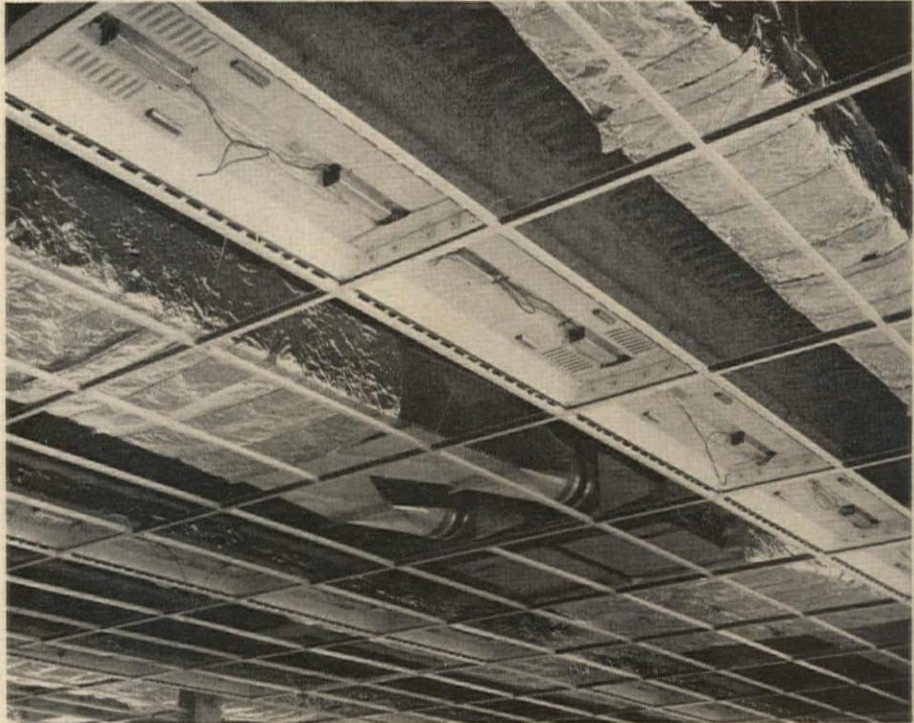
Electronic Associates, Inc. approached the problem in a different manner when they designed their new 99,000 sq ft building at West Long Branch, N.J. This building is to be used for executive offices and for designing and testing computer systems. It is lighted to a level of 125 foot candles which is the equivalent of between 5 and 6 watts per sq ft.

Removing the Heat

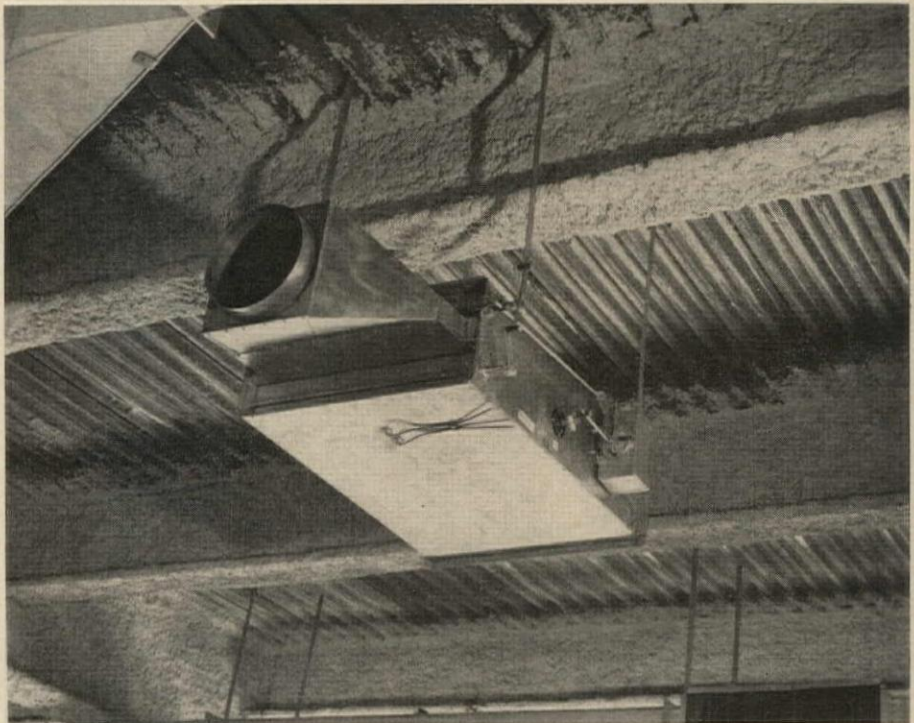
Obviously, if the heat from the lighting fixtures can be kept out of the occupied space, the air-conditioning requirements will be greatly reduced. After considerable study, heat-extractor type lighting fixtures were selected. These units draw return air from the room into a slot at one end, pass the air through a dirt trap, then across the lamps and discharge it at the opposite end into the ceiling cavity. Air motion across the lamps "wipes" heat into the ceiling cavity. This reduces the air-conditioning load for lighting by 65 per cent, correspondingly reducing conditioned air requirements.

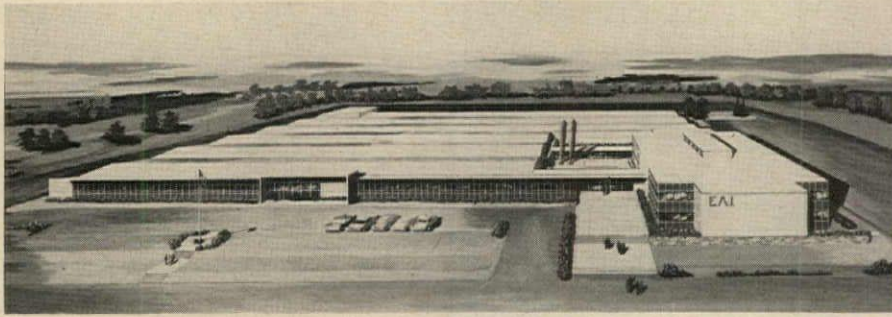
Trapping "Waste" Heat

The air trapped in the ceiling cavity is quite warm, as high as 90 F. By installing a Jetronic Induction Unit, for each of the 38 zones in the building, this hot air is used as a source for reheat or tempering. Each unit is supplied with only a single, cold-air, medium-pressure duct and is placed in the ceiling cavity as near as possible to the conditioned zone

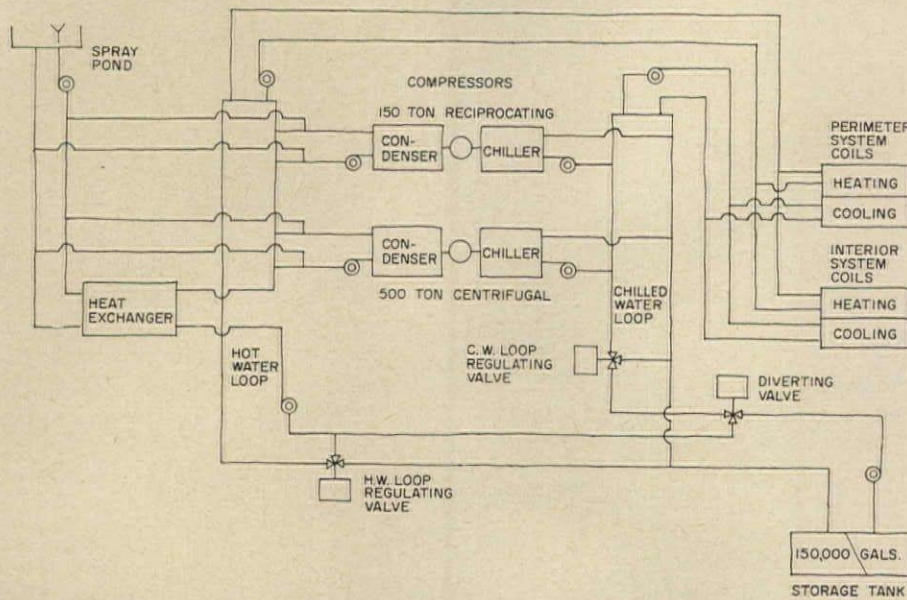


Above: Room air is drawn through fixtures to remove heat. Below: Air in ceiling cavity, which reaches 90 F, is pulled into induction unit to temper supply air





Rendering of Electronic Associates building which has 125 footcandles of light. Heat from lights is used for tempering and for heating the exterior zones. The architect was Bernard Kelenyi and the consulting mechanical engineer, Thomas Beers



Flow diagram of heat pump system which picks up heat from lights for economy

to be served. The induction unit can induce up to 50 per cent hot air and mix it with cold primary air to provide temperature variations to meet conditioned space comfort requirements.

The induction system, by using the hot air in the ceiling before it is returned to the main fan system, eliminates the hot ducts of the conventional dual duct air system and coils and piping of the conventional single duct, reheat systems.

For years architects have complained about the unsightliness of room thermostats and engineers have complained that room instruments are difficult to locate and be compatible with architectural space treatment. Again, a new approach was taken in the Electronics Associates planning. A small, pencil-sized electronic temperature sensing element is being placed in the return air inlet in a representative fixture.

Using the Heat

When the engineering studies were

completed it was found that the heat given off by the lighting fixtures was equivalent to the heat lost by the building when the outside temperature was as low as 20 F. Because each induction unit has a maximum induction capacity of up to only 50 per cent return air, and because of the unlikelihood of all units using maximum induction simultaneously, the system design utilizes only 30 per cent return air for induction purposes and brings back 70 per cent of the return air to the central mechanical system. Consequently, ways and means were studied to find how this hot air could be used to heat the building more economically during the winter season.

An all-air system was developed to recirculate the return air from the interior of the building directly to the exterior or skin of the building. During the summer cycle, this air is cooled by means of the conventional refrigeration system and during the milder parts of the heating season

the hot, return air is used to heat the exterior of the building. Only during the coldest part of the winter is any auxiliary heating needed.

The refrigeration equipment became an excellent source of heat for the winter cycle. The hot air from the interior of the building is passed across the cooling coils, providing hot water in the condensing coils which can be used as a heating medium. This is different from the conventional system which throws the condenser heat away by way of a cooling tower.

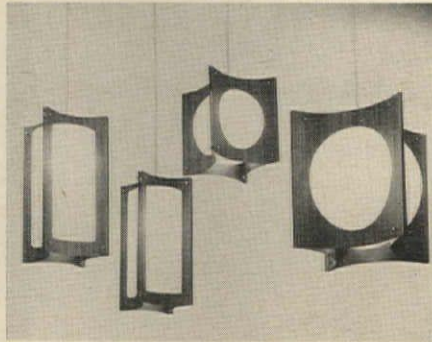
The present refrigeration equipment is sized to handle additional buildings. It consists of a 500-ton centrifugal compressor to be used for summer cooling for the new office building and future additions, and a 150-ton reciprocating compressor for winter operation as well as for emergency use. The reciprocating machine was chosen for its ability to furnish hotter condenser water (130 F) when the outside temperature is too cold for hot return air alone to heat the building. The use of these two machines solved both the heating and cooling requirements during normal day operations, but because heating would be required when the building is not occupied and the lights are turned off, a source of heat storage had to be found.

Storing Heat

A 150,000 gallon underground water storage tank designed originally for fire protection proved to be an excellent medium for storing heat to be used during the night cycle or other unoccupied periods. The heat not used for exterior zones during the day is diverted to this 150,000 gallon tank and is stored for reserve requirements. It is used in two ways, either directly circulated to the heating coils when the storage water is hot enough to satisfy the need of the exterior zone, or it is circulated through the chiller to provide a false load on the evaporative side of the system, causing the condenser to supply hotter water. Exhaust air was also recognized to be a heat source. A freeze-proof liquid is merely circulated through two coils, one in the exhaust air and one in the fresh air duct. In this manner the heat in the exhaust air is used to pre-heat the fresh air as it comes into the building.

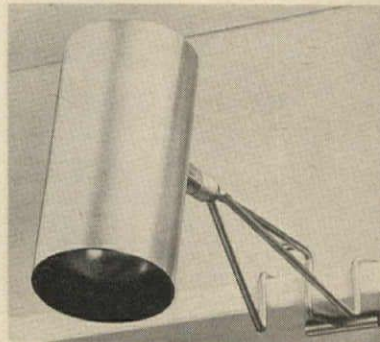
For more information circle selected item numbers on Reader Service Inquiry Card, pages 303-304

NEW DESIGNS FOR INDOOR AND OUTDOOR LIGHTING



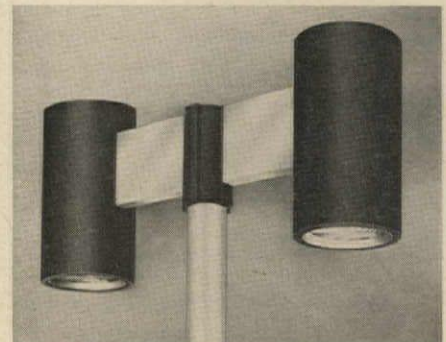
Pendant Coordinates, a new range of hanging lights by Lightolier, are designed to give softly diffused lighting effects in homes and public buildings. The models illustrated consist of luminous spheres and cylinders framed by concave panels of walnut veneer on the outside and vermilion and slate gray inside. Polished brass is used to accent the corners of each panel. Other designs in the series include a smoked glass goblet-shaped shade over an inner cylinder of lead crystal, and wooden grid frames with spun glass panels. *Lightolier, 346 Claremont Ave., Jersey City, N.J.*

CIRCLE 300 ON INQUIRY CARD



Koch and Lowy's 1100 miniature lamps are available with a number of unusual wall, desk and ceiling fixtures. The *W 1115* model illustrated has a mar proof shelf clip which extends 8 in. and adapts to all standard shelf sizes. Several models with walnut and teak backplates are particularly suitable for use as bed lights. The lamps, which use the standard 30 or 50 watt R 20 Reflector bulb without transformer, are very moderately priced. The cylindrical reflectors are 3 by 6 in., in diameter. *Koch & Lowy Inc., 201 East 34th St., New York, N.Y.*

CIRCLE 301 ON INQUIRY CARD



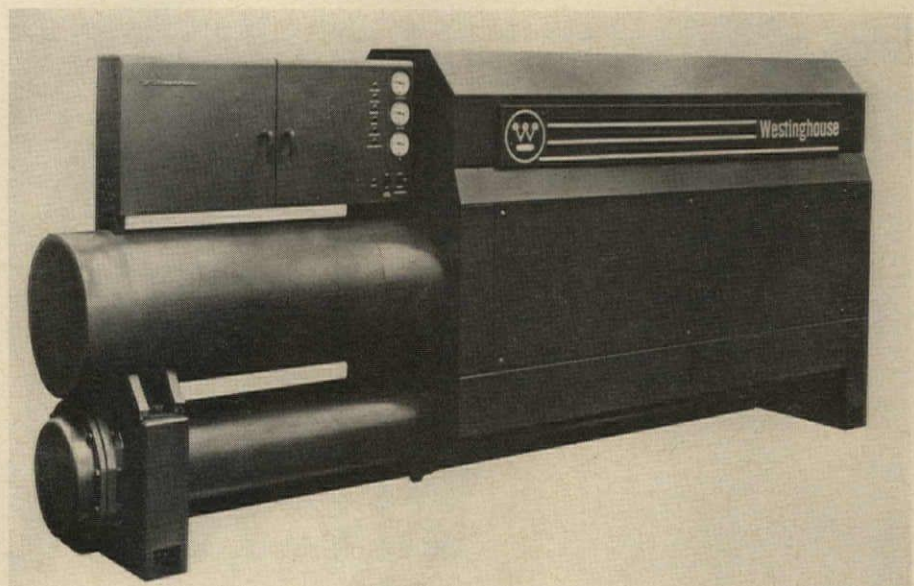
A recent development in outdoor lighting is the *New 3 Line* series of cylinder post lights by McPhilben. All models are of unitized construction of precision cast aluminum with corrosion resistant finish. Ten- or 14-in.-deep housings are available with integral cast open baffles, prismatic lens, louver guard or reflector intensifier. Incandescent or mercury-vapour; single, twin or quadruple units can be specified on 8-, 10- or 12-ft poles. Fine satin and matte black anodized finishes are available. *McPhilben Mfg. Co. Inc., 1329 Wiloughby Ave., Brooklyn 37, N.Y.*

CIRCLE 302 ON INQUIRY CARD

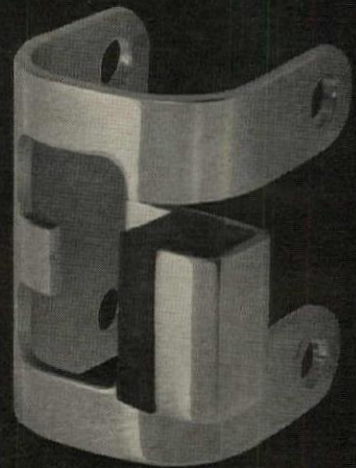
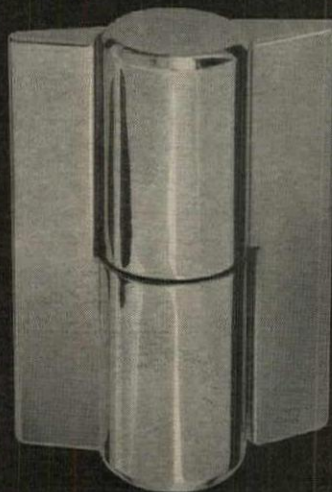
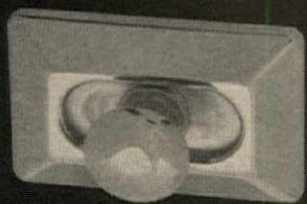
CHILLING SYSTEM AVAILABLE IN PACKAGED FORM

The first completely packaged, direct expansion, hermetic type centrifugal liquid chilling system has been developed by the Westinghouse Air Conditioning Division for use in both commercial and industrial structures requiring central cooling systems. Sizes from 100 to 140 tons are now being produced and the line will be extended to larger sizes in the future. The unit is easy to install and operate and eliminates many of the complicated components used in conventional systems. An operating test is carried out prior to shipment in customer's conditions. *Westinghouse Air Conditioning Division, P.O. Box 510, Staunton, Va.*

CIRCLE 303 ON INQUIRY CARD
more products on page 226



BRASS



Standard
equipment!
Solid Brass
Hardware

Another long-life feature for Weis Toilet Compartments: *solid brass hardware.* Solid brass plus the added protection and beauty of brilliant chromium plate. The latch, which continues to feature lift-free emergency access, is now recessed within the door. The stainless steel

bolt automatically retracts if the door is slammed against the new wrap-around keeper and rubber tipped bumper. Handsome surface mounted hinges, proven through long service, give either 180° outswing or inswing action. *Solid*, these compartments by Weis with solid brass hardware.

Write for Catalog No. 36 See Weis in Sweet's



WEIS

For more data, circle 104 on Inquiry Card

For more information circle selected item numbers on Reader Service Inquiry Card, pages 303-304

PRE-MOLDED JOINT FILLERS

A new use and specification manual for pre-molded joint filler materials in concrete construction has been made available by the Concrete Joint Institute. This eight-page color brochure contains information on the make-up of pre-molded joint fillers, how to choose the correct joint filler, data on applications and points of use, and advice on installation. The brochure also contains a recommended formula for computing the anticipated expansion of concrete and for computing the desired joint thickness to be used on any given job. ASTM specifications on both the asphalt and fiber types of pre-molded joint fillers are included. *Concrete Joint Institute, 228 No. LaSalle St., Room 1604, Chicago, Ill., 60601*

CIRCLE 400 ON INQUIRY CARD

SELECTING LATH AND PLASTER SYSTEMS

The Gypsum Association has released a new kit designed to help architects select gypsum lath and plaster systems with greater assurance of visual performance. The kit consists of three technical manuals and a cover jacket which explains how to use the new method. The three manuals included in the kit are "Fire Resistance Design Data," "Performance of Lath and Plaster," and "Recommended Specification—Gypsum Plastering." *Gypsum Association, 201 N. Wells St., Chicago, Ill.*

CIRCLE 401 ON INQUIRY CARD

FLEXIBLE CHURCH BUILDINGS

"The Mathematics of Space in Churches," a new brochure intended to help church planners and administrators get maximum use of available space, has been published by New Castle Products, Inc. Set out in the form of problems and solutions, the four-color brochure pictures actual installations to illustrate how various types of folding doors and partitions, which serve as sound and sight barriers, can provide versatility in the use of church building facilities. *New Castle Products, Inc., Box 353, New Castle, Ind.**

CIRCLE 402 ON INQUIRY CARD

STAIR CONSTRUCTION

Stair builders have announced the availability of a series of bulletins, a catalog and an installation manual giving information on their reinforced concrete stair units. The bulletins contain drawings, photographs and technical information on actual building projects in which Stairbuilder units have been installed. The catalog sets out the advantages of the company's one-piece, prefabricated, steel reinforced stair units, and explains how the uniformity of permanent metal risers was achieved. It also shows how protection of nosings by risers enables the stairs to be installed at an early stage in a job, giving site workers immediate access to the upper floors of the structure. The installation manual is fully illustrated with photographs and diagrams and describes the relevant construction procedures in detail. *Stairbuilders, Route 66, McCook, Ill., 60529*

CIRCLE 403 ON INQUIRY CARD

COATING TO PREVENT CONDENSATION

Seculate, a new coating which the company claims prevents condensation in mills, bakeries, food plants, air-conditioning ducts and a number of other applications, is fully described in an eight-page brochure. Properties of *Seculate*, methods of application, information on how to determine the correct thickness and photographs of typical applications are all included. *Chemical Concentrates, Division of Baker Industries, Inc., Fort Washington, Pa., 19034*

CIRCLE 404 ON INQUIRY CARD

STEEL AND GLASS PARTITIONS

This new business interiors brochure illustrates the use of steel and glass partitions for dividing work areas. Photographs showing actual installations are used. Library shelves, counters and over-file storage units are also displayed in the brochure. *Arc-Apex Equipment Company, Inc., 443 Park Ave. South, New York 16, N.Y.*

CIRCLE 405 ON INQUIRY CARD

ACOUSTICAL CEILING CARE

A primer on the maintenance of acoustical tile has been prepared by the Acoustical Materials Association. Called "How to Clean and Maintain Acoustical Tile Ceilings," the booklet is divided into three parts: general maintenance, heavy cleaning, and painting, and gives suggested techniques for each of these operations based on current recommendations of manufacturers. *Acoustical Materials Assoc., 335 East 45th St., New York, N.Y., 10017*

CIRCLE 406 ON INQUIRY CARD

GUIDE ON JOINT DESIGN FOR RUBBER SEALANTS

The proper design of construction joints to take maximum advantage of elastomeric sealing compounds without exceeding their capabilities is examined by an architectural consultant in a new six-page guide. Sections are included on properties of elastomeric sealing compounds, joint movements due to temperature changes, and description of conditions in various common joints and the action of various elastomeric sealants in the dynamics of these joints. *General Electric, Silicone Products Division, Waterford, N.Y.**

CIRCLE 407 ON INQUIRY CARD

CATALOG OF BANK FIXTURES

An expanded group of design coordinated fixture components, perpetual calendars, pen sets, pens and signs for use in banks are included in the recently published catalog for 1964. *Kerr-Changepoint, 122 N. Madison, Tulsa, Okla.**

CIRCLE 408 ON INQUIRY CARD

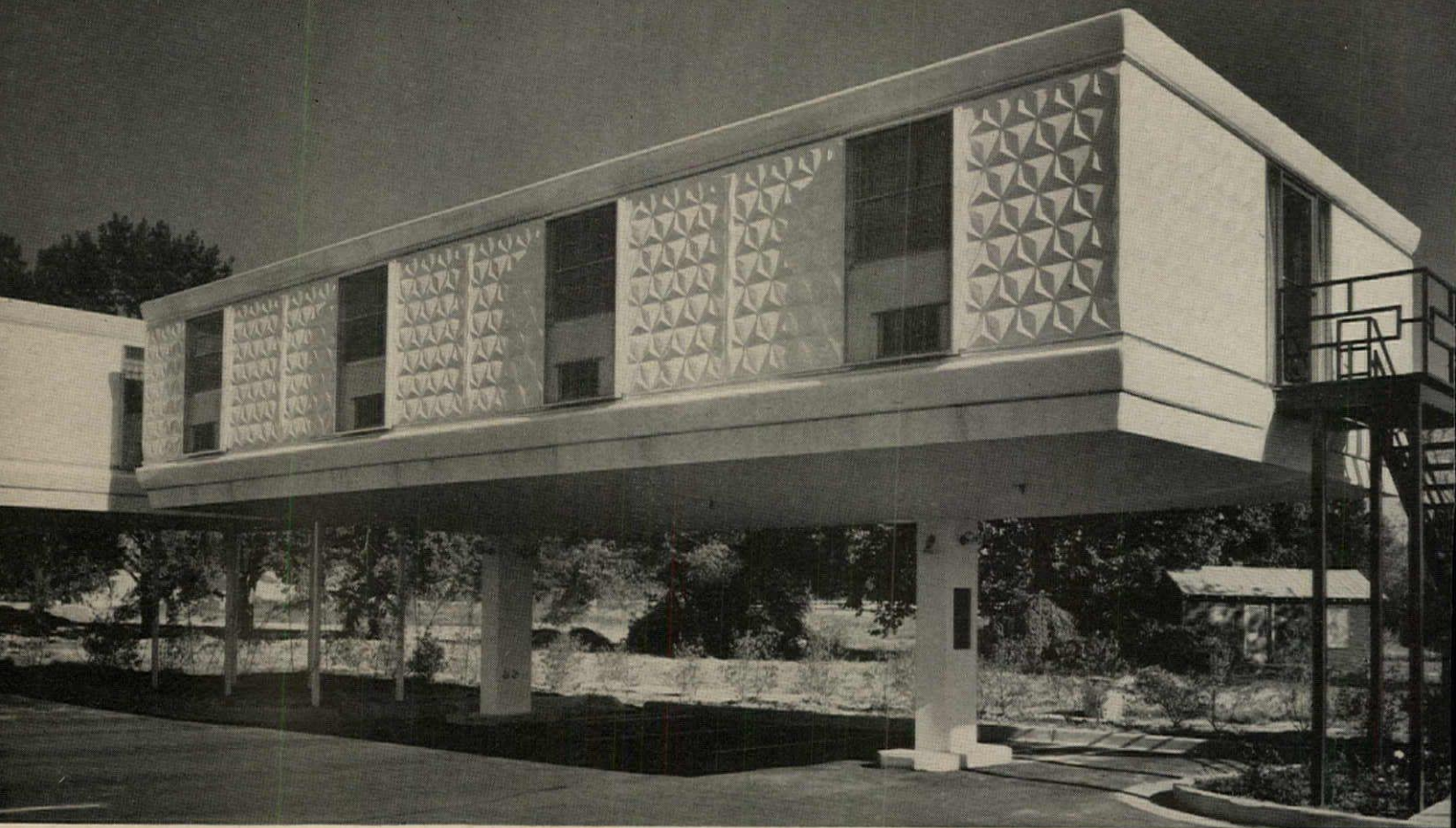
THE FUNCTION OF GLASS

"Creative Ideas in Glass" is a 12-page booklet published as a review of the function of glass in commercial buildings such as offices, banks and shopping centers. Photos of buildings exemplifying large scale use of glass are included. *American-Saint Gobain Corp., P.O. Box 929, Kingsport, Tenn.**

CIRCLE 409 ON INQUIRY CARD

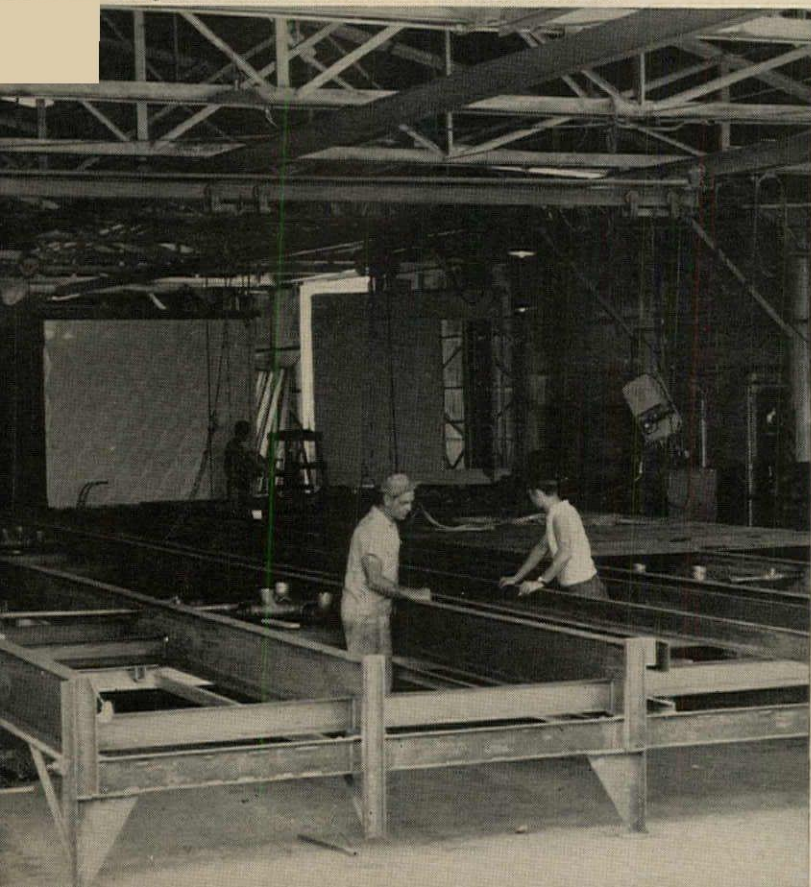
* Additional product information in *Sweet's Architectural File*

more literature on page 286

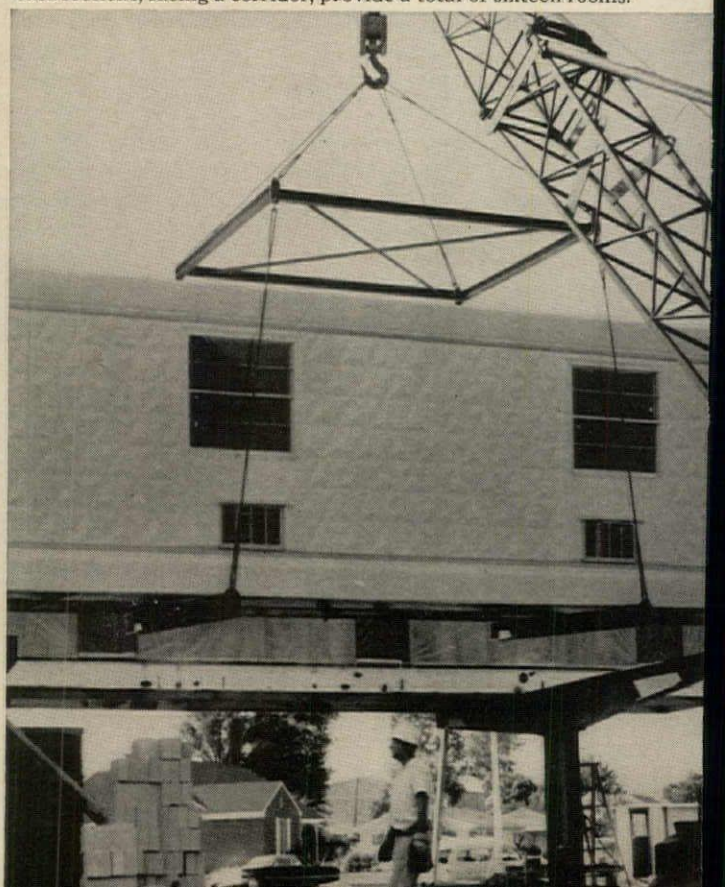


View of recently completed Holiday Inn Jr. Motel, Memphis, Tennessee, supported by two main pillars.

Frame for each section consists of 14" Light Beam longitudinal members and Junior Beam cross ties overlaid with metal deck.



A four bedroom section being swung into position by crane. Two duplicate sections, facing a corridor, provide a total of sixteen rooms.



A new Holiday Inn Jr. starts here... at 50% less cost



Steel's Symbol of Strength,
Long Life and Economy

Talk up one more wonder for this age of instant living." Holiday Manufacturing Company, a division of Holiday Inns of America, Inc., has created complete, factory built, transportable motel units!

Four-room sections of the new Holiday Inn are transportable to the site on demountable running gear and pulled by a back tractor. Each 56' x 10' compact room-unit is fully self-contained, with its own plumbing, heating, air conditioning, wiring and furniture—down to the rug on the floor! Support for the Junior, which must resist deflection for both cantilever loading when in place and over the road haul, is fabricated from three 56' 14"-17.2# J&L Light Beams. The floor is a steel deck welded to the Light Beams and overlaid with 3/4" plywood.

Two four-room sections, which can be arranged in multiples, are positioned at the site to face a 6' hallway. The corridor support is prefabricated from 6" Junior Beams and bolted to the 14" Light Beams supporting each Junior unit.

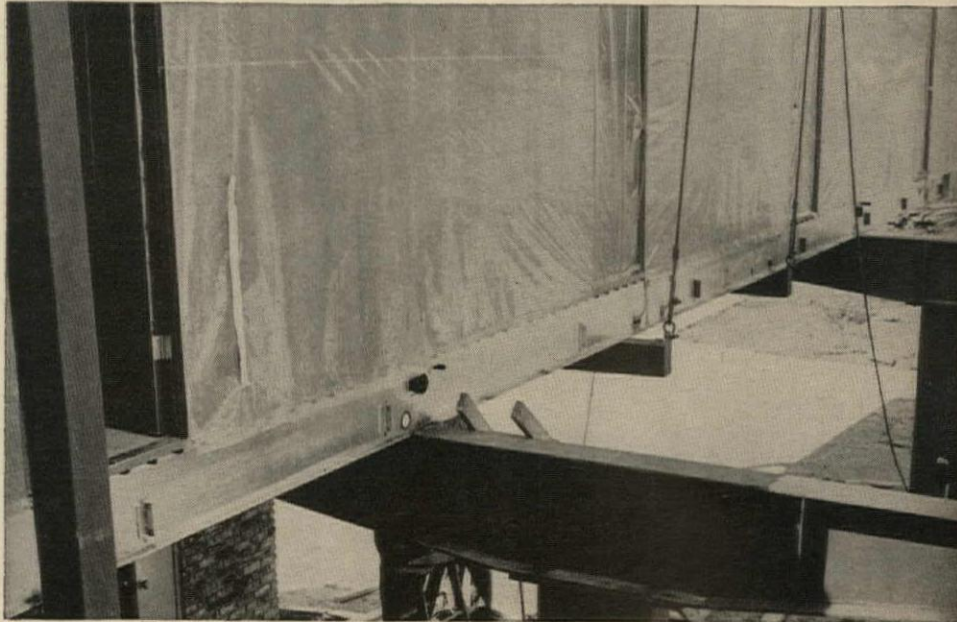
The cost of building these units, Holiday estimates, is 50% less than constructing a conventionally built motel. Savings stem from factory production methods, ease of transportation and reduced on-site construction costs. For markets, HIA looks to smaller towns, not geared to plush super-hotels. Possible sites include airports, truck stops and hospitals.

The Holiday story proves again that creative ingenuity is to be found everywhere on the American scene... and that J&L Steel can be an important factor in giving substance to the designer's vision.

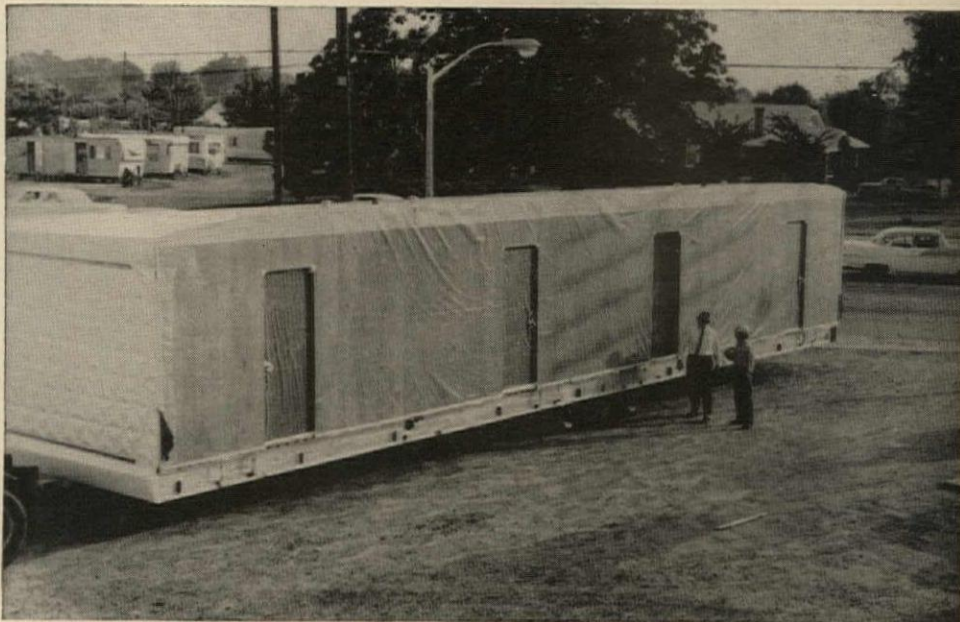
**Jones & Laughlin
Steel Corporation**



Neway Center, Pittsburgh, Pennsylvania 15230



Bolting the unit into position. All savings are the result of factory production methods, plus ease of transportation and reduction of on-site construction costs.



Mounted on demountable running gear, a four-room section is ready to roll. Each unit is fully self-contained, with its own utility equipment and furniture.

For more data, circle 105 on Inquiry Card

Quarry Tile of Special Shapes


The unique beauty of Ludowici special shapes shale flooring tile is now practical for your most budget minded client. Because of greatly increased demand, price reductions have been made on all special shape styles. No difference in quality or texture.

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Provence, Valencia and Renaissance patterns available in brushed or smooth, in red or fire flashed colors.

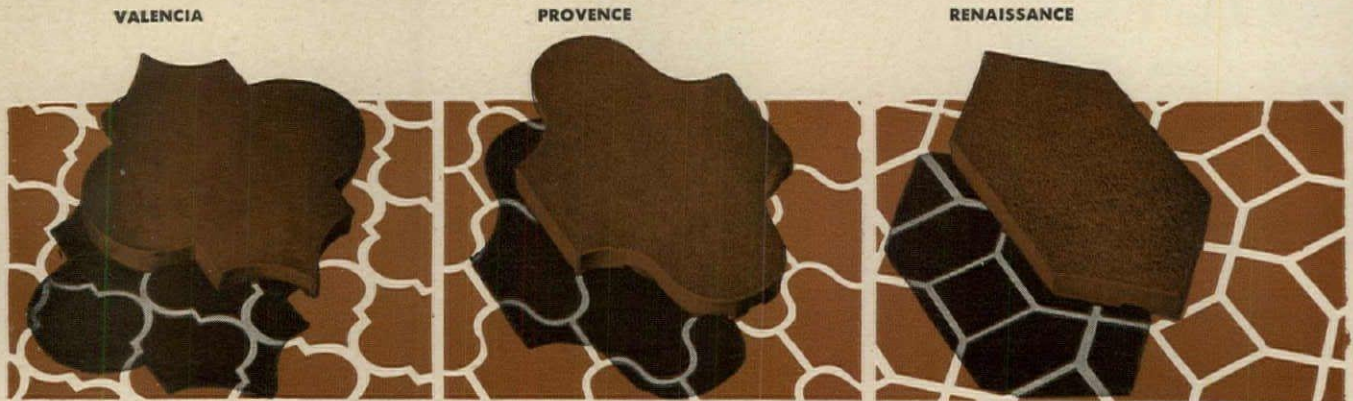
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HAWAII REPRESENTATIVES: Lewers & Cooke, Ltd., Honolulu



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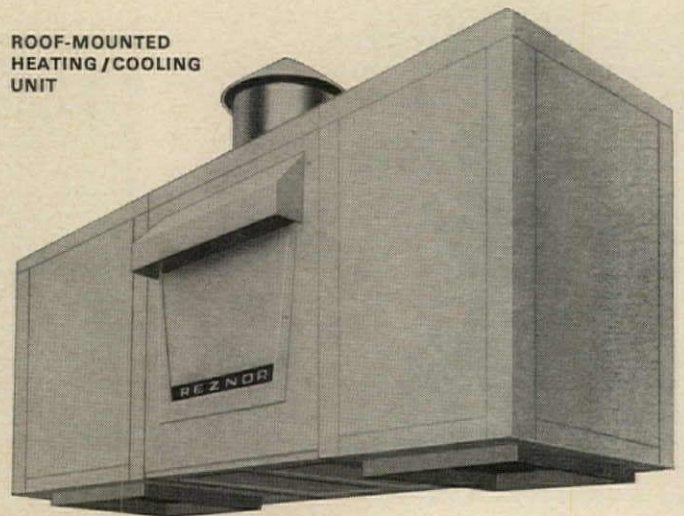
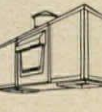
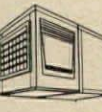
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HEATING / COOLING
UNIT



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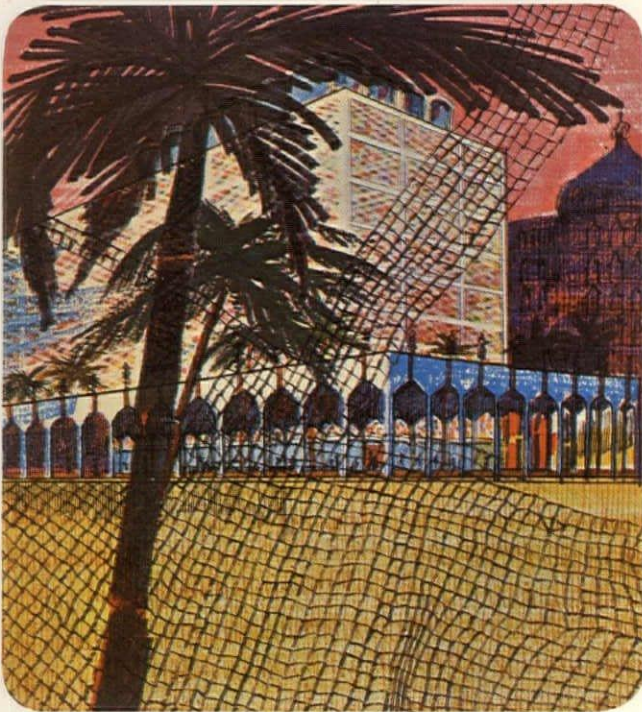


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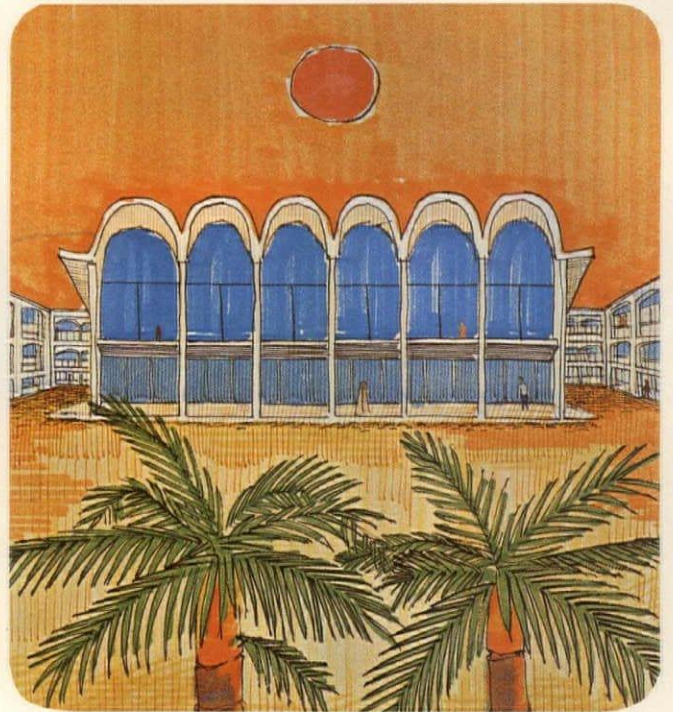
MERCER, PENNSYLVANIA

For more data, circle 46 on Inquiry Card

For more data, circle 107 on Inquiry Card



HOTEL KARACHI INTERCONTINENTAL, Karachi, Pakistan.



HOTEL JERUSALEM INTERCONTINENTAL, Jerusalem, Jordan.



HOTEL PHOENICIA INTERCONTINENTAL, Beirut, Lebanon.

What is **Carnes** doing in Karachi, Jerusalem and Beirut?

FOR ANSWER, TURN PAGE.

ANSWER

Carnes is furnishing the newest in Air Distribution Equipment for these magnificent hotels — the same high quality equipment it provides for thousands of hotel, apartment and other commercial building installations throughout the world. Fact is, Carnes products are in 31 of the 104 buildings at the World's Fair — truly a mark of recognized industry leadership.

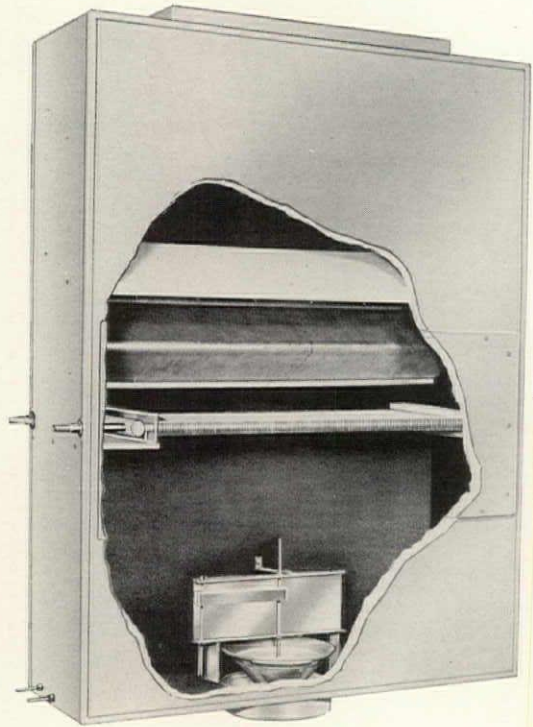


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ANOTHER CARNES FIRST

**HIGH VELOCITY REHEAT
ACOUSTIC TERMINAL
CONTROL UNITS FOR
SINGLE DUCT
ALL-AIR SYSTEMS**
**Factory Built
Calibrated
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Quality engineered Carnes Reheat ATC units are designed for year-round single duct air conditioning with individual zone control — at reasonable cost, with maximum simplicity and minimum space. High velocities and pressures are reduced for discharge of the air at conventional low velocity values. Continuous air motion in conditioned space assures maximum ventilation and odor dilution. Self-generated and duct airborne noise is minimized. Carnes offers ceiling mountable Reheat ATC units in sizes from 80 to 1700 cfm with a choice of bottom or end discharge and of one or two-row heating coil for steam or hot water. Units have external field water and steam connections, galvanized steel housings, access door for coil cleaning and acoustically baffled, fibrous glass lined casings. An external valve adjustment simplifies initial balancing or rebalancing required with subsequent building layout revisions.

All units carry Carnes standard manufacturing and performance guarantees...assurance of quality materials, workmanship and maximum specified operation.



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HIGH AND LOW VELOCITY
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REGISTERS AND GRILLES
FLEXIBLE DUCT

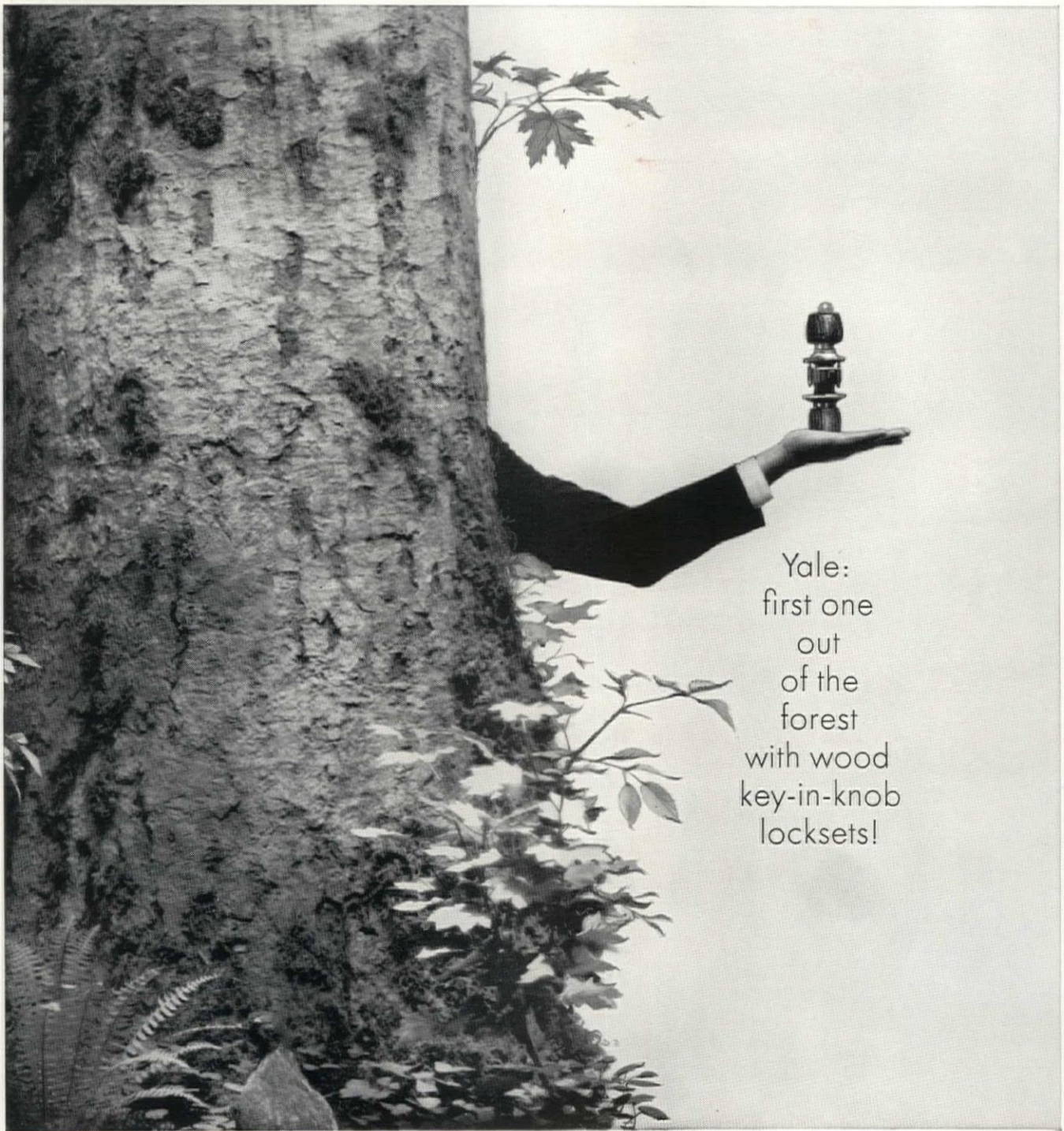
CARNES CORPORATION



Verona, Wisconsin

Canada:

VAPOR CARNES LTD., Montreal 26, Quebec



COURTESY, MUSEUM OF NATURAL HISTORY

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

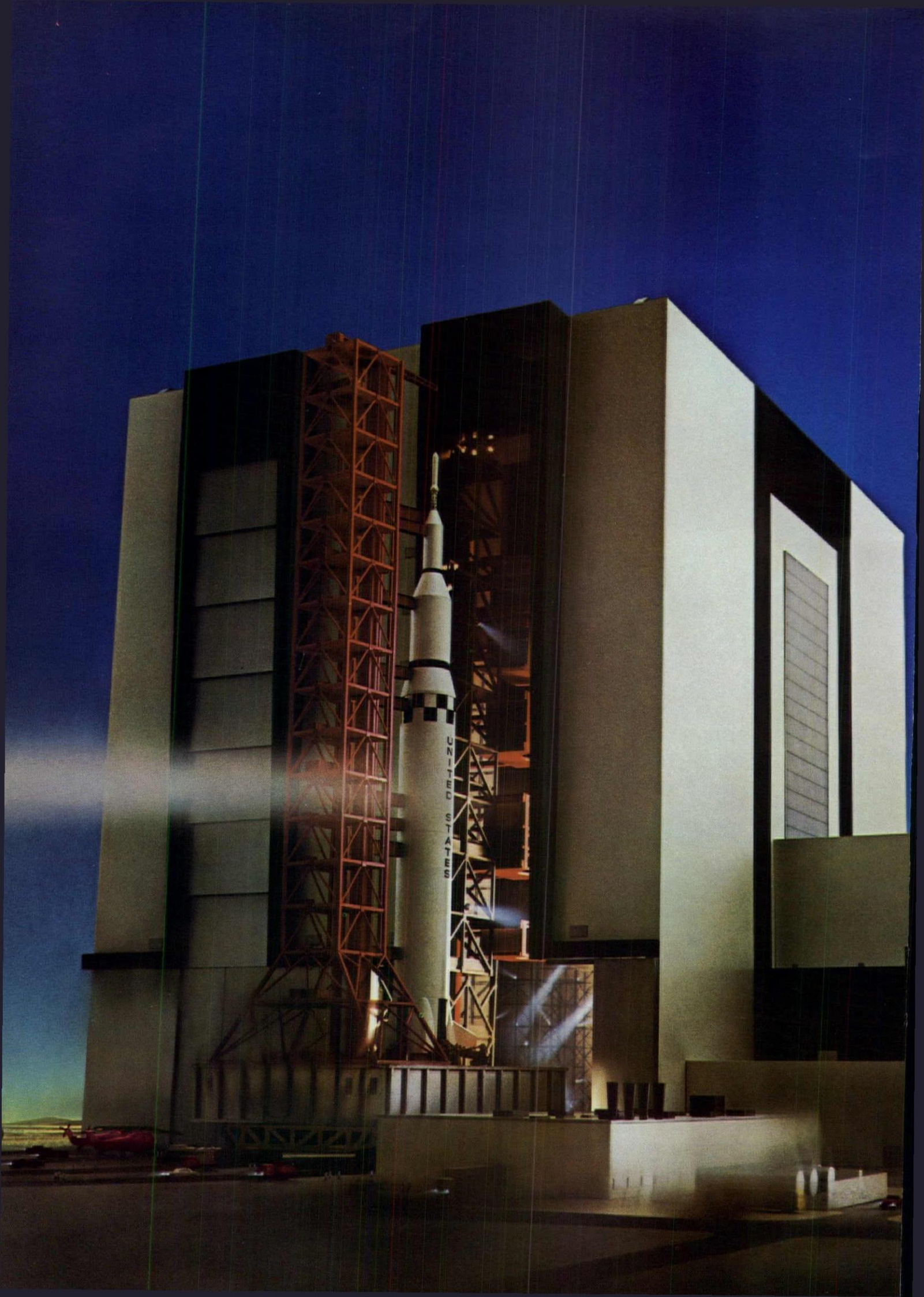
Yale combed the forest, and came out with the first wood knobs for key-in-knob locksets. In four majestic woods, too—rosewood, stratawood, cocobolo, walnut. This is hardware in the Yale tradition: functional security combined with natural beauty... integrity of design that lets you match door-knob to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

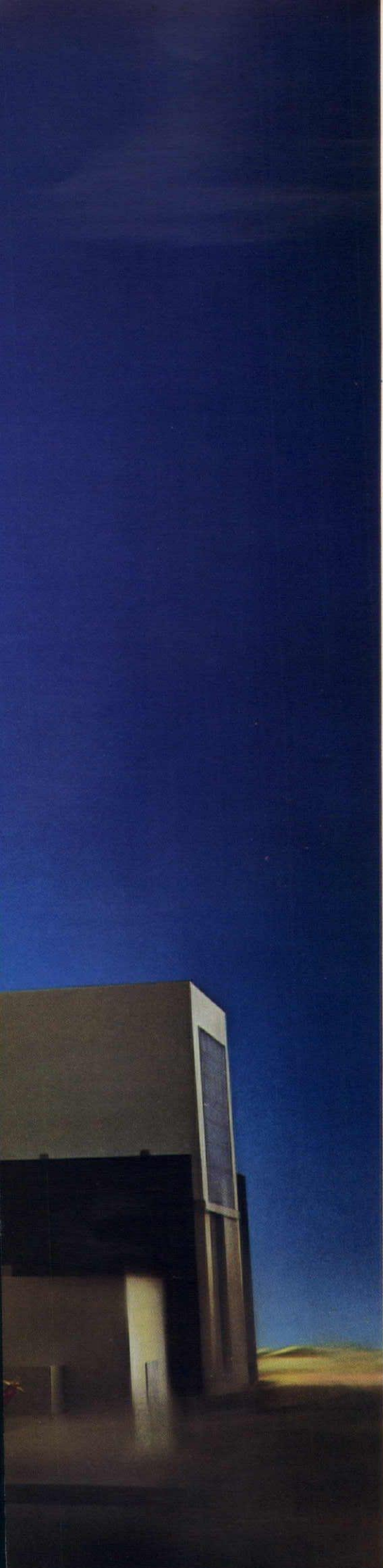
YALE
THE FINEST NAME IN
LOCKS AND HARDWARE
YALE & TOWNE

For more data, circle 114 on Inquiry Card

For more data, circle 115 on Inquiry Card

For more data, circle 116 on Inquiry Card ➔

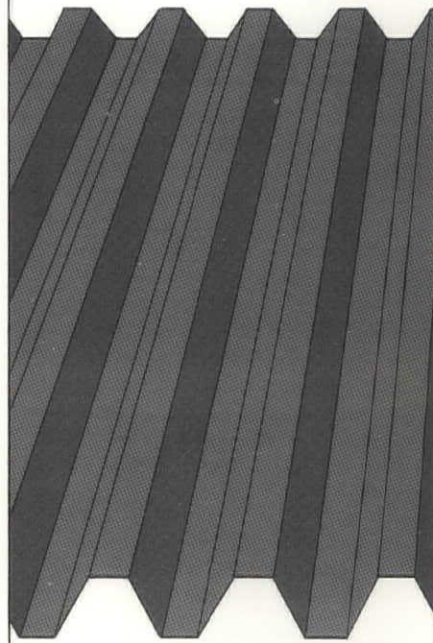




**What metal
was selected
as a skin for the
WORLD'S
LARGEST
BUILDING?**

Name of Project: Launch Complex
39 Vertical Assembly Building,
NASA Launch Area, Merritt Island,
Florida □ Architects/Engineers:
Urbahn-Roberts-Seelye-Moran;
New York City □ Construction and
Design Supervision: Canaveral Dis-
trict, U. S. Army Corps of Engineers
□ Contractor: Morrison-Knudsen,
Perini, Hardeman; Joint Venture,
South Gate, California □ Aluminum
Panel Fabricator/Erector: Climate
Conditioning Company, Stanton,
California.

Panels consist of an exterior skin
of prepainted aluminum V-beam
sheets, backed with 1½ in. of in-
sulating material.



Exterior surfacing specifications for
this 524-ft-high structure at the
National Aeronautics and Space Ad-
ministration's John F. Kennedy Space
Center were extremely strict: The
coastal climate called for a metal
skin with high corrosion resistance;
strength was also needed to with-
stand severe wind load and deflec-
tion requirements; design appear-
ance was also a major consideration.

Solution? Of several options speci-
fied, the contractor chose specially-
designed Alcoa® Aluminum V-beam
sheets to "skin" giant wall panels
(19 ft, 4 in. long, 42 in. wide and only
68 lb per square). Alcoa's design met
the specifications and job require-
ments, including texture and color.

If you would like to know more
about aluminum roofing and siding,
call your nearest Alcoa sales office.
Or write Aluminum Company of
America, 1696-K Alcoa Building,
Pittsburgh, Pa. 15219.

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



ALCOA

"This kind of light lets us read punched cards easily and accurately"

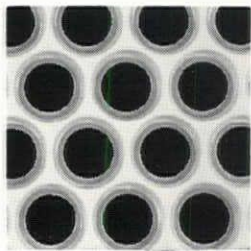
says Wilbert Parker, Data Processing Manager for Lovell Manufacturing Company, Erie, Pa.

"Our illuminated ceiling of Wilson CIRCLGRID panels has more than lighted a room. It provides the softest seeing possible in an area where people must work with hard-to-read symbols and punched cards all day. Thanks to CIRCLGRID, we have a computer room that is glare free, virtually shadowless and with more than adequate working light."



Wilson Electralume ceilings with CIRCLGRID panels give you quality light, not just lots of it. They are the magic between the light source and you that make things worth seeing. Investigate CIRCLGRID... acknowledged light diffuser for the discerning buyer. Write for Bulletin 60-1 and the name of the Wilson representative in your area: **Wilson Research Corp., 2001 Peninsula Drive, Erie, Pa.**

Beautiful Wilson CIRCLGRIDS feature —



- Maximum safety for valuable equipment (non-burning vinyl—UL Tunnel Test rating 20—approved for use under sprinklers)
- Maximum lighting for critical seeing—controls brightness and diffuses 25% more light
- Does not attract dust—self-cleaning effect minimizes maintenance
- Non-sagging design in sizes 2' x 2' and 2' x 4'
- Lightstable—guaranteed 5 years, rated life 15 years



For more data, circle 117 on Inquiry Card

Product Reports

continued from page 226

NONFLAMMABLE ADHESIVE

A nonflammable adhesive that is safe to store and use, easy to apply and provides strong, durable bonds has been developed by Armstrong Cork Company's Industry Products Division.

The company claims that the new nonflammable contact adhesive, spreads easily and evenly without balling or stringing and has no objectionable odor. Bonds made with the new adhesive have high immediate strength, making it possible to continue finishing operations such as routing, sawing, and drilling as soon as the bond is made.

Only momentary pressure after bonding is needed, eliminating the use of jigs, clamps or presses. The adhesive can be applied with trowel, brush, hand roller or sprayer, and can be used to bond a variety of materials including plastic laminate, wood, metal, rubber, foam plastic, flakeboard, tempered hardboard, plywood, cement-asbestos board, linoleum and fabric-backed vinyl. *Armstrong Cork Company, Lancaster, Pa.*

CIRCLE 306 ON INQUIRY CARD

MULTI-ZONED HEATING

Standard Hydrotherm gas-fired boilers can be quickly converted to six-zone heating applications with the *Hydrotherm Six-Zone Pak*, which consists of a power supply for the zone valves, a switching relay to energize the boiler and circulator, and terminal block for connection of each thermostat. A manual switch permits operation during power failure. All



Zone-Paks incorporate *Electro-Zone* valves, which operate with a single moving part assuring long life and trouble-free operation. *Hydrotherm Inc., Department AR-4, Northvale, N.J.*

CIRCLE 307 ON INQUIRY CARD
more products on page 244

What good is "I'm sorry"



It won't calm a client faced with premature paint failure. And costly repainting.

That's why the newest government specifications for masonry paint are worth your consideration. The government has set high standards of durability, to avoid frequent repainting.

The key to durability is the binder. Government Specification TT-P-0097 for exterior masonry paint states: "The nonvolatile matter of the vehicle shall contain at least 50% Styrene/Butadiene or Styrene/Acrylate."

Resins like PLIOLITE® qualify as binders for this application.

And—from Specification TT-P-91a for concrete floors—"Cement-Water Test: Two coats of paint on cement blocks shall not blister, crack, flake or discolor when blocks are soaked in water; Detergent Test: Blocks shall withstand scrubbing with trisodium phosphate solution."

You can obtain complete copies of these specifications from the General Service Administration or from Goodyear.

We'll also send more information on durable, proven, chemically inert PLIOLITE resins—plus names and addresses of paint manufacturers who use PLIOLITE.

Write us. You'll never be sorry.

Goodyear Chemical Data Center, V-84
P.O. Box 9115, Akron, Ohio 44305

- Send more information on PLIOLITE.
- Send Directory of paint manufacturers using PLIOLITE.
- Send Government Specifications.

Name _____

Position _____

Firm _____

Address _____

City _____ State _____ Zip No. _____

GOOD YEAR
CHEMICALS

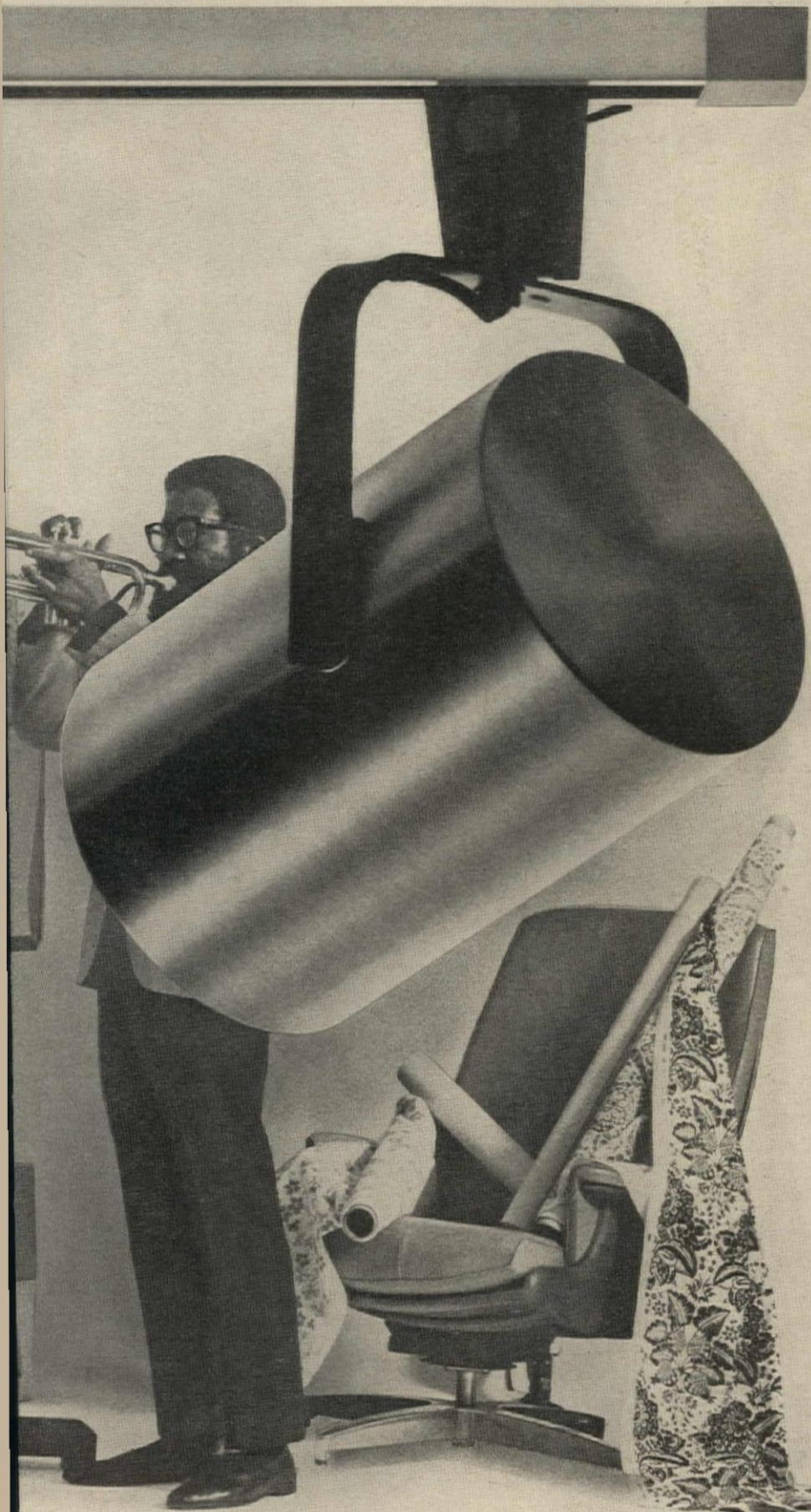
For more data, circle 119 on Inquiry Card

For more data, circle 120 on Inquiry Card →

If you want flexible spotlighting you don't have to hide

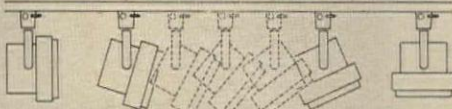
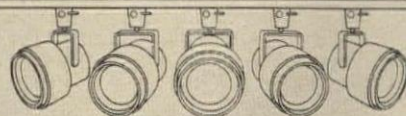
for window and in-store displays, specialty shops, show rooms, museums, galleries, exhibition halls, libraries, schools, motels, hotels, nightclubs, reception rooms, lobbies, lounges or living rooms...**you've come to the right spot**





Lytespan is the first lighting distribution track designed as an integrated, architectural lighting system. It is the first track which can be recessed, or mounted on surface or stems.

LYTESPOT FLEXIBILITY FEATURES



Direction. Lytespots rotate horizontally, pivot to any angle vertically. Pivot mountings are permanently tensioned and include a built-in 360° stop.

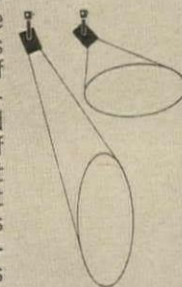
Position. Lytespots can be quickly clipped on and slid along the electrified track to any point desired. Thumbscrew rigidly secures unit, prevents sag or droop. Most Lytespots have individual switches. Spots can be stored on track when not in use.

Intensity. Lytespots accommodate a variety of R and PAR lamps ranging from 30 to 300 watts. Dramalux Lytespot with Intensitrol dimmer provides continuous intensity control from zero to 32,000 candlepower. Heat filters are available where high lighting levels at close range make display temperature critical.

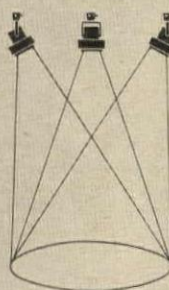


Beam Spread. Ranges from a "pin spot" of 5½° to a flood of light at 110°. The flexibility in the throw of light ranges from two feet to twenty-seven feet (for 100 foot-candles).

Beam Shape. Round or elliptical. An adjustable beam monitor permits changes in orientation of elliptical beams from horizontal to vertical. A spread lens alters the shape of any light beam, making it tall and narrow, or short and wide. Stippled lens design eliminates filament image and softens the beam-edge.



Color. Using basic hues of the spectrum, a vast variety of shades is achieved by blending colored beams of light. One-piece color filters are made of borosilicate (heat-resistant) glass. Optical stippling eliminates filament image. Intensitrol dimmer controls intensity of any hue.



LYTESPAN® BY LIGHTOLIER!

Write to LIGHTOLIER, Jersey City, N.J. for Brochure No. 40. Or see the Yellow Pages for your nearest Lightolier distributor. Showrooms: 11 E. 36 St., New York; 1267 Merchandise Mart, Chicago; 2515 S. Broadway, Los Angeles; 1718 Hi-Line Drive, Dallas.



**DO YOU HAVE
THIS BINDER
IN YOUR FILE ?**

Ask for it by name . . .

HAWS Catalog File Binder maintained with catalog sheets as they are issued, thereby providing the finest source for information on:

- Drinking Fountains
- Electric Water Coolers
- Emergency Safety Equipment

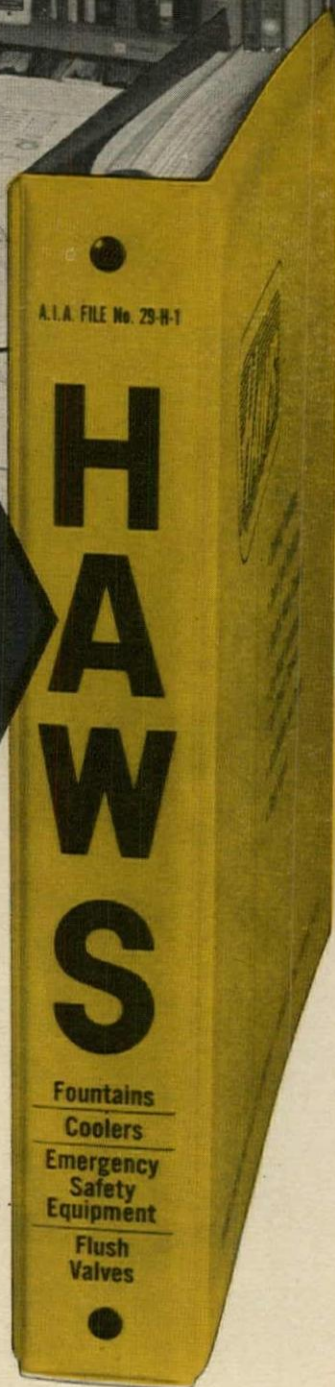
For your Copy — ask your Haws Representative or write . . .



Since 1909

HAWS DRINKING FAUCET COMPANY
1441 Fourth Street • Berkeley, California 94710

For more data, circle 121 on Inquiry Card



Product Reports

continued from page 236

LIBRARY CARRELS AND CHAIRS

The Steelcase, model 290063, library carrel measures 36 by 24 by 50 in., and is available in 23 acrylic finishes. The model 1163 reading chair with coil spring seat and foam rubber back complements the carrel, which has a fixed book or magazine shelf.



The reading chair is available in more than 30 upholstery fabrics and colors. The company claims that the use of these carrels makes possible maximum use of space in libraries and study areas. *Steelcase Library Planning Division, Box 444, Grand Rapids, Mich.*

CIRCLE 308 ON INQUIRY CARD

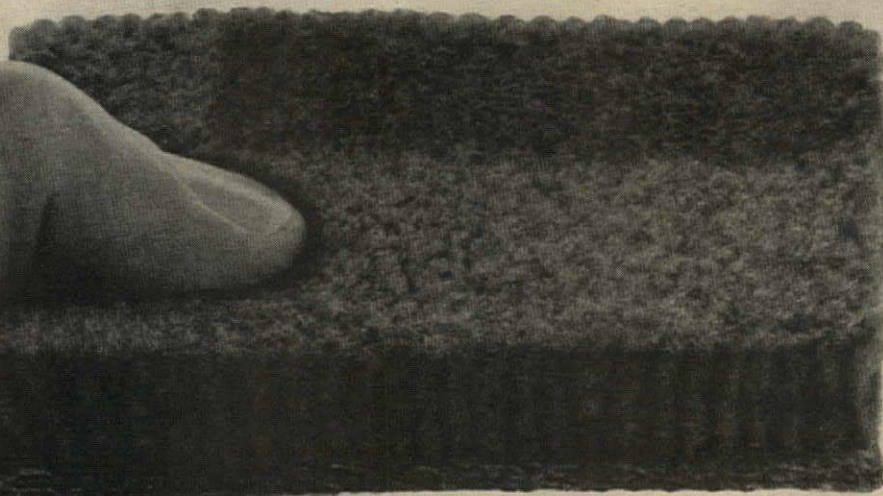
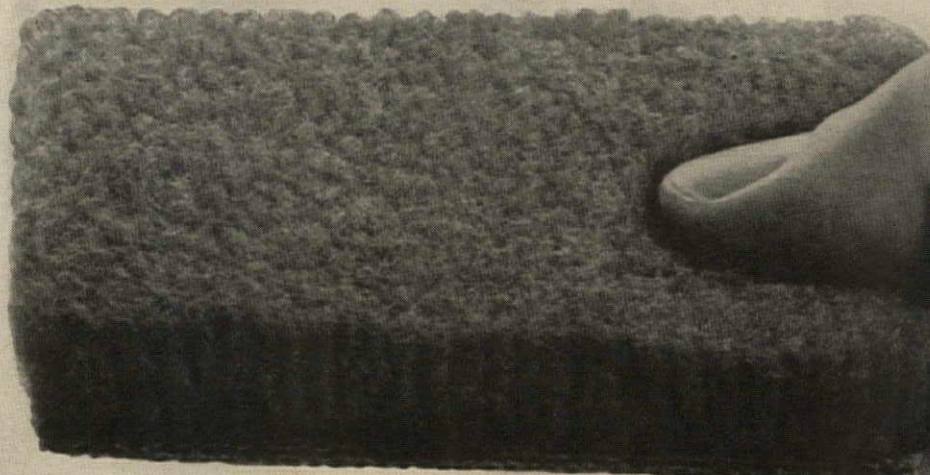
WINDOW HARDWARE

A new concept in window hardware, designed for use with Modu-Wall casement and standard projected ventilators has recently been introduced. Windows equipped with the new *Push-Pull* window hardware are opened by a light push, directly outward. The vent holds in the position where forward pressure is released. Closing the vent requires only a light pull inward and the vent locks automatically. There is no need for turning or twisting window hardware to open or close. Design of the new hardware is clean and functional, and the operating handles are available in plain anodize or a choice of colored hardcoat finishes to match the ventilator. *Modu-Wall, Inc., 5569 N. Riverview Drive, Parchment 10, Mich.*

CIRCLE 309 ON INQUIRY CARD
more products on page 256

For more data, circle 122 on Inquiry Card

**This is wool.
It's beautiful.**



**This is Acrilan.[®]
It looks like wool.
But it stays beautiful longer.**

For many reasons. Carpeting made with Acrilan acrylic fiber in the pile is more resilient than wool. It retains its deep pile longer. Resists shedding. Colors are purer and remain that way — Acrilan resists fading; Acrilan is easier to clean than wool.

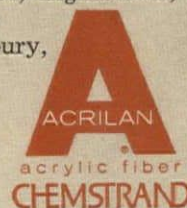
More?

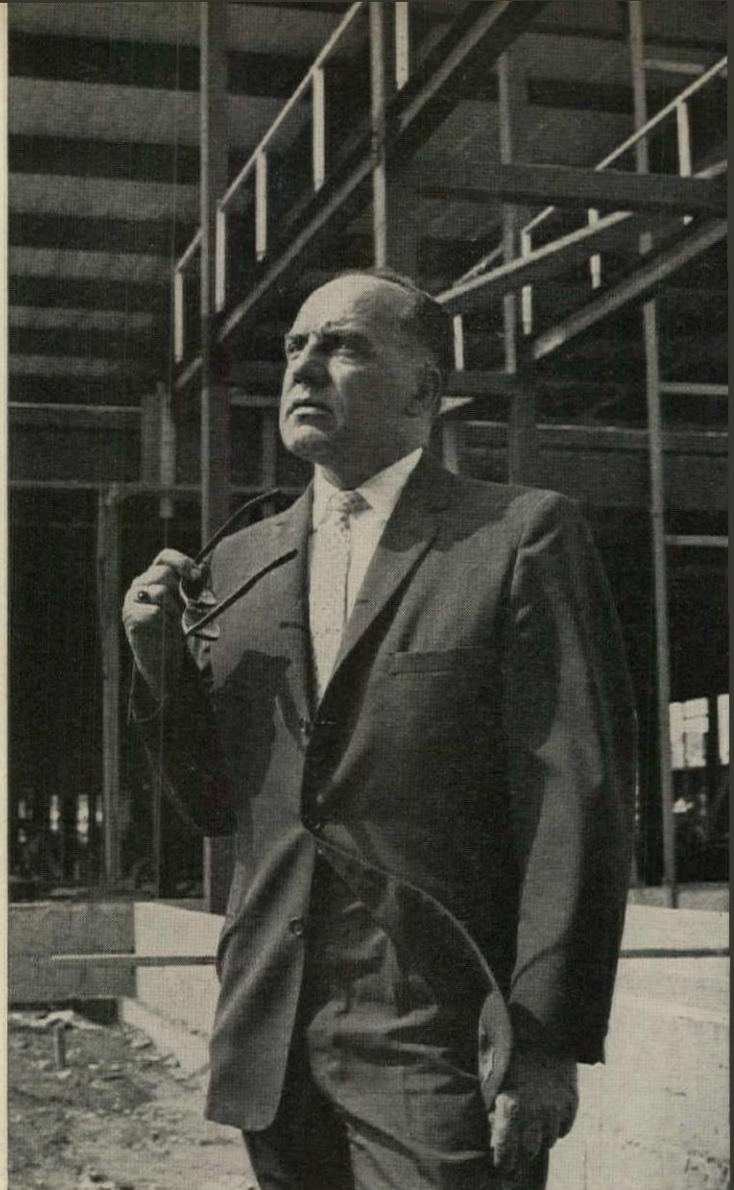
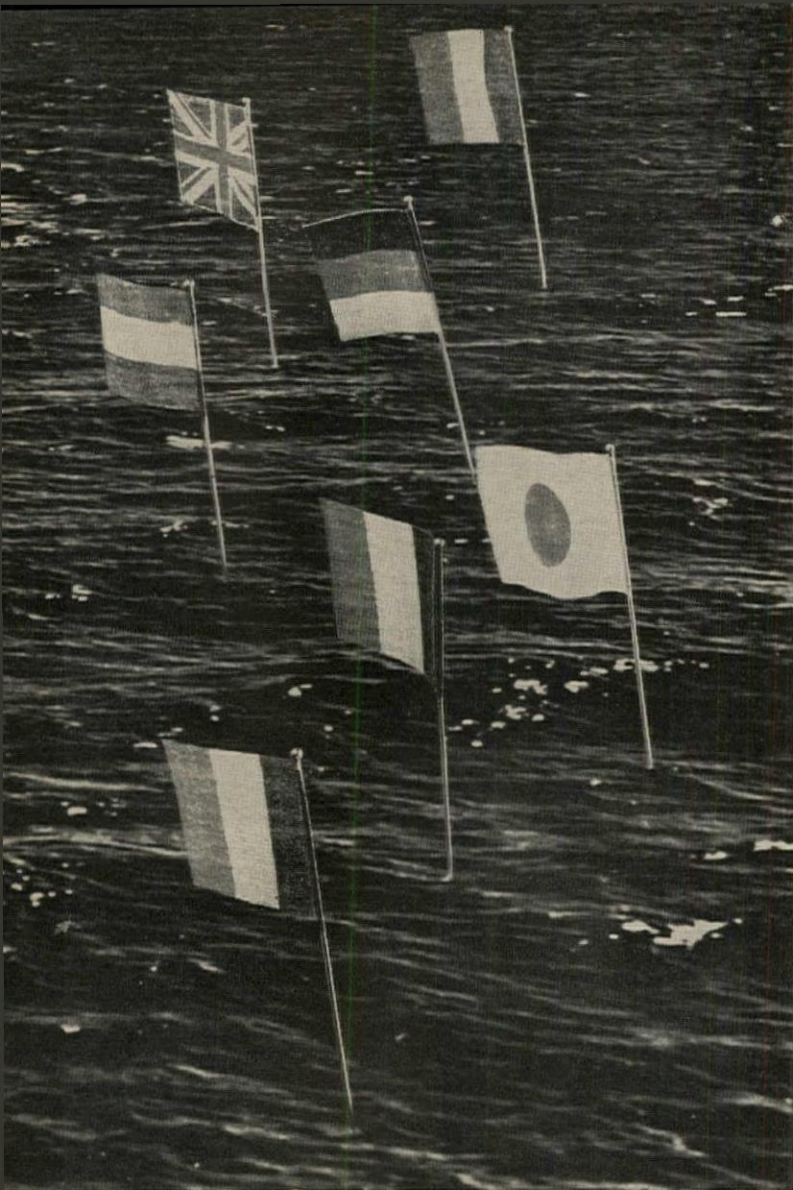
Acrilan is born moth-proof. Non-allergenic. Will never mildew. These are some of the reasons why architects all over the country are specifying Acrilan for important installations.

Let us tell you more.

Write Contract Carpet Merchandising, Chemstrand,
350 Fifth Avenue, New York 1, N.Y.

These are among the mills now licensed by Chemstrand for Acrilan: Barwick, Bigelow, Cabin Crafts, Callaway, Coronet, Crestline, Downs, Forrest, Hardwick and Magee, Hightstown, Karagheusian, James Lees, Loomweve, Magee, Masland, Monarch, Philadelphia Carpet, Roxbury, Wunda Weve. In Canada: Harding Carpets.





Who gains when foreign structural steel is used in your building?

Foreign structural steel might possibly be priced lower than American-made structural steel. But you might be surprised, upon investigation, at how little (if anything) you actually save.

Then ask your architect and engineer which kind of steel *they* prefer—foreign or American-made. We'll eat our hard hats if they don't say "American-made steel."

Remember, your architect and engineer are *responsible* for the structural integrity of your building. That's why they want to be 100% sure that the called-for grades of steel are being supplied. That's why they want *guarantees* for every pound of structural steel delivered.

And because they want to keep your building on schedule, they want a steel source close to home, so

Do you, Mr. Owner?

that deliveries will be on time and emergencies easy to handle.

American producers stand behind the structural steel they sell. All their production facilities and all their people are as near as your telephone.

Last year some 5-1/2 million tons of foreign steel came into this country. Those 5-1/2 million tons displaced 35,000 American steelworker jobs, and would have meant a payroll of approximately \$250 million for American steelworkers. How much of that money might have been spent to buy the goods or services you sell? How many tax dollars did our country lose . . . tax dollars you'll have to help make up? Bethlehem Steel Company, Bethlehem, Pa. *Export Sales: Bethlehem Steel Export Corporation.*



Steel for Strength

BETHLEHEM STEEL



For more data, circle 123 on Inquiry Card



FOR MEN IN HIGH PLACES

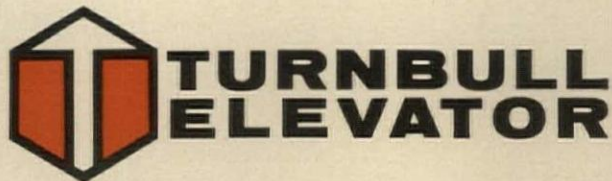
DIRECTION IN PLANNING to meet the complex elevator needs of high rise office and professional buildings is a first consideration for building management.

For "Men in High Places" the vital problem of

getting everybody there on time can be the difference between smooth administration and a continual source of irritation.

Planned transportation — in all directions — is the business of Turnbull Elevator.

- Electric and Hydraulic Passenger and Freight Elevators
- Dumbwaiters
- Moving Walkways
- Power Scaffolds



Executive Offices: 311 W. 43rd Street, New York 36, N.Y. / Sales Offices: Atlanta, Georgia; Philadelphia, Pa.; Columbia, S.C.; San Francisco, Los Angeles, Calif. / Canada: Head Office: Toronto / Branches in Principal Cities.

For more data, circle 124 on Inquiry Card

exposed aggregates

a.i.a. file: 4a

Prepared as a service to architects by Portland Cement Association
clip along dotted line

Exposed aggregate provides concrete surfaces of unusual beauty and variety. To emphasize the gleaming freshness, true colors and textures of the aggregate, architects, today, choose concrete made with white portland cement. It is also an excellent tinting base for mineral coloring pigments.

Reveal of precast concrete panels is largely determined by aggregate size. When panels are to be viewed relatively close, less reveal is needed. When panels are some distance from the main flow of pedestrian traffic, greater reveal is required for a rough textured look.

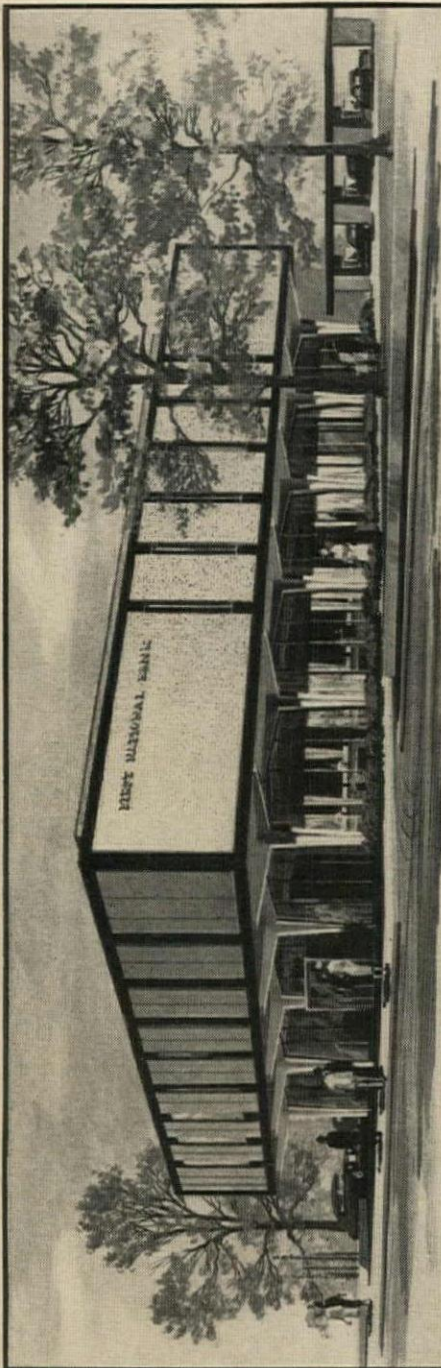
Polished panels of pastel colors tend to appear white when viewed from a distance due to the high reflectance of the surface.

Shown at right is a table which demonstrates the unlimited range of colors possible with commercial aggregates and white cement.

Write for additional free information (U.S. and Canada only.)

VISIBILITY SCALE

aggregate size	distance at which texture is visible
1/4" - 1/2"	20 - 30 feet
1/2" - 1"	30 - 75 feet
1" - 2"	75 - 125 feet
2" - 3"	125 - 175 feet



First National Bank, San Angelo, Texas. Architects: Abel B. Pierce and George Pierce, A.I.A., Architect & Planning Consultants, Houston, Structural Engineer: Walter P. Moore, Houston. Contractor: Templeton & Cannon, San Angelo

TABLE OF COMMON COMMERCIAL AGGREGATES

GLASS*	ARTIFICIAL	SIZE	USES	SOURCE**	COLOR RANGE
CERAMIC		1/4" - 1 1/2"	stained glass, walls, panels	Mich., N.J., Texas	brilliant and almost unlimited ranges
		1/4" - 1 1/2"	curtain wall panels, ornamental work	Ark., Ariz., Mich.	any color
SAND		fine to coarse	plain or sculptured panels	all areas	white-buff-yellow
PEBBLES		1/4" - 6"	tilt-up walls, panels, walkways	west & southeast	white-red-orange-buff-black
MARBLE		1/2" - 2"	curtain wall panels	all areas	white-red-buff-yellow-black
GRANITE	MINERALS	3/4" - 2 1/2"	tilt-up walls, panels, walkways	midwest & west	red-gray-buff-dark blue-black
QUARTZ		1/2" - 2"	curtain wall panels	east, west, south & midwest	white-pink-gray-clear

*Reactivity: some glasses may react with alkalis in the cement to cause expansion. Consult glass manufacturer to determine if glass is reactive.

**List of manufacturers available.



CRUSHED



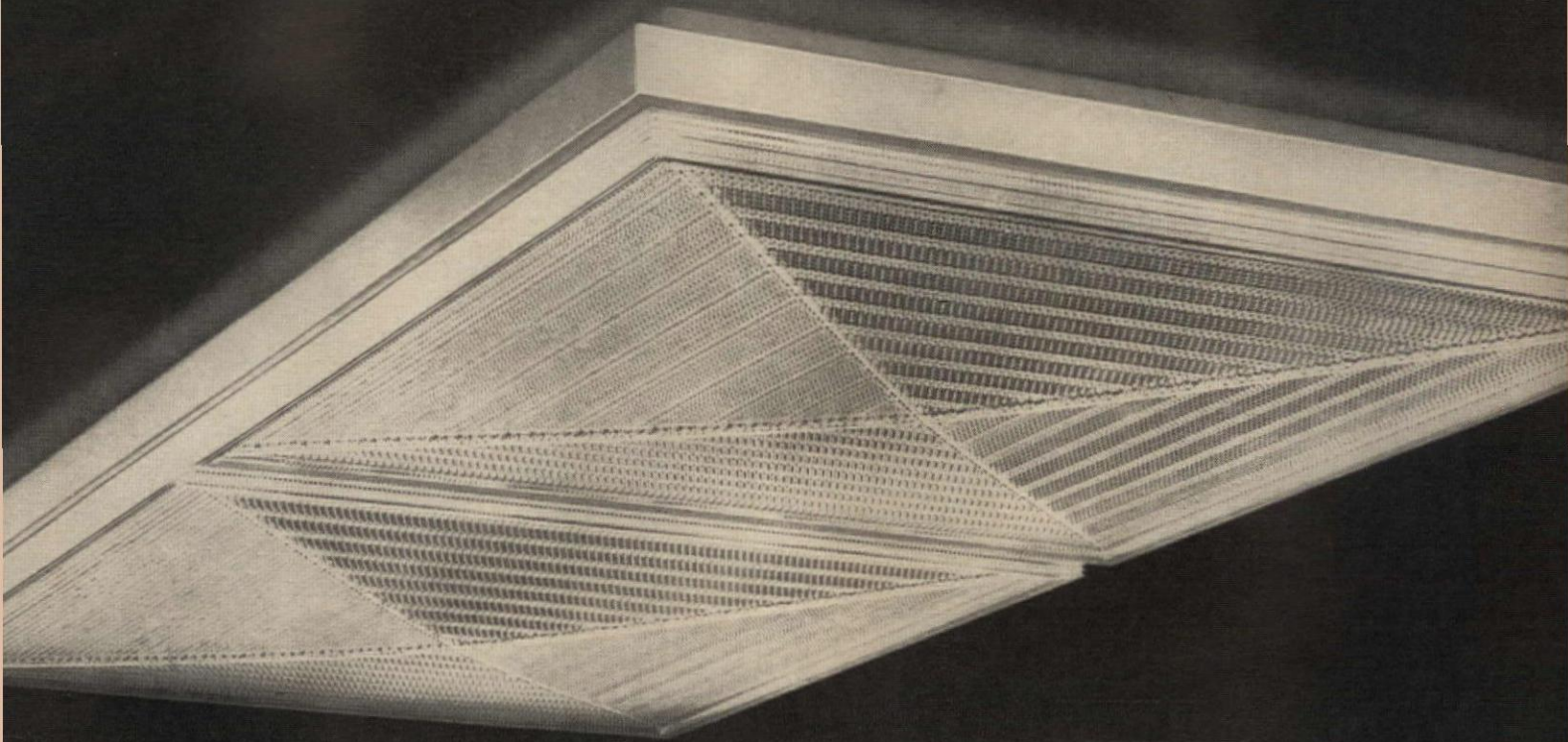
NATURAL



SAND BLASTED

PORTLAND CEMENT ASSOCIATION Dept. 10-8, 33 West Grand Ave., Chicago 10, Ill.

An organization to improve and extend the uses of concrete



TIARA



...A BRILLIANT NEW FIXTURE CONCEPT FOR STORES, SCHOOLS, OFFICES.

Direct-to-the-ceiling mounting with a depth of only 3-3/16"...surrounded by a distinctive glow from hidden aperture...TIARA has a dramatic, floating appearance which belies its crisp utility. Because TIARA is completely enclosed it stays cleaner, longer. Its precision

acrylic Controlens* gives TIARA a jewel-like luminosity that enhances any interior. For applications both old and new, specify TIARA. You'll find it one of the most versatile and eye-appealing fixtures you've ever used. For the complete story, write for Folder OD-1056.

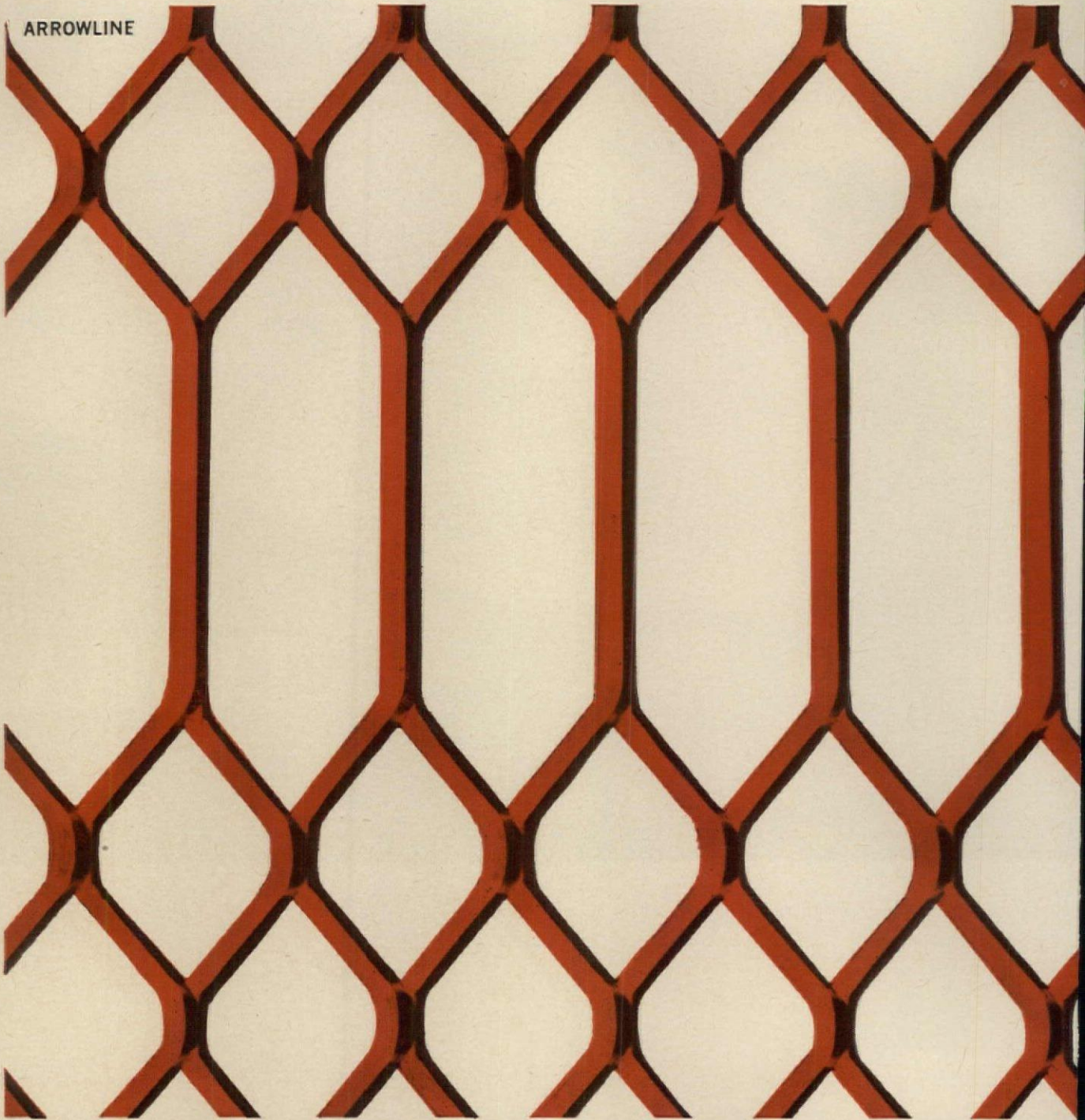


A DIVISION OF EMERSON ELECTRIC
DAY-BRITE LIGHTING • 5411 BULWER AVE. • ST. LOUIS, MISSOURI 63147

*©Halophane Co., Inc.

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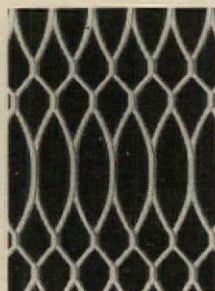
ARROWLINE



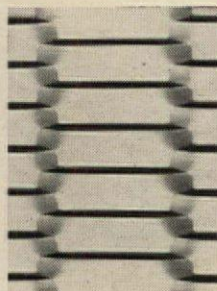
News: Wheeling introduces 9 decorative expanded metal



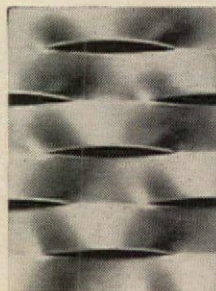
CASTLE



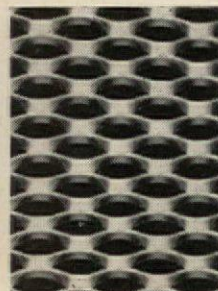
CADET



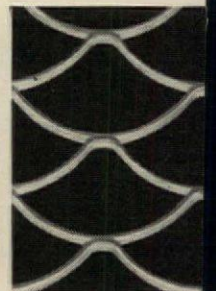
LOUVERMESH



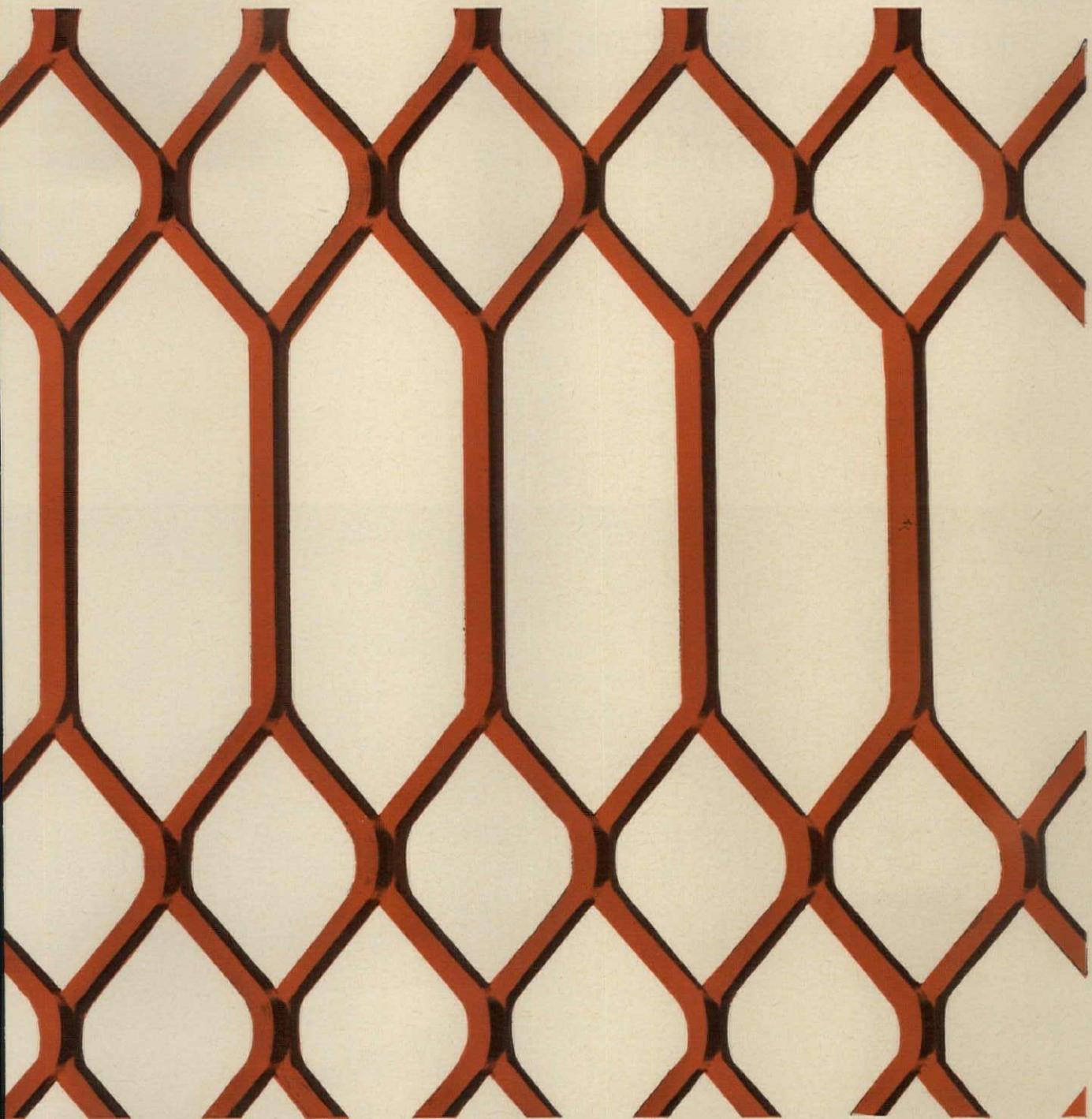
1½" FACADE



½" FACADF



DRAPE MESH



patterns to give you greater architectural latitude

Wheeling's new decorative metal meshes offer you exciting design opportunities in new and old structures alike. And they come from the pioneer in expanded metals . . . Wheeling Corrugating Company.

Applications? Here are just a few. You can use these new meshes as dramatic room dividers, area dividers, stairway enclosures, even ceilings. Or outdoors, you can put them to use as balcony railings, patio shading, or complete facades. In

warmer climates, these attractive meshes can substantially reduce air conditioning costs when used as sun barriers.

Wheeling's new decorative meshes are available on short notice in both carbon steel and aluminum. For descriptive information and application data, contact the Wheeling sales office nearest you. You'll find it listed in the Yellow Pages. Wheeling Corrugating Company, Wheeling, West Virginia.

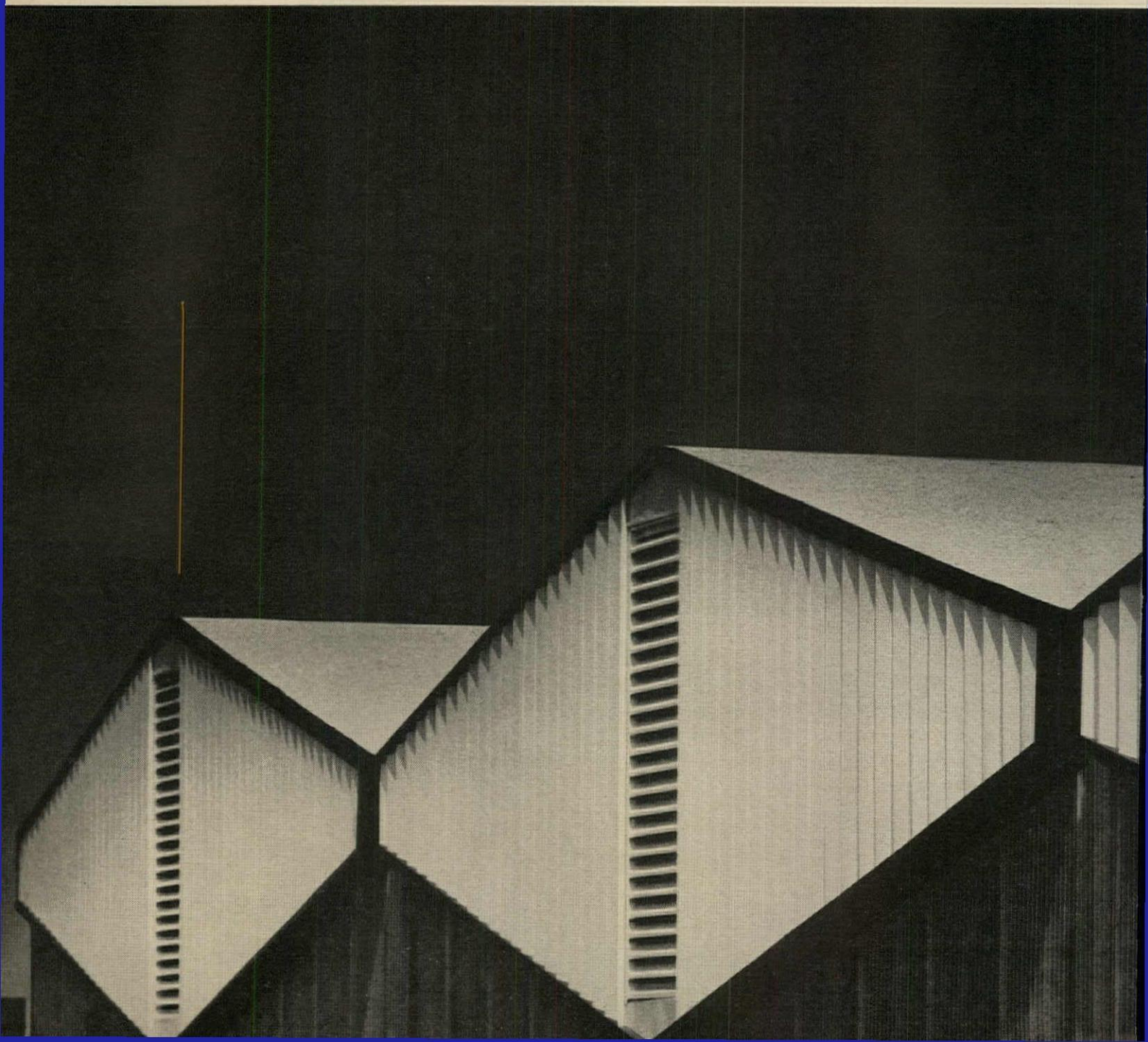
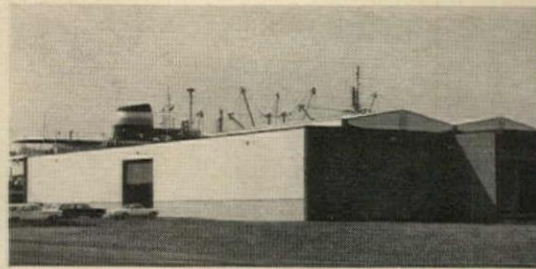


WHEELING CORRUGATING COMPANY

For more data, circle 127 on Inquiry Card

For more data, circle 129 on Inquiry Card ➤

**Siding on this lake-front building
has a remarkable new finish
that outperforms baked enamel
3 to 4 times: Du Pont TEDLAR®**



Despite its location on the shore of Lake Erie, exposed to extremes of weather, the siding on this new Transit Building will stay fresh and new-looking for many years. It's surfaced with a new and amazingly tough finish: **TEDLAR* PVF film.**

Even though these panels with **TEDLAR** cost more than panels finished with baked enamel, maintenance costs will be lower because **TEDLAR** is three to four times more resistant to fading and chalking. And **TEDLAR** has a smooth, stain-resistant surface that does not trap dirt.

TEDLAR proved itself during construction of this building when strong winds spilled a bucket of tar over panels surfaced with **TEDLAR** as well as some painted parts

stacked on the site. Workmen were unable to remove the tar from the painted surfaces, yet the **TEDLAR** was easily cleaned and restored to original appearance.

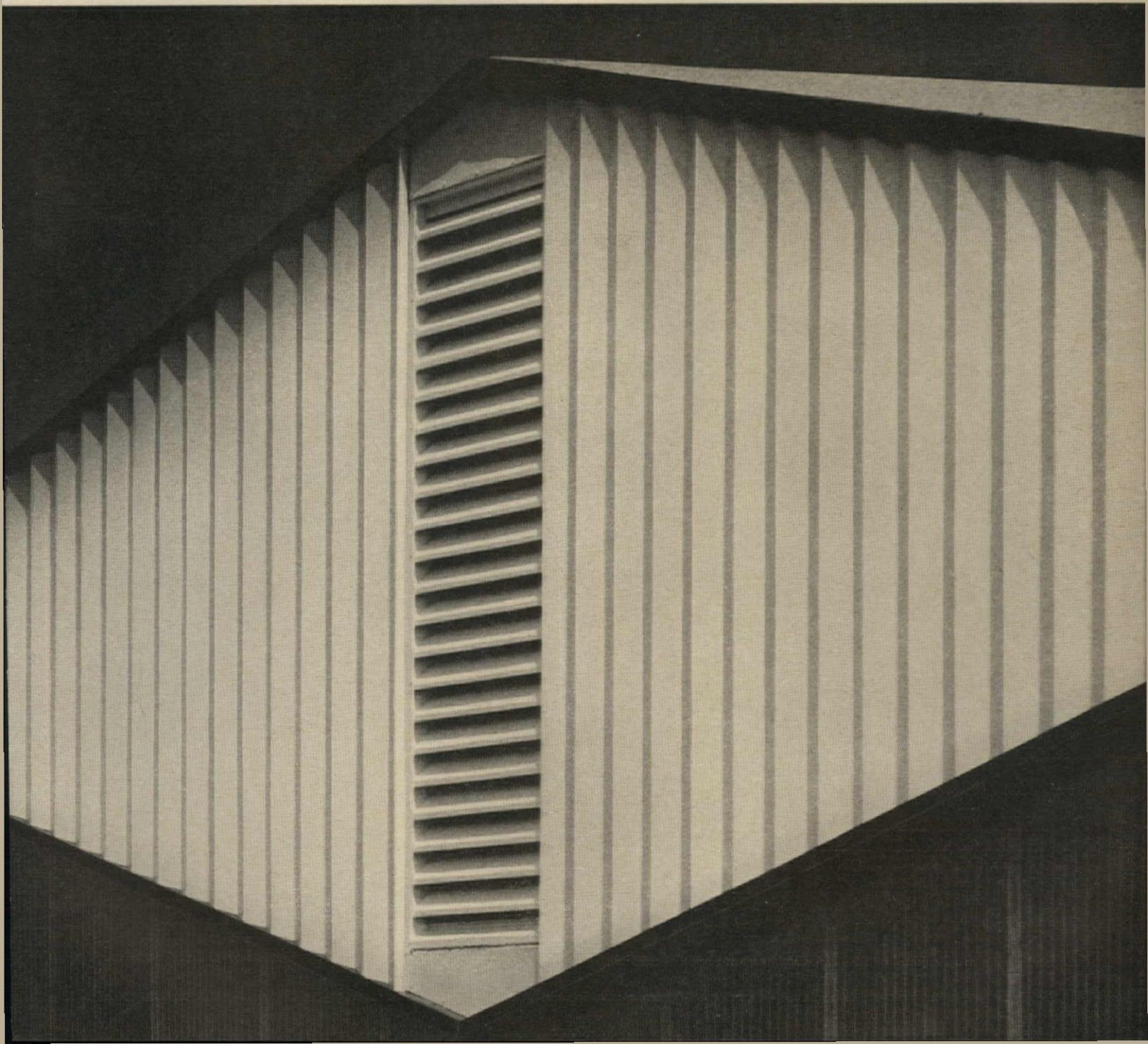
The metal building panels, surfaced with **TEDLAR**, are made and erected by **Elwin G. Smith Co.** More and more architects are specifying **TEDLAR** as the finish on roofing and siding. **Du Pont Film Dept., Box 104A, Wilmington, Delaware 19898.**

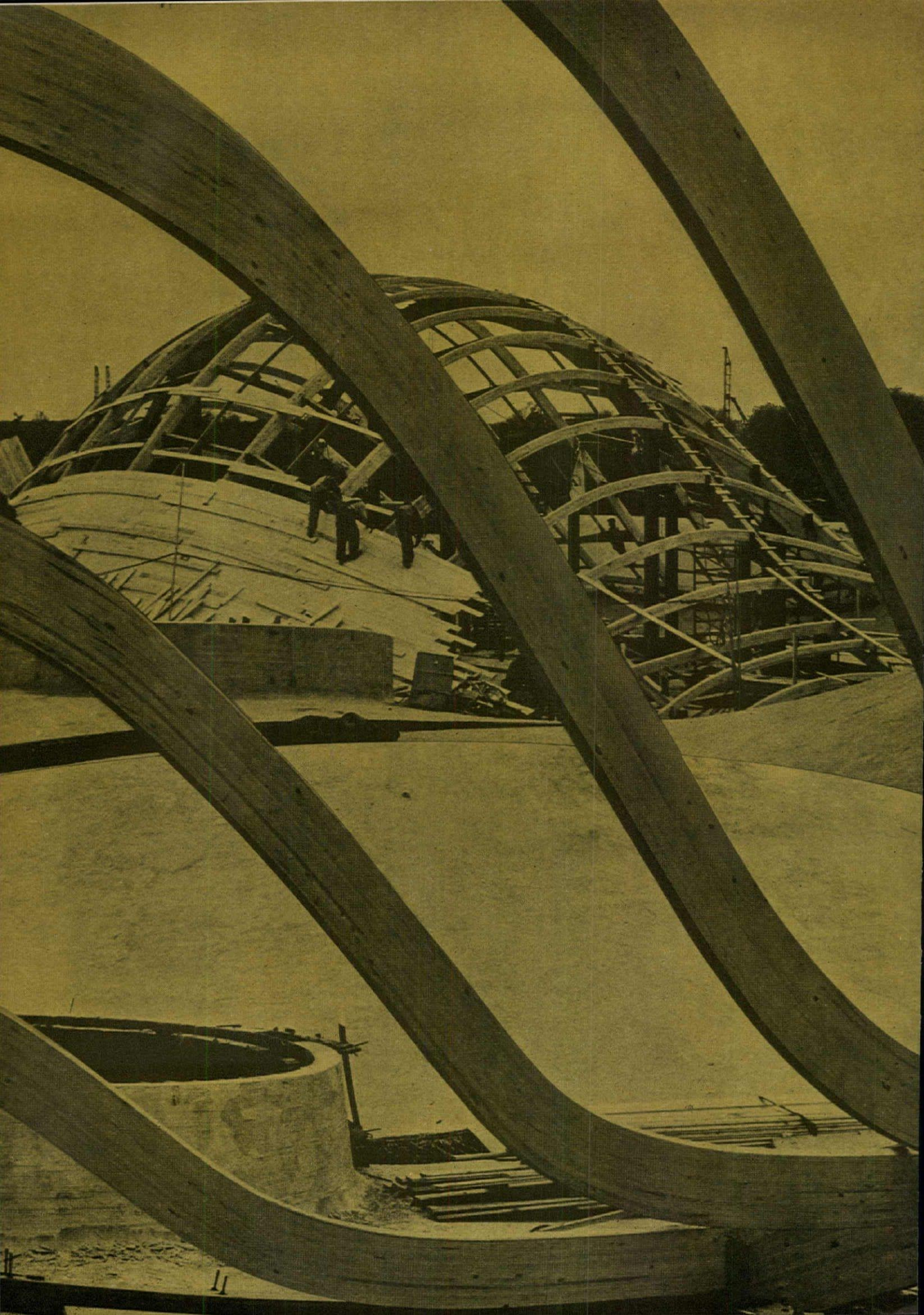
Transit Building, Department of Port Authority, Cleveland, Ohio
Architect: Alexander A. Papesh, Cleveland, Ohio
Engineer: Osborn Engineering Co., Cleveland, Ohio
Contractor: Geo. A. Rutherford, Inc., Cleveland, Ohio

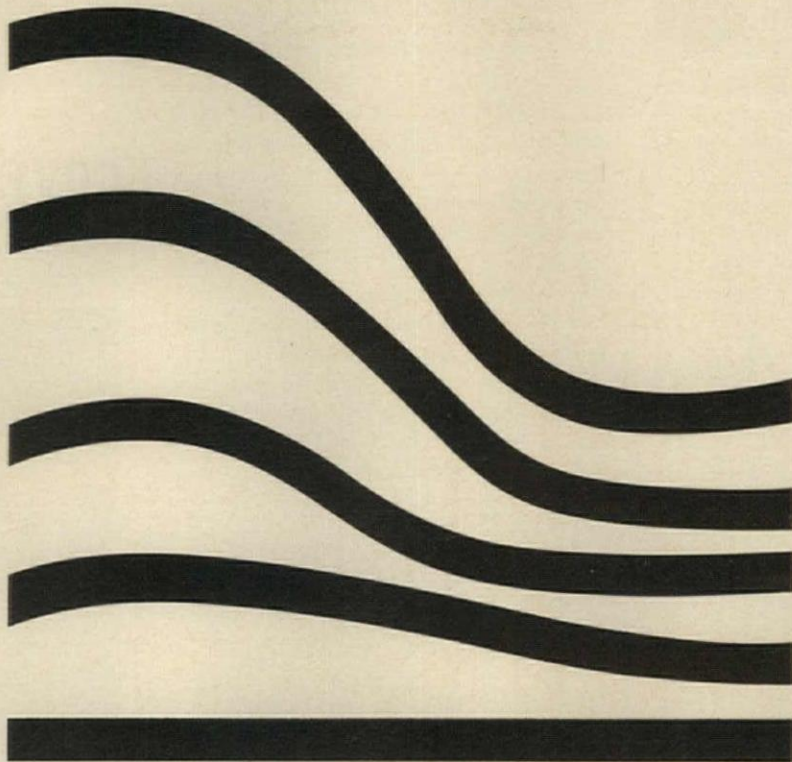
*Du Pont registered trademark for its polyvinyl fluoride film.



BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

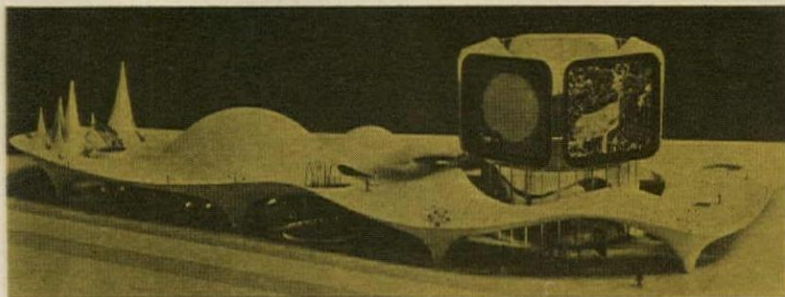






Rilco Laminated Wood . . .
the span between imaginative design
and economical construction

The sculptured domes of the Eastman Kodak Pavilion at the New York World's Fair are framed with Rilco laminated wood members. Rilco girders form the dome contours. Specially shaped laminated members tie together the intersection of dome and shell. At certain sections, girders were passed continuously through the domes to form double arched members. Rilco laminated purlins complete the roof structure. The roof is T&G decking, stuccoed and vinyl coated. The architects report the precisely engineered Rilco members and simple anchorage system kept the non-mathematical design right on schedule. Even subsequent revisions in the interior plans were made without any structural changes. These Rilco advantages can be put to work on your next job. See Sweet's Architectural File, 2bRi and AIA File 19-B-3, or write Weyerhaeuser Company, Box B-24, Tacoma, Washington.



Eastman Kodak Company World's Fair Pavilion
Architect: Kahn and Jacobs, New York/Contractor: George A. Fuller Company, New York



Weyerhaeuser Company
Laminated Wood Products

For more data, circle 130 on Inquiry Card

I of a series

problem:

Control 8500 footcandles of sunlight to insure pleasant lighting atmosphere; conceal unsightly plenum conditions; and complement imposing architectural decor.



solution:

HONEYLITE®

At Holy Cross Mausoleum in Colma, California, the problem was solved with Honeylite — luminous ceiling system of expanded aluminum honeycomb. Pink panels of 3/8" cell size and 60° shielding angle were placed below the skylight to diffuse and control to required intensity. Distracting plenums were concealed, and the proper design esthetics maintained. In addition, this client is secure in the knowledge that aluminum Honeylite provides the long-range benefits of permanence and safety.

You Can Depend on HONEYLITE

... for that special lighting job. You get highest efficiency with lowest surface brightness combined. Open cell design for longer lamp life, and simple integration of air flow systems. Lightweight Honeylite is available in a complete range of panel sizes, shapes and colors.

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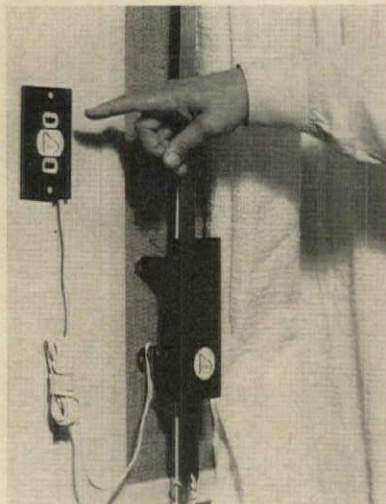
For more data, circle 131 on Inquiry Card

Product Reports

continued from page 244

ELECTRIC DRAPERY ACTUATOR

VB Research & Development has introduced a low cost electric drapery actuator, based on its *VB Long Stroke Solenoid*, that is said to be absolutely silent in operation and offers unusual reliability and longevity. The device can be offered as either an integral part of channel bracket or as an "ad-on" unit to existing hardware. The typical unit is 1½ in. in cross section by 6 to 12 in., so can be completely concealed.



Elimination of electric motor or motors, including starting switches and bearings, gears, cams, gear case, cranks or sectors, and take-up mechanism means that a strip of metal that moves within a channel and the switch are the only two moving parts. *VB Research & Development, 5441 Paradise Rd., Las Vegas, Nev.*

CIRCLE 310 ON INQUIRY CARD

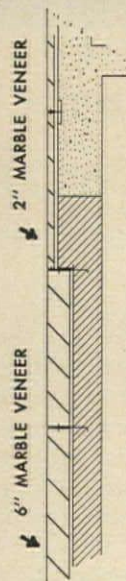
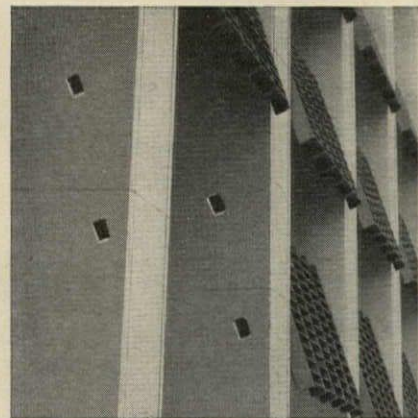
SHALLOW LIGHTING FIXTURE

The Smithcraft *Dominaire* fixture has a remarkably shallow 1½-in.-deep lens which gives the appearance of a panel lamp or a recessed lighting fixture without visible fixture attachments. When used in rows this new architectural form appears as a long thin unbroken lighting panel. The uniform low brightness of the acrylic or styrene wrap-around lens provides shadowless, non-glaring illumination for offices, schools, stores and plants. The *Dominaire* is also suitable for residential applications. *Smithcraft Corp., Chelsea 50, Mass.*

CIRCLE 311 ON INQUIRY CARD
more products on page 268



COVER STORY ON Select White Vermont



Square holes were pre-cut in the marble slabs to take the bolts for the stainless steel angles holding the painted aluminum grids.

Atlanta Tile and Marble installed veneers of 2" and 6" thicknesses on the south wall, specified by Naess and Murphy for strength and insulation.



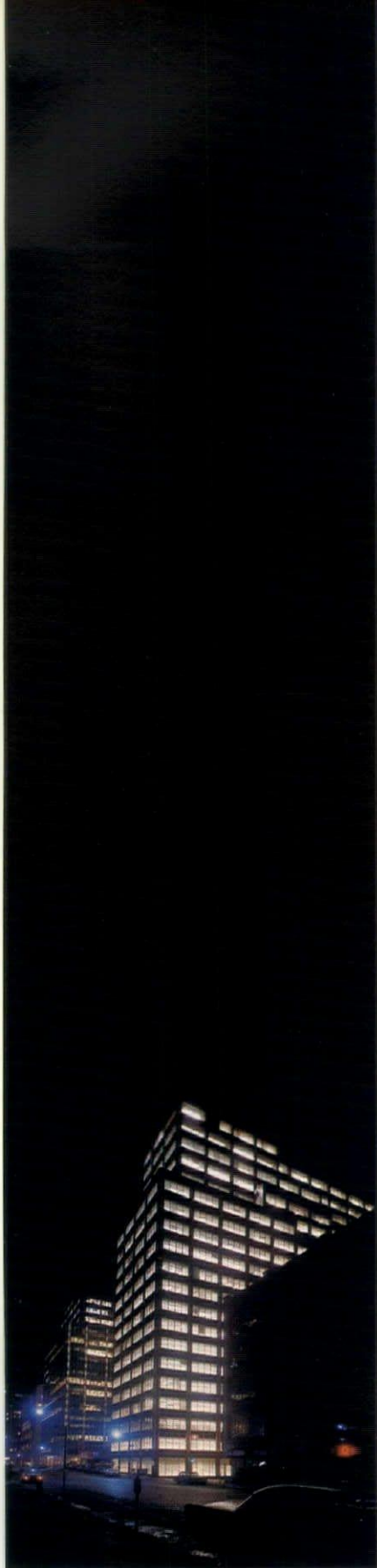
You can park at ground level in the shade at the Miami Herald. And in case of a storm, water can sweep through this area, with no damage to the building.

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World's leading producer and fabricator of foreign and domestic marble.

For more data, circle 132 on Inquiry Card

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STREET
NEW YORK CITY



120 Church Street
New York City
Served by six low-rise
and four high-rise
fully-automatic Haughton
gearless elevators.

Architect:
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342 Madison Ave.
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Owners:
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Haughton Elevonics*
brings total elevator automation
to another new trend-setting
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Haughton Total Elevator Automation enables elevator service to be matched exactly to traffic demand . . . on any floor at any time.

It is made possible by a number of unique technological advancements, stemming from our work in Elevonics. One example is our new electronic computer-control system that constantly monitors elevator traffic patterns . . . and automatically controls each car so that waiting time is never more than a few seconds, even during peak demand periods.

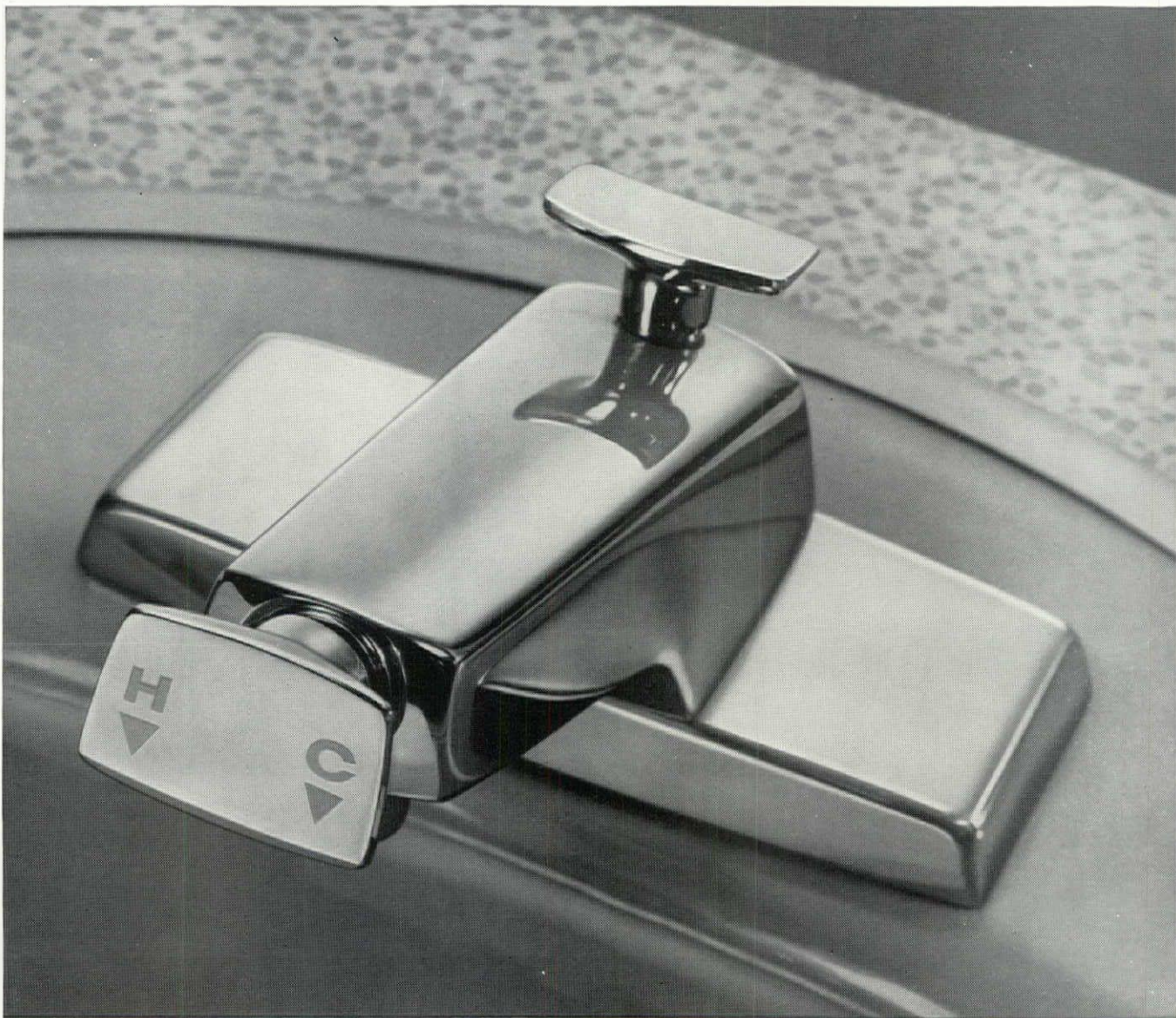
Include Haughton Total Elevator Automation in your plans for building or modernization. You'll be certain, then, that your elevator service will be the ultimate in prestige-building speed and comfort. Ask your Haughton representative for full information (he's in the Yellow Pages), or write to us.

*Haughton's advanced program in systems research and engineering with specific emphasis on the creative application of electronic devices and instrumentation for betterment of systems design and performance. Registered in U. S. Patent Office.

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*Trademarks of AR&SS Corp.

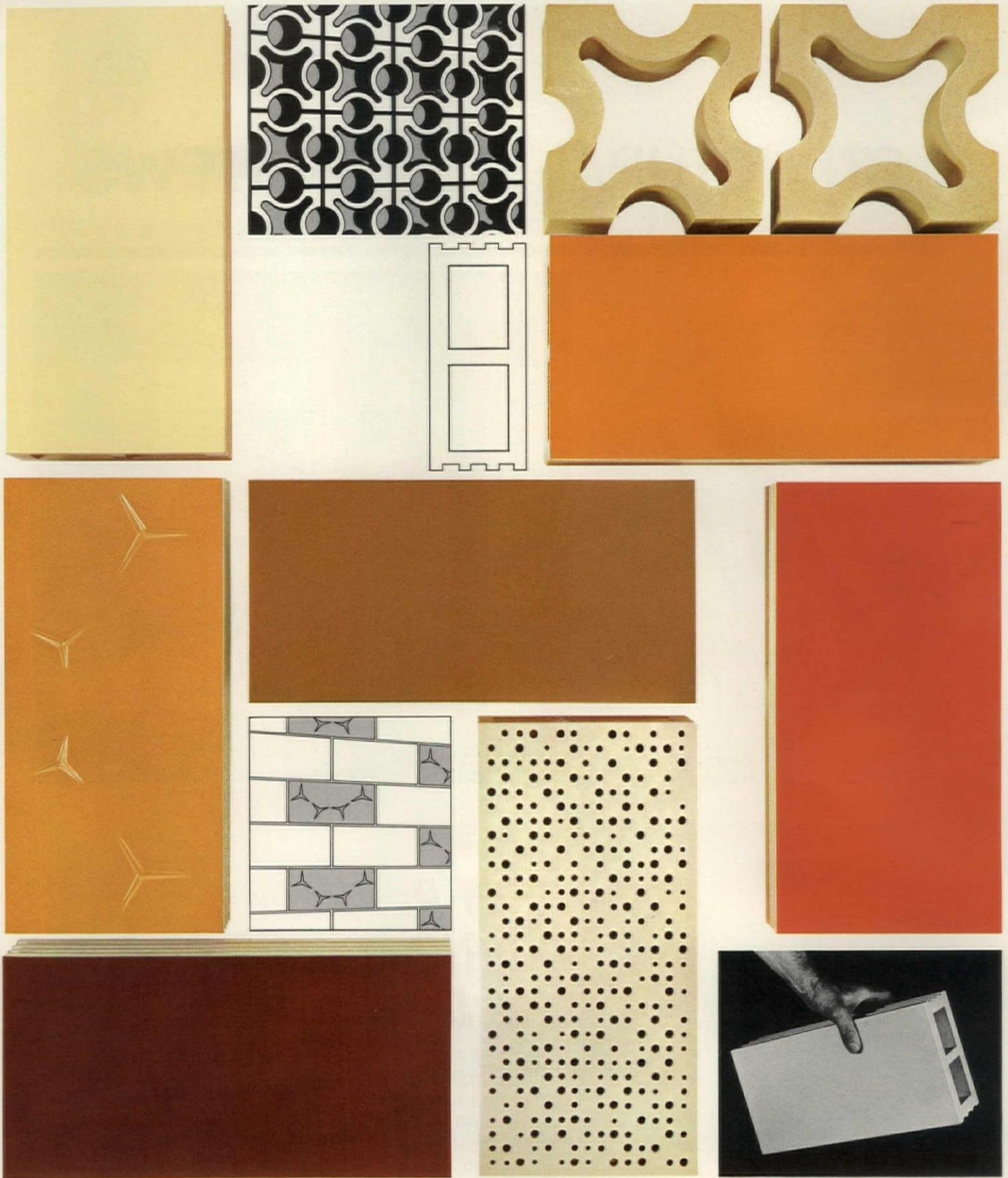


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New ideas in ageless structural clay tile by Natco

Use Natco ceramic glazed Vitritile to dramatize a concourse. Form a lobby wall. Create a mosaic design or mural. Vitritile means radiant color, or the subtle dignity of soft shades. With the new Decorata pattern there's a geometric emphasis. Natcoustile has sound-absorbing

perforations. ■ Select from over forty standard, accent or vivid colors—each with a hard-burned, glazed finish. Fire-proof. Chemical resistant. Impervious to moisture. Vitritile requires a minimum of maintenance. ■ Natsol Solar Screen Tile complements a design

while protecting against direct sunlight. Use as an interior divider, too. Available in glazed or unglazed finishes. ■ Write for catalog S-64.

Vitritile comes in three nominal face sizes: 8" x 16", 5½" x 12" and 5½" x 8".

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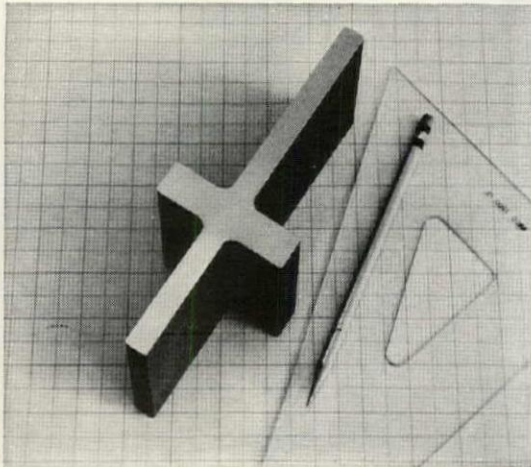
Natco corporation



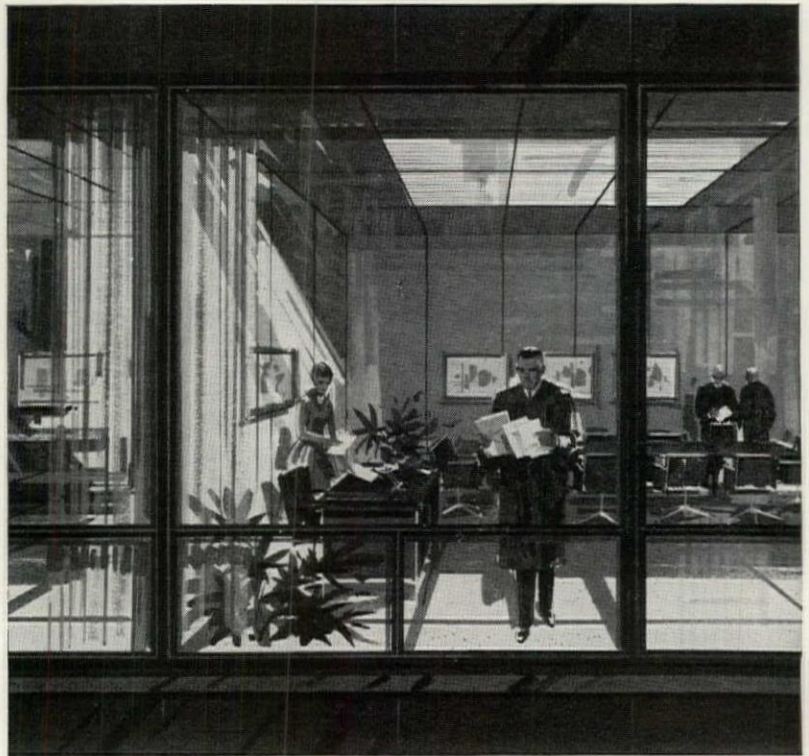
STRUCTURAL DESIGN NEWS

FROM BETHLEHEM STEEL

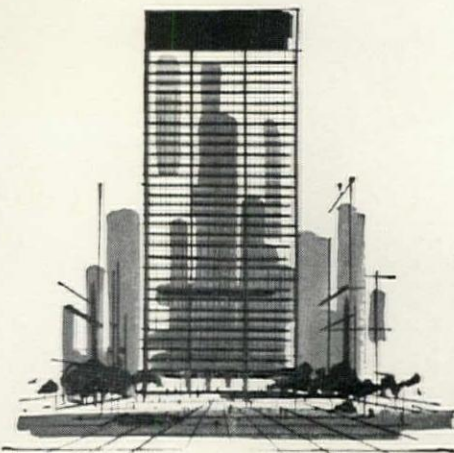
NO. 10



3 x 8-in. cruciform-shaped sash section weighs 20 lb per ft. Bethlehem supplied 1,400 tons of this special bar section, in lengths up to 35 ft, to Ceco Steel Products Corp., Chicago, which fabricated the window frames.



SPECIAL WINDOW-SASH SECTION FOR CHICAGO CIVIC CENTER



CHICAGO CIVIC CENTER.
Owner: Public Building Commission
of Chicago
Architects: C. F. Murphy Associates;
Skidmore, Owings & Merrill;
Loebl, Schlossman & Bennett

This section was rolled by Bethlehem to extremely close tolerances, and furnished in Mayari R Weathering Steel to be consistent with the building's skin material.

Unpainted Mayari R steel eliminates paint maintenance. It develops a closely grained and tightly adherent oxide finish which acts as a barrier to moisture and oxygen, and prevents further corrosion. The oxide finish ripens into an attractive russet-purple color within months.

Bethlehem has rolled hundreds of special shapes, each one tailored to a customer's individual requirement, just as this window-sash section was tailored to the architect's design. Is there a section we can develop for you?

Like to have our full-color folder describing the architectural uses of low-alloy, high-strength Mayari R Weathering Steel? Just phone our nearest sales office. Or write to us at Bethlehem, Pa.



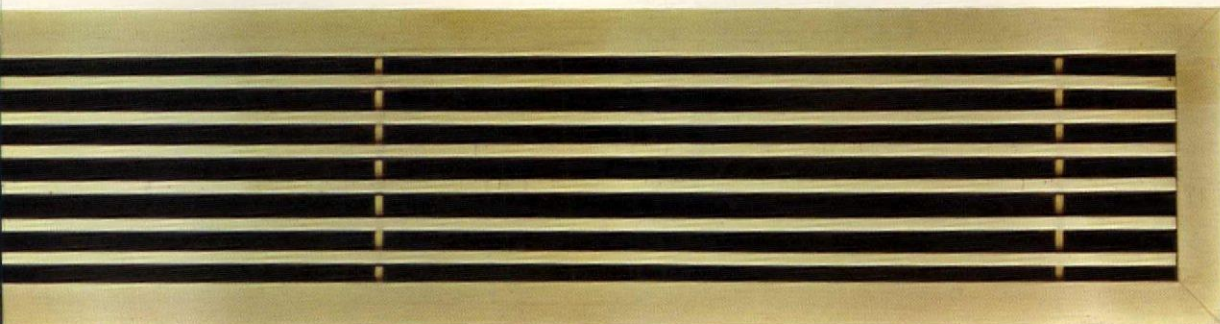
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Sales: BETHLEHEM STEEL EXPORT CORPORATION

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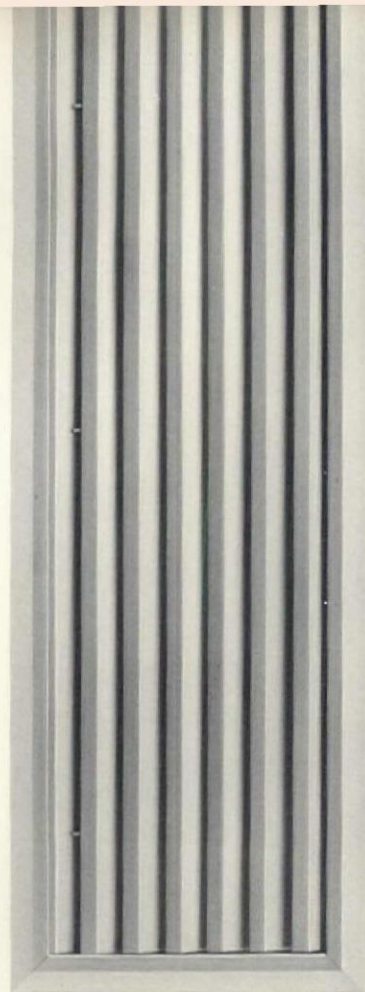
Air can be moved to create sound with beauty...



TUTTLE & BAILEY

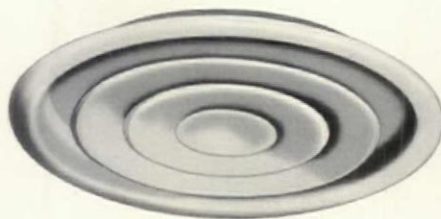
Division of
Allied Thermal Corp.

as it can be moved to create comfort with beauty...

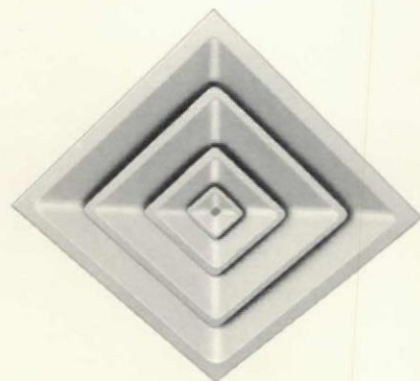


Extruded aluminum slot diffusers. Distribute air in a completely adjustable 1-way or 2-way pattern. For ceiling or sidewall positions.

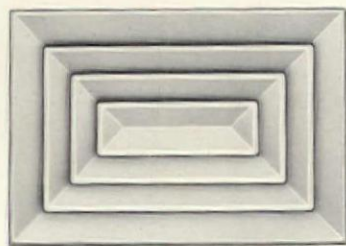
Tuttle & Bailey air distribution equipment will warm or cool your building... and enhance the beauty of your design.



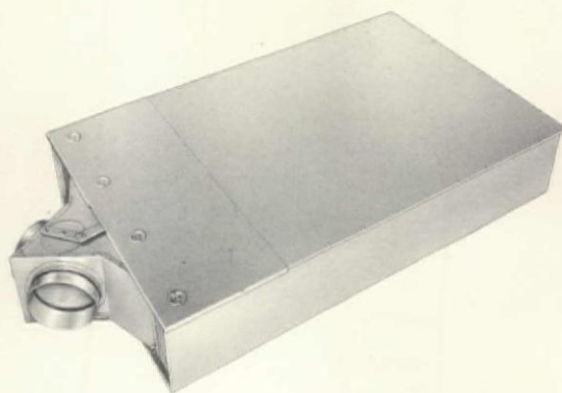
Round ceiling diffusers. In wide range of designs. Sizes from 6 inches to 38 inches, adjustable or fixed patterns. Full range of colors.



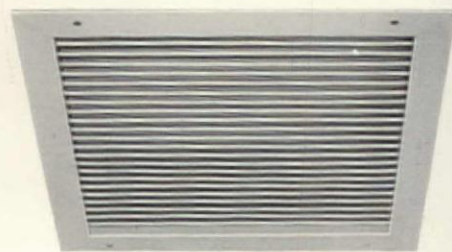
Square ceiling diffusers. Available in fixed pattern, adjustable pattern (illustrated), or panel designs. Sizes: 6-8-10-12-15. Any color.



Multipattern diffusers. In 4-way, 3-way, 2-way or 1-way models. Beveled, flat, flush, drop-collar and perforated designs.



High-pressure equipment. Ceiling, wall or soffit units. For diffusers connected to box, low-pressure ductwork, multiple outlet systems.



Grilles and registers. Supply grilles, supply registers, return grilles, return registers, return grilles and registers. More than 20 models.

Tuttle & Bailey Air Distribution equipment is designed to do its job in the most direct and efficient way possible.

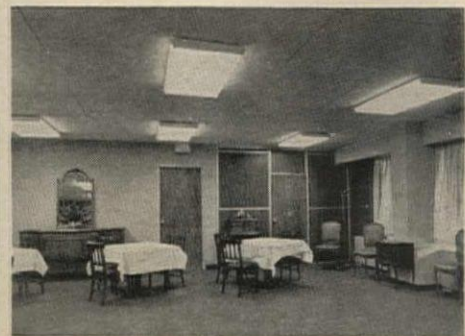
Designs are clean and functional. As a result, architects and designers reap two important rewards. First: systems that deliver effective, reliable service. Second: functional good looks that help give your building enduring esthetic appeal.

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The Gold Bond difference: Tectum Form Plank speeds deck and shoring preparation for new office building

The new, seven-floor Seely Tower office building, Modesto, California, proved once again the time-saving advantages of Gold Bond Tectum form plank for concrete construction. Tectum served as the forming material for each 8" concrete floor slab. Left-in-place after concrete cured, Tectum provided a textured, insulating, acoustical ceiling. As with all concrete construction, rate of progress was dependent upon scheduling each trade as rapidly as possible. Tectum was installed on Spanall shoring joists within two days, for each floor. Electrical and telephone service was embedded in each slab. Plumbing and mechanical services were located in furred out columns. Gold Bond Tectum saved the cost of insulation, acoustical ceilings and the stripping, handling and clean-up associated with conventional forming methods. Thus, Tectum does many jobs in efficient concrete construction. Your West Coast Gold Bond representative can help you with the details. Write or call National Gypsum Company, 2801 W. 6th St., Los Angeles or 1040 Canal Blvd., San Francisco (Richwood), Dept. AR1064.



Building:
Seely Tower,
Modesto, California

Architect:
James Rector Lucas,
Orinda, California

Gen. Contr.:
A. T. Mercier,
Modesto, California

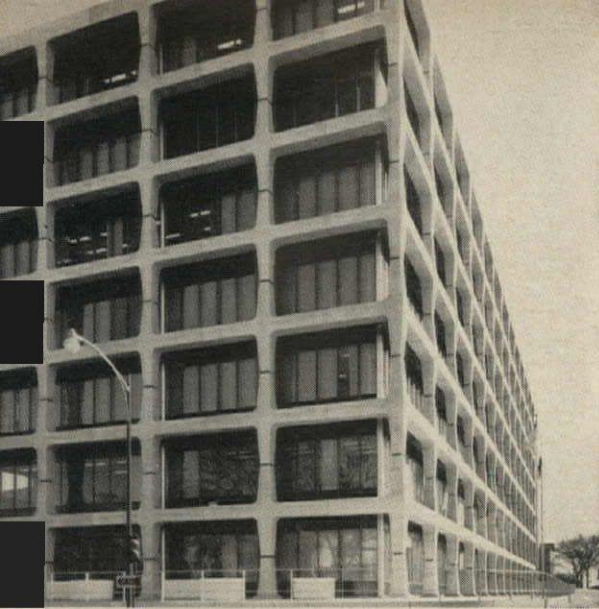


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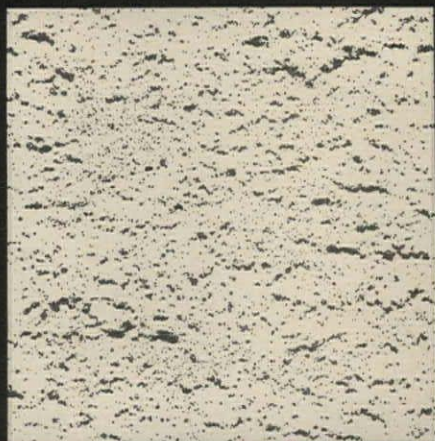
More and more top architects are going Gold Bond



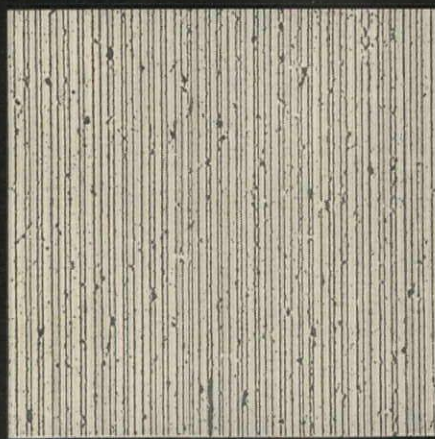
**The Gold Bond difference: Travacoustic tiles
in the John Hancock Building rival the natural
beauty of travertine stone**



*John Hancock Mutual Life Insurance Co. Building, Kansas City, Mo.
Architects: Skidmore, Owings & Merrill, New York
Associate Architects: Tanner-Linscott & Associates, Kansas City
General Contractor: W. E. Brown Associates, Inc., Kansas City
Acoustical Contractor: George Will Company, Kansas City*



Fissured Travacoustic
(Used in the John Hancock Building)



Striated Travacoustic
(Travacoustic is also available
in three sculptured patterns)



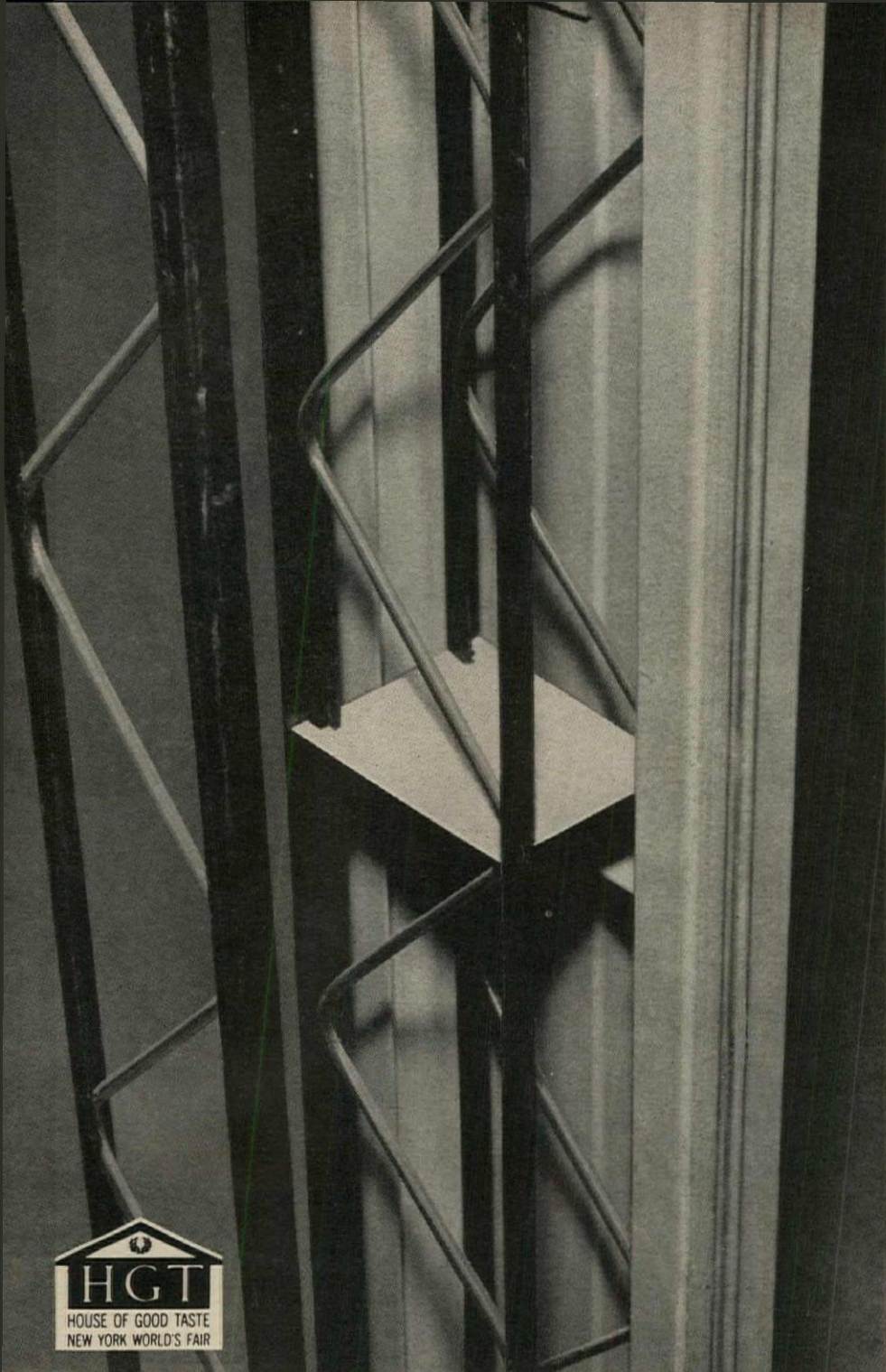
No two tiles are exactly alike. The surface fissures vary in size and arrangement. And because there's no duplication, ceilings have a pleasing, natural appearance. Interesting as the clean peristylar frame of the building. The white finish provides a high degree of light reflectivity. Gold Bond Travacoustic is made from mineral wool and is rated noncombustible. Rates high acoustically, too, with a noise-reduction coefficient of .70 or

better. And it is dense enough to help reduce sound transmission from office to office. Travacoustic is available in fissured, striated and a choice of sculptured patterns. For samples and technical information, ask your Gold Bond® Representative. Or write to Department AR-104, National Gypsum Company, Buffalo, New York 14225.



Gold Bond materials and methods make the difference in modern building

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St. Joseph's Hospital, Chicago, Ill.

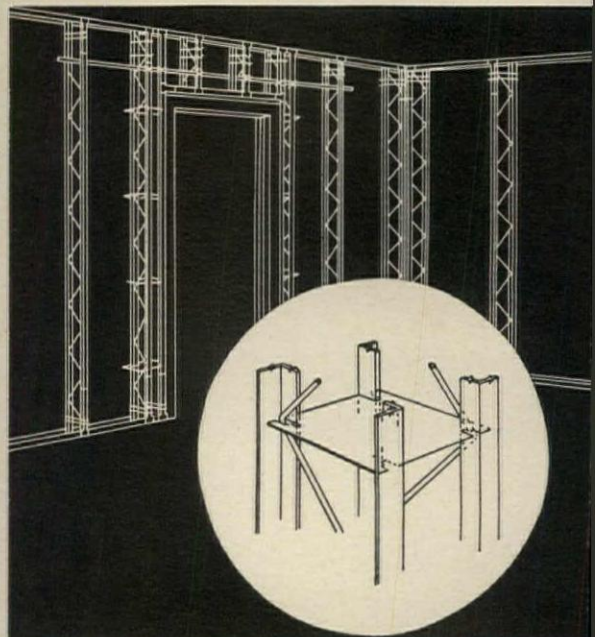
Architect: Belli & Belli

General Contractor: Corbetta Construction Co., Inc.

Plastering Contractor: Suburban Plastering Co., Inc.

Materials Supplier: Material Service Division,

General Dynamics Corporation



Column clip locks two Holostuds together to form a rigid column at door frames. Eight clips per door required.

Truss-type diagonal webbing of Gold Bond Holostud permits free horizontal passage of utility piping and wiring.

The Gold Bond difference: Exclusive Column Clips reduce plaster cracks around doors at St. Joseph's Hospital

These little clips are just *one* reason for specifying Gold Bond Holostud Systems for nonbearing walls. They fasten two studs together, forming a rigid four-cornered column adjacent to the door frame. Reduce door-slaming vibrations and help reduce plaster cracking. The clips cost only a few cents per door, but they can make a big dollar difference in the quality of the plastering job. And steel Holostud systems, finished with Gold Bond lath and plaster, go up fast. Earn a 2-hour fire rating plus

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Gold Bond materials and methods make the difference in modern building

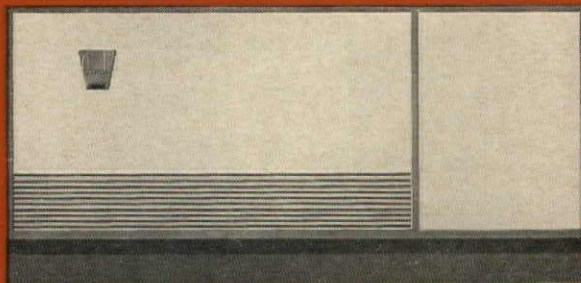
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Specify Modulaire® by Chromalox . . . the year-round electric self-contained air conditioner

for customized comfort heating □ cooling □ dehumidifying □ circulating □ filtering and ventilating □ **Cooling capacity:** 18,000 BTU at 95 F. outdoor temperature—air to air operation □ **Heating capacity:** Up to 6,000 watts (20,500 BTU) heating in four control stages. Optional connections available for additional 2000 watts flanking "Draft Barrier" heat. □ **Ventilation capacity:** 0 to 150 CFM. Setting made at factory per order □ **Supply voltage:** 208, 240 or 277 volts, single-phase, 60-cycle □ **Electrical protection:** 2 pole 40 amp circuit breaker (by others) □ **Evaporator fans:** 600 CFM at high speed, 550 CFM at low speed. □ **Evaporator coil:** 3-row staggered ½" O.D. copper tube, corrugated aluminum fins, low 300 FPM face velocity for high humidity removal. Condensate evaporated to outdoors; no plumbing or drain lines needed □ **Dimensions:** Exterior cabinet 54" long, 26" high, 16¼" deep. Wall opening 41" long, 18½" high □ **Mounting weight:** Approximately 400 lbs. □ **One Modulaire** for rooms 400—600 sq. ft. in area □ **Two Modulaires** (one Master and one Syncro) in typical classroom with 700—1000 sq. ft. area.



Northview Elementary School, Will County, Ill.; Architects and Engineers: Alexander, Borken, Westphal & DeYoung, Joliet, Ill.



Chromalox Modulaire for new and existing classrooms □ churches □ restaurants □ laboratories □ larger offices □ libraries □ conference rooms □ other commercial and institutional applications.

WC-52A

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One good
Mo-Sai^{*}
 job deserves
 another

The International Building, designed with Mo-Sai concrete splayed panels, added a new landmark to the San Francisco skyline.

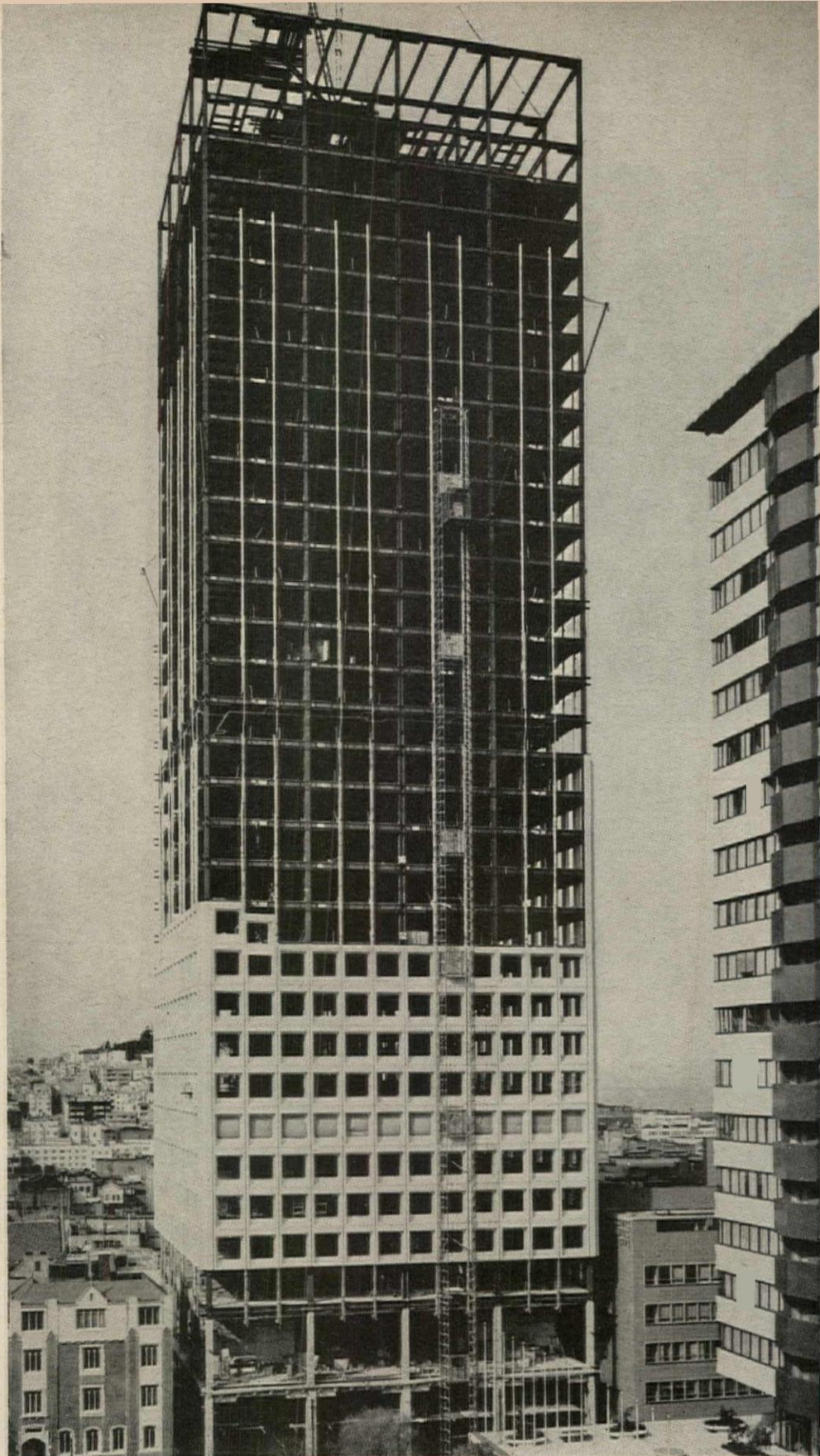
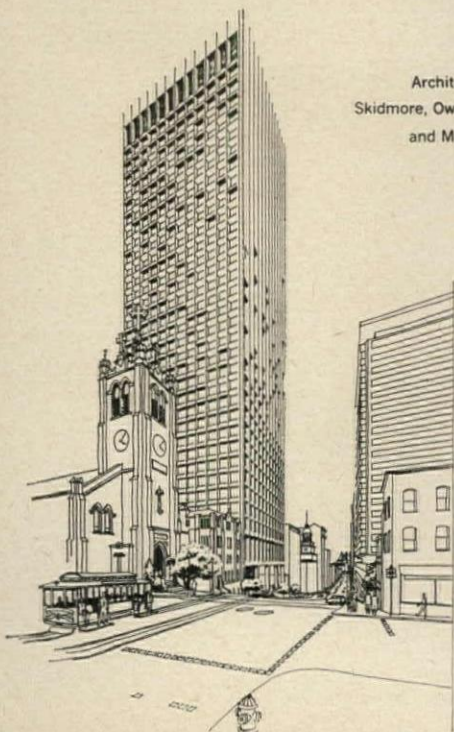
Now a distinguished new neighbor, the 33-story Hartford Building rising across the street, also makes use of Mo-Sai's design versatility and erection speed.

The Mo-Sai precast concrete windowall units — typically 10' x 12' x 2' and a fine-texture and buff color — lend three-dimensional design effect in addition to their function as window frames and sunshades.

Recesses for fixed window glazing were integrally cast into the Mo-Sai windowalls. The units were made under precise quality controls in a franchised Mo-Sai plant.

*Mo-Sai precast concrete panels and windowalls

Architects:
 Skidmore, Owings,
 and Merrill



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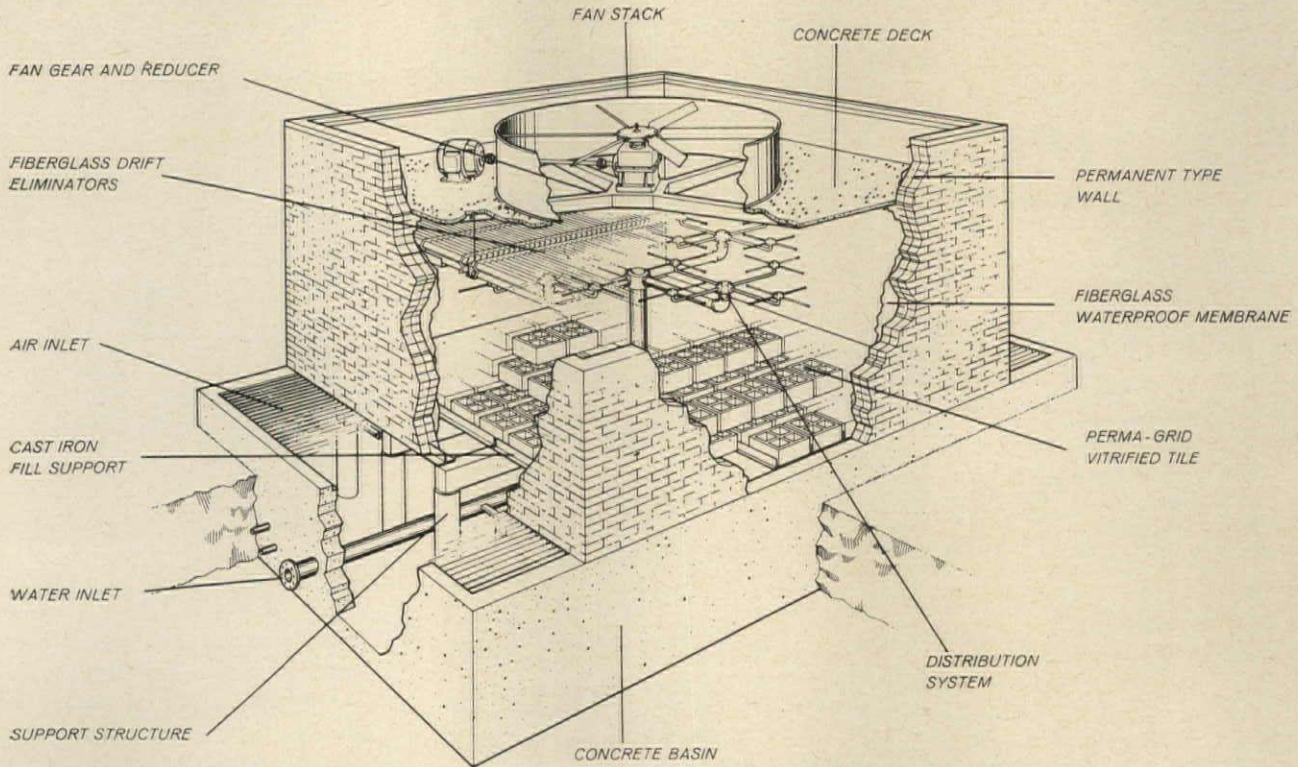
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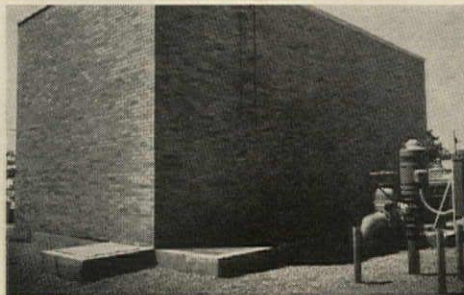
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CUT-AWAY VIEW OF A ONE-CELL CERAMIC COOLING TOWER



Tower shown: Arlington State College Central Chilling Station, Arlington, Texas. Built June, 1962. Two cells; 2,760 GPM; specifications °F: 101.4 — 85 — 78. Consulting Engineers: Yandell, Cowan & Love, Fort Worth, Texas.

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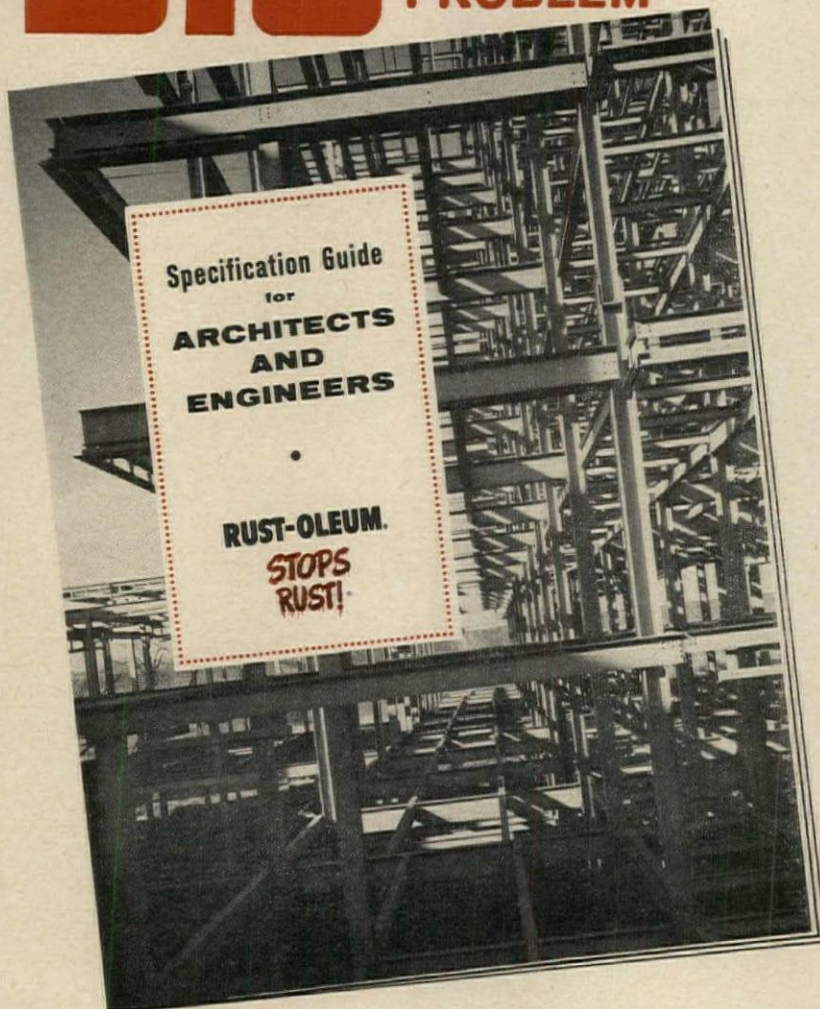
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2468 Oakton St., Evanston, Ill.

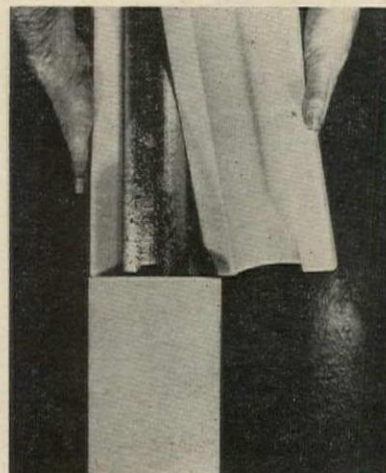
Gentlemen: At no cost or obligation, please send me _____ copies of the Rust-Oleum "Specification Guide for Architects and Engineers," and _____ copies of the Rust-Oleum "Long Life Facts" booklet.

Product Reports

continued from page 268

EXPANDED POLYSTYRENE PIPE INSULATION

A new low temperature expanded polystyrene pipe insulation, featuring extreme lightness and low thermal conductivity is now available from Johns-Manville. Called *Zero-Lite*, it is recommended for low temperature lines, including chilled water, refrigerant and special process lines. *J-M Zero-Lite* has a thermal



conductivity of .24 at 40 deg F and .26 at 80 deg F, mean temperature. It weighs only one pound per cu ft, permitting fast handling at low cost, and is quickly and accurately cut with either knife or saw. It also is self extinguishing by test of ASTM D1692-59T. Available in 3-ft lengths, *Zero-Lite* Pipe Insulation is furnished in thickness of 1-3 in., in pipe sizes 1/2-12 in. *Johns-Manville, Industrial Insulations Division, Box DOC-31, 22 East 40th St., New York, N.Y.*

CIRCLE 314 ON INQUIRY CARD

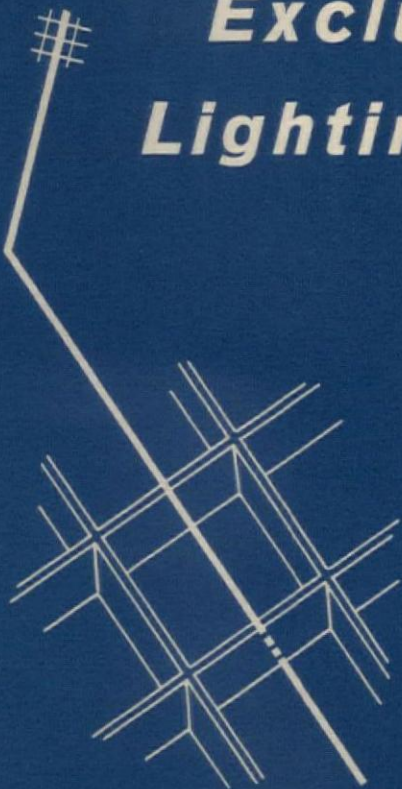
PRE-CONDITIONER FOR METAL

Chem-Grip, a new pre-paint liquid conditioner for metal surfaces, can be brushed, rolled or wiped on manually to impregnate the surface of the metal with a non-metallic coating to which paint clings easily and firmly. Although intended primarily for use with the company's *All Surface Enamel*, this new conditioner can be used effectively with other types of paint, including latexes, acrylics, alkyds, lacquers, asphaltic-based paints and phenolic plastics. *Acme Quality Paints, Inc., 8250 St. Aubin Ave., Detroit, Mich.*

CIRCLE 315 ON INQUIRY CARD

Exclusive 55° Angle Lighting Louver Diffuser

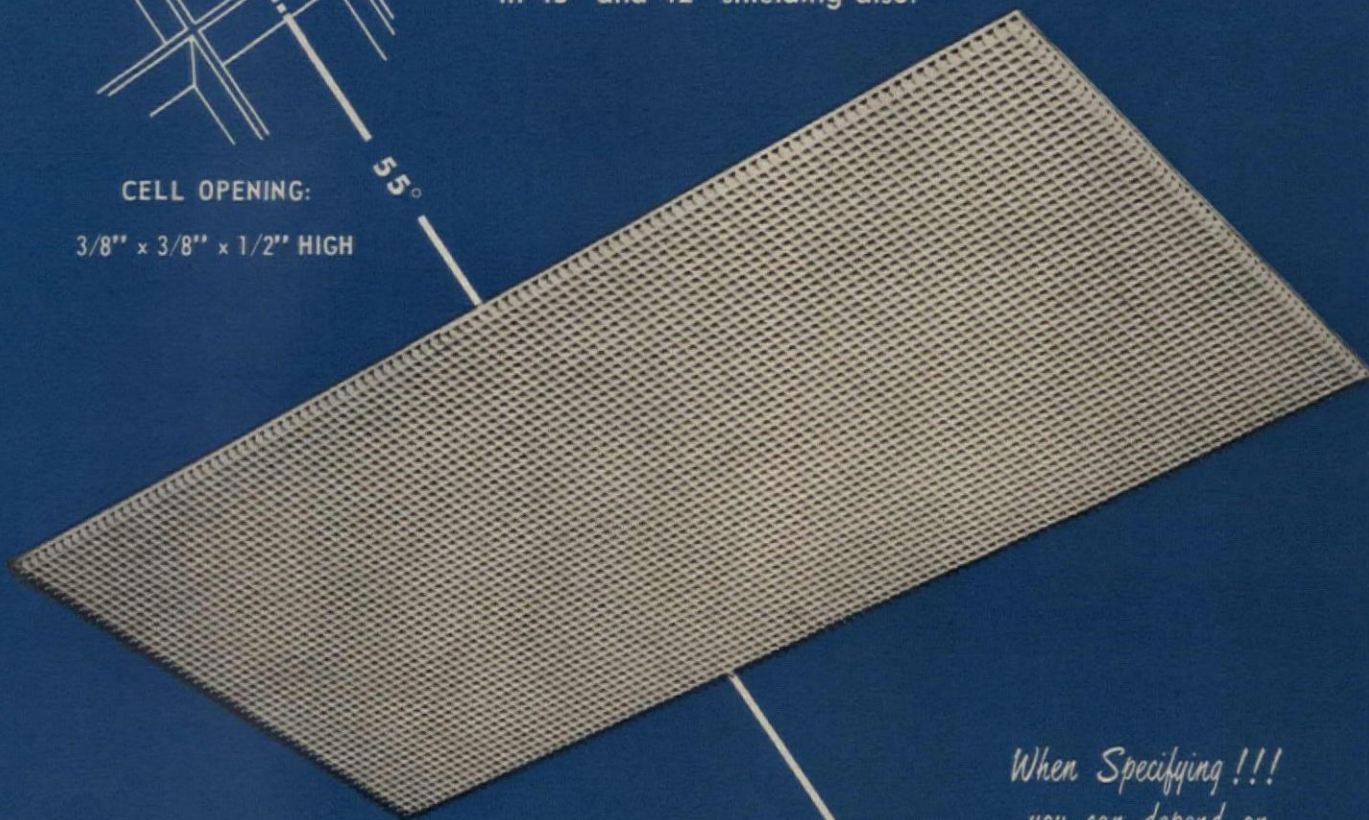
Developed to meet today's and tomorrow's higher lighting levels—For use in Individual fixtures, Modular or Large Area illumination with unexcelled diffusion—Developed to meet and exceeds IES-NEMA SPI joint specifications for stabilized styrene—True translucent white and a wide range of colors—Light weight for easy handling, installation and maintenance—Dimensionally stable—Low cost—Available in 45° and 42° shielding also.



CELL OPENING:

3/8" x 3/8" x 1/2" HIGH

55°



Light shielding louvers is our one and only most important product, developed, designed and manufactured by American Louver, consultants to the lighting industry since 1939, assuring you the finest in Plastic Louvers.

For pertinent facts on American Louvers, write for bulletin 33am and new 3 color catalog—Just off the press.

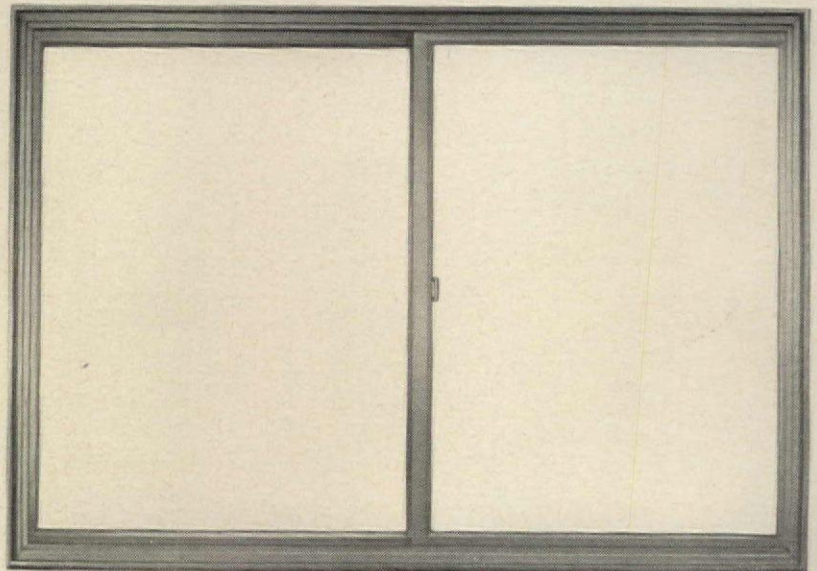
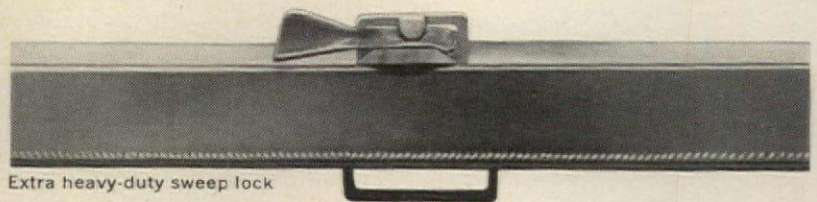
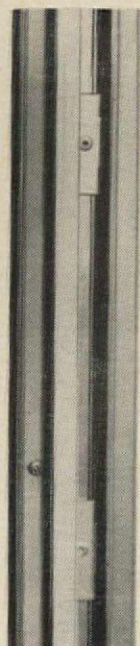
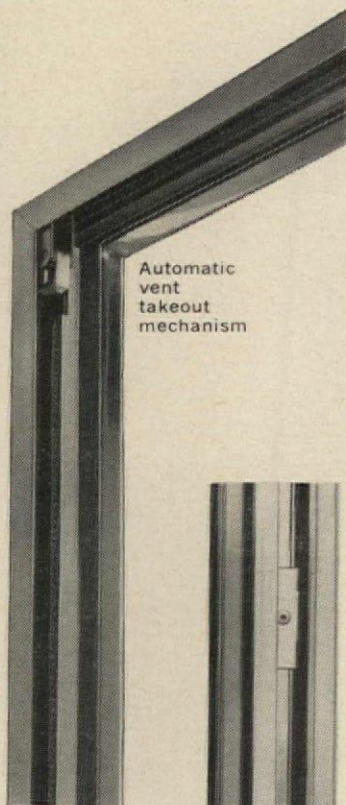
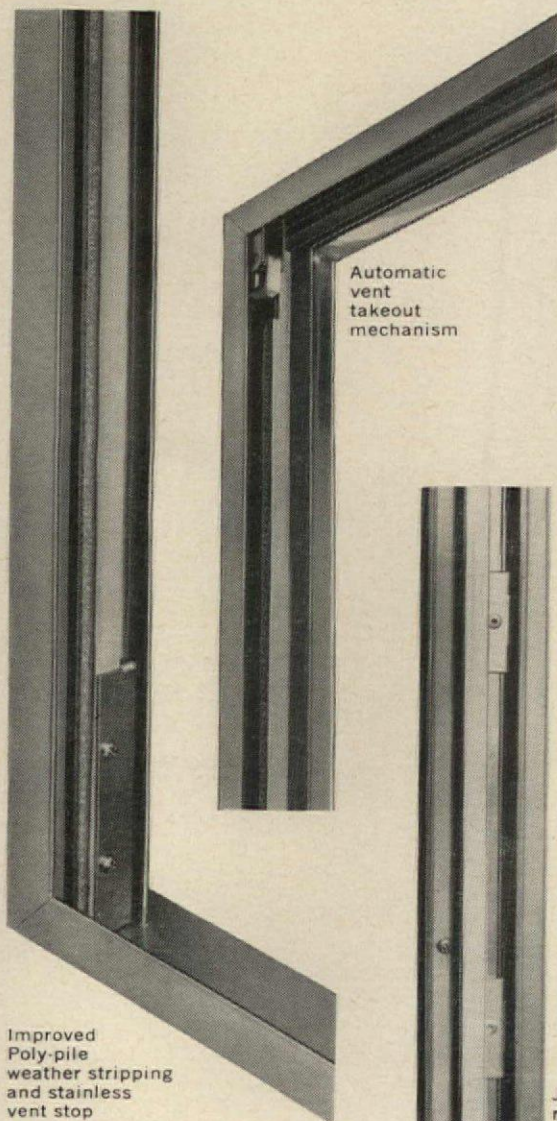
*When Specifying!!!
you can depend on
American Louvers...*

american louver company

5308 NORTH ELSTON AVENUE • CHICAGO 30, ILLINOIS
15 TIDEMARE, TORONTO (REXDALE) ONTARIO, CANADA

For more data, circle 150 on Inquiry Card

There are 17 things new Freedom Stick, rust, etch, crack, chip, warp, swell, shrink, scratch, If the rain doesn't wash



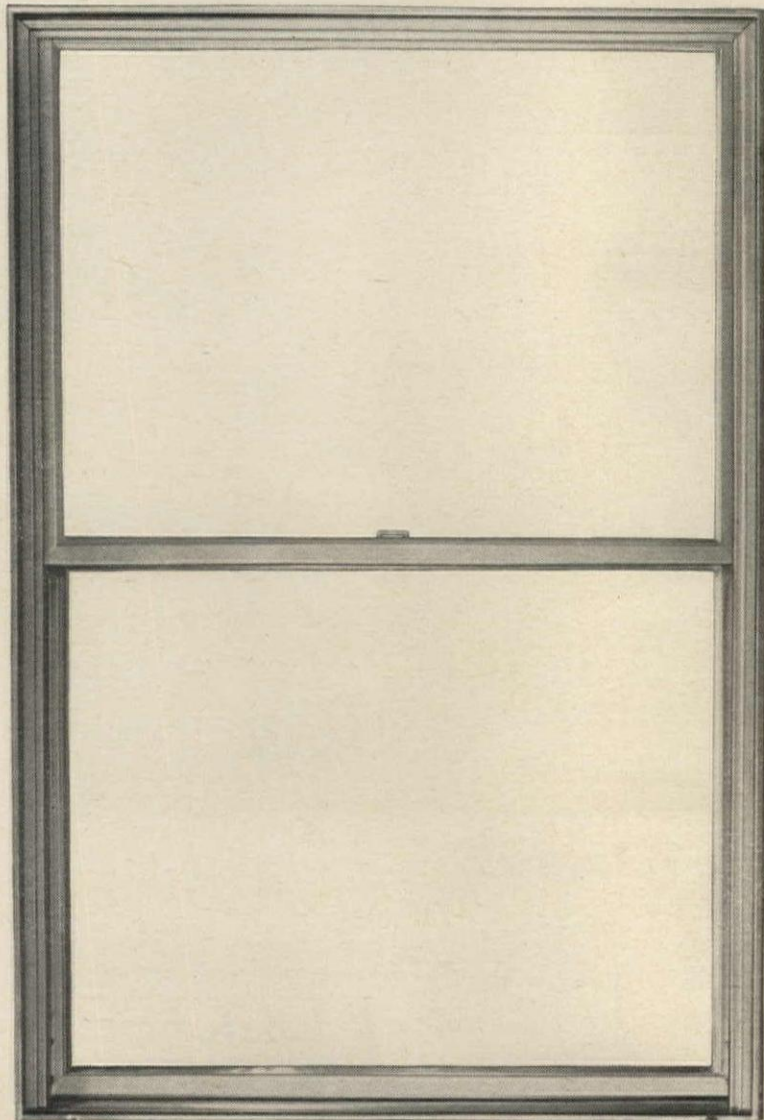
Heavily reinforced watertight corners—both frame and ventilators



Windows of Stainless Steel can't do.

peel, flake, twist, rot, discolor,
bleed, rack, or pit. Not ever.

them, soap and water will.



The FREEDOM WINDOW of Stainless Steel, matte silvery finish, stainless all the way through. Soft reflections of color, light, and shadow in a finish that never changes. Strong; strong as steel; engineered even stronger. Attention to detail as never before in head, jamb, and sash; mullion and muntin; latch, vent, fin, bead, anchor, and fitting. Premium? Yes, indeed. And well worth it. Soap and water will always come cheap, year after year after year.

MANUFACTURING DIVISION



REPUBLIC STEEL CORPORATION
Youngstown, Ohio 44505



MANUFACTURING DIVISION

Republic Steel Corporation • Dept. AR-8333
Youngstown, Ohio 44505

Please send me detailed information on FREEDOM
WINDOWS of Stainless Steel.

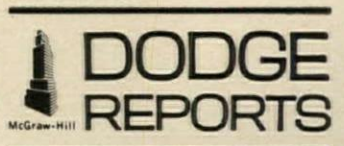
Name _____
Title _____
Company _____
Address _____
City _____
State _____ Zip _____

"Infinity" by Hans Felbinger



Thinking glass?

Dodge helps architects realize their ideas. The project information you give to your Dodge Reporter helps contractors and suppliers fit their skills and products to your requirements more accurately, at greater savings of everybody's time—and money.





All you need to rearrange your lighting is our Universal Lighting Duct,



and a ladder.

It's that simple. No more expensive, extensive lighting jobs. No more rearranging equipment to fit lighting arrangements. Just unplug. Move lights. Or add new lights. Or take lights away. Then plug in again. And you're finished. Any wonder

we call it a *Universal* Lighting Duct? For further information contact your local I-T-E Sales Office or write the BullDog Division, Box 177, Detroit, Michigan 48232. In Canada: 80 Clayson Rd., Toronto, Ontario.

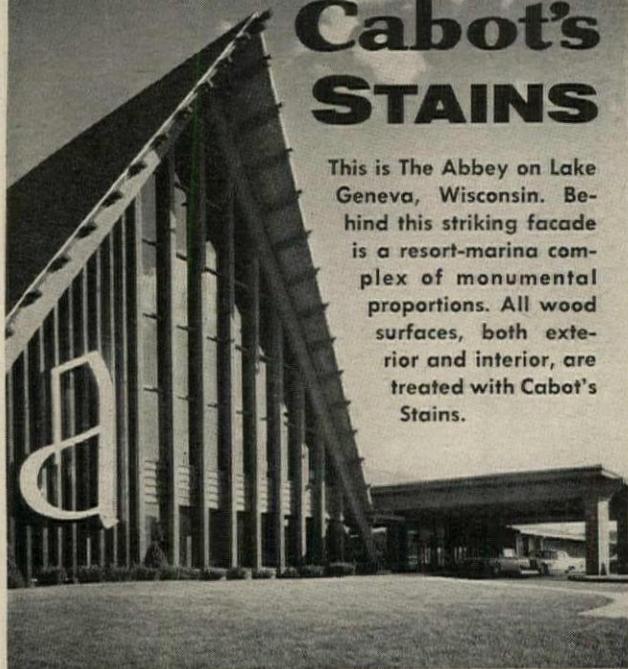


I-T-E CIRCUIT BREAKER COMPANY

For more data, circle 153 on Inquiry Card

Imagination with Wood...
Enhanced, Protected by

Cabot's STAINS



This is The Abbey on Lake Geneva, Wisconsin. Behind this striking facade is a resort-marina complex of monumental proportions. All wood surfaces, both exterior and interior, are treated with Cabot's Stains.

Architect: A. Epstein & Sons Inc., Chicago, Ill.; Builder: Zinzow Construction Co., Elkhorn, Wisc.; Painting Contractor: Lakes Industries, Elkhorn, Wisc.

2500 gallons, eight different colors were used on The Abbey, indicating the architect's confidence in Cabot's products. Cabot's Stains, in a range of 35 colors, bring out the best in wood, preserving it and enhancing the grain; Cabot's Stains cost only half as much as paint, require less maintenance, never crack, peel, or blister; Cabot's Stains beautify... a stained surface grows old gracefully.



STAINS FOR INTERIOR BEAUTY

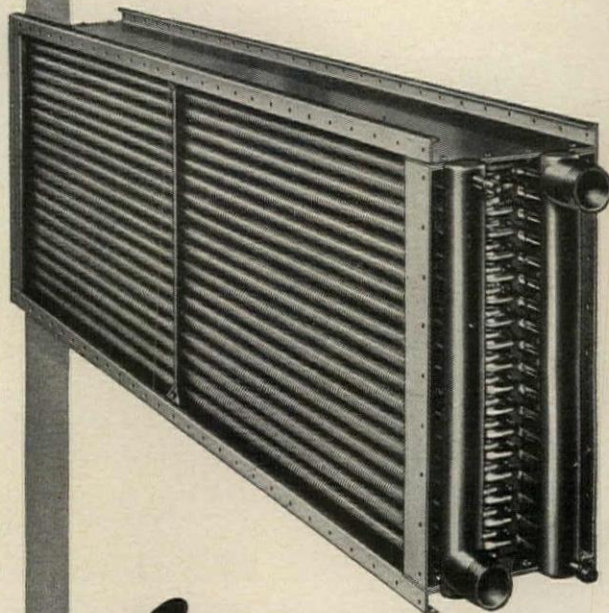


The interior of The Abbey is as breathtaking as the exterior. Sturdy beams, soaring arches, wood in its natural beauty... a fitting complement to the luxury and comfort of the furnishings. For interior surfaces, Cabot offers two distinct products: Cabot's Interior Stains for the traditional flat finish; Cabot's Stain Wax for a rich, soft, satin luster... staining, sealing, and waxing in one operation.

SAMUEL CABOT INC.

1029 S. Terminal Trust Bldg., Boston 10, Mass.
Please send color cards and information on Cabot's Stains.

For more data, circle 152 on Inquiry Card



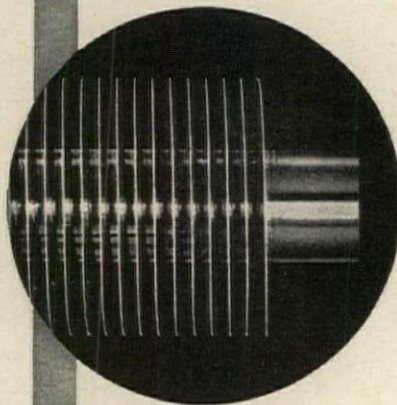
AEROFIN

Smooth-Fin Coils
offer you:

Greater Heat Transfer
per sq. ft. of face area

Lower Airway Resistance
— less power per c. f. m.

Aerofin smooth fins can be spaced as closely as 14 per inch with low air friction. Consequently, the heat-exchange capacity per square foot of face area is extremely high, and the use of high air velocities entirely practical. Tapered fin construction provides ample tube-contact surface so that the entire fin becomes effective transfer surface. Standardized encased units arranged for simple, quick, economical installation.



Aerofin is sold only
by manufacturers of
fan system apparatus.
List on request.

AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N. Y.

ENGINEERING OFFICES IN PRINCIPAL CITIES

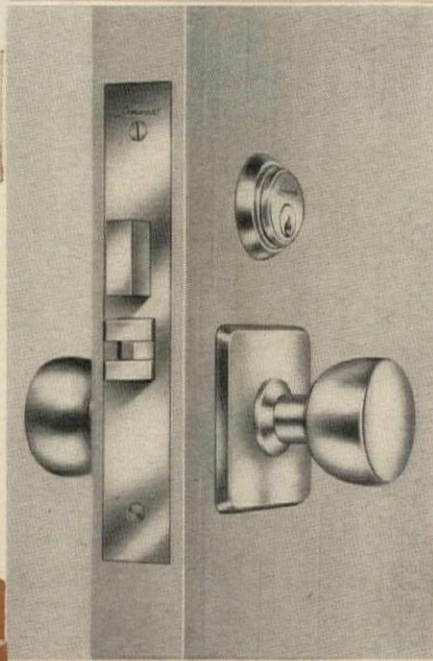
For more data, circle 154 on Inquiry Card

KICKOFF TIME

KICKOFF TIME was when she turned the knob. This Lockwood dormitory lock has an exciting safety feature. The husky solid brass deadbolt which gives so much security is locked by the turnknob but "kicked off" by simply turning the inside knob.

Of course it's just a convenience now, but think of what it means in case of fire or other emergency. No groping in the dark for turnknob or key by a panic stricken co-ed. A twist of the knob means safety.

Long, trouble free life with this mortise lock too. Could well last right up to the class of '75—2075 that is.



LOCKWOOD

LOCKWOOD HARDWARE MFG. CO.
FITCBURG, MASSACHUSETTS

For more data, circle 155 on Inquiry Card

Office Literature

continued from page 215

ROOF DECK INSULATION

A new 12-page booklet contains complete product data, specifications and diagrams of *All-weather Crete* roof deck insulation. This seamless roof deck insulation has a K factor of .40 can be applied hot and dry even in freezing weather and can be

pitched to drains. *Silbrico Corporation, 5901 West 66th St., Chicago, Ill.*

CIRCLE 410 ON INQUIRY CARD

CONCRETE SYSTEMS

Specifications, characteristics and placing instructions for a wide range of lightweight concrete roof deck systems are detailed in a new eight-page brochure. *Zonolite Division of W. R. Grace & Co., Dept. CA-88, 135 S. LaSalle St., Chicago, Ill.**

CIRCLE 411 ON INQUIRY CARD

RESIDENTIAL LIGHTING CATALOG

The new *Empire* line of residential lighting fixtures is described in an 8-page color catalog. The line consists of 35 fixtures, including pendants, wall mounted fixtures, post lights, close to ceiling units and chandeliers. A chain conversion kit is also shown which is designed to convert all chain hung pendants into portable styling. *Residential Lighting Division, Thomas Industries Inc., 207 East Broadway, Louisville, Ky.*

CIRCLE 412 ON INQUIRY CARD

GUIDE TO PHOTO REPRODUCTION

A useful reference guide to Eastman Kodak Company photo reproduction materials has been produced in the form of a chart which quickly pinpoints the best *Kodagraph* film or paper for any drawing reproduction job. Developer recommendations and filter or safelight information are also included. All *Kodagraph* roomlight and darkroom handling materials, both contact speed and enlarging or camera speed are covered. A new product codification scheme is used to assist the buyer in identifying, ordering and stocking the films and papers. *Photo Reproduction Products Sales Division, Eastman Kodak Company, Rochester, N.Y.*

CIRCLE 413 ON INQUIRY CARD

NEWS OF THE CERAMIC TILE INDUSTRY

"Tile Talk" is the first issue of a bi-monthly magazine which is intended to keep readers informed of new ceramic tile product developments, unusual applications, installation and maintenance data. The magazine also gives general information about current events in the ceramic tile industry. *United States Ceramic Tile Company, Canton, Ohio.**

CIRCLE 414 ON INQUIRY CARD

ACRYLIC PLASTIC PANELS

The various kinds and applications of *Plexiglas* acrylic plastic facing panels are illustrated in a 12-page colored brochure. Installation photos are shown and details of the range of colors and textures available are also given. *Rohm & Haas Company, Philadelphia, Pa. 19105.**

CIRCLE 415 ON INQUIRY CARD

*Additional product information in *Sweet's Architectural File* more literature on page 294

New TALK-A-PHONE Apartment House Intercom



Provides instant and direct 2-way conversation between any Apartment and Vestibule . . . Greater Performance with these Exclusive Talk-A-Phone Features:

- **Ample Volume**—Whispers, shouts and normal voice are heard clearly without "boom".
- **Automatic Privacy**—On all Apartment Units.
- **Volume Selector**—Each Apartment selects own volume. Concealed yet easily accessible.
- **Built-in Buzzer**—Pleasant sound, in each Apartment Unit.
- **Contoured Push Button**—Operates electric door opener.
- **Fanning Strip-Terminal Block** for easy connection.

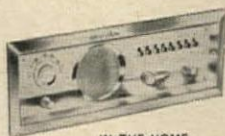
Distinctively styled. Quality Engineered. Built to withstand continuous use.

TALK-A-PHONE . . . "Has Everything. Does Everything." The accepted standard of quality and dependability in Intercommunication for over a third-of-a-century.



IN OFFICE AND INDUSTRY

IN OFFICE AND INDUSTRY . . . Talk-A-Phone fulfills virtually every Intercom need. Gives you instant and direct two-way conversation between any two points. Saves thousands of man-hours, simplifies office routine. Distinctively styled, ruggedly built to withstand continuous day and night use. Pays for itself many times over.



IN THE HOME

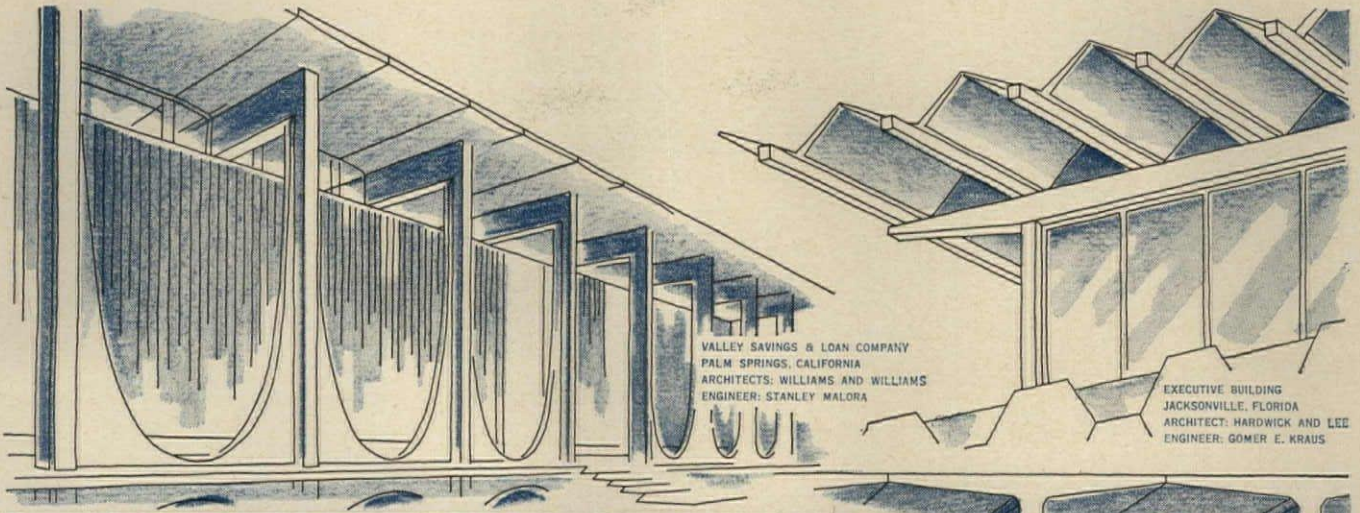
IN THE HOME . . . everyone in the family will enjoy the comfort, convenience and peace of mind this Talk-A-Phone Home Intercom-Radio System provides. From any room you can • Listen-in on baby, children or sick room • Answer outside doors without opening doors to strangers • Talk to anyone—upstairs and downstairs, inside and out • Enjoy radio in every room with the simple flick-of-a-switch. Distinctively styled. Beautifully finished. Easily installed.

Send for Free Catalogs...

Dept. AR-10

TALK-A-PHONE CO., 5013 N. Kedzie Ave., Chicago 25, Illinois

For more data, circle 156 on Inquiry Card



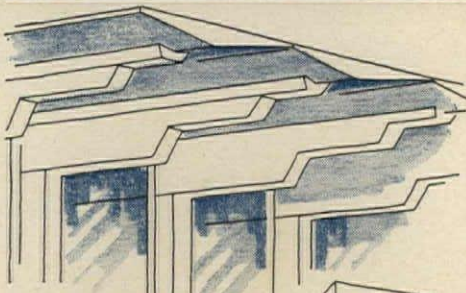
VALLEY SAVINGS & LOAN COMPANY
PALM SPRINGS, CALIFORNIA
ARCHITECTS: WILLIAMS AND WILLIAMS
ENGINEER: STANLEY MALORA

EXECUTIVE BUILDING
JACKSONVILLE, FLORIDA
ARCHITECT: HARDWICK AND LEE
ENGINEER: GOMER E. KRAUS

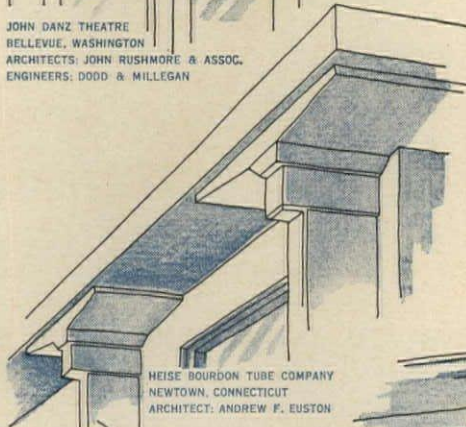
PRESTRESSED CONCRETE

CREATIVE DESIGN GIVES CUSTOM LOOK TO STANDARD PRODUCTS

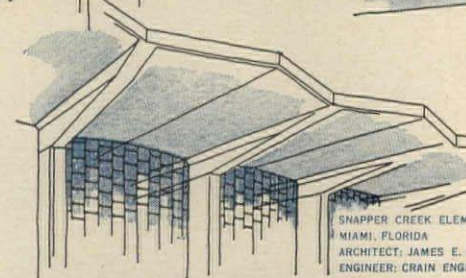
Architects and engineers whose esthetic concepts and ingenuity lead them to seek broad versatility find prestressed concrete a truly cooperative structural material. Simple techniques in manufacture permit virtually unlimited variations in economical standard sections. Let your next building express bold individuality with plant-produced prestressed concrete.



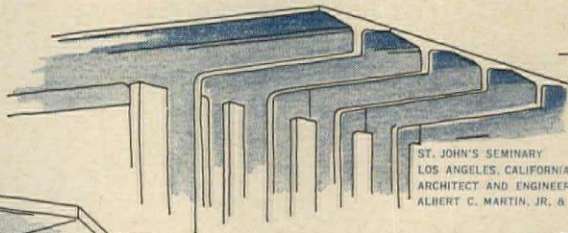
JOHN DANZ THEATRE
BELLEVUE, WASHINGTON
ARCHITECTS: JOHN RUSHMORE & ASSOC.
ENGINEERS: DODD & MILLEGAN



HEISE BOURDON TUBE COMPANY
NEWTOWN, CONNECTICUT
ARCHITECT: ANDREW F. EUSTON



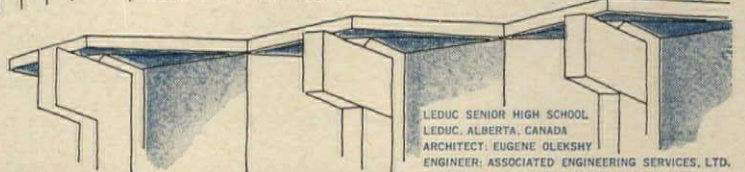
SNAPPER CREEK ELEMENTARY SCHOOL
MIAMI, FLORIDA
ARCHITECT: JAMES E. FERGUSON & ASSOC.
ENGINEER: CRAIN ENGINEERING CO.



ST. JOHN'S SEMINARY
LOS ANGELES, CALIFORNIA
ARCHITECT AND ENGINEER:
ALBERT C. MARTIN, JR. & ASSOC.



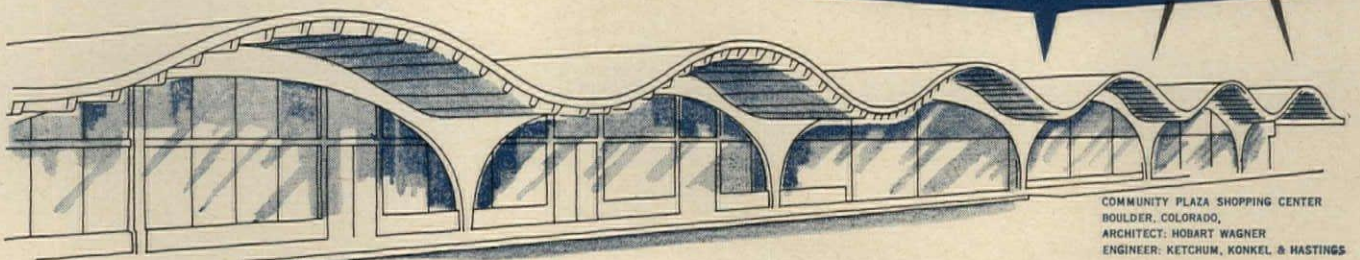
FITCHBURG PAPER COMPANY
FITCHBURG, MASS.
ARCHITECT: CARL KOCK & ASSOC.
ENGINEER: SOUSA & TRUE



LEDUC SENIOR HIGH SCHOOL
LEDUC, ALBERTA, CANADA
ARCHITECT: EUGENE OLEKSHY
ENGINEER: ASSOCIATED ENGINEERING SERVICES, LTD.

PRESTRESSED CONCRETE INSTITUTE

205 WEST WACKER DRIVE • CHICAGO, ILL. 60606



COMMUNITY PLAZA SHOPPING CENTER
BOULDER, COLORADO
ARCHITECT: HOBART WAGNER
ENGINEER: KETCHUM, KONKEL & HASTINGS

For more data, circle 157 on Inquiry Card



At Searstown they needed:

- 10** duct furnaces,
- 75** unit heaters,
- 11** horizontal furnaces,
- 23** rooftop heating and air conditioning packages,
- 7** blower package units,
- 71** remote condensing units,
- 59** horizontal blower coil units,
- 1** gas boiler,
- 3** gas heating/electric cooling packages.



Searstown, Cumberland, Maryland. C. Yoder & Sons, Heating and Cooling Contractor.

They got 'em all from one reliable, dependable source: Janitrol.

When you specify heating and cooling by Janitrol, you specify from the broadest, most complete line in the industry. Does that make a difference? You bet it does.

First, it means you get the right equipment to match the requirements of the job. Not something that just comes close. Janitrol's complete quality line gives you specification flexibility for any heating or cooling application . . . boiler to forced air . . . gas, electric or oil fuels. The Janitrol line is available in a wide variety of models for residential, commercial and industrial applications. Includes make-up air systems, unit heaters, year-round gas/electric packages,

forced air furnaces, add-on cooling, electric heat pumps and gas or electric driven air conditioners.

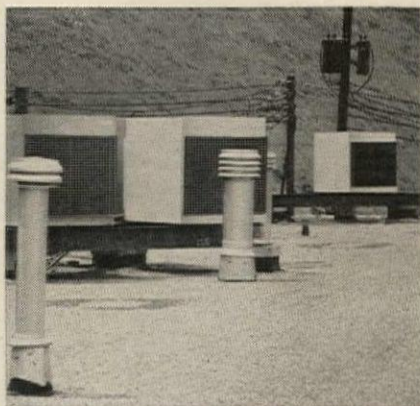
Second, you get the benefit of the longest experience and most dependable design and engineering in the industry. You know when you specify Janitrol equipment it will perform efficiently at or above rated capacity.

Third, you get more technical help. Janitrol's expert C & I field force is always on call to help you

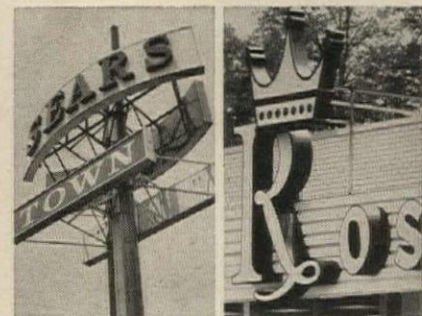
select equipment, handle layouts, take-offs and whatever is necessary to help you get the job right.

Finally, you get one source, full line responsibility for all phases of the heating and cooling problem—from rough sketch to final completion of the job.

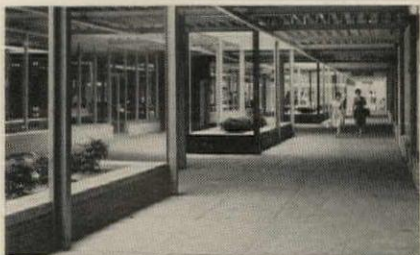
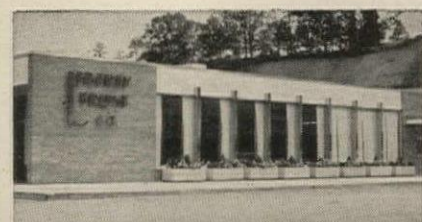
Like to see what more Janitrol can offer to make your job easier? Contact your Janitrol District Manager for full details. His name's in the Yellow Pages.

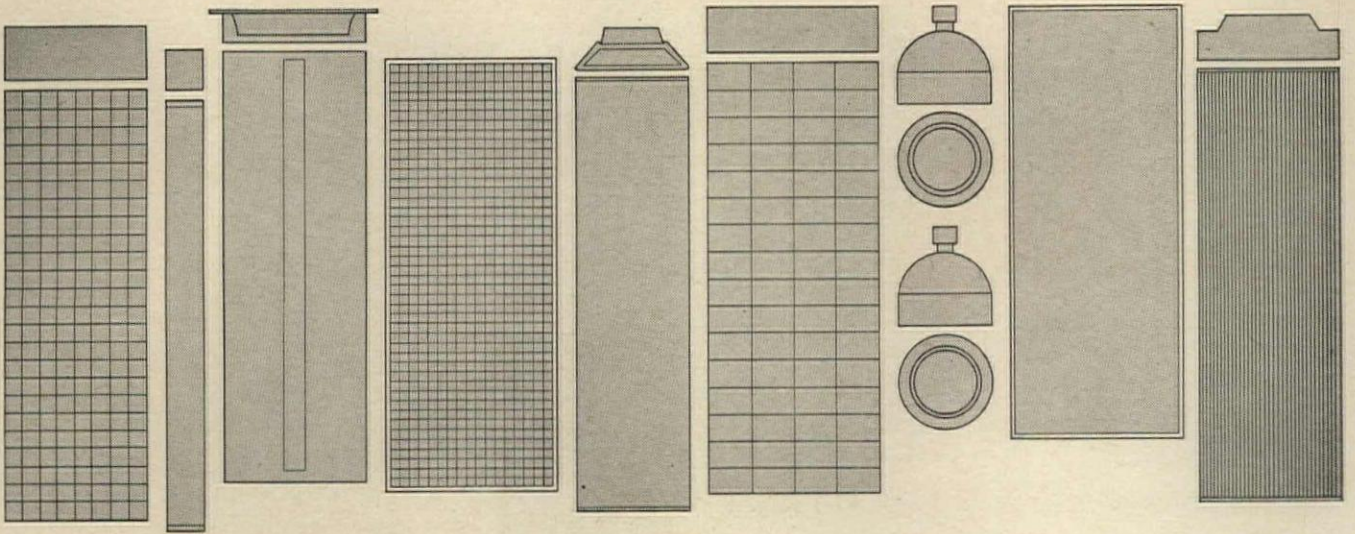


JANITROL DIVISION
Midland-Ross Corporation
Columbus, Ohio Phoenix, Arizona

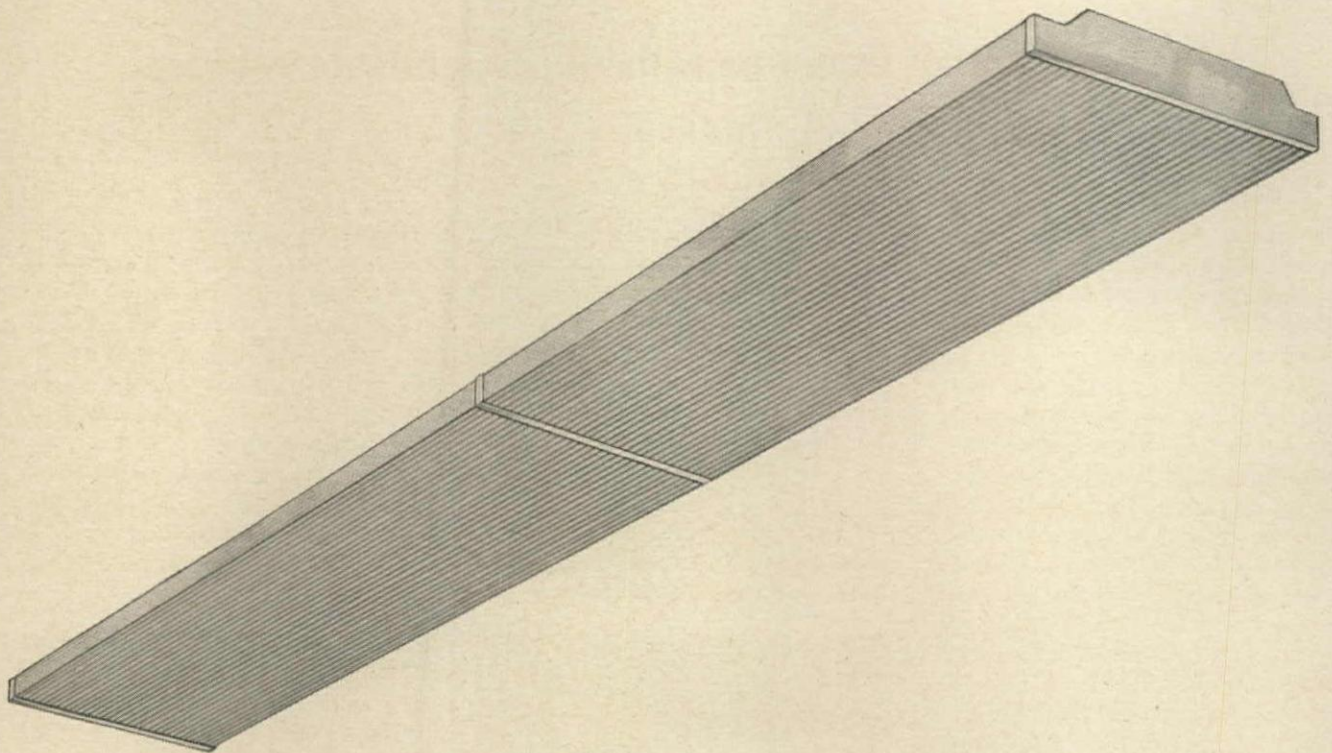


Janitrol gives you more
to work with





Add the Kingston to the Litecontrol Line



Litecontrol has many standard fluorescent fixtures — ones that you see every day in modern buildings. We also design and produce fixtures to meet particular specifications. But we don't have a complete line. • We're continually adding new models. Take the Kingston wrap-around fixture, for instance. It's the latest addition to the Litecontrol line of fine fluorescent fixtures for commercial or institutional lighting. Known as Series 6800RS, the Kingston is available with either 2 or 4 lamps. • But, the Kingston is a long way from the first Litecontrol fixture. It will not be the last. When you want to make a good job, a better lighted one, check with Litecontrol where you can choose from many modern, functional, cost-conscious models. They'll give your job the effect you want. • Write for more information about the Kingston, or about the extensive — not complete — Litecontrol line of fluorescent lighting fixtures.



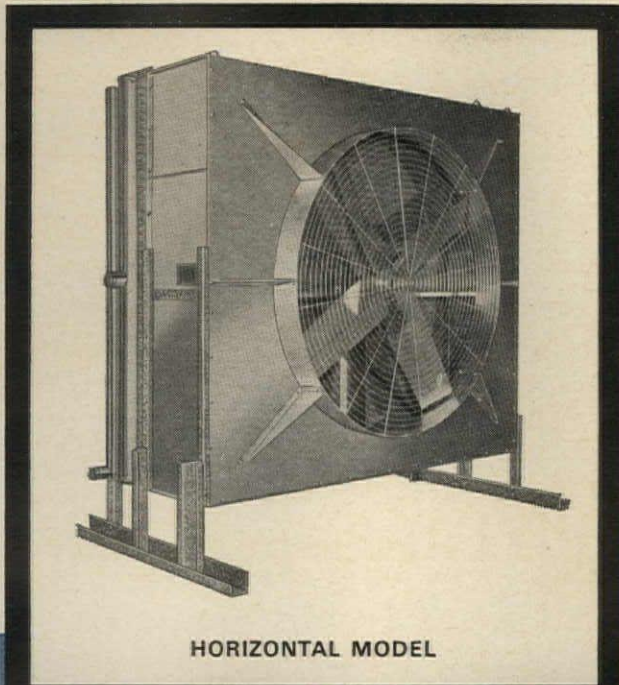
LITECONTROL
LIGHTING

LITECONTROL CORPORATION,

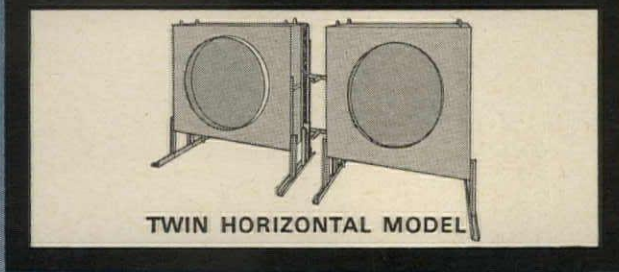
36 Pleasant Street, Watertown 72, Massachusetts

For more data, circle 159 on Inquiry Card

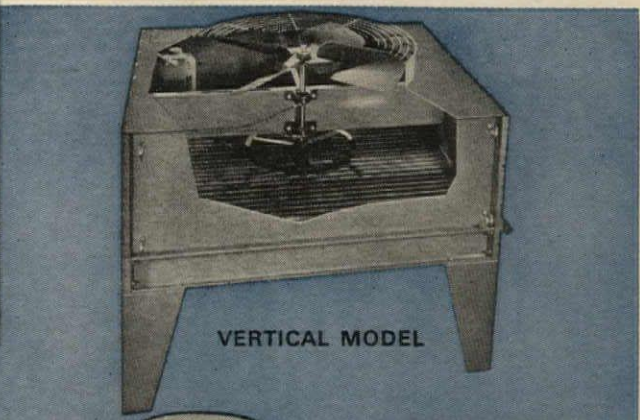
**WATER PROBLEMS?
SPECIFY
BOHN
AIR COOLED
CONDENSERS**



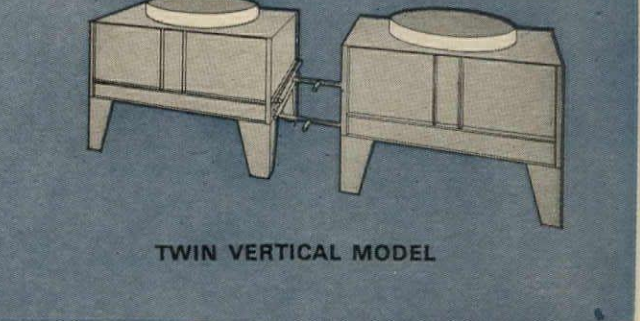
HORIZONTAL MODEL



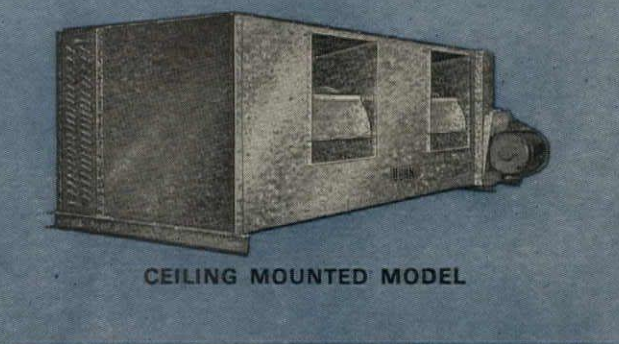
TWIN HORIZONTAL MODEL



VERTICAL MODEL



TWIN VERTICAL MODEL



CEILING MOUNTED MODEL

If you have "water problems" in your area (and even if you haven't), Bohn air cooled condensers are ideally suited to such varied applications as built-up air conditioning systems, package air conditioners, supermarket refrigeration involving multiple compressors, refrigerated warehouses, and commercial heat pumps.

Bohn's remote condenser line consists of 5 basic models. The horizontal and vertical models have slow-speed belt-driven propeller fans. Large access panels are provided for inspecting motor and drive.

Fan bearings are provided with "lube" lines extended to the outside so bearings can be easily lubricated. Single fan models are available in sizes from 7½ to 65 tons; the twin units cover the range from 60 to 130 tons. Twin units are shipped separately with proper manifold for field installation, thus making "rigging" easier.

The ceiling mounted model is designed for connection to supply-air and discharge-air ductwork and is available in sizes from 10 to 50 tons.


BOHN

ALUMINUM & BRASS COMPANY

Heat Transfer Division • Danville, Illinois

A DIVISION OF UNIVERSAL  AMERICAN CORPORATION

For more data, circle 160 on Inquiry Card



Glass Conditioning: a new concept for increasing

How do you minimize solar heat and glare for a western exposure in Arizona? How do you cut down on heat loss for any exposure in Alaska? How significantly can glass perform in intermediate situations? These are the problems solved by Glass Conditioning, a new concept developed by Pittsburgh Plate Glass to make glass contribute more than mere transparency in your buildings.

Only Pittsburgh Plate Glass offers you a complete range of environmental products

Every exposure of every building presents a different condition for indoor environmental control. Each condition presents an opportunity to save on heating and air conditioning capacity. It's also an opportunity to capitalize on available daylight.

PPG offers you 25 different vision area glasses to achieve maximum indoor comfort. (See chart.) Where glare is the major problem, you can choose from the GRAYLITE™ series, which

transmits 61% down to 14% of light. Where both solar heat and glare must be curbed, a PPG high-performance glass will probably be the optimum specification. To reduce heat loss, PPG TWINDOW® Insulating Glass should be specified.

For further details on Glass Conditioning and how PPG products economically promote indoor comfort, write for a detailed report on product performance

indoor comfort through the selective use of glass

characteristics or consult the PPG Architectural Representative nearest you. Pittsburgh Plate Glass Company, 632 Fort Duquesne Boulevard, Pittsburgh, Pennsylvania 15222.

The term Glass Conditioning is a service mark of the Pittsburgh Plate Glass Company.

PPG makes the glass that makes the difference



PPG PRODUCTS FOR GLASS CONDITIONING

		Maximum Heat Gain (BTU/hr./sq. ft.)	Visible Light Transmittance %	Shading Coefficient
HEAT AND GLARE REDUCING				
Regular Plate Glass	1/4"	200	88	.93
(For Comparison)	3/8"	190	87	.87
	1/2"	180	85	.83
Solargray®	1/4"	150	42	.67
	3/8"	130	28	.58
	1/2"	115	19	.50
Solarbronze®	1/4"	150	51	.67
	3/8"	130	38	.58
	1/2"	115	29	.50
Solex®	1/4"	150	75	.67
	3/8"	130	64	.58
GLARE REDUCING				
Clear Sheet Glass	7/32"		89	.96
Graylite™ 31	3/8"		31	.78
Graylite 61	3/16"		61	.91
Graylite 56	7/32"		56	.88
Graylite 14	7/32"		14	.67
Graylite 52	1/4"		52	.85
HIGH PERFORMANCE (Insulating, Heat and Glare Reducing)				
All Twindow products have a U factor of .6				
Clear Twindow®		170	77	.80
LHR™ Clear Twindow		120	43	.55
LHR Solargray Twindow		90	22	.40
LHR Solarbronze Twindow		90	25	.40
LHR Solex Twindow		90	32	.40
Solargray Twindow		115	37	.54
Solarbronze Twindow		115	45	.54
Solex Twindow		115	65	.54

For more data, circle 161 on Inquiry Card

Office Literature

continued from page 286

PROTECTIVE SHIELDING

Catalog 641 covers equipment and services for radio frequency shielding, gamma ray shielding and x-ray protection for the full range of research, medical and industrial installations. Planned as a quick reference guide for architects, engineers, constructors and users, the 8-page catalog

gives basic technical data on prefabricated and custom built shielded rooms and structures, as well as on standardized doors, windows, ventilating equipment, lighting fixtures, building materials, lab components and accessory equipment. Application information is provided throughout, and in each category a further reference is given to more comprehensive literature on that particular subject. *Ray Proof Corporation, 843 Canal Street, Stamford, Conn.**

CIRCLE 416 ON INQUIRY CARD

CARE OF ALUMINUM

A new 16-page guide to the "Care of Aluminum in the Building Industry" has just been completed by research and development experts of the Aluminum Company of America. The brochure explains in detail the numerous protective coatings, standard and special cleaning procedures and the care that should be taken of aluminum building products before, during and after installation. *Aluminum Company of America, 784 Alcoa Building, Pittsburgh, Pa.**

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Provide ACADEMIC FLEXIBILITY with Multi-Purpose Areas

Instant classrooms from cafeteria space. This school is typical of so many, from elementary to university levels, which rely on FolDoor folding partitions to give them greater utility and flexibility from their floor space. Building dollars go further; plant and personnel are more efficient; students benefit directly (also taxpayers).

FolDoor's very high sound-retarding capabilities now make many different multi-purpose arrangements completely practical. The Super Soundguard X24 boasts an STC rating* of 44... highest ever achieved by such a partition; higher even, than some more cumber-

some types of folding walls costing up to twice as much.

Teamed with a new Traveling Chalkboard, which rolls along its own track to the desired spot, FolDoor partitions contribute to increased freedom and adaptability in the planning and use of educational facilities. And FolDoor's Total Excellence of quality and service is backed by the strongest warranty program in the industry.

Send for informative brochure, FOLDOOR for Educational Systems, which explains the role of folding partitions in providing academic flexibility.

*Sound Transmission Class, in accordance with ASTM E90-61T.



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For more data, circle 162 on Inquiry Card

MOVABLE WALLS

An 8-page catalog describing the complete line of 2 $\frac{3}{8}$ in. and 3 in. thick *SpaceStyler Movable Walls* has recently been released. Included in the new catalog are photographs of installations selected to demonstrate the flexibility and versatility of the system. Elevation, detail and exploded isometric drawings are used to give construction and assembly information. The catalog also provides complete architectural specifications and a listing of a number of free services available from the company's layout, design, engineering, installation and sales departments. *Rockaway Metal Products Corp., 175 Roger Avenue, Inwood, Long Island, N.Y.*

CIRCLE 418 ON INQUIRY CARD

RELIGIOUS LIGHTING

A wide range of fixtures for lighting religious institutions is presented in a 30-page color catalog, No. 78. Colored or black and white illustrations have been chosen to give a good idea of the effect created by the different types of fixture. All details of size, color, number of lamps and wattage requirements are given. *NL Corporation, 14901 Broadway, Cleveland, Ohio.*

CIRCLE 419 ON INQUIRY CARD

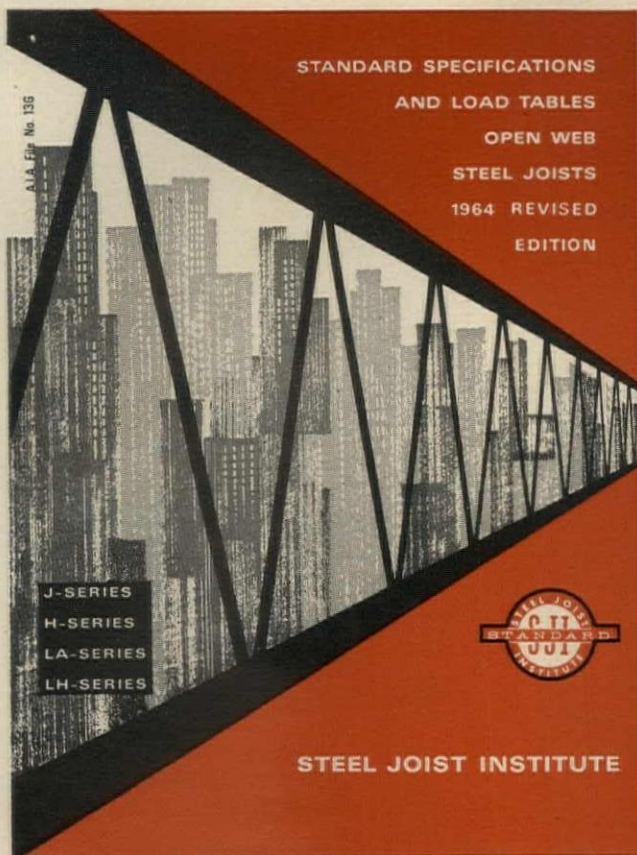
AMERICAN WALNUT FURNITURE

"Decorator Showcase" is a 20-page brochure which presents a complete line of dining room, bedroom and occasional pieces of furniture made of American walnut. Photographs and dimensions are included. *Foster-McDavid, P.O. Box 10617, Tampa, Fla.*

CIRCLE 420 ON INQUIRY CARD

*Additional product information in *Sweet's Architectural File* more literature on page 310

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Harmless fun

(For J-M Fesco Board Roof Insulation)

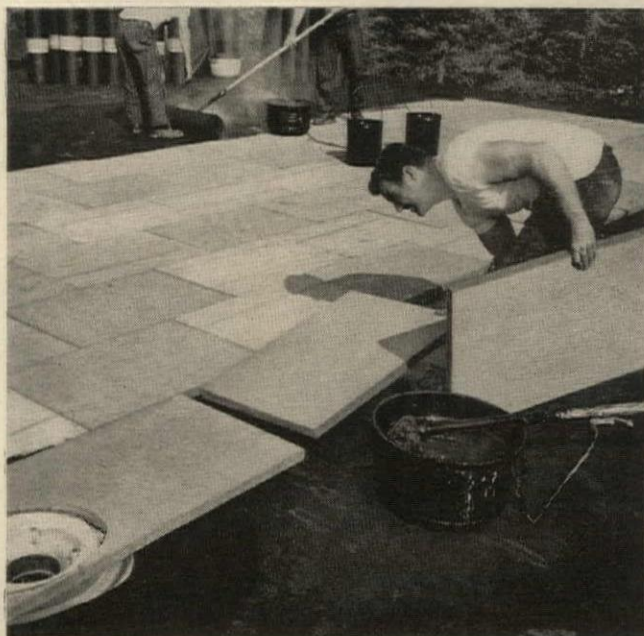
Surrender? Fat chance. Even an ordeal in a torture chamber can't faze Fesco Board. You can try to dampen its spirit . . . put the heat on . . . pressure it—yet Fesco Board remains imperturbable.

How come? The basic stuff Fesco Board is made of—Perlite. A very important and precious volcanic ore. Johns-Manville digs up this Perlite . . . expands it . . . anneals it (at 1700°F) . . . and transforms it into lightweight beads of volcanic glass.


These "beads" make Fesco Board fantastically durable. No matter how you punish it. Take fire, for example. Fesco Board is rated incombustible by Underwriters' Laboratories. And it's highly resistant to moisture absorption. Temperature, too. So much so, it lowers both original and operating costs of heating and cooling equipment. Yes, J-M Fesco Board is so effective, it actually pays for itself. In practically no time.

No wonder J-M Fesco Board is *the* roofing insulation preferred by many leading architects, engineers and owners as well as roofers.

For more information on J-M Fesco Board, write to Johns-Manville, Box 111, Dept. AR, New York, N.Y. 10016. In Canada, address Port Credit, Ont. Cable: Johnmanvil.



J-M FESCO BOARD, exceptionally light, is easy to cut and fit right on the job. Yet it's so rugged, it's not damaged by equipment or traffic.

Johns-Manville 

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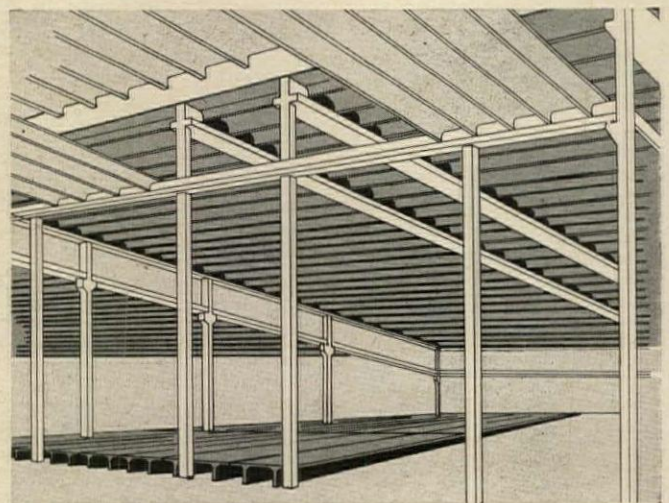


Owner: Norfolk Daily News, Norfolk, Nebraska
 Architects, Engineers: Leo A. Daly Co., Omaha, Nebraska
 Contractor: Beckenhauer Brothers, Norfolk, Nebraska
 Prestressed Concrete Fabricator: Wilson Concrete Company, Omaha, Nebraska

New home of Norfolk, Nebraska newspaper has complete structural frame, roof and floors of prestressed concrete

Behind the facade of the new Norfolk Daily News building in Norfolk, Nebraska, is a complete prestressed concrete structural system: columns, beams, double tee floor system and roof, plus double tees for the balcony floor. Use of prestressed concrete permitted the contractor to work through the winter months, and, equally important, provided an efficient, economical interior finish. The smooth surface of the concrete members permitted liberal use of exposed painted areas in the building. Use of acoustical tile ceilings was limited to the editorial, advertising and business offices, plus the hallway.

The Norfolk Daily News building is another example of the way prestressed concrete is used to meet a variety of design and construction needs. Prestressing strand used throughout this project was Union TUFWIRE Strand. TUFWIRE Strand and other Union Wire Rope Products are made by Armco Steel Corporation, Steel Division, Department S-1644, 7000 Roberts Street, Kansas City, Missouri 64125.



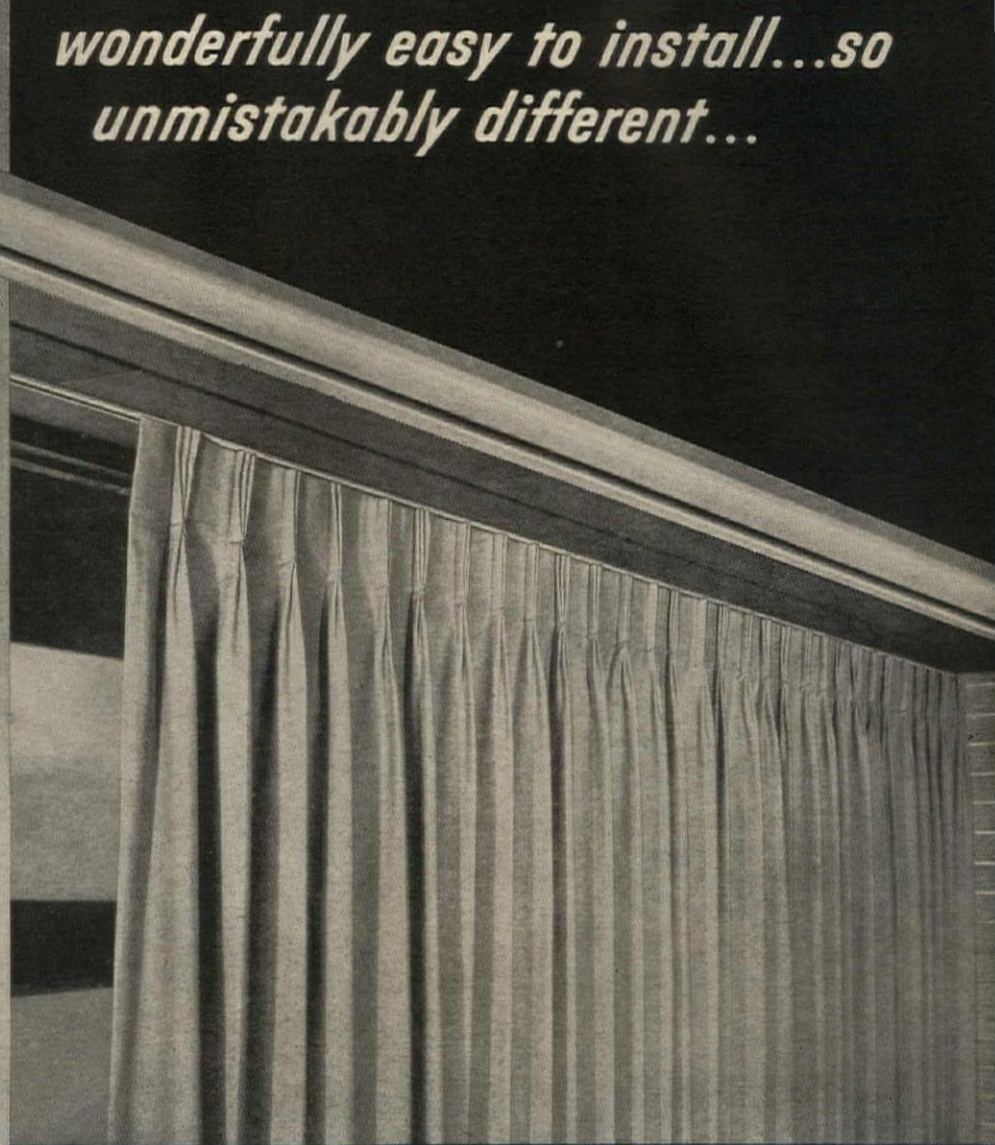
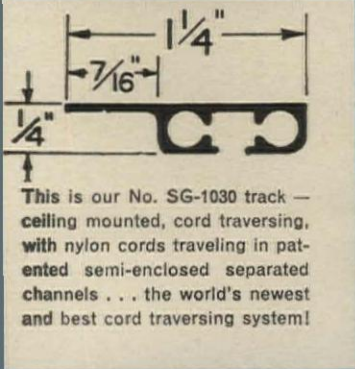
All columns, beams, floor and roof double tees in the Norfolk Daily News building are prestressed concrete.

ARMCO STEEL



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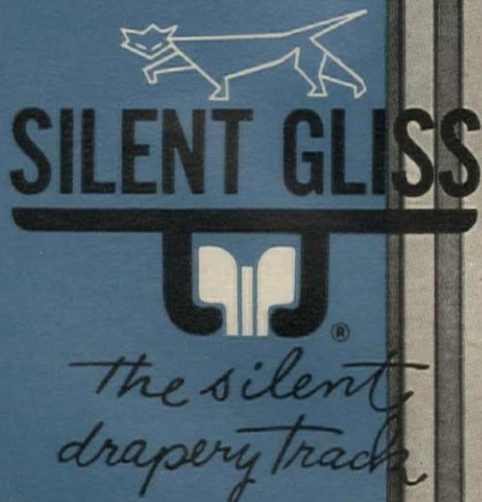
*Such a trim, beautiful
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wonderfully easy to install...so
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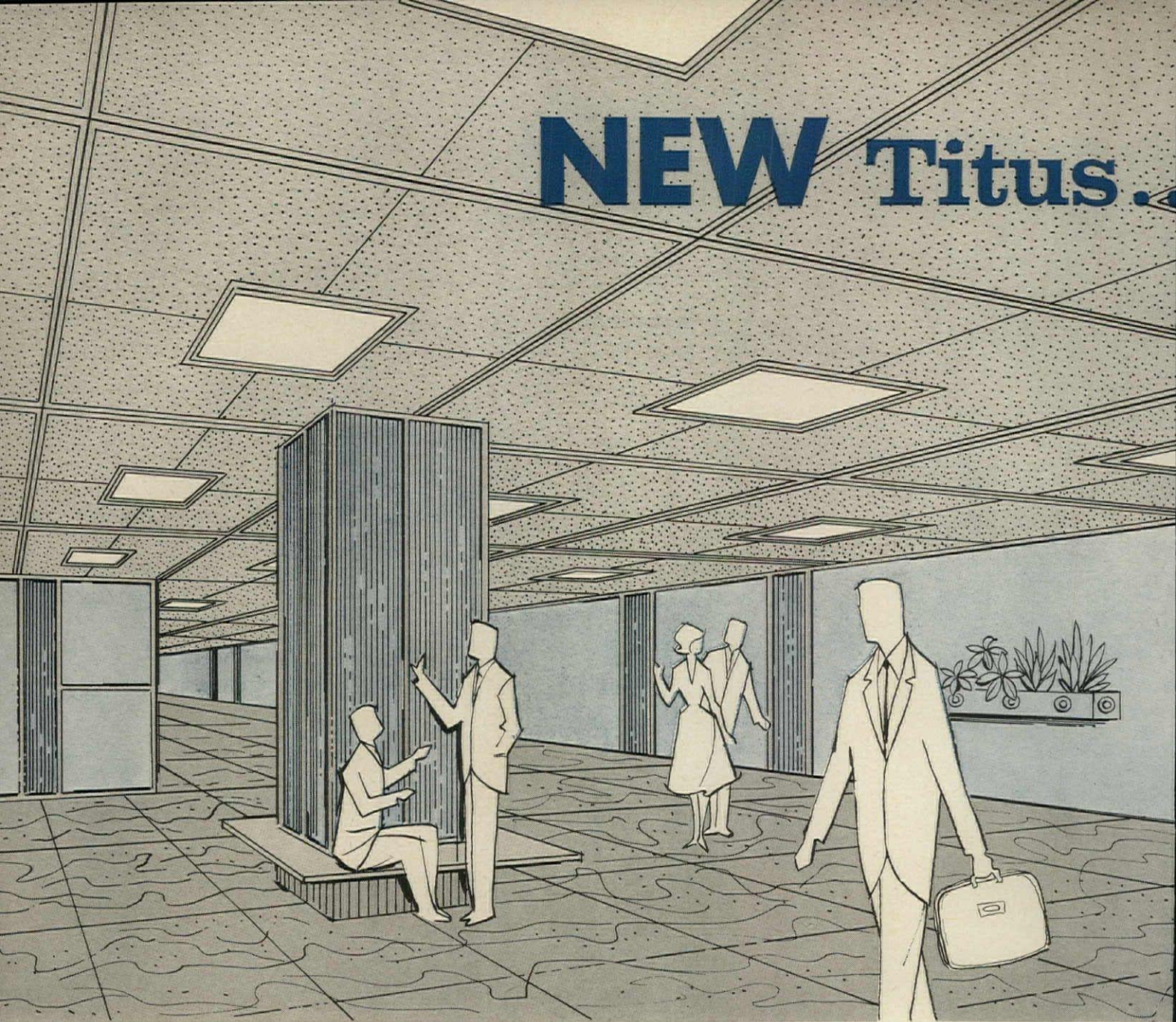
SILENT GLISS, INC.
Distributing Companies

Angevine Co. Freeport, Illinois	Drapery Hardware Mfg. Co. Monrovia, California
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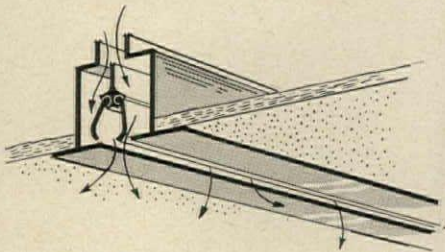
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NEW Titus.

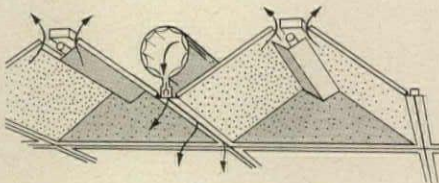


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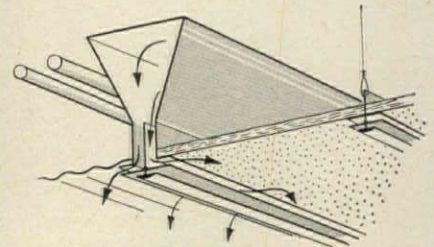
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TITUS COV-Aire...

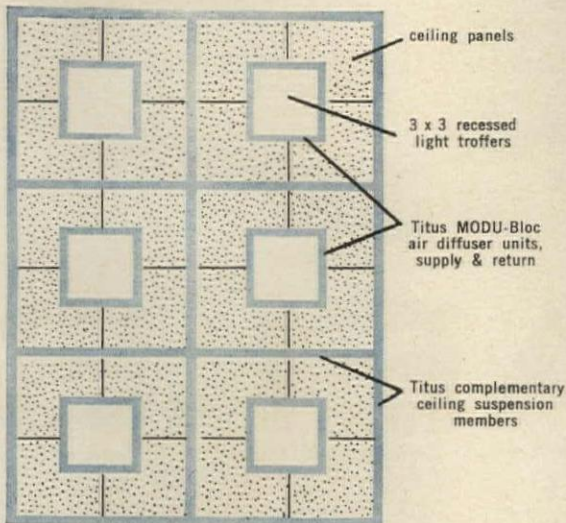
Offers the ultimate in modern architectural design and sound air diffusion for cove-type ceilings. Wide flexibility of air pattern adjustment.



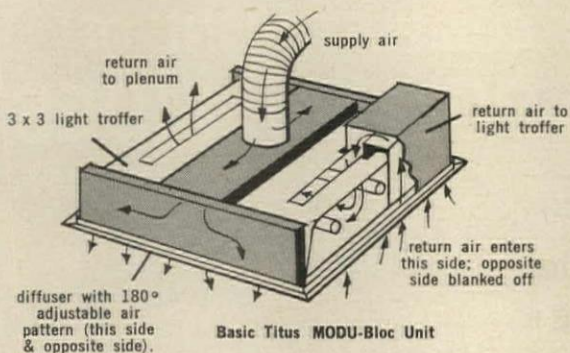
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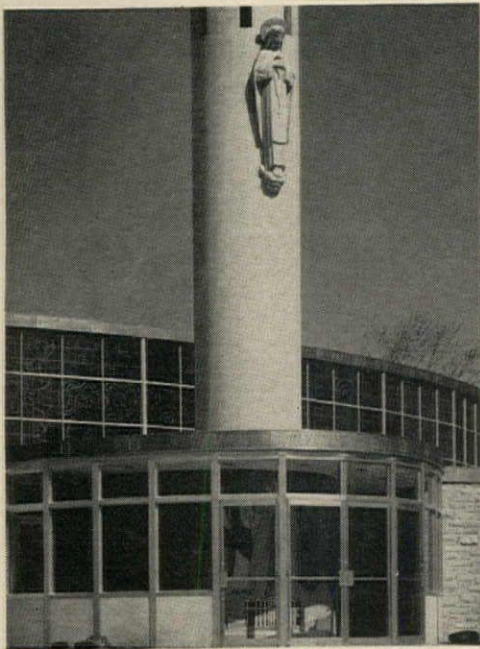
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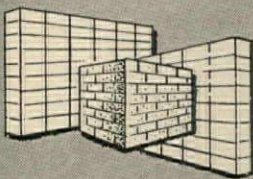



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The USS COR-TEN Steel angles in the picture were salvaged from a three-year-old transmission tower that was a victim of plant expansion in Gary, Indiana. They illustrate the even texture and dense, adherent oxide coating that forms on COR-TEN Steel when used bare for building exteriors. This natural patina inhibits further corrosion and preserves the structural integrity of the steel, and unlike most man-made materials, it becomes more handsome with age.

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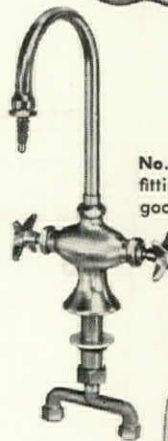
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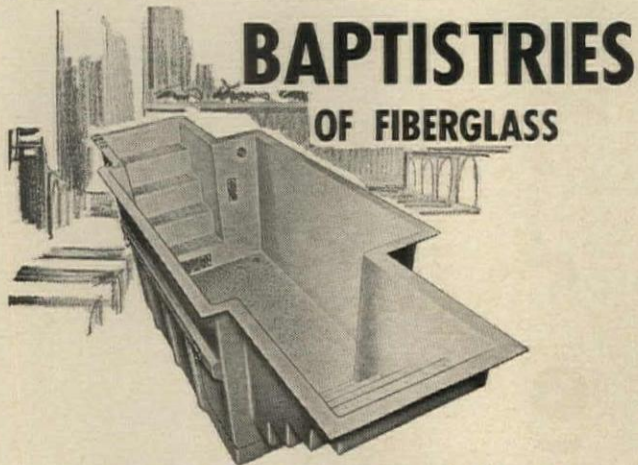
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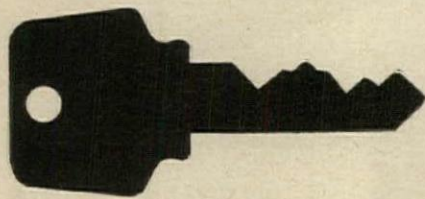
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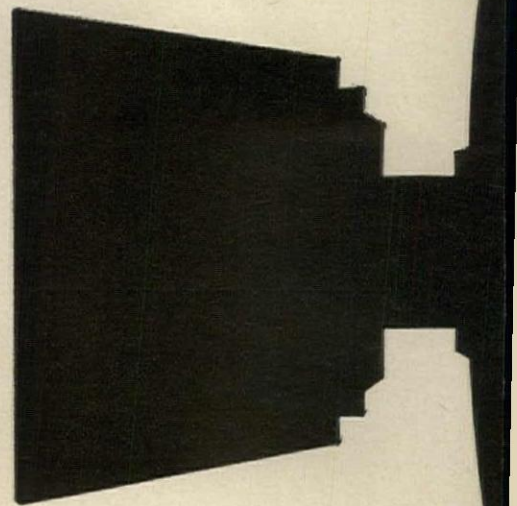
**5611 Center
Hill Ave.
Cincinnati,
Ohio 45216**

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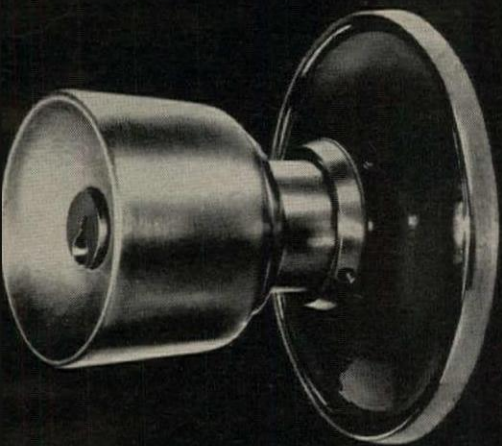
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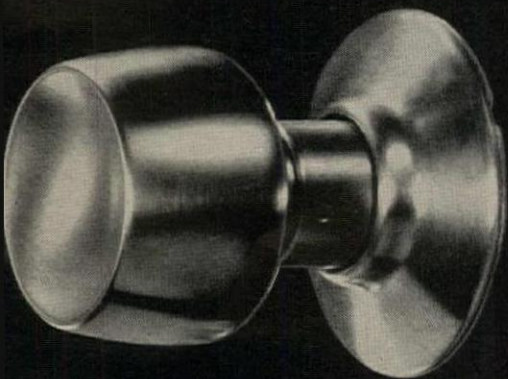
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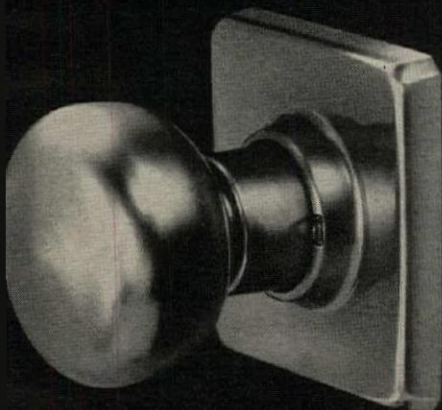
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"SentryLock" D2N nickel stainless steel lockset (Sargent & Co., New Haven, Conn.)



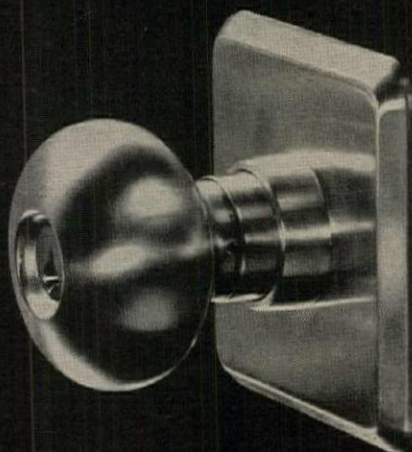
"Brandywine" heavy-duty cylindrical nickel stainless steel lockset (Yale Lock and Hardware Div., Yale & Towne, Inc., White Plains, N. Y.)



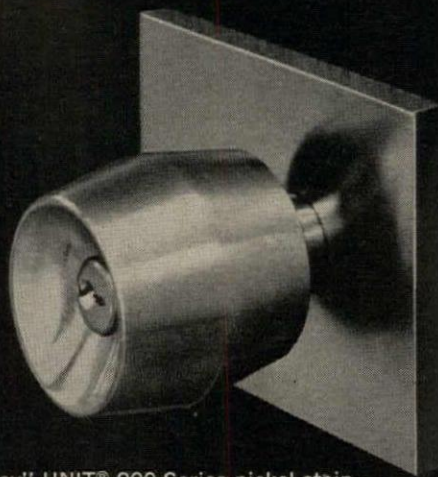
"Litchwood" heavy-duty cylindrical nickel stainless steel lockset (Yale Lock and Hardware Div., Yale & Towne, Inc., White Plains, N. Y.)



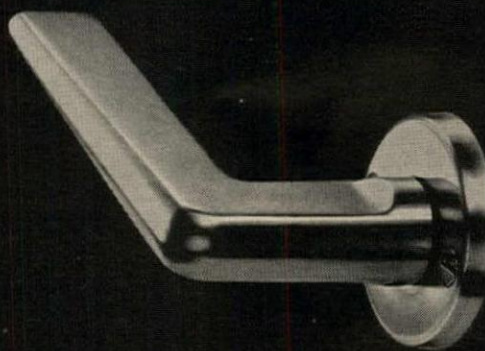
Extruded nickel stainless steel door pull — "3301" (Sargent & Co., New Haven, Conn.)



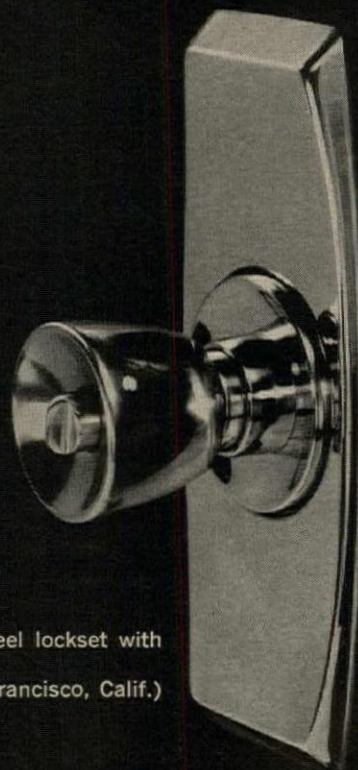
"Hanover" standard line "A" series nickel stainless steel lockset (Schlage Lock Co., San Francisco, Calif.)



"Monterey" UNIT® 900 Series nickel stainless steel unit lockset with square rose (P.F. Corbin Div., American Hardware Corp., New Britain, Conn.)




Lever-Handle nickel stainless steel lockset — "M2110B" (General Lock, Inc., Pontiac, Mich.)



"Tulip" nickel stainless steel lockset with "803 Savoy" escutcheon (Schlage Lock Co., San Francisco, Calif.)

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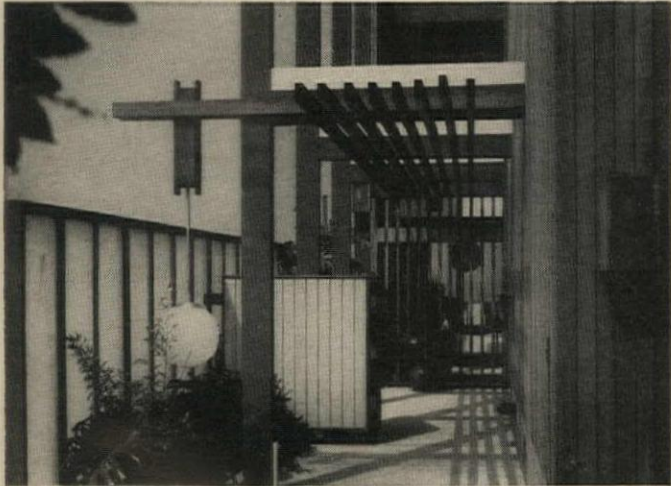
Today's nickel stainless steel hardware often costs less than you think. Like to know more about the many advantages of stainless steel in architecture? Write Inco for the 32-page booklet "Archi-

tectural Uses of the Stainless Steels." **THE INTERNATIONAL NICKEL COMPANY, INC.** 67 Wall Street  New York 5, N. Y. **NICKEL...its contribution is QUALITY**



Graceful overhang provides shelter and shade for this Florida home. Pole construction withstands winds and water. Architect: Robert B. Browne, A.I.A., Miami, Fla.

For homes of high style, wide appeal and handsome appearance design with the freedom of **WOOD**



The dignity and charm of strong vertical and horizontal lines mark the entrance to this California beach residence. It's privacy, in good taste. Architect: Tucker Sadler & Bennett, A.I.A., San Diego.

UNICOM MANUALS 1 & 2: "Design Principles" (122 pages) and "Fabrication of Components" (248 pages), graphically detailing the UNICOM method of house construction, are available at nominal cost to those associated with or supplying the home building industry. For free booklet describing UNICOM, write to: UNICOM, National Lumber Manufacturers Association, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036.

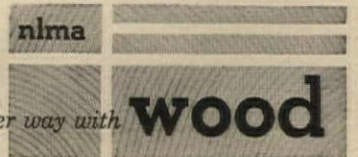
How beautifully houses of wood move from your drawing board to the seacoast . . . or a hillside . . . or a roadside! When the setting is important, so is your use of wood. Wood has a wonderful way of blending with its natural surroundings, yet maintaining its own warm personality.

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NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036



Attractive, geometric-design beam ceiling combines with walls of wood, stone and glass in this California home. Architects: Honnold & Rex, Los Angeles, Calif.

For more data, circle 180 on Inquiry Card



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For complete information, consult Sweet's Architectural File, or write Sonneborn Building Products, Inc., 1700 South Mt. Prospect Rd., Des Plaines, Illinois.



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FULLER'S GLOBE WROUGHT IN WOOD

Inspired by R. Buckminster Fuller's "Dymaxion air-ocean map," originally designed almost 30 years ago, design students at Southern Illinois University, where their mentor is presently a research professor of design science, have constructed an icosahedron as a "globe-that-is-not-a-globe." The 9-foot model is built of 20 equilateral triangles in plywood that can be peeled off in sections and laid flat. Fuller claims that this type of map shows each land mass in the most accurate proportions possible. Harold Grosowsky, instructor in design and director of the project, views the "globe" as a valuable tool in the visual presentation of world resource data.

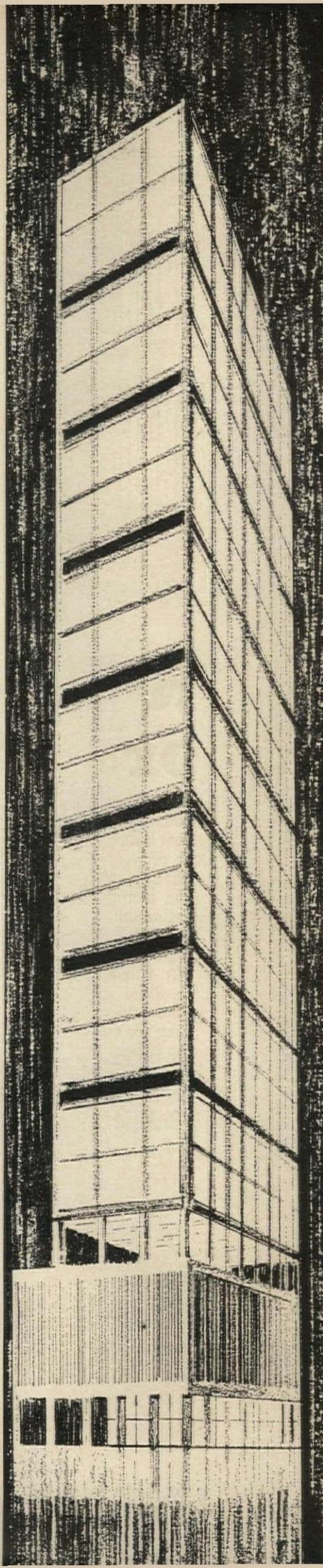


B.R.I. LAUNCHES NEW JOURNAL

"To aid in the intelligent and rapid improvement of our building environment through a wider dissemination of building science information" —with this aim in mind, the Building Research Institute has this year inaugurated the bi-monthly publication of its own magazine, Building Research: The Journal of the Building Research Institute.

Every B.R.I. member will receive a subscription to the journal. Subscriptions are available to members or employees of B.R.I. member organizations at \$12.00 per year and to the general public at \$35.00 per year. Libraries may receive copies at a special rate of \$20.00 per year.

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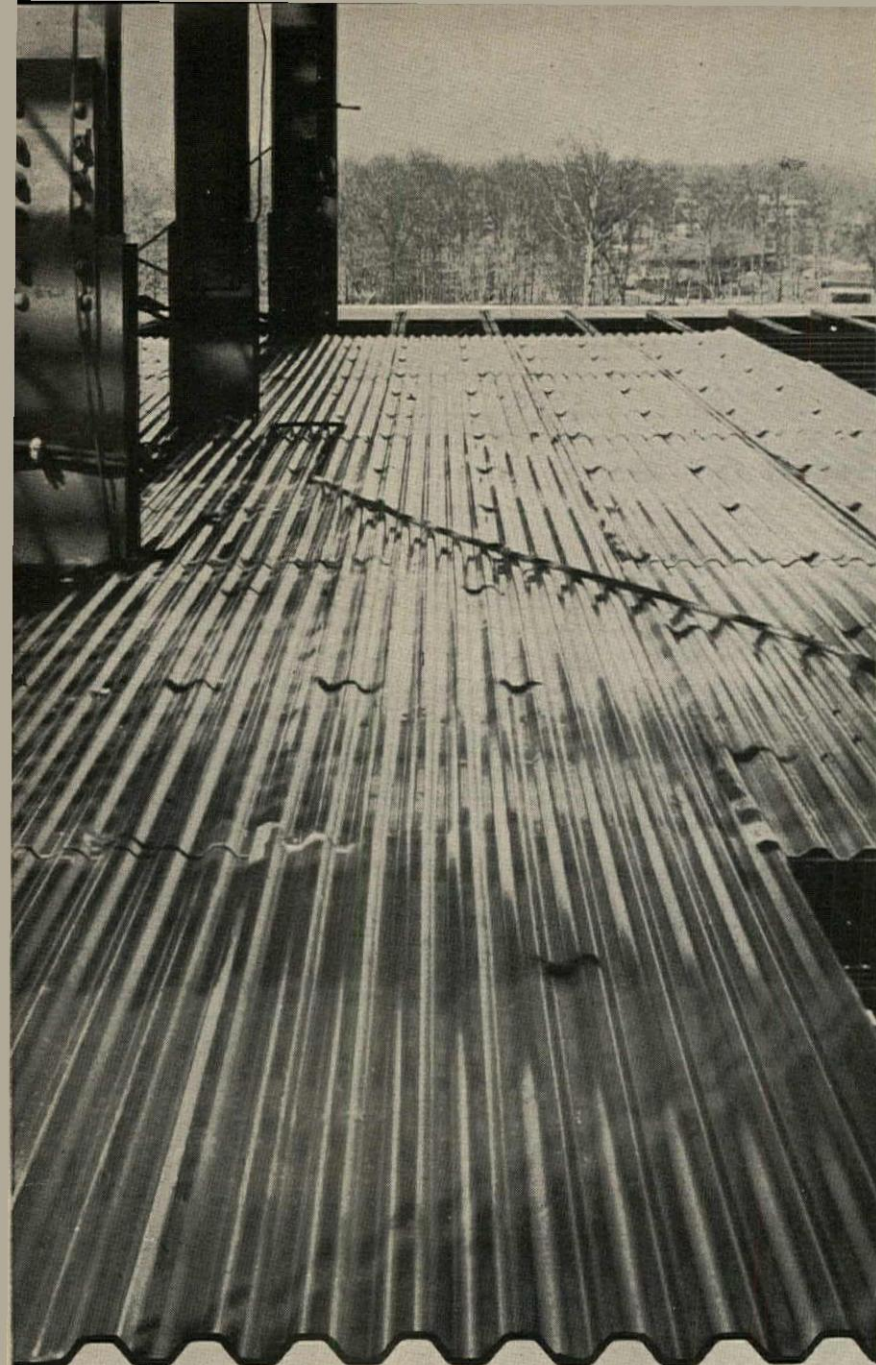
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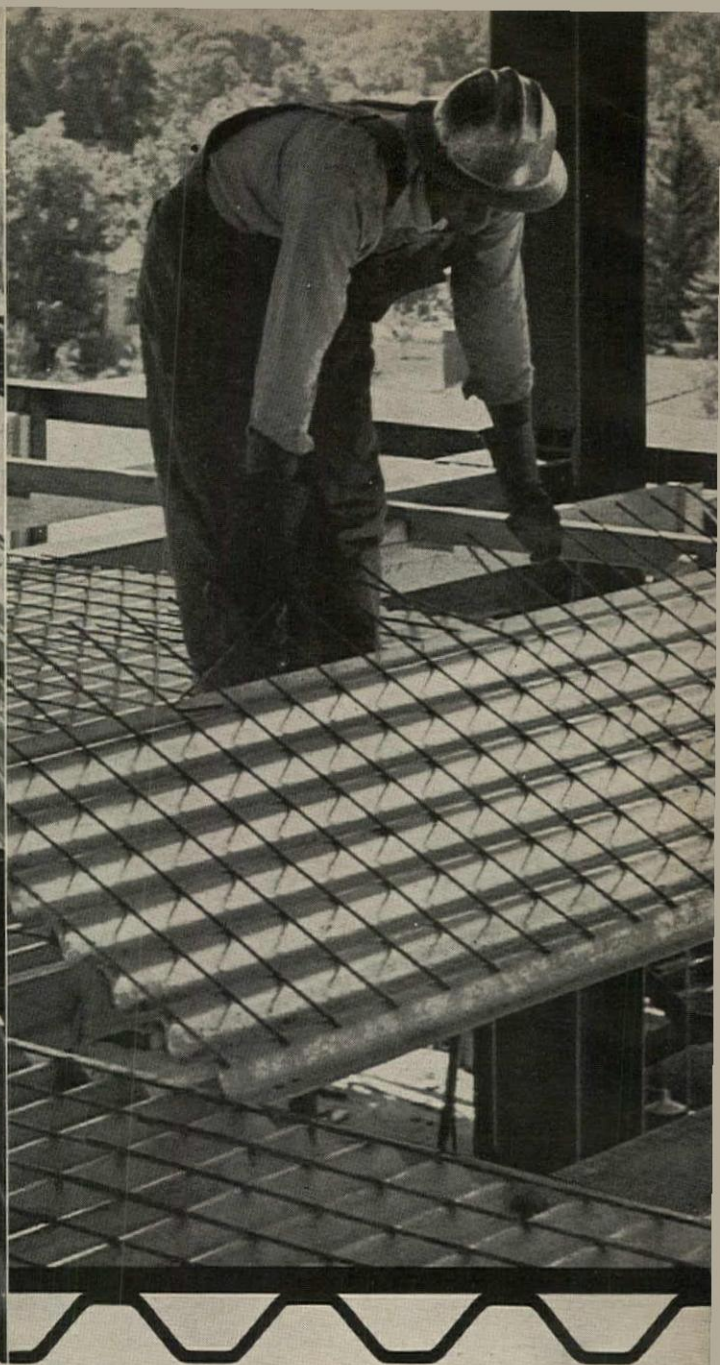
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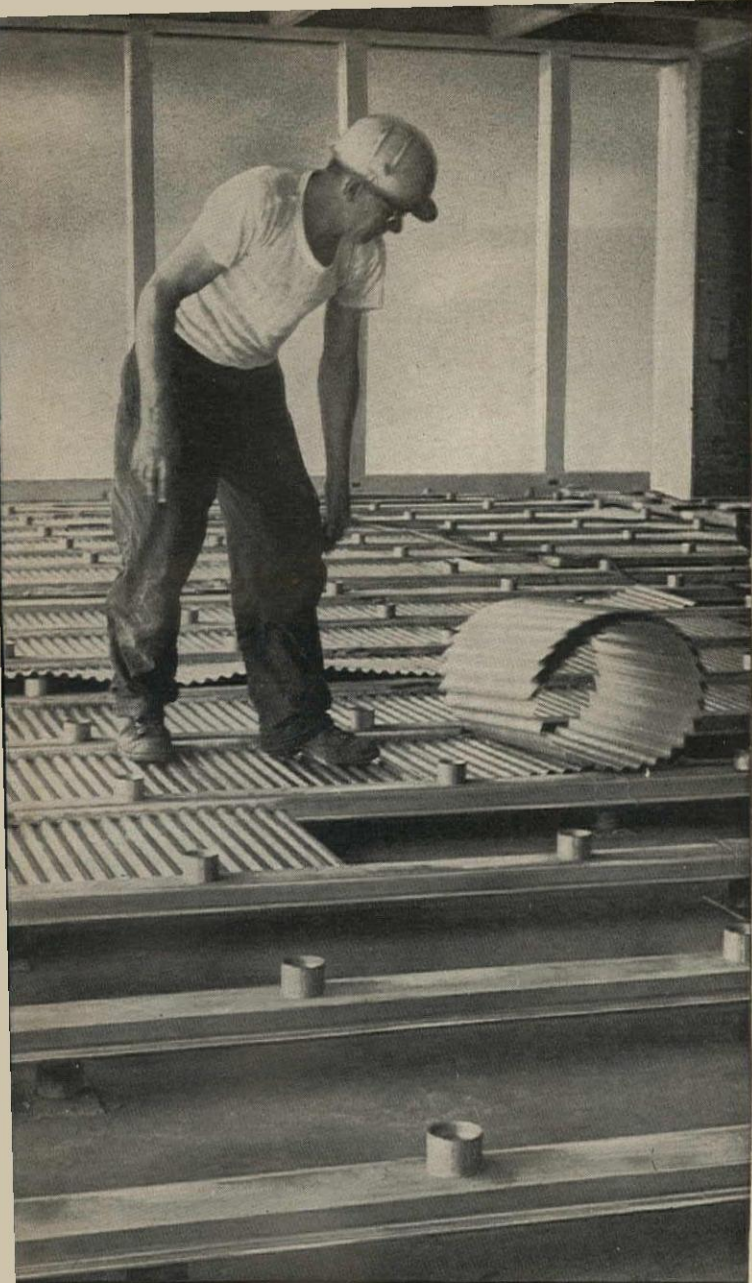
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Cofar is the 4-in-1 product—form, working deck, bottom reinforcing steel, and temperature steel—for reinforced concrete slabs. Construction is fast, proven, economical. Exposed Cofar has 3-hour UL fire rating. New Cofar shear connectors afford even greater economies in Cofar composite beam construction. The shear connectors are field-welded to the beams; make the slab and beams work together as "T" beams. This permits reduction in beam sizes—saves 20 to 30 per cent in steel tonnage. Most economical slab span range is 10' to 16', using either sand-gravel concrete or lightweight structural concrete.



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Floor system requirements in today's modern buildings go far beyond satisfying structural needs. Occupants expect more than floor space alone. They need telephones, intercoms, lighting, electrical services, air conditioning. They will need even more, tomorrow.

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For more information, write: GRANCO STEEL PRODUCTS CO., 6506 N. Broadway, St. Louis 47, Missouri. A subsidiary of Granite City Steel Company. Our catalog is filed in Sweet's. 2j/Gr.

GRANCO



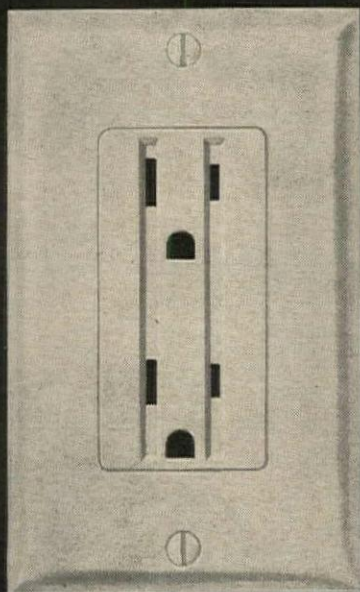
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On the Calendar

October

18-22 66th Annual Conference, American Institute of Park Executives—Shamrock Hilton Hotel, Houston, Tex.

19-23 Annual Meeting and Structural Engineering Conference, American Society of Civil Engineers—Statler Hilton Hotel, New York City.

November

4-7 Eighth semi-annual meeting of the Board of Directors of Consulting Engineers Council—Fort Des Moines Hotel, Des Moines, Iowa.

10-12 1964 Fall Conferences, Building Research Institute—Shoreham Hotel, Washington, D.C.

10-12 International Symposium on inelastic flexural behavior and mechanics of reinforced concrete, including limit design and analysis, sponsored jointly by the American Concrete Institute, the American Society of Civil Engineers, and the Engineering Experiment Station of the University of Florida—Miami.

11-13 Fall convention, American Concrete Institute—Dupont Plaza Hotel, Miami, Fla.

30th 1964 Winter Meeting of the American Nuclear Society, through December 3—San Francisco Hilton Hotel, San Francisco.

Office Notes

Offices Opened

Dwight E. Bennett, A.I.A., has opened an office for the practice of architecture at 3913-A Long Beach Blvd., Long Beach, Calif.

Frank Carey Holton, Jr., A.I.A., has established an architectural practice at 516 Warren Crescent, Norfolk 7, Va.

New Firms, Firm Changes

Rudolph M. Arsenicos has joined Robert Wening in partnership in a new firm, Wening & Arsenicos, A.I.A.

Lou Bakanowsky is again an associate in Cambridge Seven Associates, Inc.

Ralph C. Carroll, William G. Ford, Harry D. Minto, Arlyn A. Orr, Jack W. Smith, James Byron Thomas, Michael H. Trower and Jack R.

continued on page 332

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**Tomorrow, scientists
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cause of leukemia.
But today
we need your help.**

The American Cancer Society is devoting more research money to leukemia than to any other form of cancer. Many different possibilities are being explored—viruses, anticancer drugs, early diagnosis, immunology, bone marrow transplantation.

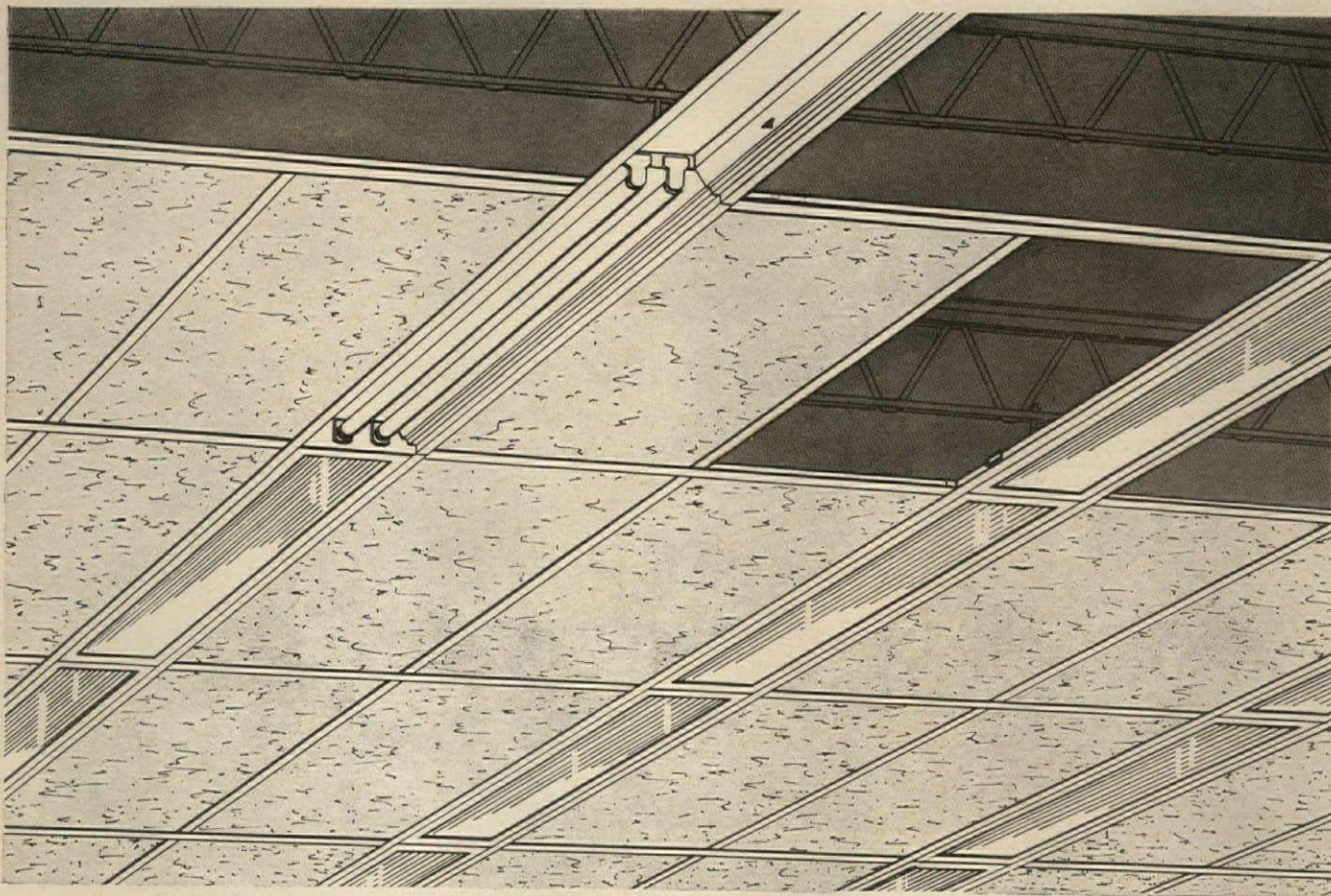
Progress is being made. Lives are prolonged by many months, sometimes by years, with drugs and other therapy. The course of leukemia has been slowed and even temporarily halted by chemicals and blood transfusions.

And today there is *hope*. Many research scientists believe that the next major breakthrough may be against leukemia. But much more could and should be done—now. This will take money—lots of money.

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La Palma Apartments, Santa Clara, California
Architect: Fred Marburg
Tony Rose photos



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Office Notes

continued from page 326

Yardley are new associates in the firm of Caudill, Rowlett & Scott.

Robert W. Chambers, A.I.A., is a new associate in the firm of Olin Boese and Associates, Architects.

F. Lee Cochran, A.I.A., a partner of the Perkins & Will Partnership, has been transferred to the Washington, D.C. office.

A new firm, Granbery Cash & Associates, formerly the Office of Carleton Granbery, has opened offices at 112 Whitney Avenue, New Haven, Conn.

Fischer, Koscher, Bowden, Architects and Designers, successor to Fischer, Hermeling & Koscher, have opened offices at 103 North Glenview Drive, Carbondale, Ill.

A. Calvin Hoiland and William R. Zucconi have formed a new firm, Hoiland-Zucconi, Architects, located at 606 Strain Building, Great Falls, Mont.

Robert H. Liles has been appointed chief architectural draftsman for the Detroit architectural firm of Eberle M. Smith Associates, Inc.

William E. Lowry and William C. Meagher, Jr. have become associates in the firm of William B. Tabler, F.A.I.A.

A new firm, James Lynch and Associates, Architects and Engineers, will open offices in Suite 314, Savings and Loan Building, Des Moines, Iowa.

A new firm, Dan Saxon Palmer, A.I.A. & Associates, will be located in Westwood, Calif.

The partnership, James S. Wald & Associates, has been dissolved. Arthur J. Reichert will continue his practice at 2810 West McMicken Ave., Cincinnati, Ohio.

New Addresses

John H. Alschuler, A.I.A., Palmolive Building, 919 North Michigan Ave., Chicago, Ill.

Bushnell, Jessup, Murphy & Van De Weghe, Architects, 245 Vallejo St., San Francisco.

Carl F. Gould, A.I.A., 1818 Westlake Ave. North, Seattle.

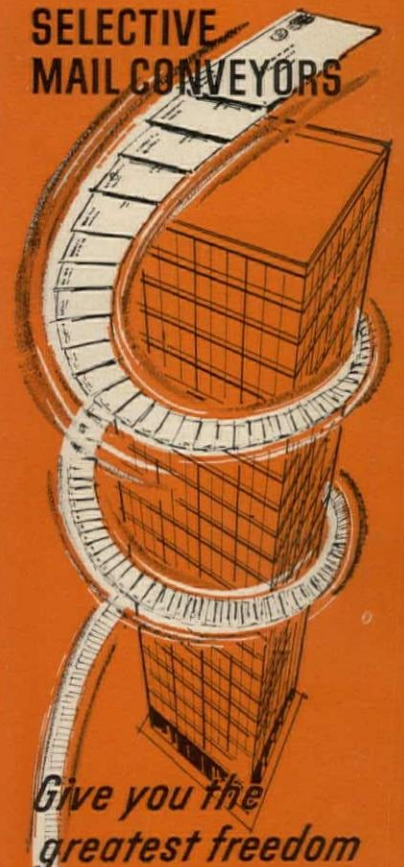
Morris Lapidus Associates, 641 Lexington Ave., New York.

Michael S. Molnar, Architect, 57 E. Main St., Uniontown, Pa.

Clothiel Woodard Smith & Associates, Architects, 1056 Thomas Jefferson St., N.W., Washington, D.C.

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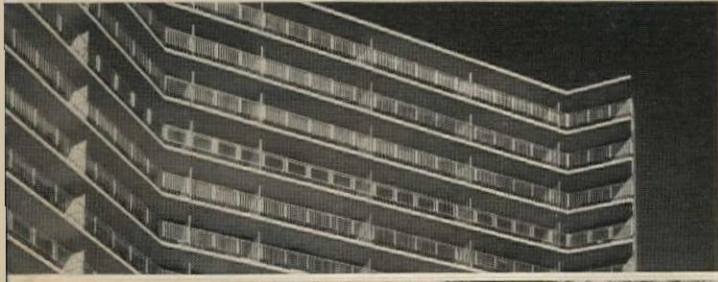
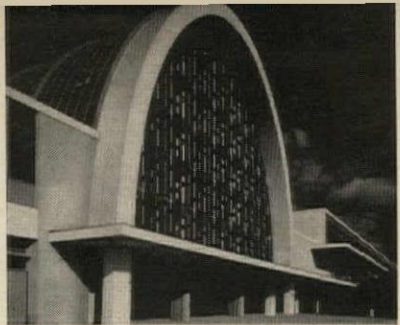
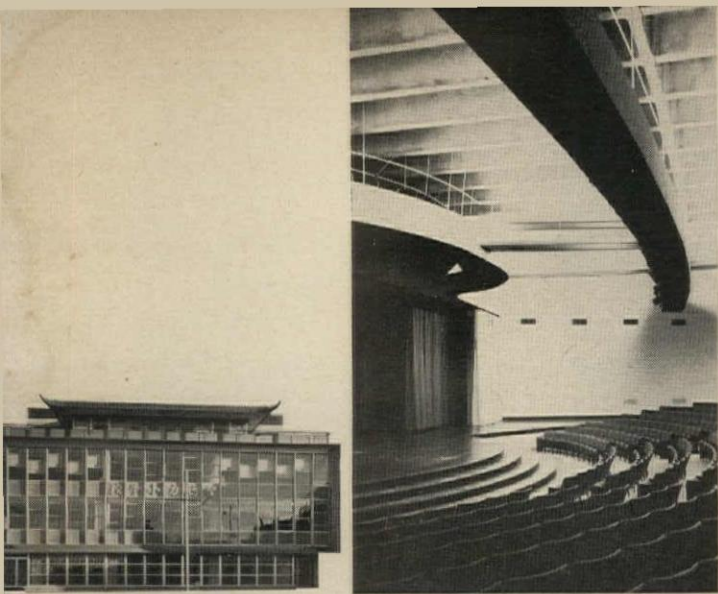
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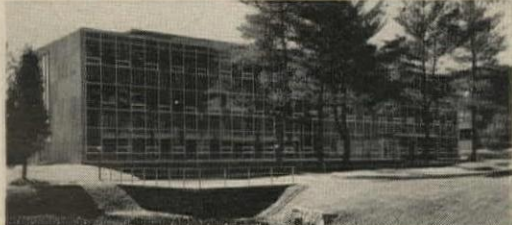


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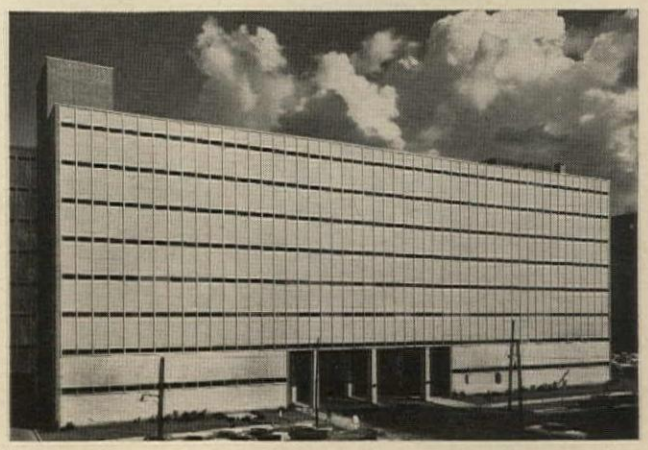
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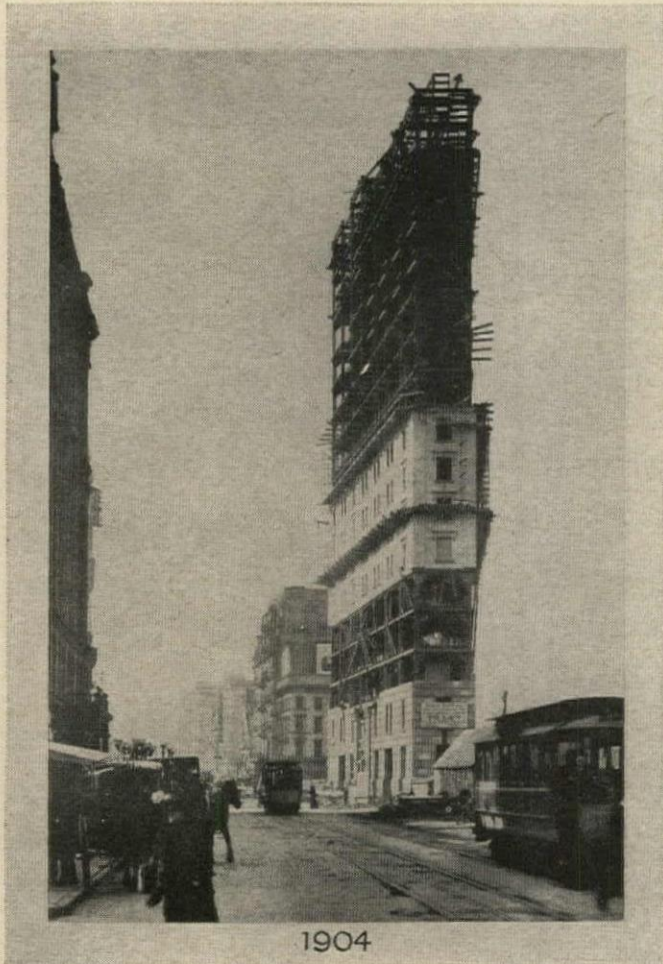


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1904



1963

When its 3700-ton steel framework was erected in 1904 by American Bridge, the Times Tower was the tallest building in New York. Plenty of later buildings dwarfed the 24-story skyscraper, but few ever matched the fame the Times Tower gained from the electric news sign that flashed around its circumference and was seen daily by a million and a half people.

Regardless of fame, the old Tower outlived its day and was sold to Allied Chemical Corporation, which wanted "the crossroads of the world" as the site for its chemical showcase. Allied needed a building that not only *looked* modern, but one that could accommodate modern space and equipment needs. At the narrow Times Square corner, Allied planned a giant 10-story exhibit window. The serv-

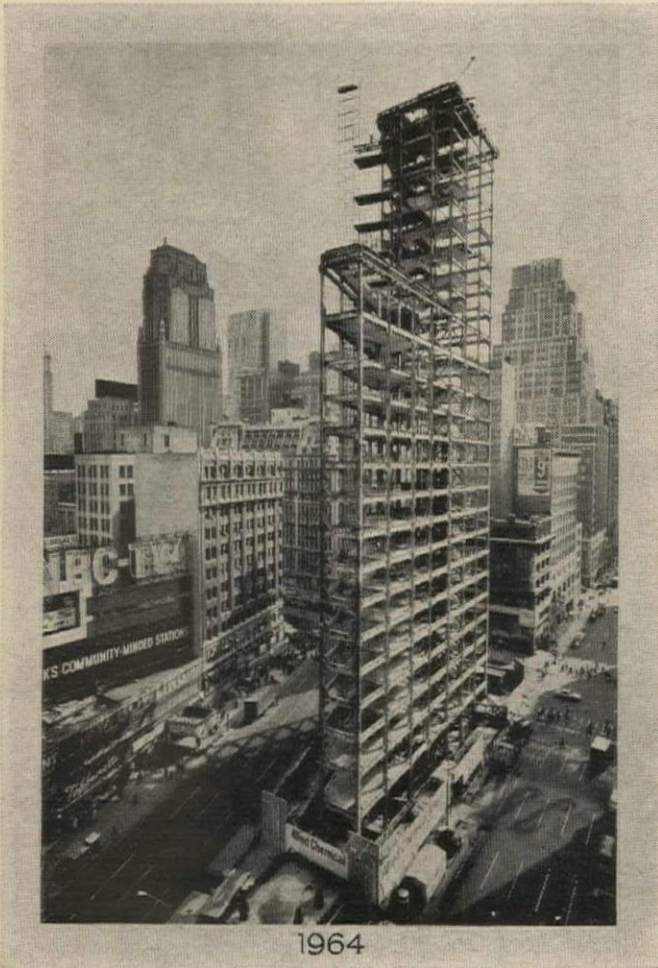
ice core needed enlargement; more stairs were required; partitions needed moving; floors and plumbing needed replacing; modern air conditioning had to be installed.

If the old Times Tower had been built of anything but steel, it would have been necessary to tear down practically the entire building. But instead of starting from scratch, Allied is dismantling virtually *everything but the steel skeleton*.

Although built by methods no longer used, the 60-year-old frame is still structurally sound, with more than enough built-in strength capable of handling the heavier demands of modern office use. Even at the giant window—where all beams between the 4th and 14th floors were removed—it was relatively easy to restructure the wind-

New skin, new guts, new name

... same steel skeleton



bracing system by transferring to adjacent columns. (Architects said they probably wouldn't even have attempted the window if the building were concrete.) The *only* corrosion that engineers found in the framework were slight spots on two columns, and these were so minor that no corrective measures were required. If the same building is remodeled 60 years from now, chances are it will be built around the same steel skeleton American Bridge erected in 1904.

Steel construction *always* makes remodeling less expensive, because *only* steel can safely be severed, extended, or bolstered without damaging a building's structural integrity. Steel construction is even more of a bargain now than it was 60 years ago. New high strength structural steels

cut costs and weight, because they are two to three times stronger than carbon steels. Rolled structural shapes replace old-fashioned built-up members, and weldable steels make bracing and fastening much simpler. New concepts, such as the combination of steels of different strength levels, facilitate architectural expression as well as cut costs.

American Bridge technical representatives will be glad to discuss your building and remodeling problems. Write: American Bridge Division, United States Steel, 525 William Penn Place, Pittsburgh, Pa. 15230.

Architect—Engineers: Smith Smith Haines Lundberg and Waehler. (Original Times Tower was designed by Eidlitz & McKenzie from which the firm Smith Smith Haines Lundberg and Waehler was derived.) General Contractor: William L. Crow Construction Company. Structural Engineers: Purdy & Henderson Associates, Inc.



TRADEMARK

**American Bridge
Division of
United States Steel**

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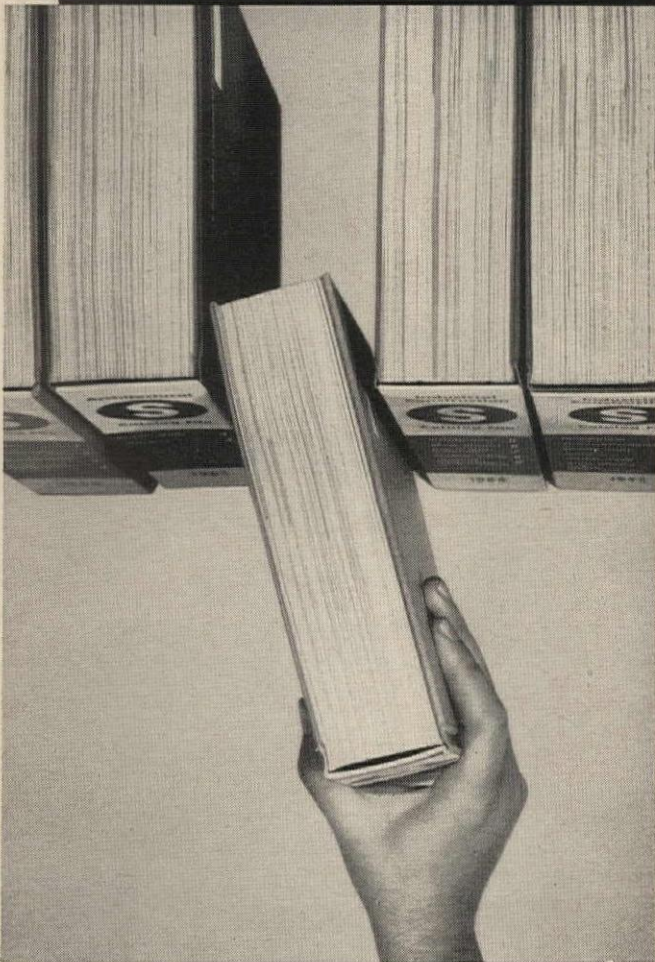
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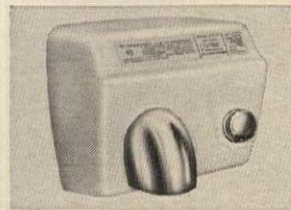
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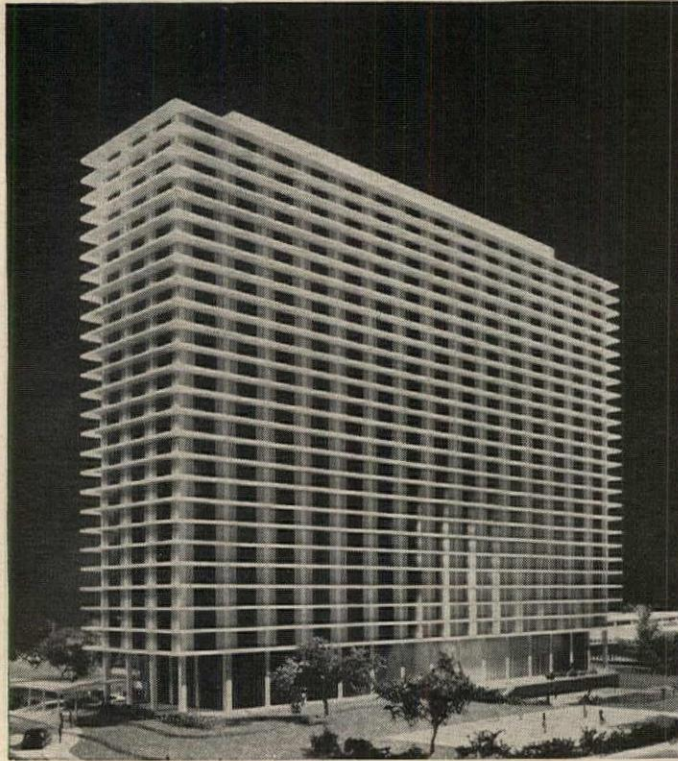
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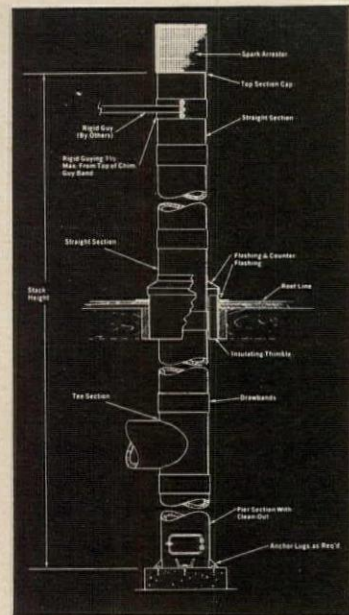
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