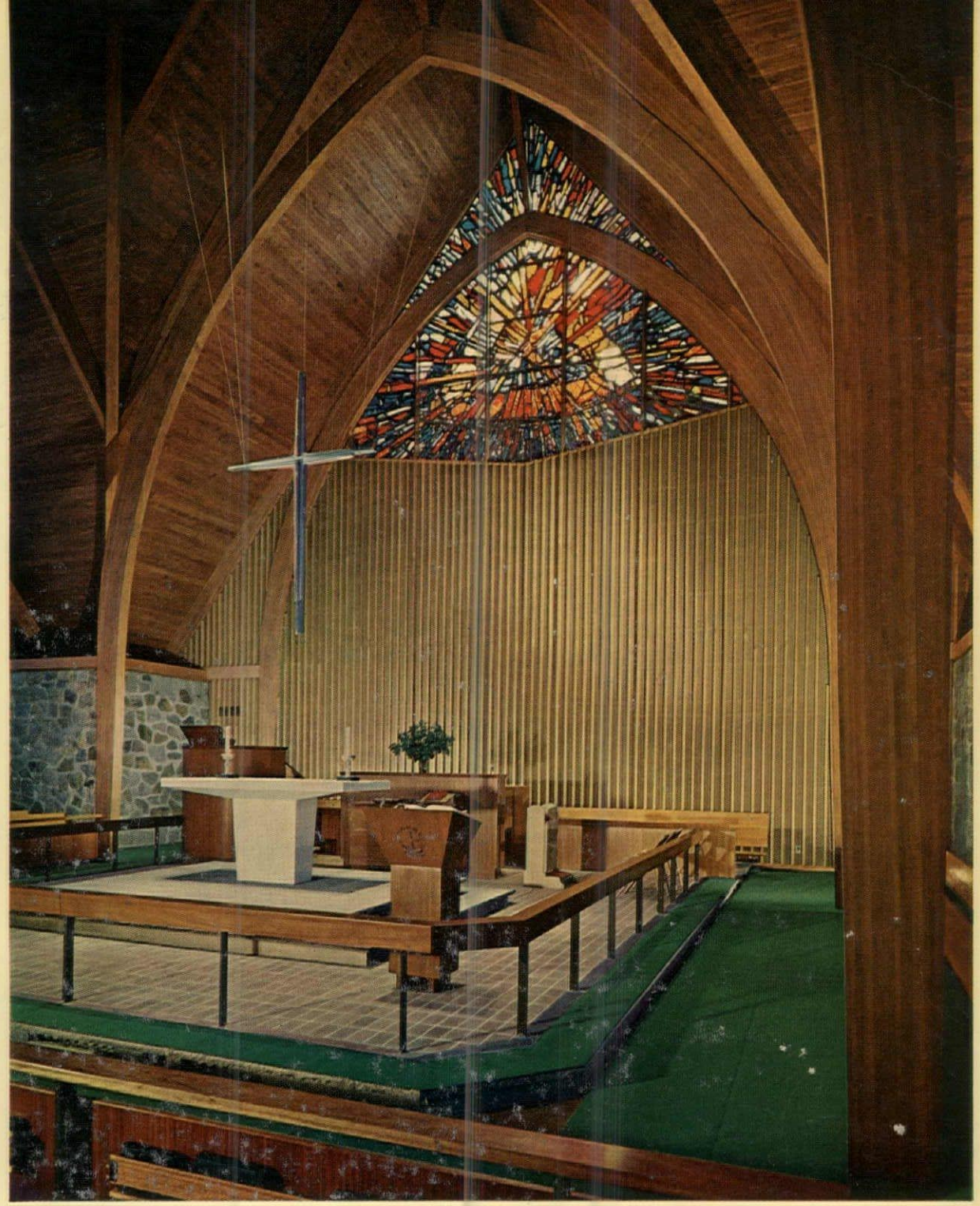

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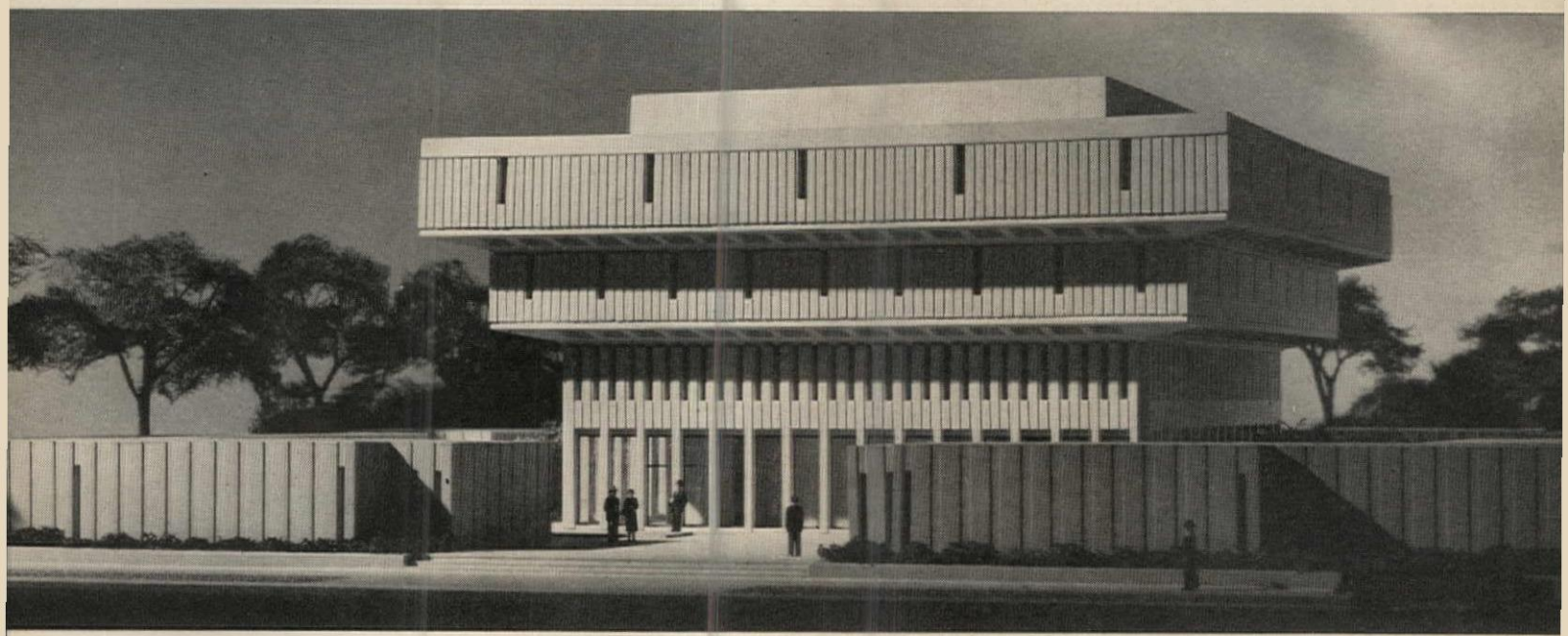

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Trinity Episcopal Church, Concord, Massachusetts. Architect, Pietro Belluschi. Photograph by Joseph W. Molitor

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RECORD

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March 1964

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Next month's Building Types Study on medical facilities looks at new developments on several active building fronts. Research study of a proprietary nursing home population has been translated into architectural planning concepts for two new facilities. Two large hospitals are redesigned with clean-slate approaches. Clinics and rehabilitation centers are planned for specific community services.

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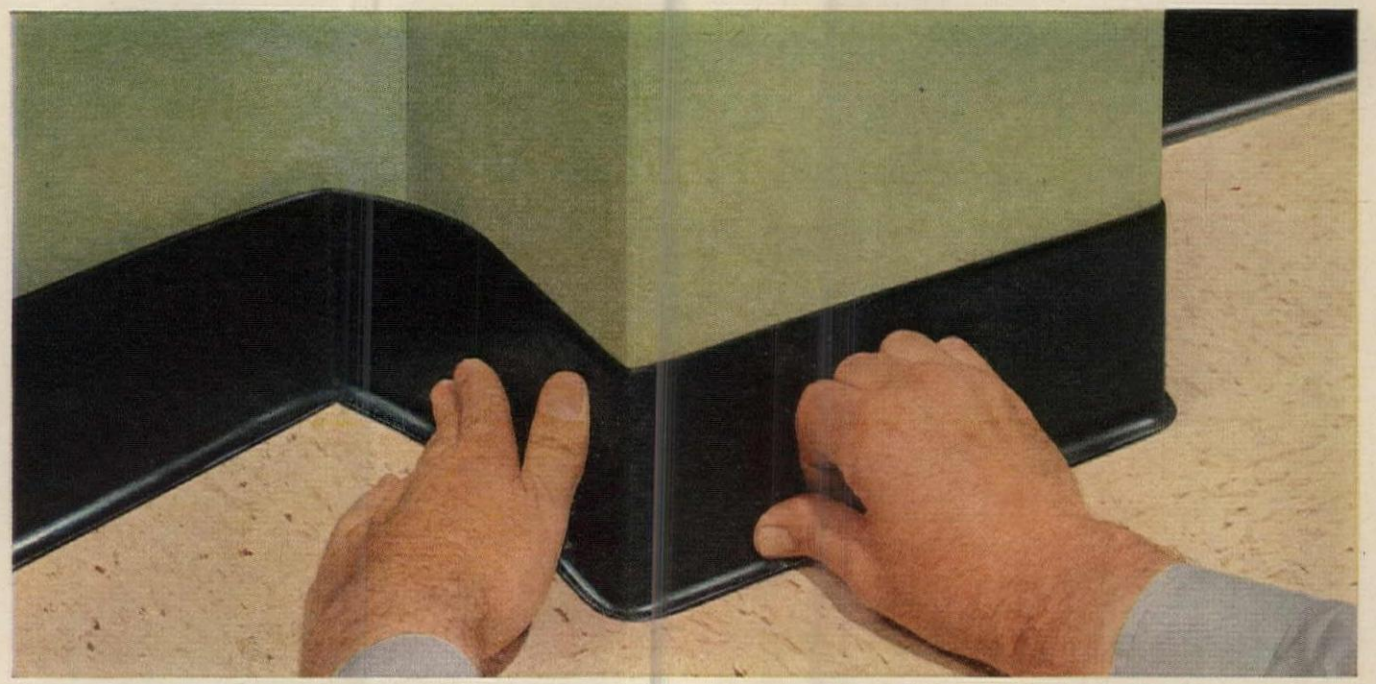

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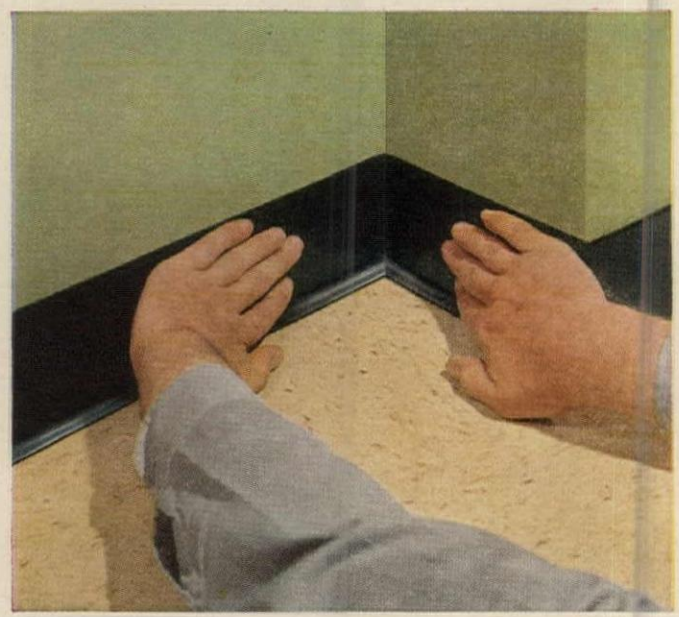

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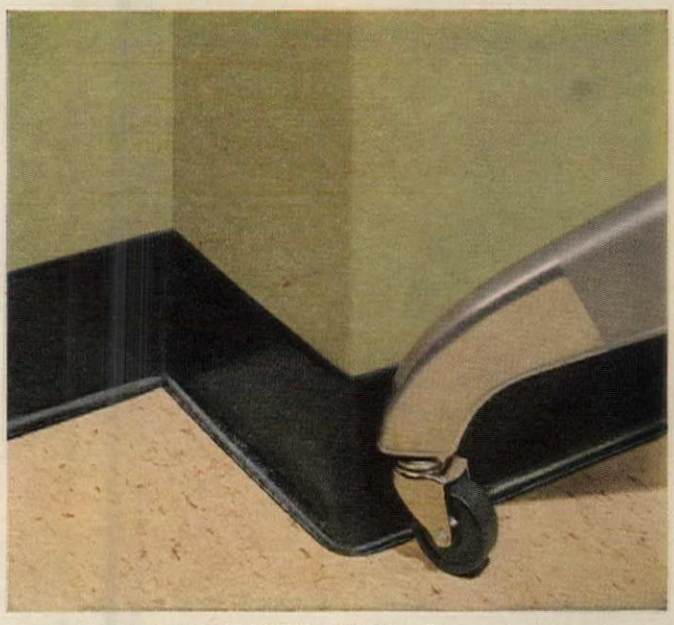

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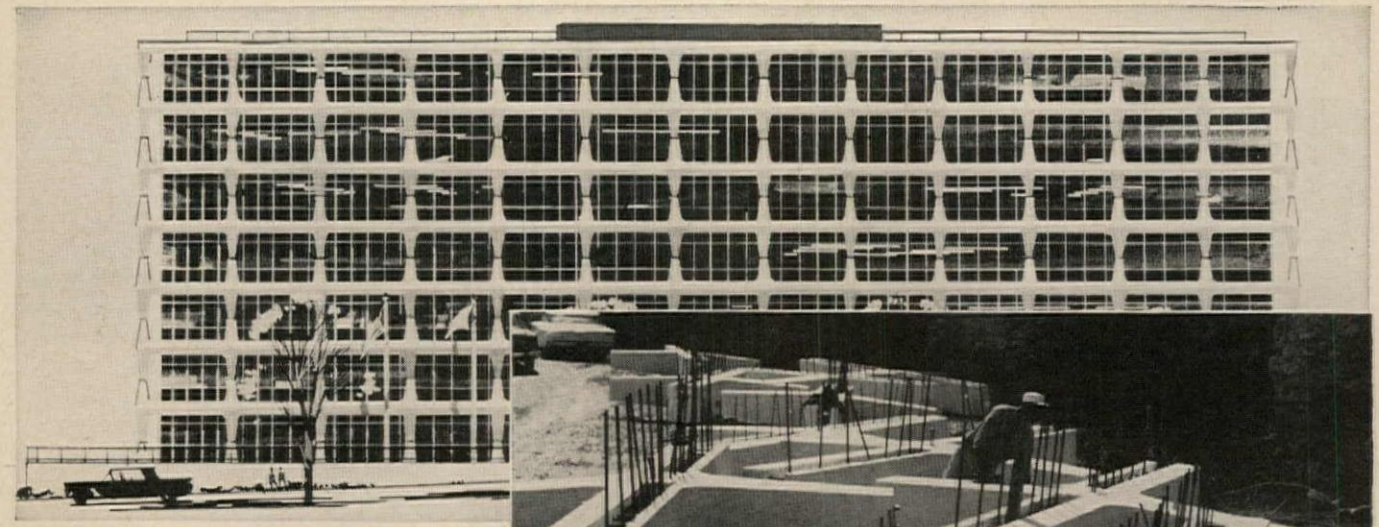

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The crosses are temporarily braced in position and become integrated into the structure as the concrete floors are poured, which operation fills a groove in the spandrel beam of the cross.

For more data, circle 3 on Inquiry Card

Viable Vernacular

One of the more dismal aspects of our time in architectural history is its "vernacular" architecture. Gone is the stately street of a New England town, the linear unity of Park Avenue, or even that of a few blocks of railroad flats. Gone is the picturesque quality of an Italian hill town, a Portuguese fishing village, a group of native huts almost anywhere.

Now we have the beach hotel, the highway hotel, the hamburger drive-in, the used car lot, the shopping center, the bowling alley. Where we do get some unity, as in the small-house tract or the public housing project, we are conscious only of a sort of design poverty.

Perhaps I am stretching the word "vernacular" in that list, for most of those buildings are done by professional designers.

We have more means, more money, more communication, more exuberance—and more chaos.

No, I shall not blame it all on the architectural profession. Clearly no design group, however self-disciplined, could be equal to the task of digesting, distilling or disciplining such discordant influences as today beset us. But we can ask what influence the organized architectural profession does have.

I have asked several observant friends two questions lately. Would you agree that the architectural leadership of the West (U. S. West) has largely been dissipated? Answer: yes. Would you then agree that the architects of the West have had more influence on the townscape than those of the East? Answer, yes.

Sometimes the answers were not thus sharply stated, but there was substantial agreement on the general thesis: greatest architectural leadership in the East, greatest popular following in the West.

The trap is, of course, that there are two different viewpoints on leadership—architects leading architects or architects leading laymen. A few years ago the Western architects were stuffily rejecting the tag that was tossed to them—the Bay Region Style. They protested that they had no wish to create a style. A few of them in fact denied the style so vehemently as to import a style from the East.

A recent observer, William L. C. Wheaton, director of the Institute of Urban and Regional Development, University of California, was bold enough to bring it up again:

". . . the best residential building in all generations has been a vernacular style, one which emerged from the economies of building, the local availability of material, the technology of the times. The older residential areas of Boston, Philadelphia, Litchfield, Conn., Concord, Mass., and Savannah, Ga., are now universally recognized as prize examples of a perfect, vernacular building, anonymous, harmonious and functional for their time. Contemporary vernacular building is afflicted with the disease of too many styles, too rapid change, too universal a market for materials and skills. As a result most vernacular non-architect designed home building is a hash of elements, unrelated by any common thread. You in the Bay Area are fortunate that you have had a vernacular for more than half a century—called the Bay Style—which draws upon the local climate for its inspiration."

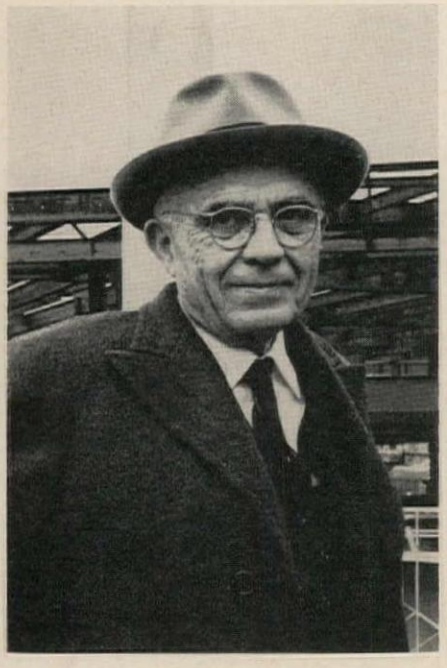
Well, style or no style, I think that architects of the Western states have influenced, favorably, the residential building of their areas. If the architect assumes any responsibility for his city and its buildings he must accept this sort of influence as his responsibility.

Roy Carroll, president of the American Institute of Architects, said recently: "Perhaps the problems of people and the questions of quality are, and should be, more important to us today than the daring structure or the new material. We are, quite obviously, pausing to get our esthetic breath; examining both the new *and* the old."

The proliferation of architectural gimmicks in the vernacular of our day ought to give us pause to get "our esthetic breath," and perhaps to give some thought to a better, viable vernacular.

—Emerson Goble

PIER LUIGI NERVI AWARDED A.I.A. GOLD MEDAL



Pier Luigi Nervi has been named by the American Institute of Architects the recipient of its 1964 Gold Medal. Mr. Nervi is the first engineer, the first Italian and the 11th foreigner to receive the A.I.A.'s highest honor.

Before World War II, Mr. Nervi was known for his design of the Municipal Stadium in Florence, and for a series of concrete airplane hangars. He has since built the Turin Exhibition Hall (1950), two Sports Palaces and a stadium for the 1960 Olympic Games in Rome, and the Palace of Labor in Turin (1961). In this country, he designed the Port of New York Authority Bus Terminal at George Washington Bridge in New York City (1962).

The medal will be presented to Mr. Nervi at the Institute's convention in St. Louis this June.

Kemper Award

The Edward C. Kemper Award, given for significant service to the Institute and to the profession, will be presented this year to Daniel Schwartzman, F.A.I.A., of New York.

The Institute has also announced its awards for the allied arts. The English sculptor Henry Moore will receive the Fine Arts Medal. Landscape architect Lawrence Halprin will be presented with the Allied Professions Medal. The Industrial Arts Medal will go to George Nelson, F.A.I.A., industrial designer of New York. Jan de Swart, Los Angeles sculptor, will receive the Craftsmanship Medal, and the Architectural Photography Gold Medal will go to Baltazar Korab of Birmingham, Michigan.

The Citation for an Organization will be made to Educational Facilities Laboratories, Inc.

The Architectural Firm Award will be presented to The Architects Collaborative of Cambridge, Massachusetts.

A new award, for Collaborative Achievement in Architecture, will be made to the designers of the Seagram Building and Plaza and the Four Seasons Restaurant in New York City. Those to be honored include, for the Seagram Building: Mies van der Rohe and Philip Johnson, architects; Kahn & Jacobs, associate architects; Philip Johnson Associates, J. Gordon Carr and Knoll Associates, office layout and furnishings; Severud-Elstad-Krueger, structural engineers; Jaros, Baum and Bolles, mechanical engineers; Clifton E. Smith, electrical engineer; Richard Kelly, lighting consultant; Karl Linn and Charles Middeleer, landscape architects; Bolt, Beranek and Newman, Inc., acoustical consultants; Elaine Lustig, typographical consultant; George A. Fuller Company, general contractor; and Mrs. Phyllis B. Lambert, director of planning. And for the Four Seasons Restaurant: Mr. Johnson, interior architect; William Pahlmann Associates, associate interior designers; Mr. Linn, interior landscaping; Mr. Kelly, lighting consultant; Richard Lippold, sculptor; L. Garth and Ada Louise Huxtable, industrial designers; and Emil Antonucci, graphic designer.

Honorary membership in the Institute will be accorded to Henry Lee Willett, stained glass designer and fabricator; S. C. Hollister, dean emeritus of the School of Engineering at Cornell University, and chairman of the A.I.A.'s Ad Hoc Commission on Education; Dr. Anthony G. Adinolfi, director of Planning for the New York State University Construction Fund; John L. Cameron, chief, School Housing Section, U.S. Office of Education; and George McCue, art editor, St. Louis Dispatch.

Honorary fellowships will be conferred upon E. Maxwell Fry, London; Mario Pani, Mexico City; Max Bill, Zurich; Eugene Elie Beaudouin, Paris; Affonso Edouardo Reidy, Rio de Janeiro; Sir Artheur Stephenson, Melbourne; and Luigi Moretti, Rome.

KETCHUM NOMINATED FOR A.I.A. FIRST VICE PRESIDENT

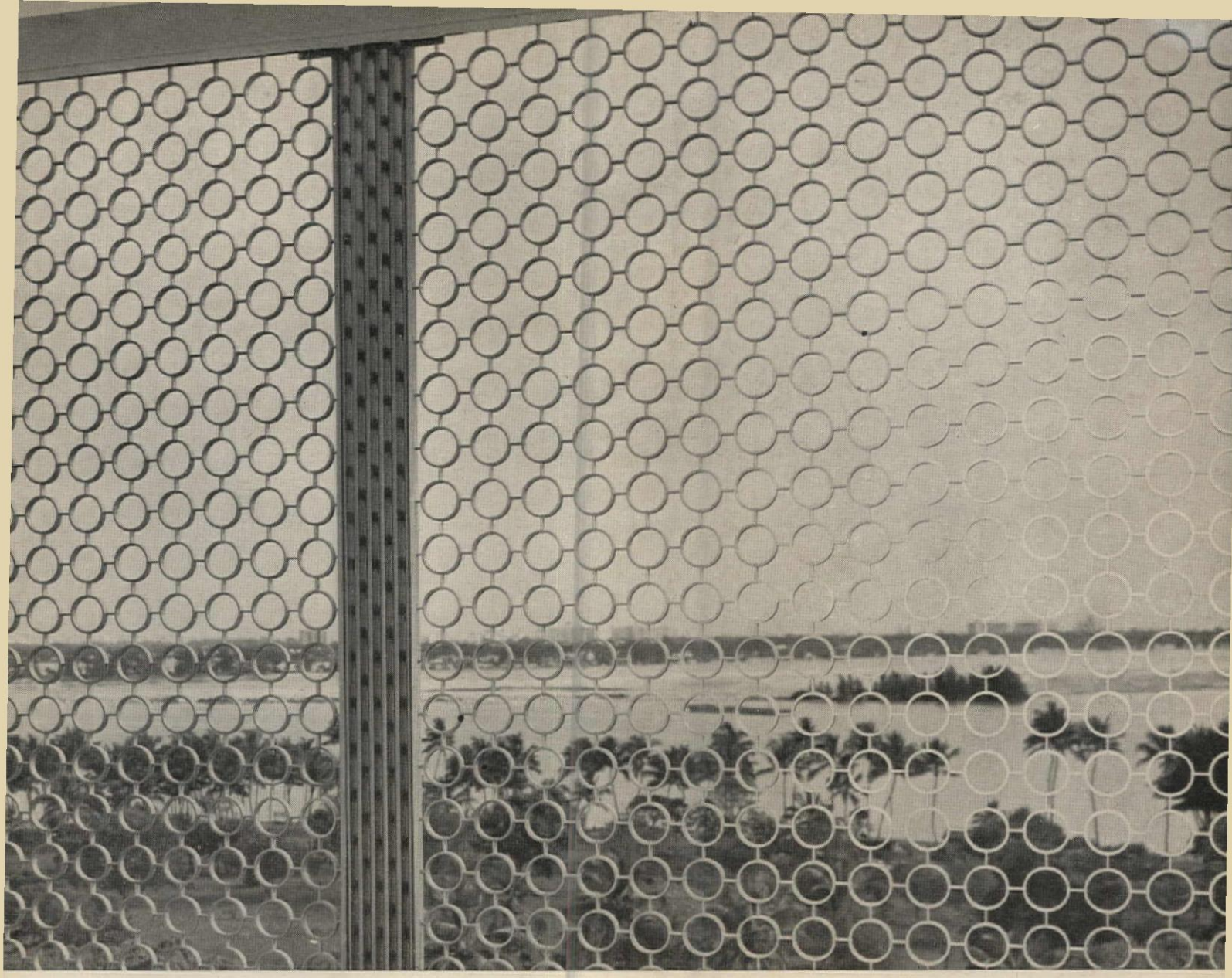
The American Institute of Architects has received the nomination of Morris Ketchum Jr., F.A.I.A., of New York City, as First Vice President and President Designate. The elections will be held at the Institute's convention in June, at which time the incumbent First Vice President, Arthur Gould Odell Jr., F.A.I.A., will become president.

Three vice presidents will be elected this year. The A.I.A. has so far received four nominations for this position: William Stephen Allen, F.A.I.A., San Francisco; Clinton Gamble, F.A.I.A., Fort Lauderdale, Florida; Julius Sandstedt, A.I.A., Oshkosh, Wisconsin; and Hugh A. Stubbins Jr., F.A.I.A., Cambridge, Massachusetts.

William J. Bachman, A.I.A., Hammond, Indiana, has been nominated for secretary.

Nominations for Regional Director include: New England Region—Willis N. Mills, F.A.I.A., Stamford, Connecticut; New York Region—Donald Q. Faragher, F.A.I.A., Rochester; Ohio Region—Charles J. Marr, F.A.I.A., New Philadelphia; Western Mountain Region—James M. Hunter, F.A.I.A., Boulder, Colorado.

The deadline for nominations is May 6, although nominations from the floor will be recognized.



Architect: Rader and Associates

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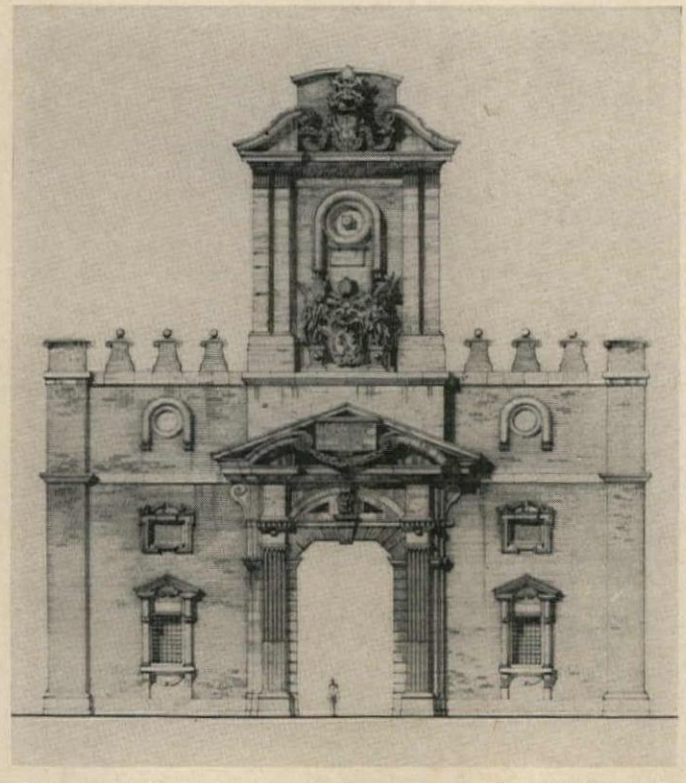


Michelangelo's design for the Porta Pia, with which the design of the British Embassy had to comport, is distinguished by its battlemented silhouette, forceful modeling and strong horizontals. It is built of brick and travertine

GREAT BRITAIN PLANS NEW EMBASSY IN ROME

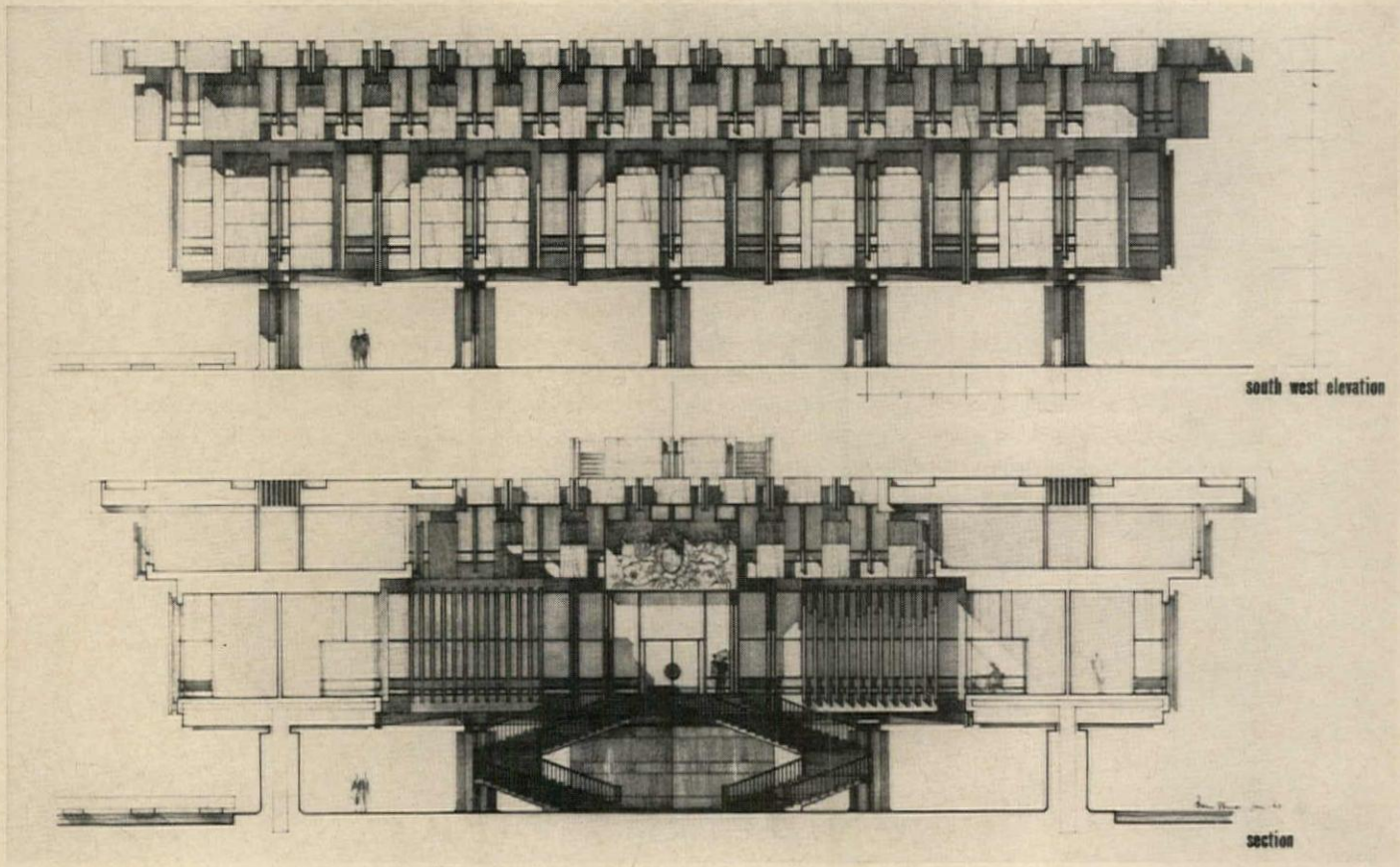
Sir Basil Spence, asked to design Her Britannic Majesty's Embassy-Chancery Building in Rome, faced more than the ordinary problems of extending courtesy to existing buildings. He had to design a building which would express the dignity of his country without mocking the Renaissance splendor of Michelangelo's Porta Pia nearby or the ancient Aurelian wall which borders the six-acre site.

In analyzing the circumstances, Sir Basil concluded: "Rhythmically, the building should be in harmony with the wall and the gate, in bulk it should not be too overpowering, in height it should conform, and the materials should not be out of sympathy."

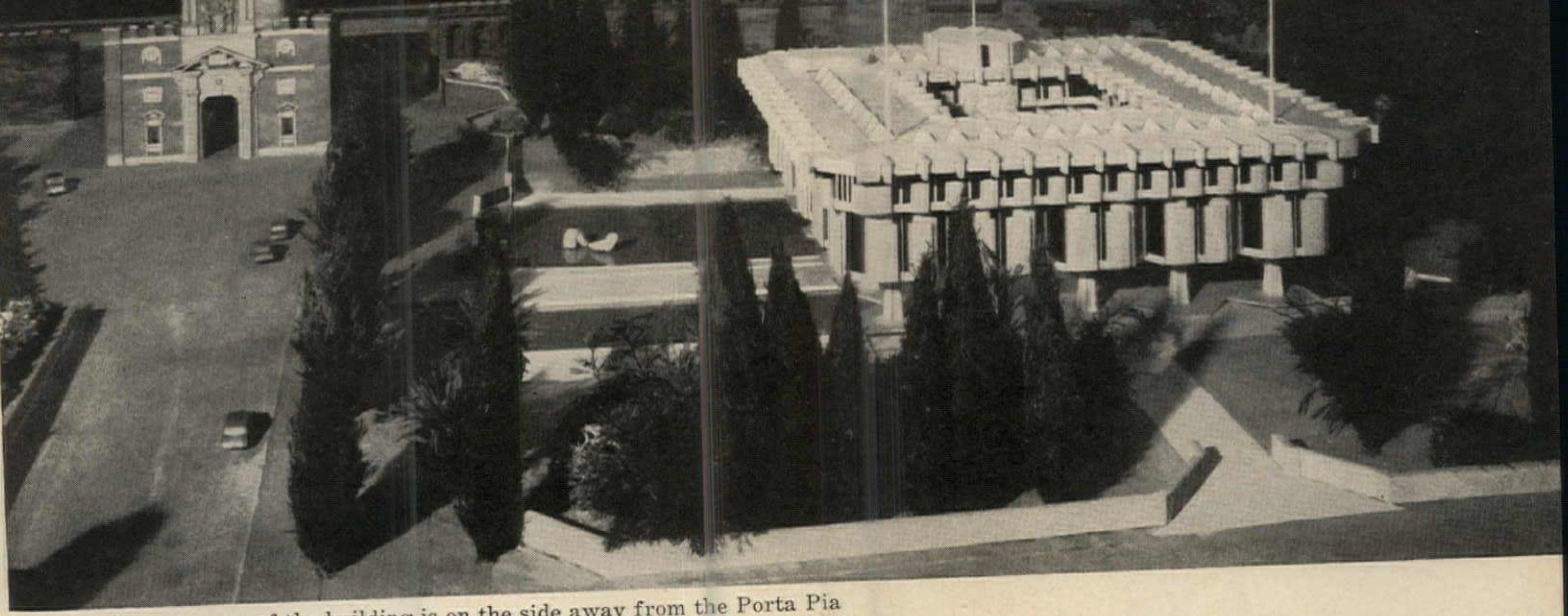
The resulting plan, accepted both by the Royal Fine Art Commission and Italian authorities, consists of 16 concrete units clustered around a large courtyard. It will be faced with travertine slabs, set forward so that the surface will be modeled. Projecting elements on the top floor echo the battlements of gate and wall.

The ground floor of the building will be open, while the first floor will contain large formal rooms, and the top room will house offices.

Ove Arup was consulting engineer for the project, and Pier Luigi Nervi is the Italian consultant.

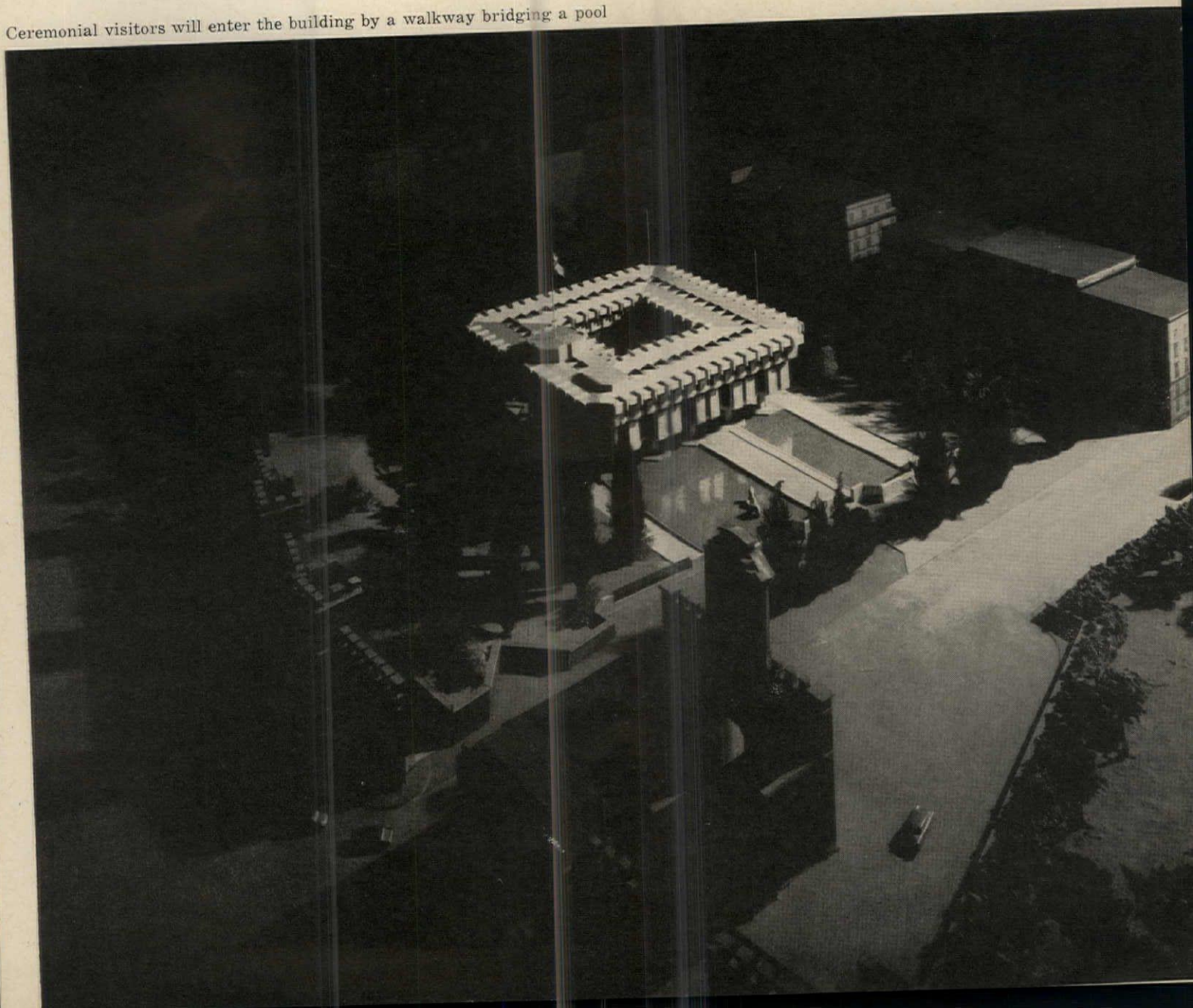


The southwest side of the building will be seen by visitors using the everyday, rather than the ceremonial, entrance. The open ground floor is dominated by the grand staircase which leads to the formal entrance lobby on the first floor



The working entrance of the building is on the side away from the Porta Pia

Ceremonial visitors will enter the building by a walkway bridging a pool



1963 PAN PACIFIC CITATION AWARDED TO JAPAN'S KIKUTAKE

Architect Kiyonori Kikutake

Y. Futagawa

Above: "Sky House," Tokyo, the architect's residence (1958). *Below:* The interior of "Sky House." Construction is ferro-concrete. The plan accommodates changeable service functions, which the architect calls "move-nettes." He has added two kitchen "move-nettes," one for the bathroom, and three for the children

Camera Hawaii

Kiyonori Kikutake of Tokyo is the recipient of the 1963 Pan Pacific Architectural Citation. The award is made annually by the Hawaii Chapter, American Institute of Architects, to an outstanding professional in architectural design who may live in any country bordering the Pacific Ocean.

Mr. Kikutake, 35, graduated in 1950 from the Waseda University School of Architecture. He has won a number of national architectural competitions, and currently serves as a member of the Japanese National Board of Licensing and as architectural consultant to the Shirokiya Department Stores. He accepted the honor at the chapter's annual banquet, held January 18 in Honolulu. Three days later, he was guest at a reception held by the Honolulu Academy of Art, which opened an exhibit of drawings and photographs of the architect's work.

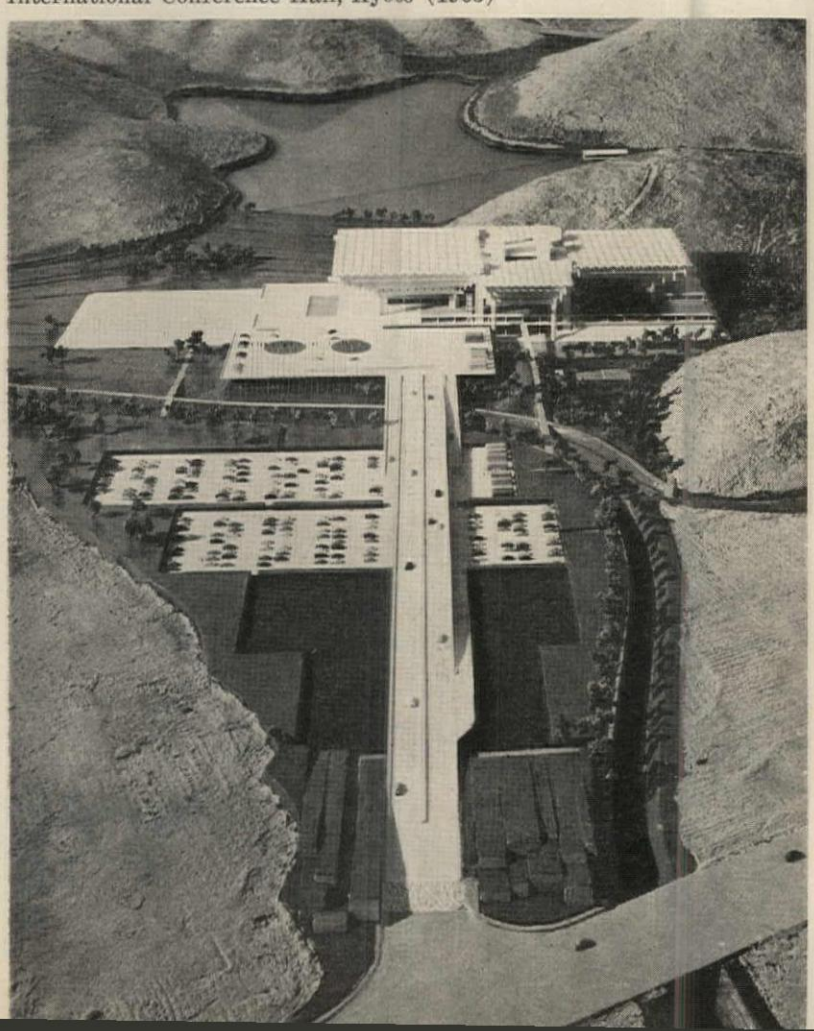
Mr. Kikutake is the second Japanese to receive the citation. Kenzo Tange was honored in 1957, the year the citation was established. In the years between, architects from Australia, the Philippines, Mexico and Canada have been similarly honored.

The Selection Committee for the citation is composed of former chapter presidents. This year's chairman is Harry G. Seckel, A.I.A.

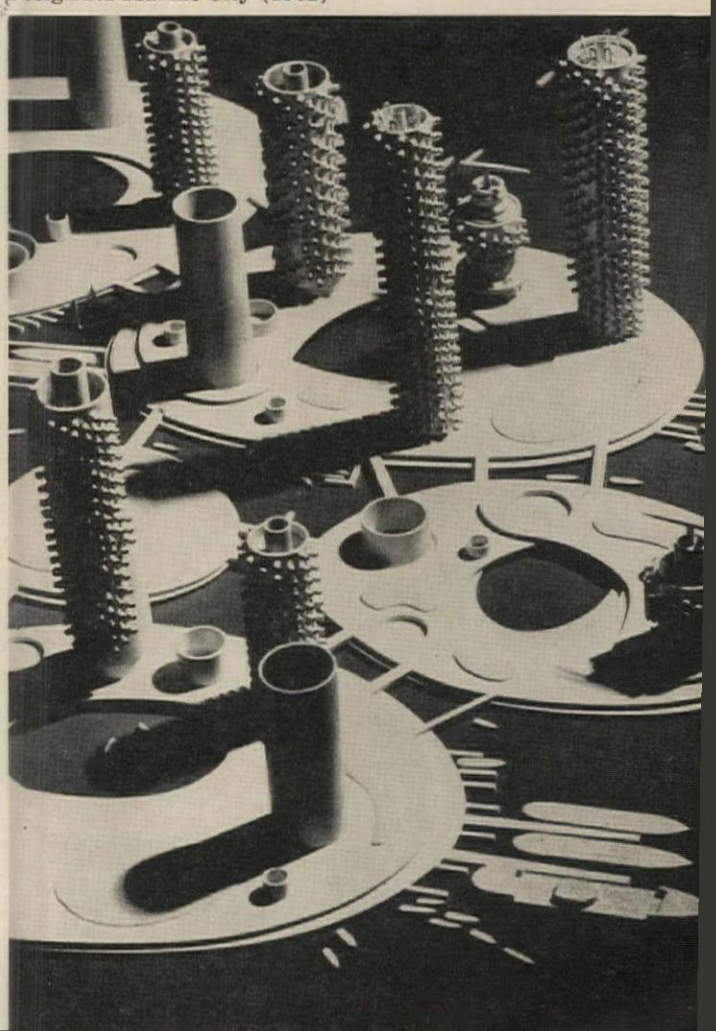
Tatebayashi City Hall (1963)

Camera Hawaii photos

International Conference Hall, Kyoto (1963)



Design for Marine City (1962)



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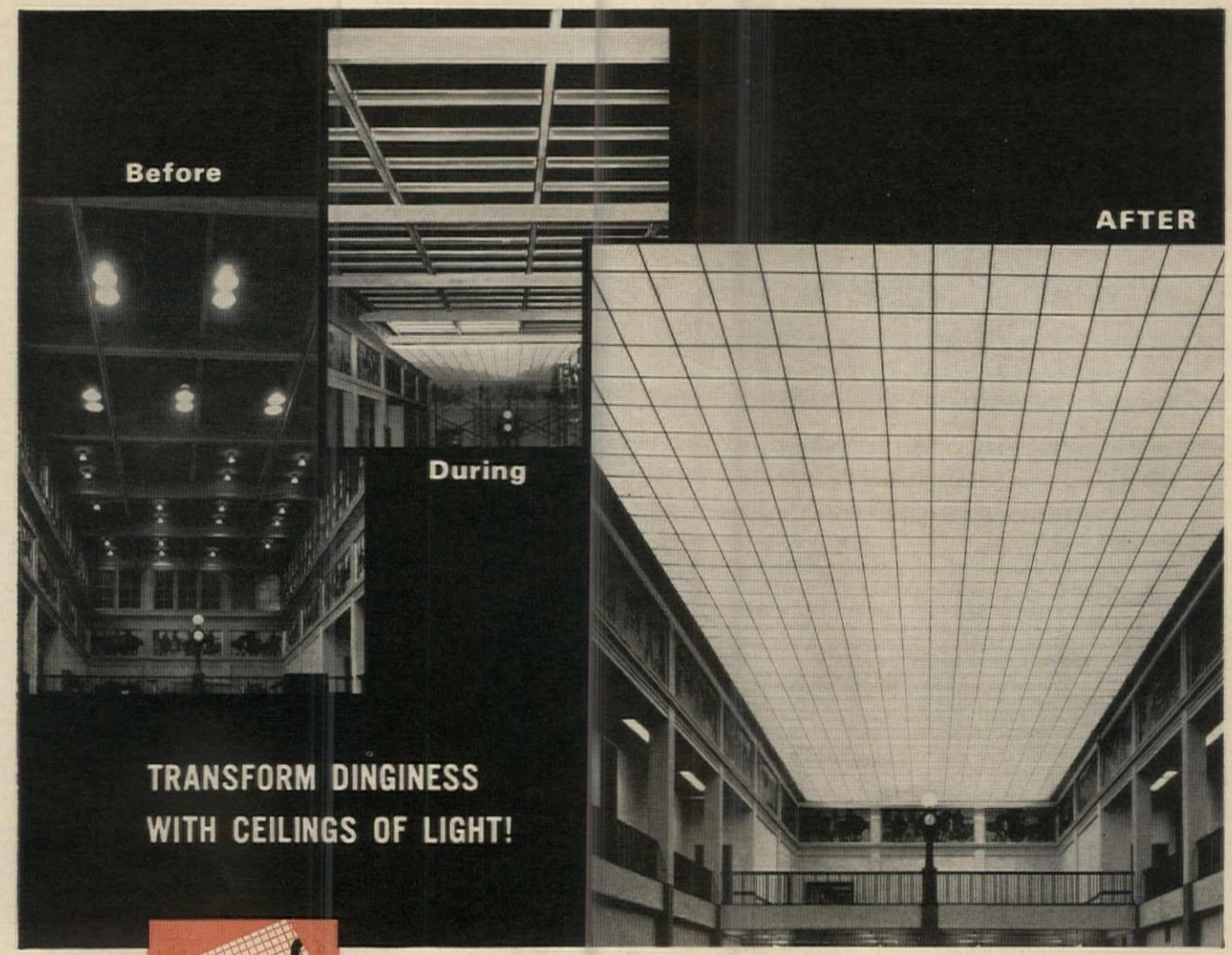

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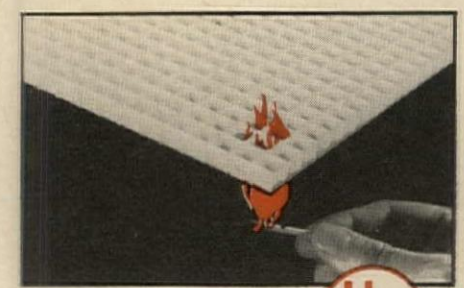

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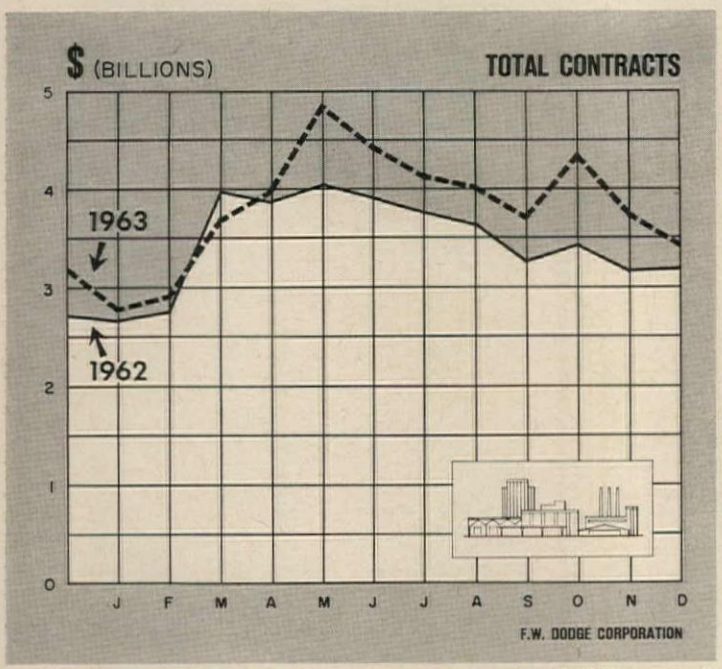
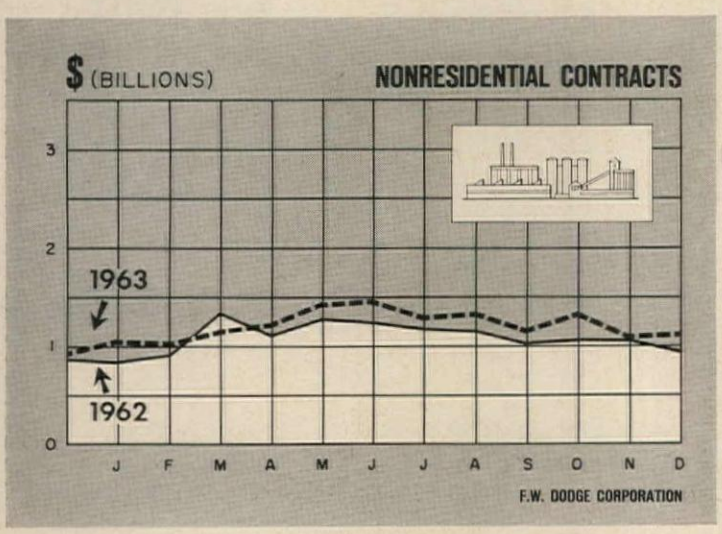
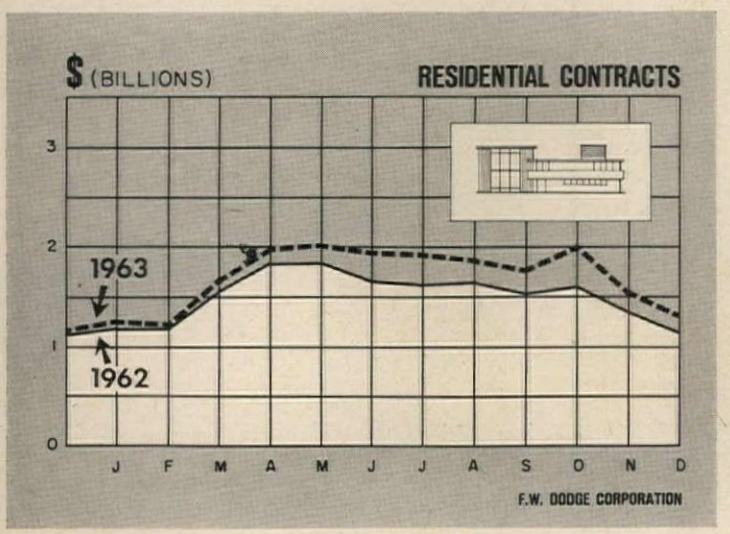
CONSTRUCTION SETS ANOTHER RECORD



Total contracts include residential, nonresidential and non-building contracts





With the compiling of December's contract data, F. W. Dodge Company has finished tabulating another year's construction activity. The final figures certainly are impressive: construction contract value in 1963 topped $45.5 billion, 10 per cent above 1962's total. This was a new high, and it added one more record year to the string of consecutive ones that goes back to the end of World War II.

The value of new construction contracts, as measured by the seasonally adjusted Dodge Index (1957-59=100), started 1963 in a lackadaisical fashion. After the first quarter ended, however, the Index moved upward in April, and then spurted to 144 in May—a new monthly record. Contract activity eased back from May's peak, but remained at high levels until the fourth quarter, when it soared: the Dodge Index eclipsed May's record in both October (146), and December (148), and equaled it in November. For the whole year, the Index was 132.0, far above 1962's 119.7.

All three major construction categories contributed to 1963's record-setting contract activity. Apartment building, which continued its booming performance for another year, was the major force boosting residential construction up 14 per cent, to a level over $20 billion. Although apartment contracts didn't match 1962's 45 per cent rise, total value last year was up nearly 30 per cent, piercing the $5 billion mark for the first time. Because of multi-family construction's sparkling performance last year, it's easy to overlook the splendid year that one- and two-family homebuilding had. After recording a 4 per cent gain in 1962, single-family home contracts increased 10 per cent in 1963, to an amount slightly less than $14 billion; only 1959's total exceeded last year's. Hotels, motels and dormitories, a small category in dollar terms, showed diverse trends. Hotels and motels fell 11 per cent, and dormitories climbed 26 per cent.

Total nonresidential construction contract value was more than $14 billion in 1963, up 11 per cent from the previous year. Among the nonresidential building types, there were two star performers: hospitals and public buildings. After four straight lethargic years, hospital building broke out of its torpor in 1961 when contract value rose 18 per cent. In 1962, contracts were up another 9 per cent, and last year they really soared, increasing a whopping 38 per cent. Public buildings, which only showed a 1 per cent gain in 1962, zoomed 42 per cent last year, spurred by funds from the Accelerated Public Works program. Bolstered by a 6 per cent rise in office construction, the total value of commercial building contracts was up 5 per cent. Continuing on the comeback trail from the sluggish years between 1956 and 1962, industrial buildings posted a 9 per cent gain in 1963. Educational buildings bounced back from a slow 1962, by registering an 8 per cent increase last year. Finally, religious buildings slumped 7 per cent, social and recreational contracts fell 8 per cent, and miscellaneous nonresidential construction contracts advanced 31 per cent.

Nonbuilding construction contract value rose 4 per cent in 1963, as public works construction edged up 3 per cent and utilities contracts increased 8 per cent.

Henry C. F. Arnold, Economist
F. W. Dodge Company
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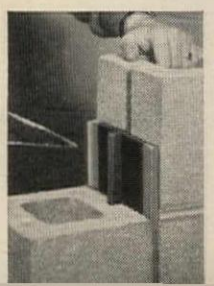

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Building Construction Costs

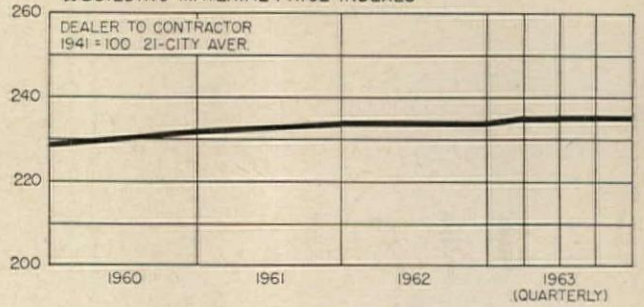
By Myron L. Matthews
Manager-Editor, Dow Building Cost Calculator, an F. W. Dodge service

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.

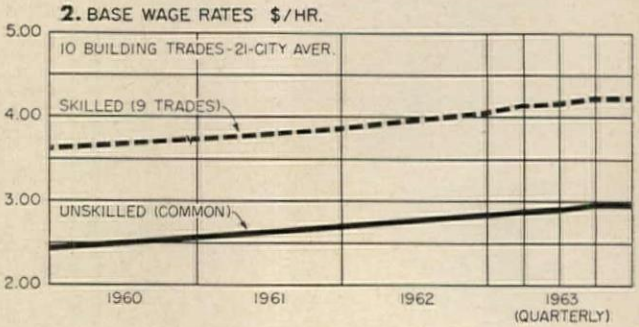
A. CURRENT BUILDING COST INDEXES—FEBRUARY 1964
1941 Average for each city = 100.0

Metropolitan Area	Cost Differential	Current Dow Index Residential	Current Dow Index Nonresidential	Per Cent Change Year Ago Res. & Nonres.
U.S. AVERAGE— 21 Cities	8.5	262.9	280.0	+2.52
Atlanta	7.1	294.4	312.3	+2.42
Baltimore	8.0	265.9	282.8	+2.16
Birmingham	7.4	243.7	262.0	+2.98
Boston	8.4	235.9	249.6	+2.41
Chicago	8.8	293.0	308.2	+2.56
Cincinnati	8.8	254.0	269.9	+2.38
Cleveland	9.3	265.6	282.3	+2.28
Dallas	7.8	249.5	257.7	+1.63
Denver	8.3	271.2	288.3	+3.67
Detroit	8.9	264.6	277.8	+2.77
Kansas City	8.3	239.4	253.4	+3.26
Los Angeles	8.4	266.4	291.5	+2.26
Miami	8.4	262.1	275.1	+3.50
Minneapolis	8.9	264.3	280.9	+2.43
New Orleans	7.9	239.6	253.9	+1.83
New York	10.0	271.0	291.5	+1.46
Philadephia	8.7	263.7	276.8	+3.12
Pittsburgh	9.1	247.8	263.4	+2.48
St. Louis	8.9	254.3	269.4	+2.78
San Francisco	8.5	332.3	363.6	+1.77
Seattle	8.5	241.6	270.0	+2.81

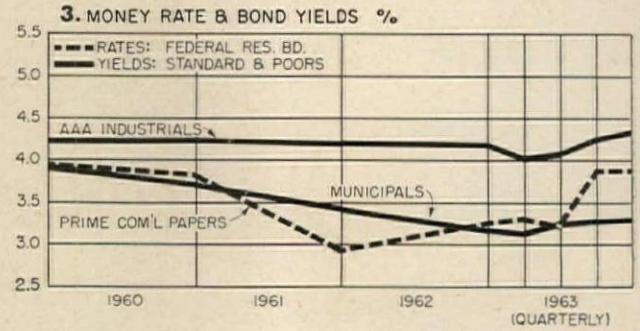
1. BUILDING MATERIAL PRICE INDEXES



2. BASE WAGE RATES $/HR.



3. MONEY RATE & BOND YIELDS %



B. HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES
1941 average for each city = 100.0

Metropolitan Area	1947	1952	1957	1958	1959	1960	1961	1962 (Quarterly) 1st	2nd	3rd	4th	1963 (Quarterly) 1st	2nd	3rd	4th
21 Cities U.S. AVERAGE	185.9	213.5	244.1	248.9	255.0	259.2	264.6	265.1	265.9	267.4	268.7	269.4	270.3	273.4	275.0
Atlanta	190.0	223.5	269.6	277.7	283.3	289.0	294.7	296.5	297.6	298.2	300.6	302.0	303.0	305.7	307.5
Baltimore	181.0	213.3	249.4	251.9	264.5	272.6	269.9	270.5	272.6	272.4	271.9	272.3	272.9	275.5	277.1
Birmingham	175.0	208.1	228.6	233.2	233.2	240.2	249.9	249.9	249.9	249.9	250.6	251.3	252.0	256.3	257.8
Boston	187.0	199.0	224.0	230.5	230.5	232.8	237.5	238.5	239.9	240.4	240.4	240.4	241.2	244.1	245.6
Chicago	182.0	231.2	267.8	273.2	278.6	284.2	289.9	289.9	289.9	292.6	295.8	296.4	296.4	301.0	302.8
Cincinnati	178.0	207.7	245.1	250.0	250.0	255.0	257.6	257.6	257.6	260.0	260.0	260.0	260.7	263.9	265.5
Cleveland	173.0	220.7	258.0	257.9	260.5	263.1	265.7	265.7	268.4	268.4	271.7	272.3	272.8	275.8	277.4
Dallas	202.0	221.9	228.4	230.5	237.5	239.9	244.7	244.7	244.7	247.7	250.8	251.5	252.2	253.0	254.5
Denver	187.0	211.8	245.6	252.8	257.9	257.9	270.9	273.1	276.3	275.3	274.8	275.0	275.4	282.5	284.2
Detroit	158.0	197.8	237.4	239.8	249.4	259.5	264.7	264.7	264.7	267.1	267.1	267.1	267.9	272.2	273.8
Kansas City	172.0	213.3	230.5	235.0	239.6	237.1	237.1	238.5	239.5	240.8	241.8	242.3	242.9	247.8	249.3
Los Angeles	180.0	210.3	248.4	253.4	263.5	263.6	274.3	274.3	274.3	278.0	278.6	279.1	279.7	282.5	284.2
Miami	193.0	199.4	234.6	239.3	249.0	256.5	259.1	259.1	259.1	260.8	262.4	262.4	266.7	269.3	270.9
Minneapolis	176.0	213.5	235.6	249.9	254.9	260.0	267.9	267.9	267.9	269.5	270.8	271.4	272.1	275.3	276.9
New Orleans	180.0	207.1	232.8	235.1	237.5	242.3	244.7	244.7	244.7	245.5	245.5	246.5	246.5	248.3	249.8
New York	181.0	207.4	240.4	247.6	260.2	265.4	270.8	273.5	273.5	276.6	280.4	280.9	280.9	282.3	284.0
Philadelphia	209.0	222.3	255.0	257.6	262.8	262.8	265.4	265.4	265.4	265.0	265.0	265.6	265.6	271.2	272.8
Pittsburgh	191.0	204.0	234.1	236.4	241.1	243.5	250.9	250.9	250.9	252.1	253.5	255.0	256.1	258.2	259.7
St. Louis	191.0	213.1	237.4	239.7	246.9	251.9	256.9	254.0	254.3	256.2	257.3	260.1	262.4	263.4	265.0
San Francisco	243.0	266.4	302.5	308.6	321.1	327.5	337.4	339.1	340.8	344.5	348.7	350.1	350.1	352.4	354.5
Seattle	175.0	191.8	221.4	225.8	232.7	237.4	247.0	249.0	251.9	253.7	255.3	256.5	257.8	260.6	262.2

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 my 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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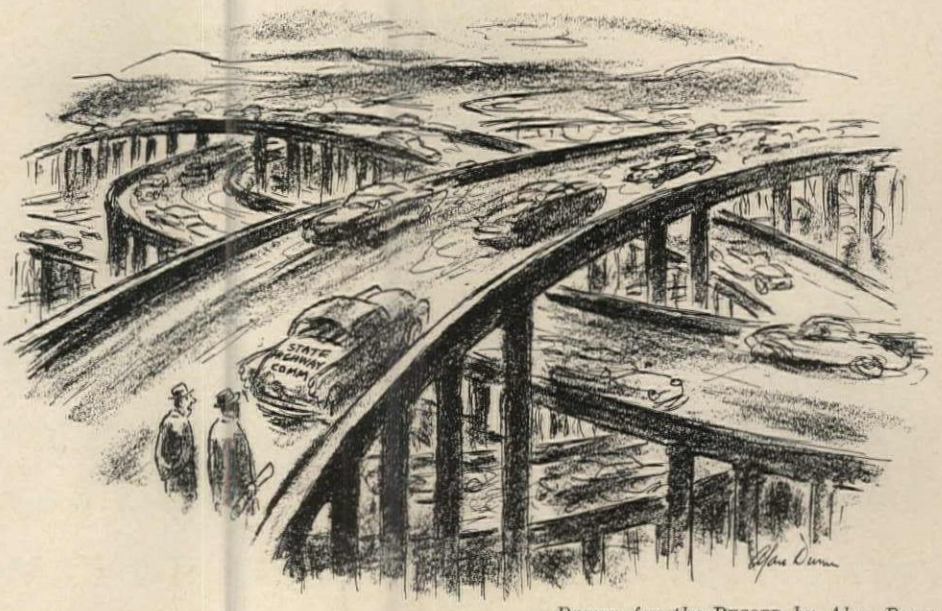

—Drawn for the RECORD *by Alan Dunn*

"You solved the Urban Center transportation problem perfectly, but, by the way, whatever became of the Urban Center?"

GORES OF E.F.L. NOTES CHANGING STANDARDS FOR SIZE AND LOCATION OF BIG CITY SCHOOLS

The rules-of-thumb which have determined the size and location of urban schools are undergoing some revision, Harold Gores of Educational Facilities Laboratories, Inc., said last month. He spoke to members of the Architectural League of New York at one of the League's series of meetings on "The Pursuit of Civil Excellence."

On the question of school size, Mr. Gores suggested that the old arbitrary minimums and maximums, e.g., 750-1,200 students for high schools, are meaningless in the context of urban logistics. With more and more people on less and less land, the question is simply how many students may safely be housed. Any feeling of massiveness, he said, should be counteracted by good design.

Improvements in transportation, he suggested, have made the need to locate schools in the pupil's neighborhood obsolete. Large tracts, where education parks can be built, and "where the physical environment is benign," are available outside the city.

If the schools are to be built in the city, Mr. Gores believes that the standards for site size, essentially suburban standards as they now stand, can be considerably reduced. And reduced, he went on, without sacrifice of play space. He cited particularly the use of "synthetic turf," a Neoprene sod which can be installed on rooftops.

Mr. Gores had also some specific suggestions for school planning: (1) joint occupancy, particularly with commercial buildings; (2) interior flexibility ("to design a school as though education will not change in the 50-year life of the building is cultural arrogance"); (3) schools that "reach out" to their neighborhoods ("A fortress put down in a slum . . . does nothing to rally the neighborhood to its own renewal"); (4) terraces and rooftops for play space; (5) new education specifications ("Given the School Board's standards and detailed requirements, about all [the architect] can do is to practice cosmetology. . . ."); (6) "descriptive rather than prescriptive specifications" ("Tell the architect what will go on in the place and let him design an environment that will consent to it").

James Hult, director of the New York School Board's Office of Design, Construction and Physical Plant, spoke on the panel with Mr. Gores, and reported on New York's efforts to get more attractive and better working schools. Exciting design, the board thinks, will upgrade neighborhoods, attract good teachers, and thus perhaps provide one answer to the integration problem.

The city has also adopted the use of portable classrooms to accommodate its 100,000 yearly transfers. Mr. Hult reported that 250 units are in use and another 358 underway. As to their success, Mr. Hult was forthright: "They're crumby, but they do the job."

Current projects in New York are the investigation of air rights and the possibility of combining schools with income-producing buildings; the use of carpeting for sound reduction (first test: negative; reason: chewing gum); and the incorporation of movable walls in some schools in preparation for team teaching.

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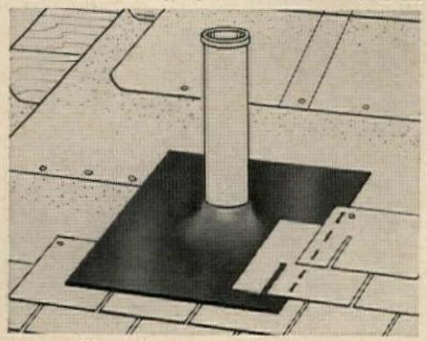

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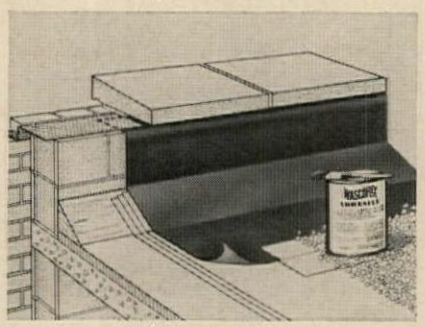

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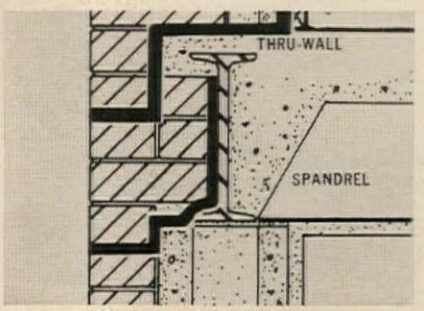

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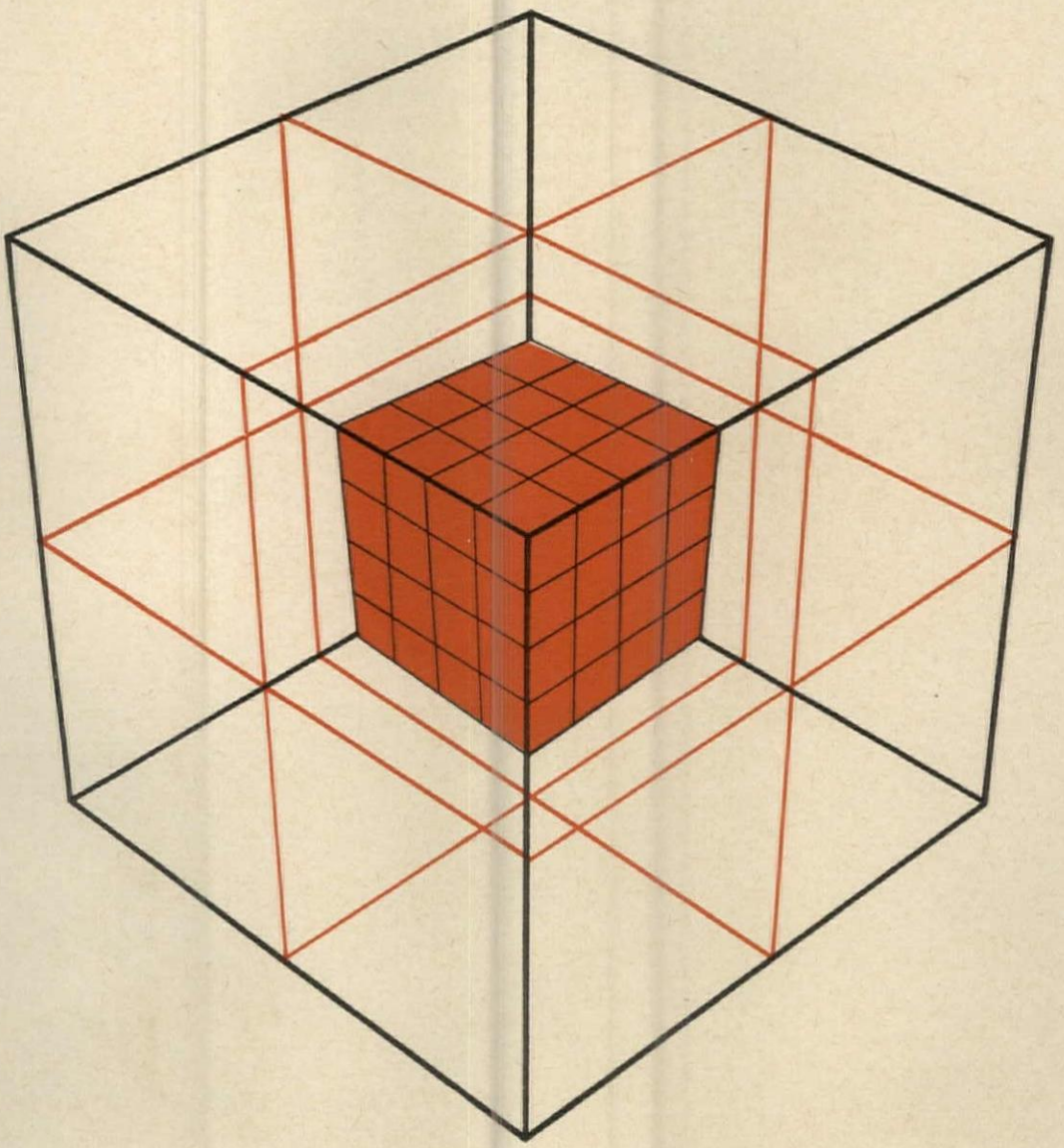

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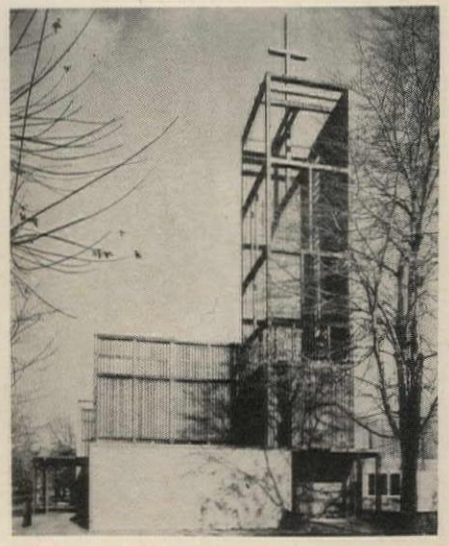
Oscar Niemeyer's Cathedral of Brasilia (*left above*) and Reima Pietila's Church at Tampere, Finland are among the 21 examples in New York A.I.A. exhibit



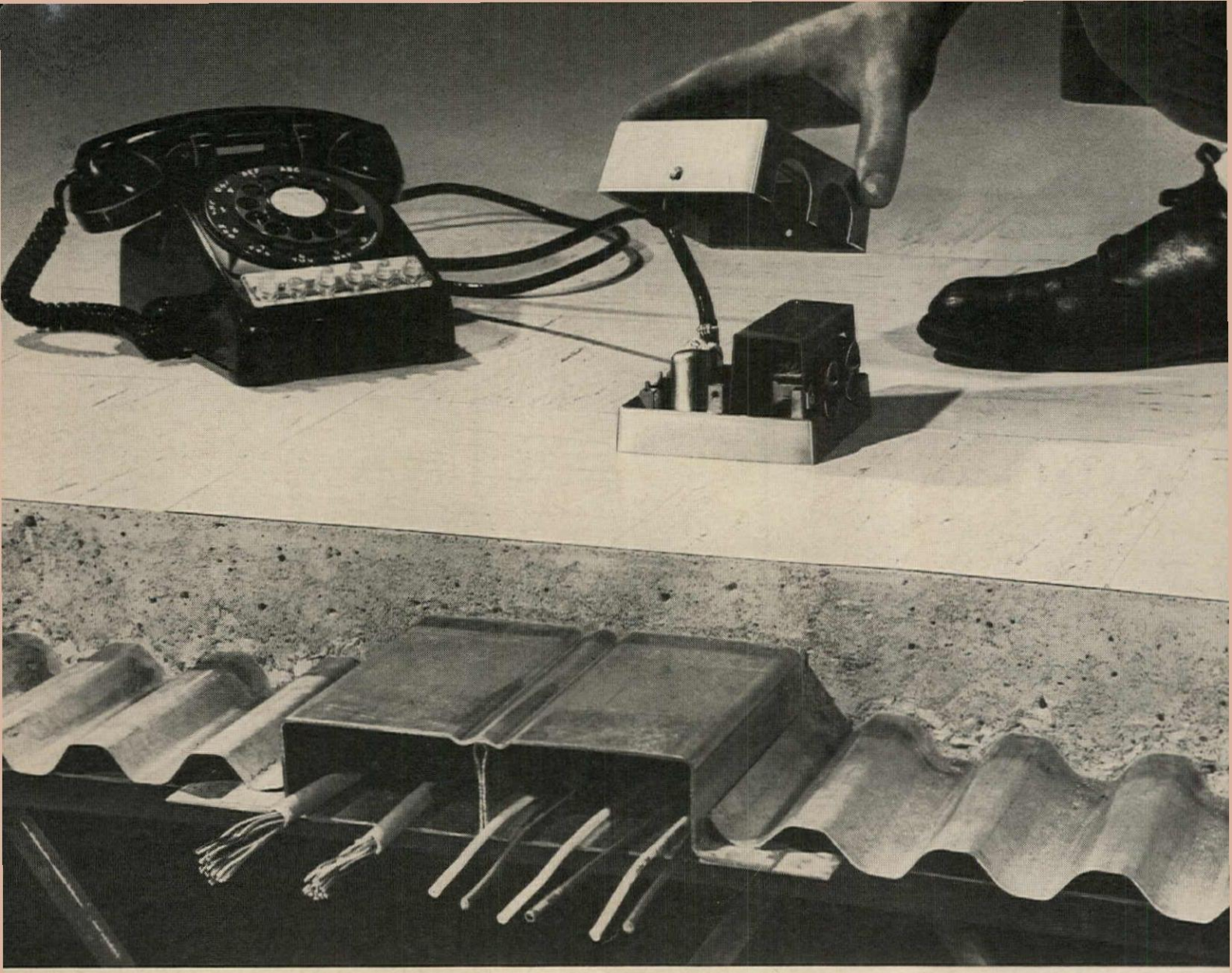
Belluschi's Central Lutheran Church in Portland, Oregon

NEW EXHIBIT OF CHURCHES AND TEMPLES TO TOUR

A major exhibit of religious architecture sponsored by the New York Chapter of the American Institute of Architects will soon be circulated by the American Federation of Arts.

The exhibit, "Churches and Temples: Postwar Architecture," closed last month a month's premiere at the Pepsi-Cola Exhibition Gallery in New York City. It includes 21 examples shown in photographs, models and examples of religious art. An illustrated brochure describing the exhibit has been published.

Buildings were chosen by the board of selection consisting of architects Marcel Breuer, Lathrop Douglass, Percival Goodman and Jan C. Rowan, editor of Progressive Architecture; and Maurice Lavanoux, editor of Liturgical Arts.

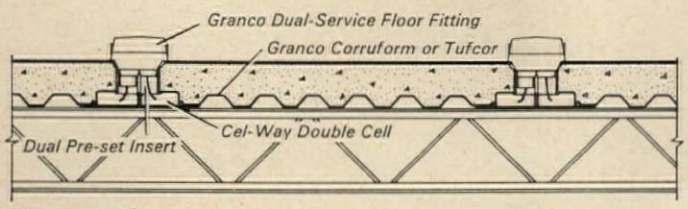


Granco's new Cel-Way floor system uses one fitting for power and telephone

Now for the first time, you can fully electrify thin, structural slabs over steel joists! Granco's new Cel-Way system gives you cellular-floor electrical capacity in a compact slab. Large-capacity single, wide or double cells, blended with a Granco permanent steel form (shown above with *double cells* and Corruform®), provide the form for wet concrete and raceways for telephone and power . . . all within a single thin slab!

For high-capacity systems—using double cells—optional new dual-service floor fitting and matching dual pre-set insert offer additional benefits and economy. The new, satin-finish fitting encloses *both* telephone and power outlets in *one* fixture . . . to cut in half the number of fittings needed. To meet modern telephone requirements, each fitting can conceal two amphenol jacks. Floor cleaning and maintenance is easy. Servicing communication needs of present and future tenants is simplified.

With Cel-Way you can design complete in-floor electrification for any building in a new, economical way. For floors requiring long spans and greater load-carrying capacity, combine Cel-Way with Granco Tufcor®, Cofar®, or Cofar Composite. For more information about Cel-Way, see our catalogs in Sweet's, or send for Cel-Way catalog 99-363. Write Granco Steel Products Company, 6506 N. Broadway, St. Louis, Missouri 63147. A subsidiary of Granite City Steel Company.



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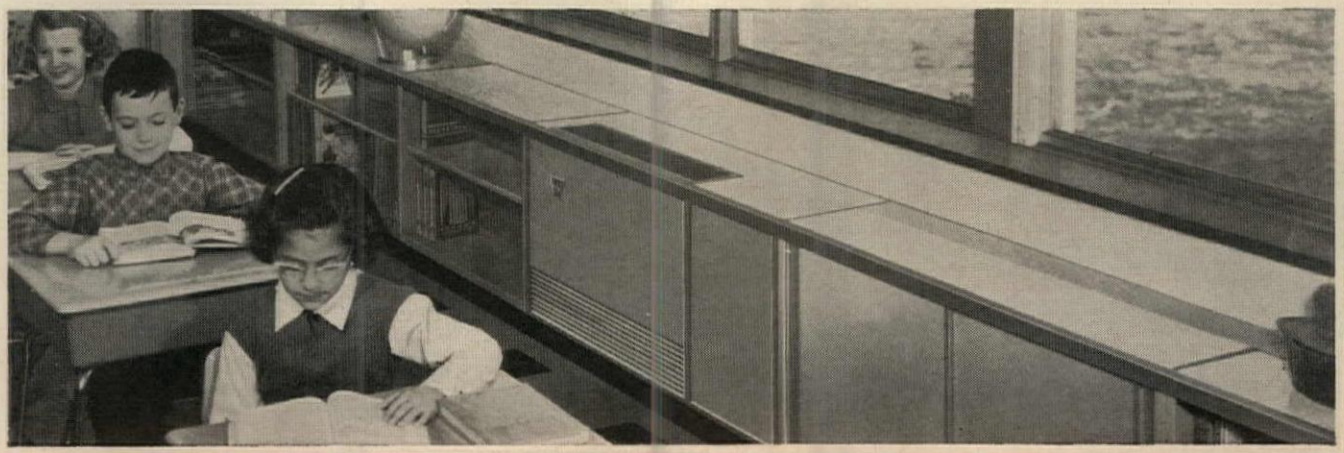

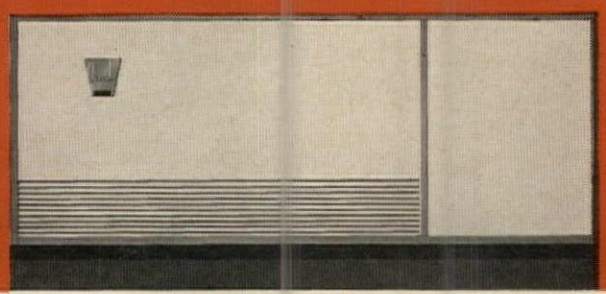

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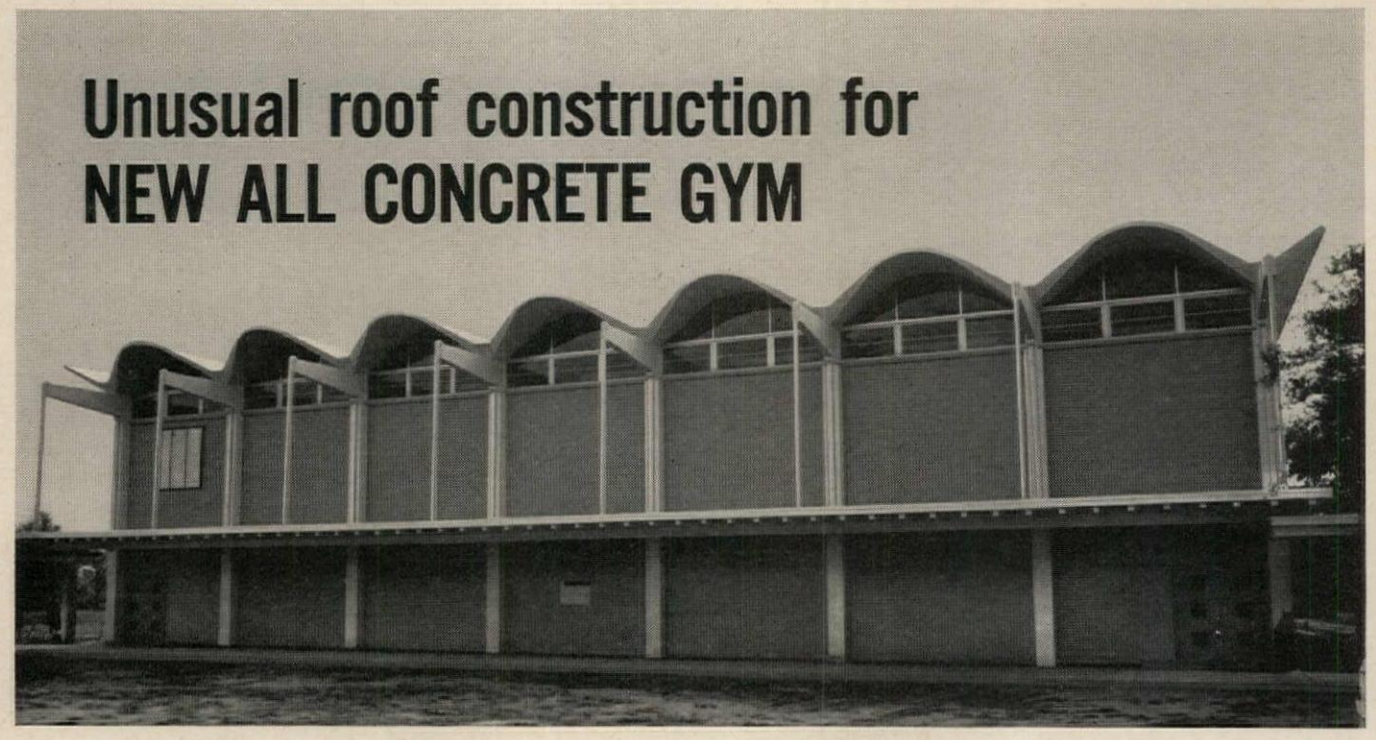
Unusual roof construction for NEW ALL CONCRETE GYM



• Huge, prestressed "Y" beams, resting on cast-in-place columns, form the basic structure of this interesting high school gym roof. Cast-in-place parabolic arches between these beams complete the effect. Prestressed double Tee beams, supported from the ends of the "Y" beams, provide a covered walkway. And, the walls are painted concrete masonry units.

LEHIGH EARLY STRENGTH CEMENT BENEFITS EVERY MEMBER OF THE TEAM Dura-Stress, Inc. used Lehigh Early Strength Cement for the prestressed units in this building. Here, as in almost any concrete work, this cement provides important benefits for manufacturer, contractor and architect alike. Quicker re-use of forms. Earlier availability of units. Assured on-time delivery for smoother planning. Lehigh Portland Cement Company, Allentown, Pa.

Fessenden High School gymnasium in Marion County, Fla. is an interesting combination of prestressed concrete, poured concrete and concrete masonry. Tapered ends of the Lin Y roof beams cantilever to support double Tee Beams covering a walkway.

Owner:
Marion County Board of Public Instruction, Ocala, Fla.
Architect:
Berry J. C. Walker, A.I.A., Ocala, Fla.
Structural Engineer:
R. O. Newman, Leesburg, Fla.
Contractor:
Thompson Brothers Construction Co., Leesburg, Fla.
Prestressed Manufacturer:
Dura-Stress, Inc., Leesburg, Fla.
Concrete Block Manufacturer:
Robinson-Scofield Lumber Co., Dunnellon, Fla.

LEHIGH CEMENTS

Eight prestressed Y beams are set in place on 16′ centers as the first step in roof construction. Each beam measures 105′ long and 8′ wide.

To complete the interesting form of the roof, 8′ wide parabolic arches are poured-in-place between the beams.

Such a trim, beautiful drapery treatment with sleek, slim Silent Gliss track...so wonderfully easy to install...so unmistakably different...

This is our No. SG-1030 track — ceiling mounted, cord traversing, with nylon cords traveling in patented semi-enclosed separated channels . . . the world's newest and best cord traversing system!

Such a marvelous new look for window treatments! Straight, *erect* drapery headings that won't tip forward . . . compact stacking with between-pleat spacings folded *back* to save space.

Such a never-before kind of track, this Silent Gliss . . . compact, discreetly elegant . . . extruded aluminum with the finest, most foolproof cording and traverse performance the world has ever known!

Installation? Our No. SG-1030, shown here, goes up in a breeze with standard fasteners, standard tools . . . with the pre-punched mounting flange invisible in normal use. Range of styles? Silent Gliss offers 14 to choose from, for recessed and surface mounted installation, cord or hand traversing, wall mounted and specialty applications. For details, write for personal illustrated catalog copy today. Address Dept. AR-3.

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HOUSING MESSAGE CALLS FOR AID TO SUBURBS

President asks Congress for new towns, other aid to suburban housing and development; also recommends establishment of new Department of Housing and Community Development

President Johnson's housing message of last month indicated great Federal concern with the broad problems of the expanding suburbs. "The great expansion of our urban areas over the last two decades," the President told the Congress, "has too frequently been carried out in a sprawling, space-consuming, unplanned and uneconomic way. . . . If the taxpayer's dollar is to be wisely used and our communities are to be desirable places in which to live, we must assure ourselves that further growth takes place in a more orderly fashion."

His most sweeping proposal assumed that a "significant portion" of future urban growth would be provided by new towns, "complete with all public services, all the industry and commerce needed to provide jobs, and sufficient housing and cultural and recreational facilities for moderate- and low-income families as well as for the well-to-do." To encourage activity in this field, the President requested a program of grants and loans to states and cities for the provision of public facilities. Since construction would mostly be in the hands of private investors, he also urged the establishment of a loan insurance program for developers building the new towns.

Recognizing the short-term efforts forced on most communities for lack of capital, he recommended a program of community loans, with deferred amortization, for planning and building public facilities ahead of need, and for advance acquisition of public land. A loan program for private developers, to be applied to the acquisition of land for subdivisions, was also requested.

Although the President did not specifically recommend Federal planning controls, he did point out that all of these programs should be based on efficient land use.

New Department

The Housing and Home Finance Agency, the President said, has acquired in the 17 years of its existence so many responsibilities not envisoned at its inception that it should be elevated to departmental status. The suggested title, Department of Housing and Community Development, reflects, as do the suburban recommendations, a broader scope of interest than did President Kennedy's similar request for a Department of Urban Affairs.

New Authorizations

Two of the major programs under the Housing Act of 1961—public housing and urban renewal—require new authorization if they are to continue.

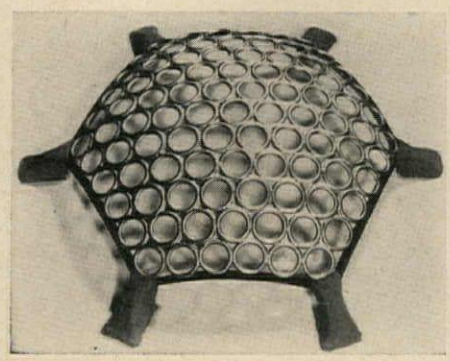
The 100,000 units of public housing authorized by the act have all been committed. The President asked for an additional 50,000 units a year over the next four years. Not all of these units may be new housing, however; the President urged legislation enabling communities to acquire existing housing for rehabilitation to fill part of the requirements.

The 1961 urban renewal authorization is expected to be exhausted by the middle of this year. The President requested a new authorization of $1.4 billion to be approved for a two-year period.

Health Message

In his health message, also delivered last month, the President asked for some funds for construction. Most of these requests fell under his appeal for a five-year extension of the Hill-Burton Act, due to expire at the end of June. Among other things, he requested: (1) an increase in annual appropriations from $40 to $70 million for long-term care facilities (combining the categories of nursing homes and chronic disease hospitals); (2) an amendment permitting mortgage insurance with up to 40-years maturity for private nonprofit hospitals and nursing homes; and (3) a five-year program of Federal loans and mortgage insurance for group medical facilities.

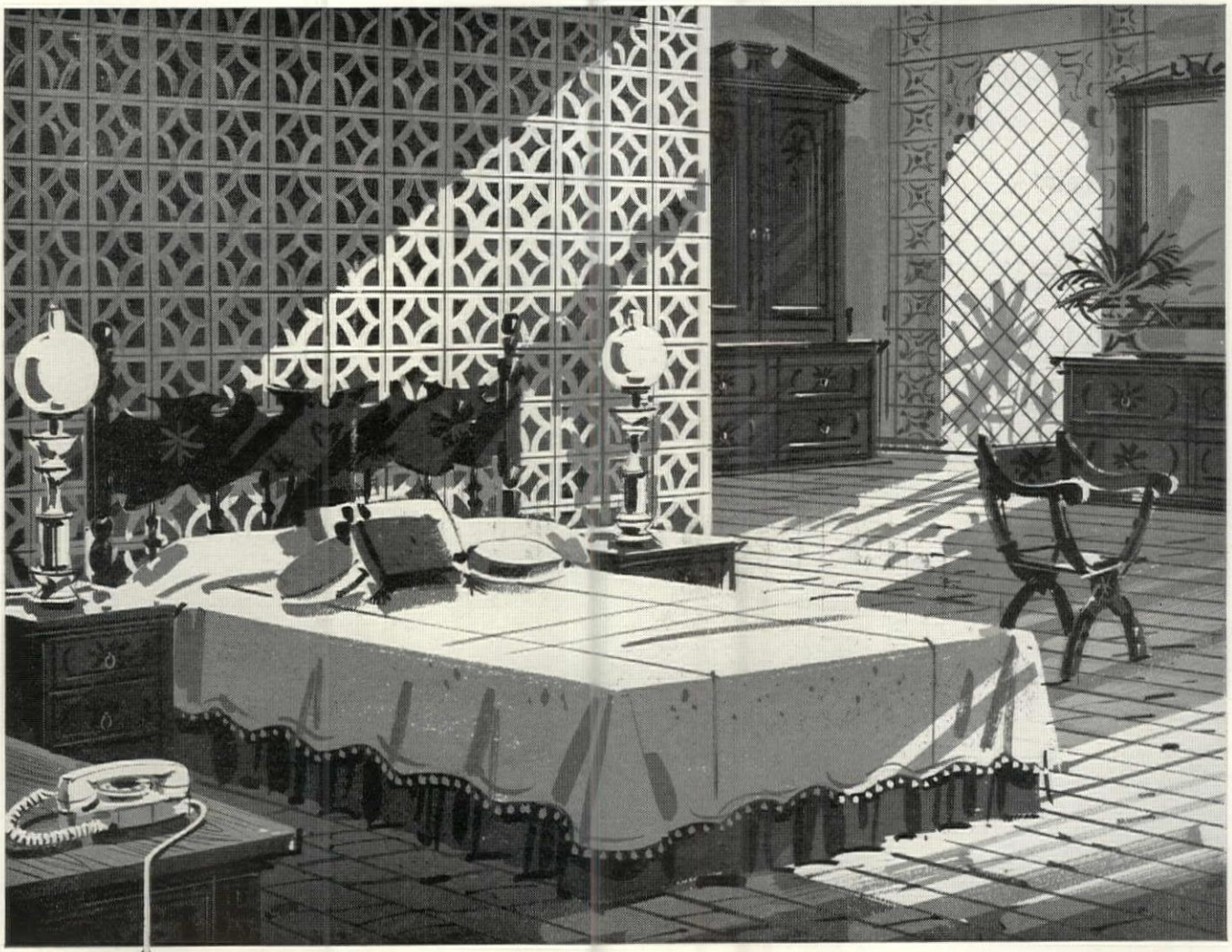
1964 REYNOLDS PRIZE AWARDED TO NOTRE DAME STUDENT



John F. Torti, an architectural student at the University of Notre Dame, has been named the winner of the fourth annual Reynolds Aluminum Prize for Architectural Students. His "Dynamic Clear Span" design is a shallow dome of aluminum rings, joined by single bolts at the point of contact. The dome is closed by glass or plastic.

The prize, for $5,000, is divided between the winner and his school.

Honorable Mentions were given to student designs by Eddy Bejar, Rice University; Sam Leonard Condit, University of Nebraska; Daniel Eugene Decker, University of Ohio; Jacob Joffe and Kyun Kim, Virginia Polytechnic Institute; Roger Marshall, California Polytechnic Institute; James Sarantitis, City College of the City University of New York; and Richard Lee Sullivan, University of California.



This interesting bedroom is even more comfortable and convenient with a Princess® phone. For help in telephone-planning your homes, call your Bell Telephone Company Architects' and Builders' Service. See Sweet's Light Construction File, 11c/Be, for other residential telephone installation ideas.

ADD PRESTIGE to the homes you design by providing for built-in telephone outlets and concealed wiring. It's the tidy, modern way to protect interior beauty, increase convenience and serve present and future telephone needs.

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For BOWLING ALLEYS

This handsome bowling center in Coos Bay, Oregon, built with the standard sizes and grades of West Coast Lumber, is full tournament size, containing 22 completely equipped bowling lanes.

Of particular interest in the construction of a building requiring large, uninterrupted floor space is the use of contoured glued laminated beams in a double curve which provides maximum roof support with a minimum of interior support. The 2″x8″ White Fir tongue and groove decking is applied directly to the beams for a light, attractive covering. An important secondary benefit is the sound-absorptive quality of the irregular wood surface.

The entire construction, in a No. 2 fire zone, is of West Coast Lumber, even to the walls which are board and batten siding of Western Red Cedar with a resawn face. Exposed trim is vertical grain West Coast Douglas Fir.

The result is a hospitable, practical building completed, minus alleys and equipment, at the astonishing figure of $7.71 per sq. ft.—an excellent example of the economical use of the standard grades and sizes of West Coast Lumber.

The retail lumber dealer conveniently located in your community is your source of information and supply for dependable West Coast Lumber.

Architects: Kruse and Fitch, A.I.A.

The standard sizes and grades of West Coast Lumber used in the building of the bowling alley were:

MILL 10 WCLB STAND — **West Coast Douglas Fir** 2″x4″, 2″x6″ wall framing.

MILL 10 WCLB SEL DEX 127b W. C. H. — **White Fir** 2″x8″ for the roof deck applied to the curve of the glued laminated beams.

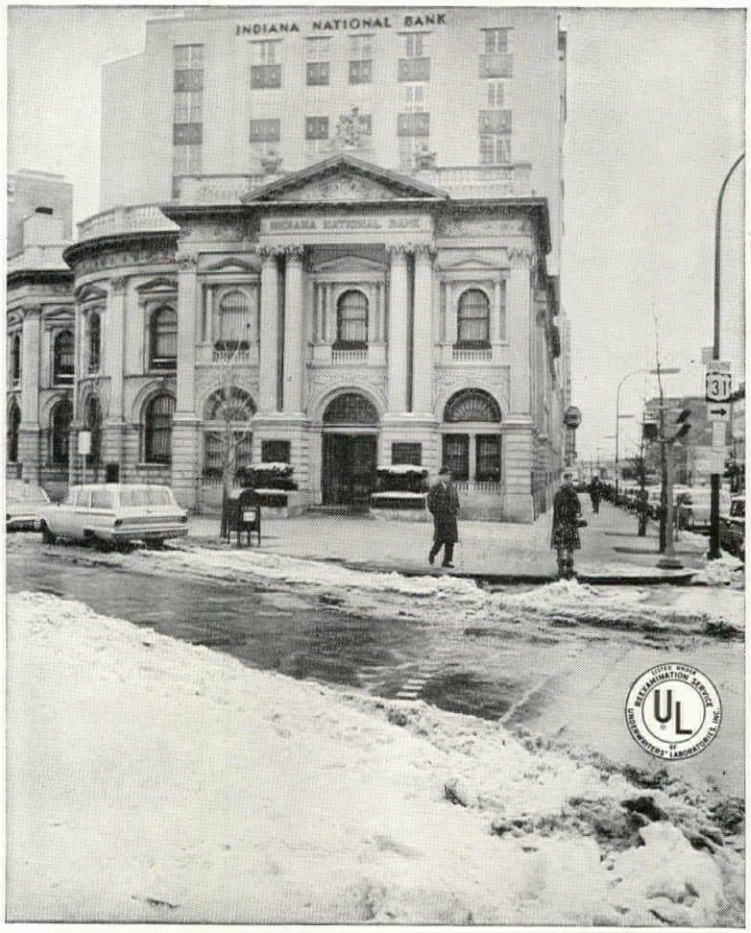
MILL 725 WCLB C&BTR — **Western Red Cedar** 1″x10″ boards with 1″x2″ battens for the exterior.

MILL 725 WCLB B&BTR — **West Coast Douglas Fir** for all exterior and interior millwork and trim.

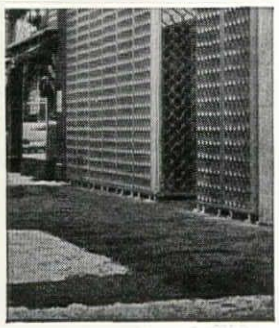
West Coast Douglas Fir glued laminated beams. Nine 7″x30⅞″x39′ support the roof resting on purlins of 5¼″x22¾″ spanning 45′. Sub-purlins of 3¼″x6½″ following the curve of the main beams are spaced 7′ o.c. The curvature of the glued laminated members is on a 40′ radius.

Before you specify any snow removal system, insist on *proof of results,* such as shown here with electric

Sno-Melter®



Over 10,000 sq. ft. of electric Sno-Melter provide snow-free walks for The Indiana National Bank buildings in Indianapolis. Pictorial proof of results!



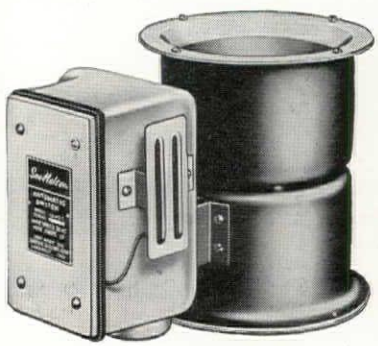
Entrance to stock brokerage firm's branch office is free of snow from curb to doorway, thanks to electric Sno-Melter system beneath walk.

Snow-free wheel tracks provide traction for trucks up incline to an industrial loading dock at a hillside factory site in the Middle West.

Safe snow removal and proper drainage from wide roof gutter of freight terminal in Iowa. 120 feet of Sno-Melter Gutter Mats did the trick!

Melt snow at the flip of an electric switch with a pre-assembled, embedded mat system. Sounds great—but wait! Let's see actual photographs of results! Easy-Heat *does* have Sno-Melter result pictures to show you... plus operational cost data, installation procedures and engineering specifications. So, buy results. Send for latest free literature picturing successful Sno-Melter installations. *Only the results show!*

ASK ABOUT THE NEW SNO-MELTER AUTOMATIC SWITCH! DETECTS SNOWFALL, CONTROLS OPERATION, SAVES ELECTRICITY!



EASY-HEAT®

DIVISION OF
EMPIRE ELECTRIC CORP., DEPT. 450
LAKEVILLE, INDIANA

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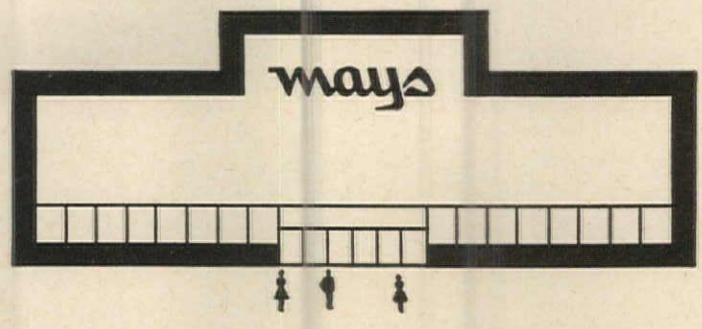
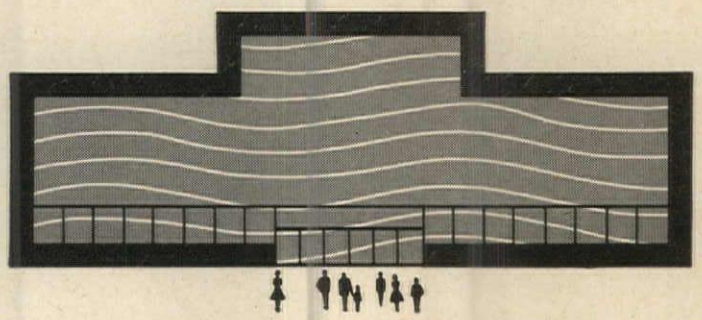


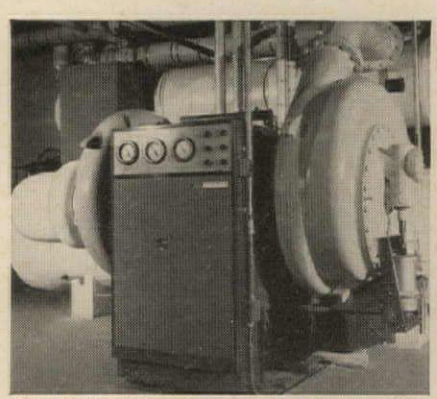
Why Mays Department Store installed Chrysler Airtemp



Mays Department Store in Massapequa, New York, needed an air conditioning system that would cool 290,000 sq. ft. of floor space efficiently and give trouble-free performance. Their selection, two Airtemp centrifugal water chillers, met these requirements. The units supply 970 tons of cooling capacity, enough to keep temperatures well within comfort levels, throughout the store. And reliability far exceeded Mays' expectations. Example: equipment operated from start-up through one of the most severe summers in New York history without any adjustment.

You, too, should consider Chrysler Airtemp for your next cooling problem. Its line has one of the broadest BTU ranges in the cooling field. And all equipment is Chrysler Engineered. Reliable. Chrysler Airtemp stands ready to help you. With fully qualified technical representatives. Detailed technical literature. For more information, write T. W. Kirby, Vice President-Marketing, Airtemp Division, Chrysler Corporation, 1600 Webster Street, Dayton 4, Ohio.

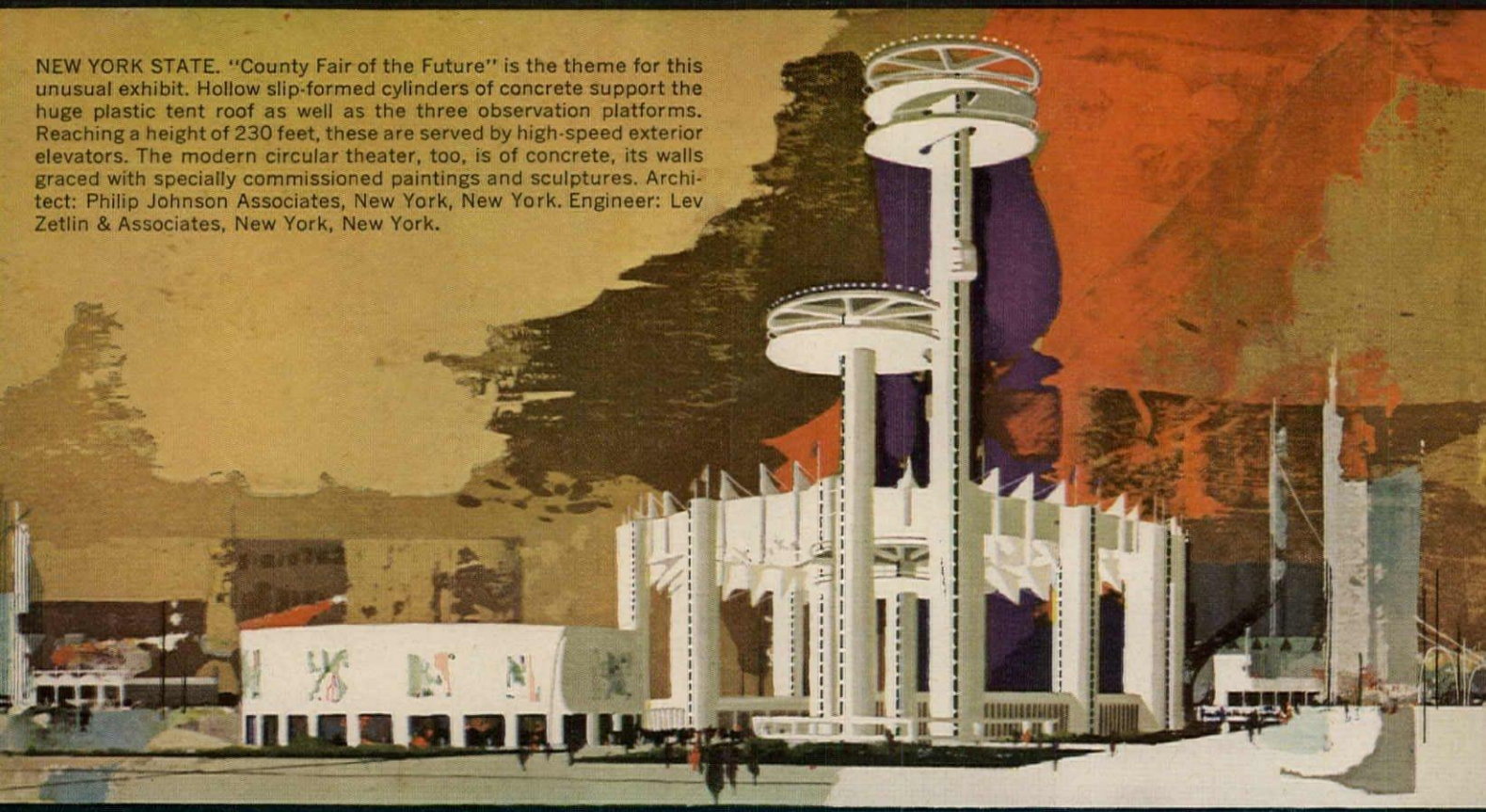
AIRTEMP DIVISION CHRYSLER CORPORATION



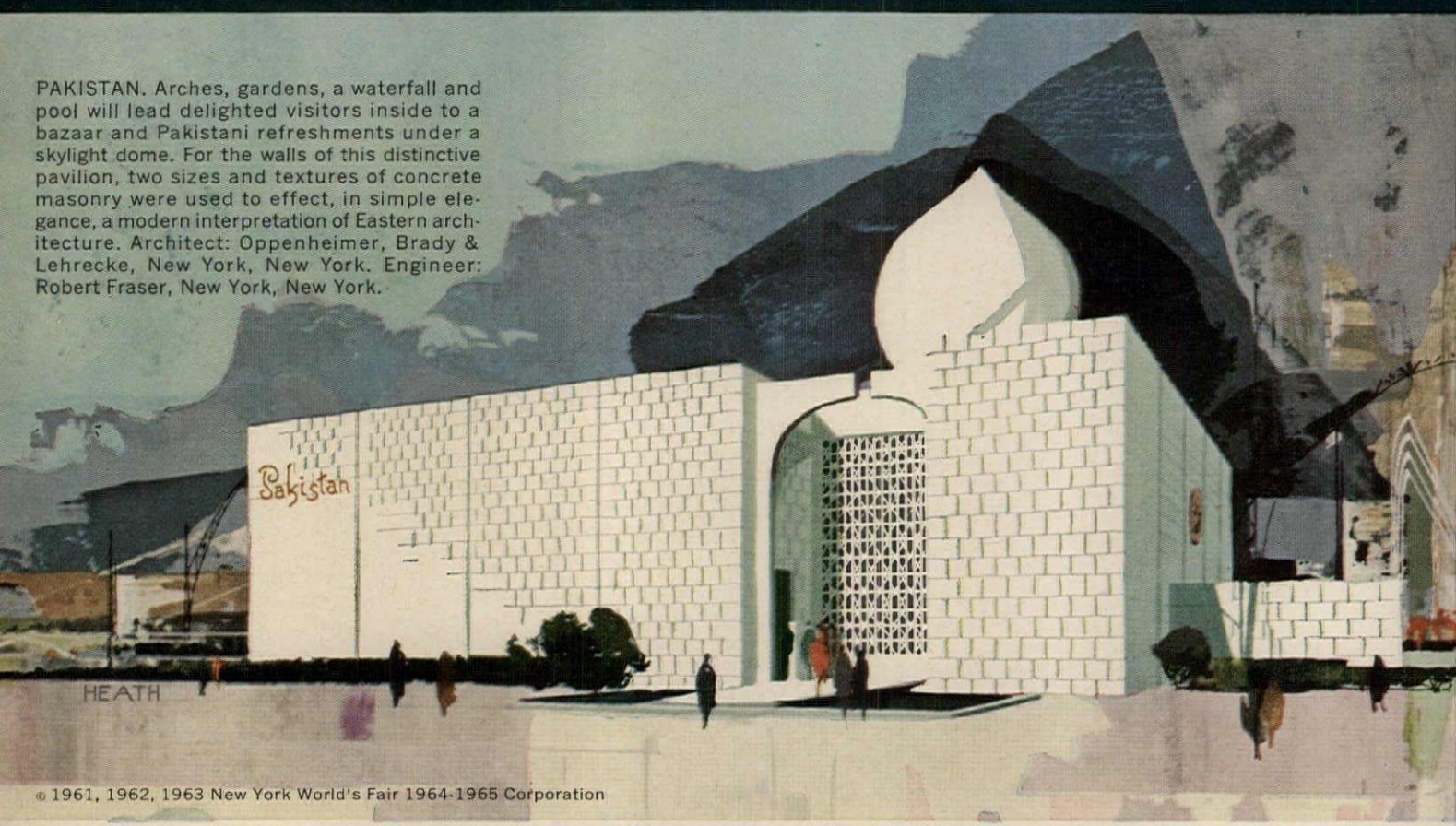
One of Mays' two Airtemp centrifugals which together deliver 970 tons cooling capacity, cool 290,000 square feet of floor space. Contractor: Samuel Messing, Nassau Mechanical Contractors. Consulting Engineer: Sidney W. Barbanel. Architect: Herbert Tannenbaum.

For more data, circle 33 on Inquiry Card

AT THE NEW YORK WORLD'S FAIR



NEW YORK STATE. "County Fair of the Future" is the theme for this unusual exhibit. Hollow slip-formed cylinders of concrete support the huge plastic tent roof as well as the three observation platforms. Reaching a height of 230 feet, these are served by high-speed exterior elevators. The modern circular theater, too, is of concrete, its walls graced with specially commissioned paintings and sculptures. Architect: Philip Johnson Associates, New York, New York. Engineer: Lev Zetlin & Associates, New York, New York.



PAKISTAN. Arches, gardens, a waterfall and pool will lead delighted visitors inside to a bazaar and Pakistani refreshments under a skylight dome. For the walls of this distinctive pavilion, two sizes and textures of concrete masonry were used to effect, in simple elegance, a modern interpretation of Eastern architecture. Architect: Oppenheimer, Brady & Lehrecke, New York, New York. Engineer: Robert Fraser, New York, New York.

EVERYWHERE YOU LOOK AT THE WORLD'S FAIR YOU SEE WHAT VERSATILE CONCRETE CAN DO

From precast wall panels, gracefully sculptured, to soaring columns and imaginatively contoured roofs, to inviting promenades and bright reflecting pools . . . concrete dramatically demonstrates its far-ranging talents.

Everywhere the Fair's most-talked-about structures express the versatility and beauty of this modern material. They embrace almost every exhibit category: education, religion, international, government, transportation, science and industry.

THE BEST IDEAS ARE MORE EXCITING IN CONCRETE

EASTMAN KODAK COMPANY. Covering 69,000 square feet and enclosing two theaters and 26 exhibits, this attraction is a camera fan's delight. Concrete was used to shape the roof into an undulating "moonscape" where visitors can stroll and use the unusual sculptures as backgrounds for their own picture taking. A striking eight-story "Tower of Photography" is ringed with giant color photos. Architect: Kahn & Jacobs, New York, New York. Engineer: Lev Zetlin & Associates, New York, New York.

MORMON CHURCH. For the pavilion of the Church of Jesus Christ of the Latter Day Saints, double exhibition halls and theaters were built with panels and structural members of white precast concrete. A 120-foot replica of the famed Mormon Tabernacle Towers provides dramatic focus. After the Fair, the permanent precast concrete sections of the halls and theaters will be reassembled into new Mormon chapels. Architect: Harold Burton, Fordyce & Hamby Associates, New York, New York. Engineer: Strobel & Rongved, New York, New York.

They carry the great names of American business: Ford, General Motors, I.B.M., Equitable Life Assurance Society, A.T.&T., Travelers Insurance and so many more. They include the official buildings of thirty states, the Vatican Pavilion, the House of Good Taste, the Protestant Center, the United States of America building.

In the magnificent showcase of the New York World's Fair, the exciting new personality of modern concrete has stimulated a world of unusual beauty.

PORTLAND CEMENT ASSOCIATION

An organization to improve and extend the uses of concrete

CIVIL DEFENSE OFFICIAL DESCRIBES ARCHITECT'S ROLE

At the RECORD'S *request, Robert Berne, A.I.A., has outlined some of the contributions to civil defense which architects and engineers have made, and can make in the future. Mr. Berne is chief architect of the Architectural and Engineering Development Division, Office of Civil Defense, Department of Defense.*

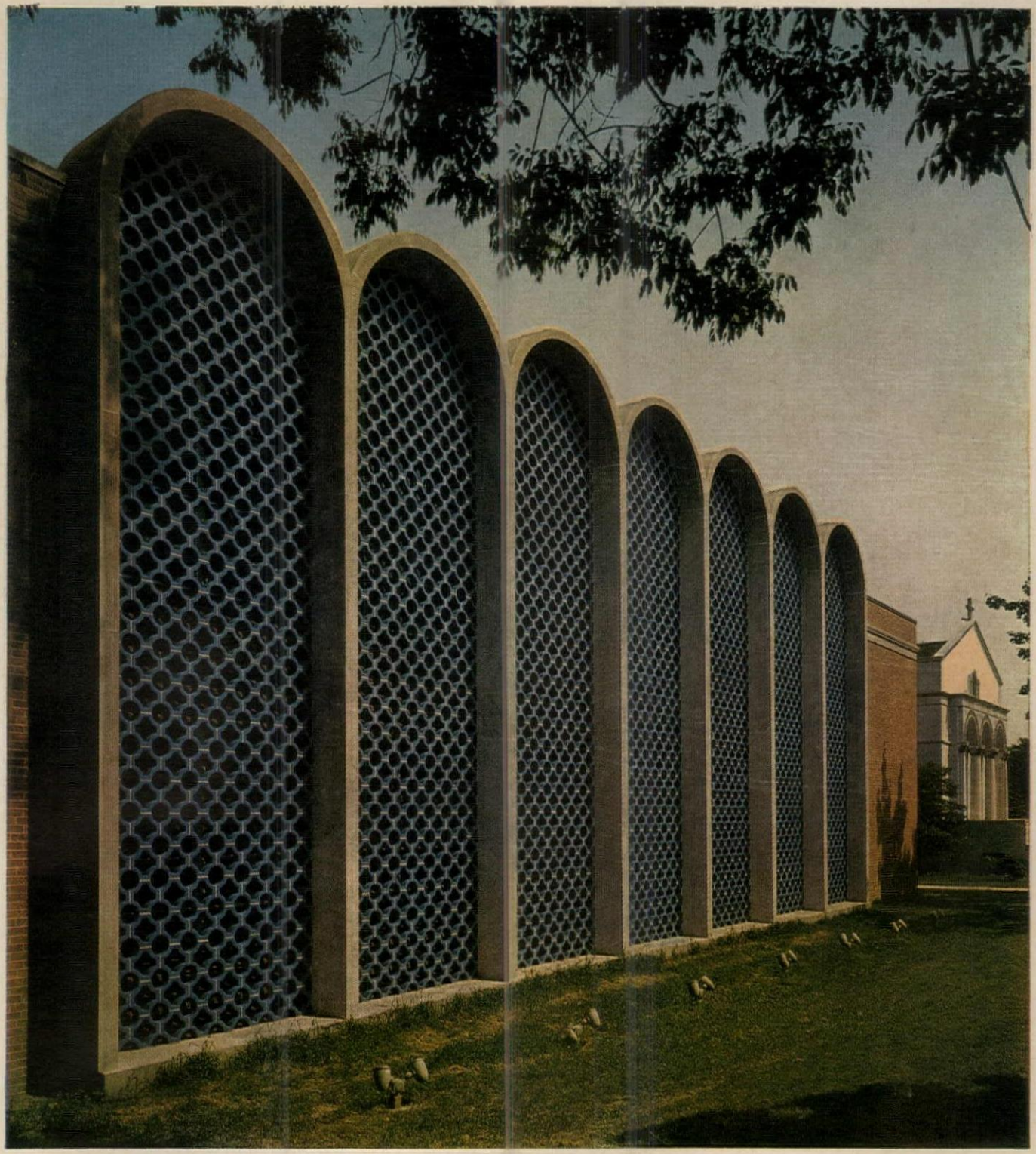
The role of architects and their consulting engineers in the civil defense of our country is little understood. Nevertheless, it is an important factor and can be expanded to major proportions with little effort or expenditure. Here is a vast reservoir of talent that has been little used but which contains skills vital to our national defense. The mission of the Architectural and Engineering Development Division of the Office of Civil Defense, under the direction of James E. Roembke, is to recruit and utilize this talent.

About two years ago the National Shelter Survey Program was initiated to locate space in existing structures capable of shielding people from the deadly gamma radiation accompanying fallout from an attack on this country with nuclear warheads. Coincidentally, the former Office of Civil and Defense Mobilization was reconstituted as the Office of Civil Defense in the Department of Defense. The Honorable Steuart L. Pittman was appointed as Assistant Secretary of Defense (Civil Defense) to direct the new office. Thus, Civil Defense has taken its proper place in the total defense of the country. As Secretary of Defense Robert S. McNamara has said, "Any defense system of this country must include civil defense as an integral part."

When confronted with the implementation of the National Shelter Survey, it became apparent, physicists, though expert in gamma radiation phenomena, knew little about construction methods and, conversely, architects and their consulting engineers knew little about gamma radiation and how to shield against it. It was necessary to combine the two to constitute the staff competent to carry out the National Shelter Survey quickly and efficiently and to use the country's architects and engineers. To do this, however, it was first necessary to develop teachers to instruct them in the nuclear physics and shielding methods of this program.

During the summer of 1961, approximately 50 professors of architecture and engineering from schools about the country were assembled at Pennsylvania State University to learn how to teach fallout shelter analysis techniques, heretofore not a part of conventional architectural and engineering curricula. With this new knowledge they returned to their institutions and set up two-week

continued on page 54



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Are you considering perforated facades to enhance appearance, utilize daylight, provide sun control or ensure privacy? If so, you'll want to see the many smart grille designs available in Ceramic Veneer. Whether you choose one of our standard solar screen units or create your own special design. Federal Seaboard will custom-make it for you in any color you want. Illustrated here is how T. H. Locraft & Associates, architects, creatively utilized our FS-A grille design with lustrous ceramic finish for the Church Center of Saints Constantine and Helen Greek Orthodox Church, Washington, D.C. A. Myron Cowell, Inc., contractor. Many other grille applications are illustrated in the complete Ceramic Veneer reference file we'll send on request.

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SEABOARD
TERRA COTTA
CORPORATION

10 E. 40th St., New York 16, N. Y.
Plant at Perth Amboy, N. J.

F S T C

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BRILLIANT RED WALL IS **GLASAL**...LANDING AND STAIRS ARE COLORLITH IN MEERSCHAUM WHITE.

Warm reception

(How an architect can give one...and get one.)

It's really quite simple with Johns-Manville's Glasal and Colorlith products.

You can create a warm welcoming atmosphere with color and pattern... in startling or subtle variations... that will surely please your clients (and *their* clients). And that won't do your reputation a bit of harm.

GLASAL is an asbestos-cement facing sheet, with a ceramic-like finish in a wide range of colors—from basic black and white to pastels to intense shades. Used as paneling or as sheathing over an insulating core, Glasal enhances the beauty of any building and offers architects a new medium for creative design.

COLORLITH products are monolithic, integrally col-

THE **COLORLITH** WALL IS THUNDERCLOUD COLORVEIN... DESK IS MEERSCHAUM COLORLITH.

ored, asbestos-cement panels created by water, pressure and heat... to be stronger and more durable than stone without being obvious about it. And, thanks to controlled-condition production, the color and design are consistent from panel to panel, which is something that can't be said for quarry stone.

For more information on Johns-Manville's Glasal and Colorlith, see your local J-M Man (he's pretty good in the warm reception department, too!)

Johns-Manville JOHNS-MANVILLE JM PRODUCTS

Here's how Glasal and Colorlith help bring out the beauty of an entire room. Incidentally, the ceiling is also made of a J-M product... Acousti-Shell, the world's first truly 3-dimensional acoustical ceiling panel.

For more data, circle 36 on Inquiry Card

continued from page 50

Fallout Shelter Analysis Courses (FSAC) for the practicing architects and engineers who were to conduct the National Shelter Survey. These were established at the universities of California, Washington, Colorado, Michigan, Illinois, Florida, Oklahoma State, Worcester Polytechnic Institute, the Naval Civil Engineer Corps Officers' School at Port Hueneme, California, and the Army Engineer School at Fort Belvoir, Va. Eighty-eight courses were completed by June 1, 1962. Because of demand, additional courses at George Washington University were conducted during the summer of 1962.

When the 1,200 architects and engineers required by the National Shelter Survey had been qualified as fallout shelter analysts, major effort was shifted to qualifying others in the professions. In the fall of 1962, semester-long courses were established in many centers throughout the country which allowed practicing architects and engineers to attend three hours a week, nightly or on Saturdays, without taking time from their practices. Currently, 3,800 architects and engineers have been qualified as fallout shelter analysts.

At the same time, the development of additional faculty capability to meet the demand for qualified instructors has been continued through the summer institutes on protective construction. The first series of these was conducted at the Universities of California, Colorado, and Illinois and Worcester Polytechnic Institute during the summer of 1962, attended by 100 university faculty members from all sections of the country. This more than proved its value during the Cuban crisis, when these professors conducted 192 fallout shelter workshops throughout the country, reaching 9,000 persons in the construction industry, giving them the technical knowledge to assist hard-pressed local civil defense offices. This program continued last summer at the Universities of California, Colorado and Michigan and Worcester Polytechnic Institute. The planning of dual-use shelter space has been added to the curriculum. Two special summer institutes for practicing professionals were also initiated at the University of Arizona and George Washington University.

In addition, an institute on radiation shielding problems started in 1962 at Kansas State University was conducted again last year. By the use of a fallout simulator with a radioactive source, data on the shielding capability against gamma radiation of various building components and configurations are determined and compiled for use by architects and engineers.

The program of professional development is a continuing one. The short-term goal is 10,000 qualified architects and engineers by June 30, 1964.

For protective construction to become a general component of building design, it is expected that there will need to be one or more qualified fallout shelter analysts in every architect's office, in every consulting engineer's office, on the faculty of every school or department of architecture or engineering, in each industry employing architects or engineers, and in each government agency with staff architects or engineers.

continued on page 56

Designed by William J. Mouton, Structural Engineer and Assistant Professor of Architecture, Tulane University

Designed for Better Living with SPA Southern Pine

This unusual home reaches the ultimate in livability with *SPA Southern Pine. The setting blends breath-taking beauty with gracious warmth. All rooms share a sense of spaciousness and casual comfort.
The details reflect a new freedom of form and styling. This is made possible by the strength and precision of SPA Southern Pine.

The floor system employs new techniques of timber engineering. The resiliency of wood decking over solid beams alleviates fatigue of household work and walking. The high strength of the engineered wood roof permits larger rooms . . . with complete freedom of vision. With all its exceptional qualities, this home was remarkably economical to build.

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continued from page 54

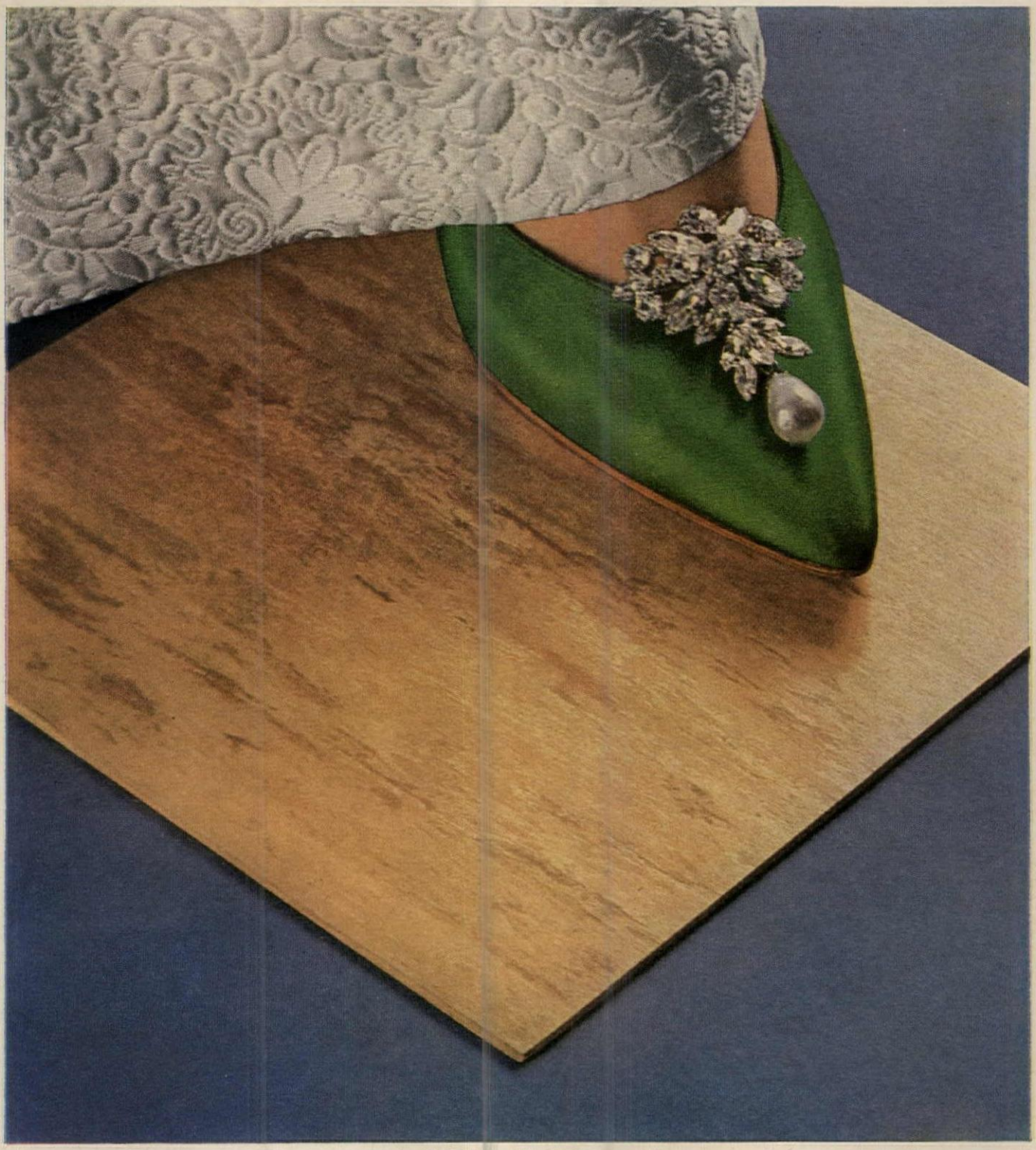
Other architectural programs are being carried on as adjuncts to the professional development program. The first, recently completed, is the National School Fallout Shelter Design Competition (NSFSDC) conducted by the American Institute of Architects under contract to the Office of Civil Defense. (See ARECHITECTURAL RECORD, February 1964, page 26 *et seq.*)

Of particular interest to architects are research projects being carried on by two schools of architecture under contracts with the Office of Civil Defense. Rice University, Houston, Tex., under the direction of William Wayne Caudill, F.A.I.A., and Bill N. Lacy conducted Rice Design Fete Number Two on the subject of industrial plants with fallout shelters. (ARCHITECTURAL RECORD, December 1963, pages 115-116.)

The other research project, being conducted at Howard University under the direction of Professors Howard H. Mackey, F.A.I.A., and Jerome Lindsay, consists of the design and development of prototype models which can demonstrate the action of gamma radiation. If feasible, these will be built in quantity for distribution to schools of architecture and engineering for use as teaching aids.

In the professional development work of the Office of Civil Defense, it is realized that principals of architectural and engineering firms cannot, in many instances, take the necessary time to become familiar with all the detailed calculations involved in fallout shelter analysis. Many find it difficult to absorb new technologies after a number of years away from textbooks. Nevertheless, it is essential for these persons to understand the principles of protective construction since they wield the greatest amount of influence on clients in the promotional and programing stages of building projects. In view of this, a pilot program of one-day workshops and one-week shelter planning courses for principals of architectural and engineering firms are being conducted throughout Pennsylvania by the Pennsylvania State University under contract with OCD. Similar courses will be planned for other areas of the country. In this manner, executives can gain sufficient knowledge of protective construction to talk intelligently and convincingly to prospective clients.

Architects and consulting engineers are uniquely suited to carry the story of protective construction to building owners. Eventually, the inclusion of shelter in buildings will be a primary requirement as are fire stairs, exits, sprinkler systems, safety treads and many others. Shelter is not the complete answer to defense against nuclear weapons, but it is one which can save the most lives at the least expenditure and, as such, is an excellent, low-cost form of insurance. With the steadily increasing capability among architectural and engineering faculties, inclusion of protective construction in curricula will increase, and eventually all graduates will enter their professions with knowledge of protective construction. The Office of Civil Defense anticipates that eventually it will be able to discontinue the qualifying of fallout shelter analysts as the state boards of examiners of architects and engineers will include this in their examinations.



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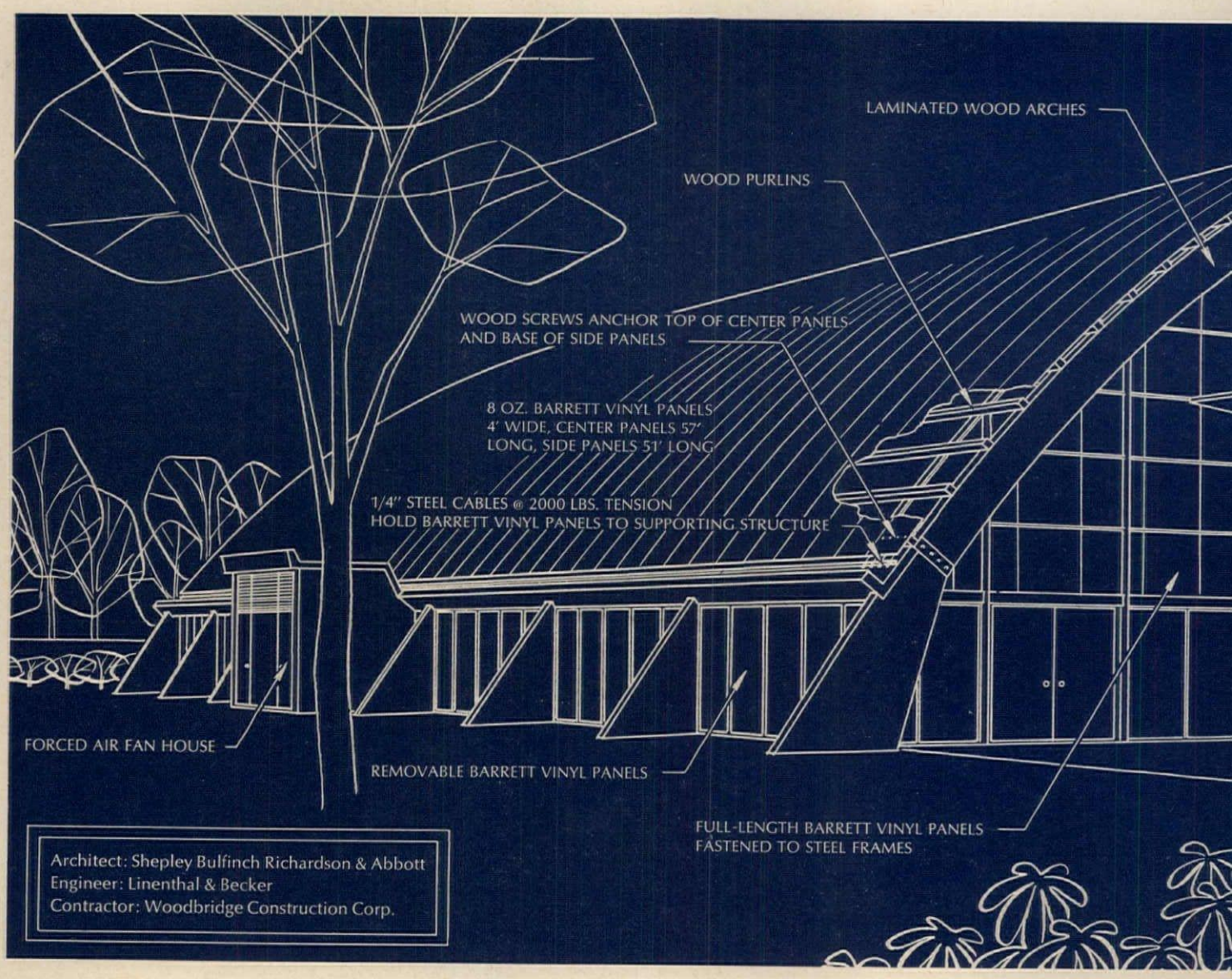

Harvard plays tennis all year in any weather...under a rugged roof of Barrett vinyl panels!

Design flexibility. Strength. Weather resistance. Solid reasons why Barrett vinyl panels make a top-flight roof and siding material for the new Palmer Dixon Indoor Courts at Harvard University. The panels were especially extruded in lengths of 51′ and 57′—the longest panels ever made—for this contemporary structure with dimensions of 161′ by 138′.

Color? Custom formulated blue to simulate a bright, clear day—no matter what weather prevails outside! Installation time? One complete arch of panels every 15 minutes. Weather? No problem! Barrett vinyl panels form an absolutely weather-tight building that lasts—for years and years.

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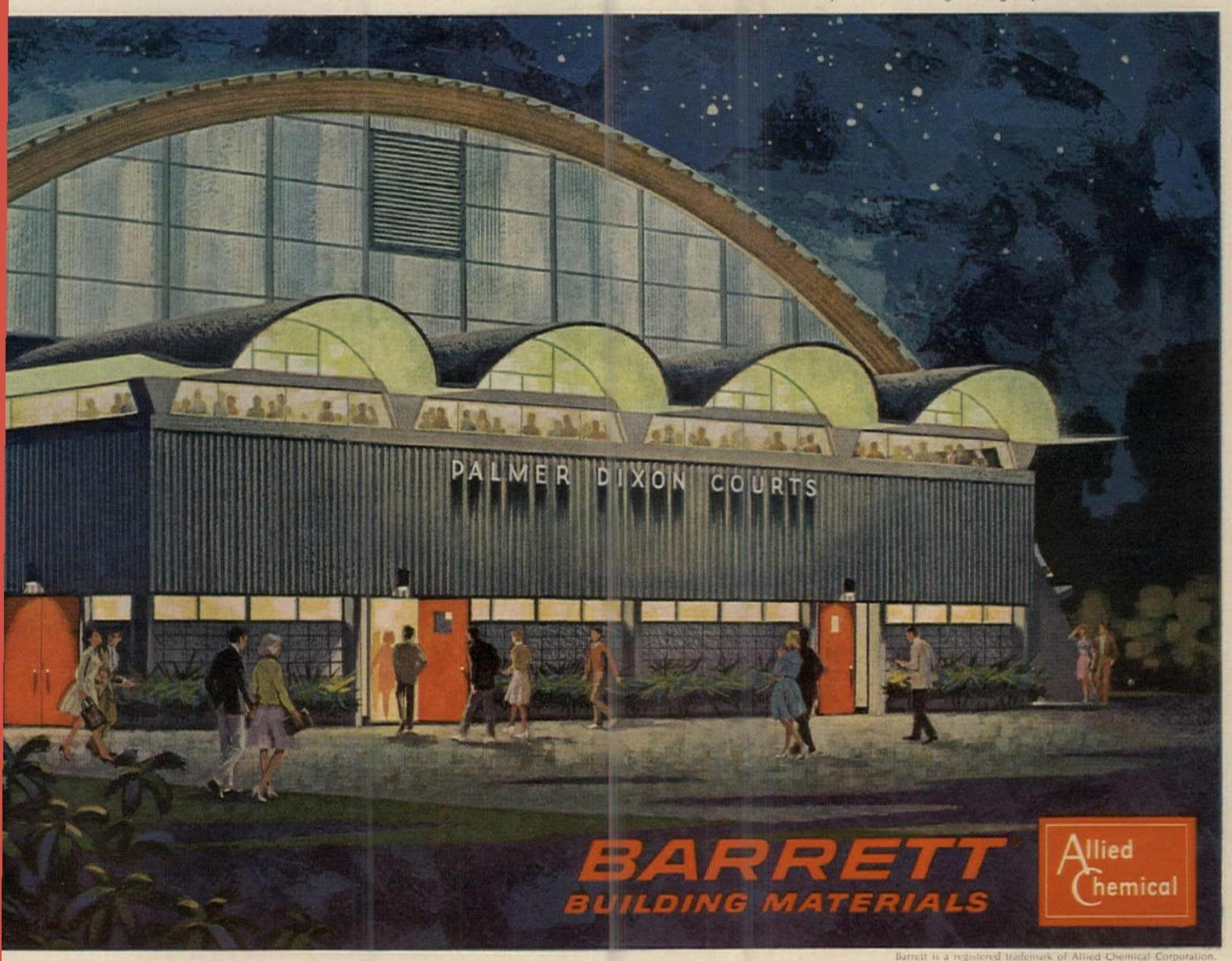
Resilient Barrett urethane insulation follows the contours of the "dish" roof on the Carson's O'Hare Airport restaurant in Chicago. Architect: C. F. Murphy Associates.

Winter and summer, Barrett built-up roofing products protect the new Nabisco Bakery in Fair Lawn, N. J. Designed by the Nabisco Engineering Department.



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EVERY ARCHITECT SHOU_D REAↄ THIS TRUE STORY... BY BRADLEY WASHFOUNTAIN

The new school exists only in your mind and, in fragments, on your design roughs. Hour after hour, you rack your brain for ideas; the lash of your own professional pride forcing you to make every room perfect — functional, practical, aesthetically pleasing. Then you come to the shower room, and you ask yourself, "How can I satisfy every requirement . . . keep installation costs to a minimum, use as little floor space as possible, yet handle heavy traffic . . . and still retain some creative flexibility?" The answer: specify Bradley Group Showers. They serve as many as

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THE SHOWERS THAT SOLVED EVERYTHING!

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You design a building.
Work your heart out.
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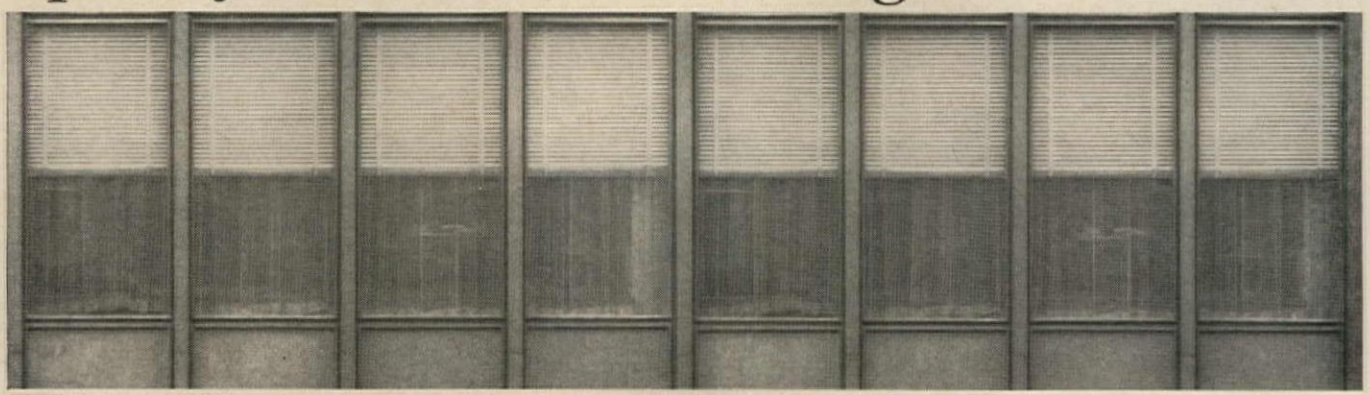

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The Seagram Building avoided this problem. They got Flexalum Twi-Nighters with the exclusive "skyscraper" option. With this feature there's only one pre-set position in addition to all the way up or all the way down. Neat. Other advantages. They provide thermal control of sunny windows; reduce the air conditioning requirement. Come with a 5-year guarantee bonded by Continental Casualty Company that includes labor and materials. Write us for details on Flexalum's other soul-stirring innovations in blinds.

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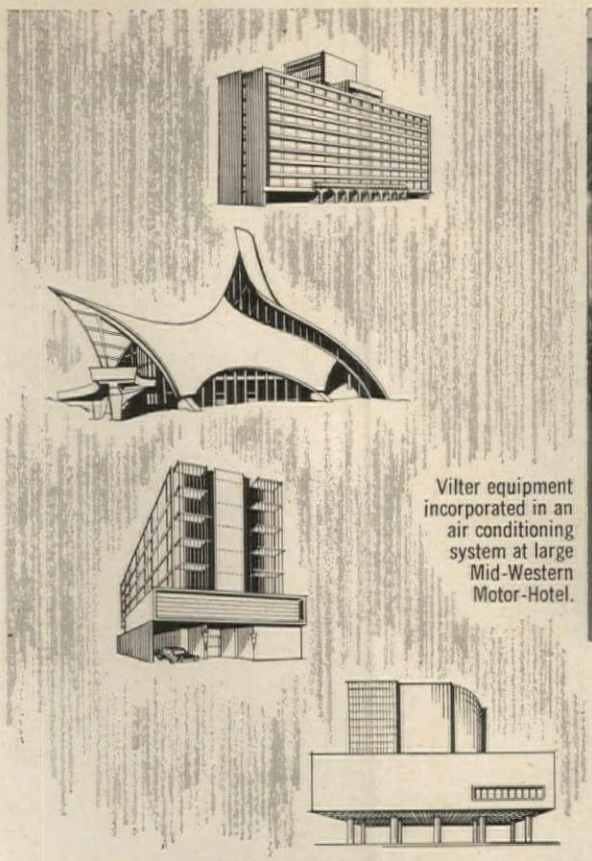
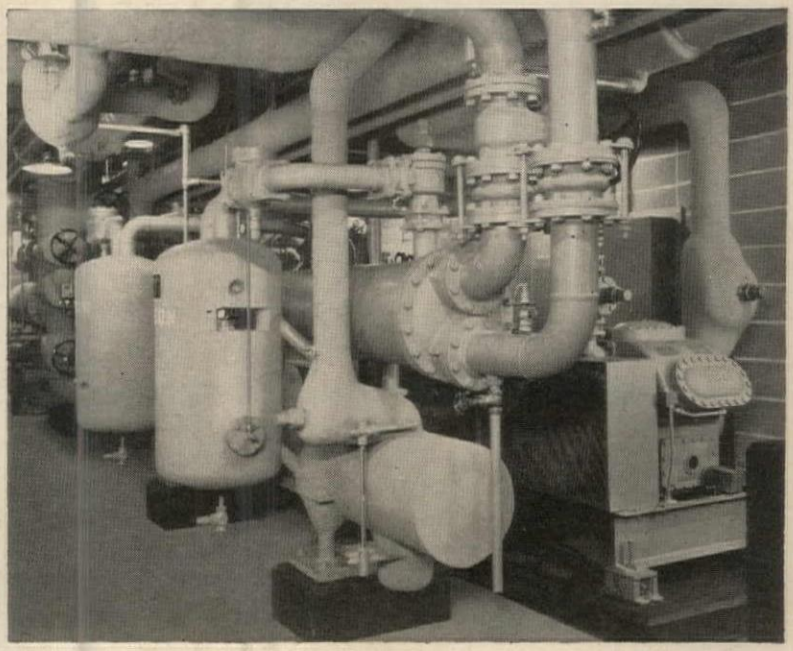
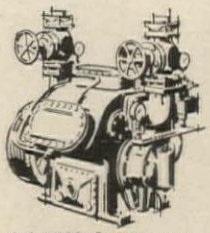


Vilter equipment incorporated in an air conditioning system at large Mid-Western Motor-Hotel.



Vilter® is "going places"

...wherever modern construction demands dependable refrigeration or air conditioning



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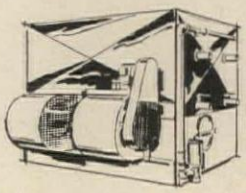
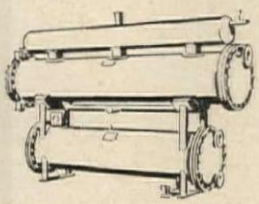


Evaporative Condensers



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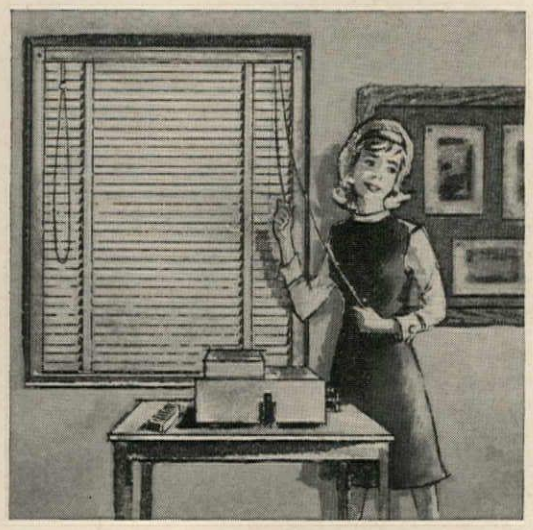
Claustrophobia is generally thought of as resulting from a crowded elevator or subway train. Many persons experience the same sensation in a room without outside vision, even to the point of illness. It can leave a lasting scar on a child.



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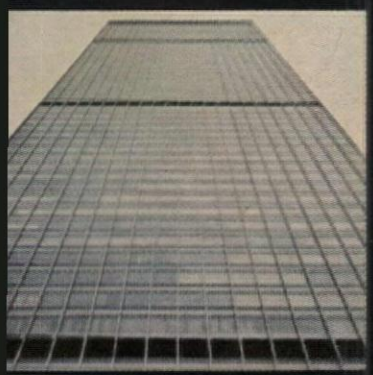

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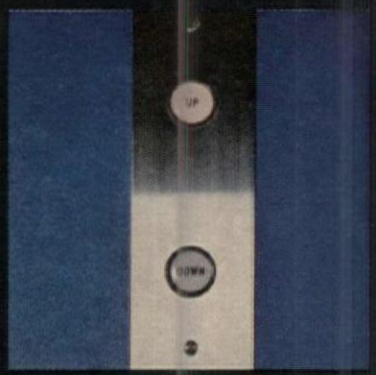
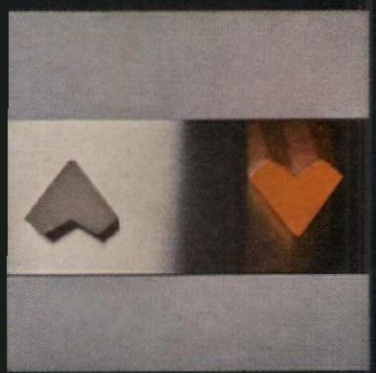
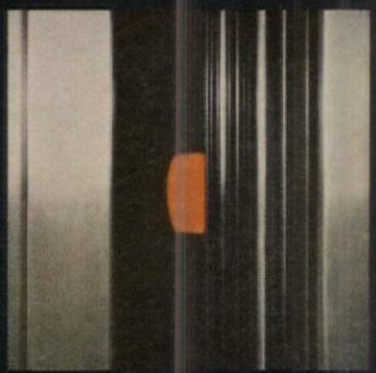


...ring for a Mark IV elevator.

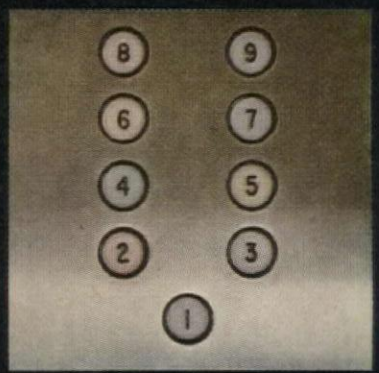
This electronic brain...



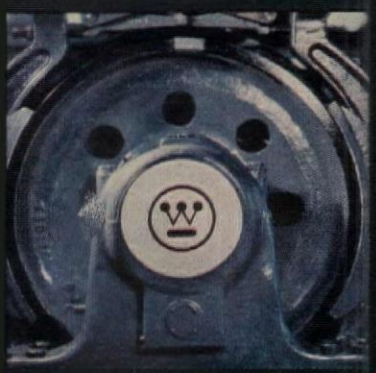
...makes the elevator arrive up to 30.6% sooner.



Step right in. The electronic eye will hold the doors open for you.



Now press a button in the car...



...and this hoists you smoothly...

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Try to catch the Mark IV doing less. Just try. Mark IV Elevators can be kept as efficient as the day they were installed with skilled Westinghouse maintenance. You can be sure...if it's Westinghouse.

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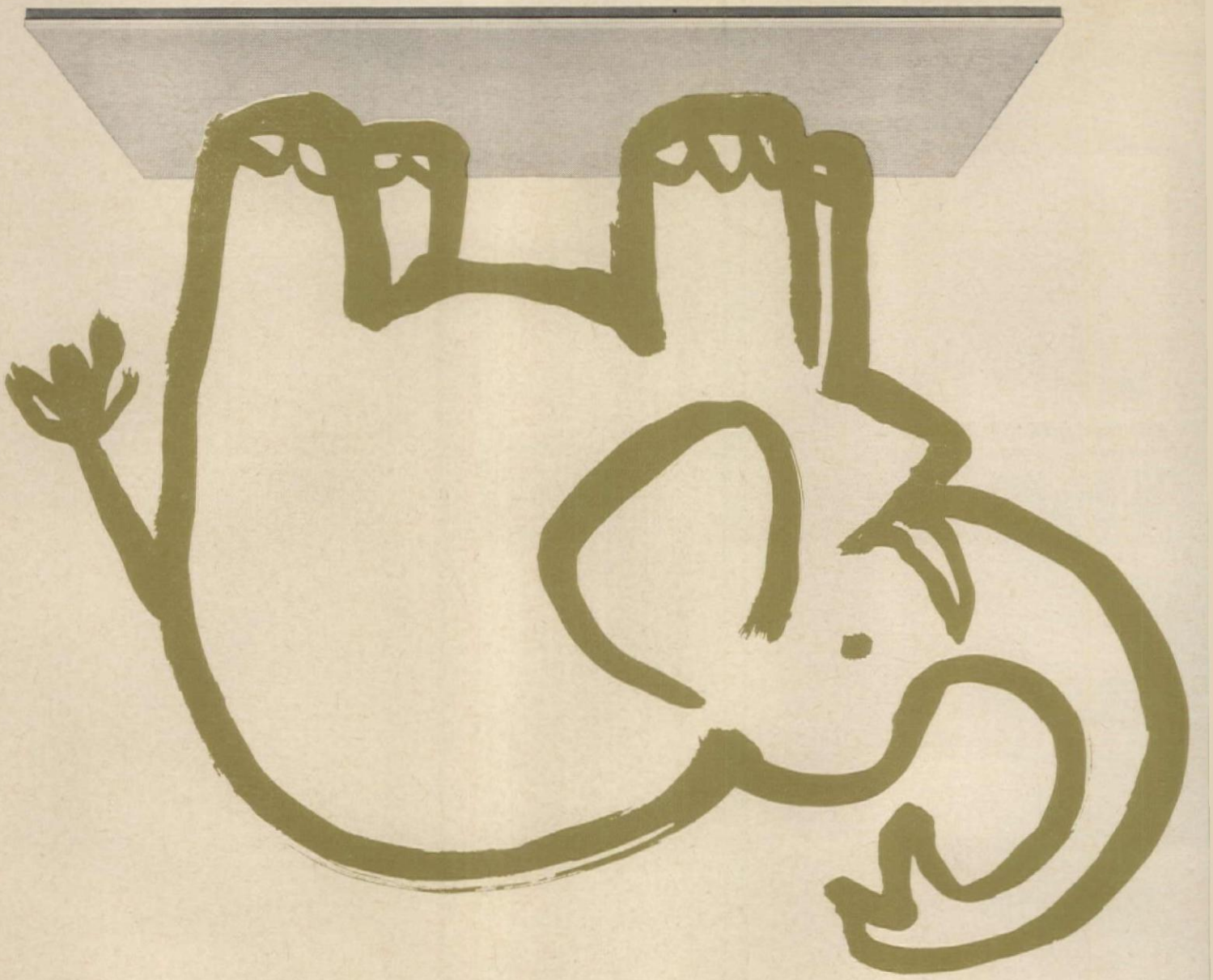

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Now your ceiling tiles can be as big as 48" x 48"... because they are dimensionally stable Fiberglas.* Guaranteed† not to warp or sag or shrink. Film-faced. Washable. Simply beautiful.

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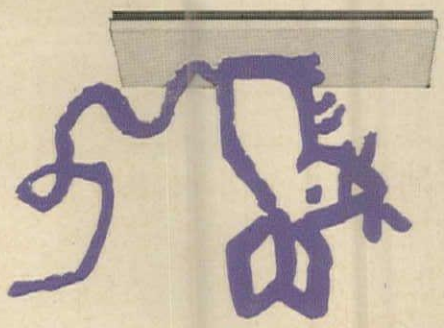

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PULL

We won't let you use Duranodic 300 finishes for every application

We suggest you consider Alcoa® Duranodic* 300 finishes for monumental buildings. For outside surfaces that can't or won't be maintained. For strong color accents—in panels, solar screens, windows, mullions, trim and framing. For places where people step, grab or push—entrances, store fronts and kick plates, railings and push bars. If you're not concerned about wear and upkeep, then don't use Duranodic 300 finishes.

WHAT'S SO SPECIAL ABOUT DURANODIC 300 FINISHES? For one thing, they contain no dyes or pigments. The color you see—masculine bronzes, gray and black—is *integral with the metal*. The tones come about through electrochemical treatment of various architectural aluminum alloys. This extremely hard oxide coating is lightfast and permanent.

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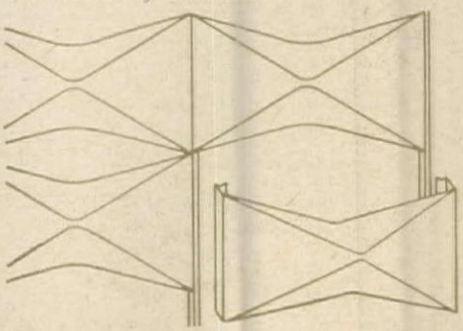
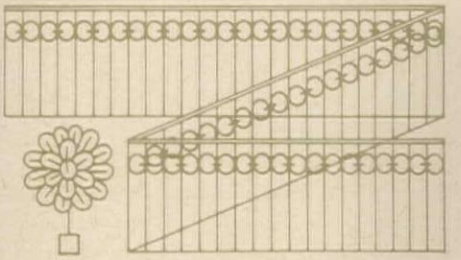


Alcoa Sol-Dec® screen patterns, including this new design, can be ordered in Duranodic 300 finishes.

DON'T SCUFF OFF. Aluminum hard coatings are so called because they are considerably thicker and more resistant to abrasion and wear than common anodic coatings. The thickness, weight and density of the coatings account for the longevity of Duranodic finishes in abrasive applications such as handrailing.

THREE NEW ALLOYS. Alcoa has developed three new alloys, Anoclad® Types 11, 12 and 13, for Duranodic 300 finishes. Specify them when you want thick-skinned durability. For good finishing characteristics, they are far superior to the standard and specialty alloys thus far developed. They provide better color control—bronzes that are deeper and richer looking than before and a black that's darker and more stable than any other black known.



THE FLOP EFFECT. We would be remiss if we didn't call your attention to what the finishing people call the "flop effect." Place two pieces of metal from the same anodizing bath side by side, deviate one ever so slightly from the same plane, and you'll notice a subtle difference in intensity or hue. You can see why we don't encourage the butting of Duranodic-finished panels against each other.

There is room for disagreement about our attitude, however. Some say the minute variation in color isn't detrimental to good design. There are those who consider the result pleasing to the eye because it breaks up an unrelieved surface. Feel free to indulge your own taste.

A WORD ABOUT SUPPLIERS. The Duranodic 300 process is licensed by Alcoa under written contracts with processors who pay royalties for use of the invention.

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ALCOA

top right Brooks Brothers, Pittsburgh, Pa. Architect: Kanner & Mayer, Los Angeles, Calif. General Contractor: O. H. Martin Co., Pgh. Fabricator and Erector: Golomb Paint & Glass Co., Pgh. Duranodic Applicator: Baker Metal Finishing Co., Monterey Park, Calif.

middle left 757 Third Ave., New York City. Owner: Durst Builders, N.Y.C. Architect: Emery Roth & Sons, N.Y.C. Fabricator and Erector: Cupples Products Co., St. Louis, Mo. Duranodic Applicator: Cupples Products Co., St. Louis.

middle right The Pittsburgh Press Building, Pittsburgh, Pa. Owner: The Pittsburgh Press Co., Pgh. Engineers & Designers: Hunting, Larsen & Dunnells, Inc., Pgh. General Contractor: Martin & Nettrour Co., Pgh. Fabricator and Erector: Columbia Architectural Metals Co., Pgh. Duranodic Applicator: Stolle Corp., Sidney, Ohio

bottom left Grand Rapids Post Office, Grand Rapids, Mich. Owner: Thomas D. McCloskey, Philadelphia, Pa. Architect: J. & G. Daverman, Grand Rapids, Mich. General Contractor: Owen, Ames & Kimball, Grand Rapids. Fabricator and Erector: Marmet Corporation, Wausau, Wis. Duranodic Applicator: Stolle Corp., Sidney, Ohio

bottom right The Continental, Queens, N.Y. General Contractor and Owner: Cord Meyer Development Co., N.Y.C. Architect: Morris Rothstein & Son, Brooklyn, N.Y. Fabricator and Erector: Samson Window Corp., N.Y.C. Duranodic Applicator: Electro-Color Corp., N.Y.C.

For more data, circle 58 on Inquiry Card

NEW COMPUTERS MAY PROVIDE BIG-JOB PLANNING ASSISTANCE

Recent developments may warrant a new look at the computer's capacities for service to architects. New visual and verbal capabilities and new flexibility in man-machine interplay during trial and selection procedures provide a familiar working situation for certain of the architectural processes. No longer trapped in the role of gigantic clerk, computers can now make visible demonstrations of plan alternatives; and they can accept and report messages in understandable words. To this they add their well known and prodigious capacities in data processing. The implications for large jobs of preliminary planning, where any massive background of data must be applied to each of the architect's explored alternatives, are obvious.

Implications, however, are not applications, and it must be admitted that only the first few steps have yet been taken to engage computers in other than the strictly engineering aspects of architectural practice. One of those steps—perhaps an impressive one—is summarized on the pages which follow.

The role of computers in engineering practice has been amply documented, and their uses in CPM and PERT are well known. The article by Mathys P. Levy and Charles P. Lecht in the August 1963 issue of the RECORD is a particularly articulate statement of the engineering role. But the notion of computer activity in planning, programing and even in design phases of architectural practice raises grave misgivings, skepticism, indeed impassioned refutation in almost any discussion among architects.

The skeptics have a point, of course; in fact, they have two points. First, no conceivable machine can introduce those elements of imagination, intuition and artistry which are the breath of life to the architect's design approach. Second, as every schoolboy knows, computers cannot operate on any information that has not been punched into their mindless memories by man. They cannot of their own will, as architects can and do, tap the full wellspring of human knowledge, judgment, taste and talent.

But nobody proposes that they can.

It is, in fact, that very character of mindless memory, of total recall uncluttered by prejudice or inhibition, that makes of the computer a true servant of those who can find use for it. It is a servant with only two virtues: (1) superhuman speed in finding and collating those bits of its potentially vast storehouse of facts which are pertinent to a particular problem; (2) operation on those bits, automatically and also at fantastic speed, in a programed series of manipulations previously ordered by its master.

Basic manipulations of which the unadorned "digital" computer is capable are simple addition, subtraction, multiplication and division. The "analog" computer deals with functional relationships, like the slide rule. The two types can be married and/or embellished with various appendages for translating their output verbally, visually or mechanically.

Recent refinements of computer appendages are making new, moderate-size computers more and more adaptable to the familiar conference techniques of the planning phases of architecture. One of these is a TV-like cathode ray tube which can record graphical materials, accept on-the-spot alterations, and recall stored images on command. It provides for console operation with opportunities for man-computer interchange during development and review of alternative concepts. Another console accessory is an on-line typewriter through which verbal instructions and inquiries can be relayed to the computer and from which written replies can be read. These two channels of communication, with new plotting and printing adjuncts, open up a vast store of background data which can be scanned and applied with lightning speed, *but with controlled interruption for review*, to any of its master's concepts, intuitive or otherwise.

In the example of the application of this technique to computer-aided hospital planning outlined in the summary of research by A.I.A. and A.H.A. on the following pages, it will be apparent that this research constitutes a massive demonstration of feasibility of the method rather than a compilation of the ultimate matrix of operable data. The summarized report, in fact, makes its plea for additions to the data through interim uses of the method. Two of the authors, James J. Souder and Welden E. Clark, have more recently described an extension of the technique to computerized simulation of patient flow through a hospital. Based on past records, a month's normal operation can be reviewed in a few minutes, and the effects of physical or policy modifications on that same month's operation can be reviewed in an equivalent period.

A second area of new development, described as especially adaptable to urban planning, combines land use and population simulation capability with improved capabilities for graphic input and output. It is now possible to trace plans or maps directly onto the oscilloscope, change them experimentally

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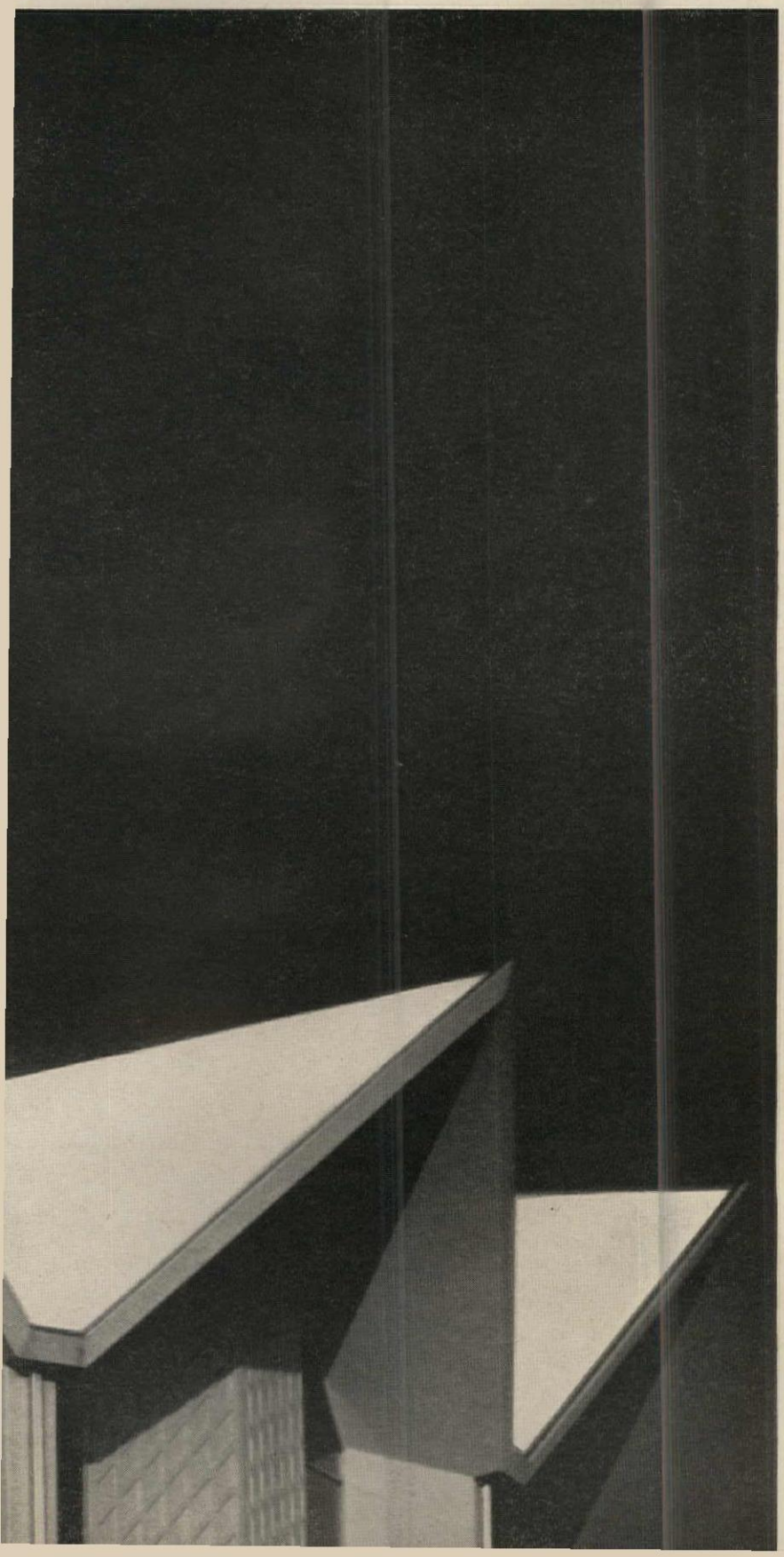

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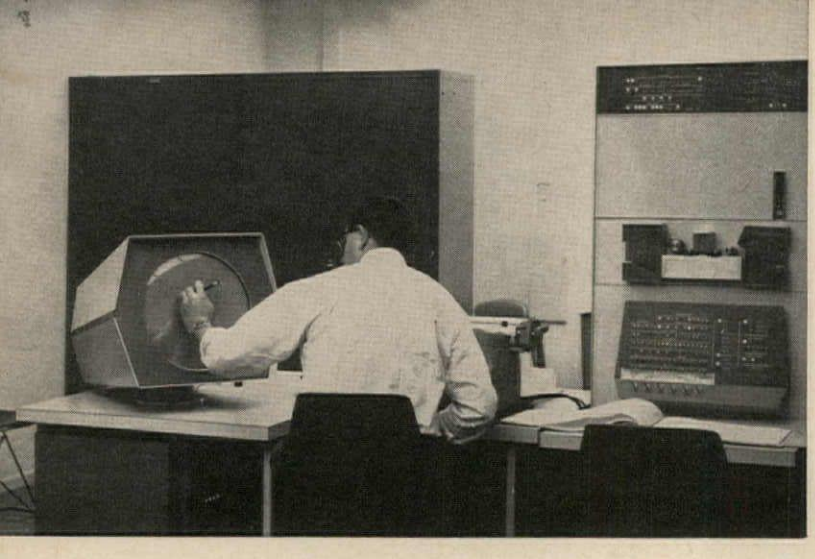
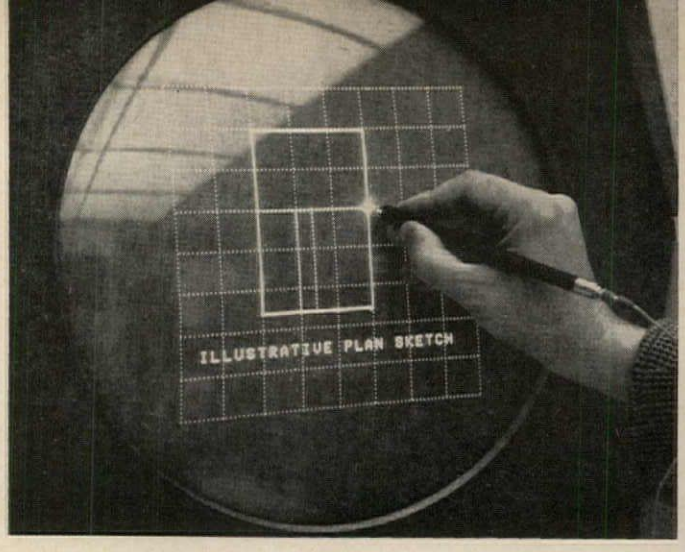




and print out desired results directly and at scale on paper from which prints can be made.

A similarly sophisticated graphics capability in an experimental computer at the Massachusetts Institute of Technology is described by Frederick Kirch in a recent issue of the "Newsletter" published by The Diebold Group, Inc. This system of units, called CADS (Computer-Assisted Design System), will allow a designer to start his work with freehand sketches made with a light-pen on the face of a cathode-ray tube. Using phases so far programed into the computer, a hand-drawn circle can be made round. Several parts of a drawing can be done separately and then merged. Perspective can be changed at will, or any part can be magnified or reduced to study the effect. The system is in early stages of development, but seems to offer promise.

The problems of data compilation and computer programing are also in early stages of solution, but they are being resolved at an accelerating rate by many workers. As Mr. Souder told the New York Chapter of A.I.A. about a year ago, there is no need for an architect to know how computers work, but only how they can help him get where he wants to go faster and with fewer wrong turns than other means provide.

COMPUTER-AIDED HOSPITAL PLANNING

Summary of a report of research sponsored jointly by the American Institute of Architects and the American Hospital Association under a grant from the U. S. Public Health Service.

One of the better known demonstrations of the application of computers to basic architectural problems evolved out of a U. S. Public Health Service grant to a joint research effort of the American Hospital Association and the American Institute of Architects. This was an extensive investigation into problems of hospital planning and design. James J. Souder, AIA, then a partner in the architectural firm of Kliff Colean Voss and Souder, and Madison B. Brown, M.D., of AHA were the principal investigators. Their key research associates were Welden E. Clark, also an architect, and Dr. Jerome I. Elkind of Bolt Beranek and Newman Inc. (Souder has since joined Bolt Beranek and Newman's planning research service.)

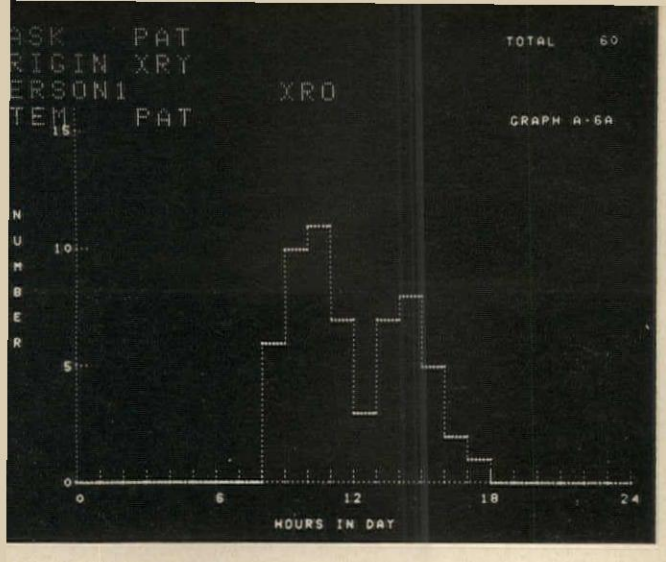
Results of the investigation are published in two reports by AHA. The first, "Estimating Space Needs and Costs in General Hospital Construction," was written by Souder and offers guides to budgeting space needs and construction costs of general hospitals by projecting from a survey of U.S. experience.

The second report, "Planning for Hospitals: A Systems Approach Using Computer-Aided Techniques," reports investigations by Souder, Clark, Elkind and Brown and represents the major effort of the study.

Objective of the investigation was the determination of measurable factors which must influence or control planning and design. The very multiplicity of such factors is a special problem for architects in confronting hospital design and is the kind of problem for which the computer is an especially adept tool. Some of the architect's problems are: understanding of hospital function, the kinds and quantities of space and of intercommunication which these functions require and the unpredictable growth of hospitals and parts of hospitals which occur with increasing population and changing techniques.

"Planning for Hospitals" attempts to shed light on the kinds, the volumes and the incidence of intra-hospital traffic and communications. It is, in short, an observation of all the simultaneous interdepartmental movements that occur in the hospital, trying to find principles which control these movements and trying with systems analysis and new computer technology to develop working models of hospital traffic which will let the architect predict and measure the results of his planning concepts.

Ultimate objective of the study is to provide stronger guides for planning. This objective was to be implemented on three fronts. First, to develop an understanding of organizational relationships with-



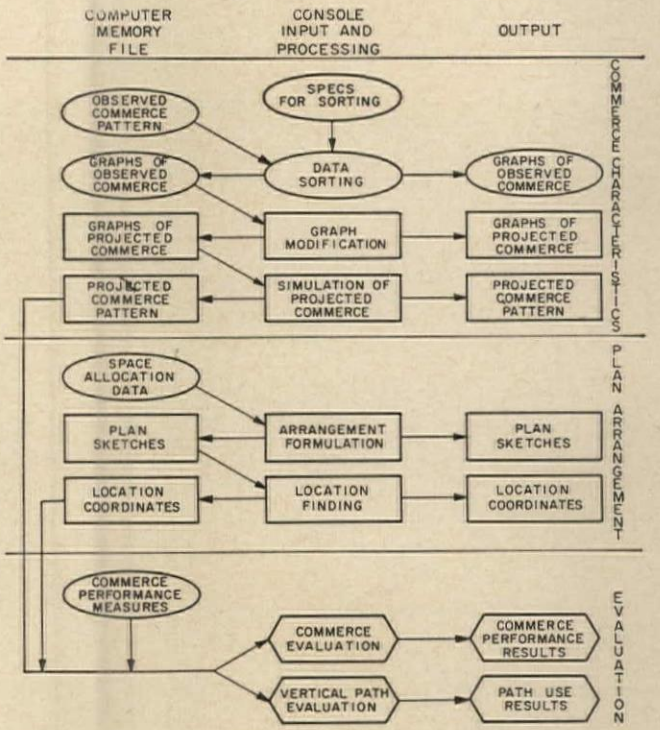
Console operation (*far left*) of the computer system provides constant interplay between man and computer. The machine used here is a PDP-1 made by Digital Equipment Corp. It is a so-called parallel binary machine with 4,096 words of core memory and supplemental magnetic tape storage. Input-output is accomplished by punched paper tape, console typewriter and cathode-ray tube with associated light-pen. The light-pen (*center left*) can draw or alter diagrams, or it can be used to operate on projected graphs (*left*) so that the machine can automatically accommodate the data to an adjusted distribution. Relationships of stored data, program commands and output in three problem situations are shown in the chart (*below*)

in the hospital as prerequisite of a clear statement of the architectural problem. Second, to explore the possibility of using objective measurements of hospital operations as guides to planning and design, identifying measurable factors so that intuition can be focused on those areas where objective measurements seem impossible or unrewarding. Third, the accumulation of hospital operational data which may serve as background for projecting and evaluating the demands of new operations.

Much of the material presented in the report is based upon detailed, recorded observations of daily activity in two acute general hospitals, one in Massachusetts and one in California. Factual observations were made, reporting the interplay of four departmental components of the over-all hospital system. These four components, described as subsystems, were: medical care, nursing care, supply and administration. The present study, in order to remain within the bounds of feasibility, limited itself arbitrarily to observations in depth of selected departments. These were: an in-patient nursing unit, a radiology department, a central supply department and a pharmacy. Detailed observations of all traffic entering and leaving these four units were made.

Observations covered seven items of information regarding each person entering or leaving the observed department: time, category of person, origin or destination, access route, item carried, means of carrying it and purpose of the trip. Some 250,000 entries were noted and punched on tape for computer sorting. This information matrix then was introduced into the electronic memory of a PDP-1, a binary digital machine with verbal core memory and supplemental magnetic tape storage. Instructions to operate on data and output of results are accomplished by punched paper tape, on-line console typewriter and oscilloscope with associated light-pen.

The potential usefulness of these data is in reducing the over-all planning problem to an observable interplay of what authors of the report call "commerce subsystems." The architect acquires a means of dealing with his greatest problem in basic planning, interdepartmental relationships, by means of computer techniques which permit rapid comparisons of many factors at one time.



ROLE ASSIGNMENT FOR COMPUTER-AIDED PLANNING

Planning Phase	Man Provides	Computer Provides
Investigation (development of requirements and programing)	Knowledge and experience	Storage, retrieval and processing
Synthesis of physical and organizational	Imagination and design sense	Manipulation simulation and short-time memory
Evaluation of arrangements and anticipated performance	Judgment and assessment of intangibles	Calculation and display

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The method is one in which a cooperating but subordinate role is played by the computer in the planning process. Employment of a digital computer equipped with an oscilloscope, which can both recall and record visual material including graphs and plans, permits a constant interchange between the computer and the designer for scanning background data and measuring the effectiveness of alternative plans. The system permits the drawing of proposed planning schemes on the oscilloscope and simulating performances within them, which are then measured against the computer's stored scales of value.

The operator can also store and recall on demand any set of data or any set of plans which have been developed. The system, in short, offers the difficulty of requiring new skills for its use but the compensating advantage of greater speed and greater thoroughness in solving complex problems.

It is acknowledged that the present background of stored data is incomplete. It is based on data taken on only two hospitals. To be more helpful, complete observations from other departments and other hospitals should be added to the data. The report urges further research and field tests of the method to build up the background data and to encourage practitioners to make use of the method. The strength of the tool lies in its capability of substituting observed factual experience for suppositions. With this means of factual implementation, pure intuition and creativity can be focused more and more in the areas where it is most effective.

The W-59 project concerned itself primarily with the traffic between elements of the physical arrangement. The magnitude of the data assembled on traffic alone, indicates that it should be a major determinant in the planning. Hence, in an attempt to develop a procedure for predicting the "commerce activity" in a future hospital, an analysis of the intensive observations of activity in two existing hospitals was made to show that an underlying consistency is present in their seemingly diverse traffic and communication patterns.

The traffic characteristics can be expressed quite easily in graphical form. It would be a tedious and time-consuming job to study by hand the effects of introducing changes in operational patterns. One of the fruitful applications for computer-aided planning is rapid manipulation of these many possibilities. Hence, the computer makes feasible the simulation of hypothetical traffic patterns for proposed hospitals.

The computer is able to evaluate travel time on the basis of distance and assumed rate of travel. It is also capable of determining the effect of introducing vertical travel. It can also determine whether a given route is feasible for the item being transported. For example, patients in wheelchairs can be transported in elevators but not in stairways. Further, the computer can determine the optimum route in terms of time and acceptability.

WHY COMPUTERS?

Hospital planning is a well-established field of endeavor for architects, administrators and consultants. Why, then, suggest "rocking the boat," the authors ask rhetorically, by introducing a new and foreign concept of computer-aided planning? They give several reasons. One is the increasing complexity of hospital planning and the increasing influence of technical decisions in the planning process. A second reason has to do with new capabilities and concepts for computer application.

Most computers in the past have been designed primarily for large-scale routine tasks such as accounting and information retrieval, or for scientific computation. However, computers are coming into use as partners of men in tasks such as traffic control, and as simulators for complicated analyses. Heretofore, most versatile and powerful computers were large, costly and difficult to maintain, but developments in solid-state circuitry and core memories have made medium size and small high speed computers a practical reality. Advances in input-output equipment and in programing techniques can now provide communication between man and computer for cooperation in solving problems.

It is true that computers are not yet developed far enough to count as "artificial intelligences" in many real life situations, but they are far enough developed to perform very efficiently and swiftly many functions that man performs only haltingly, such as quick retrieval of data, manipulation and display of simple patterns, and various calculations.

Assume that the hospital planning team includes architect, administrator and consultant, functioning in their accustomed roles. Assume further that these planners can convene in working conference sessions at the console of a computer rather than at a drafting board or conference table. This group of planners, or any one of their number, can now proceed with consideration of planning problems as before, but with an important difference. Immediate recourse is possible to background data and relationships; and various possible operational patterns (or policies) and physical arrangements can be formulated and evaluated or compared without tedious calculations and long delays.

New computer applications, implemented by the new planning adjuncts, are essentially the mechanization of only those parts of the planning task that are easily done by computer and not easily or willingly done by the human planners. The table on the preceding page suggests the roles to be filled by human planners and the computer. It should be obvious that this assignment of roles does not tend to reduce the freedom of the planners, but rather extends their capabilities and reinforces them.

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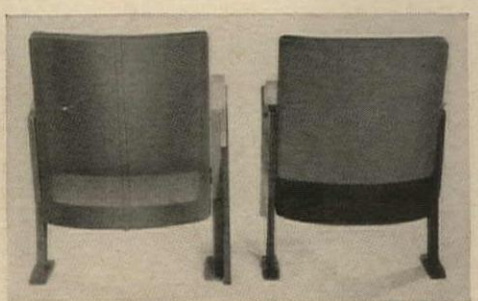

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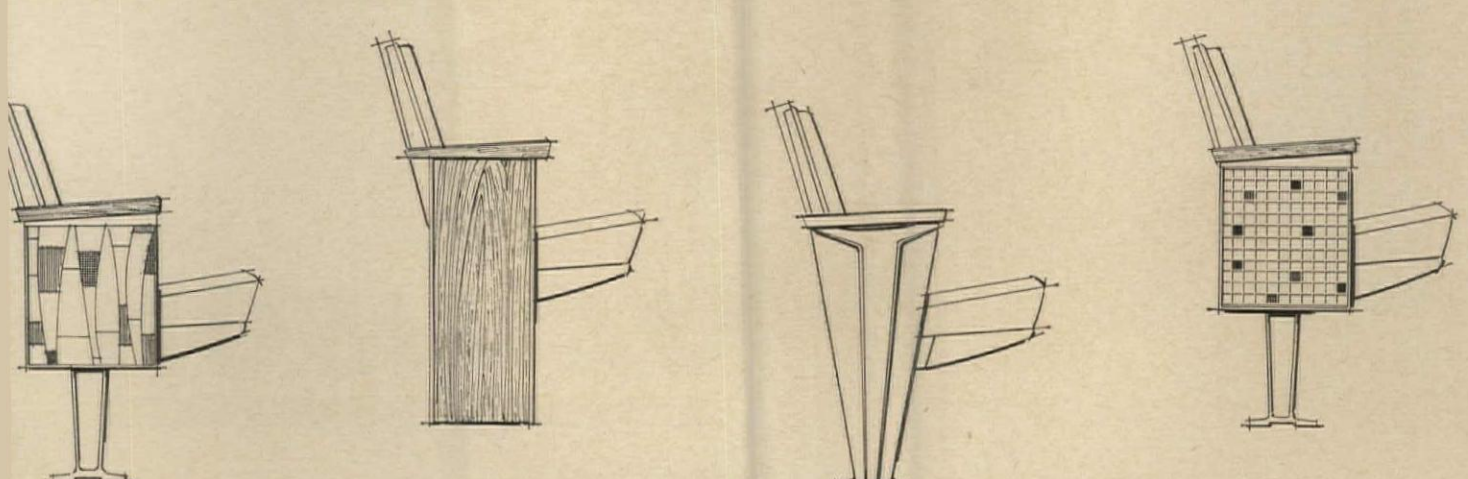

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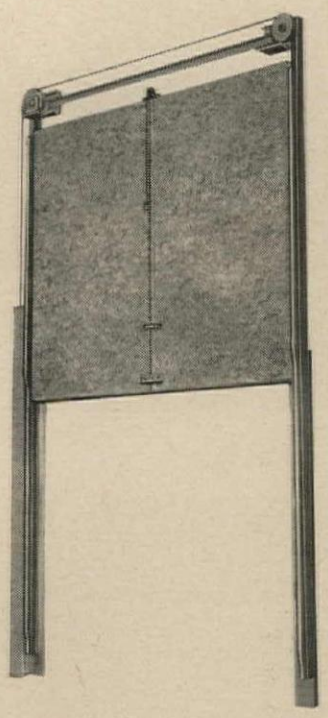

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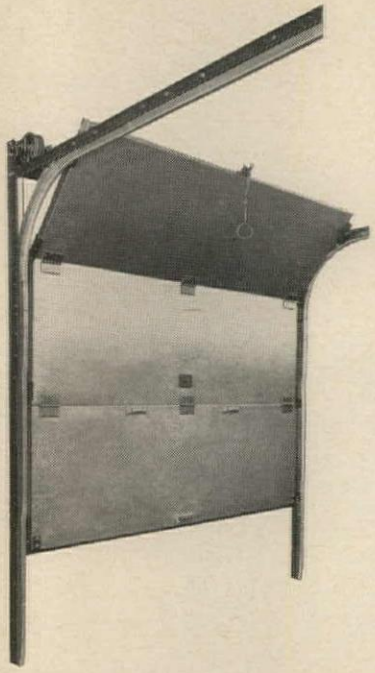

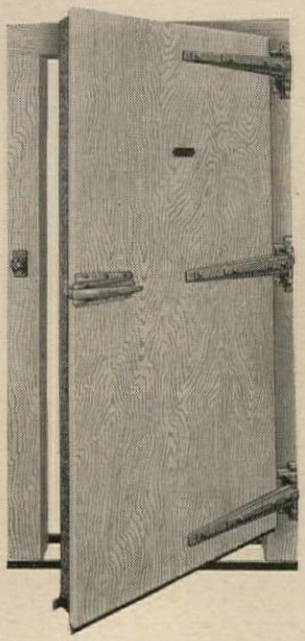

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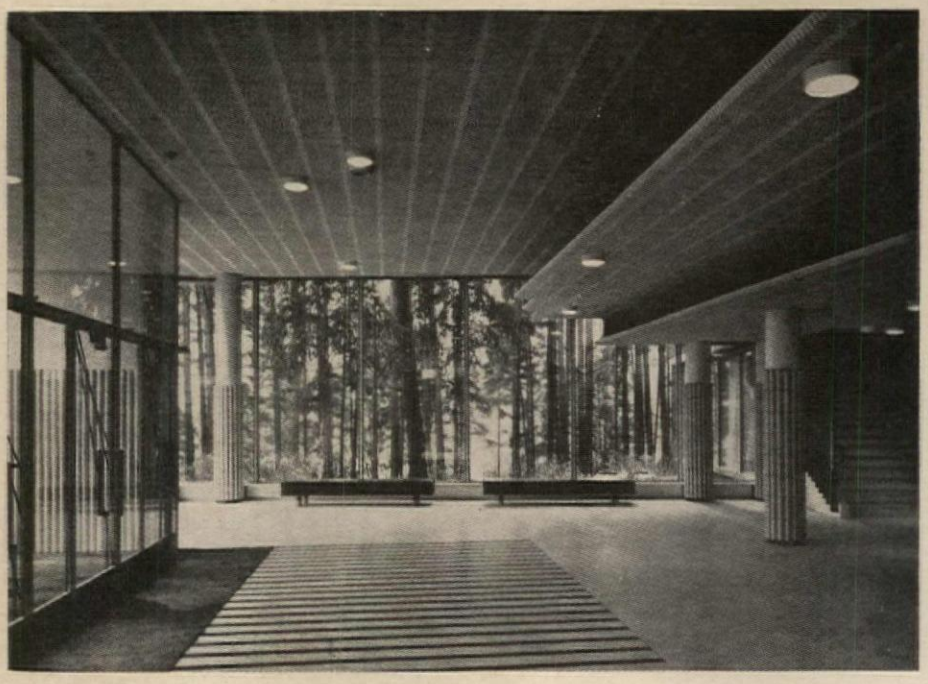


Pedagogical University, Jyväskylä, Finland—from "Alvar Aalto"

Aalto

ALVAR AALTO: COMPLETE WORKS 1922-1960. *Edited by Alvar Aalto and Karl Fleig. Wittenborn & Company, 1018 Madison Ave., New York 21. 271 pp., illus. $15.75.*

By Frederick Gutheim

This is the publication of the collected works of Alvar Aalto, presented by the architect himself with the assistance of his wife and collaborator and some devoted friends. Without the Swiss publisher, Hans Girsberger, it is doubtful if this effort of 10 years would have been completed, so little interested is the architect in labors of the sort he found himself obliged to undertake. Yet we may all be in the debt of the many whose efforts resulted in the present volume, for it documents the work of one of the few architects of our time who is of international significance and has deeply influenced the course of American architecture, and whose importance to the future may be confidently said to be assured. The book itself constitutes the principal reference to the architect's career, and is uniform in format with Girsberger's one-volume presentation of Le Corbusier's work and, one hopes, other works on contemporary architects still to be published. It is chronologically arranged, with definitive notes, and while the works themselves are presented in an index there is neither a page index nor any division into periods of the work of 40 years.

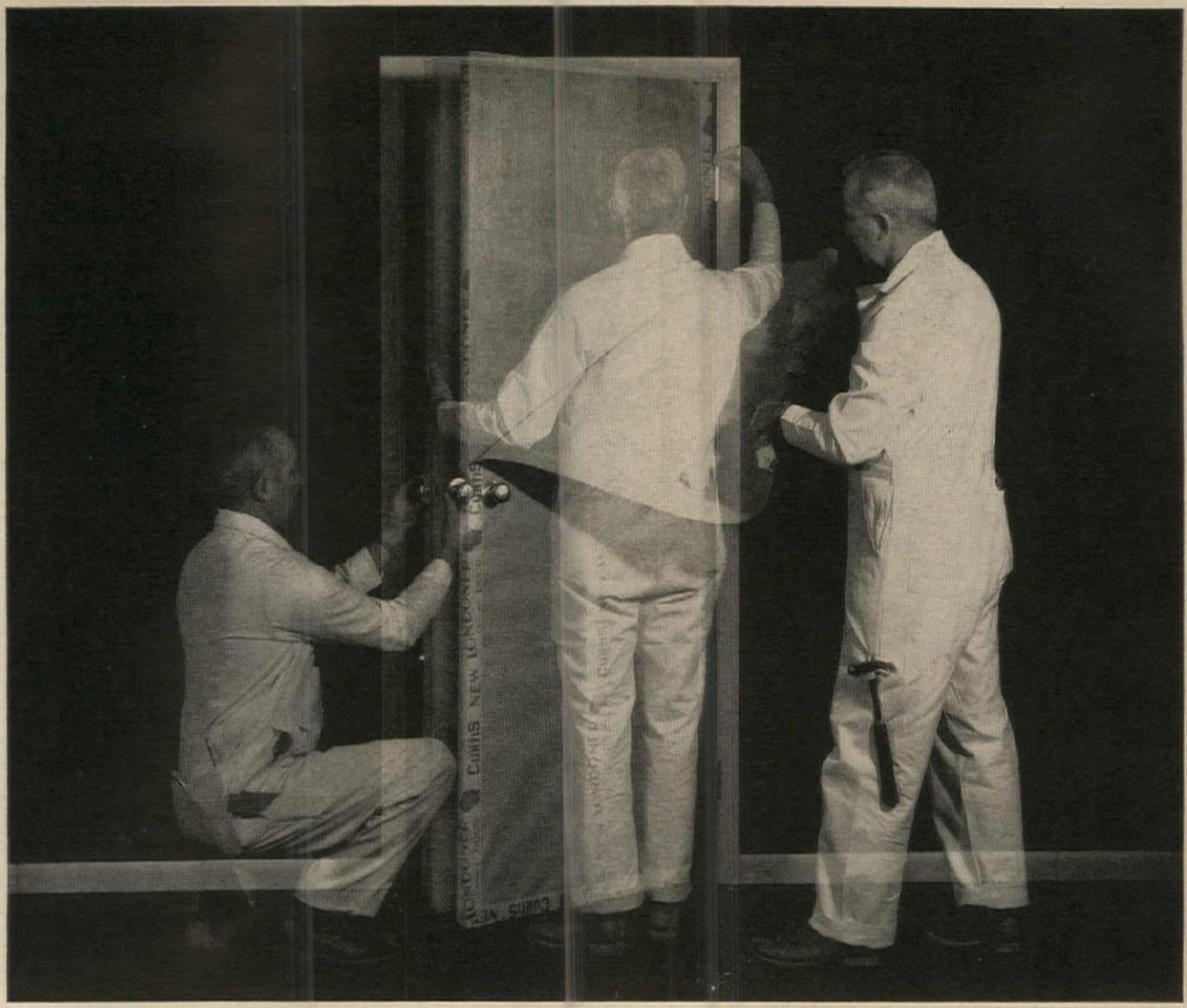
This is a formal work, one lacking the intimacy one might have hoped from writing by the architect himself. While presented as "oeuvre complet," a number of buildings have been omitted, including some which Sigfried Giedion and other analysts of Aalto's career have found of significance. Although the volume contains new drawings and photographs, and of course many new insights, the projects themselves are for the most part familiar. The glimpse of Aalto, his office and his working procedures revealed by a now out-of-print Swiss book by Mr. and Mrs. Ed. Neuenschander, still provides almost the only insight of its kind. Aalto was offended by this intrusion and has done nothing in the present work to lift the veil in a more authoritative fashion.

The presentation of buildings and the emphasis given seems to follow Aalto's idea that certain utilitarian categories of his work are "merely building" and these are given only brief recognition. By contrast, his favorite seems to be the Villa Mairea, a judgment that will find wide acceptance. In the same manner, the introduction of plans and structural details follow some prior determination of their relevance, rather than any editorial uniformity. It seems clear that he has no disposition to view as of ultimate significance any critical estimate of his building.

Aalto's work does not lack ideological content, and dicta in the present volume shows him firm in his opinion. Here is a sample: "In order to achieve practical goals and valid esthetic forms in connection with architecture, one cannot always start from a rational and technical standpoint—perhaps even never. Human imagination must have free room in which to unfold."

The concise descriptions of individual buildings are meaty and direct, as well as definitive. Considering how often many of the buildings have been described, they are surprisingly fresh. Here is the conclusion of Aalto's summary of the industrial complex at Sunila: "The center of the plant is built up into a terrace from which all phases of production can be observed. Here are located the administrative offices, laboratories, etc. This terrace also forms, at the same time, a garden, thereby creating a quiet atmosphere for the administrative center. Throughout the entire periphery of the various factory buildings, which are connected to each other by means of 'open air corridors,' the pine forest has been left untouched. Every worker in the various departments therefore has the possibility to go out of his building direct into nature. Instead of a uniform monolith, an attempt has been made here to endow, in a natural way, each department with its own character. The result is a pyramidal building mass, rich in contrasts."

continued on page 112



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Also new this year from Curtis are: (1) the all-new (economical) Styletite Casement Window Unit with no quality sacrificed for "price"; (2) the Styletite Removable Sliding Windows with vinyl sill track for reduced condensation and for quieter, smoother operation; and (3) the all-new Divided Lite Screen to *instantly* colonialize the window treatment (removable storm panels optional).

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Individuality and Quality in windows, doors and cabinets

For more data, circle 69 on Inquiry Card

Cut building weight one-third with tubular steel

With its higher strength-to-weight ratios, structural steel tubing is finding more and more cost-cutting applications in office buildings, schools, shopping centers, and a variety of other structures.

Buildings erected with tubing will average 30% to 40% lighter than those employing conventional steel members. The lighter framework permits lighter footings and foundations. At the same time, tubular load-bearing columns allow one-third thinner walls for greater usable floor space.

Tubular steel is cut to length and fabricated before delivery to the jobsite. It can be welded by arc and gas welds, spot welding, projection welding, or brazing. Mechanical joining techniques include threaded joints, bolted and riveted joints, telescopic joints, compression joints, flanged joints, and T-joints.

To further increase the design and economic advantages of structural steel tubing, Republic has increased guaranteed minimum yield strength of ELECTRUNITE® Square and Rectangular Tubing by 36% over ASTM Specifications A-7 or A-36.

Detailed in the chart at right and in Republic's new ST-101 Specification, the higher strength can bring about substantial savings in overall costs. *You spend less money* to get needed bearing strength in columns, posts, lintels, spandrels, and other structurals.

FOR A COPY of Republic's informative, 52-page booklet—"ELECTRUNITE Steel Tubing for Structural Use"—send the coupon. ELECTRUNITE Structural Steel Tubing is available in rounds to six inches O.D., squares and rectangles in peripheries to 20 inches, and wall thicknesses up to .250-inch.

REPUBLIC STEEL

Cleveland, Ohio 44101

You Can Take the Pulse of Progress at Republic Steel

Port of New York Authority Bus Terminal. Square tubing is employed to frame glass and porcelain enamel sandwich panels which protect waiting passengers from bus exhaust fumes. Tubular framework extends from floor to ceiling and full-length along each 200-ft. long platform. Final tube fabrication was by White Plains Iron Works, Peekskill, N.Y.

Extensive service plaza building program. Square and rectangular steel tubing was picked for columns, beams, and spandrels in stations like the one shown. Flat sides of the tubing simplified fitting of glass, masonry, and curtain wall sections. Tubing was fabricated by The Austin Company—Designers, Engineers, and Builders.

Ford Motor Company pavilion at the New York World's Fair. Welton Beckett & Associates, Architects, used over 50 tons of rectangular tubing in the design of this pavilion. Tubing serves as framework support for glass panels enclosing the 235-ft. diameter, 56-ft. high rotunda.

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Dependable

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		Grade A	Grade B	Grade C
Rounds	Tensile Strength, Min., psi.	45,000	52,000	60,000
	Yield Strength (.2% offset), Min., psi.	33,000	42,000	50,000
	Elongation in 2", Min., percent	25	25	20
Shapes	Tensile Strength, Min., psi.	60,000	60,000	70,000
	Yield Strength (.2% offset), Min., psi.	33,000	46,000	60,000
	Elongation in 2", Min., percent	25	25	10

ASTM A-7	
Tensile Strength, psi. for shapes of all thicknesses	60,000 to 75,000
Yield Point, Min. psi.	33,000
Elongation in 2" Min. percent	24

ASTM A-36	
Tensile Strength, psi.	60,000 to 80,000
Yield Point, Min. psi.	36,000
Elongation in 2" Min. percent	23

For more data, circle 70 on Inquiry Card

REPUBLIC STEEL CORPORATION
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1441 REPUBLIC BUILDING • CLEVELAND, OHIO 44101

Please send a copy of the booklet,
ELECTRUNITE Steel Tubing for Structural Use.

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Required Reading

continued from page 108

Some fresh observations are stimulated by this collection. In little-known projects like that for the Funeral Chapel at Helsinki or the Lyngby Cemetery we discover *partis* that in their earth-hugging asymmetrical forms would be at home in the work of Frank Lloyd Wright, and now that they have been realized in such later works as the master plan for the University of Jyväskylä deserve re-examination. Similarly, the rather unimpressive apartment house erected in Berlin in 1957, with its understated facade, can be appreciated for its embodiment of Aalto's characteristic philosophy of living.

Many of the later projects are illustrated with conceptual sketches. They also contribute to the understanding of plan details which had previously been ambiguous.

The book closes with a characteristic but hitherto unpublished project: the war memorial at Suomussalmi, a bronze abstract sculptural form, powerful in its suggestion of many associations with Finland's ski troops of the 1939 war with the Soviet Union.

In the end one asks whether new revelations or changed opinions about Aalto and his work come from a study of this volume. The answer is no. Instead there is a heightened appreciation of an already well understood and long respected figure in the architectural works. Some projects emerge with unexpected force (the 1939 New York World's Fair exhibition, previously underestimated perhaps because in a building Aalto did not design, but brilliantly showing his mastery of interior design), while others (like the sawmill at Varkaus, with its undulating form) because they embody characteristics we have only recently come to understand in the architect's work. Perhaps the best example is the contour model of the civic center at Säynätsalo, here reproduced for the first time, which throws an unexpected new light on this long-accepted masterpiece. Here, in sum, one browses as in a library of familiar books, accepting the guidance of one whose easy familiarity only the author could have.

continued on page 120

Amarlite offers new translucent Glidden Panelux panels... more in a door that's Exclusive!

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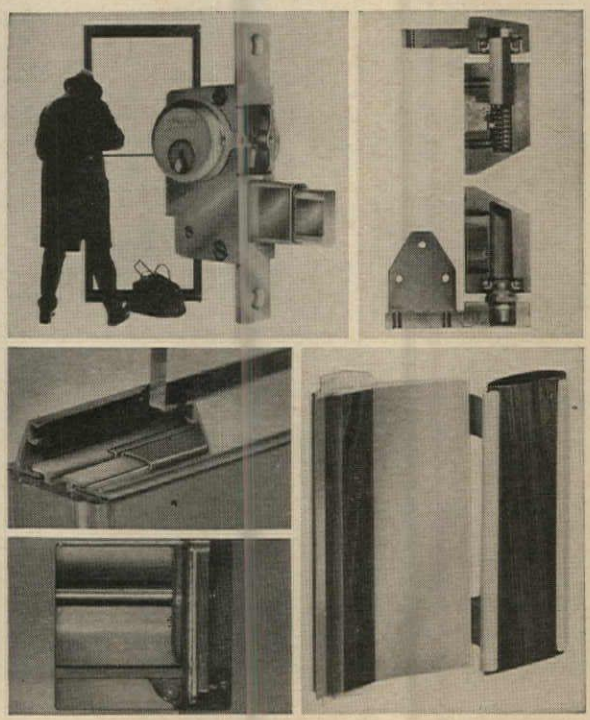

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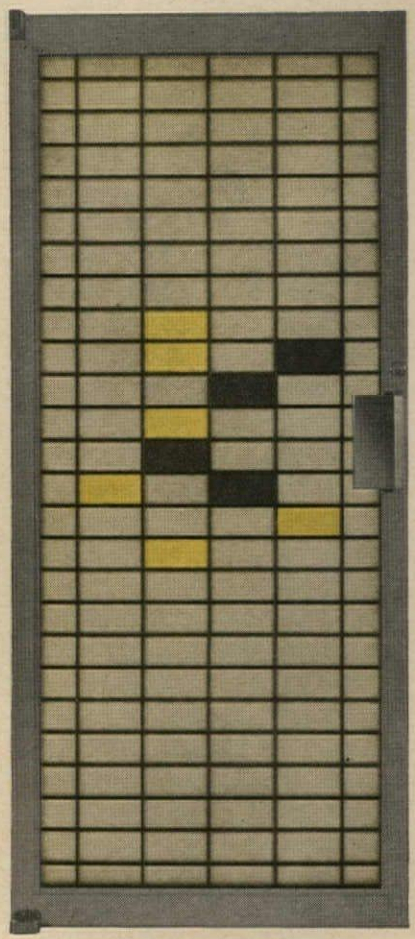

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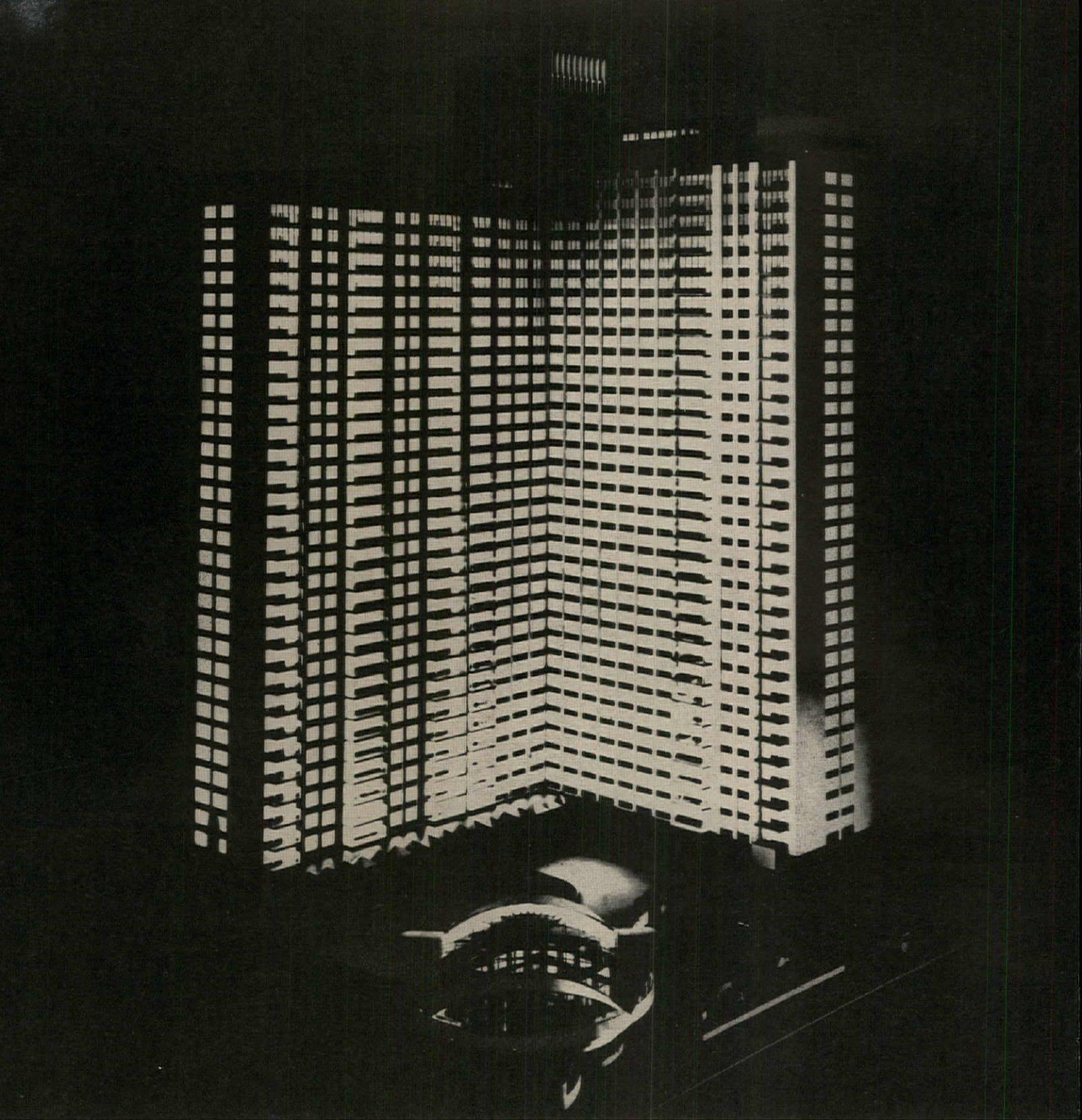

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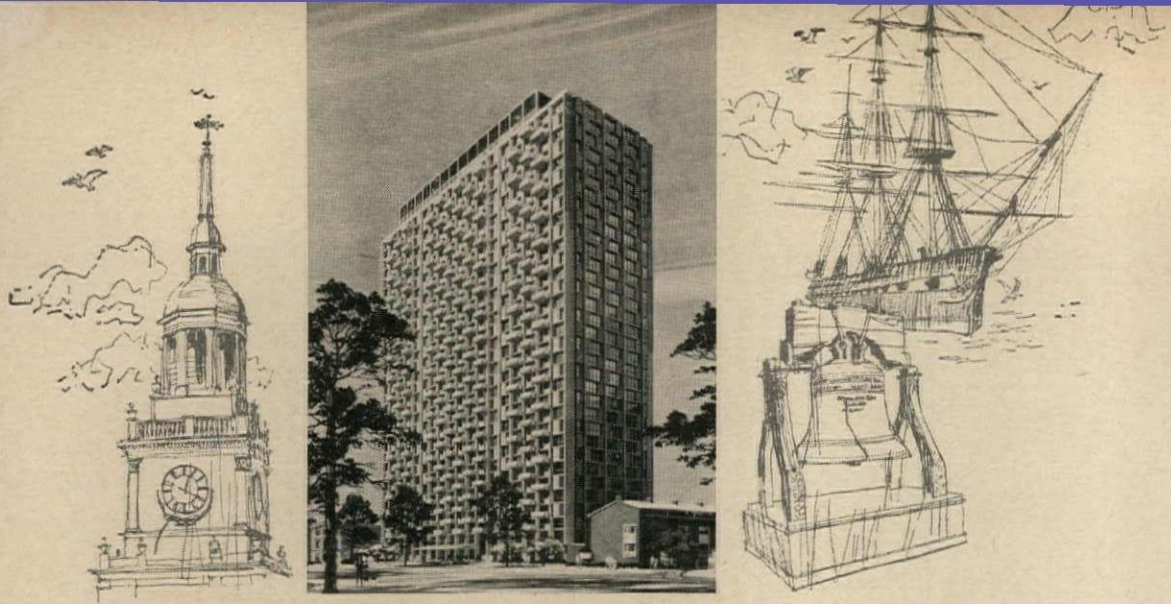

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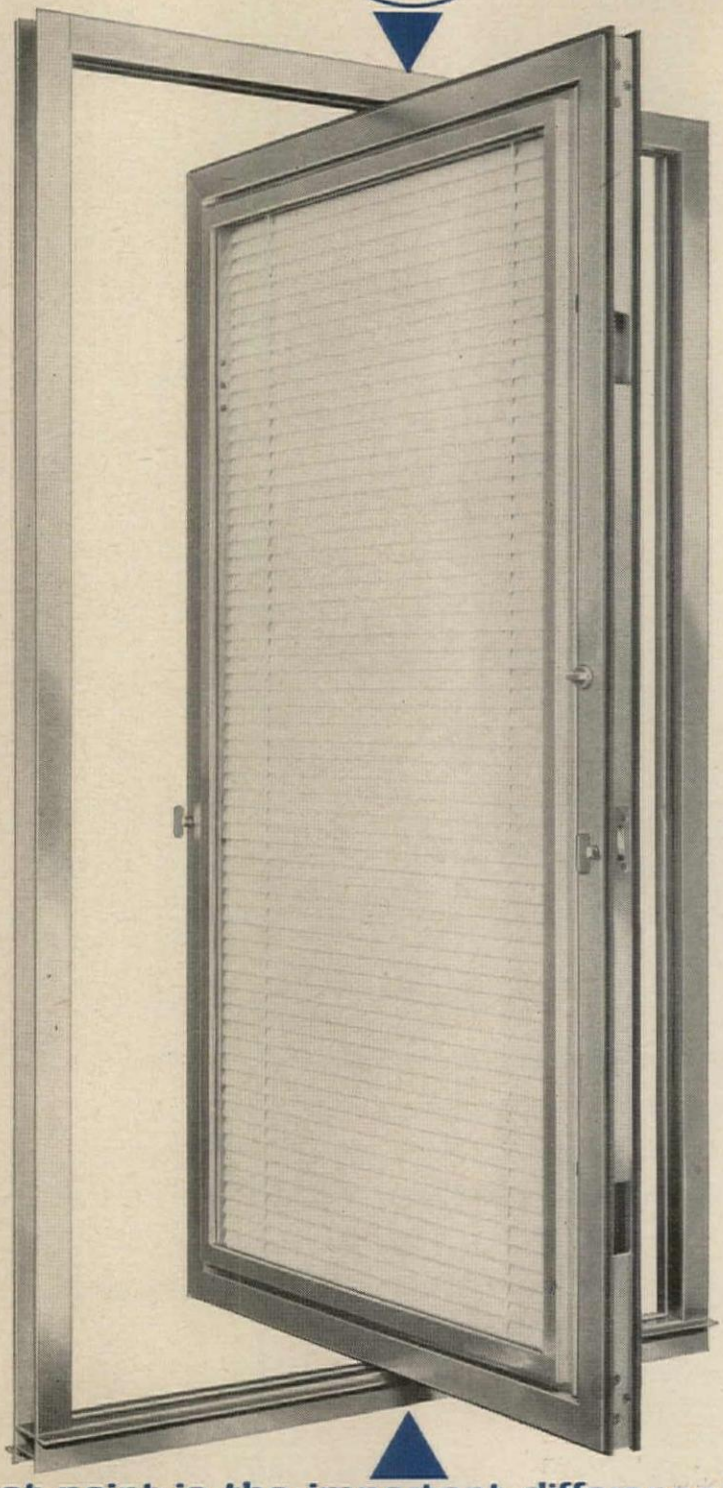
Hopkinson House Apartments / Washington Square South, Philadelphia, Pa. Winner in 1963 of the AIA Philadelphia Chapter Award for finest design in residential structures, Philadelphia area. Architect: Stonorov & Haws, Architects Building, Philadelphia. / Builder: R. M. Shoemaker Company—Hopkinson House, Inc., 245 South 24th Street, Philadelphia.

For more data, circle 75 on Inquiry Card

New venetian VP* blind



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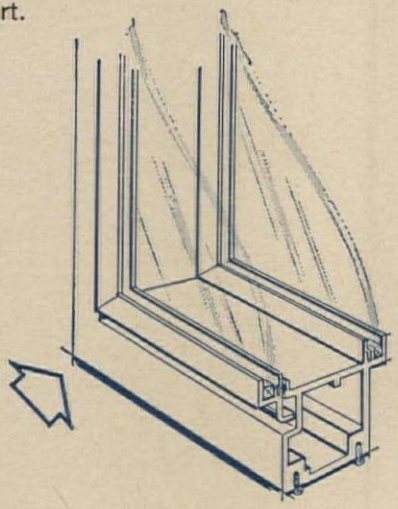
Vertical pivot action. Awkward, risky methods used to operate horizontally pivoted windows are unnecessary. *Concealed pivot mechanism.* Window can be reversed without raising venetian blind. *Removable aluminum glazing beads.* Window may be reglazed without taking frame members apart.



Square windows. All four corners are squared to lend approved architectural appearance. Initial glazing is faster, easier. Reglazing, too, if required.

Venetian blind controls. Control knob sets angle of louvers *(Inside glass)*. Side-hinged feature for easy cleaning. Gives access to inside surfaces of glass without awkward reaching or need for open holder arms.

*** Vertical Pivot point is the important difference!**

VP*

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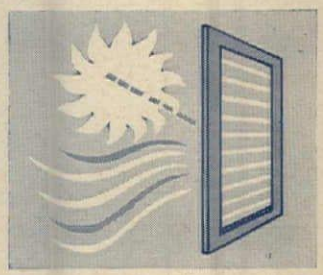
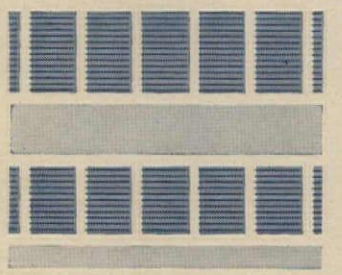
Make all four corners square. Make the window pivot *vertically*. Conceal the mechanism. Then, make it next to impossible for anyone except the window washer to disturb the uniformity of the venetian blinds. *This is how Adlake designed the most thoughtful window in a decade!* Thoughtful of the architect, thoughtful of the owner, thoughtful of the tenant–and even thoughtful of old customers. It's basically the Series 1000 vertical pivot window, already proven in thousands of installations. How will it benefit you? Read on and see. Then contact your nearest Adlake representative.

better looking... and stays that way



. . . thoughtful of the tenant

This window was designed with people in mind. They choose the louver angle that is right for them. A twist of the wrist dials it. No exposed cords to tug. Blinds keep up to 65% of the sun's heat outside the building where it belongs. Less street noise, too.

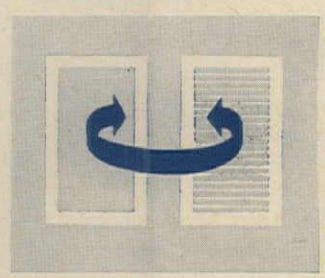


THE WINDOW THAT'S...

. . . thoughtful of the architect

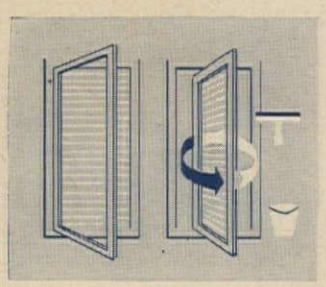
With blinds raised only for cleaning, this new Adlake window offers effective control over a horizontal design motif. But that's not all. The same four corners that give the Series 1400 an accepted architectural appearance, also cut glazing costs. And what a choice of finishes! Adlake satin etched, Anodized, Anoclad greys, Kalcolor or Duranodic.

cuts costs before and after



. . . and even remembers old customers

The new Adlake Series 1400 vent fills the same size opening as a Series 1000. Owners who need the special features of the venetian blind window can substitute one vent for the other. Replacement is economical, easily arranged. Inconvenience is held to a minimum. Your Adlake representative will gladly supply details.



. . . really thoughtful of the owner

Adlake's Series 1400 vertical pivot window really cuts maintenance and utility costs. The window is faster, easier to clean. Can be reversed a full 360° with no time out to raise the blind. And even when reversed, there's the positive seal provided by the neoprene impregnated fabric weatherstrip. A 2¼ inch air space between the panes acts as insulation. Naturally, heating and air conditioning cost less.

See your nearest Adlake representative

For more data, circle 77 on Inquiry Card

Required Reading

continued from page 112

Schuyler

AMERICAN ARCHITECTURE AND OTHER WRITINGS. *By Montgomery Schuyler; edited by William H. Jordy and Ralph Coe. Atheneum, 162 E. 38th St., New York 16. 328 pp., illus. $2.45, paperbound.*

The John Harvard Library's welcome edition of Montgomery Schuyler's writings was originally published in two volumes (reviewed in ARCHITECTURAL RECORD, December 1961, page 42). Mr. Jordy has abridged it for this paperback edition, but Schuyler's best known pieces remain. While clearly not sufficient to the scholar's purposes, students and practicing architects will still find plenty of meat in Schuyler's views on the skyscraper, on the Chicago Exposition, on Brooklyn Bridge, on Sullivan and Wright.

Mr. Jordy has also included a list of corrections and additions to the earlier volumes.

Man-Made Mess

GOD'S OWN JUNKYARD. *The planned deterioration of America's landscape. By Peter Blake. Holt, Rinehart and Winston, Inc., 383 Madison Ave., New York 17. 144 pp., illus. $4.50, clothbound; $2.95, paperbound.*

In this "muckraking book," Mr. Blake is not merely angry, but "furious" at the mess he sees around him. The rather brief text is a tirade, in which sweet reasonableness has no place, against the mindlessness of dumps, open parking lots, repetitive housing, overhead wires, and ugly advertising (especially ugly advertising). Laying about with mace-and-chain, he has at developers, politicians, merchants, householders and drivers, but particularly at artists. He makes it clear that, in his view, artists have ignored their responsibilities in solving the hard problems for the easier path of in-group panel discussions.

While Mr. Blake has discarded tact, no one looking at the numerous and scarifying illustrations is likely to argue that his indignation is not righteous.

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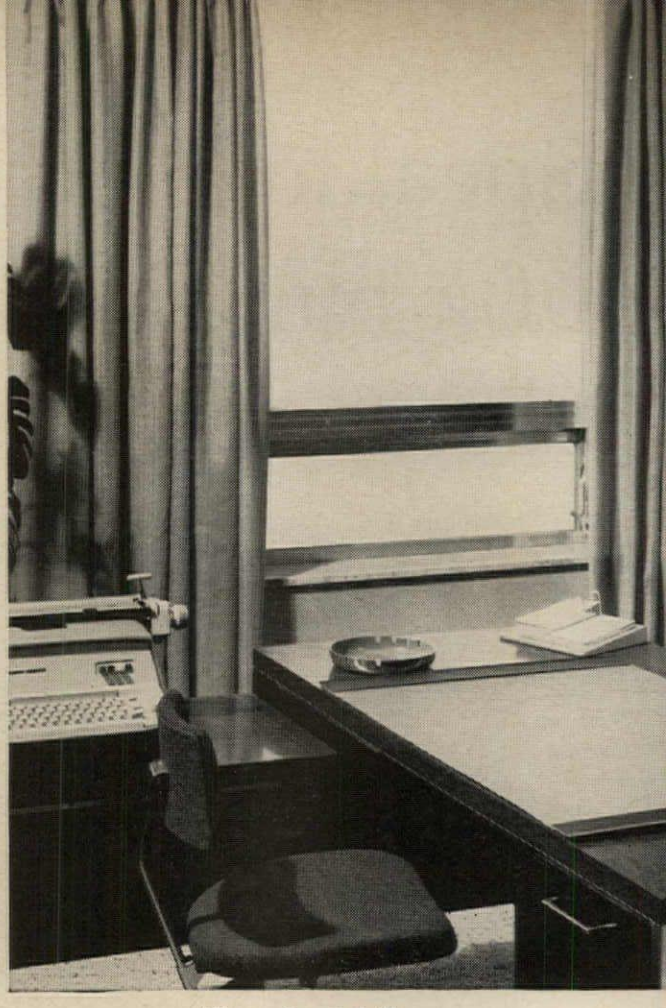
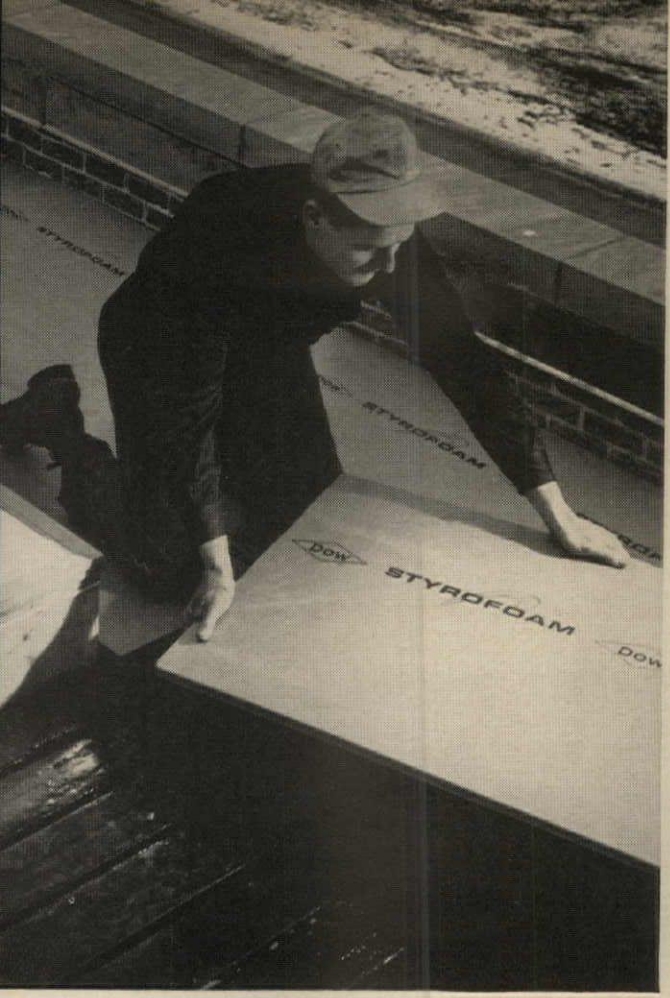


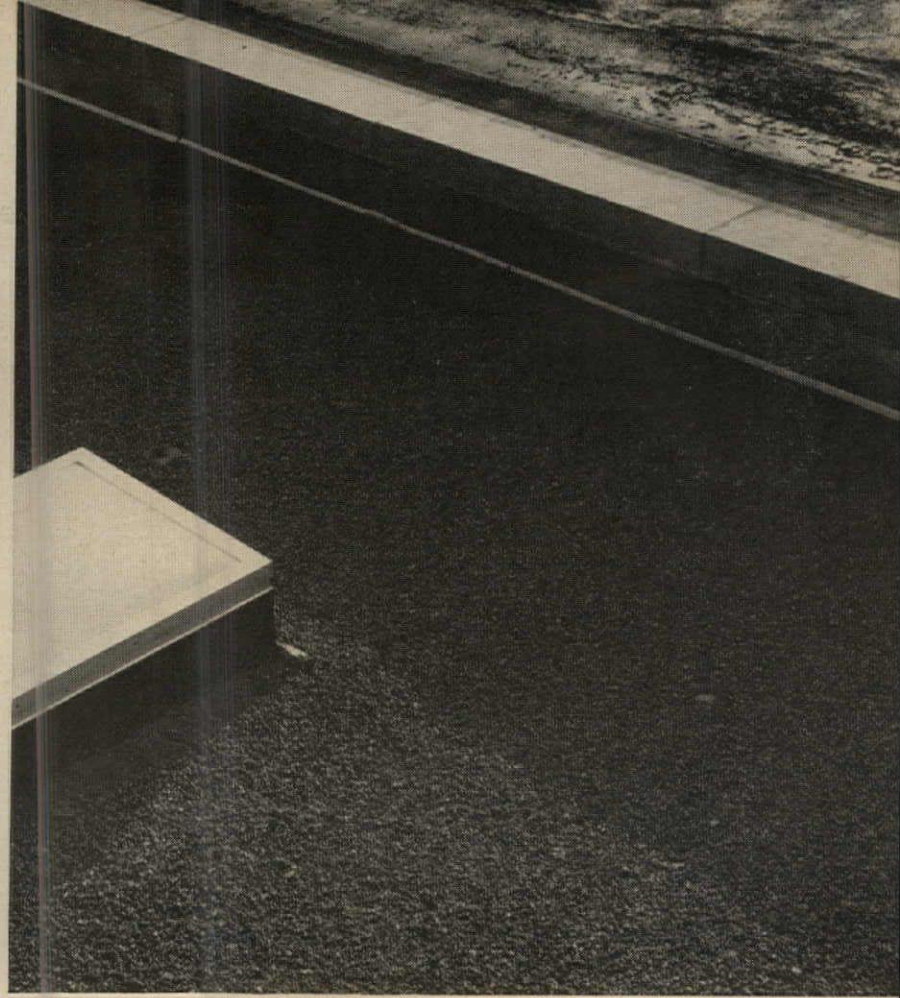
Then forget it.

Remember Styrofoam for slabs and foundations.

Then forget it.



Remember Styrofoam for built-up roofs.



Then forget it.

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

DOW

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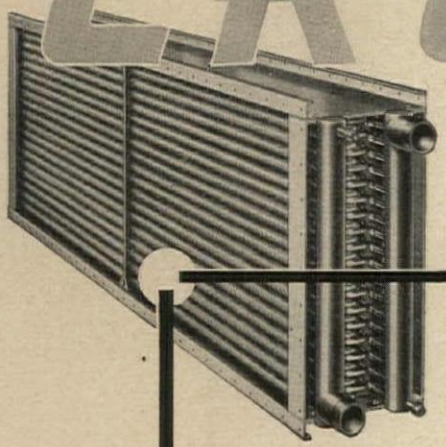
AEROFIN



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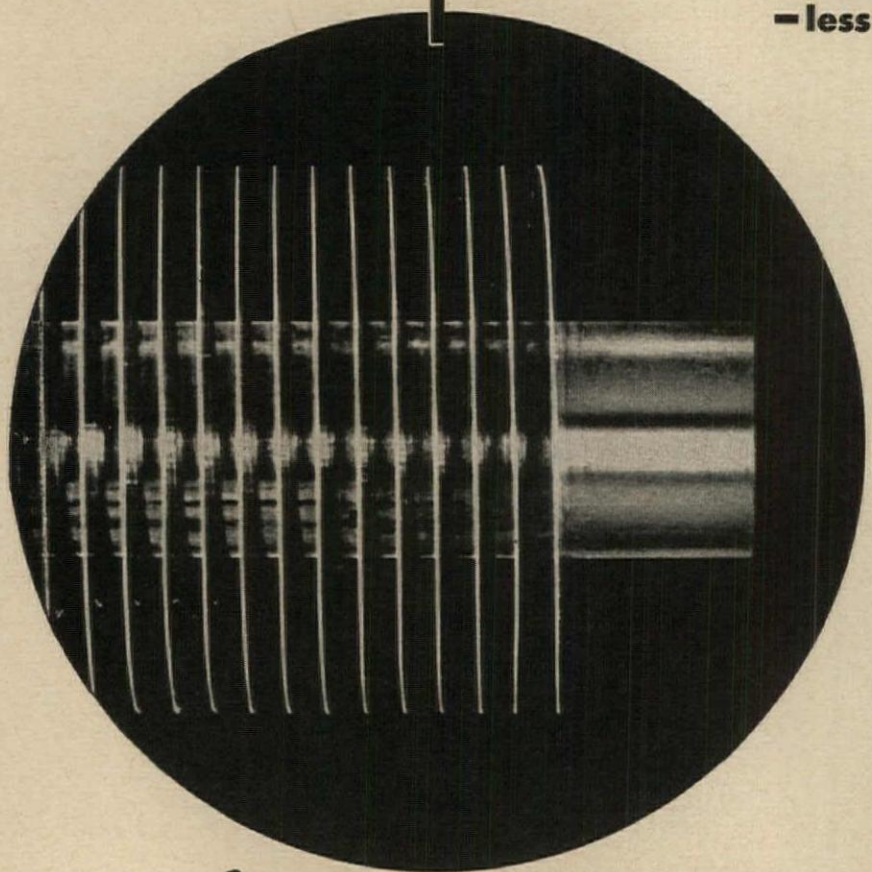

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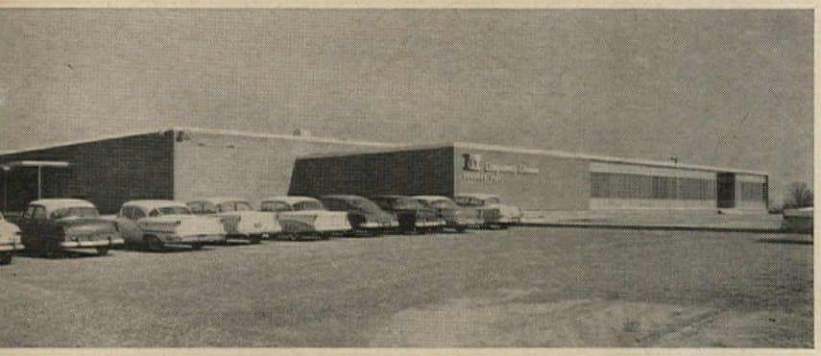
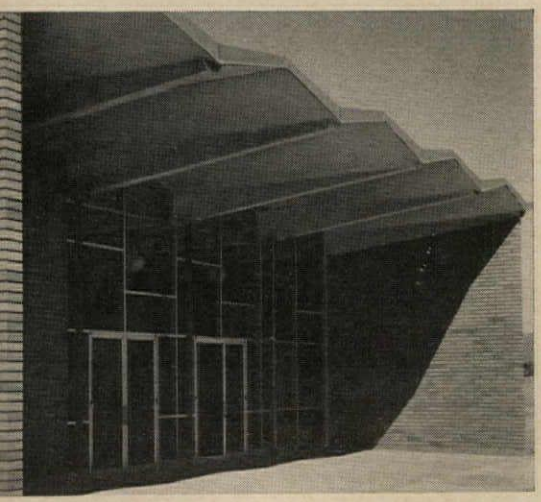
A GYMNASIUM IN MARYLAND—Maryland State Teachers College, Salisbury. *Architect:* Malone and Williams Associates. *General Contractor:* J. Roland Dashiells and Sons. *Masonry Contractor:* Webb and Turner, Inc. *Masonry Cement:* Pocohontas, Inc. and Webb and Turner, Inc.



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

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



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

Is masonry an art or a science?

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

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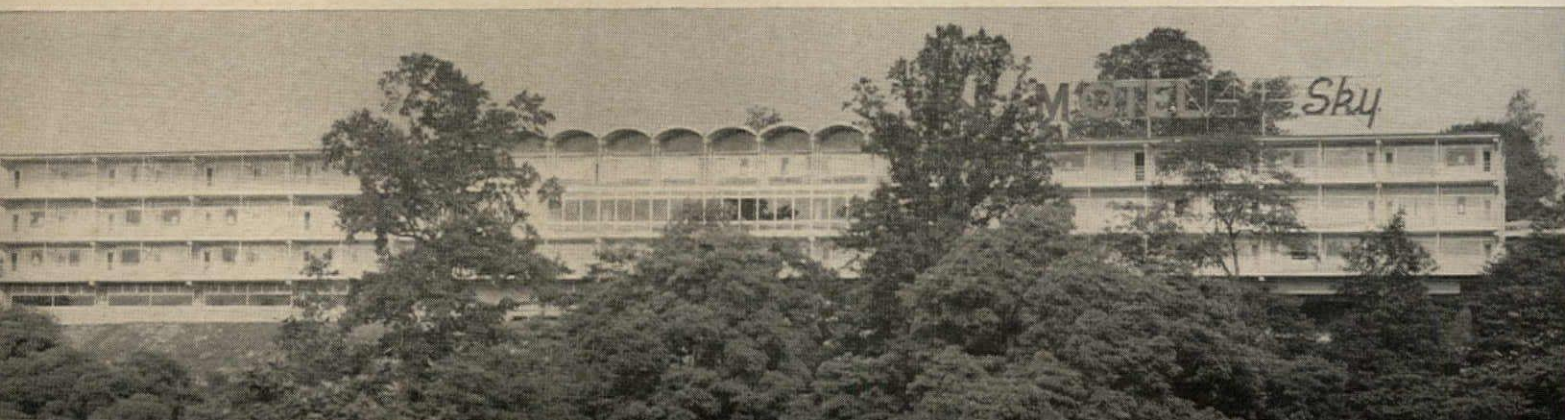
LONE STAR MASONRY CEMENT

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



ARCHITECTURE AS TOTAL COMMUNITY: THE CHALLENGE AHEAD

A series of seven articles on the challenge to architects of large-scale planning

By ALBERT MAYER
in consultation with CLARENCE STEIN

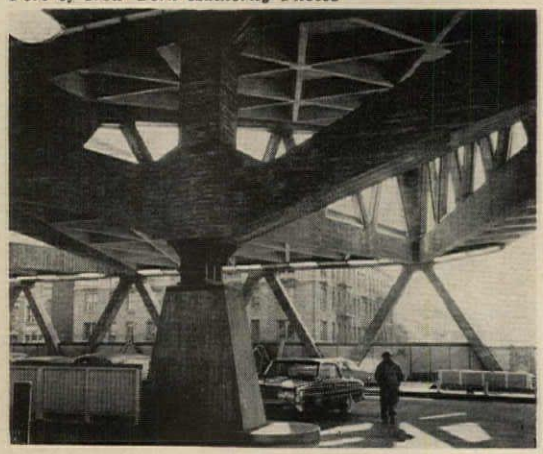
In his long and notable career as architect and planner, Albert Mayer has developed strong convictions on causes and solutions of the urban dilemma. The humanistic philosophy of Clarence Stein, revered as dean of U. S. community architects, has established new directions yet to be fully explored. Not all (including the editors of the RECORD) will agree with all the views expressed in these articles; but all who care about the future of architecture and planning will consider them to be required reading

I. CRISIS AND OPPORTUNITY

The new and ever-advancing technology in industry and in agriculture, and the mastery of natural forces, could be giving us the new plenty, the new leisure, and jointly with social science, the unprecedented opportunity and the tools for the good life. We should now be able to create for all a life with diminished tensions and more drama; the life of expanded understanding and vision and the daily experiences reinforcing it; diminution of drudgery and its transformation into unforced creative activities; easy accessibility of market place and community, and of the counterpoint of nature and its healing.

But these new forces are also causing or contributing or permitting a series of galloping maladjustments and uneasinesses: massive unprepared inmigrations from rural into urban areas, and at the same time out-migrations within our ever-expanding urban complexes; massive involuntary and uncreative and even dangerous leisure. The ubiquitous automobile may be considered a symbol of the two-faced, or Jekyll-and-Hyde, character of modern man and modern development-or-deterioration. It enables us to do wonderful things, to visit distant places, to constitute a new family unity or mobile hearth. In actuality, it does something of this, but far more

Port of New York Authority Photos



Pier Luigi Nervi's George Washington Bridge Bus Station, New York City

Our architecture is typically single-building architecture, less concerned with community architecture than with the single glamorous building. . . . The ubiquitous automobile: the city's intolerable congestion, the countryside's despoilment by unbridled road-building . . .

does it result in the city's intolerable congestion; in the countryside's despoilment by unbridled road-building and by excessive anarchic scatter; in excessive distance between living, work and recreation; in family disorder and non-unity. We are not nearer nature, as we could be, but pushing farther away: not only in distance, but now in time as well, as the inexorably lengthening journey to work negates the extra leisure of the shorter work-day.

The purpose of this series is to explore what are the elements in the physical-social planning and development of our urban civilization, and how they must be deployed, to much more fully realize the promise of the new forces, and to minimize their wastes and menaces.

Decay: Development: Destruction

As an observer and a hopeful re-former of the urban scene for many years, one has gone through as many years of alarm and elation: continuing and recurring alarm at the intensifying deterioration of our cities and the accelerating expansion of the area of urban decay and disorder; very occasional elation at some fine development, or prospect of fine development, or vision of what could be accomplished, or was actually *being* accomplished in other countries. Paradoxically, a major element that has kept buoying invincible expectations is the continuing acceleration of deterioration, and the conviction that things were reaching such a critical point that a sensible democracy must finally be awakened to the need for drastic, far-reaching action. Such a juncture is, pointedly, now.

Both the rate and scale of deterioration have been constantly accelerating, in the cities and their centers, on the fringes, and now far out into the hitherto-countryside.

Two factors have of late years hastened and accentuated these tendencies into real crisis: the population explosion, and the internal-combustion-engine explosion. The phenomenal spread of automobile ownership, unbridled promotion of its use, and accelerating development of road programs-to-everywhere, give full range to anarchic development-and-destruction at all points. These factors have served to accentuate and to deepen the effects of inherent social, political and economic weaknesses in our urban-suburban-exurban—in short, urbanoid—system, into the present condition of crisis.

A hopeful factor is that there is a great deal of discontent, worry, self-searching, painful recognition of painful symptoms. But unfortunately, many of the deep-seated factors and influences are not recognized: we are in large measure shooting at the wrong targets or with guns of too-short range; our painfully wrought remedies are obsolete or obsoles-

Ewing Galloway

Eric Photo

cent or quite inadequate to the newer and most damaging diseases.

We are using up new land at the rate of 1,000,000 acres a year; our population is increasing at the rate of some 30,000,000 or 15 per cent per decade, and much faster in the metropolitan areas. Dr. Jerome Pickard states that between 1962 and 1980 the nation's population will have increased 36 per cent, but 21 metropolitan regions by 73 per cent: i.e., twice as fast. It is declining in the farm areas, also in the central cities, and increasing at tremendous rates farther out, in the metropolitan countryside. Note, as an example, Syracuse: by no means a spectacular area. From 1950 to 1957 the city's population declined from 220,000 to 214,000. But in the county there was a 50 per cent increase: from 121,000 to 181,000. Yet practically the only available government tools of any creative strength are shaped to deal with the central cities' situation, while the outlying region gallops into the inevitable day when it too must be rescued, at vast expense and heartbreak, by future urban renewal.

The Alternatives to Trend

Another troubling factor is that the whole tendency of urban development and highway planning-development in this country is to follow TREND, to study TREND, to ride with TREND as smoothly as possible (so as not to get bumped too badly). But TREND can be desperately undesirable, however carefully we adjust to it. There is almost no creative recognition that we could be and must be IN CREATIVE CONTROL, that TREND is not DESTINY.

Imagination and statesmanship can take trend into account and in their stride, can distinguish between the inevitable and the alterable-controllable, can bend trend to human and moral purpose. In contrast to ineluctable *trend,* there is a greater than ever wealth of *opportunity and choice.* But we have to muster the imaginative self-discipline not to get lost among them.

The rage for statistics is one index of the enthronement of trend. Yet statistics can often be nothing but a record of reaction and adjustment to unsatisfactory conditions. They can be accurate, yet in a high degree misleading, literally and actively misleading: i.e., leading in the wrong direction.

"Megalopolis" and similar coined expressions give some sort of sloganistic comforting sanction by a fancy name to an ultimate extrapolation of undesirable trends. These fancy expressions describe a manifest troubling trend: the oozing together of already amorphous cities into a sort of lava flow hundreds of miles in dimension, from Boston to Washington, from San Francisco to San Diego. The "sophisticated" go for this as the equivalent of the *dernier*

Ewing Galloway

Replacing endless and shapeless expansion of cities, and anarchic destruction of rural areas, with creative alternative goals—limitation to endless city sprawl and to rural-urban rash, in favor of consciously-planned city and city limits, New Towns for nuclei of growth to pre-planned size, reasonably self-contained in character with less need for more and more superroads, ever-longer journeys to work; on the positive side preserving and enhancing adjacency and accessibility to nature . . .

cri, the *avant garde*. It is the apotheosis of the school of Trend.

It is also stupid and inhumane. Also, it can be resisted, outwitted, re-formed. In Holland, where the "Randstad" of Amsterdam, Haarlem, The Hague, Rotterdam, Utrecht were far along toward Megalopolis, they decided it was an evil to be countered, that Trend could be dethroned. They have diverted the ooze into quite different sections of the country; they have kept green space between cities, green space and farming at the center of this Randstad. In England the ooze, the overspill, was dealt with by organic New Towns; after the authorization and development of 15, there was a lull, and now a new series *and variations* are under way. There are other solutions and other possibilities as well, which we will develop. Not only that, but our existing cities that are already so amorphous-glutinous-anonymous, can be reshaped into organic-cellular-community summations.

Potential of Creative Control

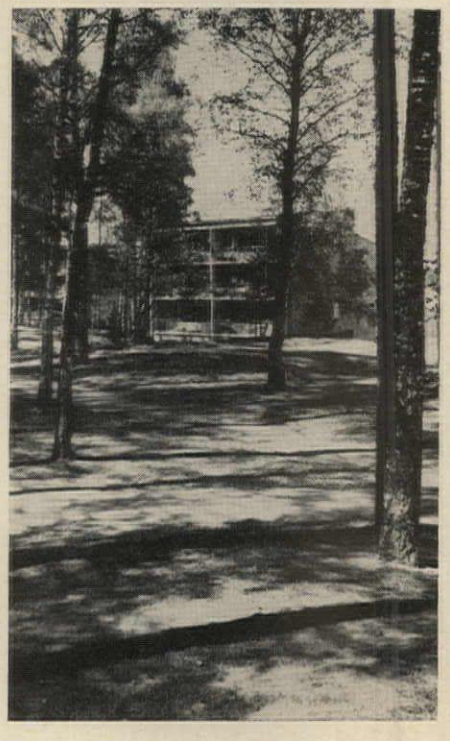
The purpose of this series is to set out what are the characteristics of the good, the stimulating life in cities of the modern world, and how this may be attained in physical, social, architectural terms and relationships.

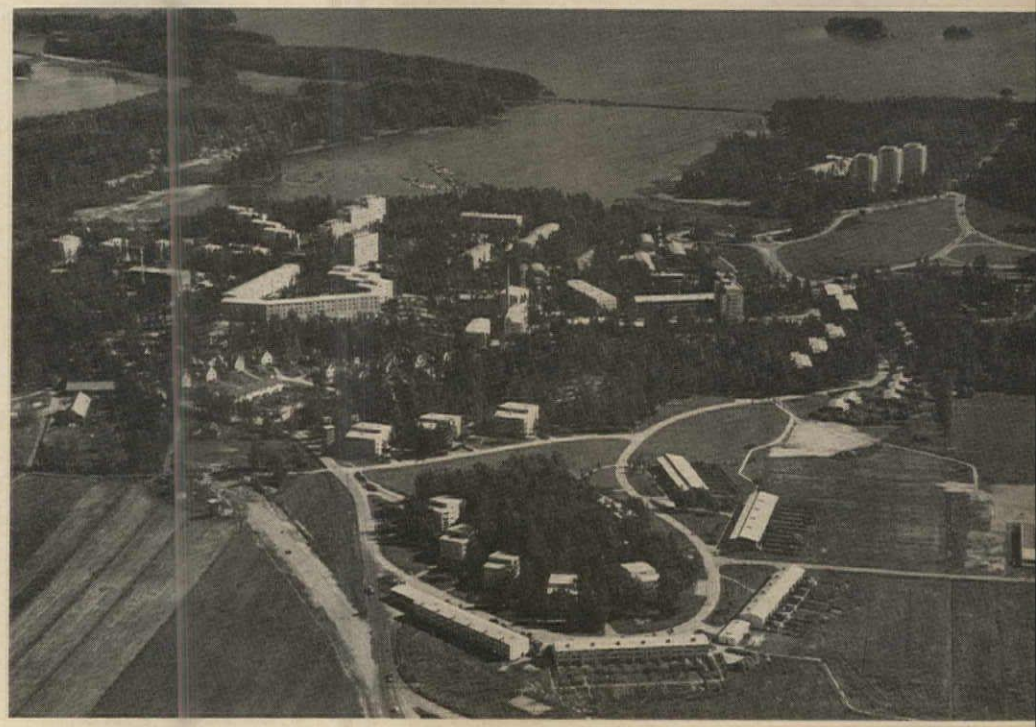
Ineluctably this involves reorganization of cities internally into significant local community entities, and must deal with population growth and industrial dispersion by reaching out into the region in terms of defined, finite, functional and organic entities to bring an end to ooze and sprawl and anarchic spotting.

Within the city we may think of these as active and alert sub-cities or groups built up of related smaller communities and neighborhoods, with less friction of space within; and because more self-contained, dispersing the peaks of traffic to the other parts. These can be the more readily created or re-created, and with more open green space, because the continuing out-migration from the city proper means we can find play-room for leavening their physical quality and relationships.

At and beyond the periphery we can create New Towns or New Outlying Districts. And beyond this, we will propose quite different partially existing and partially potential alternative centers to the increasingly Gargantuan Metropolis. In all of these, we must introduce the concept of CREATIVE CONTROL, in place of haphazard and unlimited growth. When an industry's operations exceed the capacity of a factory, it doesn't keep adding appendages in all directions. It opens a new branch of pre-determined size in a carefully selected location. We will have to absorb this kind of thinking in our cities.

Tapiola Housing Foundation Photos





Two views of the New Town of Tapiola, Finland

Existing Tools for Change

The presentation of these creative concepts, their underlying reasons and implications, constitute the climax of this series. The next two articles are given over to description and analysis of government's presently most important and powerful tools, both in-city. These two articles will discuss and dissect *public housing* and *urban renewal* in terms of their past and present limitations and prospects, to see to what extent they meet or fail to meet purposes for which they were set up and how they can be structurally modified to do this better; and to see what is required beyond their stated purposes so that they may to the maximum serve the new creative and humane environment which we visualize and will propose.

We lead off by close consideration of these present tools, for several reasons. They *do* constitute the major current developmental efforts of Federal-State-City governments. They *are* the most vital conscious immediate government tools for change. They *can* be vastly improved and given new directions. Analysis of their characteristics and limitations and untried potentials sharpens the later discussion of goals and how to reach them, and the question of what these efforts and forms can contribute.

There is another potent reason for the early and extended consideration of these "action" programs. An essential thesis in our presentation is the spiritual, social, psychological, visual importance of design, of creation of space and of the third dimension, in the whole final impact of our urban ensembles *on people*. Our final article is devoted to this subject. However, we can much more closely explore that, and build up to it, on the community-to-region scale, by considering the quality of what *has* been and *is* being actually done: where there have been fine things, where drab and depressing, and why and how; and in particular, whether in either case we are creating ambient environment, or only buildings, and why.

The Federal Housing Administration is, of course, the third powerful government tool, which operates in, though chiefly beyond, the city. However, its powers and activities have been largely in non-creative terms. At worst, they have characteristically manifested themselves mainly in accentuation and limited rationalization of unhealthy development trends: toward outward scatter, toward increased and rigid single-class settlement, toward economic and racial stratification. At best, FHA has lately started to facilitate some aspects of urban renewal. We will, therefore, take account of its work not in any concentrated treatment, but at various points where it seems to have exercised serious influence on activities essentially of others.

Dynamics of Development: Underlying Social Factors

The fourth article will deal with underlying dynamics of social-physical development. This is the pivot chapter. It is pivotal because much of its content flows from the conclusions reached in the earlier articles as to weaknesses in the development tools, stemming from inherent underlying conditions which the present development measures and the current attitudes toward development do not recognize or cope with. And partly because we here identify these and other factors which must be recognized and dealt with, if the creative policies and measures to be described in the later articles are to become realities.

Typical among the factors to be explored are:

Population and automobile explosion—Well known, of course; but the effects of the one ignored in terms of active planning and development tools; the effects of the other actively multiplied negatively by the twin trends of expanded road systems and the ever more unrelated use of land and living that this permits and encourages.

The question of land—Can we continue to consider land merely as a private tradeable commodity; or is it essentially also a resource to be rationed? What inevitable results from each? Can the land resource be safely left entirely in private hands any more than the water resource? Does zoning help, as it is presently conceived and practiced?—or does it promote at the same time both sterile uniformity on the one hand, and scattered mix-up on the other?

Urban taxation and system of capital assessment —As active promoter of land speculation, quick turnover, price rises, premature developments: i.e., intensification of the long-existing driving forces and tendencies of private enterprise. Analysis of the destructive concept of "highest use"; and in road-building, of the "cost-benefit ratio" as applied over the short run.

Also to be considered are the experiences of Stockholm, of Rotterdam, of Britain, in solving these problems by acquisition and public ownership of land on a large scale *for all development,* and the implications for us. We will consider the relevance of our own tentative moves in acquisition and permanent preservation of land for future public recreational use.

Another of the underlying factors is the continuous relentless rise in sales prices of houses, thus more and more accentuating suburban segregation and stratification and separation of places of living and work for lower-income workers, forcing them to stay in obsolete inferior housing in the city, while industry and their jobs decentralize. And, simultaneously, the middle classes continue to move outward, while their office jobs increasingly concentrate in the centers.

Mastering the Trend

We face also the alternatives of unlimited city and metropolitan expansion and mélange, or conscious limitations and nucleations in favor of livability, amenity, accessibility to the green world. Trend, or mastery? The relevance of European policy and experience will be discussed.

In the following two articles the positive concepts of in-city communities, new towns, and districts and regionalism will be considered: approaches to taking account of trend but mastering it in favor of creative control. Articulating the existing amorphous city into organic cells of communities reasonably self-contained and socially confident and capable. Transforming the amorphous agglomerate city, with its remote city hall power, into active and alert foci of allegiance and participation.

Correspondingly, replacing endless and shapeless expansion of cities, and anarchic destruction of rural areas, with creative alternative goals—limitation to endless city sprawl and to rural-urban rash, in favor of consciously planned city and city limits, New Towns for nuclei of growth to pre-planned size, reasonably self-contained in character with less need for more and more super-roads, ever-longer journeys to work: on the positive side preserving and enhancing adjacency and accessibility to nature. The countryside preserved as an accessible resource and as a barrier (the green wall) ; the highway deflated to its reasonable functions.

The New Towns: concept and brief history beginning with Ebenezer Howard. New Towns defined: a national policy of planned and simultaneous locating of people and employment in contemporary cities of planned size, where they may live convenient to work and to open spaces and to cultural elements, with highways scaled essentially to the needs of inter-contact but not to the uneconomical and absurd peak load severity and scale necessitated by excessively concentrated employment and excessively concentrated recreation. Balance of jobs and workers in varied occupations; balance of open space and development; balance of economic, social and occupational groups. The next significant step in this environmental analysis and clarification is the Radburn Idea, the traffic-free super-block, the residential cluster and the quiet internal park.

As a planner, I always come back to the idea of

Zadkine's sculpture in the square at Rotterdam sublimates Rotterdam's ordeal and destruction to its undying strength and will to live. It might symbolize, too, the total life-and-death struggle of the 20th-century city: the forces of destruction less obvious and less poignant but fully as lethal; the life-giving forces of creative re-conception and construction fully as powerful if there is a will to unleash them

Henk Jonker © Marlikam, courtesy Netherlands Information Service

public ownership of land not only in the town but in surrounding areas of verdant land to avert the honky-tonk fringes and the slums beyond, which have poisoned all our existing cities. These would be reserved for agriculture, forests, recreation, nature-mingling. Also, by public ownership, land value increments will inure to the benefit of the community. I note, too, the inexorable pressure on the private owner against holding land undeveloped, in the form of accumulating taxes and interest. I note the exhilarating illustrations of this freedom from land-tension, from inexorable fringe land spoilation: e.g., Vallingby, Tapiola.

Finally, the regional constellation or galaxy, satisfying the physical, social, economic, ecological and spiritual requirements. Involved are these aspects:

The rational articulated development of all metropolitan regions as we have just outlined it.

The conscious and energetic promotion and development of alternatives to the geometrically increasing size of the very large metropolitan areas. Examples of such alternatives: the Albany-Troy-Schenectady triangle in New York State; the Durham-Raleigh-Chapel Hill area in North Carolina. All the advantages of Metropolis can be made available, without the uneconomical, unecological giantism of the New York region, the Chicago region, etc. On another plane of alternative are the area development programs, and particularly such as that of the region of Apalachia, which may be just at the beginning of some massive planning-development attention: or, may be just a piddling pretense.

In all these elements, there are national and state policy implications, as well as desperately intimate and painful local decisions and facings up. A drastic and searching policy debate will be required, and tough policy decisions will need to be made, to create an adequate and farsighted program, and to convert it into action.

The Human Need for Beauty

The last article in the series will deal with the role of design in infusing beauty and fitness at each scale. Planning-development, however well and boldly and thoroughly conceived intellectually, sociologically and economically, can reach its full flowering in spiritual, psychological and social effect on people only if it finds expression in harmonious and inspiring design and space creation and inter-relations. Experience shows that high goals and good planning by no means automatically result in stimulating and satisfying design. Equally, fully satisfying design and space creation can flow only from a harmonious, thorough-going and humane plan that meets human and ecological needs in living, in working, in recreation and relaxation.

In the end, too, architecture or created physical environment cannot lie. Whatever our verbal proclamations or self-assurances, the highest creative skills are still devoted to those elements which really represent the power and intent of the time. We must be sure that if democracy is visceral and not just verbal, those skills actively embrace daily life and the institutions of the people, as well as monuments to the powerful, whether they are kings or business men or art patrons.

Toward Excellence Decentralized

In our cities we are used to centralization of "architecture"; on our Fifth Avenues, in our civic or cultural centers, in monumental skyscrapers. But we must produce uplifting architecture in people's daily lives. We must have a "decentralization of excellence"—in daily installments, with neighborhood foci. Cities, and civilization, cannot afford to condone ugliness or dullness, whether by neglect, or by intent, or in support of moral Puritanism and the economic "minimum standard."

Our architecture as of now is typically project architecture, or single-building architecture, more concerned with facades and masses than with the quality of space defined and surrounded, and of the ambient space; less concerned with community architecture and community creation than with the single glamorous building or building-group; less concerned with daily life and reaction than with the "public image" or monument of huge concerns. What we must create runs all the way from the daily environment, the daily incident, close at hand, to the noblest regional complex. This does not mean that we want a great-scaled Washington Monument in the backyard or even in the community center, for the architectural expression must be hierarchical, as it were, in scale and proportion. (Nor does it mean that toilet paper must be styled by industrial designers.)

What it does mean is that each level of community must not only meet the functional requirements of open green and developed space, but must find its expression in living design, that it must be deemed worthy of care and attention and talent, that it must result from the same absorption or understanding of the social and physical factors as the largest complex of the regional scale. Thus, the "interstitial areas" between projects or centers or major foci have no longer to be left-overs, or just areas where clean-up, paint-up drives flourish and wane. These worthy moral impulses and exhortations are not enough. More inspiring elements are needed. We require, let us repeat, the decentralization of excellence, day-to-day contact with excellence, first-rateness, to be inspired by and rally 'round. This must be the theater of serenity and stimulation, of drama and repose, of community life and of private life, the locus of subfoci and self-identification, and each citizen must identify with it, must be involved in its creation and support. In short, the TEXTURE of the city-region has got to rise to the quality of the plan: from the small playground to the great dam.

While by no means general enough, there are already some fine things to show at many levels: from the small exciting playgrounds of Philadelphia and elsewhere to the TVA dams and power houses. In contrast to this we have also: boredom, seas of parking in housing developments and around shopping centers, etc. Also to be noted as typical and alarming: the degeneration of regional architecture in the highway system, from the original handsome and elegant clover leaves to the present spaghetti and mix-masters; corresponding to the actuality of orignal purity and brilliant simplification-systematization of traffic flow separation and clarification, and now to the present serpentine absurdity of unbridled complication. We have got to retrace and gain the grand simplicity of the regional scale. We must explore newly. We can actually transcend what has gone before. But we cannot do it on either the small scale or the large scale if we are trying to give architectural shape to what is essentially anarchy and undiscipline.

These problems of great depth and immensity face us in attempting to create conditions for the good life at this juncture in the 20th century:

First, can we, in the welter of international and national problems and urgencies, convince and enlist enough people with enough fire to place the question of the character of our life environment high enough in their thinking-and-action priorities?

Second, if this is accomplished, can there be injected the moral element to the extent that the vision of personal-civic-over-all excellence can overcome inertia, the habitual comfort of the fairly second-rate?

And finally, having, we hope, attained these intellectual and moral transformations, we must further make a supreme effort to put these creative forces effectively into the field *in time*, before accelerating current trends and galloping disruptions have excessively or irrevocably changed the dimensions and nature of the multiple problems.

Joseph W. Molitor photos

EPISCOPAL CHURCH BY BELLUSCHI

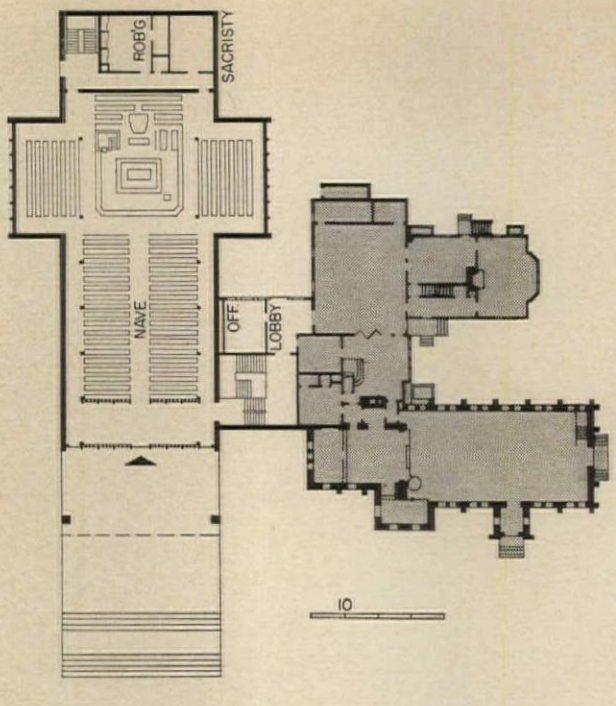
Notable addition to a rural Gothic church in New England demonstrates the importance of simplicity rather than pretension in emphasizing the quality of space

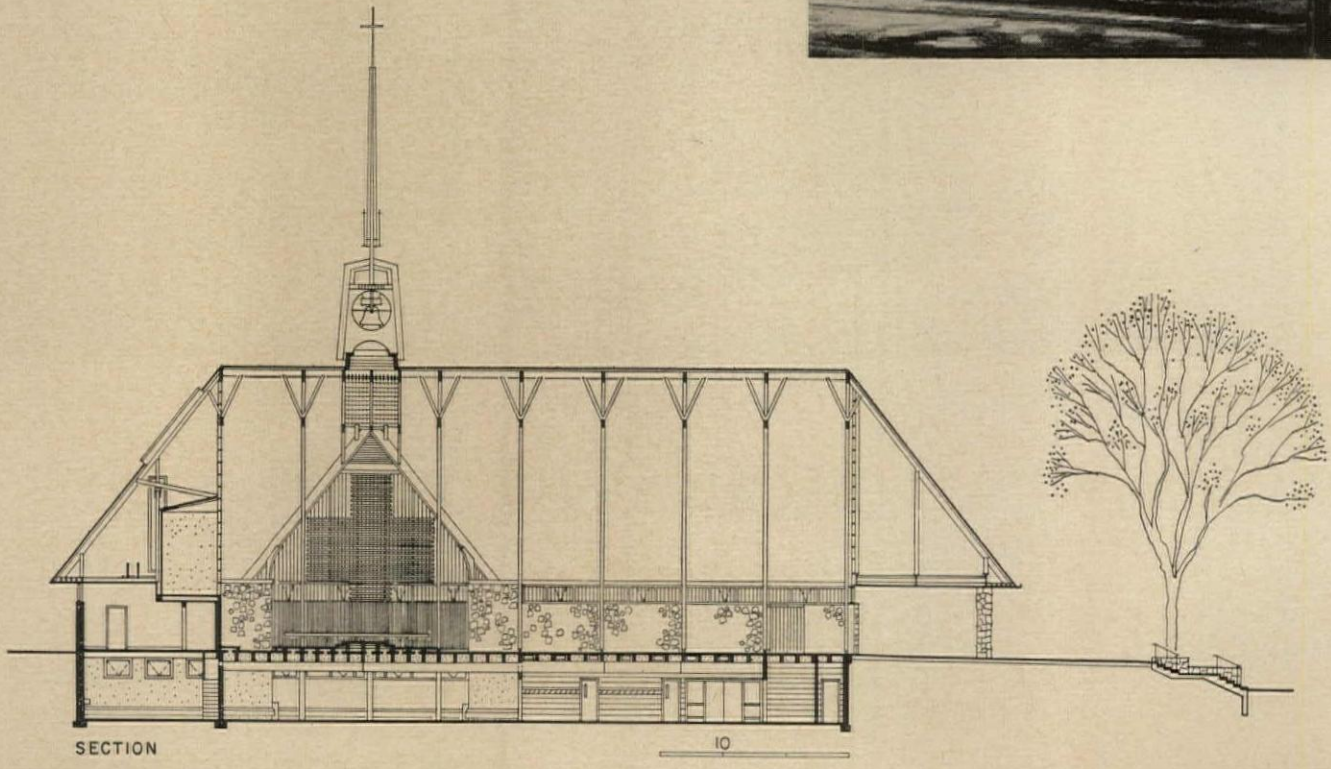
This church successfully meets the challenge of adding a new and larger church to an existing one without overwhelming it. It further demonstrates in convincing fashion that elegant simplicity emphasizes the quality of interior space more effectively than architectural pretension.

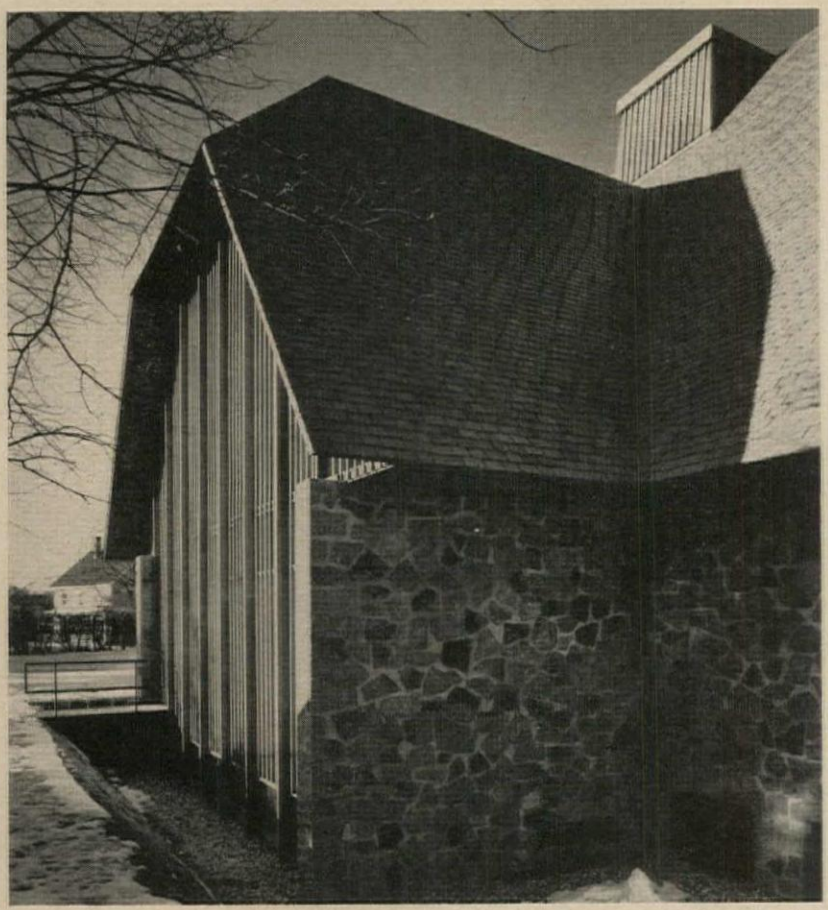
The old church was rural Gothic in style, of stone with a slate roof, and located on a restricted plot. The new church would be built on higher ground, a complicating factor. Belluschi's design left the old church undisturbed, called for the new one as a separated element; joined the two with a link containing stairs connecting the two levels. The nave of the old church was preserved for use as a chapel.

The new church is of the same stone as the old, has a sloped roof of the same slate, and is in all its parts skillfully brought into scale with the old. As the plan explains, the chancel and seating are arranged in a modified "in the round" pattern, the transepts furnishing lateral spread. Such a scheme gives the congregation a strong sense of participation and follows the newer Episcopalian liturgical thinking.

The stained glass window above and to the rear of the chancel assumes added drama in the moving simplicity of the interior (refer to cover photograph). Pietro Belluschi says: "The solution, as forced by thought and circumstances, is extremely simple, which pleases us very much. We find the idea of 'holy emptiness' a satisfying one; it is a statement of the importance of humility and of emphasizing the qualities of space over the pretensions of form. It acknowledges the poetry of simple things when they are conceived in love rather than in arrogance."







Trinity Episcopal Church
Concord, Massachusetts

ASSOCIATED ARCHITECTS:
Pietro Belluschi, Anderson, Beckwith and Haible

STRUCTURAL ENGINEERS:
Souza and True

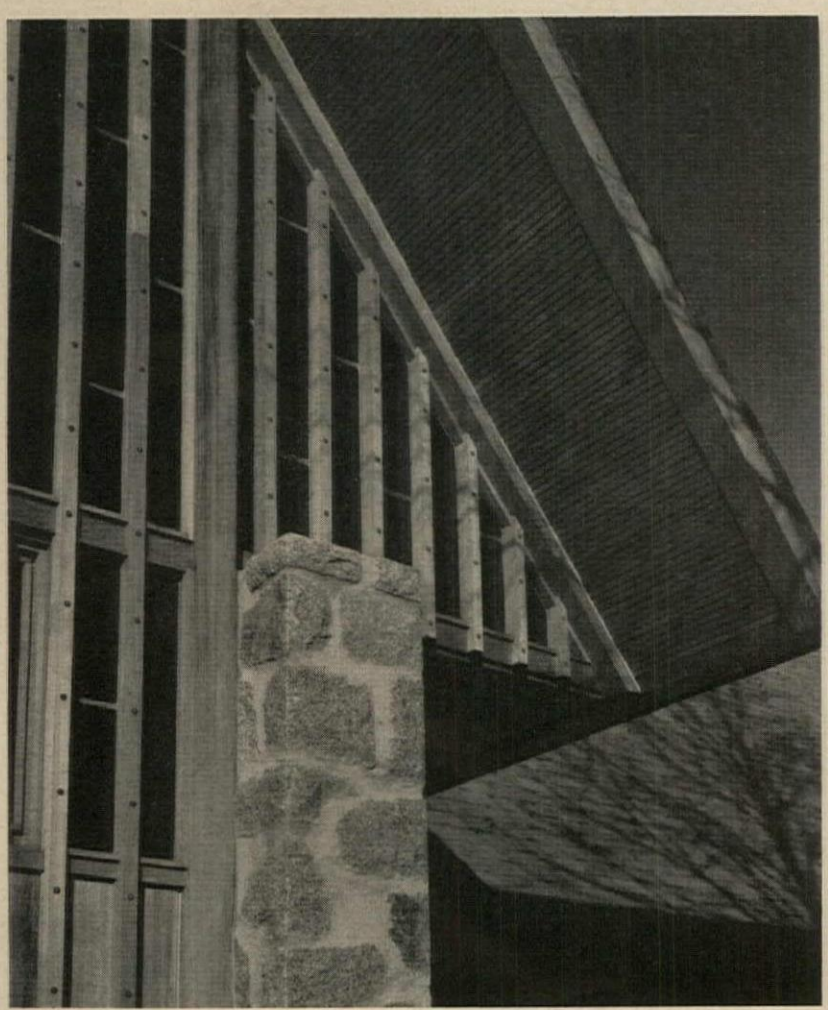
MECHANICAL ENGINEERS:
Nickel-Borek and Associates

ELECTRICAL ENGINEER:
Edwin P. Mahard

GENERAL CONTRACTOR:
Rich Construction Company

ORGAN:
Aeolian-Skinner Organ Company

STAINED GLASS:
Designed by Gyorgy Kepes



These photographs testify to the care and skill with which stone, wood, glass, and slate were combined and detailed. The transept windows were designed by Pietro Belluschi; the window above the chancel and white Carrara altar by Gyorgy Kepes. The Kepes window is protected from the weather by a box skylight high in the roof *(bottom photo, page 147)*, which provides also a space in which nighttime illumination for the window is placed. The building foundation and the floor under the carpeting are of concrete; the walls are stone inside and out; the doors and sash are of wood. The 400-seat church is heated by forced warm air, and sprinklered for fire safety. The metal spire *(see rendering, page 146)* will be built in the future, when funds for it are available

R. Wenkam photos

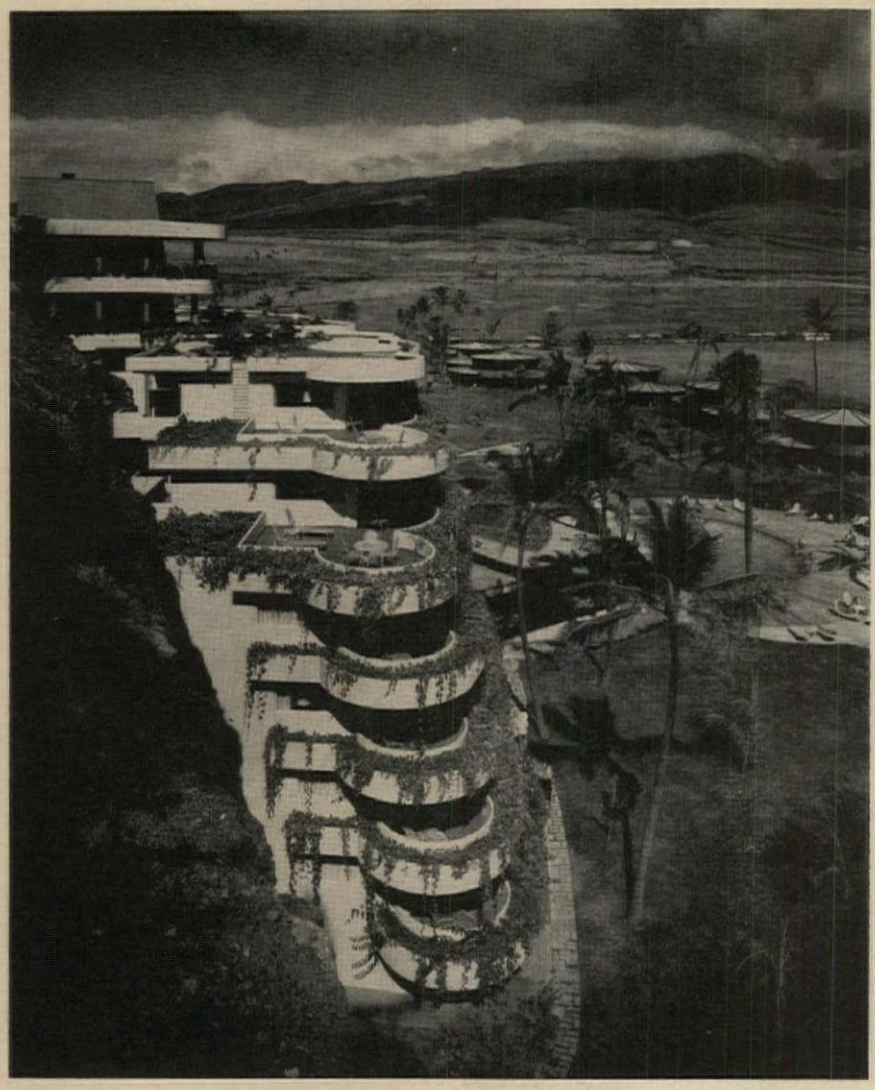
HANGING GARDENS ON THE ROCKS IN HAWAII

Luxury hotel by George Wimberly grows out of the black rocks of Maui at unspoiled Kaanapali Beach

This exotic hotel at Kaanapali Beach—gay and playful—makes the most of a magnificent site by becoming a part of it. The escalloped terraces of concrete that lie outside the eight levels of guest rooms climb dramatically up the sheer face of the black lava rock, and follow also its horizontal configuration. The design brings together the soft, rounded forms of the Maui Mountains and the jagged lines of the cliff. Guest rooms are reached by elevators that descend from the principal public rooms on top of the rock. The hotel is approached by a newly-made road that climbs the gentle slope from the mainland to the summit. At beach level, a group of 13 cottages and a swimming pool complete the development.

Here is resort architecture of distinction: spectacular and romantic, yet carried out with taste and a proper degree of restraint. The romantic tropical setting seems to ask for romantic architecture—harsh rectilinearity could hardly provide the carefree atmosphere the architects have achieved.

The hotel lies south and east of Honolulu—30 min-



Sheraton Maui Hotel
Kaanapali, Maui, Hawaii

ARCHITECTS:
Wimberly, Whisenand, Allison & Tong

LANDSCAPE ARCHITECT:
George Walters

PROJECT ENGINEER:
Walter Bernhardt

MECHANICAL ENGINEERS:
Robert Hamilton & Frederick H. Kohloss

ELECTRICAL ENGINEER:
Douglas MacMahon

ART COORDINATOR:
Edward Malcolm Brownlee

INTERIORS:
Mrs. Mary Kennedy

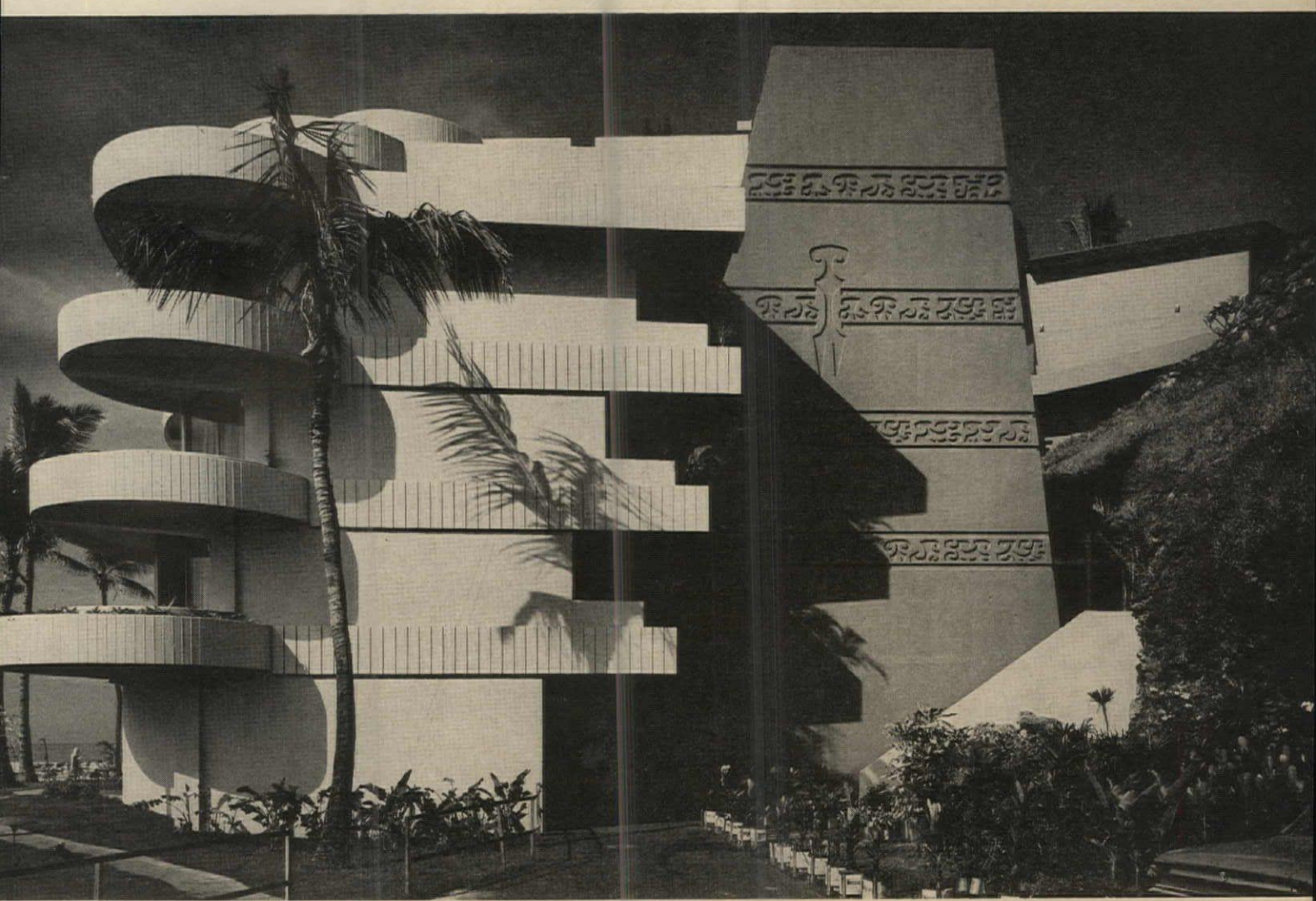
CONTRACTOR:
Swinerton, Walberg, Westgate & Tait

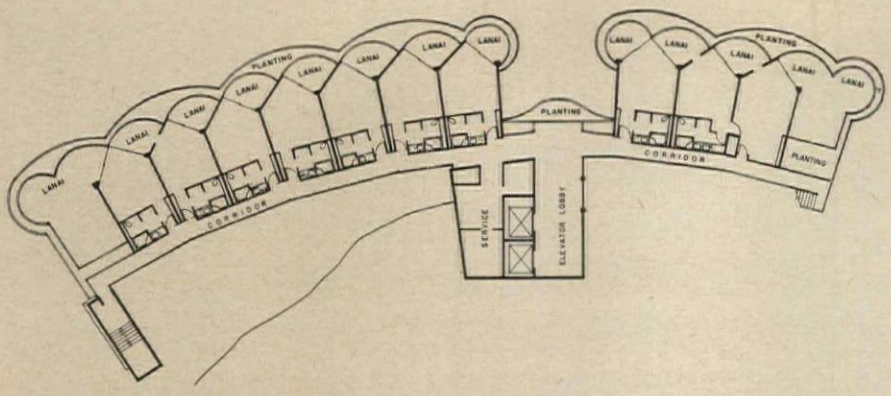
utes away by air—and is on Maui, considered the most beautiful of the Hawaiian Islands. Its wide Kaanapali Beach is three miles long and split in the middle by a large outcropping of black lava rock, upon which the hotel is built. The entrance road leads to the summit and to the lobby, dining room, bar and hilltop terrace, which offers views of the nearby islands of Molokai and Lanai. The elevators down to the guest rooms and beach are located in a cut in the rock; the balcony corridors at each level are built free of the cliff face with tropical planting set between. Each of the 72 rooms in the eight-story tower is set back sufficiently so that tropical planting can terminate its terrace and provide hanging greenery to soften the transition from building to cliff at each side. The concrete fire tower (*bottom right*), is 50 feet high and is built between the cliff and the hotel structure proper. It is decorated by incised Polynesian motifs as adapted by Edward Brownlee.

The 13 Polynesian cottages are air conditioned; contain four units at ground level and two on the upper floor. They are constructed of wood; the outer walls finished with rough redwood boards and battens, the inside with gypsum board. The circular roofs are surfaced with off-white coral chips. A "parasol rib" pattern of redwood members is placed over the roof surface. A dining pavilion and cocktail bar are located in the cottage area, which is flanked by the tiled crescent of the swimming pool on one side, and by the handsome golf course designed by Robert Trent Jones on the other.

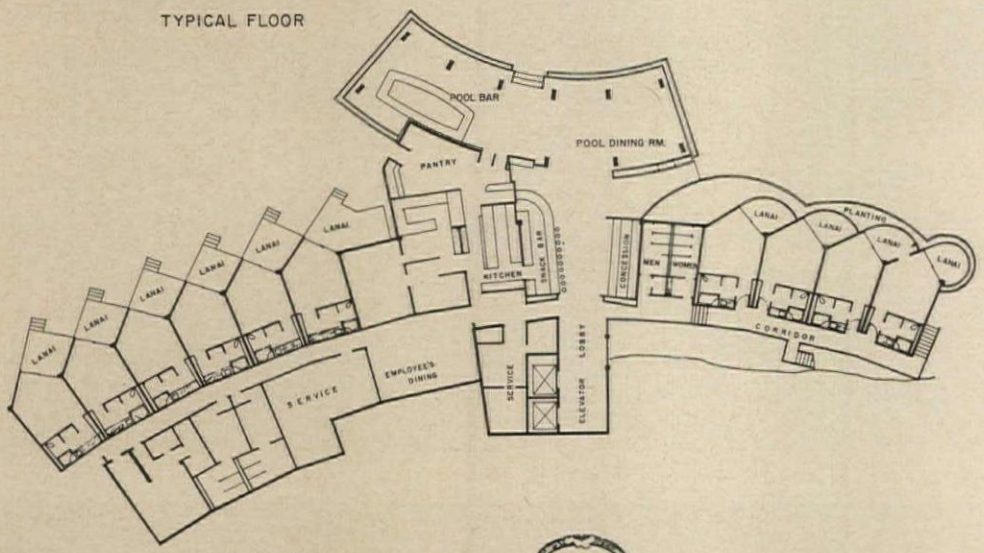
Air conditioning is provided by a central chilled water system which is piped to cottages as well as the main building. Fan coil units for each guest room are located in the hung ceiling space over the bath-dressing room. Hot water is provided by an oil-fired central plant for the main building and by gas-fired heaters in each cottage.

A second unit, providing 60 additional guest units, was recently finished. This unit—called the Crescent—is located on the other side of the rock, but uses the same entrance and lobby.

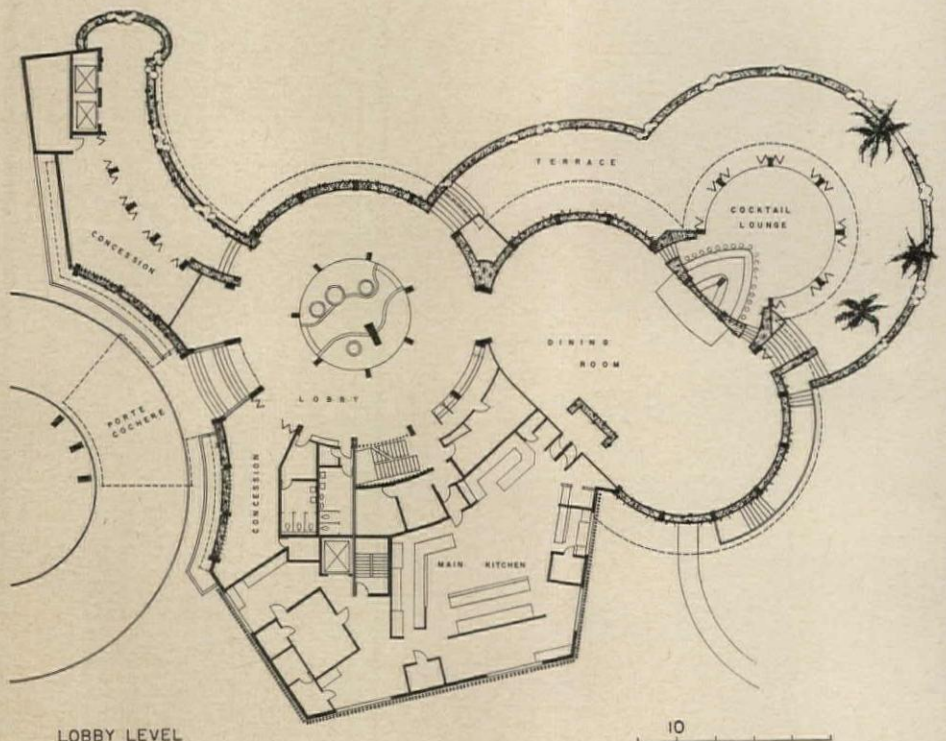




TYPICAL FLOOR

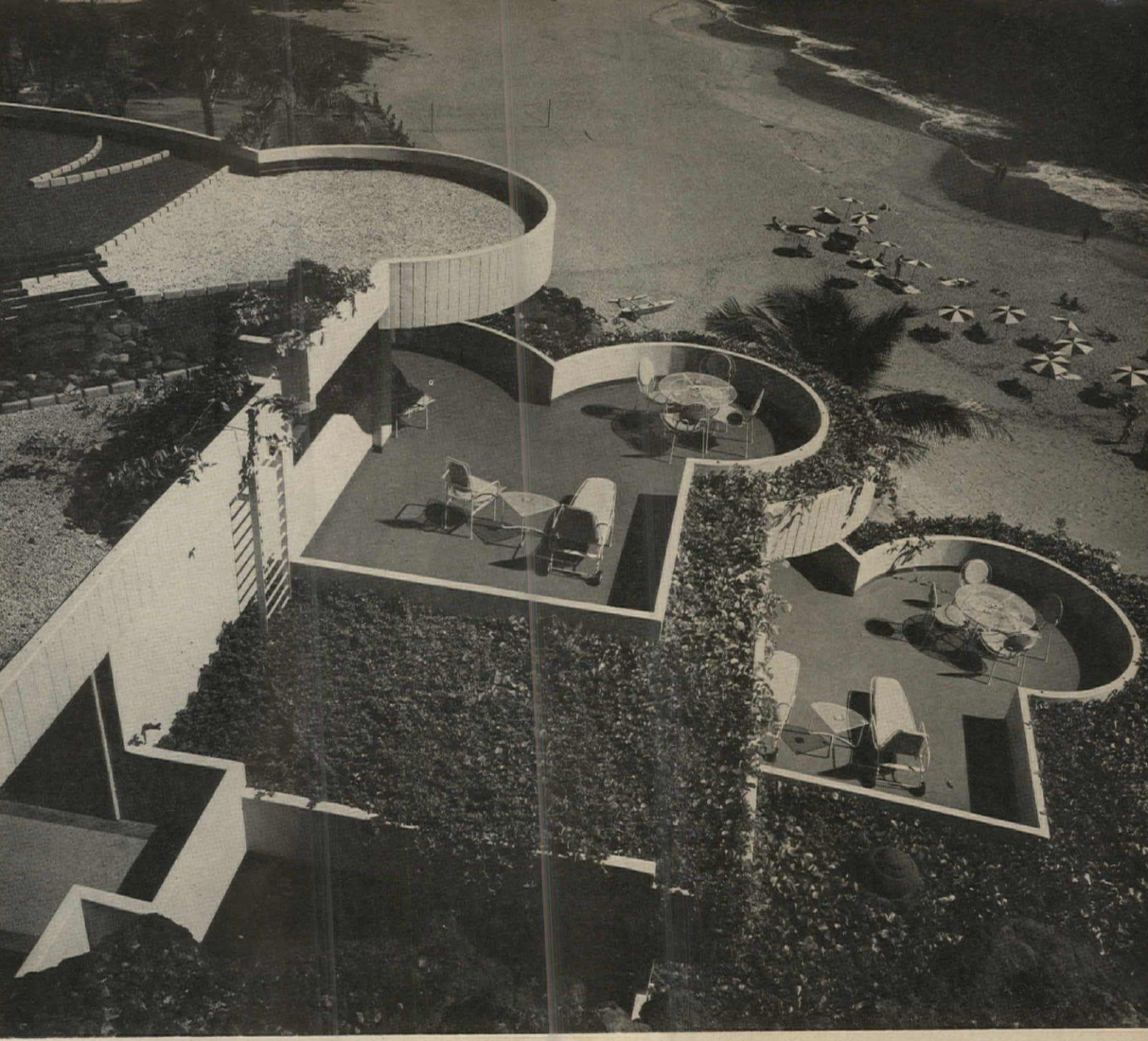


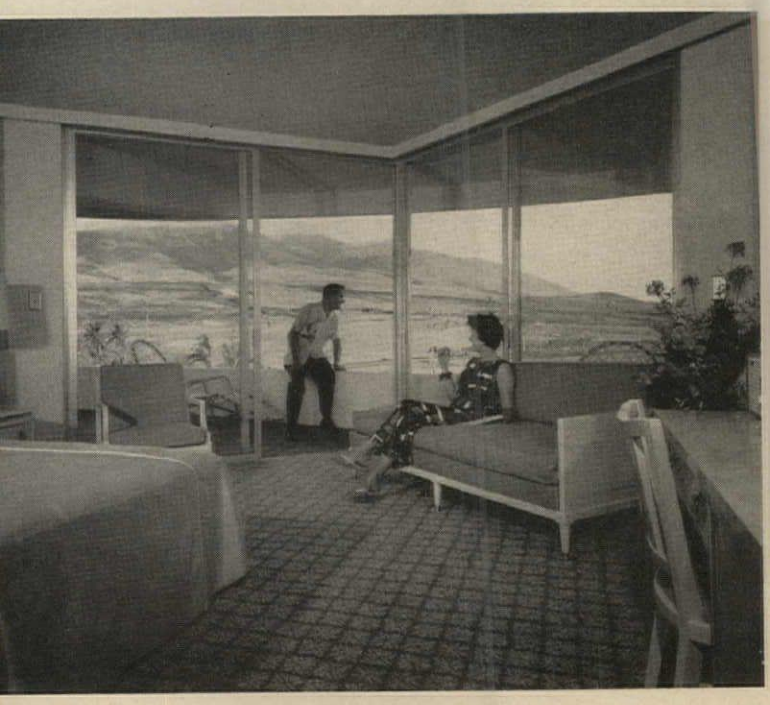
GROUND FLOOR



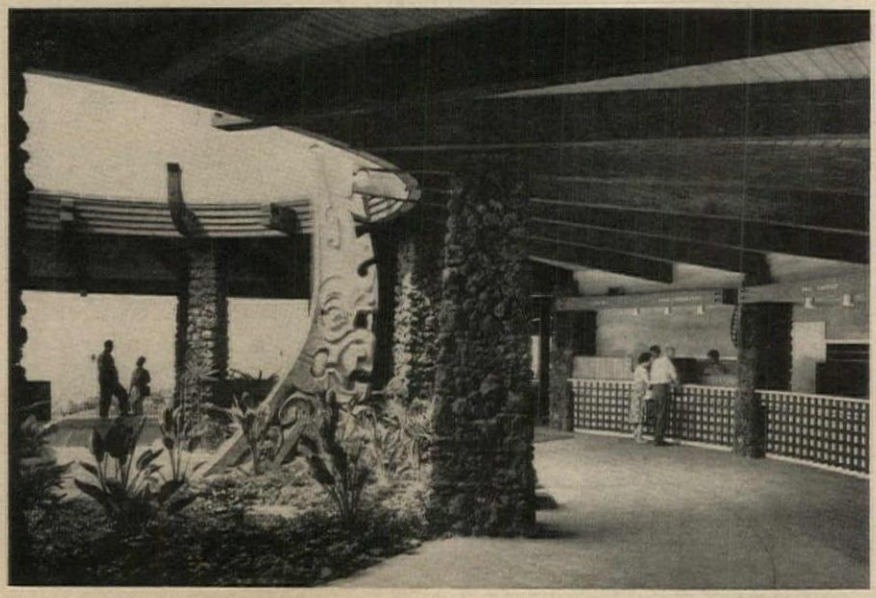
LOBBY LEVEL

The main building is an eight-story reinforced concrete bearing wall structure. The terrace railings were given texture and a vertical pattern by means of rough form boarding with slight V-joints. Interior walls are of concrete, 6 inches thick, with a plaster finish. The floors are concrete slabs, with a thin coat of acoustical plaster sprayed on the soffit. The roof is finished as a Japanese garden by using three types of roofing gravel in an arranged pattern. These consist of off-white coral chips, red volcanic cinders and blue-gray crushed volcanic basalt. The ventilating exhaust fans on the roof are concealed by masses of volcanic rock and tropical plants in redwood tubs. The guest rooms have carpeted floors, and painted or papered walls. Bathrooms are finished in ceramic tile and vinyl wallcoverings, and have a glass shower enclosure

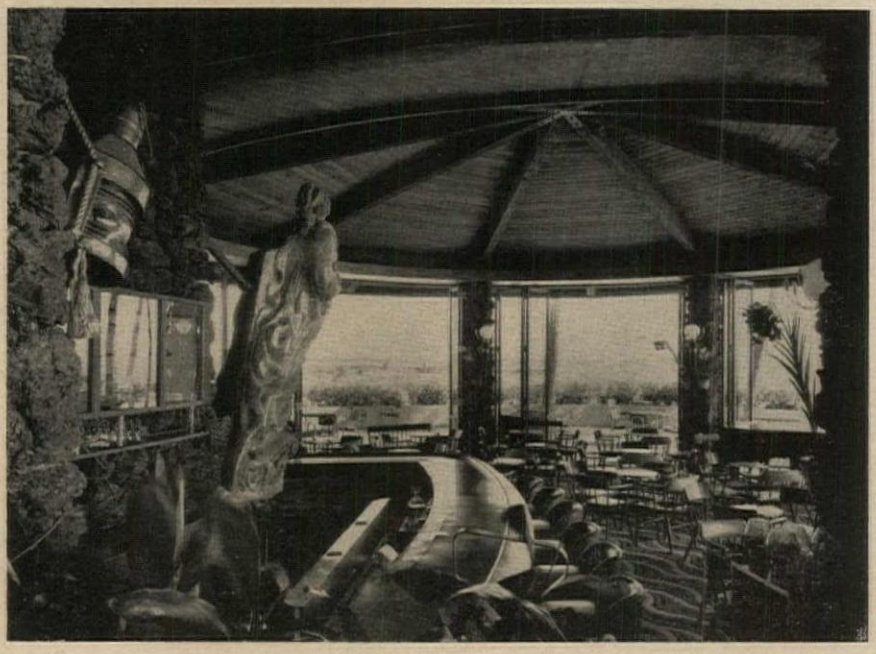




The decorative highlight of the upper level lobby is a pool and fountain in cast stone by sculptor Edward Malcolm Brownlee, depicting a legendary Hawaiian war canoe rising from the water



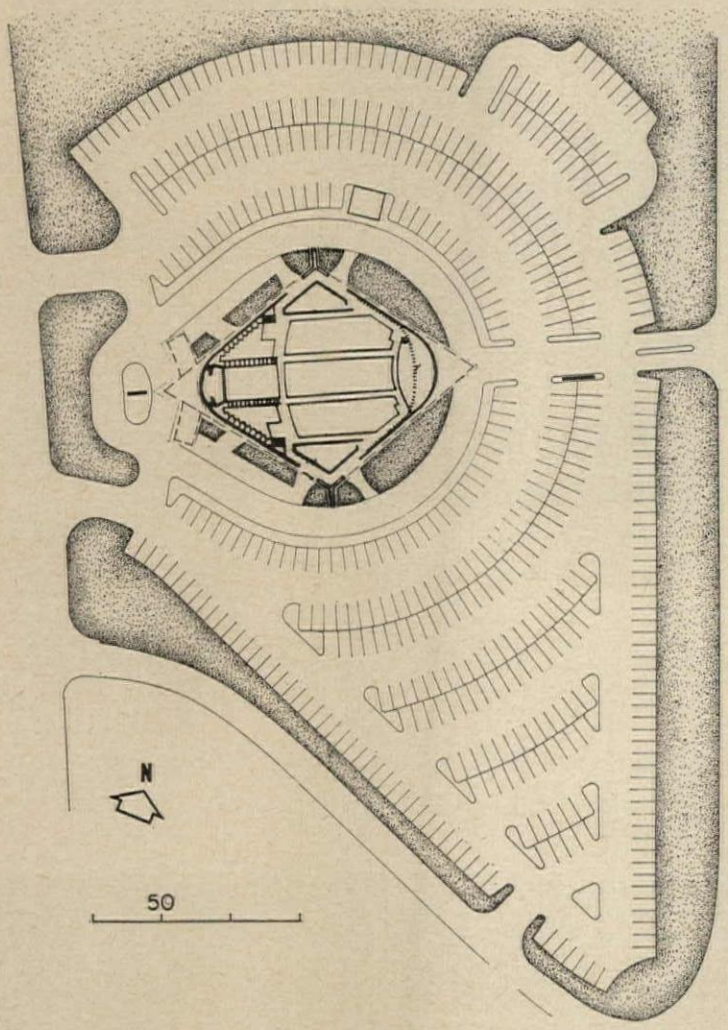
The circular lobby centers on the pool and is open to the sky; the reception desk, shops, and transportation counter are lined around its solid portion. The roof is of heavy timber construction, the columns are of lava rock, the floor is of unpolished gold and white terrazzo



The bar in the cocktail lounge features a replica of a figurehead from an old whaling vessel—appropriate enough since Lahaina, on Maui, was the winter base of the New England whaling fleet in the 19th century

SADDLE SHELL ROOF FOR THEATER

Perkins & Will combine natural and colored concrete, topped by a soaring roof, for a suburban movie house north of Chicago

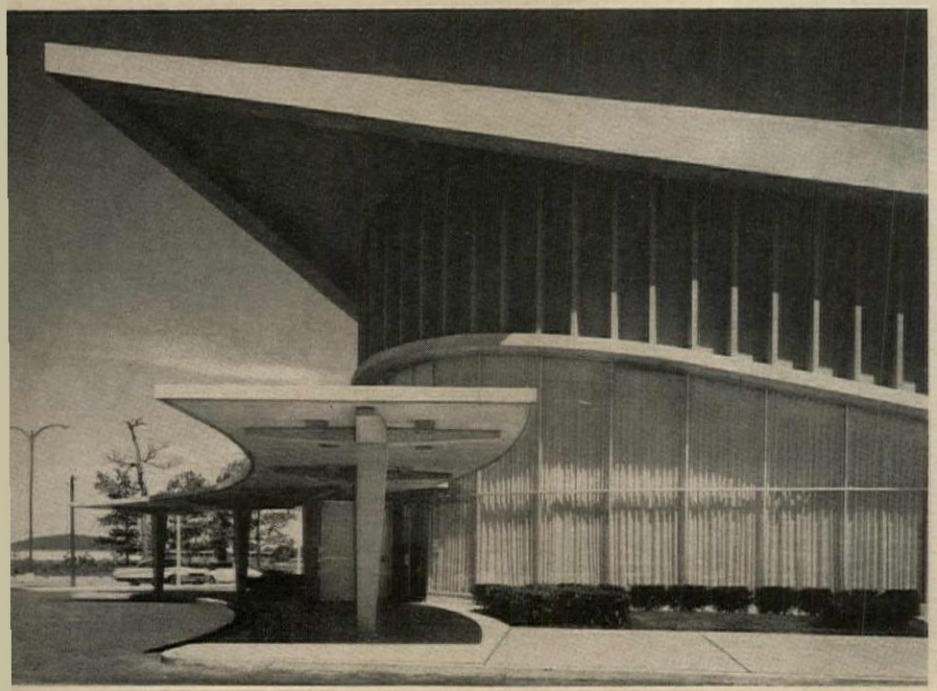


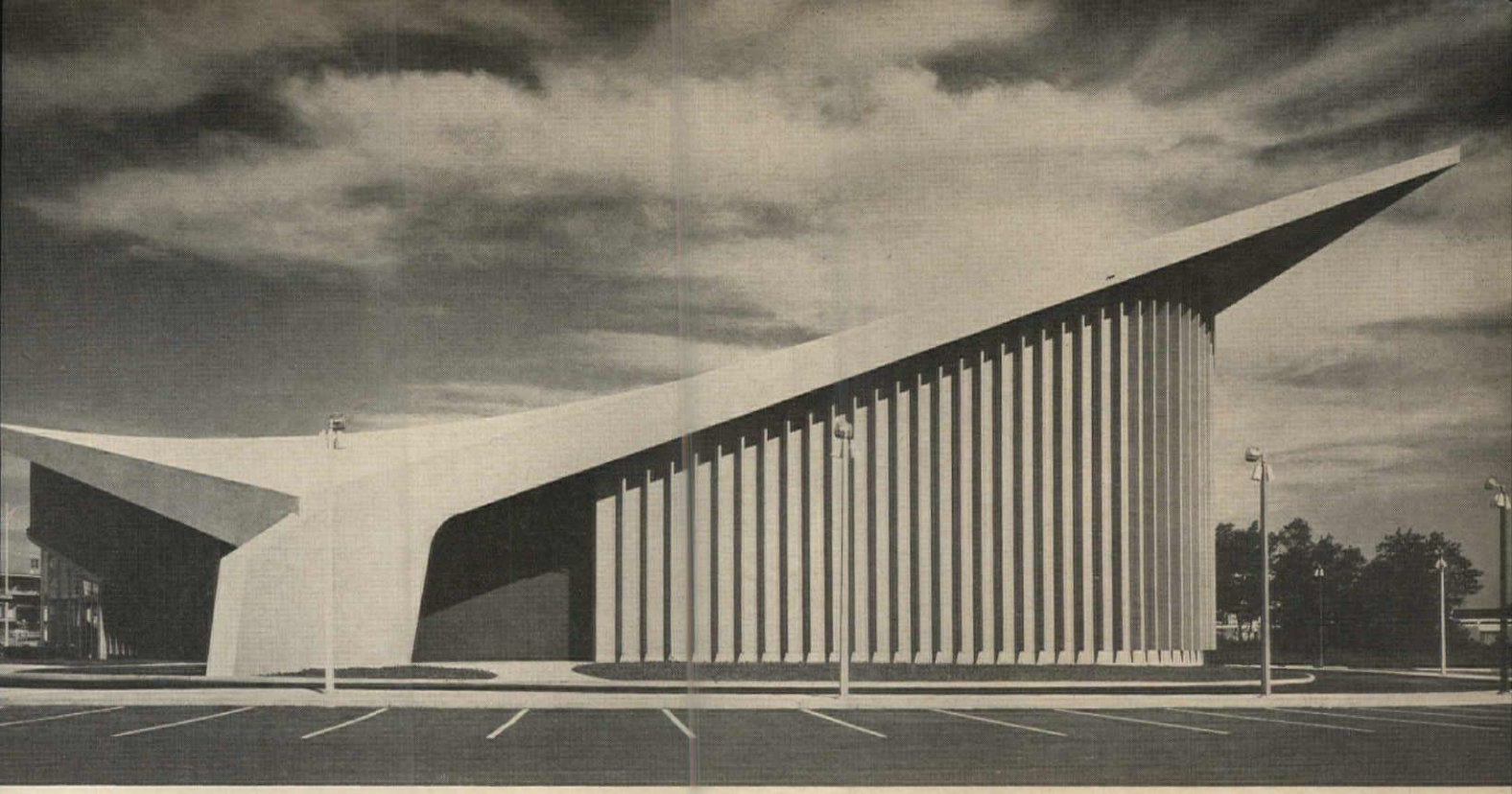
The Edens Theater, Northbrook, Illinois
ARCHITECTS: *The Perkins & Will Partnership*
ENGINEERS: *The Engineers Collaborative*
INTERIOR DESIGN: *I.S.D., Incorporated*
GENERAL CONTRACTOR: *Chell & Anderson*

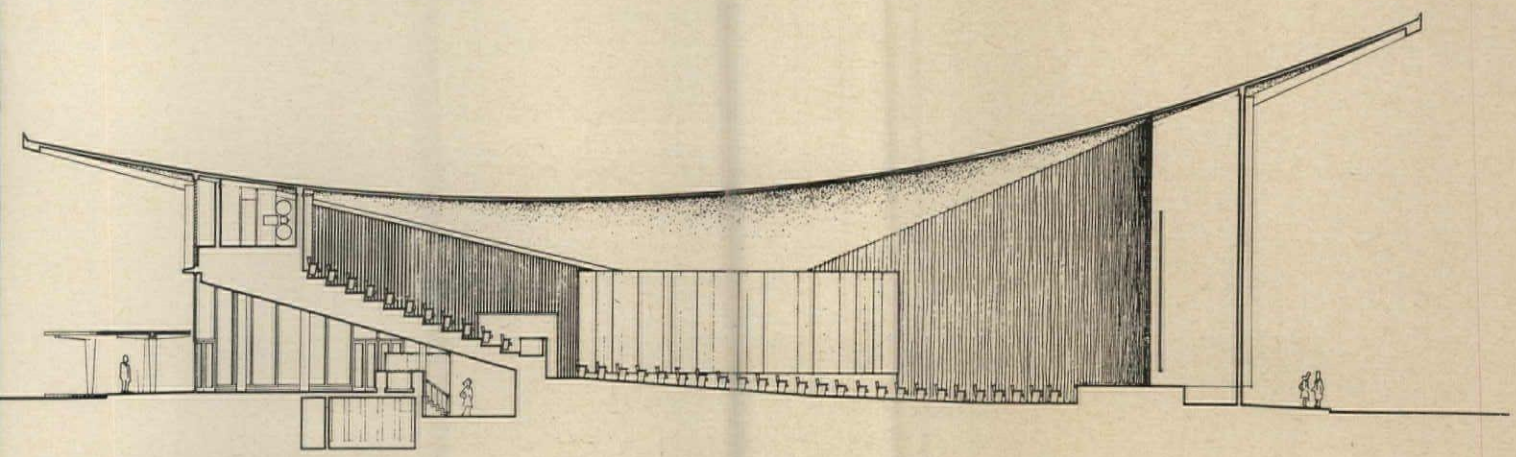
A soaring concrete roof with the characteristic warped surfaces of a saddle type hyperbolic paraboloid makes a peculiarly appropriate enclosure for this theater near Chicago. The plan (*left*) and the section (*right*) show how the areas and volumes work. The roof is the largest of its type in this country—160 by 220 feet in area—and is supported by two massive buttresses which are shaped to handle lateral thrust as well as vertical forces.

Color adds interest to the building: the precast vertical panels that enclose the stage and screen portion are painted a soft tan; the recessed areas back of the buttresses are charcoal brown. These tones contrast effectively with the light tone of the natural concrete roof, the fascia of which varies in height from 22 to 58 inches.

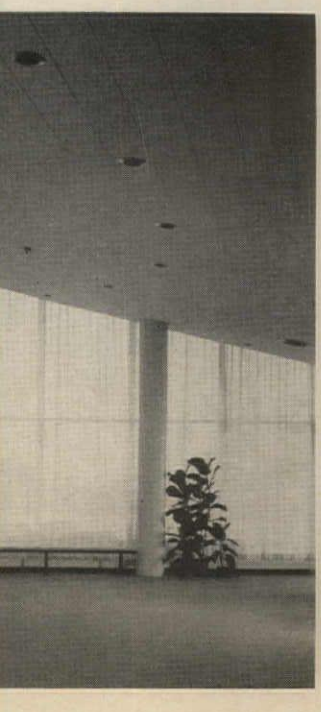
The air-conditioned building is served by parking arranged in a series of concentric rings; an interesting departure from the more familiar rectilinearity.

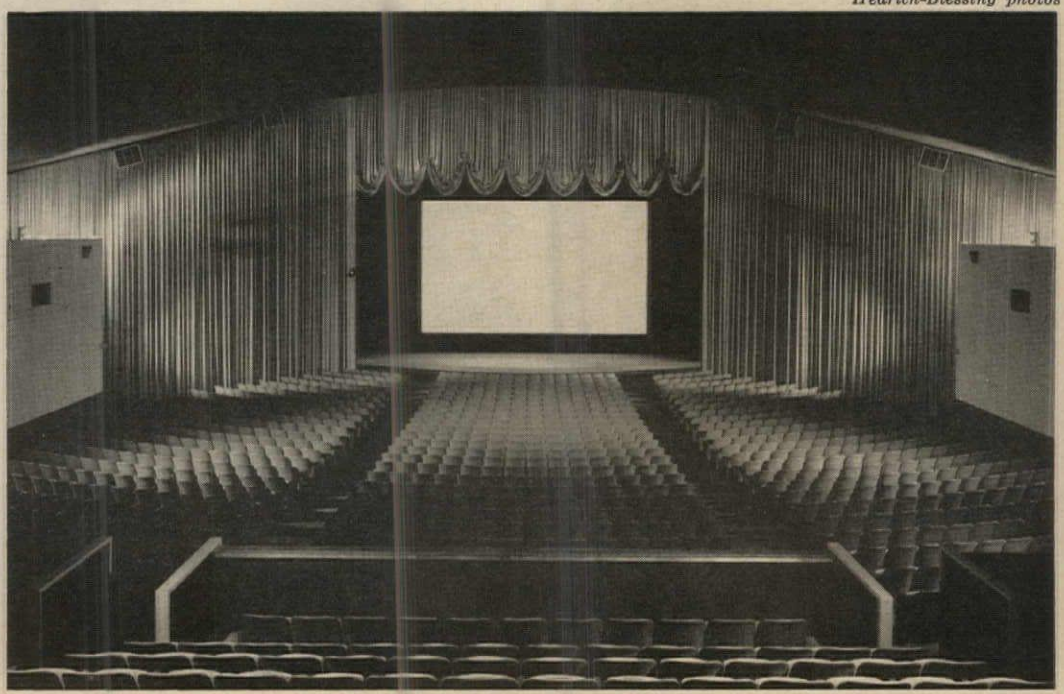






Hedrich-Blessing photos





The interiors, designed by the interior space design division of Perkins & Will, echo the simplicity of the exterior. Interior color is predominantly gold, enlivened by small areas of charcoal brown and off-white. The wood paneling is natural teak; the ceiling natural concrete

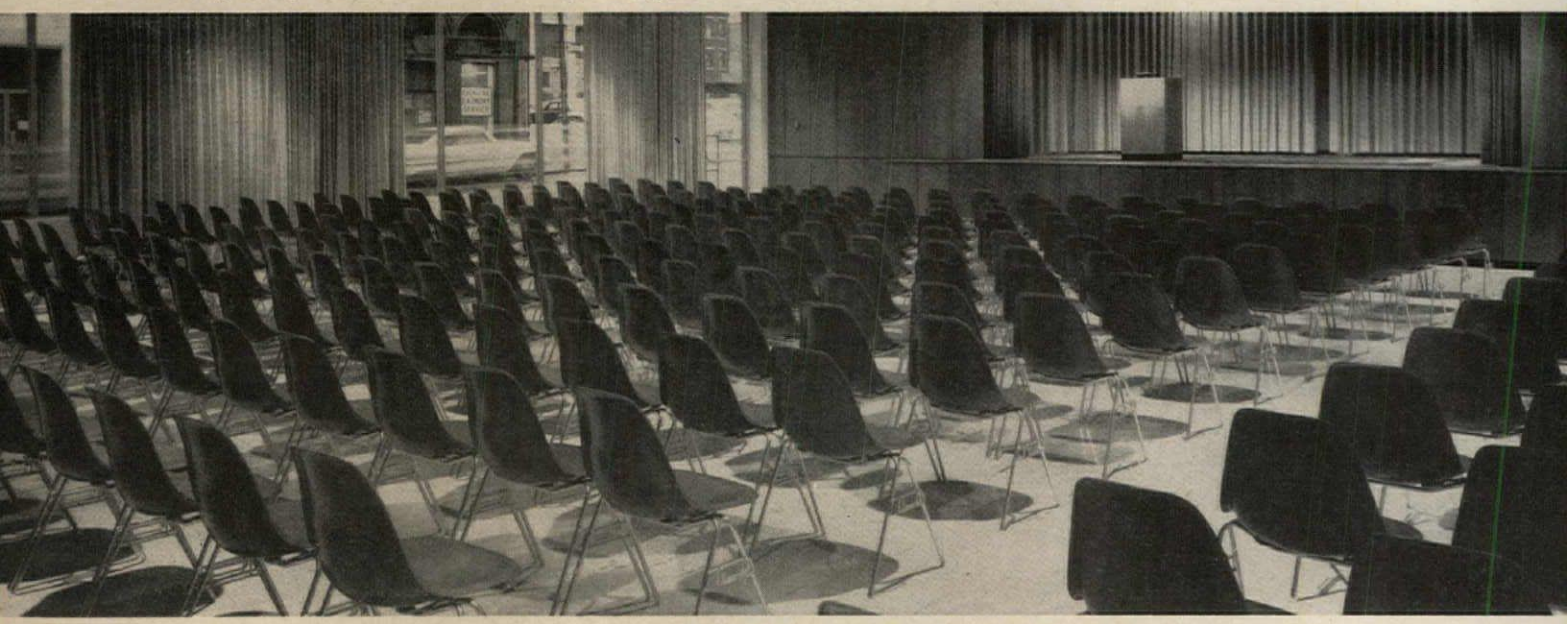
ADMINISTRATIVE OFFICES AND RECREATION CENTER FOR YWCA

The members and participants in the Young Women's Christian Association are not all young, do not have to be women, and are not necessarily Christian. The YWCA has for many years been a complex organization which offers diverse facilities to an increasing segment of the community and in which members of the community play many roles. The new central services building for the Pittsburgh YWCA has been skillfully designed to accommodate typically extensive "Y" requirements and should be studied by those architects who must program and solve community centers of all kinds.

The Pittsburgh "Y" provides office space for the executive staff which administers eight centers, two local campus branches, and programs in schools, churches and community centers throughout Allegheny County. As a downtown facility, easily accessible to the surrounding area, it was considered a good location for a gymnasium, swimming pool, auditorium and public cafeteria; and classroom space has been provided to accommodate a schedule of approximately 48 adult education classes. Because there is less demand for permanent housing for young women than in an earlier period, residence facilities were not provided.

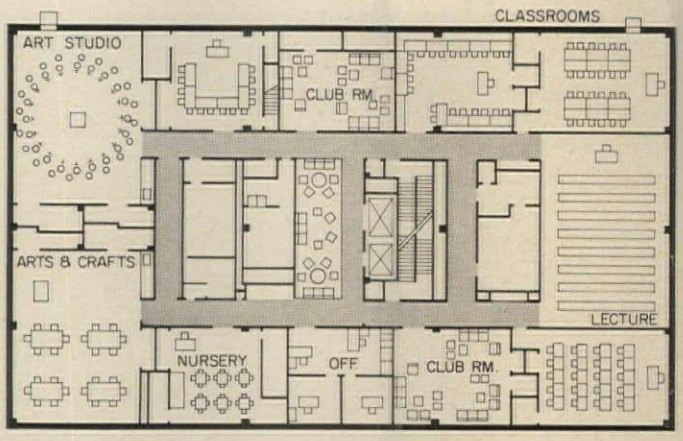
The gym and pool are below ground, the auditorium and cafeteria are on the ground floor and visible from the street, and all other functions are concealed behind windowless walls. The architects felt that the surrounding views were not good and that the absence of windows would decrease air-conditioning and maintenance costs. The total cost of the structure including furnishings and fees, but not land, was $3,400,000.

Lounge is separated from auditorium by folding doors

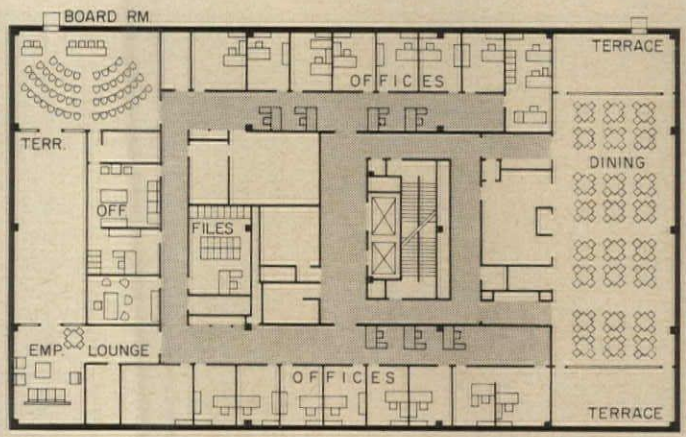


Removable seating makes auditorium adaptable for dances and exhibitions

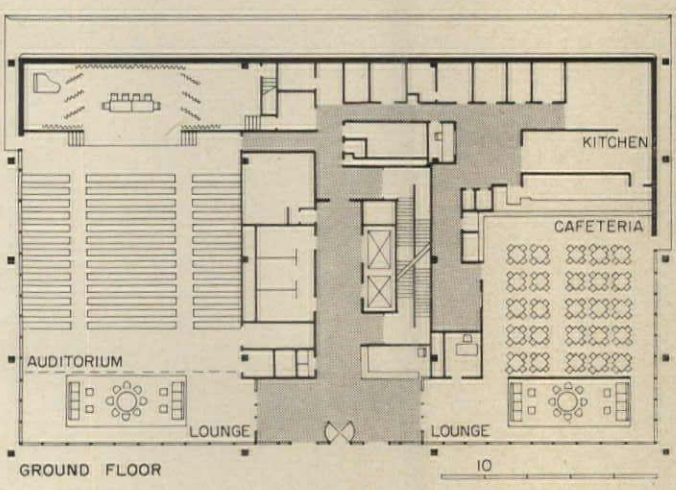
Young Women's Christian Association, Pittsburgh, Pennsylvania
ARCHITECTS: *Belluschi—Skidmore, Owings & Merrill*
William S. Brown, partner in charge
Harold J. Olson, project manager
Patricia W. Swan, project designer
Paul H. Baren, job captain
Allan N. Denenberg, interior designer
STRUCTURAL ENGINEERS: *Weiskopf & Pickworth*
MECHANICAL ENGINEERS: *Syska & Hennessy, Inc.*
GENERAL CONTRACTOR: *Dick Corporation*



SECOND FLOOR

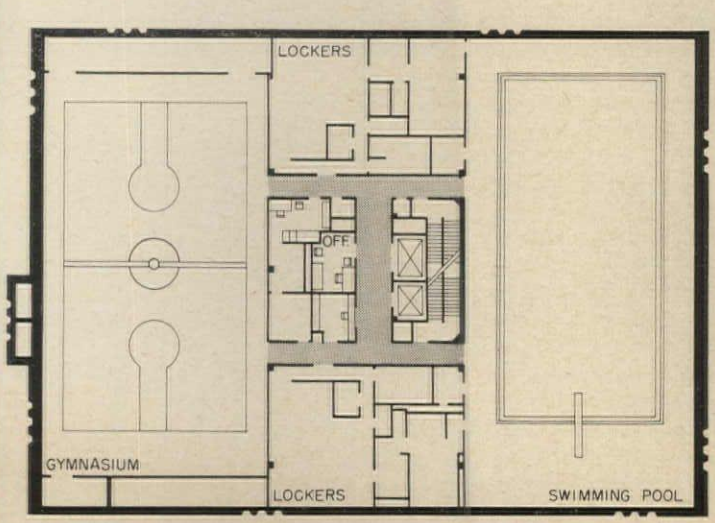


FOURTH FLOOR

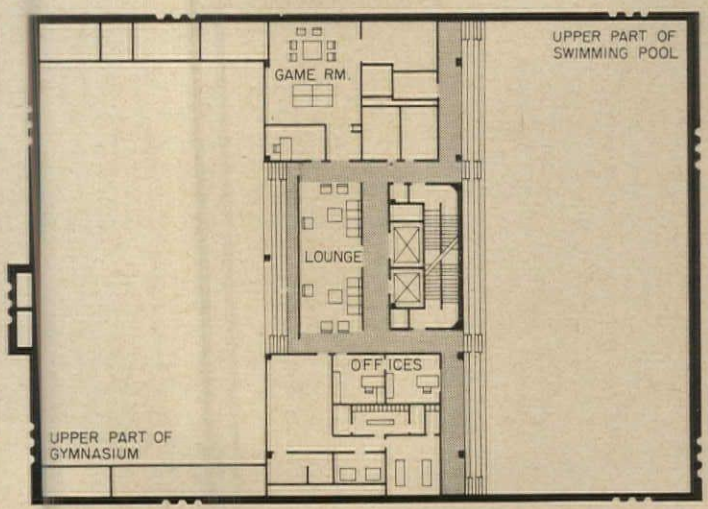


GROUND FLOOR

Health education level and mezzanine are below ground. Here are necessary locker and toilet facilities for a physical recreation program which enrolls approximately 430 people in 45 different classes for an eight week term. Offices for the physical education staff, a lounge, and spectator seating have been included on these floors. The ground floor cafeteria, located at the busiest street corner, is open to nonmembers and has become a popular lunch spot for workers in nearby office buildings. Exhibitions within the glass enclosed auditorium interest passers-by. The openness of the ground floor area attracts the public; the enclosed floors (*above*) afford quiet and privacy to staff and members attending meetings or classes. The third floor (not shown) is similar to the second. On the fourth floor the private dining room, the board room, the employes' lounge, and the president's and executive director's offices overlook enclosed terraces open to the sky. The steel frame building utilizes the entire site and is surrounded by streets on three sides



HEALTH EDUCATION LEVEL



MEZZANINE LEVEL

The decision of the board of the Pittsburgh YWCA to permit SOM to design all the interiors was made after the firm had been commissioned to design the building. The architects worked hard to sell the board on their concept of total design, and the executive director and several of the board members made a pilgrimage to Connecticut General Life Insurance Company near Hartford, and to other SOM buildings as well to see for themselves. In authorizing SOM to control the interiors, the YWCA spared itself the fruits of well-meaning volunteer interior decoration, but more than this, it achieved simple, handsome, inexpensive spaces which achieve their fine effect mainly through the use of color. The executive secretary's office (*above*) has white walls, a golden carpet and a bright red desk chair. The court beyond the window has white walls to reflect the light from the sky, a white gravel floor, and plants which are watered daily by board members. The nursery (*top opposite*) follows a Mondrian palette with entire walls in brilliant, almost primary colors set off by white. Selection of china, glass and silverware in the cafeteria and dining room was relinquished to the architects (*bottom opposite*)

The gymnasium is junior high school regulation size

The swimming pool is 75 by 35 feet

All photographs from World Architecture

Tholos at Delphi, c. 390 B.C.

MODERN HISTORY FOR MODERN ARCHITECTS

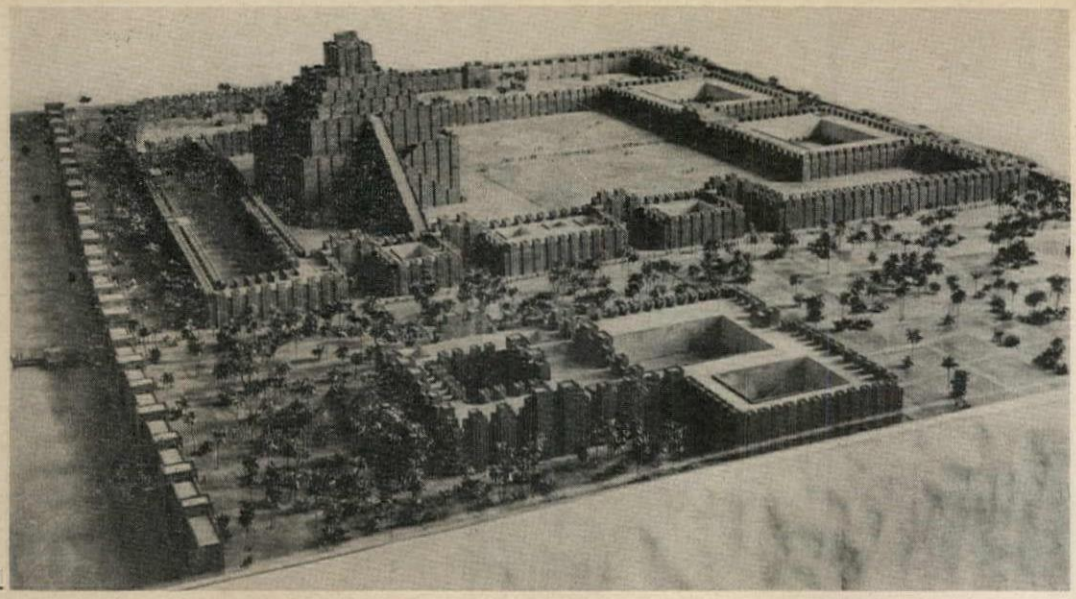
A review of World Architecture, a new McGraw-Hill book

By Jonathan Barnett

The establishment of modern architecture has already attained the status of an historical event, and the inevitable reaction has begun. Recent buildings have demonstrated the changing relationship between the architecture of today and its architectural past, and this changing relationship has in turn affected the latest writings of architectural historians. It is unlikely that a book such as "World Architecture" could have appeared even so short a time as 10 years ago. It may not look like a new departure, being simply a collection of extensively illustrated histories of architecture by a group of scholars each writing on his own specialty, but its publication is symptomatic of two important developments. One is the growth of an inclusive view of architecture that does not confine itself only to its modern or European aspects. The second is a tendency to redefine what is meant by modern architecture itself. John Jacobus, in his discussion of the subject, shows that he, in common with other historians like Vincent Scully, has come to distrust the generally accepted and familiar theories.

The public owes its understanding of modern architecture mainly to books that were, at the time they were written, radical and revolutionary statements. They asserted that the modern period had begun with the industrial revolution, and that it was no longer possible to treat the Orders, or the Gothic arch, as if they were a part of a living historical tradition. In order to make their point, these historians of modern architecture tended to concentrate on buildings that seemed to them to embody progressive tendencies; and to ignore, or even disparage, other buildings which they deemed retrograde. It was implied that architecture had begun to sicken at the end of the 18th century, and that only a few buildings re-

"World Architecture, an Illustrated History." Introduction by Henry-Russell Hitchcock; Ancient and Classical Architecture by Seton Lloyd; Chinese Architecture by Andrew Boyd; Japanese Architecture by Andrew Carden; Indian Architecture by Philip Rawson; Islamic Architecture by Philip Rawson; Medieval Architecture by David Talbot Rice; Renaissance Architecture by Norbert Lynton; Modern Architecture by John Jacobus Jr. Glossary of Architectural Terms. Extensively Illustrated. McGraw-Hill Book Company, Inc., New York, 1963. $17.50



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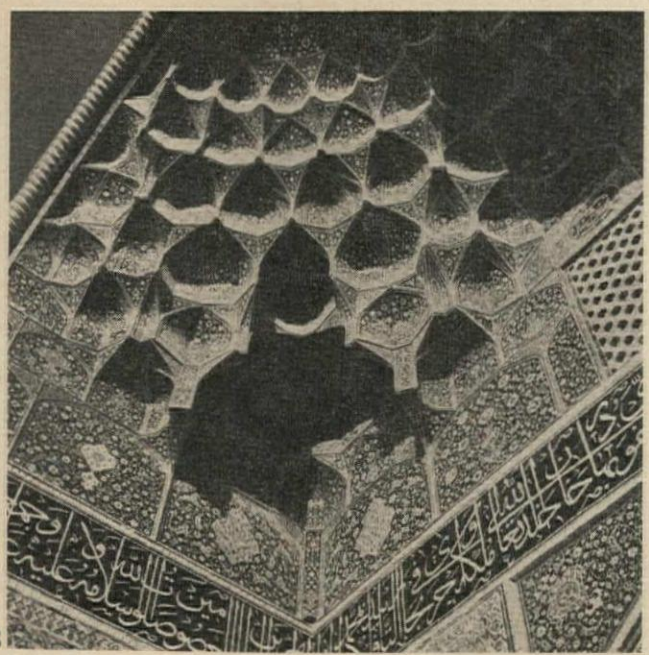

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1. Model showing a restoration of the city of Ur, c. 2125-2025 B.C.

2. Matsumoto Castle, begun in the early 16th century

3. Detail (c. 1600) of polychrome ceramic ornament from the Masjid-i-Jami, Isfahan

4. Abbey Church at Conques in Périgord, 1045-1119

5. The Pantheon, Paris, begun 1759 by Soufflot

6. St. George's Hall, Liverpool, 1841-1854 by Elmes

7. Oriel Chambers, Liverpool, 1864-1865; the architect was Peter Ellis

5

6

7

mained uncontaminated; only a few architects, often rather obscure, merited close attention.

The theoretical basis for this kind of history was the assumption that modern architecture represented a return to the type of consistent architectural development held to exist up to the middle of the 18th century. When modern architecture proved to be more complex and varied than had first been predicted, the historians began to revise their views. Instead of concentrating exclusively upon a "progressive current" in 19th- and 20th-century architecture, they began to see all architectural developments as inter-related, just as they had been in other historical periods. A great neoclassic theorist like Durand came to seem as important as the unlettered rural mechanic who had unconsciously contributed to the "functional tradition."

This reappraisal of modern architecture has helped give architectural history a new significance. When architects believed that they were still designing within the Renaissance or Gothic tradition, historical concern centered around matters of detail. The Modern Movement brought freedom from precedent, but it generated distrust of historical investigations not pursued for their own sake. Today the architect is used to thinking of himself as a modernist, and, as the historians no longer view him as a rebel, he can regard history with detachment. Adopting the principles put forward by Le Corbusier in "Towards a New Architecture," he looks to the past for examples of certain abstract architectural principles.

Thus young architects in New York City startled their "progressive" elders by picketing for the preservation of Pennsylvania Station. To those in the picket lines, Penn Station was not a false and decadent evocation of Roman architecture, but one of the city's few great architectural spaces. Similar reasons explain the current widespread interest in Italian hill towns, Greek island villages and cathedral squares like the Piazza San Marco. They are valued for their qualities of space, mass and surface, rather than for their particular periods or styles.

The pages of "World Architecture" offer an excellent opportunity to contemplate the past from this

Le Corbusier: Notre-Dame-du-Haut, Ronchamp

detached and objective point of view. They present Assyrian, Islamic, Chinese, Japanese and Indian architecture on equal terms with the more familiar Egyptian, Classic, Medieval, Renaissance and Modern; and there are so many illustrations that the visual presentation becomes almost as important as the text.

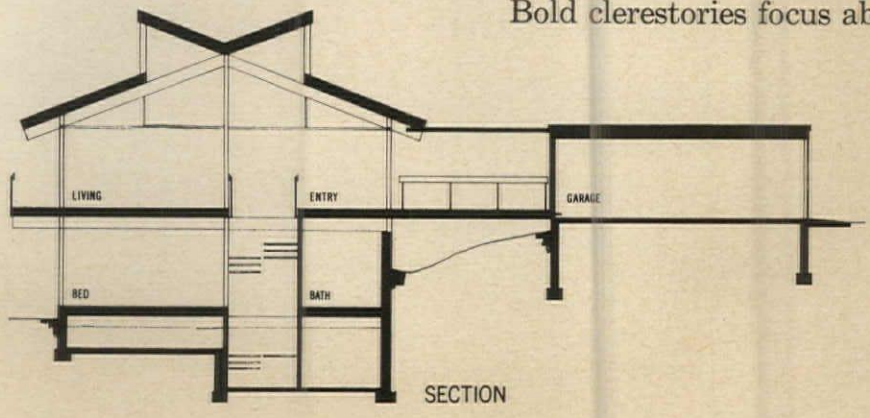
Of course, no single volume can hope to cover all the complex and subtle ramifications of architectural history; and "World Architecture," with its relaxed format that omits bibliographies, extensive notes, tables of dates and so on, makes no pretense of being comprehensive in the textbook or handbook sense. It is rather a volume to be dipped into or browsed through, with authoritative commentary available whenever the reader wishes to know more about an interesting photograph, or refresh his memory about a particular architect or period.

This method of looking at architectural history has many possibilities for architects, but it contains a pitfall for the historian, who may be tempted to favor those elements of the past which jibe with current architectural beliefs and practices. For example, Seton Lloyd, the author of the Ancient and Classical chapters of "World Architecture," faults ancient buildings for being relatively undifferentiated and not expressing their function; and David Talbot Rice seems to equate the progression of developments in Medieval architecture with progress in an absolute sense.

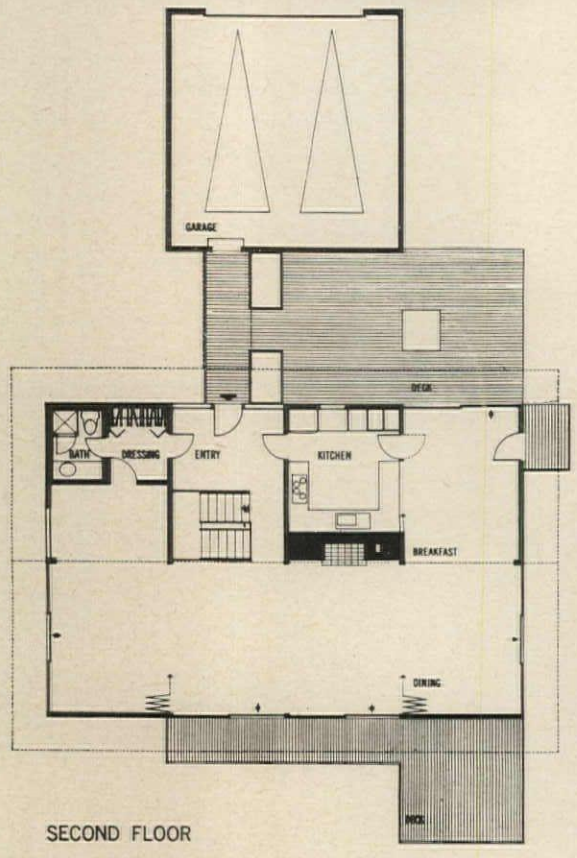
In general, however, the text of "World Architecture" is uncompromisingly scholarly; the only major defect lies in the captions. It may seem pedantic to mention them when text and illustrations maintain such a high standard; but the captions are one of the most prominent aspects of the book and they are a good deal worse than useless. The same unsympathetic individual seems to have written them all, and he has managed to introduce so many inaccuracies and mis-statements that the whole effect of the book is cheapened. It remains an impressive volume nevertheless, and its comprehensive nature makes it a unique contribution to the new architectural history.

A SUNNY HOUSE FOR A WOODED SITE

Bold clerestories focus above foliage for light and air



SECTION



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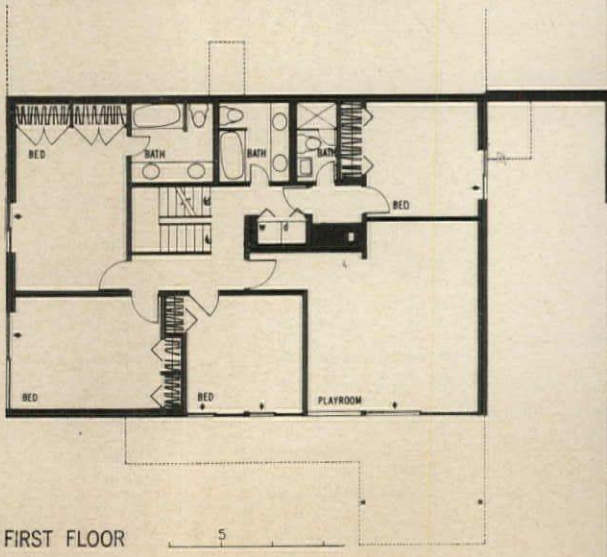


FIRST FLOOR

Residence for Mr. and Mrs. Irving S. Friedman
Silver Spring, Maryland
ARCHITECTS: *Harold Edelman and Stanley Salzman*
CONTRACTOR: *Fred G. Williams, Inc.*

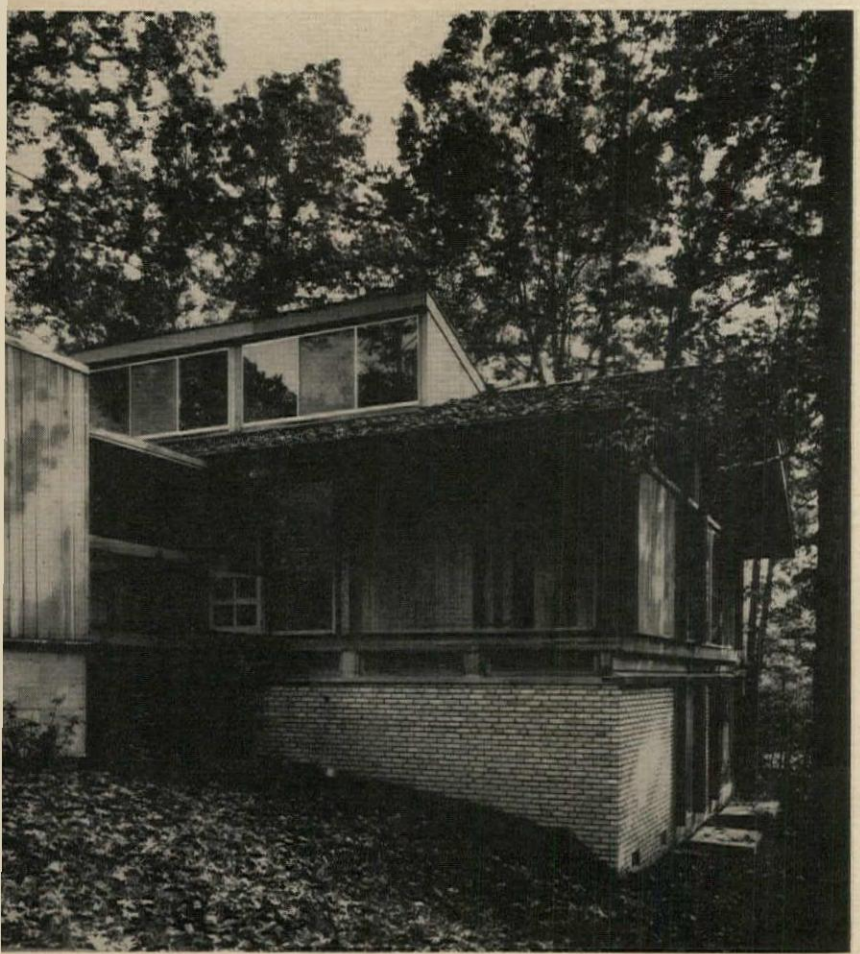
This comfortable house includes some interesting uses of site and clerestories to solve some problems typical of many suburban locations. The lot slopes down from the circle of a cul-de-sac, and overlooks a dense development of houses. There is no particular view, but the land is heavily wooded.

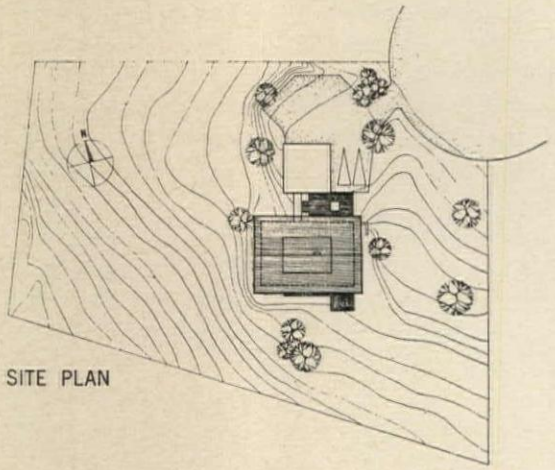
It was decided to exploit the trees to screen off the neighboring houses, and gain light and ventilation in the upper level by the use of big clerestories. The latter act as a sort of chimney, with hot air rising against the slope of the roof, for ventilation on days that are not hot enough to use the air conditioning. As can be noted in the section on the preceding page, the slope at the front of the house was left unfilled to permit high windows on this side of the lower level. A bridge-like deck spans over this area to connect house and entrance drive.

The owners have three children—two teenage boys and an adult girl. All the members of the family needed separation for their studies. The mother and daughter are both teachers, and the husband works for a U.N. specialized agency. In addition, it was desired to provide space for large adult parties, a separate playroom for the boys, with TV and a piano, and a couple of guest rooms.

For the individual study areas, each bedroom on the lower level was designed for privacy and paperwork; in addition, a study area was provided off the living area. The study can be closed to double as guest room, as can the playroom. The dining area also closes off from the living area, to give big or more intimate spaces as desired.

The entire second floor can be used together for really big gatherings—with the playroom below providing a family retreat.





SITE PLAN

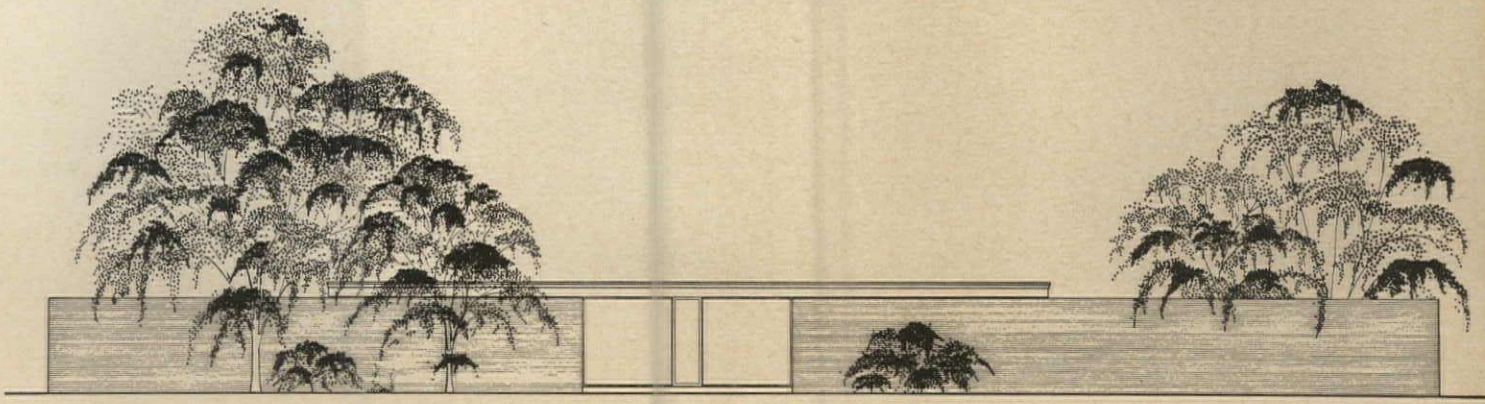
The structure of the Friedman house has heavy timber posts and beams, set on 14-foot modules in both directions. On the lower level, brick is used to fill in between posts as a screen, or as a bearing-retaining wall on the uphill side. Siding and exterior trim are redwood, treated with creosote bleaching oil. The roof is of red cedar shakes.

Interior wall finishes on both levels, and the ceiling of the lower level, are white sand-finished plaster left unpainted. Cypress boarding forms the ceilings of the upper level. Floors are carpeted in the living areas, hardwood in the entry and lower floor, and vinyl-asbestos tile in the kitchen. Heating and cooling use a gas-fired, forced air system

Alexandre Georges photos

AN OPEN PLAN FOR A FAMILY HOME

Anderson Todd designs a classic courtyard house
to meet his own family's needs: privacy,
safety and servantless operation



Residence in Houston, Texas

ARCHITECT AND OWNER: *Anderson Todd*

MECHANICAL ENGINEERS: *Cook & Holle*

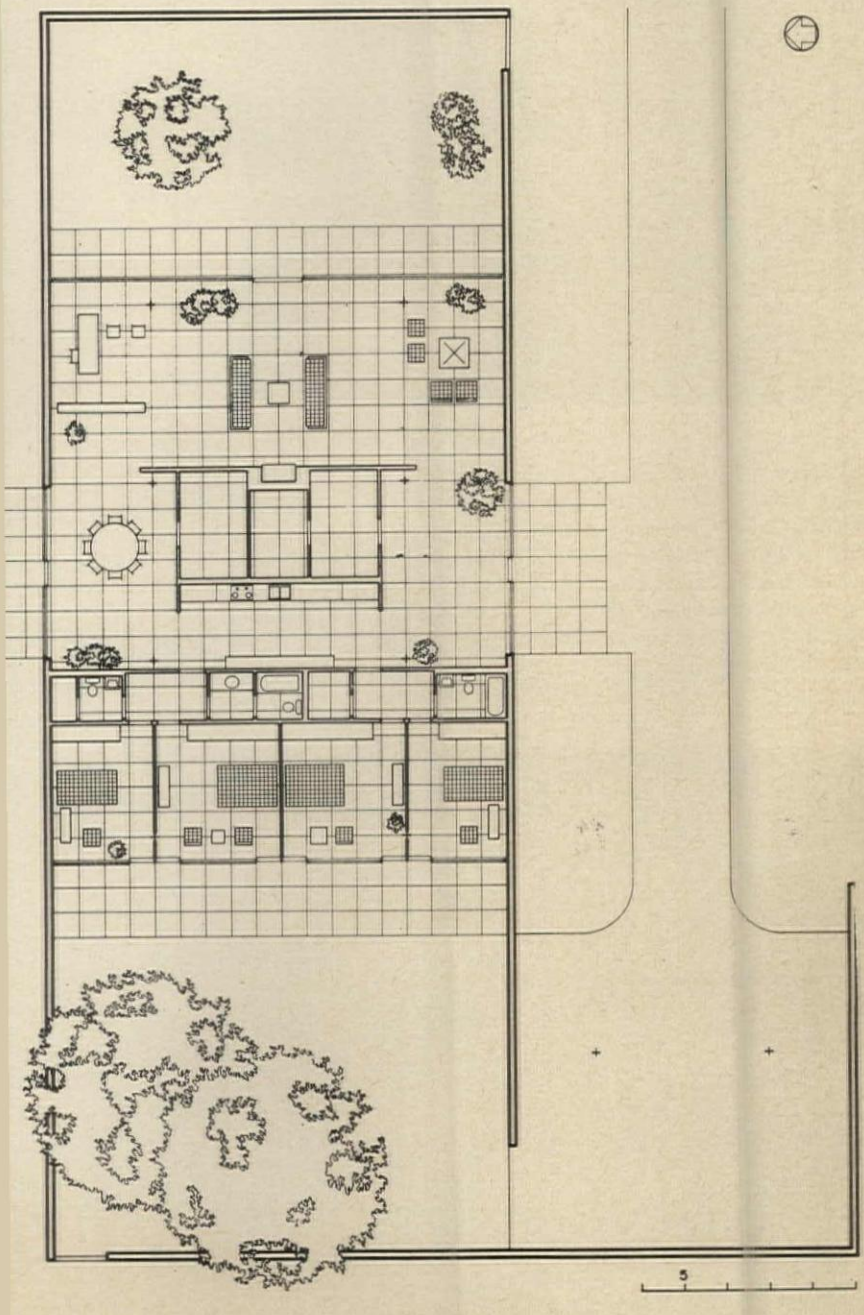
CONTRACTOR: *Chambers & Ford*

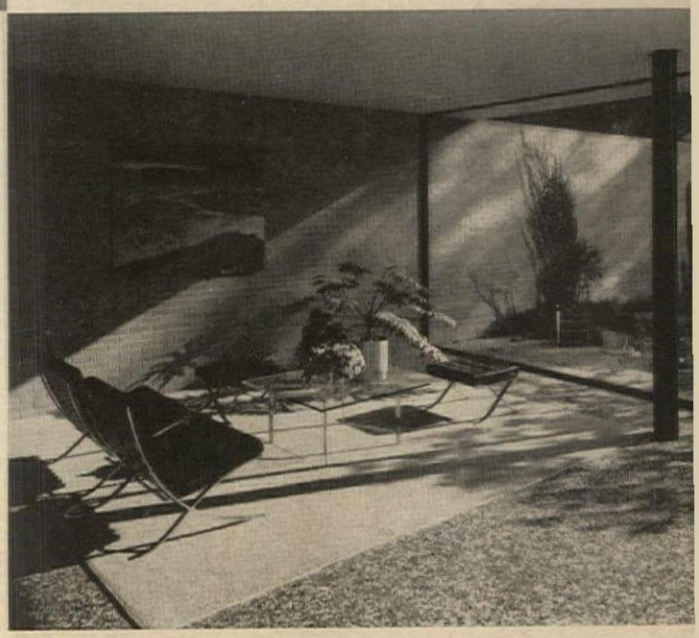
STRUCTURAL ENGINEERS: *Walter P. Moore & Associates*

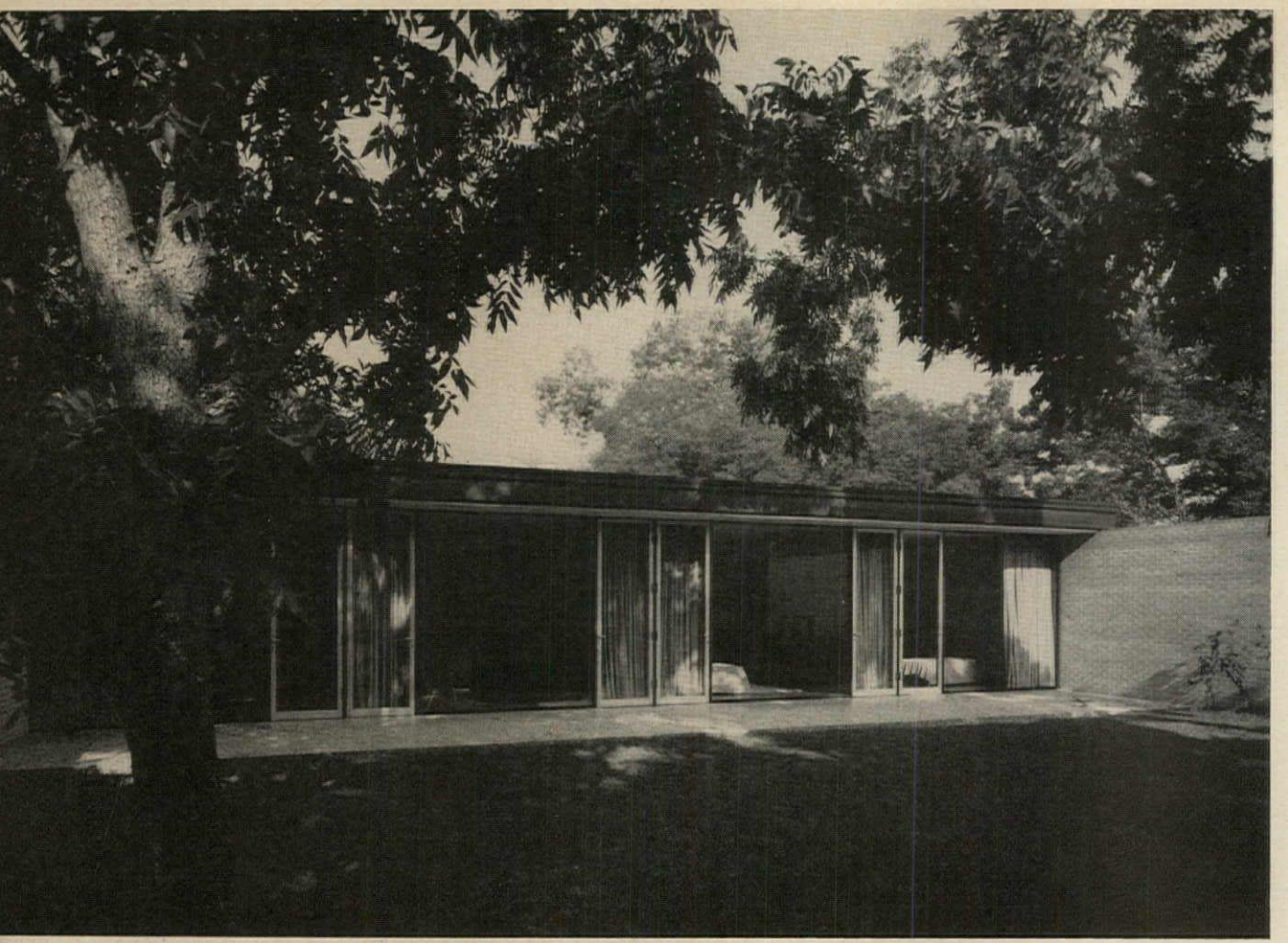
Philip Johnson has reportedly remarked that this house was "more Mies than Mies." However, for all its elegant design and construction, the scheme has proved a very serviceable and comfortable family home. Architect Todd states that, "the design of this house was the outgrowth of an intensive investigation of what constituted a family house. Out of this concept grew the recognition of the opposing problems of a desire for privacy and, yet, the desire for openness and freedom, and a balance between formality and informality. Next came the need for servantless operation and low maintenance, and the needs for the safety of a young family. A fire-resistant structure was set as a goal."

These objectives have been met in a handsomely simple and restrained manner. The living areas, augmented by an enclosed court, surround a mechanical core with the fireplace on one side, kitchen on the other. Within the core are air conditioners, washer, dryer, icemaker and storage. The four bedrooms, which also open off a walled garden, are divided into two apartments. One is occupied by the children, one by the parents. Floors throughout are gray-green terrazzo. The year-round air-conditioning has supply and return ducts in the floor slab. The house has 3,800 square feet of interior space, not including the carport.

On the cost of the house, which is put together with unusual care, Todd comments, "the cooperation, interest, and sheer competence of the general contractor (one of the principals was educated through the master's level as an architect) enabled us to build the house for $19.90 per square foot. This included terrazzo terraces and driveway, brick garden walls and sodding of the lot." The house was constructed two years ago.







The structure of the Anderson Todd house is entirely of steel: framing, columns and deck—topped by a built-up roof. Exterior walls are either gray brick or floor-to-ceiling plate glass. Interiors are plaster painted flat white, except for the mechanical core, whose walls are covered with walnut-veneered plywood panels. The veneer is carefully matched and cut from one log. The long wall-hung counter in the kitchen (*below*) is black marble. The carport flanking the house can accommodate four cars, but the extra bays are planned for (and used by) the children for bicycles, toys and a paved play area. The paving is the same washed terrazzo as the drive

PLANNING THE DOWNTOWN CENTER

Architects designing office buildings for downtown locations will be planning them as part of large business centers on land cleared by urban renewal. There will be more wide open spaces in the heart of downtown than anywhere else: open areas of cleared land waiting for a master plan, and open plazas after the planning and building are done. Urban renewal has shifted in emphasis from residential projects to the rebuilding of outdated downtown business areas in cities. Municipal officials and businessmen see in urban renewal the chance to save their cities from decline, to restore them to economic prominence in their region, and to reserve the trend toward decentralization and the flight to outlying areas.

This means that the architect is less likely to be designing a hotel or office building on a single plot. If he is lucky he will be designing a complex of downtown business buildings, self contained little cities on their own plazas perched on top of garages. These welcome islands of safety for pedestrians will be surrounded by elaborate traffic arteries. The master planning is tougher than for campuses or shopping centers, and the architect must collaborate like never before, since other architectural firms will be working on some of the buildings in a center and nowhere will uncoordinated design expression be more visually chaotic.

He will have to learn how to handle the scale of the new plazas and he cannot copy the ones in Europe. He will have to develop sufficient judgment to know when to restrain the landscape architects from inordinate creativity in the planting and furnishing of these spaces.

The examples which follow include a finished business center in Hartford, built, owned and managed by a large insurance firm; a world trade center which is a masterpiece of concentration and decentralization proposed by a quasi-governmental agency with vast powers to shape the environment; a large complex designed for another insurance company by a single architectural firm; and Government Center in Boston, sponsored by the Boston Redevelopment Authority and notable for the quality of its architecture.

—Mildred F. Schmertz

Joseph W. Molitor photos

Hartford's central business district as seen looking west faces the Connecticut River on the east. Constitution Plaza, Inc., owned by The Travelers Insurance Company, is on the north side of the street and Phoenix Mutual Life Insurance Company is on the south. Beyond the foot bridge which interconnects the two raised plazas is the Old State House by Charles Bulfinch

Insuring the Growth of Hartford

Constitution Plaza, Hartford, Connecticut
Owner: Constitution Plaza, Inc.
Site Planning and basic design of over-all project and components; general design coordination: Charles DuBose, A.I.A., Architect
North Garage, South Garage, East Commercial Building, West Commercial Building, Research Center, Brokerage House: Charles DuBose, Architect
100 Constitution Plaza: Charles DuBose and Emery Roth & Sons, Associated Architects
Hotel America: Charles DuBose and Curtis and Davis, Associated Architects
Broadcast House: Fulmer and Bowers, Architects
One Constitution Plaza (Conn. Bank & Trust Co. Building):
For the owner: Kahn and Jacobs, Architects
For the bank: Carson, Lundin & Shaw, Architects

Several great insurance firms have their home offices in Hartford and two of them have spurred the urban renewal process to reverse the city's trend toward economic stagnation and population decline. The Travelers Insurance Company developed the recently finished $40,000,000 Constitution Plaza, and across the street Phoenix Mutual has just completed its home office building in a plaza of its own.

The merits of Constitution Plaza are a measure of the generosity of a client willing to pay for plazas, elaborate landscaping and expensive building materials, the excellence of the master plan, the quality of individual buildings and that degree of over-all control permitted the coordinating architect. Its defects stem from lack of successful precedents in design and coordinating procedure for the construction of this kind of office complex. Now that this project is complete some do's and don'ts *have* been established and are there for architects to examine in the context of how the center came about.

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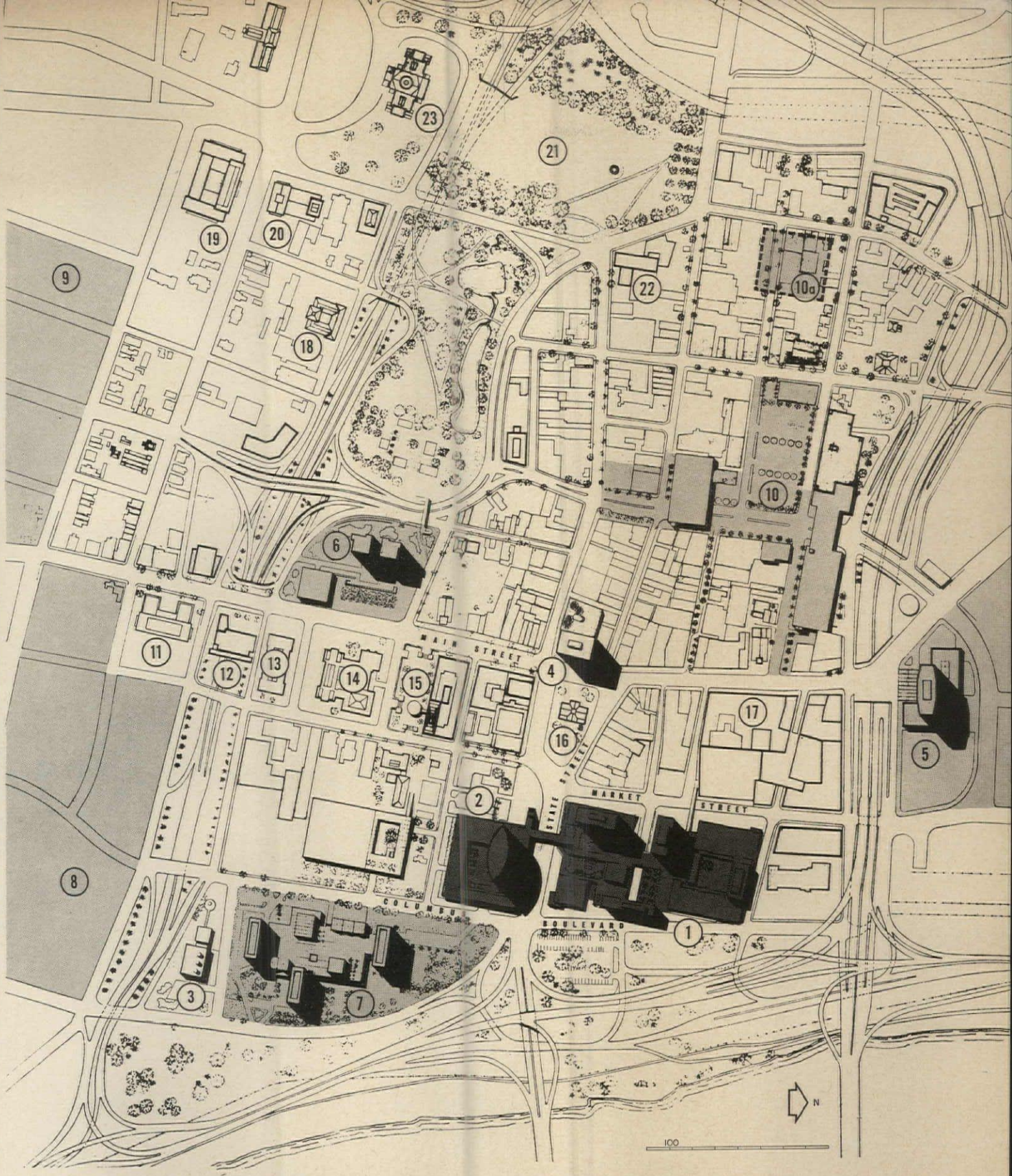
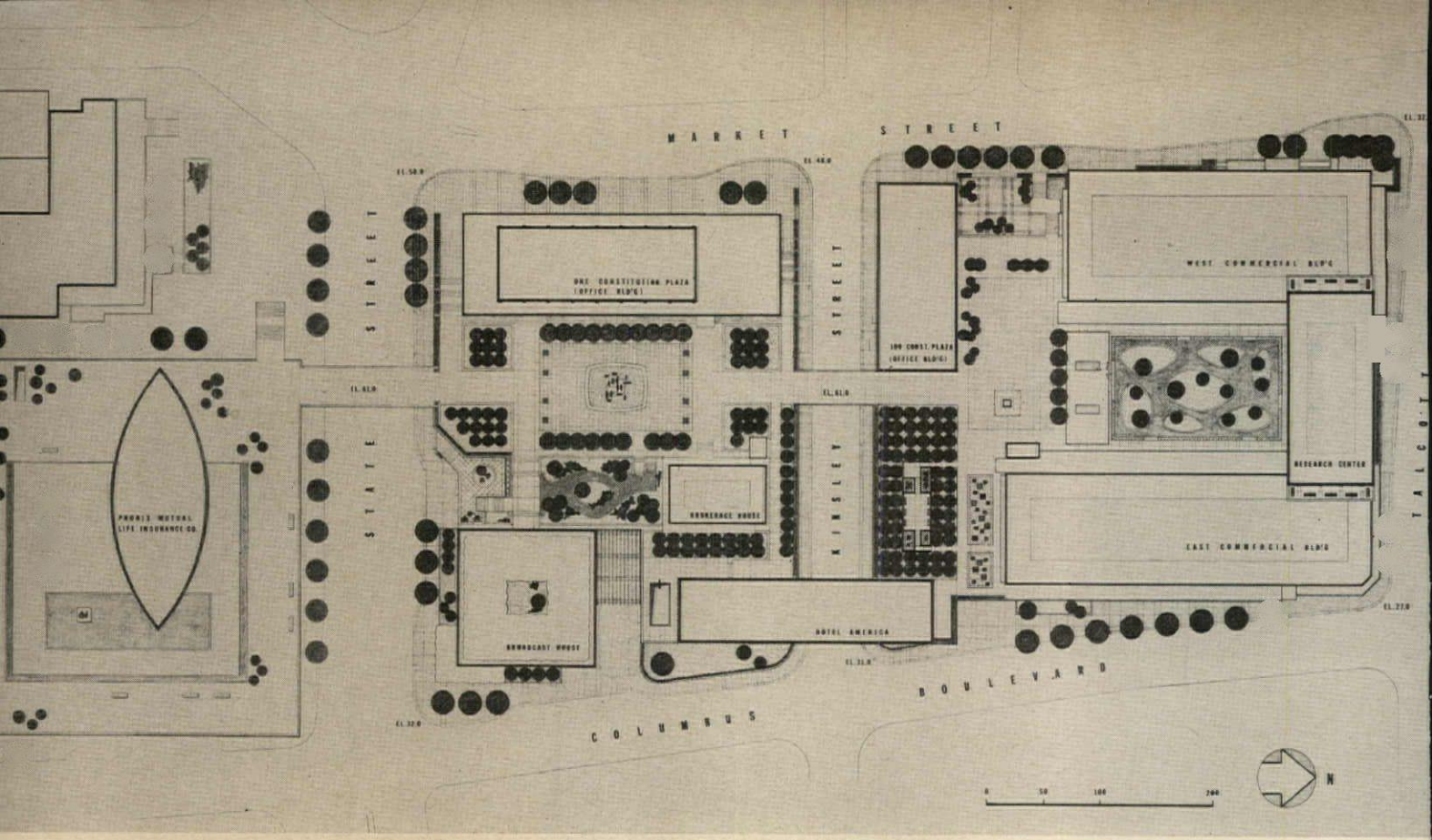
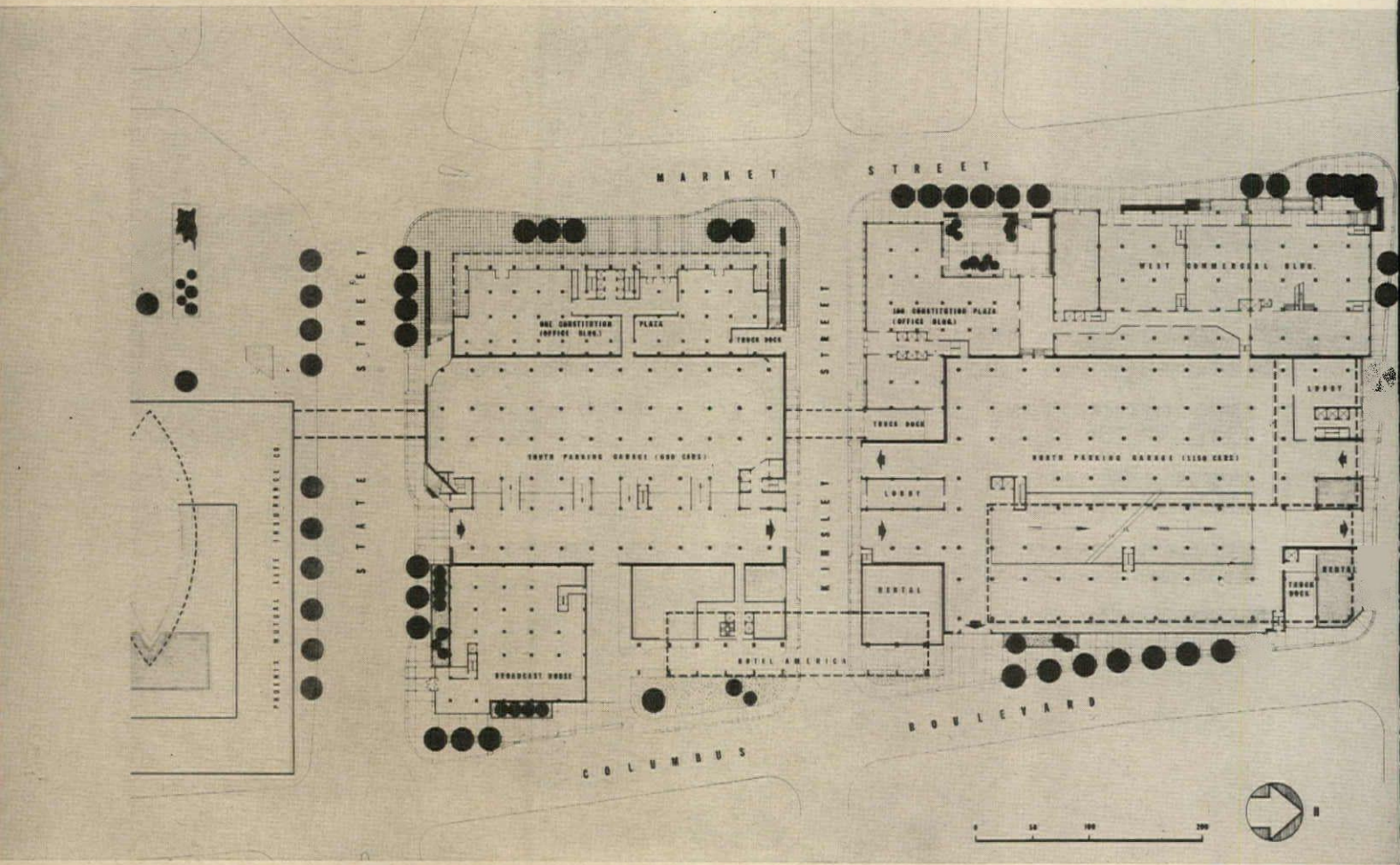


1. Constitution Plaza (Completed)
2. Phoenix Mutual Life Insurance Co. (Completed)
3. Hartford Gas Co. Heat and Chilled Water Plant (Completed)
4. Hartford National Bank & Trust Co. (25-story office building)
5. Windsor Street Redevelopment Project (Under Construction)
6. Bushnell Plaza Apartments (Redeveloper Selected)
7. Riverview Apartments (Redevelopment Project—Proposed)
8. Charter Oak (Redevelopment Project—Proposed)
9. South Side (Redevelopment Project—Proposed)
10. Trumbull Street (Redevelopment Project—Proposed)

10a. Convention Center (Redevelopment Project—Proposed)

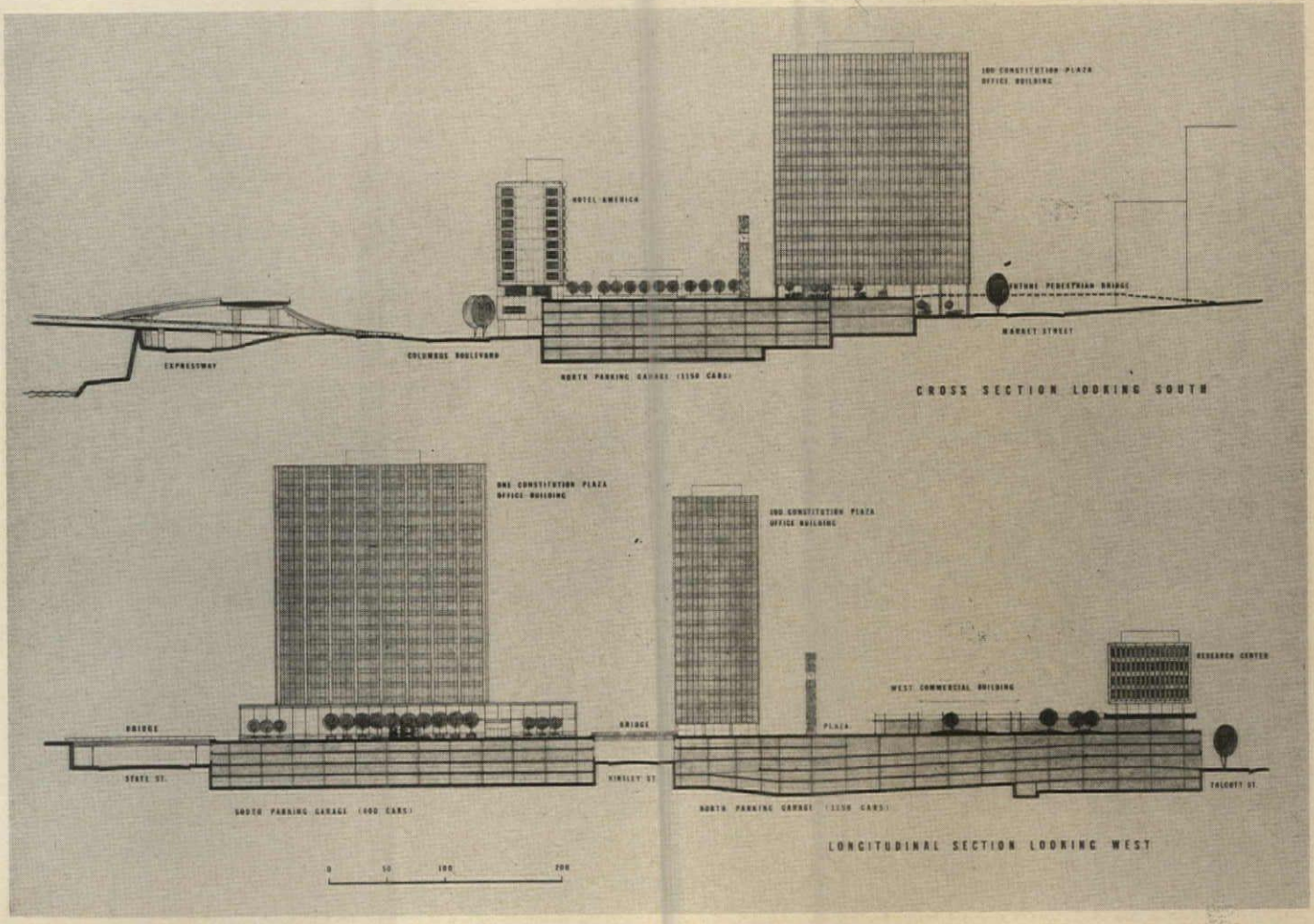
11. Federal Office Building
12. Hartford Public Library
13. Municipal Building
14. Wadsworth Atheneum
15. Travelers Insurance Co.
16. Old State House
17. G. Fox & Co., Inc. Store
18. State Office Building
19. State Office Building
20. Horace Bushnell Memorial Hall
21. Bushnell Park
22. Statler Hilton Hotel
23. State Capitol





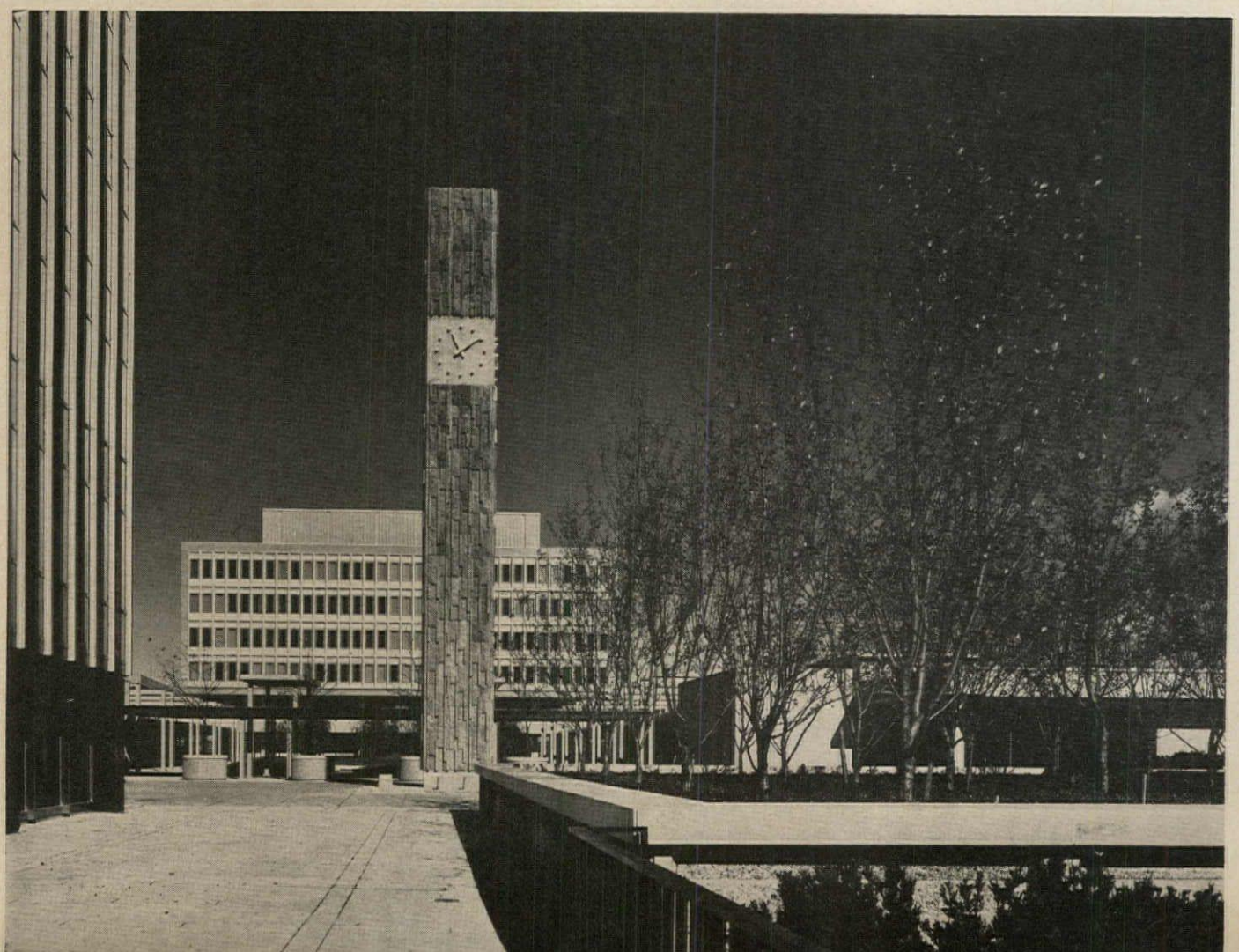
Plot plans at garage and plaza level

View to the north from Phoenix Mutual Tower



Sections

Constitution Plaza looking south *(above)* and north *(below)*. The funnel shaped office building, while not a part of Constitution Plaza, Inc., and not controlled by DuBose's site plan, has been carefully positioned as a visual termination

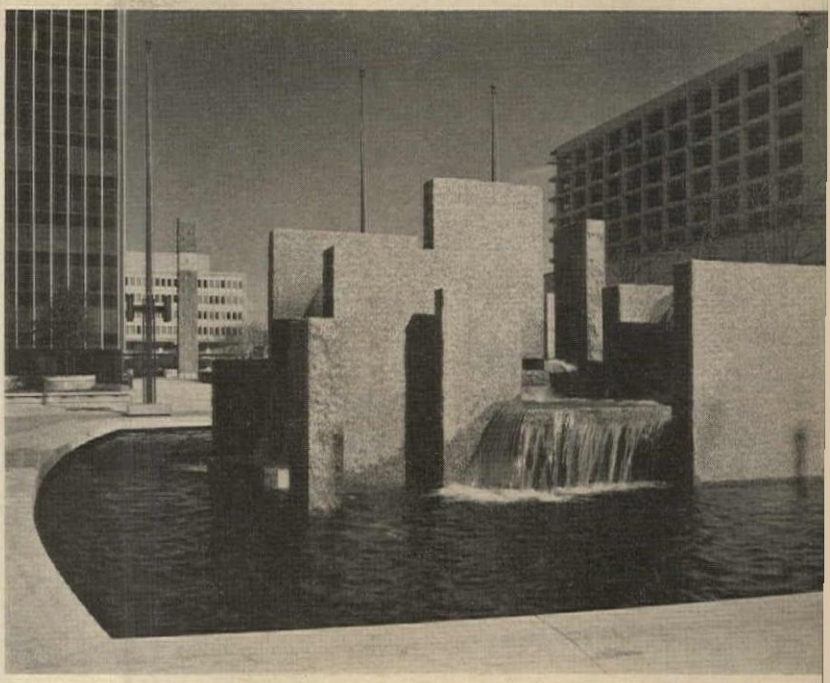


continued from page 178

Built by Constitution Plaza, Inc., a subsidiary of the Travelers Insurance Company, on a slum site cleared by urban renewal, the new business center is considered an important generator of growth for the downtown commercial district and for the entire region. Major businesses which were planning to move away from Hartford, including Phoenix Mutual, are safely back in town, and six new redevelopment projects are being considered for the immediate vicinity. See map on page 179. Travelers was not seeking new quarters and does not now occupy any part of Constitution Plaza. Those in charge of real estate investment for the company had been eyeing the nearby site since it was first designated for renewal. When F. H. McGraw & Co., Inc., a Hartford-based construction company selected as the original developer by the city, failed to get financing, Travelers bought that company's interest in the job. McGraw retained approximately one sixth of the equity and won the construction contract for all buildings except the broadcasting station.

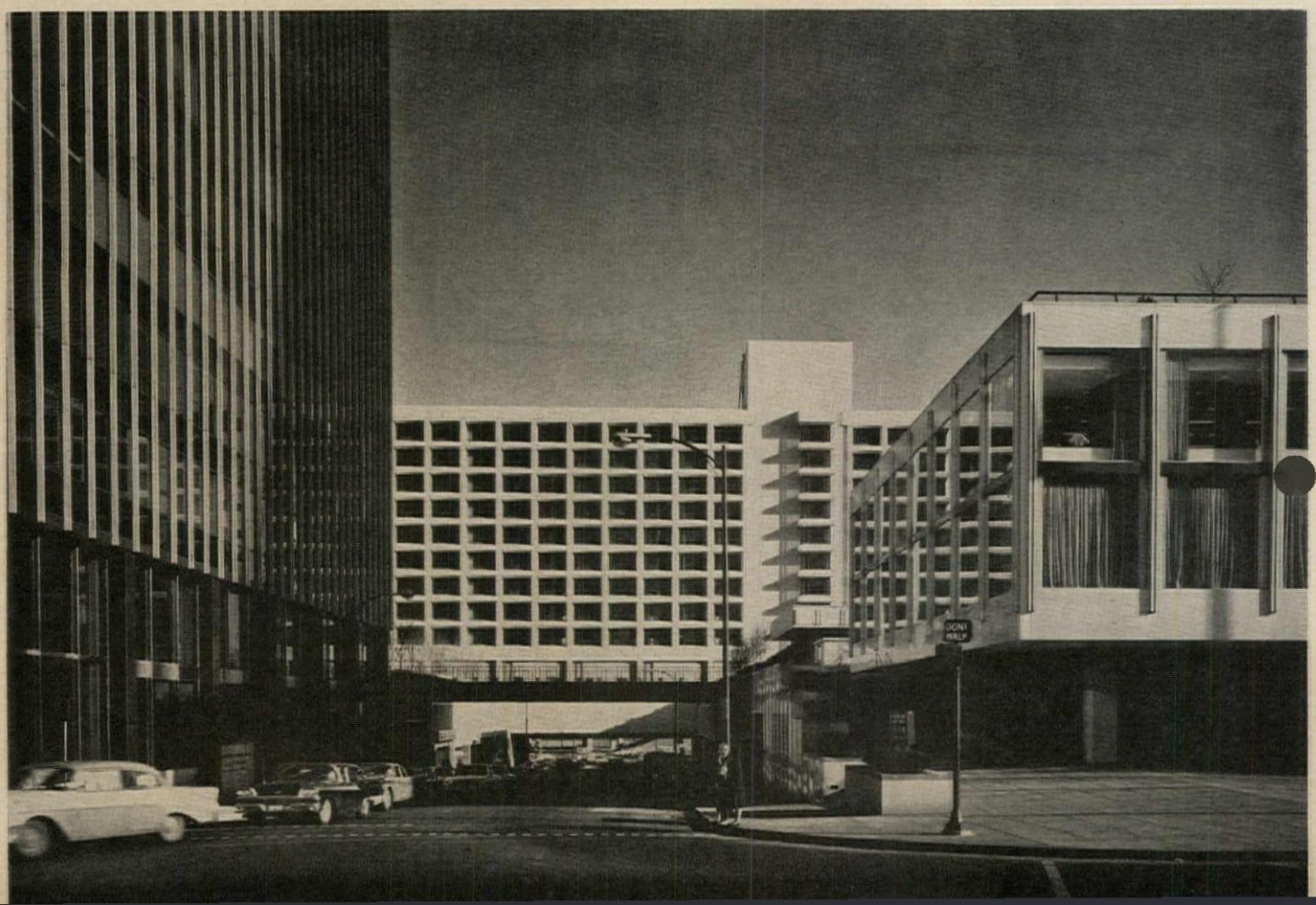
The McGraw company already had a master plan which had been prepared by architect Charles DuBose. Travelers decided to go along with the plan in its essentials and DuBose remained in charge of the site planning and basic design of the over-all projects and acted as general design coordinator. He was architect for the landscaped plaza done with Sasaki, Walker and Associates, the landscape architects. His firm had sole responsibility for the design of the garages and all buildings except 100 Constitution Plaza, a 17-story office building on which he collaborated with the Roths, the Hotel America done in association with Curtis and Davis, Broadcast House by Fulmer and Bowers, and the Connecticut Bank and Trust Company building (designated on the plot plan as One Constitution Plaza), an 18-story structure by Kahn and Jacobs and Carson, Lundin and Shaw.

Obviously, a single architectural firm, commissioned to master plan a large renewal complex, doesn't necessarily get to design all the parts, since major tenants or investors usually prefer to use architects who have built for them in the past, and who are "specialists" in skyscrapers, hotels, etc. If the elements of a complex are to be coordinated, however, some one must not only set up the ground rules but insist that the various architects collaborate. The alternative is to have one big architectural firm, experienced in all kinds of buildings, do the entire project. In Hartford, after Travelers entered the picture and began to line up real tenants, the final master plan was developed by DuBose. The "architectural specialists" called in to design the buildings for which they have acknowledged expertise worked on fixed sites within bulk and massing limitations set by the plan. The separate architural firms, however, each went their own way in



The budget for landscaping was generous, as is the basic allocation of open space. DuBose points out that only developers like the big insurance companies, with their own funds to invest, can afford large plazas with lavish planting and pools

Above: View to the north from the terrace of Phoenix Mutual. To the left are the project's two large office towers, the brokerage office is in the center and the broadcasting station appears in the right foreground with the hotel behind it. Vertical slots and holes in the base of the plaza light and ventilate the top two floors of the garage. Six separate architectural firms including that of DuBose designed the buildings shown in this view. Massing and placement follow the master plan, architectural expression and details escaped control. *Below:* Hotel bridges street and is readily accessible to motorists who drive in to the garage underneath from the belt roads which lie between the plaza and the river to the east. Foot bridge visible



matters of architectural expression, to the detriment of the over-all visual unity of the plaza.

The development of Constitution Plaza by Travelers inspired Phoenix Mutual to purchase a site across the street. As a separate developer Phoenix was free to do as it pleased with its plot, but it chose to tie in with Constitution Plaza by building a podium at the plaza level and a foot bridge to connect the two sites. The architects, Harrison and Abramovitz, took pains to relate the Phoenix tower correctly to the complex across the street.

In the project notes which follow DuBose gives the reasons for the location of each element in the master plan.

"One Constitution Plaza (Office Building)

The new home of The Connecticut Bank and Trust Company occupies more than half of the building. This dictated its location on the corner closest to the existing heart of the city's financial community and justified its use of the most valuable portion of the Constitution Plaza property.

"100 Constitution Plaza (Office Building)

Basement and first two floors are occupied as a major branch office of The Hartford National Bank and Trust Company. The building occupies the second most valuable portion of the over-all property and a street corner position also convenient to existing business and financial institutions.

"Broadcast House (Radio and TV Station and Executive Offices)

Because of the nature of the tenant, a visually prominent location is required, but not physical proximity to buildings in the surrounding neighborhood. The site provided is not as expensive as that occupied by the office buildings, but is adequately visible from four directions and is directly seen upon entering Hartford via Founders' Bridge from the east. The location also gives clear alignment for transmission beams from the roof of the building to the top of Travelers tower, and thence to the broadcast towers several miles to the west.

"Brokerage House

A small building, glass enclosed, at an important central position in the project. The brokers' office is conveniently related to banks, hotel, and the main plaza promenade, and surrounded by features of the plaza landscaping. It is served by elevators directly from the parking garage below.

"Hotel America

Building is oriented so that all guest rooms have a view either of the landscaped plaza to the west or of the Connecticut River valley to the east. Its location spans Kinsley Street at the plaza level. It is served by the north-south and east-west highway system. Private parking is provided within the adjoining parking garage with separate entry for hotel guests.

"East and West Commercial Buildings

Located at the north end of the project and ar-

Above: The west side of Constitution Plaza is adjacent to the financial and shopping district and its base consists of banking offices and shops. *Below*: The east side of the plaza is at the foot of a hill and here the garages face the belt road system and are readily accessible therefrom. The vertical slots used to light and ventilate the garages, while practical, weaken the appearance of these walls as a podium for the plaza

ranged around a shopping mall at the plaza level, these two buildings relate closely to Hartford's existing retail area one block to the west. It is planned that a pedestrian bridge will be constructed across Market Street to give a more intimate and convenient pedestrian connection from the Plaza to the retail buildings now existing and to those being planned for construction in the near future.

"North and South Garages

The four-level South Garage and the five-level North Garage are centrally located within the project so as to give maximum convenience of circulation to all buildings. Entrances and exits are provided at seven different locations and five different levels to insure maximum speed for traffic movement. Two additional access ways serve the large areas within the parking structures which are allocated to drive-in tellers and private customer parking for the two main banks.

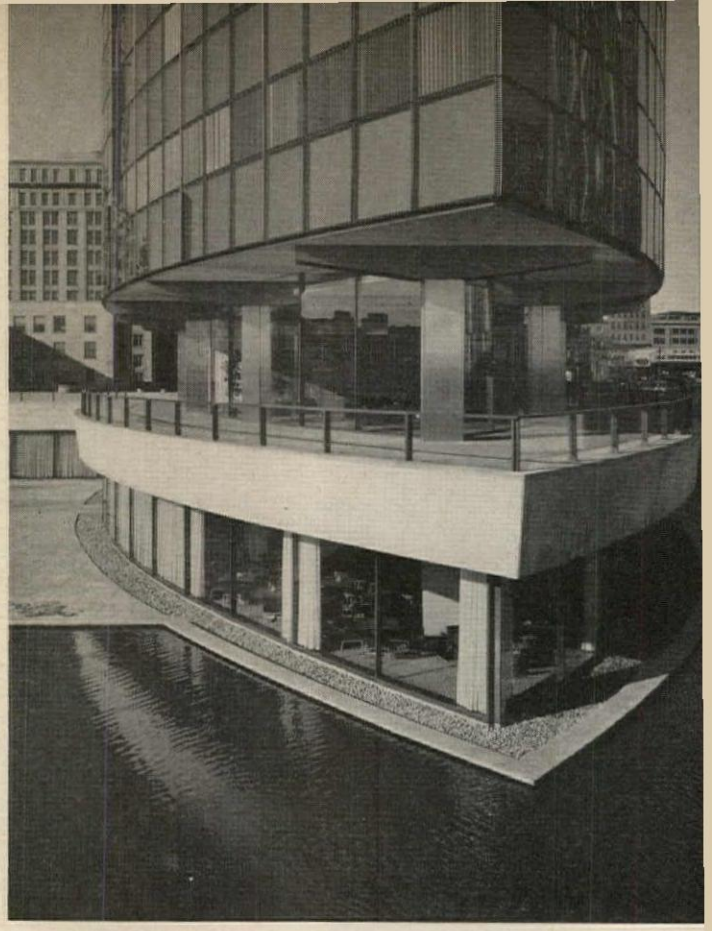
"The Landscaped Plaza

The plaza is the central focus of the project plan. It is for pedestrian use only and is designed as an area of relaxation and enjoyment within the congestion of the city. It serves as a circulation way between the buildings of the project and as a community promenade.

"Its elevation above the street level provides a separation of pedestrian and vehicular traffic which is an important aspect of the basic project concept. Pedestrian bridges extend across Kinsley Street and State Street, and other bridges planned for future construction will further extend this pattern of traffic separation to adjacent areas of the city. The plaza stands directly on top of the North and South Garages.

"Research Center

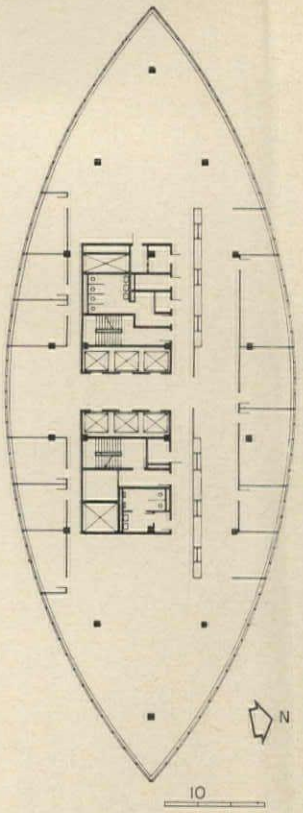
At an axial position at the north end of the project, it is primarily occupied by an environmental research organization. It is directly connected by elevator to the five level parking garage upon which it stands and is accessible from entrance lobbies at the street and plaza levels."



The prow of Phoenix Mutual is surrounded by water

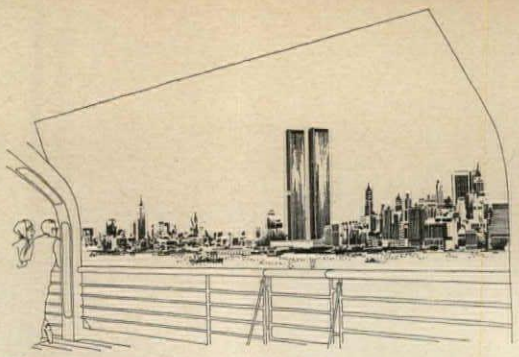
The Phoenix Mutual Life Insurance Company building occupies a sunken plaza surrounded by a terrace at the same elevation as Constitution Plaza. Its simple funnel-shaped curves and restrained landscaping are in deliberate juxtaposition to the exuberance and variety in the design across the street

The Phoenix Mutual Life Insurance Company
Hartford, Connecticut
ARCHITECTS: *Harrison & Abramovitz*
STRUCTURAL ENGINEERS: *Edwards & Hjorth*
MECHANICAL ENGINEERS: *Jaros Baum & Bolles*
ELECTRICAL ENGINEERS: *Ebner Associates*
GENERAL CONTRACTOR: *George A. Fuller Company*



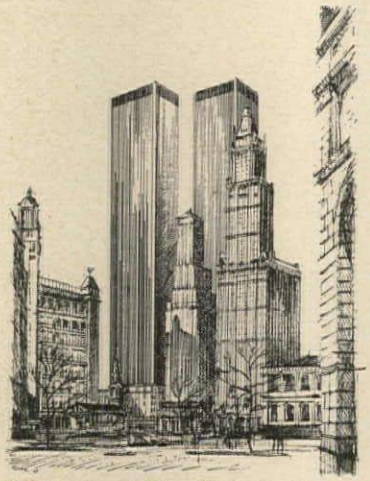
Arrangement of furniture in main floor lounge fills prow nicely. On office floors this space is filled by the secretarial and clerical pools. The supervisor sits in the apex. Executive offices are in the center section at the widest point of the plan and are directly accessible from the elevators, thus reducing corridor space and circulation past clerical personnel

A Great Port City Planned for New York's Lower West Side

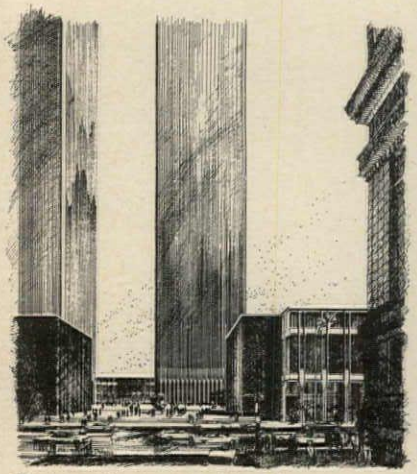


View from Hudson

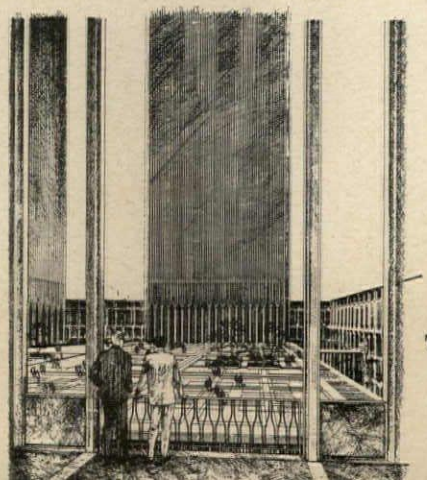
The Port Authority's projected World Trade Center designed by Minoru Yamasaki and Emery Roth & Sons proclaims a new era for the skyscraper and a new scale for the city. It will bring all the functions of world trade together in a great concentration where routing, financing and administrative processing can be transacted more swiftly and economically than ever before. Federal government customs operations will be consolidated there where the freight forwarders, custom house brokers, marine insurance firms and international banks will all be. The Port Authority as landlord has sent its real estate experts out to canvass the market and they have estimated that enough foreign consulates and commercial attachés, foreign government purchasing missions, trade associations, exporters and importers, and other agencies and businesses related to foreign trade can be attracted to the project to warrant the erection of ten million square feet of rentable space. This is seven million, six hundred thousand more square feet than Pan Am offers. It is expected that 50,000 persons will work in the World Trade Center and 80,000 will be expected to visit it daily. So far there has been no outcry against the Center's mammoth size or the concentration of people and services in its 16-acre site. It has exceptionally convenient access to transportation facilities. In 1962 the Port Authority acquired title to the properties of the Hudson & Manhattan, an antiquated 56-year-old rapid transit system linking Manhattan and Jersey City. Now known as the Port Authority Trans-Hudson (PATH) System, it is in the process of improvement and will become the principal means by which New Jersey commuters reach their jobs at the Center. They will proceed from the PATH terminal directly to express and local elevators which will take them to their office floors. Three separate subway lines will be directly accessible on the site and three other subways are located within close proximity to the Center. Vehicular and pedestrian circulation will be completely separated. Large areas below grade including building services, parking and United States Customs examination areas will be served by vehicular tunnels from the peripheral streets, which will be widened. The street bordering the West Side Highway will become the main vehicular entrance and exit area. All trucks serving the project will be handled in off-street loading berths.



View from City Hall Park

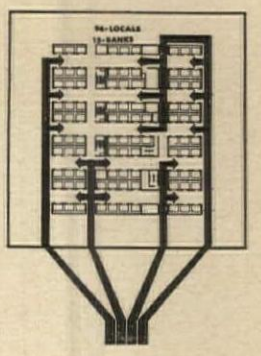


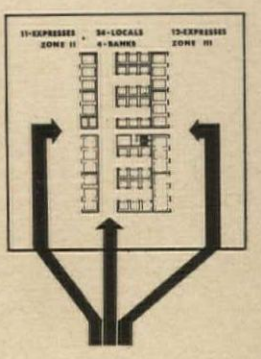
Main entrance to the plaza

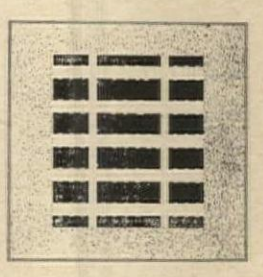


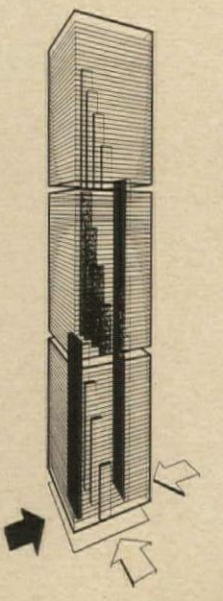
The plaza

Above: Model showing entrance to five-acre plaza. The Hudson River is beyond. Towers will be 1,350 feet high, the tallest in the world and 100 feet higher than Empire State. Walls are load-bearing with columns on 39-inch centers combining with horizontal cross members to form a supporting web. There are no interior columns. *Below:* Several downtown projects will be close to the World Trade Center (indicated by circle), including the Civic Center immediately to the northeast







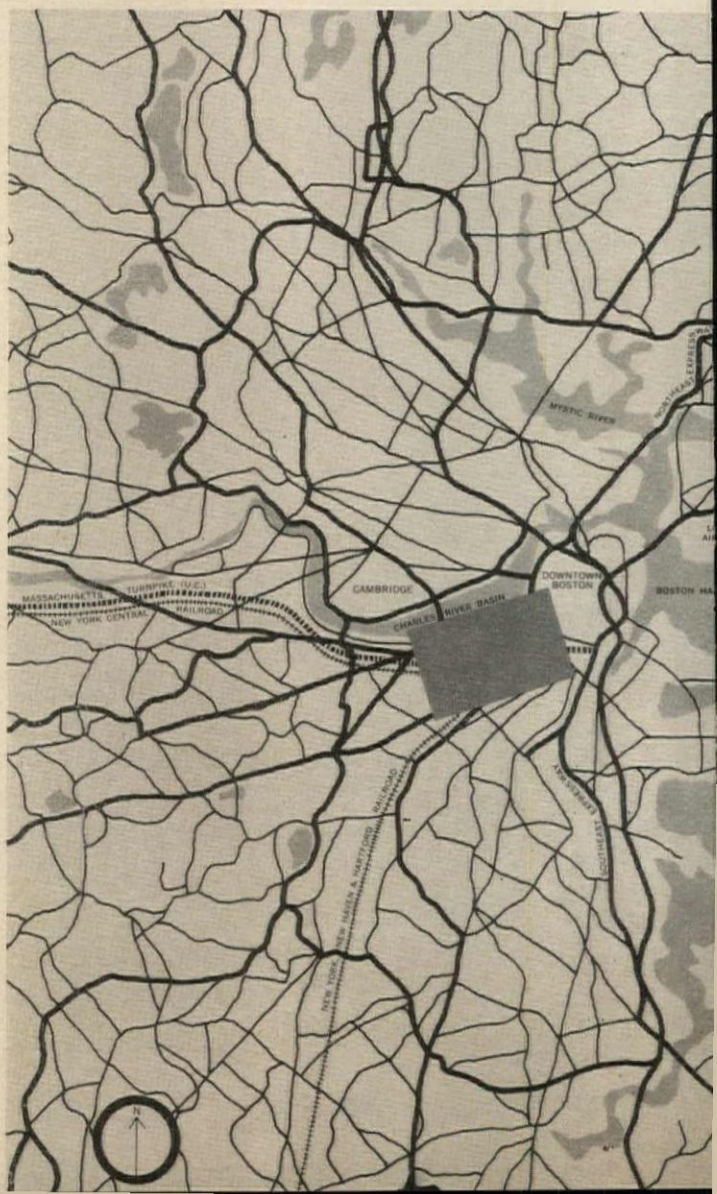


Until the World Trade Center concept, all office building elevators, whether express or local, started at the first floor lobby. The taller the building the more elevators were required and their bulk limited the height to which a skyscraper might go. The diagrams *(above left)* show how many elevators one of the World Trade Center towers would require if elevators were allocated according to present methods. The top diagram shows the complexity of circulation, the lower shows net rentable space to gross as it would be computed in the lower floors before the first banks drop off. The diagrams *(above right)* show the maximum number of elevators required in the World Trade Centers "sky lobby" scheme and the corresponding simplicity of circulation. Eleven express elevators going non-stop from the ground floor will bring passengers to the 41st floor sky lobby where they will transfer to locals. Twelve express elevators go directly to the 74th floor. Seventy-two locals will make stops in the lower, middle and upper zones. The Port Authority claims that transportation time to any point in the building including transfer at the sky lobby will not exceed two minutes. The wait for an elevator will never be more than 30 seconds. The elevators will be large and adequate for freight at off-peak times. Machinery has yet to be developed to get the 10,000-pound cars moving at the required speed

The Prudential Master Plan

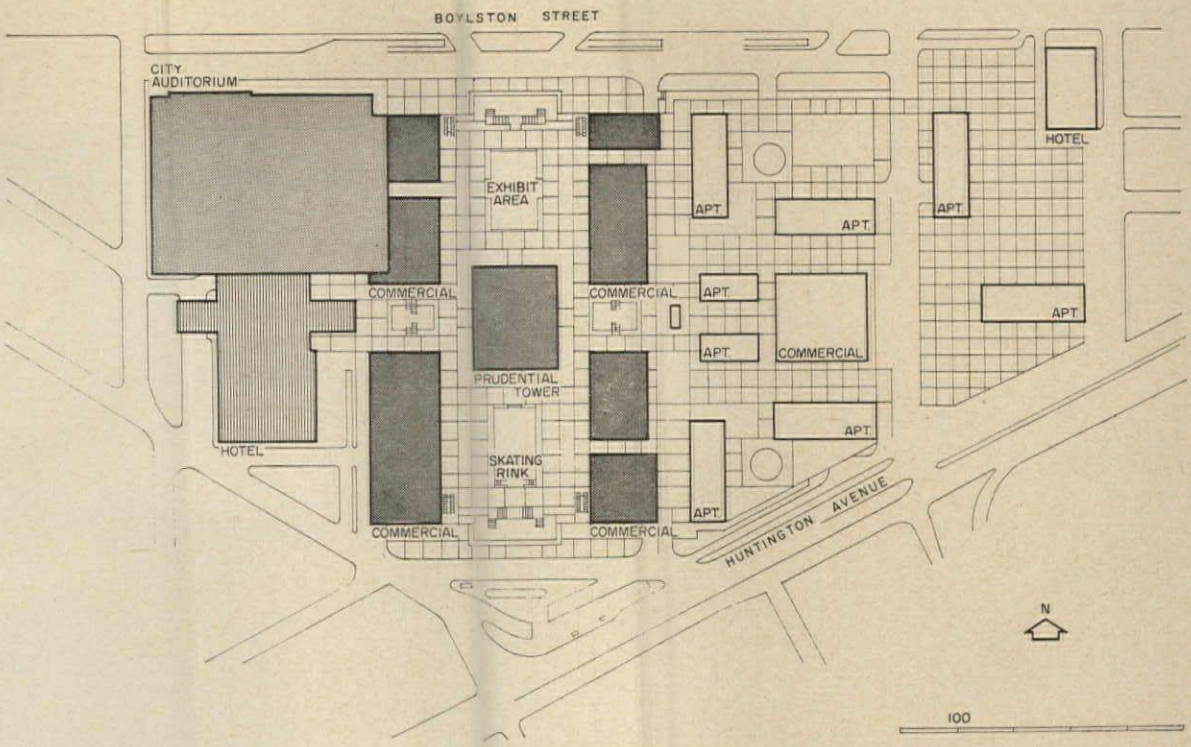
Model photograph showing tower, commercial buildings and hotel

Prudential Center area is adjacent to downtown Boston

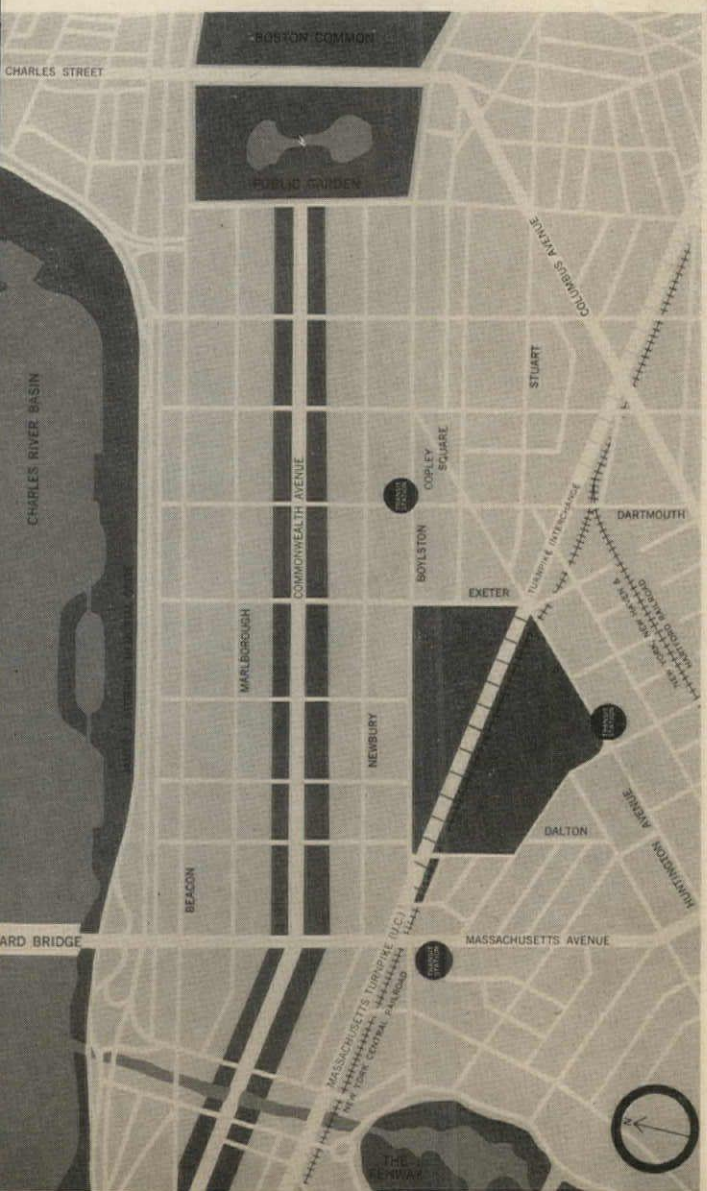


In the beginning the Prudential Insurance Company did not know what belonged on the 31-acre site it planned to develop in Boston's Back Bay area. They did not come up with a definitive program for Charles Luckman to solve, they came for architectural help in starting from scratch. The site had an easement problem, for the new Massachusetts Turnpike was to cut right through it alongside the tracks of the New York Central Railroad. See area plan on opposite page. This condition called for a raised plaza. After some work which involved considerable groping for a proper scale in relating building masses to the plaza, and investigation of the feasibility of certain kinds of rentable area, the architects came to the following preliminary conclusions: (1) Prudential's office tower should be centrally located to create high land values at the center of the site; (2) the project should be developed to take advantage of equal access from Boylston Street and Huntington Avenue with excellent frontage thereby available on both streets; (3) the axes of the development should coincide with the patterns of surrounding streets; (4) proper zoning within the development should be maintained by creating "buffer strips" (landscaping) between the various functions; (5) visual access and continuity from surrounding streets should be maintained by developing street level plazas leading onto the upper plaza.

The center section of the plan developed into a nearly symmetrical balanced solution focussing attention on the tower and drawing people into the center by means of the formal approaches from the north and south. The tower alternated from rectangular slab to square. Prudential needs large central clerical spaces and it was decided that for this the square was the optimum shape. In addition, a square tower resists wind loads better.



Enlargement of rectangular inset shown in map of greater Boston on opposite page. Three rapid transit stations (shown below as circles) are adjacent to site



This site will have a ring road in addition to the city streets which surround it because of the number of people expected to arrive at the center by car, cab and bus. Passengers will be discharged at the lower plazas to the north and south from which they will ascend to the main plaza. Cars will not enter garages from the new turnpike underneath the plaza because ramp turning requirements left not enough room for adequate garage space. The architects studied the feasibility of including a railroad station within the site but found the following negative factors: (1) a station facility requires approximately 5,000 square feet of premium plaza level commercial space; (2) additional easement width required would displace parking space for 103 cars; (3) the Boston & Albany Railroad was reluctant to sign a long term lease because not enough people use the line to justify a new station and they expect railroad traffic to decline further on this line. The railroad was also put off by the cost of a new platform and station which was expected to be between one and two million dollars. Bus lines also found it impracticable to build a station. Since ramps from the new turnpike are close to Prudential Center, the major means of access will be by car as well as by rapid transit. Had the rail and bus companies not been negative much could have been done to reduce automobile congestion in the area

Prudential Center, Boston, Massachusetts

Charles Luckman, Associates, Planning and Architecture

ASSOCIATE ARCHITECTS ON TOWER BUILDING:

Hoyle, Doran & Berry

FOUNDATION ENGINEERS: *Metcalf & Eddy*

STRUCTURAL ENGINEERS—TOWER & COMMERCIAL:

Edwards and Hjorth

MECHANICAL ENGINEERS—TOWER & COMMERCIAL:

Syska & Hennessy

CONTRACTORS: *Perini Corporation & Walsh Construction Co.*

STRUCTURAL ENGINEERS—HOTEL:

Seelye, Stevenson, Value and Knecht

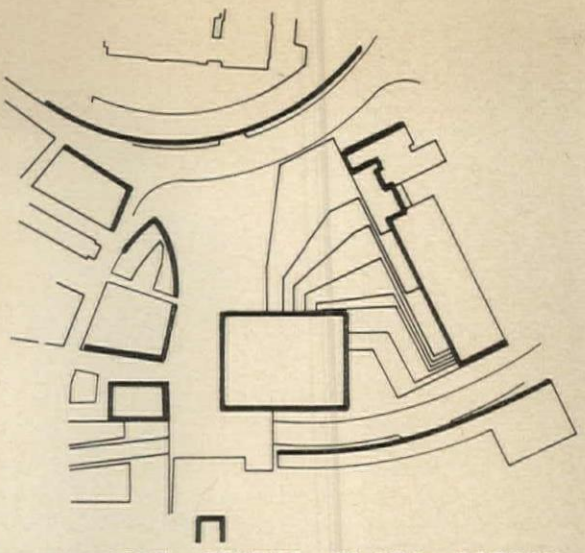
MECHANICAL ENGINEERS—HOTEL & APARTMENTS: *Krey & Hunt*

City Hall as seen from main approach. Subway kiosk is at left, Sears Crescent at right

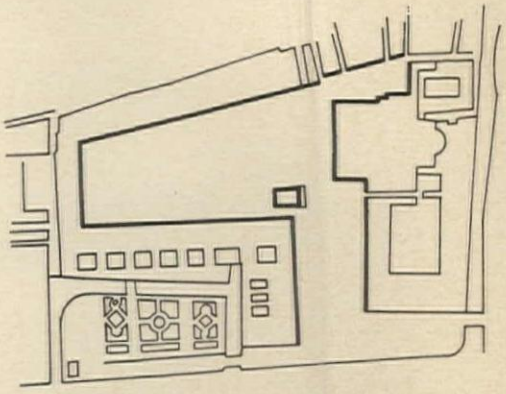
A Great Plaza for Boston's Government Center

In this now cleared urban renewal tract in Boston's Scollay Square area, foundation work has begun on two major buildings, the Boston City Hall by competition winners Kallmann, McKinnell and Knowles, who have formed an association called City Hall Architects and Engineers with Campbell and Aldrich and William J. LeMessurier and Associates; and the Federal Office Building by The Architects Collaborative and Samuel Glaser Associates.

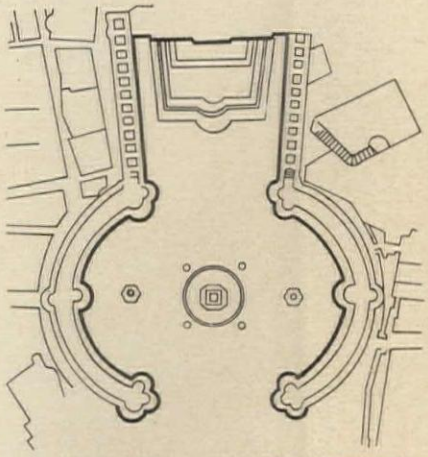
Both buildings face a huge plaza comparable in size to St. Mark's Square in Venice or St. Peter's Square in Rome. The plaza is essentially a trapezoid with two curved sides formed by the existing curve of Cambridge Street and by Sears Crescent, the remaining half of another curved street at one time lined on both sides with 19th-century buildings. Kallmann, McKinnell and Knowles have handled the plaza as a great plane on which people move, into and through the public spaces of the city hall, across to the raised podium of the Federal Office Building or down by means of broad steps to Faneuil Hall and the old Quincy Market and beyond to the waterfront area. The subway kiosk was placed in such a way as to hold the street motion along the face of Sears Crescent.



GOVERNMENT CENTER PLAZA, BOSTON



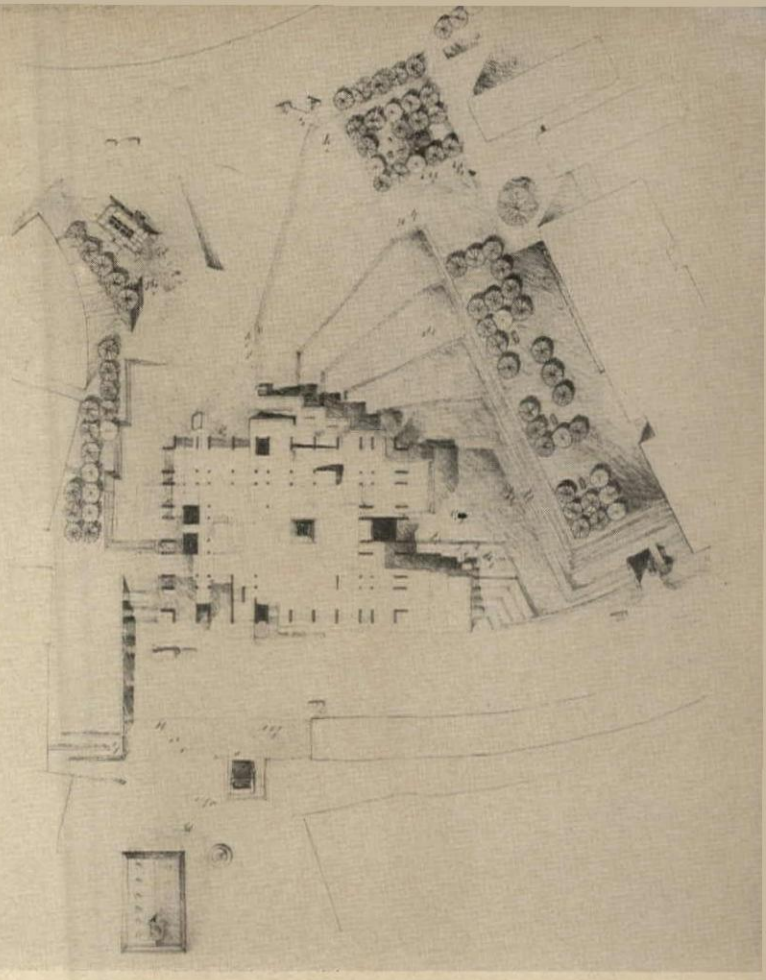
ST. MARK'S SQUARE, VENICE



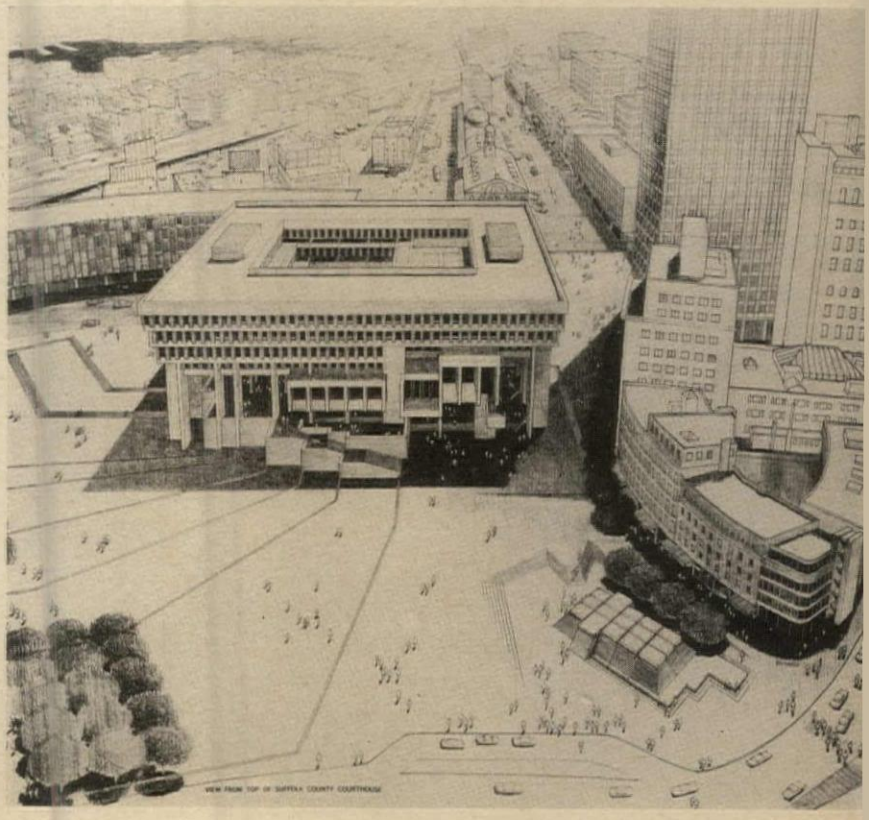
ST. PETER'S SQUARE, ROME

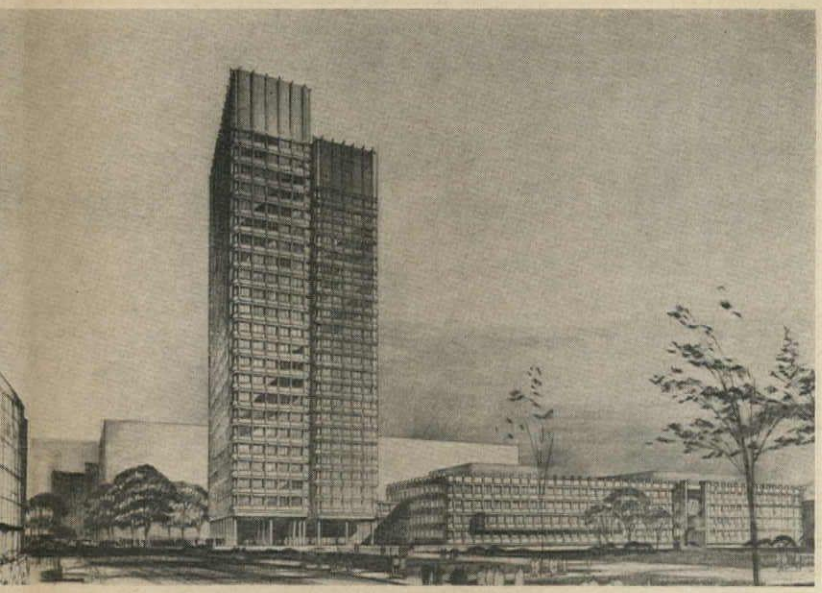
Legend for Government Center plan at left

A. Old State House
B. Private office building
C. New Congress Street
D. City Hall
E. Motel
F. 2,000-car parking garage
G. Federal Office Building
H. Plaza
I. M.T.A. Kiosk
J. Sears Crescent
K. V.A. Building
L. Cambridge Street
M. Private office building (One Center Plaza)
N. Court House Annex
O. State Office Building
P. Private office and commercial buildings
Q. State Service Center
R. State House
S. Faneuil Hall
T. Central artery



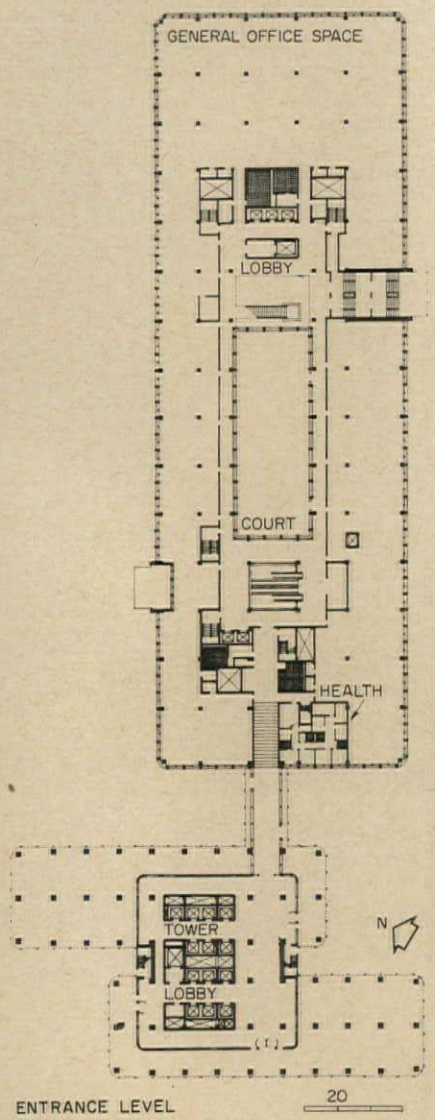
The plaza will be hard and paved in Boston red brick with special landscaping effects avoided. Said McKinnell: "Boston has a magnificent system of parks so we didn't need another park . . . we wanted the plaza to have an urban aspect. It will not be barren of incident . . . life in a plaza does not occur in the center but around the edges, people cluster around the periphery and look toward the center . . . but a plaza is essentially a place of passage."



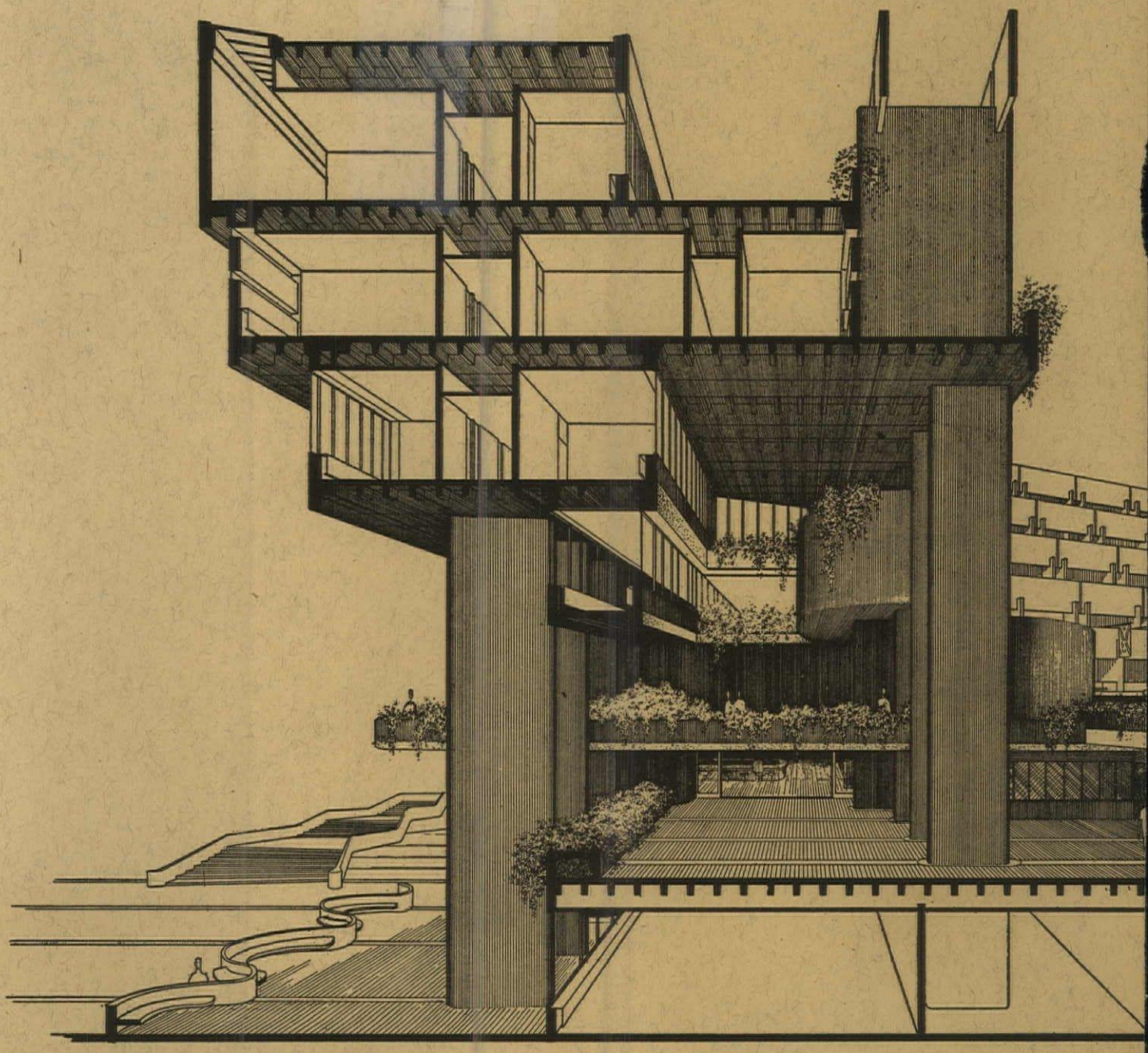


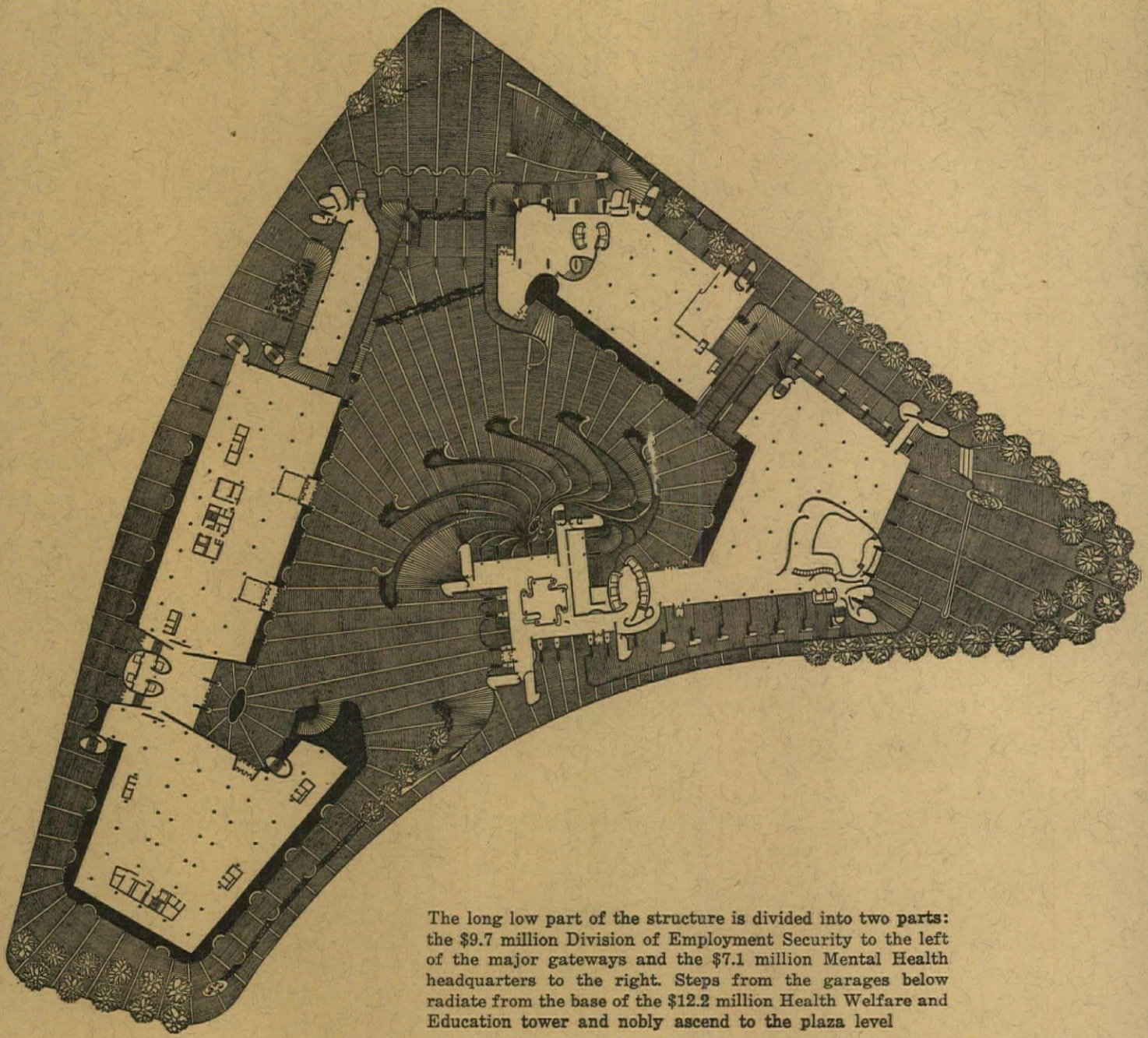
Perspective sketch of Federal Office Building was made before new plaza was developed. This building had been designed before the City Hall competition was held and was therefore a fixed element in the program for the competition. The winning architects collaborated with Gropius in further refinement of plaza relationships adjacent to this building

Plan of Federal Office Building

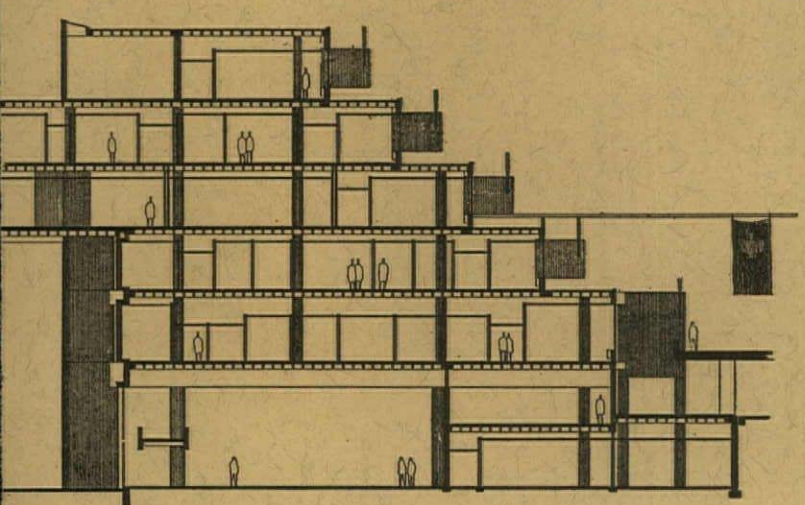


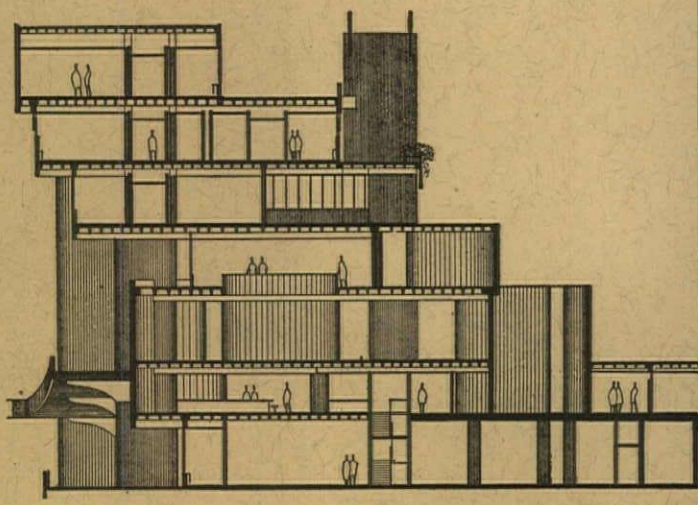
Coordinated Architecture for Government Center

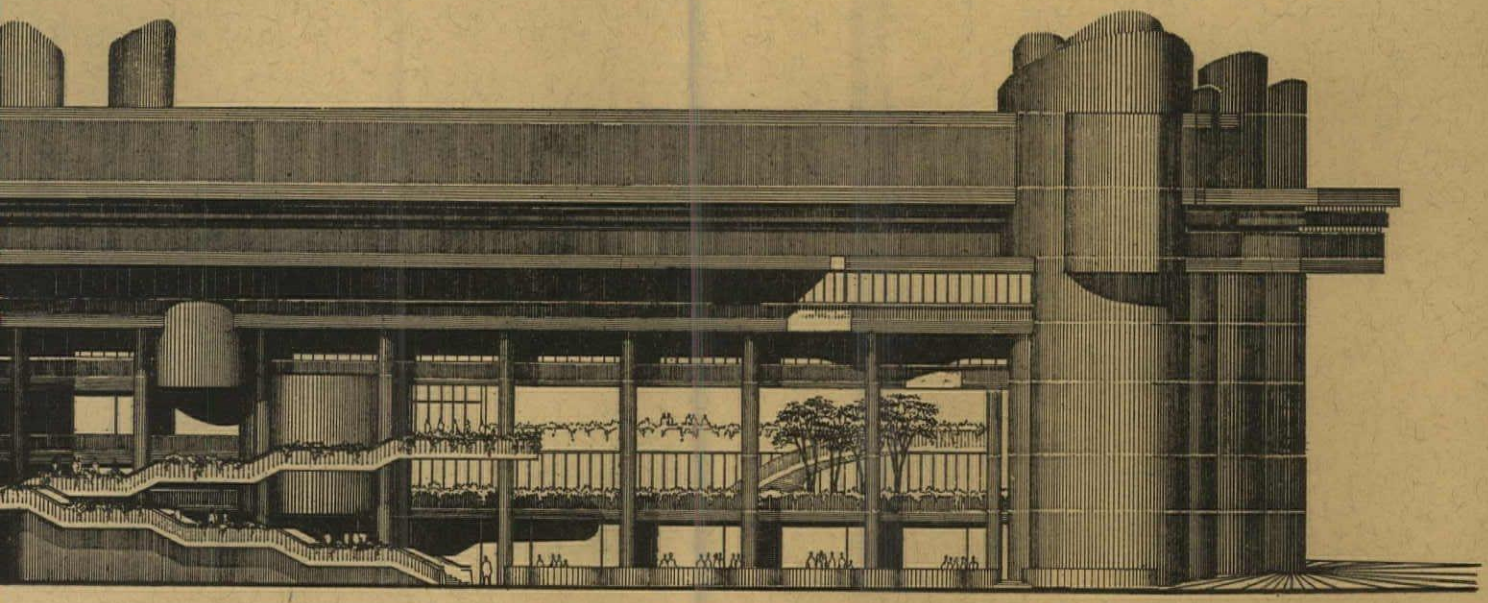


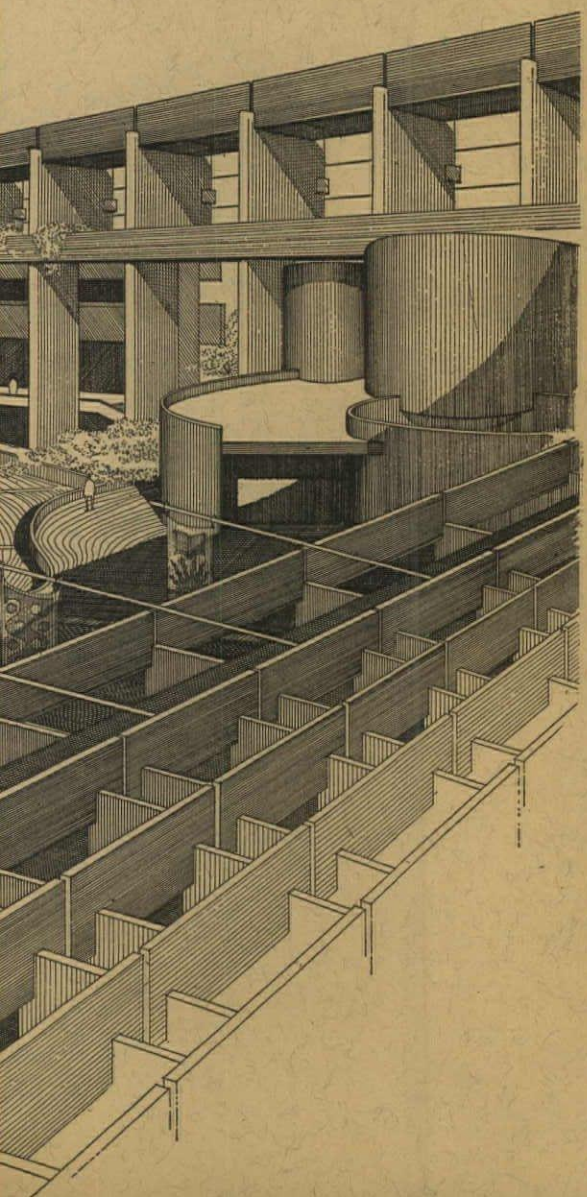


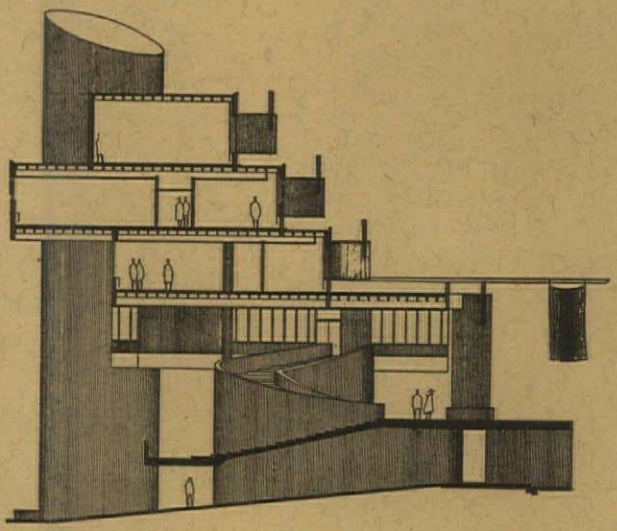
The long low part of the structure is divided into two parts: the $9.7 million Division of Employment Security to the left of the major gateways and the $7.1 million Mental Health headquarters to the right. Steps from the garages below radiate from the base of the $12.2 million Health Welfare and Education tower and nobly ascend to the plaza level

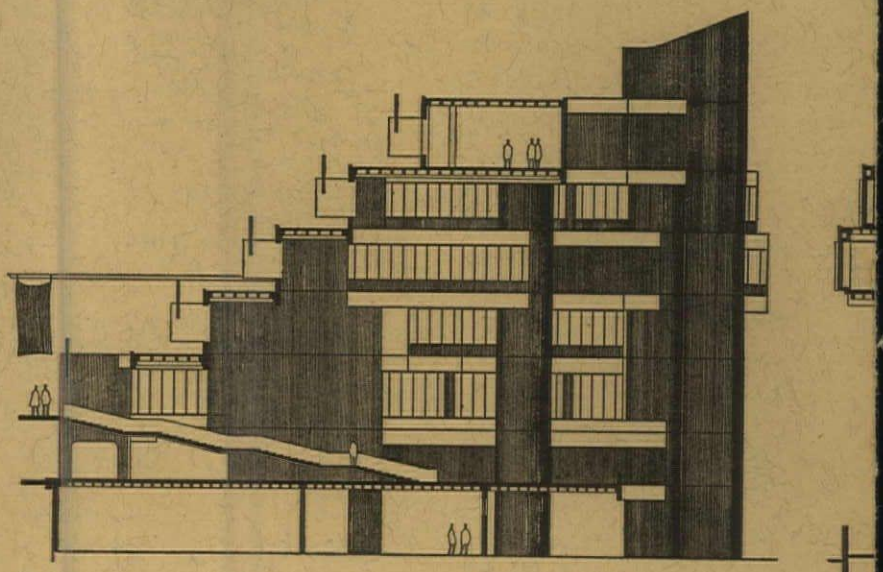






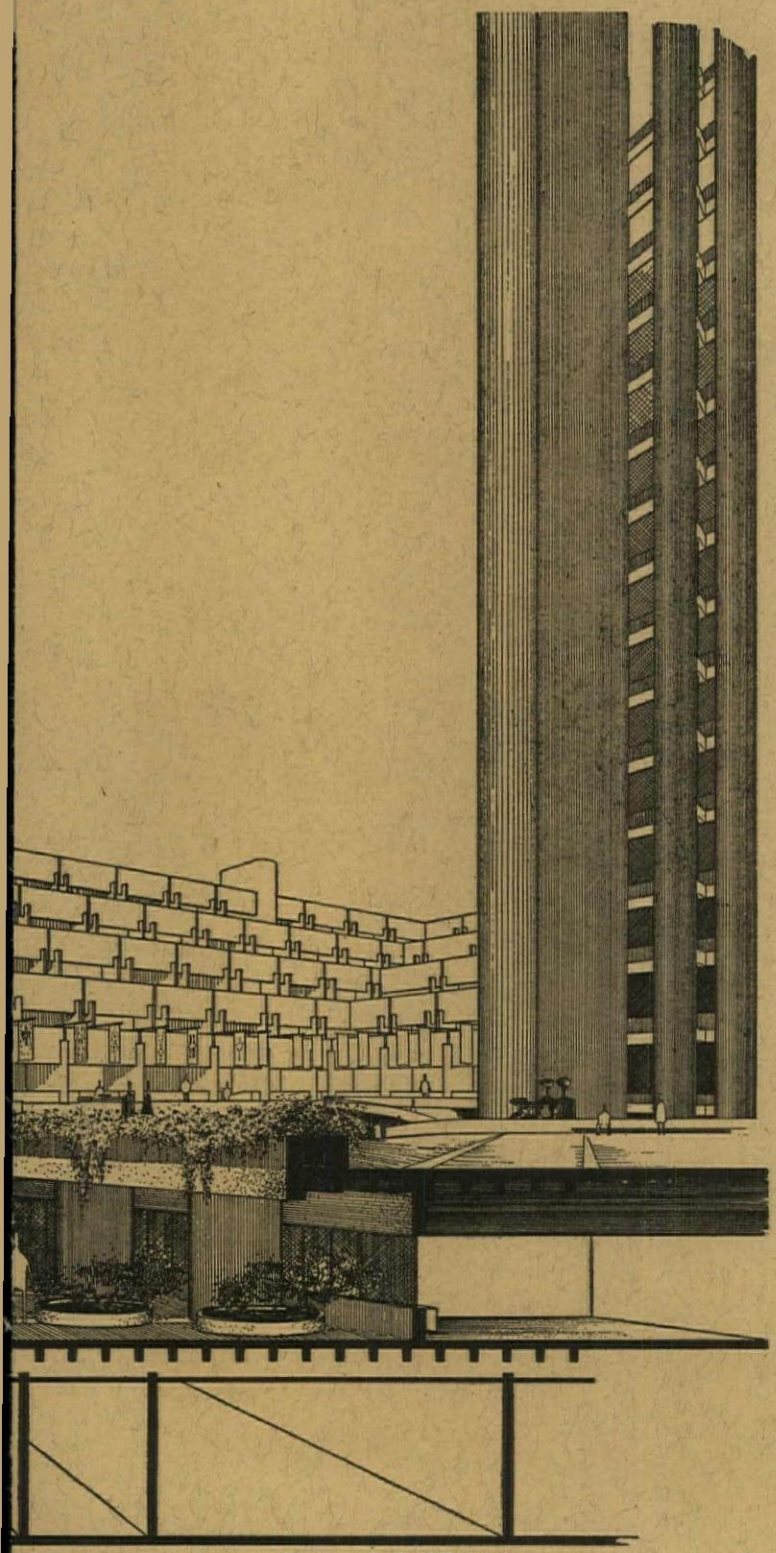






The portion of Boston's Government Center which has been allocated to the Boston Government Service Center is the only site in the entire complex in which the work of several firms has been totally coordinated. This pie shaped piece of I. M. Pei's master plan was designated for three state service buildings to be done by three separate firms. Because of the odd site the participating architects began to devise over-all schemes as a basis of possible cooperation, but none satisfied all of them or the design review panel of the Boston Redevelopment Authority. Shortly after the winning design of the Boston City Hall competition was unveiled, Paul Rudolph came up with a scheme which had the strong backing of Jean Carlhian of the Shepley firm and which won the approval of the B.R.A. The participating firms agreed to execute their buildings within the terms of this scheme and Rudolph became coordinating architect.

The scheme assembles the spatial requirements of three distinct state services into a system of terraced buildings which snake around a fan shaped plaza, and culminate in a 23-story tower building to house the state departments of Health, Welfare and Education. The height of the street facade was controlled by the scale of the surrounding buildings. The elements of the Center are stepped down toward the plaza to reduce its size. Each of the three corners is squared off to create three small exterior street plazas.



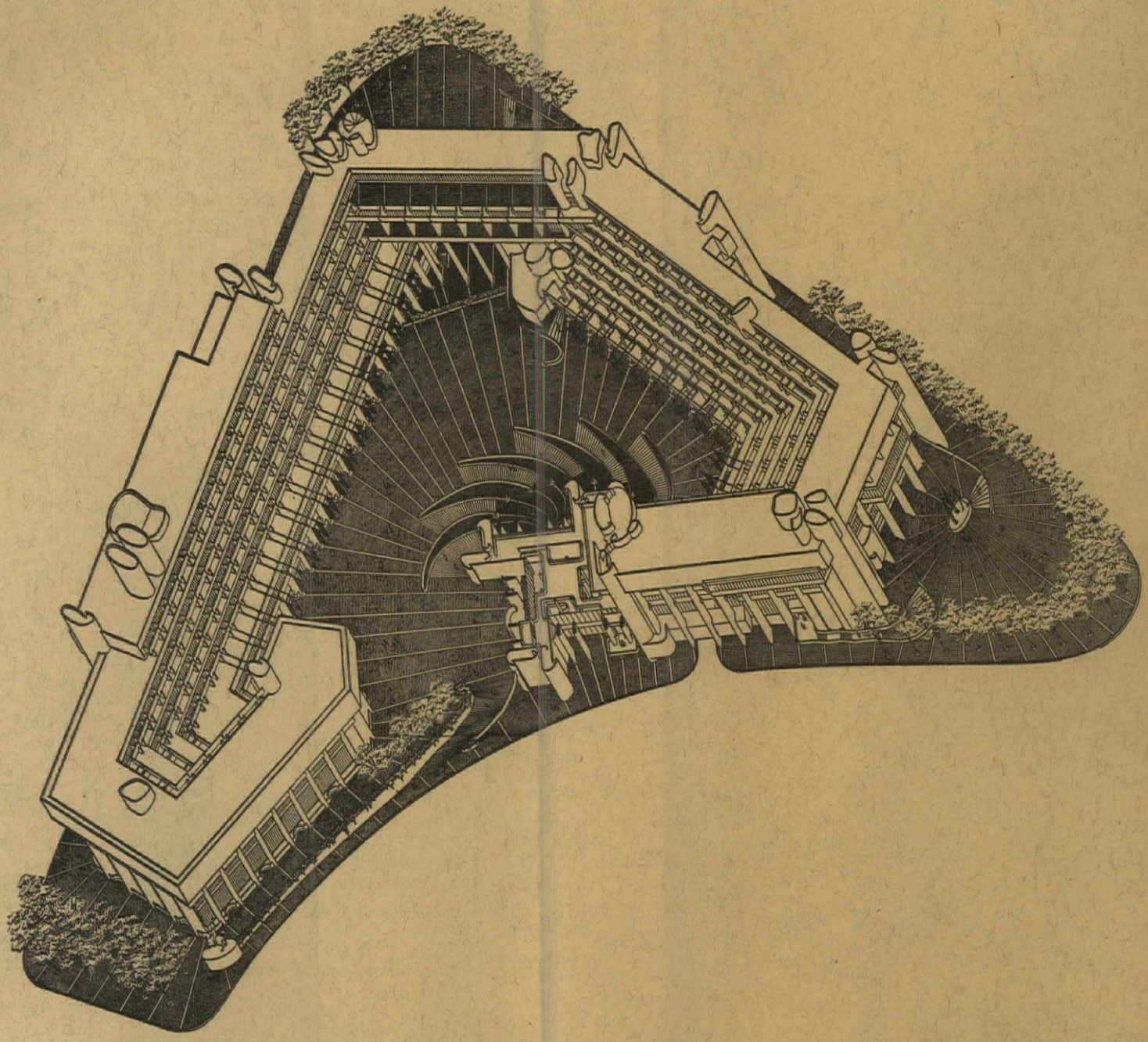
Drawings by Paul Rudolph

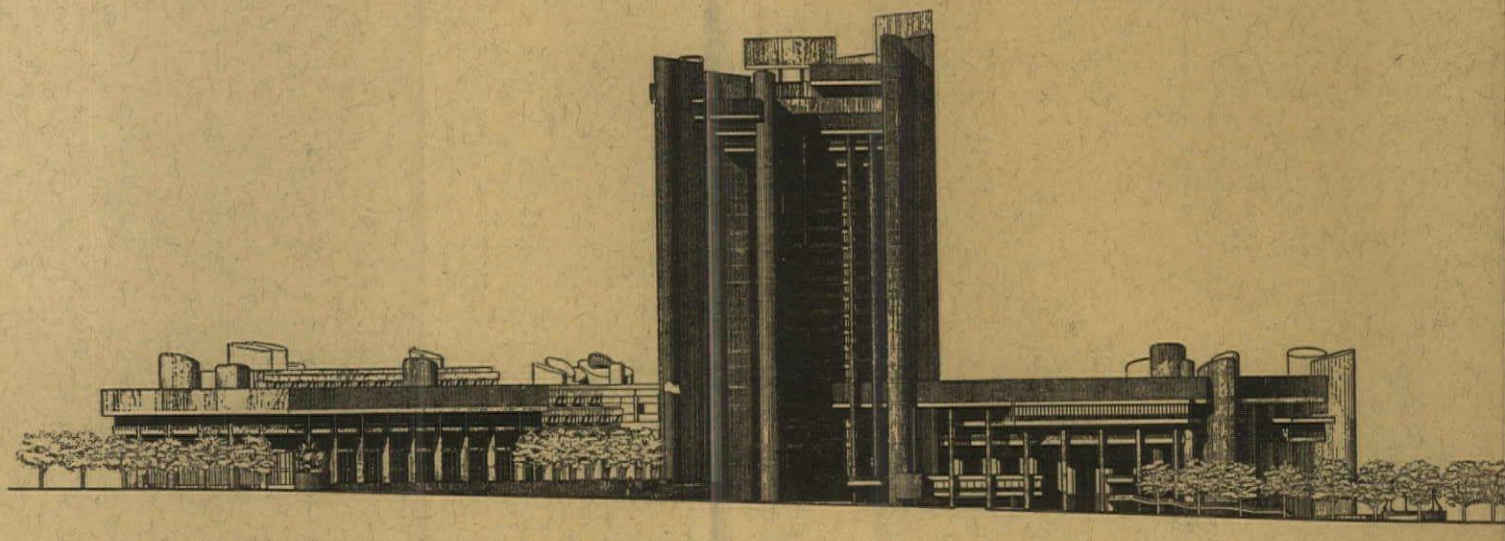
Paul Rudolph—Coordinating Architect

Division of Employment Security Building—
Shepley, Bulfinch, Richardson & Abbott, Architects

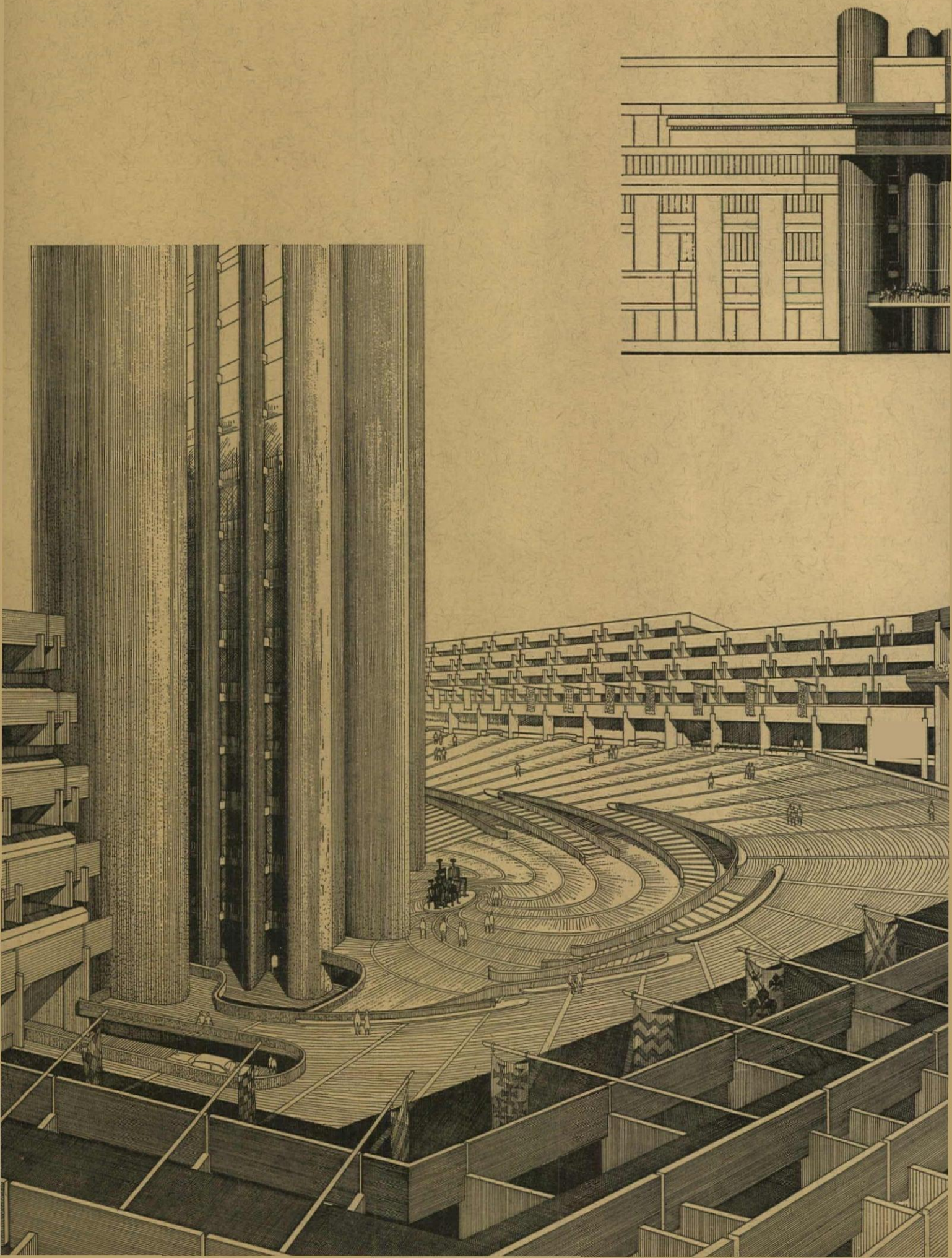
Mental Health Building—Desmond & Lord, Architects
Paul Rudolph, Architectural Design

Health, Welfare & Education Building—
H. A. Dyer and Pedersen & Tilney, Architects
Paul Rudolph, Architectural Design





State Government Service Center



Architectural Engineering

New Glasses Acquire, Shed "Suntan"

Architects have had their imaginations aroused by reports of glasses which darken on exposure to light and clear again when the light source is removed. Dr. S. Donald Stookey, director of fundamental chemical research at Corning Glass Works, described a series of new light-sensitive materials at the annual meeting of the American Physical Society on January 24th. These glasses, which can be made transparent or opaque, are still in the laboratory stage and are not yet commercially available. But Corning is engaged in a research and development program to adapt the materials to practical products such as automobile windshields, sunglasses and building glasses. Called photochromic glasses, these glasses retain indefinitely their ability to darken quickly (to a neutral gray, a brown or purple) and then clear. The darkening-clearing cycle can take from three minutes to hours, depending upon the glass composition, previous heat treatment and temperature of the material. Wave lengths that produce the darkening are typically near the ultraviolet; some samples have become so dark that only one per cent of the light comes through. Responsible for the light-sensitive characteristics of these glasses are dispersed submicroscopic crystals of silver halide which act as permanently reversible darkening-clearing agents. Another manufacturer, Pittsburgh Plate Glass Company, has also been conducting research on photochromic glasses. They report that they have found a number of substances which react photochromically and have said, "We are continuing our research to produce the most satisfactory variable transmission product that can be manufactured economically."

"Direct" Disposal System Eliminates Garbage Cans

Garbage cans may be on their way out as the result of a new, completely automatic apartment house garbage disposal technique. The system uses an advanced burning and conveyor system instead of the traditional incinerator to transfer ash directly from building to truck. At no time is the ash exposed to the air or human hands during the transfer from the destructor storage bin through the completely enclosed conveyor to the sanitation truck. In this system, the refuse chutes are only arteries which lead to destructor rooms where refuse and combustion products are processed. When a certain amount of refuse has descended the chute, a photocell mechanism releases the waste into the destructor room. Once inside, the rubbish is automatically and continuously "rammed" into the primary burner. The combustible material, odors and smoke cannot escape past this ramming device and move up the depository chute being installed at the Pavilion, which will be New York City's largest apartment house, the new disposal system has dispelled the designers' nightmare of some 200 garbage cans lined along the 35-story tower. Howard Bodan, was the industrial consultant in designing the system.

Room-size Fire Tests

New types of fire tests using room-size structures have been proposed by Professor Franz Kollmann, director of the Institute for Wood Research and Technology at Munich, Germany. Kollmann has pointed out that in conventional small-scale tests, certain vital conditions of large fires are lacking—turbulence created by heat and gases produced in a room-size fire does not develop in small tests designed to measure flame spread, ignition time, temperature rise and other characteristics of burning. Professor Kollmann's recommendations were adopted by the Fifth Conference on Wood Technology of the United Nations Food and Agriculture Organization, held at the U.S. Department of Agriculture's Forest Products Laboratory in Madison, Wisconsin.

This Month's AE Section

WALLS BECOME COLUMNS, AND VICE VERSA

Consulting engineer Wayman C. Wing shows structural elements that enclose and subdivide space

Interest has steadily grown among architects and engineers in exploiting the multi-functional capabilities of bearing walls and wall-columns in multi-story buildings. Not only can these structural elements support floors and resist lateral loads due to wind and earthquake, but they can work architecturally in enclosing and subdividing space, particularly in apartment buildings and hotels. For structures in these building types, architects have welcomed the replacement of awkward square or round columns with bearing walls or wall-columns as thin as 6 in. or less. With these elements working as exterior walls or partitions, this approach avoids undesirable protrusions into rooms and provides much more usable space.

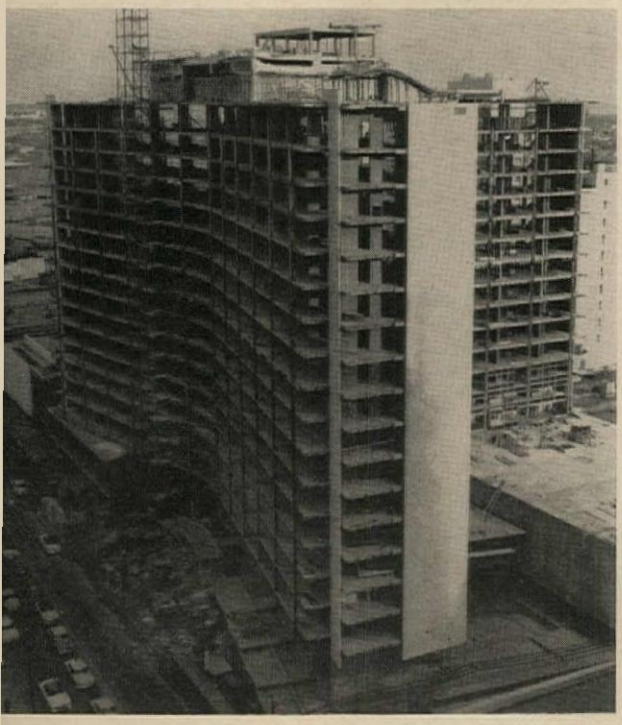
Six buildings shown here, constructed during the period from 1955 up to the present, illustrate the use of concrete structural elements as: (1) end shear walls or wall-columns serving as the major wind-resisting elements (Dallas and Puerto Rico); (2) load-bearing walls doubling as room partitions (Dublin and Bermuda); (3) thin columns around the building periphery which match interior partitions in thickness (Karachi); and (4) exposed concrete bearing walls acting as seismic-resisting elements (San Francisco). Wayman C. Wing was associate engineer-in-charge for the first two buildings mentioned while with Seelye, Stevenson, Value & Knecht, Consulting Engineers. His office was designing consulting engineer on the remaining buildings. Architect for all buildings shown was William B. Tabler.

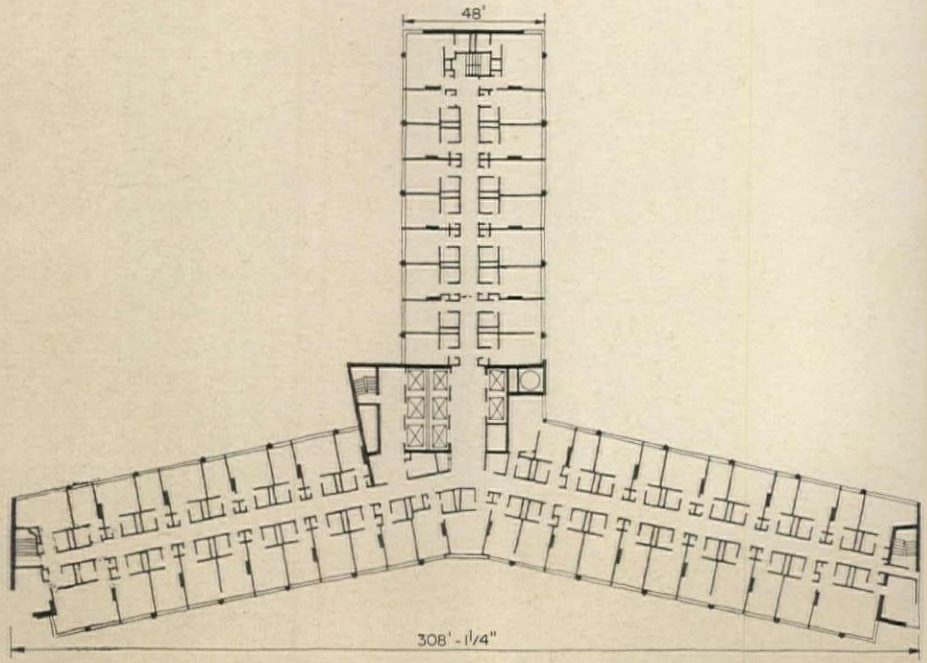
While both the dimensional and reinforcement requirements for bearing walls and rectangular columns are specifically spelled out in the American Concrete Institute building code, the structural designer must perform individual engineering analyses for various hybrid wall-columns in order to realize the economies and architectural advantages of thin elements, as will be demonstrated below. And since wall-column design is covered only briefly in the A.C.I. code, the designer will have to make sure that his engineering analysis for a particular design will be acceptable to the local building department involved.

The A.C.I. building code requires that reinforced concrete bearing walls be a minimum of 6 in. thick for the first 15 ft, with thickness being increased 1 in. for each additional 25 ft of height. Principal columns in a reinforced concrete frame must be a minimum of 8 in. wide, have a gross area of not less than 96 in., and use tied reinforcement. The A.C.I. provision which permits the structural engineer to waive these items, if his analysis indicates that they are not necessary, could in some cases lead to a problem for the engineer in convincing building authorities that his analysis should be accepted.

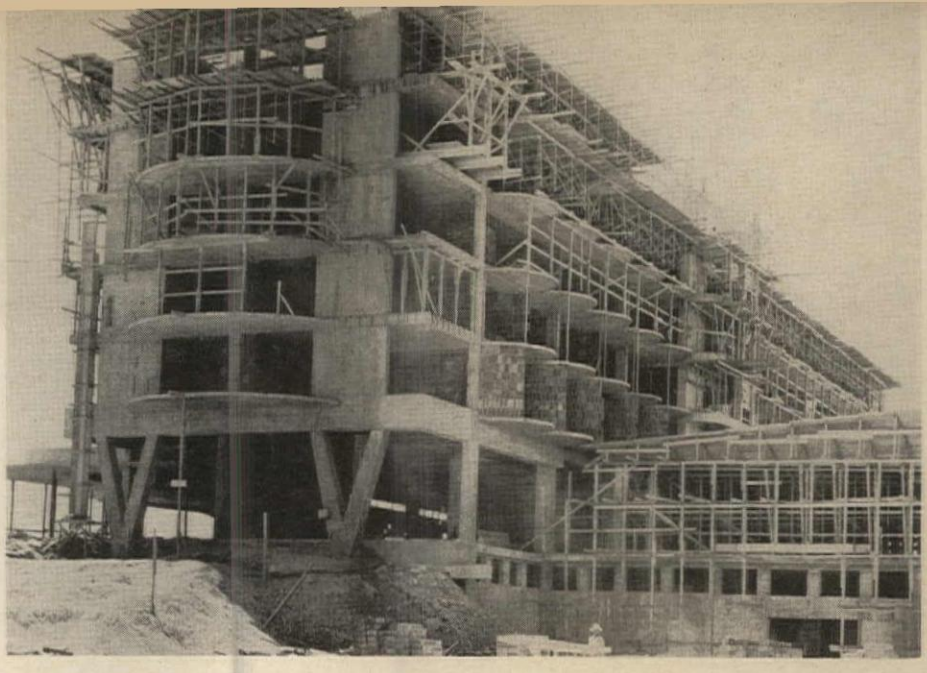
Engineering analysis for the Intercontinental Hotel in Dublin indicated that all cross walls in the eight-story structure could be as thin as 6 in. Strict adherence to the A.C.I. code would have required these walls to be 10 in. thick when considered as bearing walls and reinforced with the minimum amount of steel bars called for in bearing walls. If considered as columns, the walls would have had to be a minimum of 8 in. thick.

It is obvious that the progressive designer will discover many cases in which the design does not belong in the governing criteria of the wall or column formulas of the A.C.I. code. In many cases he will find that the actual stresses are small, and increasing the wall thickness or providing tied reinforcement will be uneconomical and unnecessary.



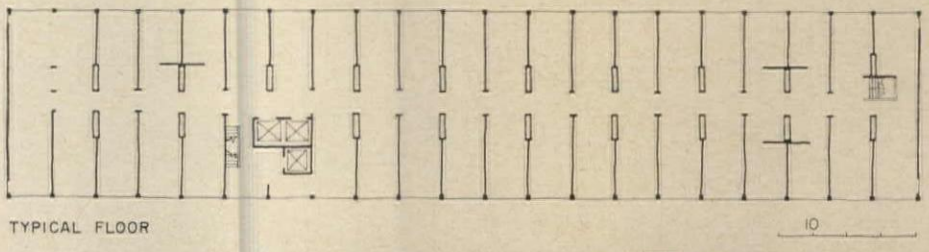


TYPICAL FLOOR

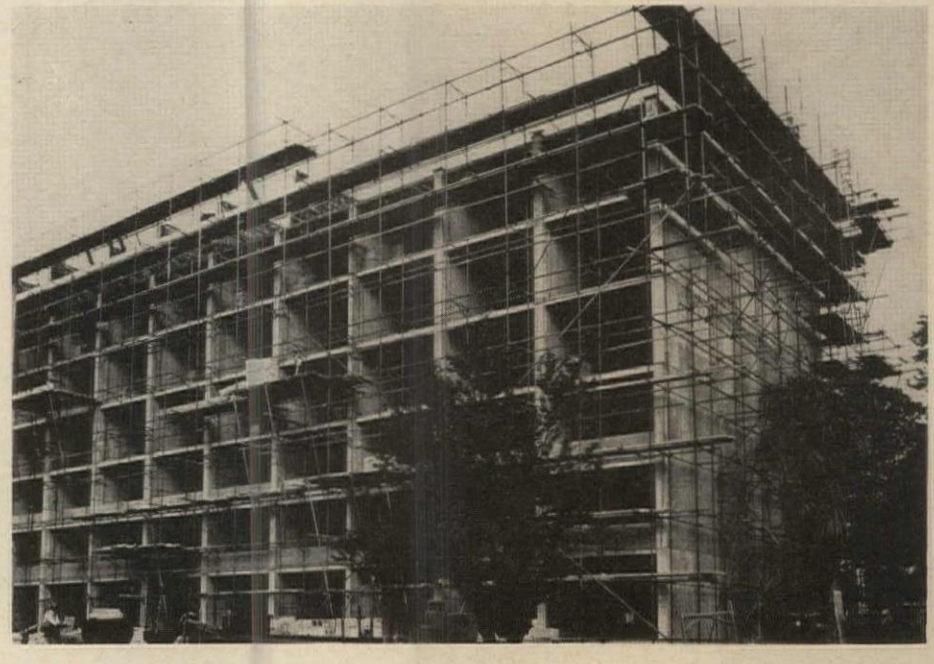


Intercontinental Hotel, Ponce, Puerto Rico *(right)*. End bearing walls in upper floors and V-shaped columns at ground floor contribute to rigidity of the structure in resisting wind loads. Wind forces in other portions of the building were taken by transverse bents

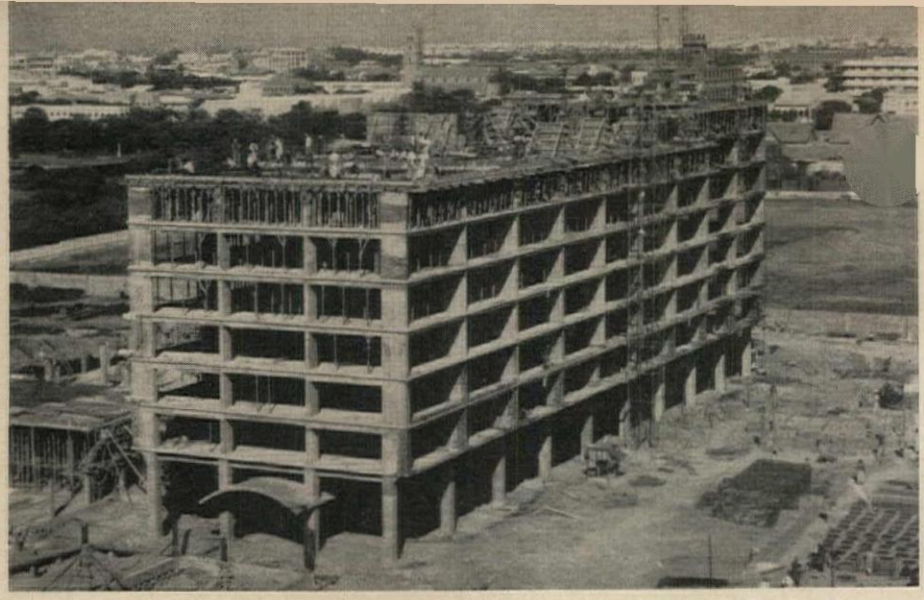
Intercontinental Hotel, Dublin, Ireland *(right)*. Load-bearing partitions only 6 in. thick carry eight floors. Local code does not require an arbitrary increase in thickness. Actual stresses were well within safe limits allowed for concrete bearing walls in accordance with American Concrete Institute code. Stability at right angles to bearing walls was provided by longitudinal concrete shear walls and block corridor walls

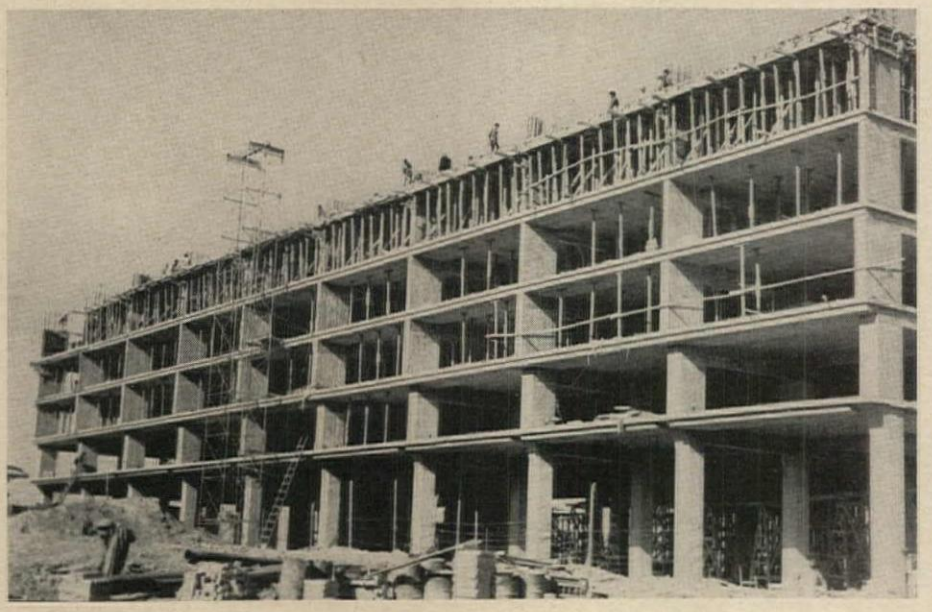


Statler-Hilton Hotel, Dallas, Texas *(across page)*. End bearing walls were designed to carry gravity loads and to resist wind stresses. Even though the thickness was increased 1 in. for every 25 ft of height after the first 15 ft, as required by code for bearing walls, the walls were designed as column-beam frames

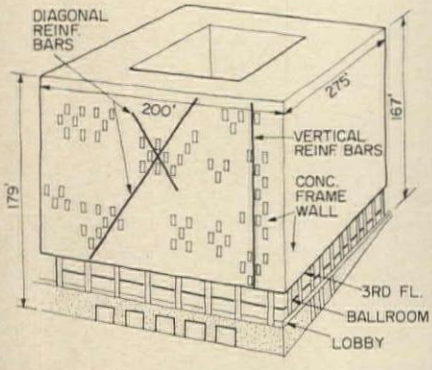


Carlton Beach Hotel, Bermuda *(below)*. Eight-inch unreinforced concrete block bearing walls carry five stories with actual stresses well within safe limits. Stability at right angles was achieved by corridor walls acting as stiffening diaphragms





Intercontinental Hotel, Karachi, Pakistan *(left)*. Long, thin exterior columns serve as space dividers along the balconies. Transition in shape takes place at the second floor with columns becoming shallower and fatter, and columns on the ground floor being square-shaped. This eliminates the need for a heavy transition girder in the lobby ceiling



Hilton Hotel, San Francisco, California *(left and above)*. Exposed exterior concrete frame walls are load bearing and serve as seismic-resisting elements. Even though the walls were increased 1 in. for every 25 ft of height after the first 15 ft, the wall analysis was based upon beam-column theories. The staggering of windows allowed straight-line placement of reinforcing bars along primary stress lines

AIR CONDITIONING OF AUDITORIUM-TYPE BUILDINGS

By Alfred Greenberg, Consulting Engineer

The general air-conditioning design for larger places of assembly is basically similar despite the varied functions and architectural expressions of these buildings. The building types include: houses of worship, theaters, opera houses, concert halls, auditoriums, fully-enclosed stadiums, community centers and sports arenas. Several common characteristics make their air-conditioning problems similar:

High ceilings. In large places of assembly, ceiling heights may range from 15 to 100 ft or more. Ceiling heights in other types of buildings, however, range from about 8 to 12 ft, except for special areas such as lobbies.

High population density. These buildings can hold from several hundred to tens of thousands of people in seating areas that allow about 5 sq ft of seating space per person.

High heat load. The congregation of a large number of people produces a big heat load which must be dissipated in order to produce a comfortable atmosphere.

Occupation time. As a rule, most of these buildings are occupied by a given group of people for only about one to four hours. If the building is continuously used by different groups of people at all hours of the day, it presents a different problem from one which is occupied for only one performance an evening.

Although buildings of assembly all have similar design criteria, the variations that may result are numerous and each situation must be analyzed in the light of its own characteristics. The distinguishing features of each type of building will be reviewed and analyzed to ascertain its relationship to the air-conditioning problems involved. Air-conditioning systems for all buildings of assembly must be very carefully designed because attention to details, more so than in many other types of buildings, can make the difference between a good and a poor job.

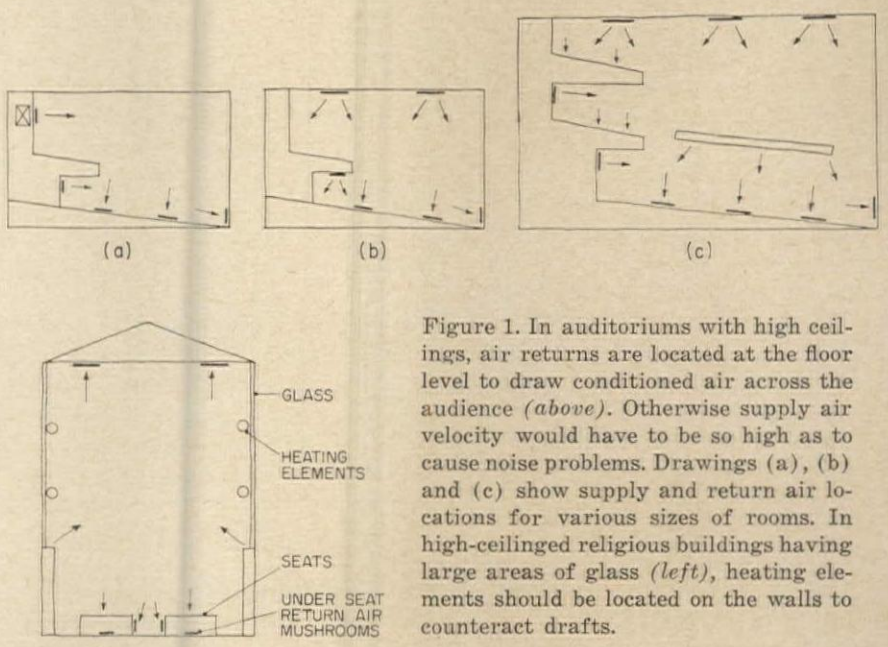


Figure 1. In auditoriums with high ceilings, air returns are located at the floor level to draw conditioned air across the audience *(above)*. Otherwise supply air velocity would have to be so high as to cause noise problems. Drawings (a), (b) and (c) show supply and return air locations for various sizes of rooms. In high-ceilinged religious buildings having large areas of glass *(left)*, heating elements should be located on the walls to counteract drafts.

Ventilation Requirements

The primary problem is to furnish sufficient air at the proper temperature and humidity conditions and distribute it in a satisfactory manner. Seating area ventilation requirements are usually set by codes which typically call for 30 cfm of total air flow per person with 15 cfm of outside air. For air conditioning, the total cfm per person may be lowered to 12-24 cfm with 5-10 cfm of outside air per person. The lower limits apply where no smoking is allowed and the building is used infrequently. In most places of assembly this will give from five to eight air changes per hour, which will usually provide good air circulation.

Noise Level

One of the prerequisites for air conditioning in places of assembly is that the systems not be heard. This is difficult to achieve if the air supply is expected to travel 30 or more ft to provide proper air conditions for those people in the center of the seating area. The large size of most houses of worship, theaters and halls would require high air discharge velocities from the air outlets which would create noise objectionable to those sitting near the outlets. Therefore, the concept of "putting the return air system to work" has to be adopted. It is illustrated in Figure 1, and, stated simply, means that the supply air is discharged from the air outlet at the highest velocity consistent with an acceptable noise level. This velocity will usually not enable the conditioned air to reach the farthest portions of the audience. Therefore, if return air registers are located at lower levels of the auditorium, then the conditioned air will be pulled to return registers and thus cool or heat the audience as required. In practice, this usually means that the supply air is furnished in a blanket over the seating area and is pulled down uniformly by the return air registers under or alongside the seats.

Concert halls and opera houses have the most critical noise requirements. Theaters for drama and dance, auditoriums, houses of worship and sports arenas generally follow in the order given. Wherever possible, air-distribution systems should be designed so that noise levels from the system do not exceed the recommended low limits in order to provide a factor of safety and insure satisfactory performance.

Air-Conditioning Requirements

Where large groups of people congregate, it is seldom necessary to provide much heating. In fact, the usual need is for sufficient cooling to offset the heat given off by people and by lights.

Because of the relatively high latent heat load produced by the audience, the seating area system should be designed for proper dehumidification as well as humidification control. The latter may be required if the outside air has a low relative humidity and the seating area is relatively empty.

To reduce the recirculation of body odors, stale air, smoke, etc., outside air quantities should not be reduced below acceptable levels. The use of activated charcoal filters to reduce odors and thus cut down on the outside air needed may be desirable if economically practical. But it must be borne in mind that the use of activated charcoal will not eliminate the need for outside air altogether.

The air-conditioning requirements for places of assembly are reasonably fixed with regard to people and lights, once the capacity of the room is established. This will also determine the outside air requirements. The two major considerations left are the outside load and the method of air distribution.

Where the place of assembly is completely within an outer shell consisting of rooms, lobbies, etc., it will not be affected by outside air temperatures except for the load of ventilation air. This spatial arrangement has been used extensively for cultural and civic centers, partially to isolate the seating areas from outside noises. The "bubble-within-a-bubble" arrangement allows for reduced refrigeration requirements and also minimum air stratification. The latter makes it practicable to supply conditioned air from the ceiling and cool a "lot of empty space."

In houses of worship, which often have high, vaulted ceilings and large expanses of glass on the exterior walls, it is impractical to supply air from the ceiling, as this air would have to cool or heat all the space above the 12-15-ft level and still have enough capacity to provide comfort conditions at the occupants' level. It can be seen that this would substantially increase the size of heating and cooling plants. In buildings of such design it is desirable to supply the air from the side walls at about the 15-ft level and not heat or cool the upper areas of the main room.

In the summer, the hot air will rise and collect at the ceiling. This will produce a radiant effect which will increase the roof load by about 20-40 per cent. If the hot air is vented to the atmosphere, then the radiant load will be considerably reduced. It must be borne in mind that although the transmission load above the 15-ft level may be neglected, the solar load that reaches the occupants' level must be included in the air-conditioning load.

In cold weather the air supply blanketing the occupied area cannot be counted upon to prevent cold downdrafts from large glass areas from breaking through. Therefore, it is recommended that strips of radiation be placed at various glass levels to break up the downdraft currents into smaller components at higher temperatures which will diminish their intensity and effect.

Air Cleanliness

The areas of most houses of worship, theaters, opera houses, concert halls and all other buildings with elaborate decorations and accommodations should have high-efficiency filters because of the difficulty of cleaning such areas and to prolong the life of their interiors. Filters selected should have 80 per cent efficiency based on the National Bureau of Standards atmospheric air discoloration test. Other places of assembly can probably operate economically with a minimum of cleaning by using filters in the 20-35 per cent NBS range.

In addition it will be desirable to provide means for sterilizing the air to prevent the spread of infection and contamination.

Air Conditioning the Stage

Most building codes distinguish between a stage and a platform, with the former having much more stringent and complex construction and ventilation requirements. Thus it is essential that the legal definition of what is being furnished for a given building be determined early, since relatively minor changes in design or concept could legally change a platform into a stage or vice versa.

When a place of assembly has a permanent stage, it usually becomes necessary to furnish the stage area with a different air-handling system from that which serves the audience. The air flows and balances can be better controlled through a separate system, and there is greater protection from smoke and fire. Even where a stage is not present, but the functions performed are markedly different from those of the audience, such as when an orchestra performs on a platform, it is desirable to have the platform served by a separate air-conditioning system.

Air-conditioning design to provide comfort for actors can be complex because of the large mobile lighting load and intricate or delicate stage scenery that varies from scene to scene. Approximately 40-60 per cent of the lighting heat load can be negated by exhausting air around the lights (see Figure 2). This is practicable for lights around the proscenium, but it is more difficult to locate ducts directly over the light strips over the stage because of the closely spaced scenery and light drops. Careful coordination is required to achieve an effective and flexible design layout (see Figure 2). The conditioned air should be introduced from the side and back stages (perforated ceilings or outlets preferable) and be returned or exhausted around the lights. Some exhaust air will have to be taken from the top of the main stage tower. The air distribution is somewhat complicated by the fact that some pieces of scenery consist of light materials that flutter in the slightest air current. This occurs even with air motion due only to the stack effect created by the heat from lights. To achieve the necessary low air movement velocities, the air must be distributed over a wide area with many supply and return registers. Due to the scenery changes, low supply or return registers from the floor of the stage are almost impossible to provide. However, some return air at the footlights and for the prompter should be considered. Air conditioning should also be provided for the stage manager and the control board area.

Very little research has been performed on the proper air conditioning of stages. Much valuable information could probably be gained by establishing a mock-up and running smoke tests and taking air temperatures for various stage operating conditions.

One phenomenon encountered in many theaters is the billowing of the

lowered stage curtain. This is due to the stack effect created by the height of the main stage tower, the heat from the lights, and the temperature difference between the stage and seating areas. Proper air distribution and balancing can minimize this phenomenon.

On the stage, cognizance must be taken of any local code requirements for emergency exhaust ductwork or skylight requirements which are often sizeable. These requirements should be incorporated in the earliest designs. Skylights may not be architecturally desirable but the emergency exhaust fans often require as much space and are usually taller. Where it is not possible to use a skylight, a duct flue connected to exhaust registers at the top of the stage tower must run to the top of the building and be connected to an exhaust fan.

Audience Seating Areas

The supply air must be furnished from the ceiling, the side walls or in some cases from the edges of balconies. Air may conceivably be supplied from the seats but air distribution and noise problems make this difficult and costly to do properly.

With small balconies, side wall supply distribution emptying into the central seating area is satisfactory, but deeper balconies will require some ceiling supply air and possibly under-the-seat returns.

A certain amount of exhaust air should be taken from the ceiling of the seating area in order to prevent formation of pockets of hot air which can produce a radiant effect with resulting discomfort and increase in the cost of air conditioning.

Location of thermostats and humidistats in the seating areas is impractical, so they should be placed in return air ducts. Several schemes for returning the air near the seating areas are shown in Figure 3.

Auxiliary Areas

Theater lobbies and lounges and even corridors sometimes contain works of art to be viewed by the patrons during intermissions. In such cases, the lighting intensity is often increased from an average of 3-6 watts per sq ft to 12-15 watts per sq ft. This creates a large increase in the air-conditioning load for areas having such a relatively short period of occupancy. It may be desirable in the main lob-

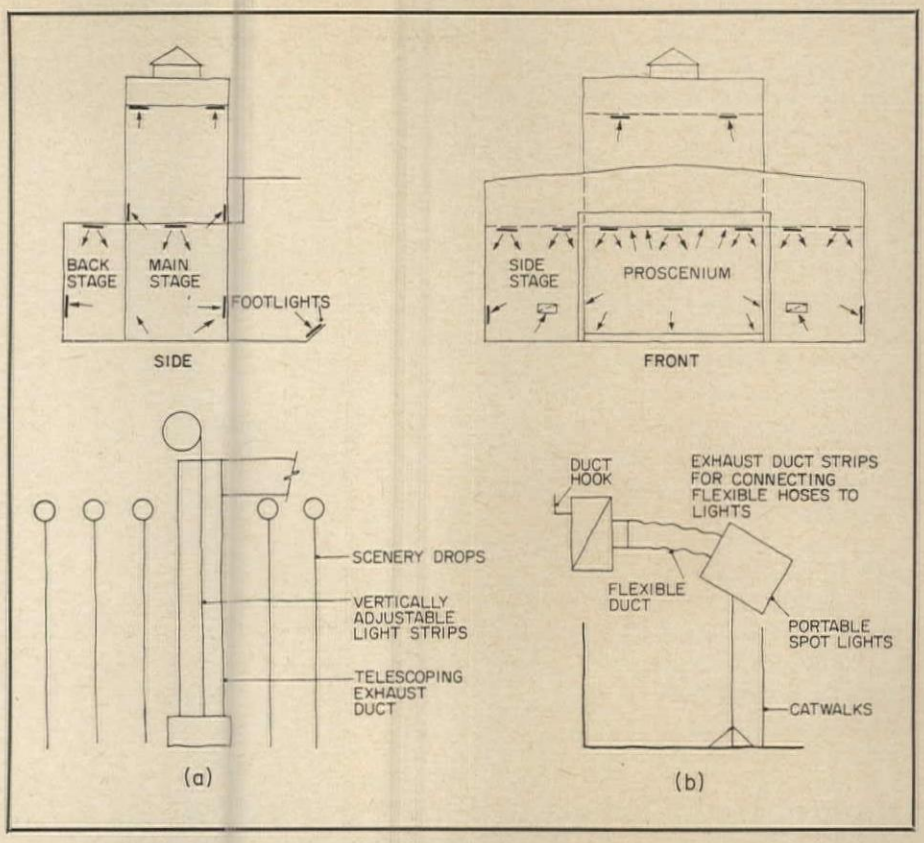
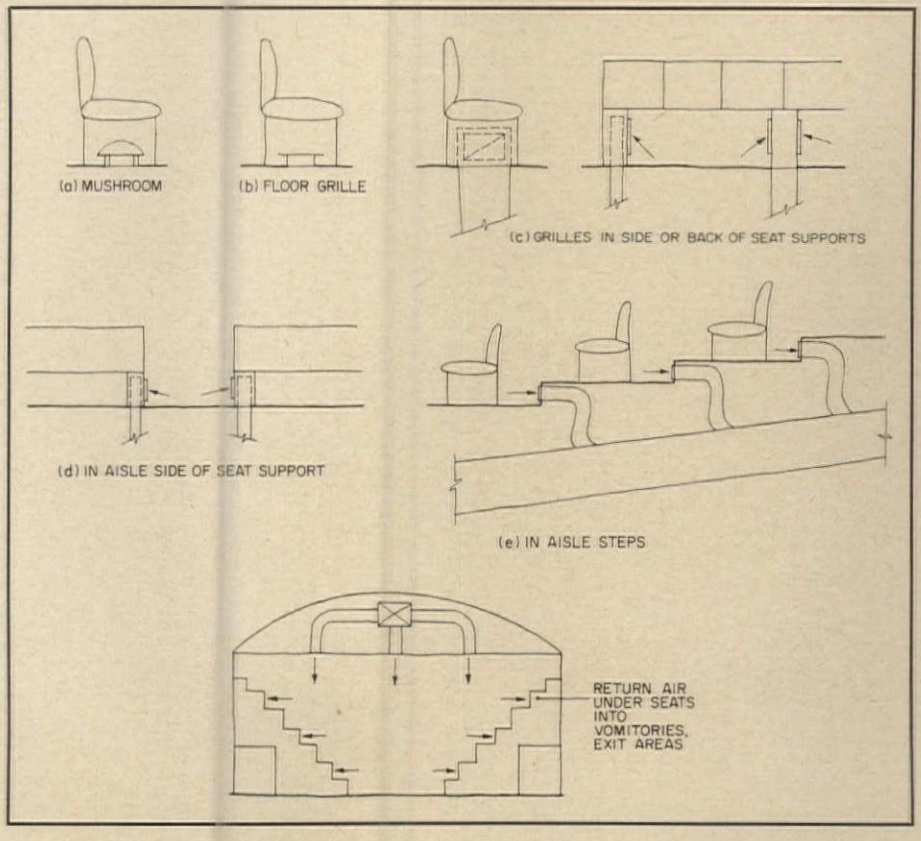


Figure 2 *(above)*. Air-conditioning of the stage area *(top)* presents special problems due to the large, mobile lighting load and intricate scenery that varies from scene to scene. To achieve low air velocities, many supply and return registers must be distributed over a wide area. This is necessary because light scenery materials will flutter in the slightest air current. Much of the heat from lights can be removed by exhausting heat directly from them *(bottom)*. Figure 3 *(below)*. Various devices and locations can be provided for removing air from auditoriums, illustrated in sketches (a) through (e). In arena-type buildings, air can be supplied from the ceiling and returned under seats into vomitories



bies to keep the lights on fully at all times, but in the lounges and corridors, dimming or shutting off part of the lights except during the intermissions may be practical to cut down on the air and refrigeration requirements.

During the intermissions, the population density in the lobbies, lounges and corridors may reach about one person per 5 sq ft. Roughly about one quarter or one third of the people leave their seats. However, since intermissions seldom last longer than 15 minutes, the heat build-up can usually be tolerated without increasing the air quantity. If it is desired to maintain peak comfort during intermissions, auxiliary air-handling units can be installed which will operate only during the intermissions, or two-speed fan motors may be used.

Since smoking is usually allowed in lobbies, lounges and corridors, the exhaust fans serving these areas should eliminate all the air directly to the atmosphere, and the supply air system should furnish 100 per cent outside air during intermissions. This can be done by means of proper damper and control arrangement. If it is desired to minimize the use of outside air, and it is shown to be economically feasible, activated charcoal filters may be utilized to purify the air.

The air-handling systems in fire corridors must be properly designed with fire dampers and smoke control devices in order to prevent the spread of fire and smoke between separated areas.

Houses of worship may also have auxiliary rooms which should be air conditioned. The manner in which this is done will be dependent upon the relationship of the architectural layout and the systems selected to furnish the air conditioning. Privacy between adjacent areas is an important factor in the air-distribution scheme.

In houses of worship and auditoriums it will usually be desirable to provide some degree of individual control in the air conditioning for the platform, sacristy, bema or choir area.

Sports Arena-Civic Auditorium

One of the most flexible of all building types is the combination sports arena-civic auditorium. In many respects it must follow the principles set up above for the seating areas in houses of worship and theaters. However, with the stage actually in the center of the arena for most events and with no possibility of having vertical ductwork, flexibility must be obtained through versatility in the design. Multi-speed motors or auxiliary air systems are two common means of providing variation in air quantity for different events.

Since all air generally originates from the ceiling or side walls (unless the arena has a balcony) the air must come down at velocities sufficient to reach the arena floor area. Return or exhaust is generally from the lower seating areas, either at the side of the aisles or under the seats. Vomitories are an excellent place for collecting the return or exhaust air from the sides of the aisles or under the seats.

Civic auditoriums may have separate seating and convention rooms, offices and other types of functional areas. Because of the diversity of uses and concomitant variation in loads, individual air-conditioning systems may be desirable at times for these rooms.

Due to varying degrees of usage, flexibility in the control of the environment system is essential for proper operation. Also, the possibility of odors and smoking is greater than in other buildings of mass occupancy. Therefore, positive measures such as activated charcoal filters or electronic ionizers should be used to dissipate odors, whether gaseous or particulate.

When an ice-skating rink is designed into the structure, the problems of ground water conditions, site drainage, structural foundations, insulation, and waterproofing enter into the picture. The rink floor may have to be strong enough to support heavy trucks. The floor insulation will also have to be strong enough to take this load. Ice melting pits of sufficient size, with steam pipes, must be furnished also. If the arena is to be air conditioned, the possibility of combining the air-conditioning system with the ice rink system should be analyzed. The radiant effect of the ice on the people and the roof heat on the ice must be considered in the design and operation of the system.

Enclosed Stadiums

A relatively new type of construction used for places of assembly is the open stadium with an operable roof which can be moved to completely enclose the stadium. When the roof is open, mechanical ventilation is not required. However, when it is closed, ventilation will be needed as in any auditorium. Ductwork must be run in the permanent sections of the stadium with the supply air high and the exhaust air taken in near or under the occupants' seats.

Some open stadiums install radiant heating coils in the floor slabs of the seating areas for use during cold weather in an effort to increase patronage attendance and comfort. Another means of providing warmth is the use of gas-fired or electric radiant heating located above the occupants.

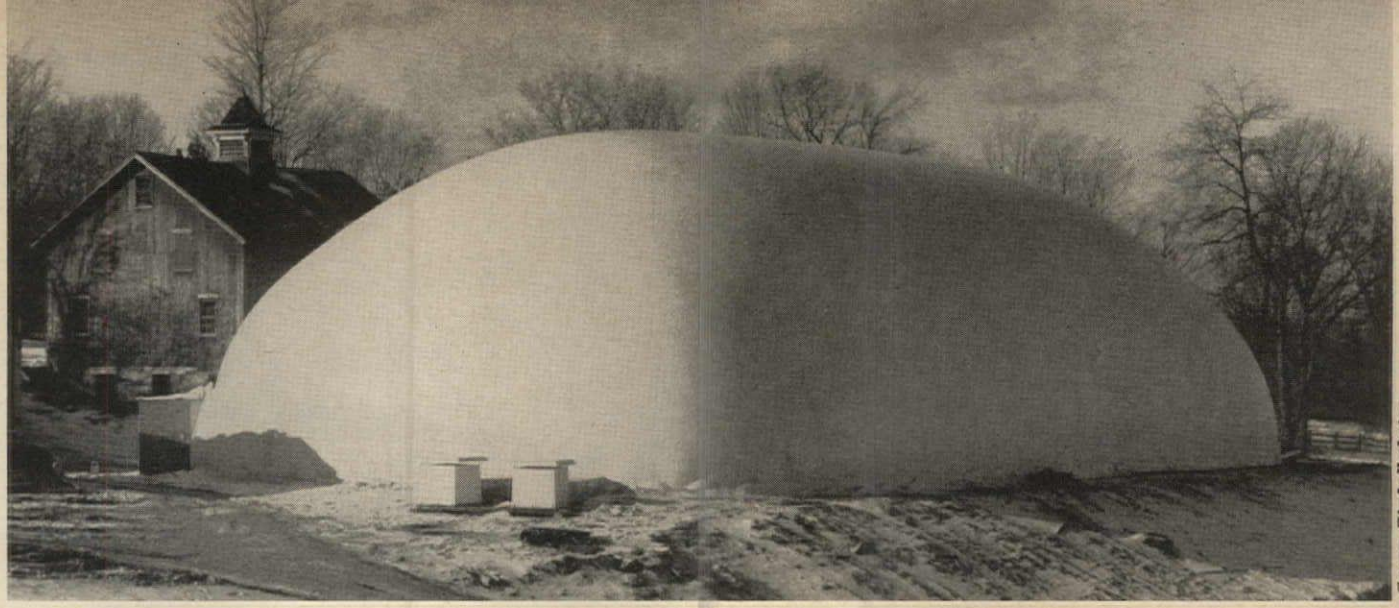
Mechanical Equipment Rooms

In theaters, auditoriums of all types, and houses of worship, the location of the mechanical and electrical equipment rooms can greatly affect the degree of sound attenuation treatment required to isolate the sound from the seating areas. Mechanical equipment rooms located near the rear of the seating area are more critical than those around the stage area because of the normal attenuation of sound through space. If possible, mechanical equipment rooms should be located in an area which is separated from the main seating or stage area by a buffer such as lobbies, service areas, etc. Of course, the economics of the structure and site will be determining factors in this evaluation.

Generally, at least one mechanical equipment room should be furnished somewhere near the roof level to house the toilet, general exhaust, kitchen and emergency stage exhaust fans, if any.

REFERENCES

1. Williams, M. J., "Design and Cost Data For Ice Rinks," Air Conditioning, Heating and Ventilating, Oct., 1959.
2. Bengle, C. V., "Design of Ice Skating Rinks," Air Conditioning, Heating and Ventilating, Oct., 1956.
3. Schmidt, J. F., "Air Conditioning System Design for Churches, Theaters and Auditoriums," Air Conditioning, Heating and Ventilating, Jan., 1960.
4. Briggs, D. C., Woolrich, W. R., "Church Air Conditioning Needs Can Be Met in Many Ways," Heating, Piping & Air Conditioning, Feb., 1958.
5. Carrier, Cherne, Grant & Roberts, "Modern Air Conditioning, Heating and Ventilating," 3rd ed., Pitman.



George Zimball photos

Two fans inflate and hold erect Forman School's unique gym in Litchfield, Conn.

TWO AIR-SUPPORTED STRUCTURES FOR ATHLETICS

Forman School in Litchfield, Connecticut, couldn't afford to spend $260,000, the minimum cost for a conventional gymnasium. Nor could they afford another $250,000 for a 75- by 42-ft indoor swimming pool. So they resorted to blowing bubbles.

The first bubble pioneered the use of air structures for school athletic spaces, at a cost of $10,000. Pitched on top of a tennis court, it was used for various indoor sports including tennis and basketball. Forman's second bubble, attached on one side to a low-lying conventional building, provides winter shelter for an outdoor swimming pool, making it a pool for all seasons. The Architects Collaborative of Cambridge, Massachusetts, who were engaged by Forman to investigate the feasibility of air-supported structures, estimated that the combined cost of pool and air shelter was only one-fourth that of a similar-sized pool housed in a conventional building. This study was financed by the Educational Facilities Laboratories which also supported later studies on the lighting and heating of the bubbles, and contributed to the development of a plastic-floored bubble. This third bubble, a permanent replacement for the first, was "launched" over 7,200 sq ft of plastic grass. This novel playing surface comes in 12-in. squares which were cemented to the asphalt court.

Besides low cost, the second main characteristic which attracted Forman was the easy erection and demountability of bubbles—Forman students prefer to play outdoors most of the year. In addition, these domes have proven to be durable, safe and comfortable.

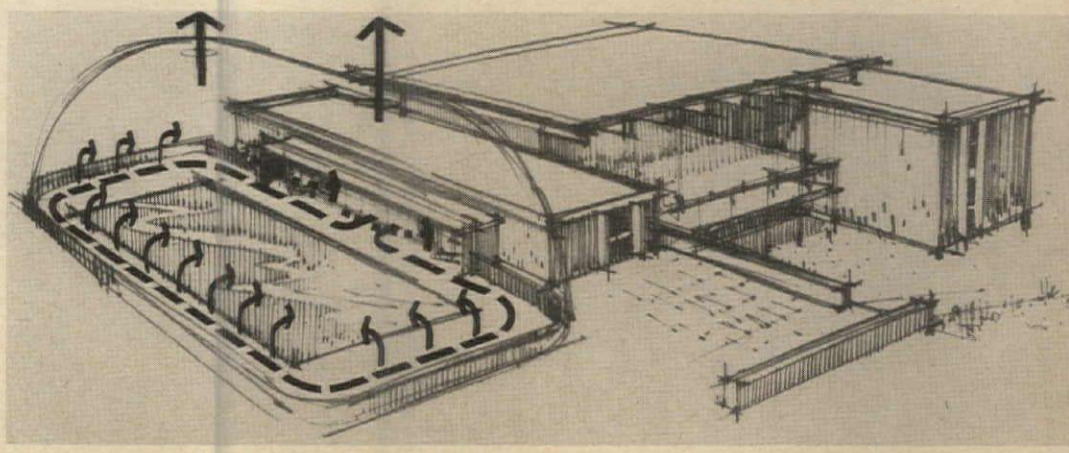
The bubble is held erect by a slight internal pressure produced by centrifugal type blower fans. It can be inflated in one day or less and deflated even more quickly. When down, it can be folded into a compact parcel for storage or transport. Its shape must consist of circular elements for load balance. The most elementary anchorage system is equivalent to pitching a tent to the ground.

Still an infant in the building field, the limitations and potential source of trouble of air-supported structures are still not common knowledge; and many of the solutions to problems encountered by Forman's Director of Development Stowell Mears with the first bubble were incorporated into Forman's subsequent bubbles.

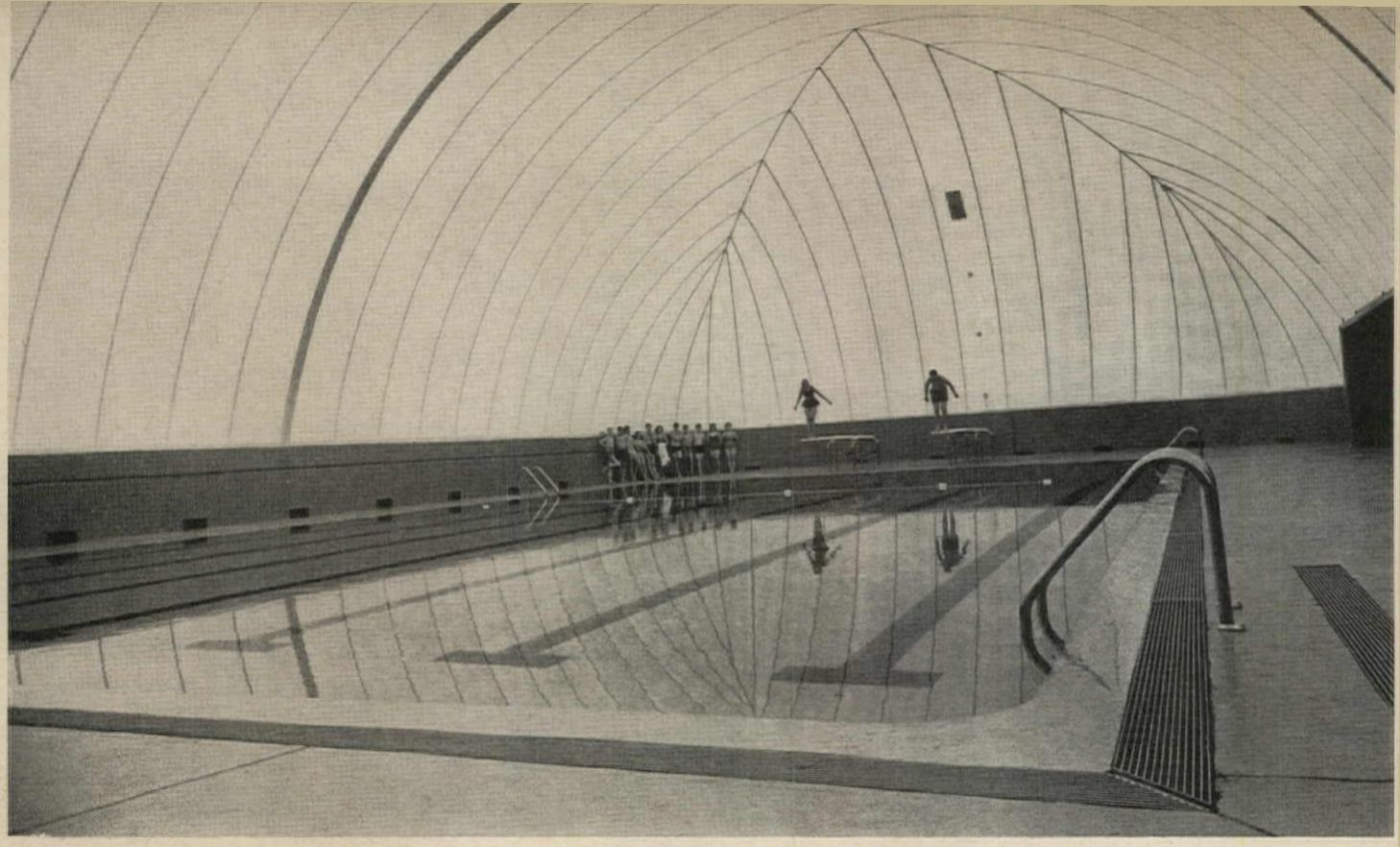
To begin with, Bubble No. 1 was completely unsheltered from the wind, which wracked the jamb of the single door so it did not close securely. Once a sudden gust managed to suck its single-door open and deflate it. Double doors are used in Forman's later bubbles, and revolving doors are another possibility. The bubble collapsed a second time when the two unprotected blower fans were buried under snow. The remedy involved building a housing over each fan with protected air inlets 6 ft above ground.

After some experimentation, Director Mears found that a high volume, low velocity hot air furnace would heat the bubble quietly and cleanly, bringing the bubble up to 40 F over outside temperature in 15 minutes.

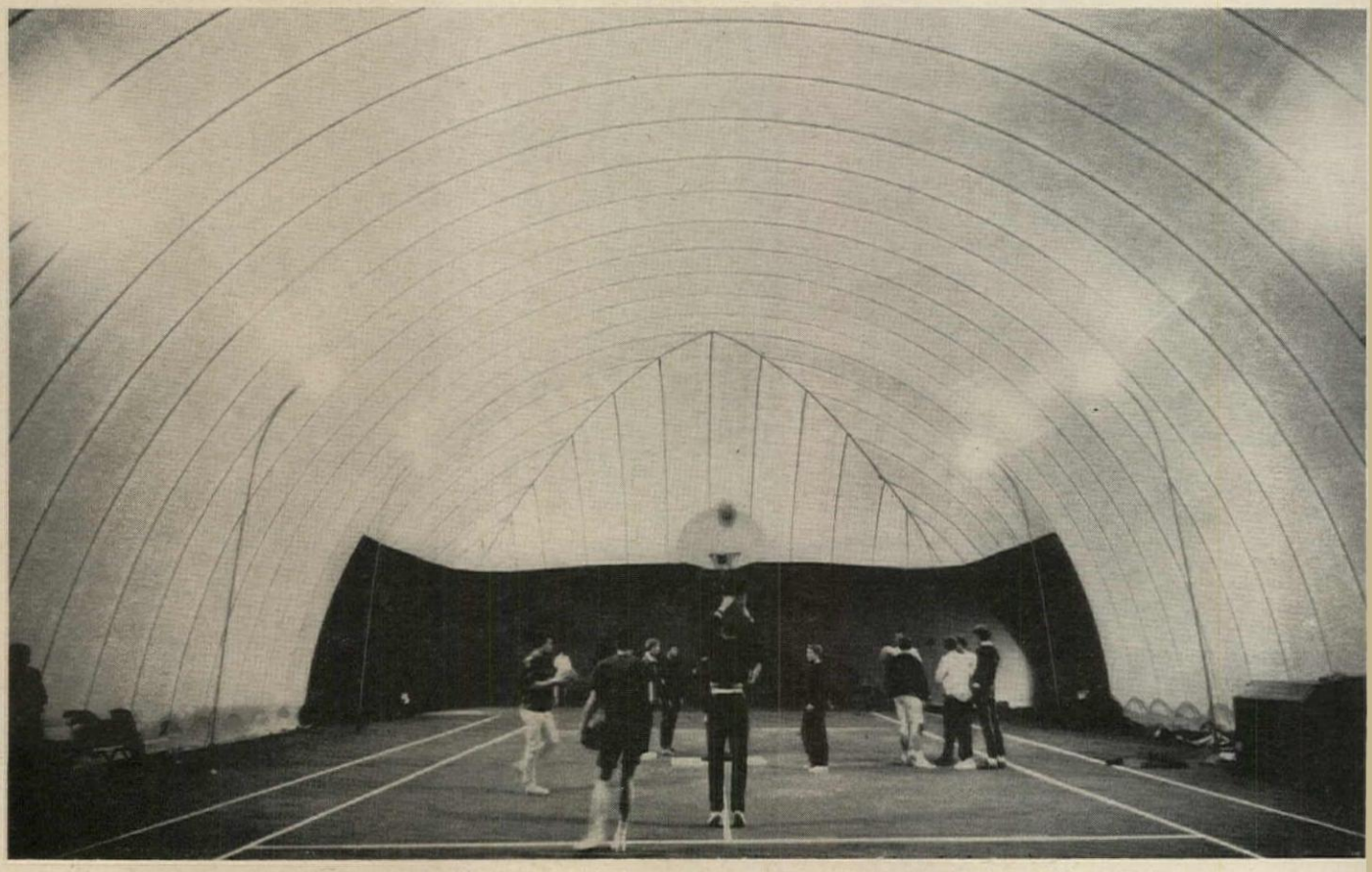
About the toughest problem the tennis bubble presented was lighting. Adequate diffused sunlight streamed through the bubble's translucent vinyl-coated nylon skin on sunny days. But at night, in bad weather and on dark winter afternoons, when indoor recreation facilities were most



Schematic sketch shows the relationship of the pool enclosure to the adjacent commons building, where heating and air pressurization equipment is housed. Heated fresh air is emitted through grills located at the perimeter of the pool deck



The pool bubble is 108 ft long, 68 ft wide and 31 ft high. A concrete ledge for anchoring the bubble runs along three sides of the deck and atop a concrete canopy extending from the building's side *(above)*. Green plastic at the end walls of the athletic tent *(below)* provides contrast so that tennis players can see the small white ball



needed, artificial lighting is essential. Due to the nature of the game, a tremendous amount of light is needed to play tennis in a bubble. The problem was further complicated because lights could not be hung safely from the ceiling. Lighting consultant William C. Lam's solution was to place three 20-ft collapsible poles, curved to follow the roof contour, on each side. Attached to the poles were six 1,500-watt quartz lamps.

A different solution was evolved by Mr. Lam for the pool bubble. Light is provided by a strip of fluorescent tubes 46 ft long which lie inside a light-reflecting aluminum trough. Set on top of the concrete canopy which juts out from the adjacent commons building, the trough can be tilted to throw the light upward to bounce light off the ceiling, or canted downward when the dome is removed in summer.

monolithic reinforced concrete sets new height record in world's tallest hotel

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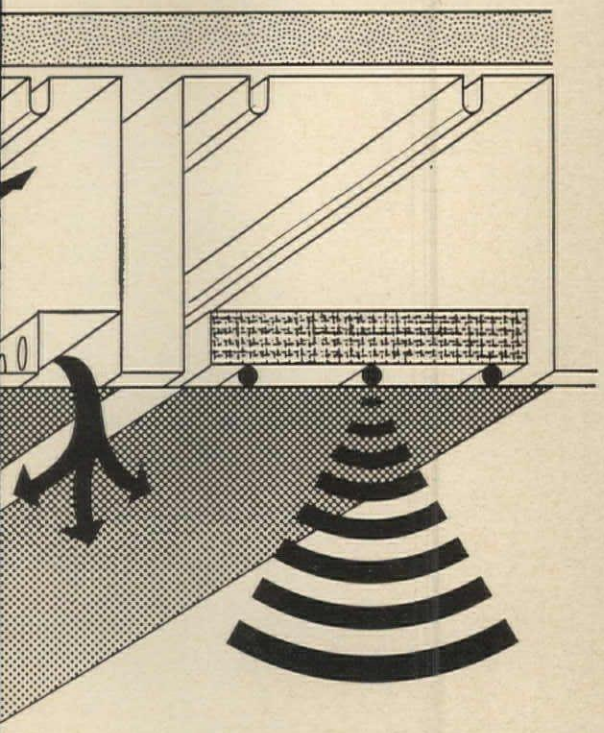
System



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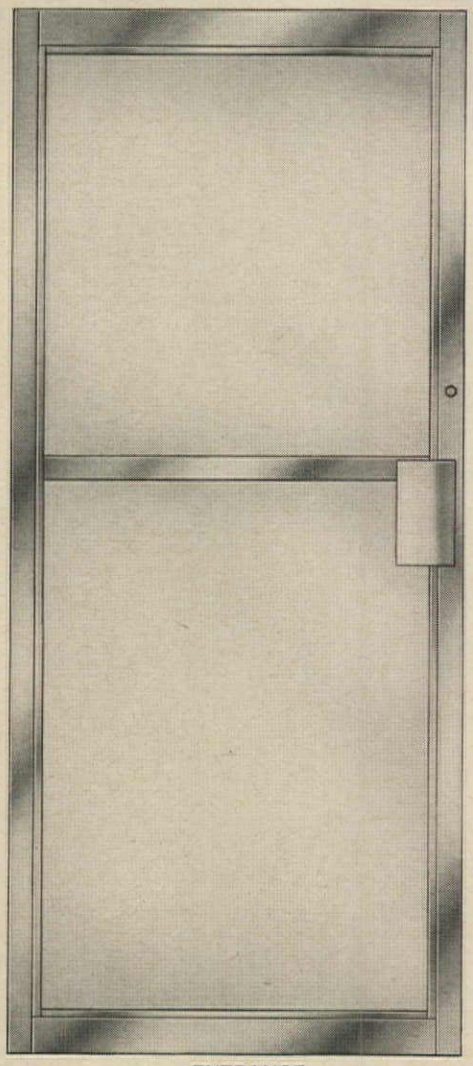

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FLUID ROOFING SYSTEMS OF SYNTHETIC RUBBER

Part 3 (conclusion): Typical fluid systems; flashing details

Typical Systems

Described here are five typical Neoprene/Hypalon roofing systems. The first three are "general purpose" systems, while the last two were developed to satisfy specific roofing requirements.

1. *General-Purpose System for Monolithic Roof Decks.* This roofing system is the one most frequently specified. It can be applied to any suitable hard, dry substrate and consists of a primer, two applications of neoprene and two applications of Hypalon. Thickness of the finished membrane is generally 15 to 20 miles.

Membrane thickness may be reduced below 20 by eliminating one of the neoprene applications when the following conditions prevail: (1) the roof deck is composed of dense poured or pneumatically applied concrete; (2) surface of the deck is always in compression, so that cracking due to negative forces is eliminated; and (3) slope of all areas is steep enough to rapidly drain off water. However, such a reduction in membrane thickness should be attempted only upon the advice of the roofing manufacturer.

2. *General-Purpose Mat-Reinforced System.* This system produces a heavy-duty membrane. It consists of a primer followed by an application of neoprene into which reinforcing mat is laid. Enough neoprene is then applied to fill all interstices and completely embed the mat. Two applications of Hypalon follow to complete the membrane. The introduction of a reinforcing medium increases over-all thickness of the system to about 30-35 mils.

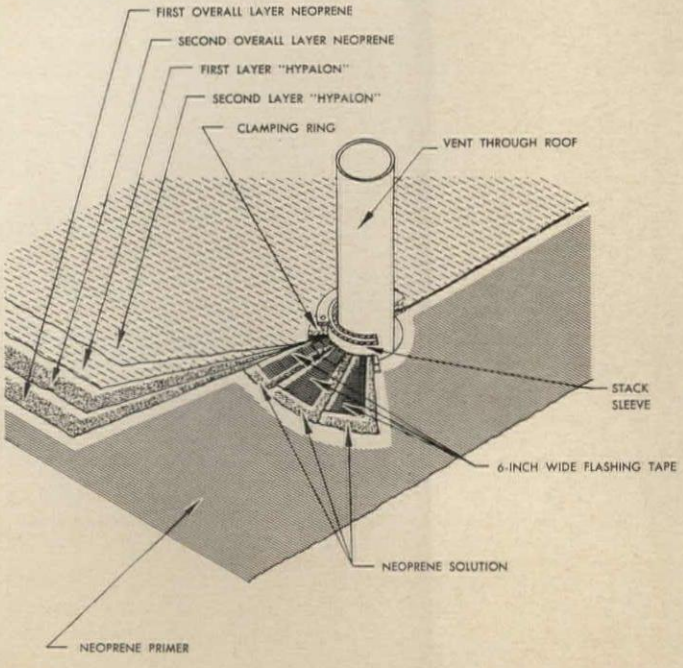
A membrane of this type is extremely tough and resistant to foot traffic.

3. *General-Purpose Fiber-Reinforced System.* This system is similar to the one above. In place of the reinforcing mat, however, chopped glass fibers are dispersed into the first coat of wet neoprene to act as reinforcing medium. The fibers are then embedded into the base coat with a roller dipped in solvent. When the fiber-filled base coat is dry, additional coats of neoprene are applied until the fibers are completely embedded. The usual two coats of Hypalon complete the membrane. Over-all thickness is again about 30-35 mils.

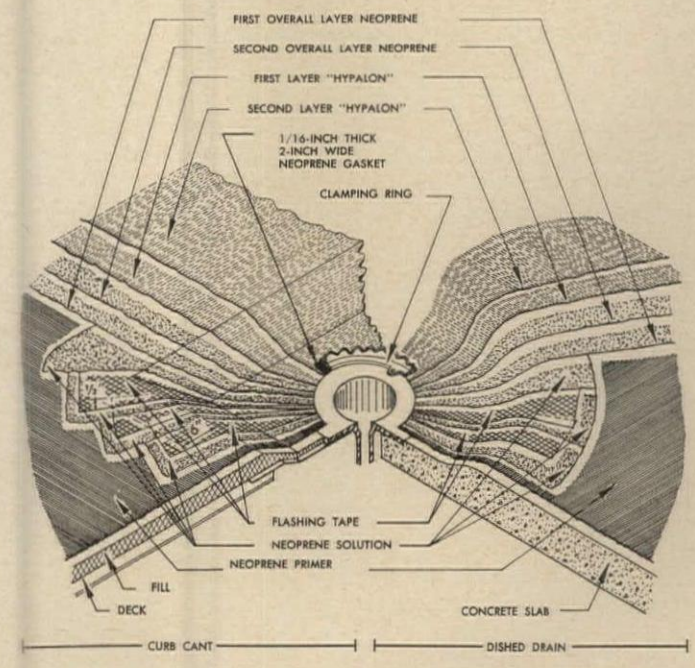
4. *Special-Purpose All-Hypalon System.* This special-purpose system has been developed for thin-shell concrete roofs with substantial slopes. This system consists of a neoprene primer and two or more applications of Hypalon. Total membrane thickness varies between 6 and 12 mils and is based on specific design considerations.

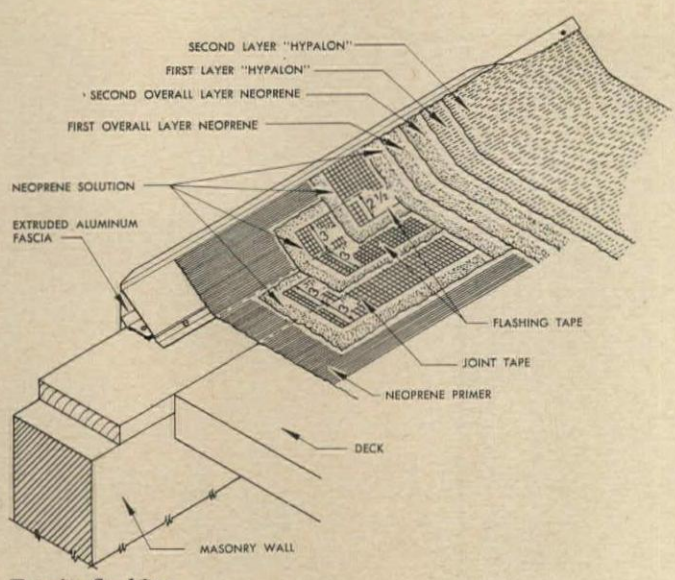
This article is based on technical information developed by the Elastomer Chemicals Department, E.I. du Pont de Nemours & Company

Vent flashing

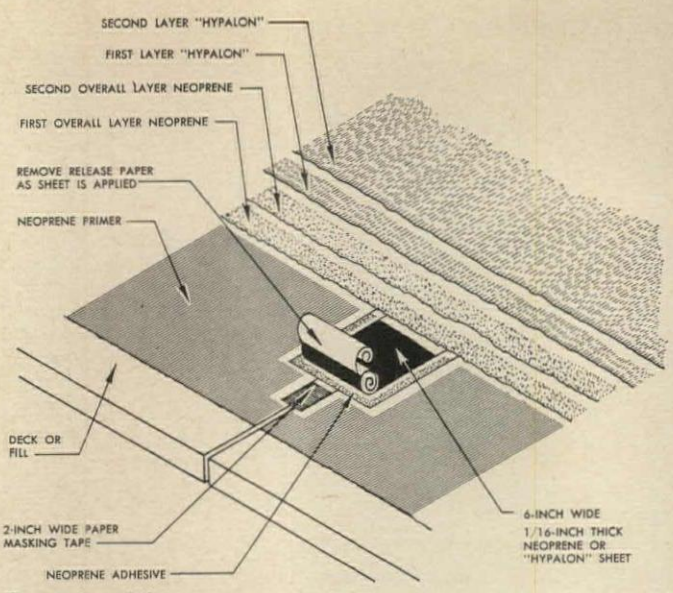


Drain flashing





Fascia flashing



Expansion joint cover

5. *Special-Purpose System for Metal Decks.* Corrugated and V-beam roofs of steel or aluminum can be sealed and protected against corrosion with this special-purpose system. After priming, joints are sealed with glass tape laid in neoprene or Hypalon solution. The entire roof is then coated with two applications of Hypalon. Total membrane thickness is about 6 mils.

Joint Materials

Proper treatment of joints in the roof deck prior to application of the neoprene/Hypalon roofing is of prime importance.

The following kinds of tape are currently in use with neoprene/Hypalon systems. Each has its specific advantages.

Glass Fabric Tape. The most widely accepted general-purpose tape for use with the neoprene/Hypalon system consists of glass fibers woven into the cloth. Glass fabric tape is stable, unaffected by moisture and solvents and has adequate strength. To adhere it to the deck, a glass fabric tape must be applied into wet roofing solution.

Pressure-Sensitive Cotton Tapes. These tapes have proven satisfactory when used over primed dense concrete or plywood substrates. Their major advantage is the clean and easy manner in which they can be applied. However, alternate wetting and drying will cause cotton tapes to shrink and therefore lose adhesion. For this reason, an extra-heavy base coat of roofing should be applied and allowed to dry thoroughly before tapes are laid. This base coat will prevent moisture in the roof deck from penetrating to the tape. Pressure-sensitive cotton tapes should not be used on soft or porous roof decks, nor should they be laid into roofing that has not thoroughly dried.

Nylon Tape. Like glass tapes, nylon tapes must be applied into wet coatings. Nylon tapes are highly moisture resistant, but are subject to minor swelling when exposed to solvents in the roofing solution. However, they prove satisfactory if base and overlying coatings are allowed to become thoroughly dry before the roofing membrane is applied. Use of nylon tapes over cracks, contraction or construction joints has a special advantage: tape elongation will, to to some extent, accommodate future increases in crack or joint width.

Miscellaneous Tapes. Tapes of phenolic-treated, random-mesh glass mat or glass scrim are compatible with the neoprene/Hypalon system, but they do not possess the strength of woven tapes. These non-woven glass tapes contribute most to a successful job when used over a surface curved in two or more directions, such as a dished drain. This is because these tapes can be stretched in any direction during application. Like glass and nylon tapes, they must be applied into wet roofing.

Over-all Glass Fiber Reinforcement Mat. Non-woven glass fiber is a satisfactory material for providing over-all reinforcement to a neoprene/Hypalon membrane (system 2). For membranes of normal thickness, a phenolic-bonded non-woven glass matting is suitable if approved by the roofing manufacturer.

Loose Fibers. The neoprene/Hypalon roofing system incorporating loose glass fibers as the reinforcing medium shows much promise on complicated decks or where considerable flashing is required (system 3). The fibers are cut from glass roving by a special air-operated chopping and blowing device. This device blows the fibers into the wet neoprene roofing. If desired, bulk fibers can be dispersed by hand. After dispersing, the fibers are embedded, or laid flat, with a solvent-dampened roller. Additional neoprene and Hypalon coatings are then applied as specified. The completed membrane will have the same characteristics as one reinforced with glass mat as described earlier.

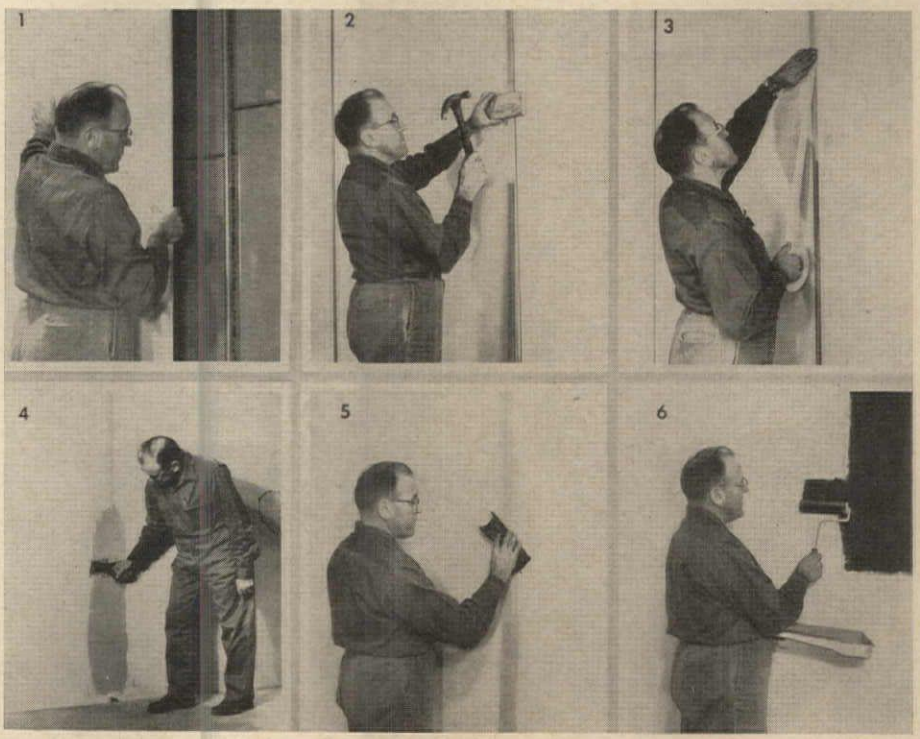
Expansion Joint Seals. Sealing expansion joints with calendered neoprene or Hypalon sheeting is a common practice with many advantages. The cured sheeting should have a hardness of 50 to 70 durometer A, should be no less than 1/16 in. thick and wide enough to span the joint with at least 2½-in. overlap on each side. Calendered sheets used for this purpose must be compounded for maximum weather and ozone resistance and non-staining characteristics.

Color of neoprene sheets is usually black or dark gray; if color is de-

continued on page 224

For more information circle selected item numbers on Reader Service Card, pages 271–272

NEW MOVABLE "ZIPPERED" WALL SYSTEM FEATURES NO EXPOSED JOINTS OR SEAMS



The Penn Metal Company has announced the first movable wall system with no exposed joints, seams or cracks which can be "unzippered" in minutes. The cost of the new gypsum-faced wall system, called *Penwall Kwik-Zip,* compares favorably with fixed-wall installations, making these walls practical for apartment and residential construction as well as for customary commercial and industrial applications, the company reports.

The process of installing the system is shown at right. The workman (1) sets a panel of ½- or ⅝-in. thickness in place in the steel stud framing; (2) taps the snap-in batten strip into place to hold the panels together at the joint (no other fastenings are required); (3) applies the special, high tensile strength tape over the batten strip; (4) applies a single coat of topping compound over the tape (note tongue of tape sticking out at bottom of panel); (5) sands lightly to obtain an absolutely smooth, flush surface; and (6) paints completed wall. To remove the wall, the workman simply grabs the tongue or tape (visible in No. 4), pulls it sharply upward to uncover batten strip, removes the strip and the wall panels. *Penn Metal Company, Inc., P.O. Box 1468, Parkersburg, W. Va.*

CIRCLE 300 ON INQUIRY CARD

CENTRALIZED PNEUMATIC CONTROL SYSTEM FEATURES SEPARATE SENSORS AND CONTROLLER

Honeywell's new centralized pneumatic control system for heating and air conditioning, has a separate sensor and controller so that sensors can be located at remote points throughout the building, and the controller installed up to 1,000 ft away at any location where it's easy to set. The only link between the two is a single pneumatic line of either copper or plastic tubing. Whatever adjustments are needed can be made at the controller; and, by installing gages near the controller, the operator has remote indication and control at one central location. With this new system, Honeywell estimates that centralized control will cost as little as 10 per cent more than a conventional pneumatic system without centralization, making centralized control economically feasible for small and medium size buildings.

Key components of the system shown in the photo are: a controller (here a dual-input model with gages showing branchline air pressure, water temperature, outside air temperature and remote control point adjustment); temperature indicator (also available in vertical, horizontal and rectangular models); a rod-and-tube sensor and a room sensor. Other components engineered for the new system include alarm and indicating lights, target indicators to show off-normal and on-off-conditions, recorders and programers. *Honeywell, 2755 Fourth Ave. South, Minneapolis, Minn., 55408*

CIRCLE 301 ON INQUIRY CARD

more products on page 232

Office Literature

For more information circle selected item numbers on Readers Service Inquiry Card, pages 271-272

INSULATING GLASS

In addition to specifications for *Thermo-O-Proof* insulating glass, an eight-page booklet gives details on standard sizes, specialty configurations and information on the reduction of heating and air-conditioning costs when *Therm-O-Proof* is used. *Thermoproof Glass Company, Sales Promotion Dept., 4815 Cabot Ave., Detroit, Mich., 48210**

CIRCLE 400 ON INQUIRY CARD

PARTITIONING SYSTEMS

The six basic *Aetnawall* partitioning types for commercial, industrial and institutional interiors, are described in a revised 32-page catalog by means of installation photographs, detailed specifications and engineering detail drawings. General information pertaining to special components, doors, sound control and electrical wiring is also included. *Aetna Steel Products Corporation, 730 Fifth Ave., New York, N.Y.**

CIRCLE 401 ON INQUIRY CARD

POST-TENSIONING CONCRETE SLABS, BEAMS AND COLUMNS

A new brochure tells the techniques and hardware required for post-tensioning concrete slabs, columns and beams in such structures as flat slab apartment buildings and multi-level parking structures, and post-tensioning of decks for watertightness, using a seven-wire strand system. Details of anchorage size, type of tendons, maximum eccentricity of tendons, wall to slab connections, corrosion protection, cable lengths, lightweight tensioning jacks, fire resistances and pocket elimination are covered. *Atlas Service Corp., 14809 Calvert St., Van Nuys, Calif.*

CIRCLE 402 ON INQUIRY CARD

SPIRES AND CROSSES

The 1964 edition of the Overly catalog "Spires and Crosses" contains specifications for steeples, crosses and five basic types of spires. Installation photos of 19 different spire and cross designs illustrate the catalog. *Overly Manufacturing Company, 574 W. Otterman St., Greenburg, Pa., 15602**

CIRCLE 403 ON INQUIRY CARD

INDUSTRIAL INSULATIONS

A new 24-page catalog on industrial insulations for operating temperatures from −450 F to +1,200 F has been published by Pittsburgh Corning. The booklet deals with the installation of asbestos pipe insulation for temperatures from +100 F to +1,200 F; cellular glass insulation for −450 F to +800 F; and rigid polyurethane foam insulation for −330 F to +200 F. Physical properties of the three insulations are included, along with installation photographs, application specifications, line drawings and accessory items. Request Booklet FI-109. *Pittsburgh Corning Corporation, One Gateway Center, Pittsburgh 22, Pa.*

CIRCLE 404 ON INQUIRY CARD

HEATING AND AIR-CONDITIONING UNITS

An eight-page condensed catalog on Mueller Climatrol's entire product line of climate control equipment for the residential and light commercial field gives a brief description, capacities and dimensions of electric, oil and gas heating equipment and air-conditioning units. *Mueller Climatrol Division, PO. Box 401, Milwaukee, Wis., 53201**

CIRCLE 405 ON INQUIRY CARD

INTERIOR DECORATING

A new "Decorating Idea Kit" presents illustrations and manufacturers literature on the newest trends in floor, window and wall coverings, folding doors, shoji screens and dividers. *Reinhart Design Center, 21st and Naudain Sts., Philadelphia, Pa., 19147*

CIRCLE 406 ON INQUIRY CARD

FIBER GLASS

A four-page fiber glass "Fact Sheet" and "Material Check List," regarding the application of glass-fiber reinforced plastics in roof-mounted fans, ventilation, equipment housings, penthouses and screens, covers such points as durability, appearance, strength, material properties and fire resistance. *Williams-Bermuda Corporation, P.O. Box 2053, Pasadena, Calif.*

CIRCLE 407 ON INQUIRY CARD

ELECTRICAL FLOOR BOXES

Electrical floor boxes for locating wiring outlets in the floor are the subject of the new 12-page "Bulletin FB-1." Steel City's new line is fully illustrated together with detailed specifications for both concrete-tight and water-tight designs. *Steel City Division, Midland-Ross Corp., Pittsburgh, Pa., 15233**

CIRCLE 408 ON INQUIRY CARD

FILM AND DIGITAL DATA REDUCTION

Gerber's line of digital data reduction, film reduction, and plotting equipment is described in a catalog of eight pages. Fully illustrated, the catalog contains concise descriptions and prices of the equipment, ranging from the Gerber variable scales to their X-Y plotter. *Gerber Scientific Instrument Company, P.O. Box 305, Hartford, Conn.*

CIRCLE 409 ON INQUIRY CARD

PERIMETER RADIATION

The design advantages of *Architrend Sill Fin* enclosures for hot water or steam heating systems are discussed in a color brochure (Form 4200). The booklet contains an enclosure diagram, dimensional information and Btu capacity ratings. *Schemenauer Manufacturing Company, Holland, Ohio*

CIRCLE 410 ON INQUIRY CARD

CERAMIC TILE INSTALLATION

The Tile Council of America has revised its handbook on installation of ceramic tile. Accompanying installation instructions are detailed sketches for ceramic tile floors, walls, countertops and shower receptors which include information on control joints. New in this edition are installation details on tile swimming pools, all-tile tubs, refrigerator rooms and steam rooms. Also discussed are materials for setting and grouting ceramic tile. Price 10 cents. *Tile Council of America, 800 Second Ave., New York N.Y., 10017**

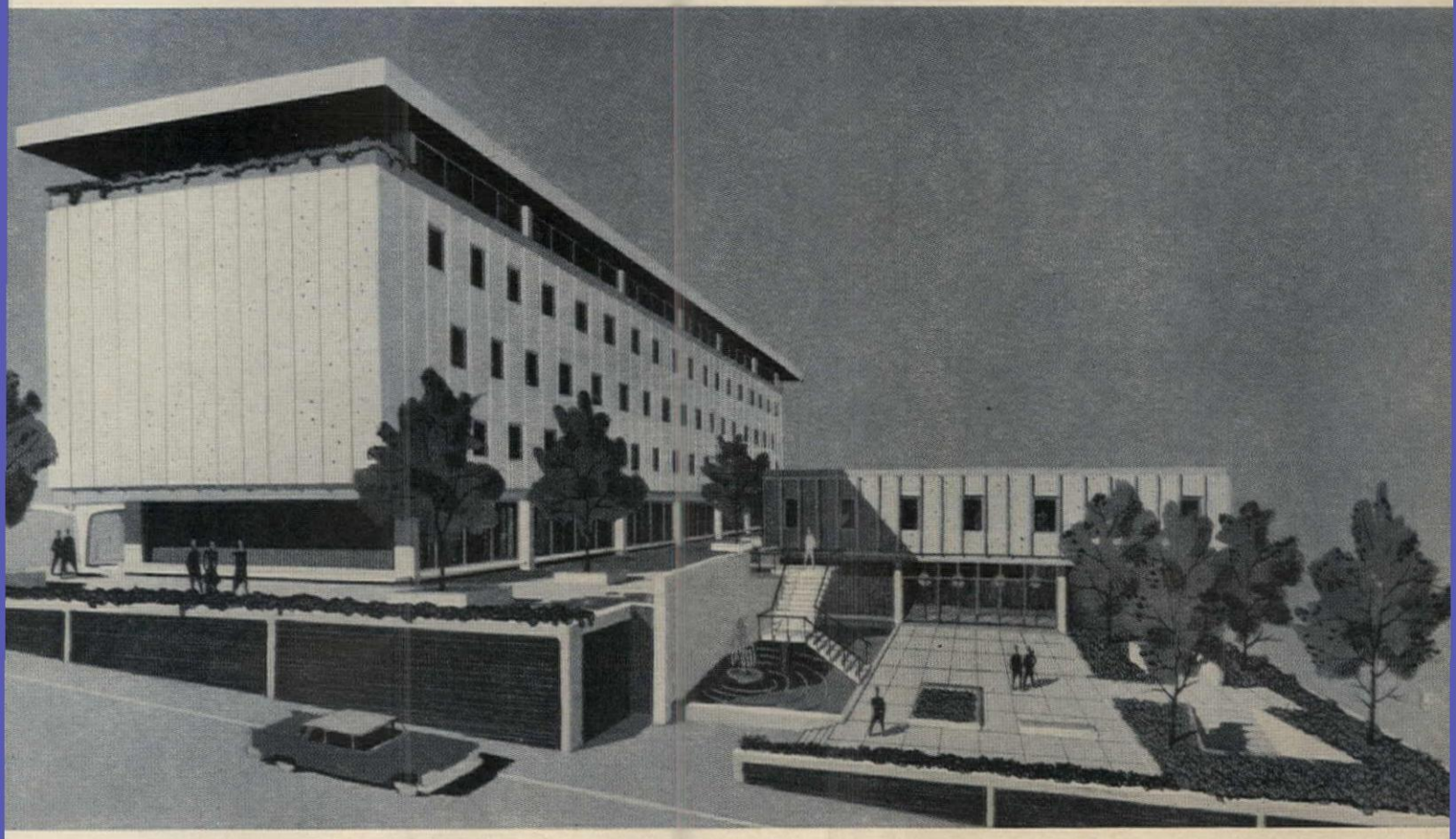
CIRCLE 411 ON INQUIRY CARD

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

more literature on page 258

CITY HALL and POLICE BUILDING

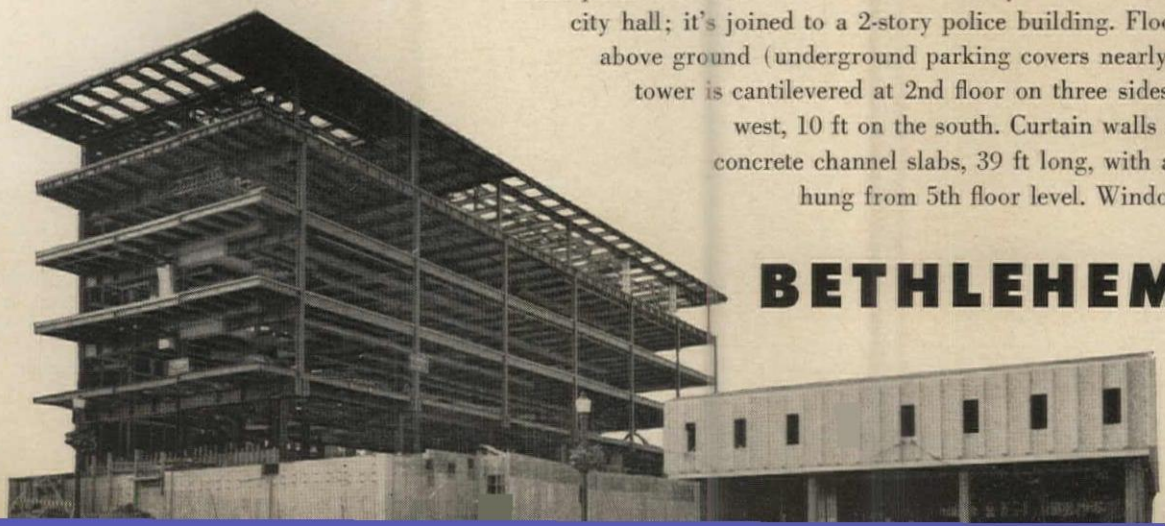
Allentown, Pennsylvania



Everett Associates, Architect-Engineer, investigated both reinforced concrete and structural steel for the framing material . . . then chose steel, when steel proved more adaptable, more economical.

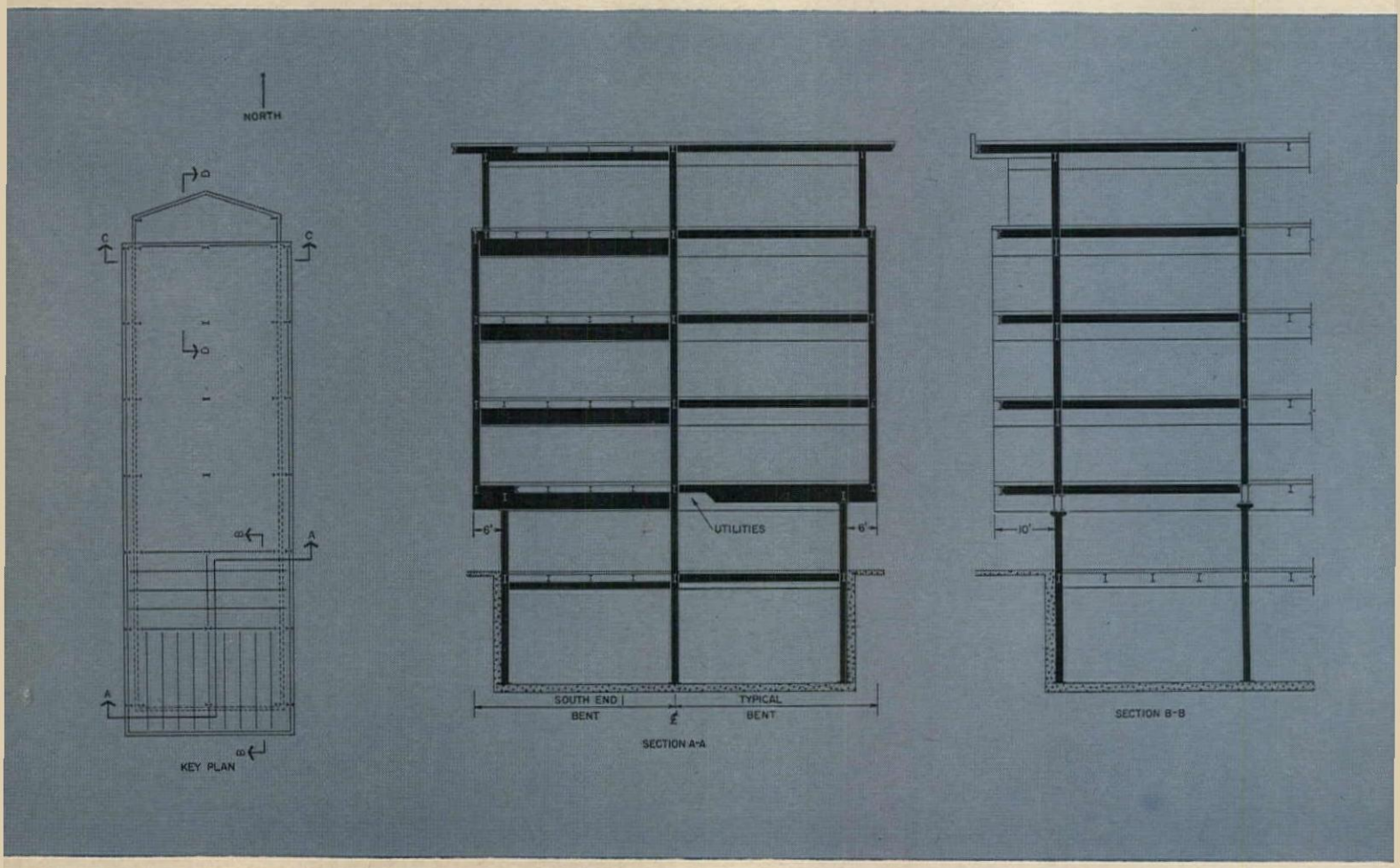
To be completed late in 1963, the Allentown City Hall and Police Building will be one of the nation's most flexible and complete administrative facilities. The structure launches the first phase of an extensive redevelopment campaign in Allentown, Pa.—an "All-America City."

Main portion of the $3 million Allentown City Hall and Police Building is a 5-story city hall; it's joined to a 2-story police building. Floor space: 120,000 sq ft above ground (underground parking covers nearly the whole site). Main tower is cantilevered at 2nd floor on three sides—6 ft on the east and west, 10 ft on the south. Curtain walls are precast, prestressed concrete channel slabs, 39 ft long, with a pebble finish; they're hung from 5th floor level. Window pattern is staggered.



BETHLEHEM STEEL

The architect wanted two-way Steel made them easy...



In the unique design of the Allentown City Hall and Police Building, the main tower is cantilevered at the second floor on three sides—6 feet on the east and west, and 10 feet on the south.

At first, these cantilevers looked like a natural for reinforced concrete in a waffle-slab system. But thorough study of both concrete and structural steel proved exactly the opposite.

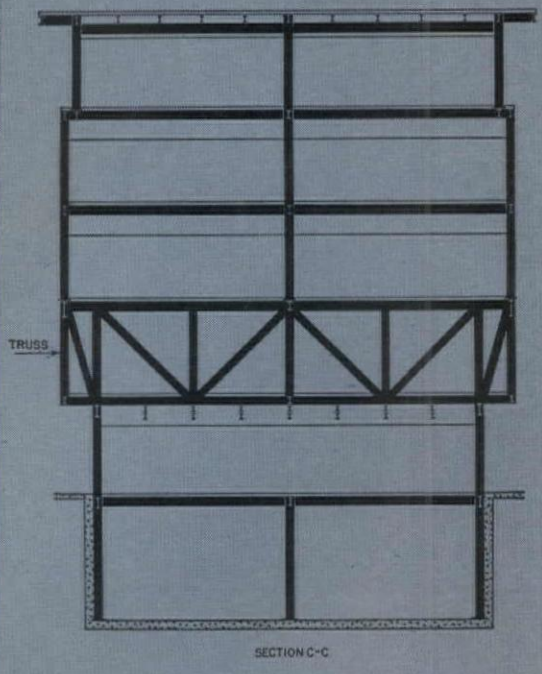
6-ft cantilevers on east and west . . . solved by steel

In the concrete design, columns were located in the set-back exterior wall at the first floor, and carried up through the four floors above. This resulted in columns occurring in the middle of certain rooms—an undesirable feature of the concrete design.

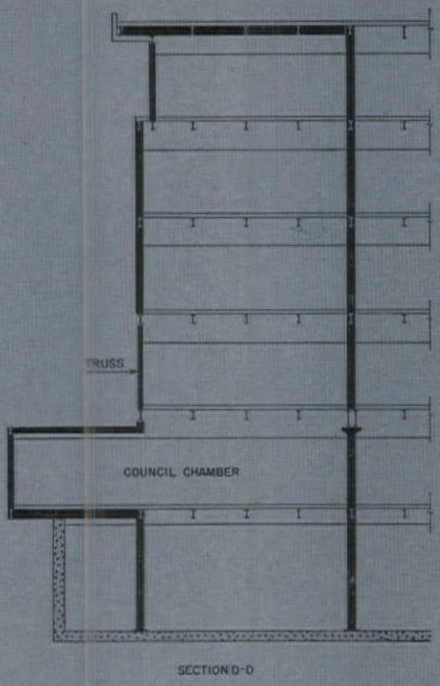
The steel solution is shown on the key plan and Section A-A. Two parallel 30-in. wide-flange steel beams cantilever 6 ft beyond the first floor columns, and carry the exterior columns for the upper floors. This feature allows the exterior line of columns to be moved into the wall, where a line of columns rightfully belongs. In addition, to allow passage of utilities near the interior support of the cantilevered beam, the beam depth was reduced by coping the lower flange and welding on a tapered flange to replace it.

cantilevers.

and saved money, too!



SECTION C-C



SECTION D-D

Architect-Engineer:
Everett Associates.

General Contractor:
E. C. Machin, Inc.

Steel Fabricator and Erector:
Lehigh Structural Steel Company.

All are Allentown, Pa., firms.

Bethlehem supplied 1,770 tons of structural steel for the project.

10-ft cantilevers on south . . . solved by steel

The 10-ft cantilever on the south side, and the two-way cantilevers required at the corners (see key plan) were solved by dropping the girders in the southernmost frame, thereby allowing the filler beams to pass over the girders and develop the cantilevers rather simply at each floor. (See Section B-B.)

North wall problem . . . solved by steel

The architectural concept dictated that the north wall be carried from the second to the fifth floors on a column-free support over the center of the council chamber located on the first floor at the north end of the building. Since the north wall was windowless, this problem was solved by a story-height truss, which carries the columns above, and provides a column-free council chamber at the ground floor.

Steel frame cost less than concrete

Steel framing not only proved more adaptable to this unusual architectural concept, but also cost considerably *less* than the proposed concrete frame, according to the architect.

We'd like to prove to you that structural steel, *with very few exceptions*, can do anything any other structural material can do—and do it *better*. If you are planning to build or design a new structure, the Bethlehem sales office nearest you will be pleased to discuss the project with you.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

Hartford, Connecticut... first utility plant to market chilled water for air conditioning uses Carrier refrigeration

In operation since early June, 1962, the Hartford Gas Company's new steam and refrigeration plant sets a precedent in the utility field.

Although steam has long been distributed and sold by utilities in major cities, this is the first time chilled water for cooling has ever been sold on the same basis in a downtown area.

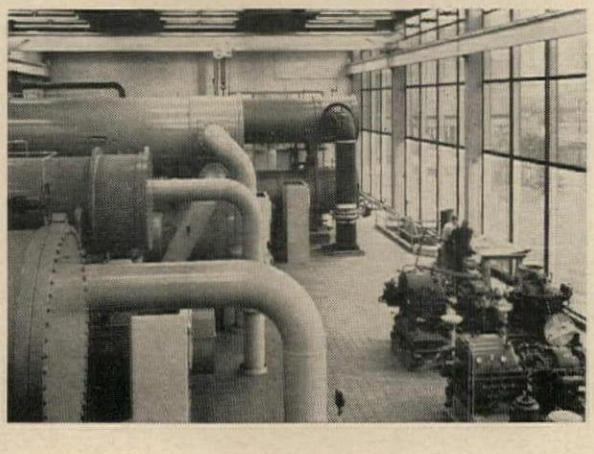
The new plant serves twelve buildings. Its four-pipe distribution network weaves 5200 feet through a highly developed commercial area. It provides a peak capacity of 10,500 tons of cooling and 225,000 pounds per hour of steam. The amount of cooling contracted for among the buildings varies widely—75 to 3250 tons.

Steam-turbine-driven Carrier Centrifugal Refrigeration Machines provide the chilled water for air conditioning. There are four in the plant—one with a cooling capacity of 4500 tons, the largest ever built... one of 3000 tons... two of 1500 tons.

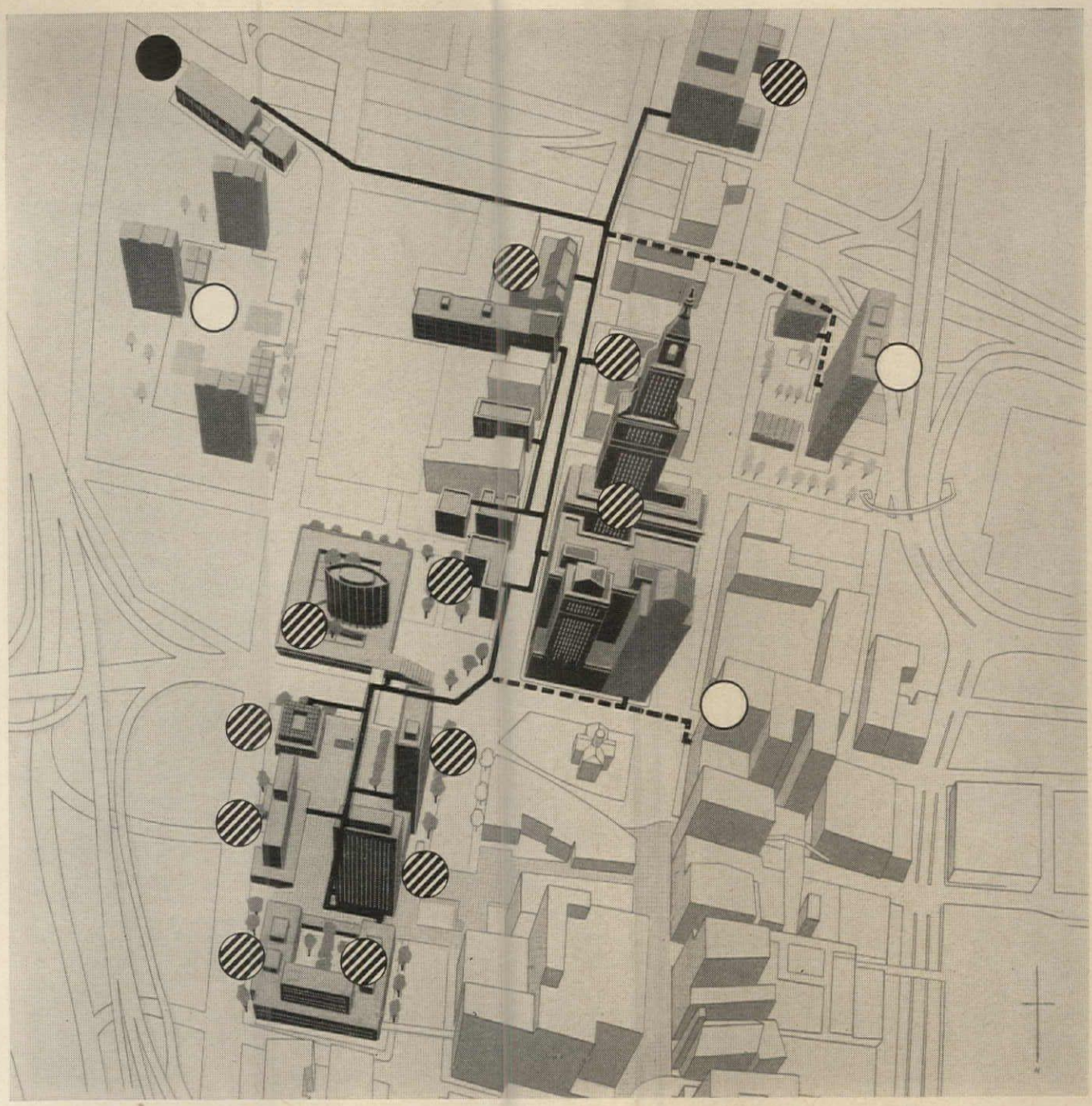
The success of the Hartford project indicates that utility-operated plants supplying chilled water are practical for other cities—particularly those planning urban renewal. However, this can only be determined by exhaustive economic and engineering analysis—as fuel sources, means of distribution, climate and costs will vary from one project to another. An experienced firm of consulting engineers can best conduct such a study.

Carrier, with its full line of large refrigeration equipment and far-flung sales force, is best equipped to advise on equipment performance and selection. Carrier equipment serves such diverse complexes as Kennedy International Airport (absorption equipment), O'Hare Field in Chicago (electric hermetic refrigeration machines), the Lincoln Center for Performing Arts in N. Y. (steam-turbine-driven centrifugals), Texas A.&M. campus (absorption), Notre Dame University (steam-driven centrifugals), NASA Manned Spacecraft Center, Houston (steam-turbine-driven centrifugals).

Carrier has prepared a 22-page booklet entitled "Chilled Water as a Utility" examining the advantages of the central plant and outlining cost and design factors in matching it to cooling usage. Whatever your interest in a central refrigeration plant—for urban renewal, government center, campus, industrial park, airport or hospital complex—we believe you will find it helpful. For your copy, without obligation, call your local Carrier representative. Or write Carrier Air Conditioning Company, Syracuse 1, New York. In Canada: Carrier Air Conditioning (Canada) Ltd., Toronto 18.



The largest refrigeration machine ever built projects at the far end of the plant beyond three smaller machines. This Carrier 4500-ton capacity Centrifugal was put "on stream" early in July, 1963. At right are turbine-driven pumps which send chilled water 10,400 feet on its round trip to twelve major downtown buildings.



Aerial perspective shows route of pipelines carrying chilled water and steam to urban complex from one plant. The Hartford Steam Service Company, subsidiary of Hartford Gas Company, operates the central plant, supplying up to 225,000 lb. of steam per hour and 10,500 tons of cooling. Architect: Charles DuBose, Hartford. Engineering Design: Seelye, Stevenson, Value & Knecht, N. Y. General Contractor: F. H. McGraw & Company, Hartford. Mechanical Contractor: C. N. Flagg & Company, Meriden.

Key:

- Hartford Gas Central Plant
- Buildings served by plant
- Buildings planned or under construction
- Lines in operation
- Future lines

Fluid Roofing Systems of Synthetic Rubber

Part 3: Typical fluid systems: flashing details

continued from page 216

sired, they may be top coated with colored Hypalon roofing solution. Hypalon sheets are obtainable in a variety of colors. However, field-coating with Hypalon roofing solution is a more economical method of achieving continuous roof color.

Neoprene Contact Adhesive. This type of adhesive is very effective for applying expansion-joint seals. Substrate surfaces should first be primed and the primer allowed to dry thoroughly. The adhesive is then applied to both contact surfaces and allowed to achieve the necessary tack. When the joint strip is laid into place, adhesion to the substrate is almost instantaneous. End laps are sealed in a similar manner.

Caulks. One-part Hypalon-based caulking compounds have proven serviceable for filling major cracks in deck surfaces. Like Hypalon roofing solutions, these caulks cure into permanently flexible materials that expand and contract with the deck surface, resist weather and moisture.

Flashing

Flashing tapes should be installed where called for on the drawings and/or in the following locations: (1) vent pipes and stacks; (2) drains; (3) corners where roof intersects walls, cants, parapets, nonmonolithic curbs and pads, and at any location where differential movement of collateral members can be forecast.

Reinforcing tapes should be applied wherever called for on the drawings, to all cracks and joints wider than $\frac{1}{16}$ in. and to contraction and construction joints including grouted joints of precast sections, joints between dissimilar deck materials (i.e., at tops of hips and ridges, plywood eaves, gable edges) and metal edges of flashing, fascias, eave trims, etc.

All surfaces to which tapes are to be applied should first be primed.

Tape should be laid as soon as the primer is dry and before the over-all roofing membrane is applied. Tapes must not be stretched as they are applied.

Glass Tapes. Liquid roofing solution should first be applied to an area 1 in. wider than the tape or flashing involved. This can be done with a brush or narrow roller. Enough roofing solution should be applied to the deck so that it will penetrate the tape as it is laid. While the coating is wet, tapes should be laid in the desired position and smoothed into place with a fairly stiff brush, eliminating wrinkles, dry laps and fishmouths. If a second strip of tape is required (e.g., against vertical surfaces), it should be applied immediately after the first.

All end and side laps should be at least 2 in. wide. Reinforcing tapes should be wide enough to extend at least 1½ in. beyond the crack or joint on both sides. Width of flashing tape should conform to architectural drawings. As soon as tapes are in place, a top coat of neoprene solution thick enough to fill and cover the tape should be applied. The coated tape should be allowed to dry thoroughly before applying the over-all membrane.

Nylon Tapes. Nylon tapes should be applied in a similar manner. After the tape is embedded in the base coat, however, an hour or so should elapse before applying the top coating of neoprene. This time lapse permits solvent vapors to escape.

Pressure-Sensitive Cotton Tapes. These should be applied directly to the dried, primed roof deck. The tape should be smoothed by hand as it is laid into place, applying sufficient pressure to insure complete adhesion. It must be applied without forming wrinkles, blisters or fishmouths, but must not be stretched. When tape is in place, a coating of neoprene should be applied over the tape to at least 1 in. beyond its edges. Thickness of this coat should be adequate to completely fill and cover the tape.

Because of their tendency to shrink, pressure-sensitive cotton tapes should not be used around drains or in internal corners where sub-surface voids might result. Nor should they be used over soft or easily damaged deck materials, such as fiberboard insulation, vermiculite or foamed concrete fills.

Famous residence of
Mr. E. P. Taylor
Lyford Cay
Bahama.

Architect:
Eldredge Snyder
New York, N. Y.

The Ludowici-Celadon roof crowning this beautiful home is Designer gray . . . Many patterns and colors to enrich the architect's most talented expressiveness are available.

The truly fine home . . . characterized by the permanent elegance of a LUDOWICI ROOF

FOR FULL PARTICULARS CONTACT ARCHITECTURAL DEPT. AR

LUDOWICI-CELADON COMPANY
75 EAST WACKER DRIVE, CHICAGO, ILLINOIS 60601
Manufacturers of quarry tile, the nation's largest producer of roofing tile and NAILON Facing Brick

For more data, circle 95 on Inquiry Card

Foresight

Foresight was the byword in the late Eero Saarinen's planning of the Dulles International Airport.

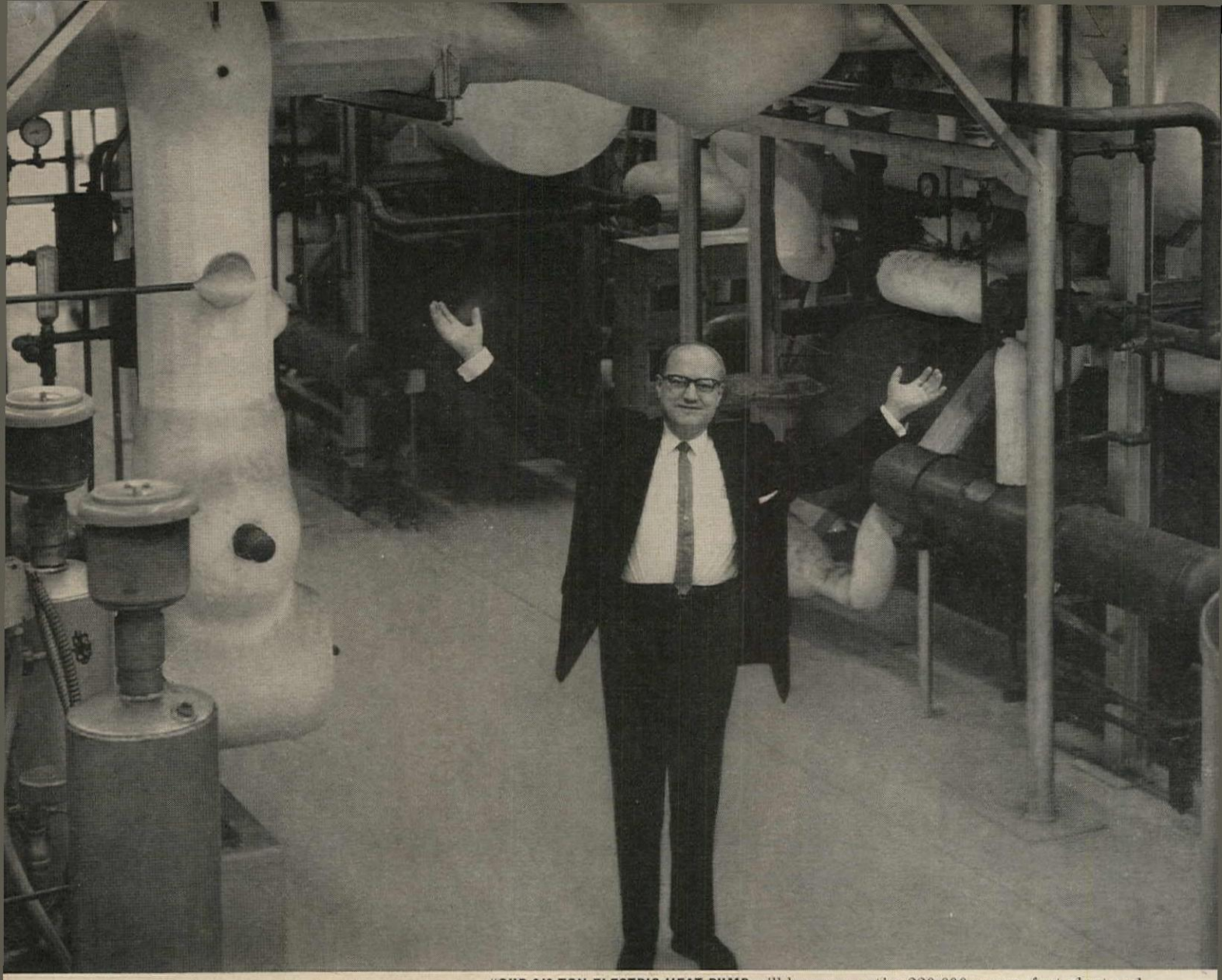
Plush mobile lounges whisk passengers effortlessly to the huge silver birds perched on the runways. A veritable forest of millions of trees were strategically planted to cushion the roaring of the jets from the ears of people who will someday populate the area around Dulles but who now don't even exist.

Foresight was used too, in the locksets chosen for this monumental terminal. Lockwood Mortise Locksets—structurally strong and mechanically perfect enough to give faithful service far into the future.

LOCKWOOD

LOCKWOOD HARDWARE MFG. CO.
FITCHBURG, MASSACHUSETTS

For more data, circle 96 on Inquiry Card



"OUR 640-TON ELECTRIC HEAT PUMP will keep our entire 220,000-square-foot plant and offices at 70° year-round, regardless of outside temperatures," says Frank Flick.

"TOTAL ELECTRIC SPACE CONDITIONING FOR OUR PLANT WAS THE BEST RECOMMENDATION OUR ARCHITECT MADE"

Frank Flick, President of Flick-Reedy Corp., Bensenville, Illinois, reports on the advantages of using flameless electricity as a single source of energy for all plant heating, cooling and lighting

"Without any doubt, one of the most important new design elements in our new Flick-Reedy plant is total electric space conditioning," reports President Frank Flick. "By following our architect's recommendation and using electricity as our only source of power, we have obtained a markedly more efficient operation.

"Greater plant cleanliness, for example, has enabled us to improve the quality of the hydraulic cylinders and sealing fittings manufactured by our two divisions. And automatic year-round air conditioning—with heating and cooling both provided by our electric heat pump—has resulted in a sharp drop in absenteeism and a consequent increase in production.

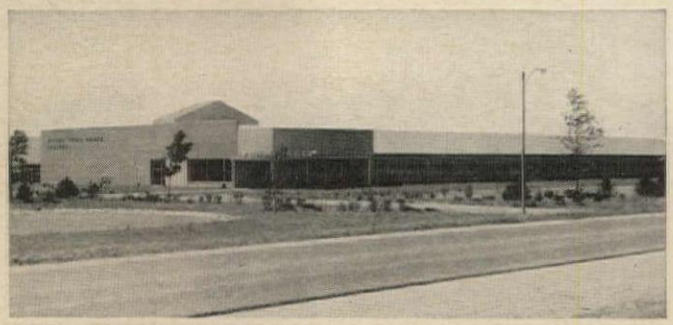
"On the basis of our own experience here at Flick-Reedy, I would strongly recommend that anyone involved in industrial design look into the advantages of total electric space conditioning as soon as possible."

For architects and consulting engineers, total electric space conditioning offers the modern method for combining heating, cooling and lighting into one efficient operation using a single source of energy. In many cases, recommended lighting levels can provide a substantial part of the heat as well, thereby reducing the size, space requirements, and cost of heating equipment.

If you are interested in finding out ways in which total electric space conditioning can help you in the design of industrial and commercial buildings, contact your local electric utility company. They will welcome the opportunity to work with you.

BUILD BETTER ELECTRICALLY

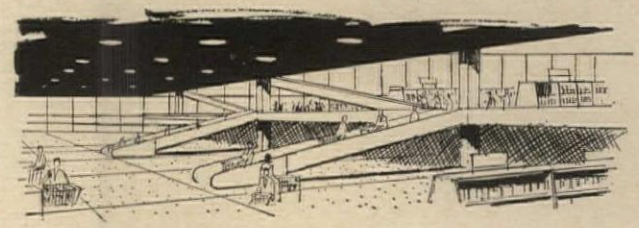
Edison Electric Institute, 750 Third Avenue, New York 17



CITED FOR "IMAGINATIVE BOLDNESS," the award-winning Flick-Reedy plant features total electric design. Architect-engineering firm was Zay Smith & Associates, La Grange, Illinois.

Why moving walkways?

Call it what you will... power sidewalk... passenger conveyer... moving walkway... moving sidewalk... the basic idea of a Turnbull Elevator Pedesta-Ride is to move people (large numbers of people) and their luggage or their shopping carts from one place to another, either between floors or on the level. Pedesta-Ride's moving surface is a real "magic carpet"—free from sway, sag or weave. There's no risk of linkage breakdown because its heart is a continuous band of cold rolled, tempered carbon steel of exceptionally high tensile strength and stability. This forms the core for a specially designed rubber covering that gives a safe, comfortable platform under all conditions. Turnbull Elevator Pedesta-Ride® is the ultimate in continuous transportation — regardless of traffic peaks — for shopping centres, parking facilities, exhibitions, transportation terminals and countless other uses. Why moving walkways? — Because they're safe, economical and efficient. Because they've become an accepted mode of transportation the world over: in Canada, Japan, Australia, Italy, Sweden. And there's a Pedesta-Ride in the New York City Building at this year's World's Fair. In fact, whenever you want to move people from one place to another, investigate the advantage of Pedesta-Ride. For information write to...



Passenger Elevators
Parking Garage Elevators
Dumbwaiters
Freight Elevators
Moving Walkways
Power Scaffolds

TURNBULL ELEVATOR

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

For more data, circle 98 on Inquiry Card

ANDERSEN PROVIDES THE WINDOW SOLUTION FOR ANY TYPE OF LIGHT CONSTRUCTION

Stillwater High School, Stillwater, Minnesota
Architect: Hammel & Green, Inc., St. Paul, Minnesota
Windows: Andersen Casements in combination with fixed glass

How finely detailed **STOCK WINDOWS** enhance the crisp design of a Minnesota school

Hammel and Green's elegant design of the new Stillwater, Minnesota High School is a study in attention to detail. Here are simple, uncluttered lines boldly presented to form an interesting, integrated design.

It's the successful realization of an architect's all-out striving to create functional beauty. It involved carefully weighing and considering the tiniest details of design and material.

That stock Andersen Casement Windows could become an integral part of such a design is a tribute to their **finely detailed lines** and the craftmanship that goes into their manufacture.

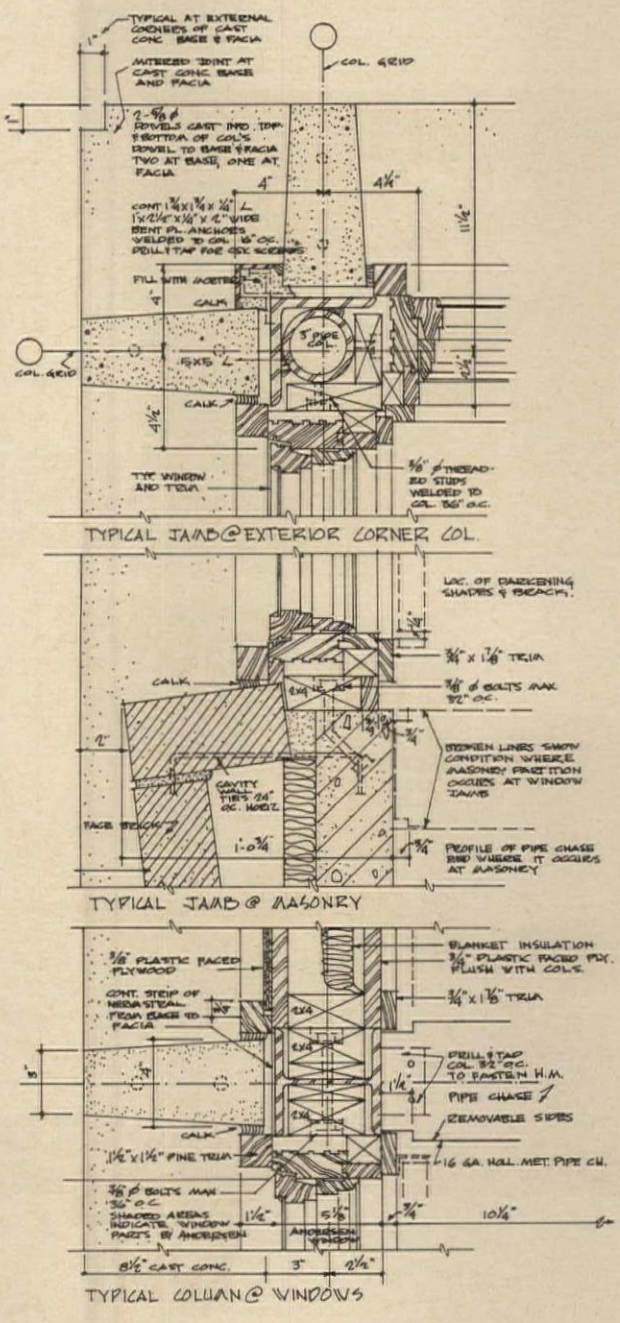
Andersen Casements contribute to the over-all architectural scheme . . . become an important design element without being obtrusive.

And all this **window beauty** comes with the assurance that Andersen Casements will operate smoothly, silently, almost effortlessly for the life of the school. They will save on heating costs. They will keep students in **draft-free comfort** during the most bitter winter weather. What more could be said . . . or expected . . . of any window than this?

Check Sweet's File. Or, contact your Andersen distributor for a Tracing Detail File. All Andersen Windows are readily available throughout the United States and Canada.

Andersen Windowalls*
*TRADEMARK OF ANDERSEN CORPORATION
America's Most Wanted Windows
ANDERSEN CORPORATION • BAYPORT, MINNESOTA

Andersen Windows AW



Product Reports

continued from page 217

CHAIR, OTTOMAN DESIGNED FOR COMFORT

Architect Eric Defty has designed two chairs, an ottoman and a glass-topped coffee table. The bases for the furniture are of nickel-plated steel, all utilizing the same opposing curves. The chair can also have a stainless steel base, and its cushion is of leather. *Phoenix Development Corp., 401 N. Euclid, St. Louis 8, Mo.*

CIRCLE 302 ON INQUIRY CARD

HEAT PUMP

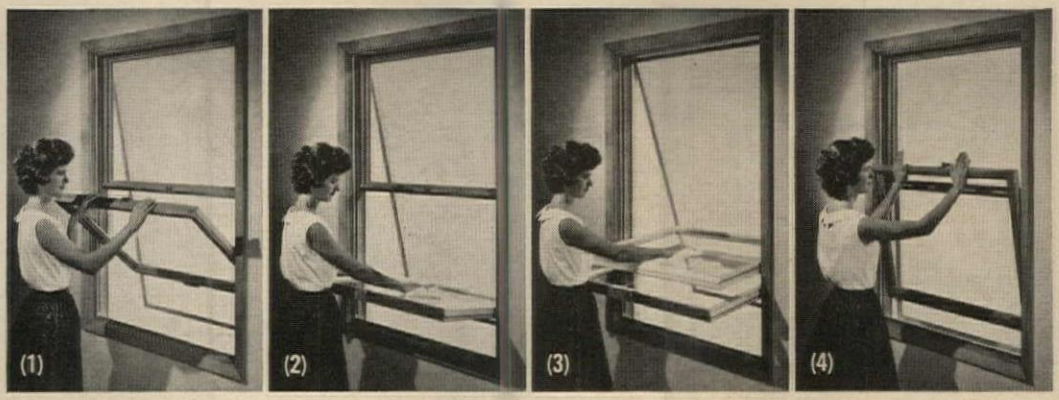
Both heating and cooling capability are combined in a new *Comfort Pac* series of reverse cycle heat pumps. Designed primarily for garden apartment and other multi-unit applications, the packages come in 1½ and 2 ton capacities. The 14-in. depth of the condensing unit allows it to be mounted flush with the outside wall. The 12½-in. depth of the blower package permits it to be concealed in a closet ceiling or mounted in a false ceiling with plenum and discharge grill. *Peerless Corporation, 1853 Ludlow Ave., Indianapolis, Ind.*

CIRCLE 303 ON INQUIRY CARD

QUIET OPERATING FILTER BLOWER

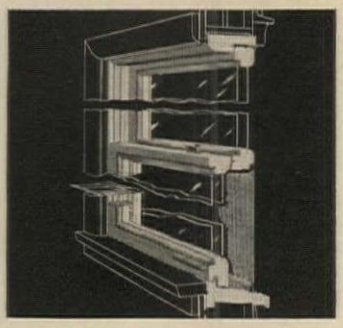
A new filter blower air system, offered in two models of G. E.'s 1964 *Superline* series of room air conditioners, has a lower operating noise level, the company reported. Basically, the filter blower consists of a one-piece drawn aluminum wheel with over 1,000 tiny blades cut into the wheel. A heavy duty filter is fitted in the inside perimeter of the wheel and spins with it. The filter doubles as a

more products on page 236



The PELLA Wood Double Hung Window is designed as a practical answer to the need for a double hung window where quality and convenience are primary. Some of the features of this window are apparent . . . some are hidden. Among the obvious ones are superior workmanship and finish. Less apparent is the ease of washing the outside of PELLA Double Hung Windows from the inside! Here's how: (1) Just lift the bottom sash a few inches. Pull in on the top and the sash pivots! (2) Now, you can wash the outside of the bottom sash from the inside! (3) To wash the outside of the top sash, pull it down part way, pivot it and the outside comes inside! (4) Just reverse the procedure and the sash slip back into place.

The New PELLA Wood Double Hung Window...



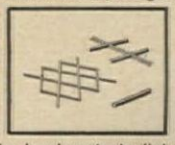
What's the big secret about this new window? There are several. But, this one in particular is exclusive: SPRING-LOADED VINYL SASH SLIDES. They're the reason both sash can be pivoted . . . practically without effort. Sash stiles that come into contact with these special jamb liners are factory-painted . . . need no further finishing. Windows won't stick when painted because the PELLA design keeps painted surfaces separated.

Two all-aluminum screen options are available. First, there's a full screen that swings outward when you pivot the sash for washing.

Then, for those who prefer, there's a lower half screen. Both of these screens are removable from inside, making outside ladder climbing obsolete.

Storm panel fits into the inside of the sash, making outside storms unnecessary. Welded insulating glass or single glazing is optional.

For traditional styling, snap-in, snap-out muntin bars of wood are available. They come in horizontal, rectangular and diamond arrangements. They make window cleaning and painting easier and faster.



Additional design features and benefits: rigid steel frame at the head protects flat overhead clock-spring-type sash balances during trimming. Stainless steel weatherstrip at head and check rail plus woven pile weatherstrip at the jambs seal out the weather. Woven pile weatherstrip also seals over an aluminum interlock at the sill.

For the latest in quality, convenience and traditional styling, PELLA Wood Double Hung Windows offer a new standard for comparison and value. Full range of ventilating and fixed sizes.

Rush the attached card today for information about PELLA Wood Double Hung Windows.

PELLA

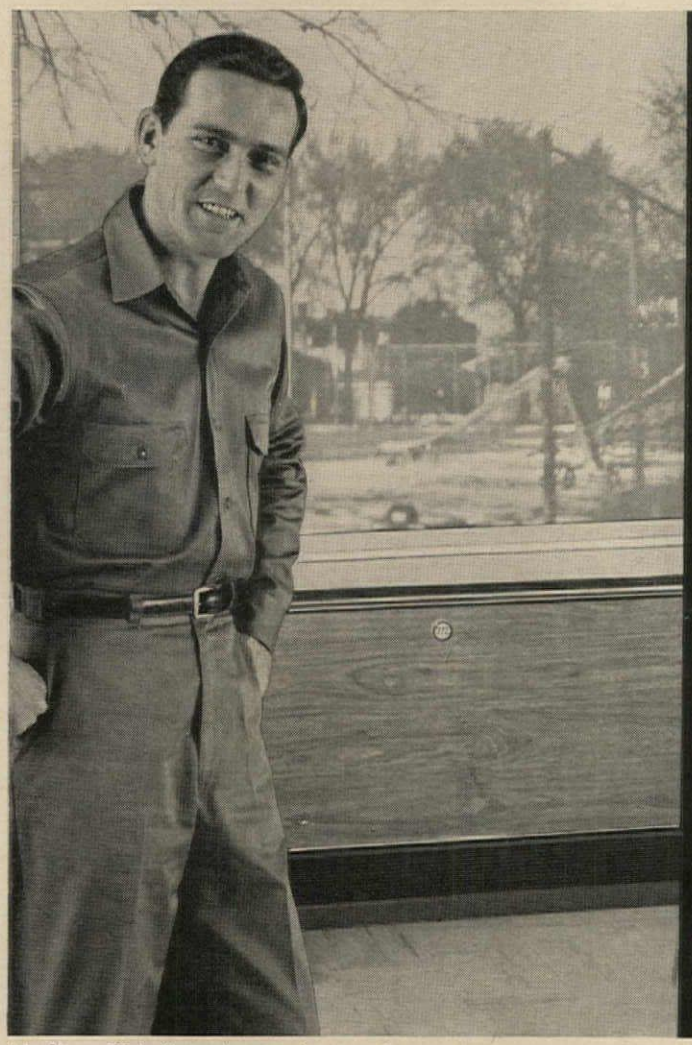
ROLSCREEN COMPANY • PELLA, IOWA

PELLA MAKES QUALITY WOOD WINDOWS, WOOD FOLDING DOORS AND PARTITIONS, WOOD SLIDING GLASS DOORS AND ROLSCREENS

THOUGHTS FROM A MAINTENANCE ENGINEER

"Used to be a tough job keeping kids and teachers comfortable . . . rooms always too hot or too cold. The Valedictorian changed all that. Temperature stays just right in here . . . whatever the weather's doing."

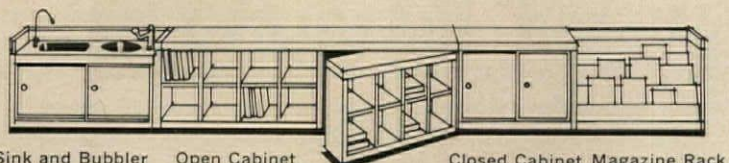
"Another great thing about the Valedictorian . . . filters slide in and out just like a drawer. I don't even have to carry a screw driver."



Modine Valedictorian unit ventilators are constantly alert, instantly responsive to students' comfort needs. A unique "weather control center" dictates total heating, cooling, ventilating and dehumidifying. Everything Modine Valedictorian does, it does *quietly*. And it's equipped to perform the *full* air conditioning function.

One-piece, cleanable urethane filters slide in and out fast and easy. *Everything* about Valedictorian is designed to make maintenance easy . . . right down to the feature that prevents small objects, such as paper clips, from falling into the fans to cause noise and fan damage. No danger either of injury from objects projected by fans.

A full line of attractive, functional accessories.



Sink and Bubbler · Open Cabinet · Closed Cabinet · Magazine Rack · Mobile Cabinet

WRITE TODAY FOR UNIT VENTILATOR BULLETIN 1264

ABOUT MODINE Valedictorian UNIT VENTILATORS

"Never thought I could throw away my oil can. But look at me now... just pushing a button to lubricate a whole unit."

"Sure easy to take care of. And tough as they come . . . take a lot of punishment from the kids and still look just as good as new."

Valedictorian has a single-station, pushbutton metered system that distributes lubricant under pressure to all oiling points. The entire unit is oiled in *seconds*. No need to remove front panel! And no tools needed! Quick-access, hinged control panels open with key-lock latches.

Valedictorians are virtually *student-proof*: scuff-resistant, vinyl-covered front panels; chip-resistant chrome trim; heavily-reinforced, sturdy-steel construction; long-wearing, baked-enamel finishes (7 colors). Same durability in Modine custom-styled storage cabinets and accessories.

Modine MANUFACTURING COMPANY

1510 Dekoven Avenue, Racine, Wisconsin

The Valedictorian is more sensitive to classroom comfort than the student body!

For more data, circle 110 on Inquiry Card

Product Reports

continued from page 244

COLD-FORMED HOLLOW STRUCTURAL STEEL SECTIONS

Cold-formed hollow structural sections of steel are well suited for applications such as exposed steel columns and beams in school, home and one- and two-story plant and office construction, the company reports. Sizes range from 2 by 2 in. up to 8 by 8 in. in square cross section, and from 3 by 2 in. up to 12 by 4 in. in rectangular cross section, with wall thickness up to ⅜ in. Lengths range up to 40 ft. *Bethlehem Steel Company, Bethlehem, Pa.*

CIRCLE 309 ON INQUIRY CARD

LOUVERS ELIMINATE R.F.I.

A new specular *Parahex* louver eliminates radio frequency interference from fluorescent lamps and still gives the highest levels of illumination with visual comfort, according to the manufacturer. *Sinko Manufacturing and Tool Co., 7310 W. Wilson Ave., Chicago, Ill., 60631*

CIRCLE 310 ON INQUIRY CARD

TELEPHONE SYSTEM FOR HIGH-RISE APARTMENTS

In a new telephone system for high-rise apartments, the entrance telephone is equipped with a push button for each floor number, a push button for each apartment letter and a cancel push button. The unit measures 13 by 10¾ in. and comes equipped with 42 buttons to handle 360 apartments or 24 buttons to ring 128 apartments. Mounting of the unit can be flush in the wall, table console or pedestal top. *Auth Electric Company, Long Island City, N.Y.*

CIRCLE 311 ON INQUIRY CARD

FOLDING PARTITION PASS DOORS MINUS THRESHOLD

Pass doors in folding partitions without the objectionable threshold are now possible since Haws *Soundwalls* are sealed both top and bottom by hydraulic pressure applied through the supporting head section, and adequate reinforcing around the door frame is all that is required. *Robert Haws Company, 19400 Allen Rd., Melvindale, Mich.*

CIRCLE 312 ON INQUIRY CARD

more products on page 254

ARCHITECT:

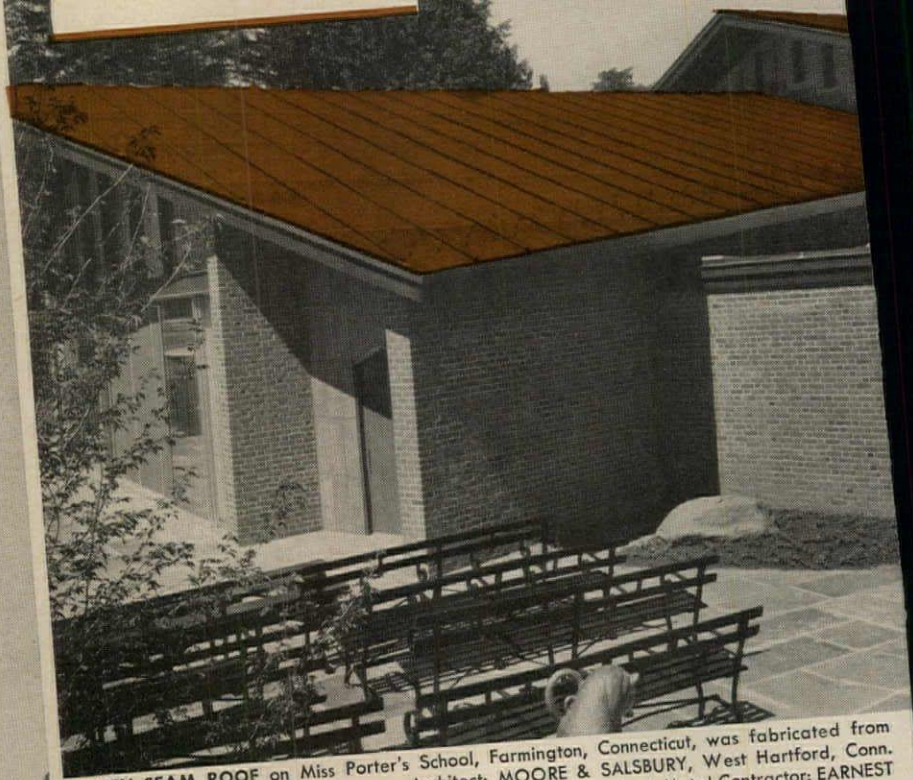
R. BEN JOHNSON

Owensboro, Ky.

Curtain Wall
by
MARMET CORPORATION

CATHEDRAL SPIRE

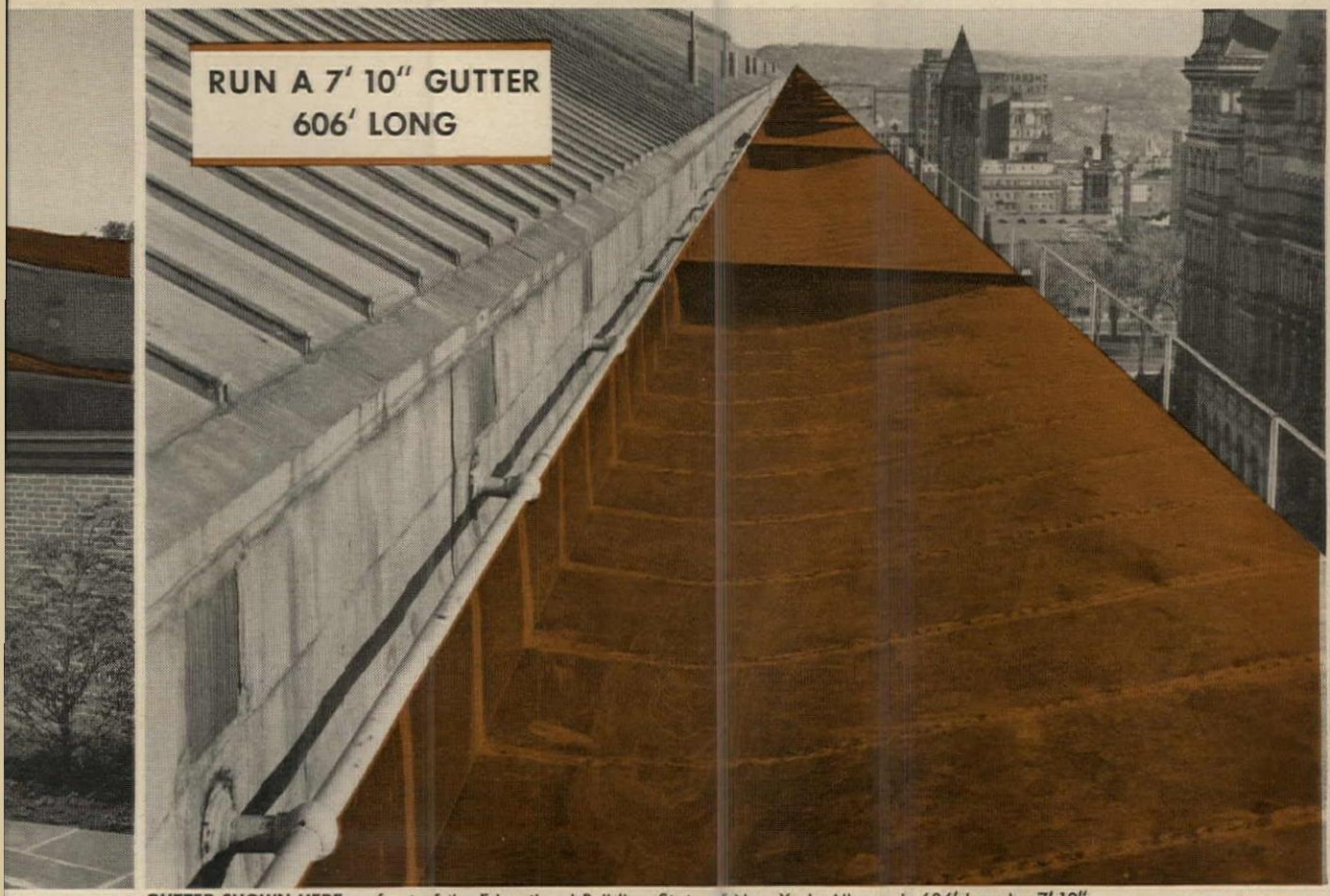
COPPER SPIRE for Church of the Open Door, Muskegon, Mich. It was fabricated from 5,000 lbs. of 16 oz. Cold Rolled Revere Copper by LIVINGSTON SHEET METAL CO., Muskegon. Spire is 81 feet high and 19 feet in diameter at the base. Revere Distributor: CENTRAL STEEL AND WIRE COMPANY, Chicago, Ill.



BATTEN SEAM ROOF on Miss Porter's School, Farmington, Connecticut, was fabricated from 30,000 lbs. of Revere Sheet Copper. Architect: MOORE & SALSBURY, West Hartford, Conn. General Contractor: FELIX BUZZI & SON, INC., Torrington, Conn. Sheet Metal Contractor: EARNEST PETERSON, INC., Hartford, Conn.

YOU CAN DO ALL THREE, AND MORE, WITH

VERSATILE REVERE COPPER



GUTTER SHOWN HERE on front of the Educational Building, State of New York, Albany, is 606′ long by 7′ 10″ wide. Gutter around entire building runs 1,818′ in widths of 5′ 1″ and 7′ 10″. 38,000 lbs. of 32 oz. Revere Copper were used. Architect: CARL W. LARSON, State Architect. Roofing & Sheet Metal Contractor: VENDITTI BROS., INC., Schenectady, N. Y. Revere Distributor: BINGHAMTON HARDWARE COMPANY, Binghamton, N. Y.

"Man's oldest metal," is also his newest when it comes to design possibilities. The flexibility of copper in building construction is virtually unlimited.

It is because of this versatility of copper that architects are incorporating it in their work more and more.

Scan the plans now taking shape on your boards . . . consider the ones you are planning for the future. There undoubtedly are excellent opportunities to take advantage of the tremendous design flexibility of copper . . . just the advantage you've been looking for to make your buildings outstanding works of achievement. You'll find copper doubly effective when you wish to combine utility with beauty.

Particularly significant in the use of copper, today, is the fact that its price is the lowest it has been in years.

We believe it will pay you to "Have copper in mind when you design."

Revere's Technical Advisory Service will be glad to help you in creating the unusual with copper and its alloys. Get in touch with the Revere Office nearest you today.

• • •

SEND TODAY for free copy of "Copper and Common Sense," Revere's 140-Page Brochure illustrating the design principals and techniques of sheet copper construction. Also free companion piece, "The Revere System of Copper Flashing," for the complete weatherproofing of masonry buildings. Address Dept. "A-3" at address below.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices: 230 Park Ave., New York 17, N. Y.
Sales Offices in Principal Cities . . . Distributors Everywhere

For more data, circle 112 on Inquiry Card

Product Reports

continued from page 250

TWIN PEDESTAL CHAIR

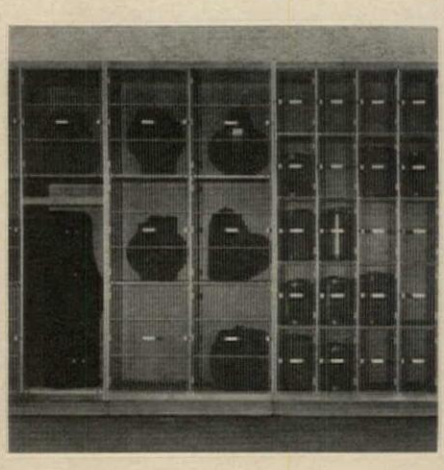
Shown is a chair from a new grouping of tables and single and twin pedestal chairs for the contract furnishings market. The four chairs in the

group are available on the (detachable) metal table bases as well as their own bases of cast bronze, chrome, aluminum or porcelain enamel colors. *The Chicago Hardware Foundry Co., North Chicago, Ill.*

CIRCLE 313 ON INQUIRY CARD

MUSICAL INSTRUMENT STORAGE

Multiplex storage units have been designed and made by Mutschler to the maximum case size of each band and orchestra instrument. Storage racks within tall units are provided for extremely large instruments.



Mutschler says the *Acousti-Grill* steel doors help eliminate music bounce-back as sound waves pass through them and are absorbed by the walls of the hardwood cabinets. *Mutschler Brothers Co., Nappanee, Ind.*

CIRCLE 314 ON INQUIRY CARD

LAY IT ON THIN...WITH papi®

(POLYMETHYLENE POLYPHENYLISOCYANATE)

PROBLEM:

Efficiently insulate, in limited time, a prefab steel building during construction.

SOLUTION:

Spray apply one-shot PAPI-based, self-extinguishing rigid urethane foam.

Average thickness: 0.9 inch.
Coverage: 10,000 sq. ft.
Time: three men, two days.

The new Carwin applications laboratory building, 7000 square feet with a 20 foot center height, presented an extreme heat loss potential. Insulation could only be applied during the relatively short interval after channeled steel panels had been placed, and before special wiring and piping began. Enjoying a unique opportunity of spraying PAPI one-shot rigid foam insulation on the very building they were to occupy, Carwin's own laboratory personnel laid it on lightly — it didn't take much — to produce the most efficient insulation at minimum cost. Come and see for yourself, or write us for the whole story on PAPI polymethylene polyphenylisocyanate.

THE CARWIN COMPANY

A DIVISION OF THE UPJOHN COMPANY

NORTH HAVEN, CONNECTICUT

® PAPI T.M. Reg. U.S. Pat. Off.

WEST — 2113 East Chapman Avenue
Fullerton, California (714) 526-4936

MIDWEST — 553 Pennsylvania Avenue
Glen Ellyn, Illinois 60137 (312) 469-8875

EAST — Stiles Lane, North Haven,
Connecticut 06473 (203) 288-1671

For more data, circle 114 on Inquiry Card

YORK SUNLINE Rooftop Air Conditioners give these stores a better climate for business!

These leading retail stores are air conditioned by compact York units that cool in summer, heat in winter, provide tempered, filtered air the year around. York SUNLINE Air Conditioners are roof-mounted, take no floor space for equipment or fuel storage.

Complete application flexibility. The York SUNLINE is a single unit that may be mounted anywhere on the building roof—not necessarily over the conditioned space. If a roof installation is not desired, it may be located on the ground, outside the building. Units may be installed with or without ductwork, to meet any application requirement.

"*Zoned cooling.*" In a larger building, several units may be installed, each individually controlled. Then, one or more units may be operated independently—to meet changing occupancy conditions . . . and to effect operating economies.

Low ambient cooling. York SUNLINE Air Conditioners provide cooling even when outdoor temperatures are below freezing. York's highly efficient compressor, and exclusive "flooded condenser" assure full capacity cooling in any season.

When you plan air conditioning for any single-story building, get specification data on the York SUNLINE Rooftop Air Conditioners. Call your York Representative, or write directly to York Corporation, York, Pennsylvania. In Canada, call or write Shipley Company of Canada, Ltd., Rexdale Boulevard, Toronto, Ontario.

Neisner's Store, Batavia, New York, is heated and cooled by 6 York SUNLINE Air Conditioners. Conditioned air is distributed through ceiling diffusers.

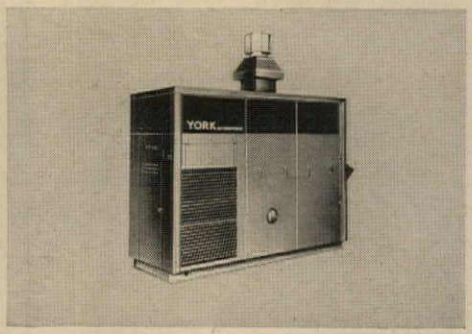
Top Save Store, located in Westgate Shopping Center, Streator, Illinois. 6 York SUNLINE units provide year-round comfort conditioning for this modern retail store.

First National Store, Acton, Mass. Roof-mounted York SUNLINE units heat and cool entire store . . . take no floor space.

YORK CORPORATION
Subsidiary of Borg-Warner Corp.
YORK, PENNSYLVANIA

THE QUALITY NAME IN AIR CONDITIONING AND REFRIGERATION

York BW BORG-WARNER



York SUNLINE units may be mounted anywhere on the roof, not necessarily over the area to be conditioned. Low silhouette design blends with the building roof line.

For more data, circle 117 on Inquiry Card

Office Literature

continued from page 218

WATERTIGHT JOINTS IN REINFORCED CONCRETE

A new brochure deals with *Nervastral Waterstop* and *Weldbar* for water-tight joints in reinforced concrete structures such as foundations, tunnels, dams, roads, tanks, swimming pools, retaining walls and abutments. The folder gives physical and chemical properties, specification and performance data, and splicing instructions. Request bulletin 128B. *Rubber & Plastics Compound Co., Time & Life Bldg., Rockefeller Center, New York 20, N.Y.**

CIRCLE 412 ON INQUIRY CARD

WOOD-FRAMED SLIDING GLASS DOORS

Archwood's line of sliding glass doors and windows featuring frames of Ponderosa pine or mahogany with aluminum cores, is presented in a four-page brochure. Standard types and sizes are listed and typical installation and construction diagrams are also included. *Architectural Fenestrations of Wood, Inc., 3837 Thirteenth Ave. West, Seattle 99, Wash.*

CIRCLE 413 ON INQUIRY CARD

CIRCUIT PROTECTORS

A four-page brochure describes four models of illuminated, protected on-off switches designed for applications requiring a switch, a fuse and a pilot light. The booklet includes pictures, technical specifications and diagrams with all dimensions. *Rowan Controller Company, 30 Bridge Ave., Red Bank, N.J.*

CIRCLE 414 ON INQUIRY CARD

METAL FRAMING FOR PIPE LINES

Grinnell's new line of metal framing and framing accessories for suspending or supporting pipe lines running parallel and in proximity to one another is described in a 16-page catalog (GMF-63). The line consists of channels; concrete inserts and accessories; steel pipe and tubing clamps; I-beam clamps, flat plate, angle and wing fittings; brackets; screws; nuts and washers. *Grinnell Company, Inc., 227 W. Exchange St., Providence 1, R.I.*

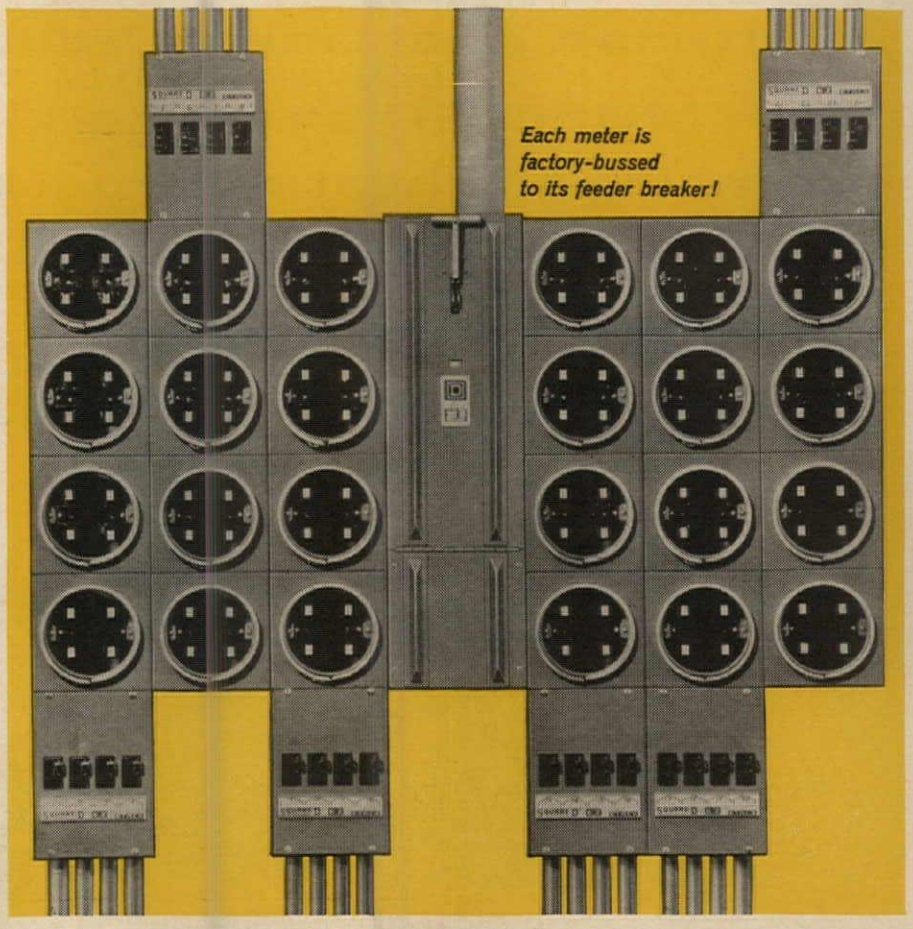
CIRCLE 415 ON INQUIRY CARD

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

more literature on page 262

24 Meters AND 400 amp Main Switch

–yet only 62 inches wide!



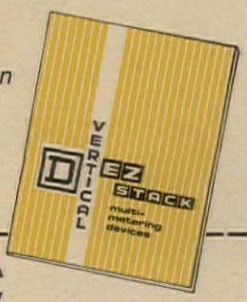
This typical 3-wire S/N installation shows the compactness and versatility of

SQUARE D's VERTICAL EZ STACK MULTI-METERING DEVICES

If you want to make the most of available wall space, Vertical E-Z STACK is for you! But saving space is only a part of the story. Drastically reduced on-site assembly cuts labor costs, too.

Vertical E-Z STACK is available either as components or as custom factory assemblies, Underwriters' Laboratories listed.

Write *for your free copy of 20-page illustrated bulletin which describes Vertical E-Z STACK devices and installations in detail*



SQUARE D COMPANY, Dept. SA
Mercer Road, Lexington, Kentucky

I'd like a copy of Bulletin SL-32

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

SQUARE D COMPANY

wherever electricity is distributed and controlled

For more data, circle 119 on Inquiry Card

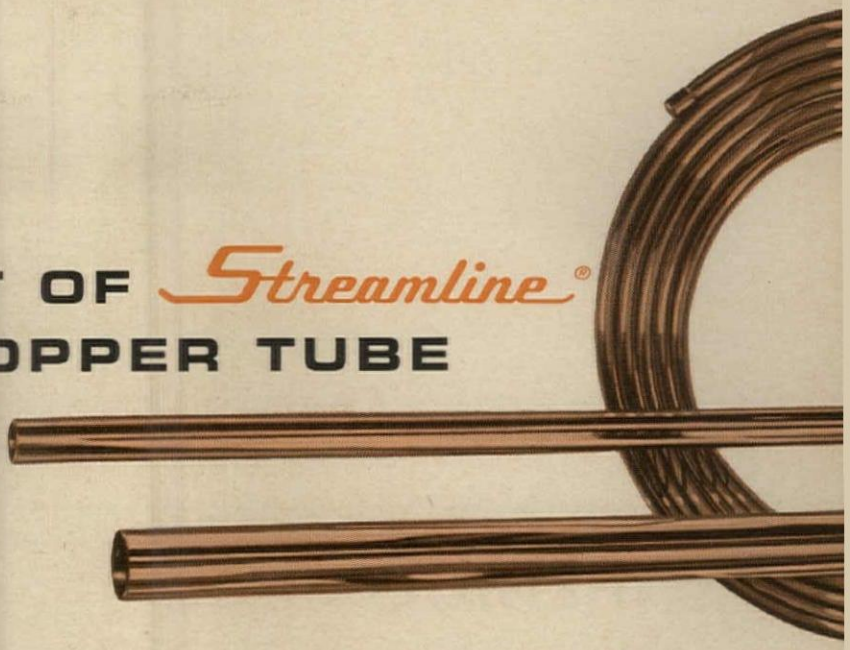
Beautiful 5 million dollar San Francisco high-rise apartment building equipped with MUELLER BRASS CO. *Streamline*® plumbing and heating products throughout

Laguna Eichler Apartments developed and built by Eichler Homes • Architects: A. Quincy Jones, Frederick E. Emmons & Associates, A.I.A. • Mechanical Contractor: Currie Heating and Plumbing Co. • Landscape Design: Royston, Hanamoto, Mayes & Beck

MUELLER BRASS CO. 1945 LAPEER AVE. PORT HURON, MICHIGAN 48061

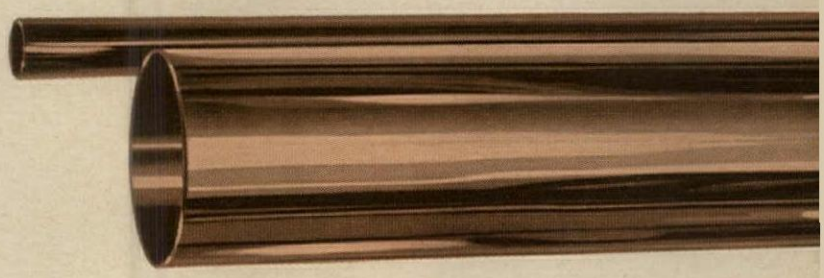
For more data, circle 120 on Inquiry Card

104,120 FEET OF Streamline® TYPE L COPPER TUBE



19,000 FEET OF Streamline® DWV* TUBE

(DRAINAGE, WASTE AND VENT)



1,000'S OF Streamline® CAST AND WROT FITTINGS

Everything about the new and exciting Laguna Eichler apartment project in San Francisco is crisp and modern . . . including the all-copper radiant heating installation, and the supply and drainage plumbing systems. Streamline copper tube and fittings, manufactured by the Mueller Brass Co., were used exclusively for all above-ground installations. Copper fits perfectly into this scheme of gracious living because of its dependability and long service life without troublesome repairs caused by rusting, leaking or clogging.

Streamline copper tube and fittings offer many other advantages, too. They are easy to handle, require fewer connections because of the convenient 20 foot lengths of tube, and a compact copper system actually adds available space because no furring out to accommodate bulky fittings and cumbersome pipe is needed.

Compare materials and you'll find that copper offers more on every count . . . for high-rise apartments or single story structures, Streamline copper tube and fittings are best for fabricating modern plumbing and heating systems.

Write today for our latest Catalog.

403

Office Literature

continued from page 258

INDUSTRIAL COOLERS

Complete information on the construction, performance and application of Marlo industrial coolers for product and process cooling, freezing and heating, is contained in a new 28-page Bulletin 25. *Marlo Coil Co., 7100 S. Grand Blvd., St. Louis, Mo., 63111*

CIRCLE 416 ON INQUIRY CARD

ROOM AIR CONDITIONERS

The 1963-4 "Directory of Certified Room Air-Conditioner Models" contains a total of 1,321 models and 15 revisions in ratings. Cooling capacity, current, and power ratings of the models are independently tested and certified accurate under terms of a program sponsored by the N.E.M.A. *National Electrical Manufacturers Association, 155 E. 44 St., New York 17, N.Y.*

CIRCLE 417 ON INQUIRY CARD

SPACE FRAMES

A new 12-page brochure describes the *Unistrut* space-frame system, made up of five simple standardized parts. The catalog includes typical details, specifications and tabulated data for roof loads and spans up to 100 ft. *Unistrut Corporation, 4118 S. Wayne Rd., Wayne, Mich.**

CIRCLE 418 ON INQUIRY CARD

MOVABLE WALLS

The *Aco* line of operable walls used for the division of rooms or floor space in schools, churches, hotels, restaurants, or any place where sound isolation is desired, is described and illustrated in an eight-page bulletin. Three basic models with various noise reduction properties are considered. Detail drawings illustrate the features of the fully automatic and manual operating system. The bulletin includes application illustrations, diagrams and performance data charts. *Engineered Products, Inc., Sound Control Division, 998 Farmington Ave., West Hartford, Conn.**

CIRCLE 419 ON INQUIRY CARD

POWER EXHAUSTERS

In its eight-page brochure on power exhausters, Airmaster rates the three materials used in their construction —fiber glass, aluminum and steel. The booklet also describes and rates the three series of *Air-Van* units. Typical specification outlines, and photos and descriptions of accessories are included. *Airmaster, Division of Hayes Industries, 1623, Wildwood Ave., Jackson, Mich.*

CIRCLE 420 ON INQUIRY CARD

HOSPITAL COMMUNICATIONS

A new hospital communications guide has sections on departmental intercom systems, administrative communications, program distribution and paging, audio-visual nurses' call systems, nurse-resident communications, and doctor's register systems for hospital installation. Each category includes complete specifications, wiring information, functional data on each product, planning, layout and survey forms and suggestions. *Communications Systems Division, DuKane Corporation, St. Charles, Ill.*

CIRCLE 421 ON INQUIRY CARD

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

more literature on page 280

- *Ageless*
- *Limitless*
- *Dentless*
- *Cost Less*

■ Only genuine extruded Ceramic Quarry Tile offers so many centuries of carefree wear.

Only Textured Quarry Tile offers an almost limitless choice of colors and patterns. Only Ceramic Tile resists dents caused by furniture, cleats and spikes. When you consider that Quarry Tile is frostproof, fireproof, scratch-proof, fadeproof, waterproof and never needs waxing . . . it really is most economical.

Write for the new, full-color story about . . .

QUARRY TILE BY

Summitville

TILES, INC.

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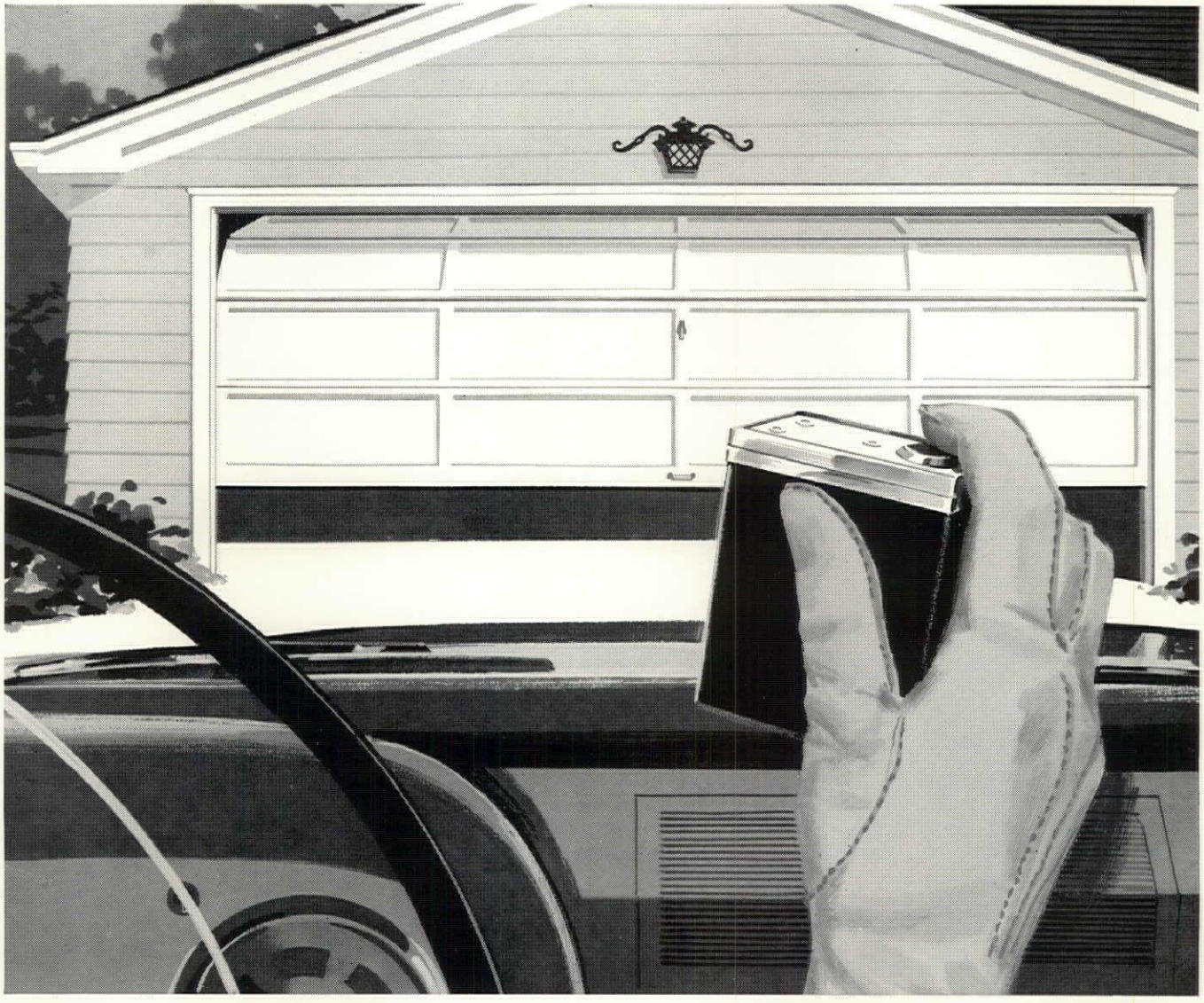
MEMBER: TILE COUNCIL OF AMERICA, INC.



Stay seated . . . everything's under control

The **RōWay** *motor-operated door does the job . . . perfectly . . . conveniently*

Get set for a front-row performance every time the RōWay motor-operated door goes into action. Just a light touch on the button of the palm-size remote control transmitter and the garage door raises automatically, quickly, easily. No one has to leave the comfort of the car during this performance. Rain, snow or cold weather swirls around outside the car as the door opens. The entire driving area is flooded by the automatically-turned on security garage light as the car is driven inside, assuring complete protection at all times against vandals or prowlers.

Conversely, when preparing to leave home, a single button control station, located wherever desired, opens the garage door automatically. Once outside, the magic of the push button transmitter orders the door lowered and latched. The handy little transmitter can then be stored anywhere within the car by means of an easily-mounted bracket.

Convenience . . . control . . . protection . . . all of these advantages, and more, at a cost that makes the RōWay motor-operated door sell for a surprisingly low price!

A complete selection of RōWay doors and operators await the most discriminating buyer. RōWay's residential line includes AlumaLux fiber glass doors, wood paneled or flush doors. Commercial and industrial buyers can select their motor-operated door from among AlumaLux fiber glass, wood paneled, flush, steel or aluminum doors.

There's nothing like the RōWay touch for motor-operated doors. Your RōWay man has all the facts and figures. Find out for yourself . . . now.

there's a RōWay for every Doorway!

RESIDENTIAL • INDUSTRIAL • COMMERCIAL

RōWay OVERHEAD DOORS

ROWE MANUFACTURING COMPANY
Dept. AR34, Galesburg, Illinois

Find Your Nearest Distributor in the "Yellow Pages"

SEE OUR CATALOG IN SWEET'S OR WRITE FOR COPY

For more data, circle 123 on Inquiry Card

For more data, circle 124 on Inquiry Card →

STAGGERED 4″ HIGH Q BLOCK

Unlimited designs for outdoor living facilities are yours with versatile Q BLOCK. Popular 4″ high Q BLOCK was used here to create an imaginative curved backdrop for outdoor entertaining at beautiful Swan Lake, Mira Loma, Cal.

Architect: James R. Wilde, AIA

Q BLOCK
Quality walls of fashion

Q BLOCK builds the natural addition to the world of Outdoor Living. You now find this stylish mark of quality creating patios, fences, partitions, walks, barbeque pits, pools and planters. Countless varieties of Q BLOCK give you wider design and pattern latitude than any other outdoor building material. Q BLOCK cannot rot or rust and requires little maintenance over the years. Only NCMA members can make Q BLOCK. Write for your nearest Q BLOCK producer.

Q BLOCK is the new national standard of excellence for the highest quality concrete block in modern day design.

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

Fabricator: American Bridge Division of U.S. Steel Corporation

HOW LONG SHOULD IT TAKE TO ENCLOSE A BUILDING?

The five men putting up these panels weren't out to set a record.

They worked at normal pace. Yet, in just under four working days they erected the 50 sturdy panels needed to completely enclose three open sides of this building addition.

The 24′x4′ panels go up fast. Big and strong as they are, they are also lightweight and easy to handle.

They're made of Hetrofoam®-based polyurethane foam 2⅝″ thick poured in place between steel skins by American Bridge Division, United States Steel Corporation.

The Hetrofoam-based foam adds rigidity and dimensional stability to the panel and has an insulation value double that of ordinary insulating materials. Its k factor, initially as low as .11 at 75° F, stays remarkably stable. **Won't support combustion.** Fire retardance is inherent in the chemistry of Hetrofoam systems. It adds nothing to the cost. They are rated nonburning on ASTM D-1692-59T.

For more information on Hetrofoam and its architectural applications, please write Durez® Plastics Division, Hooker Chemical Corporation, 8003 Walck Road, North Tonawanda, N. Y., 14121.

DUREZ PLASTICS DIVISION

HOOKER CHEMICALS® PLASTICS

For more data, circle 128 on Inquiry Card

ARCHITECTS / ENGINEERS...

OUTSTANDING
DuKane
COMMUNICATIONS APPLICATION

UNIVERSITY OF KENTUCKY MEDICAL CENTER
LEXINGTON, KENTUCKY

REQUEST THE APPLICATION FOLDER FREE

HOSPITAL

- ☐ *"All-In-One" Automatic Hospital Communications Systems*
- ☐ *Audio-Visual Nurses' Call Systems*
- ☐ *Program/Paging Systems*
- ☐ *Entertainment/Nurses' Call Control Systems*
- ☐ *"Planned Hospital Communications" Manual*
- ☐ *Filmstrip—"Rx for Communications-itis"*
- ☐ *(Shortcuts to improving patient care and increasing staff efficiency.)*
- ☐ *Demonstrate system(s) checked above*

COMMERCIAL/INDUSTRIAL

- ☐ *Communications Systems For Industry*
- ☐ *Private Automatic Telephone Systems*
- ☐ *Paging Telephone Systems*
- ☐ *Decorator Styled Intercom Systems*
- ☐ *Intercom Systems (All-Types)*
- ☐ *Hi-Power Intercom/Program Systems*
- ☐ *Demonstrate system(s) checked above.*

AUDIO LEARNING LABS

- ☐ *Medallion II Audio Learning Laboratory*
- ☐ *Triumph Audio Learning Laboratories*
- ☐ *"5 Peas In a Pod"—a complete manual on Audio Learning Laboratories*
- ☐ *Demonstrate system(s) checked above.*

call DUKANE for communications systems assistance before you design that building

Feel free to call the local DuKane Franchised Distributor . . . he's in the yellow pages . . . or call us direct for thorough and qualified communications systems planning assistance. We'll help you personally or provide planning aids and tools to cut your costly communications design time from days to hours. Here are just a few of the areas of service where we can provide our full measure of assistance.

HOSPITALS—DuKane Hospital Communications Systems are specifically engineered to hospital needs. Nurses' Call, paging, programming, patient entertainment control, doctors' register, pocket pagers, nurses' home multi-resident and security communications, etc., are some of the many communications services afforded by DuKane Systems. "Planned Communications Guide," with complete specifications, available upon request.

COMMERCIAL/INDUSTRIAL—DuKane offers a complete line of intercom, private automatic telephone and paging telephone systems for business. In addition, DuKane provides a complete line of rugged, heavy duty, dependable industrial "Hi-Power" communications systems. Literature and specification data are available on all systems for normal and high noise level applications.

SCHOOLS—DuKane provides a complete line of Centralized Communications Control Systems. All systems feature two-way communications between console and any classroom or area, monitoring of unattended areas, ALL-CALL emergency facilities, fire detection, vandalism detection, private administrative communications, and many more. Two or three channel models available. Full specification details, layout, and descriptive data available.

AUDIO LEARNING LABORATORIES—DuKane MEDALLION and TRIUMPH Audio Learning Laboratories provide long-sought-after flexibility with simplified control. Instructor's console can accommodate from 25 to 60 positions or more. Two, three, and five programs can be originated from built-in equipment. All power supplies are centrally located in console. All electronic assemblies in console or student position provide plug-in convenience. Handsomely styled, sturdy-steel student booth permits more booths per row—more per classroom. Audio-Active or Audio-Active-Compare positions are available. Desk control units also available. Many additional DuKane "plus" features. Complete specifications and planning manual entitled, "5 Peas In A Pod," available.

CHURCHES—Voice reinforcement and church communications systems are available in depth from DuKane. Two and three channel systems provide communications facilities for nursery or children's rooms, tower sound/music, Sunday School programming and social hall activities. Church Speaker layouts, specification details, and literature are available.

MARK THE COUPON BELOW WITH THE APPROPRIATE MATERIAL DESIRED, ATTACH TO YOUR LETTERHEAD AND MAIL TO US.

PROMPT COMMUNICATIONS SYSTEMS ASSISTANCE AND SERVICE IS OUR OBLIGATION . . . NO OBLIGATION TO YOU.

SCHOOLS

- ☐ *Centralized Communications Systems For Schools*
- ☐ *Administrative Communications For Key School personnel.*
- ☐ *Demonstrate system(s) checked above.*

CHURCHES

- ☐ *Voice Reinforcement and Communications Systems*
- ☐ *Demonstrate system*

PROJECT EVALUATION...

for *your* business

DuKane has developed a new approach to putting the squeeze on rising business overhead costs. A new filmstrip, "Project Evaluation," provides full details for analyzing communications systems to reduce overhead with thorough, foolproof survey procedures. In 9 minutes you can have full details.

- ☐ *"Project Evaluation" Filmstrip*
- ☐ *"Help Yourself" Communications survey forms and kit.*

DuKane

COMMUNICATIONS SYSTEMS DIVISION
DUKANE CORPORATION
DEPARTMENT AR-34 • ST. CHARLES, ILLINOIS

For more data, circle 129 on Inquiry Card

Office Literature

continued from page 262

METAL BATTEN ROOFING

Metal batten roofing, coping and skylights available from Overly are described in an eight-page catalog. The brochure is illustrated with construction details and installation photos. *Overly Manufacturing Company, 847 W. Otterman St., Greensburg, Pa.*

CIRCLE 422 ON INQUIRY CARD

VINYL WALLCOVERINGS

A "Guide to Better Hospital Walls" describes the company's line of vinyl wallcoverings available in numerous colors and patterns. The new guide gives detailed information on the results of U.L. and other fire-resistance tests. Actual samples of wall covering patterns and colors that have proved most popular for hospital installations are included. *L. E. Carpenter & Co., Inc., Empire State Bldg., New York 1, N.Y.**

CIRCLE 423 ON INQUIRY CARD

PRE-ENGINEERED METAL BUILDINGS

A "Recommended Guide Specification for Metal Buildings" has been published by the Technical Committee of the Metal Building Manufacturers Association. This specification provides a standard which will qualify pre-engineered metal buildings for commercial, industrial, agricultural, and military installations if requirements are applicable. *Metal Building Manufacturers Association, 2130 Keith Bldg., Cleveland 15, Ohio*

CIRCLE 424 ON INQUIRY CARD

UNGLAZED FLOOR TILE

Literature on unglazed *Flint Paver Tile* illustrates this vitreous natural clay product in a wide variety of shapes, sizes and surface designs. *Amsterdam Corporation, 285 Madison Ave., New York 17, N.Y.*

CIRCLE 425 ON INQUIRY CARD

BACKWARD CURVE FANS

Forty-eight page bulletin L-6 provides ratings and dimensional data on 15 sizes of backward curve fans. *Lehigh Fan & Blower Division, Fuller Company, Catasauqua, Pa.*

CIRCLE 426 ON INQUIRY CARD

PLYWOOD FINISHES

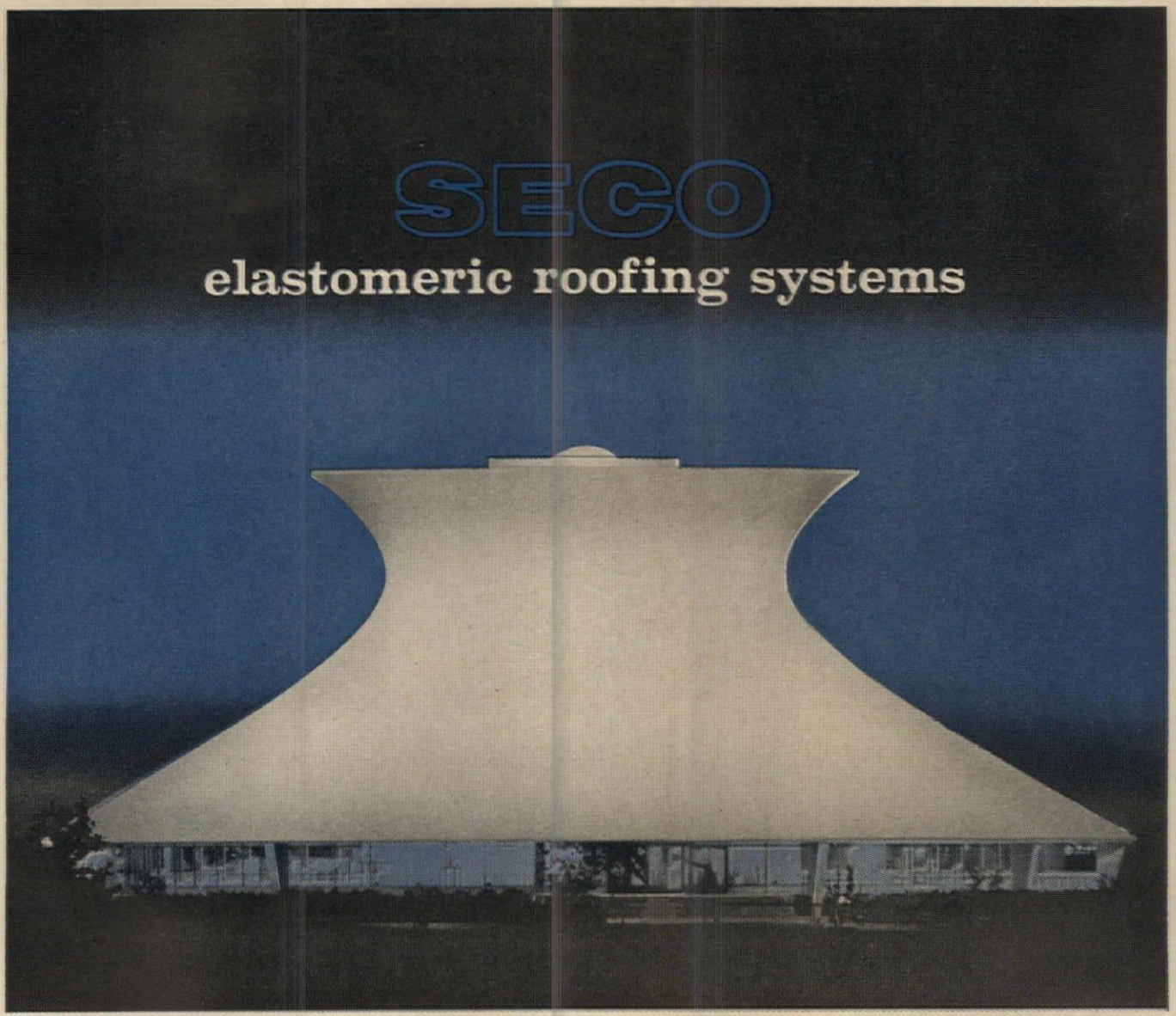
A new 24-page color booklet, "Finishing Douglas Fir & Other Softwood Plywoods," details various methods of finishing structural plywood. The booklet contains six pages of charts that provide references for any type of finishing for interior or exterior plywood. Included are the various paint types and recommendations about which paint or finish will work best for a desired effect on different types of plywood. Methods of application and life expectancy of the finishes and paints are also included. *Douglas Fir Plywood Association, Tacoma, Wash., 98401**

CIRCLE 427 ON INQUIRY CARD

LITERATURE REQUESTED

The offices of Kesnow & Thompson, Architects, 116 Main St., Towanda, Pa. 18848, were completely destroyed by fire on January 1, 1964. The architects are anxious to rebuild their A.IA., literature and manufacturers' catalog file and would appreciate receiving such material.

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



St. Louis Planetarium
St. Louis, Missouri
Architects: Hellmuth, Obata & Kassabaum, Inc.
St. Louis, Missouri

...tough and resilient as natural rubber plus outstanding resistance to weathering!

Here is an architectural roofing system that provides *all* the toughness and elasticity of natural rubber *plus* the added advantage of remarkable resistance to weathering.

Not a paint but a combination of two well-known DuPont elastomers—Hypalon* and Neoprene—that protect, beautify and waterproof thin-shell concrete roofs of unusual geometric design. Outstanding example is the SECO-protected roof on the St. Louis Planetarium. Can also be used just as effectively on lightweight concrete, exterior grade plywood, certain types of insulating materials . . . and many other surfaces.

Hairline cracks on monolithic substrates are easily bridged by the highly elastic SECO membrane—surface maintains a beautiful and seamless plastic film. Structural load is less than 20 pounds per 100 square feet—less than 1/25 of conventional roofing systems. Self extinguishing—will not support flame.

Write today for catalog on the complete line of SECO protective coatings!

**Registered trademark of DuPont*

SECO
SURFACES

SURFACE ENGINEERING COMPANY
834 Ohio Avenue **ST. LOUIS, MISSOURI 63103**

For more data, circle 131 on Inquiry Card

Introducing the all-

So quiet you have to get

Trane research puts new materials and ideas to work in a new fan design...sets a new standard for quiet fan-coil operation!

Only the air-conditioned comfort tells you it's on.

For at low speed you can't hear it.

And at high speed there's just a whisper of sound.

At either speed, the new Quiet-Zone UniTrane provides exceptionally quiet air conditioning for office, apartment, motel, hotel and hospital room air conditioning applications.

Why? Because a new design... made possible with the use of new materials . . . has been developed exclusively for the fan-coil UniTrane.

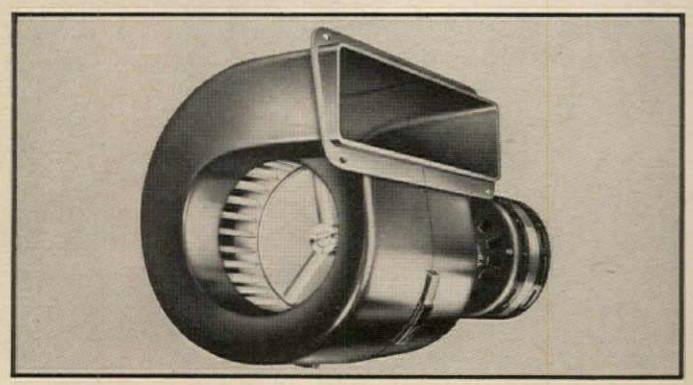
For example, the new sculptured fan housing features an exclusive molded design that increases efficiency while eliminating noise. Rugged, fiber-reinforced material makes the design possible.

Air flow into the fan is exceptionally smooth. And two major sources of noise are eliminated . . . turbulence at the fan air inlet and buffeting between outlet and coil.

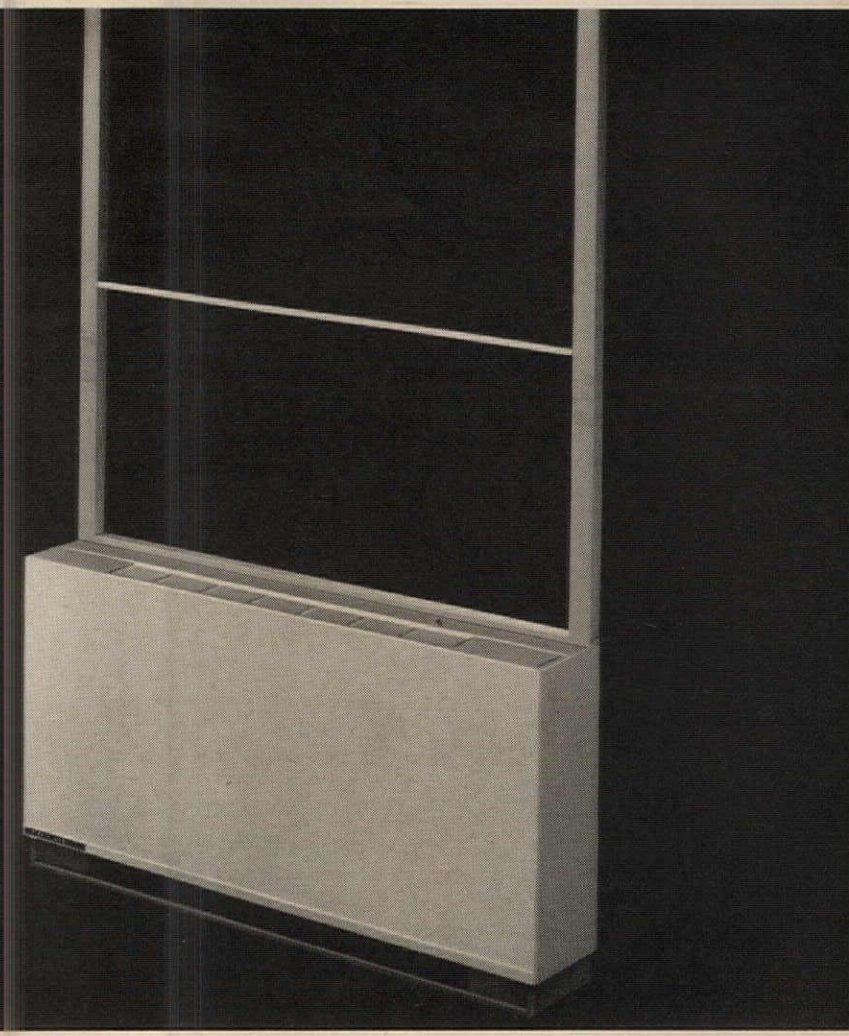
Within the unique snail-shaped fan housing (see illustration below), air is permitted to expand in two dimensions instead of the one dimension common to conventional fan housing designs. Air moves smoothly, greatly minimizing noise-creating turbulence.

And, the wider discharge opening offers unusually even air distribution at low velocity across the coil, assuring high unit efficiency and contributing further to low sound level.

A new aerodynamically designed fan wheel works to eliminate noise, too. Made from a new high-strength



new fan-coil UniTrane



this close to hear it

glass-fiber material, it all but eliminates high frequency sounds . . . the sounds most irritating to the ear!

That's the inside story on the new Quiet-Zone UniTrane. With over 300 arrangements available, selection flexibility is every bit as exciting.

In many applications, smaller, lower-cost units can be used to meet requirements . . . because new UniTrane is capable of delivering more capacity per cfm. And in other cases you can cut piping, insulation and pump costs in half . . . selection flexibility makes it possible!

8 basic models. Vertical units: free standing or wall mounted, cabinet or concealed . . . plus recessed. Horizontal units: concealed or cabinet.

4 basic heating-cooling coils. Standard capacity; high capacity; internal face and bypass for excellent humidity control and economical unit control; and high water temperature rise coils which allow system cost savings up to 5% of the total mechanical contract.

4 auxiliary coils. For steam and hot water, high capacity hot water, and electric operation.

There's a beautiful side to the new UniTrane, too. Design engineers have styled the line in a new unobtrusive sheer-look that complements the beauty of any decor. That's why we say . . .

You've never seen, never heard a fan-coil room unit like this before. See it . . . try to hear it. This beauty is the quiet solution to your air conditioning needs. Contact your nearby Trane Sales Office. The Trane Company, La Crosse, Wisconsin.

TRANE

FOR ANY AIR CONDITION

MANUFACTURING ENGINEERS OF AIR CONDITIONING, HEATING, VENTILATING AND HEAT TRANSFER EQUIPMENT

The Trane Company, La Crosse, Wis. • Scranton Mfg. Plant, Scranton, Pa. • Clarksville Mfg. Plant, Clarksville, Tenn. • Salt Lake Mfg. Plant, Salt Lake City, Utah • Lexington Mfg. Plant, Lexington, Ky. • Trane Company of Canada, Limited, Toronto • Trane Limited, Dunfermline, Scotland • 116 U.S. and 20 Canadian Offices.

"TRANE UNITRANE RATINGS ARE CERTIFIED UNDER THE INDUSTRY ROOM FAN-COIL AIR-CONDITIONER CERTIFICATION PROGRAM, ADMINISTERED BY THE AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI)."

CERTIFIED COMPLIANCE ROOM FAN-COIL AIR CONDITIONERS INDUSTRY STANDARD 441

PEACE CORPS NEEDS MORE ARCHITECTS

The Peace Corps has found considerable employment for architects and architectural graduates. The corps currently has volunteer groups working on architectural projects in Asia, Africa and Latin America. Its Tunisian project, in fact, has been so successful that the Tunisian government has asked for nearly three times the number of architectural volunteers now stationed there.

A recent report from the Peace Corps indicates some of the challenges offered the volunteers not only in design but by local customs and personalities as well.

The King Approved

Take, for instance, Ralph Goetz, an architectural graduate of Harvard assigned by the corps to Pokhara, Nepal, where he was to assist the town in the expansion of its community college. The townspeople, apparently rather vague on questions of structure and cost, presented Mr. Goetz with their vision of a multi-storied building. Not even the King, who had to be persuaded to support the project, could afford it. Besides, Peace Corps policy is that the role of volunteer architects is to provide the necessary facilities with the materials at hand. Mr. Goetz redesigned the project, suggesting a one-floor building of local fieldstone and slate which greatly pleased the townspeople. It remained to persuade King Mahendra. The King, when he arrived, was, according to the corps' report, polite but uninspired by the drawings shown him. Nor was he much taken by the foundations, already laid. But a model with movable parts, made by Mr. Goetz, "fascinated" him. The college is now under construction, and the King has promised to return to Pokhara for its dedication.

Then there is Sumner Sharpe, a graduate of Cornell, who teaches architecture at the University of Bangkok. The corps calls him "a man with a mission." An admirer of traditional Siamese architecture, Mr. Sharpe was distressed to find local architects ignoring it in favor of the more obvious modern Western design. His mission is to convince the Thais that theirs is a design of continuing vitality.

Current Needs

The Peace Corps has issued an urgent request for 40 architect volunteers for Tunisia, to replace the 15 whose enlistments will shortly expire. Tunisia's public building program is extensive, particularly in the housing field. The government expects to construct about 11,000 low-cost units, to increase its public housing inventory by a quarter within the next 10 years. The volunteers will be working under the supervision of the Secretary of State for Public Works and Housing in the Tunisian government. Volunteers for this project will begin training in June.

The requirements established by the corps for architectural volunteers are: (1) an architectural degree; (2) a two-year enlistment; and (3) a three-months training period at an architectural school selected by the corps for this purpose.

Information about enlistment is available from the Office of Public Affairs, Peace Corps, Washington, D.C., 20525, and from campus corps liaison officers.

Modern Door Control by

LCN

SMOOTHEE® Door Closers

Eisenhower Hall
Valley Forge Military Academy
Wayne, Pennsylvania

Robert Ellis Burton, Architect

LCN CLOSERS, PRINCETON, ILLINOIS

Application Details on Opposite Page

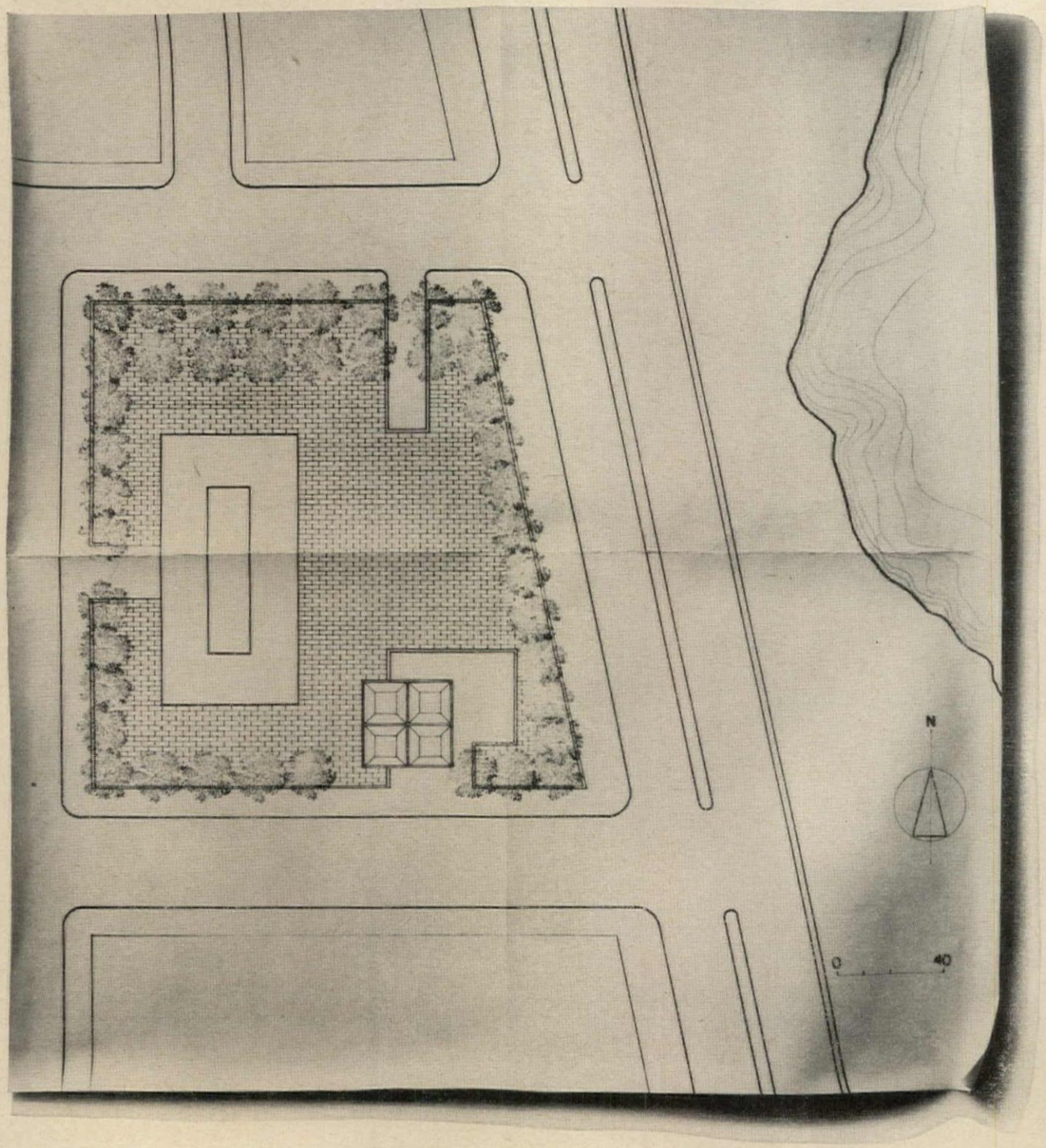
Glass Conditioning*

(a systematic plan for controlling indoor environment with PPG glass products)

Hypothetical Assignment: A projected office building in Chicago, facing Lake Michigan per client's request. Building dimensions: 300 feet high by 100 feet by 50 feet.

Site Conditions: Latitude subject to extremely low temperatures, severe winters with high winds, hot summers. Heating season: approximately 6300 degree days. Air conditioning season: 120 days of which 90 would have an average of 80F for a 12-hour air conditioning period. Indoor temperature to be maintained at 70F.

*Service Mark



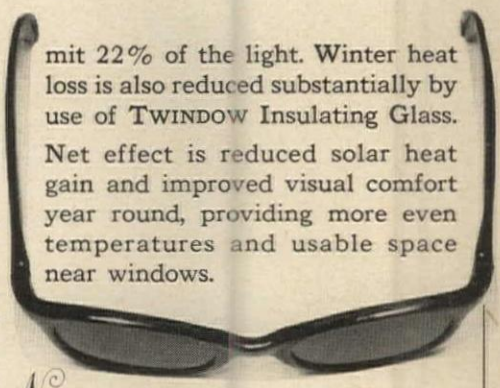
Eastern Exposure Site Conditions: Direct morning sunlight, intensified by reflection from lake. Low winter temperatures combined with lack of sun, aggravating afternoon heat loss.

Glass Conditioning Recommendation: SOLARGRAY® TWINDOW®—TWINDOW Insulating Glass to reduce heat loss to a "U" factor of 0.6, significantly reduce downdrafts and cold areas near windows. ¼-inch SOLARGRAY Plate Glass transmits 42% of visible light (37% when combined with clear glass in a TWINDOW unit), to give natural daylight with substantial softening of sun and lake brightness.

Western Exposure Site Conditions: Strong afternoon sunlight in all seasons, with substantial indoor heat gain.

Glass Conditioning Recommendation: LHR(TM) 140 SOLARGRAY TWINDOW—LHR (Light and Heat Reflective) coating on air space side of the outdoor glass of TWINDOW will reduce heat gain to 90 BTU/sq.ft./hr. maximum, transmit 22% of the light. Winter heat loss is also reduced substantially by use of TWINDOW Insulating Glass.

Net effect is reduced solar heat gain and improved visual comfort year round, providing more even temperatures and usable space near windows.



Northern Exposure Site Conditions: Little sun exposure.

Glass Conditioning Recommendation: TWINDOW—to reduce heat loss and heat gain through conduction. Result: More even indoor temperatures, increased occupant satisfaction, and lower comfort maintenance costs.

Southern Exposure Site Conditions: Extensive sunlight, summer and winter, introducing solar heat gain as a factor which will be welcome in winter, but will significantly increase air conditioning requirements in summer.

Glass Conditioning Recommendation: SOLARGRAY Plate Glass—to reduce heat gain substantially during summer, and soften brightness in all seasons, while providing better control of indoor temperature and environment.

Human Factors: Personal comfort is, after all, the main goal of environmental control. To this end, Glass Conditioning produces pleasant working conditions by improving visual comfort and lessening seasonal extremes of solar heat and severe cold. Glass Conditioning, then, by providing both operating economies and a more attractive working atmosphere, will stimulate rentals and reduce turnover.

For more complete information on PPG Products for Glass Conditioning, consult the PPG Architectural Representative nearest you. Pittsburgh Plate Glass Company, Pittsburgh, Pennsylvania 15222.

LIGHT TRANSMITTANCE AND THERMAL CONDUCTIVITY DATA

		Visible Transmittance %	Thermal* Conductivity U	MAXIMUM** Heat Gain BTU/hr/sq ft
(PLATE GLASS)				
Regular	¼	88	1	200
Solex	¼	75	1	150
Solargray	¼	42	1	150
Solarbronze	¼	51	1	150
(SHEET GLASS)				
Clear	7/32	89	1	205
Graylite "31"	⅛	31	1	170
Graylite "61"	3/16	61	1	195
Graylite "56"	7/32	56	1	190
Graylite "14"	7/32	14	1	150
Graylite "52"	¼	52	1	185
(INSULATING GLASS—1" Metal Edge Twindow—½" air space)				
Clear ¼" Glass, both sides		77	0.6	170
with ¼" Solex, 1 side		65	0.6	115
with ¼" Solargray, 1 side		37	0.6	115
with ¼" Solarbronze, 1 side		45	0.6	115
with ¼" LHR Solargray, 1 side		22	0.6	90
with ¼" LHR Solarbronze, 1 side		25	0.6	90

*BTU/hr/sq ft/ degree F indoor-outdoor temperature difference.
**BTU/hr/sq ft/ for July 21 Design Day 40° N. 4 P.M. West Elevation.

PPG makes the glass that makes the difference

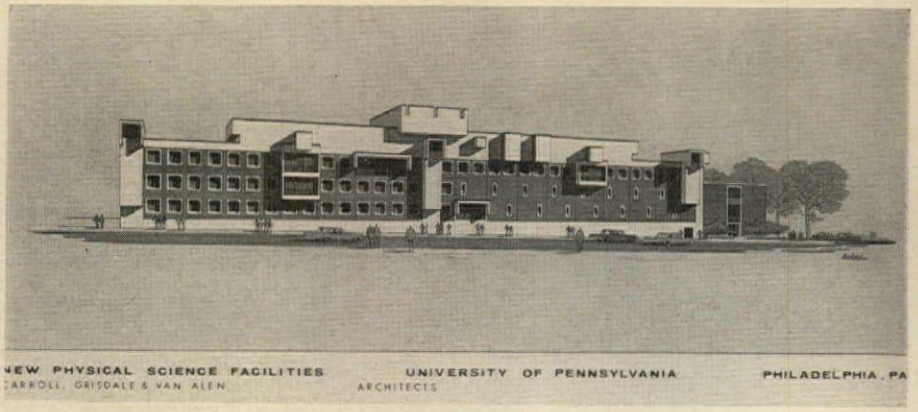
For more data, circle 134 on Inquiry Card

SCIENCE BUILDING AT PENNSYLVANIA

An addition of 65,000 square feet designed by Carroll, Grisdale & Van-Alen, Architects, will approximately double the original space of a physical science building completed in 1956 at the University of Pennsylvania.

The program includes new lecture room facilities, teaching labs, research labs, library, shops and offices. Adequate classroom facilities are available in the present building, creating a requirement that floor levels be maintained and corridor systems continuous through both units.

The proposed building is a four-story reinforced concrete structure, 357 feet long by 50 feet wide, with a one-story lecture hall wing 90 feet square.



MIAMI U. STARTS COMPUTER CENTER

A computing center which will be used for teaching as well as research is under way at Miami (Florida) University, scheduled for completion by the end of this year at an estimated cost of "more than $1.15 million." Architects are Watson, Duetschman and Krusé; M. R. Harrison Construction Corporation is the general contractor.

A modern, high-speed computer to be used by faculty, graduate students and personnel of four Federal agencies engaged in weather studies will be housed in a glass-enclosed room on the ground floor. The room will have an "access floor" with removable floor sections covering the intricate electrical cables and wiring used by the computer.

CAN THIS GOOD LOOKING WALL ALSO FOLD?

Indeed it can. The difference between a FAIRHURST FOLDING WALL and an "accordion door" is apparent. Quite evident is the beauty of its near-seamless facade of wood veneer, plastic or fabric. Less obvious is the real reason Fairhurst has been first in Folding Walls for over 35 years—the patented folding mechanism which assures ease of operation and positive closure without motors or exposed hardware. A FAIRHURST FOLDING WALL is always sound-retardant. It won't sag, warp or jam and can be made fire retardant if you wish. Check your SWEET'S FILE or WRITE DIRECTLY FOR COMPLETE INFORMATION.

TECHNOPLY CORPORATION Dept. A

Fairhurst DIVISION
TECHNOPLY CORPORATION

Mfrs of Folding Walls and Architectural Plywood
182-20 Liberty Avenue, Jamaica 33, New York

SAVINGS BANK GROUP PAN-AM BLDG., NEW YORK, NEW YORK

For more data, circle 137 on Inquiry Card

NEW HIGH STYLE CONCEPT IN SOLID PLASTIC SEAT DESIGN

BENEKE 1680 ELONGATED

High strength, injection molded plastic. Concealed offset hinges have metal posts and nuts—hold seat in "up" position without special mechanisms—check seat and cover from striking tank or valve handle. Exclusive "Unified Design" hides hinges—gives chair-like appearance—improves sanitation and eases cleaning. Available in major fixture colors and a complete range of open front, closed front; with cover and without cover models.

BENEKE CORPORATION
COLUMBUS, MISSISSIPPI

Write today for complete information, or see Sweets 26a/Be

For more data, circle 138 on Inquiry Card

Use this AMERICAN TEAM

New Techniques and innovations in the Retailing Industry demand new concepts in store equipment—style with efficiency to serve more customers during peak sales hours.

THIS AMERICAN TEAM never stops searching for improved design . . . economical production . . . rapid assembly features that hold store equipment costs to a minimum.

The nation's largest and most successful Department Stores, Chain Stores, Discount Stores and small shops select American

for EXPERIENCED STORE PLANNING—DEPENDABLE INSTALLATION

Write or phone:

AF AMERICAN FIXTURE INC
TRIMLOK STORE EQUIPMENT

2300 LOCUST ST., ST. LOUIS, MO. 63103 • Area Code 314 GArfield 1-2170

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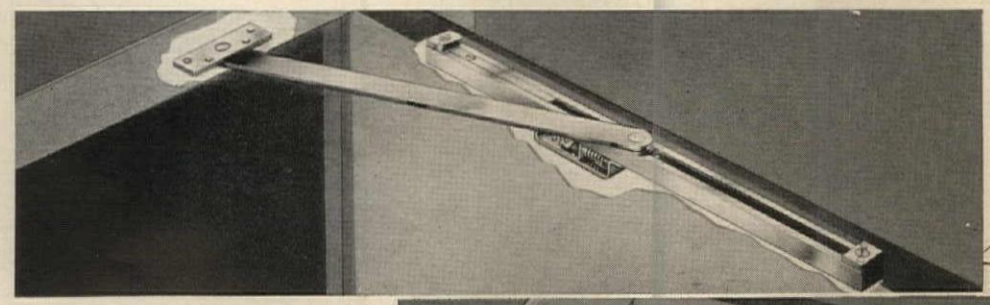
GLYNN·JOHNSON

the complete line of OVERHEAD DOOR HOLDERS

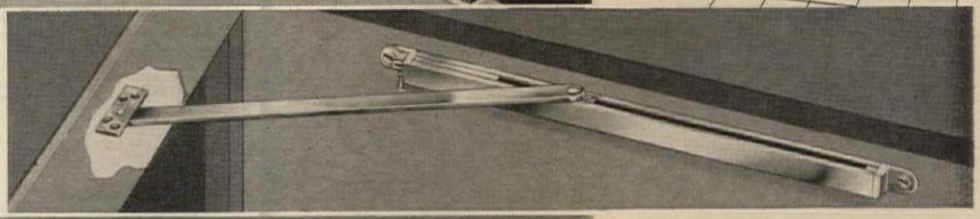
*overhead means out-of-the-way...

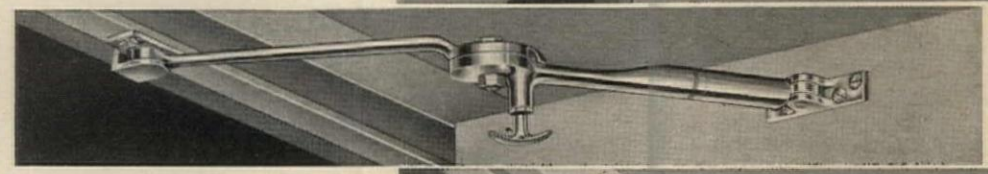
no stumbling hazards—no interference with cleaning



▲**GJ 100** **concealed (non-handed) for single and double acting doors.** The finest in appearance and long, trouble-free wear.

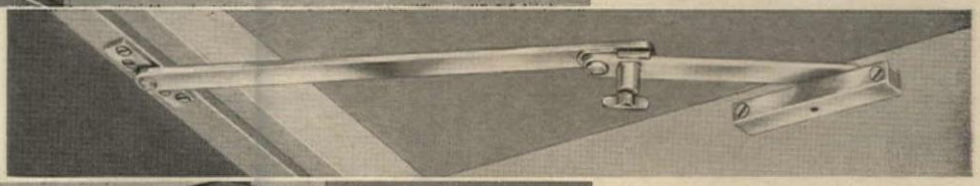
GJ 90▶ **surface type (handed)**

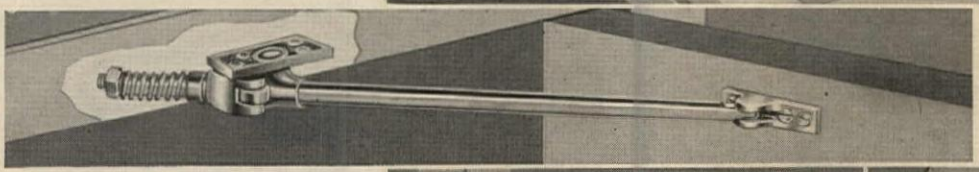




◀**GJ ARISTOCRAT (non-handed) for single acting doors.** Ruggedly built for hard, practical usage.

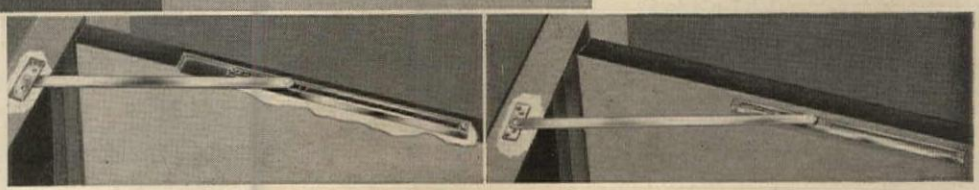
GJ 80M ▶ **(handed) for single acting doors.** For moderate cost installations.





◀ **GJ 70 (non-handed) for single acting doors.** Inexpensive for low-cost installations.

GJ 300 and GJ 500 series▶ **(non-handed)** concealed for single and double acting interior doors. Surface type for single acting doors. Spring cushion types and friction holder type.



CUSHION THE STOP... silently absorbing the shock of violent openings.

HOLD THE DOOR... hold-open engages silently... holds firmly...releases easily.

"Life of the building" GJ Overhead Door Holders are made of highest tensile strength alloys requiring minimum maintenance or replacements. They have built-in shock absorbers to cushion the stop and are made in various sizes for any width door.

Write for complete details and templates.

GLYNN·JOHNSON CORP.

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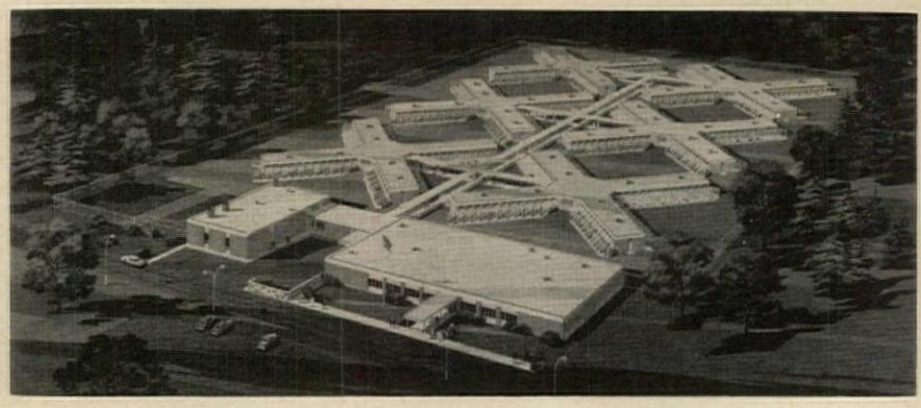
NEW DOG KENNELS FOR RESEARCH USE



A $1.7 million Special Pharmacological Animal Laboratory for the U.S. Food and Drug Administration has been opened at Beltsville, Md. George M. Ewing Co. were architects and engineers.

Key to the design of the dog-care, or kennel, building, is the provision in six X-shaped units of 23 separate wings, each containing facilities for a complete experiment, and a 24th wing containing double enclosures to be used as a holding area or for special group experiments.

Each wing is completely isolated by airtight doors to avoid feeding error and cross-contamination, and each has its own storage for the experimental diet and cleaning implements. A central examination area, used by technicians for testing dogs and taking samples, is provided in each kennel unit. Pens, one for each dog, are angled at 45 degrees to avoid obstructing corridors.

FOR YEAR-ROUND FUN ON A SUMMIT

Another step in New Hampshire's drive to improve recreational facilities is this design for a new "summit" building for Mt. Sunapee. Architects are Carter and Woodruff. The building, intended for use by summer visitors as well as winter skiers, is designed to withstand winds of 100 miles per hour and gusts to 130 miles per hour; the problem of holding the roof *down* is more critical than the snow load it must carry. Walls are made of wood studs with ¾-inch plywood on each side for a very stiff structure.

The man with the purple face ...and the bright red penny

He sells PERMALITE,® expanded perlite roof insulation board. It's the total board. And he proves it with performance—not legerdemain.

PERMALITE is mineral . . . permanent, moisture resistant, featherlight, dimensionally stable, inorganic. It's anti-rot, anti-rodent, anti-mildew. Twenty years after installation it will still have the same high efficiency.

What about fire? PERMALITE practically ignores it. This man heats a penny until it's flaming hot—right on a section of rigid, tough PERMALITE, held in his hand. There's no burning, no dissolving. And the underside of the material stays as cool as early morning. (The same penny melts a hole through other insulations.)

The PERMALITE penny-test is a meaningful demonstration. Especially to the professional interested in seeing a client keep a roof over his head.

How incombustible is your favorite roof insulation? Is it approved and rated for Factory Mutual Class I Construction?

PERMALITE, the extraordinary Roof Insulation Board, can answer your burning questions. Write us for an interesting demonstration.

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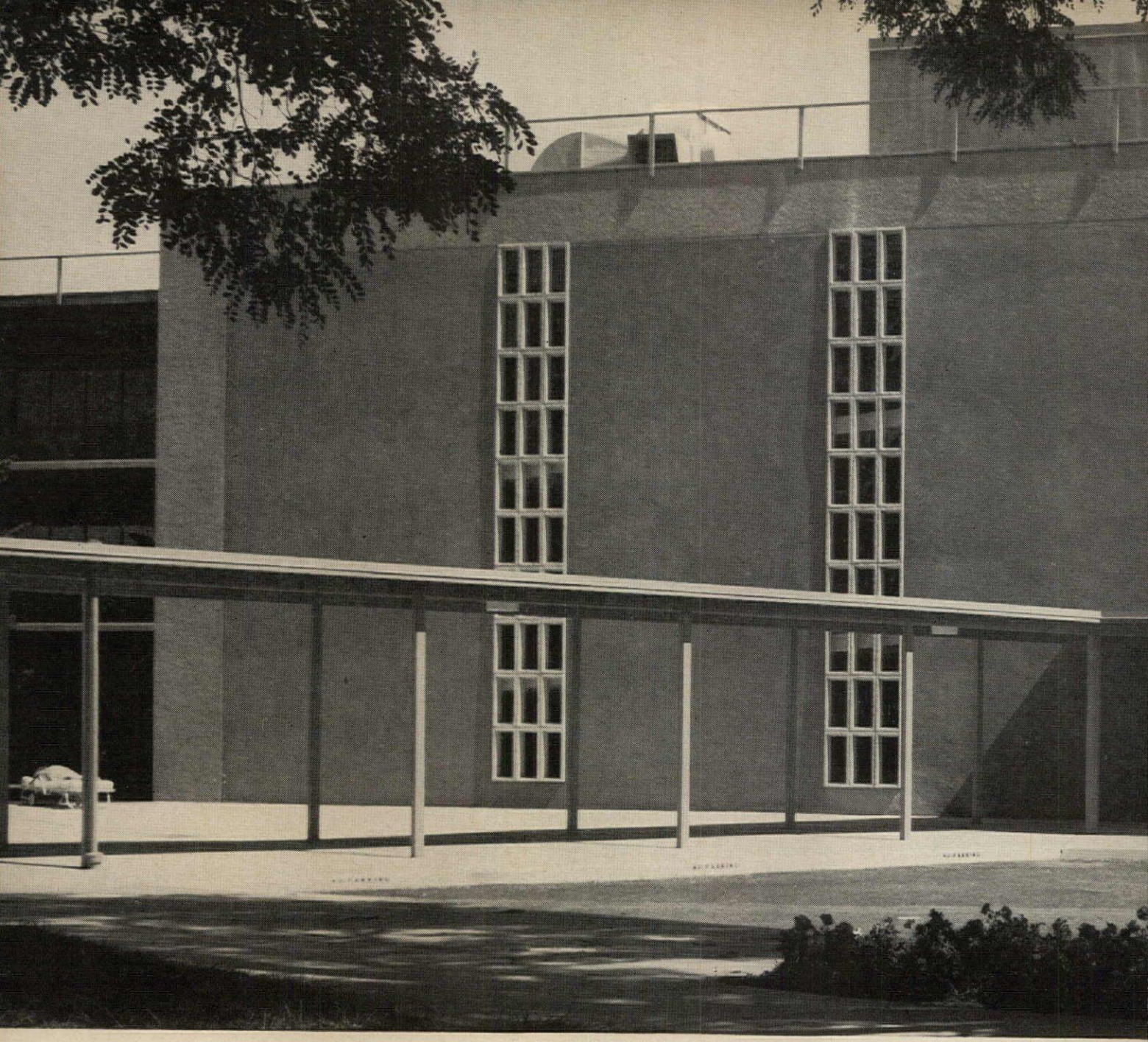
Phone FR 2-5445



Columbia Park State Home, The Dalles, Oregon ARCHITECTS: *Mockford & Rudd, Oregon City, Ore.*

$2.00

PER SQUARE FOOT

Cost of hospital wall system of new Keystone Spraywall

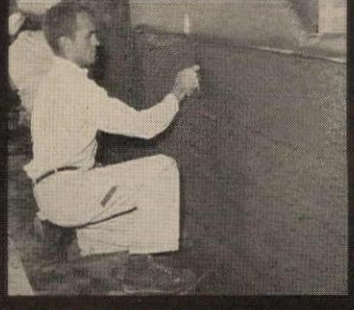
GENERAL CONTRACTOR: *Paul B. Emerick Co., Portland, Ore.* PLASTERING CONTRACTOR: *Ivan Sletta, Portland, Ore.*

Steel studs go up first.

Then Keymesh Paperbacked lath is applied.

Portland Cement is sprayed on.

Cement trowelled prior to application of finish coat.



This new construction method utilizes a simple system of metal studs, Keymesh® Paperbacked Lath and spray-on exterior wall.

It is the most meaningful breakthrough in curtain wall construction since glass and metal.

Keystone Spraywall is low cost, of course. (This hospital addition was done for $2.00 a square foot, from the plastering on the inside to the Botticini Marblecrete finish on the outside.)

Its hourly fire ratings are excellent. (The rating on this building is 2 hours.)

But more than that, Spraywall's design possibilities are endless, because of its plasticity. Using Keystone Spraywall, you can *sculpt* the walls; curve them, create hyperbolic paraboloids, shape them in any way you can imagine. Then finish them to meet your design requirement in any color, any texture, with or without embedding stones.

Keystone's new Keymesh Paperbacked Lath is the product that makes Spraywall possible.

For complete information about applying this simple system to your next job, call your Keystone Representative, or write us.

KEYSTONE STEEL & WIRE COMPANY, Peoria, Illinois

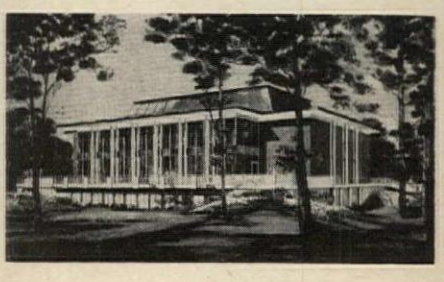
MAKERS OF KEYCORNER • KEYSTRIP • KEYWALL • KEYMESH AND KEYMESH PAPERBACKED LATH • KEYDECK • WELDED WIRE FABRIC • NAILS

For more data, circle 143 on Inquiry Card

SIX-IN-ONE FOR COLLEGE DINING

Architect Vincent Kling's design for a 600-seat dining hall for Swarthmore College groups three large dining areas around a central high-ceilinged lounge area and also includes three small interior dining rooms, two seating 16 persons each and the third 32. To one side of the lounge area are the serving area and kitchen, which are located beneath entrance lobby and adjacent patio.

Native stone will be used for exterior walls and clay tile for the roof. Stone walls and wooden ceilings with exposed beams will be used inside. Glass will be used at the entrance in perimeter windows which will carry light into the three large dining rooms and in clerestory windows to bring natural light into the lounge.

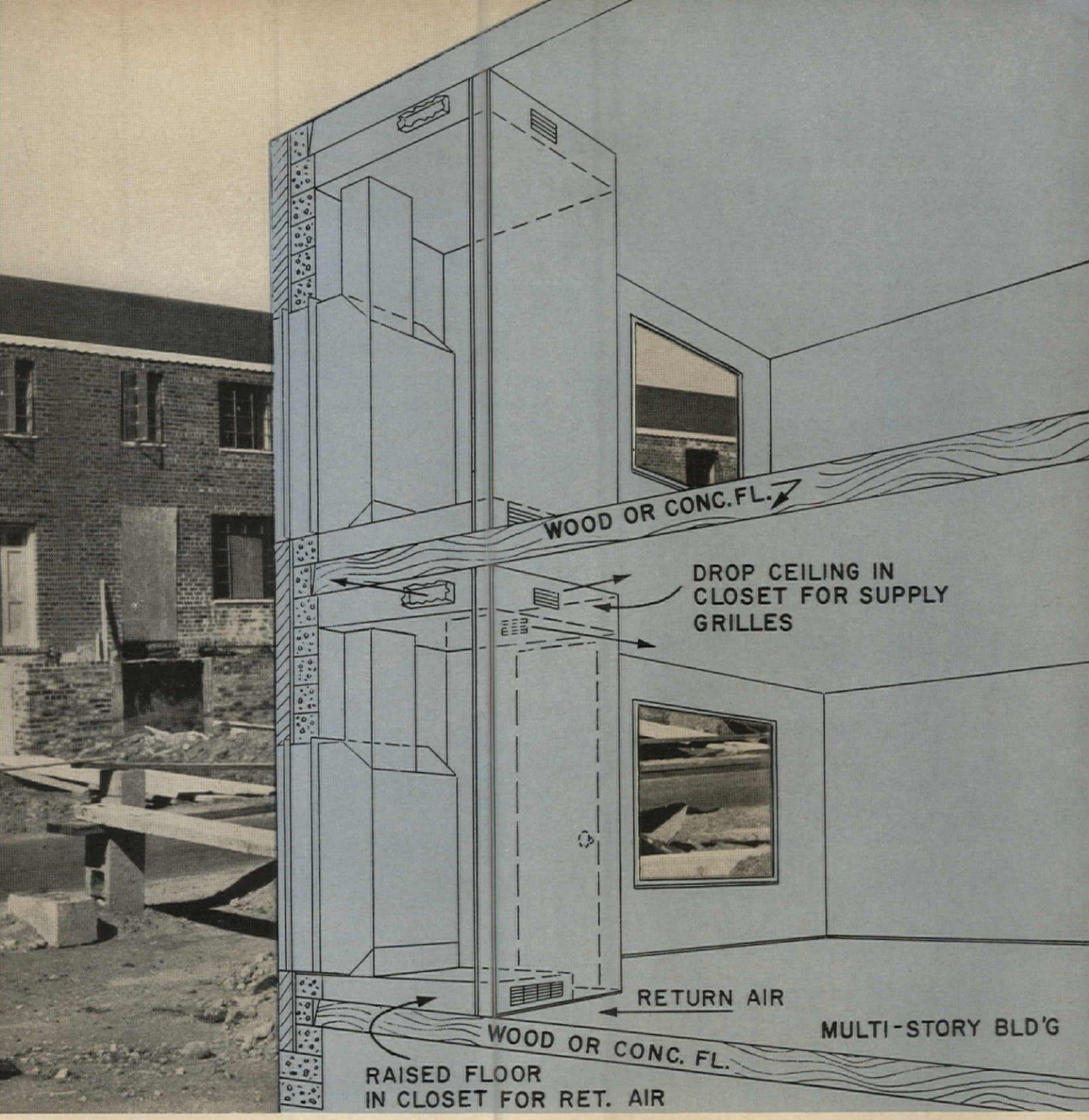


COLLEGE LIBRARY: DESIGN FOR STUDY

A 46,000-square-foot library in which study carrels constitute 80 per cent of the building and a special area is provided for all-night study is under construction at Lake Forest, Ill., College for completion this fall. Perkins & Will are the architects, Tonyan Construction Company the general contractor.

The three levels of the library will ultimately house 250,000 volumes and seat 600. Initially, the lower level will be used as temporary classroom and office space. The combined capacity of the two upper floors is 120,000 volumes, seating for 323.

The central portion of the building, with floor-to-ceiling windows, will contain most of the study facilities. Each study alcove will have four carrels, with stacks operating each grouping.



A New Way to Heat and Cool Apartments—Individually

Now you can design and build apartment units that rent for less, return a higher profit, and still include complete heating and air conditioning comfort.

How? With the new Climatrol 750, a central heating/cooling unit for each apartment. There's no need for chimneys, and it's easily installed through the wall. A simple closet or cabinet encloses it in the interior.

The Climatrol 750 is not a space heater, not a window unit, not just air conditioning with heating, but a totally new concept in ducted, year-round climate control. It provides each dwelling unit of an apartment building with its own individually controlled climate. The warmth or coolness of the air is completely controlled by the tenant; switchovers are automatic. The only maintenance required is a simple operation, changing the filters at regular intervals.

Apartments heated and cooled by Climatrol 750's are quieter, cooler, cleaner, and easier to rent. Because the tenant controls his own climate, rentals are lower.

There's complete specification data in Sweet's Catalog 30b/Mu or 10c/Mu. Or see your local Climatrol dealer. (He's in the Yellow Pages.)

CLIMATROL
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Milwaukee 1, Wisconsin

Please send me more information on the Climatrol 750.

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Address_____

City_____ State_____

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WORTHINGTON/*CLIMATROL*
AIR CONDITIONING

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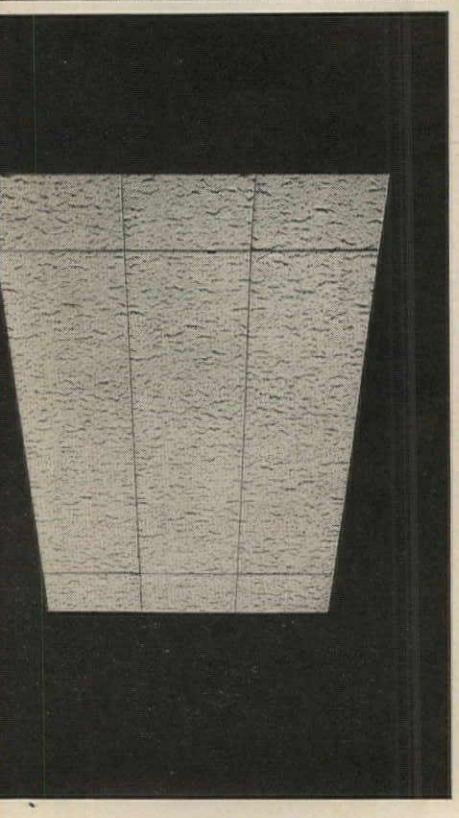
More and more top architects are going Gold Bond

The Gold Bond difference: Acoustiroc withstood heat, rain and cold during construction at Humble Building

Owner: Humble Oil & Refining Company, Houston, Texas
Architect: Welton Becket and Associates, Houston
General Contractor: W. S. Bellows Construction Corp., Houston
Acoustical Contractor: Straus Frank-Shugart Company, Houston



The acoustical ceilings in the 44-story Humble Building were installed prior to heating and air-conditioning equipment. The weather turned alternately hot, cold and rainy. Condensation was heavy enough to actually saturate the ceiling panels. Open flame-type burners were then used to dry out the building. But the Acoustiroc ceilings were not affected—due to built-in stability achieved by an exclusive felting process that interlocks long mineral wool fibers. Acoustiroc did not sag, shrink or warp.

Each 56″ square module in the suspended ceiling is a self-contained unit with its combination lighting-air conditioning fixture integrated with two special tile sizes 14″ x 48″ and 8″ x 14″. This provided the desired flexibility in arrangement of lighting fixtures plus complete flexibility in partitioning and access to above-the-ceiling utilities. Acoustiroc has excellent attenuation and sound-absorbing qualities, and is noncombustible. It is available in a wide variety of sizes and patterns. Like to know more? Ask your Gold Bond® Representative for information. Or write Dept. AR-34, National Gypsum Company, Buffalo 25, New York.

Gold Bond
ACOUSTICAL PRODUCTS

Gold Bond materials and methods make the difference in modern building

For more data, circle 146 on Inquiry Card

CONSULTING ENGINEERS EXPAND COUNCIL ACTIVITIES

A change in its name, a major internal reorganization and the establishment of six new committees to explore areas of developing interest to its membership have been announced for 1964 by the Consulting Engineers Council, which also expects to expand its activities in the international engineering field. All of the changes will be effective with the first full-scale annual convention of C.E.C., scheduled for May 26-28 in Denver.

C.E.C. will change its name to "Consulting Engineers Council of the United States of America" with the purpose of "clarification of C.E.C.'s role as a national federation of consulting engineers and its significance to the International Federation of Consulting Engineers."

Internal organizational changes will give C.E.C. a seven-man Executive Committee composed of the president, a president-elect (a new office), four vice presidents (compared with the present two) and a secretary-treasurer (at present the offices of secretary and treasurer are separate). New terms of the secretary-treasurer and the vice presidents wil be two years, with vice presidents' terms staggered so that two of the four continue in office and two replacements are elected each year.

New Committees

The new committees will tackle a wide range of subjects selected for their wide interest among the more than 1,500 member firms of C.E.C.

One committee will study the advisability of establishing a mechanism within C.E.C. for certifying member firms which have demonstrated certain proficiencies and achievements in consulting engineering. Another will consider the publication of a new specialty listing of member firms with indexing of the various specialties.

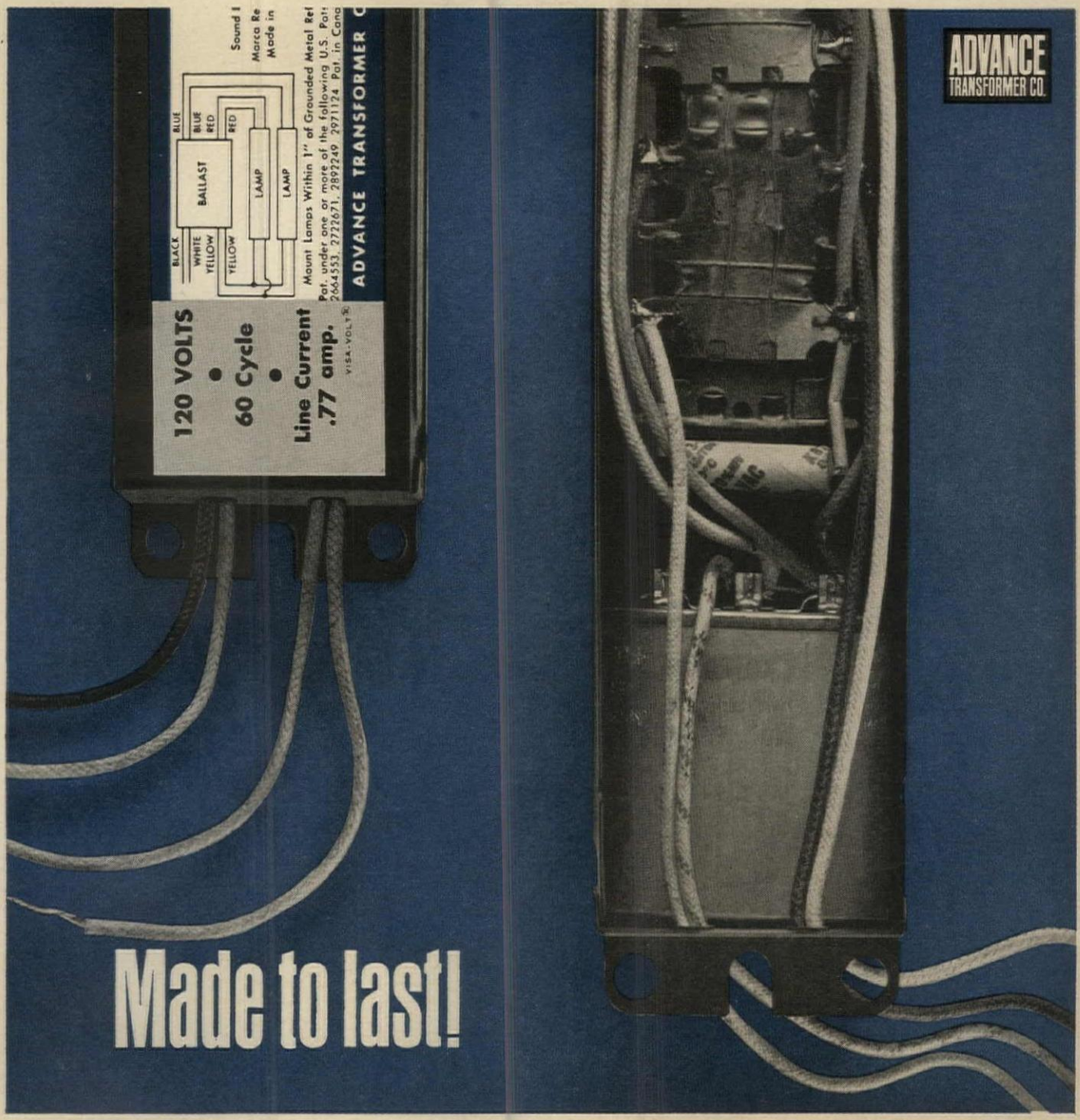
A third new committee, assigned to relations with the Department of Defense, will have as one of its first objectives the re-evaluation of the present policy of the Department of Defense which limits to $25,000 the amount any consulting firm can obtain by Defense contract in a calendar year.

Additional committees will be formed to advise and carry out C.E.C.'s growing public relations activities and to act as liaison with the Construction Specifications Institute.

International Activities

High on the list of C.E.C. goals in international promotion in 1964 is the preparation of a special directory listing those U.S. consulting engineer firms interested in and seeking overseas work. The directory is expected to be ready by midyear.

Plans are also under way for the Second International Engineering Institute to be held at the University of Colorado at Boulder September 23-25, with the co-sponsorship of C.E.C. The Institute will explore the nature of international competition, how it is being met and the role of the U.S. government.



Typical of the engineering and quality advantages of any ADVANCE Fluorescent Lamp Ballast is the protection provided by ADVAN-guard ballasts. Unlike other protective devices which permit premature ballast destruction, ADVAN-guard with an automatic resetting thermal protector provides protection with preservation. Protection that is made to last.

Other exclusive developments contributed to the Lighting Industry by ADVANCE include: **KOOL KOIL** Fluorescent Lamp Ballasts, ballasts that operate 15° to 20° cooler. **SOLID-FIL** Ballasts designed with unitized construction utilizing a polyester fill that retains a pliable consistency that will not become brittle with age or heat. The ADVANCE **FUSE-LINK** Ballast, a non-resetting thermally protected ballast. **VISA-VOLT** Color Coded ballast labels for positive voltage identification. A practical **FLUORESCENT LAMP DIMMING SYSTEM.** And to guarantee your assurance of performance and service, a (FLB) Fluorescent Lamp Ballast Service Warranty Program backed by a nation-wide Service Stocking Distributor Organization. Write for details of how you may enjoy these and other ADVANCEments in engineering, manufacturing and service from the World's Largest Exclusive Manufacturer of Fluorescent Lamp Ballasts.

Mfr. in Canada by: Advance Transformer Co., Ltd., 5780 Pare St., Montreal, Quebec

ADVANCE® TRANSFORMER CO.
WORLD'S LARGEST EXCLUSIVE MANUFACTURER OF FLUORESCENT LAMP BALLASTS
2950 NO. WESTERN AVE. CHICAGO 18, ILL. U.S.A.

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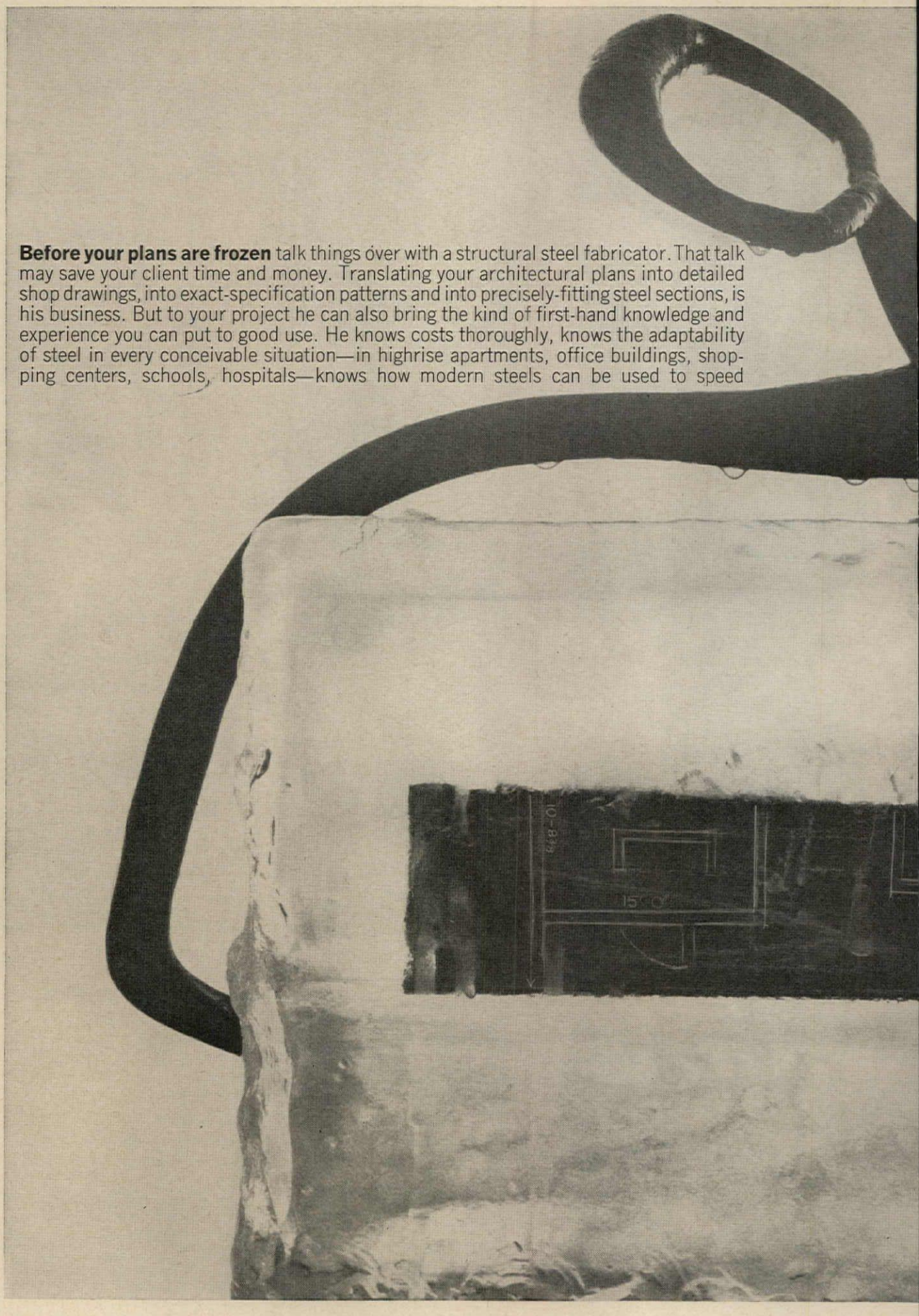

Before your plans are frozen talk things over with a structural steel fabricator. That talk may save your client time and money. Translating your architectural plans into detailed shop drawings, into exact-specification patterns and into precisely-fitting steel sections, is his business. But to your project he can also bring the kind of first-hand knowledge and experience you can put to good use. He knows costs thoroughly, knows the adaptability of steel in every conceivable situation—in highrise apartments, office buildings, shopping centers, schools, hospitals—knows how modern steels can be used to speed

erection. To you, the architect or engineer, the steel fabricator can bring up-to-the-minute steel information, helpful suggestions, practical ideas. Working regularly with regional engineers of the American Institute of Steel Construction, your steel fabricator can answer your every question—often offer surprising, new, construction methods. Use him! That steel fabricator and his highly skilled staff, are the technologists who help turn creative dreams into reality. Talk to him early in the game. You'll find it pays.

Inland Steel Company, 30 West Monroe St., Chicago 3, Ill.

Steel

INLAND

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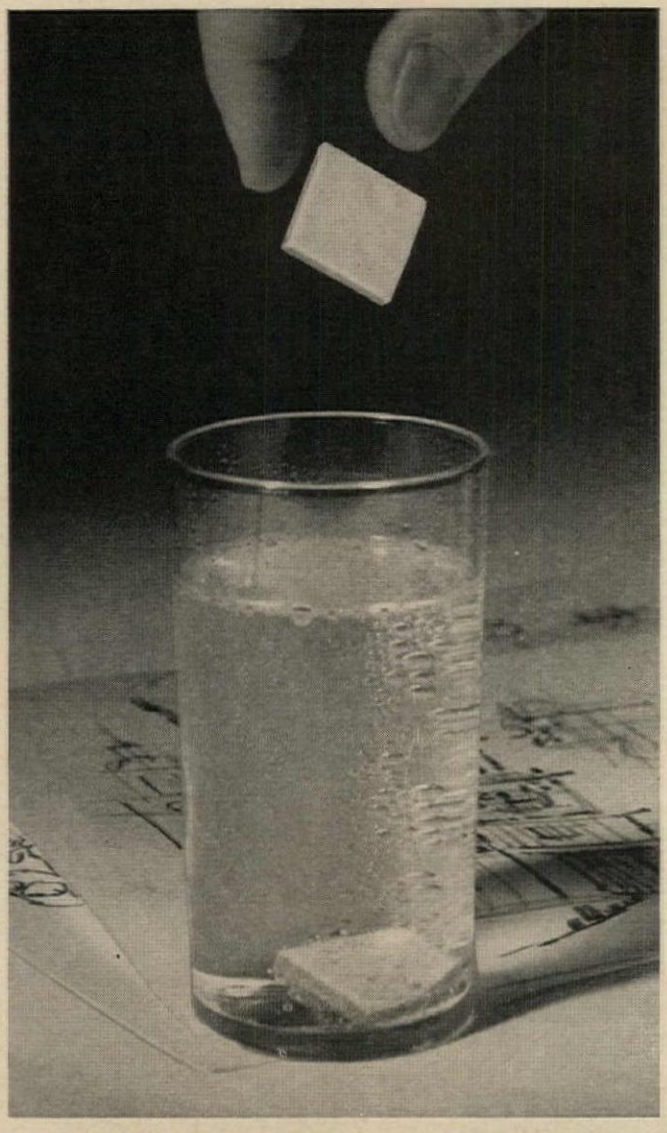

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THE CAMBRIDGE TILE MFG. CO.

P. O. Box 15071,
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Producers of SUNTILE wall and floor tiles, SUNTILE mosaics, HORIZON tile and CERATILE 800.

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when architects buy audio-visual equipment the screen, most often, is

DA-LITE

Shown is the 8 ft. electrically operated Da-Lite Electrol® projection screen installed recently in a conference room in the Apollo Support Department of General Electric's Daytona Beach plant.

For important conferences, the Da-Lite projection screen at General Electric plays a useful role. Out of sight when not in use, the electrically operated screen lowers automatically at the touch of a button. Superb reproduction of projected pictures on Da-Lite's White Magic II® Chemi-Cote® glass beaded surface is assurance of effective visual presentations.

Experts in the audio-visual field recommend the Da-Lite Electrol for unsurpassed performance. Electrols have been giving trouble-free service for over 26 years.

Da-Lite Electrol screens are available in a wide selection of sizes to fit your needs. They can be recessed in the ceiling or installed on wall or ceiling. Choose a Da-Lite screen—get the *Big Difference*—and the difference costs you nothing.

Write for specifications, prices and name of nearest franchised Audio-Visual dealer.

perfection in projection since 1909

Da-Lite Screen Co., Inc., Warsaw, Indiana

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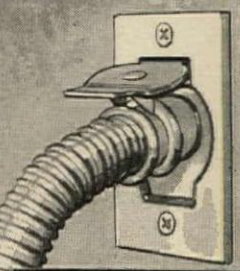
it sells itself, too!

with **Vacu-FLO®**
BUILT-IN CLEANING



plug in the hose . . dirt is whisked through tubes to power unit in garage or utility area: dirt collects in receptacle . . . "blue-air" is exhausted outside

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Muzak® at The First National Bank of Memphis

One of the growing South's largest prestige office structures, the gleaming new First National Bank Building, is in the financial hub of Memphis.

Like other progressive financial and industrial institutions throughout the world, First National has selected Music by Muzak to help create a pleasant and efficient atmosphere in its public and work areas.

Even the finest architecture takes on added warmth and charm with Music by Muzak.

Muzak is scientifically planned to ease tension caused by monotony, fatigue, noise or cold silence. People *feel* the difference – business transactions become more congenial, employees more alert and efficient.

Muzak sound systems may serve for civil defense and emergency warnings, paging and signalling, as well as Muzak distribution. A.I.A., File 31-I-7, Sweet's Catalog 33a Mu. Specify Muzak in early planning stages.

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Muzak®—A Division of Wrather Corporation
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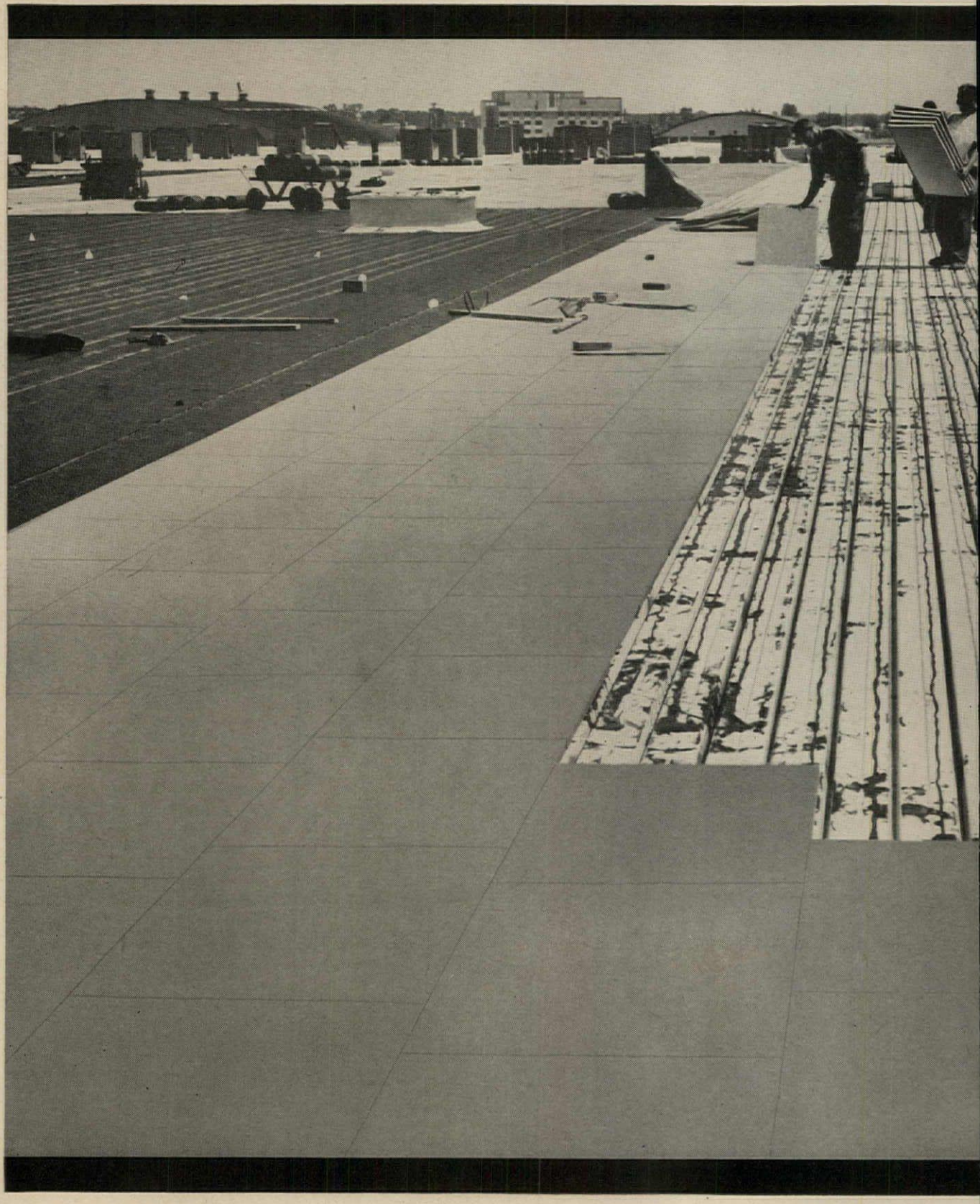
Huge 11-acre roof...and it's all



Celo-therm

TRADE MARK

incombustible* ROOF INSULATION

New Perlite base product from CELOTEX UL tested and approved

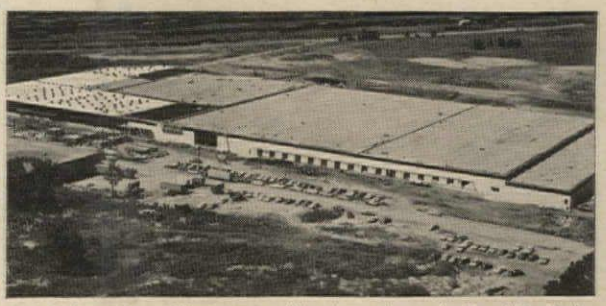
Celo-Therm Incombustible Roof Insulation was selected for the roof of this giant new Montgomery Ward warehouse. Made with Perlite base, it won't decay or deteriorate. It is highly moisture-resistant, has excellent thermal insulating value, and is dimensionally stable.

Roofing crews like to handle Celo-Therm panels! They're lightweight, easily cut with a knife, can be nailed in place on wood decks or set in hot bitumen on concrete or steel decks. Panels are 2′ x 4′.

Celo-Therm Roof Insulation has a UL flame spread classification of 25, and is listed and labeled by Underwriters' Laboratories under their inspection and label service. It qualifies for steel deck assemblies UL Construction No. 1 and Construction No. 2. Permits a reduction generally equivalent to 40% of the basis insurance rate. *Send coupon* today for samples, application instructions.

**In accordance with the definition of non-combustibility in NFDA No. 220*

Distributed East of Rocky Mountains



Aerial view of new Montgomery Ward warehouse in Franklin Park, Ill., Roofer: E. W. Olson Co. Engineer and Builder: The Austin Co.

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☐ Please send me specifications for Celo-Therm Incombustible Roof Insulation.

☐ Show me samples.

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Firm Name_____

Address_____

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PHOENIX PROJECT COMBINES HOTEL AND OFFICE SPACE

A 25-story combination hotel-office building is under construction in Phoenix as a project of the Del E. Webb Corporation of Phoenix and Los Angeles. Architect is the Phoenix and Albuquerque firm of Flatow, Moore, Bryan and Fairburn.

The Phoenix Towne House, scheduled to be completed early in 1965 at an estimated cost of $10 million, will have 14 stories of office space as well as 269 hotel rooms and convention facilities to accommodate 3,000 for meetings or 2,400 for banquets.

NEW CENTER FOR MISSION SOCIETY

A new Minisink Town House and service center will be built in central Harlem to house an expanded program of resources and training by the New York City Mission Society's Harlem branch. The building has been designed by architect Edgar Tafel in steel frame over poured concrete basement walls and floor slab. Exteriors are brick.

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HE WILL PREVENT COSTLY DOOR PROBLEMS FOR YOU . . . SAVE MONEY FOR YOUR CLIENT!

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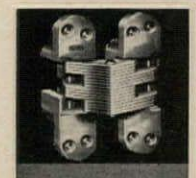

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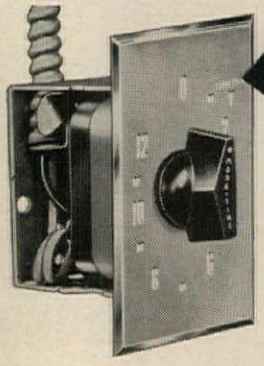

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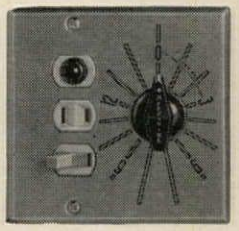

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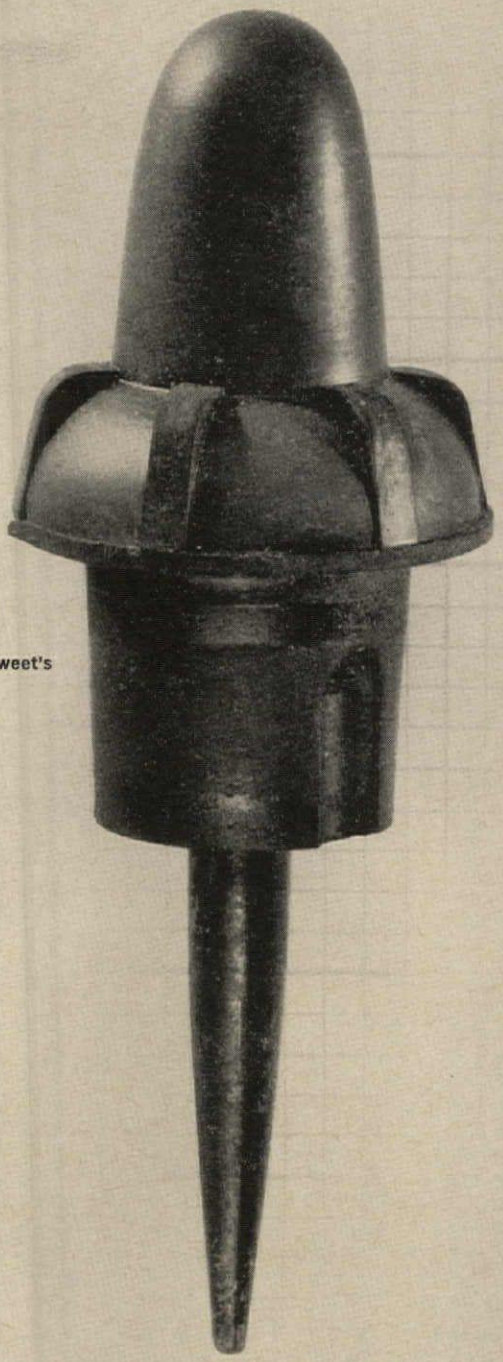

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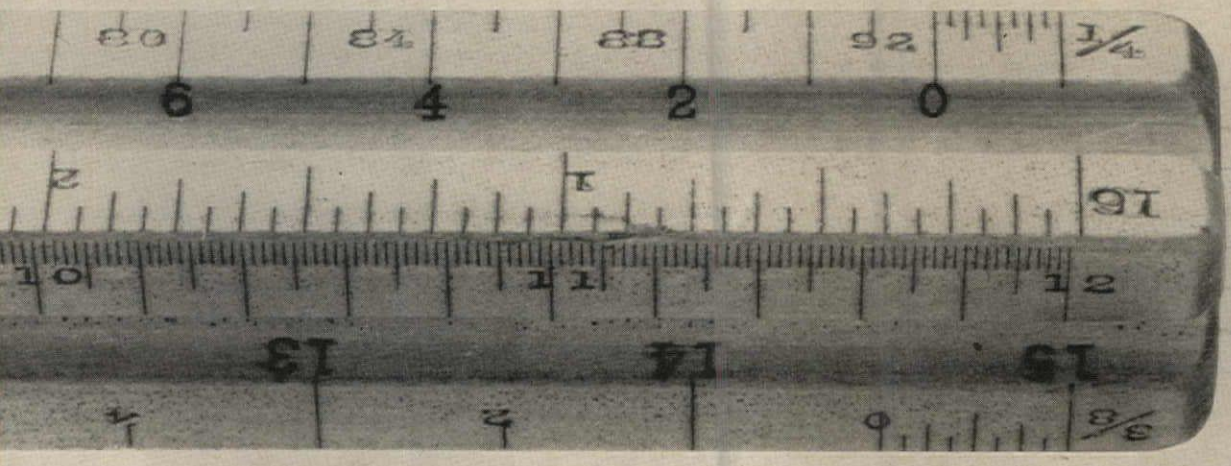


On the Calendar

March

2-5 60th annual convention, American Concrete Institute—Rice Hotel, Houston. The convention will reconvene at Monterrey, Mexico

April

5-9 30th annual national planning conference, Society of Planning Officials—Statler Hilton Hotel, Boston

7-9 25th National Conference on Church Architecture, sponsored jointly by The Church Architectural Guild of America and the Department of Church Building and Architecture of the National Council of Churches of Christ in the United States of America—Sheraton Dallas Hotel, Dallas

13-15 Meeting, Committee on Acoustical Materials, American Society for Testing and Materials—A.S.T.M. Headquarters, Philadelphia

21-23 1964 spring conferences, Building Research Institute—Shoreham Hotel, Washington, D.C. Information from Milton C. Coon Jr., Executive Vice President, B.R.I., 1725 DeSales St., N.W., Washington, D.C., 20036

25-26 Fourth annual conference, United States Institute of Theatre Technology; theme "Today's Theatre—Yesterday's or Tomorrow's?"—Barbizon-Plaza Hotel, New York City

May

26-28 First national convention, Consulting Engineers Council—Denver, Colorado

31ff International conference of office administration executives, sponsored by National Office Management Association; through June 3—Statler Hotel, New York

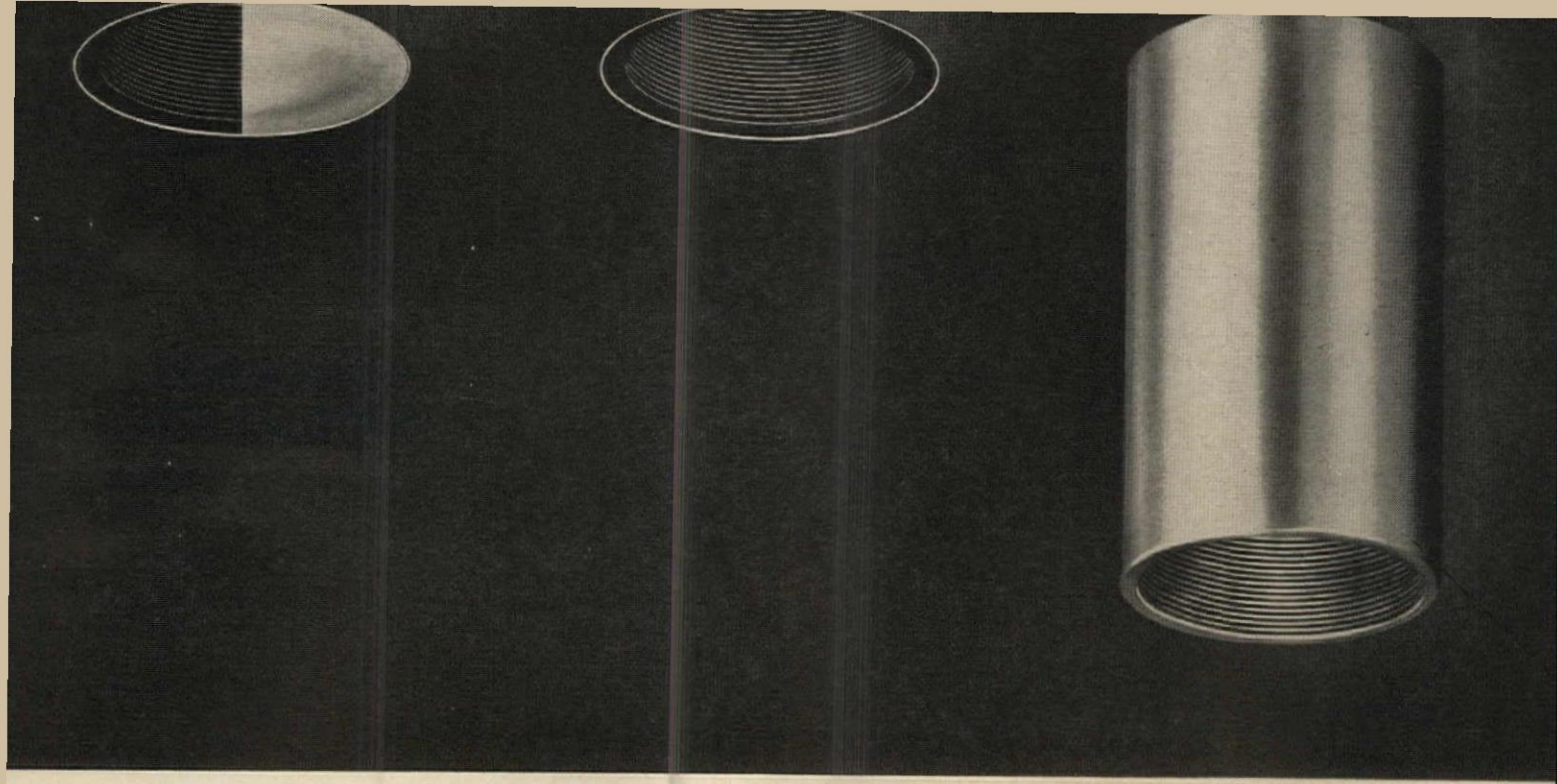
Office Notes

Offices Opened

Willard C. Parrish, Jr., A.I.A., Architect, has announced the opening of his office for the practice of architecture at 1162 West First National Bank Bldg., Saint Paul 1, Minn.

Bernard Schulak, Architect, formerly with W. B. Ford Design As-

continued on page 326



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Supply Co. **FLORIDA Miami:** Farrey's Wholesale Hardware Co. **Tampa:** Tampa Wholesale Elect. **GEORGIA Atlanta:** Atlanta Lighting Fixture Co., Electrical Wholesalers, Noland Co. **Augusta:** Georgia Elect. Supply **HAWAII Honolulu:** Hawaiian Light & Supply Co. **ILLINOIS Champaign:** Tepper Elect. Supply Co. **Chicago:** Creative Lighting Division-Elect. Wholesalers Elect. Supply, Efengee Elect. Supply Co., Englewood Elect. Supply Co., Harlo Elect. Supply Co., Hyland Elect. Supply Co., Metropolitan Elect. Supply, Steiner Elect. Co., Wholesale Elect. Supply Co. **Rockford:** Englewood Elect. Supply Co. **Springfield:** Springfield Elect. Supply Co. **INDIANA Ft. Wayne:** Mossman-Yarnelle Co. **Gary:** Englewood Elect. Supply Co. **South Bend:** Englewood Elect. Supply Co. **IOWA Des Moines:** Weston Lighting, Inc. **KANSAS Wichita:** Architectural Lighting, Inc. **KENTUCKY Louisville:** Henry J. Rueff Co., Brecher Co., Inc. **LOUISIANA Baton Rouge:** Electrical Wholesalers, Inc. **New Orleans:** Interstate Elect. Co., Lighting, Inc. **MAINE Bangor:** Standard Elect. Co. **Portland:** Holmes Elect. Supply Co. **MARYLAND Baltimore:** Baltimore Gas & Light Co., Dorman Elect. **Brentwood:** National Elect. Lighting, Inc. **Hagerstown:** Tristate Elect. Supply Co. **MASSACHUSETTS Boston:** Boston Lamp Co., Mass. Gas & Elect. Lighting Co., United Elect., Henry L. Wolfers, Inc. **Framingham:** Framingham Elect. **Lynn:** Essex Elect. **Pittsfield:** Bland Elect. Supply **Springfield:** Eastern Elect. Supply Co., M. W. Zimmerman, Inc. **Waltham:** Standard Elect. **Worcester:** Atlantic Elect. Supply **MICHIGAN Detroit:** Madison Elect. Co., Michigan Chandelier Co. **Flint:** Royalite Co. **Grand Rapids:** Enterprise Elect. Supply Co. **Kalamazoo:** West Michigan Elect. Co. **Lansing:** Michigan Elect. Supply Co. **Pontiac:** Standard Elect. 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Supply Co. **Nanuet (Rockland Co.):** Rockland Lighting **Poughkeepsie:** Electra Supply Co. **Rochester:** Rowe Electric Supply Co., Empire Elect. Supply **Syracuse:** Superior Elect. Corp. **White Plains:** Wolar Lighting Corp. **NORTH CAROLINA Asheville:** Electric Supply Co. **Charlotte:** Independent Elect. Supply Co. **Durham:** Noland Co. **Greenville:** Sullivan Hardware Co. **Hickory:** Bryant Supply Co. **High Point:** Electric Supply, Inc. **Raleigh:** Electrical Equipment Co. **Winston-Salem:** Noland Co. **NORTH DAKOTA Fargo:** Border States Elect. Supply Co. **OHIO Cincinnati:** B. & B. Elect. Co., F. D. Lawrence Electric Co., Richards Elect. Supply Co. **Cleveland:** The H. Leff Electric Co., Midland Elect. Co. **Columbus:** Elgee Elect. Co., The Loeb Elect. Co. **Lima:** State Elect. Supply Corp. **Springfield:** The W. W. Elect. Co. **Toledo:** Gross Elect. Fixture Co. **OKLAHOMA Oklahoma City:** Hunzicker Bros. **Tulsa:** Nelson Elect. **OREGON Portland:** Baker-Barkon Co. **PENNSYLVANIA Allentown:** Coleman Elect. Co. **Erie:** Kraus Elect. Co. **Harrisburg:** Fluorescent Supply Co., Schaedler Bros. **Hazleton:** Power Elect. Co., Inc. **Kingston:** Anthracite Elect. Supply Co. **New Castle:** Midwestern Elect. Co. **Philadelphia:** Gold Seal Elect. Supply Co., Logan Elect. Supply Co., Inc., Pyramid Elect. Supply Co., Inc., Rumsey Elect., West Philadelphia Elect. Supply Co. **Pittsburgh:** Allied Elect. Supply Co., Argo Lite Studios, Brown & Green, Wally Elect. Supply Co. **Reading:** Coleman Elect. **Scranton:** Lewis & Reif, Inc. **West Chester:** West Chester Elect. Supply Co. **Williamsport:** Lowry Electric Co. **York:** Graybill's **RHODE ISLAND Pawtucket:** Major Elect. Supply Co. **Providence:** Leavitt Colson Co., Tops Elect. Supply Co. **SOUTH CAROLINA Greenville:** Sullivan Hardware Co. **TENNESSEE Chattanooga:** Mills & Lupton Sup. Co., Noland Co. **Knoxville:** The Keener Co., Stokes Elect. **Nashville:** Nashville Elect. Supply Co. **TEXAS Bryan:** Dealers Elect. **Dallas:** Rogers Elect. Sup. Co. **El Paso:** E. & M. Supply Co. **Ft. Worth:** Anderson Fixture Co., Cummins Supply Co., General Industrial Supply Corp. **Houston:** Anderson Lighting Co., Marlin Associates, Worth Elect. Supply Co. **Lubbock:** Homer G. Maxey & Co. **San Antonio:** Central Distributor Co., Electrical Distributors Co., Tri-State Elect. **Tyler:** Dealers Elect. Supply **Waco:** Dealers Elect. Supply Co. **Wichita Falls:** R. & A. Supply **VIRGINIA Alexandria:** Capital Lighting and Supply **Arlington:** Dominion Elect. Supply Co., Inc., **Falls Church:** Noland Co. **Lynchburg:** Mid-State Elect. Supply Co., Inc., Noland Co. **Norfolk:** Atlantic Elect., Westinghouse Elect. Supply **Richmond:** Atlantic Elect. Supply Co. **WASHINGTON Seattle:** Seattle Lighting Fixtures Co. **WEST VIRGINIA Wheeling:** The Front Co. **WISCONSIN Appleton:** Moe Northern Co. **Milwaukee:** Electri-Craft Lighting, Lappin Elect. Co., Standard Elect. Supply **CANADA Edmonton:** Alberta Elect. Supply, Ltd. **Montreal:** Ideal Elect., Gray Elect., L. D. G. Products, Inc., Union Elect. Supply Co., Ltd. **Toronto:** Revere Elect. Distributors, Toronto Elect., Union Elect. Supply **Winnipeg:** Dominion Elect.

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Factory Mutual Approved for use with metal decks and Fiberglas® insulation, Pyro-Kure 600 is rated as non-combustible and has an Underwriter's Laboratory flame spread of 25. This non-combustible property is permanent.

Pyro-Kure 600 is applied to the metal deck with conventional felt-laying equipment using regular asphalt, 12 to 15 lbs. per 100 sq. ft., or it can be strip mopped. The use of asphalt rather than special cold adhesives results in substantial savings in material cost. Write for suggested specifications and additional information on this new vapor barrier system. American Sisalkraft, 73-R Starkey Avenue, Attleboro, Mass. Branch offices and plants at Cary, Illinois and Tracy, California.

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Office Notes

continued from page 322

sociates, has announced the opening of his office for the general practice of architecture at 6889 West Maple Rd., Walled Lake, Mich.

Arthur L. Spaet, Consulting Engineer, formerly with Slocum and Fuller, has announced the opening of his office for engineering design at 101 Park Ave., New York 17, N.Y.

New Firms, Firm Changes

Bovay Engineers, Inc., has announced the following promotions: **George C. Love,** assistant manager, projects division; **M. J. Green,** assistant chief engineer, design division; **C. R. Thomas,** manager, electrical department; **R. E. Schulman,** acting manager, air conditioning and petrochemical plant design; **Charles E. Brown,** senior project engineer, projects division. The work of the office at 5009 Caroline St., Houston 4, Tex. has been considerably expanded.

Buchart-Horn Consulting Engineers, 55 South Richland Ave., York, Pa., have appointed **Harry O. Wagner** as vice president of the firm with responsibility for operation of the York office's highway, civil engineering, mechanical engineering, municipal and city planning divisions.

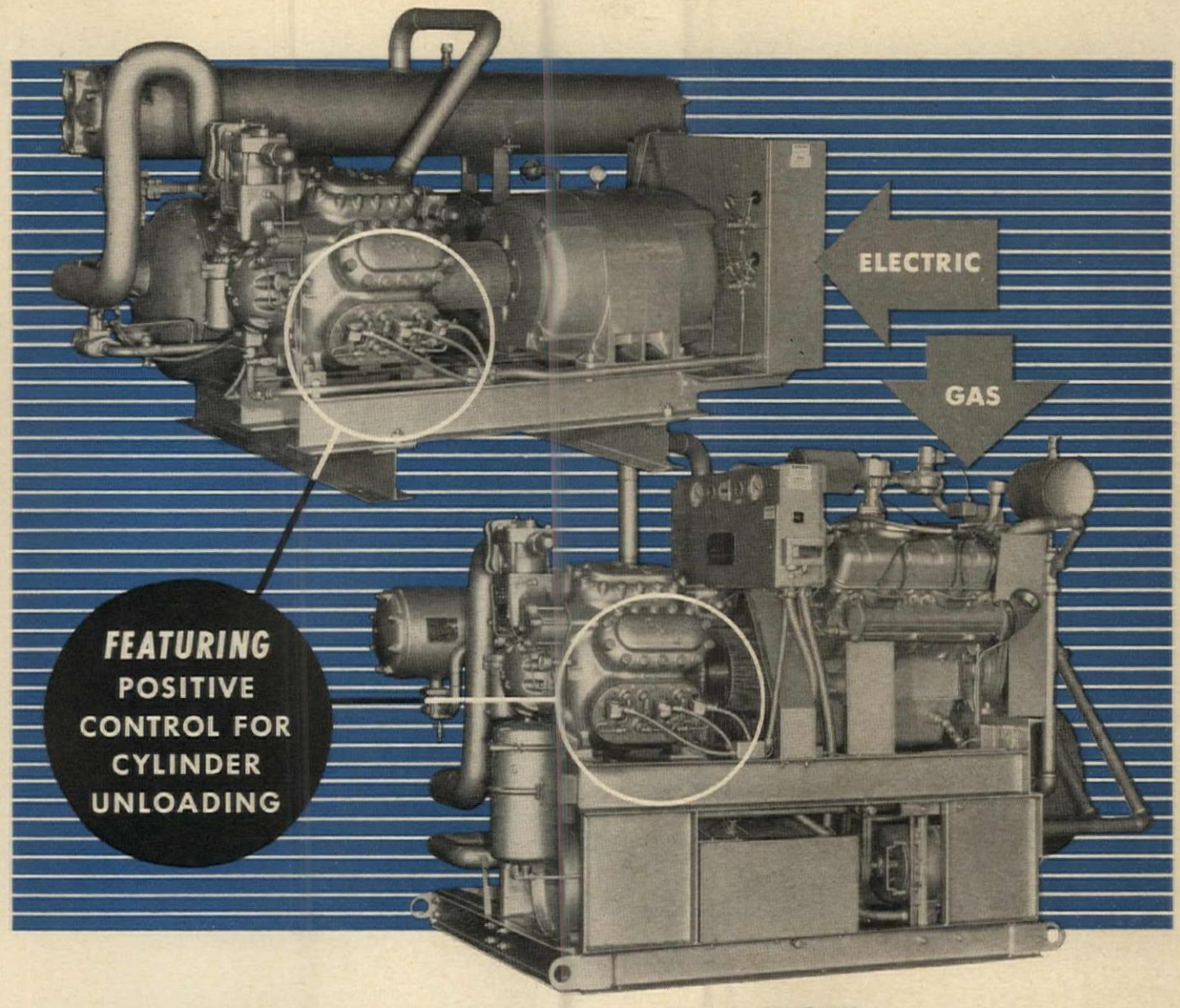
Fred S. Dubin Associates, Consulting Engineers, have appointed **Jasper Merendino** to the position of vice president. He will continue as manager of the Puerto Rico office. **Robert Dukes** has been promoted to associate status in the Puerto Rico office and **Lewis Mutch** and **Robert Bettinger** of the Hartford office have both been raised to associate position.

Emery Roth & Sons, 850 Third Ave., New York, have promoted three of their staff members to associate position. They are: **Gelal Kent, A.I.A., Bernard Kessler, A.I.A.,** and **Joseph Solomon, A.I.A.**

The Engineers Collaborative have appointed **Edwin A. Lampitt** as associate in charge of their new office in St. Louis, Mo.

Marvin L. Mass and **J. Stewart Stein,** project engineers, have been named associates of **A. Epstein and Sons, Inc., Engineers and Architects,** 2011 West Pershing Rd., Chicago, Ill.

continued on page 330



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Positive control of compressor cylinder unloading in both units is achieved by using external solenoid operators activated by temperature signals instead of suction pressure. This assures stable operation at each capacity step ...prevents "hunting" between steps with attendant problems of excessive wear and breakage of the mechanisms.

The necessity to service intricate and sensitive small parts *inside* the machine is eliminated. The control solenoid valves and temperature controller are located *outside* of the compressor crankcase and can be serviced without opening the refrigeration compressor.

Equipped with "open" compressors

B&G builds "open" compressors because in actual operation they offer many exclusive advantages. Motor burn-out in a closed system leads to system contamination, with an exceedingly involved clean-up procedure. An open compressor can be serviced by the average contractor—no special tools needed.

Gas powered units show remarkable economy in areas with favorable gas rates

B&G gas powered units are equipped with heavy duty gas engines developed for minimum oil and fuel consumption. The engine operates considerably below its maximum rated horsepower, for longer life and minimum maintenance.

Additional operating features include automatic and adjustable engine warm-up...100% no-load start ...capacity control effected by automatically varying engine speed in addition to varying the compressor unloading.

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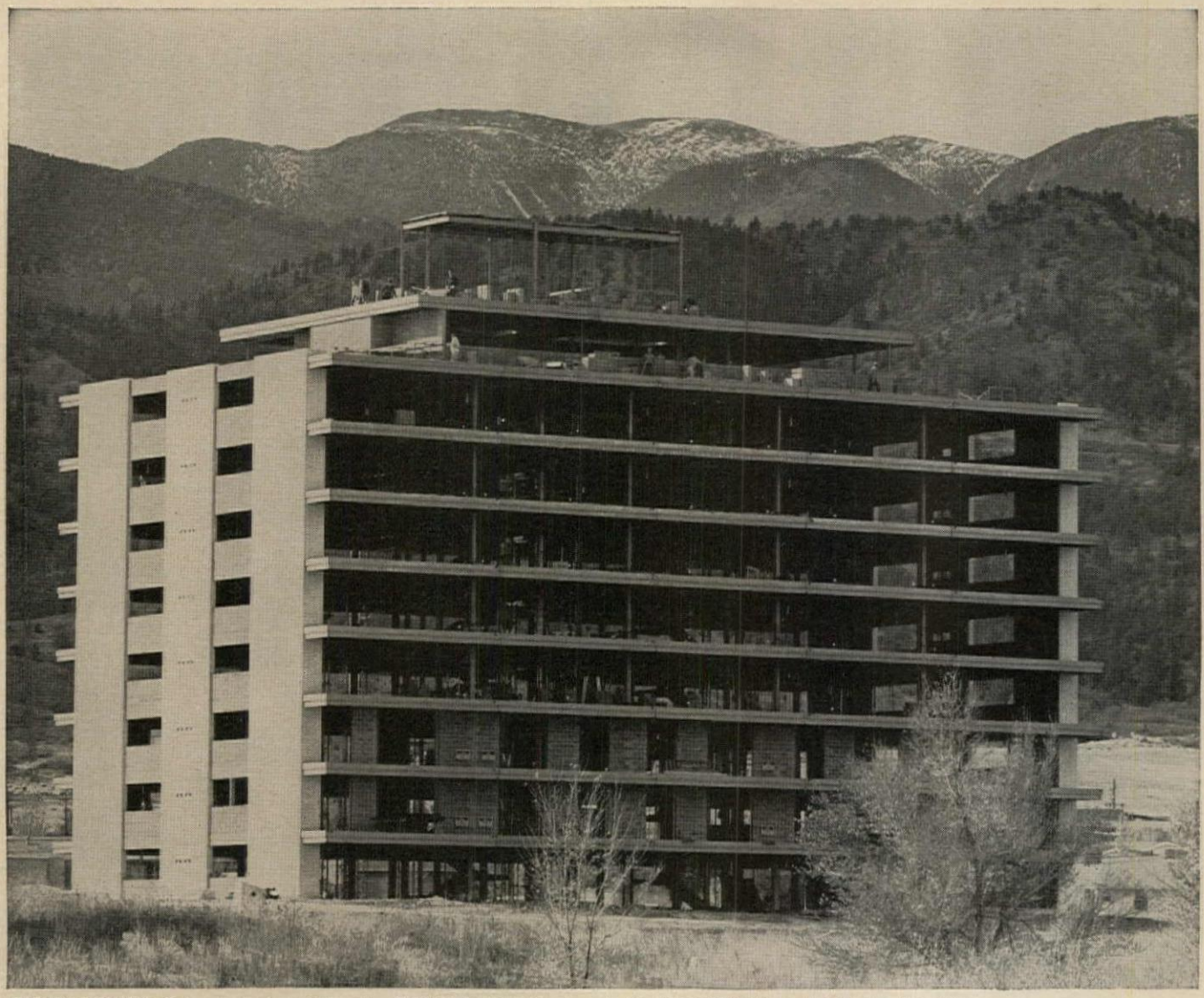


SATURN TOWERS, Colorado Springs, Colorado. OWNER-BUILDER: Crestmar & Co.; ARCHITECT: Roland A. Wilson Associates; STRUCTURAL ENGINEER: Sallada and Hanson; STEELWORK: Sterling Steel & Supply Co. All firms of Denver, Colorado.

This steel frame, including joists and solid centering, weighs only 7 lb per sq ft

The steel frame (Bethlehem A36 structurals) plus Bethlehem open-web steel joists, with Bethlehem Slabform (our solid steel centering) weighs only 7 lb per sq ft in this nine-story Colorado Springs apartment.

What's more, steel for the 81-unit building was erected in only 45 working days. The owners are so satisfied, they plan two more identical structures at some time in the near future.

Besides fast erection, a steel frame provides strength to spare; and a non-warp, non-sag construction that holds down maintenance costs. Fire-safety is up, with a resistance of up to four hours. Steel joists permit easy passage of pipe, wire, and conduit through the open webs—in any direction. Slabform saves both time and money, compared to flexible-type centerings. It's a safe working platform, too.

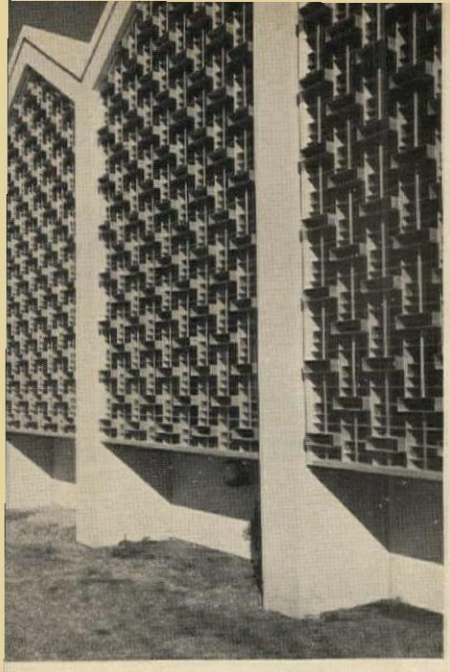
We'll be glad to discuss your next building with you. Perhaps we can show you ways you can save time and money with today's steels for construction.

Steel joists allow pipe, conduit, and ductwork to be run in any direction.

Steel for Strength

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA., Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



Noyer Residence Hall, Ball State Teachers College, Muncie, Indiana; Architect: Walter Scholer & Associates Inc., Lafayette, Indiana; General Contractor: Hagerman Construction Corp., Fort Wayne, Indiana; Painting Contractor: Odle Painting Inc., Muncie, Indiana.

The Man from DEVOE helps make college life more colorful

William N. Temple, Jr., "Man from Devoe" serving architects in Indiana.

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For more data, circle 181 on Inquiry Card

Office Notes

continued from page 326

Macy DuBois has become a partner in the firm to be known as **Fairfield and DuBois, Architects,** 120 Eglington Ave. East, Toronto, Canada.

John Graham and Company announced the appointment of **David M. Checkley, A.I.A.,** as director of the office at 1426 Fifth Ave., Seattle, Washington.

Harland Bartholomew and Associates have announced the appointment of five new associate partners. They are: **Robert R. Way, Joseph W. Guyton, James W. Yarbrough, Alan R. Siff,** and **Charles A. Franzman.**

A. Calvin Hoiland and **William R. Zucconi** have announced the establishment of the architectural firm **Hoiland-Zucconi, Architects.** The architectural firm of Hoiland & Lund and Associated Architects has been purchased and the new firm will practice at the present firm location, 606 Strain Bldg., Great Falls, Mont.

Kelly & Gruzen, Architects-Engineers, 10 Columbus Circle, New York 19, have made two appointments. They are: **George G. Shimamoto, A.I.A., F.A.S.C.E.,** general manager, and **Jordan Gruzen, A.I.A.,** associate and director of design.

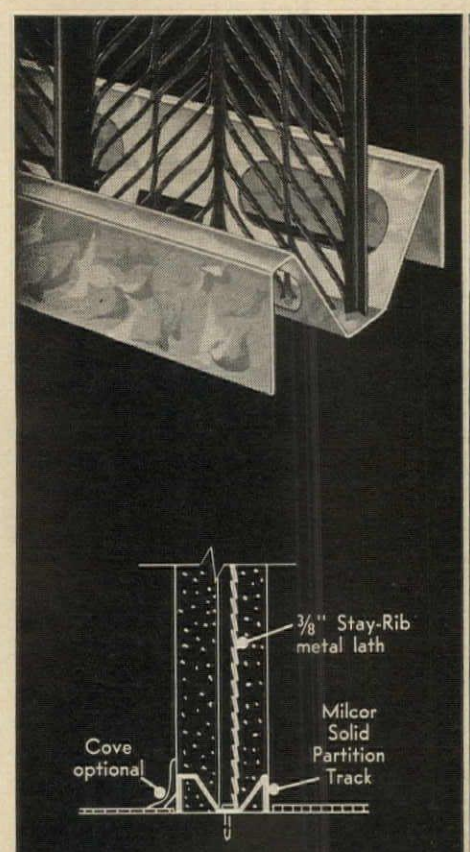
Harold M. Liebman, formerly of Morris Lapidus, Liebman & Associates, has announced the opening of his new firm, **Harold M. Liebman & Associates, Architects,** at 420 Lexington Ave., New York, N.Y., 10017.

Charles Luedtke & Associates, Architects, have announced the organization of a new firm to replace the former practice of Dembeck Luedtke. **Dale Wiars** and **Tom DeBuhr** have been appointed associates in the firm which will continue to practice at 3575 N. Oakland Ave., Milwaukee.

McCall & Associate, Inc., Architect, is the designation of a new firm for the practice of architecture located at 88 West Southern Blvd., Montgomery, Ala.

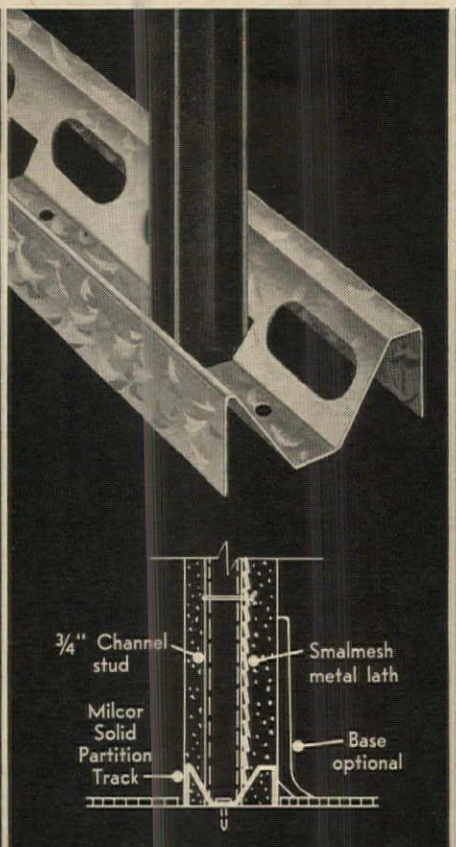
Newcomb & Boyd, Consulting Engineers, of 1205 Spring Street, N.W., Atlanta, Ga., 30309, announced the reorganization of the firm as a partnership consisting of **Spencer W. Boyd, I. Ben Kagey,**

continued on page 334



V-groove holds lath without need for ties. Track is galvanized steel, furnished in 2", 2¼" or 2½" widths.

Studless solid plaster partition



Retaining slots 4" o.c. hold channel studs. Track is galvanized steel, furnished 2", 2¼" or 2½" wide.

Channel stud solid partition

Retaining slots 2" o.c. hold Milcor Steel Studs. Track galvanized. Furnished for 3¼" or 4" studs, ¾" or ⅞" grounds.

Steel stud hollow partition

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speed and improve installation of non-bearing plaster walls!

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BALTIMORE 5, BUFFALO 11, CHICAGO 9, CINCINNATI 25, CLEVELAND 14, DETROIT 2, KANSAS CITY 41, MO., LOS ANGELES 58, NEW YORK 17, ST. LOUIS 10, SAN FRANCISCO 3

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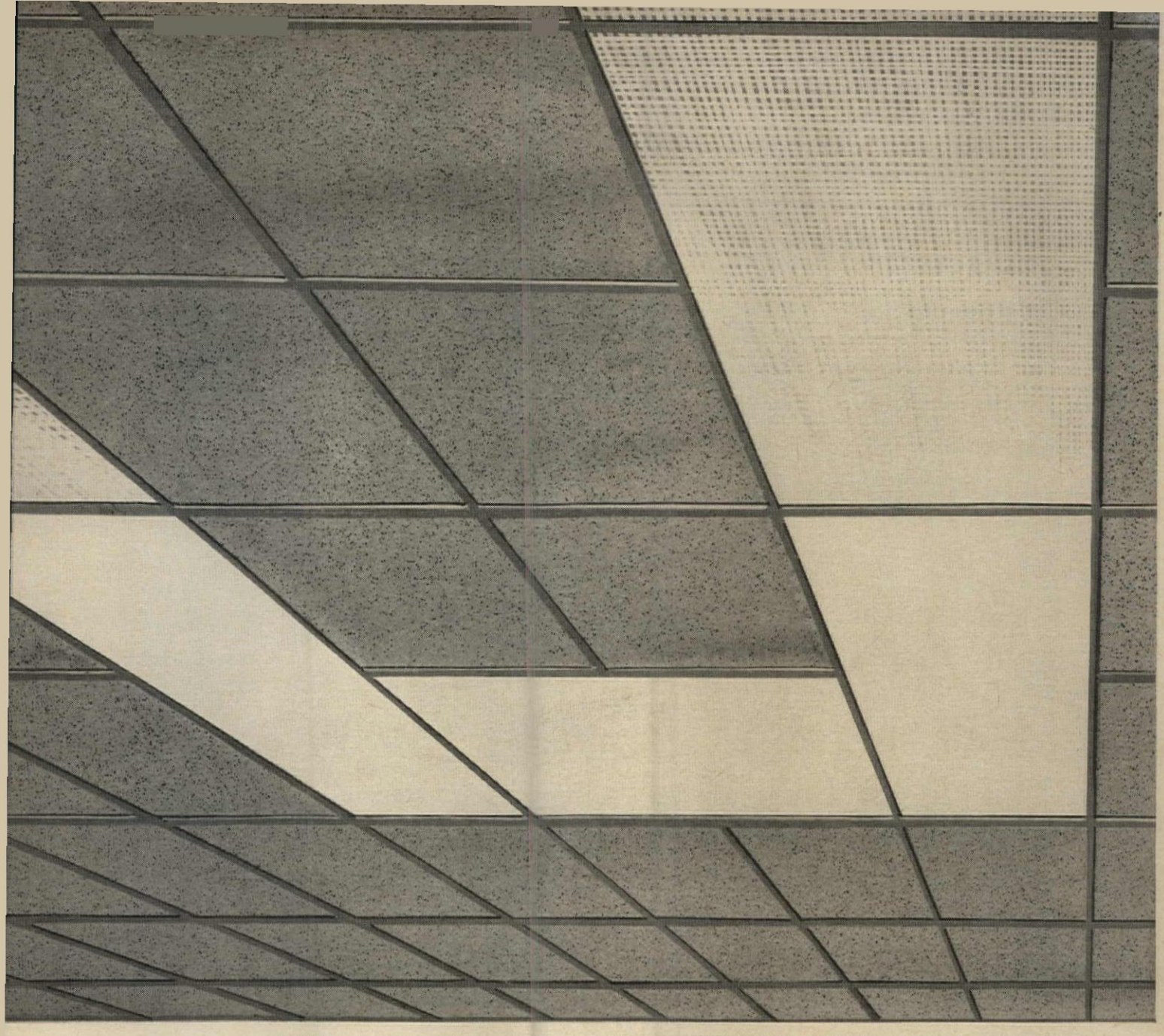

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Office Notes

continued from page 300

Lloyd Barnard Jr., and **Elmer L. Riker**, partners, and **Guy W. Gupton, Robert E. Bolton, Don J. Jones, David B. Lee Jr., John W. Simpson** and **W. Earl Tolson Jr.**, associates.

Nolen, Swinburne and Associates, Architects and Planners, of 1601 Locust St., Philadelphia, Pa., 19103, announced the appointment of **John D. Sackster** as an associate.

Gordon E. Iversen, A.I.A., has been appointed as associate in the office of **Robert C. Taylor, Architect.** The firm has been re-designated as **Robert C. Taylor Associates** and is located at 212 South Marion St., Oak Park, Ill., 60302.

New Addresses

Chloethiel Woodard Smith & Associates, Architects, 1056 Thomas Jefferson St., N.W., Washington D.C., 20007

Stotz, Hess and MacLachlan, Architects, 1814 Investment Bldg., Pittsburgh, Pa., 15222.

Addendum

The RECORD, through inadvertence, omitted one of the Awards of Merit in its story on the winners in the Federal Housing Administration's competition in residential design (Building Types Study, January 1964). A sixth award was given to the Brickell Town House, Miami, Florida (*below*). The architects were Steward-Skinner Associates, Carl M. Apuzzo, designer. Emert B. Neal was the landscape architect, and the builder was Brickell Mansions, Incorporated.

Men's Dormitories, University of Pittsburgh. **Architects:** Deeter & Ritchey. **Structural Engineer:** Martin C. Knabe, Inc. **Contractor:** Dick Corporation. **Precast Concrete Panels:** General Concrete Units Corporation. All of Pittsburgh.

DEETER & RITCHEY specified precast white concrete for the 70,000 square feet of curtain wall on these three circular dormitory towers at the University of Pittsburgh. Made with ATLAS WHITE portland cement, the floor-to-floor panels are just 5″ thick. This includes a 1½″ insulating core of foam plastic, sandwiched between screens of steel-wire reinforcing. They are held by one load-bearing steel angle at the bottom and two securing angles at top and bottom. The panels cost only $4.50 a square foot in place; they save 7,300 square feet of interior space that would have been lost with the conventional stone-and-masonry wall system. ■ Today, more architects are using precast concrete to gain usable space while achieving construction economy and esthetic distinction. For specific information about white, tinted or exposed aggregate units, see your local precast concrete manufacturer. For information about special properties of new ATLAS WHITE high-early strength portland cement for use in precast concrete units, write to Universal Atlas, 100 Park Avenue, New York, N. Y. 10017.

Universal Atlas Cement
Division of
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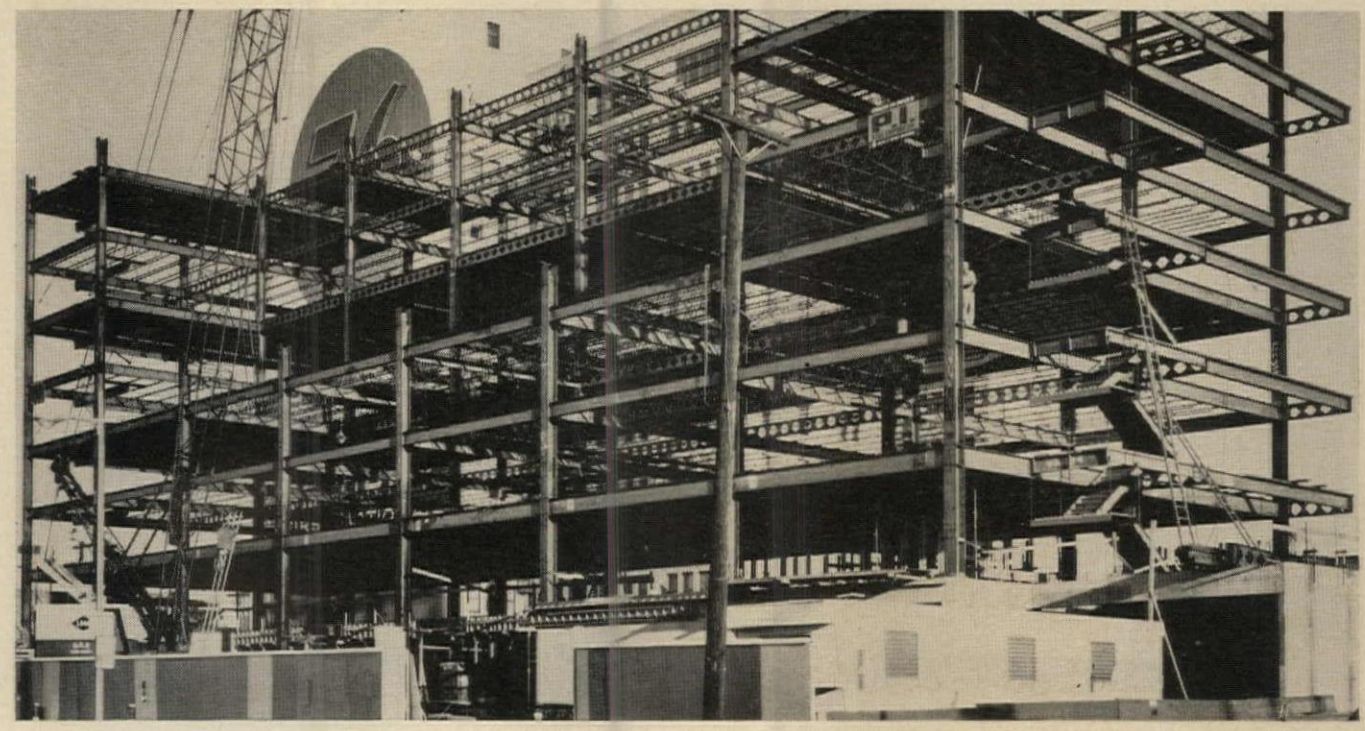
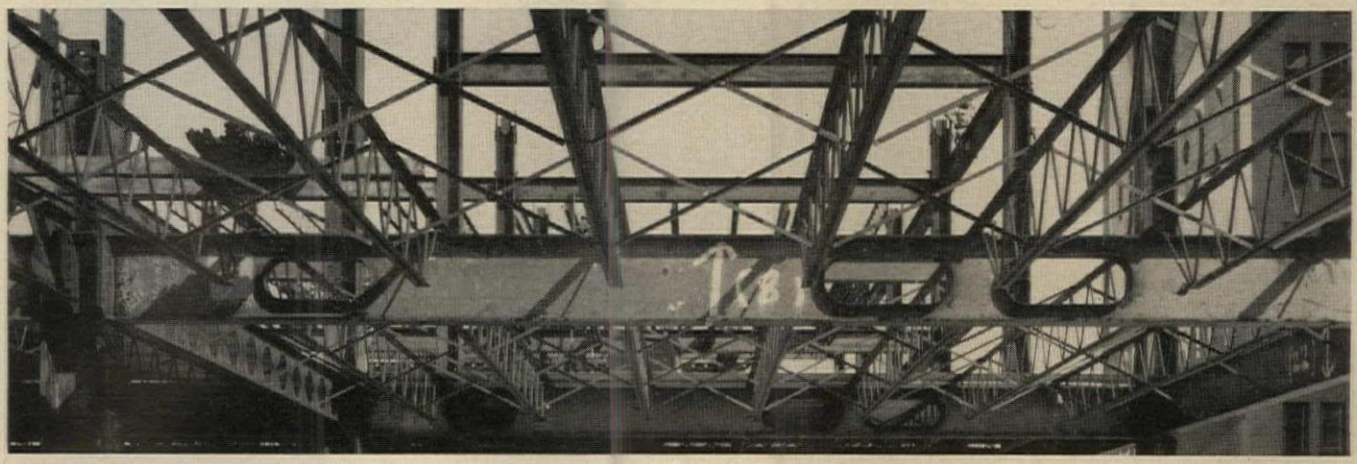


Sheffield H-Series Joists in floors of Doric Motor Hotel

OWNER: One Thousand Figueroa Corporation, Los Angeles, California
ARCHITECT: Albert Criz, A.I.A., Beverly Hills, California
STRUCTURAL ENGINEER: Zorah E. Sheffner, Beverly Hills, California
STEEL FABRICATION AND ERECTION: P. I. Steel Corporation, Los Angeles, California
CONTRACTOR: Vinnell Steel: Irwindale, California



High-strength Sheffield Steel Joists for high-rise motor hotel

Floor structure for the multi-story Doric Motor Hotel, Los Angeles, demonstrates the use of modern, high-strength steel joists to achieve economical design. Use of Sheffield H-Series Joists, made with steels having 50,000 minimum yield point, contributed to high strength-to-weight ratio. This structure was designed with columns on 28′-0″ centers in both directions. 4′-0″ spacing of the Sheffield H-Series Joists met all loading requirements.

This is another example of the acceptance of Sheffield Joists in today's structural designs. All Sheffield Joists meet the specifications of the Steel Joist Institute. See our catalog in Sweet's Architectural File or write for complete data. **Sheffield Division, Armco Steel Corporation, Department S-514, 7000 Roberts Street, Kansas City, Missouri 64125.**

ARMCO Sheffield Division

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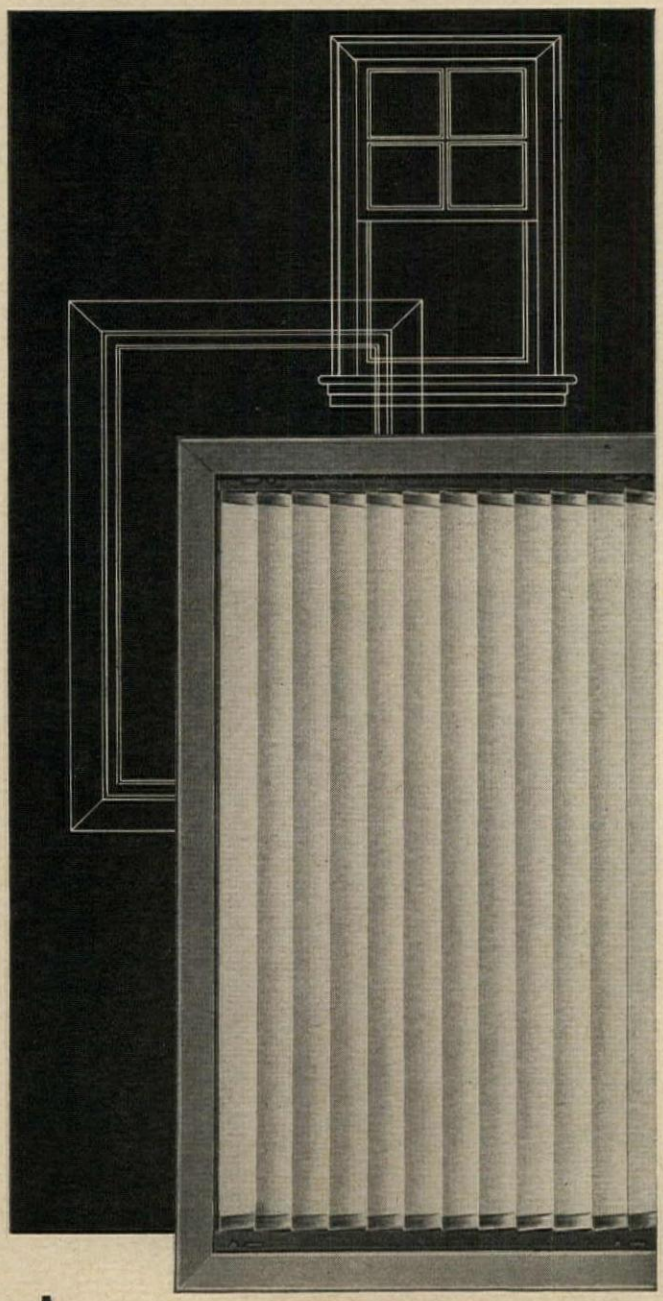

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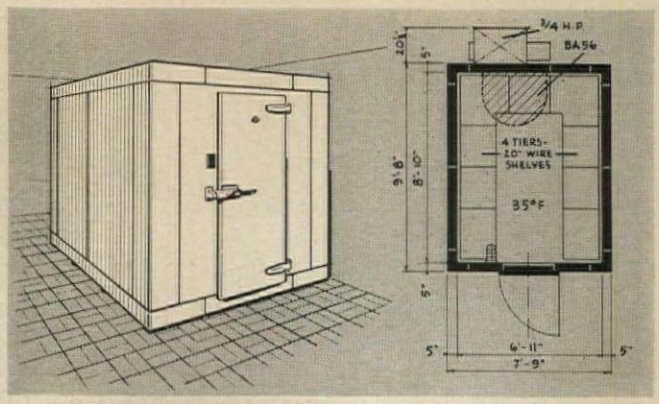

Normal temperature Walk-In installed in the **Athens High School,** Athens, Wisconsin.

Specifications prepared by **Perry-Carrington Engineering Corp., Consulting Engineers,** 249 S. Central Ave., Marshfield, Wisconsin.

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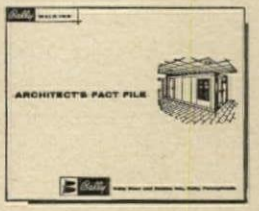

See Sweet's File, Section 25a/Ba

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Bally, Pennsylvania

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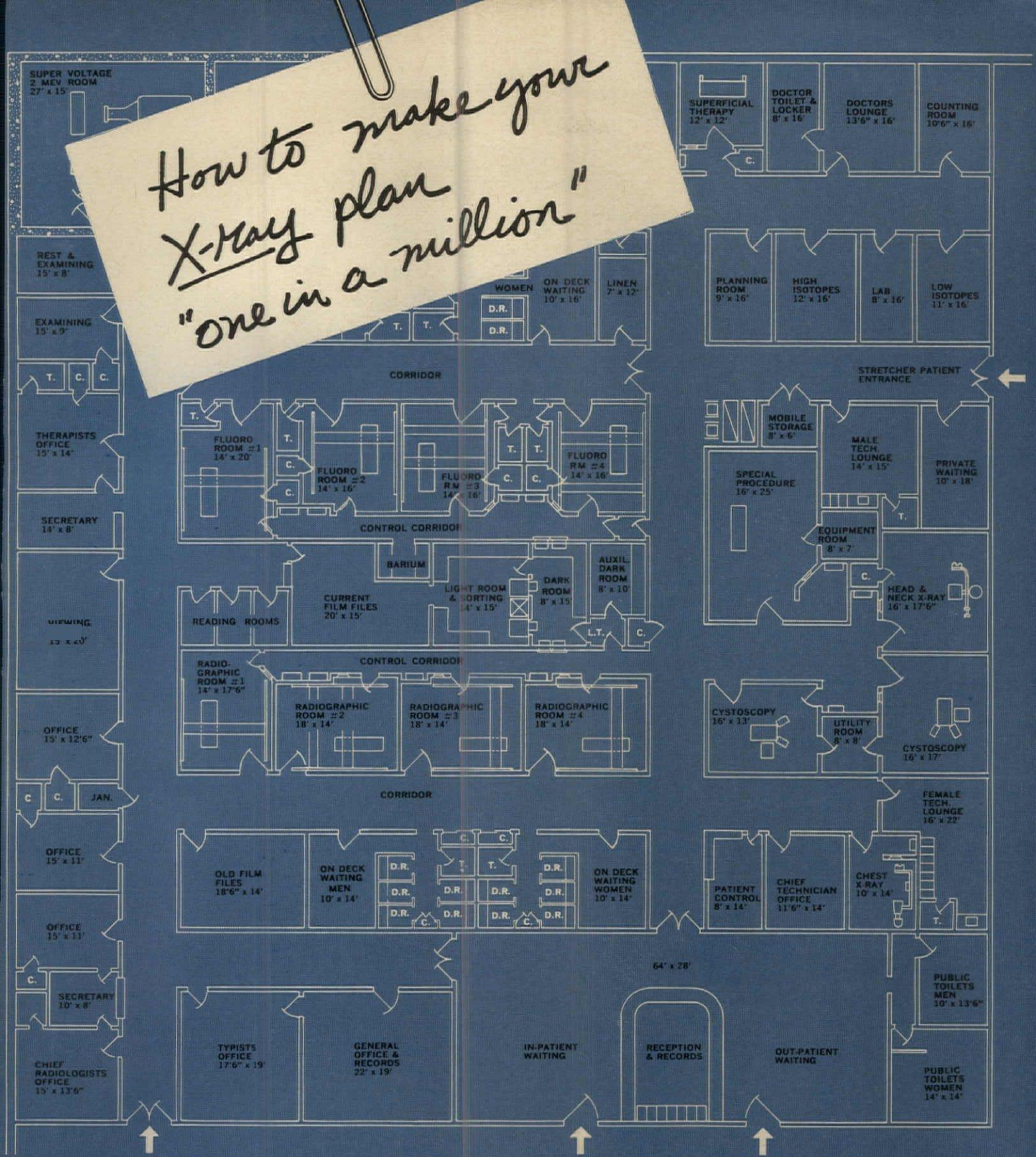

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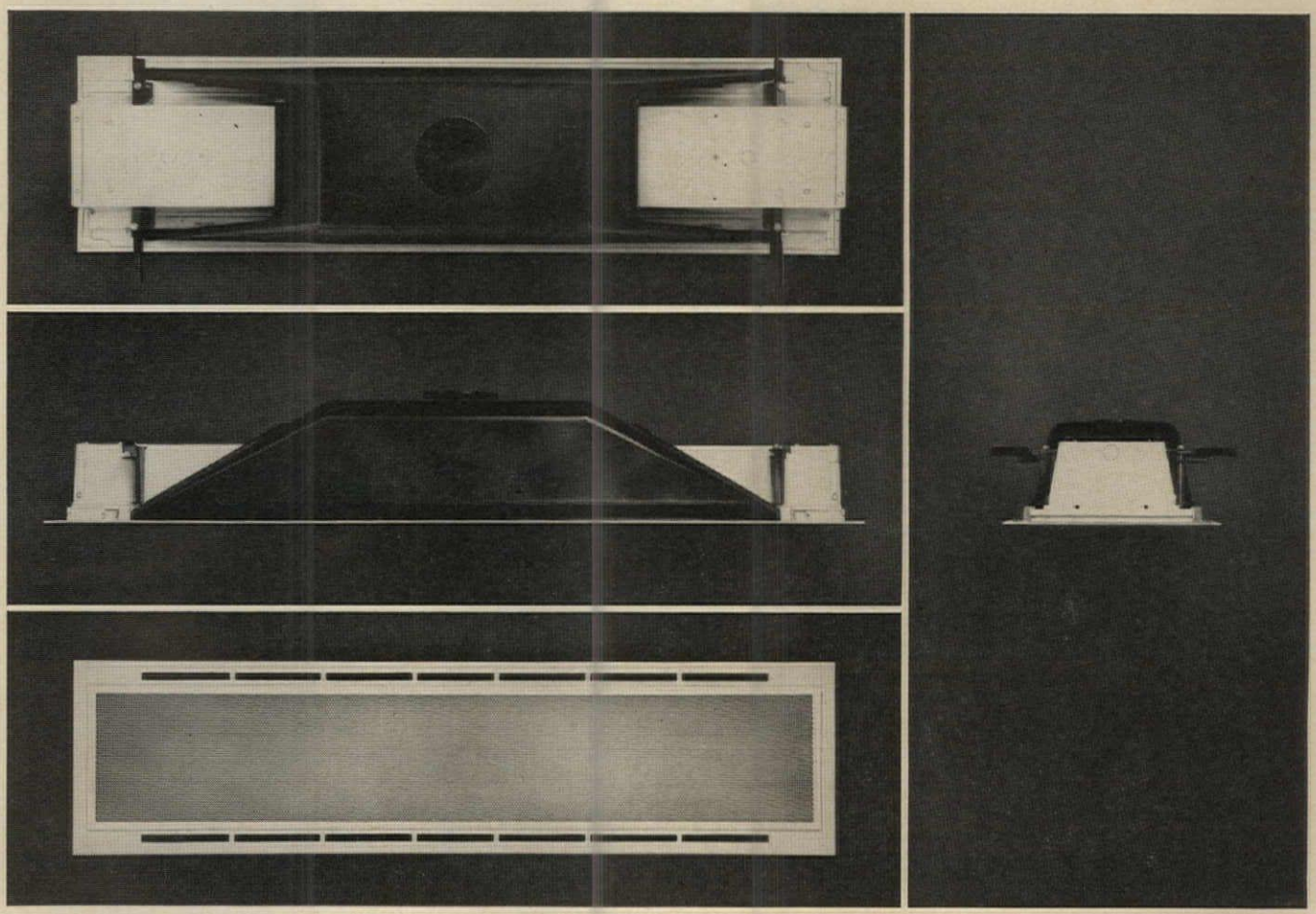

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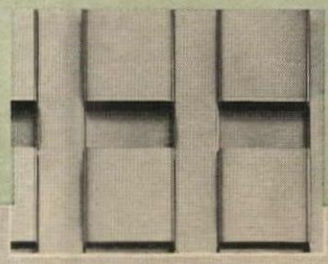

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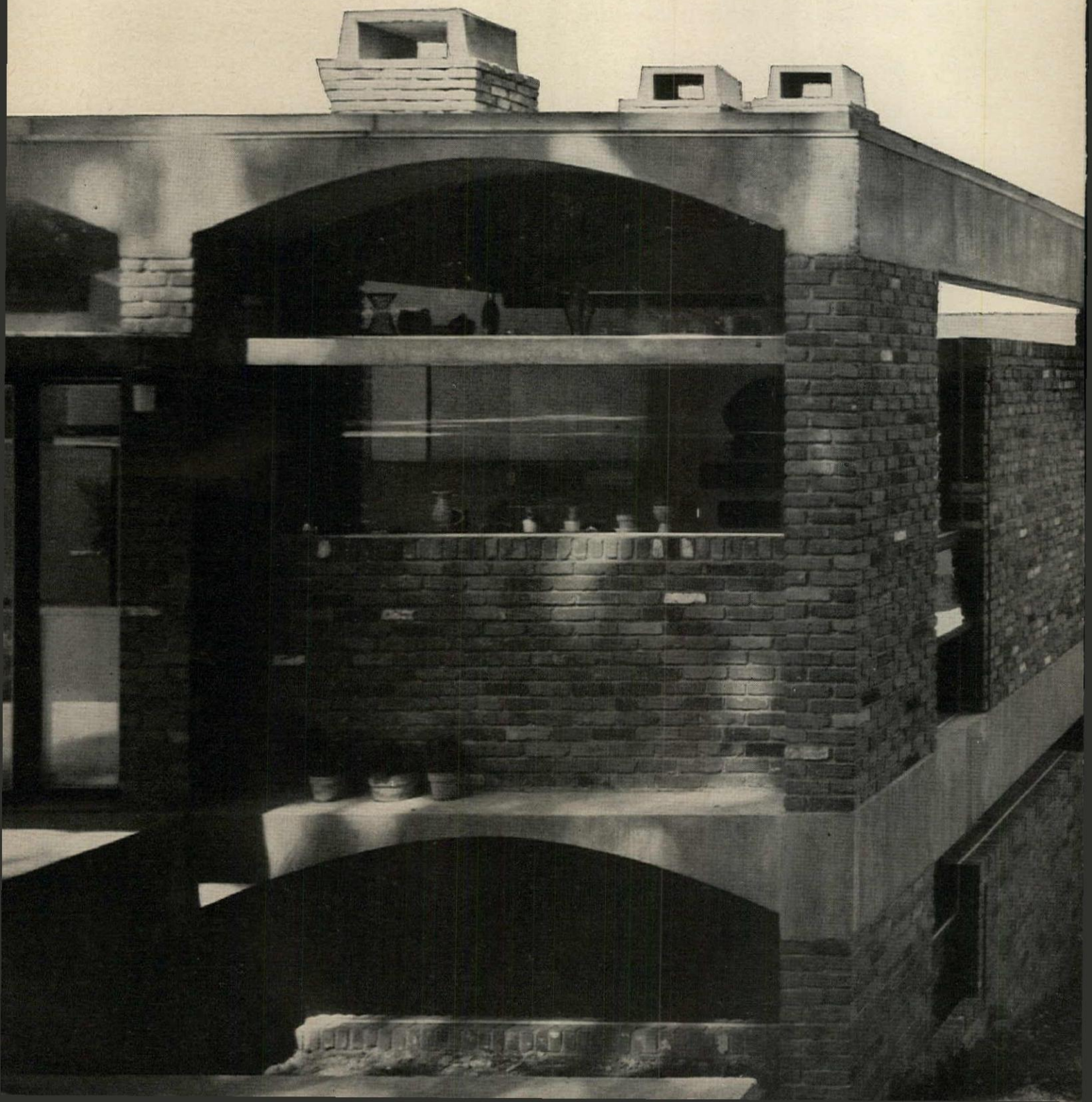

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Katselas House, Pittsburgh, Penna.
Architect: Tasso Katselas
Photo: Marc Neuhof

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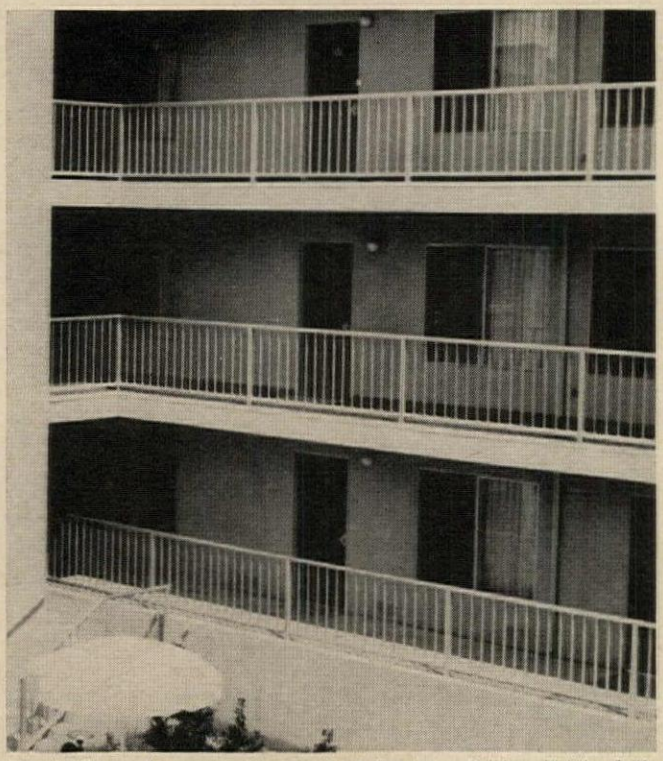

Magnolia Terrace Apartments, Dean Bradley & Associates—Builders, Whittier, Calif.

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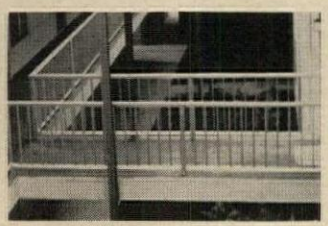

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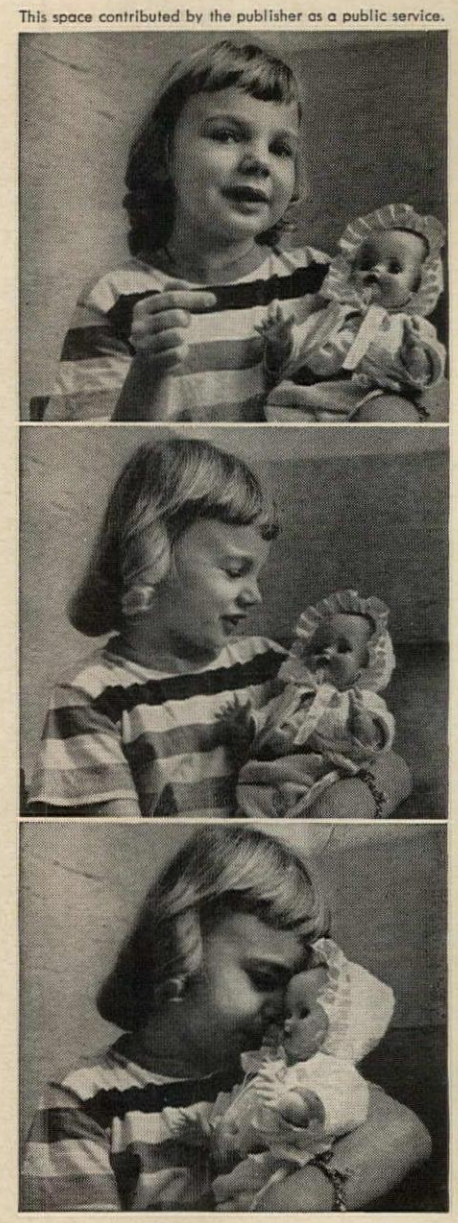

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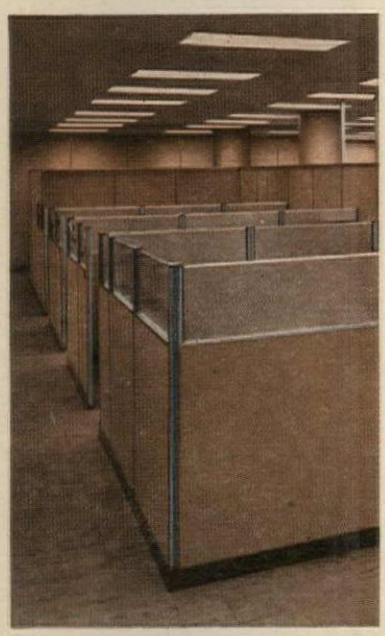

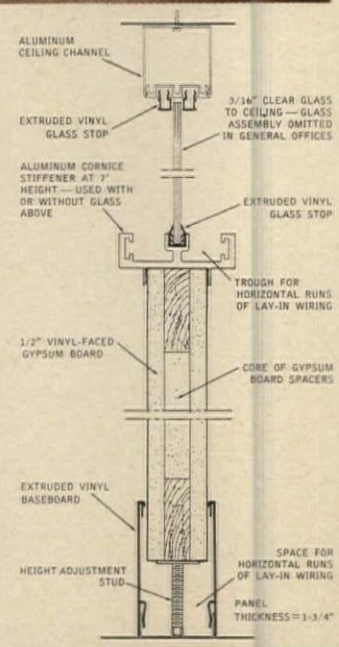

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