



# ARCHITECTURAL RECORD

**9** SEPTEMBER 1963 • TWO DOLLARS PER COPY

BUILDING TYPES STUDY: APARTMENTS

ARCHITECTURE FOR A NEW ENGLAND PREPARATORY SCHOOL BY TAC

CONSTRUCTION IN 1975: AN F. W. DODGE ANALYSIS

FULL CONTENTS ON PAGES 4 & 5



United Parcel Service Building, N.Y.C.  
 Architects: David and Earl J. Levy, N.Y.C.  
 Engineers-Architects: Abbott, Merkt & Co., N.Y.C.  
 Interior Architect: Edwin Harris, Jr., AIA, N.Y.C.

# Bold good looks— one of 6 reasons the architects used Armstrong Tessera Vinyl Corlon flooring in these new offices

This photo shows Armstrong Tessera Vinyl Corlon flooring installed in the national executive office and reception area of the new United Parcel Service Building, New York City. Tessera is a striking floor that's especially well

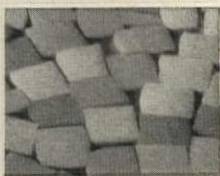


suiting to distinctive custom installations. Although costing about 90¢ sq. ft. installed, its beauty and functional advantages make it an excellent long-term value for

new and remodeled commercial interiors. Here's a brief summary of the reasons why Tessera is often selected for these interiors.

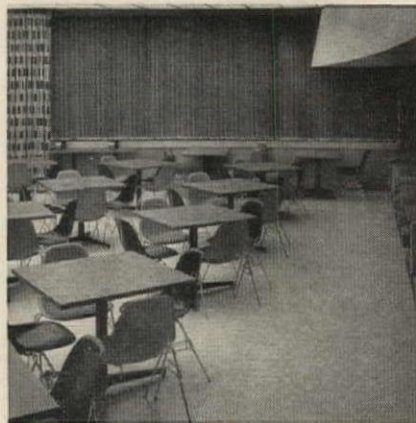
**1. Dramatic Color and Design** Tessera Vinyl Corlon is a boldly handsome floor. Its colors are rich and decorative, ranging from subtle off-whites and softly recessive hues to vibrant blues, deep apricot orange, and leather brown. Tessera comes in both monochromatic and multicolored stylings that will harmonize with any decorative scheme. And Tessera's random chip design adds interest to any interior without intruding on its other features.

**2. Distinctive Texture** The vinyl cubes in Tessera are raised slightly from their translucent vinyl setting, giving Tessera a gently textured surface. This texture complements



the other textured interior surfaces so widely used today. It also helps hide stiletto heel marks and conceal minor subfloor irregularities.

**3. Easy Maintenance** Tessera Vinyl Corlon comes in rolls 6' wide and up to 90' long, so it can be installed with a minimum of dirt-catching seams. Cleaning the dense monolithic surface is fast and economical. Because Tessera is resistant to staining and damage from grease, most alkalis and chemicals, food, and beverages, the architects installed it in the United Parcel Service cafeteria.

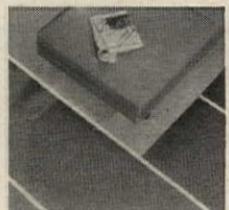


**4. Durability** .090" gauge Tessera Vinyl Corlon has proved itself extremely durable in countless commercial installations. Its design goes all the way through to the backing—won't blur or disappear in areas of concentrated traffic. The floors at United Parcel Service will serve for years and still keep their good looks.

**5. Can Be Installed Almost Anywhere** Tessera's exclusive moisture- and

alkali-resistant Armstrong Hydrocord Back enables you to specify it on or below grade, as well as above grade (except where excessive alkali or hydrostatic pressure is present).

**6. Excellent Material for Custom Designs** In these offices, the floor was designed to function as a spatial divider. Large rectangles of a contrasting Tessera color are used to define conversation areas and furniture groupings. Strips in a third coloring echo the linear architectural features. Made in long, wide rolls, Tessera also lends itself readily to large-scale, curving custom designs.



**For Specifications, Complete Data, Samples** of Tessera and the other Armstrong Vinyl Corlon flooring styles, call your Armstrong Architect-Builder Consultant. A flooring expert, he can help you solve almost any flooring problem you encounter. He can also get you further assistance from Armstrong research, installation, and technical advisors. And since Armstrong makes a complete variety of flooring materials, he can make unbiased recommendations as to the right type of resilient flooring, properly balanced in quantity and quality, for any interior. Call him at your nearest Armstrong District Office, or write direct to Armstrong, 309 Rock Street, Lancaster, Pennsylvania.

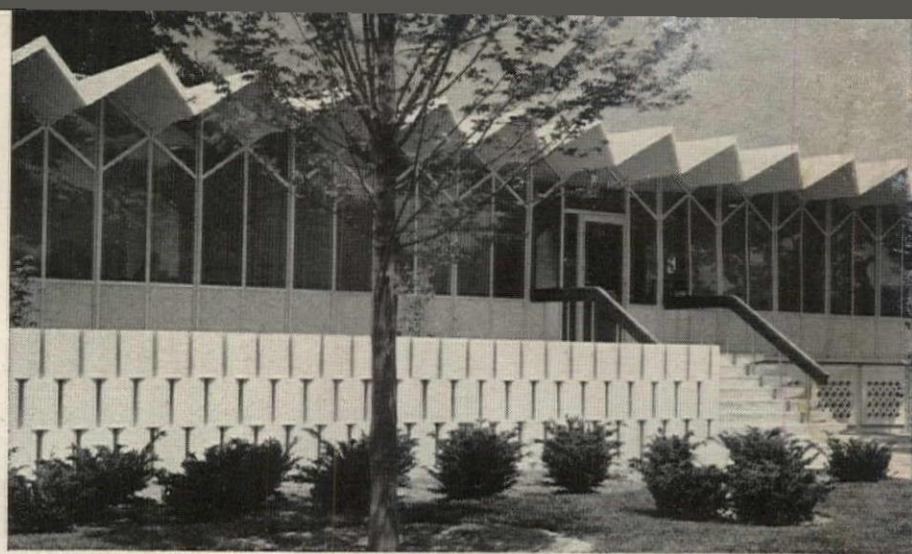
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**Armstrong VINYL FLOORS**

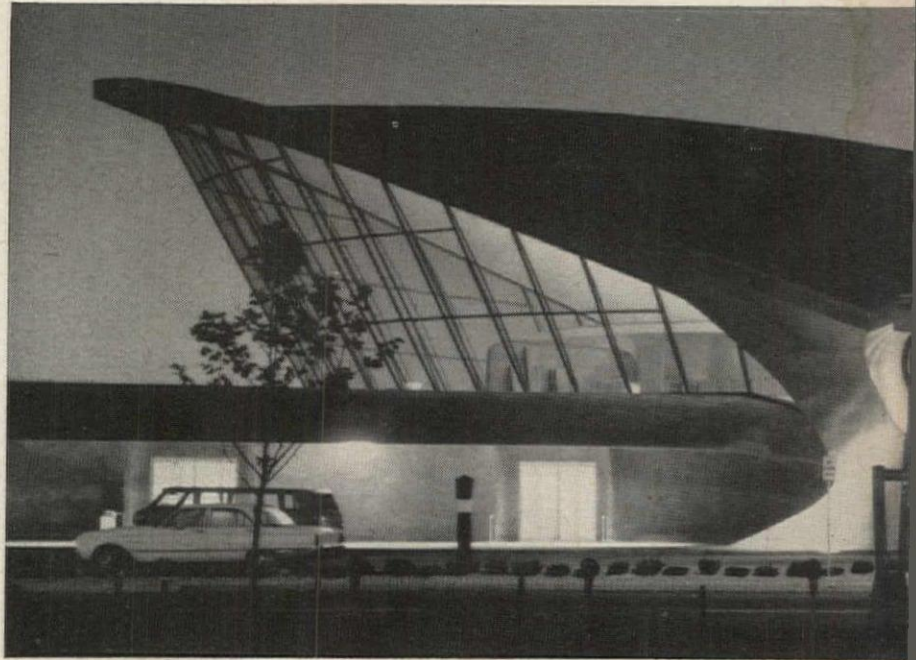
## FOLDED

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



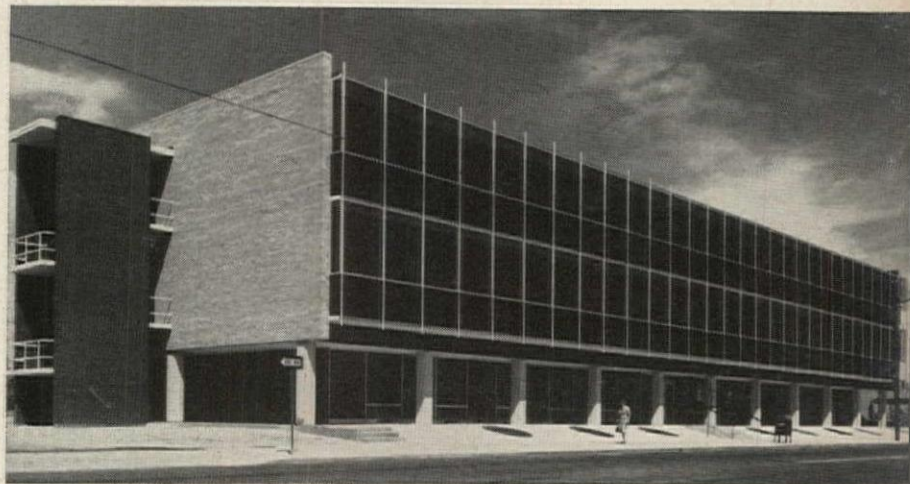
## CURVED

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



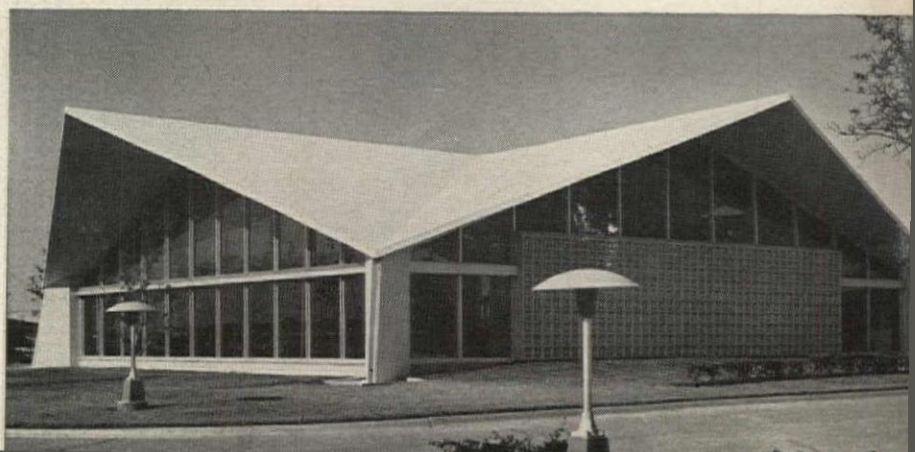
## FLAT

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

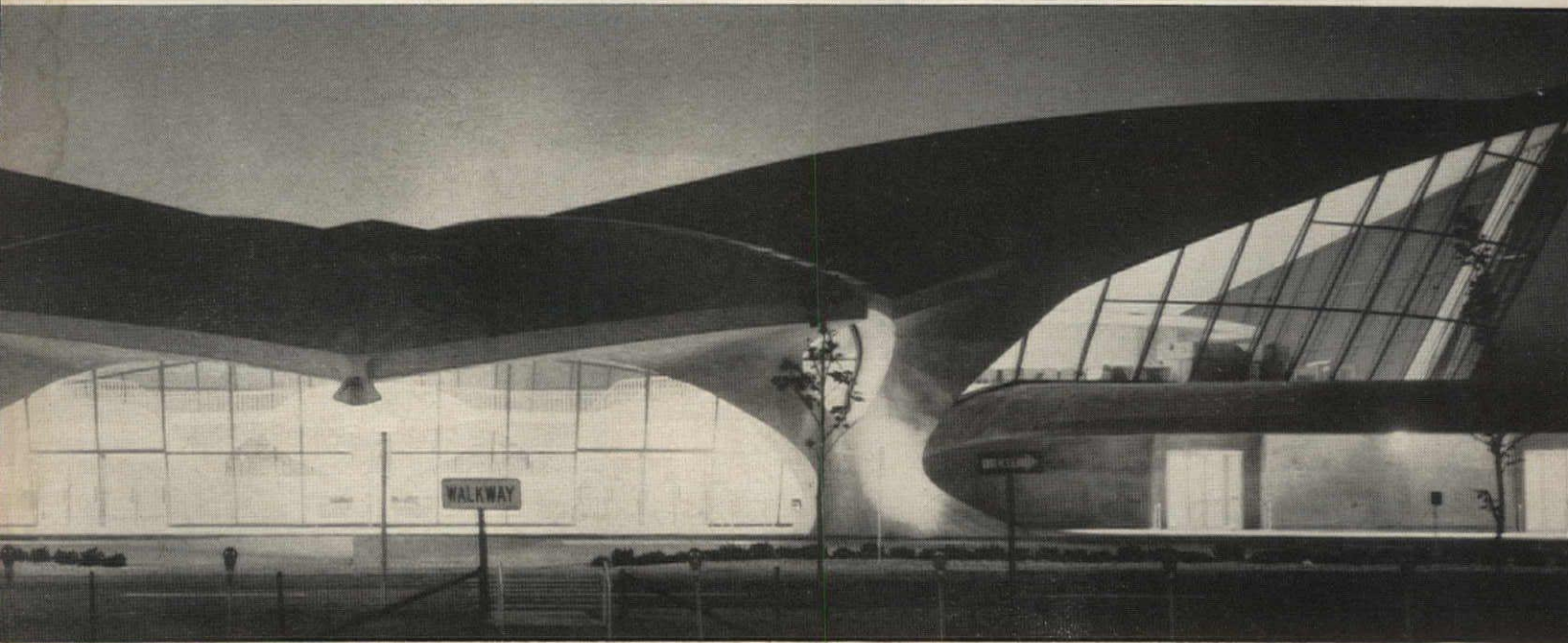


## PEAKED

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

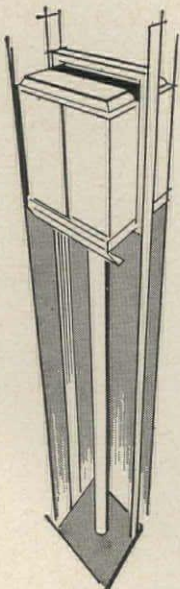


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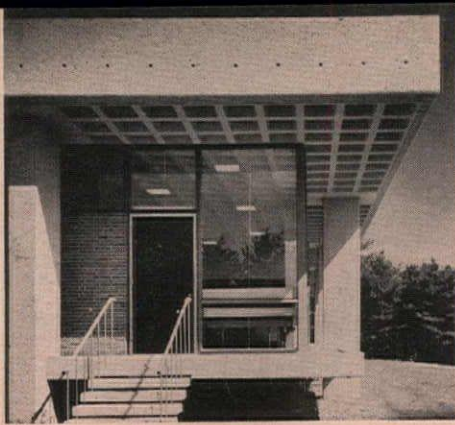
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Thomas M. Evans Science Building, Phillips Academy, Andover, Mass. Architects, The Architects Collaborative; photographer, © Ezra Stoller

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### DESIGN FOR TEAM TEACHING AND HOW IT WORKS

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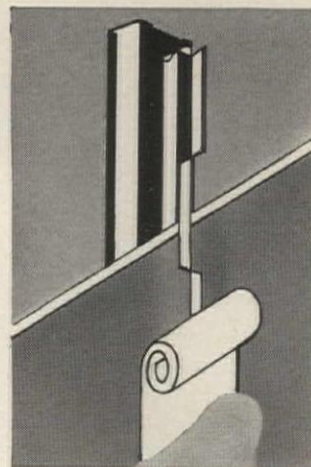


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## Go Back To School?

With a new program announced for the retraining of graduate engineers, I can't help wondering what might be accomplished with a similar program for architects. Some months ago the Alfred P. Sloan Foundation made a grant to M.I.T. for the establishment of a Center for Advanced Study for Engineers. The university and its teachers are reported as elated by the opportunity to combat engineering obsolescence; everybody is aware of the pace of technological development, and of the practicing engineer's great need to keep abreast.

Architects too are having to scramble to keep up. There are new design interpretations, new building needs, new techniques, new materials, new economic and social and political influences. Who has a broader range of developments to assimilate, a more difficult task of synthesis?

And yet one wonders what might be accomplished by going back to school. How would a university approach the re-education of the architect? What parts of the architect's new needs would a university be able to fulfill? What would the faculty know about them? Where would the professors have encountered the problems or the progress? One dislikes being cynical, but is the school, generally speaking, ahead of or behind the practicing architect?

Presumably the returning engineer would have some fairly definite idea of where he felt the need of new schooling. Presumably the faculty would have a grasp of scientific and technological developments, scientific at any rate. Such knowledge seems to focus more finitely in the engineering field. And what is more to the point, it seems to focus more definitely in university circles. And, still more important, scientific and technical research is the great fact of our age. And where is there anything comparable in the area of architecture?

Now I am not just needling the gentle professors of architectural schools. Everybody knows, of course, that schools of architecture are generally preoccupied with the artistic aspects of architecture. And how

would an art faculty bring an old grad "up to date" on those?

It would be easier to imagine a curriculum in the technical areas. A new understanding of structural knowledge, a new look at mechanical systems and equipment, a better understanding of lighting, acoustics, or what not. It is not so easy to visualize the faculty which would assemble, digest and package such information.

Specific and current information of these general types is generally considered beyond the scope of the school of architecture.

So far the university could not offer much to the old grad.

The scene doesn't improve much when you come to the "commodity" aspects of the architect's job. What can the university tell him about the design of Telstar tracking stations, a Cape Canaveral, a truck terminal or a parking garage, a downtown motel, a home for the aged, a new campus?

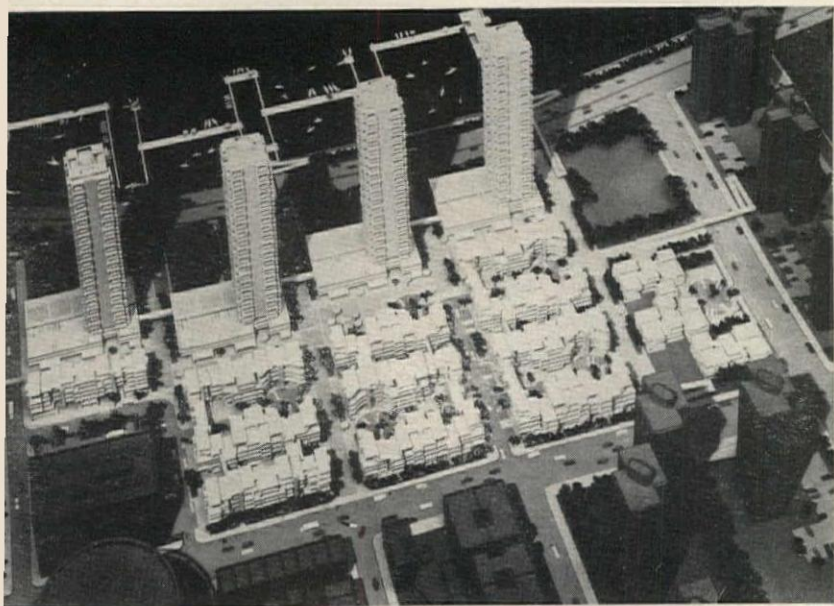
Too specialized? Yes, I suppose so.

But what about environmental matters, vital in all buildings? What about urban planning, congestion, population explosion? Anything new? No, nothing new except the ballooning needs. What about comfort, noise levels, lighting, weather control? What about cleanliness, order, beauty? Nothing new? Well, again, just the extent of the needs.

No, school has no postgraduate course in human environment. Nobody knows much about it. Nobody studies it. We are going to rebuild great hunks of all of our cities, and nobody can tell us how people should really be housed when population pressure increases. What basis do we have for planning our living conditions? Nothing, really except intuitive assumptions or traditions. As science sends men toward the moon, we have only the roughest guides to living on earth.

Science is not at work on these basic environmental questions. So, no research. So, no new information to collate, digest, test and communicate. And on such factors, which architects consider of prime importance in their work, there is no place to go for re-education.

—Emerson Goble



## Ruberoid Award Winners Announced

Hodne Associates of Minneapolis has been awarded \$10,000 first prize in the Fifth Annual \$25,000 Ruberoid Design Competition (February 1963, page 23), it was announced as the RECORD goes to press. Full details and names of award winners will appear in October. The winning design for the New York City East River Urban Renewal Project has low- and middle-income housing with most of the area covered with five- and six-story buildings which fit into the surrounding neighborhood. Four towers are located near the river, and the plan retains existing streets. Jury comments cite the important elements of no through traffic since streets end in cul-de-sacs and street indentations for recreation and relaxation. Each tower has a social area on the third floor for sunning of small children. Members of the winning team are Thomas H. Hodne, A.I.A., Kermit Crouch, Tokiaki Toyama, Vern Svedberg, James Solverson, James McBurney and Robert Einsweiler



## Physics Research Laboratory

The Behlen Laboratory of Physics Research is now under construction at the University of Nebraska, Lincoln. It will be used exclusively for research projects and will connect to the existing Brace Physics Building. Architects are Steele, Weinstein & Associates, Inc. of Omaha. Flush interior walls are achieved by putting structural columns, mechanical and electrical chases and individual room heating and air-conditioning units on the periphery of the building. Exterior materials are poured concrete and precast concrete, with sand blasted aggregate finish. General contractor is Olson Construction Co.

## Chinese Church in California

When a new freeway threatened the headquarters of the Chinese Consolidated Benevolent Association in Fresno, California, the elders of the community insisted there be some Chinese motif in the design of the new building. The resulting Chinese Confucius Church, in the words of architect Allen Y. Lew, is a "modern building with an oriental influence in order to express this fight of the older generation with the new." There are three classrooms on the first floor and an auditorium with laminated wood beams on the second floor



*Morley Baer*

ANNOUNCING.....

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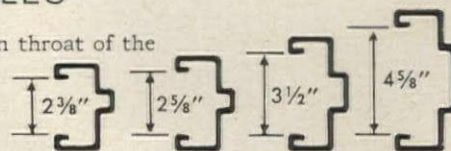
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Actual drywall thickness is shown. Slip-on throat of the frames fit snugly around the drywall.



### *Fen-Dry* FRAME INSTALLATION . . . Easy, Economical, Fast



1. Slide head-bar in place



2. Slide on lock and hinge jambs



3. Pull head-bar down over aligning tabs



4. Square and anchor in place as shown

# Fenestra

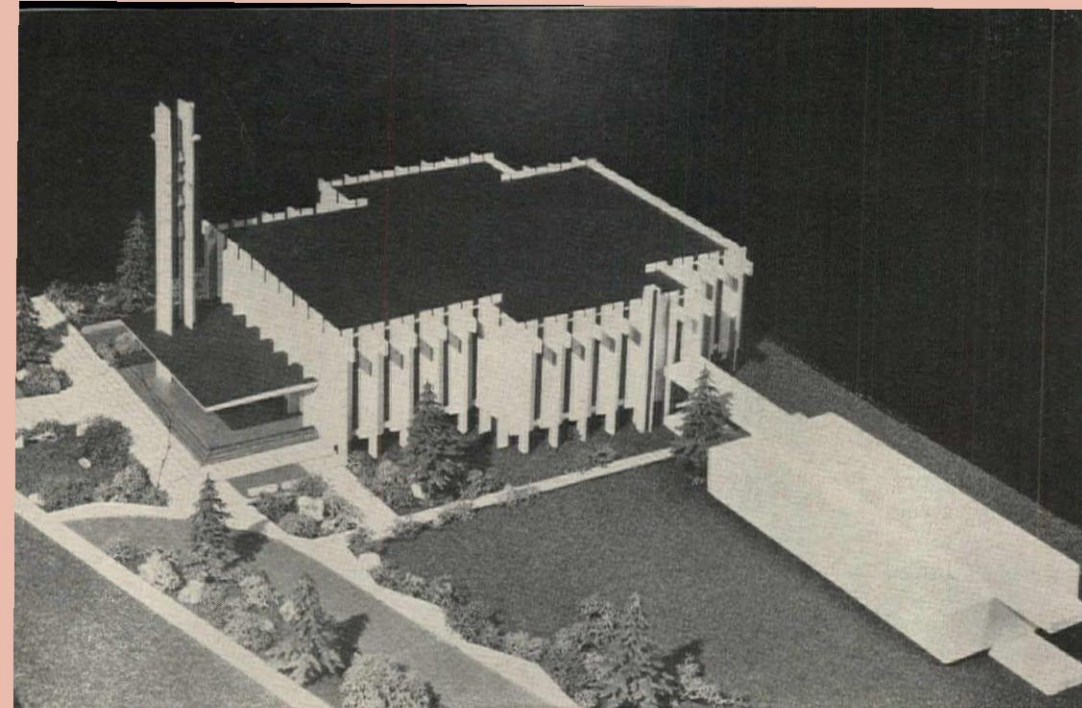
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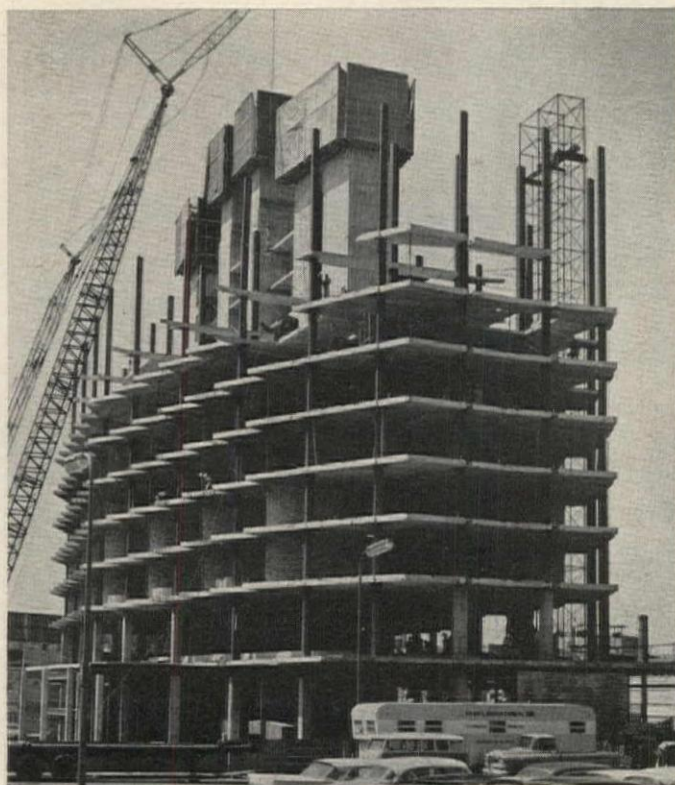


**FIRST PLACE:** St. Richard Church, Côte St.-Luc, Que.; Maurice Robillard, architect. Said the jury: "It is a proper adaptation of the prestressing technique and the design is not made fancy in any respect. Concrete is used in its simplest terms from the ground up, and, as a result, the architect achieved an expression which is nearly Gothic in its verticality—the thin edges of the slabs and details contributing to this expression"

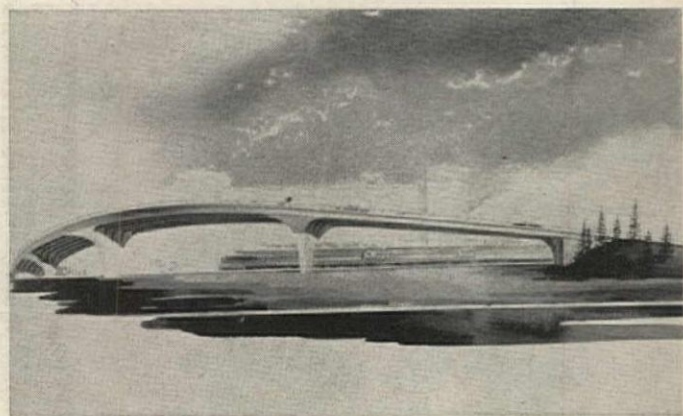
**AWARDS OF MERIT:** The jury commented that "every one of the merit award recipients indicated a very special talent in the structural sense." Besides the structures shown here, an award of merit went to the **Famous Barr Parking Garage**, St. Louis, by Kenneth Balk & Associates, engineers, for its prestressed foundation. Said the jury: "The building used prestressed members for its framework, but the most interesting technique to us was the post-tensioning of the foundation mat. Normally, foundation mats require very large slabs of reinforced concrete. Here again, we wanted to commend the advancement in engineering . . ."



**U.S. Science Pavilion**, 1962 World's Fair, Seattle; Minoru Yamasaki and Associates, and Naramore, Bain, Brady & Johnson, associated architects; Worthington, Skilling, Helle & Jackson, structural engineers. ". . . a very exciting form, climaxed by the free standing interlocking arches . . . a virtuoso performance showing what can be done with concrete—what previously would have been done with wood or steel"



**Capps Tower Motor Hotel**, Minneapolis, for structural system; Ackerburg & Associates, architects; Ross H. Bryan, structural engineer. "Every piece of the floor slab was lifted into place by crane. . . . After the precast material was in place, the slabs were post-tensioned together and covered with 3 inches of concrete fill. Here we have the advantages of the lift-slab idea without resorting to lift-slab techniques . . ."



**Oakland 23rd Avenue Bridge**, Oakland, Calif.; John Carl Warnecke and Associates, architects; Kaiser Engineers, Inc., engineers; T. Y. Lin and Associates, International, structural consultants. "This curvilinear arrangement . . . seems destined to be one of the major advancements in bridge architecture. [It] expresses in excellent fashion the forces accumulated and brought to the ground through the piers . . ."

## NINE BUILDINGS HONORED BY P.C.I.

The Prestressed Concrete Institute has given one first place award and eight awards of merit to structures considered worthy contributions to the advancement of prestressed concrete. Open to any prestressed concrete structure begun before April 1, 1963, P.C.I.'s 1963 Awards Program drew more than 100 entries from the United States and Canada. Factors weighed by the jury in selecting these structures were originality of architectural or engineering design displaying new applications or techniques in the use of prestressed concrete, and, where

the question was relevant, esthetic satisfaction.

Chairman of the jury was architect Harry Weese, F.A.I.A., of Chicago. Other members of the judging committee were engineer Thomas C. Kavanagh, New York; architect John Graham, A.I.A., Seattle; engineer Fred N. Severud, New York; and architect Arthur Quentin Davis, F.A.I.A., New Orleans.

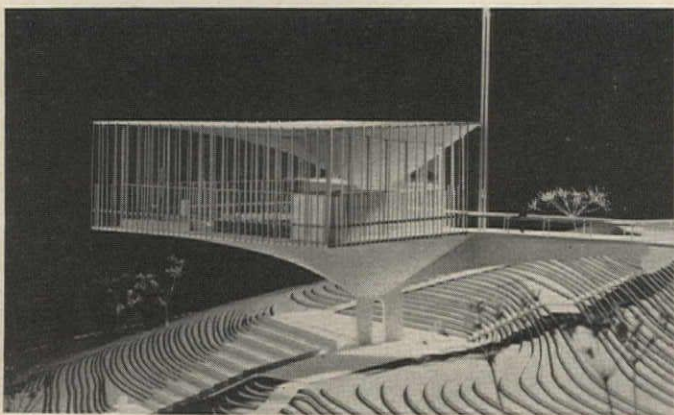
The structures will be the subject of an exhibition to be shown at P.C.I.'s annual convention, which will be held October 6-11 in San Francisco.



Happy Valley Indoor Swimming Pool, Calgary, Alta.; G. R. Beatson & Associates, architects; Haddin, Davis & Brown, structural engineers. "Use of prestressed tees which jump the long axis of the pool give a vaulted feeling in the space. This adaptation of the technique to the form of the building is quite logical. . . . Another feature that is handled very well is the control of direct sun admission . . ."



American Republic Insurance Company Building, Des Moines; Skidmore, Owings & Merrill, architects; Paul Weidlinger and Associates, structural engineers. "We were intrigued with the concept of the precast, prestressed floor structure which spans between the long walls, a matter of 99 feet, and were equally intrigued with the floating effect of the superstructure over a powerful statement of walls at street level . . ."



Church of the Good Shepherd, Seattle; Kirk, Wallace, McKinley, architects; Worthing, Skilling, Helle & Jackson, structural engineers. "This little chapel perched on two concrete supports has a great unity and a very dramatic appearance. It is pleasant to see emphasis given to the nave and sanctuary, with the educational facilities . . . housed in a separate building down the hill . . ."



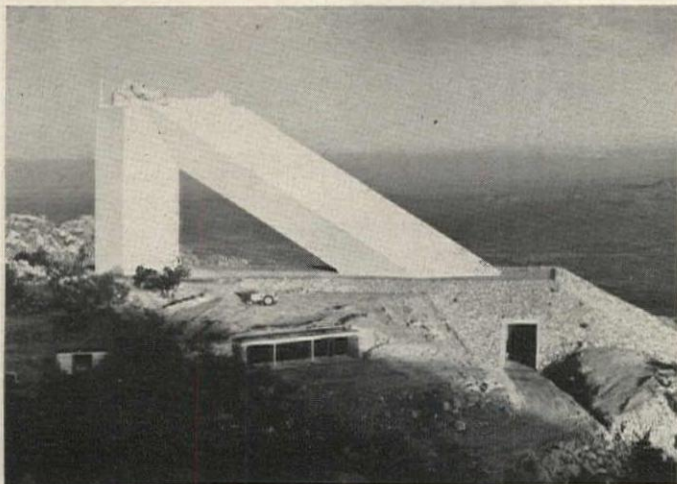
County of Alameda self-parking garage and heliport, Oakland, Calif.; Van Bourg/Nakamura and Ratcliff & Ratcliff, associated architects; H. J. Brunner, structural engineer. "For once we have a garage that tries to make the process of driving through it and parking in it pleasant and lucid for the motorist. . . . It is something like a Roman circus . . . and it highlights the business of parking . . ."

## NINE BUILDINGS RECEIVE A.I.S.C. AWARDS

For the fourth year, the American Institute of Steel Construction has presented its Architectural Awards of Excellence. The purpose of the awards is to recognize architects who have used steel "esthetically in a dimension beyond its use as a basic structural material." The jury, commenting on this year's 74 entries, said that they "clearly demonstrate that where a sculptural design quality is desired, the result can be achieved easily and dramatically with structural steel. The structures we examined demonstrate that standard steel shapes in the hands of a talented designer have unlimited possibilities for interesting and esthetic designs."

Jury members were Harlan E. McClure, F.A.I.A., dean, School of Architecture, Clemson College; Daniel A. Hopper, A.I.A., Irvington, N.J.; Richard Snibbe, A.I.A., New York City; Harold Spitznagel, F.A.I.A., Sioux Falls, S. Dak.; and John B. Skilling, of Worthington, Skilling, Helle & Jackson, Consulting Engineers, Seattle.

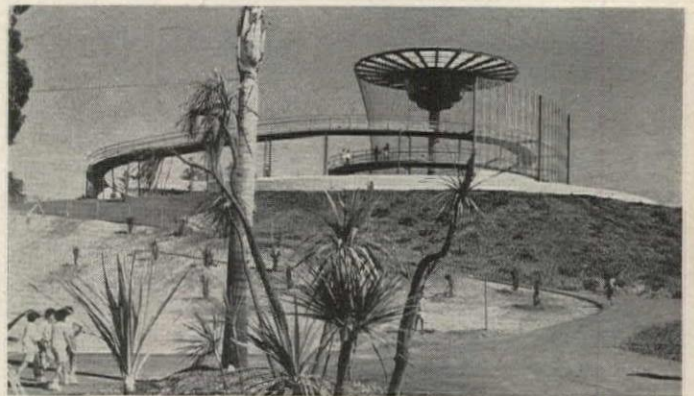
Architects will receive walnut and metal plaques. Owners, structural engineers, general contractors and structural steel fabricators will receive certificates.



**Sixty-Inch Solar Telescope** for the Association of Universities for Research in Astronomy, Inc., Kitt Peak, Ariz.; Skidmore, Owings & Merrill, architects and engineers; Western Knapp Engineering Company, general contractors; Allison Steel Company, steel fabricator. Noting the structure's mechanical complexity, the jury said, "Such a structure indicates the unlimited possibilities for design excellence in the space age"



**Aldrich Recreation Arena**, Ramsey County, Minn.; Haarstick Lundgren and Associates, architects; James Steel Construction Company, general contractors; American Bridge, steel fabricator. The jury called the multi-purpose public facility "an esthetically simple and bold statement. The expression of the trusses in the roof construction is a clear statement of the structural steel"



**Gibbon Cage**, Oakland Zoo, Calif.; Norris M. Gaddis, architect; Haluk Akol, structural engineer; Christenson and Lyons, general contractor; Eandi Metal Works, Inc., steel fabricator. The jury said, "It is an interesting solution to an unusual problem—a creation of a cage without bars permitting maximum freedom to the gibbons as well as a fine view for children and adults alike . . ."

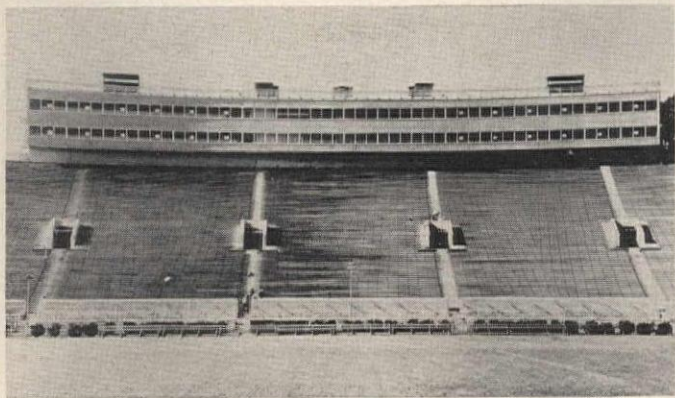


**Benjamin A. Weeks Residence**, Seattle; Nelsen, Sabin & Varey, architects; Gray & Evans, structural engineers; Eberharter & Gaunt, general contractors; Leckenby Structural Steel Company, steel fabricator. The jury commented on "this attractive house that blends its steel frame so harmoniously with the natural surroundings," and mentioned "the very livable plan . . ." (See ARCHITECTURAL RECORD, Mid-May 1963).





Consolidated Marine, Inc., port facilities, San Pedro, Calif.; Kistner, Wright & Wright, architects and engineers; Edward H. Fickett, architect; S. B. Barnes & Associates, structural engineers; Louis C. Dunn, Inc., general contractor; American Bridge Division of the U.S. Steel Corporation, steel fabricator. "... an unusual solution to a problem in which esthetics are unfortunately often neglected." (See pages 163-168)



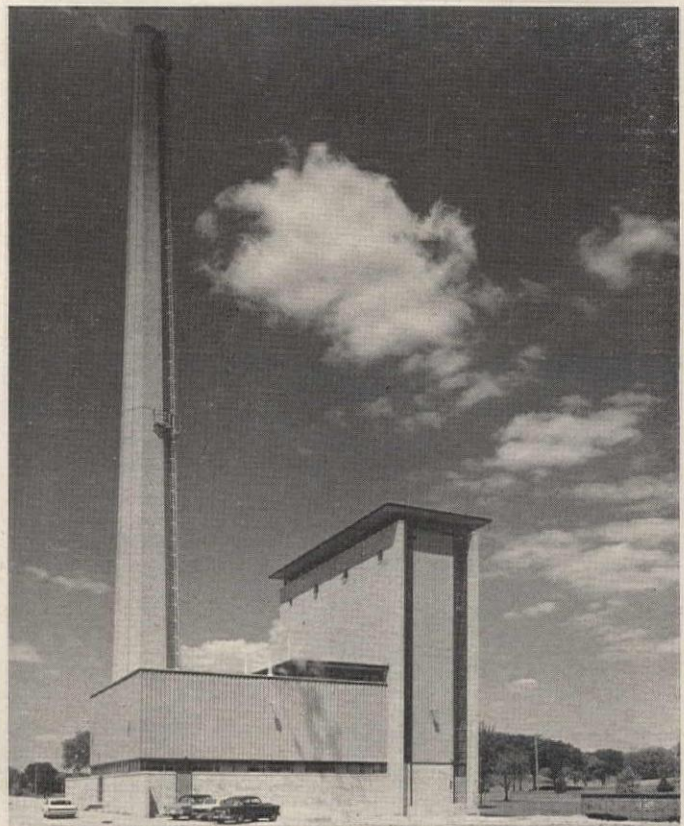
Press Box, Pasadena Rose Bowl, Calif.; Breo Freeman, architect; S. B. Barnes & Associates, structural engineers; Ray Wilson Co., general contractor; Apex Steel Corp., Ltd., steel fabricator. The jury's comment: "... a demonstration of the simplicity of steel construction, and its advantages of light-weight, durability and versatility for adding to existing structures"



American Cyanamid Company Office Headquarters, Wayne Township, N. J.; Vincent G. Kling, architect; Severud-Elstad-Krueger Associates, structural engineers; Frank Briscoe Company, general contractor; Harris Structural Steel Co., steel fabricator. "Careful attention to detail is evident throughout... the sweeping 'S'... breaks up the tremendous length to create an interesting space following the shore line"



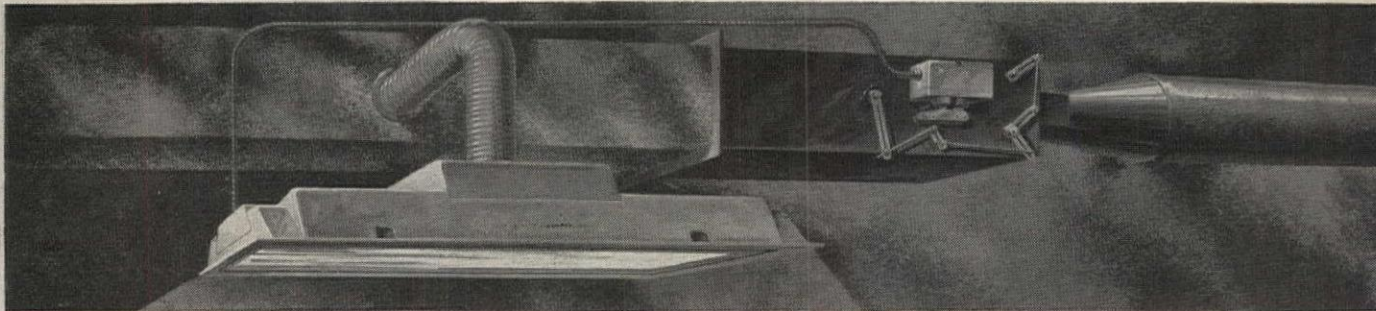
Headquarters for the International Association of the Bridge, Structural and Ornamental Ironworkers Local No. 401, Philadelphia; Hassinger & Schwam, architects; Manuel A. Greenberg, structural engineer; Yellin & Co.-Herman Libros, general contractors; Camden Iron Works, steel fabricators. "... a visual expression of the occupant... the front facade is particularly dramatic, capturing the spirit of the building's purpose"



Heating Plant, Hill Farm State Office Building Complex, Madison, Wis.; Stanley Engineering Company, consulting engineers; J. H. Findroff & Son, Inc., general contractors; Worden-Allen Company, steel fabricator. "This is visually a very strong building... It looks like a heating plant, yet the designers obviously gave careful attention to esthetics not usually associated with such structures"

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The Heat-of-Light system eliminates hot air ducts, reheat coils and piping. It requires less insulation. System design and installation are simplified.

And, for the first time, lighting and air conditioning zones can be controlled simultaneously by wiring zones not in use, so that air conditioning is off when lights are off, thereby assuring maximum economy.

*Result of these benefits: major savings in the cost of air conditioning—savings which can be applied to a building's other architectural or mechanical features of comfort living.*

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Room air is returned through the Day-Brite Clymatron air/light diffuser (1) picking up light-generated heat and depositing it in the ceiling cavity. This hot air is mixed with cold primary air through a Jetronic unit (2). Tempered air is then delivered to the occupied space through the Clymatron. Comfort conditions are constantly monitored and maintained by Dynamic Sensing (3) mounted in the Clymatron.



## APARTMENT BUILDING: REGIONAL TRENDS

Last February, this column stated that "1962 may well be remembered (for a time, at least) as the 'year of the apartment.'" Fortunately, "for a time, at least" was added because it is almost certain that 1962's record performance will be eclipsed when 1963's total apartment construction figure is posted. Through the first six months of this year, apartment building was 20 per cent ahead of last year's comparable period, and, excepting 1961 and 1962, has exceeded every past *full* year's total! February's article suggested some reasons why apartment building has been and is soaring: liberalized depreciation allowances, urban renewal, development of the cooperative apartment and the condominium, population growth and migration from rural to urban areas.

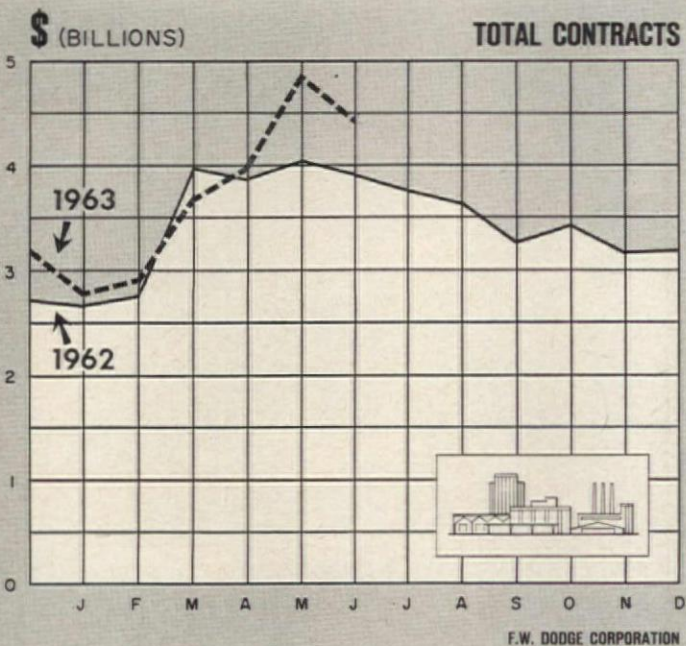
In recent years (1956 through the first half of 1963), the most dramatic aspect of apartment construction has been the concentration of building in a couple of U.S. regions. In any given year during this period, roughly 65 per cent of the nation's apartments were put up in the Middle Atlantic and the Western states. And, within these areas, apartment construction has been further concentrated: Metropolitan New York City has been the pace setter in the Middle Atlantic states, California in the West.

The Middle Atlantic and the Western states have accounted for the bulk of apartment building during the last seven and one-half years; but, each has traced a distinctly different trend during that period. Apartment building in the Middle Atlantic states just about kept up with the trend of total apartment construction—until this year. This region accounted for over 35 per cent of total apartment building in 1956; by 1962, this figure had slipped slightly below 35 per cent. But, so far in 1963, the Middle Atlantic states' share of the total has dropped sharply to 29 per cent. (Undoubtedly, the change in New York City's zoning regulations explains part of this drop.) Apartment building in the West, on the other hand, has been increasing faster than in the country as a whole. In 1956, that region built about 26 per cent of the nation's apartments; in 1962, 31 per cent, and so far this year, over 35 per cent.

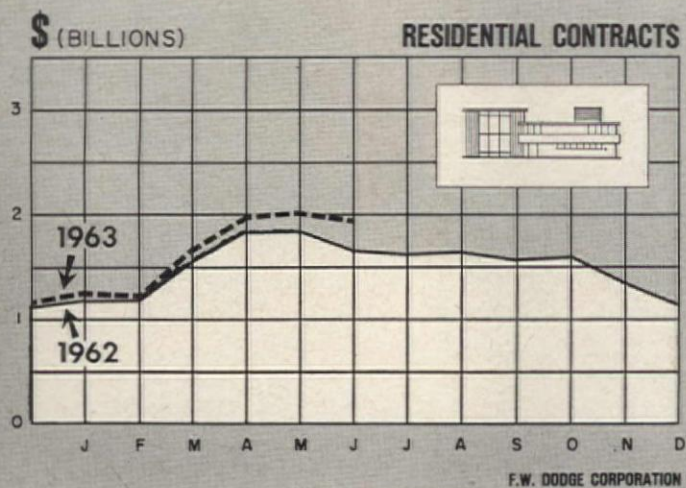
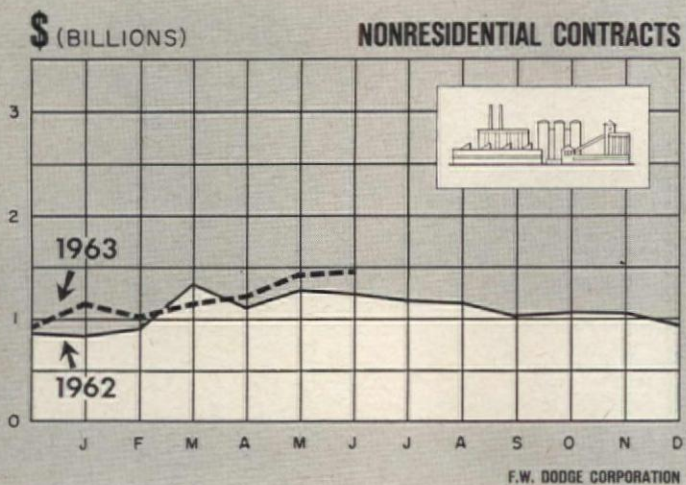
Apartment construction has concentrated in the Middle Atlantic and the Western states because the forces that have boosted demand for apartments, in general, have had a much greater impact on those two areas. Consider, for example, the many facets of population: growth, changing composition and migration among others. Mainly because of migration to the West (particularly to California and Arizona), population in that region has been growing twice as fast as that of any other section of the U.S. But that's not the whole story. The age composition of these people who migrate almost looks like a barbell: a lot of older persons who are planning to retire and many youngsters seeking, in most cases, economic opportunities. And the number of people getting married in the West has increased far more rapidly than in the rest of the country. Newly-weds and retired persons are more likely to live in apartments than in single-family houses.

The population forces at work in the Middle Atlantic states are quite different from those in the West. Population has increased, but at a much slower pace than out West. But, because space in the Middle Atlantic states is in such short supply (particularly in metropolitan New York City), even a slight population rise is almost like the straw on the camel's back. By building apartments, which house many more people per measure of ground, these pressures on space have, to some extent, been modified.

Henry C. F. Arnold, Economist  
F. W. Dodge Corporation  
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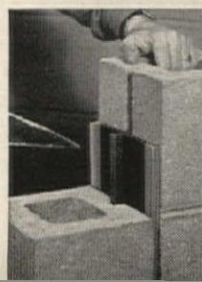
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# Building Construction Costs

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—AUGUST 1963  
1941 Average for each city = 100.0

Metropolitan Area	Cost Differential	Current Dow Index		Per Cent Change Year ago Res. and Nonres.
		Residential	Nonresidential	
<b>U.S. AVERAGE—21 Cities</b>				
	8.5	258.1	274.9	+1.61
Atlanta	7.1	289.8	307.4	+1.87
Baltimore	8.0	261.5	278.2	+0.25
Birmingham	7.4	238.0	255.9	+1.00
Boston	8.4	231.4	245.0	+0.66
Chicago	8.8	286.5	301.4	+2.09
Cincinnati	8.8	249.1	264.8	+0.96
Cleveland	9.3	260.9	277.3	+1.78
Dallas	7.8	247.0	255.1	+2.80
Denver	8.3	262.6	279.1	-0.08
Detroit	8.9	258.6	271.5	+1.05
Kansas City	8.3	233.1	246.7	+1.37
Los Angeles	8.4	262.0	286.6	+1.77
Miami	8.4	257.8	270.6	+2.88
Minneapolis	8.9	259.4	275.8	+1.56
New Orleans	7.9	236.3	250.4	+0.77
New York	10.0	267.9	288.2	+2.51
Philadelphia	8.7	256.4	269.2	+0.30
Pittsburgh	9.1	244.2	259.6	+1.98
St. Louis	8.9	251.5	266.5	+3.05
San Francisco	8.5	327.9	358.8	+2.60
Seattle	8.5	237.3	265.2	+2.25

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

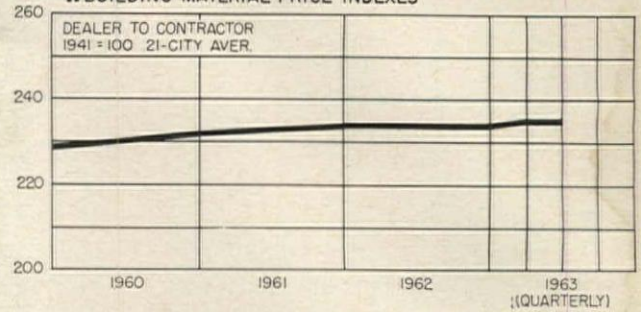
1941 average for each city = 100.0

Metropolitan Area	1947	1952	1957	1958	1959	1960	1961	1962 (Quarterly)				1963 (Quarterly)			
								1st	2nd	3rd	4th	1st	2nd	3rd	4th
<b>U.S. AVERAGE 21 Cities</b>															
	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		
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		
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		
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		
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		
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		
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		
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		
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		
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		
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		
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		
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		
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		
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		
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		
New York	181.0	207.4	240.4	247.6	260.2	265.4	270.8	273.5	273.5	276.7	280.4	280.9	280.9		
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		
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		
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		
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		
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		

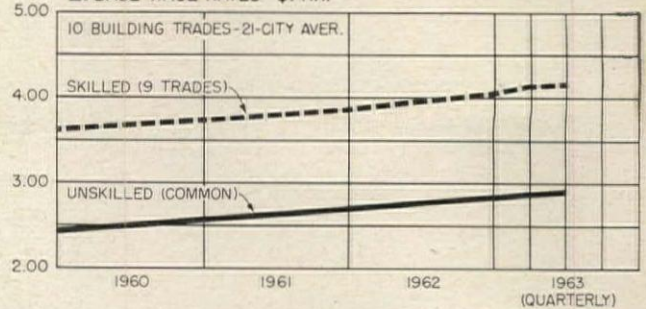
HOW TO USE TABLES AND CHARTS: Building costs may be directly compared to costs in the 1941 base year in tables A and B: an index of 256.3 for a given city for a certain period means that costs in that city for that period are 2.563 times 1941 costs, an increase of 156.3% over 1941 costs.

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

1. BUILDING MATERIAL PRICE INDEXES



2. BASE WAGE RATES \$/HR.



3. MONEY RATE & BOND YIELDS %

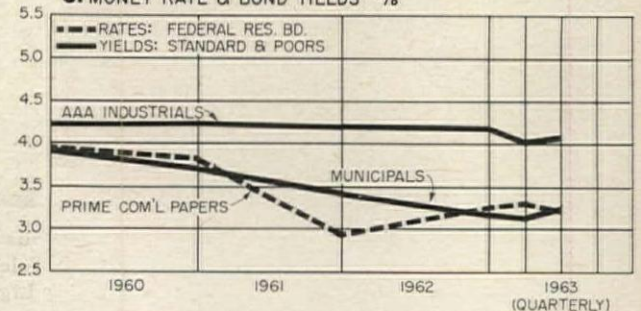
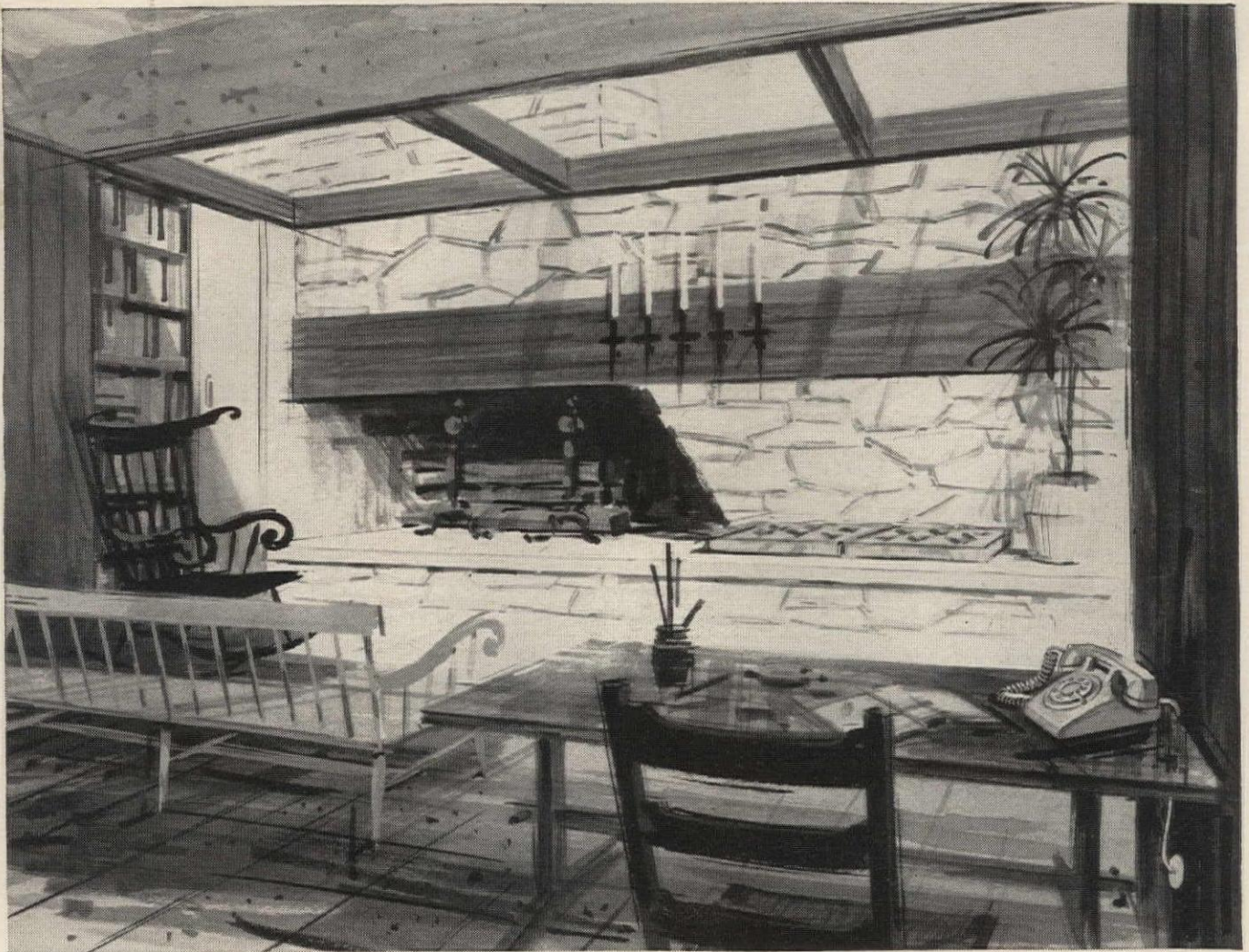


TABLE B. Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other: if index for a city for one period (200.0) divided by index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than those of the other.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



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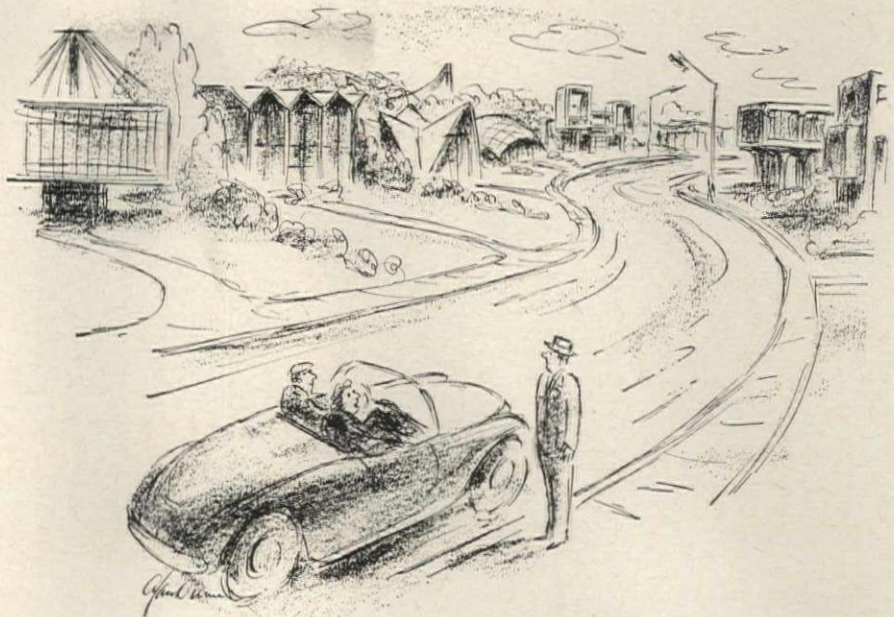
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"I'm sorry—we thought this was the World's Fair—"

## THREE DEPARTMENT HEADS NAMED TO A.I.A. NATIONAL HEADQUARTERS STAFF

Three top appointments to the staff at the national headquarters of the American Institute of Architects in Washington, D.C., have been announced by William H. Scheick, executive director of the Institute.

Benjamin H. Evans, A.I.A., former coordinator of architectural research at Texas A&M College, is head of the reorganized Department of Research. Mr. Evans will work with the A.I.A.'s national Committee on Research for Architecture, and his department will continue to work with other national committees, such as those on special building types, which do research in their special fields.

At present the Institute itself does not plan to perform research projects; instead it will seek to identify sources of support for programs and projects and stimulate work by qualified research organizations. Thus Mr. Evans will work with governmental agencies, the Building Research Institute, the building industry, education institutions and

foundations. He will also direct completion of a census of architectural research activities and facilities.

Mr. Evans has taught at Texas A&M since 1952 and has been coordinator of research there since 1958. He has done research on how architectural shapes affect environmental factors and was instrumental in establishing an architectural model testing laboratory at Texas A&M.

### Institute Relations

New head of the Department of Institute Relations is C. Henri Rush, A.I.A., succeeding Kenneth C. Landry, who was recently appointed director of the Division of Public Services (May 1963, page 10).

To his new job of coordinating the Institute's governmental and legislative affairs, Mr. Rush brings a varied background which includes private architectural practice in Washington, D.C., St. Louis and the Union of South Africa.

From 1956 to 1961 he was an ar-

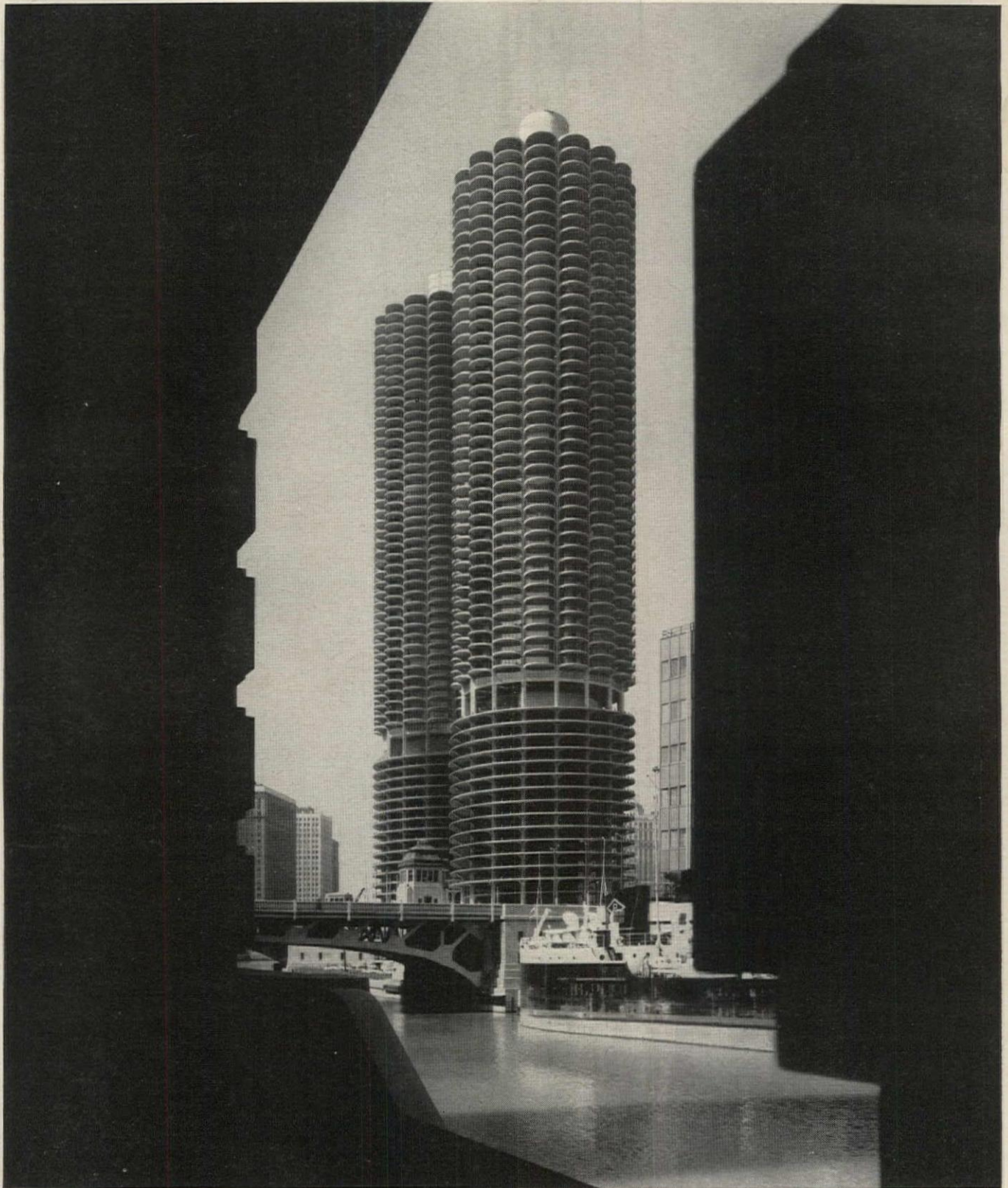
chitect-engineer adviser on U.S. military construction on Taiwan. During the Second World War, Mr. Rush was a chief priority specialist with the War Production Board and a coordinator in the Agencies Coordination Division of the Smaller War Plants Corporation.

### Chapter Affairs

John F. Dawson, A.I.A., new head of the Department of State, Chapter and Student Affairs, succeeds M. Elliott Carroll who is now director of the A.I.A.'s Division of Professional Services (March 1963, page 23).

Mr. Dawson's job will be to coordinate the activities of A.I.A. chapters, student chapters and state organizations throughout the country. Since 1956 he has been on the architectural faculty at the University of Michigan. From 1953 to 1955, he served with the U.S. Army, teaching construction drafting to Army, Air Force and Marine personnel at Fort Belvoir, Virginia.

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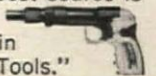
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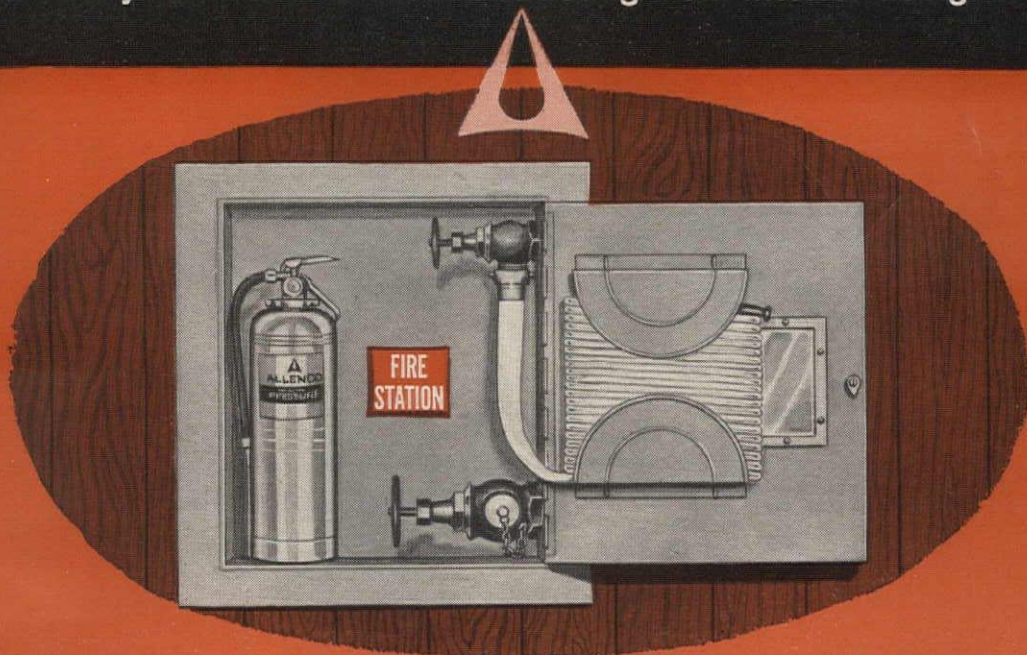
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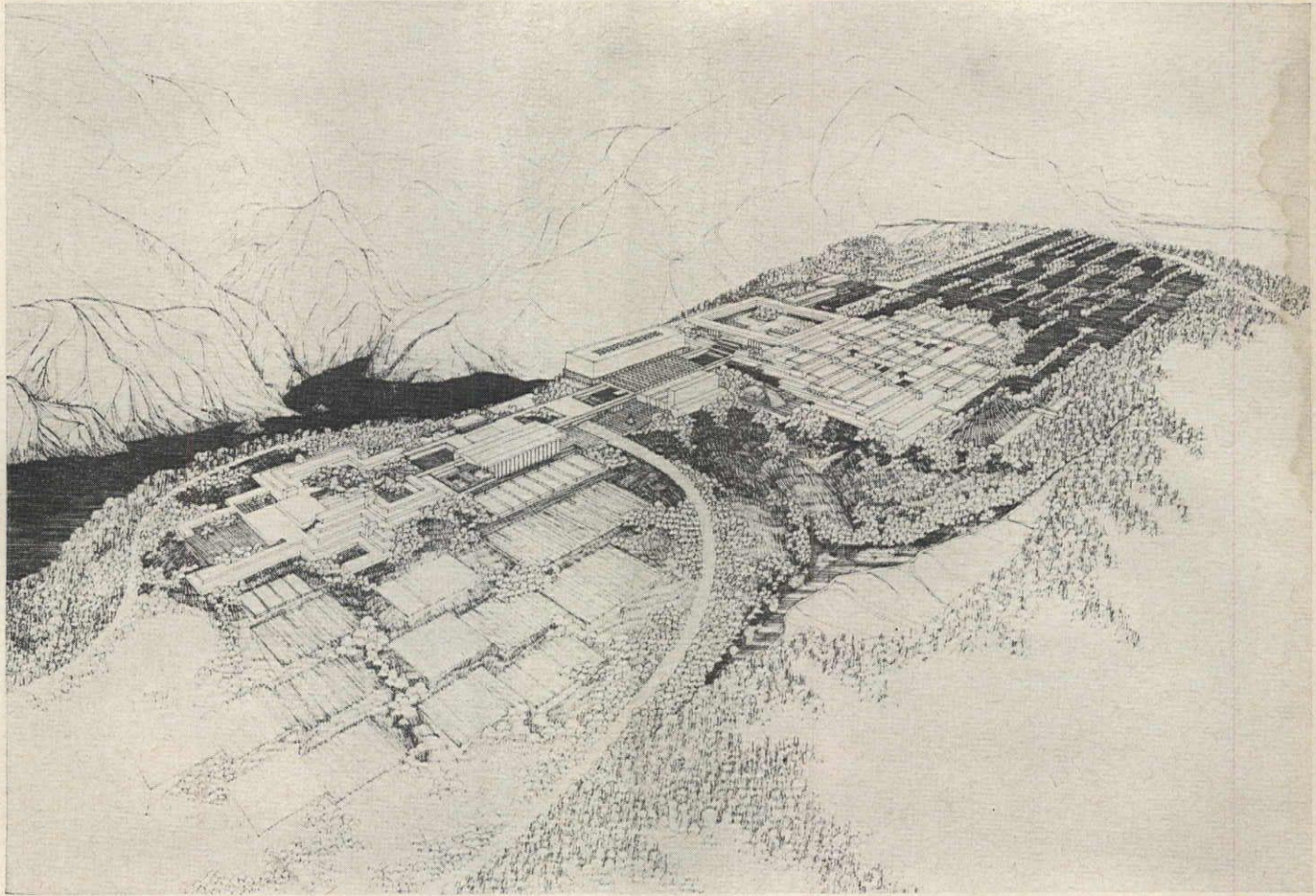
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 (integrates with interiors)

\*fitted to serve the  
 purpose, practical

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## AWARD WINNERS NAMED FOR NEW COLLEGE IN BRITISH COLUMBIA

When a mountain-top was selected as the site for a new four-year college in British Columbia, competition entrants were urged to exploit fully the "panoramic view over mountains and inlets, the Fraser River and the urban development of Greater Vancouver." First prize winners in the Simon Fraser University competition are Arthur Erickson and Geoffrey Massey, whose plan clusters the buildings on the crest of Burnaby Mountain, Burnaby, B.C.

The competition was open to Royal Architectural Institute of Canada members who were registered with the Architectural Institute of British Columbia and residents of that province. The first five awards carried \$5,000 each. Second through fifth prizes were won by Rhone and Iredale, Zoltan Kiss, Robert F. Harrison, and Duncan S. McNab and Associates. Honorable mentions were given to Thompson, Berwick and Pratt, Fred H. Hollingsworth and Barry Downs, Vladimir Plavsic, Alexander M. Webber, and John Lloyd Kidd.

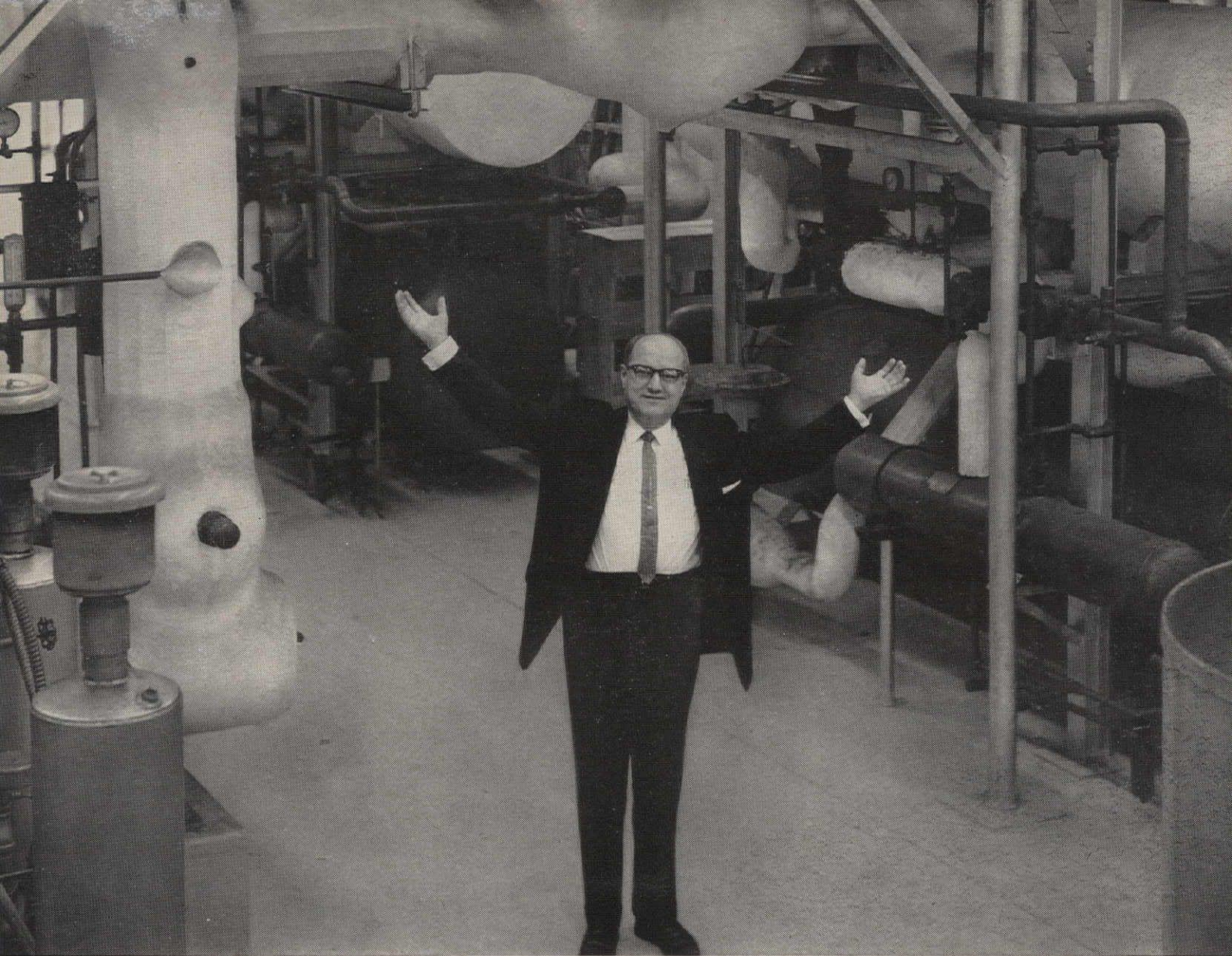
The design program called for planning for an initial 7,000 students, with final expansion for 18,000 students. Requirements were to show the "form and architectural character" of eight buildings.

"Assessors" were Henry Elder, F.R.I.B.A., director of the University of British Columbia School of Architecture; Aaron G. Green, A.I.A.; Dr. Thomas Howarth, Chair of Architecture, University of Toronto; David A. McKinlay Jr., A.I.A.; and E. Stewart Williams, A.I.A. Professional adviser was Warnett Kennedy, executive director of the Architectural Institute of British Columbia.



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Geoffrey Massey (left) and Arthur Erickson (right), both of Vancouver, with their prize-winning design for Simon Fraser University, Burnaby, British Columbia, Canada



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"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."

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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.

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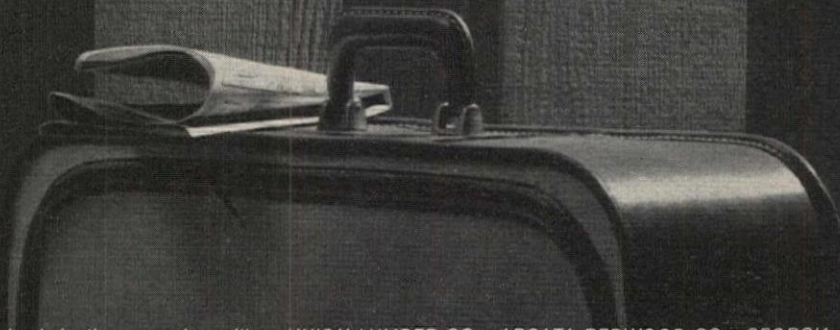
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## EXPANSION AND REMODELING PLANS FOR MUSEUM OF MODERN ART

Remodeling of the main building and two additions to the Museum of Modern Art in New York City are scheduled for completion in May 1964. Philip Johnson Associates are architects. Robert Zion and Harold Breen are landscape consultants. The new east addition (on right in top rendering) will have three gallery floors, two office floors and one floor for conference rooms and receptions. The garden wing, being constructed at the eastern end of the sculpture garden in back of the east addition, will contain classrooms and a large exhibition hall. A roof garden will connect with the sculpture garden by means of open-air stairs. The two new wings will be connected by a corridor; the garden wing will also have its own entrance on West 54th Street.

A new lobby on West 53rd Street will offer enlarged accommodations and will provide direct access to new, ground-floor galleries for changing exhibitions.

The second phase of the building program, incorporating the Museum's structures west of the main building and the Whitney Museum of American Art, will be started after the first phase is completed. The facade of the west addition is on the left in top rendering.

The galleries opening next spring will almost double exhibition space and will provide greatly increased facilities for library, archives and research. The expansion, the Museum's sixth since its inception in 1929, is made possible by a fund-raising drive for 25 million dollars. Seven million dollars is allotted for construction.



Expanded facade with east wing to be finished in 1964 at right with west wing at left to be started later



View from the sculpture garden with new east wing at right and new garden wing with roof garden at rear



Western Pennsylvania State School & Hospital; Cannonsburg, Pa.  
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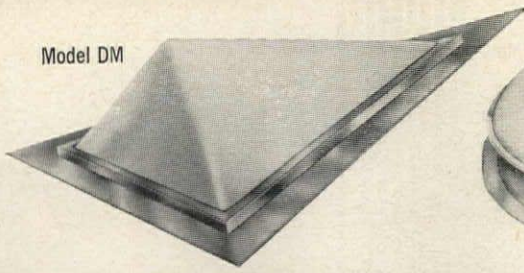
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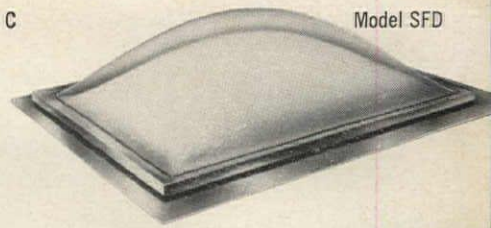
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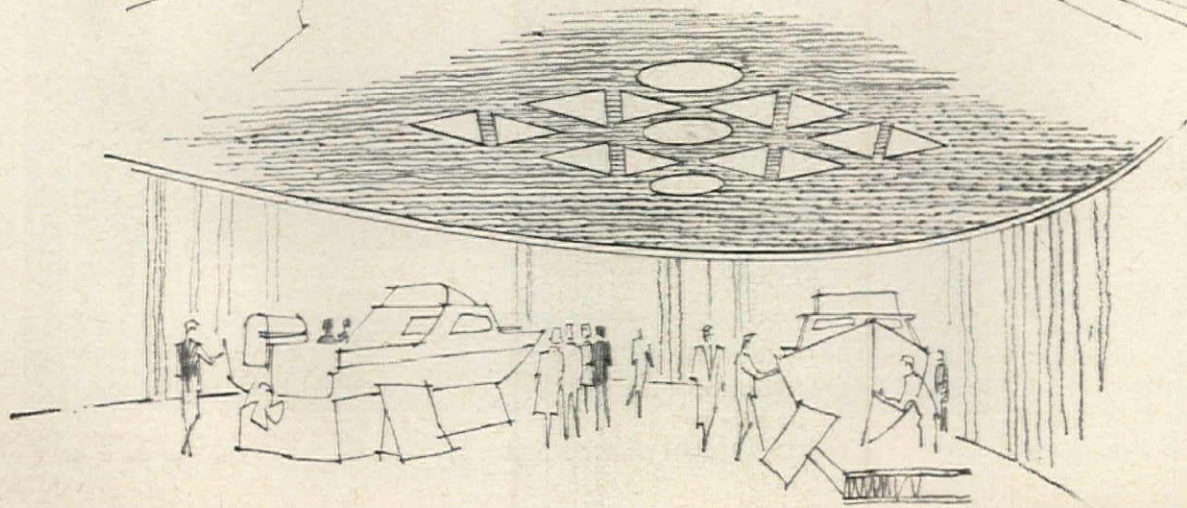
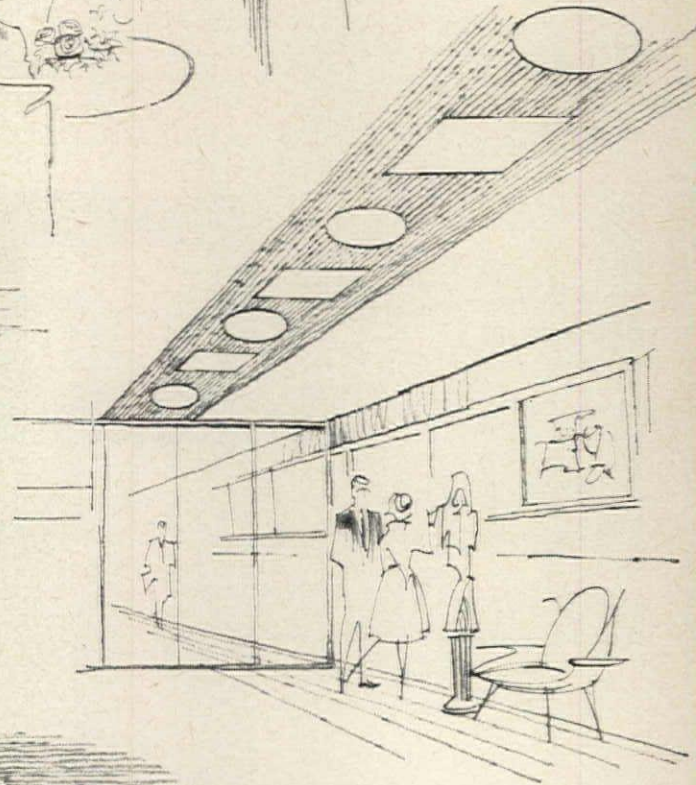
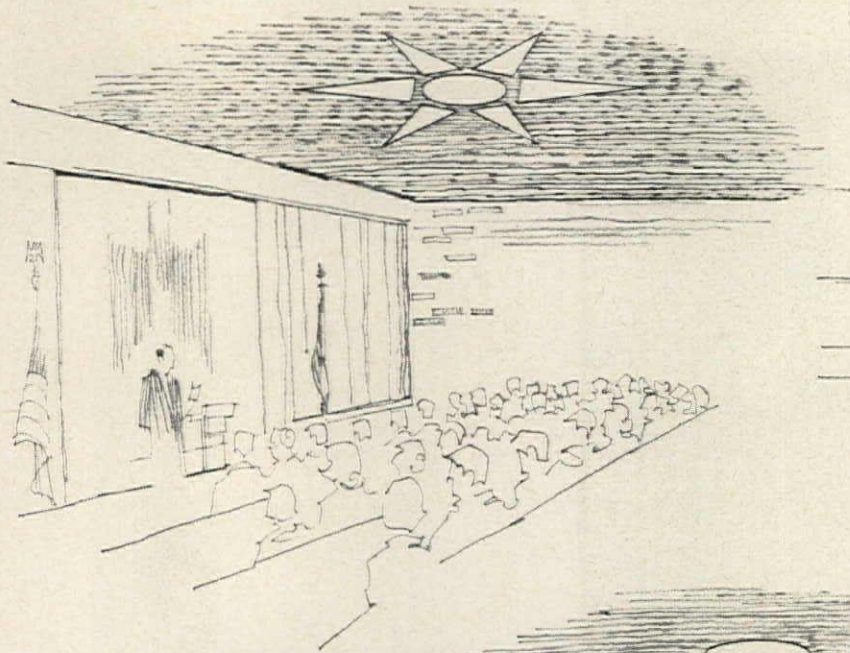
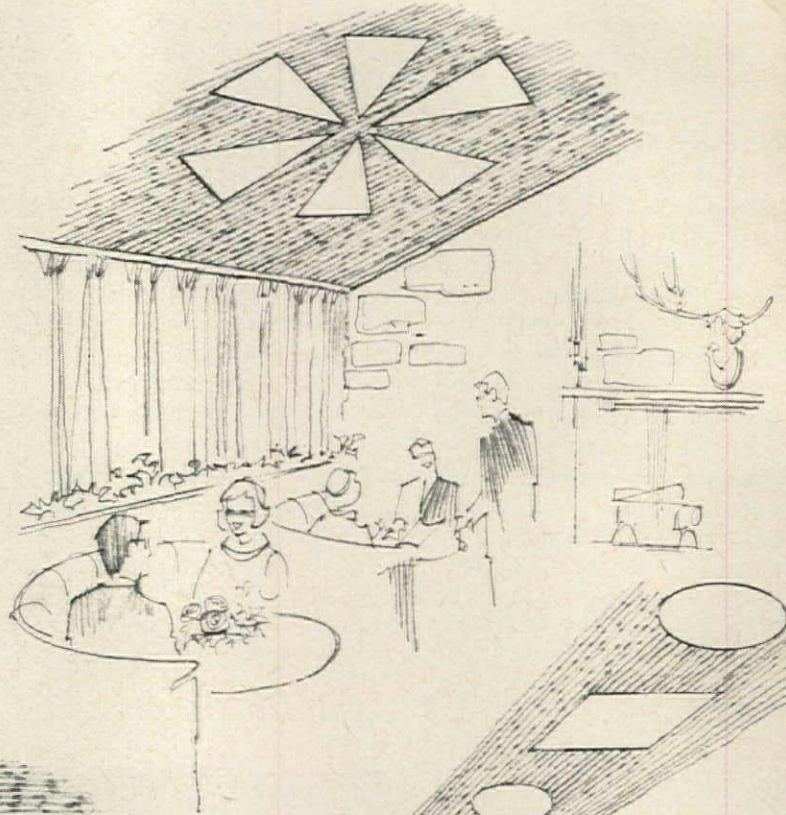
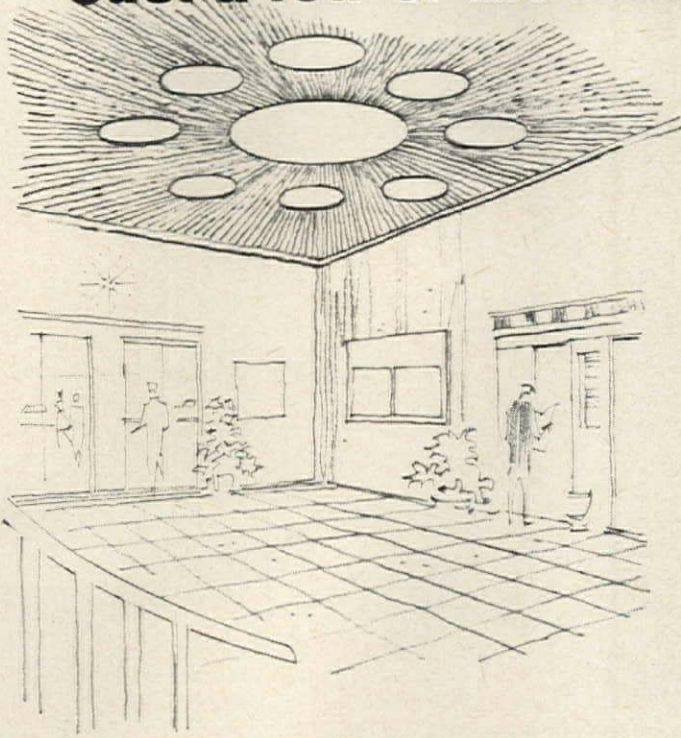
Model C



Model SFD



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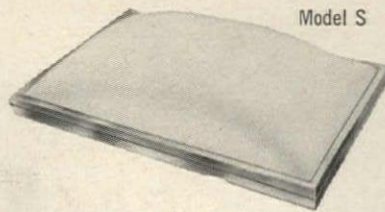
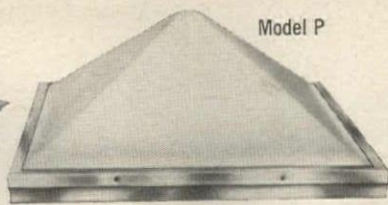
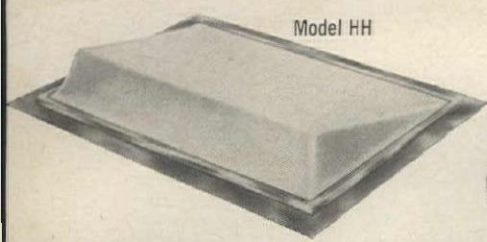




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For complete specifications, see Sweet's Architectural File 20a/Am or Industrial Construction File 15c/Am, or write Cyanamid for data sheets.  
Building Products Division, American Cyanamid Company, 5 Bay State Rd., Cambridge 38, Mass.

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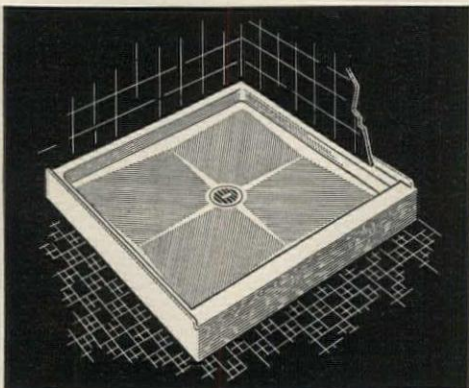
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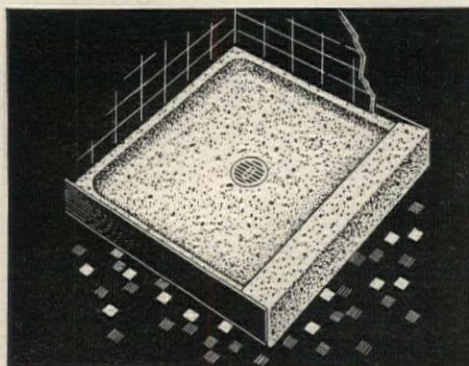


## PRODUCT CASCADE FLOOR

New, exclusive Molded-Stone process gives this shower floor even greater economical advantages than those that made Pre-Cast Terrazzo floors such a specification favorite. The **Cascade** is 80% lighter, yet retains the permanence of natural stone. Precision molding produces perfect uniformity; unique floor pattern provides a safe, non-slip surface. Write for descriptive literature.

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Ease of handling and exceptional weight saving make this floor ideal for many applications. Can be carried and installed by one man. Drain is factory-attached and tested to be leakproof. Molded with tiling-in flange, the **Cascade** has reinforcing ribs to eliminate the need for special structural support. Available in all popular sizes. See Sweet's Light Construction File 12c/Fi.

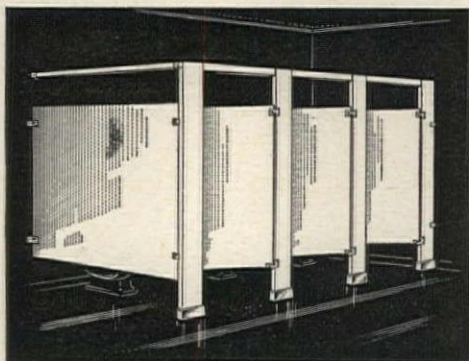


## PRODUCT MONTEREY FLOOR

This PreCast Terrazzo shower floor with integral threshold is permanently leakproof. With **Monterey** no sub-pan or double drain is required, high tiling in flange is cast integral as is the brass drain body. Plumber does entire job fast because there is nothing else to assemble or adjust—no way for it to leak. Stock sizes: 32" x 32"; 36" x 36"; 40" x 40"; 48" x 32".

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Here is the easy, serviceable base for any shower stall . . . use it with ceramic tile or plastic tile, plastic sheet or plaster. Comes in four rectangular sizes and two corner models, three room corner models, and two neo-corner models. Wide, integral threshold is ideal for attachment of glass panels. Fiat offers a variety of other shower floors to meet any need in homes or institutions.



## PRODUCT TOILET ENCLOSURE

Duro headrail-braced model shown is the most simple and hence the least expensive toilet enclosure to install. It was deliberately designed to meet popular concepts of clean, modern design and yet was engineered to economize on details that do not detract from its appearance, nor lessen its performance or long-life.

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The Duro model is ideal for replacement, remodeling projects as well as new construction. No special reinforcement of floor, wall or ceiling required. Ceiling-hung and floor-braced models are also available with the "years-ahead" features that have earned a reputation for durability, low maintenance and easy installation.

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See Sweet's  $\frac{22B}{Fi}$  and  $\frac{26C}{Fi}$  or write nearest Fiat office for literature.



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# DESIGN IDEAS 1963

*On the following five pages you'll see specific examples of how Koppers building products have helped architects and engineers obtain greater latitude of design and save money for clients. These Koppers products are either permanent in themselves or they give permanence to other materials.*



## *Laminated wood arch spans 308 feet at Eastern Kentucky State College*

This is not the *first* building to be made like this—just the biggest. The main diagonal span is 308'-3½" and rises 78' above the floor of the new \$17 per square foot Alumni Coliseum in Richmond, Ky. This \$3 million combination athletic-physical education plant includes a swimming pool wing.

The architect selected laminated wood for the sports arena because he considered it the most practical material to achieve a graceful appearance and provide the necessary strength in a span this size. He didn't want steel trusses because the Kentucky Department of Insurance would have required fire protection for the steel, and then an additional ceiling or covering would have to be installed for appearance.

The laminated Southern Pine arches, beams, and purlins that form the cross-vault dome were fabricated and erected by UNIT STRUCTURES, a department of Koppers. The three-hinge main diagonal arches are 18" wide, 78" deep where they're pin

hinged to the buttresses, 85" deep at their maximum, and tapered to 39" at the crown pin hinge. Each arch segment is spliced between the buttress and crown. The 26 intersecting arches are bolted to the main diagonals and pin hinged at their crowns.

Five 107' arches form a barrel vault structure over the swimming pool wing adjoining the main building. Because of the high humidity, these five arches were built with WOLMANIZED® pressure-treated lumber for permanent resistance to rot and decay, and laminated with waterproof adhesive.

The roof deck, covering the entire building, consists of 357,900 board feet of double tongue and groove 4" x 6" Southern Pine UNIT DECK®. Every piece of decking was spiked to the arches to create a diaphragm action with the framework. This deck construction preserves a neat, attractive ceiling because the lateral stability provided by the deck eliminates bracing between purlins and arches. Check the coupon for more information.

Architect: Hartstern, Louis and Henry; Louisville, Kentucky Consulting Structural Engineer: Ross Bryan; Nashville, Tennessee  
Consulting Mechanical Engineer: E. R. Ronald & Associates; Louisville, Kentucky



## New insulated structural wall and roof panels saved 30 days, gave owner \$15,000 more business

Five men erected the walls and roof of this 116,000-cubic-foot freezer warehouse in only five days. It was built with factory-made DYLITE® Refrigeration Panels for the Columbus, Ohio, branch of S. M. Flickinger, Inc. Because the panels are load bearing, they form the structural wall and roof deck of the building. They completely eliminate perimeter steel framing.

The warehouse is 88' long, 68' wide, and 20' high. The builder estimates that the DYLITE panel construction saved 30 days compared to conventional freezer warehouse construction. The owner estimates that 30 extra days' use of the build-

ing means an additional \$15,000 worth of business.

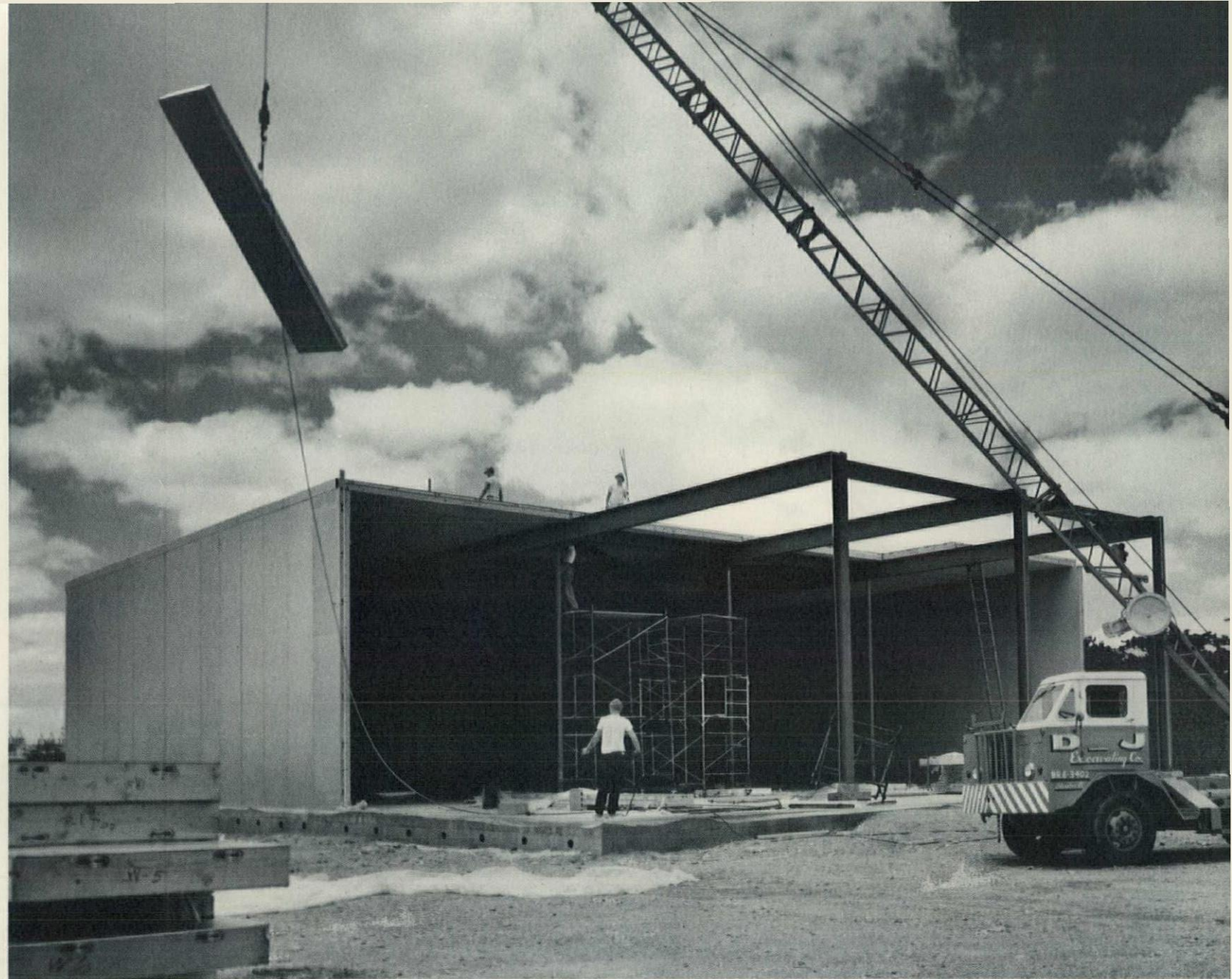
The panels are sandwich type. The interior facing is plywood; the exterior is plywood with an embossed .015" aluminum sheet that provides a vapor barrier with a zero perm rating. The panel core is molded in place, in the factory, of DYLITE expanded polystyrene. This rigid foam plastic has a very low water absorption rate because of its closed cell structure. It has a "K" factor of 0.24 which gives the 8" thick panel a "U" factor of 0.030. All panels are 4' wide. Wall panels rise 20'; roof panels span 16' 6" and 17' 6". An easily operated mechanical locking device joins the panels vertically and also locks the roof panels to the tops of the wall panels.

The use of DYLITE Refrigeration Panels in this cold storage warehouse clearly illustrates the speed with which these factory-finished panels can be erected. In addition, construction costs are more fixed, and less affected by weather, than with standard built-up construction. Because DYLITE panels are made and inspected in the factory under rigid specifications, they are uniform, and high in quality. And DYLITE is a superior insulator that absorbs little moisture, remains rigid and in place, won't rot or decay.

Koppers produces both load bearing and non-load bearing DYLITE panels for refrigeration and many other environmental control applications. Check the coupon for complete information.



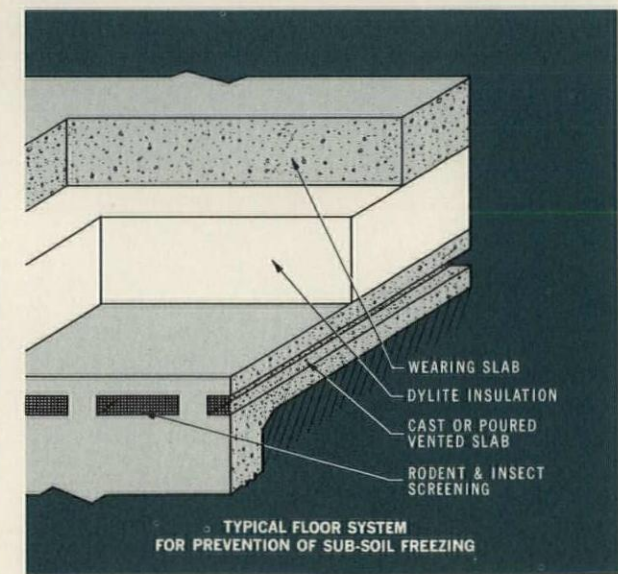
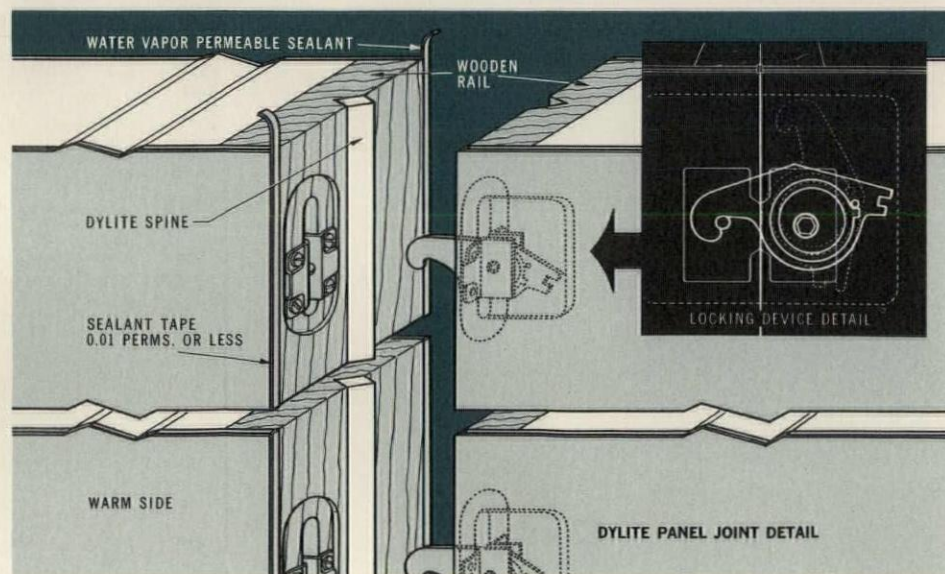
DYLITE panels are exceptionally strong, but light; easy to handle and assemble.



Architect: Smith, Buchanan & Smith; Youngstown, Ohio  
Engineer and General Contractor: Davis Construction Co., Inc.; Youngstown, Ohio

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4"		18	24
5"		2	7
6"		-15	-10
8"		-48	-43
EXTERIOR APPLICATIONS —°F			
3"		40	42
4"		23	26
5"		6	9
6"		-10	-8
8"		-44	-41

\*Minimum operating temperature based on a maximum heat gain of 4 BTU/Hour/sq.ft./°F. temp. diff. at a 90°F. outside ambient temp.

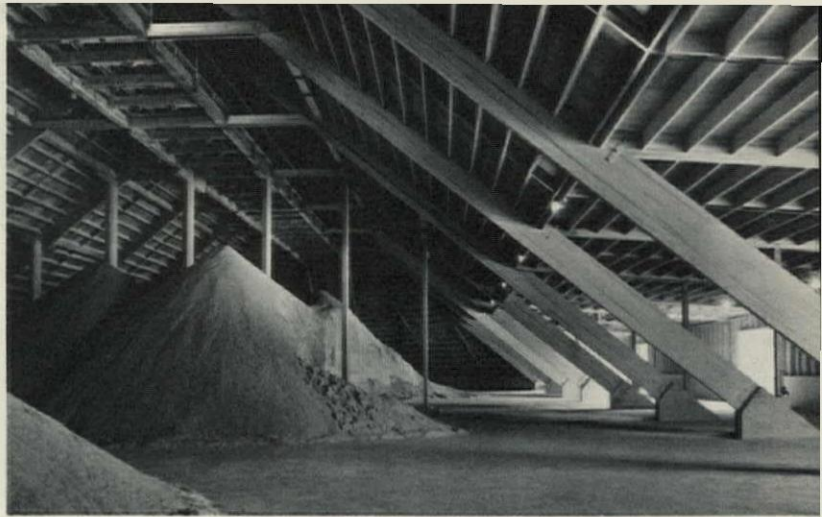


## *This warehouse is wood, but it has a noncombustible insurance rating*

Bulk fertilizer is highly corrosive to steel. Smith-Douglass Company, Inc., eliminated this problem by using wood for their new 10,000-ton capacity bulk fertilizer warehouse in Danville, Va. But fire regulations for this type of wood building require a complex sprinkler system which is hard to maintain because of the corrosion. The problem was solved when insurance underwriters verified that NON-COM® fire-protected lumber would earn a noncombustible insurance rating and would not require the sprinkler system.

NON-COM lumber was used for the 2" x 10" roof joists and structural members holding the conveyor belt that runs the length of the building; NON-COM plywood was used for the roof deck. The glued laminated members and solid heavy timbers did not require treatment.

In the NON-COM treating process, wood is pressure-impregnated with chemicals that provide per-



manent fire protection. If NON-COM lumber is exposed to temperatures approaching the ignition point of wood, the chemicals produce carbon and water vapor to choke off flame and prevent fire spread. The same chemicals protect the wood permanently from rot, termites and decay.

Fire insurance codes accept NON-COM lumber as full alternate for noncombustible materials in many applications. For more information from Koppers about NON-COM wood, check the coupon.

---

## *Coal tar coatings prevent corrosion of steel tanks and pipes in underground Minuteman missile sites*

All of the steel piping and the hundreds of steel tanks—for fuel, water and sewage—buried deep under ground at the Air Force Minuteman missile sites near Minot, N. D., are protected from corrosion with coal tar coatings.

Koppers contract coatings department field-coated the exteriors of the large-diameter pipes and the tanks, which varied from 4' to 8' in diameter. The steel was sandblasted before the coating began. BITUMASTIC® Jet Set Primer was applied first, then a double coat of BITUMASTIC 70-B Enamel, and a double wrapping of 15-pound tar-saturated asbestos felt. The interiors of the large-diameter pipe (22" to 48"), used for manways and air circulation, were sandblasted, then spray-coated with three coats of cold-applied, self-priming BITUMASTIC Tank Solution.

Coal tar coatings were specified for permanent corrosion protection in these vital installations because unlike other coating materials, the molecular structure of coal tar doesn't deteriorate in the presence of water. The coating remains intact; a tough continuous membrane prevents moisture from reaching the steel. Koppers supplies a complete line of coal tar coatings, and contract coating service, for corrosion protection of steel and concrete below ground, under water, or in highly corrosive atmospheres. Check the coupon.



Architect-Engineers: The Ralph M. Parsons Co.; Los Angeles, Calif.  
Staven Engineering Company, Associates

TURN PAGE →



Problems ... and low-cost solutions



	BITUMASTIC® COATINGS	COAL TAR ROOFING PITCH	DURETHENE® POLY-ETHYLENE FILM	COAL TAR WATER-PROOFING PITCH	PAYMENT SEALERS	PRESSURE CREOSOTED WOOD	NON-COM® WOOD	WOLMANIZED® LUMBER	DYLITE® FOAM PLASTIC BOARD	DYLITE® SANDWICH PANELS	AIRCOURSTAT® SOUND TRAPS	SOUND-RETARDING SILENTWALL*	PENACOLITE® ADHESIVES	LAMINATED ARCHES, BEAMS, DECKING
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CORROSION PROTECTION FOR STEEL & PILING	X													
CORROSION PROTECTION—CONCRETE & MASONRY	X		X											
PROTECTION OF ASPHALT PAVEMENT					X									
INSULATION									X	X				
LOW-COST PILING, POLES & STRUCTURES						X								
FIRE PROTECTION FOR WOOD							X							
TERMITE, ROT & DECAY PROTECTION					X	X	X							
SOUNDPROOFING										X	X			
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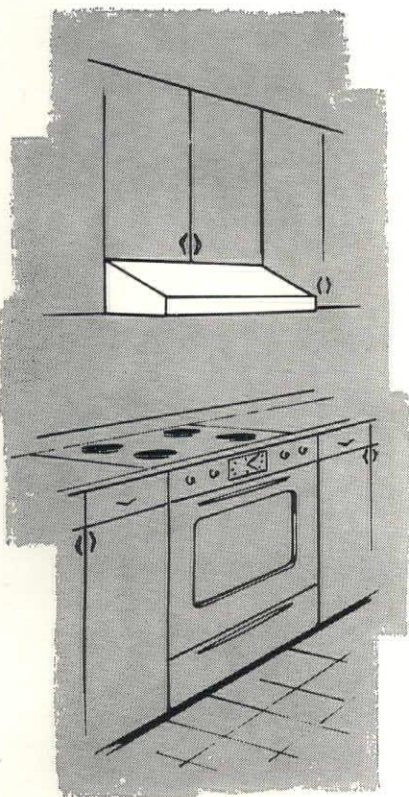
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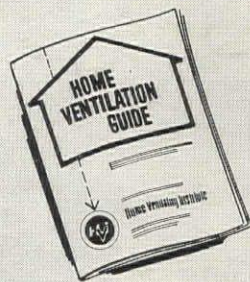


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You'll see it on 2 out of 3 range hoods and exhaust fans. It certifies rating accuracy as tested independently at Texas A. & M. College and assures that units have been designed to meet FHA requirements.



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12-page booklet keys CFM ratings of fans to room sizes. It also includes HVI recommendations on number of air changes per hour, location of fans and hoods, selection of accessories and installation of ducts.

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### MAIL FOR GUIDE



Home Ventilating Institute, Dept. P,  
1108 Standard Building, Cleveland 13, Ohio

Please send free copy of your "Home Ventilating Guide" and full information on the HVI testing program.

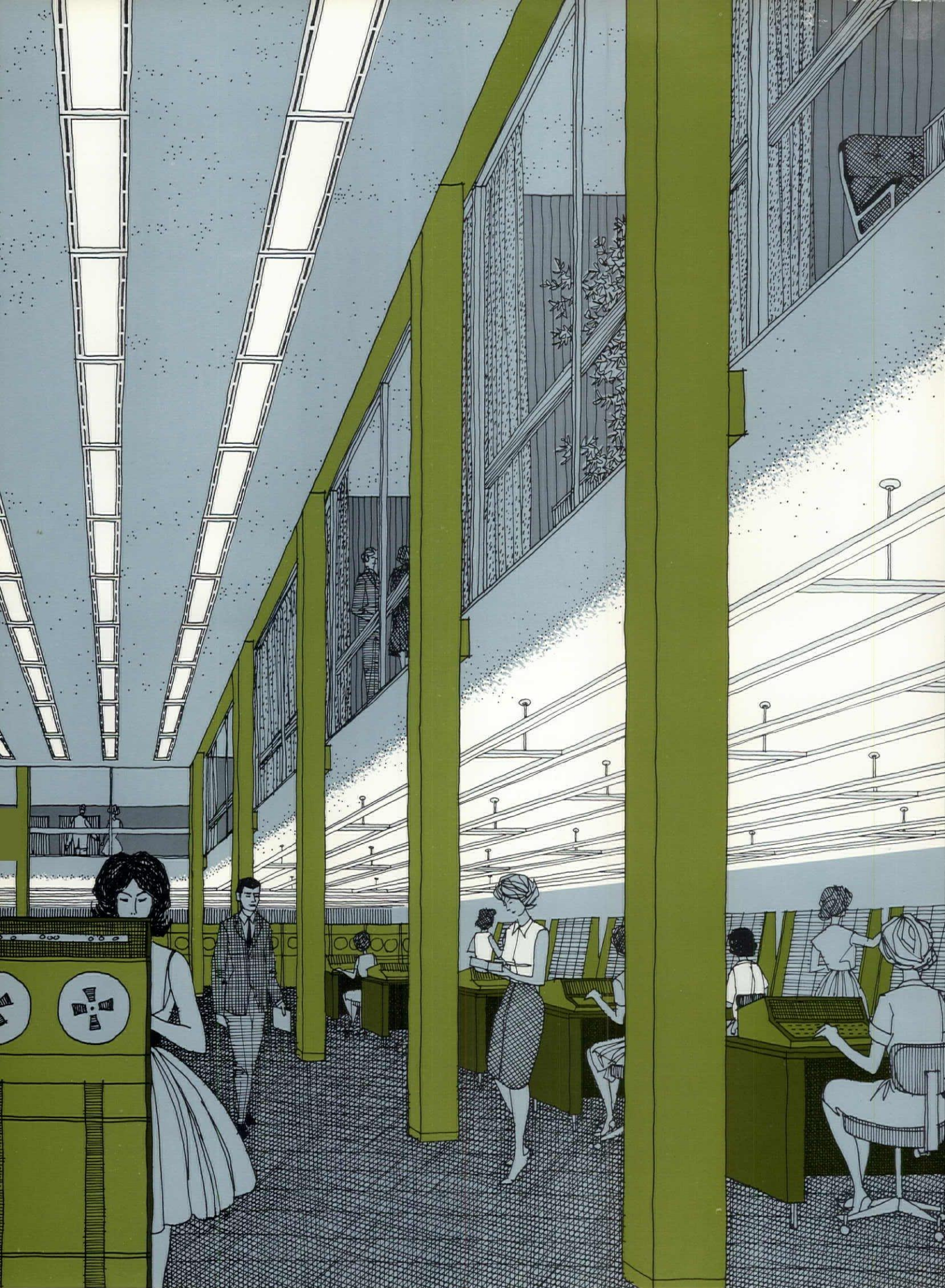
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Data Processing Center. Drawing by Angelikis & Bailly, A.I.A.



Sunbeam Lighting takes a careful look at a modern data processing center; and presents its thoughts on how to match electronic efficiency with human effectiveness.

## COMPUTED: LIGHT AND AIR DIFFUSION FOR HUMAN EFFICIENCY

Modern computing equipment has replaced many types of tedious human tasks in business and industry; and has the advantage of executing these tasks much more swiftly and precisely...and almost independent of environmental requirements. The new electronic brains can presumably do their work in the dark; but their output is no better than the "input" supplied to them by people. And when human effort is coupled with the speed of electronic data processing, the need for working efficiency becomes critical. In a very real sense, therefore, the environment of a modern data processing center is a vital ingredient in the quality and timeliness of its product.

In planning for good working conditions in the contemporary data processing installation shown at left, the designer has, first of all, availed himself of a product that combines two important environmental functions: light and air diffusion. Sunbeam Lighting has implemented the air-light troffer concept with a fixture called VISIONAIRE-5: a fixture that combines top lighting performance and flexible accommodation of air diffusion equipment. Unlike other "integrated"

products of this type, VISIONAIRE-5 is designed to work with a broad range of diffusers from different manufacturers. The specifier is left free to take his choice.

The area immediately below the mezzanine poses a special lighting problem. Here the activities of data and programming constitute very demanding seeing tasks. Illumination must be of high intensity, but with minimum glare and "overhead" contrasts. The answer is Sunbeam Lighting's SIGHTLINE: a totally indirect lighting system devised especially for critical visual tasks. Plastic diffusers, metal parts, and the white ceiling all blend together, making SIGHTLINE almost invisible; yet the workers benefit from a light without shadows that allows them to see every minute detail.

In the demanding effort to create the optimum visual environment, our contribution is the broadest possible range of good lighting products. To inspire new application ideas for these products, we offer an exciting brochure that depicts their use in contemporary architectural settings. May we send you a copy?

# Sunbeam Lighting Company

777 EAST 14TH PLACE, LOS ANGELES, CALIFORNIA / GARY, INDIANA / LIGHTING PRODUCTS THAT CONTRIBUTE TO IMAGINATIVE ARCHITECTURE



**SIGHTLINE (patented):** This nearly invisible lighting system is engineered to produce high intensity illumination with minimum "overhead" contrasts. Applications include school rooms, engineering and drafting areas, precision components assembly, etc. No glare, either direct or reflected. High efficiency is combined with extremely low brightness. For higher intensity applications, units are available for 1500 m.a. operation. Send for data.



**VISIONAIRE-5 AIR/LIGHT FIXTURES** were designed for compatibility with a broad range of leading air diffusers. Each fixture can be used for supply air — return air — or both. Will fit all major types of ceiling construction. Air and light are completely separated. 1' x 4' and 2' x 4' units available with broad selection of light control media. Send for complete literature.



Steel for Strength

# STRUCTURAL DESIGN NEWS

FROM BETHLEHEM STEEL

NO. 4

## HIGH-STRENGTH STEELS ARE IN THE NEWS ...

All across the country, architects and their associated structural engineers are using high-strength steels to achieve dramatic designs — economically. They're using ASTM A440 and A441 shapes and plates in combination with the latest AISC Specification. But the biggest news of all is the way designers have hopped aboard the V steel bandwagon. Bethlehem's V Steels, with yield points ranging from 45,000 through 65,000 psi, deliver more strength for fewer dollars than any other steels on the market.

Here are some outstanding examples:

**PORTLAND, OREGON** — Pacific Northwest Bell Telephone Company's new 200-ft-square office building is three stories high, but it will ultimately "grow" to eight. Its slender columns are of high-strength steel, so they can be uniform in section; all beams and girders are of high-strength, welded-plate construction to span the large bays (24 by 36 and 28 by 36) with minimum ceiling-to-floor depth; most have reinforced cut-outs to accommodate ductwork. High-strength steel reduced total height, increased span lengths, and resulted in confirmed dollar savings over carbon steel.

**BETHESDA, MARYLAND** — The crisp, 5-story Phillips Office Building has a welded steel frame that cost less than \$1.00 psf erected. Total structural cost (caisson foundations, structural steel with open-web joists, and wire-fabric-reinforced concrete over steel decking) is only \$1.54 psf ... and the primary reason is economical continuous-beam framing with V50 steel (50,000 psi yield).

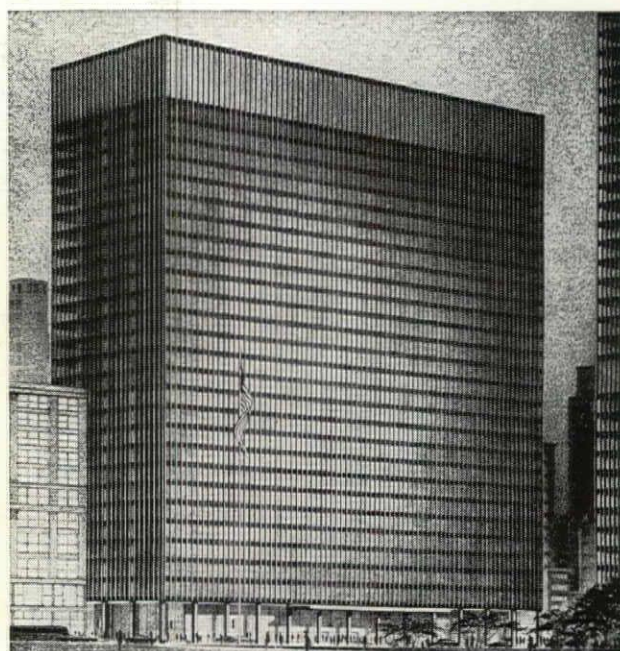
Another interesting building in this Washington, D.C. suburb is a ten-story "air rights" office building that is being built over a railroad right-of-way. Framing spanning the railroad is of composite design in V50 steel; columns are V60.

**WANT MORE INFORMATION?** If you are in the thinking or designing stages for a new building and want more information on how Bethlehem can save you money, just get in touch with the Bethlehem office nearest you.



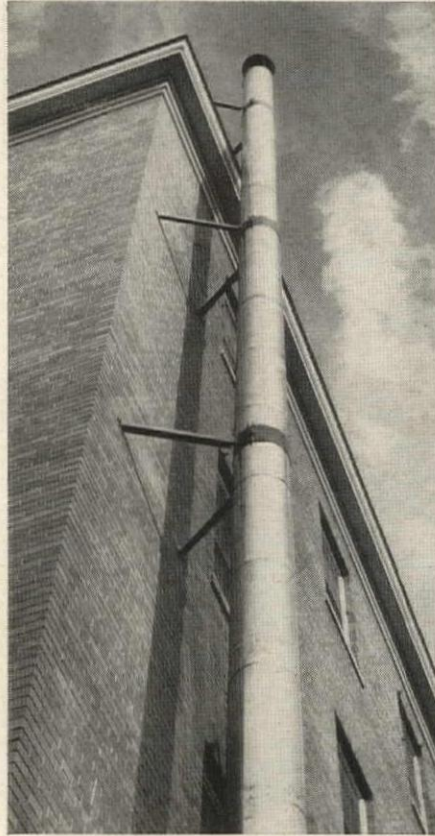
(Names of the architectural and engineering firms responsible for the projects named above will gladly be furnished on request.)

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



**CHICAGO, ILLINOIS** — Continuing the city's tradition of elegant steel-framed skyscrapers, the 30-story Federal Courthouse and Office Building now a building sets a new standard for government building design. Lower column sections are of A440 steel; exposed steel-plate spandrels and wide-flange mullions, painted a flat black, extend the full 382-ft height. Fifteen courtrooms on upper floors require 56-ft clear spans!

For more data, circle 18 on Inquiry Card →



## INSIDE ... or OUTSIDE VAN-PACKER® is the first choice to last!

Van-Packer refractory stacks last an average of 3 times longer than steel stacks. They are safer than steel stacks. And they give more draft. The reason: Van-Packer's special refractory material resists both corrosive acids and costly burn-outs . . . insulates against heat loss.

The Van-Packer Model H-T stack withstands temperatures up to 2000°F. It is the *only medium-heat appliance stack listed by the Underwriters' Laboratories.*

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Economical? A Van-Packer stack costs no more than a refractory lined steel stack — less than brick or tile-lined concrete block stacks.

Make sure your next incinerator, boiler or furnace installation has the stack that lasts longer . . . costs less. Specify Van-Packer. 8 diameters: 10" to 36".

**VAN-PACKER...**  
**First choice to last!**

*For complete engineering and application data, write for Bulletin IS-57.*



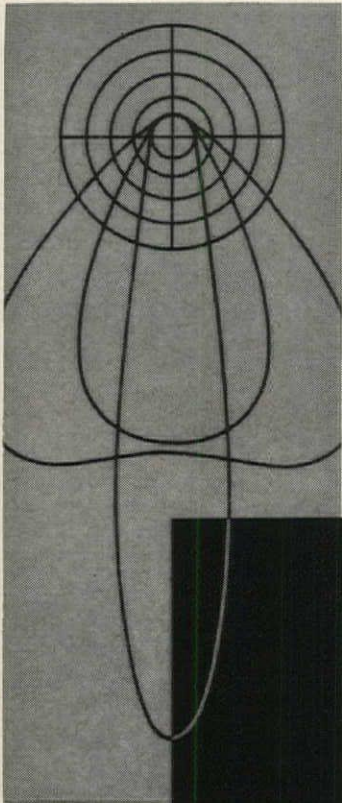
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## exploring the characteristics of light

Light waves have certain basic characteristics . . . they travel at a speed of 186,000 miles per second . . . they travel in a straight line from their source. Light reflects from a smooth surface at the same angle at which it strikes it. Light can be measured.

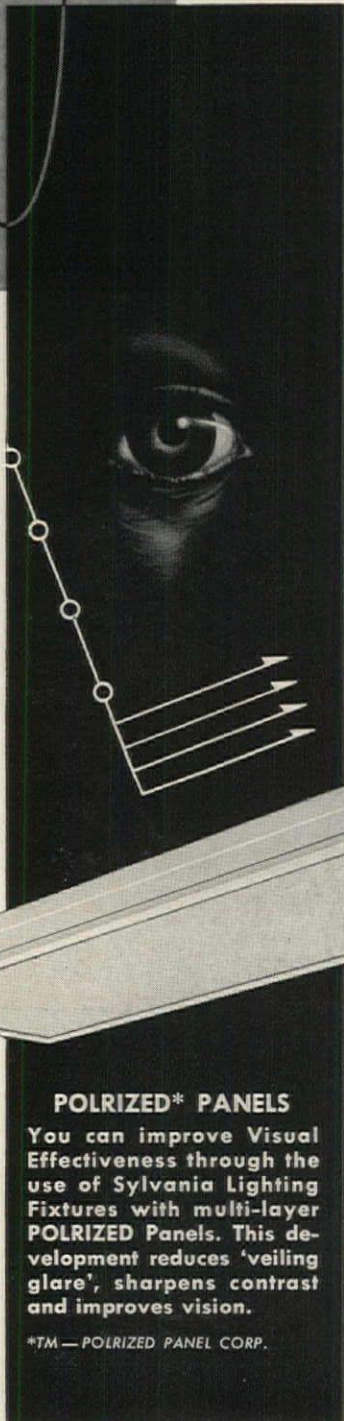
But controlling light to make it produce the desired results is not always easy. This requires knowledge, research and experience in photometry . . . shieldings . . . plastics . . . metals . . . finishes and many other technical fields.

Sylvania has these attributes and the ability to put lighting to work properly.

Sylvania can help you put light to work for your clients with expertly-designed and quality-built fixtures for interior and exterior illumination.

For descriptive and specification information on the broad line of Sylvania indoor and outdoor fixtures, see Sweet's Architectural File or write direct.

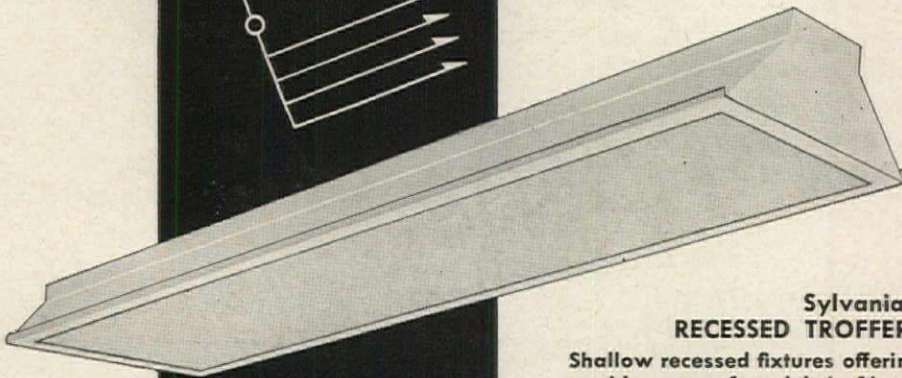
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### Sylvania's RECESSED TROFFERS

Shallow recessed fixtures offering a wide range of models in 1' and 2' widths, 2', 4' and 8' lengths and 4' x 4' units. Many shieldings to select from. Easily installed in all popular ceilings.



### Sylvania's VNB LUMINAIRE

Sylvania's VNB—Very Narrow Beam—luminaire is designed to meet requirements for high intensity concentrated light beams as narrow as 7° x 4.5°. Ideal for architectural lighting of buildings, monuments and towers.

LIGHTING FIXTURES BY

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For more data, circle 20 on Inquiry Card



## This building's beauty is more than skin deep

The exterior facing plates of Chicago's new Continental Center Building are carbon steel painted black. The handsome steel facade is highlighted by gleaming stainless steel sash. And the building's beauty is more than skin deep. The facing plates, which act as back-up for fireproofing, are welded together and anchored to spandrel beams and slender USS MAN-TEN

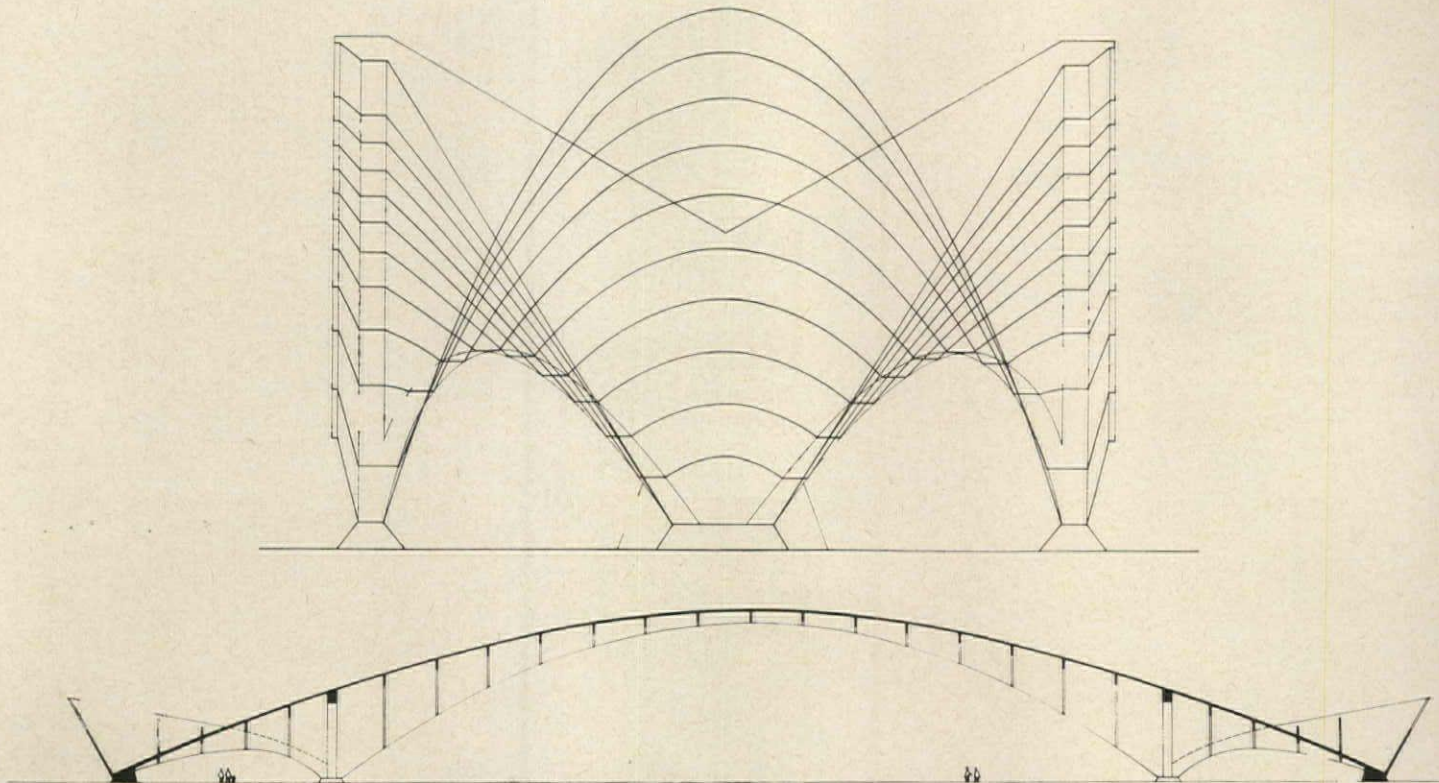
Steel columns. The extra strength of USS MAN-TEN Steel (A440) permitted broad 42 x 42-foot bays, requiring only 20 columns which, in turn, reduced foundation costs. For full design details, write for "Architectural Data Sheet: Continental Center Building" to United States Steel, 525 William Penn Place, Pittsburgh, Penna. 15230. USS and MAN-TEN are registered trademarks.

Owners: Continental Assurance & Continental Casualty Companies. Architects-Engineers: C. F. Murphy Associates, Chicago, Illinois. General Contractor: A. L. Jackson, Chicago, Illinois. Structural Steel Fabricators and Erectors: Allied Structural Steel Company, Chicago, Illinois. Stainless Steel Window Fabricator: Building Products Division of The Standard Products Company, Cleveland, Ohio.

United States Steel



... the architectural metal



Agnelli Exhibition Hall, Turin; from "Pier Luigi Nervi"

## Nervi

PIER LUIGI NERVI. *Buildings, Projects, Structures, 1953-1963*. Frederick A. Prager, 64 University Place, New York 3. 168 pp., illus. \$15.

Like one of Nervi's buildings, this book speaks for itself. As its title proclaims, it is a collection of Nervi's work of the last 10 years, illustrated by photographs and renderings, explained by drawings and construction photographs. The captions are brief but adequate and to the point; generally, recondite engineering data have been omitted.

Mr. Nervi has contributed an abbreviated introduction reiterating his philosophy of structure as a grammar basic to both understanding and sophisticated expression.

The photographs are well chosen and well reproduced, and the whole effort is likely to find favor with Nervi's many admirers.

## Summerson

HEAVENLY MANSIONS and Other Essays on Architecture. By John Summerson. W. W. Norton & Company,

Inc., 55 Fifth Ave., New York 3. 253 pp., illus. \$1.35, paperbound.

Sir John Summerson is a spellbinder. Even a layman knowing and caring nothing for architecture would be charmed by these historical essays. An architect should be enthralled.

Arranged in chronological order, these pieces cover Western architectural history from the Gothic through Le Corbusier. Sir John's method of attack on any period is to reconstruct the thought of an architect both, hopefully, great and representative of his time—Wren, say, for 17th-century England, or Alberti for the Renaissance. The attack breaches some carefully built walls of architectural theory. The multiplicity of these approaches also reveals some of the many ways architecture can be viewed. Some of these ways, if currently unremembered, are still valid, as Sir John reminds the reader in an essay about the distortion worked on the architect's attitude toward his job by the more treasured aims of modern theory. ("If architects are more interested in the relationship of buildings to a social and scientific context than in the buildings themselves, it is probable that the build-

ings will become dull, empty and unattractive to all except the architect.")

The final essay, on the place of preservation in architecture and city planning, was written in 1947, but has at least as much point now as it did then.

## Bibliophilia

THE HOUSE BEAUTIFUL. By William C. Gannett. In a setting designed by Frank Lloyd Wright. The Prairie School Press, 117 Fir St., Park Forest, Ill. No folio, illus. \$22.50.

This is a facsimile edition of a beautiful book originally published, as the title page reads, "in a setting designed by Frank Lloyd Wright and printed by hand at the Auvergne Press in River Forest by William Herman Winslow and Frank Lloyd Wright during the winter months of the year eighteen hundred ninety six and seven." It belies the adage not to judge a book by its cover, for the contents, a sentimental and rather charming 19th-century tribute to the house as art, is incidental.

continued on page 66

**FOR QUIET  
EFFICIENCY  
IN APARTMENT  
AIR CONDITIONING  
LOOK TO  
BOHN**

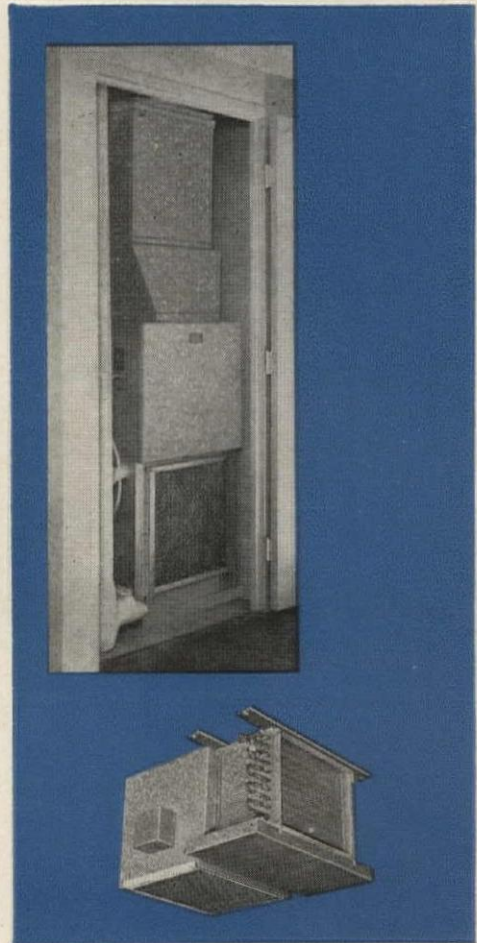


Typical installation—Bohn Apartment Units cool and heat these new apartments near Washington, D. C.



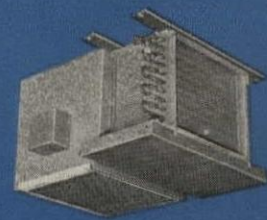
Attractively designed selector panel (on far wall) provides thermostatic control of room temperature and 3-speed push-button control of air movement.

BOHNaire Apartment Units, designed to operate with ductwork, are air conditioning modern apartments throughout the country. Vertical Models ABV (belt drive) and ADV (direct drive) are available in five sizes from 800 to 2,000 CFM. Horizontal Model ADH (direct drive only) is offered in seven sizes from 400 to 2,000 CFM. For complete specifications, write for Bulletin 461.



**BOHNaire**

Model ABV Apartment Unit (above) installed in closet. Air intake in louvered door. Model ADH (below) designed for ceiling installation.



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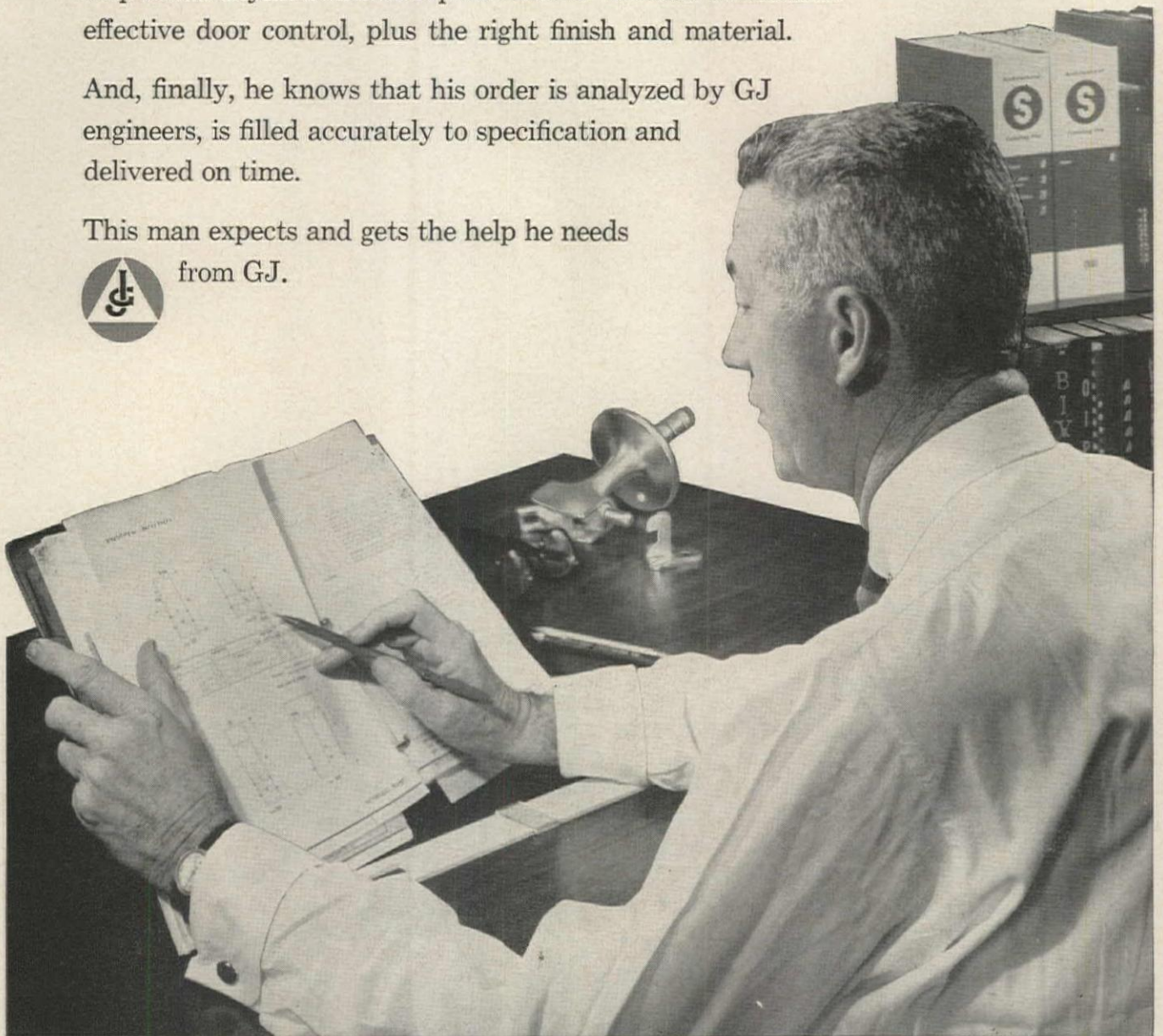
He knows that his GJ catalog offers a wide variety from which to make his choice. If there is a problem he welcomes the help of his Glynn-Johnson representative—assured of the most effective door control, plus the right finish and material.

And, finally, he knows that his order is analyzed by GJ engineers, is filled accurately to specification and delivered on time.

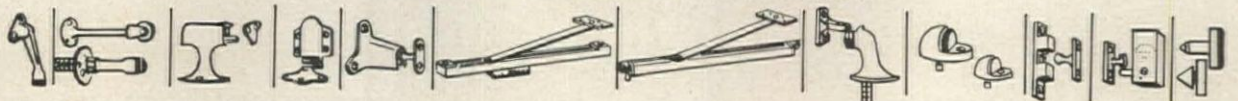
This man expects and gets the help he needs



from GJ.



*GJ hardware is built to endure... and LOOKS it.*



**GLYNN · JOHNSON CORPORATION / 4422 no. ravenwood avenue • chicago 40, illinois**

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## CONCRETE FITS HIGH-RISE LIVING TO A TROPICAL SETTING ... WITH A BONUS OF TWO EXTRA FLOORS

Coral Ridge Towers, Florida's newest and largest cooperative apartments, make the most of sun and sea on the glamorous Fort Lauderdale "Ocean Mile" beach. Concrete contributes importantly to the beauty and efficiency of the structure's modern design. Precast, sculptured balconies and stucco-finished walls combine crisply with broad expanses of glass. Behind the attractive façade, a concrete frame and flat plate floors provide not only rugged strength but a remarkable saving in floor-to-floor height. This made possible an increase from 14 stories to 16 within the local 150-foot limitation for high-rise buildings. For today's progressive architects, no other material provides the versatility of modern concrete.

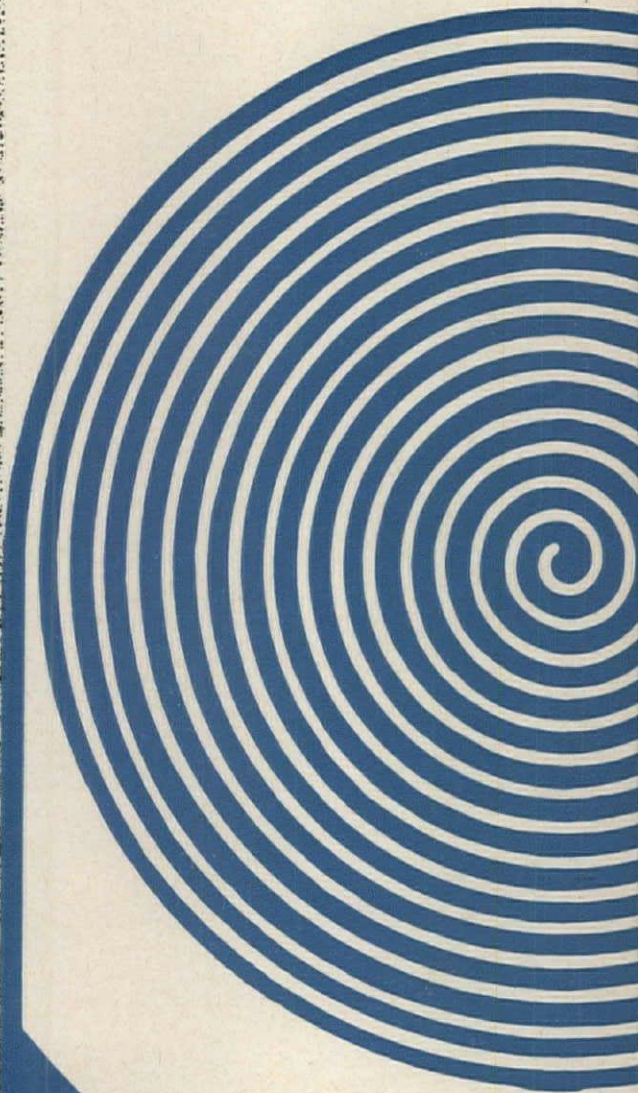
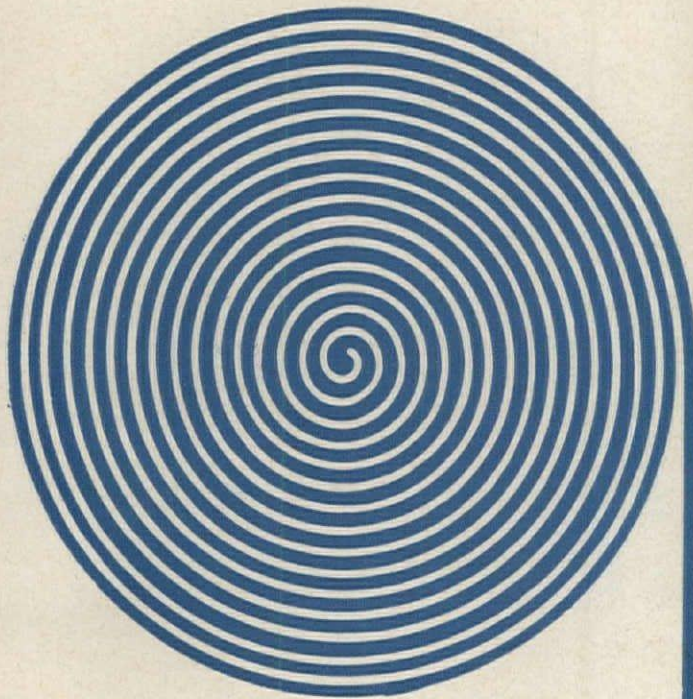
### PORTLAND CEMENT ASSOCIATION

*An organization to improve and extend the uses of concrete*

### THE BEST IDEAS ARE MORE EXCITING IN CONCRETE

Coral Ridge Towers, Fort Lauderdale, Florida. Owner: Coral Ridge Properties, Inc. Architect: Charles F. McKirahan & Associates, A.I.A., Ft. Lauderdale. Structural Engineer: D. E. Britt & Associates, Ft. Lauderdale. Contractor: Frank J. Rooney, Inc., Miami





THE E. F. HAUSERMAN COMPANY  
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and its place in the Hauserman Total Interior Concept.


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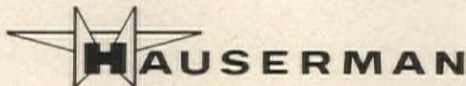
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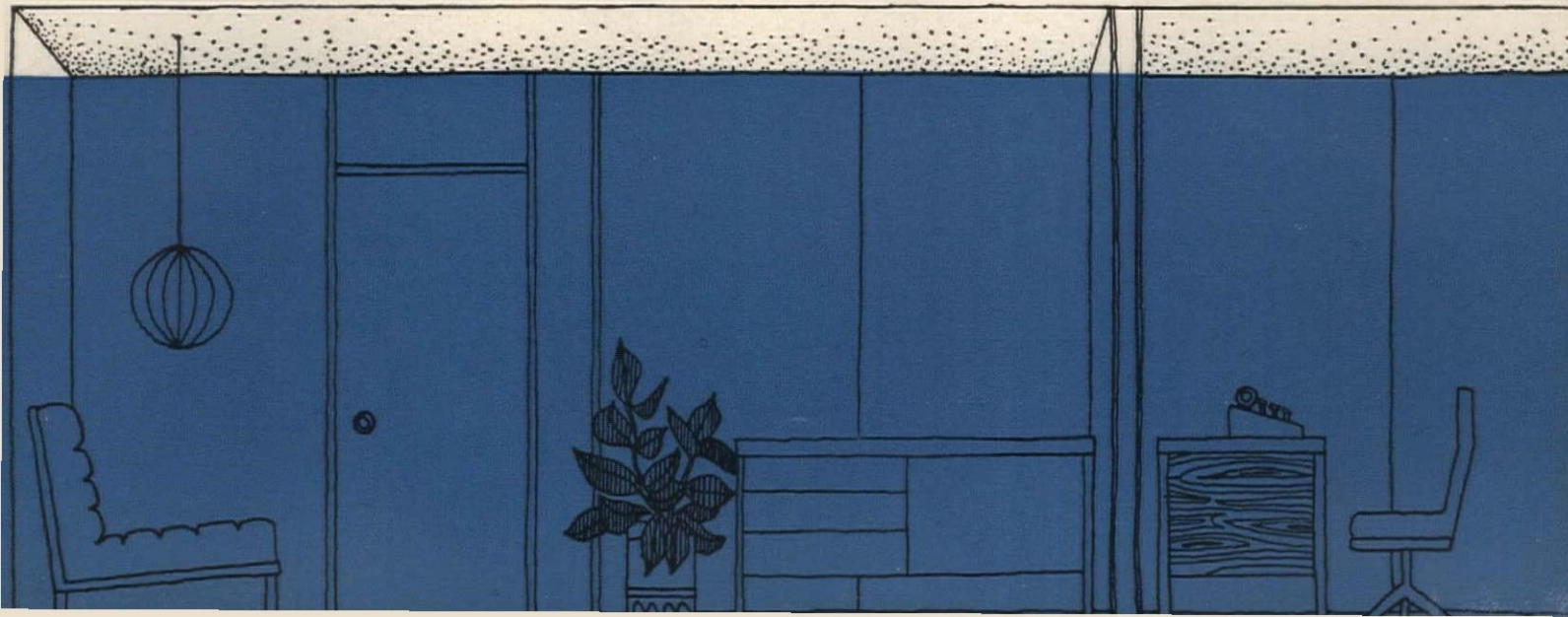
# Hauserman Announces Co-ordinator Double-Wall

## A new metal movable wall system at substantially lower cost

This unique new Hauserman product, Double-Wall, is the first metal movable wall system that can be purchased at only a fraction more than the least expensive space divider. ■ The key to Double-Wall's exceptional low cost is in production standardization and the elimination of costly engineering. Standard components are shipped to the job where they are easily adapted by Hauserman-trained installation experts to meet any building requirement. On-site fitting and finishing allows last minute layout and color changes, permits earlier occupancy for earlier return on investment. ■ No compromise has been made in Double-Wall's appearance or performance. It provides sound control (43 db STC), movability, ease of wiring, and utility access. Its components are 100% re-usable. And it offers trim, handsome appearance, simply maintained, only possible with a metal wall surface. ■ Double-Wall integrates fully with all other Hauserman movable wall systems. Installation and subsequent service of your total interior are guaranteed under our Hausermanaged single-contract responsibility. Never before has a company offered such a flexible, economically practical concept for interior space division. And new Hauserman Co-ordinator Double-Wall is included in the exclusive Hauserman Lease-Wall plan.



For more data, circle 172 on Inquiry Card



# Hauserman Extends Its Total Interior Concept

One source for integrated installation of the full range of movable wall and acoustical ceiling systems

Here is a completely new approach to interior space division. It is now possible to select Hauserman movable wall and ceiling systems whether you need simple, basic space division or the elegance and economy of Hauserman engineered walls—and **combine** them to answer specific space requirements at significant cost savings.

Now you can create the most distinguished conference chamber, the most functional offices, the most flexible hallway systems—all at a cost that averages out to fit your particular budget. And since the name on each product is Hauserman, you are assured of Hauserman's quality leadership in each product classification:

**DELINEATOR** Slim and graceful, the most quietly distinctive movable wall system ever designed. Matchless engineering and finishing provide long-term savings that more than offset the initial investment in quality.

**SIGNATURE** An engineered movable wall system of classic all-steel panels combining simplicity, precision, and beauty with significant long-range economies.

**DOUBLE-WALL** New—the first truly practical metal movable wall at a cost only slightly more than the least expensive way of dividing space. A Hauserman exclusive.

**GYPSUM MOVABLE WALLS** Traditional Hauserman quality in the lowest priced movable wall material. Now, Hauserman provides Vaughan movable gypsum walls installed complete with Hauserman single-contract responsibility.

**OPERABLE WALL** Acoustically sealed steel panels glide instantly into place to divide space, slide aside at a touch to open space for double or triple duty.

**CRITERION CEILINGS** A complete series of incombustible, acoustical ceiling systems in all materials and textures. Designed for specific varying applications.

Under the Hauserman Total Interior Concept, any combination of systems you choose for your complete interior is handled under one Hausermanaged contract for perfection of installation.

To the architect, this means unusual aesthetic freedom—designs precisely executed with superior products.

To the contractor, it means on-time delivery and installation, with all work carefully coordinated with that of other trades.

To the owner, it means ideal space division under either lease or purchase—the ultimate in quality, flexibility, and efficiency at a balanced overall cost.

For all parties concerned, the Hauserman Total Interior Concept is the simplest, soundest, most complete proposal ever made for the division of interior space.

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Gentlemen: Please send me your illustrated literature on the Hauserman Total Interior Concept, with product and service particulars.

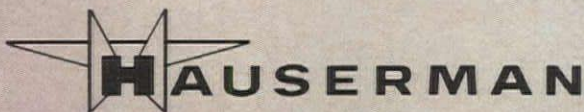
Name \_\_\_\_\_

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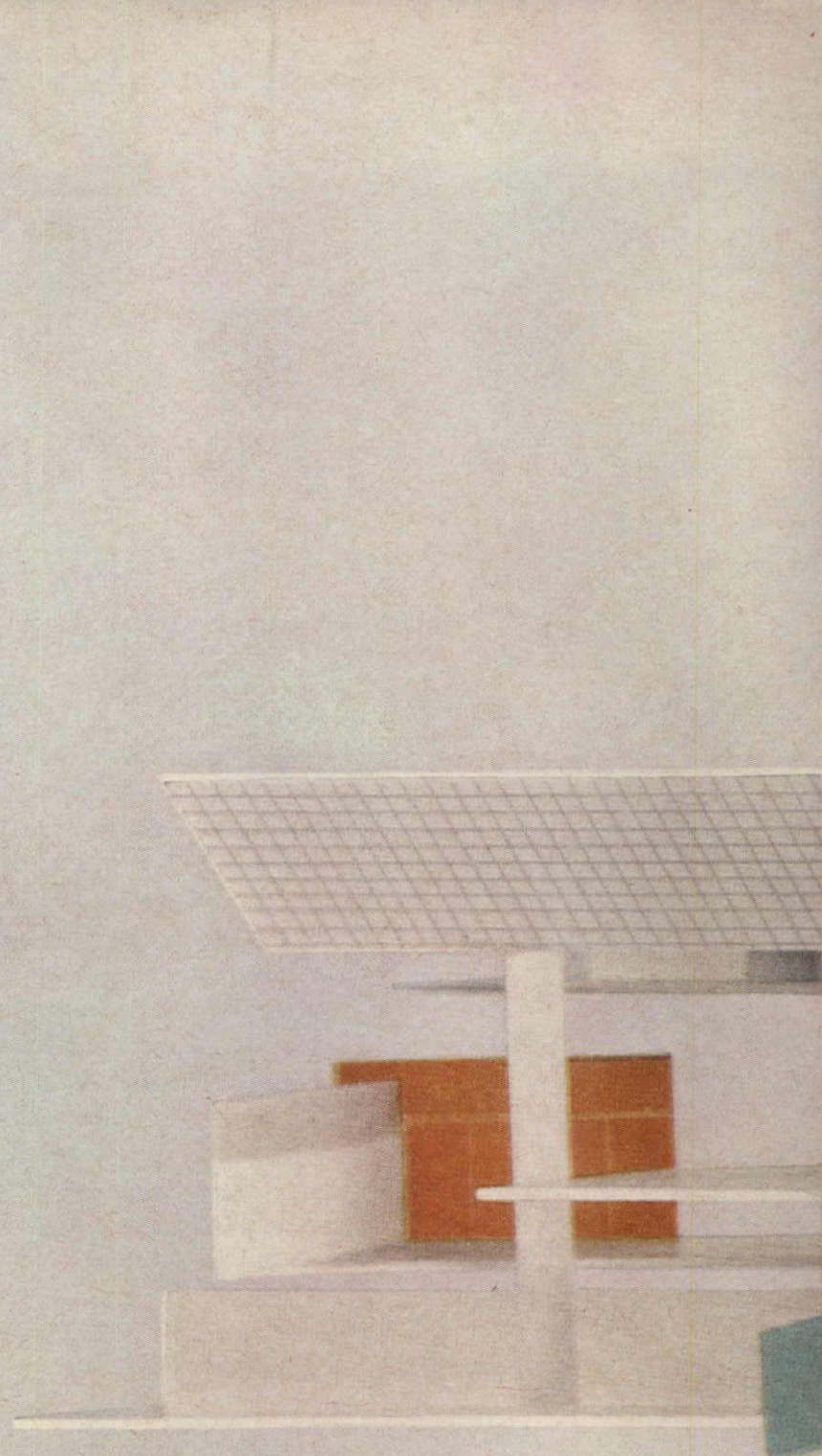
Company \_\_\_\_\_

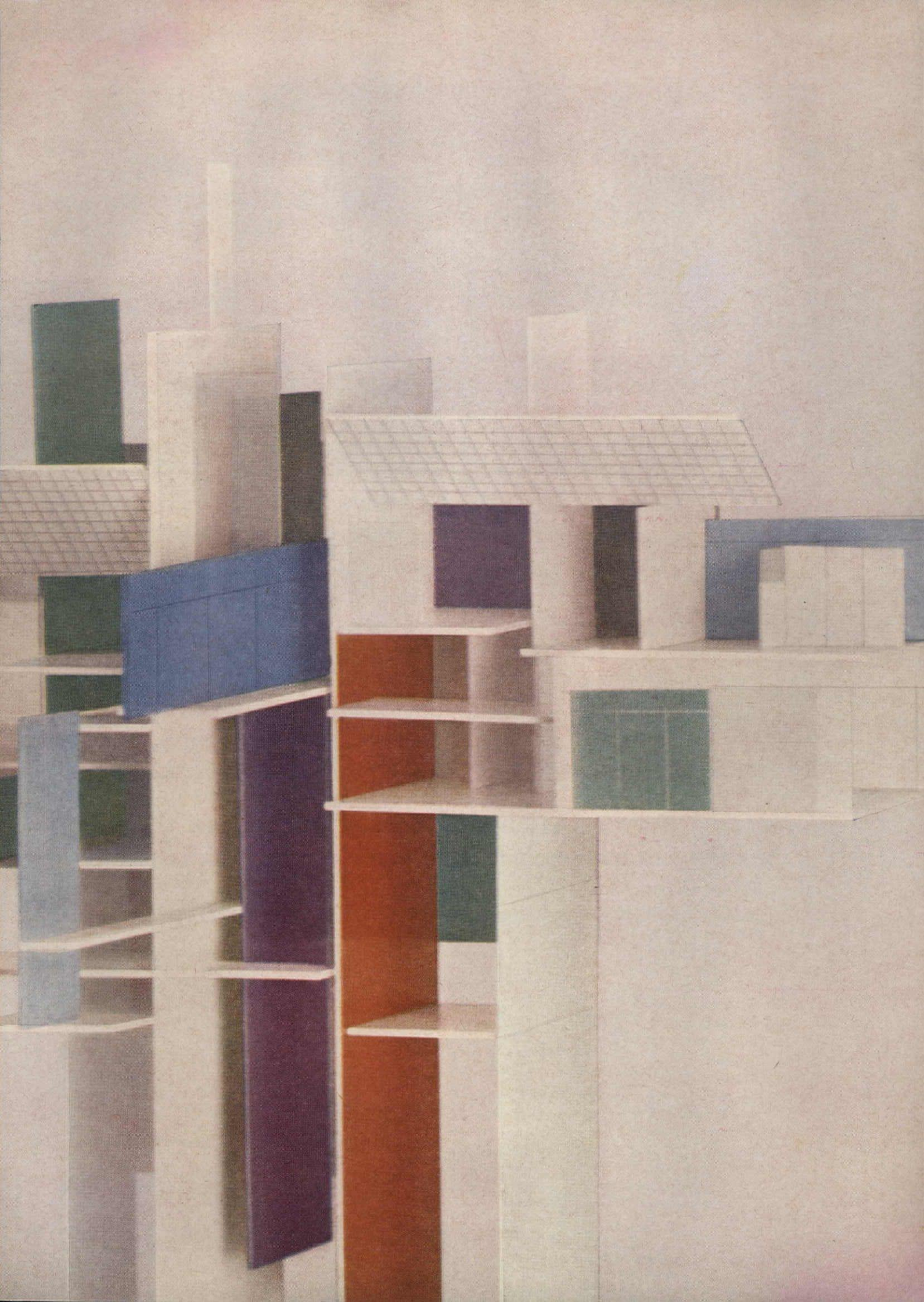
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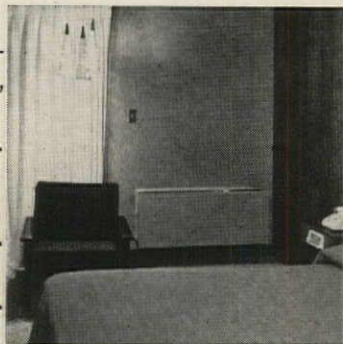




## Past experience paves way for Zoneline heating and cooling in Atlanta's newest Howard Johnson's

"You could say General Electric room air conditioners gave us the idea, and you'd be right," says Killiaen V. R. Townsend.

"We operate two other Howard Johnson Motor Lodges here in Atlanta. Both are cooled by G-E room air conditioners. We and our guests have been so pleased with them, we specified the new G-E Zoneline systems for cooling *and* heating in our new luxury motor lodge. Another thing... we also operate a large motel down in Southern Georgia. Even though it has one of the finest central systems available, we've



found General Electric Zoneline air conditioners much more satisfactory."

"The new Zonelines have worked out even better than we expected, allowing individual control of temperature, room by room, regardless of the season. They're quiet. They're easy to install and replace. They work fast and, being built-in, are easy to live with from the designer's standpoint."

Whether you design apartments, motels or office buildings, get the facts about G-E Zoneline for yourself. Write: General Electric Company, Room Air Conditioning Department, Appliance Park, Louisville 1, Ky.

*Progress Is Our Most Important Product*

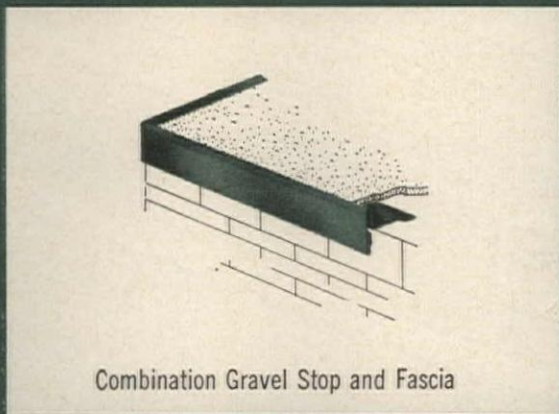
**GENERAL  ELECTRIC**

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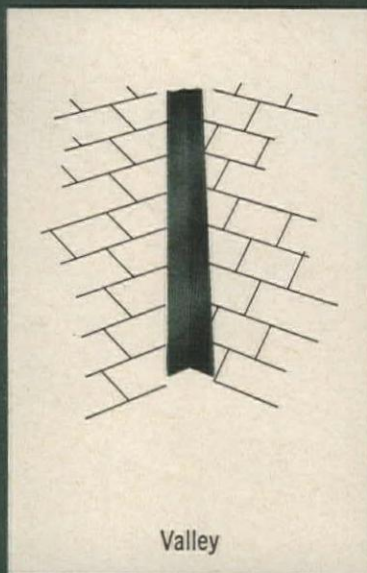
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## TERNE METAL: The Accessories

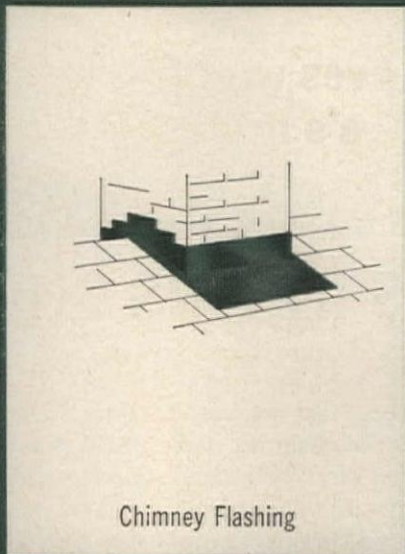
We believe most architects are now aware of terne's nearly unique design potential for visually significant roofs in the contemporary idiom. But terne is also among the best of accessory metals—probably the best when initial cost is balanced against durability. If considerably fewer architects are aware of it in this context, the fault is largely our own, for we frankly haven't found too many exciting things to say about gutters, flashings, valleys and gravel stops. Exciting or not, however, these commonplace items still play an important role in most buildings, and any failure can be very troublesome indeed. When next specifying them, therefore, why not give Follansbee Terne a trial? It should not only save your client money, but under normal exposure has a life-expectancy measured in generations rather than years.



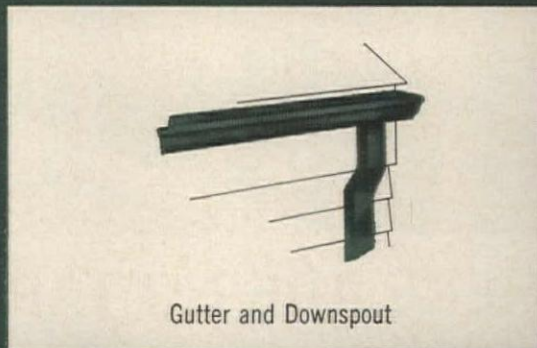
Combination Gravel Stop and Fascia



Valley



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Gutter and Downspout



FOLLANSBEE STEEL CORPORATION

Follansbee, West Virginia

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



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Twi-Nighters could do the same for you. Other Twi-Nighter features: Aluminum slats give thermal control of sunny windows — guard air-conditioning equipment against overloads. 5-year

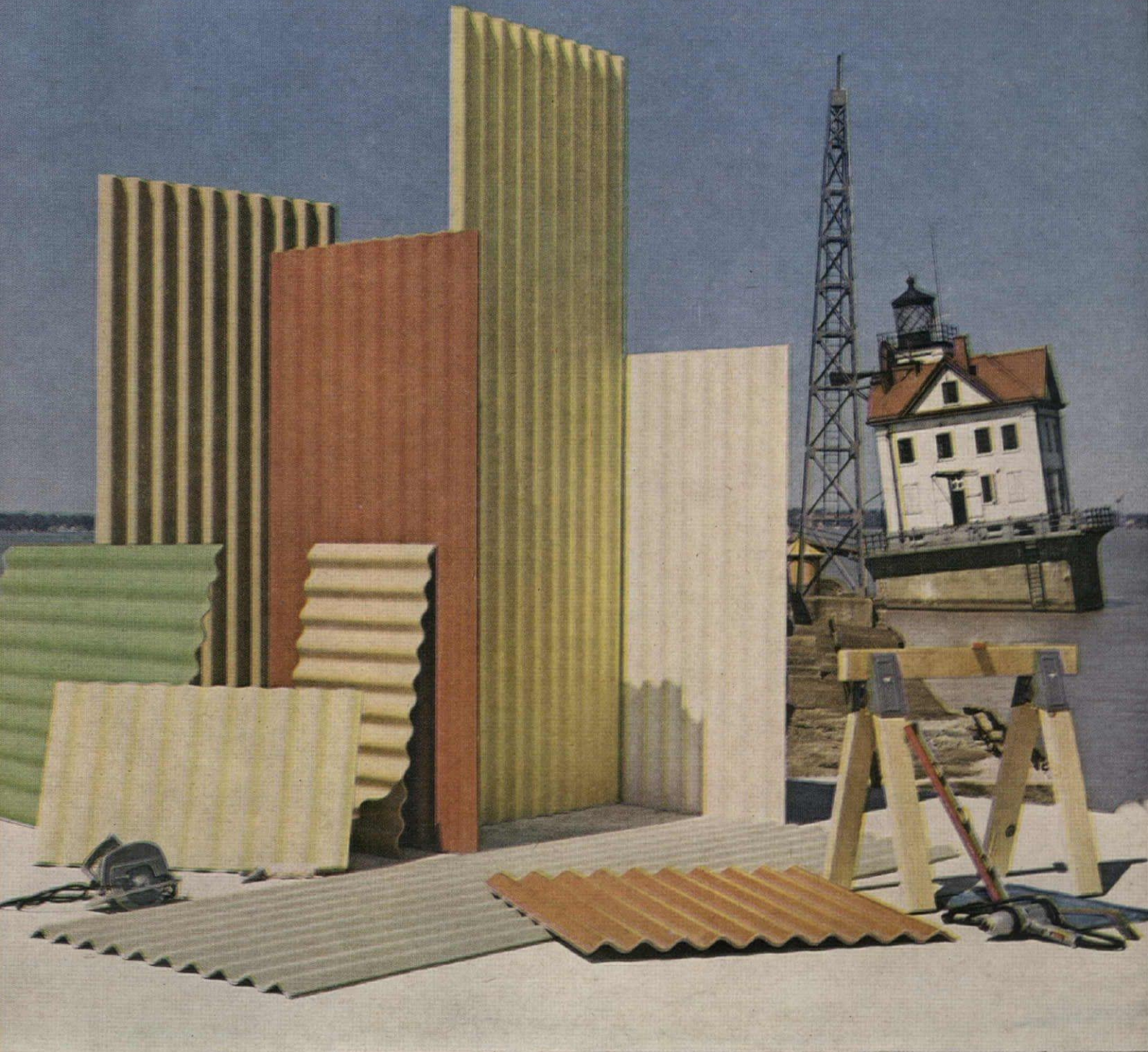
guarantee, bonded by Continental Casualty Co., includes labor and materials, insures against costly maintenance. Write us for specifications and details on all special purpose blinds.

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Bridgeport Brass Company, Hunter Douglas Division, 30 Grand Street, Bridgeport 2, Connecticut.

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**The Gold Bond difference:**

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New Gold Bond Corrugated "400" costs much less than comparable competitive materials. Yet it carries a 10-year written guarantee against peeling, blistering or crazing. "400" is the first corrugated asbestos-cement product with a durable pre-decorated finish. The PLASTI-CLAD finish is a heavy polyvinyl chloride coating that gives maximum resistance to weathering. It is virtually inert, so airborne dust, acid and alkaline fumes will not affect the appearance. And the glossy, pebbled surface is impervious to water, and resists weathering. The integrity of PLASTI-CLAD is assured through the use of an epoxy primer which

permanently bonds the surface to the base. What's more, PLASTI-CLAD is oven baked to harden and cure it. Do you know of any similar prefinished siding or roofing products so reliable and so fully guaranteed? We don't. Six handsome, tasteful colors are now available: Dawn Gray, Fawn, Green, White, Goldenrod and Tile Red. For technical information and samples, call your Gold Bond® Representative, or write to Dept. AR-93, National Gypsum Company, Buffalo 13, New York.

Gold Bond materials and methods make the difference in modern building



## Required Reading

continued from page 54

The book's interest lies in the intricate design by Wright which surrounds the text, a design of which he wrote in the foreword: "With nature-warp of naked weed by printer-craft imprisoned, we weave this interlinear web, a rhythmic changing play of ordered space and image seeking trace our fabric makes, to clothe with chastity and grace our author's gentle word. Appreciation of the beauty in his work we weave,—in part ourselves to please, yet may we better fare, and, weaving so, with you our pleasure share."


There were only 90 copies of the original printed, and only a few remain in existence; some were destroyed in one of the Taliesin fires. The facsimile has been printed by W. R. Hasbrouck, A.I.A., who has dedicated a small royalty on each copy to the Robie House fund.

## Fuller

EDUCATION AUTOMATION: *Freeing the Scholar to Return to His Studies*. By R. Buckminster Fuller. 88 pp. \$2. NO MORE SECONDHAND GOD and *Other Writings*. By R. Buckminster Fuller. 153 pp., illus. \$4. Southern Illinois University Press, Carbondale, Ill.

The first of these two books was read originally as a discourse before the Southern Illinois University Campus Planning Committee. Much of it is devoted to a definition of the modern world as Fuller perceives it, and to the place of education in that world. Not surprisingly, Fuller finds contemporary education and educational facilities hopelessly obsolete. Most particularly, he finds the increasing trend toward education specialization outdated, and contrary to his own aim of a "comprehensive anticipatory design science." He does not see education essentially as face-to-face instruction, and certainly not as a matter of buildings and apparatus. On the other hand, he does suggest some technological aids to "free" the scholar: "individually selected and articulated two-way TV, and an intercontinentally net-worked, documentaries call-up system," filmed lec-

continued on page 80



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# BORDEN DECOR PANEL

Durable lightweight aluminum panels custom-styled in an endless selection of forms, patterns and designs: Deca-Gril, Deca-Ring, Deca-Grid and Decor-Plank — each type capable of pattern variation.

In addition to widespread specification as facades, Borden Decor-Panel is used for interior partitions, room dividers, grilles, window guards, railing panels, doors, entryways, sunshades, and is especially valuable for the refacing of existing buildings.

For technical information and design data sheets, write:

## BORDEN METAL PRODUCTS COMPANY

822 Green Lane, Elizabeth, N. J.

Above: Columns of standard rectangular punched Decor-Plank add design emphasis to this building. A dramatic afterdark effect is produced by lighting behind the Decor-Plank columns with continuous fluorescent light tubes.

Right: Harmonizing with the overall scheme of this modern Miami, Florida elementary school, Borden Deca-Grid panels provide free access for light and air along with sturdy practicability and long, maintenance-free service.

Architect:  
James E. Ferguson & Associates





Borden Decor Panel lends itself readily to the theme of current-day religious buildings. Above is a facade of gold-anodized Deca-Grid panels enriched by a backing of porcelain enameled sheets.

*Architect:*  
*Davis, Brody & Wisniewski*

Left: Deca-Grid panels with tilted spacers were custom-designed to both separate and obscure the service area at Saks in Garden City, Long Island. Panels are finished with Kaiser Kalcolor.

*Architect:*  
*Abbott, Merkt & Company*

## **BORDEN METAL PRODUCTS CO.**

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Encore is more than an advanced lighting fixture. It's a revolutionary modular lighting systems *concept*—basis of a virtually infinite number of designs. From one of the four basic systems you can easily create the exact variation you need to fit any specific job.

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**Pattern systems:** Perfect for stores and classrooms, this Encore modular system offers unique new illumination possibilities—squares, U-shapes, rectangles—almost any imaginable combination.

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**Valance system:** Lighting moves off the ceiling. This completely new Encore valance system uses walls for both support and reflective action. Ideally suited for conference rooms, stores and classrooms.

And all these systems assemble quickly, easily with Encore's revolutionary pre-wired, plug-in design.

There are many more design exclusives that make Encore the biggest lighting advance in years. For full details, specifications and information, call your Benjamin Representative—or mail the coupon today.



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Moses, by Michelangelo. Marble, height about 7½ feet. (San Pietro in Vincoli, Rome.)

# BEAUTY THAT ENDURES

... in a complete line of Lo-Tone ceiling tile and board for nearly any installation.

If you need an attractive Fire-Rated tile or board, for example, there's a Lo-Tone product to fill the bill. Not one pattern, but three—including the new Fissura pattern with the classic beauty of travertine marble. All Lo-Tone FR products are completely fabricated under Underwriters' Laboratories Inc. (U.L.) inspection and carry the Label Service.

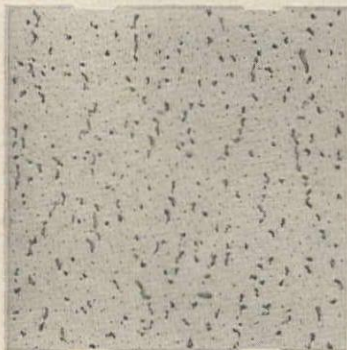
For the architect who wants to design ceilings to match throughout a building, including kitchens and washrooms where washability is a concern, Lo-Tone vinyl-coated products are ideal. The coated plastic surface is sealed and static-free so that it will not attract dirt particles.

For effective air distribution, acoustical control, and decorative finish, nothing does the job so handsomely as Lo-Tone Acoustical Ventilating products. This dramatic new approach to room air distribution has special appeal to the architect who welcomes the chance to design ceiling areas unobstructed by conventional air distribution devices.

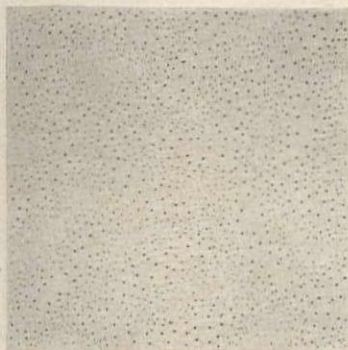
Almost unlimited effects in striking ceiling textures are possible through the use of Lo-Tone Design Tiles. These sculptured tiles may be used alone, or in conjunction with other handsome Lo-Tone patterns. Corporate trademarks and symbols can also be designed to further personalize a special ceiling area.

Whatever your requirements, see your local Lo-Tone Acoustical Contractor. Consult your Yellow Pages, or write direct to: Wood Conversion Co., St. Paul 1, Minnesota.

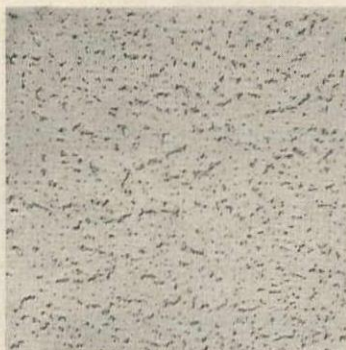
**LO-TONE®**  
ACOUSTICAL CEILING TILE AND BOARD



Acoustical Ventilating Products



Vinyl-Coated Acoustical Products



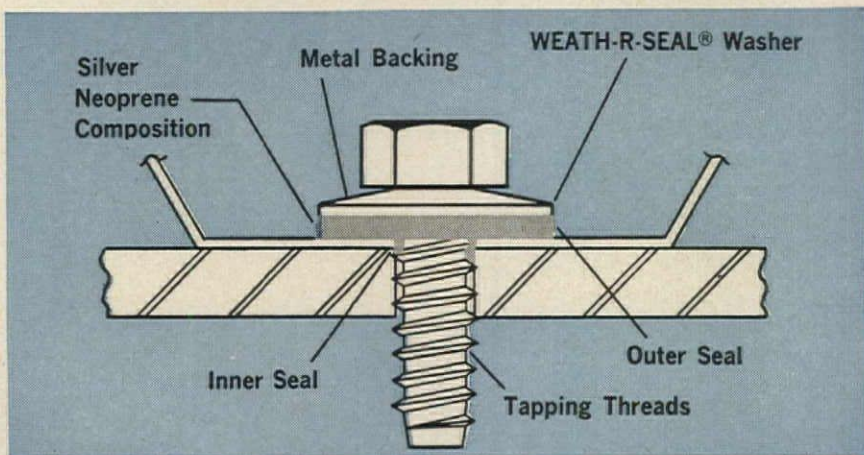
Fire-Rated Acoustical Products



Design Tiles

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# Improved Appearance and Quality



Improved Weath-R-Seal washers, available only with Fabco Topseal® Fasteners, are now available with silver colored neoprene (rather than black). The slight amount of sealing extrusion around the metal washer periphery now adds to the appearance and blends in with sheet surface.

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**Complete Flexibility**—Sizes and gages of Weath-R-Seal washers can be increased to provide larger bearing areas. Maintenance is reduced, adds years to life of sheets.

**Free Spinning**—Hex fastener head spins freely against the metal face of the washer, allows greater torque, prevents damage to neoprene and underlying sheet. Write for complete details—Fabco Fastening Systems.

## Fabricated Products Division

West Newton, Pa.

# Townsend Company

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Plants in West Newton, Pa. and Santa Ana, California

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## Required Reading

continued from page 66

tures, "knock-down" labs, an unpartitioned campus sheltered in a giant Geodesic dome.

"No More Secondhand God" is a collection of writings which Fuller describes as "mental mouthfuls and ventilated prose, which may be poetry also." Much of it is difficult reading even for the initiated.

## Technical

**EXPOSED CONCRETE FINISHES.** By J. Gilchrist Wilson. John Wiley & Sons, Inc., 440 Park Ave. South, New York 16. 142 pp., illus. \$7.50

A small book, not highly technical. The book concerns itself with finishes for in-situ concrete and is a first volume of a projected series to be followed by another on finishes for pre-fabricated concrete.

**CURTAIN WALLS.** By Rolf Schaal. Reinhold Publishing Corporation, 430 Park Ave., New York 22. 245 pp., illus. \$16.50

With the aid of more than 250 drawings and numerous photographs the author analyzes a wide range of modern curtain walls from American and European examples. Contents range from on-site construction to prefabrication.

**ENGINEERING CONTRACTS AND SPECIFICATIONS.** By Robert W. Abbett. John Wiley & Sons, Inc., 605 Third Ave., New York 16. 445 pp., \$8.50

Robert W. Abbett is both an author and engineer. This fourth edition has been revised and brought up to date. It stresses the hazards and precautions in the legal aspects of the profession.

**LIST OF PUBLICATIONS.** By the National Research Council, Division of Building Research, Ottawa, Canada. 51 pp.

A 51-page bibliography of all the publications of building research prepared by the Canadian National Research Council, from 1947 to 1962, inclusively.

For more data, circle 36 on Inquiry Card ➔



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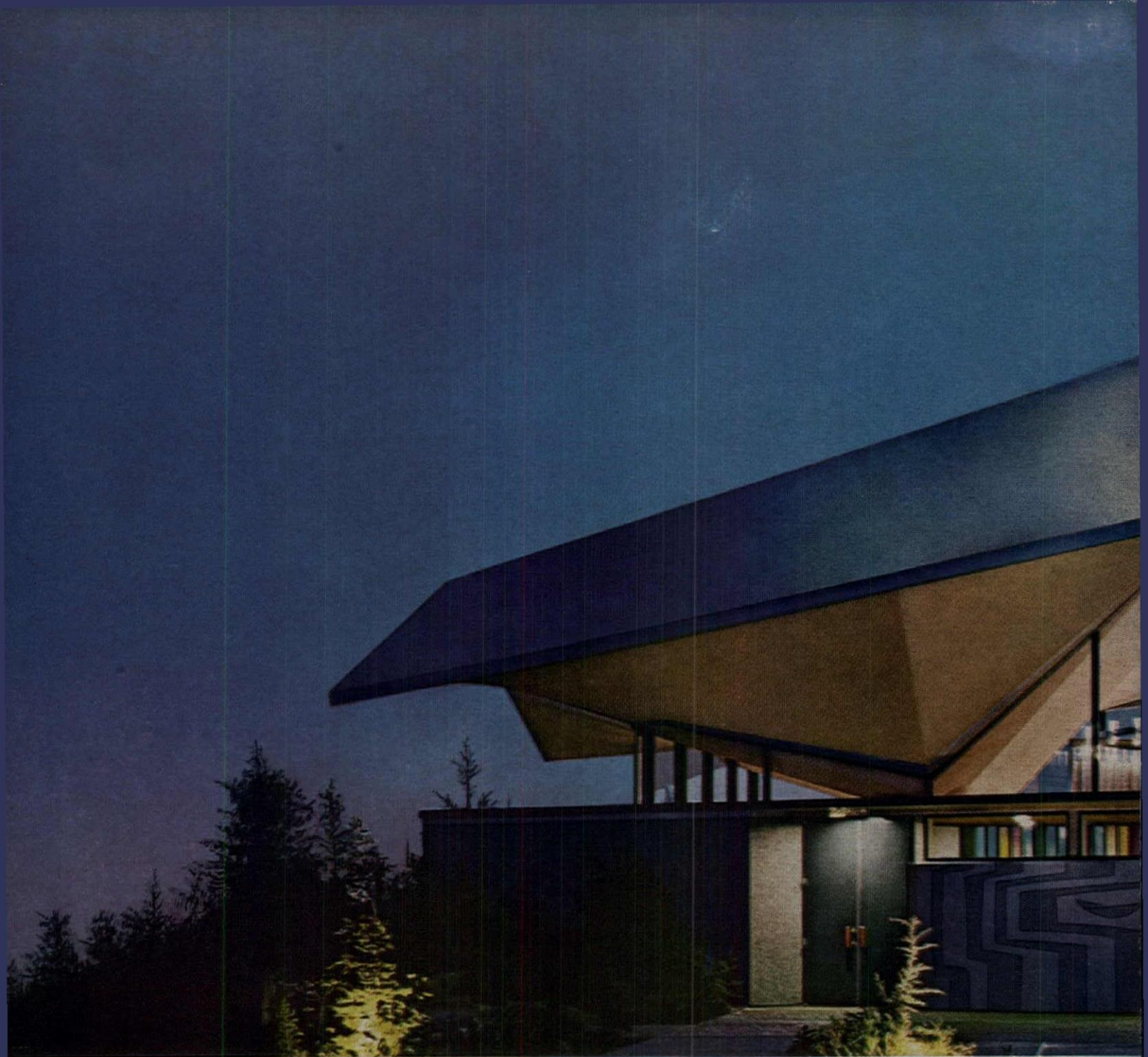
Mesker Brothers  
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Republic Steel Corporation  
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United Steel Fabricators, Inc.  
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Virginia Metal Products, Inc.  
Orange, Virginia

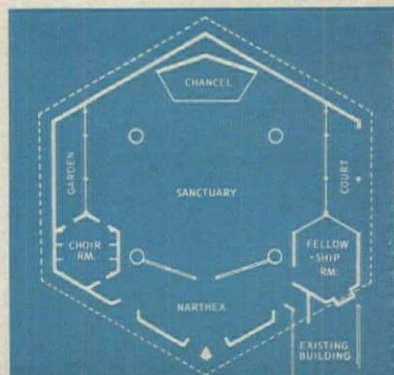


## A Hilltop Sanctuary by Paul Thiry... Starlux plate glass by **ASG**

*I set out to create a "tent" to offer shelter for worship, keep the congregation close to nature... I wanted to merge the land, the sky, the distant waterways one with the sanctuary.—Paul Thiry, F.A.I.A.*

The Mercer Island, Washington, Presbyterian Church is Architect Thiry's expression of this concept in glass, concrete and steel. The tent-like concrete roof, designed to suggest cupped hands uplifted, provides the basic "shelter for worship." It creates the intimate relationship between the congregation and the church's panoramic hilltop site, soaring walls

ARCHED WINDOWS are created by ceiling configuration. Large openings up to 20 feet high were glazed with Starlux  $\frac{3}{8}$ " heavy plate, smaller openings with  $\frac{1}{4}$ " regular plate. Interior columns support entire weight of roof.





ASG's Starlux clear plate glass ring the building's hexagonal circumference.

These extensive walls of high-quality plate glass flood the church with natural light by day. By night, they make it a glowing beacon, visible for miles around. In addition, the superb clarity and high visual fidelity of Starlux keep worshippers in constant and accurate contact with the church's natural surroundings.

Starlux polished plate is the queen of building glasses—utterly transparent, brilliantly clear, with the total lack of distortion

characteristic only of the finest plate glass. It's manufactured in the newest and most modern plate glass plant in America by ASG . . . the only U. S. producer of all three major types of flat glass: plate, sheet and patterned.

For further information about ASG's full line of flat glass products, write: Dept. D-9, American Saint Gobain Corp., Box 929, Kingsport, Tenn.

## AMERICAN SAINT GOBAIN



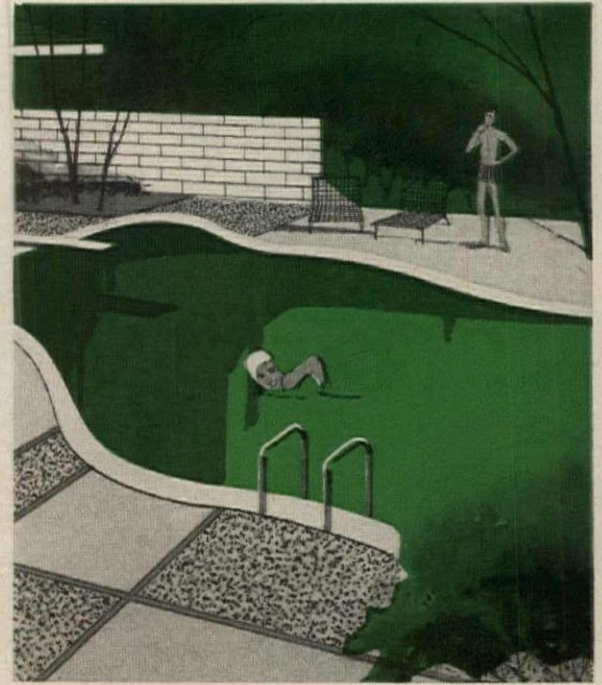
SALES OFFICES: Atlanta • Boston • Chicago  
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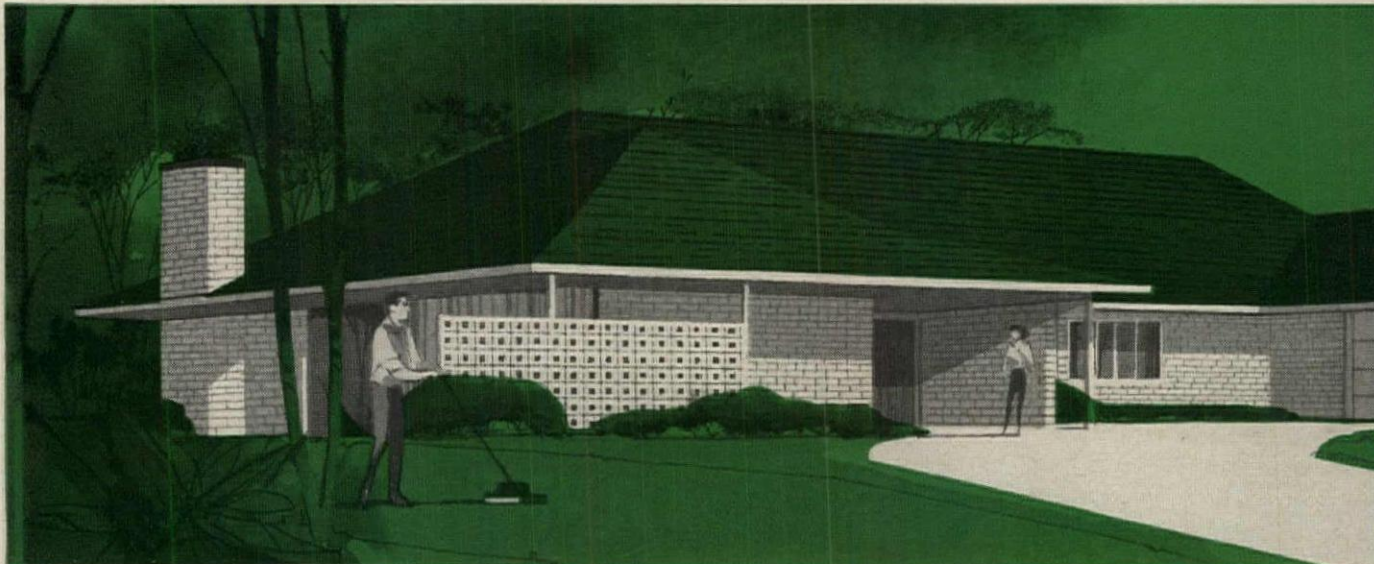
HANDSOME APPROACH TO A MODERN HOME is this distinctive concrete driveway. Concrete offers custom-designed smartness, opportunity for imaginative color and design treatments. Concrete is durable; the beauty lasts.

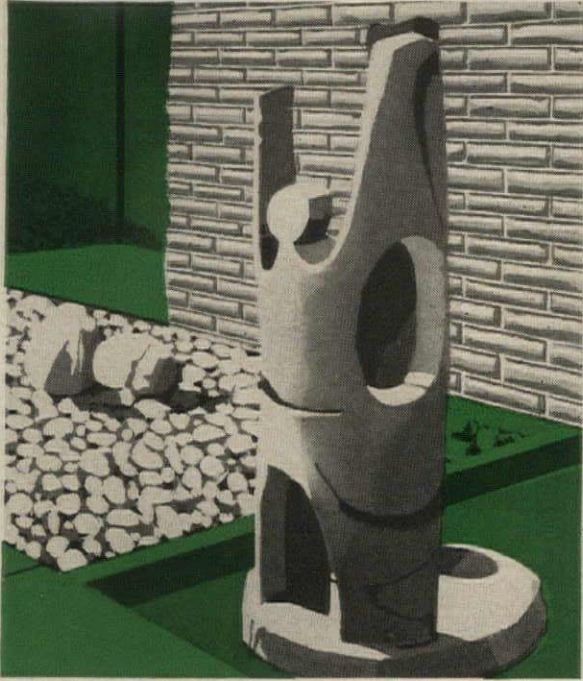


NEW PATTERNS IN OUTDOOR LIVING — casual or formal — are easily achieved with concrete. The pool serves as the focal point of activity, complementing a warm spectrum of colors and textures in the patio and garden.

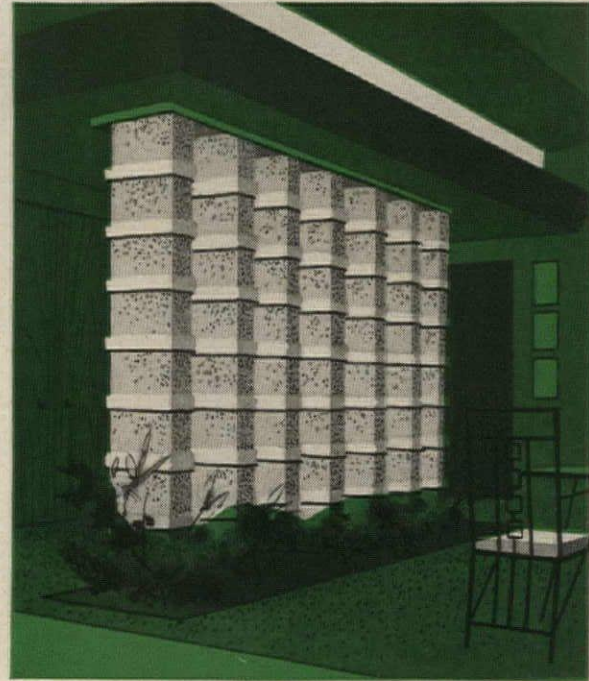
*Out of the Horizon Homes Program... distinctive  
design ideas with  
modern concrete*

*Outstanding home design from 1962 Horizon Homes Program features concrete slump block for beauty and textural interest.*





MODERN CONCRETE SCULPTURE by Charles Clement sets the theme for this smartly contemporary western garden. Precast or cast in place, concrete gives landscape architects unusual opportunity for patio and garden design.



CONCRETE MASONRY DIVIDER is laid in a dramatic pattern and painted in two tones, providing a tropical motif for this house designed in the style of South Seas architecture. Here is a gracious, easy-to-care-for interior.

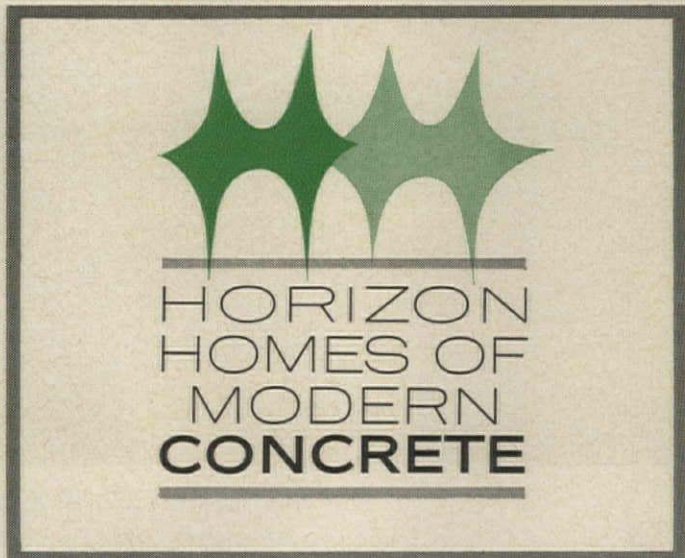
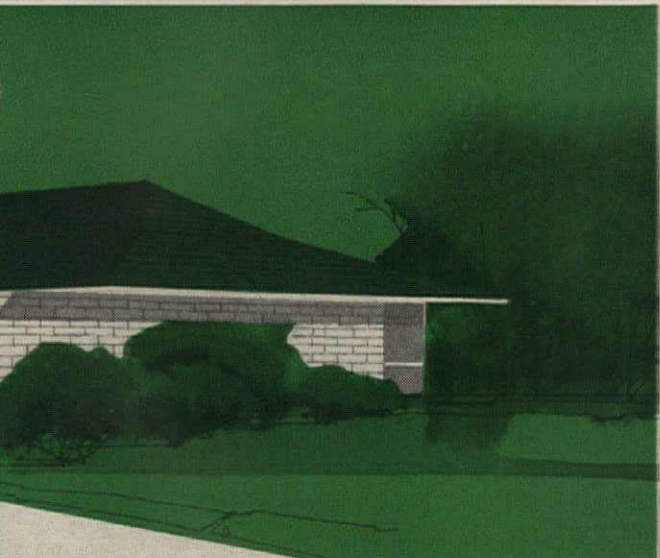
Beautiful things are being done, today, with concrete. Typical are the outstanding home designs created by leading architects for the annual Horizon Homes Program, sponsored by the nation's concrete industries.

Modern concrete opens the way to fresh ideas. Architects are turning to concrete more and more for vital structural elements, as well as for intriguing decorative effects. No other basic material is so versatile or offers the home designer such freedom for

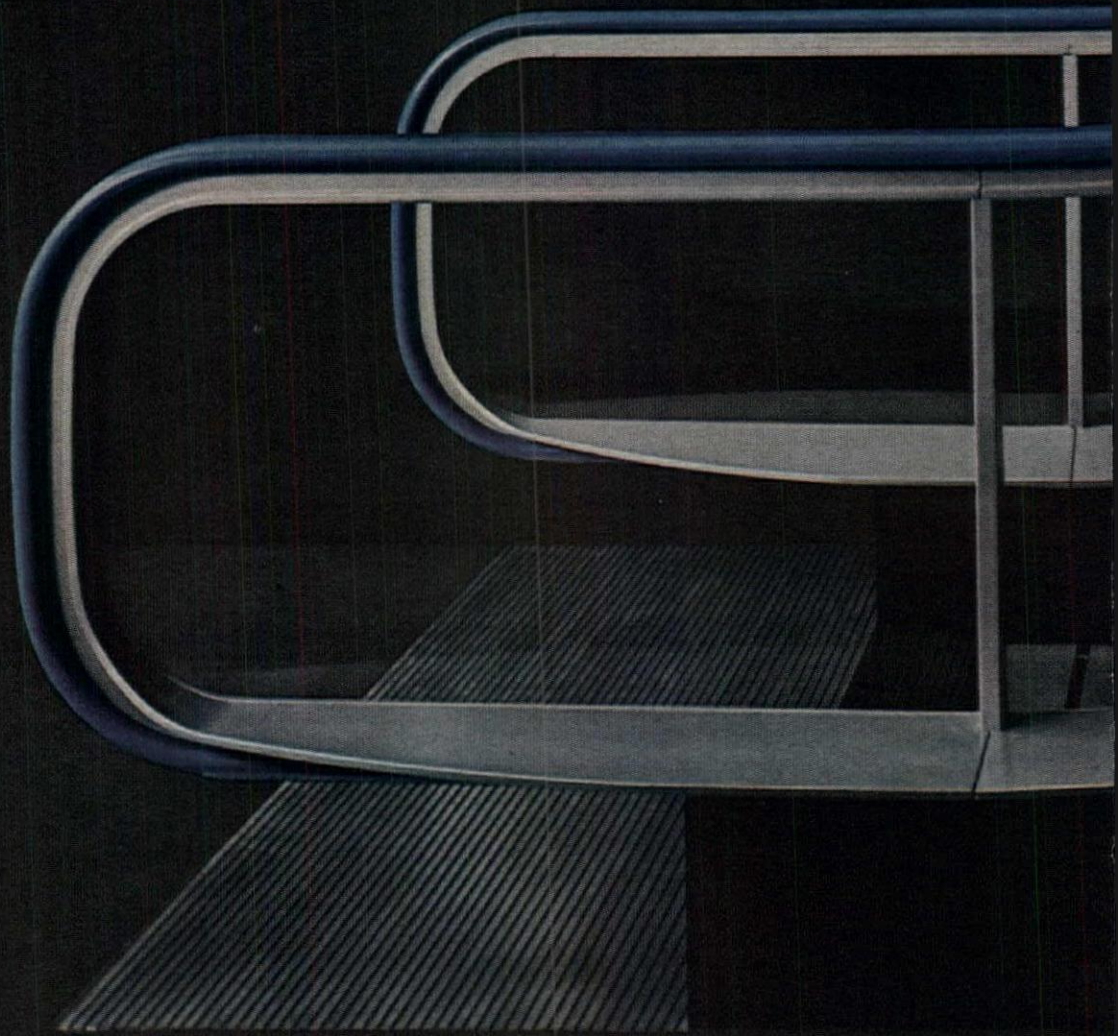
innovation. Concrete offers a virtually unlimited range of colors, textures, patterns and shapes.

Architects are finding that concrete readily accommodates the newest concepts in modern living and provides opportunity for distinctive home design. Major design awards are offered in the 1963 Horizon Homes Program. Plan to enter.

**Portland Cement Association**  
 A national organization to improve and extend the uses of portland cement and concrete  
 Better living begins when you own a new home



For more data, circle 37 on Inquiry Card



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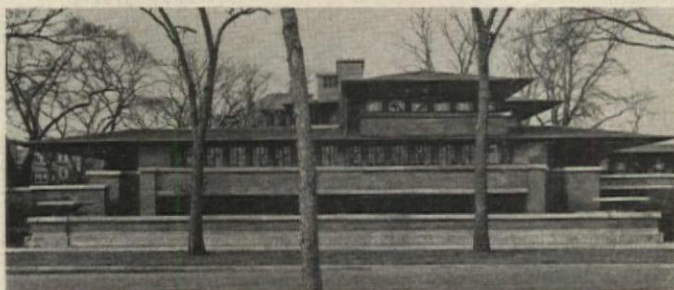
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We never forget how much you rely on Westinghouse



## FUND CONTINUES SLOW GROWTH FOR RESCUE OF ROBIE HOUSE



The Committee for the Preservation of the Robie House for the University of Chicago has, as the RECORD goes to press, raised about \$31,200. The largest contribution has been from the Edgar Kaufmann Charitable Foundation of Pittsburgh. More than \$5,000 has been raised recently from building products manufacturers approached directly by four Chicago architects. And sums as small as \$5 and \$10, even \$1 and \$2, have been received gratefully. The drive has had considerable coverage in the foreign architectural press, and contributions have arrived from British architectural students.

But the results are so far a long way from the committee's year-end goal of \$250,000.

Ira J. Bach, Chicago city planning commissioner and chairman of the Robie house committee, has reminded interested architects that donations are tax deductible, and asks that contributions be sent to him at Room 1006, City Hall, Chicago 2. Checks should be made payable to "Robie House Restoration Fund of University of Chicago."

Members of the committee are: Dr. J. B. Ache, Paul M. Angle, Harris Armstrong, Alexander H. Bacci, Edmund N. Bacon, Alfred H. Barr Jr., Dr. George W. Beadle, Pietro Belluschi, Edward H. Bennett, Joseph Benson, William McCormick Blair, Peter Blake, Andre Bloc, Hon. Augustine J. Bowe, Robin Boyd, Ray E. Brown, John E. Burchard, Albert Bush-Brown, Clifford J. Campbell, Andre Chastel, Dr. L. T. Coggeshall, Fairfax M. Cone, Thomas H. Creighton, Mayor Richard J. Daley, Gibson A. Danes, George E. Danforth, William F. Deknatel, Alderman Leon M. Despres, Senator Everett M. Dirksen, Jay Doblin, Balkrishna V. Doshi, Senator Paul H. Douglas, Alden B. Dow, James C. Downs Jr., Arthur Drexler, Mrs. Ben F. Enelow, John Entenza.

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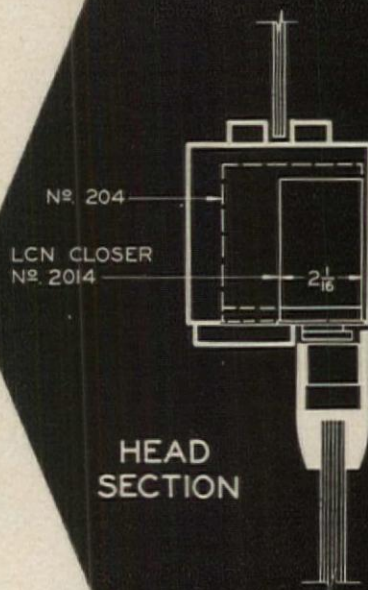
William W. Peters, Dr. Nikolaus Pevsner, Mrs. Ruth Philbrick, Ralph E. Rapson, Sir Herbert Read, Earl H. Reed, J. M. Richards, Edouard Roditi, Ernesto Rogers, Mrs. Eero Saarinen, Bruce Sagan, Louis Sauer, Harry J. Scharres, Ruth E. Schoneman, Jay H. Selz, Jose Luis Sert, Alfred Shaw, Arthur S. Siegel, Hon. Seymour Simon, H. Mayne Stanton, Thomas B. Stauffer, Edward Durell Stone, Carroll H. Sudler Jr., Kenzo Tange, Crombie Taylor, Jack D. Train, Heinz Troekes, Mies van der Rohe, Mrs. J. Harris Ward, Harry M. Weese, Philip Will Jr., Henry L. Wright, Barbara Wriston, William W. Wurster and Bruno Zevi.

## Construction Details

for LCN overhead concealed door closer  
installation shown on opposite page

LCN series 2000 & 200 closers' main points:

- 1 Efficient, full rack-and-pinion, two-speed control of the door
- 2 Mechanism entirely concealed in head frame and top of door; arm shows when door opens, is hidden when door is closed.
- 3 Hydraulic back-check cushions door if thrown open violently, saving door, wall, etc.
- 4 Hold-open available at 85, 90, 100 or 110 degrees setting
- 5 Closers are made for heavy duty and long life



HEAD  
SECTION

Send for comprehensive folder  
and see Sweet's 1963, sec. 19e/Lc, p. 6

# LCN

LCN CLOSERS, PRINCETON, ILLINOIS

A Division of Schlage Lock Company

Canada: LCN Closers of Canada, Ltd.,  
P. O. Box 100, Port Credit, Ontario

For more data, circle 39 on Inquiry Card



# Aladdin Restaurant



Modern Door Control by

**LCN**

Closers concealed in head frame

Aladdin Restaurant, Lloyd Center  
Portland, Oregon

John Graham and Company  
Architects—Engineers

LCN CLOSERS, PRINCETON, ILLINOIS

Construction Details on  
Opposite Page



## TAKE A LOOK AT ALL FOUR

There are four leaders in the lamp industry. You know the other three. Our name is Champion. ■ Naturally, all four have much in common. What makes Champion different? Most importantly — we're lamp specialists. In two ways. For one thing, we make lamps *only* — thousands of different kinds. They have been our one product since 1900. ■ Then, our field is commercial and industrial lighting — exclusively. Always has been. That's why we know it so well — and why we can offer the kind of service we do. You won't ordinarily find Champion lamps in the supermarkets (unless you look in the fixtures). ■ Being specialists, we can concentrate on making superior lamps. All Champion lamps are made under one roof, to a rigid set of production standards. Every one of them is quality-controlled through more than 200 inspections. ■ Over the years we have devel-

oped our own special techniques and products. For example, a coating developed in our laboratory for the cathodes of our fluorescents that makes for long and efficient lamp life. Or our Very High Output lamps — the Champion VHO T12 line. They fit *all* standard high-intensity fixtures... no need for special positioning. They're trimmer and lighter than others, too. ■ Industrial or commercial lighting represents a big expenditure. When it's time to buy, take a close look at all four. We think you'll buy Champion. For full information, call your local Champion distributor or write Champion Lamp Works, Lynn, Massachusetts.



OUR ONLY BUSINESS

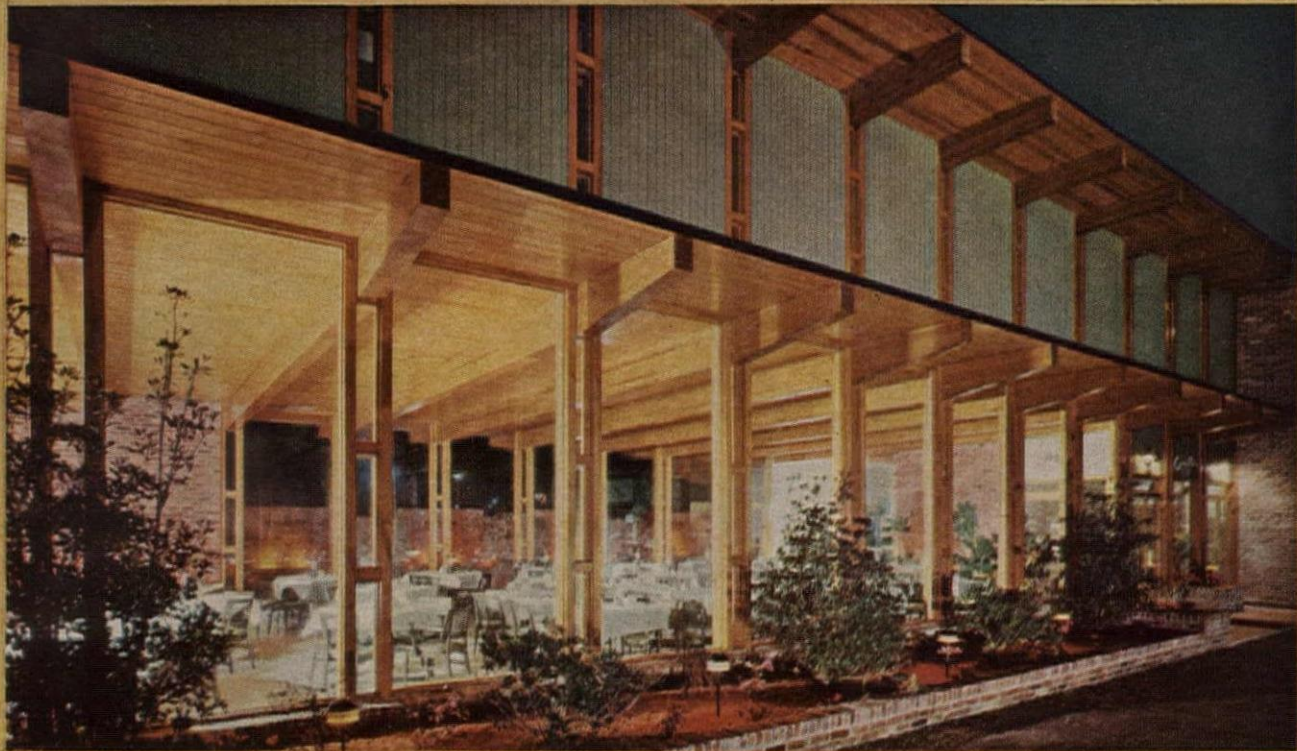
FOR OVER HALF A CENTURY

For more data, circle 40 on Inquiry Card

Modern...  
in beauty and  
design efficiency



Capitol Music Center, Baton Rouge, La., A. Hays Town, A.I.A.



Camillo's Restaurant, New Orleans, La., Paul J. Mouton, Architect

## A new freedom of design and economy in commercial buildings with \*SPA Southern Pine.

Camillo's lends a cordial atmosphere for leisurely dining. The design takes full advantage of the structural values and beauty of SPA Southern Pine. Unique columns, solid roof decking and laminated beams form a highly efficient two-story frame.

SPA Southern Pine is ideal for modern engineered construction, because of high stress values, full length grading and dimensional stability.

Capitol Music Center creates a feeling of spaciousness in a small area. Graceful laminated beams and solid decking of Southern Pine, warmly beautiful with high acoustical value, create an inspirational setting.

Send for free copy of "New Dimensions of Design" with color illustrations and descriptions of new techniques for many forms of building. Address: Southern Pine Association, AR-9, Box 52468, New Orleans 50, La.

\*Trade-Marked and officially Grade-Marked



# SOUTHERN PINE

*Pre-Shrunk for greatest structural strength*

FROM THE MILLS OF THE SOUTHERN PINE ASSOCIATION

For more data, circle 41 on Inquiry Card



## ARE DOOR FAILURES GIVING YOU HEADACHES?

Your BARCOL dealer can help you prevent the major causes of overhead-type door failure.

By analyzing door requirements, he identifies penalty your client would pay with inadequate, inferior-quality doors . . . justifies initial cost of door equipment . . . determines a firm, accurate budget figure . . . eliminates your headaches right at the preliminary planning stage.

BARCOL OVERdoor specifications are based on

PERFORMANCE STANDARDS . . . documented evidence that these superior overhead-type doors will provide more efficient materials handling . . . more effective plant maintenance . . . more accurate temperature control . . . more convenient door operation . . . longer door life.

Yes, your BARCOL dealer is a door specialist who can save your client money . . . save you time and worry! He will work directly with you, or as your representative to your client. Call him or write us.



BARCOL

**BARCOL OVERdoor COMPANY**

SHEFFIELD, ILLINOIS

Subsidiary Barber-Colman Company, Rockford, Illinois

For more data, circle 42 on Inquiry Card

For more data, circle 43 on Inquiry Card →

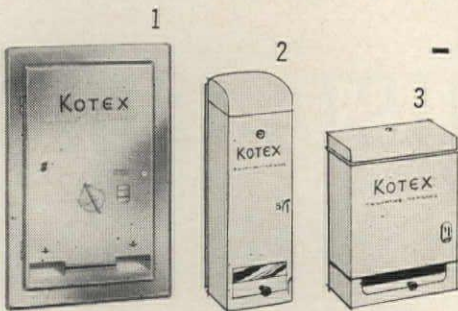


**What do most women prefer in buildings?** It's a fact. Most women prefer modern, spacious washrooms equipped with vending machines for Kotex feminine napkins. It's a fact—because most women prefer Kotex to all other brands! When you make provision for vending machines for Kotex, you add a greatly appreciated thoughtfulness—and help to eliminate unnecessary embarrassment and absenteeism.

Only Kotex offers three separate machine designs. Each is easily installed and is available in your choice of white enamel, bright or satin chrome finish. (The Kotex recessed model is also available in stainless steel.) All three vending machines are made of 18 and 20 gauge steel, with trouble-free, long-wearing, cold-rolled steel mechanisms. (Five-cent, ten-cent or free vending

mechanisms are available for all models.) 1. **Model R-63** (Recessed)—Dispenser can also be surface mounted. Holds 63 individually boxed Kotex napkins. 2. **Model MW-15** (Surface mounted)—Dispenser holds 15 individually boxed Kotex napkins. 3. **Model R-25** (Surface mounted)—Dispenser holds 22 envelope-wrapped Kotex napkins.

**More women choose Kotex feminine napkins than all others combined**



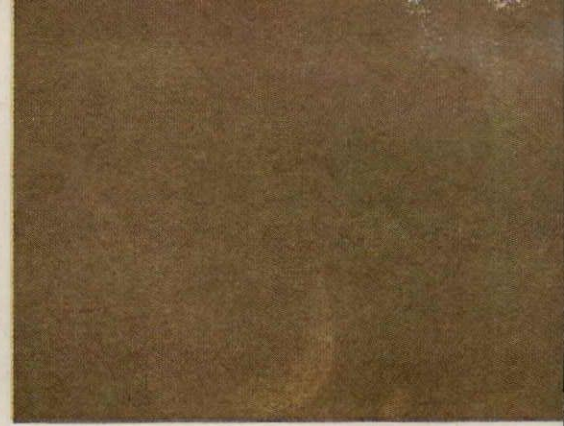
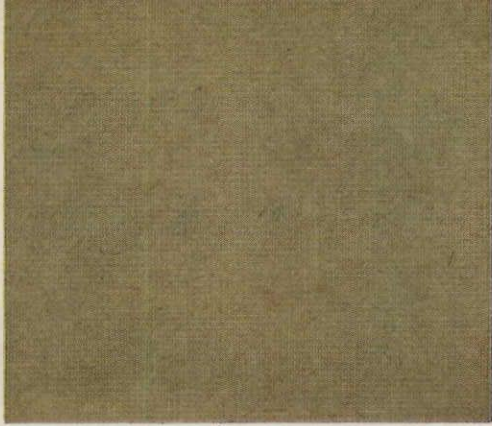
Kotex is a trademark of Kimberly-Clark Corporation, Neenah, Wisconsin

Kimberly-Clark Corporation, Department Number AR-93, Neenah, Wisconsin  
Gentlemen: Please send complete information on vending machine service for Kotex feminine napkins.

Name \_\_\_\_\_ Title \_\_\_\_\_  
 Organization \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

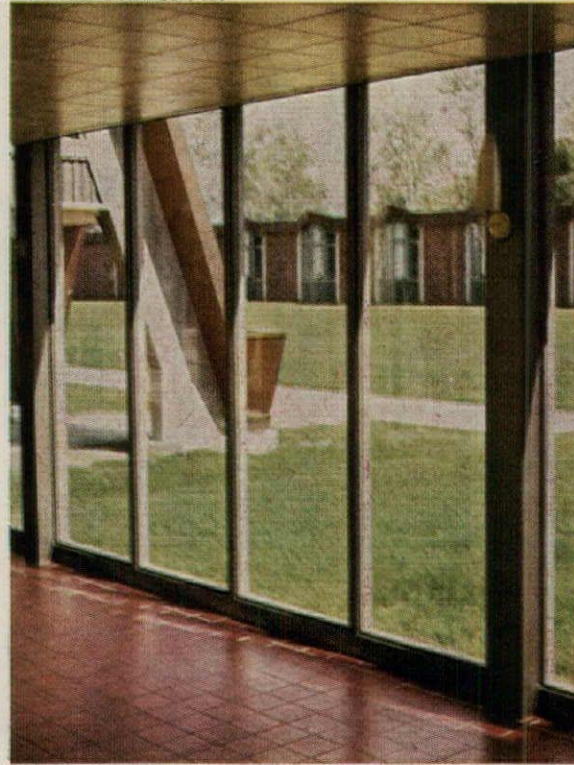
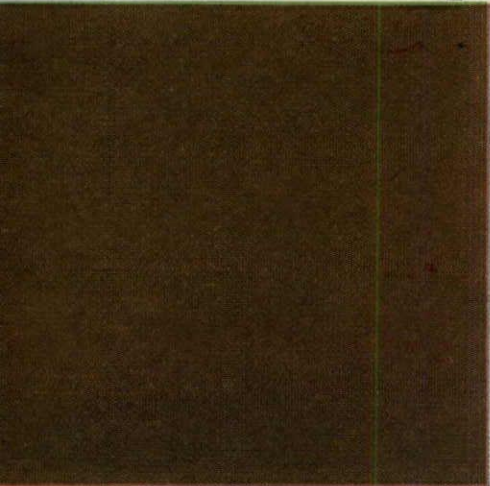
← For more data, circle 50 on Inquiry Card

For more data, circle 51 on Inquiry Card



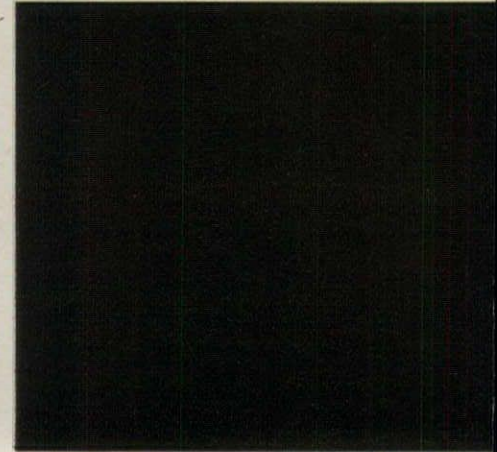
▲ LIGHT BRONZE - DURANODIC 300

MEDIUM BRONZE - DURANODIC 300 ▲



BLACK - DURANODIC 300 ▼

▲ DARK BRONZE - DURANODIC 300

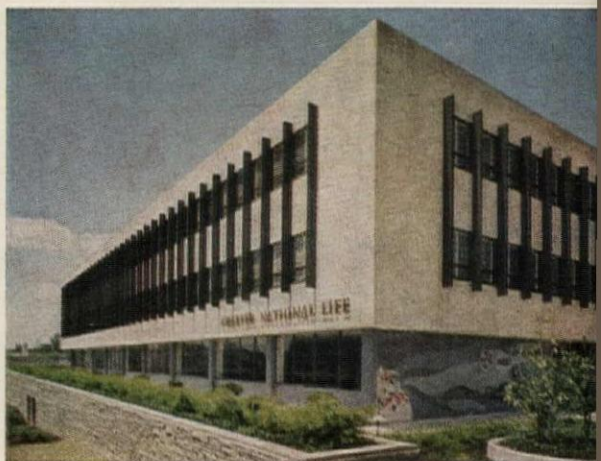


# DURANODIC\* 300

## HARDCOAT FINISHES WITH SUNFAST COLORS FOR YOUR OUTSTANDING ALUMINUM JOBS



\*DURANODIC is a registered Trade Mark of the Aluminum Company of America



Left: Our Lady of Angels Seminary, Glenmont, N. Y. DURANODIC 300, medium bronze used for windows, doors and frames. 215 R1 Alumilite spandrel panels, Urbahn, Brayton, & Burrows, Architects. ■ Top Right: The Madison Hotel, Washington, D. C. DURANODIC 300, medium bronze windows and entrance doors. Emery Roth & Sons, Architects. ■ Right Center: Fair Oaks Elementary School, Minneapolis, Minn. DURANODIC 300, medium bronze mullions. Matson & Wegleitner, Architects. ■ Lower Right: Charter National Life Bldg., Clayton, Mo. DURANODIC 300, medium bronze windows and fin type mullions. Meyer Loomstein, Architect.

Developed by ALCOA research... Tested and proved practical in countless applications by Cupples and other aluminum fabricators... DURANODIC 300 offers architects, designers and building owners a superior hardcoat finish for exterior aluminum surfaces in a choice of permanent sunfast colors.

Available in 4 basic colors — black, dark, medium and light bronze — with close color control — DURANODIC 300 opens up new opportunities for creative imagination in building design. This hard, abrasion resistant finish is available for sheet or extrusions. It is ideal for exterior architectural metal work, curtain wall panels, spandrels, doors and windows. **And it costs but little more than "Alumilite 215."**

With extensive and complete Duranodic facilities in all our plants, Cupples Products Corp. is in a position to assure uninterrupted delivery schedules. Why not specify DURANODIC 300 for your next job? If you would like to see examples of how other architects have used DURANODIC 300 effectively, write for a list of jobs in your area. Address Dept. AR 639.

## CUPPLES PRODUCTS CORPORATION

*a division of the Aluminum Company of America*

Main Office and Plant: 2650 So. Hanley Road, St. Louis 44, Mo.  
West Railroad St., Dowagiac, Mich. • 1450 Rincon St., Corona, Calif.



For more data, circle 52 on Inquiry Card

**Now...the ultimate  
TV/FM outlet for motels,  
hotels, apartment houses**



**JERROLD *ULTRA-TAP***

Now, from the world's leading manufacturer of master antenna systems, comes this simple, attractive, durable all-purpose tap-off unit for TV/FM—the new Jerrord *ULTRA-TAP*. Smart-design flush-mounting cover plates, in a variety of decorator colors and finishes, blend perfectly with any room decor.

The versatile *ULTRA-TAP* can handle TV and/or FM signals. It can be conveniently mounted together with an a-c power outlet under one cover plate.

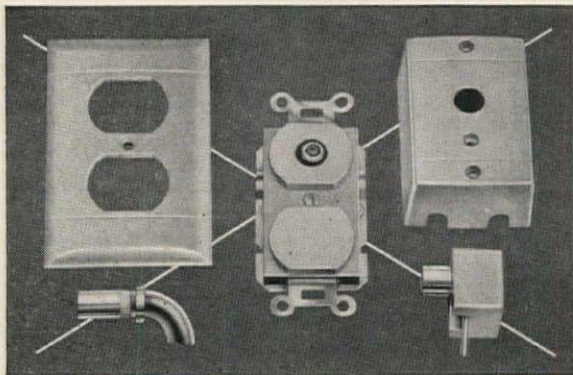


Illustration at left shows the basic outlet, which adapts to flush or surface mounting and accepts either 75- or 300-ohm solderless plug-in connectors. *ULTRA-TAP* is compatible with any TV signal-distribution system. Write for complete information on Jerrord's wide line of antennas and antenna systems.



A subsidiary of THE JERROLD CORPORATION  
Distributor Sales Division, Philadelphia 32, Pa.

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**ARCHITECT WORKS  
60 YEARS FOR FIRM**

Andrew Weggenman was honored in May at a party given by his fellow employees to celebrate his completion of 60 years' continuous employment with the architectural firm of Voorhees Walker Smith Smith & Haines.



Mr. and Mrs. Weggenman hear Ettore Coiro read a citation, celebrating Mr. Weggenman's 60 years employment

In May of 1903, Mr. Weggenman, then 14 years old, was hired by Andrew C. McKenzie of Eidlitz & McKenzie, predecessors of the present firm. They were at that time planning the design and construction of the building that became known as the Times Tower. Today, 60 years later, the present firm has been retained to modernize this same building for Allied Chemical Corporation.

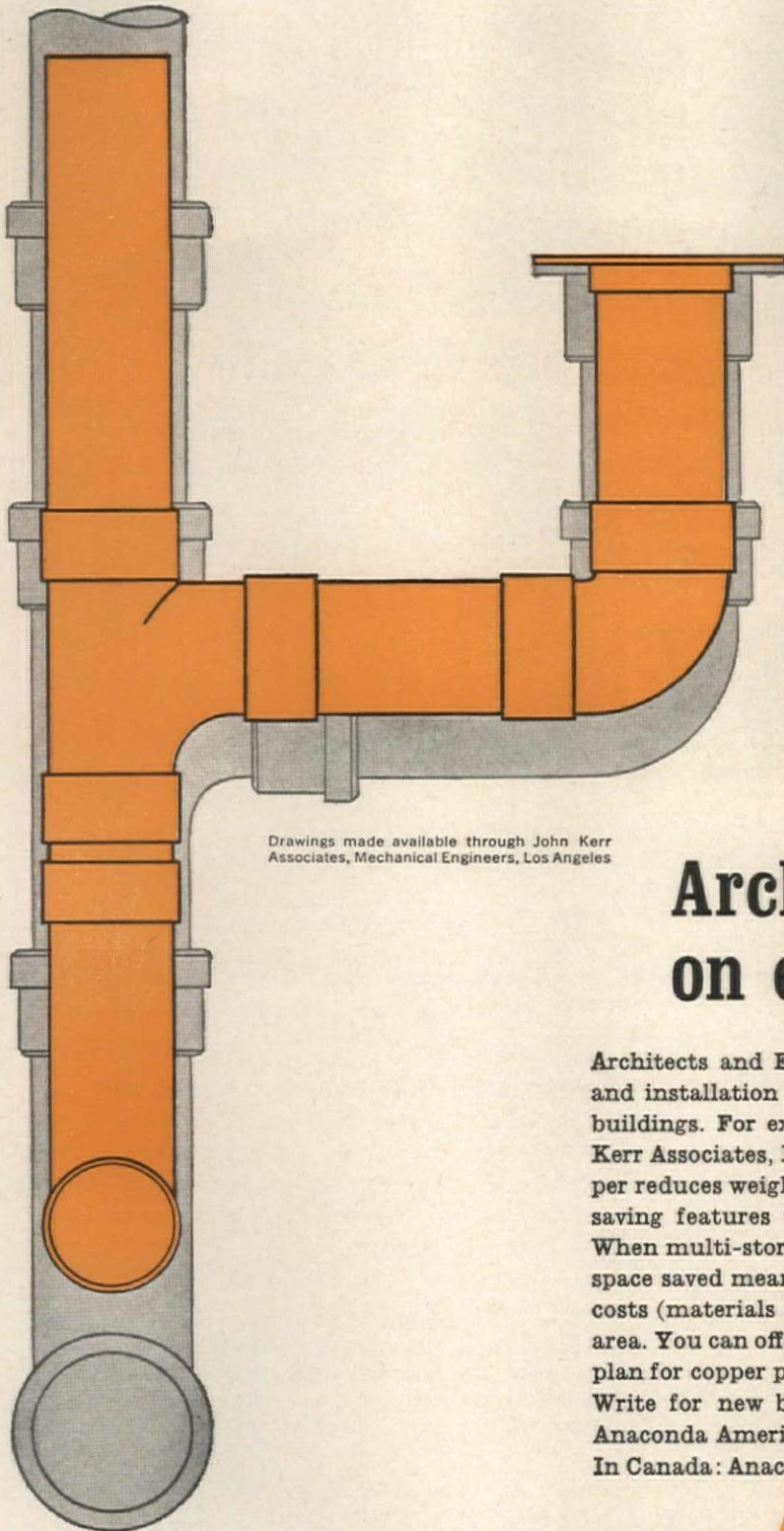
Mr. Weggenman has had a part in the planning of numerous specialized buildings for the New York Telephone Company, for whom the firm has been designing since 1885.

**COLUMBIA DIRECTS  
WORCESTER STUDY**

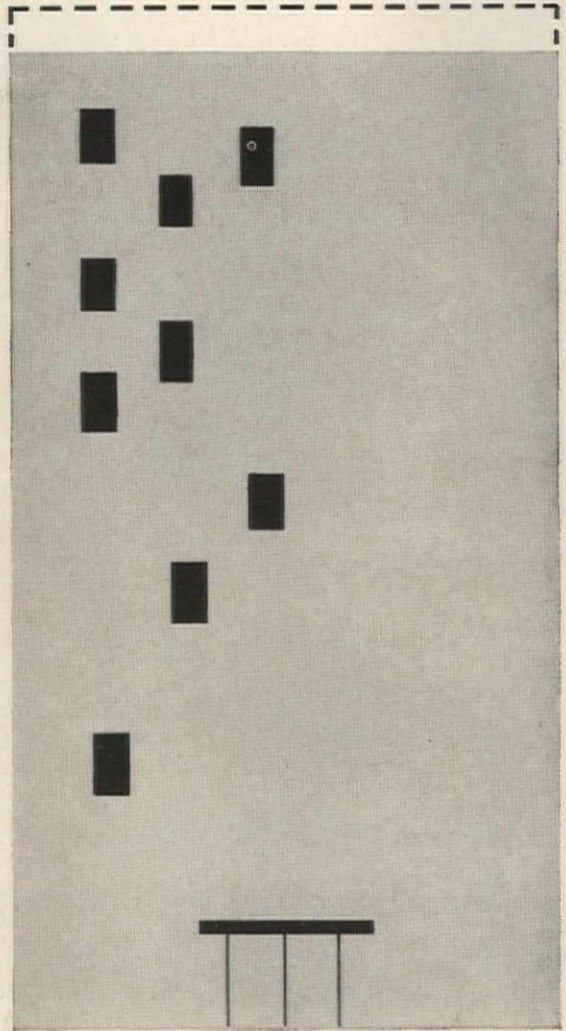
J. Stanley Sharp, architect and professor in Columbia University's School of Architecture, is director of the school's study for the redevelopment of the central business district of Worcester, Mass. Other members of the Columbia team under whose direction graduate architectural and planning students will work are Dr. Ernest Fisher, land economist and Sigurd Grava, city planner.

The study is part of the school's program in central business district studies which started this year with downtown Dallas.





Drawings made available through John Kerr Associates, Mechanical Engineers, Los Angeles



## Architects save more on every floor

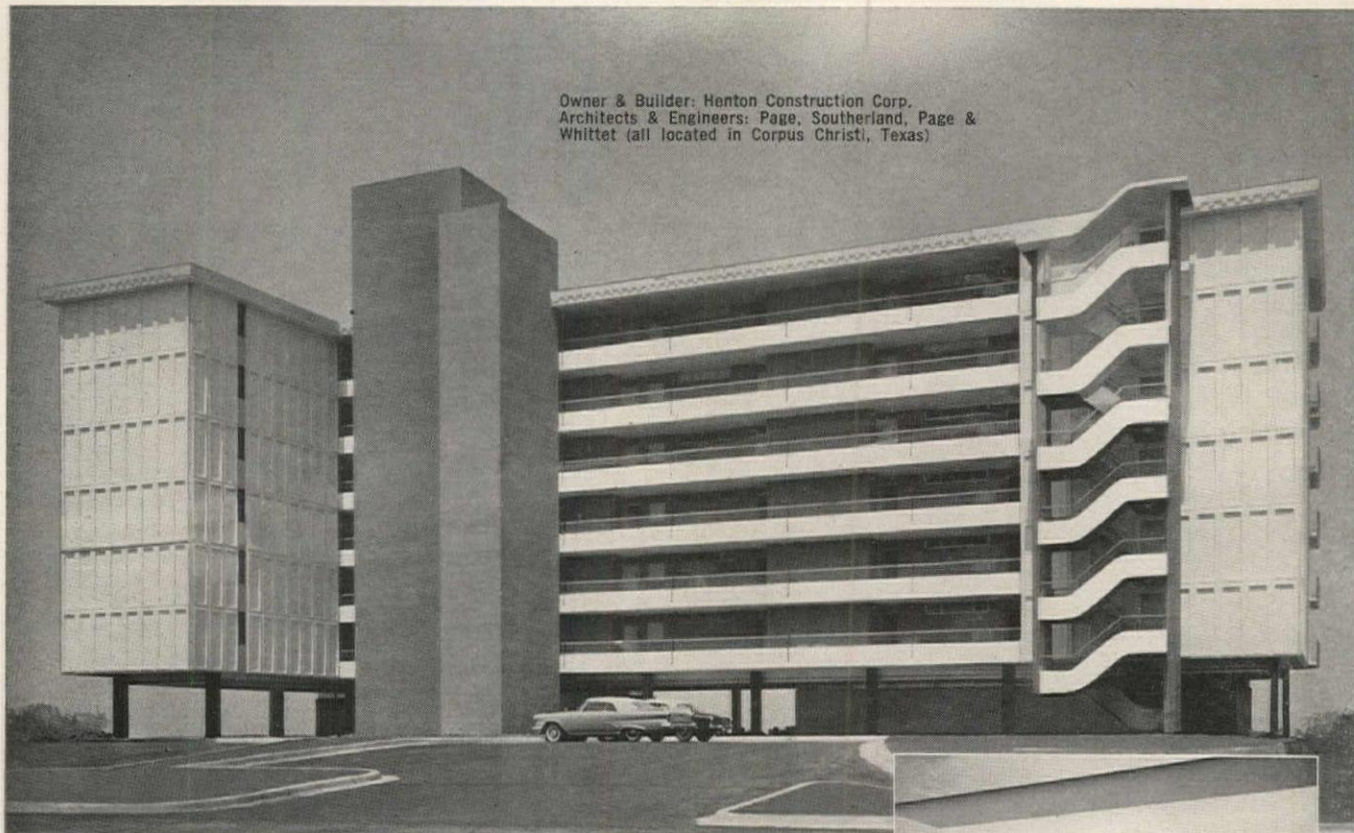
Architects and Engineers are telling us about the space savings and installation economies of All-Copper plumbing in high-rise buildings. For example, D. F. Dickerson, Vice-President of John Kerr Associates, Mechanical Engineers, Los Angeles, writes, "Copper reduces weight of the piping system and provides many space-saving features when distributing water or collecting wastes." When multi-story buildings are designed for copper plumbing the space saved means substantial reductions in general construction costs (materials and installation) and more usable, rentable floor area. You can offer these floor-to-floor savings to your clients if you plan for copper piping in the blueprint stage. You're the key man. Write for new brochure, "It Pays to Specify Copper." Address: Anaconda American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

**ANACONDA**<sup>®</sup>  
AMERICAN BRASS COMPANY

Leading Wholesalers Stock  
Anaconda Products

For more data, circle 54 on Inquiry Card

Owner & Builder: Henton Construction Corp.  
Architects & Engineers: Page, Southerland, Page &  
Whittet (all located in Corpus Christi, Texas)



Post-tensioned beams used in underground parking garage.

# PRESCON SYSTEM\*

## ALLOWS FREEDOM IN PARTITION PLACEMENT BY ELIMINATING INTERIOR COLUMNS

Maximum Space Utilization and Lower  
Cost Gained in Riviera Luxury  
Apartment Construction

Columns for this seven-story structure were placed only in the outside walls to gain complete flexibility in arranging partitions. The post-tensioned cast-in-place 10" lightweight concrete flat slab has no deflection in the 34' x 19' bays. The underside of the slab was plastered to become the finished ceiling. Nine foot cantilevers form open corridors on one side of the building. Prescon tendons were used for the 34' spans, mild reinforcing steel in the 19' direction.

The underground parking garage covering practically the entire site also serves as a fallout shelter. Wide

flat beams are post-tensioned to carry the 8" concrete slab, 24" of dirt and blacktop. Protection rating of the shelter is 100.

Whenever column-free interiors, or long spans are desirable, the Prescon System of post-tensioning offers advantages both from the design and cost standpoints. The Prescon representative can furnish you examples of numerous structures using this method of construction.

\*The Prescon System consists of the following components: (1) high tensile-strength carbon steel wires with cold-formed button-heads for positive end anchorage encased in (2) slippage sheathing, and (3) threaded-thru end anchorages (steel spread plate at fixed end and stressing washer and bearing plate at the stressing end) plus shims for maintaining tension.



**THE PRESCON CORPORATION**

P. O. Box 4186 • Corpus Christi, Texas

Albany • Atlanta • Memphis • Dallas • Houston • Denver  
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MEMBER OF PRESTRESSED CONCRETE INSTITUTE

SEE OUR  
CATALOG  
IN **S**  
SWEET'S

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*a story  
worth  
remembering  
by bradley  
washfountain*

Witness the modern lounge or powder room . . . bright, beautiful, marvelously sanitary. A vast improvement over the washrooms of yesterday! One reason for this phenomenon: progressive architects and discriminating owners select Bradley Duos — the washfixtures that win

*Compliments  
For  
The House*

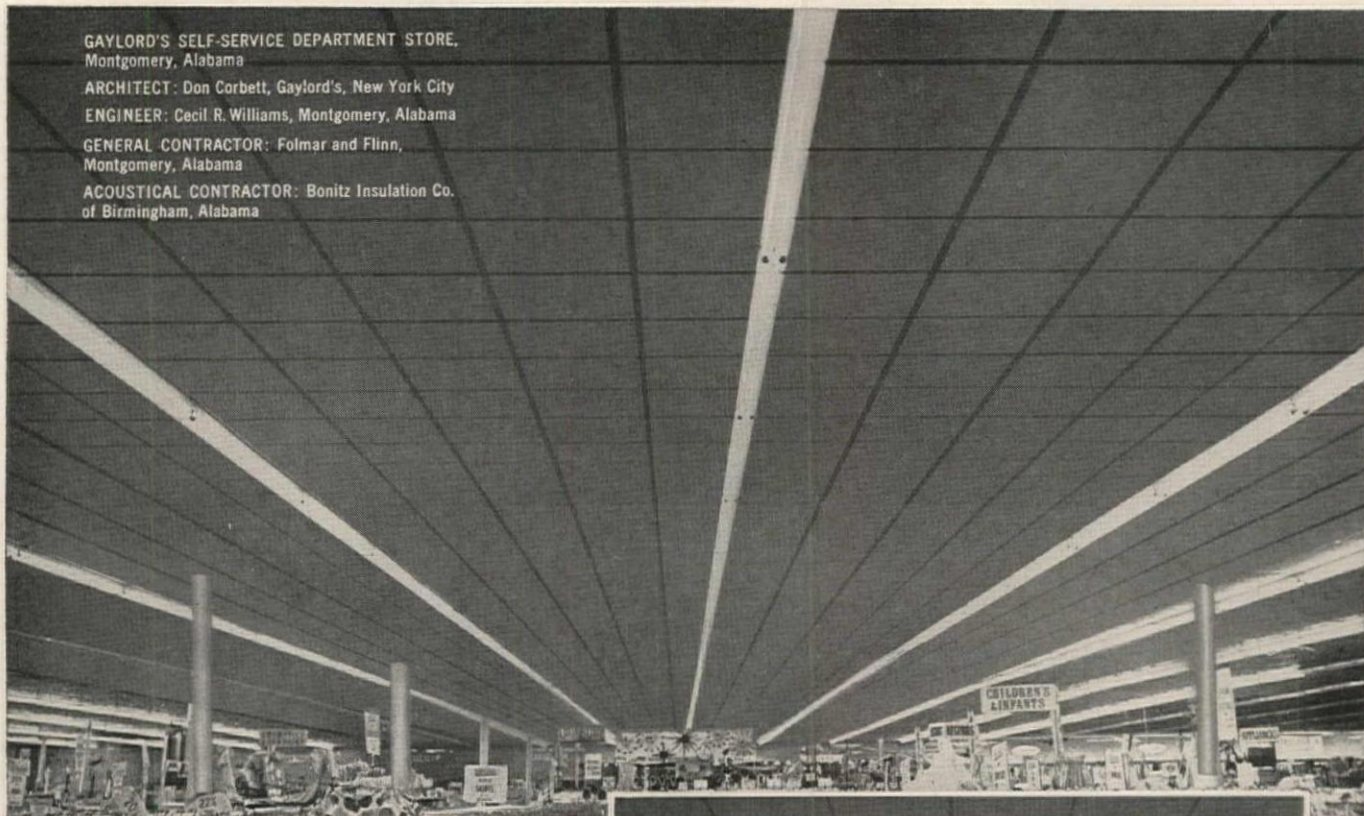
Duos are far more sanitary, because they are foot-operated. Hands touch only clean, tempered water, never germ-laden faucets or taps. And the water spray rinses the bowl *clean*. Space-saving Duos serve two people, yet require no more space than single lavatories. Of course, they are available in a full spectrum of colors to complement the most elegant decor. Bradley Duos are the last word in beauty and sanitation. And the last word of a guest leaving a Duo can well be "How thoughtful!"

Ask your Bradley representative for assistance on specific applications. Or write for latest literature. Bradley Washfountain Co., 2277 W. Michigan Street, Milwaukee 1, Wis.



COUNTER-TYPE  
WASHFOUNTAIN

GAYLORD'S SELF-SERVICE DEPARTMENT STORE,  
Montgomery, Alabama  
ARCHITECT: Don Corbett, Gaylord's, New York City  
ENGINEER: Cecil R. Williams, Montgomery, Alabama  
GENERAL CONTRACTOR: Folmar and Flinn,  
Montgomery, Alabama  
ACOUSTICAL CONTRACTOR: Bonitz Insulation Co.  
of Birmingham, Alabama



## SECURITEE EXPOSED GRID SYSTEM SCORES AGAIN—

*chosen for 60,000 sq. ft.  
area ceiling . . .*



Gaylord's Department Store in Montgomery, Alabama posed two distinct problems in ceiling installation: (1) The vast 60,000 sq. ft. single area, (2) Separating departments by lighting where an overall design occurred.

W. J. Haertel & Co. engineers and Bonitz Insulation Co. of Birmingham, the Acoustical Contractor, in conjunction with the architect and building contractor, solved this problem by using Securitee Exposed Grid System.

Main runners were installed 4' 0" on center; 4' 0" cross tees, 2 ft. O.C. with an intermediate 2 ft. cross tee formed a 24" x 24" ceiling pattern for **direct application of the tile**. The result: (1) a finished ceiling that met the most critical inspection requirements, (2) labor savings beyond the estimated costs were realized, (3) separation of various departments by overhead light arrangement, allowing the store to have a clean open look.



\* T. M. REG. U. S. PAT. OFF.

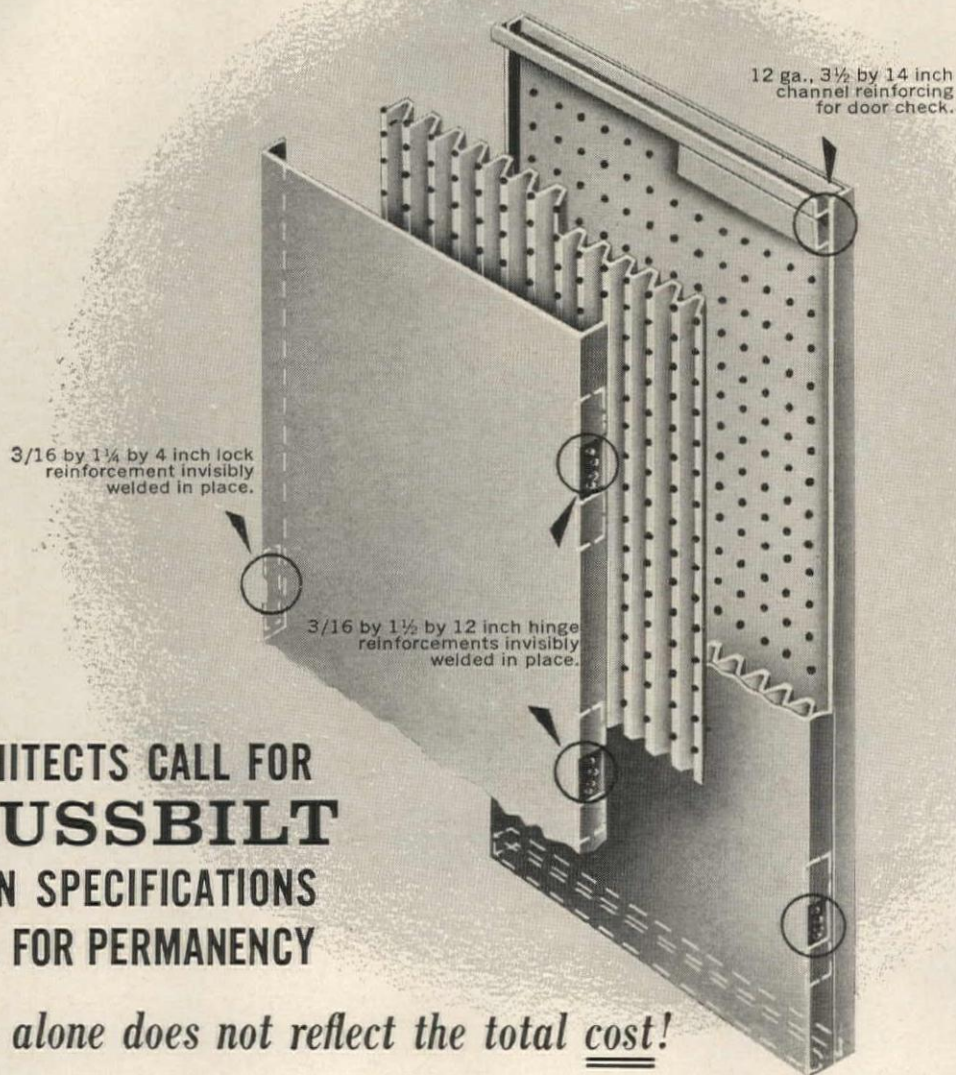
For more information about this particular installation, and other **SECURITEE SYSTEMS**, write

**W. J. HAERTEL & CO.**

11550 West King Street, Franklin Park, Illinois  
Phone 455-3232

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# X-Ray of a **TRUSSBILT** hollow metal door



ARCHITECTS CALL FOR  
**TRUSSBILT**  
WHEN SPECIFICATIONS  
CALL FOR PERMANENCY

Price alone does not reflect the total cost!

Architects, contractors and building owners should look to **QUALITY** and **VALUE** rather than price alone when it comes to installing permanent building components. Total cost involves repairs, maintenance and replacements. A quality product such as **TRUSSBILT** is constructed for permanency and rugged wear plus aesthetic qualities.

**TRUSSBILT's** specialization is *custom* hollow metal doors and frames. However, **TRUSSBILT's** Standardline of doors and frames maintain the same quality control as the custom line. Quality is not sacrificed for price alone.

Customers appreciate this. In fact, we seldom see a customer again until the next job is ordered . . . maintenance problems on **TRUSSBILT** products are *that* insignificant!

## **TRUSSBILT** features:

1. A continuous trusscore inner re-inforcement rather than intermittent channels . . . with over 800 invisible spot welds.
2. A guarantee that lasts and means something if you find it necessary to use it.
3. 37 years of outstanding service to the building industry.

AMONG OUR CUSTOMERS are outstanding architects and contractors throughout the nation. A representative list is available on request. Customers appreciate these high standards of quality control. We invite you to ask ours.

**TRUSSBILT**

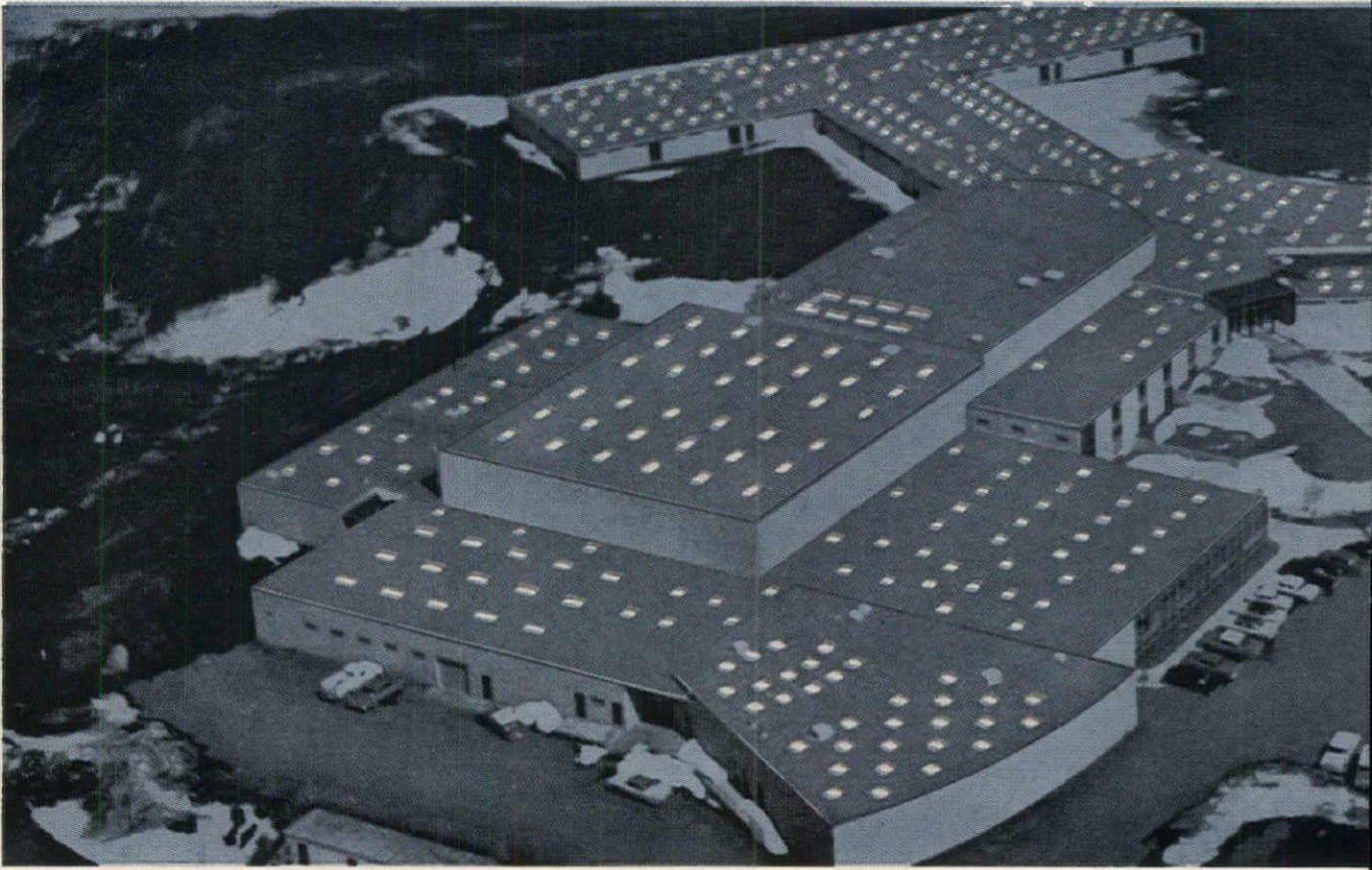
Division of Siems Bros., Inc.

2575 Como Avenue, St. Paul 8, Minnesota

Phone: Midway 6-7181 or Midway 5-7711

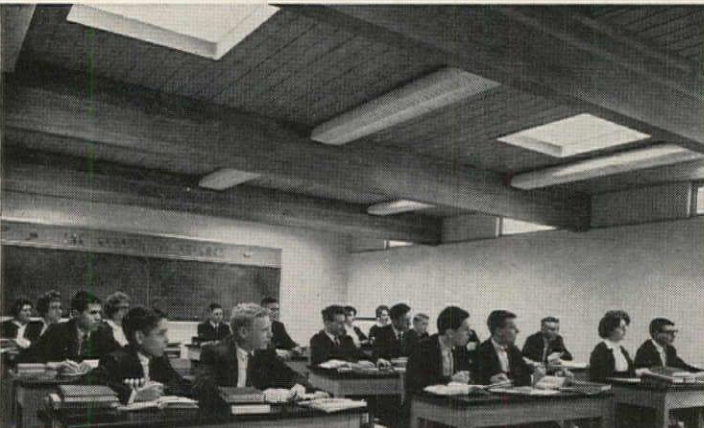
Sweets Catalog 16b  
File Number: Tru

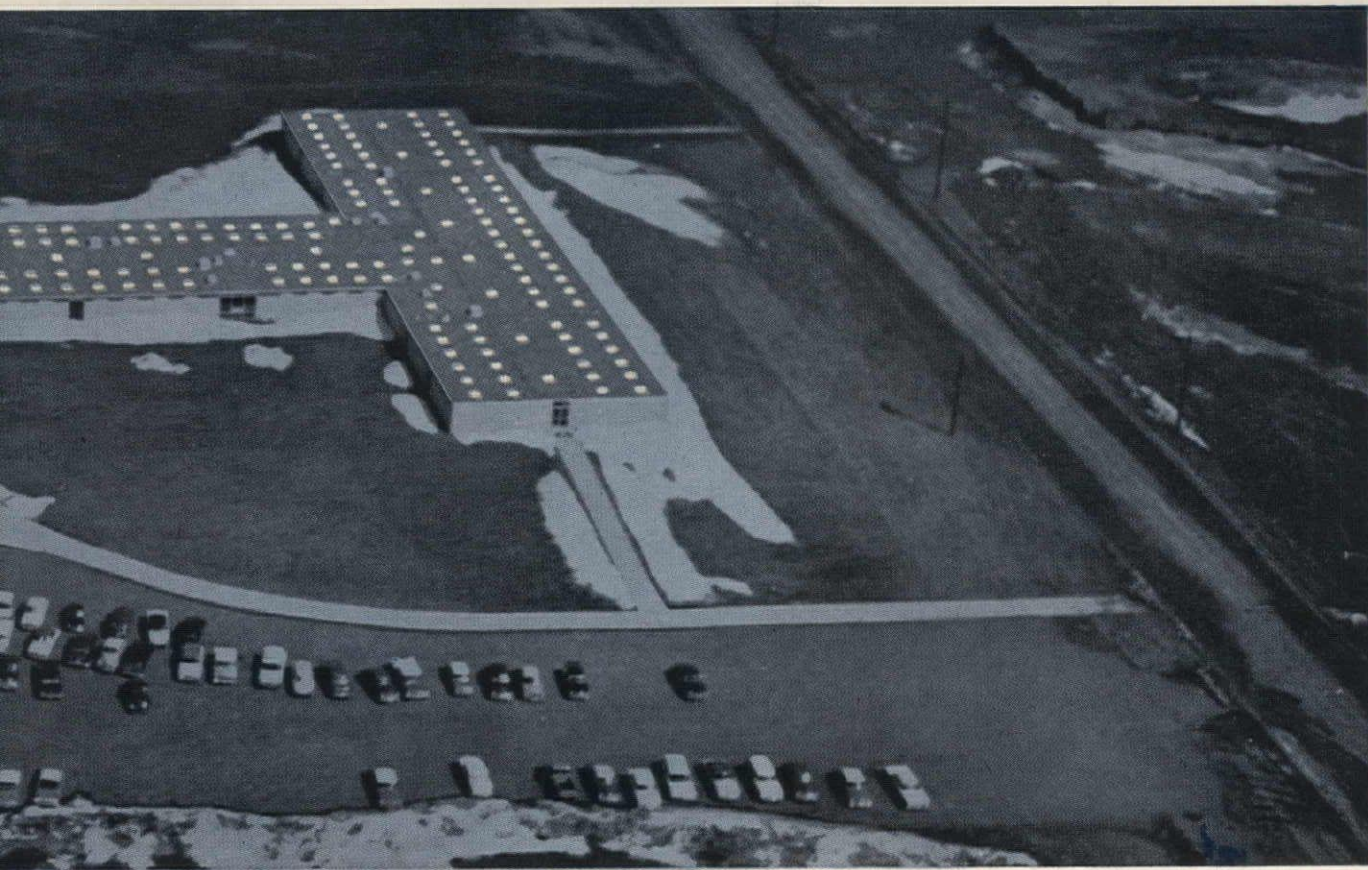
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Architect: Howard Parezo and Associates, AIA, Sioux Falls

## Quality lighting and operating economy with





## 570 Dome Skylights of **PLEXIGLAS**<sup>®</sup>



Dome skylights of PLEXIGLAS acrylic plastic provide natural lighting of the highest quality at the O'Gorman High School, Sioux Falls, South Dakota. In classrooms, corridors, gymnasium,

auditorium, cafeteria, library and lobby, the high-level daylighting is uniform in distribution and free of glare. In addition, an appreciable saving in electric power costs is realized because the school's incandescent and fluorescent lighting is needed only on the relatively few days when the sky is totally cloudy.

This daylighting installation was engineered to control the sky and sun conditions of its geographical location—through selection of the proper density of white translucent PLEXIGLAS for the diffusing domes of the skylights. *Five densities of white translucent PLEXIGLAS are available for skylights*, a choice that insures successful daylighting under any sky and solar conditions.

Through the use of the proper density of white translucent PLEXIGLAS, the following interior lighting goals were achieved at O'Gorman High School:

- The predetermined light level for the visual task involved—an average reading of 60 foot candles in the case of classrooms—is attained during at least 75% of the school year through the skylights alone.
- Daylight is distributed uniformly throughout the skylighted areas.
- Brightness of the light source—the skylight opening in the ceiling—is controlled to insure visual comfort.
- Output of heat per foot candle is lower with the skylights than the output produced by either incandescent or fluorescent light alone.

You can obtain these advantages through Daylight Engineering with dome skylights of PLEXIGLAS. Our engineering services and those of skylight manufacturers are available to help you. We will be pleased to send you the names of dome skylight manufacturers who use PLEXIGLAS.

**ROHM  
&  
HAAS**



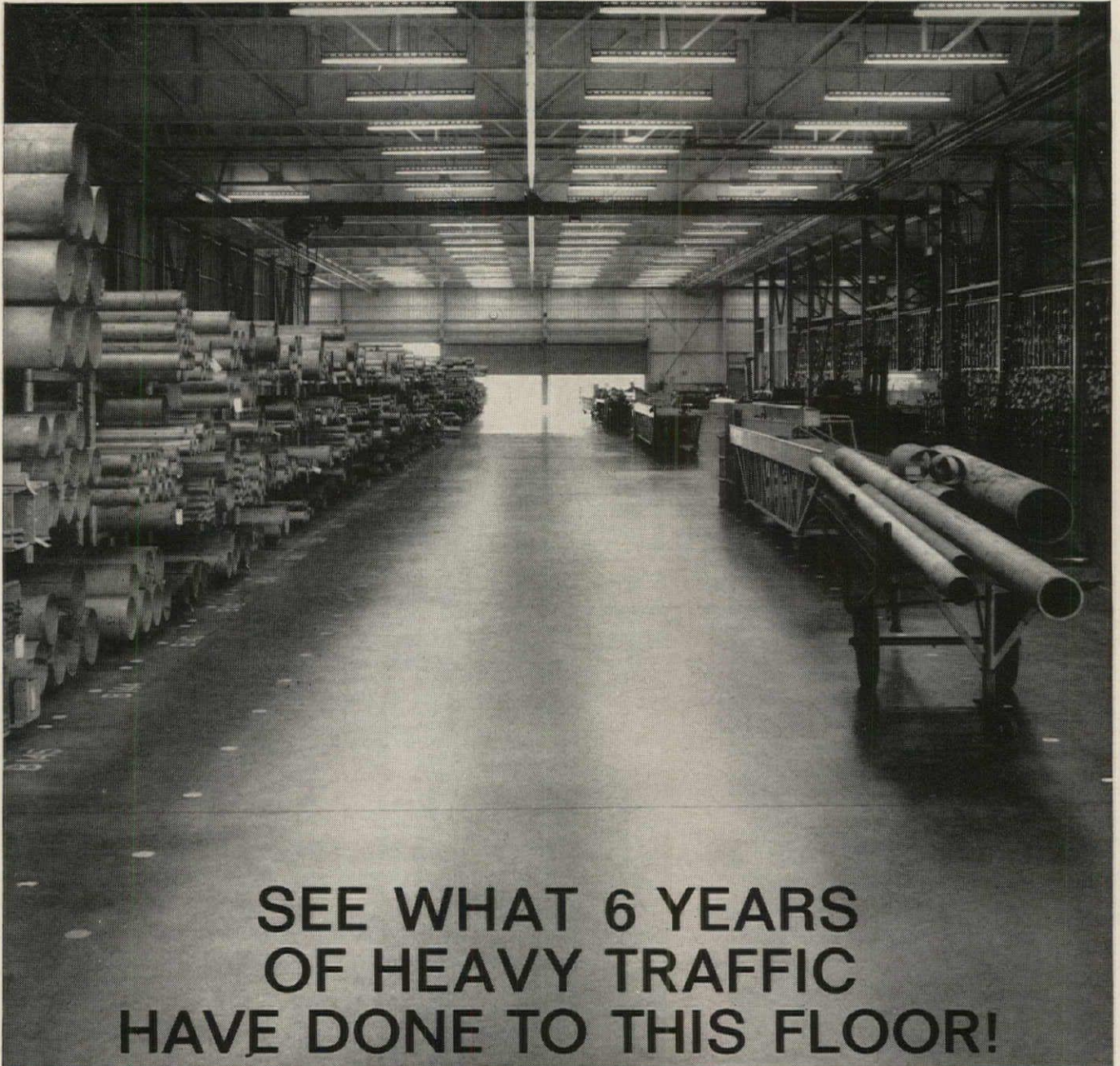
PHILADELPHIA 5, PA.

In Canada: Rohm & Haas Company of Canada, Ltd., West Hill, Ontario

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IN 1957, ONE COAT OF WEST CONCRETE FLOOR TREATMENT WAS USED AT THE TUBESALES PLANT IN LOS ANGELES. IN 1963 . . . NO CHANGE!



**SEE WHAT 6 YEARS  
OF HEAVY TRAFFIC  
HAVE DONE TO THIS FLOOR!**

(PRACTICALLY NOTHING.)

West Concrete Floor Treatment is the one product that cures, hardens, seals and dust-proofs new concrete floors with a single application! Goes on right after troweling!

Just *one coat* of West Concrete Floor Treatment seals concrete and helps minimize staining from acids, oils, and greases during the early construction phases. Protects surface from plaster, paint, mud and abrasive traffic during final construction period. No removal of West Concrete Floor Treatment is necessary prior to the installation of composition tile or other material.

This remarkable time-and-labor saving treatment is effective on all concrete surfaces. It enables concrete to retain over

95% of its moisture. Permits a gradual and even release of moisture so that the curing, hardening and sealing processes occur simultaneously. And it meets ASTM specifications C-156 and C-309-58.

Why not contact the man to help you with specifications and additional information: your West representative. Look him up in your Yellow Pages, or write West Chemical Products, Inc., Construction Division, 42-16 West Street, Long Island City, New York.



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In all the world  
no other drapery track like



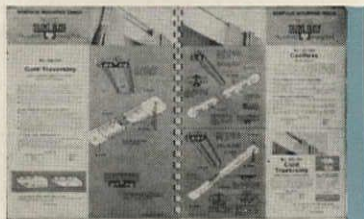
**SILENT GLISS**

*the silent*  *drapery tracks*



**the secret  
of  
SILENT GLISS**

- All-nylon cord, traveling in patented, *separated channels!* Minimum maintenance, because there's no drooping, no tangling *ever*.
- The only track in the world so *silent*. No annoying "Echo Chamber" roller noise!
- No other track so trim and tiny for the big job it does!
- Versatile. *14* track styles to choose from for every need whether cord operated or hand drawn.



***best investment for quality installations***

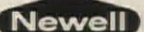
Find out for yourself why Silent Gliss is the prestige track that *makes sense* . . . why you can buy less expensive tracks, but never make a better track investment. Send for complete illustrated catalog containing full details of the entire Silent Gliss track line: cord or hand operated; recessed, surface or bracket mounted; cubicle, extra-duty, specialty tracks too . . . some tracks easily curved for specific requirements. Catalog also shows just a few of many prestige installations. Address Dept. AR-9.

**SILENT GLISS, INC., FREEPORT, ILLINOIS**

*Distributing Companies:*

Angevine Co., Crystal Lake, Illinois

Drapery Hardware Mfg. Co., Monrovia, California

THREE OF THE  COMPANIES

*Manufacturers of Quality Drapery Hardware Since 1903*

For more data, circle 61 on Inquiry Card

ANDERSEN PROVIDES THE WINDOW SOLUTION FOR ANY TYPE OF LIGHT CONSTRUCTION





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

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

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

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

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

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

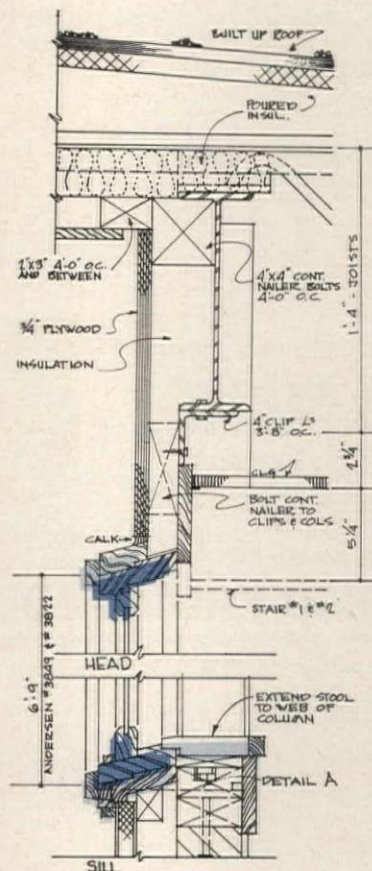
For added information, check Sweet's File—or contact your Andersen distributor for Tracing Detail File. Andersen Windows are available from lumber and millwork dealers throughout the United States and Canada.

# Andersen Windowalls

TRADEMARK OF ANDERSEN CORPORATION

**AW** America's Most Wanted Windows  
ANDERSEN CORPORATION • BAYPORT, MINNESOTA

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## AWARDS GO TO CITY PLANNER, ARCHITECTS AND SCULPTOR

Ludwig K. Hilberseimer, director of the department of city and regional planning at Illinois Institute of Technology, was recently elected to the Akademie der Kuenste in Berlin. This election represents the highest distinction which can be achieved in the art world of present-day Germany.

Professor Hilberseimer, a 76-year-old native of Karlsruhe, Germany, in 1928 founded the department of city planning at the Bauhaus, famed

pre-war German school of design.

Chicago's Junior Association of Commerce and Industry recently honored Professor Hilberseimer as "Chicagoan of the Year in Engineering and Architecture" for his contributions to Chicago in city and regional planning.

Louis I. Kahn has been presented with honorary membership in the American Institute of Interior Designers for "his concepts of order and design which have greatly influenced our mid-century environment as reflected in his architecture." The architect received the honor in May during the 32nd annual national A.I.D. conference held in Philadelphia.

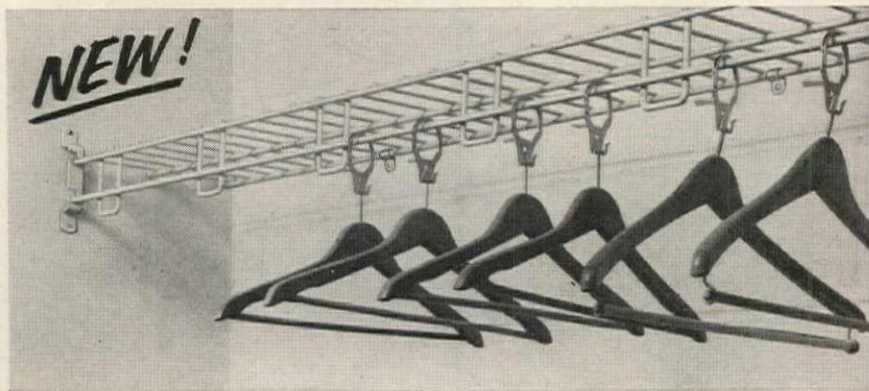
D. Kenneth Sargent, dean, School of Architecture, Syracuse University, has been named an honorary member of the Producers' Council. He was cited for his many architectural achievements and for his close cooperation with building products manufacturers in developing educational material (slide sets on building products) for use by architectural students. Mr. Sargent is the third person to be awarded this honor in the Producers' Council 42-year-old history.

The Municipal Art Society of New York has cited the following:

**Richard Lippold**, "Sculptor, for his work Orpheus and Apollo, the space dramatist in Philharmonic Hall"; **Marcel Breuer**, "Architect, for his powerful additions to the University Heights Campus of New York University, a complex of dormitory, classroom and lecture hall which dignify a difficult site";

**Mayer, Whittlesley & Glass**, "Architects, for the design of two Manhattan apartment buildings . . . which extended the best qualities inherent in their neighborhood, and **Daniel L. Gray** who sponsored and built these two extraordinary investment buildings";

**Abraham W. Geller and Ben Schlanger**, "Architects for the design of two motion picture theaters, Cinema I and Cinema II which bring the qualities of elegance and reserve to a field in which they most usually are absent and **Ralph Abrams** and **Donald S. Rugoff** for commissioning both designs."

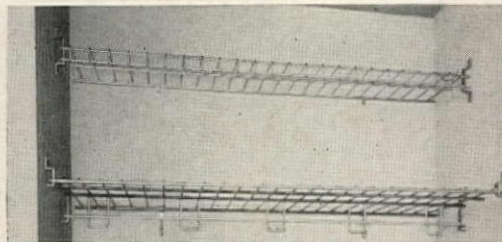


## PEMCO WARDROBE RACKS

12 WAYS BEST FOR CLOSET AND STORAGE AREA  
INSTALLATIONS—LOW COST AND VERSATILE

- 1 Costs less installed than conventional wood shelving & rods.
- 2 Strong welded steel — won't sag — unlimited life.
- 3 Durable Vinyl "Colorfuse" finish — blends with any decor.
- 4 No maintenance — won't collect dust nor trap dirt.
- 5 Single unit combines shelf and clothes hanger rod.
- 6 Fast, simple installation — extremely low labor cost.
- 7 Available any length and various widths — versatile.
- 8 "See through" visibility — no blind spots.
- 9 Free air circulation — guards against musty closet odor.
- 10 Divided clothes hanging — garments not crushed.
- 11 Light flows through rack — no dark corners.
- 12 All installation hardware furnished — anchors and screws. (Coat and .pant hangers available).

INSTALLATION SHOWING PEMCO  
WARDROBE RACK IN COMBI-  
NATION WITH PEMCO GENERAL  
STORAGE RACK, NOTE EXCEL-  
LENT SPACE UTILIZATION.



MANUFACTURED BY

**PEMCO-KALAMAZOO**

1800 RAVINE ROAD  
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CLIP AND MAIL TO PEMCO 1800 RAVINE ROAD KALAMAZOO, MICHIGAN

Send Representative with samples and Complete Catalog.

NAME \_\_\_\_\_

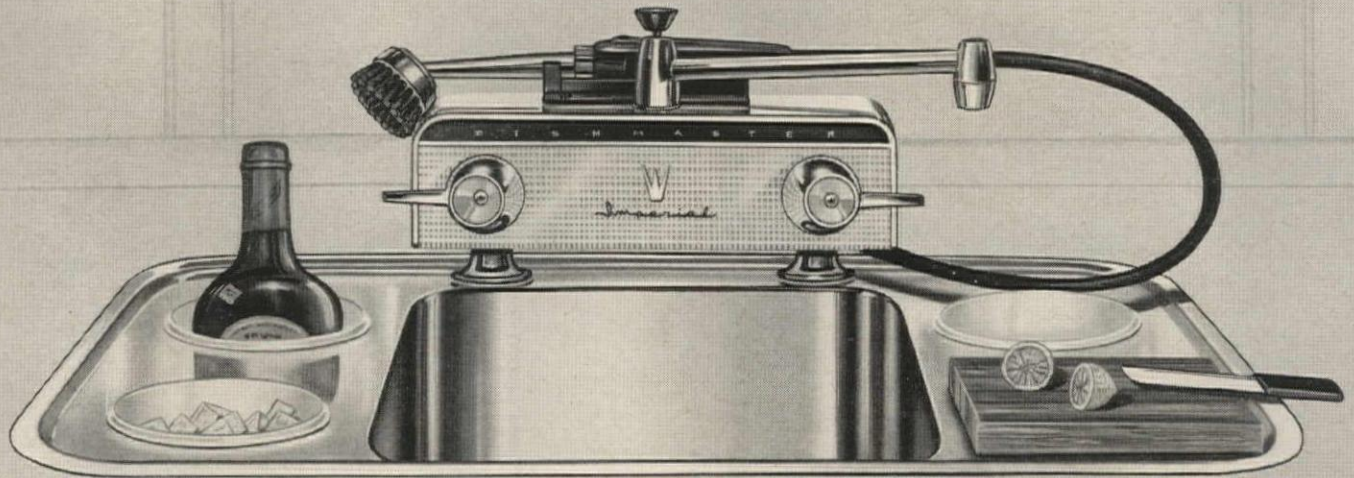
ATTENTION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

For more data, circle 63 on Inquiry Card

# New Dishmaster Bar-Boy Sink



## Costs little more than a sink and an ordinary faucet!

Dishmaster—famous the nation over for quality—now presents a complete bar-sink in combination with the Dishmaster dishwasher. Dishmaster is already America's best-liked dishwasher.

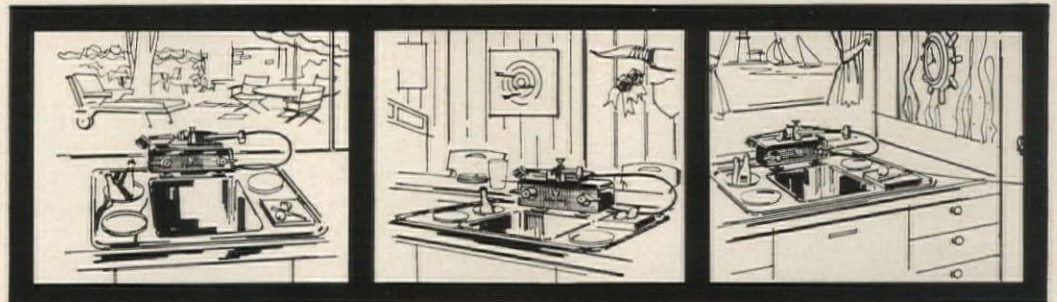
The Dishmaster Bar-Boy features four storage wells for ice, bottles or foods. The wells are made of polyethylene to prevent dripping and to retain cold. A chopping block (included with every sink) can be placed on top of one of the wells for salad or other food preparation.

This versatile unit is large enough to be practical, yet compact enough to allow its use in patios or boats, as well as kitchens and family rooms. The Dishmaster "Imperial" is an integral part of the unit, and installation is quick and easy.

The Dishmaster Bar-Boy Sink combination (Model DS-400) makes an invaluable selling feature for new homes and apartment units.

Your inquiry will receive prompt attention from either of the addresses below.

Here's the special sink for those limited areas—on the patio, in the family room, or in the galley. It's a convenient, practical sink, and the incomparable dishwasher—the Dishmaster "Imperial" is attached.

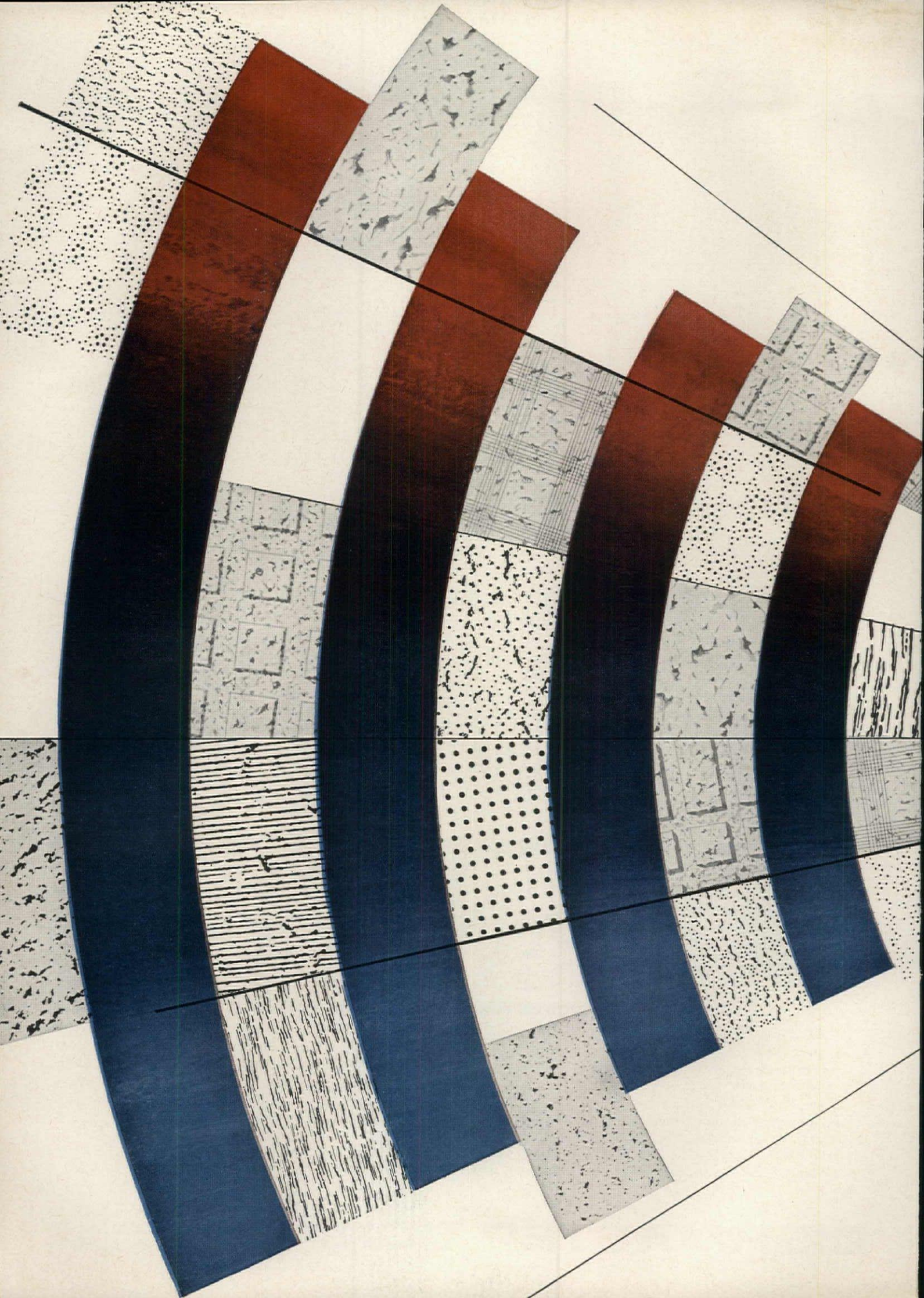


- 18-8 Self Rimming Stainless Steel Sink with a coated bottom and sides to deaden noise and prevent condensation.
- Standard 3½" drain hole.
- Laminated maple cutting block, specially treated, lifts out for easy access to wells, remains handy for cutting.
- Standard fittings provide for easy installation of sink.

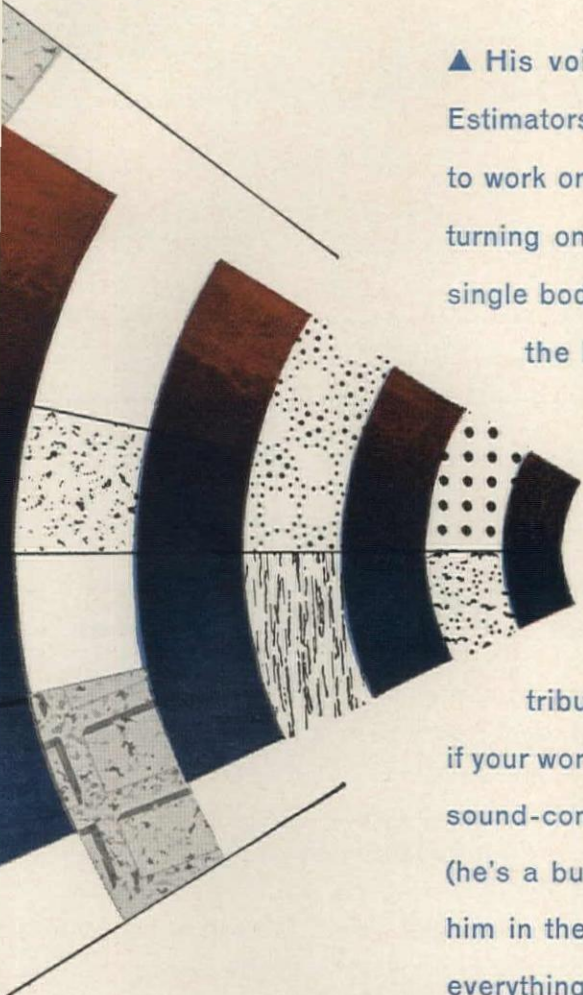
- Four polyethylene wells hold ice, bottles, ice cream scoops, fruit, etc. Flush mount for a level, leak-proof surface . . . lift out for easy cleaning or cold storage.
- Shipping Weight . . . 20 lbs.
- Dimensions:  
O.D. . . . 18¾" x 25¼" x 6"  
Sump. . . 11" x 14" x 6"  
Wells . . 4" Diameter x 5¼" Depth (1 quart cap.)

# DISHMASTER CORP.

2605 WOODWARD AVE.  
BLOOMFIELD HILLS, MICHIGAN  
2208 S. GRAND, LOS ANGELES, CALIFORNIA



Is the man with the answers  
in esthetic sound-control  
getting through to you?



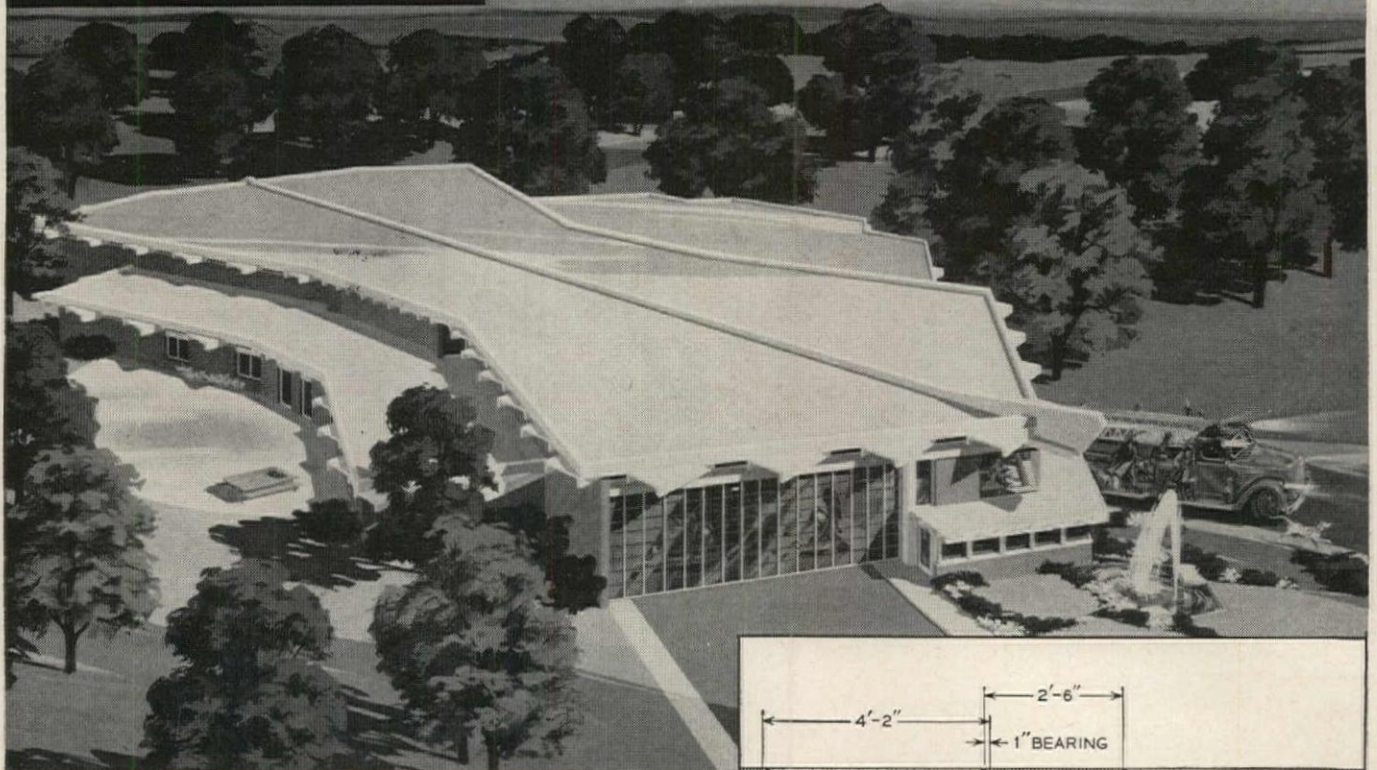
▲ His voice is respected because he commands an army. Estimators, designers, engineers, installers and inspectors go to work on your problem when he gives the word. As easily as turning on a faucet, he can put you in touch with the biggest single body of sound-control experience in the world. He offers the largest and most *varied* line of ceiling materials, acoustically *and* esthetically correct for today's demands, tested and proved in use. No one else can offer you even comparable variety and service. This man is at your beck and call. ▲ He's your local Acousti-Celotex distributor—a good man to know generally, and especially if your work leads you into the knotty-problem areas of esthetic sound-control. If he hasn't been getting through to you lately (he's a busy man) turn the tables and get through to *him*. Find him in the Yellow Pages and give him a phone call. You have everything to gain in dialing the man with the answers.



Problem-solver in esthetic sound-control

THE CELOTEX CORPORATION, 120 S. LA SALLE ST., CHICAGO 3, ILLINOIS  
Canadian Distributor: DOMINION SOUND EQUIPMENTS, LIMITED, MONTREAL

For more data, circle 65 on Inquiry Card



Firehouse of Company #21, Truck Company #7, owned by Metropolitan Government of Nashville and Davidson County. Mayor, Beverly Briley, Fire Chief, John Ragsdale. Architects: R. Bruce Draper & Associates; Consulting Engineer, Structural: Jack Figilis; Contractor: Reco Contractors, Inc. Prestressed Concrete Fabricator: Dixie Concrete Pipe Company, Inc., Nashville, Tenn.

## Elegance and economy are designed into this firehouse with **PRESTRESSED CONCRETE**

This beautifully designed and durably built fire station is another example of prestressed concrete construction. It is conceived on the spread channel principle, developed by the architectural firm of R. Bruce Draper & Associates, Nashville, Tennessee.

As practical as it is unique in design, the "X" shape building houses six pieces of fire apparatus. Quick access to the streets is provided by two exit ports; there are two entrance ports at the rear. Expensive? Not at all. Considerable savings were achieved in the 152 ft. long structure by positioning the prestressed channel slabs 30" apart and filling in with Insulrock slabs. Erection time? Much faster than conventional materials. The 16,000 sq. ft. of spread channels were erected in only 20 working hours.

Prestressed concrete offers many advantages to

architects and contractors: simplicity and symmetry of design...savings in construction time and materials...fire resistance...light weight, yet extremely high strength members.

For the latest information about prestressed concrete call CF&I-Roebling, the leading manufacturer of prestressing wire and strand. We will be happy to give you helpful information and the names of prestressed fabricators in your area, if you will tell us what type of structure you are considering. The Colorado Fuel and Iron Corporation, Denver 2, Colo.; Trenton 2, N. J. Sales offices in key cities.



9176

**CF&I-ROEBLING**  
PRESTRESSING WIRE AND STRAND

For more data, circle 66 on Inquiry Card





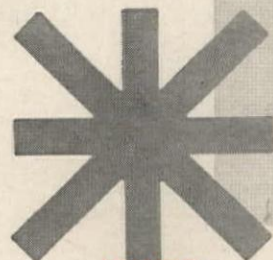
GREENS



BEIGES



TANS



KHAKIS



GREIGES



GREYS

**First from Amtico!**  
**Vinyl Asbestos**  
**color-keyed floor tile**  
**coordinates floors**  
**and decor!**

**NEW AMTICO  
 CONTRACT COLORS**

Here at last . . . flooring you can specify exactly and easily for overall color coordination. Amtico's new Contract Colors in popular Vinyl Asbestos tile include marbled color-keyed neutrals and bright accent tones . . . plus solid chip patterns.

Now, extensive Amtico research creates six distinct color families. Their muted tones coordinate perfectly with major equipment and decor colors most used in commercial, institutional and industrial installations. Each of the six Amtico color families—Grey, Greige, Beige, Tan, Green

or Khaki tones—is easily identified by one of the symbols illustrated. These symbols —also shown on samples, cartons and catalogs—quickly identify all Contract Colors within each family.

Amtico Contract Colors meet Federal Specification L-T-00345. In 9" x 9" Vinyl Asbestos tiles, 1/8" gauge (or 12" x 12", 1/8" gauge, on special order). Smooth pre-waxed surface for low-cost maintenance.

See your Amtico dealer, or write for free samples and full information.



The finest in Vinyl, Vinyl Asbestos, Vinyl Inlaid, Rubber and Asphalt Floorings

**AMERICAN BILTRITE RUBBER COMPANY**

TRENTON 2, NEW JERSEY

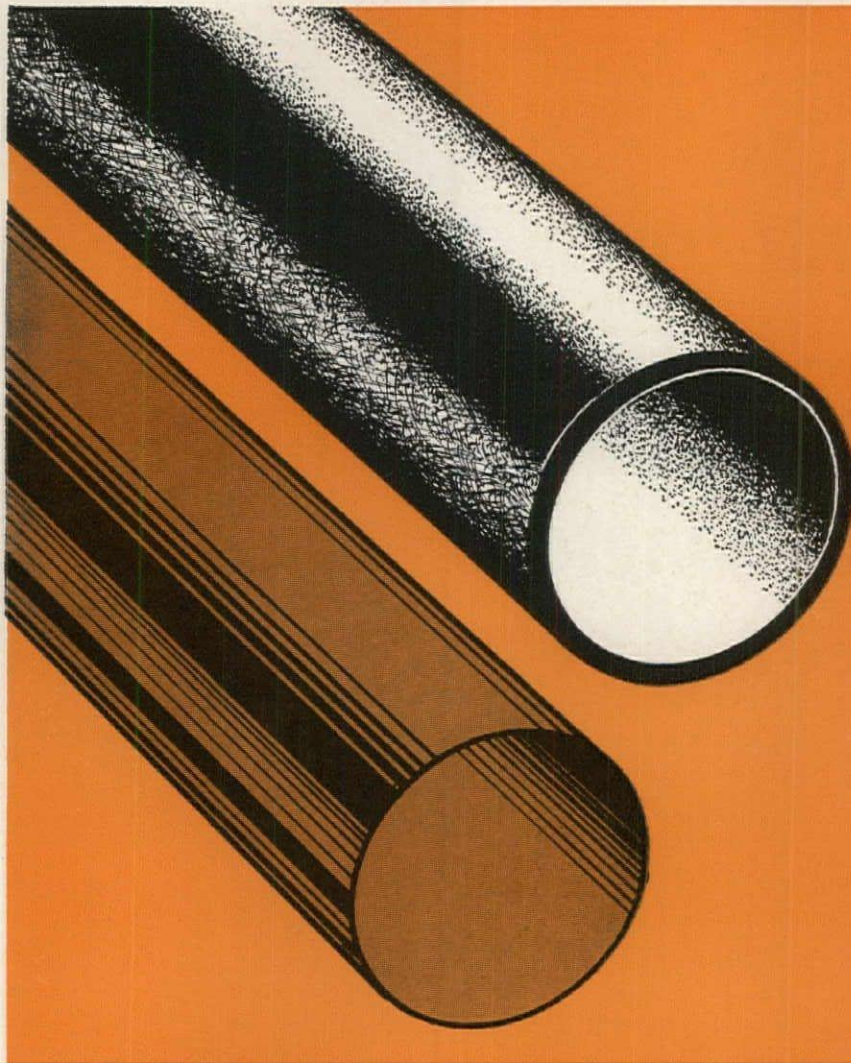
Showrooms: New York • Chicago • Los Angeles  
 San Francisco • Dallas • Toronto • London, England

In Canada: American Biltrite Rubber Company Ltd., Sherbrooke, Que.



For more data, circle 67 on Inquiry Card

# What does DWV copper





**IN CAST IRON SOIL  
PIPE...YOU CAN  
SEE...FEEL...AND  
HEAR THE DIFFERENCE.**

The facts on the adjoining page show the many advantages you get with cast iron soil pipe. They reveal with startling clarity the limited advantages you get from DWV thinwall copper tubing.

For instance: Cast iron soil pipe has a thick, strong wall. *Copper tubing has a soft, thin wall.* Cast iron soil pipe absorbs water noises and pipe vibration. *Thinwall copper tubing amplifies them.* Cast iron soil pipe can't be punctured accidentally by nails. *Thinwall copper tubing is puncturable.* And, cast iron soil pipe, in more than

a century of drainage service, has proved itself safely resistant to corrosive materials in ordinary sewage.

Keep these facts in mind when you write plumbing drainage specifications for *any* structure. *And be sure to specify*  *cast iron soil pipe. Why*  *? Because it is the quality code mark of responsible American cast iron soil pipe manufacturers who have established the Commercial Standard for their products. The importance of this specification to you and your clients is clearly told in folder offered below. Mail the coupon.*



Alabama Pipe Company  
The American Brass & Iron Foundry  
American Foundry  
Anniston Foundry Company  
The Buckeye Steel  
Castings Company

#### MEMBERS OF THE CAST IRON SOIL PIPE INSTITUTE

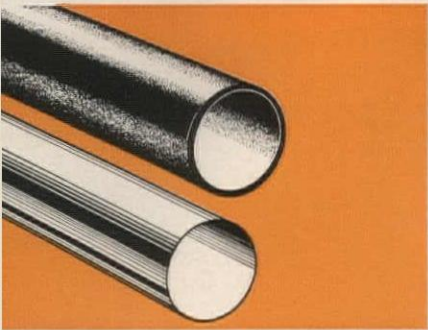
Buffalo Pipe & Foundry Corp.  
Charlotte Pipe and Foundry Company  
Glamorgan Pipe & Foundry Co.  
Rich Manufacturing Company  
Russell Pipe and Foundry Co., Inc.  
Tyler Pipe and Foundry Company

United States Pipe  
and Foundry Company  
Universal Cast Iron  
Manufacturing Company  
Western Foundry Company  
Williamstown Foundry Corporation

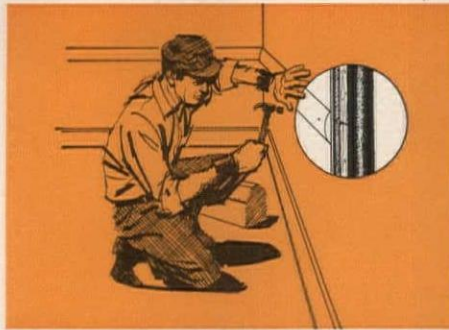
**See...Feel...Hear the difference! Specify  — the way to buy modern..**

# CAST IRON SOIL PIPE

# Drainage tubing fail to deliver?



**Cast iron soil pipe**—a rugged nominal .18-in. thick wall! DWV copper tubing—a soft, thin, nominal .045-in. wall. You can See...Feel...and Hear the Difference!



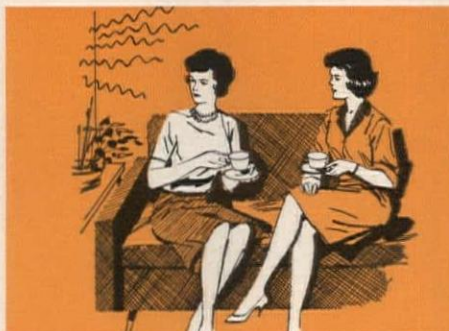
**Cast iron soil pipe is nailproof!** Accidental puncture of drain lines or stack can't happen with cast iron soil pipe. Plumber's "snake" does no damage from inside the pipe.



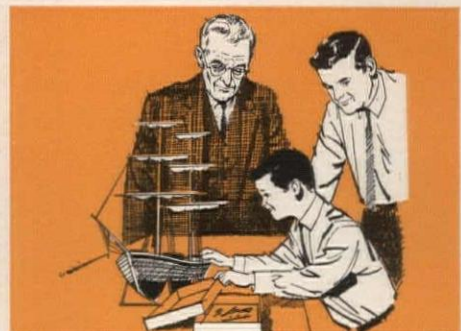
**Cast iron soil pipe resists corrosive bathroom wastes!** Wastes from plumbing fixtures affect cast iron soil pipe least—as records of years of public service show.



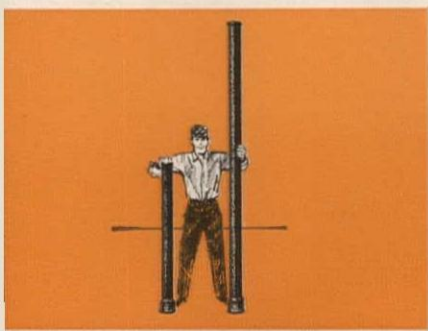
**Cast iron soil pipe takes household chemicals stride!** Detergents and drain cleaners have little corrosive effect on cast iron soil pipe—even after many years of use.



**No embarrassing bathroom noises!** Thick-walled cast iron soil pipe muffles gurgling water sounds, quiets vibration noise—the sign of a quality plumbing installation. DWV copper tubing amplifies sound.



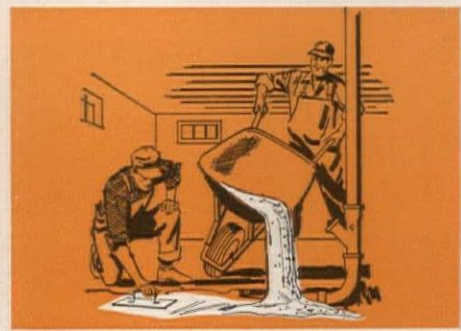
**Cast iron soil pipe gives long, long service.** It is not unusual to find cast iron soil pipe installations which have served through three generations—about 100 years.



**Modern 10-foot lengths** of cast iron soil pipe save installation time and cost. Fewer joints are needed in any drainage system in the house and to the street sewer.

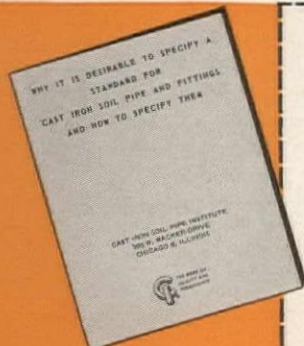


**Symbol of top quality.** This insignia on cast iron soil pipe and fittings guarantees these products are American-made, and meet the specifications adopted by the Cast Iron Soil Pipe Institute.



**Cast iron soil pipe** under the floor and to the street sewer gives maximum protection against infiltration, root penetration, crushing, pipe-joint failure. No substitute drainage piping can match it.

Mail coupon for the important folder that tells how the **CI** specification protects architects, specifying engineers and their clients.



Cast Iron Soil Pipe Institute, Dept. B.  
205 W. Wacker Drive, Chicago 6, Ill.

Gentlemen: Please send without cost

copies of: "Why It Is Desirable to Specify a Standard for Cast Iron Soil Pipe and Fittings—and How to Specify Them."

Firm Name \_\_\_\_\_

Your Name and Title \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

For more data, circle 68 on Inquiry Card

# The newest name in Portable wall Partitions

Self-storing . . . set up or taken down in minutes . . . appearance of permanent wall. Top cap expands against ceiling locking wall in place. Available in 1 3/4" thickness or 2 1/4" if greater sound retardance is required. Finished in choice of surfaces.



divide rooms quickly and easily



versatile and attractive



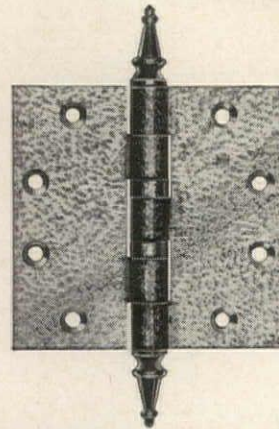
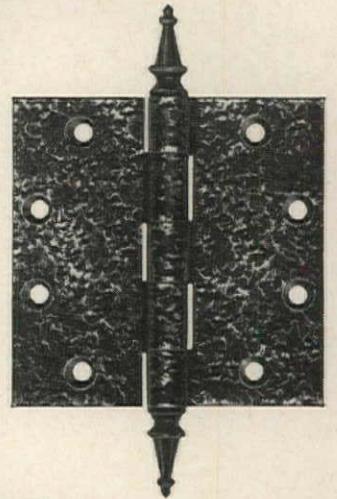
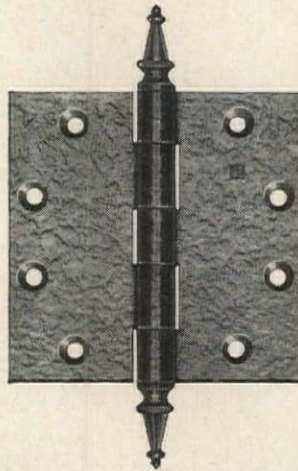
panels stack against wall when not in use

**\*KWIK-WALL CO.** SPRINGFIELD, ILLINOIS  
division of Capitol Wood Works AR 9

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Hager introduces a strikingly beautiful new hinge

## MODELÉ



This daring departure from the conventional smooth hinge brings architects new design range in decorator-inspired door hardware. The random-pattern surface, in modified bas relief, suggests hand-hammered metal or a fabric finish of brocatelle. Application is indicated where luxurious installations require rich accents tastefully ornamental. Modelé offers a choice of fourteen different finishes including bright or satin tones of silver, gold, iron, brass, and bronze. Custom finishes also available. The selection includes all popular sizes with plain or ball bearings.

HAGER HINGE CO., ST. LOUIS 4, MO.

Everything Hinges on Hager



For more data, circle 70 on Inquiry Card



## Hager creates for the Ornatologist

Where luxury is projected by traditional design, ornamentation must be rigidly disciplined. Architects who avoid ostentation yet make full use of the design freedom allowed deserve special identification. We call them *ornatologists* and entrust the use of the obviously artistic Modelé Hinge to their discerning judgment. This new hinge from Hager in a choice of rich finishes carries impeccable taste right to the doorway of traditional interiors. HAGER HINGE CO., ST. LOUIS 4, MO.



Everything Hinges on Hager

*more and more great American architects are using*

# M A R M E T

**here are a few of the reasons:**

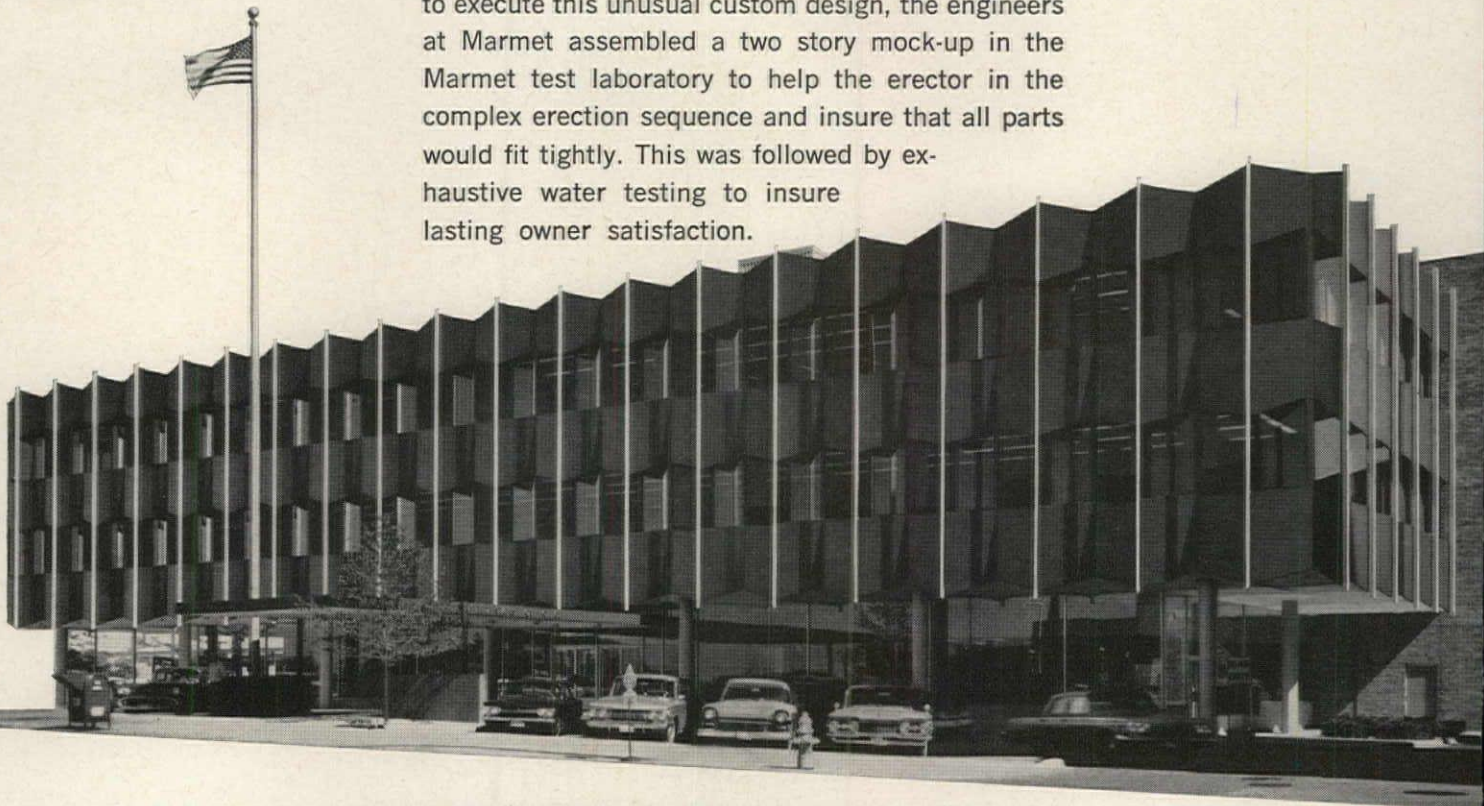
## SERIES **5212 CURTAIN WALL**

The unusual three dimensional treatment on this post office was created by the architect with bronze duranodic aluminum panels and vertical glazing, set off by diamond shaped bronze aluminum panels glazed on a slightly tilted horizontal plane. Aluminum frames of natural anodized and bronze aluminum were used to compliment the effect. . . . The brilliant, eye-catching result is a tribute to the imaginative skill of the architect. . . . In order to execute this unusual custom design, the engineers at Marmet assembled a two story mock-up in the Marmet test laboratory to help the erector in the complex erection sequence and insure that all parts would fit tightly. This was followed by exhaustive water testing to insure lasting owner satisfaction.

ARCHITECT  
J. G.

## DAVERMAN

Grand Rapids, Mich.



### GRAND RAPIDS POST OFFICE

The imposing facade of this new structure in Grand Rapids, Michigan is fenestrated with MARMET's monumental AP series. Specially designed sun screens which add the striking face effects, were also fabricated by MARMET.

# MARMET

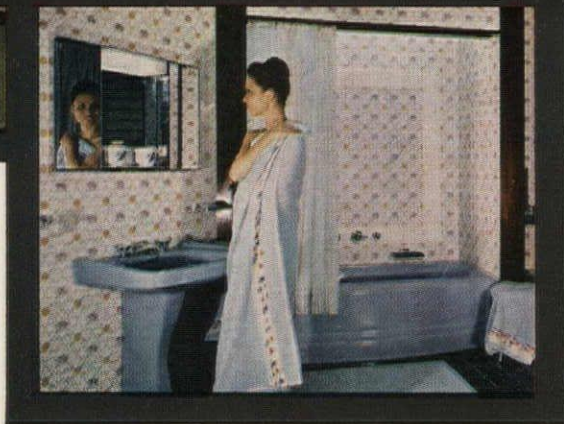
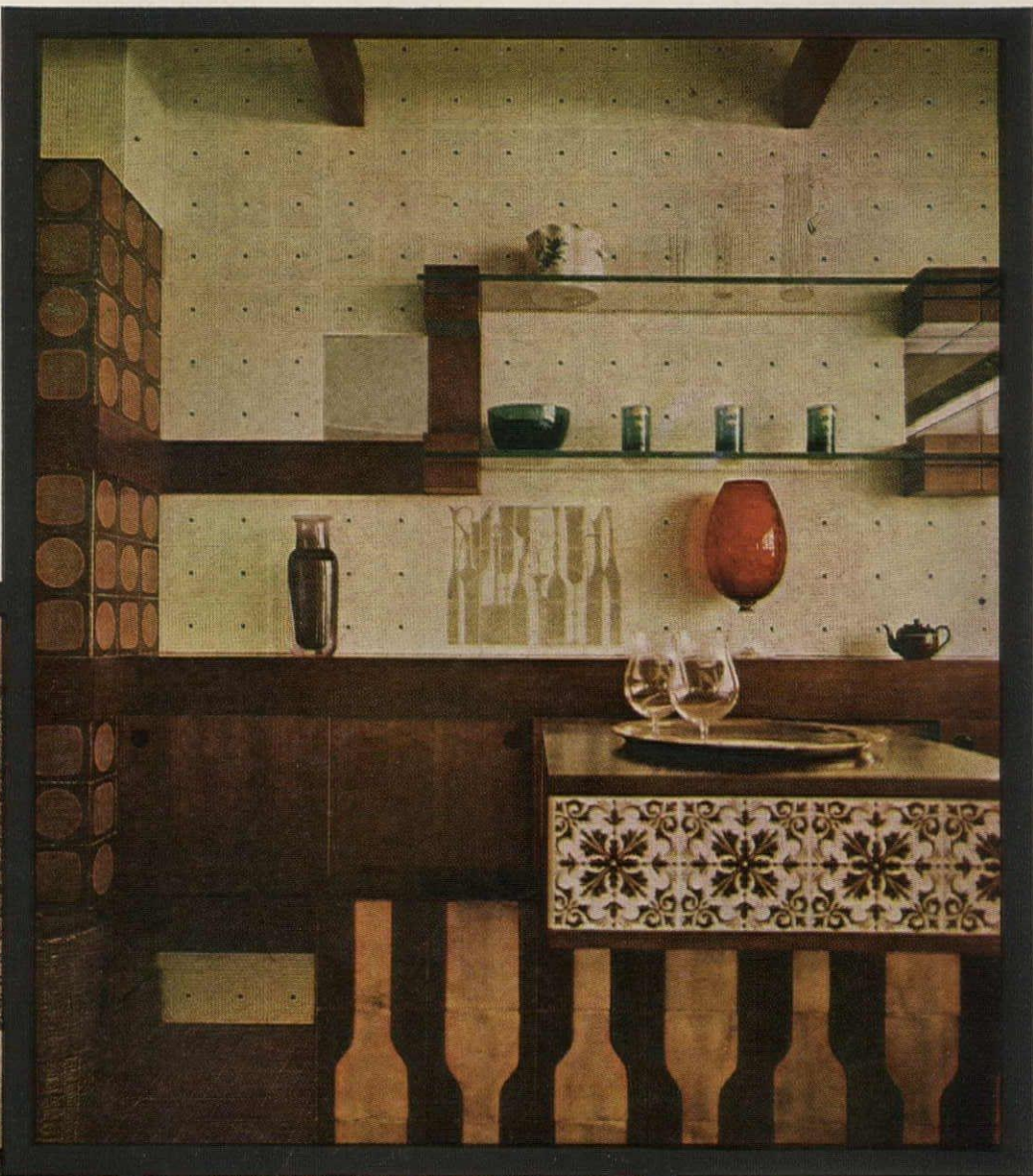
corporation

SWEETS CATALOG 3a  
OR WRITE MARMET MAR

300-B Bellis Street  
WAUSAU, WISCONSIN

For more data, circle 71 on Inquiry Card

Installed...  
Ceramic Tile  
**Ginori** of Italy  
Costs No More!



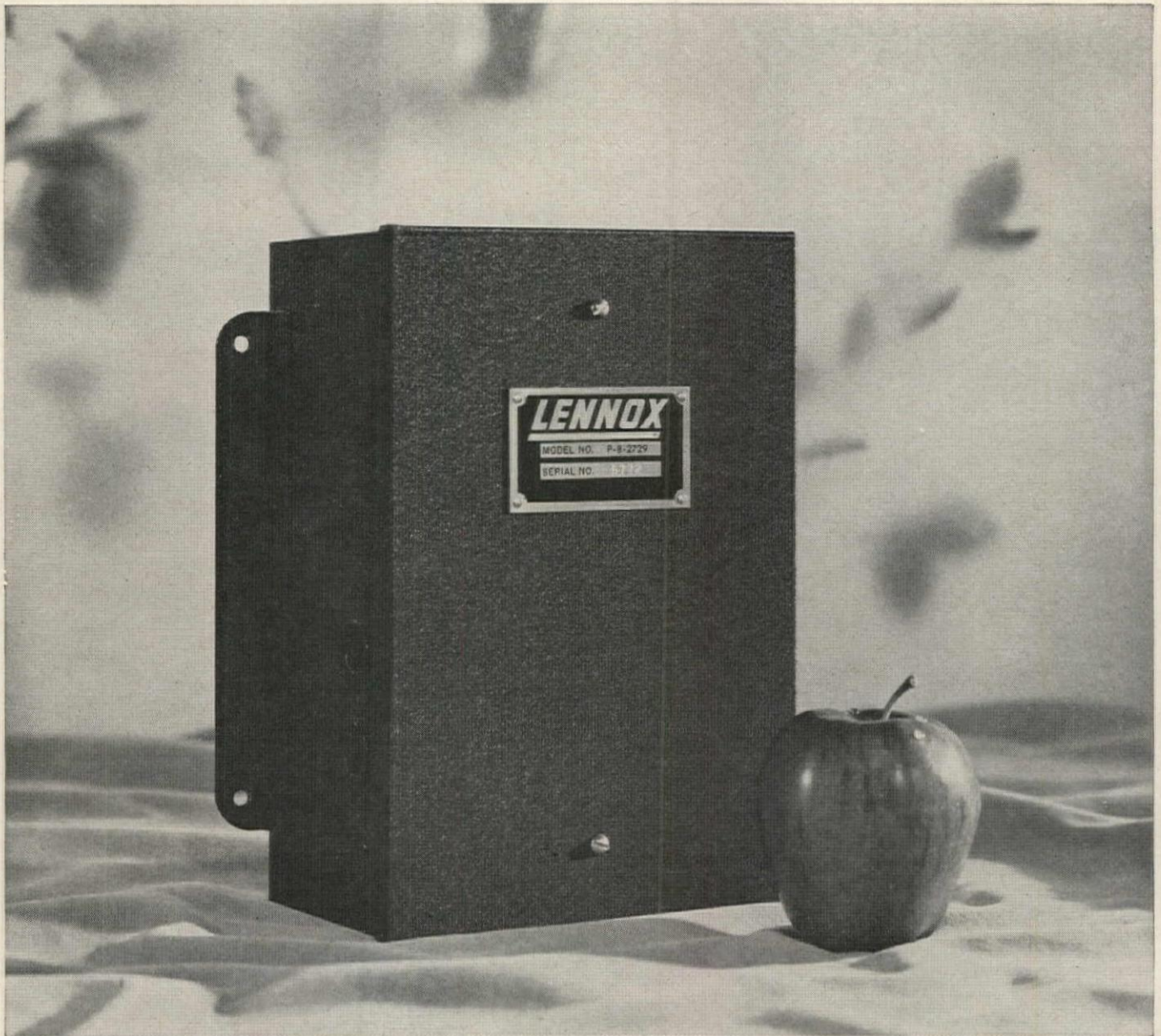
By now you know there's nothing quite like Ginori Tile. The extensive variety of unique printed and embossed patterns, the refreshing Italian colorings, provide unlimited inspiration for dramatic decor. But did you know that the TOTAL cost of a Ginori installation, figuring both tile and labor charges, can compare most favorably with an ordinary installation? Let us prove it to you . . . as we have proved it in numerous installations throughout America, in home and apartment developments, in hotels and commercial buildings!

  
Richard  
Ginori  
ITALY  
Since 1735

**ZANIN, INC.**

Exclusive Distributors  
1929 Park Ave., Weehawken, N. J.  
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In New Jersey, phone UNion 5-6600  
In New York, BRyant 9-6630

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## FRESH THINKER for classrooms . . . . .

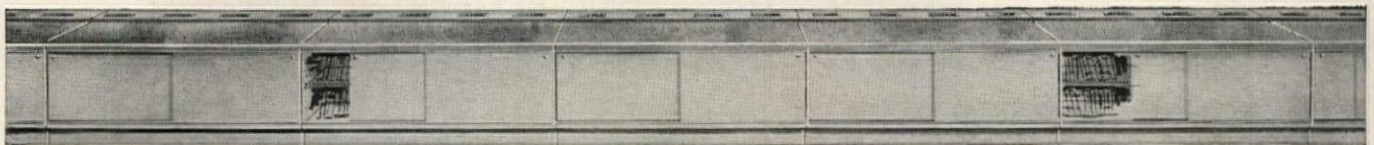
This is the all-new Lennox "Think" box—brain of the Lennox COMFORT CURTAIN® system for heating, cooling and ventilating classrooms. Thinks fresher! Weaves cool fresh outdoor air into classroom comfort.

Thinks faster, more accurately! Responds in seconds to changing load conditions, holds temperatures constant within  $\frac{1}{4}^{\circ}$  F.

*Thinks budget-wise, too! Only about half the cost of complex systems.*

The new Lennox "Think" box is pre-packaged, pre-wired, pre-tested at the factory. Pre-leveled, pre-calibrated. Fifteen minutes to install; just connect to 110 volt line. For fresh thinking on classroom comfort, write Lennox, 45 S. 12th Avenue, Marshalltown, Iowa.

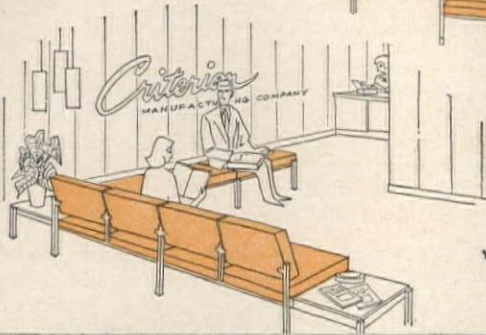
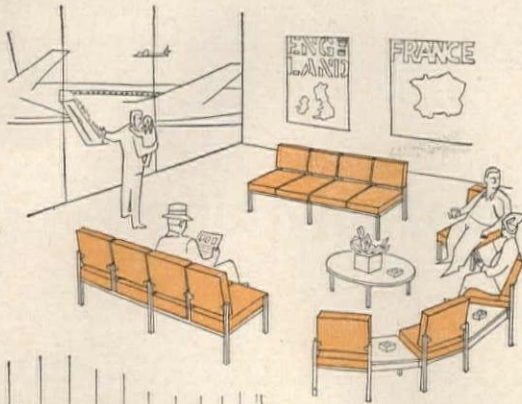
**LENNOX** *Comfort Curtain®*



For more data, circle 73 on Inquiry Card



AIRPORT LOUNGE

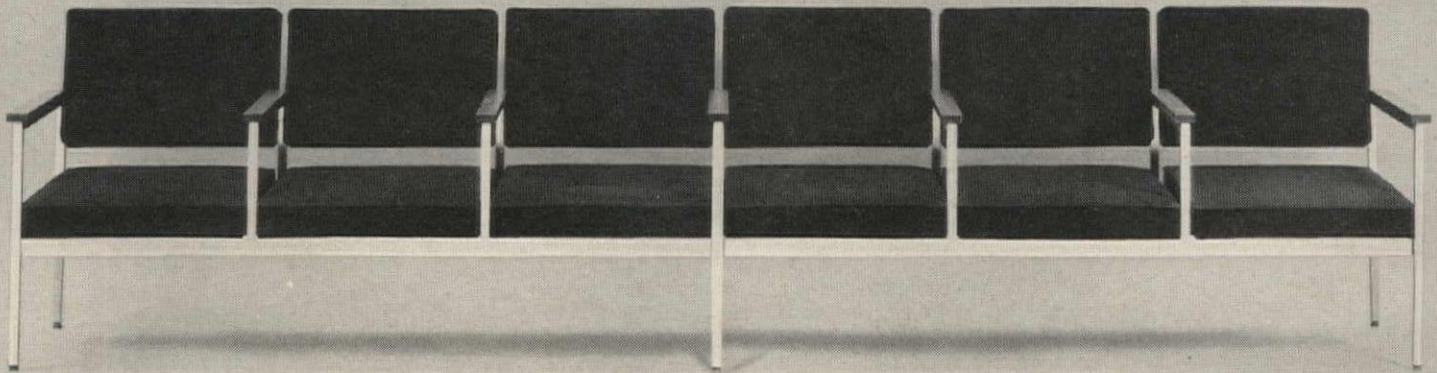


WAITING ROOM

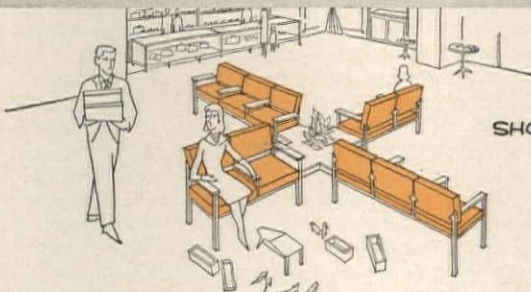
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wherever people sit to wait!

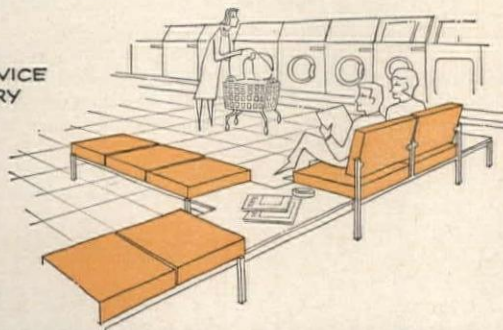


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AmBridge Coordinated Building Components are precision-fabricated. They are naturally usable as individual products, but better yet as a coordinated system of steel frame, curtain wall, partition, joist and deck construction all fabricated by American Bridge. The system is simple and fast to assemble—because every component fits perfectly. Biggest use so far for the AmBridge family of components is schools (where costs are often 13-18% less than average), but AmBridge Components have also been used successfully for power plant, bank, warehouse, laboratory and office buildings. Architects find that AmBridge Components readily lend themselves to the most modern modular design practices.

**(A) USS AmBridge Curtainwall** systems are available with exterior faces in a choice of 47 colors recommended by the Porcelain Enamel Institute; in 28 baked enamel colors, or in stainless steel. Interior surfaces are fully finished with vinyl (at no extra cost to you) or baked enamel to match or harmonize with the partitions. The steel panels are normally designed to a 4-ft. module and run continuously outside the columns. Standard panels are available in 1- 2- and 3-story heights. Panel frame members are cold formed galvanized steel. Face sheets are mechanically attached to the structural frame. Heat transfer is controlled with thermal breaks which prevent a thru-metal condition. Because the glass fiber insulation is held away from the exterior face by stainless steel clips, the panel is free to breathe, thereby minimizing condensation. AmBridge walls are so thin compared to masonry construction that you gain about 5% usable floor space. Yet the walls provide a tested thermal "U" factor of .168 that assures comfortable temperatures at reasonable cost.

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**(C) Exterior Battens** are extruded metal sections with provisions for mechanical attachment without drilling. Battens are fitted with shop-applied neoprene gaskets that permit expansion or contraction while keeping joints weathertight. Custom-designed covers permit aesthetic variation in stainless steel, porcelain enamel finish or special extruded shapes.

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**(F) Steel Roof Deck** specifically engineered to the structural requirements permits all-weather installation, receives insulation for built-up roofing and supports roof loads.

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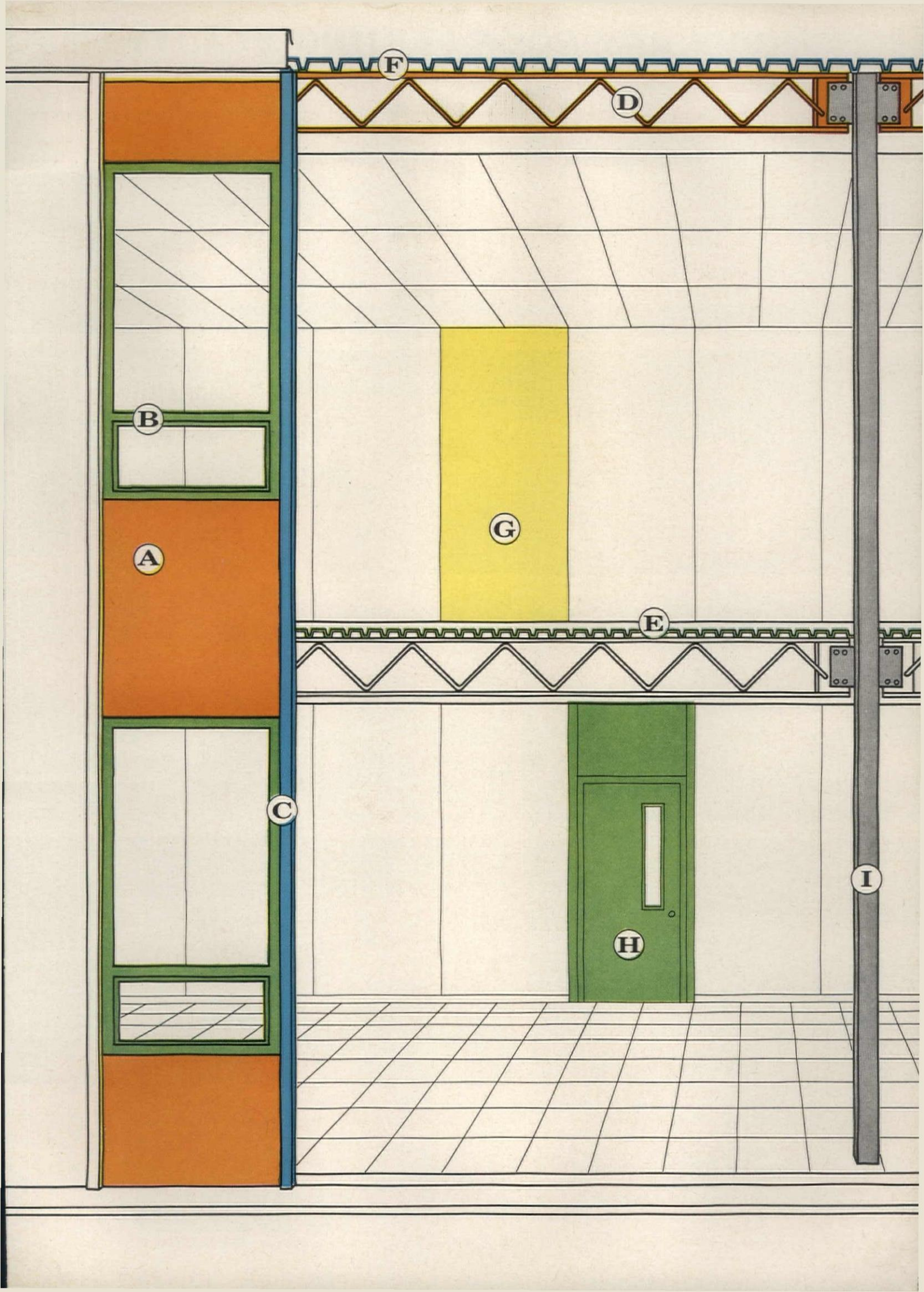
**(H) USS AmBridge Steel Doors** with a corrosion-resistant polyurethane foam core are supplied as an integral part of exterior and interior panels. All doors are complete with pressed steel frames and hardware, baked enamel finish, and can be furnished with lights and/or louvers. Neoprene weather-stripping is furnished on all exterior doors to assure a storm-tight seal. Hardware of the finest quality approved by the architect—such as lock sets, closers, panic bars, and kick plates in various finishes—can be installed under supervision of experienced American Bridge personnel.

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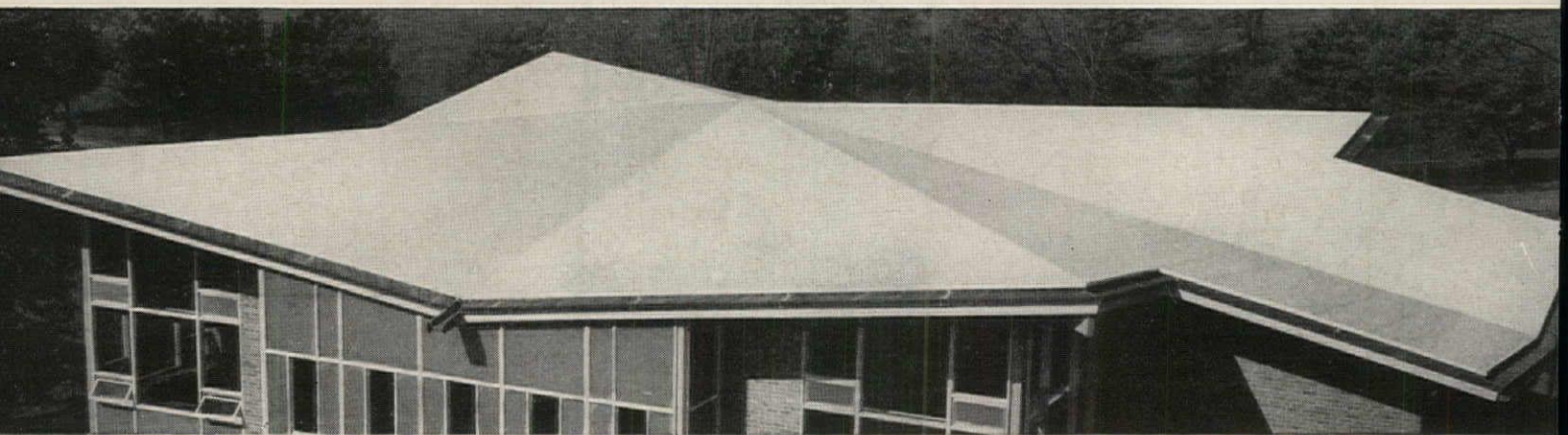
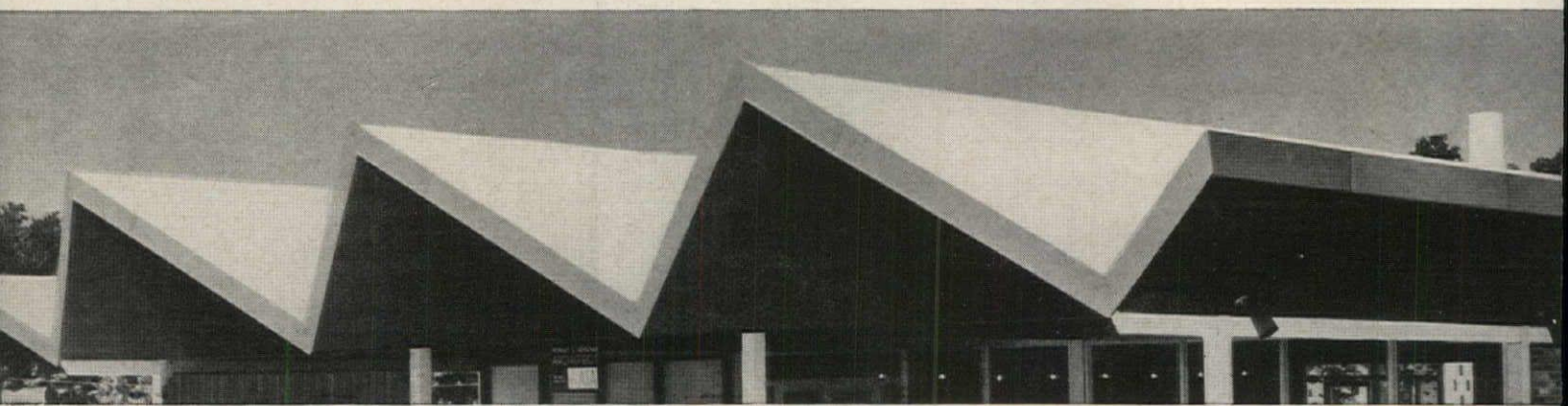
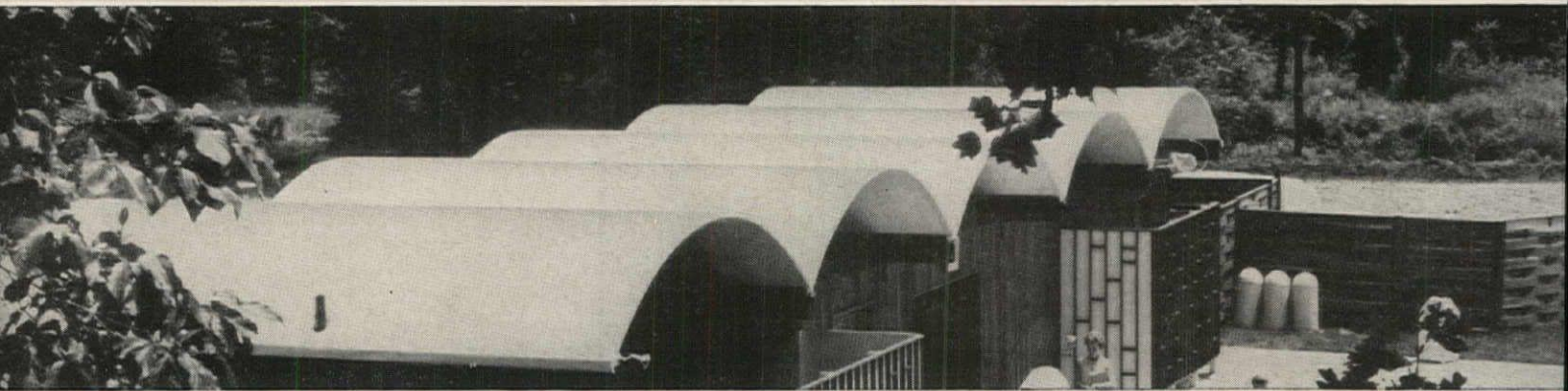
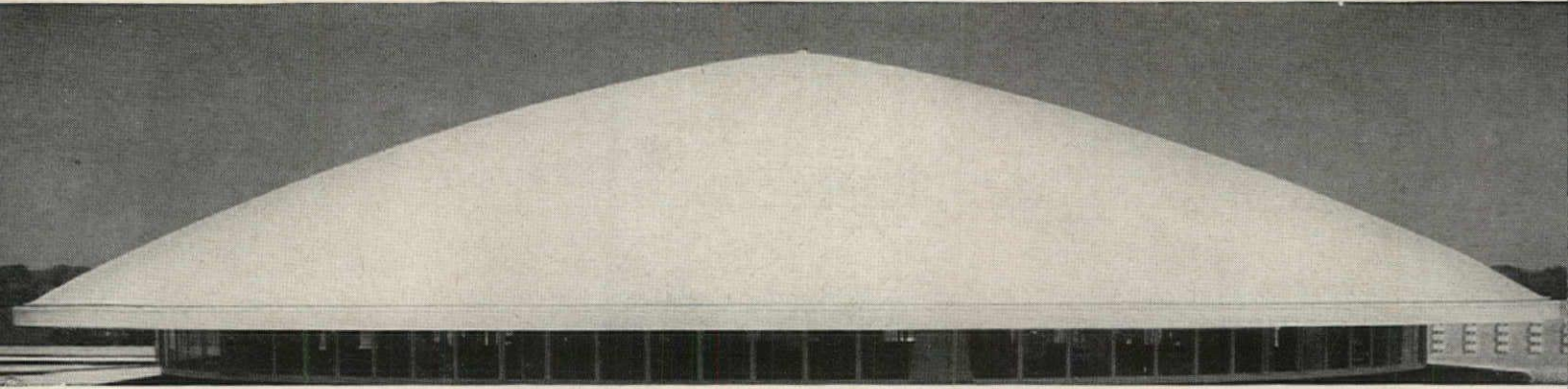
**American Bridge  
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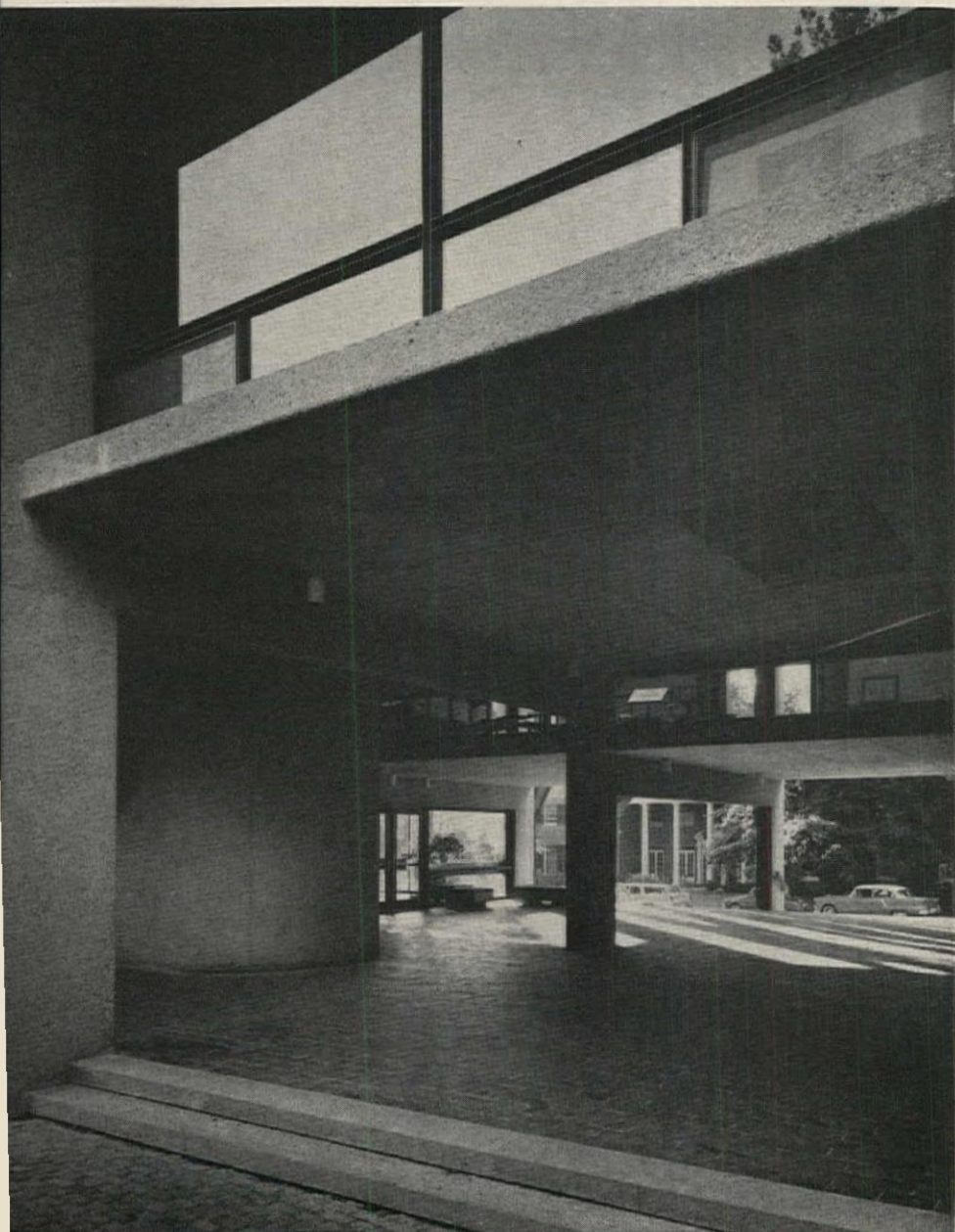
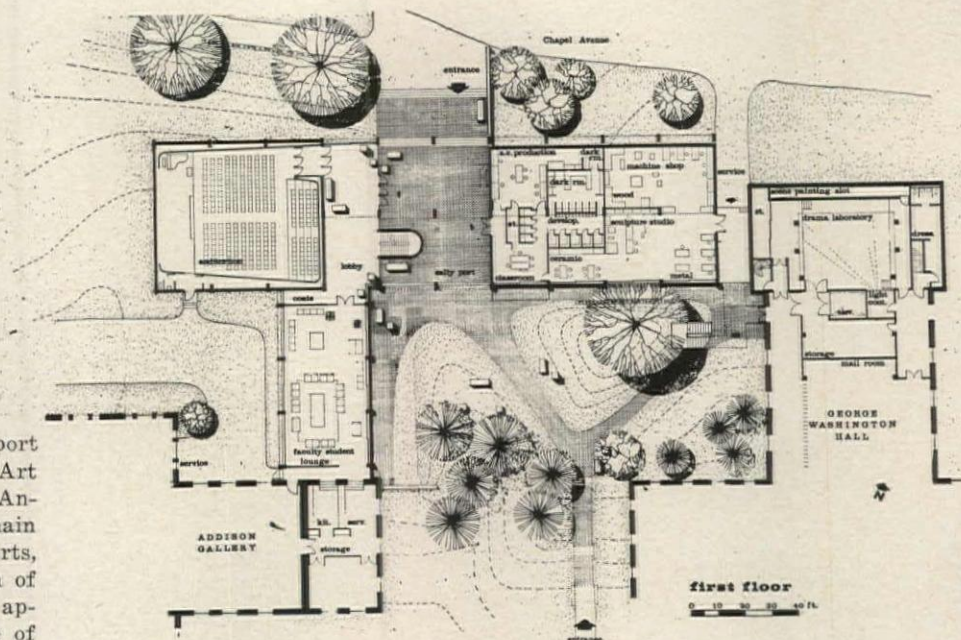
© Ezra Stoller photos

*Art and Communication Center*

## MODEST ARCHITECTURE FOR A FINE NEW ENGLAND CAMPUS

To add new buildings to a neo-Georgian environment and make them match, but in a new way, requires great talent and the humility to get the feel of the place. The recently completed work on the 183-year-old campus of Phillips Academy in Andover, Massachusetts, by Benjamin Thompson of The Architects Collaborative, fulfills his expressed hope "to make all the things that are there look more valuable"

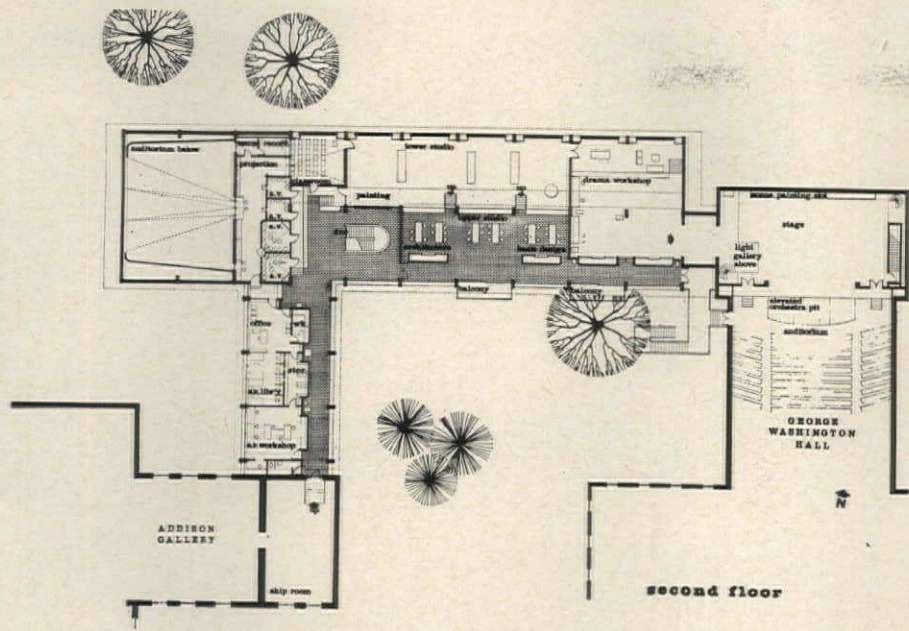
Below: View from court through sally port to Andover Inn on Chapel Avenue. Until Art and Communication Center was built, Andover had no single point at which the main campus could be entered. The visual arts, long an important part of the program of this preparatory school, now enjoy an appropriate prominence as a consequence of the location of the center as a gateway



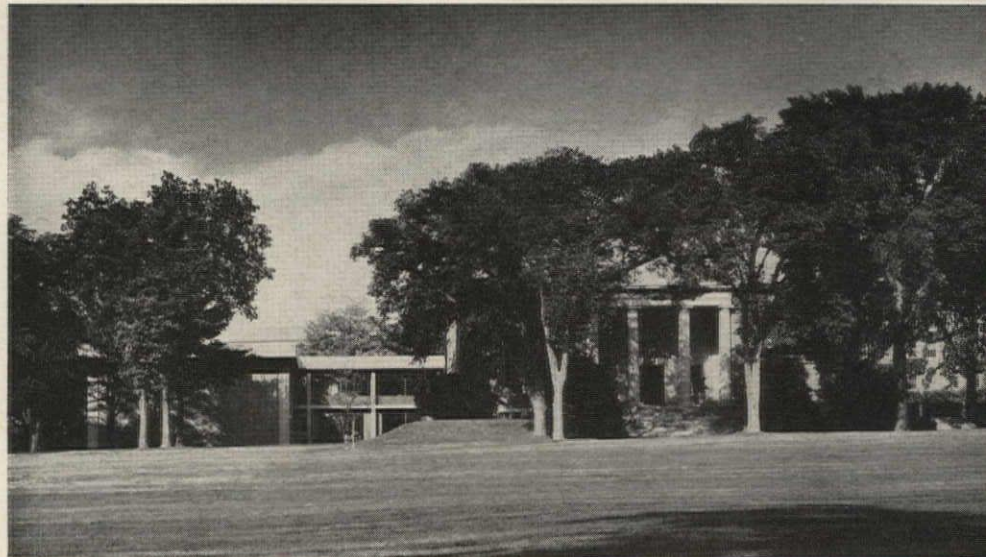
Ben Thompson asserts that "the fight for individual, strong effort to respect and understand an environment is more unusual than it should be." In discussing his approach to the design of Andover's now completed four dormitories, a library addition, an art center, a science building and a small chapel, all built within a six-year period, he said: "For years people have worked on this place . . . one just couldn't do something casual here." In referring to the lavish neo-Georgian buildings constructed in the twenties and early thirties with millions furnished by Thomas Cochran (Andover '90 and a Morgan partner) Thompson contrasts the spirit of those times with the present: "Cochran and his architects weren't thinking about education, they were thinking about visual effects, as they planned axially symmetric relationships and great vistas and decided whether to turn the buildings this way or that."

In 1956 when Thompson began to do the Andover work, the school was developing an expansion program to meet its future needs. Thompson took part in intensive programing and research for a period of approximately three years. Each of the new buildings is the result of many schemes. "Andover is a place where everybody thinks and thinks," says Thompson. "The problem was how to keep design fresh when there were so many committees. Often the best

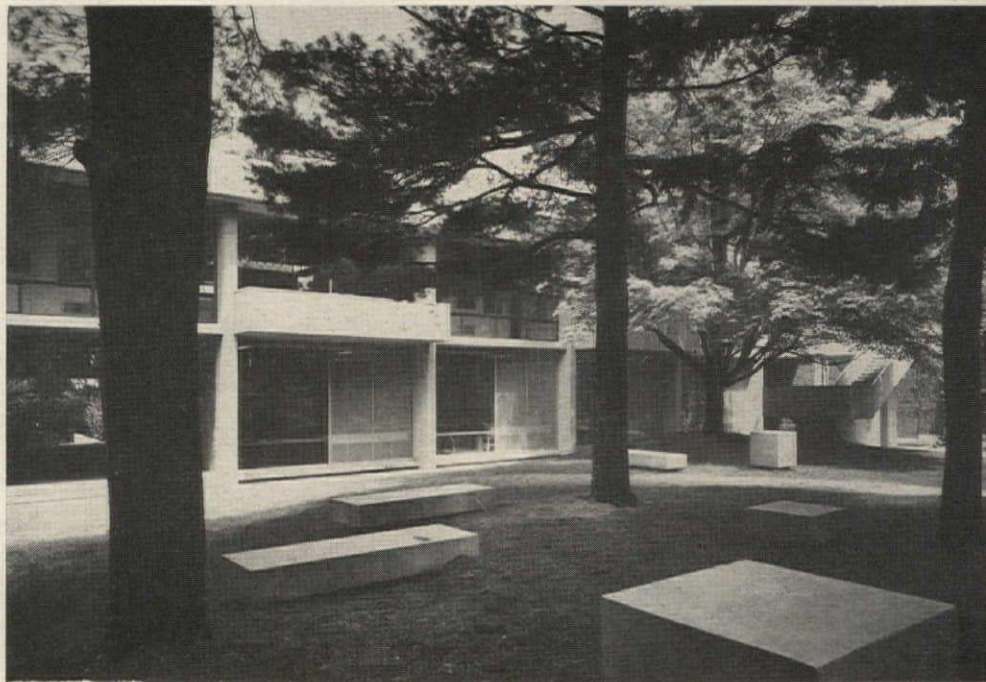
*continued on page 145*



Right: Addison Art Gallery and Art and Communication Center as seen from great lawn on the west. Entrance to new building is on the northwest and leads through court to main campus to the southeast. Brick was carefully selected to match that of the existing neo-Georgian buildings, the bush-hammered concrete is close in appearance to the existing dressed granite, and the proportion of column and cornice in the new structure is carefully related to that of the old

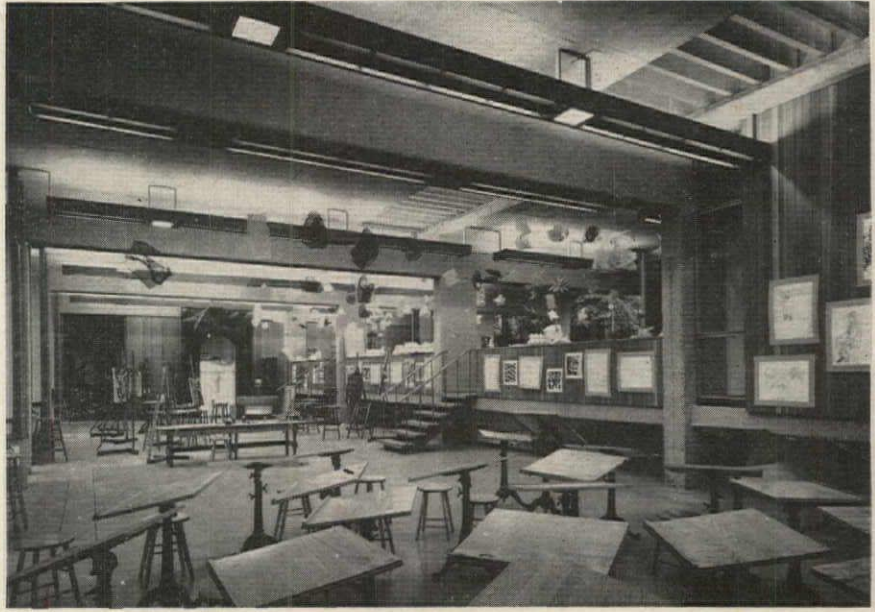


ARCHITECTS: *The Architects Collaborative*  
 Benjamin Thompson, Partner in Charge  
 STRUCTURAL ENGINEERS:  
*Le Messurier and Associates*  
 MECHANICAL ENGINEERS: *Francis Associates*  
 ACOUSTICAL ENGINEERS:  
*Bolt, Beranek and Newman, Inc.*  
 THEATER CONSULTANT: *George Isenour*  
 GENERAL CONTRACTOR: *George A. Fuller Company*

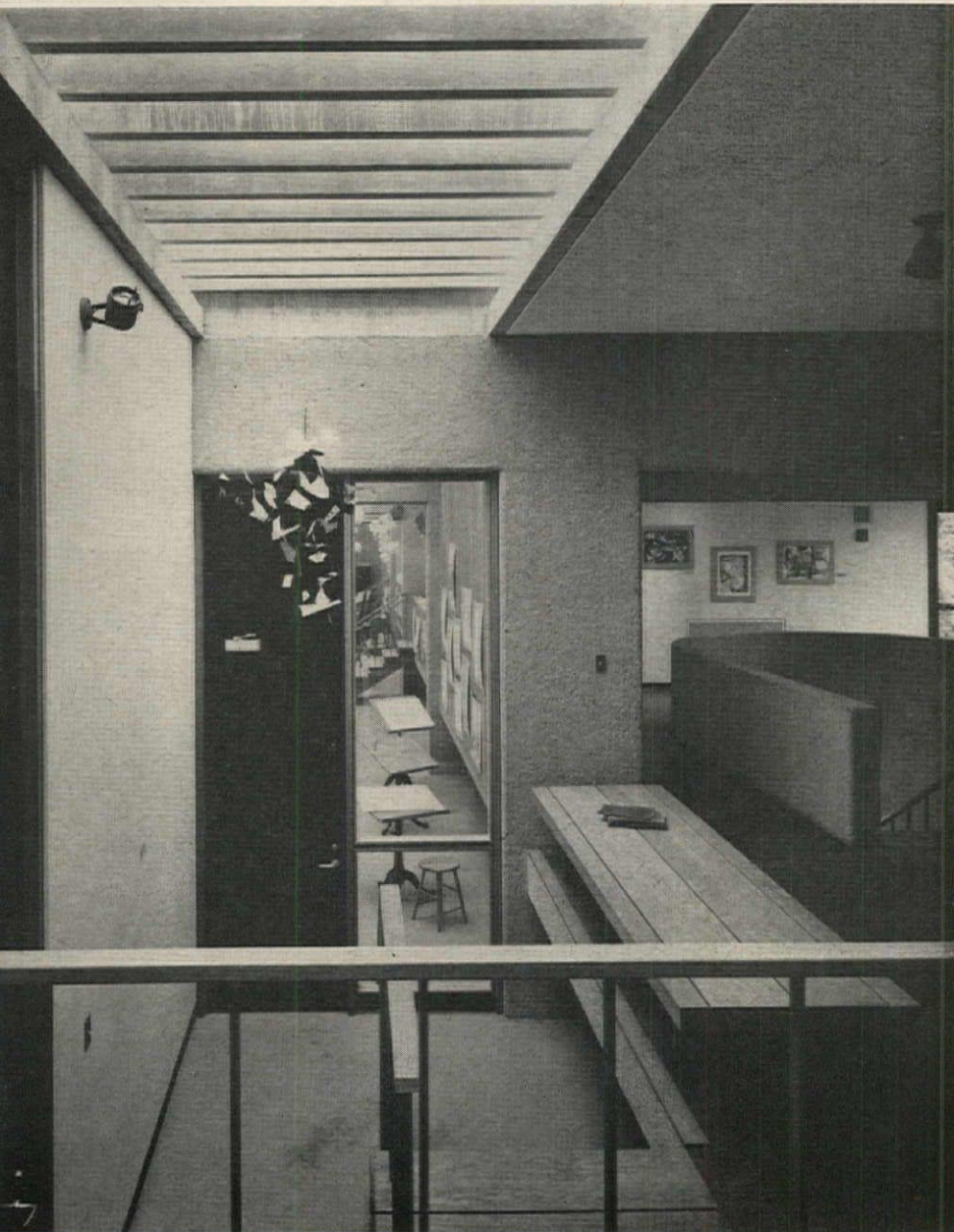


Art center from courtyard

TAC project architects for the new Andover buildings were J. Timothy Anderson, Thomas Green, Joseph Maybank, Visvaldis Paukulis, Sherry Proctor, G. W. T. Rankine



Said Thompson: "In the art center I tried to get walls into the building against which the artist can put things he has made. I designed the dropped floor to get some of the feeling of a real artist's studio. I tried to achieve a variety of spatial relationships." A glass panel between floor levels makes art students visible from the sally port



Skylight, bench, railing and step are thoughtfully integrated in well-detailed entrance to studio





Halls and public spaces are designed to be suitable for exhibition purposes

Lower level of studio is used for work of the dirty-hands variety, upper level is for endeavors which require clean hands. Lighting fixtures were designed to provide surfaces for the suspension of objects

thing was to throw it all away and start over."

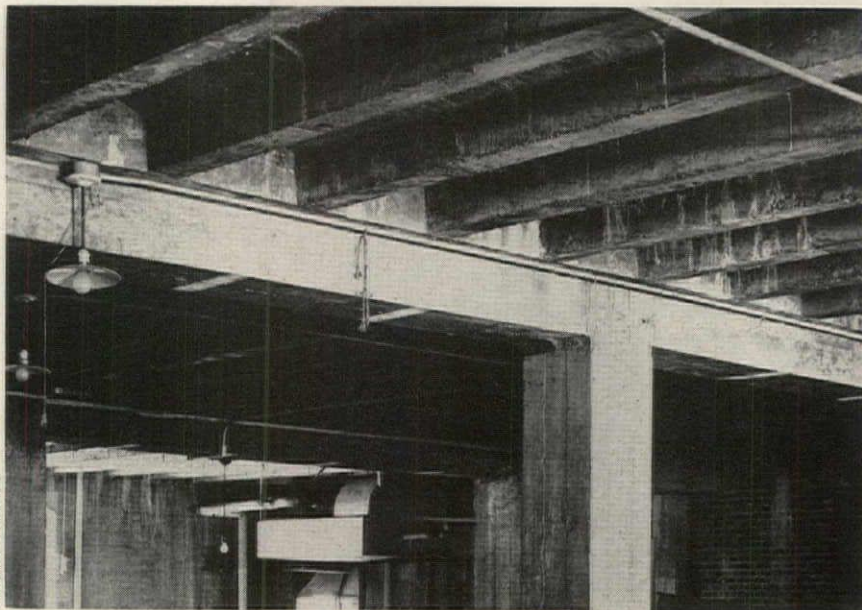
The Andover of the twenties surrounds a vast rectangular space called the Great Quadrangle opening upon a giant greensward known as the Lawn, bisected by a broad axial path called the Vista leading west to Main Street, a highway which unfortunately cuts the campus in two, separating the buildings of the twenties and later from the old campus across the road. Both the Addison Art Gallery and the Oliver Wendell Holmes Library have their main entrances on the Lawn, but since, in Thompson's words, "nobody is allowed to do anything on the great Lawn" these entrances are actually remote and inconvenient. The new campus site plan was devised to open the gallery and library into the Great Quadrangle which functions as the main campus. This was done by locating the Art and Communication Center, which is an addition to the Addison Art Gallery, in such a way that it acts as a gateway to the main campus; and by placing the entrance to the library addition near the Quadrangle. The main entrance of the new science building is asymmetrically related to the Quadrangle. Thus three buildings were turned inward to the campus.

Thompson believes that his new buildings at Andover take their proper place in a hierarchy of importance established by the buildings already

*continued on page 150*

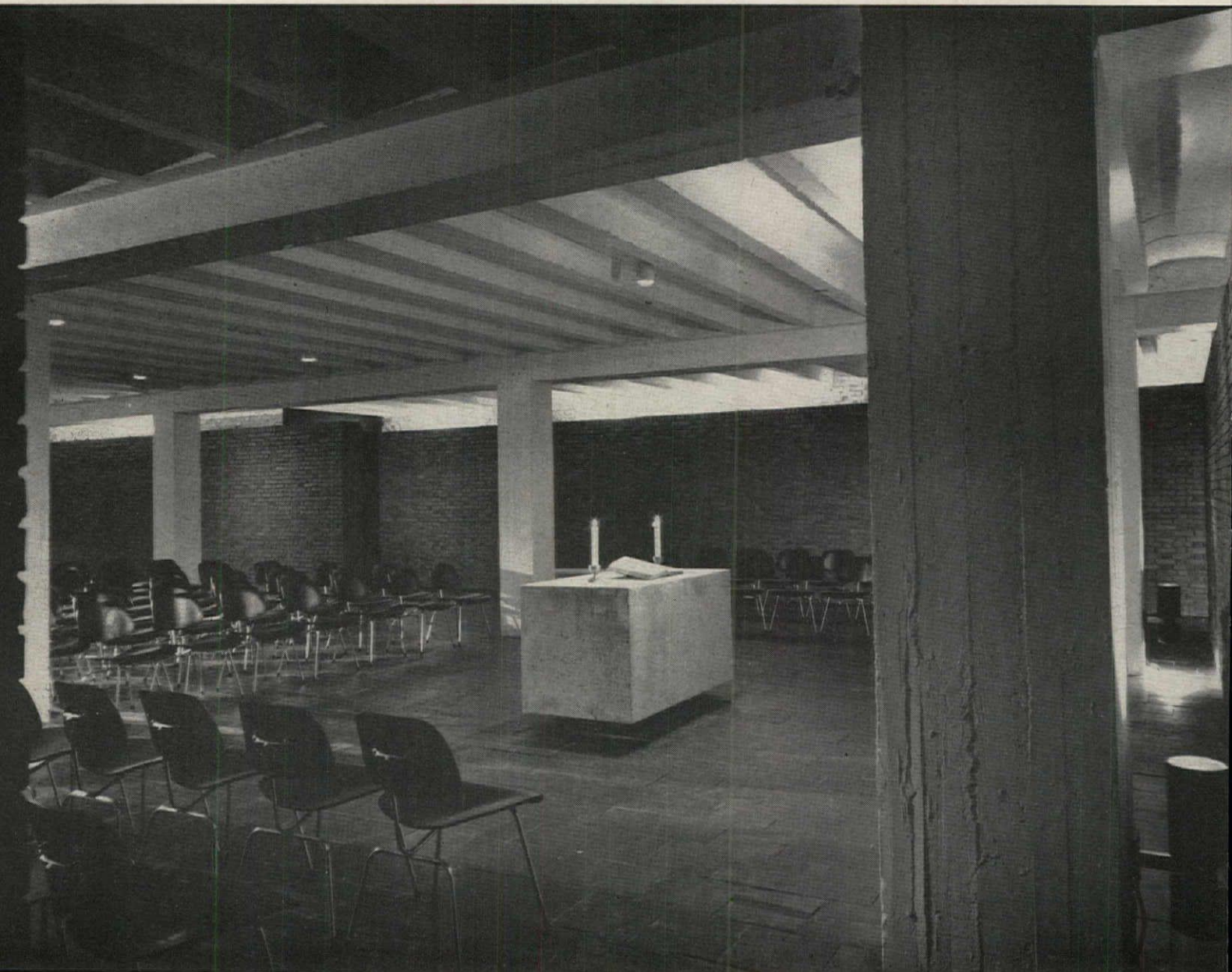


*Sylvia Kemper  
Memorial Chapel*

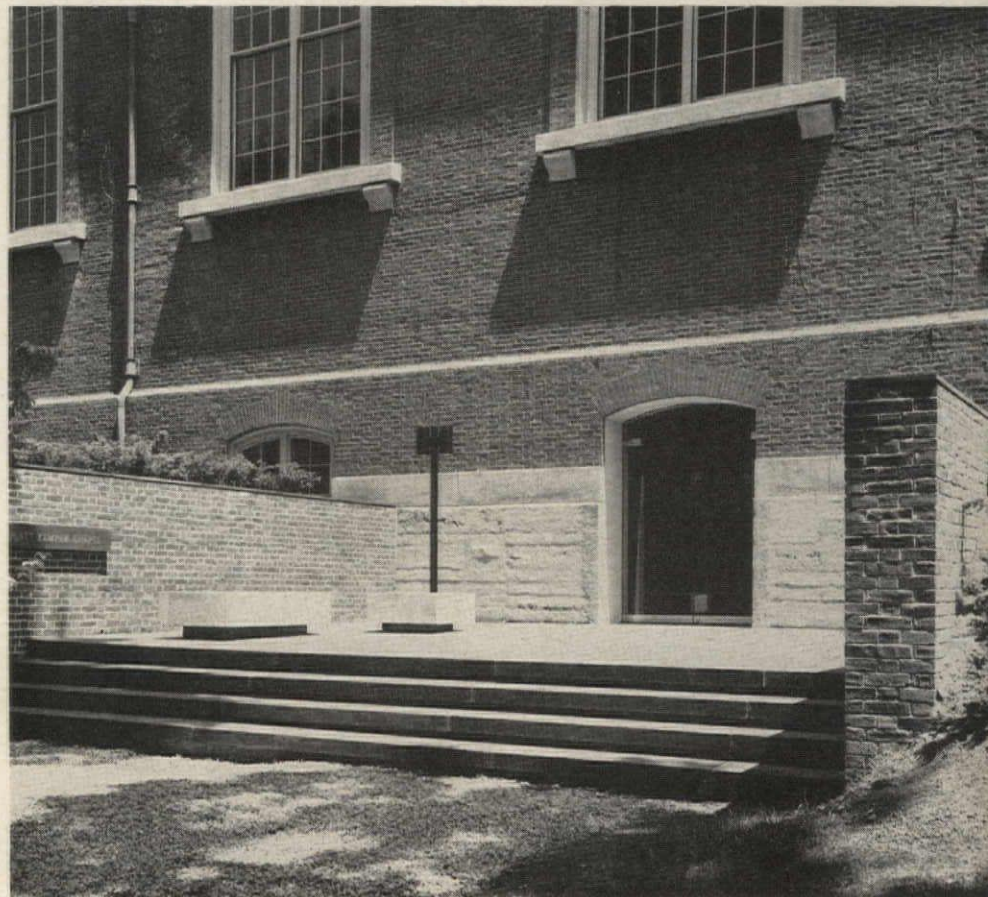
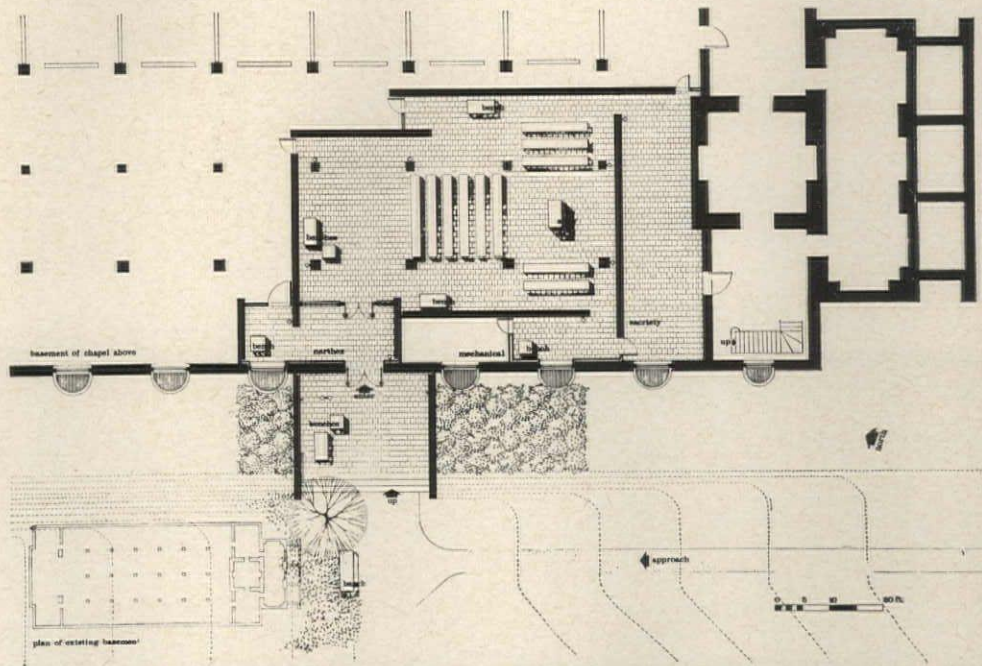


Gordon Bensley

Unremodeled section of basement

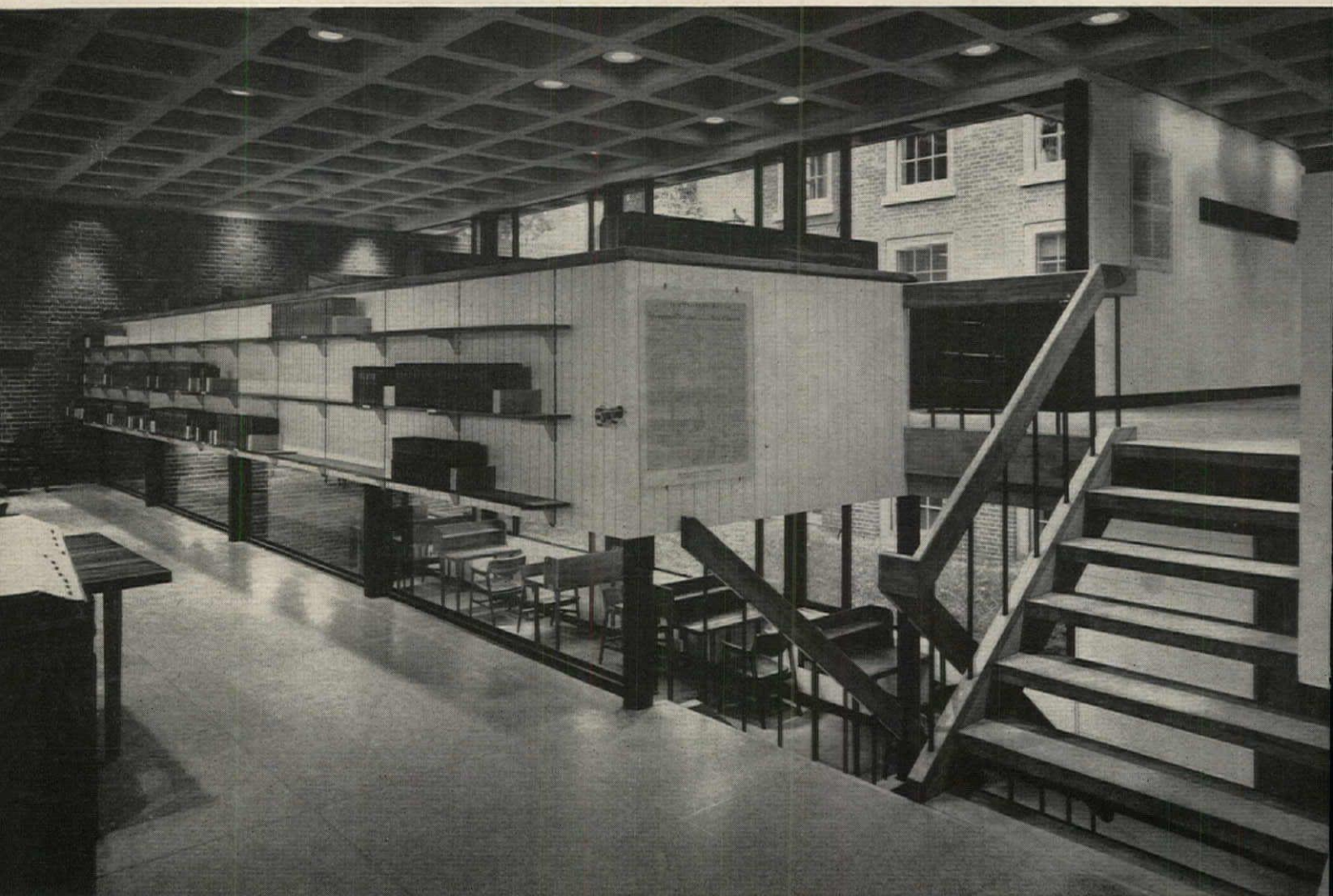


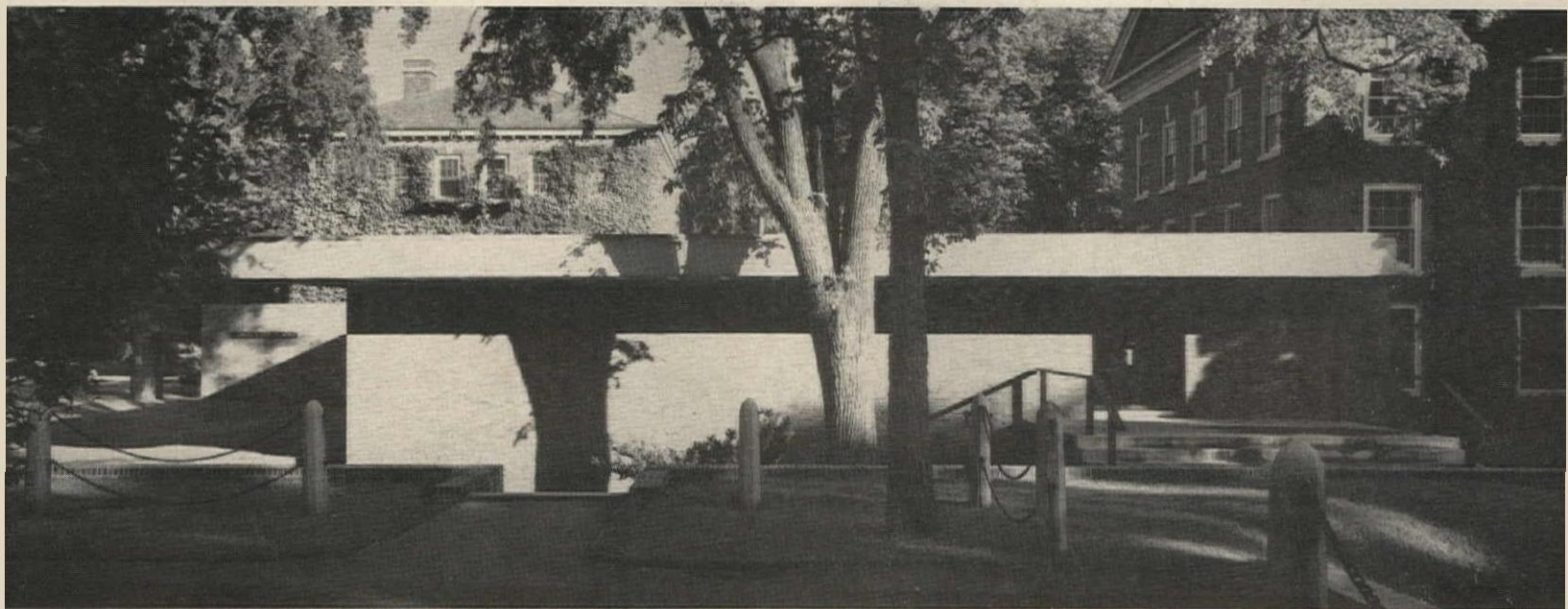
In the basement of Cochran Chapel, a neo-Georgian structure designed by Charles A. Platt in the great Andover building era of the late twenties and early thirties, is a new chapel designed to be adaptable for Roman Catholic, Jewish and other services. Here Thompson found a one-way ribbed slab system left exposed in the neglected basement, had it and the supporting columns cleaned and painted white to create a handsome effect. Bartlett Hayes, director of the Addison Gallery and the visual arts program at Andover, takes special delight in the chapel and finds much that satisfies him in the fact that Thompson found rich visual qualities in a structural system which an architect of a former generation would expose only in a basement. The handling of space is skillfully asymmetric. Cavity walls are of dark red brick with a dark mortar. The floor is slate. The outer face of the cavity wall is carried to the ceiling. The space between it and the lower wall is painted white and illuminated by recessed lights which gives the ceiling a floating effect. Entrance to chapel is through a former basement window (right)



ARCHITECTS: *The Architects Collaborative*  
 Benjamin Thompson, Partner in Charge  
 MECHANICAL ENGINEERS: *Francis Associates*  
 GENERAL CONTRACTOR: *Donald Tait Company*

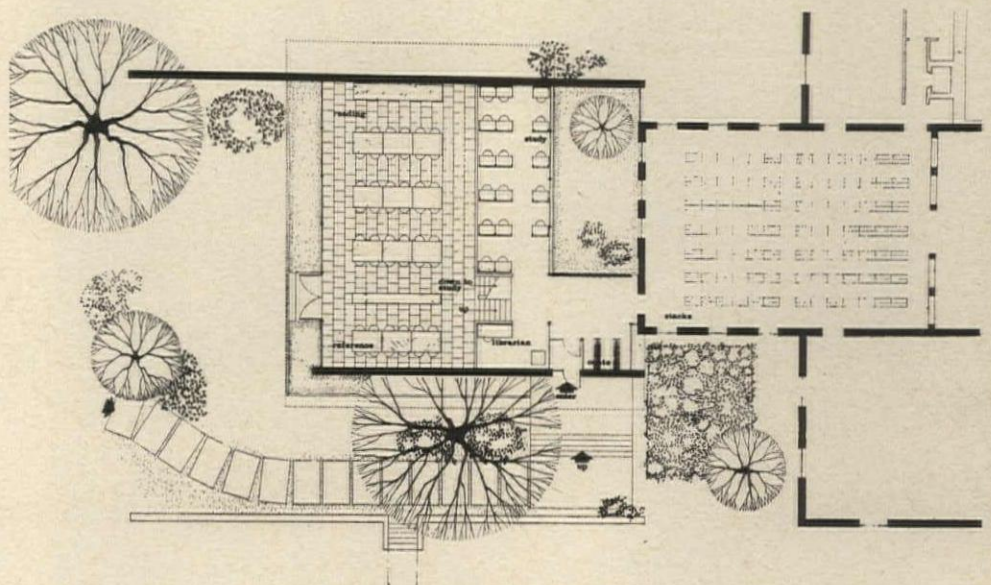
*Copley Addition to Oliver Wendell Holmes Library*





The library addition is the first use by Thompson of the exposed waffle slab roof which here has an unusually large span covering a space 45 feet by 54 feet. A 3-foot module was used for the two-way rib system, and the metal pans were 14 inches deep with 7 inches of concrete on top. This building is considered the prototype for the development of Thompson's style.

He designed the addition in such a way as not to alter the facades of the older library. The building receives light from a court and a broad window facing the main campus; the architect deliberately avoided the use of contemporary windows where they would compete with Georgian windows. The continuous brick walls have a concrete core to resist earthquake pressures



ARCHITECTS: *The Architects Collaborative*  
*Benjamin Thompson, Partner in Charge*  
 STRUCTURAL ENGINEERS:  
*Goldberg, Le Messurier and Associates*  
 MECHANICAL ENGINEERS:  
*R. O. Kimball Company*  
 GENERAL CONTRACTOR:  
*Morton C. Tuttle Company*

## *New Dormitories*

Typical dormitory entrance hall



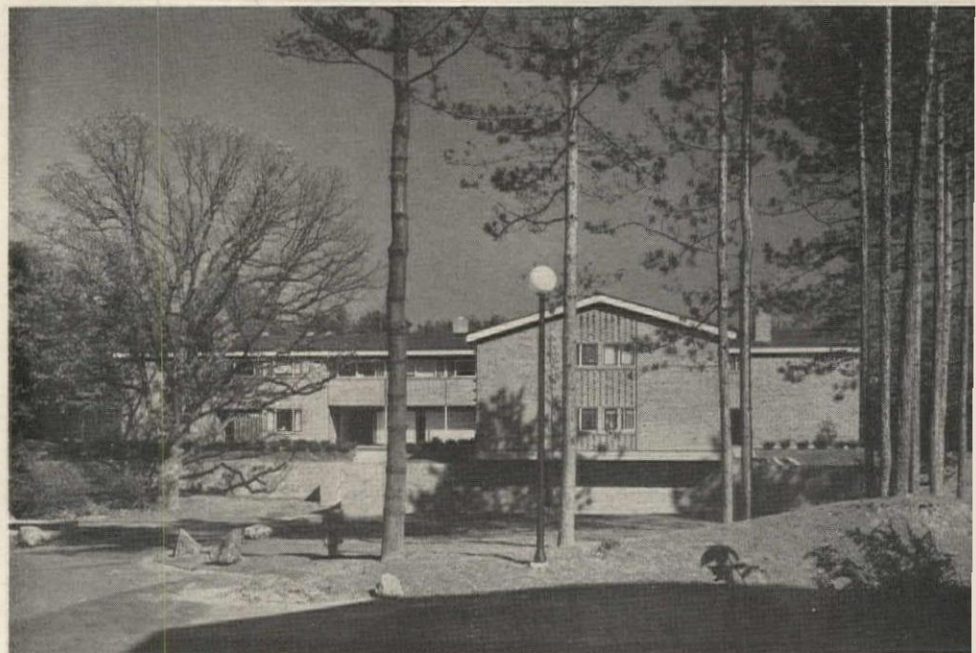
there. The shape of the new work has evolved over a period of six years through fundamental research into functional requirements and the desire to work within a common theme. No effort was made to be picturesque, or to achieve importance for its own sake. "Major architectural commissions are like epic movies and important speeches," says Thompson. "They get overworked to make them 'great.'" Thompson's architecture is evidence that he at least has avoided this dilemma. Said William Le Messurier, the engineer who has worked with Thompson on nearly all of his recent work: "None of Ben's ideas are complicated . . . he abhors trickiness . . . no folded plates, no fancy shells, no gimmicks."

The Thompson manner began to crystallize in the small addition to the Oliver Wendell Holmes Library. Here he first began to work with a structural vocabulary in reinforced concrete which became the model for the Olin-Sang Academic Quadrangle at Brandeis University, a Long Island branch of the Chase Manhattan Bank and for the science building at Andover. The elements of the vocabulary are not new; Thompson's distinction lies in the way he handles them. Essentially his system consists of the use of a two-way ribbed or waffle slab for floors and roof with the coffers exposed on the underside. The slabs are supported by widely spaced oversize concrete columns. The rigid

*continued on page 153*

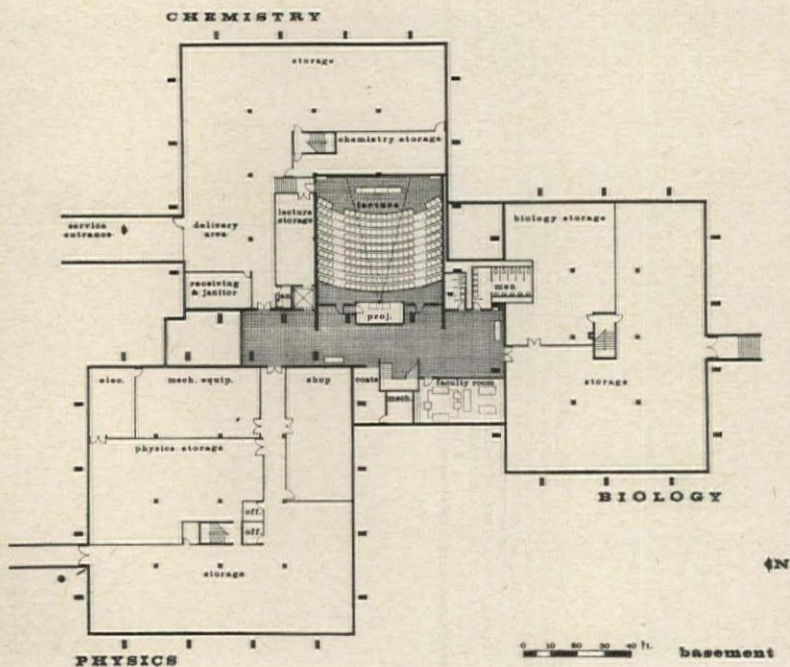


The Andover dormitories are distinguished by their careful adaptation to site and the suitability of their scale. Planning problems centered around the location of house master wings in such a manner as to make possible easy supervision for the boys, and a degree of privacy for the house master and his family. A large common living room in each dormitory serves recreational and tutorial purposes



ARCHITECTS: *The Architects Collaborative*  
*Benjamin Thompson, Partner in Charge*  
STRUCTURAL ENGINEERS: *Goldberg, Le Mesurier and Associates*  
MECHANICAL ENGINEERS:  
*R. D. Kimball Company*

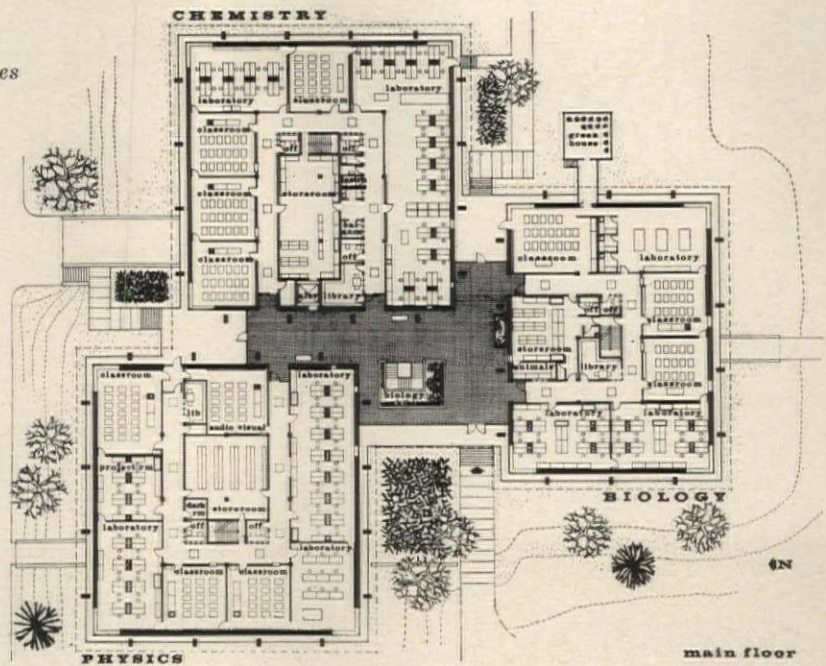
*Thomas M. Evans Science Building*



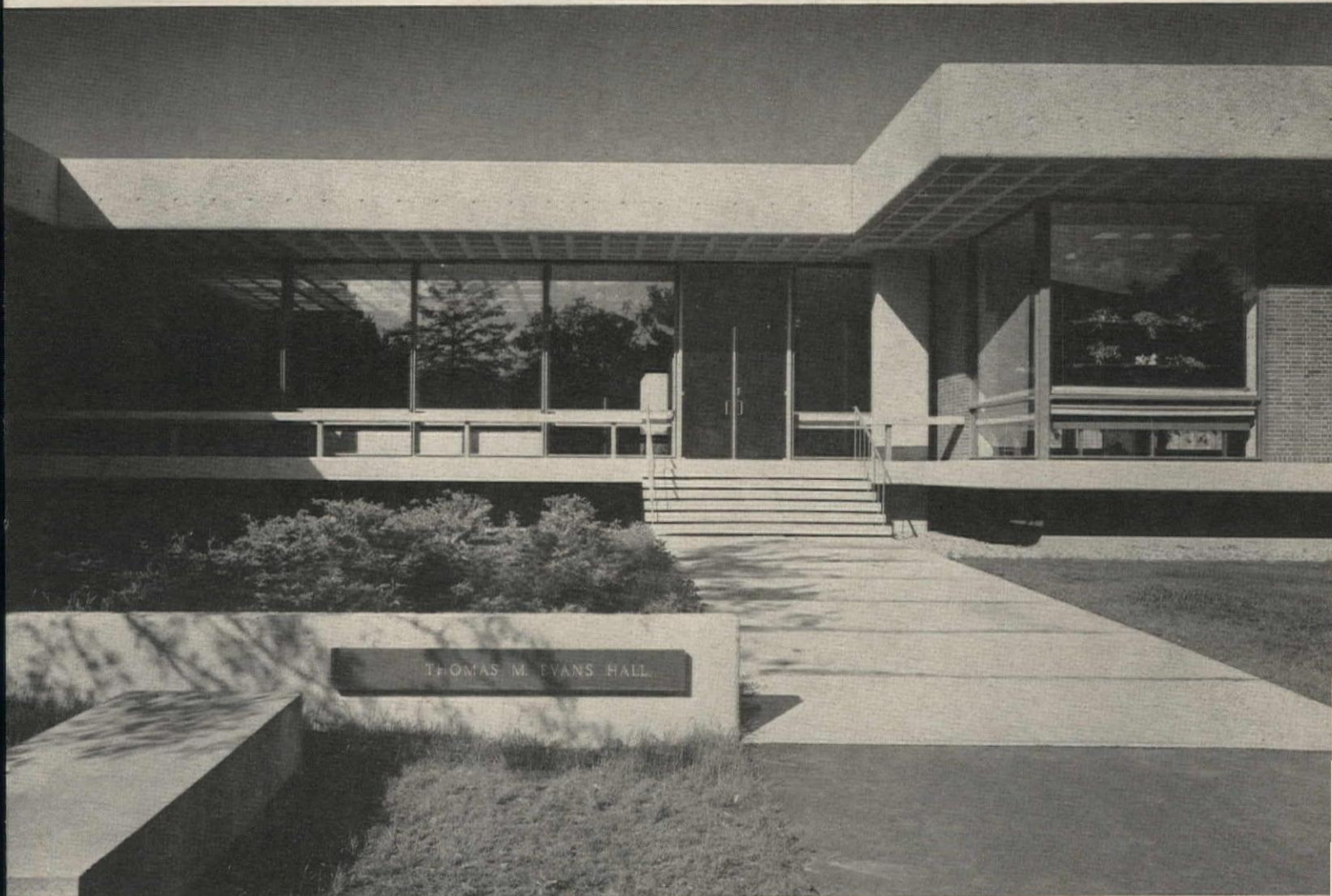
Plan was devised to provide large amounts of floor space free of bearing walls. It is essentially three buildings with a common lobby. Corridor spaces are permanent but the rest of the structure can be repartitioned. The widely spaced columns don't intrude on the working parts. Design development of the science center took six years and was partially financed by a grant of \$19,500 from Educational Facilities Laboratories to Andover for the development of scientific facilities for secondary schools. The building includes a basement which is used partly for storage, but partly as a means of easy access to the floor above through which specially developed flexible piping connections pass to supply ducts on the basement ceiling. One of the advantages of the use of the waffle floor slab is that it can be perforated at any point between the two-way ribs, and thus offers complete flexibility and adaptability to laboratory use requirements



ARCHITECTS: *The Architects Collaborative*  
 Benjamin Thompson, Partner in Charge  
 STRUCTURAL ENGINEERS: *LeMessurier and Associates*  
 MECHANICAL ENGINEERS: *Francis Associates*  
 CONTRACTOR: *George A. Fuller Company*



Entrance is asymmetrically but directly related to main campus Quadrangle. Heavy parapet stiffens overhangs which were originally cambered upwards when poured, to allow for elastic and plastic deflection after formwork was removed



Thompson's essential vocabulary of structure and materials is clearly expressed in the photograph (*below*) showing the waffle slab in combination with textured brick, bush-hammered concrete and slate floor

metal pans used in forming this system were invented and patented in Boston about 30 years ago. It is the most economical method of concrete floor construction, has better acoustical properties than the flat slab, but is generally used with a hung ceiling. Thompson was not the first to expose the coffers for their esthetic effect, but he was the first to so coordinate and detail the rib module in relation to the other elements of plan and structure that a system of great beauty and clarity has evolved.

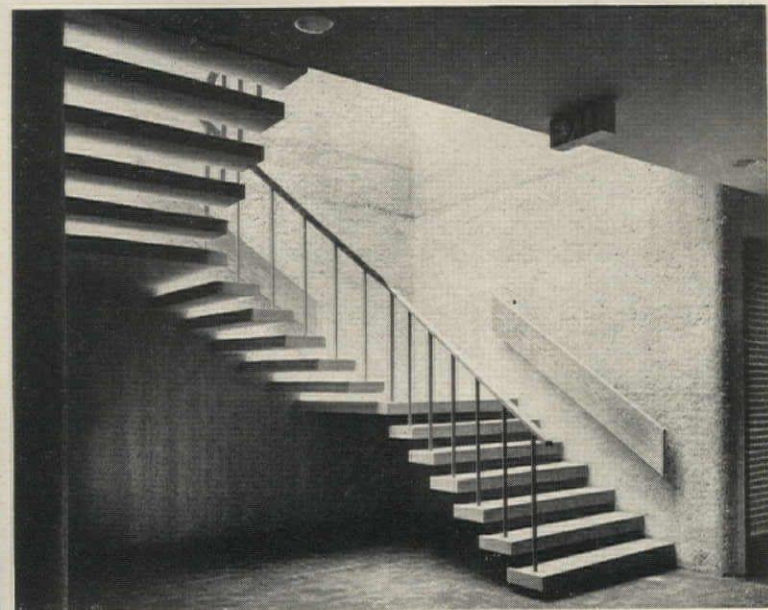
The column and parapet surfaces of Thompson's Andover buildings are bush-hammered to expose the aggregate. This finish for concrete appeared first in the work of Perret, but has been generally neglected in this country until lately. A notable revival of the method was its use on the concrete surfaces of Harvard's Loeb Drama Center by Hugh Stubbins, erected a few years ago across the street from the offices of TAC.

Paul Rudolph's Wellesley Art Center, completed before Loeb, has concrete surfaces which are sand blasted for texture.

In all of the new Andover buildings materials have been selected with great care and hand craftsmanship is everywhere to be seen. Thompson's buildings look as though they were made by men from simple materials. The architecture of machined precision he leaves to others.

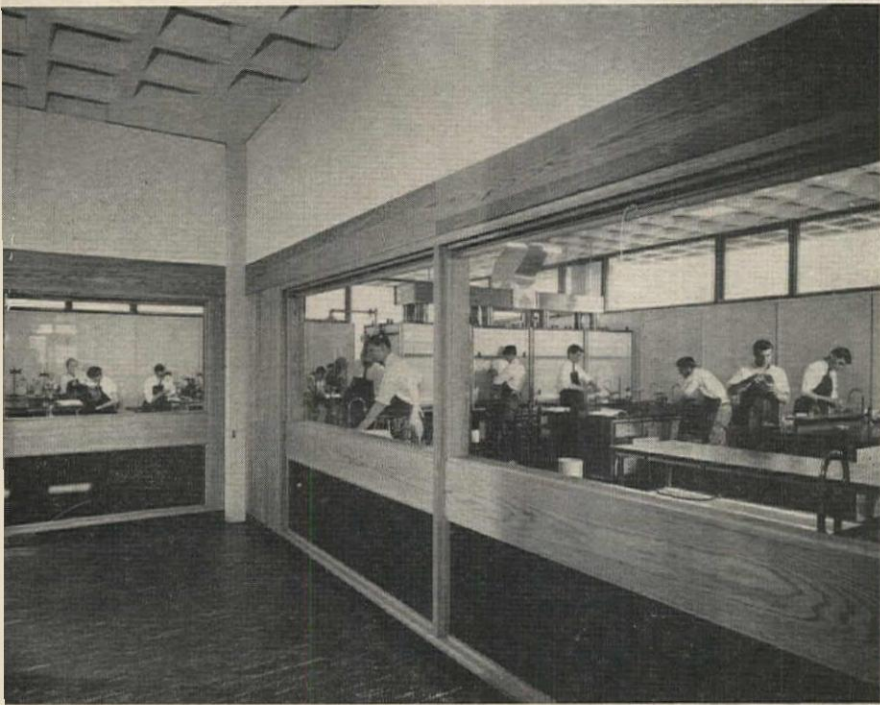
—Mildred F. Schmertz





Stair is lit by skylight shown below in entrance hall





Movable corridor partitions have large windows to enable younger students to see and admire the older boys at work in the sciences, and to be motivated accordingly

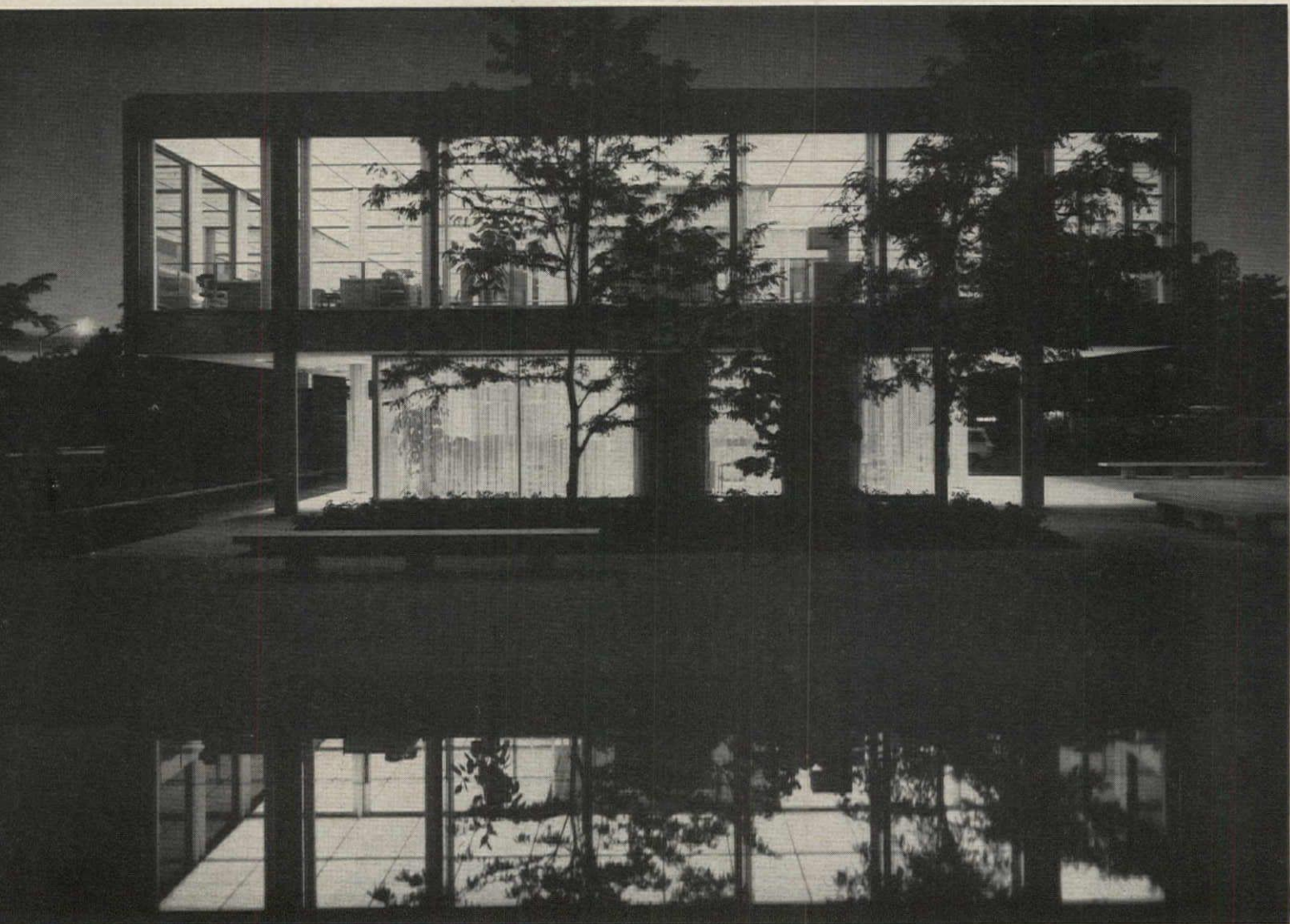


Exterior detail (*left*) shows careful coordination of wall and window with waffle module

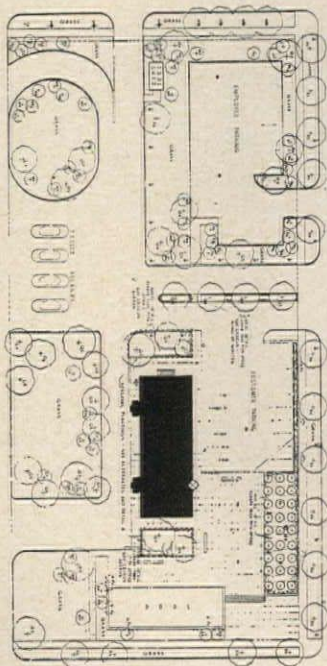


## AN ELEGANT DRIVE-IN BANK IN A PARK-LIKE SETTING

Skidmore, Owings & Merrill use their typically nice  
materials and detailing to create  
a crisp, sophisticated banking center for motorists



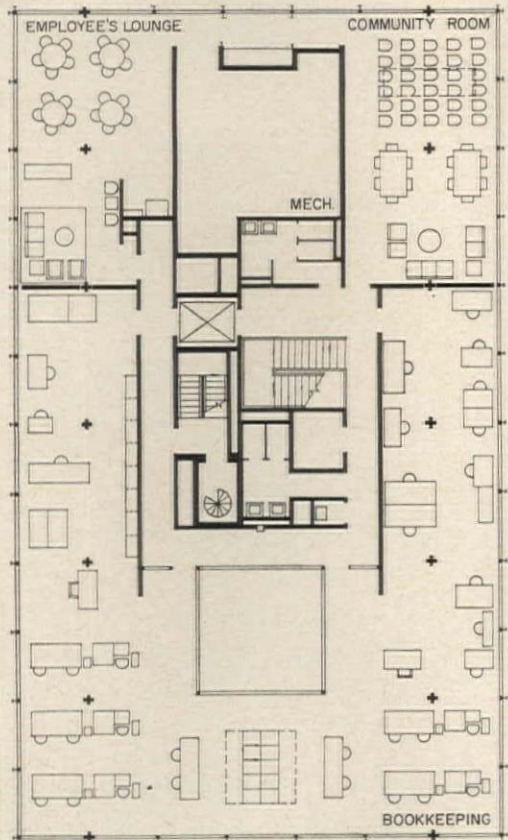
© Ezra Stoller Associates photos



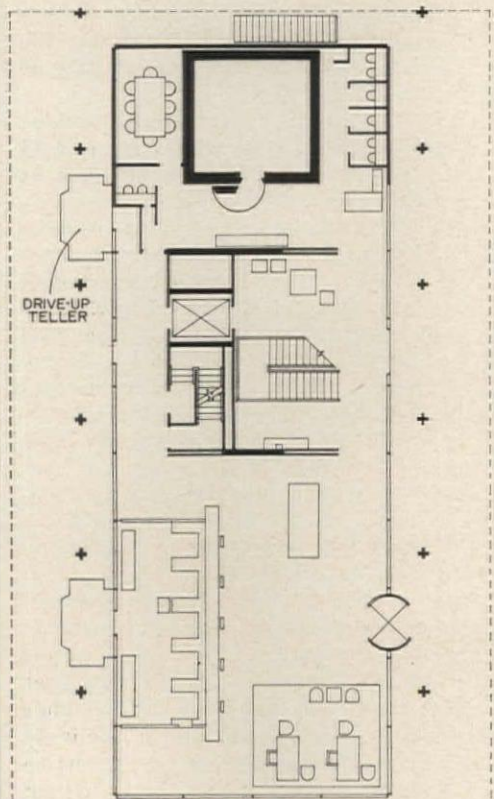
The Central Motor Bank in Jefferson City, Missouri, marks a notable rise in sophistication from the earlier, gangling days of drive-in bank design. It's light, crisp air, park-like landscaping and cantilevered second-story block, all combine to negate any possible "billboard over a parking lot" character, so often associated with this building type. Motorists are offered as elegant and contemporary an atmosphere as any downtown bank.

This branch facility is located two blocks from the main bank in the business district. At present, six drive-up teller windows are provided: two attached to the main building, and four in a separate island structure. The latter has ample space around it for expansion, and is connected to the main structure by a tunnel at basement level. The protective canopy over the drive-in unit is an all-welded, cantilevered rigid frame steel structure, supported by two rows of "cruciform" shaped built-up steel columns similar to those of the main building.

The exterior finish of the main building is glass, marble and aluminum. Clear glass is used at the protected ground level, and gray heat-absorbing glass on the second floor.

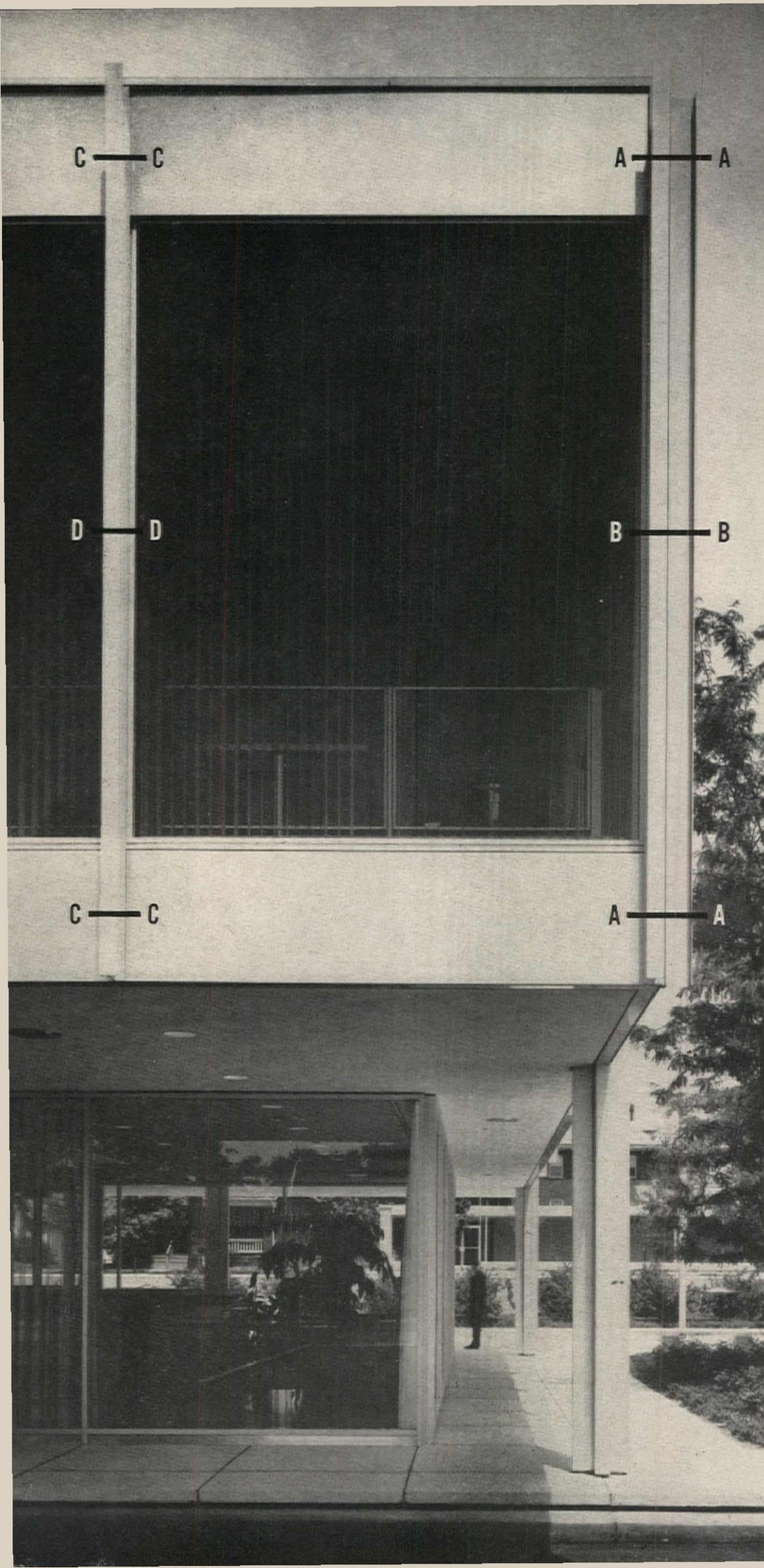


SECOND FLOOR



FIRST FLOOR





The second floor of the Central Motor Bank is enclosed by a series of pre-fabricated panels, including glass and spandrels, with crisp, raised mullions at the joints. The details shown here illustrate four conditions at the joints, and the component parts of the panels.

The basic structure is all-welded rigid frame steel with a span of 45 feet, and with 9-foot cantilevers at each side of the main span. The cruciform, aluminum-clad steel columns have an 18-foot spacing. Floor-to-floor height is 11 feet on the ground floor, 12 feet on the second floor. Maximum floor-to-ceiling heights are made possible by running duct and pipe work through specially-designed openings in the main girders and between floor and roof stringers. Steel cellular deck with lightweight concrete topping provides electrical raceways for second floor and roof deck; underfloor ducts provide for this on the first floor level.

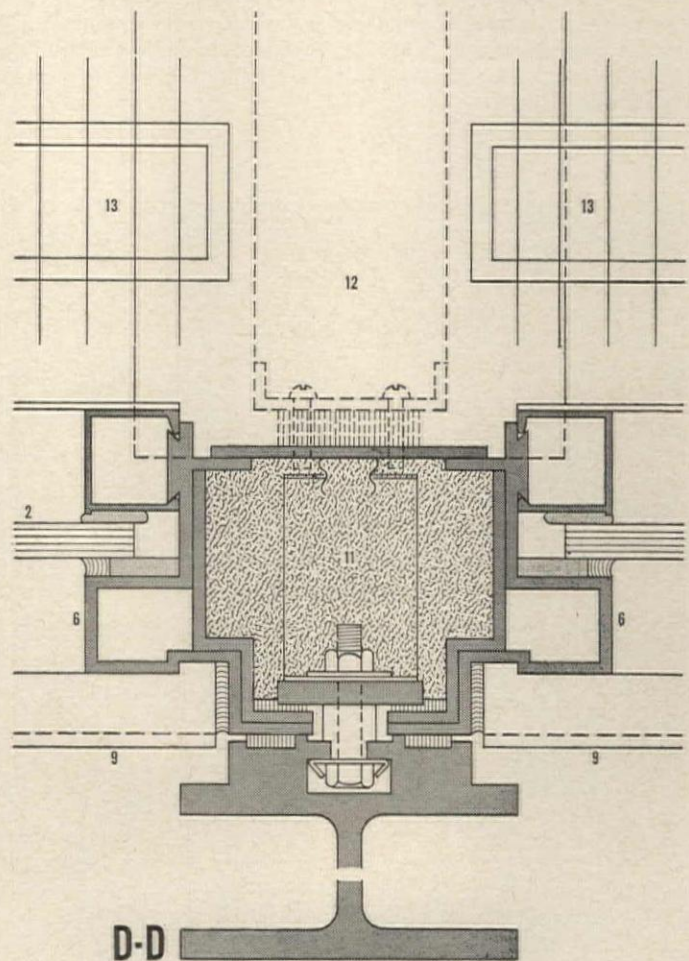
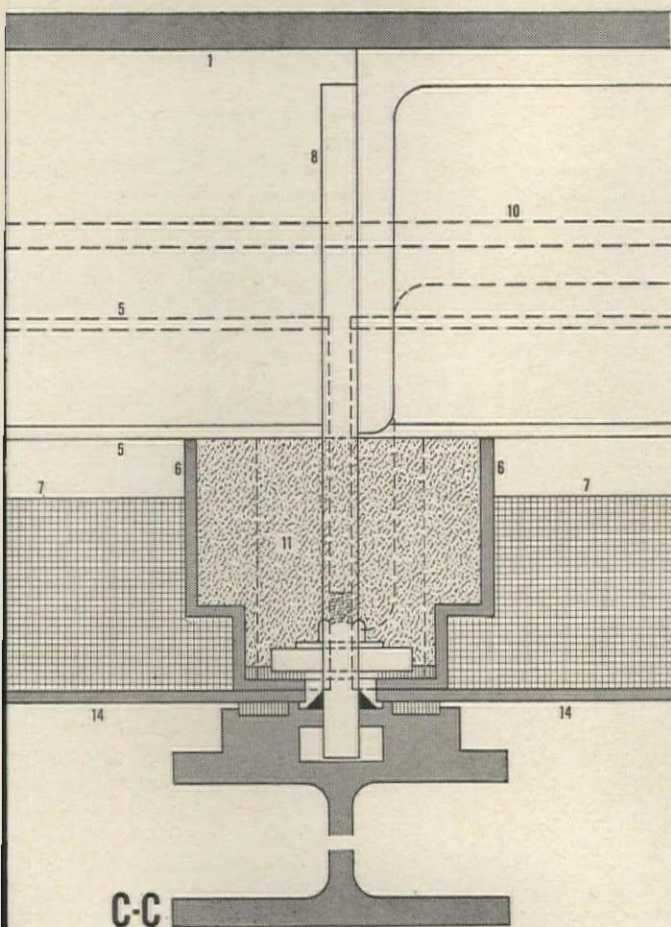
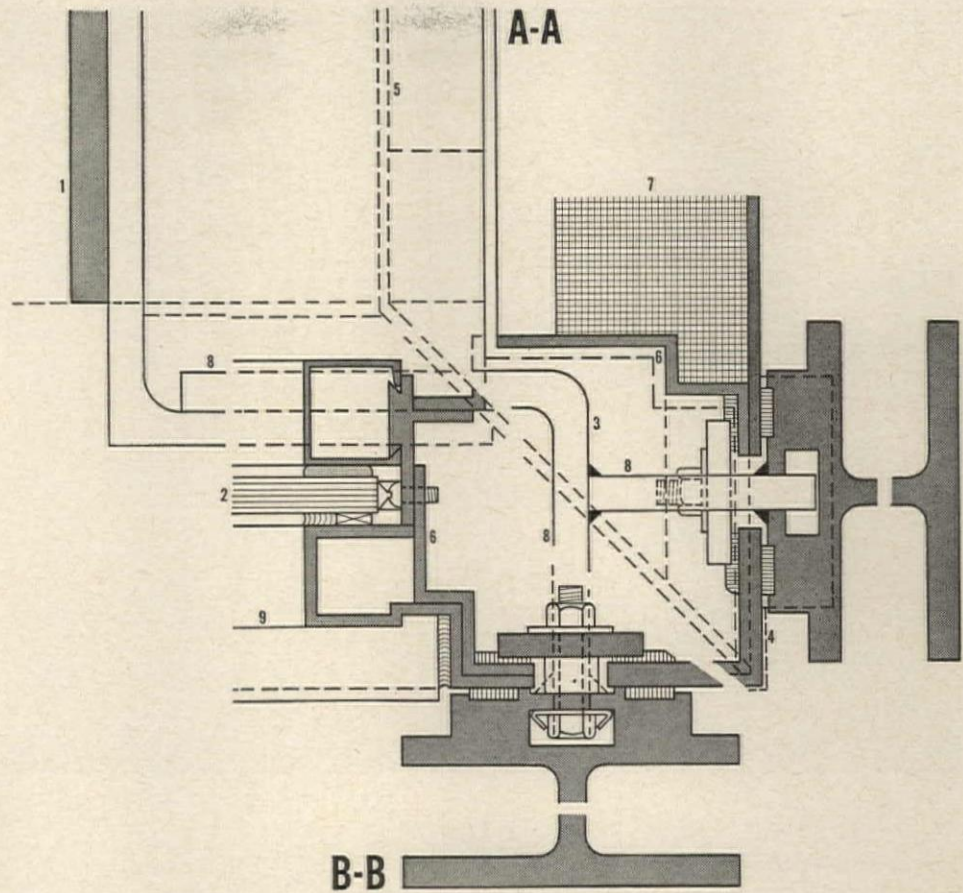
Exterior finishes include clear anodized aluminum, verde antique marble panels and Tuscan travertine panels. Interior walls are sand float plaster and teak paneling. Ceilings are acoustical plaster or luminous plastic panels. Floors are travertine in the main first level areas, carpet on the second floor and vinyl asbestos tile in the basement. The entire building is air conditioned.



**Window Wall  
Component Parts**

*Details are one-half full size*

1. Web of spandrel beam
2. Gray heat-absorbing glass
3. Interior corner member
4. Exterior corner member
5. Panel soffit frame member
6. Prefab aluminum window panel
7. Rigid insulation
8. Aluminum bracket plate
9. Sill cover
10. Web of spandrel beam, alternate elevation
11. Loose insulation
12. Partition, where occurring
13. Vertical blinds
14. Aluminum 8-inch spandrel panels





*Central Motor Bank  
Jefferson City, Missouri*

The bank offers a range of services for its clients and many amenities for the employees. The main floor of the building houses the in-bank lobby (*above*), safety deposit vault and related facilities. The second floor is visually connected with the main level by a central well, and contains air-handling equipment, bookkeeping quarters, an employe lounge (*below*), kitchen and dining facilities, and a special room for community use. A sundeck is located on the roof for employe use. The basement houses the main vault and maximum security areas. In addition to the stairs, the four levels are connected by an automatic elevator

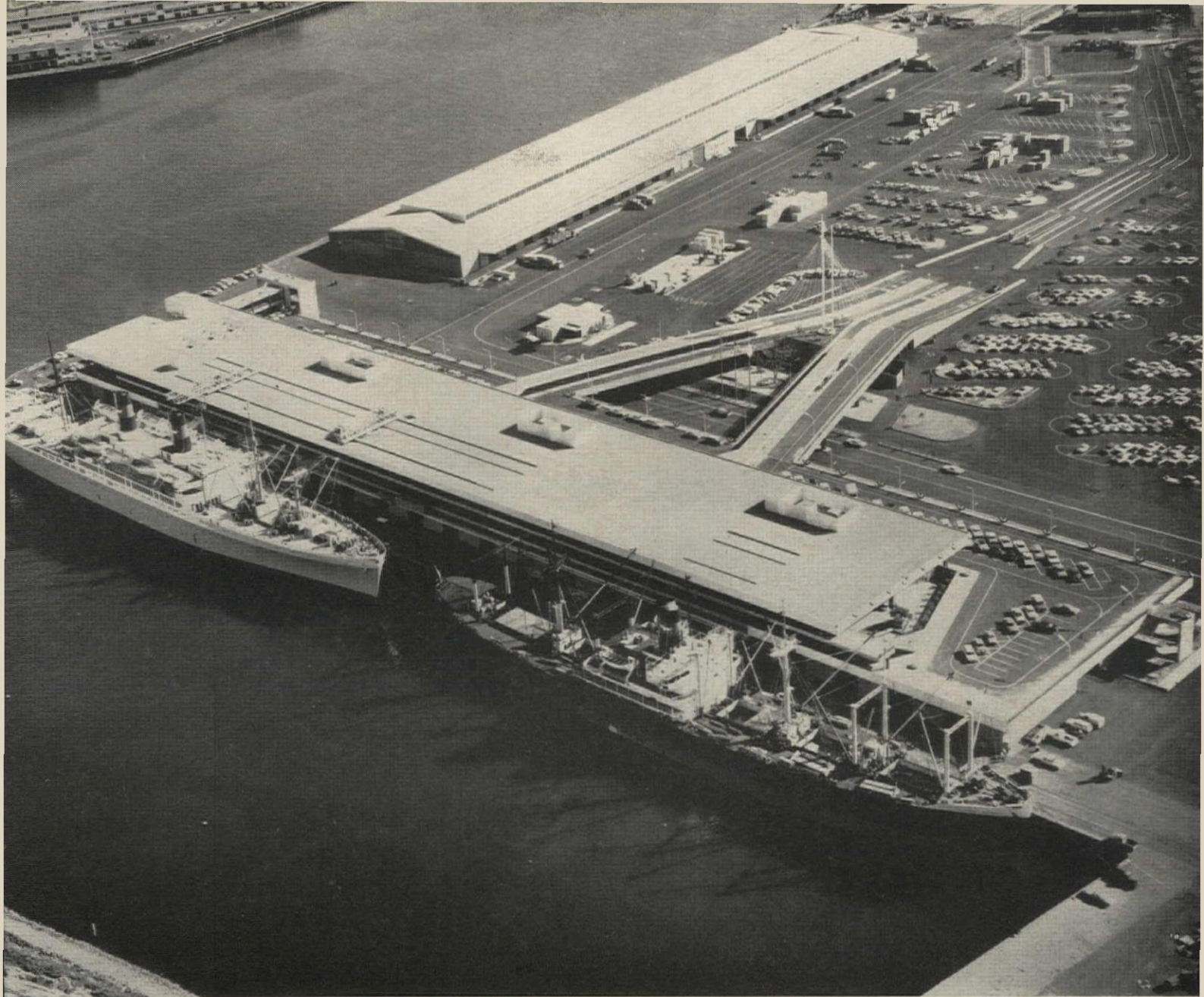
OWNER:  
*Central Missouri Trust Company*

ARCHITECTS AND ENGINEERS:  
*Skidmore, Owings & Merrill*

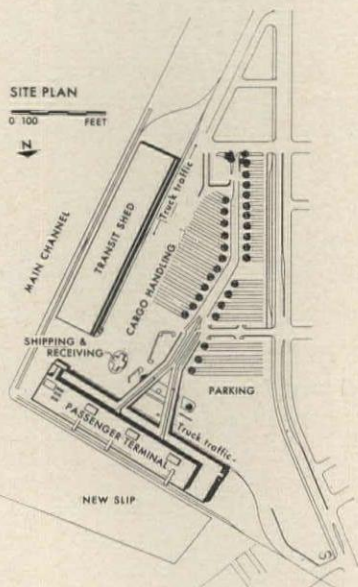
ASSOCIATE ARCHITECTS:  
*Wedemeyer & Hecker*

CONTRACTOR:  
*Schell Construction Company*



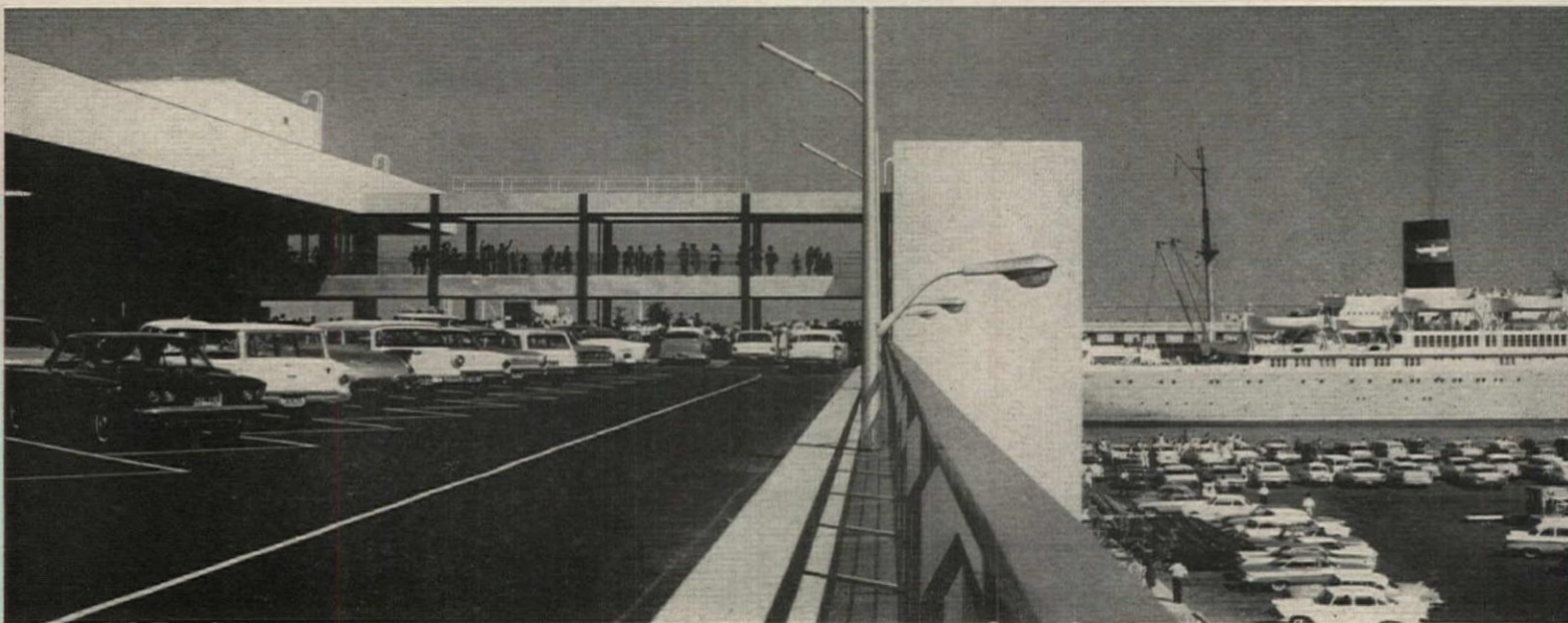
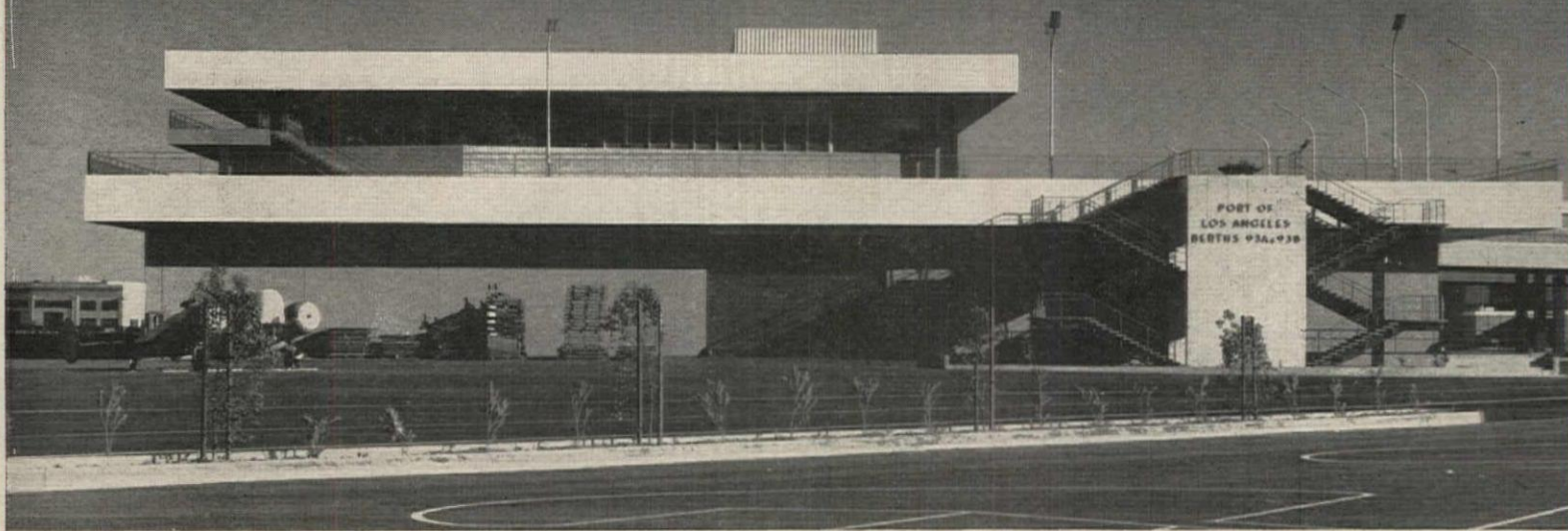


L. A. Airport Photography



## A UNIQUE TERMINAL FOR SHIP TRAVELERS

The Port of Los Angeles' new Harbor Terminal, built to meet the needs of an expected heavy increase in travel by super-ship, recognizes the special needs of cargo *and* people



*Amir Farr photos*

The Port of Los Angeles has just completed and put into use what may well be the world's first harbor terminal specifically designed to provide independent facilities for handling of cargo and passengers. In almost all existing terminals, passengers board and leave ship through transit sheds which they share with cargo operations. But here these functions are on different levels so that passengers and cargo are handled independently of each other—an essential economic consideration in port management since passengers, important to shipping during a voyage, become an economic handicap while a ship is in port at its destination. The design of this new terminal, which was based on the dimensions of a super-ship such as the U.S.S. Washington (although smaller ships can be accommodated as well) and premised on a heavy increase in ship travel, places passenger areas over the usual transit shed and provides direct vehicle access (and parking) to each level. At passenger level are lounges and customs inspection areas for each of three classes—first, cabin and tourist—and, on the ship side of the building, a spectators' waving gallery. The building's structure is steel, because of its weight differential over other materials and also because the deep truss (7 feet), needed to span the required open interior spaces, permitted installation of baggage conveyors from ship to passenger level in the space provided, out of the way of passengers, spectators and cargo.

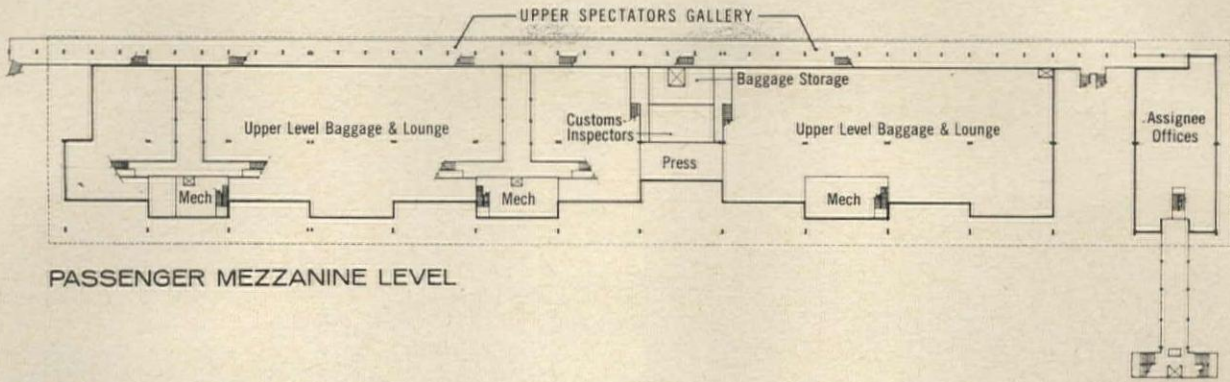
*Passenger-Cargo Terminal  
Berths 93A-93B  
San Pedro, California*

ARCHITECTS: *Joint venture of  
Kistner, Wright & Wright and  
Edward H. Fickett, architects  
and S. B. Barnes,  
structural engineer*

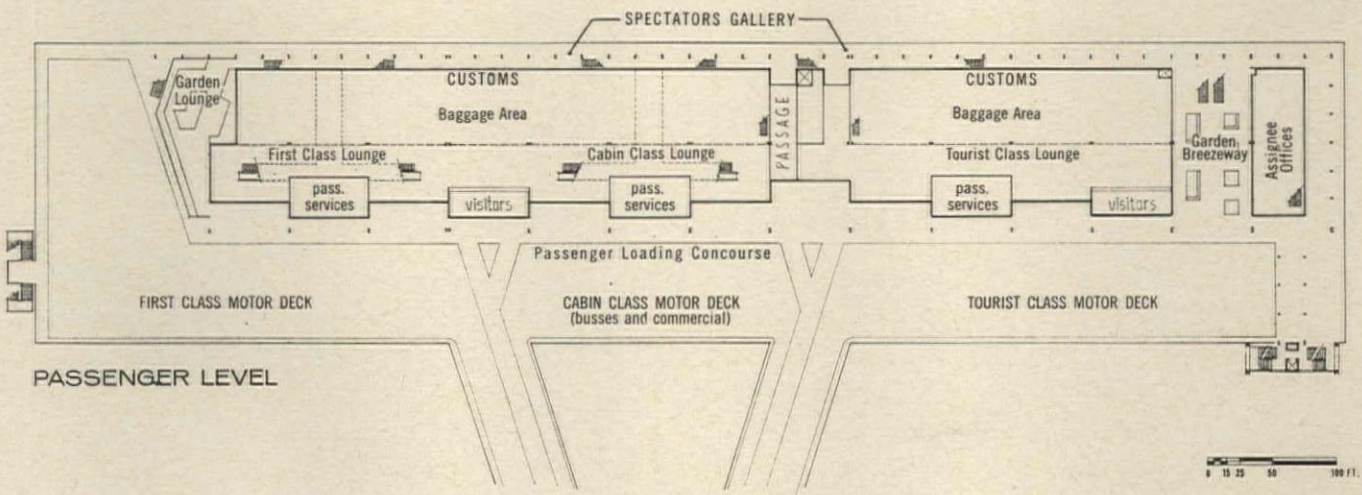
ENGINEERS: *Los Angeles Harbor Department*

LANDSCAPE ARCHITECTS: *Armstrong & Sharfman*

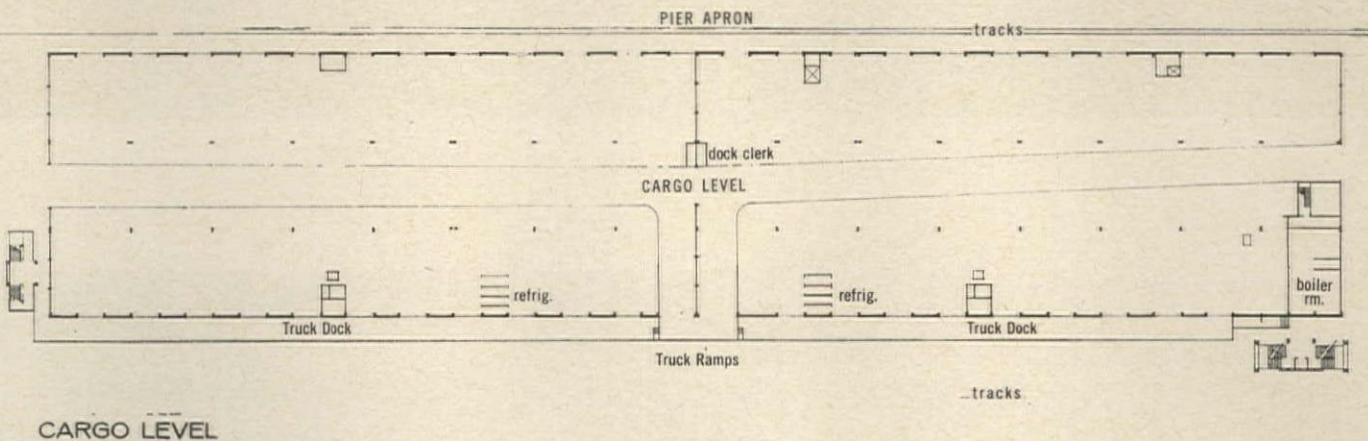
GENERAL CONTRACTOR: *L. C. Dunn, Inc.*



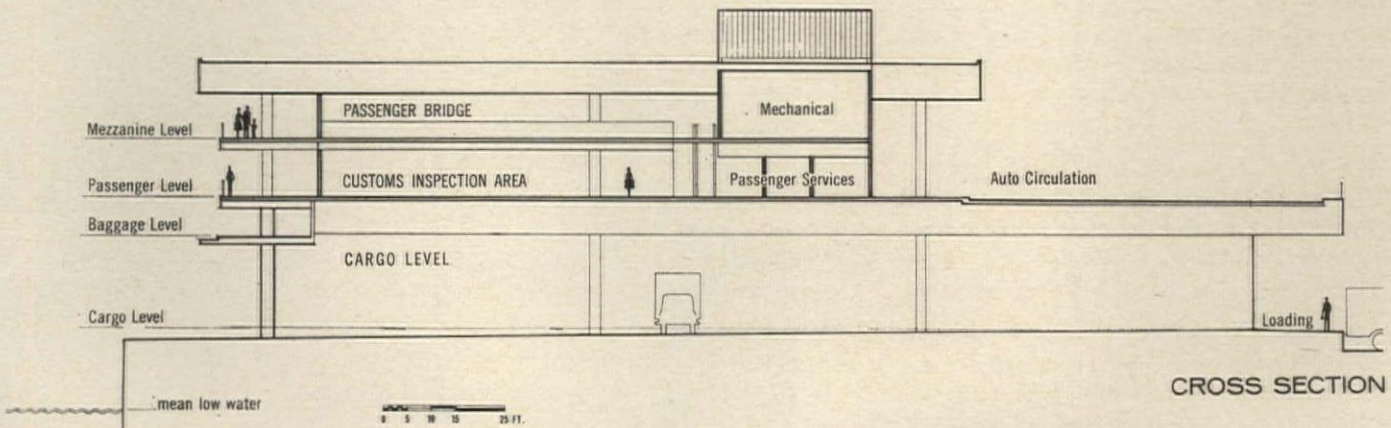
PASSENGER MEZZANINE LEVEL



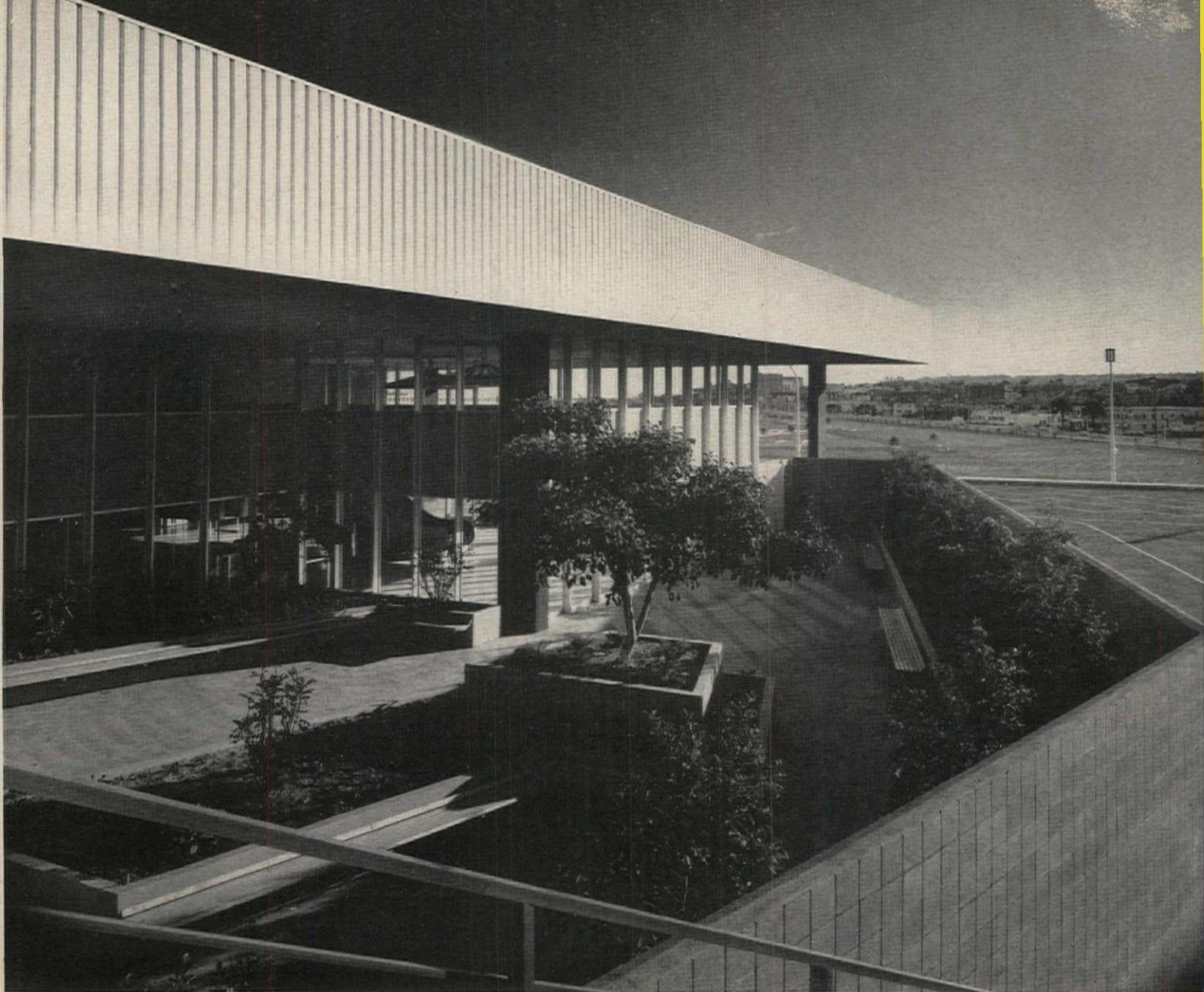
PASSENGER LEVEL



CARGO LEVEL



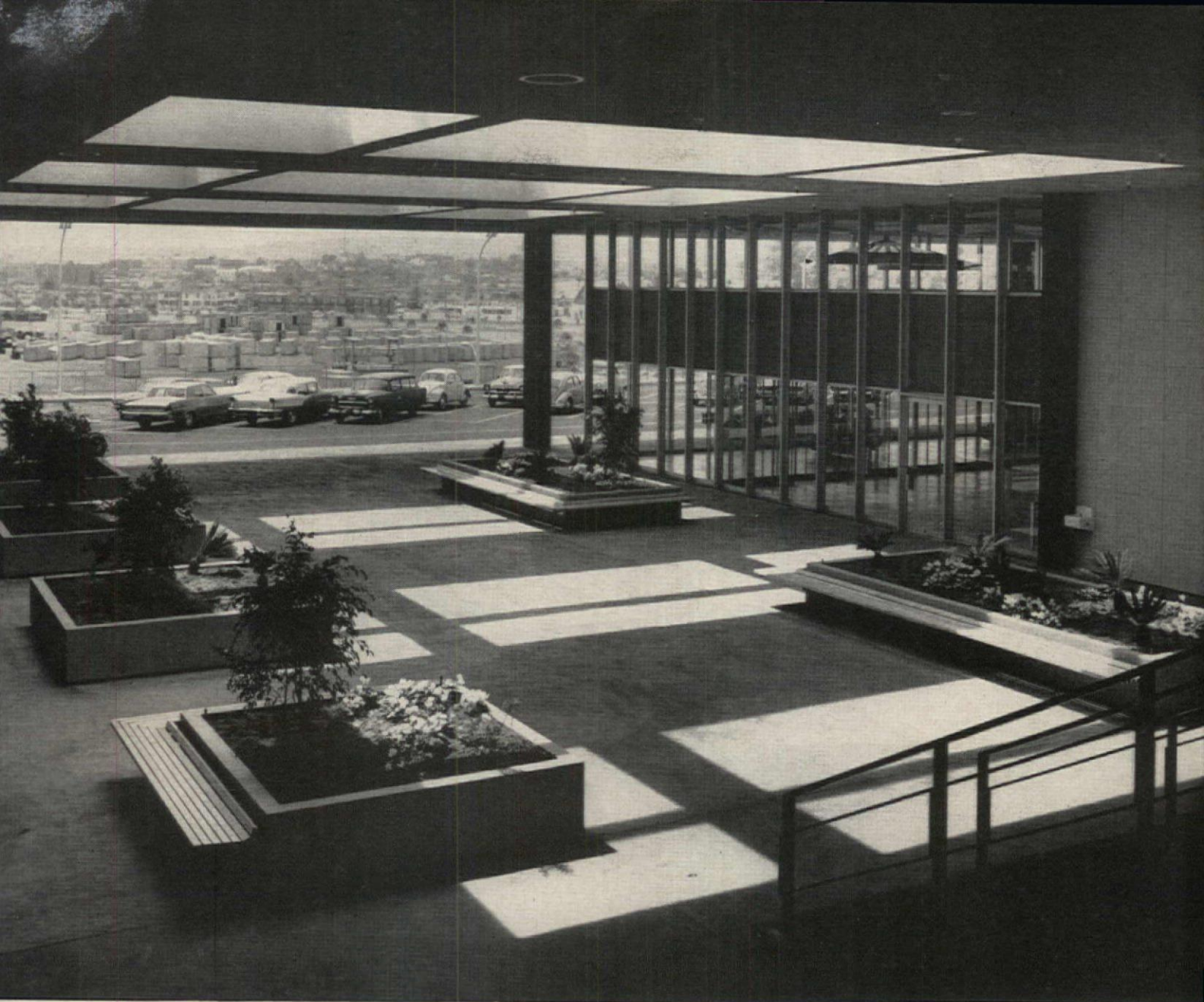
CROSS SECTION



*Los Angeles Harbor Terminal*

First-class passengers can wait in the garden lounge (*above*) at the west end of the building. The breezeway (*across-page, top*) between tourist-class passenger area on the right and shipping offices on the left is both an open area waiting room and a short cut from the spectators' galleries to the parking area. The large clear open space of the passenger level (*right*) provides lounges and baggage inspection areas for all three classes of passengers. Screened security areas (*across page, bottom right*) permit "talk through but no contact" between arriving passengers who must await customs clearance and friends who come to meet them

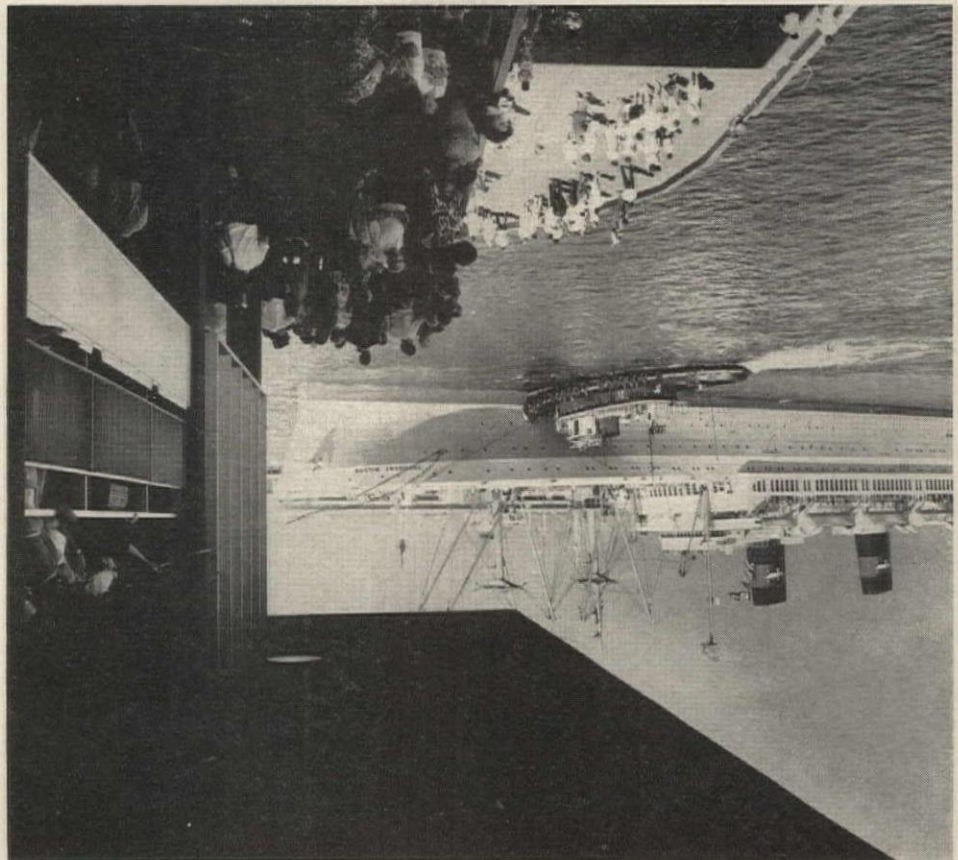
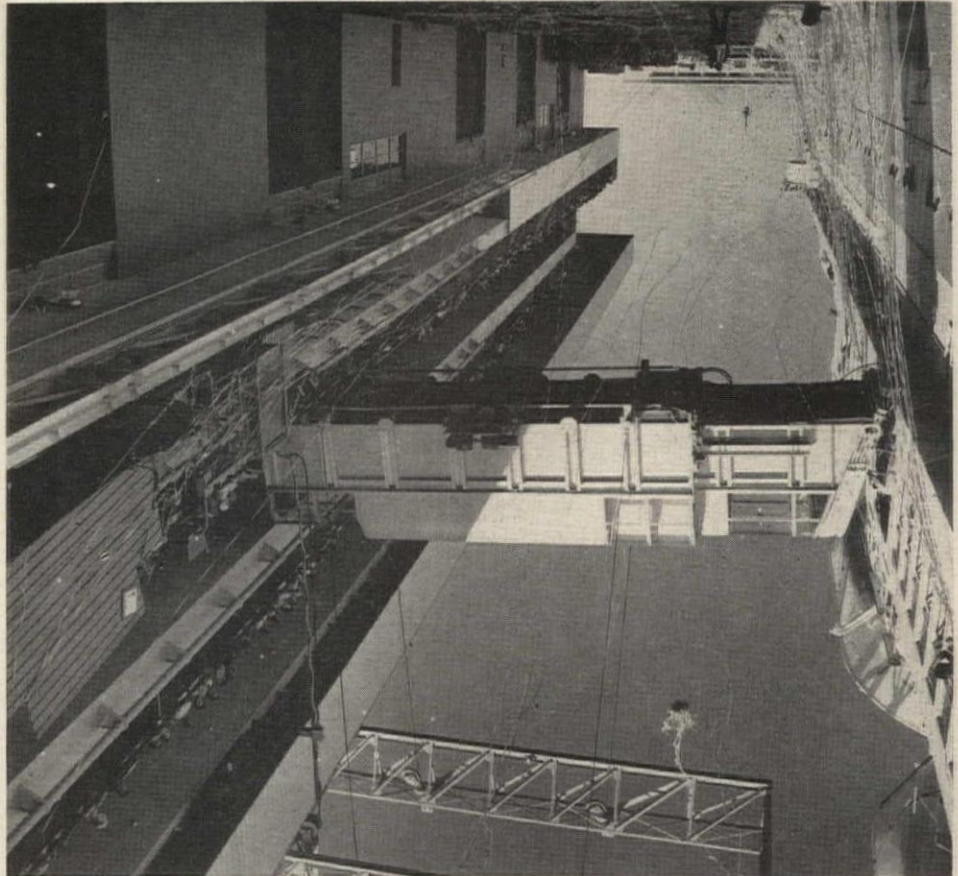




*Julius Shulman*

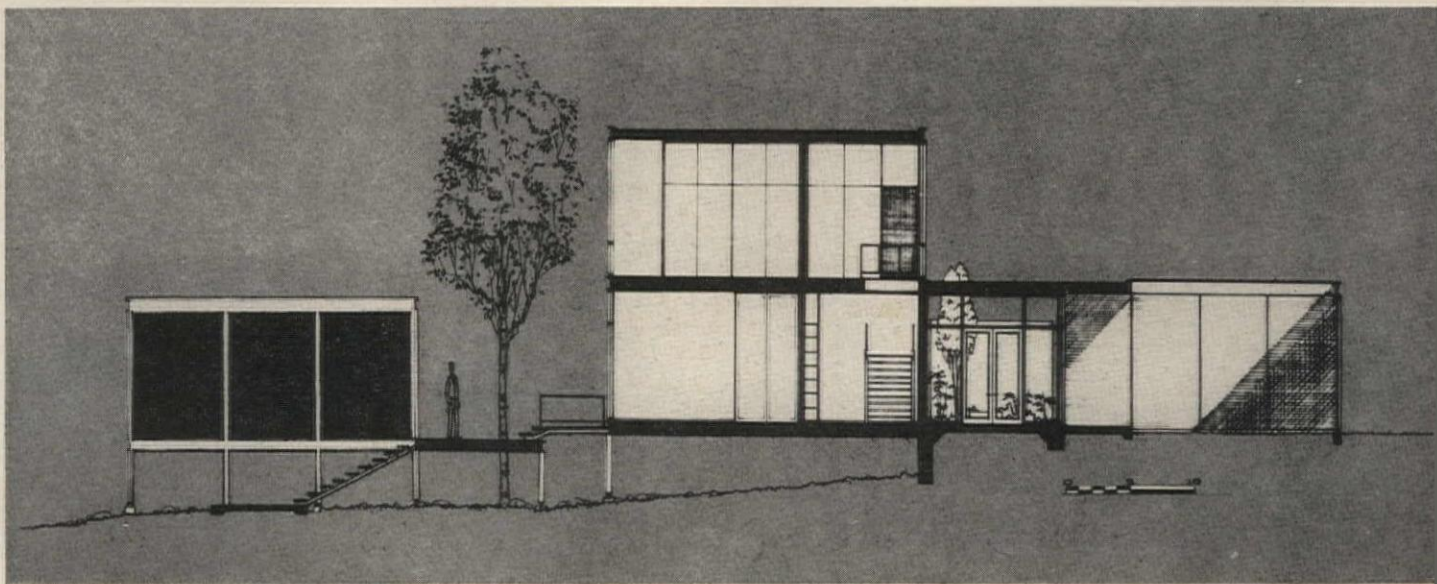


Waving galleries for spectators and passengers' friends are located on two levels. All ship-to-terminal passenger and baggage traffic is via specially designed telescoping bridges positioned by gantry crane from roof top. Over 1,000 feet long and 200 feet wide, terminal recognizes standard space needs for cargo operations at dock level and handles 1,450 passengers during customs clearance



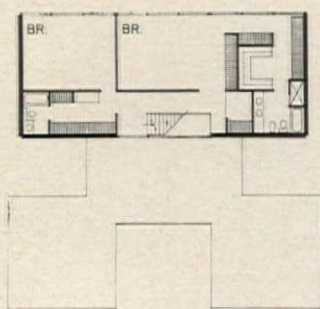
Los Angeles Harbor Terminal



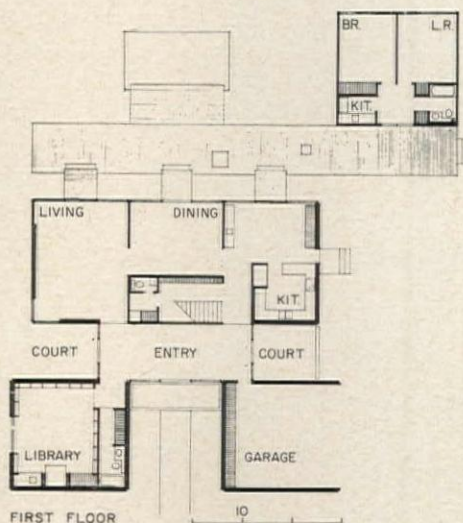


## A FORMAL HOUSE THAT EXPLOITS A SLOPING SITE

Bolton and Barnstone develop some interesting devices to project a compact house into the foliage of a natural bayou



SECOND FLOOR



FIRST FLOOR

This handsome house is an extremely interesting example of adapting a formally planned, steel-framed design to a rambling, wooded site—a type of lot highly prized in Houston. The house presents an enclosed, private appearance on the street side, but, by use of floor to ceiling glass, is completely open to the bayou view at the back. A series of courts, bridges and decks further exploits the natural backdrop of trees.

The basic house has a compact, two-story plan, which is extended at the front by an entrance gallery, flanked by courts, and by a library and a concealed garage on either side of an entrance garden. At the back it is extended by a detached guest house, which is linked to the main house by a large redwood deck. The entire complex is elevated to preserve the natural contours of the site.

Although there is no actual "open planning" used in the house (each room is separate and closed off), all rooms have one entire wall of glass and thus have a great air of spaciousness. This is even true of the interior stair hall at the second level.

Typical of the work of the two architects, the house is built of beautifully finished materials, and had great attention paid to all the details. Foundations are concrete, and the structure is exposed, painted steel. Exterior wall panels are a soft-colored Mexican brick. Floors are marble or wood, except for vinyl tile in the kitchen and baths. Ceilings are acoustical plaster. The interior walls are hardboard; those in the living room have changeable fabric coverings held in place by borders of inter-meshing tape. The kitchen and baths have plastic wall surfaces. The house has central air conditioning.

The cost was about \$84,000, excluding lot, landscaping and furnishings.

*Residence for Mr. and Mrs. J. M. Winterbotham*

ARCHITECTS: *Preston M. Bolton*

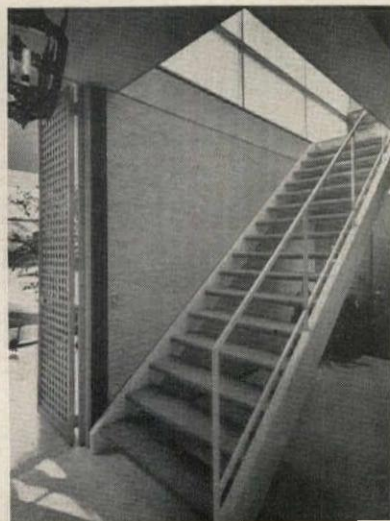
*Howard Barnstone*

STRUCTURAL ENGINEER: *A. T. Knies Jr.*

CONTRACTOR: *Ivanhoe Construction Company*

INTERIOR DESIGNERS: *Wells Design*

LANDSCAPE ARCHITECT: *Fred Buxton*



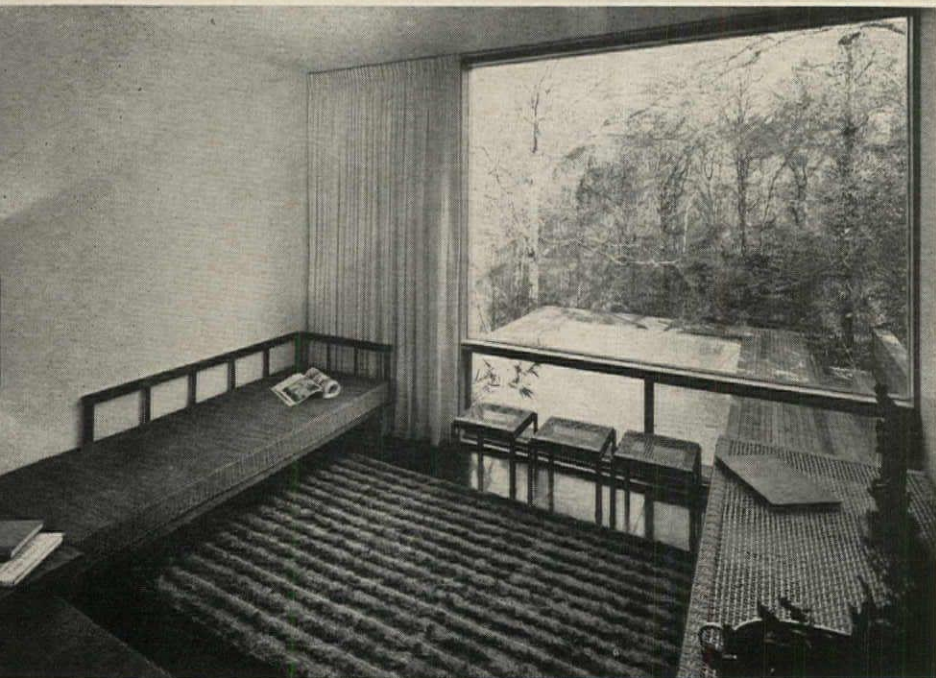
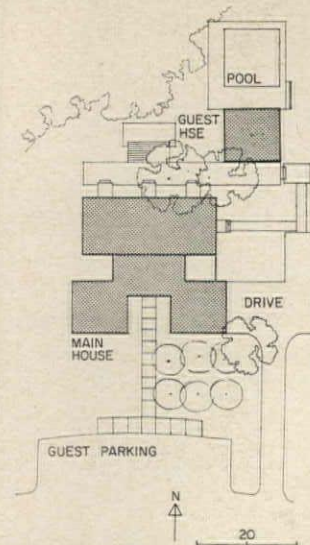


*Frank Lotz Miller photos*



To contrast with the natural surroundings, the courts and side yards of the Winterbotham house are formally landscaped. A tidy kitchen and cutting garden can be noted in the photo (*above*). The owner's children are grown, and the guest house was provided for their occasional visits. It is a complete little house with living room (*photo below*), bedroom, bath and a small kitchen. When unoccupied, it doubles as a dressing area for the adjoining swimming pool.

The long redwood deck which links the guest and main houses is sizeable enough to add considerable space for lounging and entertaining



# \$120 BILLION IN CONSTRUCTION IN 1975

FORECAST BY F. W. DODGE CORPORATION

*By George A. Christie, Senior Economist*

It is now almost the exact midpoint in time between 1950 and 1975. The earlier date marks the approximate beginning of one era; the present may well be the beginning of another.

Once past the few awkward years of transition from war to peacetime operations, our economy moved quickly into a phase of unprecedented expansion. Whether this period is recalled as the "Fabulous Fifties" or as the postwar boom, it represented a clean break with the past. For the first time in almost two decades, we produced without the severe limitations of depression or all-out war. It was a time for filling a huge void left by doing without for many years, as well as a time for meeting the needs of an explosion of new consumers being born at an alarming rate. For the construction industry it meant building more than a million new homes a year, every year; a 13-year total for all kinds of new building and construction of close to \$600 billion.

It would be hard to say just when this era came to an end. Even within the construction sector, some building markets have continued to expand in recent years, while others were trailing off. We are once again in a period of transition, but on the threshold of a new stage of growth.

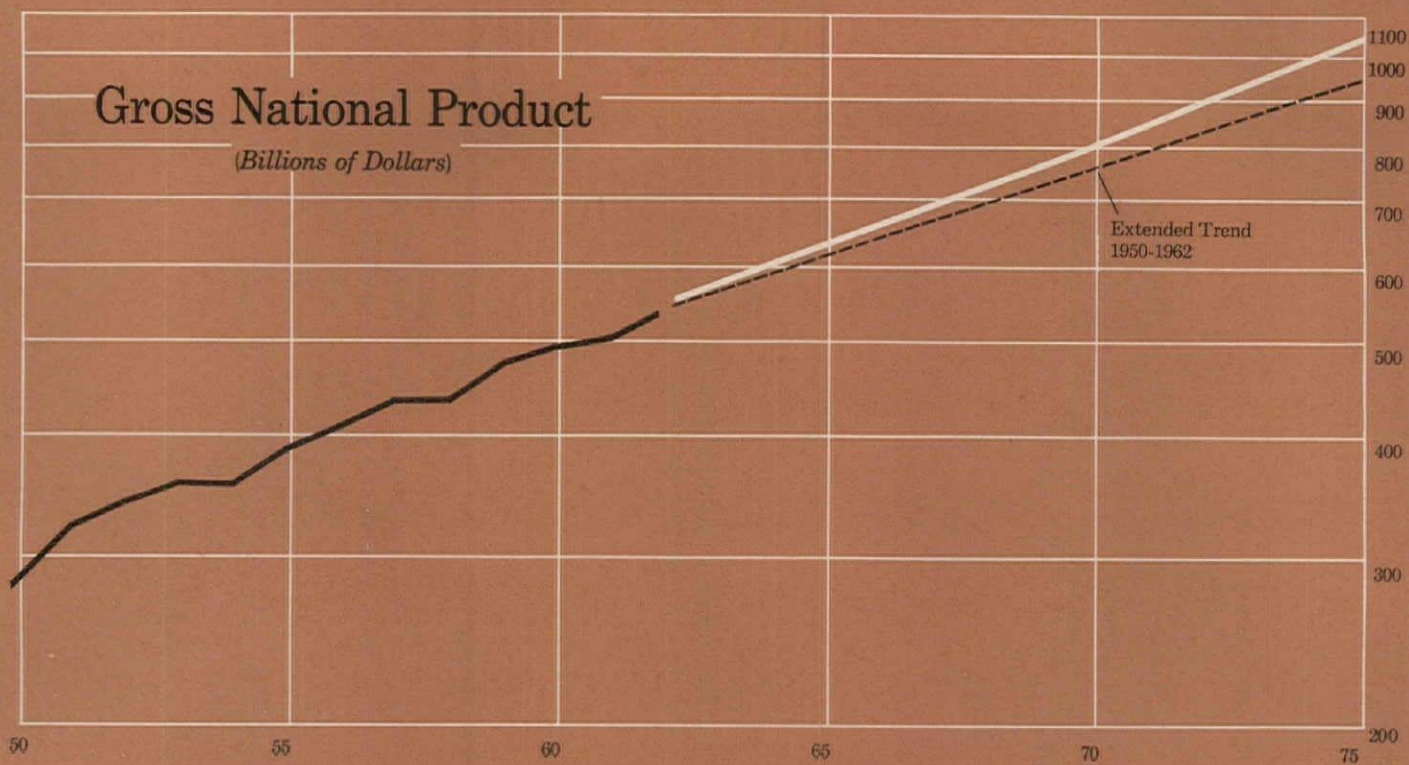
The dimensions of the future are enormous, and the numbers that measure them are difficult to grasp. How, for example, does one conceive of a trillion dollar economy? How big is \$100 billion worth of construction? By 1975 the annual volume will be well above this mark!

Normal, continuing growth leads inevitably to im-

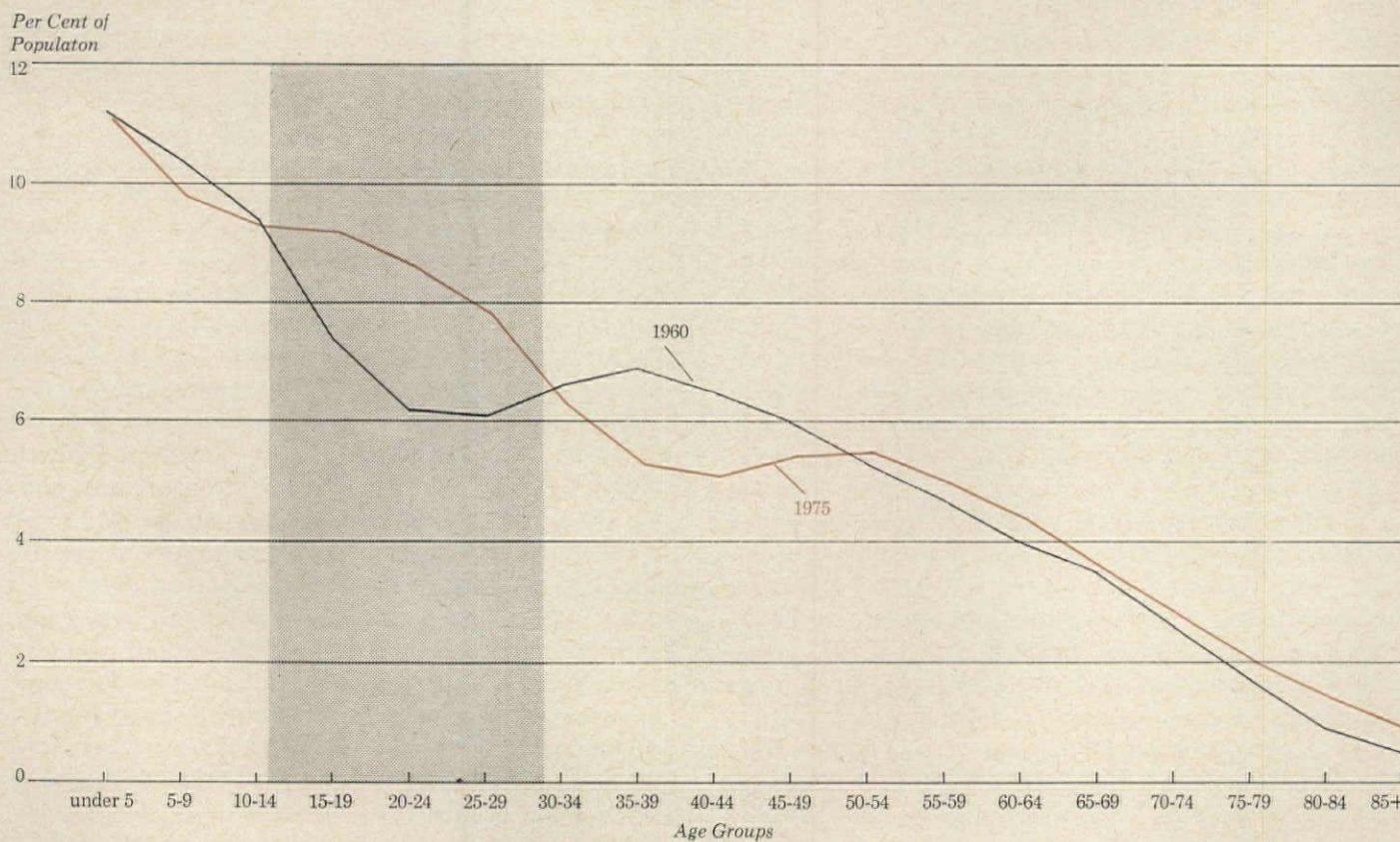
pressive measures of the future. The object of a long-range projection is not to impress, but to serve as a guide for planning. To be useful, estimates of future construction require a standard against which they can be measured and evaluated.

The current \$63 billion volume of construction is one reference point. It has the limitation, however, of immediately putting the problem into short-run focus by introducing the cyclical and random forces which affect any particular year. Another benchmark by which to measure the future is the volume of construction that would be reached in 1975 if the pattern of the past dozen years were to continue. A projection of the trend of construction since 1950 would put its total value in 1975—allowing for no structural changes in the economy—at about \$105 billion. Against this value we can measure the effects of the events to take place as we leave one era and move into another.

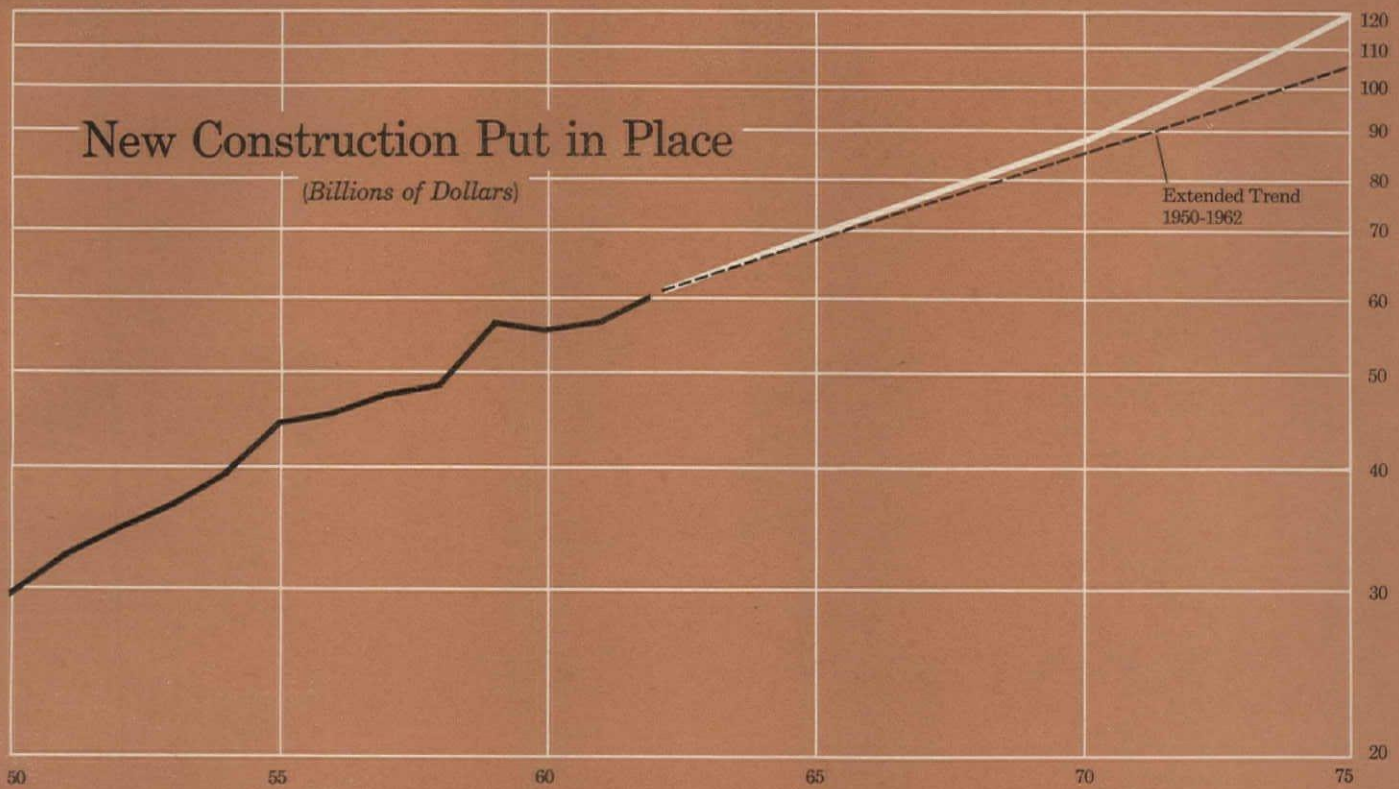
The customary note on definitions and assumptions that goes with all projections can be put briefly. The market is measured by the current dollar value of new construction put in place as reported by the U.S. Department of Commerce. Historical trends have been modified slightly to allow for under-reporting in the earlier years. Current, rather than constant, dollar measures were used throughout since they are, after all, the ones we live with. The projections represent *trend* values. Normal, year-to-year cyclical fluctuations will always be present, but no attempt has been made in this analysis to forecast such fluctuations.



## 1963-1975: ACCELERATING ECONOMIC GROWTH



## 1963-1975: YOUNG ADULTS THE FASTEST INCREASING AGE GROUP



1963-1975: CONSTRUCTION 15 PER CENT ABOVE TREND

## Total New Construction

Construction is not carried on in a vacuum. Most construction work is related to the general level of business activity, both stimulated by it and at the same time giving it support. Some comment on the general economic framework of the period ahead is necessary, therefore, to an analysis of construction.

In recent years the one aspect of our economic system which has prompted more discussion than any other has been its sluggish rate of growth. Once past the vigorous "catch-up" period, we settled into a rate of expansion well below our potential. At present, several forces are developing to liven up this drab performance.

First in importance will be the change taking place in our adult population. For at least the last three decades the labor force has shown a steady annual gain of about  $1\frac{1}{4}$  per cent. We are now at a point of significant change. The advance shock waves of the famous population explosion have already begun to reach the labor market, and the work force will accelerate sharply (to about 1.8 per cent yearly between 1965 and 1970; 1.6 per cent after 1970). It means, compared to the historical rate, an *additional* 6 million workers by 1975.

This extraordinary increase is, on one hand, a tremendous boost in productive manpower. On the other hand, finding jobs for these workers as they come along will be one of the most critical challenges that lie ahead. The optimistic assumption that these in-

dividuals will be fully employed (in a 4 per cent "frictional unemployment" sense) is not realistic. In view of the flood of young, inexperienced job-seekers about to spill upon the market, the utilization of all but 5.5 per cent of the labor force by 1970, and perhaps 5.0 per cent by 1975 (compared with today's 5-6 per cent rates in a period of high business activity) would be more likely.

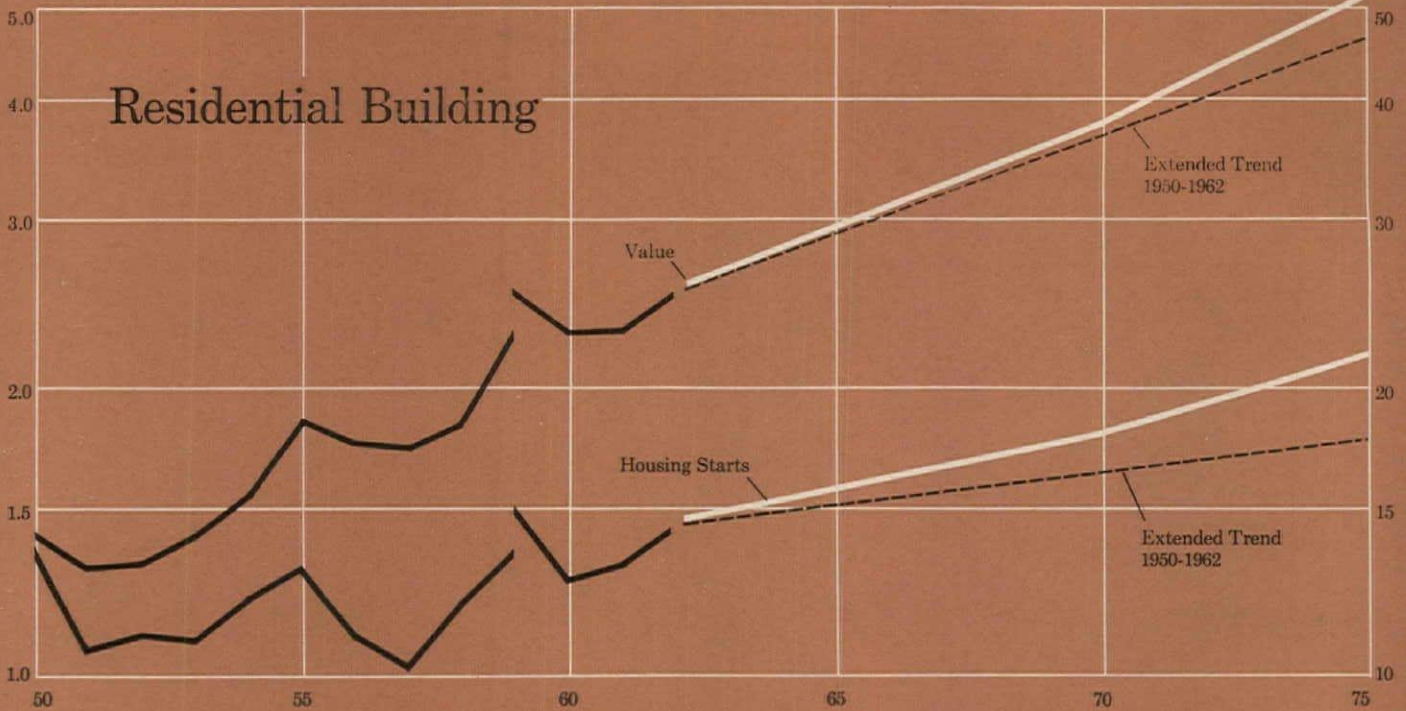
The additional output of the economy stemming from the employment of these extra workers will be substantial. But that is not the whole of it. A rising rate of capital investment will make all labor more productive, and a less restrictive tax structure will strengthen both business and consumer demand.

These factors, operating cumulatively, will put a noticeable upward bend in the long-term growth rate of total output. This acceleration of our economy offers the promise of rapid expansion for most industries by broadening existing markets and by opening new ones.

The construction industry will be no exception. By 1975 the total value of new construction put in place will be about \$120 billion—about 15 per cent better than the projected trend of the booming fifties. How this total will be reached, and how the demand patterns for the many diverse types of building and construction work will unfold over the years ahead can be shown only through a closer look at the individual markets.

Housing Starts  
(Millions of Units)

Value  
(Billions of Dollars)



## Residential Building

Housing, by far the largest segment of the construction industry, will account for an even bigger share of the total by 1975. The kinds of building included here are *new* housing units (both single-family and multiple types), additions and alterations to existing housing, and a variety of "non-housekeeping" structures such as hotels and dormitories.

A long-term look at residential building should emphasize future needs rather than the shorter-run aspects of residential demand such as changes in income and the availability of credit. The general economic outlook implies that ability-to-pay will not be a problem. The dominant force, shaping both the volume of new homebuilding as well as its mix of single- and multiple-family units, will be the rate of formation of new families in the years ahead.

The outlook for homebuilding through 1975 is exceptionally good. The earlier part of the period will provide a gradually rising demand from the current 1.5 million housing starts to an annual rate of about 1.8 million by 1970. Then the rate of starts will begin to accelerate more rapidly, reaching about 2.2 million per year by 1975. To indicate just how this market will take off in the early seventies, the extension of the past decade's trend of housing starts would put the 1975 rate at only 1.8 million.

Between 1963 and 1975 a total of 22 million new residential units will be built. The future course of this extraordinary volume of homebuilding is

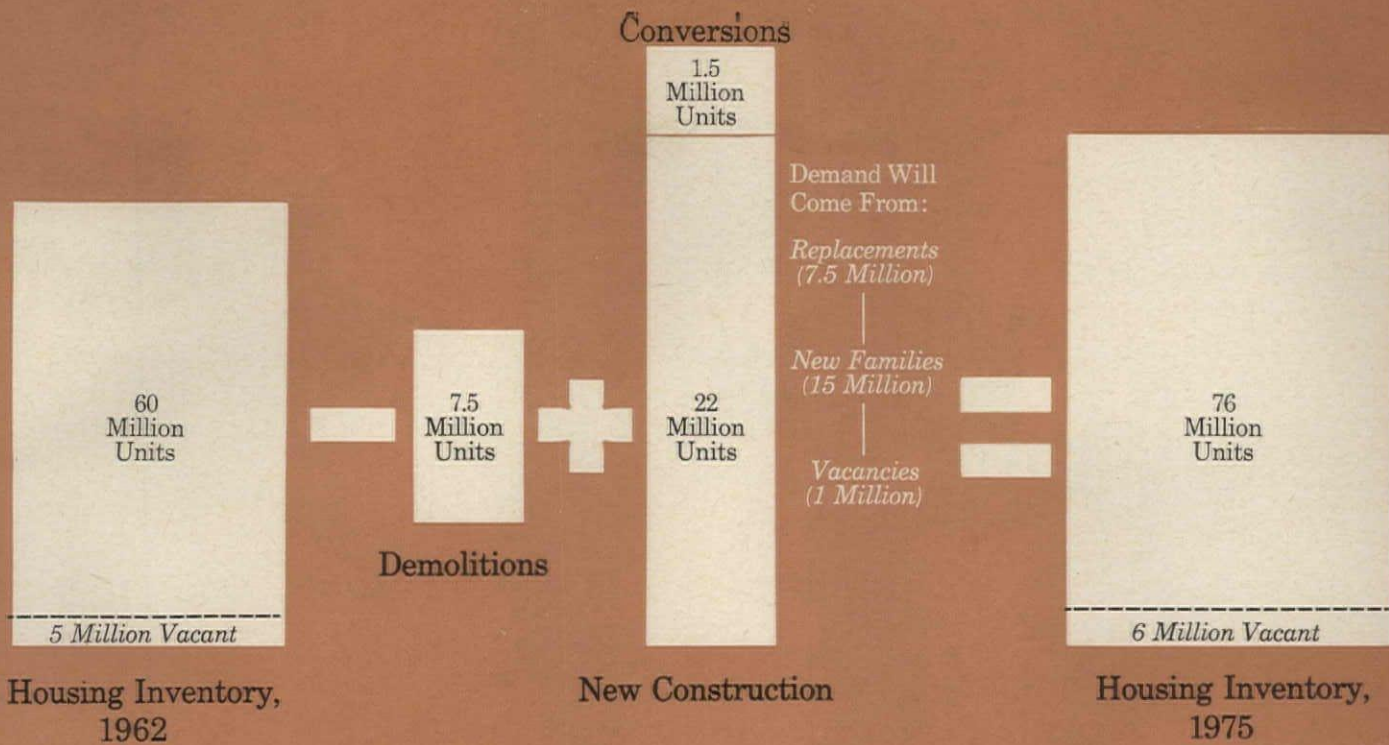
geared to the anticipated pattern of household formation, but although the sharply growing number of families will be responsible for the largest part of future residential demand, other factors will contribute to the growing need for homes as well.

Today's inventory of 60 million housing units serve the shelter needs of some 55 million households—a ratio of roughly 1.1 to 1. The housing total includes some five million units, most of which are normally vacant and a small number which are being held off the market or are dilapidated. The household figure includes about three quarters of a million cases where more than one family group lives together, a negligible proportion.

Estimating the growth in the number of households by 1975 is not a difficult task, since all of the people who will head up these new families are already among us, and in force. By 1970 today's teenagers will spin off to create 9 million new families; and by 1975, today's pre-teens will add another 6 million, bringing the total to an even 70 million households. (This will hinge partly on our ability to provide jobs for these potential family heads; otherwise, marriages will be fewer, and more young married couples will live with their parents instead of setting up their own households.)

The addition of 15 million families establishes only the nucleus of total demand. About 7.5 million homes now in existence (many of them among the





## 1963-1975: COMPONENTS OF HOUSING DEMAND

roughly 10 million considered substandard) will be destroyed before 1975, by fire and storm, by urban renewal and slum clearance projects, and as an indirect result of highway construction. These homes will have to be replaced with new units in order to provide the stock required in 1975.

The 15 million new families will not all occupy brand new housing, however. Many will take up existing, currently vacant quarters. But it is necessary that there always be a certain proportion of homes vacant and available for rent or sale in order to accommodate our highly mobile population. If the present rate of vacancy is to be maintained, it means that as the stock of housing expands, an *extra* million units will be needed for that purpose alone.

On the negative side, a small part of the coming need for housing—about 1.5 million units—will be met by subdividing already existing quarters. This is somewhat above the rate of the past decade, but is consistent with the future requirement of a higher proportion of rental units.

The several components of housing demand—new families, replacements and vacancies—add up to a need to build 22 million new units by 1975; and the housing supply will be further increased by 1.5 million conversions.

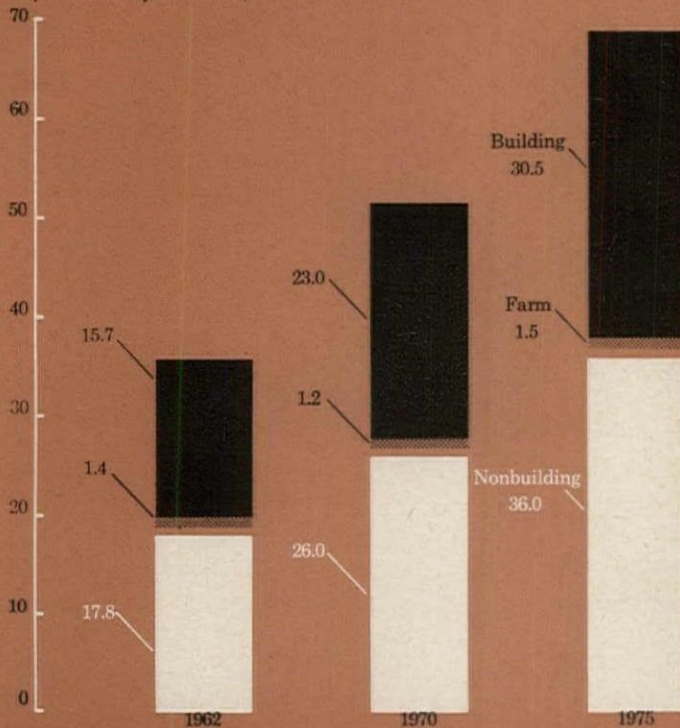
The type of new housing built over the next decade or so will continue to reflect the changing age distribution of the population. Persons of marrying

age and those in the 65 and over bracket will continue to make up a larger proportion of the populace, and it is these age groups, more so than any other, that represent the hard core of demand for rental housing. High as the current proportion (one third) of apartments to total new housing units may seem by recent standards, this ratio is still below that of our entire housing stock. With apartment dwellers increasing fastest in the years ahead, the rental proportion of total new units should rise as high as 40 per cent in the late sixties but taper off rather sharply in the years that follow, as the families responsible for the current apartment boom begin reaching the home-ownership stage.

Due partly to the higher proportion of rental units in the residential construction mix during the earlier portion of the forecast period, the dollar outlay for homebuilding will rise less sharply at first. (In terms of cost, three average apartment units are the rough equivalent of two single-family houses.) By 1970, the annual expenditure for housing—including additions and alterations to existing homes, as well as non-housekeeping units—will amount to about \$38 billion. In the five years that follow, the rate of formation of new families will accelerate and housing needs will begin to shift more in favor of single-family dwellings. These events, reinforcing each other, will boost total housing expenditures sharply to a \$52 billion rate by 1975.

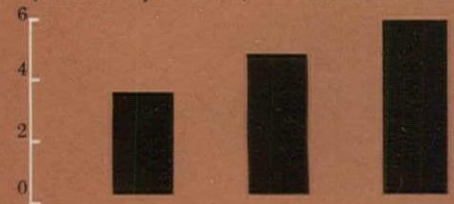
## Nonresidential Construction

(Billions of Dollars)



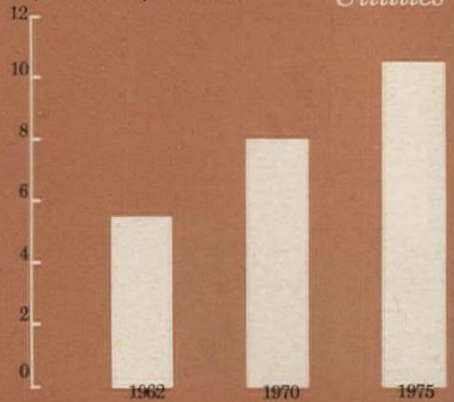
## Building

(Billions of Dollars)



## Nonbuilding

(Billions of Dollars)



## Nonresidential Building and Nonbuilding Construction

As the term implies, nonresidential construction takes in everything that is built which isn't housing. Motels and missile bases, hospitals and highways, steel mills and supermarkets—each has a place in this category, which currently makes up about three fifths of the value of all new construction. But no single type is dominant in size or importance, and while over a long period almost all of them will expand, the major individual subgroups need separate analysis to highlight their own growth rates.

Sooner or later, the demand for most types of nonresidential construction responds, *though not always proportionately*, to the same forces which govern homebuilding. Trends in population and its changing composition, and in income and its distribution, eventually work their way through the many building and construction markets. Residential demand is stimulated directly via the immediate need for shelter; the commercial and industrial building markets are stimulated indirectly through the demand for goods and services; ultimately the many other nonresidential markets are affected as the original activity becomes diffused throughout the entire social, political and cultural structure.

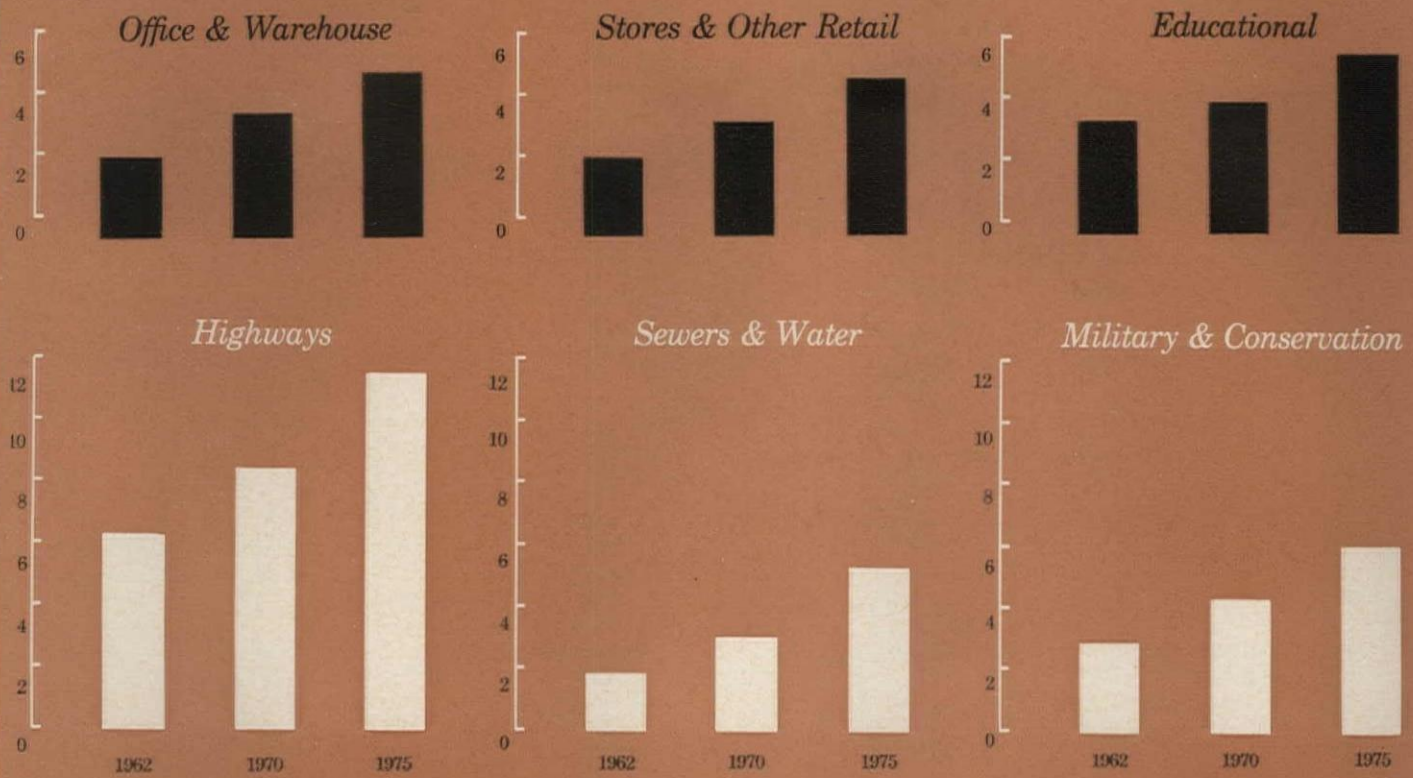
The table near the end of this article contains estimates of the *trend* value of outlays for each of the major nonresidential building and construction categories. The following paragraphs deal with the var-

ious kinds of forces that will shape these trends.

**Commercial Building.** The demand for stores, restaurants, and other commercial establishments is closely tied to the volume of residential building, and can be expected to advance at near the same rate. A period of particularly vigorous expansion will begin around 1970.

**Offices.** Office building is currently at the crest of a great wave of construction, and little further growth is likely to take place for the next several years. Once the considerable quantity of office space recently made available is absorbed, the strong underlying base of a rapidly growing white-collar labor force (twice the rate of gain for all workers) as well as a tendency toward more office space per worker, will restore the formerly vigorous upward trend in office building.

**Industrial.** Following the tremendous capital boom of the postwar period, industrial building has been erratic, with—if anything—a slight downward trend throughout the past decade. Recent construction volume has been roughly one fourth below former peaks, and rising demand for goods has gradually worked down excess capacity. One important aspect of the near-at-hand acceleration in our economy's growth rate will be an increasing rate of capi-



tal formation. Though machinery and equipment outlays may be rising faster than industrial building, this kind of construction should break out of its period of stagnation to advance steadily over the next decade.

**Schools.** As the enrollment-age portion of the population swelled during the fifties, the nation's classroom capacity had to be enormously expanded. An era ended, however, when this wave of students began to graduate, and for a time, at least, enrollment growth will slow down. With a less urgent need—except at the college level where the boom is only beginning—emphasis will be more on quality than quantity. Growth in expenditures for schools will be slower until the next generation arrives, about 1975.

Several of the remaining nonresidential building types have shown amazing expansion in recent years, and some, though not all, will continue to do so. The need for hospital services, due to improvements in medical science, hospitalization insurance, and an increasing aged population, has continued to grow as fast as new hospitals are built. Social and recreational building is likely to boom in the years ahead, reflecting higher incomes and increased leisure time. There is little reason, however, to expect another wave of religious building to match that of the fifties, and new farm construction, in a long-term decline, will do well to hold even.

**Nonbuilding Construction.** The nation's power and transportation needs will provide some of the most important growth opportunities in construction through 1975 and beyond. Some gage of the coming volume of utility construction is given by the course of electric generating capacity. Up three and one-half times since the war to the present 800 billion kilowatt hours, requirements call for 1,400 billion kwh by 1970, and over two trillion by 1980.

Street and highway construction, paced by the 41,000 mile Interstate System (now less than half completed), will continue to make up a large proportion of nonresidential work through the mid-seventies.

Still another important growth area is water supply and sanitation. Like power, our water needs will increase greatly, and the recent and future volume of both residential and industrial building will require extensive outlays for sewer systems.

Several of the individual categories in the nonresidential construction group will be expanding more rapidly over the next dozen years; others, the large educational sector for one, are not likely to repeat past performances for a time. On balance, nonresidential construction outlays will show a less dramatic rise than the mushrooming residential market. Even so, by 1975 total expenditures for nonresidential construction will amount to \$68 billion—almost double the current volume.

## NEW CONSTRUCTION PUT IN PLACE

(billions of dollars)

TYPE OF CONSTRUCTION	1962	1970	1975
<b>RESIDENTIAL (Nonfarm)</b>	<b>25.8</b>	<b>38.0</b>	<b>52.0</b>
New Dwelling Units	19.2	28.0	39.0
Additions and Alterations	5.3	8.2	10.5
Nonhousekeeping	1.3	1.8	2.5
<b>NONRESIDENTIAL (Building)</b>	<b>15.7</b>	<b>23.0</b>	<b>30.5</b>
Industrial	3.2	4.5	5.6
Office and Warehouse	2.5	4.0	5.3
Stores and Other Retail	2.4	3.7	5.0
Educational	3.6	4.2	5.8
Hospitals	1.3	2.0	2.6
Other	2.7	4.6	6.2
<b>NONRESIDENTIAL (Nonbuilding)</b>	<b>19.6</b>	<b>27.0</b>	<b>37.5</b>
Utilities	5.5	8.0	10.5
Highways	6.3	8.4	11.5
Sewer and Water	1.8	3.0	5.2
Military and Conservation	2.8	4.2	6.0
Other	3.2	3.4	4.3
<b>TOTAL CONSTRUCTION</b>	<b>61.1</b>	<b>88.0</b>	<b>120.0</b>

## 1975 Prospect: A Trillion Dollar Economy

By 1975, the value of all new construction put in place will have reached a total of \$120 billion. It wasn't so long ago—less than a generation—that the entire national output amounted to less. Inflation, of course, has taken its toll, but even after adjustment for price changes, 1975 construction alone will be the equivalent of close to half a prewar year's entire production of goods and services.

As impressive as the sheer size of the projected building market may be, the comparison of future with past or present construction outlays understates, in a sense, the significance of what is about to take place in the years to 1975. With the lush postwar years fresh in mind it is easy to become accustomed to high and ever-increasing construction volume.

The growth in construction from now to 1975 will not be a normal continuation of the trend established in the fifties, largely because the pace of construction over the past decade or so was, itself, anything but normal. During most of the fifties we were building not only to meet current demand, but to make up for shortages dating back in time through World War II and into the depression. The heavy backlog of construction demand which swelled the totals of a decade ago has been satisfied for some time now, and this means that future building will

have to be generated solely out of current needs.

Conveniently, two strong forces which will have an important bearing on future construction demand are already taking shape. One is the concentrated growth in the young adult population; the other, an expanding rate of business investment in plant and equipment.

Recent experience showed, in a very forceful way, the effect that the postwar surge in births could have in just one isolated area of building—schools. We are now at the brink of seeing this group descend upon the labor markets and the marriage license bureaus. Its needs are ultimately certain to make themselves felt in nearly every corner of the construction market.

But it will take more than mere needs of a growing population to stimulate construction demand to the extent shown in these projections. Needs will be transformed into construction projects only through adequately rising levels of income and employment. In the anticipation of a period of expanding capital investment we can plan on an acceleration of economic growth which will bring total output of all goods and services to the trillion dollar mark by 1975. This kind of an environment will allow construction demand to rise above the extended trend of the fifties by a solid 15 per cent in 1975.

# NUCLEAR FACILITIES



pages 182—183

## TEACHING REACTOR IN GLASS-WALLED PAVILION

OWNER: *University of Washington, Seattle*  
ARCHITECTS: *Wendell Lovett, Daniel Streissgruth and Gene Zema*  
STRUCTURAL ENGINEER: *Gerard Torrence*  
MECHANICAL ENGINEERS: *Stern and Towne*  
ELECTRICAL ENGINEER: *Thomas Sparling*  
LANDSCAPE ARCHITECT: *Robert Chittock*  
CONTRACTOR: *Jentoft & Forbew*



pages 184—185

## FIELD-FREE LABORATORY IN WOODED SETTING

OWNER: *Lawrence Radiation Laboratory, University of California, Berkeley*  
ARCHITECTS: *Kitchen and Hunt*  
STRUCTURAL ENGINEER: *H. J. Brunnier*  
MECHANICAL ENGINEERS: *Dan Vandament and Associates*  
ELECTRICAL ENGINEER: *R. F. Darmstadt*  
LANDSCAPE ARCHITECTS: *University of California staff landscape architects*  
PROJECT COORDINATOR: *R. C. Atchinson, for the University*  
CONTRACTOR: *Branagh, Inc.*



pages 186—187

## LABORATORY FOR BIO-RADIOLOGICAL RESEARCH

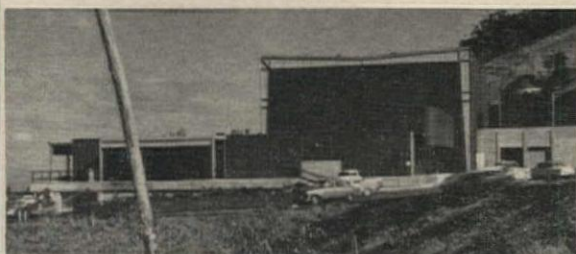
OWNER: *Lawrence Radiation Laboratory, University of California, Berkeley*  
ARCHITECTS: *Kitchen and Hunt*  
STRUCTURAL ENGINEER: *H. J. Brunnier*  
MECHANICAL ENGINEERS: *Vandament and Darmstadt*  
ELECTRICAL ENGINEER: *R. F. Darmstadt*  
LANDSCAPE ARCHITECTS: *University of California staff landscape architects*  
PROJECT COORDINATOR: *T. H. Myrher, for the University*  
CONTRACTOR: *Branagh, Inc.*



pages 188—189

## NUCLEAR SCIENCE TEACHING-RESEARCH CENTER

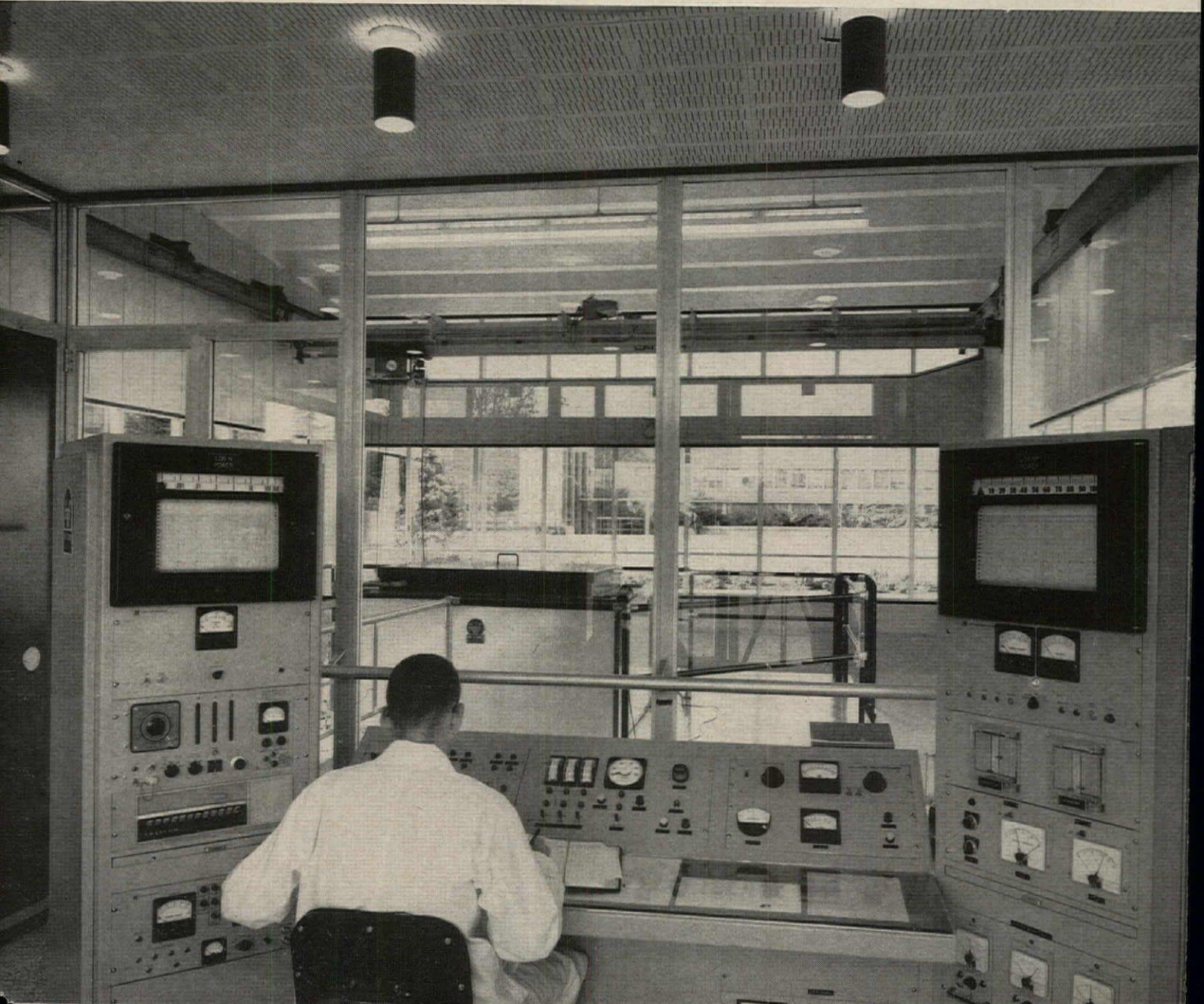
OWNER: *Texas A&M University System, College Station, Texas*  
ARCHITECTS AND ENGINEERS: *Caudill, Rowlett and Scott*  
PROJECT COORDINATOR: *Dr. R. E. Wainerdi*  
GENERAL CONTRACTOR: *Temple Associates*  
MECHANICAL AND ELECTRICAL CONTRACTOR: *W. E. Kutzchbach*

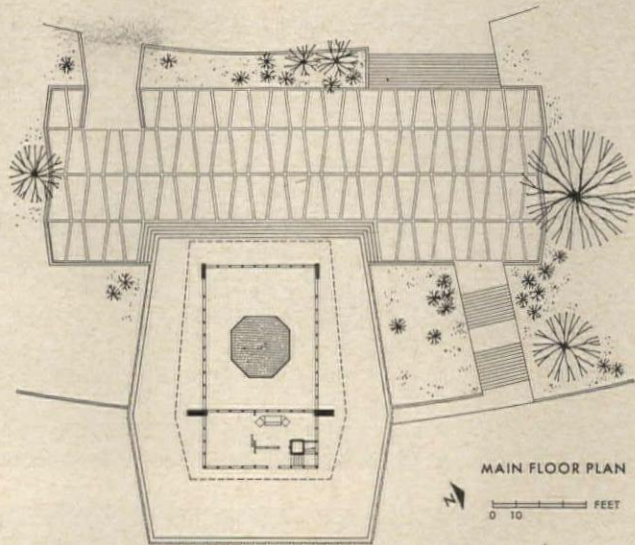
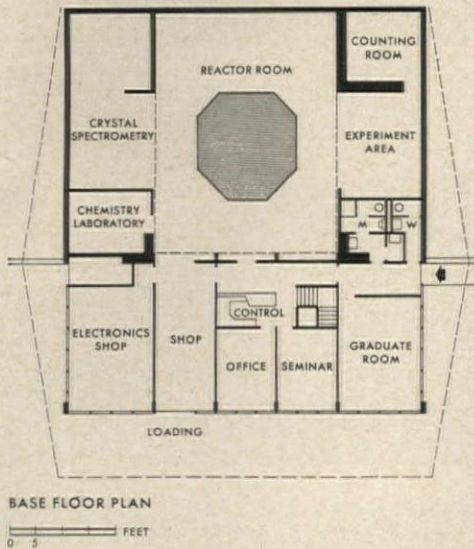


pages 190—192

## HILLSIDE BUILDING FOR NEW TYPE ACCELERATOR

OWNER: *Lawrence Radiation Laboratory, University of California, Berkeley*  
ARCHITECTS: *Gerald M. McCue & Associates*  
STRUCTURAL ENGINEERS: *John A. Blume & Associates*  
MECHANICAL AND ELECTRICAL ENGINEERS: *Bayha, Weir & Finato, Inc.*  
TECHNICAL PLANNER: *Torlief Myrher, for the University*  
CONTRACTOR: *Robert L. Wilson*





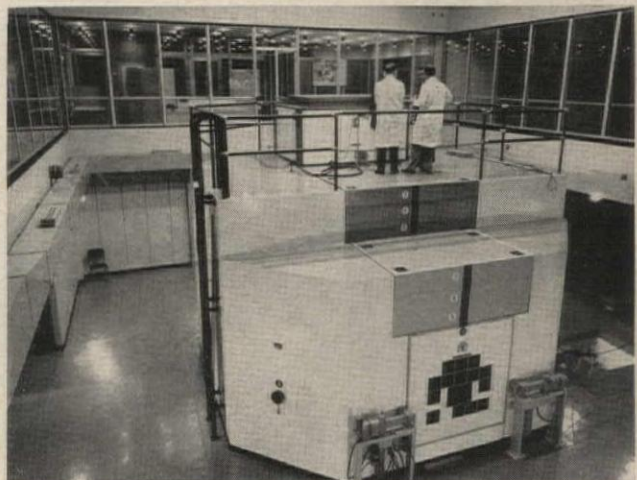
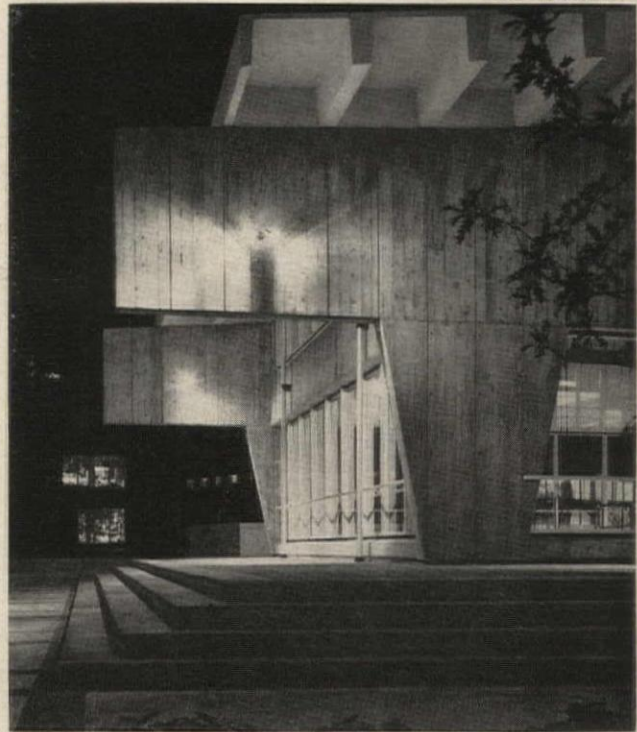
## A TEACHING REACTOR IN A GLASS PAVILION

*University of Washington, Seattle*

ARCHITECTS: *Wendell H. Lovett,  
Daniel Streissguth, Gene Zema*

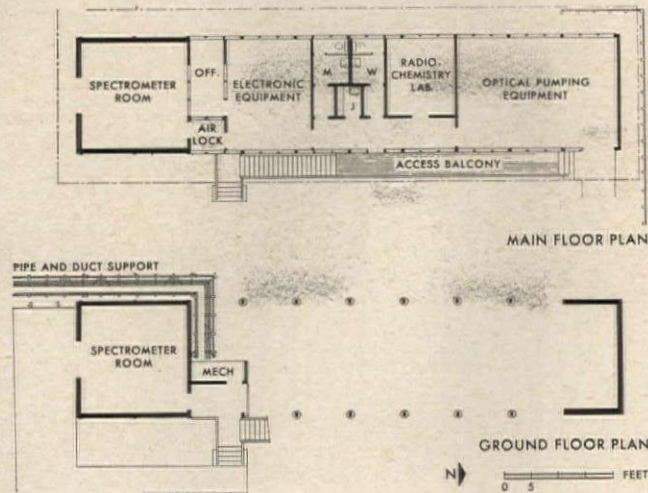
A teaching and research reactor of low thermal power such as the 10 kw power of this small reactor is subject to much the same problems and restrictions as a larger reactor, but in lesser degree. Here it was possible to use glass walls around the upper level of the building—permitting a view into the reactor room from the broad terrace around the building—but in installations involving higher thermal ratings, regulations would preclude such an architectural solution. The reactor itself is located below grade but because of the slope of the triangular site, the lower level shops, offices and classrooms are open to outside light and view. The control room and adjoining lecture rooms are on the upper level and overlook the reactor room and other classrooms below. The structure is of reinforced concrete. Four-foot-wide concrete channel slabs span the principal room and are supported by 10-inch-thick poured concrete beam-walls which also support the five-ton traveling crane. The overhead structure is carried and braced by a heavy transverse haunch beam. Haunch beam and roof slab are painted white. The rest of the structure is natural colored concrete.

*Art Hupy photos*









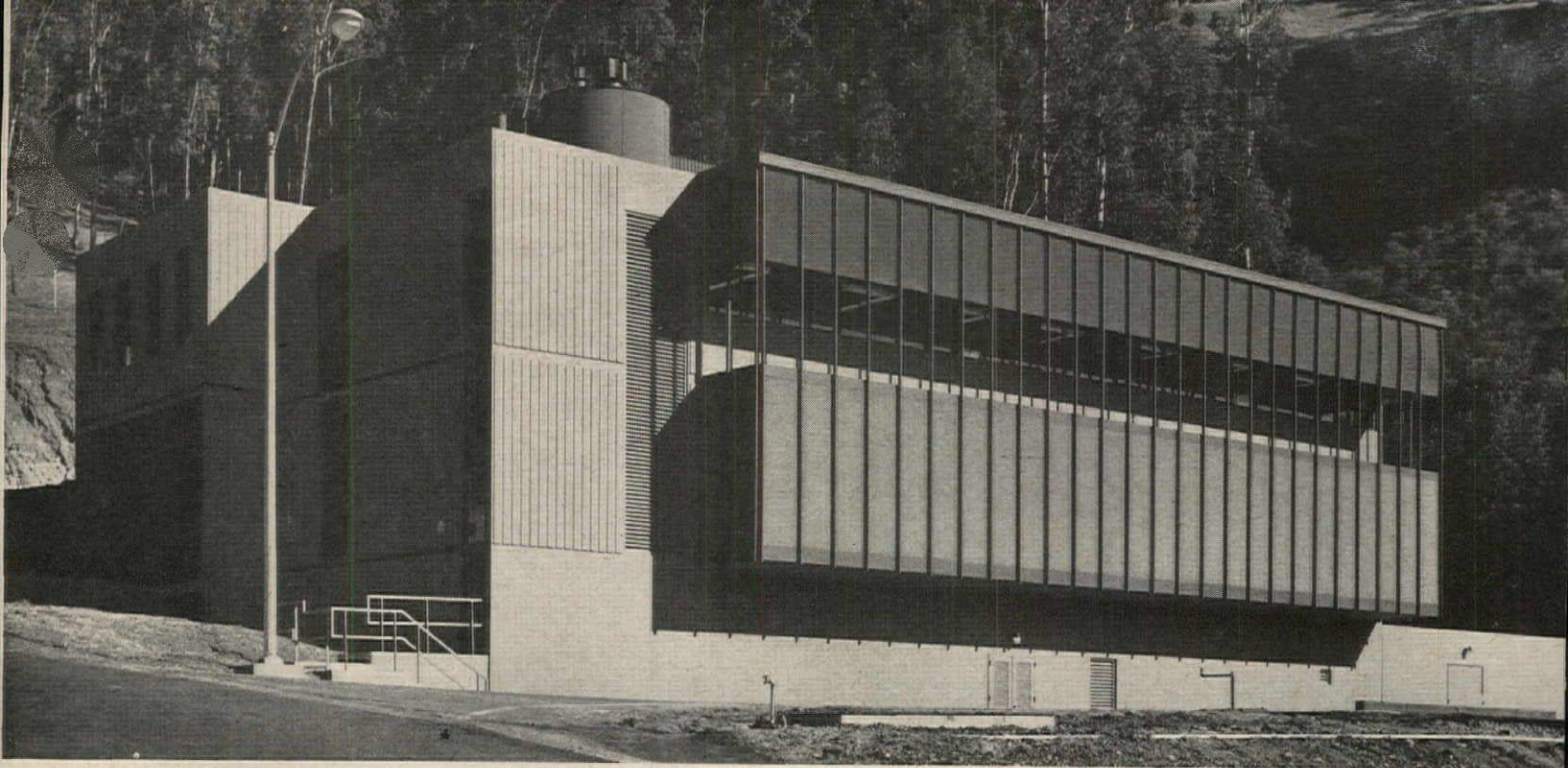
## A FIELD-FREE LABORATORY IN A WOODED SETTING

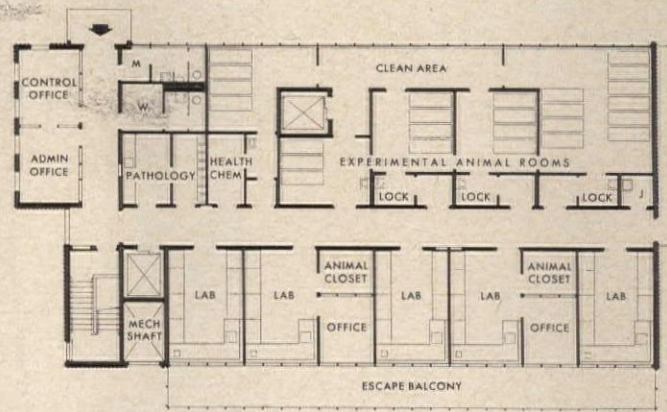
*Lawrence Radiation Laboratory  
University of California, Berkeley*  
ARCHITECTS: *Kitchen and Hunt*

This pleasant building in its lovely wooded setting houses a Beta-ray spectrometer, a delicate instrument used in research into atomic nuclei. The instrument requires a field-free—non-magnetic—environment, and the building is designed to make it just such an “island.” The structure itself is of wood, with glued laminated roof beams, wood sash and red-wood siding. No ferrous metal was used in any part of the building: there is no reinforcing in the caissons; nails, bolts and miscellaneous fittings are aluminum, brass or bronze; copper electric conductors are twisted to prevent setting up an electric field; roofing is sprayed-on plastic; gutters are eliminated by using wide overhangs. Mechanical and electrical equipment (air-conditioning units, boiler, motors, etc.) are in a separate utility structure 100 feet away, with utility connections carried on a wood trestle between the two buildings. Since even a passing car could interfere with an experiment, the building is 100 feet distant from the access road, and parking is likewise remote. By placing the building on a downhill site, laboratories are entered at upper level and two-story height is gained for the spectrometer. Particularly noteworthy is the fact that the building meets its highly technical and specific requirements with sensitively derived scale and appropriateness to its natural surroundings.

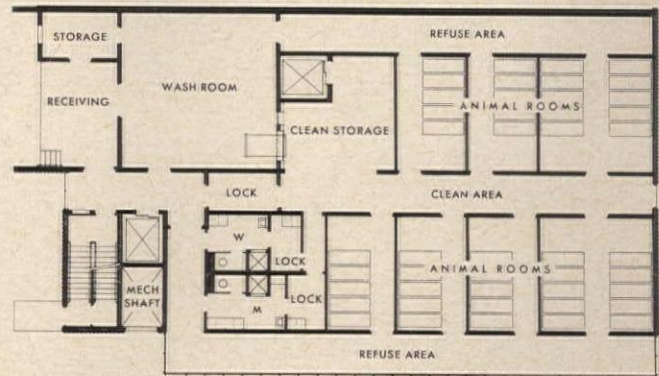


*George Knight photos*





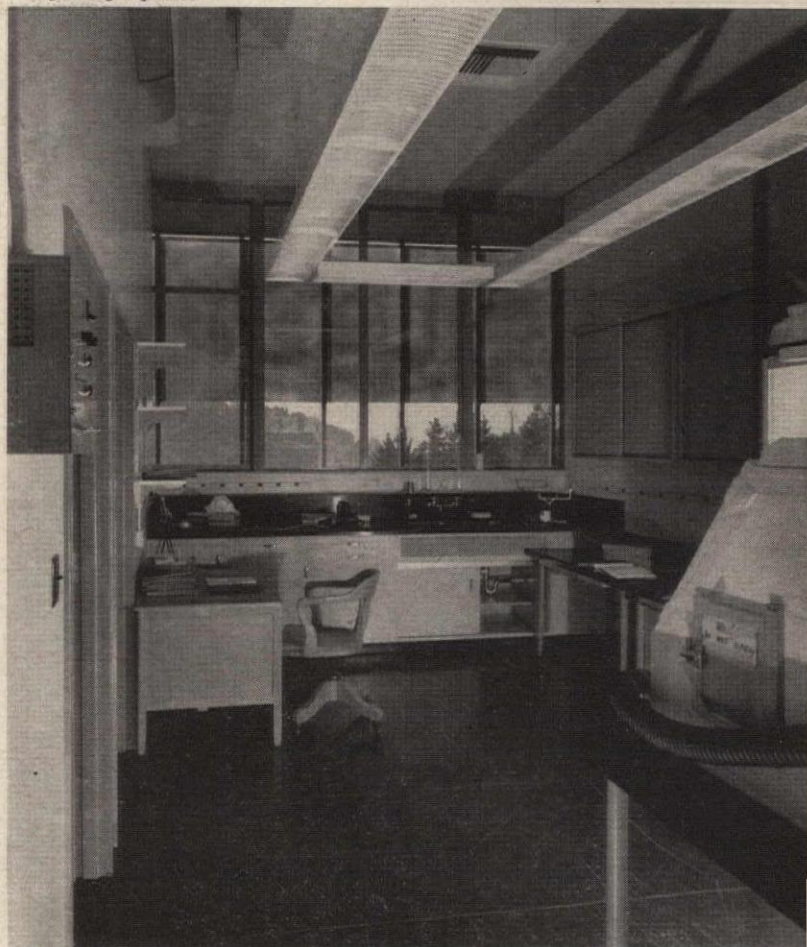
SECOND FLOOR PLAN



FIRST FLOOR PLAN

0 5 FEET

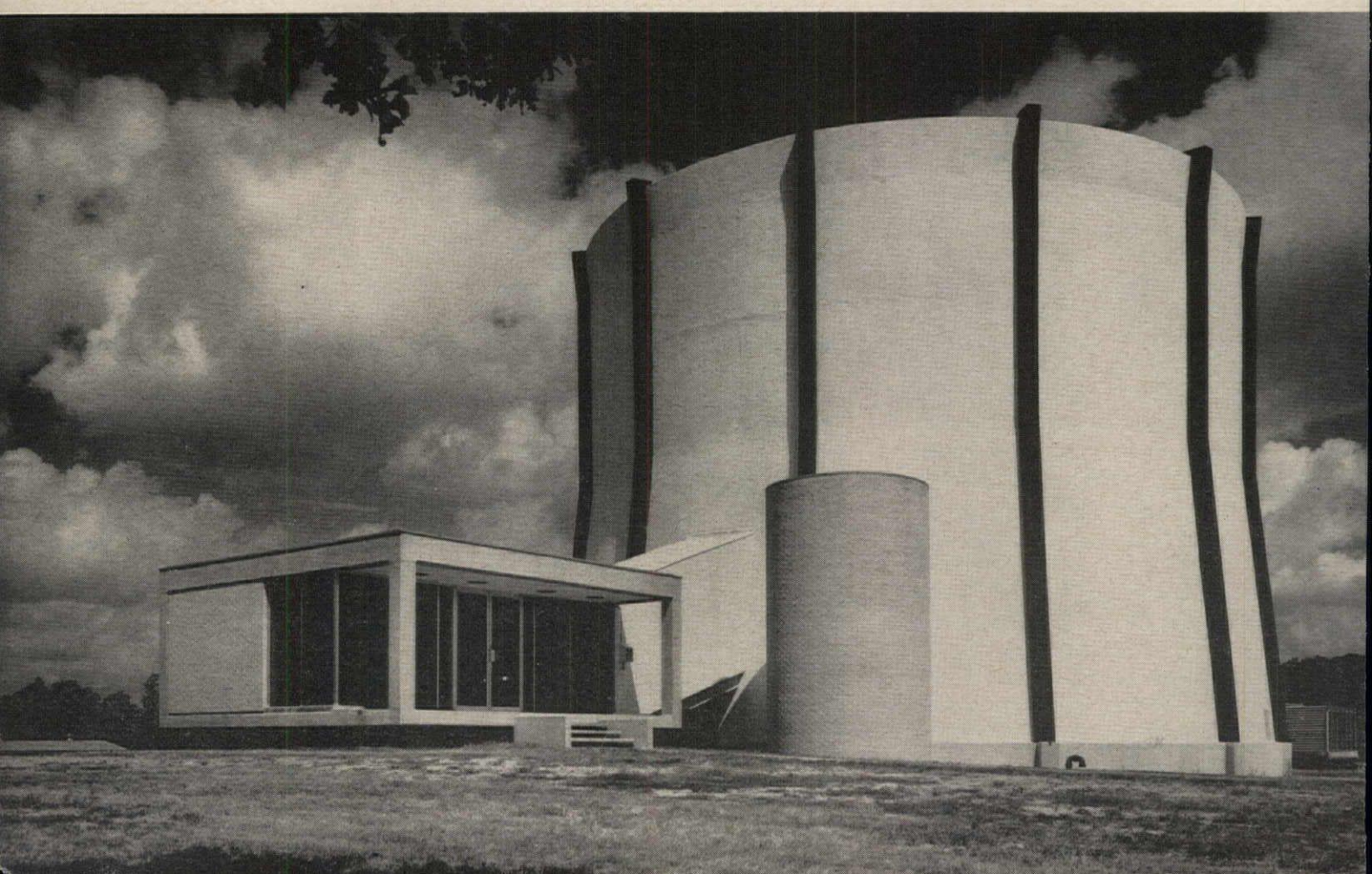
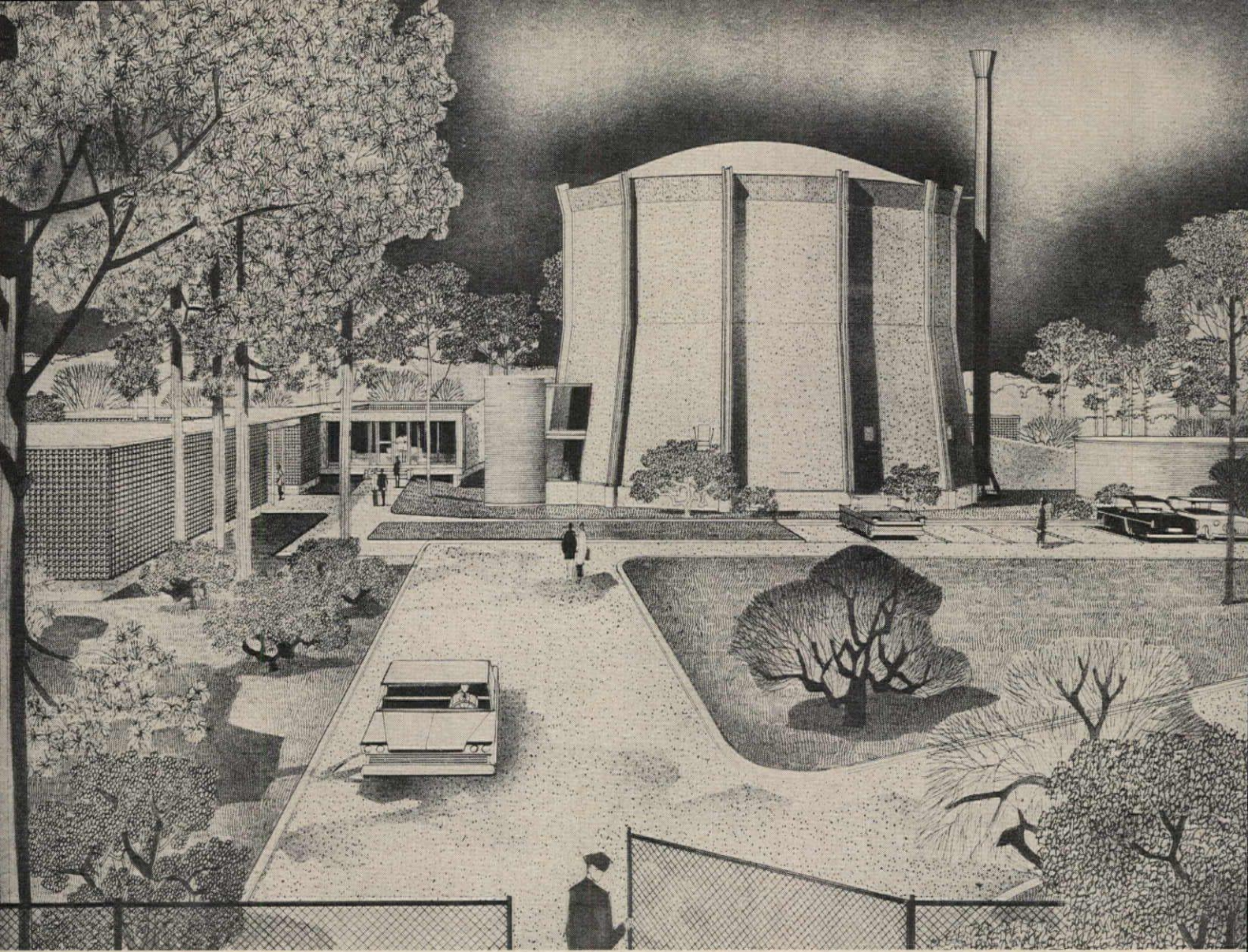
George Knight photos

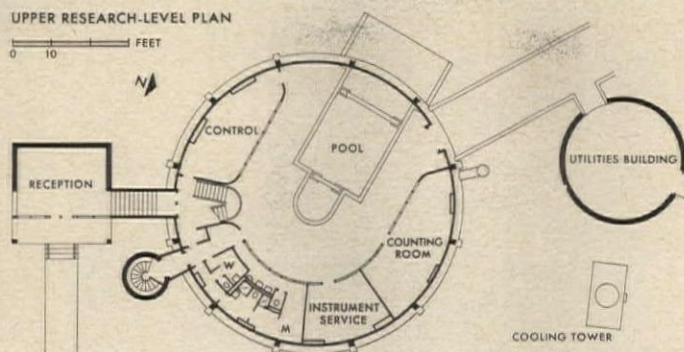


# LABORATORY FOR BIO-RADIOLOGICAL RESEARCH

*Animal Bio-radiological Laboratory*  
*Lawrence Radiation Laboratory*  
*University of California, Berkeley*  
ARCHITECTS: *Kitchen and Hunt*

The first of several buildings which will constitute a Bio-Medical Complex for Lawrence Radiation Laboratory, this building for animal bio-radiological research is located in an undeveloped hillside area east of the University's campus. The sloping site permitted a three-level plan which steps down the hill, with parking space at both upper and lower levels. Careful contouring of the site made possible truck access direct to each level. Rigid controls against radiation contamination were essential in both the rooms where animals are raised and in the animal experimentation rooms on the second floor. These controls are provided by one-way circulation for supply and service in these areas, by special sealing at all doors, special details and coatings to eliminate cracks, crevices and recesses where bacteria or insects might be harbored, and by using 100 per cent outside air, filtered. Floors, walls and ceilings of animal experiment rooms are completely coated with a plastic envelope to prevent transfer of radiation and radioactive materials. The complex mechanical distribution system is left exposed in corridors to facilitate maintenance and possible future expansion. The five second-floor laboratories open onto an escape balcony along the southwest side of the building, designed as a curtain wall to reduce loads on the cantilevered slab on that side. Plastic sun control screens on laboratory windows, combined with the design of the curtain wall, cut out direct sunlight without blocking the view to the wooded hillsides surrounding the building.





## NUCLEAR SCIENCE CENTER FOR TEACHING AND RESEARCH

*Texas A&M University System*

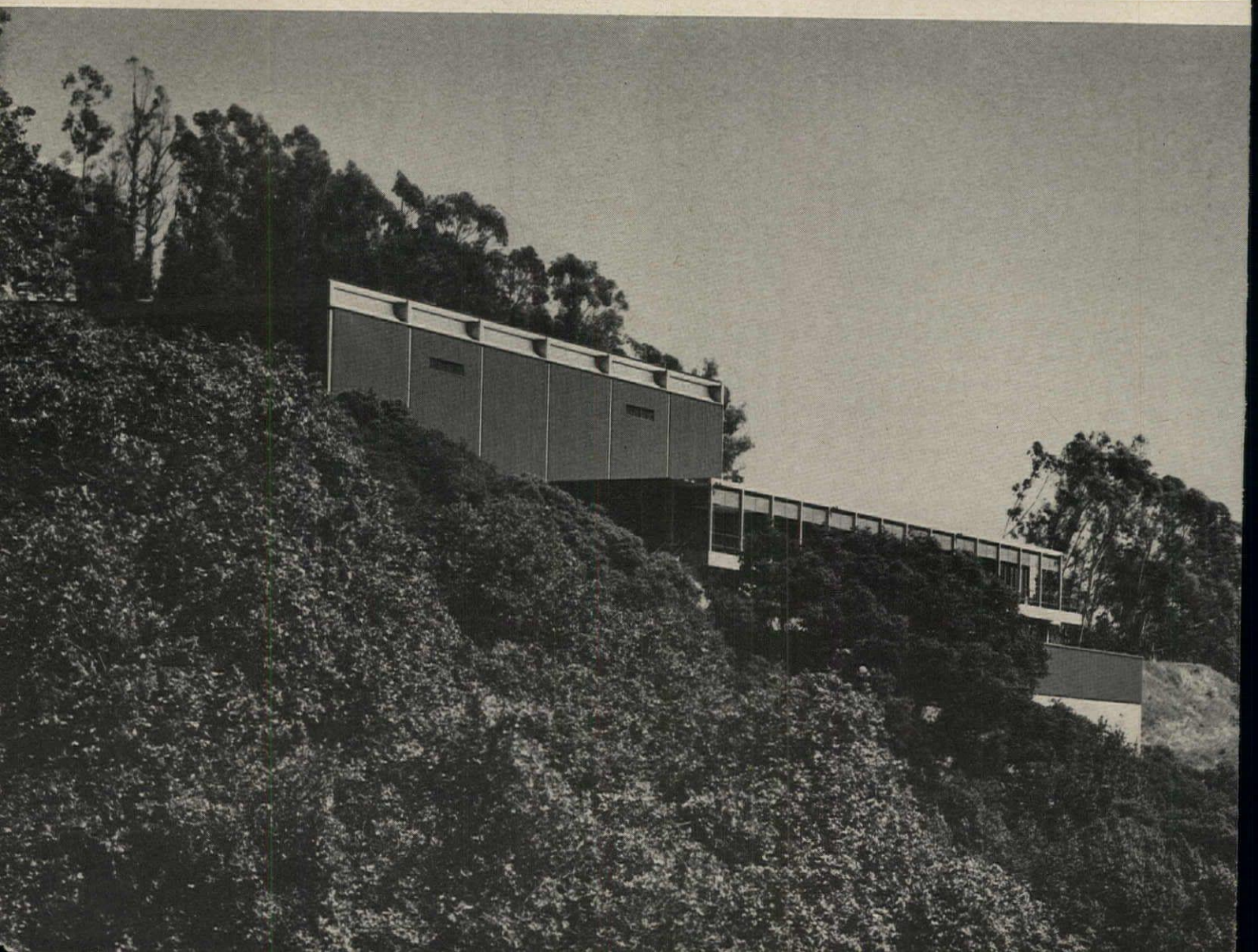
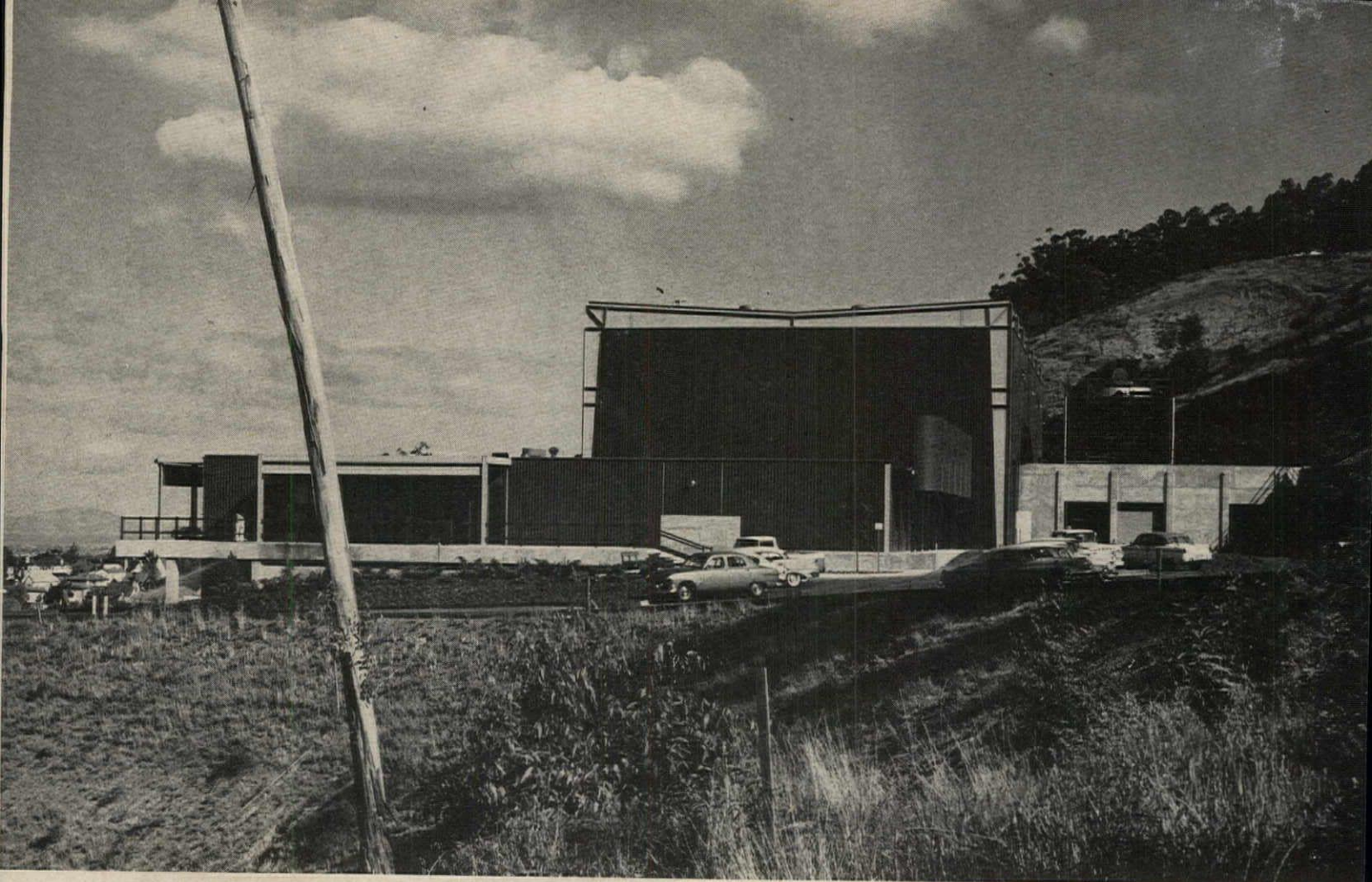
*College Station, Texas*

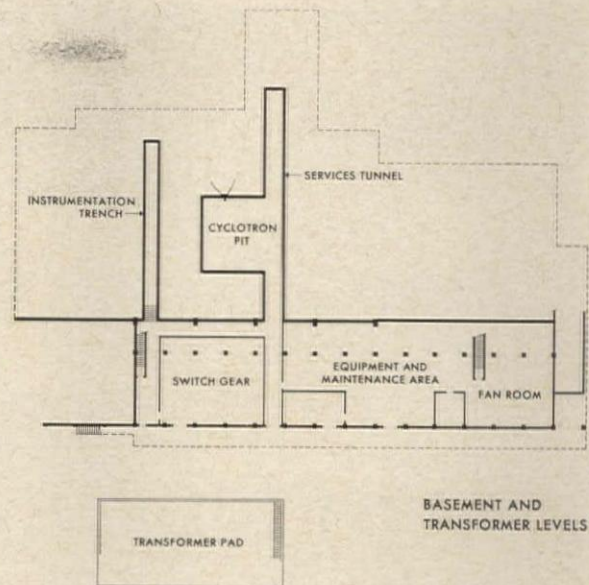
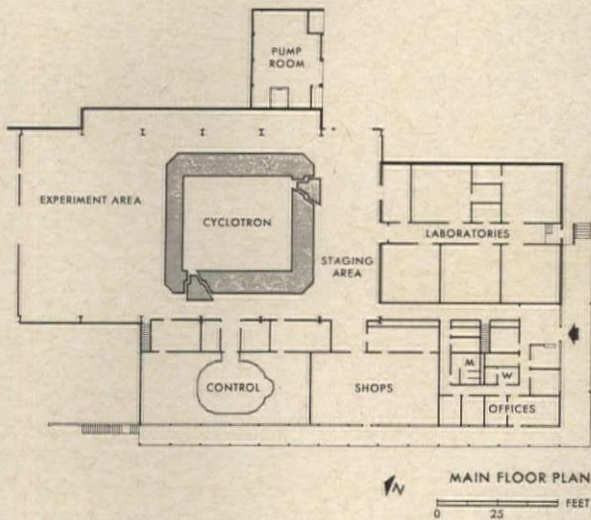
ARCHITECTS: *Caudill, Rowlett & Scott*

This circular reactor building is the first of a number of structures to be built eventually at the Nuclear Science Center at Texas A&M College, and is one of the larger and more powerful (at full capacity it will operate at up to five megawatts) teaching reactors at university installations in this country. It is situated on a six-acre plot three miles from the main campus, with a one-mile exclusion area around it. The reactor itself is shielded by water in a pool which extends below grade, with experimental areas surrounding its well-protected core at the lower level, where high density concrete is used for shielding. The cylindrical shape and domed roof were a direct response, the architects say, to the need for experimental space radiating from the core, and from the resistance offered by the form to soil pressure and to any inward pressure which might occur if a leak were to develop in the building's negative air pressure system. On the upper level of the three-part pool is a floor for controls and behind glass walls, counting room and instrument service. The main building is 70 feet in diameter and 70 feet high, the height determined by the crane hoist height necessary to lift the reactor completely out of the pool. The circular utilities building has a walk-in, working height ceiling and contains all of the heating, cooling and other mechanical equipment; it is accessible from the main building through the central mechanical chase as well as through the utilities service tunnel. The reception building provides screening for all visitors before admission to the main building.

*Roland Chatham photos*



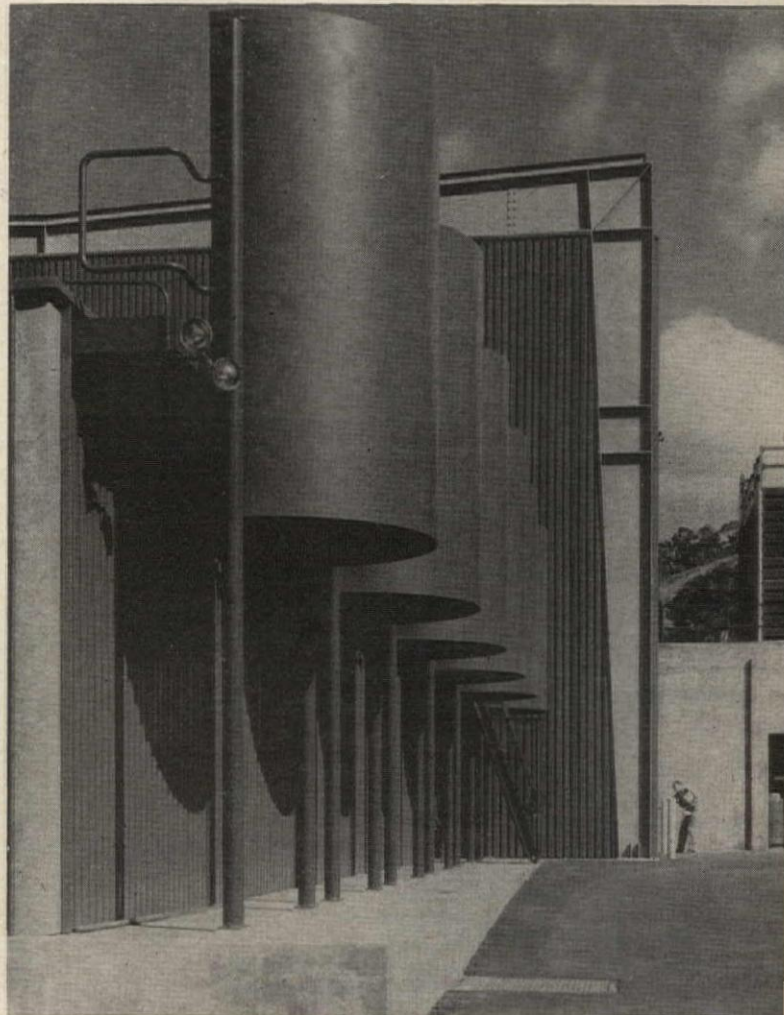




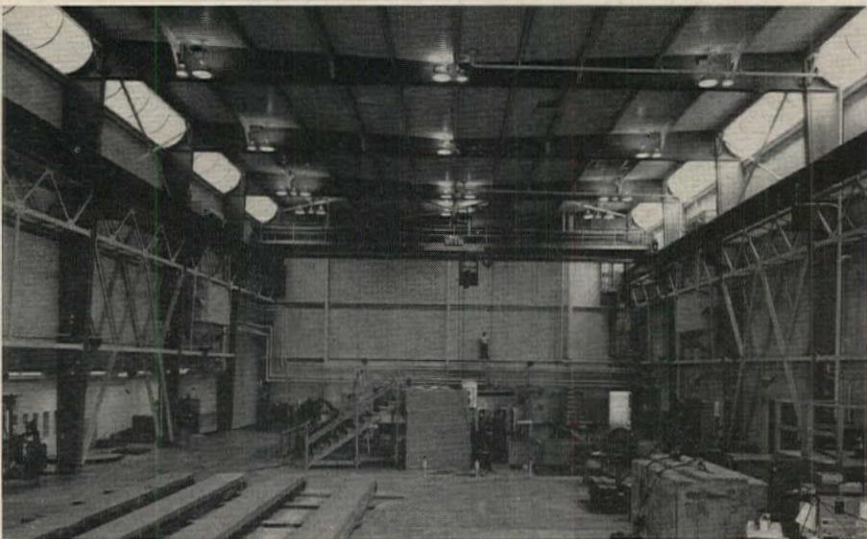
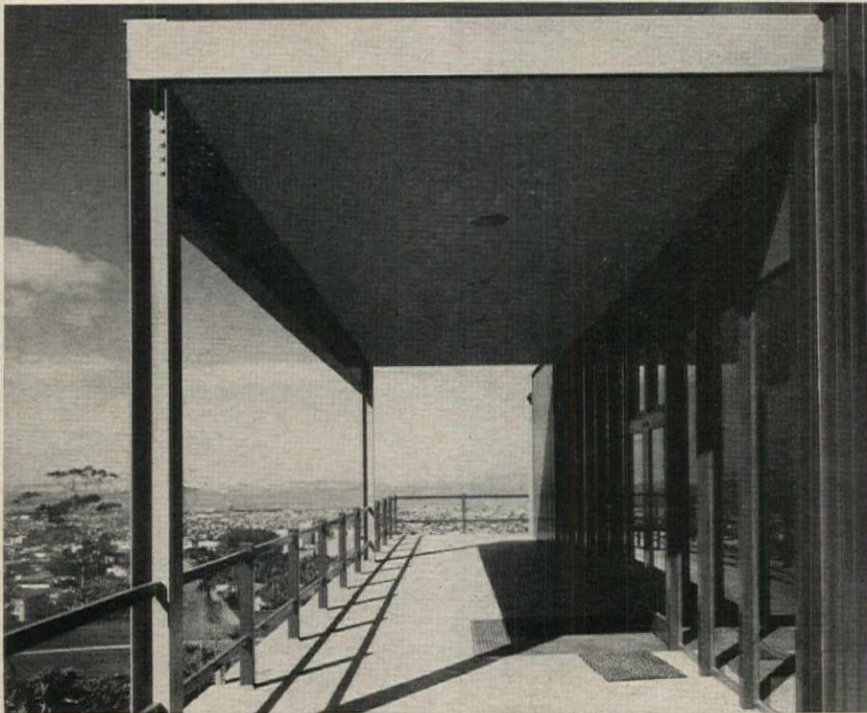
## HILLSIDE BUILDING FOR A NEW TYPE OF ACCELERATOR

88-Inch Cyclotron, Lawrence Radiation Laboratory  
University of California, Berkeley  
ARCHITECTS: Gerald M. McCue & Associates

This two-level hillside building fits its site so easily that the problems of its location are not readily apparent. The site has an average slope of 30 per cent and consisted, before cutting and filling, of a knoll and a ravine. These disadvantages increase the very limited space available for experimental areas, but by locating these parallel to the hillside, room for their expansion is provided. The building houses a new, relatively small, versatile and unusually powerful accelerator—the 88-inch cyclotron—for use in nuclear research not possible with other existing accelerators. Its two essential parts are a high bay, which allows for the 30-ton traveling crane needed for moving the 10-foot-thick concrete shielding blocks and equipment needed in the experimental areas, and a low bay containing support facilities (control room, radiochemistry laboratories, shops and utilities network). The high bay, longer of the two elements, visually dominates the building. The frame is of steel, as are skin and roof decking, and provides the required resilient, flexible structure to take anticipated movement (the location is near the active Hayward earthquake fault). Hazardous areas are under negative pressure to minimize accidental airborne radioactive contamination of other areas in the building. Exhaust ducts are carried horizontally across ceilings to an outside platform where exhaust fans are housed behind curved metal screens.



Rondal Partridge photos



The view from the entrance gallery and balcony, over the city of Berkeley and the Bay to the Golden Gate is superb, but the site was not chosen for the view. The University's more level building sites are few, and those that remain are remote from the laboratory. From the gallery, entrance is direct to the staging area of the cyclotron. Interlocking blocks of concrete 10-inches thick shield personnel from the radiation of the machine when it is working. Blocks and equipment are moved by the crane which travels on rails the length of the high bay



# APARTMENTS

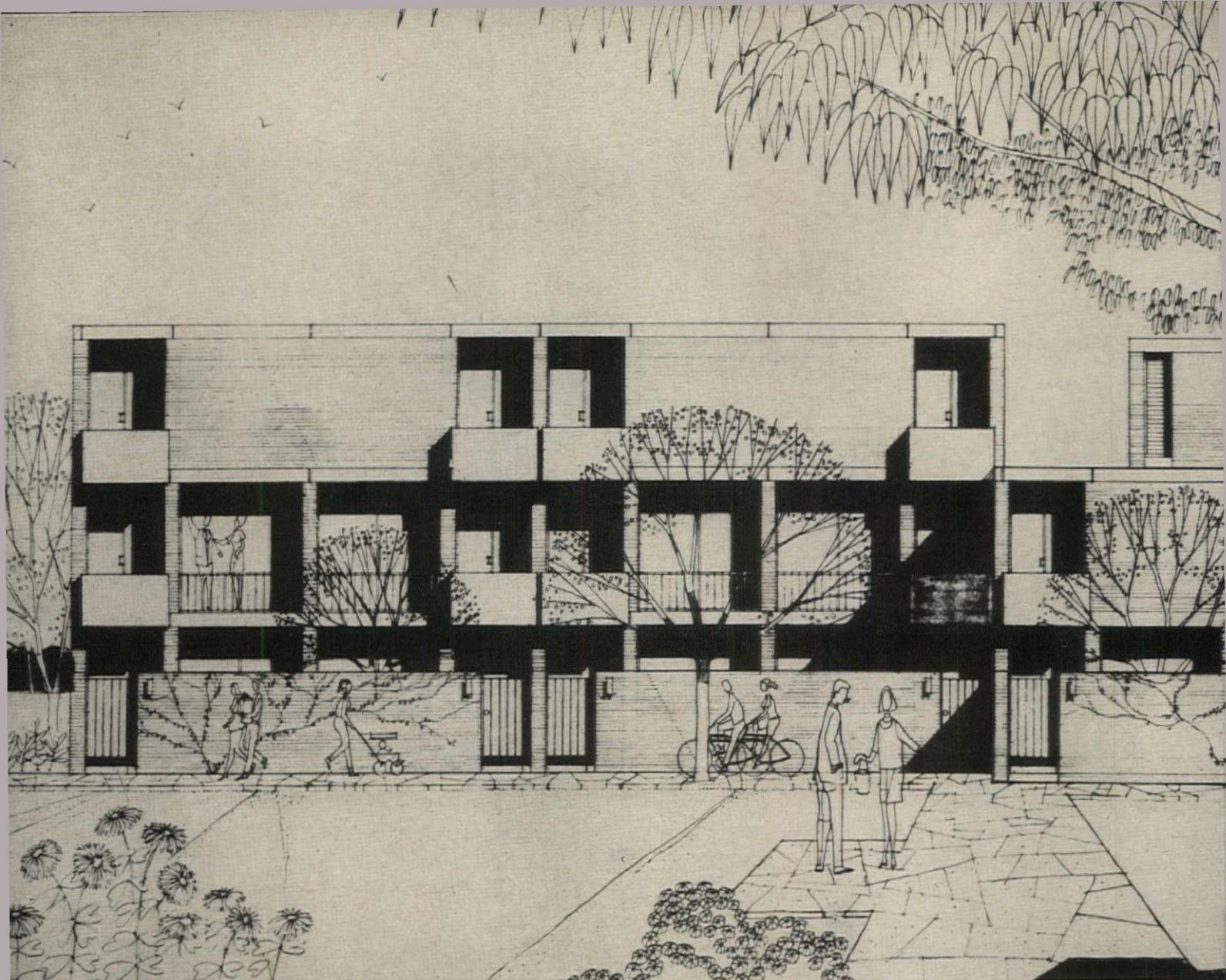
It is encouraging to observe that large scale apartment complexes—often urban renewal projects—are being designed along new lines, and being influenced by some “new” (but actually old) thinking. Among architects, for example, there is growing interest in the compact, densely planned type of residential complex which combines high- and low-rise units, and uses the ground space intensively and knowingly. Such projects are tending to become neighborhoods within themselves, and include well-planned areas and facilities for recreation, sports, convenience stores, services, etc. This new awareness of the importance of spaces between the buildings is heartening; and offers a constructive antidote to the *Ville Radieuse* idea, which gave us developments in which the open spaces around the buildings were merely open. Camillo Sitte is acquiring stature all over again, and his book, “The Building of Cities,” is assuming the nature of required reading.

When a man bought a house 15 or 20 years ago, he used the rule-of-thumb 10 per cent in figuring the part of the cost that went into land. Today, if the proportionate cost of land is to be established, the percentage figure is closer to 18. This example merely reflects the growing scarcity of land for building, and its proportionate rise in cost. The recent tendency of architects to use land more intensively and to make their projects more compact may be in part influenced by the higher cost of land, but we prefer to think that it is more in the nature of an awakening to the importance of residential scale and good planning for amenity in living. The environment has influenced the newer type development also: density is a quality of the city, and so is the scale of the townhouse and residential court: elements widely used in the newer projects.

There are larger implications in the kind of apartment complex which becomes a self sufficient neighborhood within its own bounds; it might well become an element in a planned countryside, as opposed to the urban sprawl that is overtaking us.

The Federal Housing Administration will soon be issuing new Guide Lines and Minimum Property Requirements and Standards dealing with planned-unit developments. One is pleased, when talking with the people at FHA in Washington, to learn of the very flexible approach that they are taking for their new land planning standards, and their sincere desire to give the greatest possible encouragement and freedom to good design for residential projects. When the new standards appear this fall, they will give positive encouragement to the uses of varied kinds of buildings on a site as well as the use of attractively improved roof areas and balconies for more open living space, especially in the more dense type of development. The Federal agency is now engaged in a special study of the experiences of home owners associations—both cooperatives and condominiums—and the problem of how to organize such groups, and how best to establish good standards of project management and maintenance. As a result, FHA will have improved tools available to underwrite such associations when properly conceived. FHA will be placing growing importance on good design, marketability, and the successful merchandizing of large scale projects. This all reminds me of a comment by an architect who has gained considerable experience in large apartment projects and urban renewal, who said, “I used to think that FHA was the villain in this piece, but as I grow older and wiser I realize that the real villain is cost.” Hasn’t it always been so?

—James S. Hornbeck



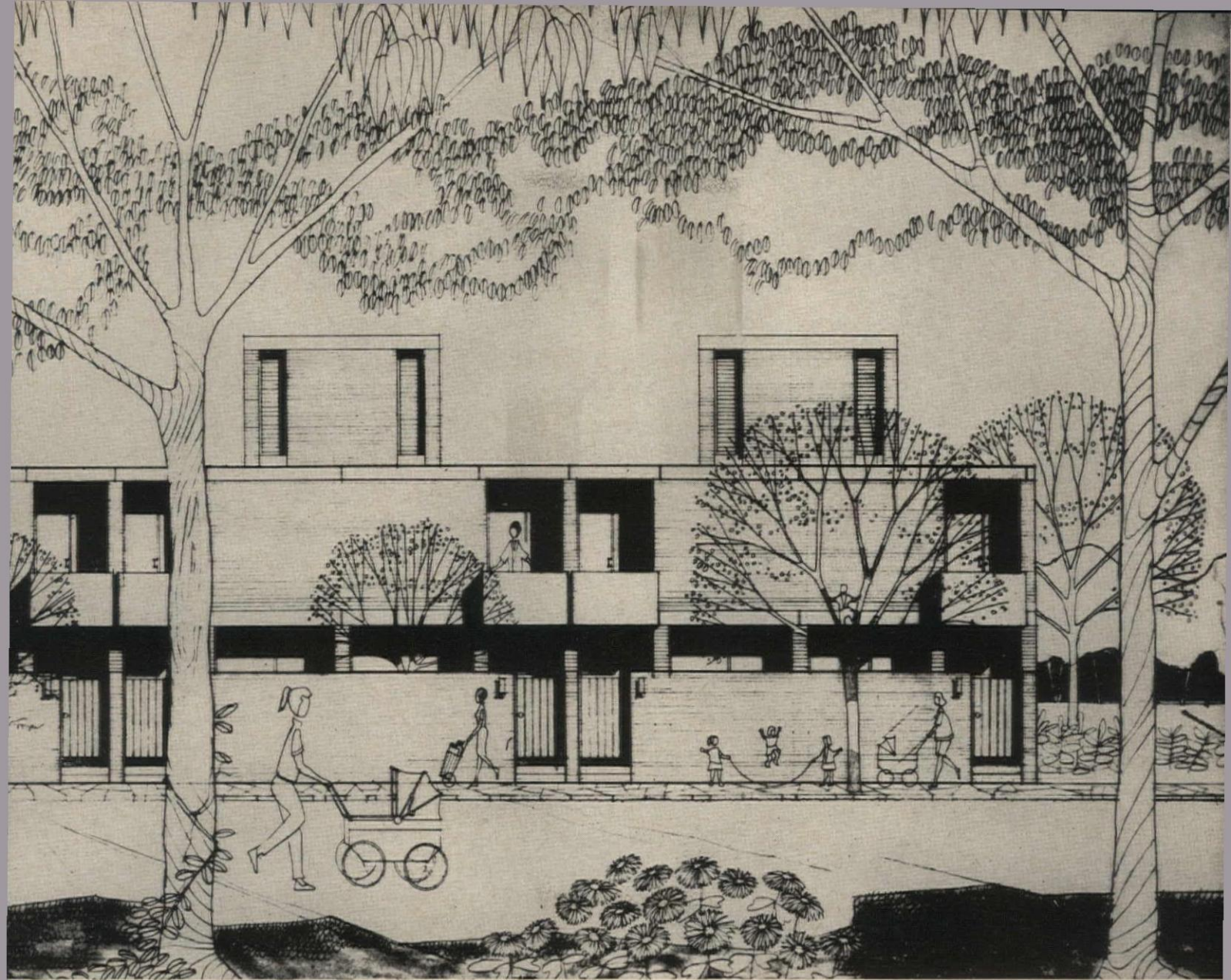
## *Apartments*

# AN ARCHITECT TALKS ABOUT THE SPACES BETWEEN BUILDINGS

*Arthur H. Keyes Jr. explains how  
the design of outdoor areas can  
create urban scale and public amenity*

The often missing ingredient of livability in urban renewal projects and large scale housing developments can be added by the skillful composition and treatment of the exterior spaces between and around the buildings. In dealing with such spaces, the objective is to organize them into a pattern or sequence; and to give each space, in turn, a strong feeling of definition and limitation. Each outdoor area should have a sense of "place," a quality of being set apart yet joined—and a scale both residential and urban. The combination of townhouses and high-rise buildings can be a useful three-dimensional medium for establishing proper character and scale for urban projects, since such elements echo the pattern of the city.

Camillo Sitte, in "The Art of Building Cities," states that "the essential thing of both room and square is the *quality* of the enclosed space." Eero Saarinen, in his book "The City," says "town design must be conceived from the very start three-dimen-



Townhouses, Tiber Island project; Keyes, Lethbridge & Condon, Architects

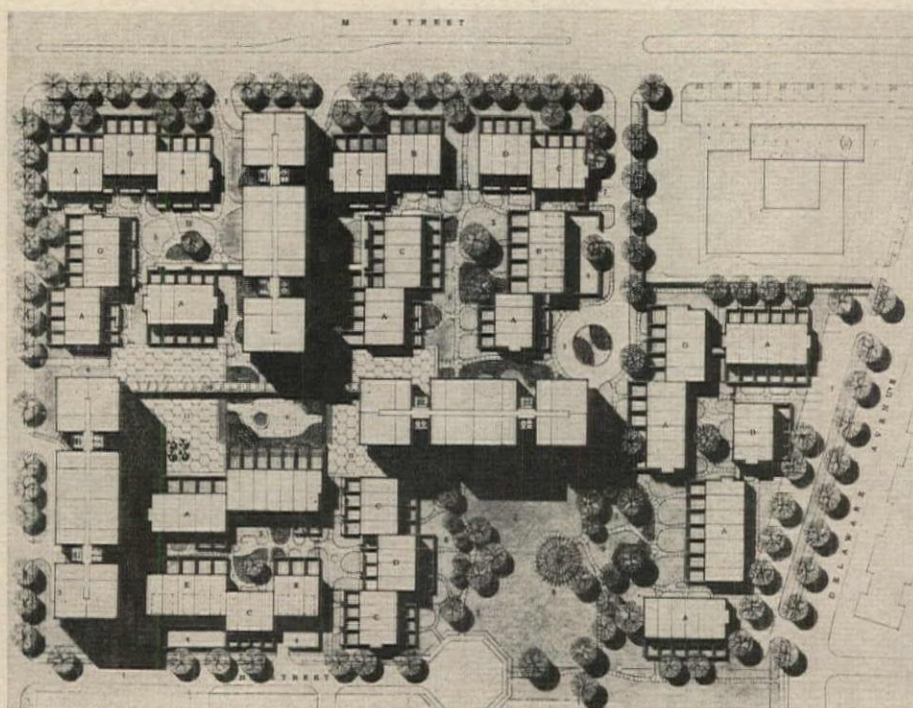
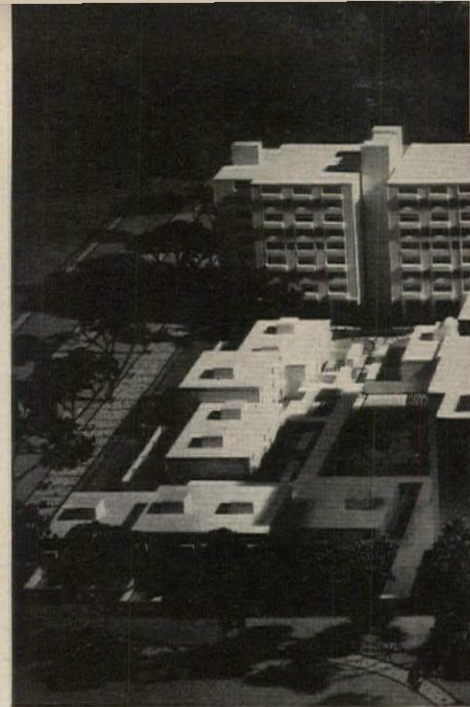
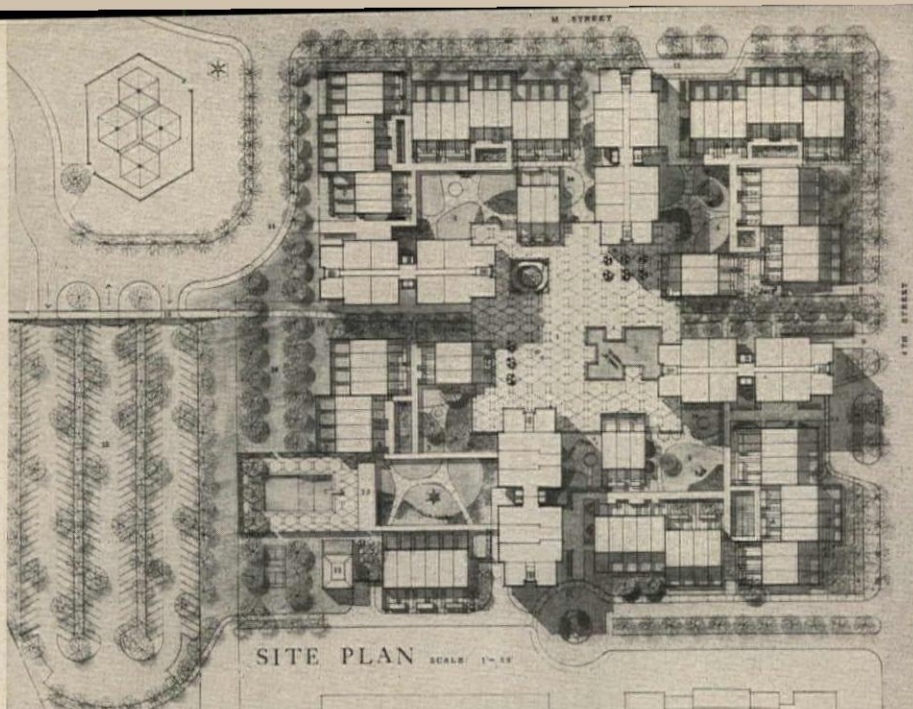
sionally, the same as the design of a room or a building." Too often the simplicity and grandeur (in plan) of a symmetrically arranged superblock of high-rise apartments becomes an utterly boring place to live, simply because the quality of the exterior spaces was not studied with the same expectation of human occupancy and useful amenity as the interior spaces.

Sitte's philosophy, which called for the intimate and irregular enclosure of limited space, was described by Saarinen as basically medieval in concept, and was labeled by him as the "Informal Revival" school of city planning. Saarinen greatly preferred this approach to the pseudo-classic concept of symmetrical and axial arrangements, surviving today in courthouse squares, certain urban renewal projects and even in campus plans. The latter philosophy has been called the "Formal Continuance." It is interesting to note, in considering the great outdoor spaces in history, that the shape

of the space itself—its urban quality, scale, and means of entrance and exit—all assume greater importance in setting character than the style of the enclosing architecture. Buildings from several periods surround and define St. Mark's piazza, notable for its unity.

The detailed analysis of the hows and whys of site-space planning for multi-building projects begs for study and publication, and is a topic of lively discussion among architects. The comments above are general in nature and necessarily brief, but will—hopefully—point a direction.

The four projects that follow are designed in the spirit of the "Informal Revival," or medieval, sense of urban space; even though the placing of the large apartment buildings for the Tiber Island project follows a regular, or "formal," pattern. More important than any label, however, is the basic necessity of making each particular outdoor space seem comfortable and appropriate to its human use.



Robert C. Lautman model photos

## TIBER ISLAND

Tiber Island and Carrollsburg Square were the subjects of two successive competitions (two months apart) sponsored by the Redevelopment Land Agency. The sites are adjacent; the same architects won both contests; thus an unusual opportunity for urban continuity was created. The plan at the far right puts the projects together.

The design for the Tiber Island project centers on a 280-car underground garage—connected directly to the elevator apartments—the roof of which forms a pedestrian plaza and creates thus a clean horizontal separation of pedestrian and vehicular traffic. The four 90-foot-high apartment buildings define the principal exterior spaces, which are in turn subdivided into smaller courts by two- and three-story townhouses and garden walls. The in-

terrelated high- and low-rise elements create interesting and usable outdoor space. Walled gardens and recessed balconies with solid railings have the effect of extending interior spaces outward, but maintain the privacy of the occupants. The central plaza and the four landscaped courts are linked together by greenways as well as by the narrower walkways. Access to most of the townhouses is by way of the courtyards; covered walkways serve to link the various elements. Architectural detail and landscaping is varied from one square to another so that each exterior space will have its own special character. The town center buildings immediately to the north (I. M. Pei & Associates, architects) are complemented by the northernmost buildings of these two projects, centered about Fourth Street.



*Tiber Island, Washington, D. C.*

OWNER: *Tiber Island Corporation*

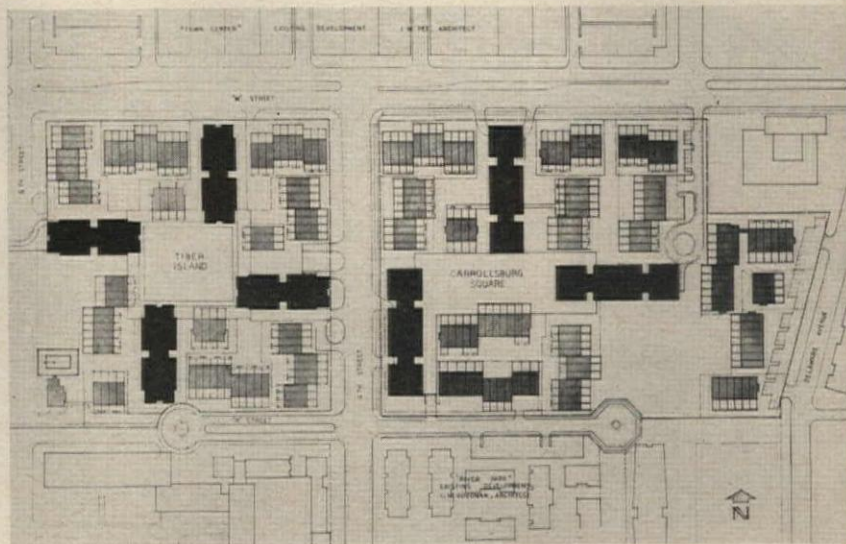
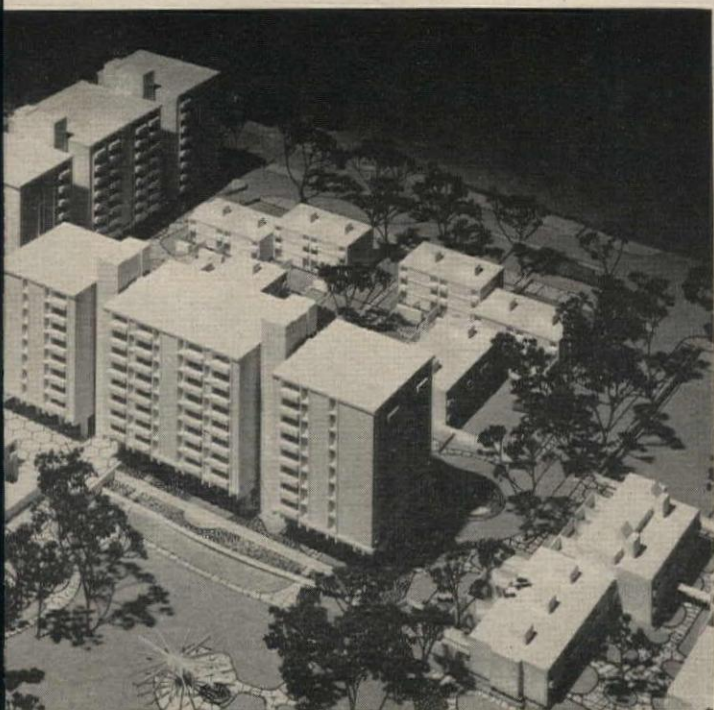
ARCHITECTS: *Keyes, Lethbridge & Condon*

LANDSCAPE ARCHITECT: *Eric Paepcke*

STRUCTURAL ENGINEER: *Carl Hansen*

MECHANICAL ENGINEERS: *Kluckhuhn & McDavid*

CIVIL ENGINEERS: *Eberlin and Eberlin*



*Carrollsburg Square, Washington, D. C.*

OWNER: *Carrollsburg Square Corporation*

ARCHITECTS: *Keyes, Lethbridge & Condon*

LANDSCAPE ARCHITECT: *Eric Paepcke*

STRUCTURAL ENGINEERS: *Gongwer, Kraas and Webb*

MECHANICAL ENGINEERS: *Kluckhuhn & McDavid*

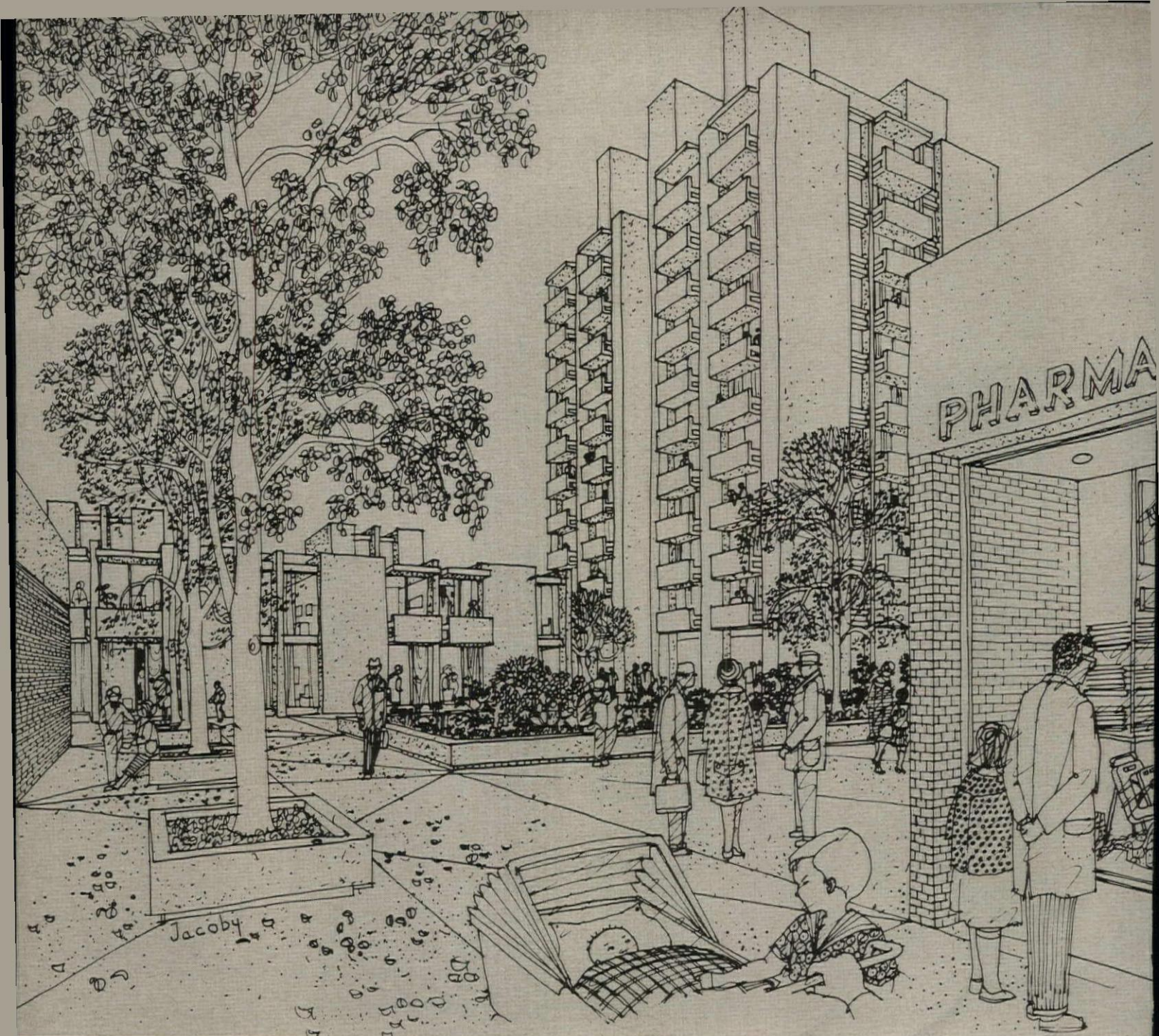
CIVIL ENGINEERS: *Eberlin and Eberlin*

**CARROLLSBURG SQUARE**

In the design of the Carrollsburg Square project, the same architectural elements as those in Tiber Island were used. Since the rental scale is lower and the site larger, the disposition of elements is modified. A low rent public housing project exists to the east; so the number of high-rise units has been reduced to lower building costs, and a zone of lower rent row housing placed in the triangular area bordering the public housing. The pedestrian plaza over the central underground garage has, for this project, been divided into smaller scaled and more intimate residential courts and gardens to avoid competition with the central plaza of Tiber Island and in addition to reflect the more informal character of this project. Variety of shape, size, architectural detail and landscaping will give each courtyard and square

its own individual character. The choice of three rather than four or more high-rise units was made in order to open the spaces between adjacent buildings, as well as to reduce cost.

The high-rise buildings in both projects will have exposed concrete frames with gray-tan brick infilling panels. The townhouses will be of brick bearing wall construction with precast concrete trim and balconies. Flat plate construction will permit the high-rise units to contain eight residential floors and a high, open lobby at ground level—within the 90-foot legal height limit. Outdoor paving will variously be of brick, flagstone and precast concrete. Tiber Island is now under construction, and Carrollsburg is almost ready for bidding. Both projects will be completed in early 1965.



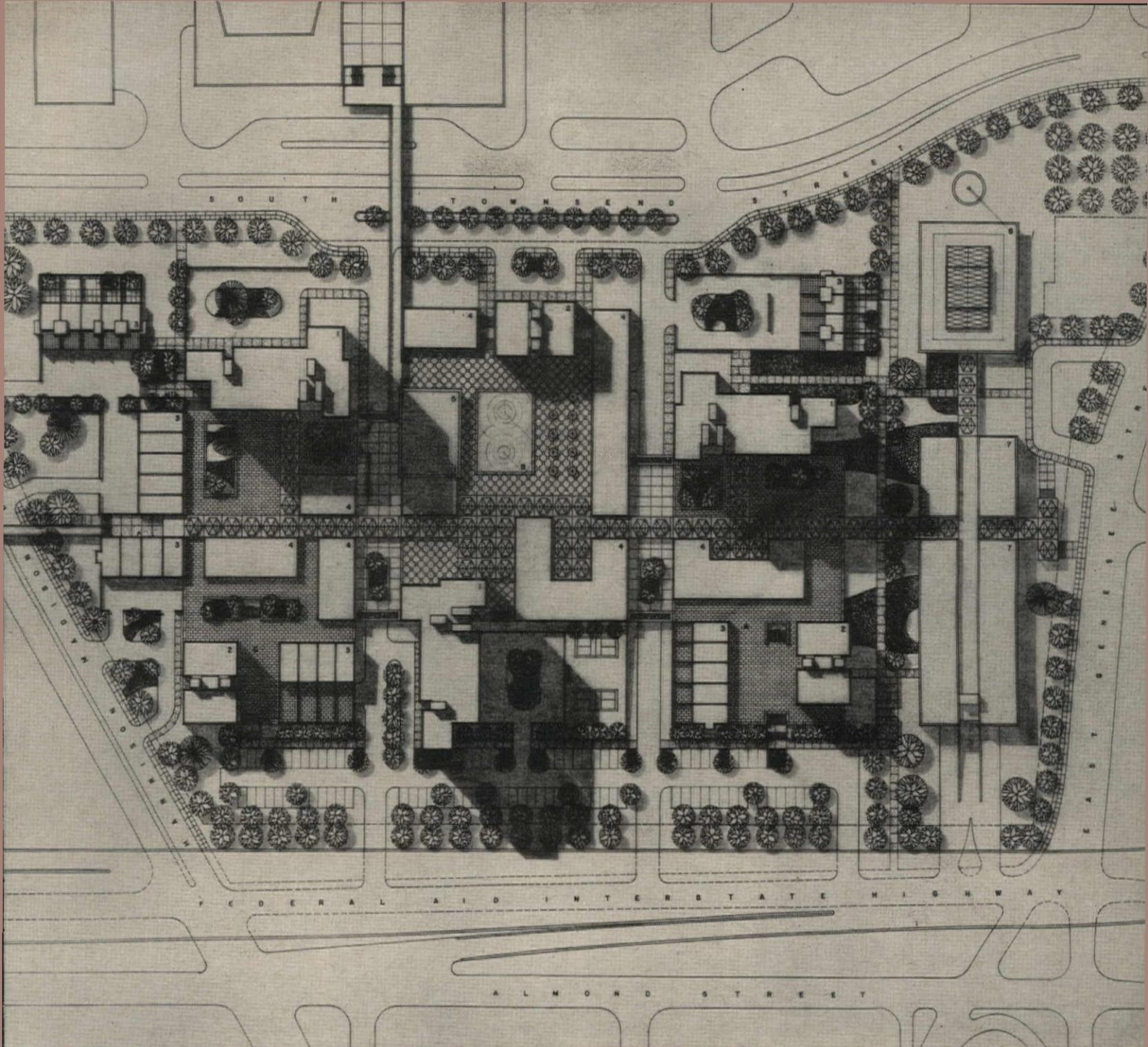
## Apartments

### PRESIDENTIAL PLAZA

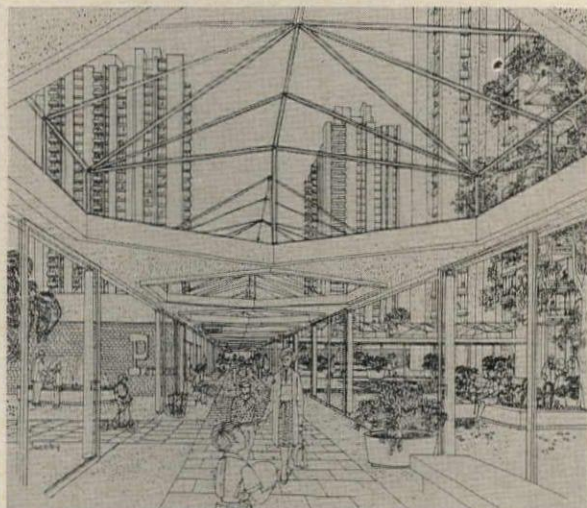
Featuring a glass-enclosed and skylighted gallery that provides all-weather connection between the various buildings, this design for a 13½-acre, three-block renewal project in downtown Syracuse will be under construction this fall. The basic design idea was to provide a complete community for pleasant living, urban in character, residential in scale, and convenient to other downtown facilities. To this end, the project brings together 957 dwelling units, a professional office building, commercial facilities, parking garages, play areas and a sports center. These elements are disposed in a workable and attractive composition offering visual interest as well as amenity.

The scheme—winner of a competition set up by the Syracuse Department of Urban Improvement—

consists of three separated yet interrelated squares. Construction will proceed in three corresponding stages. Each of the squares will contain a 30-story tower with 290 apartments, and a 10-story tower with 20 apartments. The two outer squares will have a total of 27 townhouses spaced along portions of their borders. The glass enclosed gallery and the three squares will be built about 9 feet above street level; two-level parking garages will be built beneath the squares, with cars and service vehicles entering from street level. Shops, restaurants, and other commercial facilities will occupy one-story structures spaced along the gallery, and entered from it. A natatorium and sports center will be housed in a separate building, as will professional offices (8 and 7, respectively, in the plan).



(1) 30-story apartment; (2) 11-story apartment; (3) row houses; (4) commercial; (5) restaurant; (6) covered gallery; (7) office building; (8) natatorium



*Presidential Plaza, Syracuse, New York*

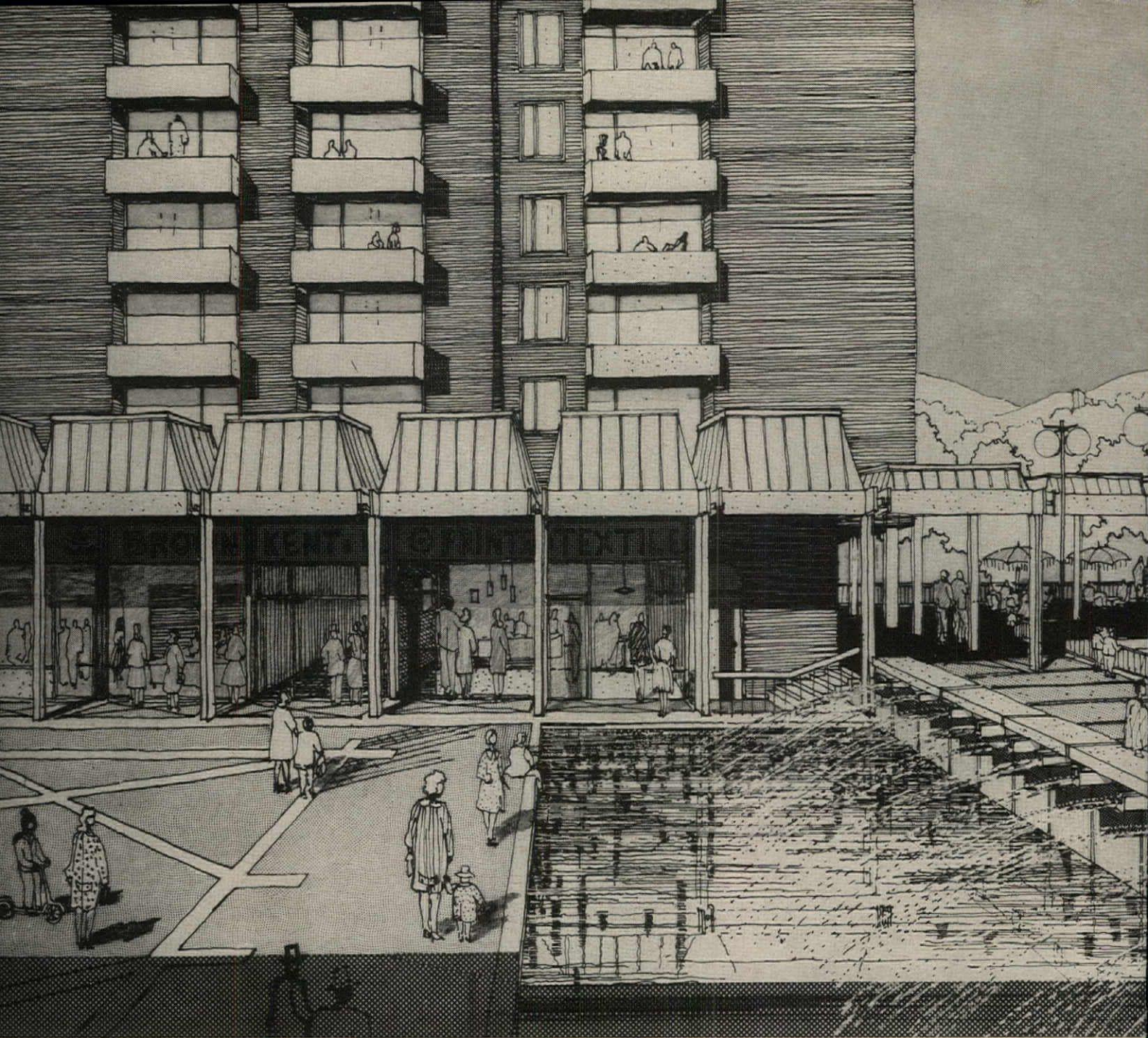
OWNERS: Reynolds Aluminum Service Corporation  
and Eagan Real Estate, Inc.

ARCHITECTS: Keyes, Lethbridge & Condon

ASSOCIATE ARCHITECTS: Pederson, Hueber, Hares & Glavin

STRUCTURAL ENGINEER: Donald J. Neubauer

MECHANICAL ENGINEERS: Galson and Galson



## *Apartments*

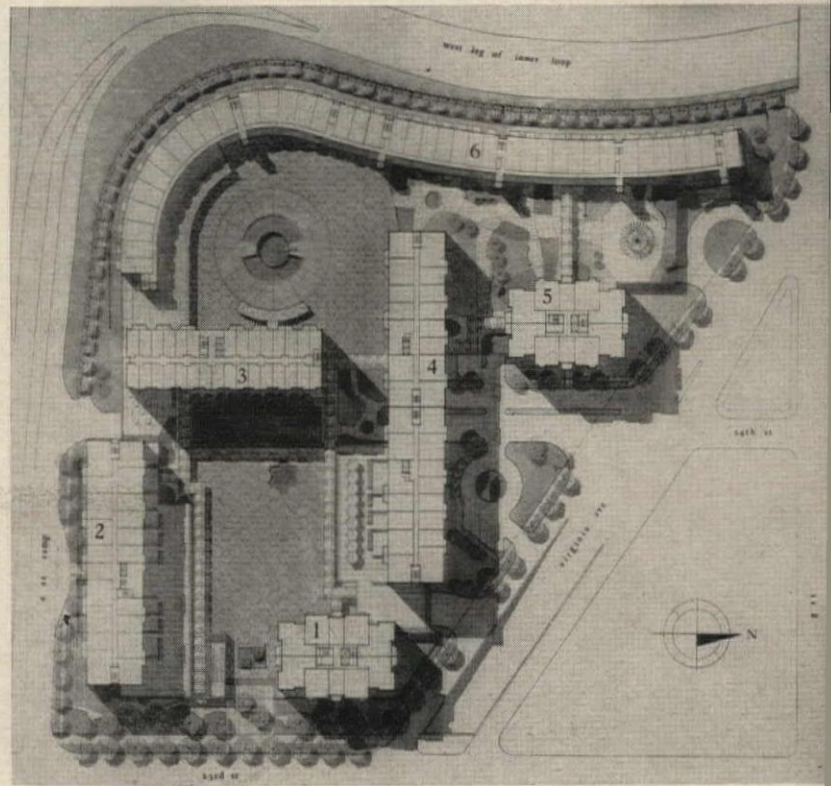
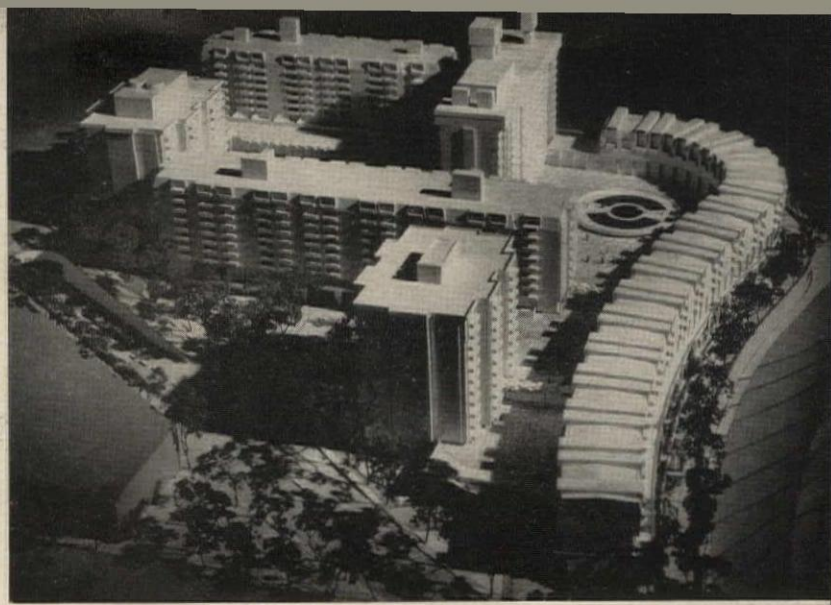
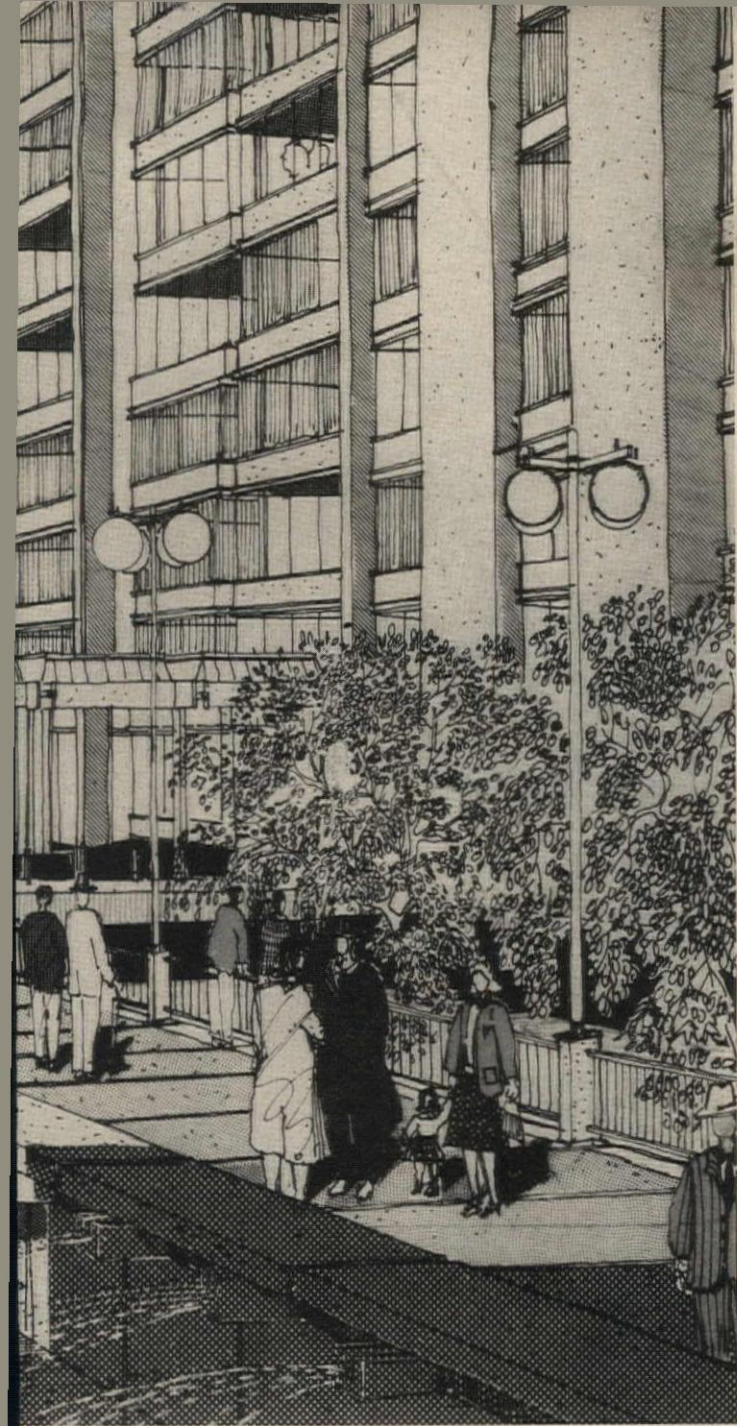
### COLUMBIA PLAZA

This project is notable for its density, urban character, and strong sense of enclosed outdoor space. It includes a 400-room hotel; 800 apartments disposed in a long low-rise and four high-rise buildings; 30,000 square feet of commercial space; and underground parking for 1,500 cars.

The shapes and relationships of its three plazas—with all vehicular traffic kept below—follow closely the characteristics of the medieval town square as analyzed by Sitte. For example, the east shopping plaza (lower part of plan) has access only at its corners—and in a direction at right angles to the next access—except for its main entrance point from the street at the bottom of the plan. But here, again, entrance is through an arcade which serves to differentiate the plaza space from the street, and

heightens one's sense of arrival by framing a vista centering on the hotel. This plaza is joined by a proportionately narrow passage to the irregularly-shaped secondary square containing the hotel, restaurant and pool; the third more intimate "green" plaza between the apartments to the north is next in the spatial succession. In pointing out that much of the charm and individuality of medieval towns derived from their irregularity, Sitte says: "The eye is inclined to overlook slight irregularities and is willing to see more irregularity than actually exists." In the long serpentine building, two banks of efficiency units facing outward to the view are topped at plaza level by a row of two-story townhouses which in turn support three stories of interlocking maisonnettes.





1, 2, 4, 5) high-rise apartments; (3) hotel; (6) low-rise apartments

*Columbia Plaza, Washington, D. C.*

OWNER: *Columbia Plaza Corporation*

ARCHITECTS: *Keyes, Lethbridge & Condon*

ASSOCIATED ARCHITECTS: *De Mars and Reay*

STRUCTURAL ENGINEER: *Donald J. Neubauer*

MECHANICAL ENGINEERS: *William A. Brown & Associates*

CIVIL ENGINEERS: *Eberlin and Eberlin*

LANDSCAPE ARCHITECTS: *Sasaki, Walker and Associates*





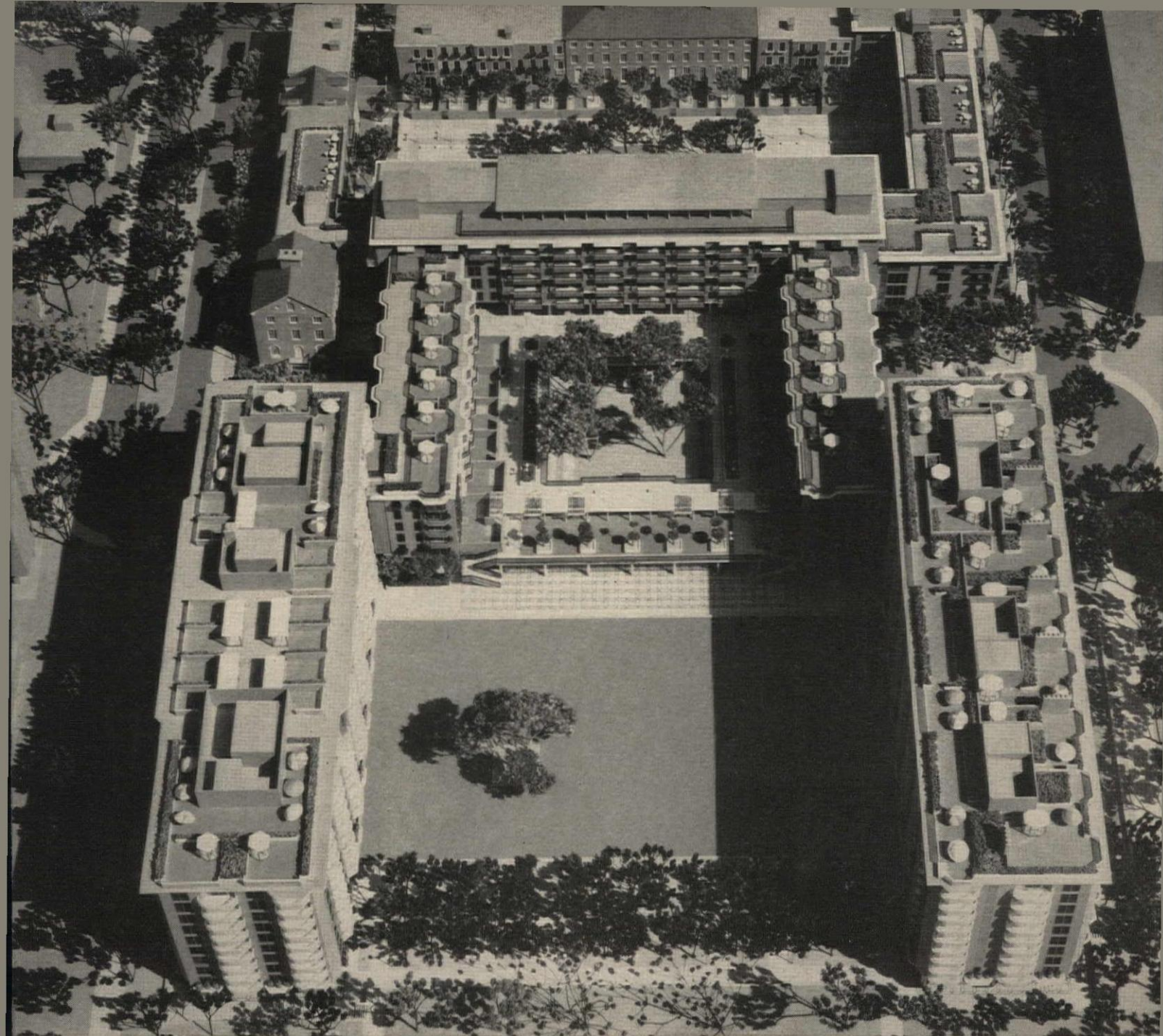
## *Apartments*

### HARBOUR SQUARE

This renewal project—which is in multi-quadrangle form—is composed of a great variety of apartments and townhouses, and will accommodate 445 families. Three historic buildings dating from the 1700's will be restored as a part of the program; they are included in the group of townhouses in the foreground of the model photograph shown above. Both pedestrian and motor access will center on a motor entrance court (with adjacent parking) at ground level; although cars bound for the more extensive underground parking beneath may reach it more directly from ramps close to the street. The entire area has been conceived and developed as an urban square with considerable diversity in the treatment of its various courts, plazas and terraces. Architect Chloethiel Woodward Smith explains: "The land-

scaped site with glimpses of a motor plaza below creates an urban pedestrian square with an acre of water garden as its dominant design element. The pool will be finished in shades of blue to blue-green with accents of various colored sculptural forms below and above the water, platforms and seating areas, fountains, walks, flowering water plants and willow trees. Beyond is a grove of trees visually enclosing the water garden court. The square will be pleasant from ground level, and in addition will offer a fine view of water within the square from the apartments above, recalling the nearby river."

The project is located directly to the south of Tiber Island (pages 196, 197) and is bounded on the east by recently completed River Park. The new town center buildings by I. M. Pei are a block north.



©Esra Stoller Associates model photos

*Harbour Square, Washington, D. C.*

ARCHITECTS:

*Chloethiel Woodward Smith & Associates  
John M. Ruffner, Project Architect  
Jon E. Jewett, Job Captain*

LANDSCAPE ARCHITECT: *Dan Kiley*

STRUCTURAL ENGINEERS:

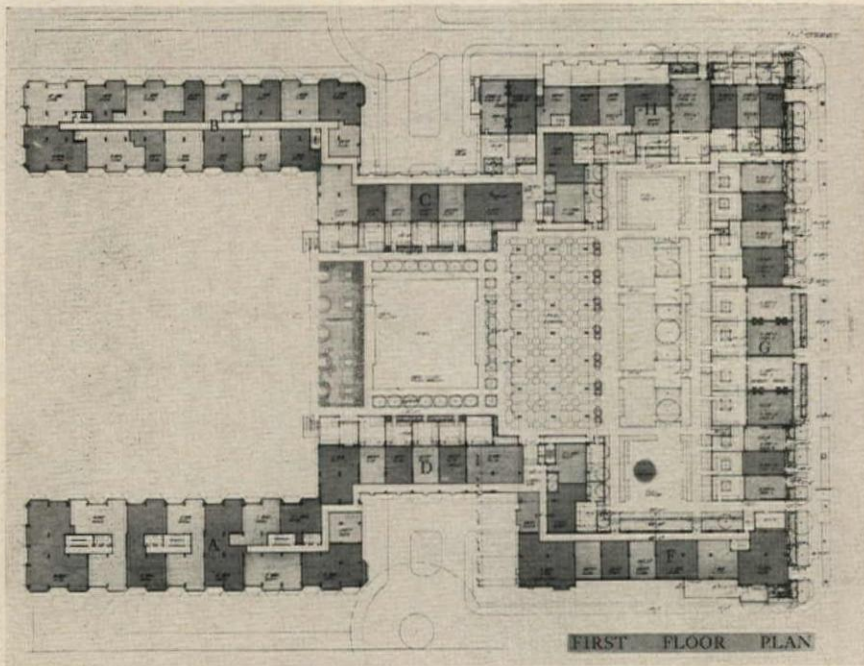
*Severud-Elstad-Krueger Associates*

MECHANICAL AND ELECTRICAL ENGINEER:

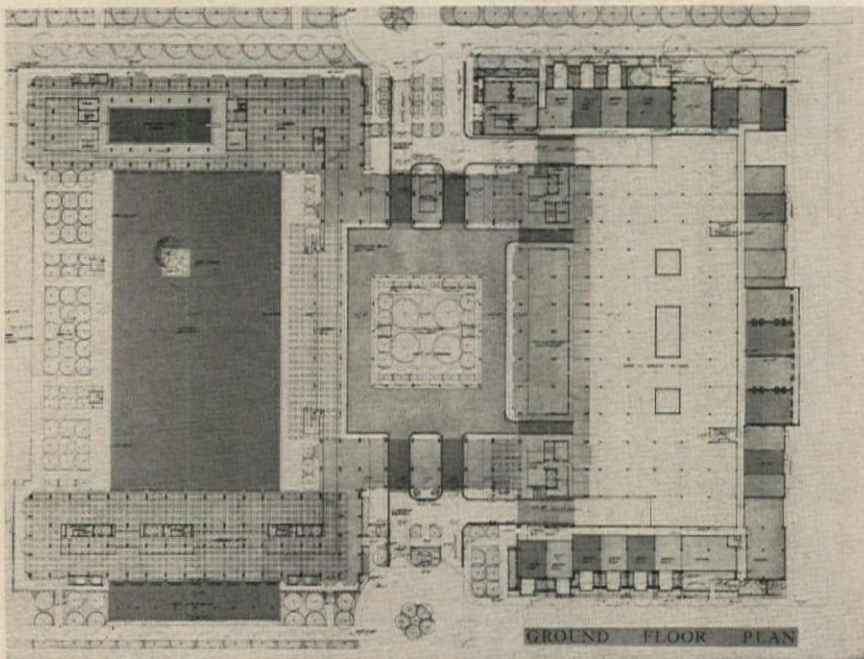
*William A. Brown*

GENERAL CONTRACTOR: *John McShain, Inc.*





FIRST FLOOR PLAN

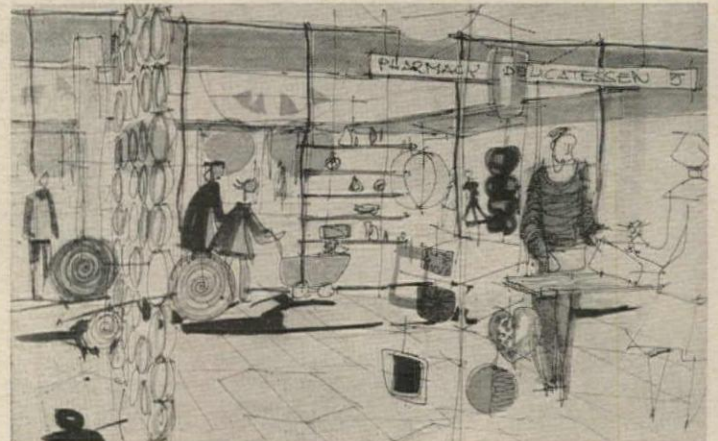
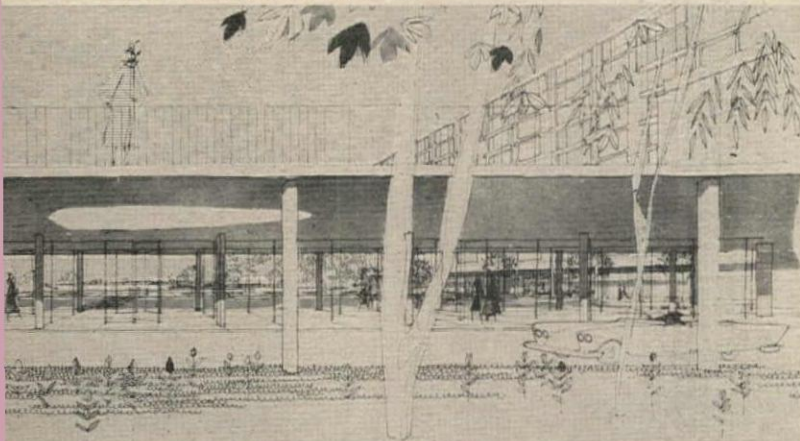


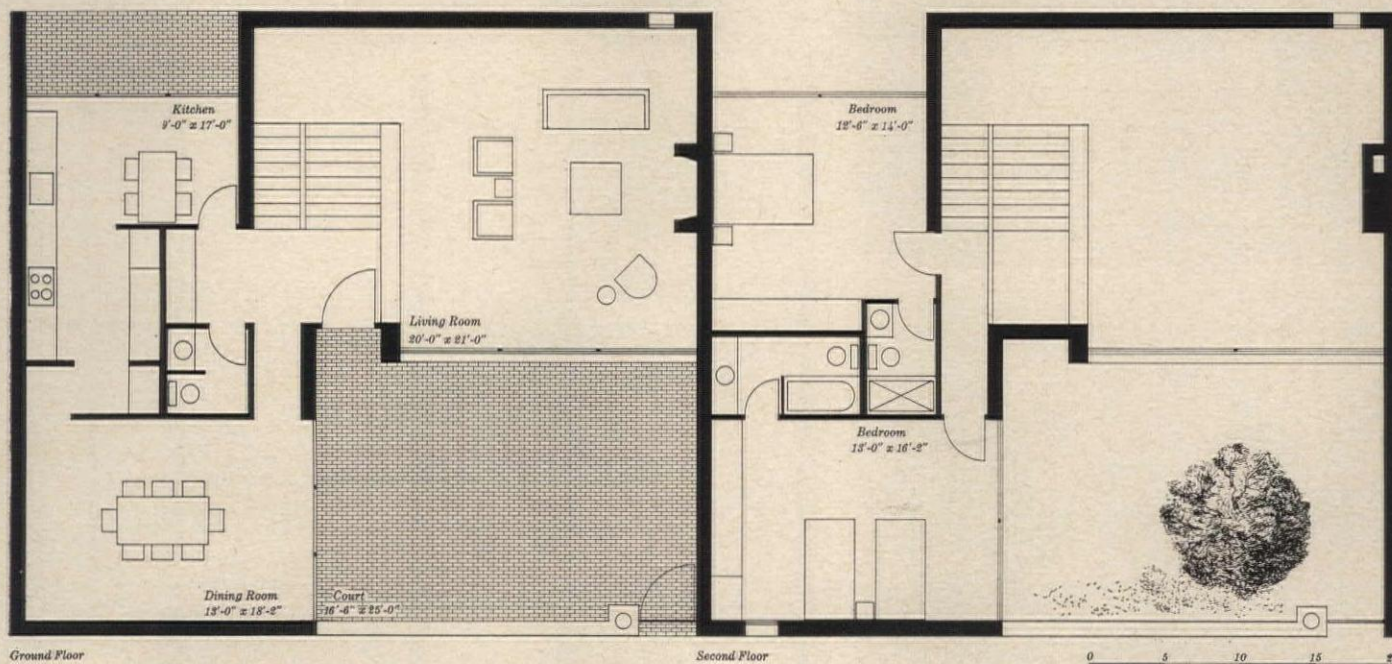
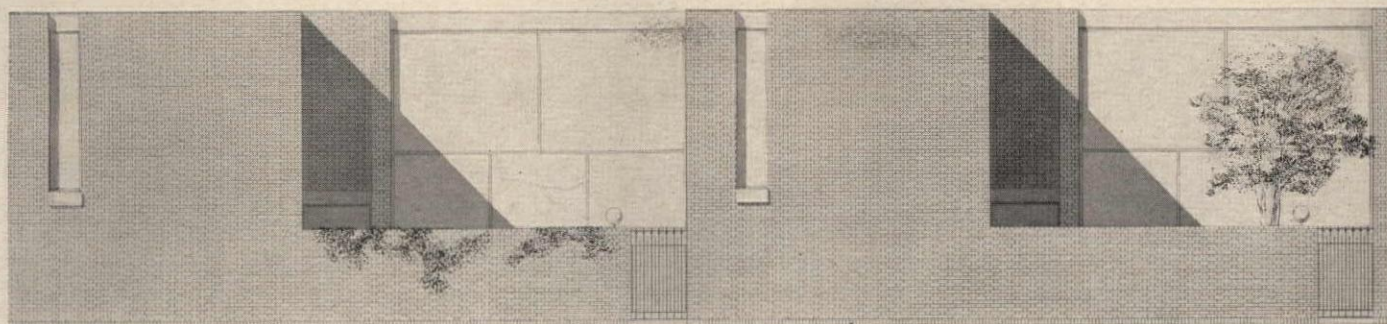
GROUND FLOOR PLAN

## HARBOUR SQUARE

The plan (*at top*) is taken at first floor, or terrace level; the plan (*left*) is at ground (street) level. At first floor level there are various outdoor play terraces, townhouse private gardens and walkways; this level opens visually to the motor court and water garden below. At ground level, the glass-enclosed swimming pool is at one end of the water garden; an extensive lobby and lounge at the other. The central entrance court gives access to four lobbies for the various buildings; future retail shops will front on this court. The adjacent ground floor parking garage is for guests; tenants will use underground parking. The entire court and all vehicular and pedestrian circulation will be readily controlled from the gatehouse located at the north entrance (top of plan). Ramps to the basement garage are located outside the entrance court so the great majority of vehicles will not pass through the court

Sketches by Zdzislaw Szczepanski



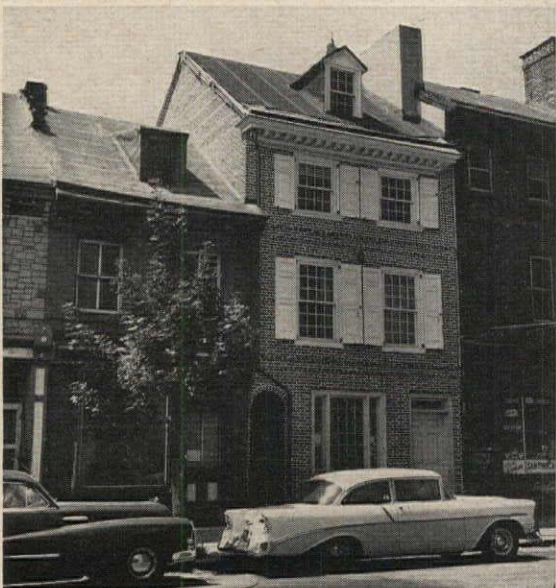
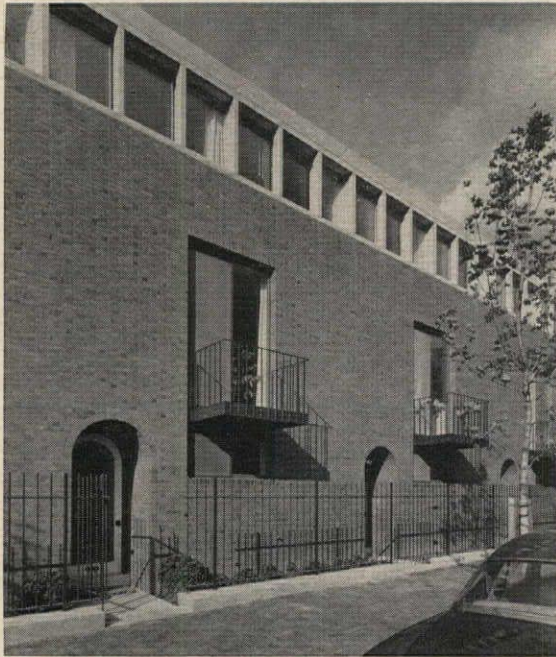


## ORIANNA BLOCK

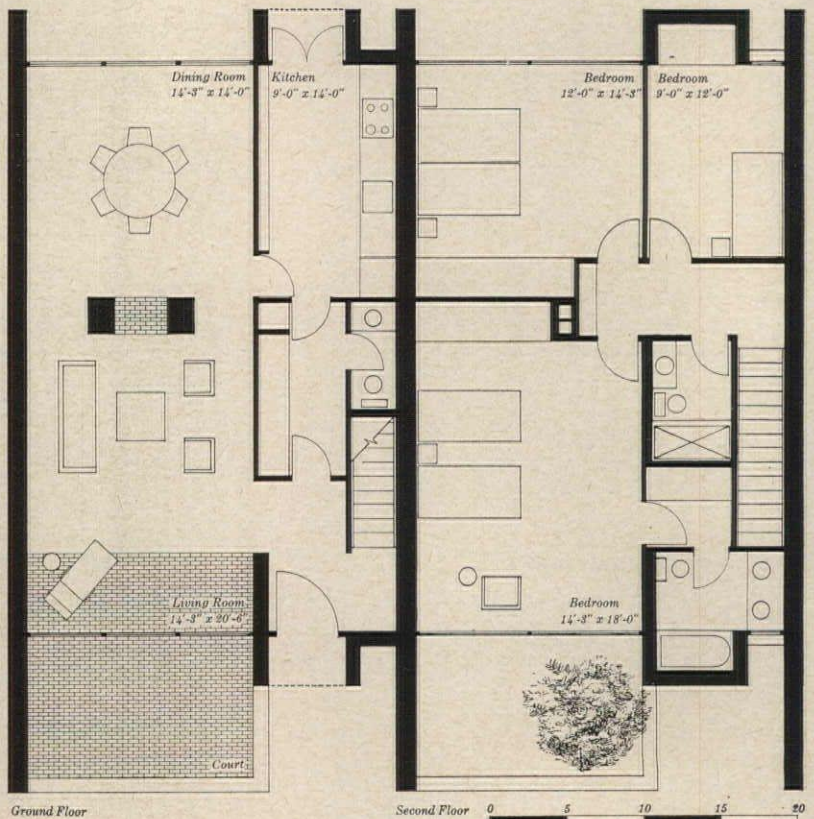
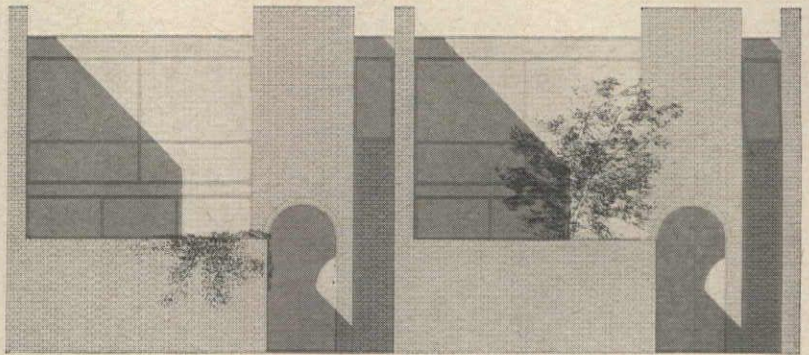
In these three pages we focus our attention on the design and arrangement of the townhouses that will be built in the Orianna Block, part of a large urban renewal area in Philadelphia called Washington Square East. The new townhouses will be of two types; plans and elevations of one type are shown above, and of the second type on the next page. The block will contain both new townhouses and 18th- and 19th-century houses worthy of rehabilitation. The design problem, then, became that of integrating the old and the new houses into properly scaled urban groupings. The use of the row house deployed in an intimate relationship across narrow tree-lined streets might be called the original residential idiom for Philadelphia, hence the new arrangement for the block should rest easily within the city pattern and appeal strongly to its citizenry. Such a concept provides both high density and amenity.

Another important consideration I. M. Pei & Associates had to take into account in planning the

block was its particular role in the larger urban renewal scheme, which covers an area extending from Independence Park South for five blocks and reaches from Washington Square East through five blocks to Dock Street and the Delaware River. As the plan on the next spread will show (north is at the top of the page) the Orianna Block contains the intersection of two greenway axes; one running east-west, the other north-south. The intersection of these two axes is developed into an open square within the central portion of the block and surrounded by new townhouse construction. From the central square, the vista to the west traverses Locust Street and continues through the extension of Independence Park to Washington Square; to the east one proceeds to the new high-rise apartments in a park at Dock Street. The gateway to historic Saint Joseph's Church lies across Willing's Alley to the north; to the south one passes through several blocks of fine old houses to a church at the end of the greenway.



Wurtz Brothers photos



*Orianna Block*  
 Washington Square East Urban Renewal Area  
 Philadelphia

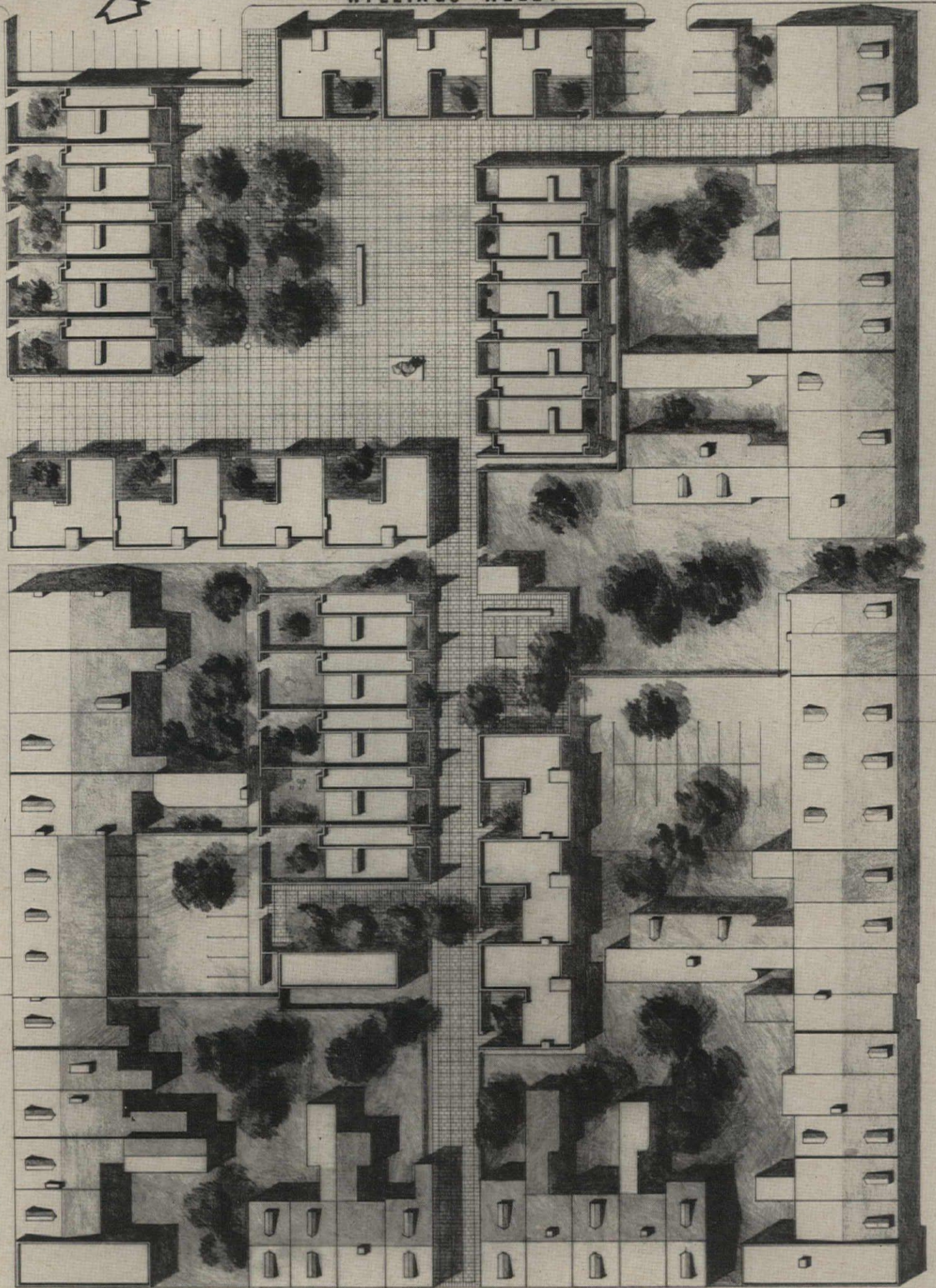
ARCHITECTS AND PLANNERS:  
 I. M. Pei and Associates

The photo (top left) shows the new townhouses—recently built in the block to the east—also designed by architect Pei. The lower photo shows the character of the existing houses in the neighborhood, some of which are worth renovation.

Immediately above are plans and elevations of the second type of new townhouses for the Orianna Block; the first type is shown on the preceding page. Note that these houses have fine residential scale and an admirable urban character, and are of a style that should fit easily into the neighborhood.

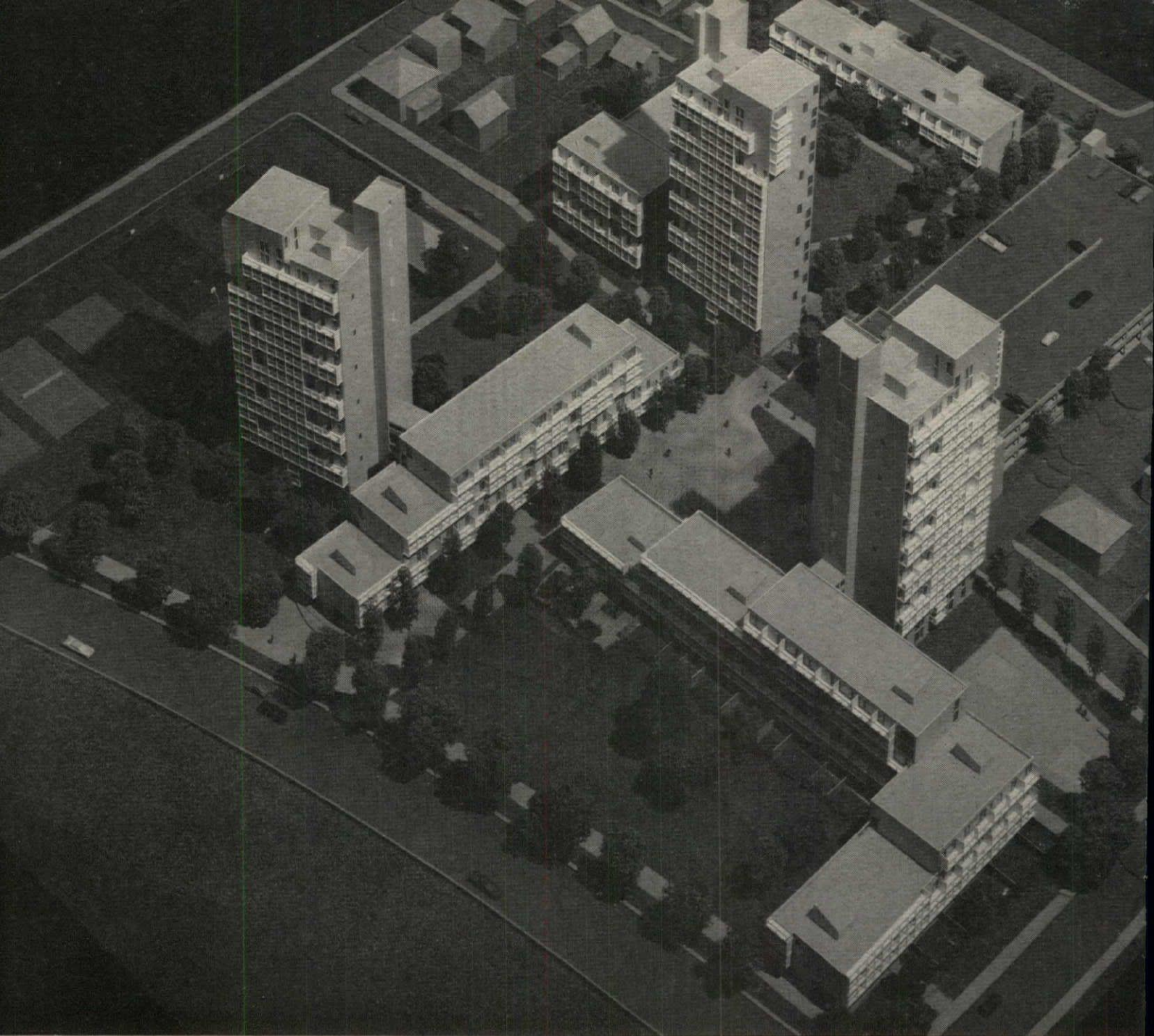
Reference to the block plan (right) will show how it centers on the square locating the intersection of the two greenway axes, and how the greenways are defined by rows of new townhouses, while the outer edge of the block is composed largely of rehabilitated existing houses. The area is adjacent to large national, state and city parks, so no additional park areas are planned; a nearby playground obviates the need for such in the neighborhood. The greenways serve to give coherence to the entire area, and serve also the functional needs of the residents in moving about on foot.

WILLINGS ALLEY



THIRD STREET

SPRUCE STREET



Robert D. Harvey model photo

## *Apartments*

### HARVARD MARRIED STUDENT APARTMENTS

Of the design of this new group in Cambridge the architects say: "The married student dormitories for Harvard University will be the latest link in the chain of Harvard development along the Charles River. These buildings will continue the line of the existing houses facing the river, and will recall the court designs of earlier groups.

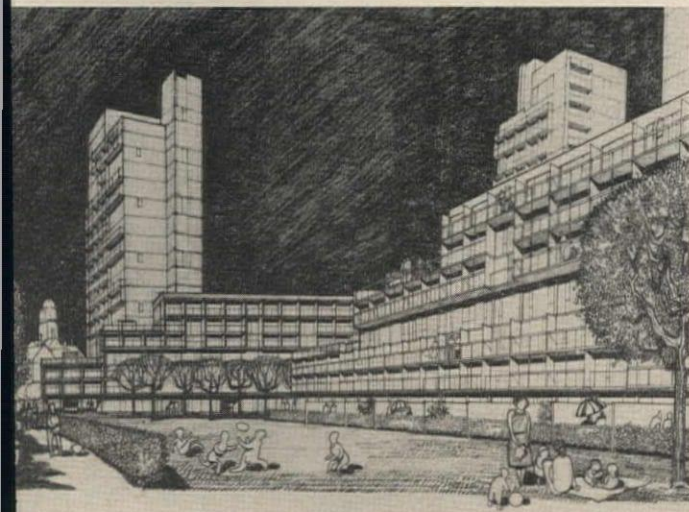
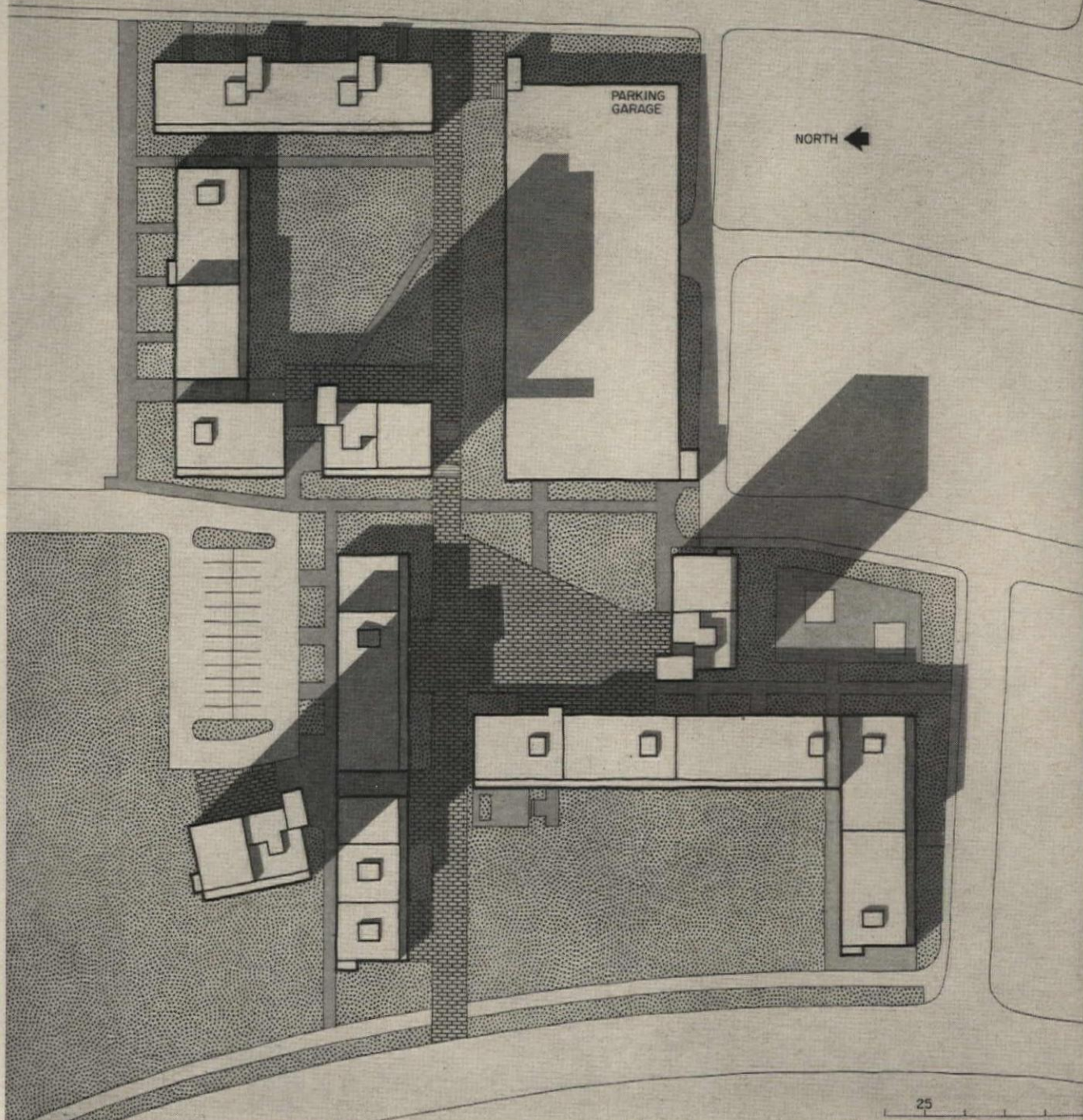
"The project will combine three 22-story towers with low-rise terraced buildings of seven-, five- and three-story heights, blending the scale of the existing houses and the new scale of the towers. The first three floors of all buildings—both high and low—are arranged for walkup access. From the fourth floor upward, the apartments will be serviced by elevators which will stop at every third floor. Each elevator tower in each of the high-rise buildings will

be joined to the distribution corridors on the fourth and sixth floors of the lower buildings.

"Five hundred families from the Harvard student community will be housed here in a variety of apartment types ranging from efficiencies to three-bedroom units. A central plaza located at the heart of the building group is designed to serve as a community center, and will be able to accommodate outdoor meetings and shows. Several communal facilities—nurseries, meeting room, drug store and laundry—will face the central plaza."

Costs were held down and construction time schedules reduced by employing a basically simple structural system, the use of precast wall panels in place of brick, standardization of many parts, and knowing organization of the construction process.





*Married Student Dormitories, Harvard University  
Cambridge, Massachusetts*

ARCHITECTS: *Sert, Jackson and Gourley  
Joseph Zalewski, Associate*

STRUCTURAL ENGINEERS:  
*Nichols, Norton and Zaldastani*

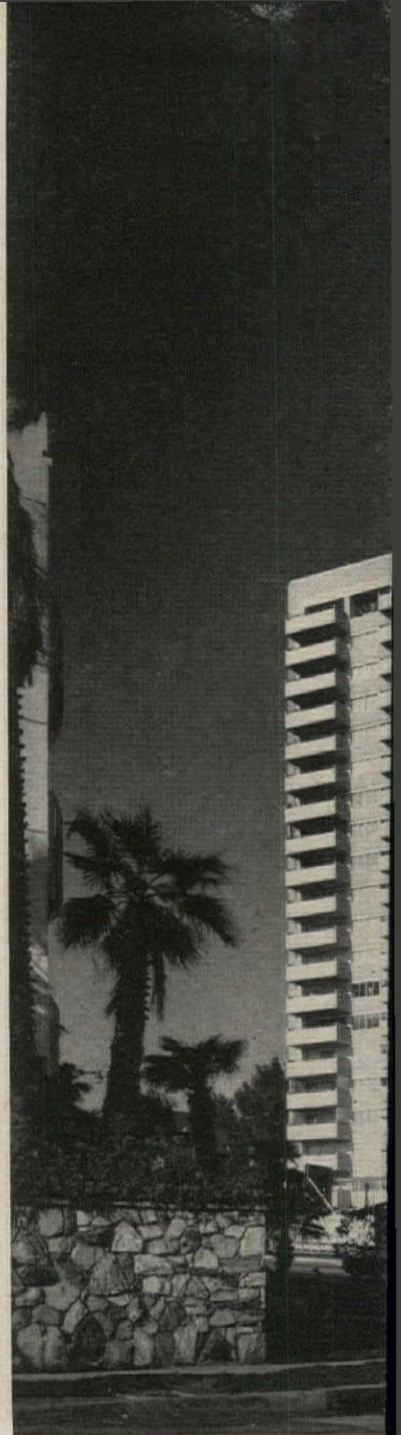
MECHANICAL AND ELECTRICAL ENGINEERS:  
*Sidney J. Greenleaf Associates*

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

LANDSCAPE ARCHITECTS: *Sasaki, Walker and Associates*

SOIL MECHANICS CONSULTANT: *Arthur Casagrande*

GENERAL CONTRACTOR: *Vappi and Company*



*Apartments*

## WEST COAST TWIN TOWERS APPROACH COMPLETION

*Wilshire Comstock Apartments  
Los Angeles*

OWNERS-DEVELOPERS:  
*Tishman Realty and Construction Company*

ARCHITECTS-ENGINEERS:  
*Victor Gruen Associates  
Edgardo Contini, Partner in Charge*

MECHANICAL ENGINEER: *Ralph E. Phillips*

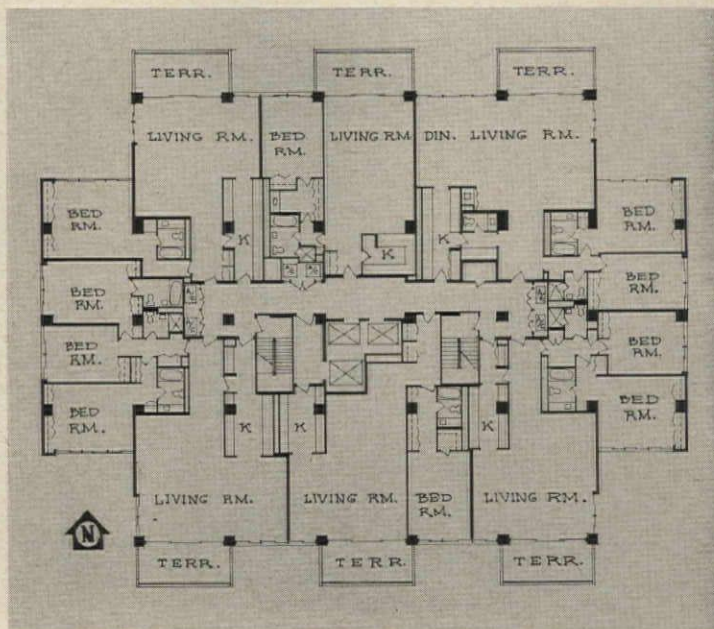
The site exerted a strong influence in the design of these twin towers in Los Angeles, now nearing completion. The plot adjoins the Los Angeles Country Club, is located in the expensive Holmby Hills residential area, and occupies a prominent corner at a bend of Wilshire Boulevard. The 305-foot-deep property has a frontage of 380 feet.

Gruen partner Edgardo Contini explains: "We felt that every apartment in the project should enjoy unobstructed views from its windows and its terraces, so the design developed as two staggered towers rather than as a single continuous structure.

"Due to the shape of each tower and its positioning in relation to the other, completely unobstructed views are available from each of the four elevations of each tower, and most of the apartments have an

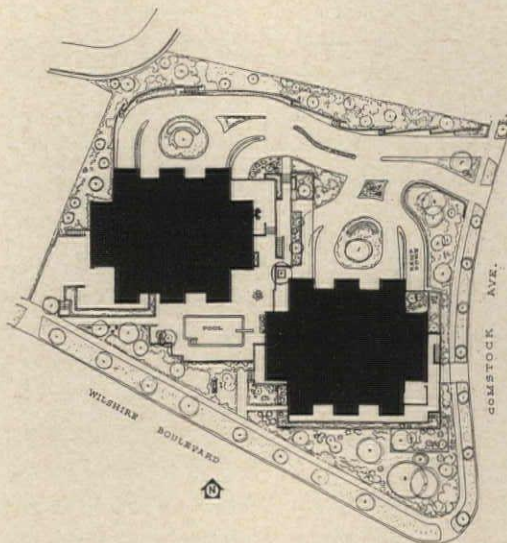


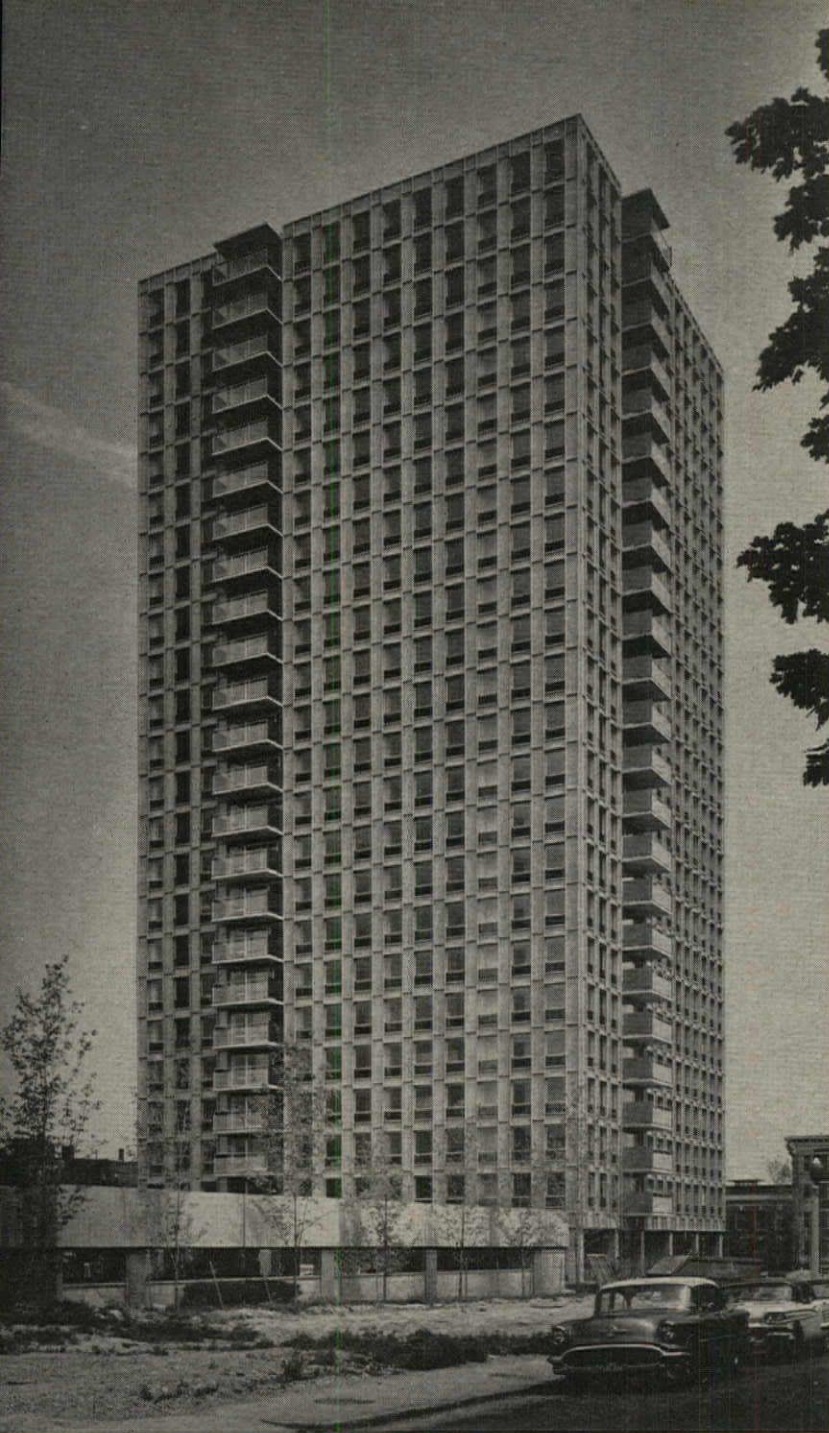
Jack Laxer photos



advantageous corner location that yields two exposures. The twin tower idea also emphasizes the inherent character of the design solution by stressing the contrast between vertical architectural expression and the manner in which the surrounding landscape spreads out horizontally."

Each of the towers is 20 stories in height and houses 109 apartments varying in area from 1,300 to 2,200 square feet. Living units are one-, two- and three-bedroom apartments, each with individual air-conditioning units, completely electric kitchens and balconies with solid railings. One hundred and seventy cars can be accommodated in each of the two underground parking garages. The structural frame for each tower is of steel; the exterior curtain walls are of plaster, applied in place.





*Apartments*

## NEW BOSTON HIGH-RISE WITH SMALL SUITES

*Charlesbank Apartments  
Boston, Massachusetts*

ARCHITECTS:

*Hugh Stubbins and Associates*

*Edwin F. Jones, Job Captain*

*Douglas Cole Smith, Construction*

*John Lee Wacker, Landscape Architect*

MECHANICAL AND ELECTRICAL ENGINEERS:

*Greenleaf & Wong*

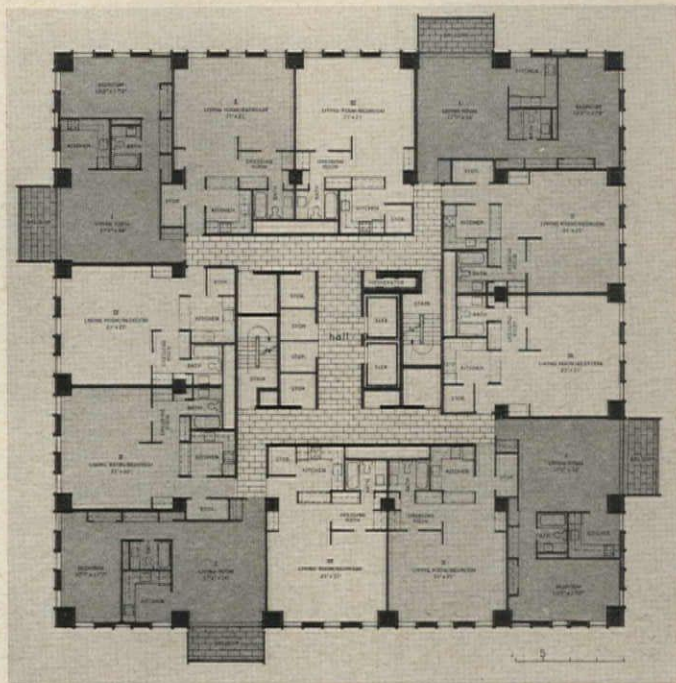
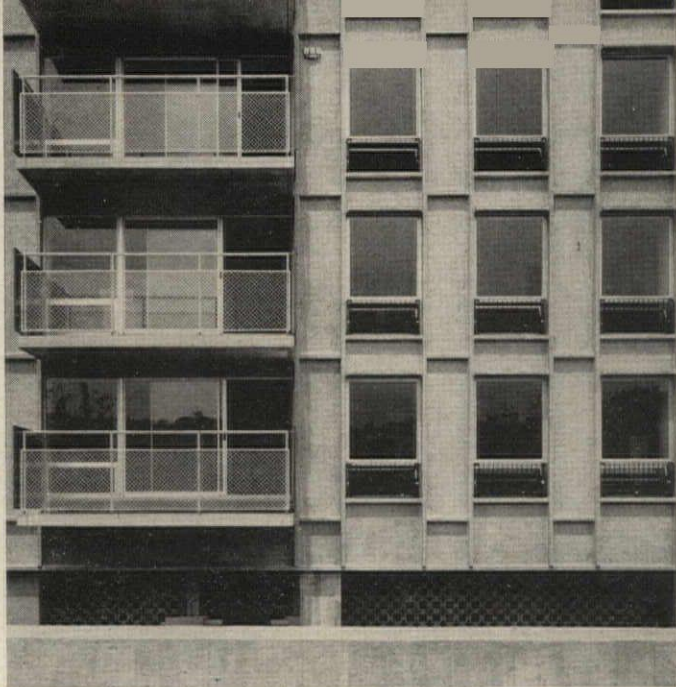
STRUCTURAL ENGINEERS:

*Goldberg, Le Messurier & Associates*

Located on a corner plot across the street from Harvard University's new building for its School of Public Health, this handsome 24-story tower provides 276 one-bedroom and studio apartments. In order to accommodate a variety of tenant needs, three different floor plans were developed by the architect. Typically, there are four apartments of each of three types per floor, as examination of the plan will reveal; and they are arranged in clockwise fashion around the central core. The corner apartments on each floor feature balconies. The square plan the architect devised is unusually compact, and has the virtue of eliminating the all too common "bowling-alley" corridor; and due to its clockwise repetition of elements, produces identical elevations for each of the four facades of the building. Parking

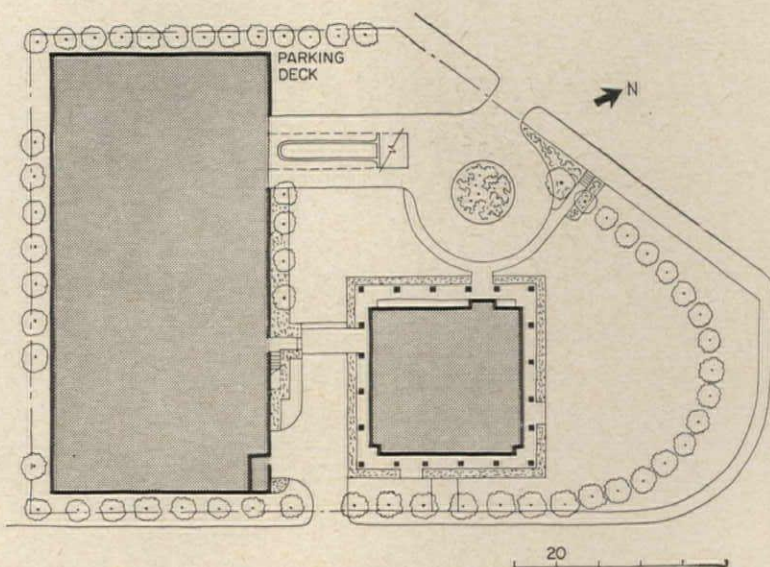


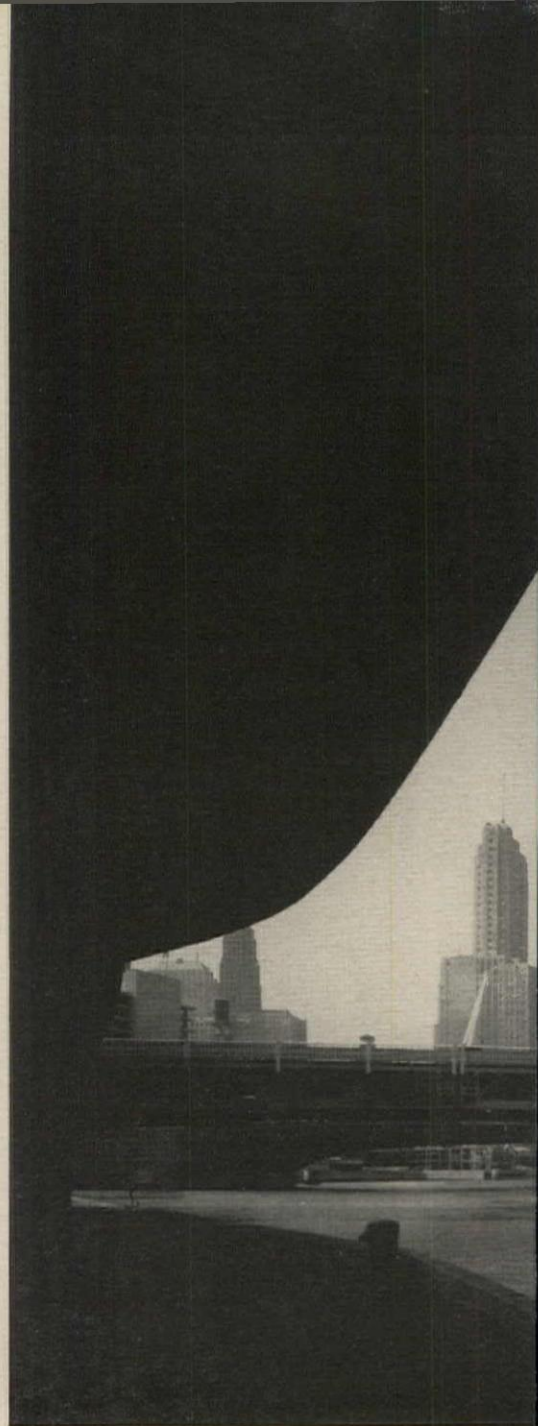
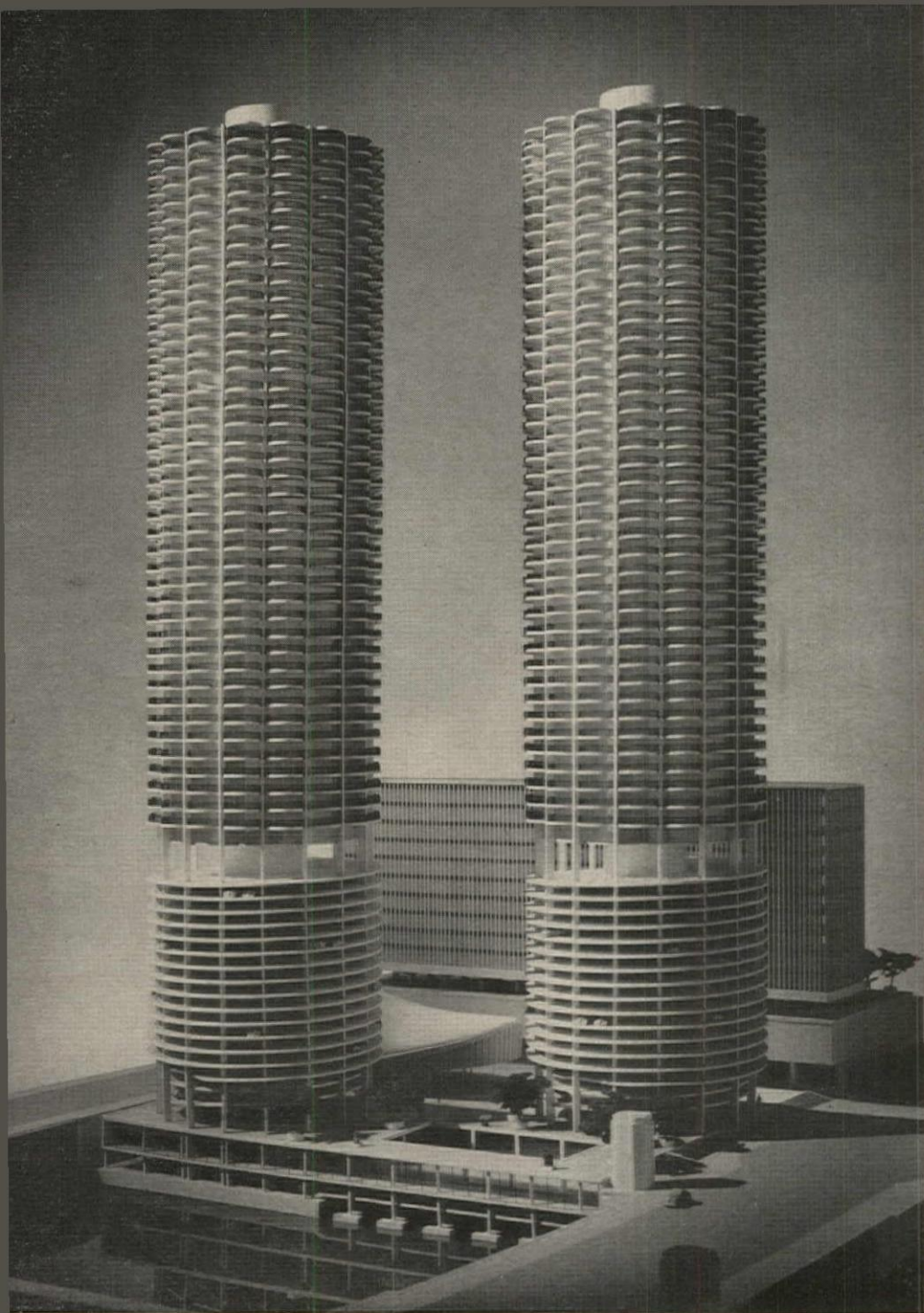
Joseph W. Molitor photos



for 195 cars is provided in an adjacent two-story structure, as can be noted in the plot plan at right and the photo above.

The structure, which consists of reinforced concrete columns and 7-inch flat slabs, rests on a 4-foot concrete mat on clay, negating the necessity of either deep footings or piles. There is no basement. The exterior wall consists of precast concrete panels—of exposed aggregate and white cement—backed up by rigid insulation, which is plastered and painted. Partitions are of block, plastered and painted. The sash are of aluminum glazed with clear plate glass, and are designed for easy installation of air-conditioning units, if the tenant desires. The ceilings are variously of either a skim coat of plaster or acoustical tile.





## ARCHITECT GOLDBERG'S MARINA CITY CONCEPT

*Marina City  
Chicago*

SPONSOR: *Building Service Employees' International Union*

ARCHITECTS-ENGINEERS: *Bertrand Goldberg Associates*

CONSULTING ENGINEERS:

*Severud-Elstad-Krueger Associates*

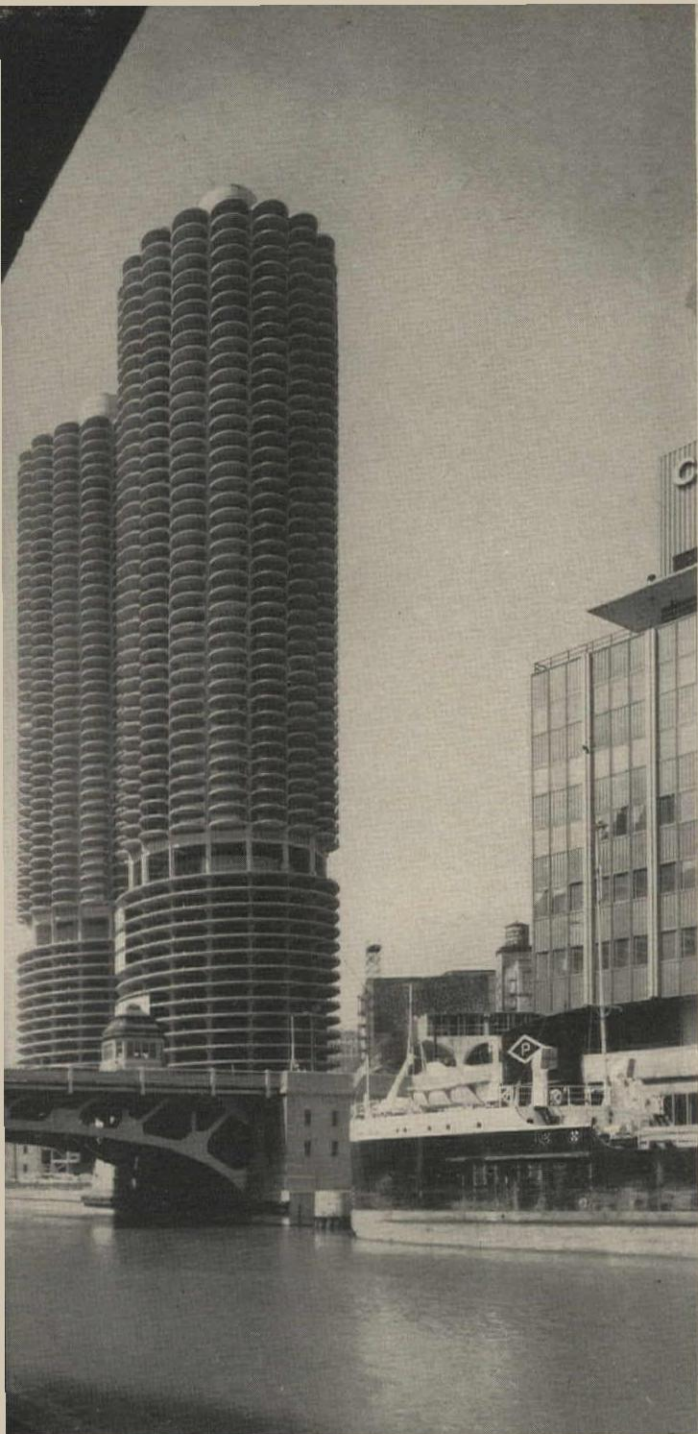
*Moran-Proctor-Mueser and Rutledge*

*Dr. Ralph Peck*

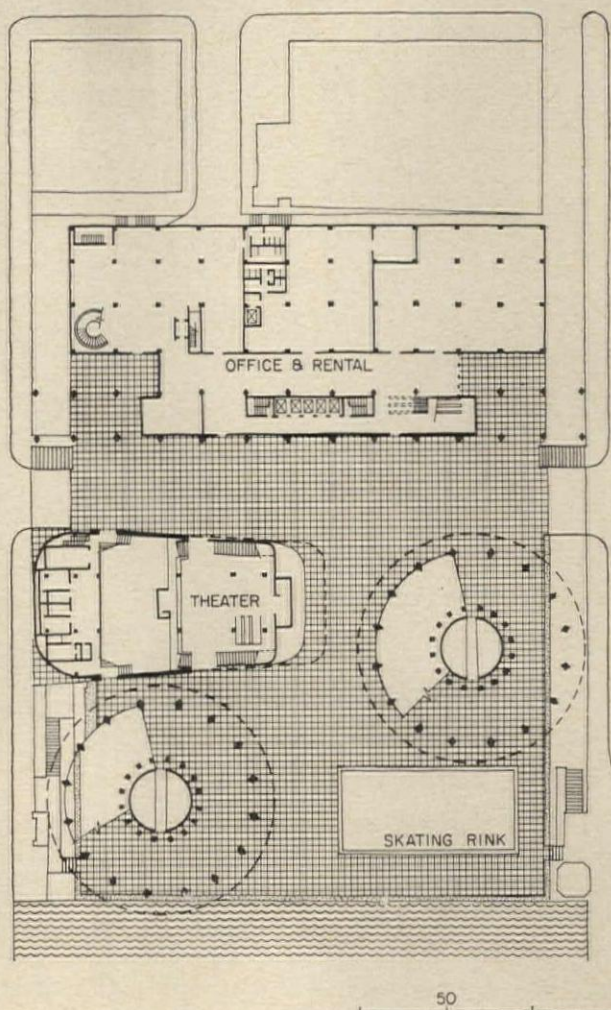
*Dr. Andrew Fejer*

CONTRACTOR: *James McHugh Construction Company*

The widely publicized twin towers of Marina City are now finished, and tenants are moving in. The towers rise 60 stories, contain 896 apartments in the upper 40 floors, and ramp storage space for 900 automobiles in the lower 19 floors. Despite the good looks of the towers and their impressive statistics, the planning story of the five buildings at ground level—which, when finished, will form a base for the towers—is of equal or possibly greater interest. One of the five will cover the entire site as a two-story service building containing a service lobby, a 700-boat marina, swimming pool, skating rink, and areas for receiving all traffic. In covering the plot, this structure serves as a base for the other four—the two towers, a 1,700-seat theater resting “piggy-back” atop a 750-seat auditorium, and a 16-story



Bill Engdahl, Hedrich-Blessing photos



commercial building housing offices, stores and recreational facilities. The theater is designed for all kinds of performances: movies, musicals, concerts, legitimate shows, revues, etc. Its roof of sprayed concrete is slung on catenary steel cables supported by a curving concrete frame, set at an angle to the plaza.

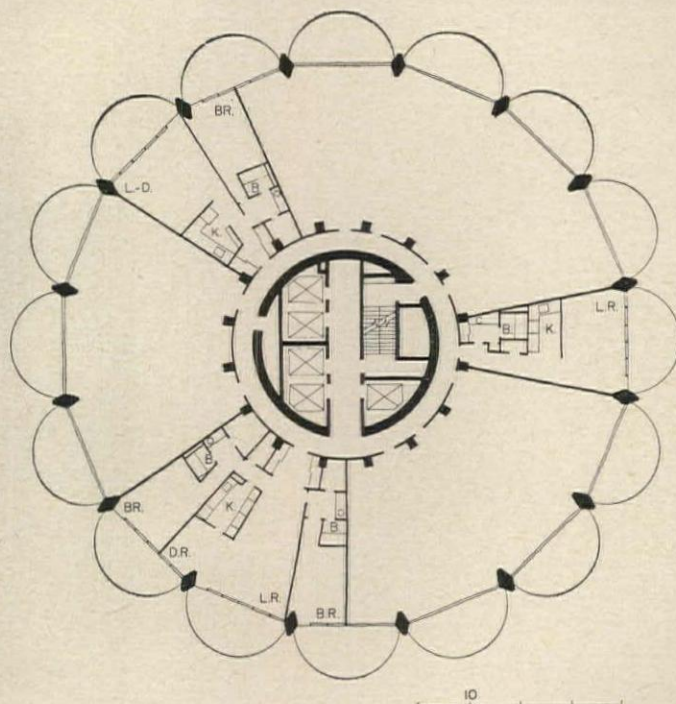
In explaining the design concept, architect Bertrand Goldberg says: "We cannot burden business buildings used 35 hours a week or apartment buildings used at night and over week ends with our total tax loads. We can no longer subsidize the single shift use of our expensive city utilities. In our cities within cities we shall turn our streets up into the air, and stack the daytime and nighttime uses of our land. We shall plan for two shifts within cities,





where the fixed costs of operating a city can be shared by commerce, recreation and education at the lower levels of the city and by housing above. As we spread taxes and other expenses over wide use, we help the traffic problem caused by the trip to work. Our specialists living and working in the same building complex need only vertical transportation.

"I once described this concept to my mother-in-law, who told me that back in New Orleans they used to call this living above the store."





## SMALL OFFICE WITH A LARGE VIEW

Disciplined simplicity and imaginative services promote big-job capability and notable solvency for the seven-man office of C. E. Silling and Associates

Among the many hundreds of successful small architectural firms throughout the nation, one that combines the elements of a fixed-size, long-term staff, big-job capability, imaginative client services and notable solvency is the seven-man (and one girl) office of C. E. Silling & Associates of Charleston, West Virginia. Cyrus E. Silling disclaims any special attributes of his operation other than those deriving out of history, geography and personality which, he points out, make of every practice a unique endeavor. But he is an articulate protagonist of the disciplined simplicity with which he makes his operation work, and his firm takes in stride a \$30 million medical center, a \$13 million hospital, a state office building, a luxury apartment building, a Bureau of Mines experiment station—all with a fixed office staff for whom overtime is rare. The disciplines of both operating principle and office routine by which this profitable activity proceeds provide some interesting guidelines, although Silling himself would not choose to call them either exceptional or exemplary.

Basic to the Silling operation is planned avoidance of the common hazards of practice that are especially costly to small offices. These hazards are: change orders, fluctuating work loads, varying staff and office space requirements, multiple concurrent small jobs, complex accounting, inaccurate estimating and poor control of corollary services and fees.

Change orders are kept to a minimum in the Silling firm by detailed and intensive programing. Even while the client is first outlining his problem, he is shown how each of his requirements and decisions affect the budget. He feels that he is participating in the design and becomes intensely aware of the consequences of changing his mind. Two simple devices help make the client's orientation as thorough and as painless as possible: (1) actual cost histories of jobs with components similar to his own project are placed before him and related to current price indexes. This gives the client a clear gage of what he can expect in the way of costs; (2) preliminary drawings are very carefully scaled, with elements of site and items of furniture and equipment outlined, so that the client can readily visualize spaces

in terms familiar to the layman. Finally, the client's written approval is required for both drawings and cost estimates—a simple but important precaution against later misunderstanding.

Early and responsible participation by mechanical, structural, electrical and other consultants in preliminary planning also insures against later changes growing out of conflicting space allocations.

Fluctuating work loads (and their effect on staff and space requirements) are not a problem in normal times at the Silling office. The field force may expand occasionally to as many as five men. The office staff remains constant and adheres strictly to the architectural functions of practice, including such "comprehensive" services as feasibility studies, site analyses, financing researches and others as required (and paid for) by the client. All corollary activities, including all engineering, food service, acoustical and other consulting services, are contracted and paid for by the architect as the need for them arises. By insisting upon having the prime service contract with the client so that all associates, architectural or otherwise, are responsive with one voice through the architect, Silling retains the simple, direct control implicit in his commitment as agent for the client.

This principle of minimum overhead and direct job accountability is carried even further. Reproduction of drawings and blueprints, for instance, is farmed out so that there is no investment in semi-idle machinery. Even the firm's accounting is done on a fee basis outside the office.

All this means that the six men in the office (including Silling himself) and one permanent field work manager concern themselves exclusively with the primary functions of architecture. The staff is stable, and the premises they occupy are the same (with some redecoration) as they were when Silling started work there in 1914 as office boy for H. R. Warne. Silling's associates and the year each joined the firm are: C. L. Bowyer, 1932; B. S. Marcum, 1947; H. J. Johe, 1950; W. B. Murrar Jr., 1953; R. C. Blankenship Jr., 1958; and field manager F. D. Desetti, 1948.

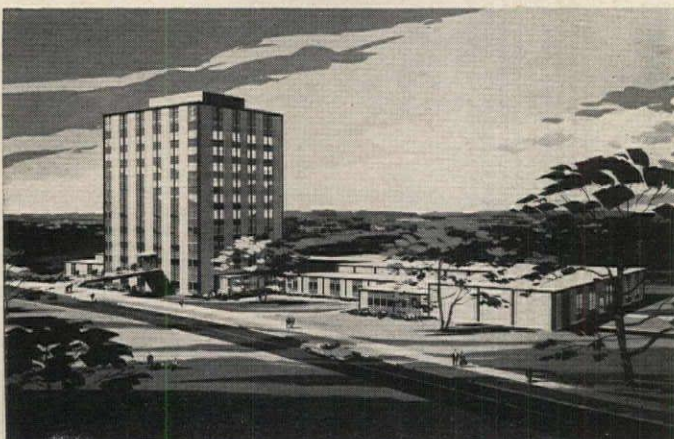
Concurrency of small jobs is no problem here



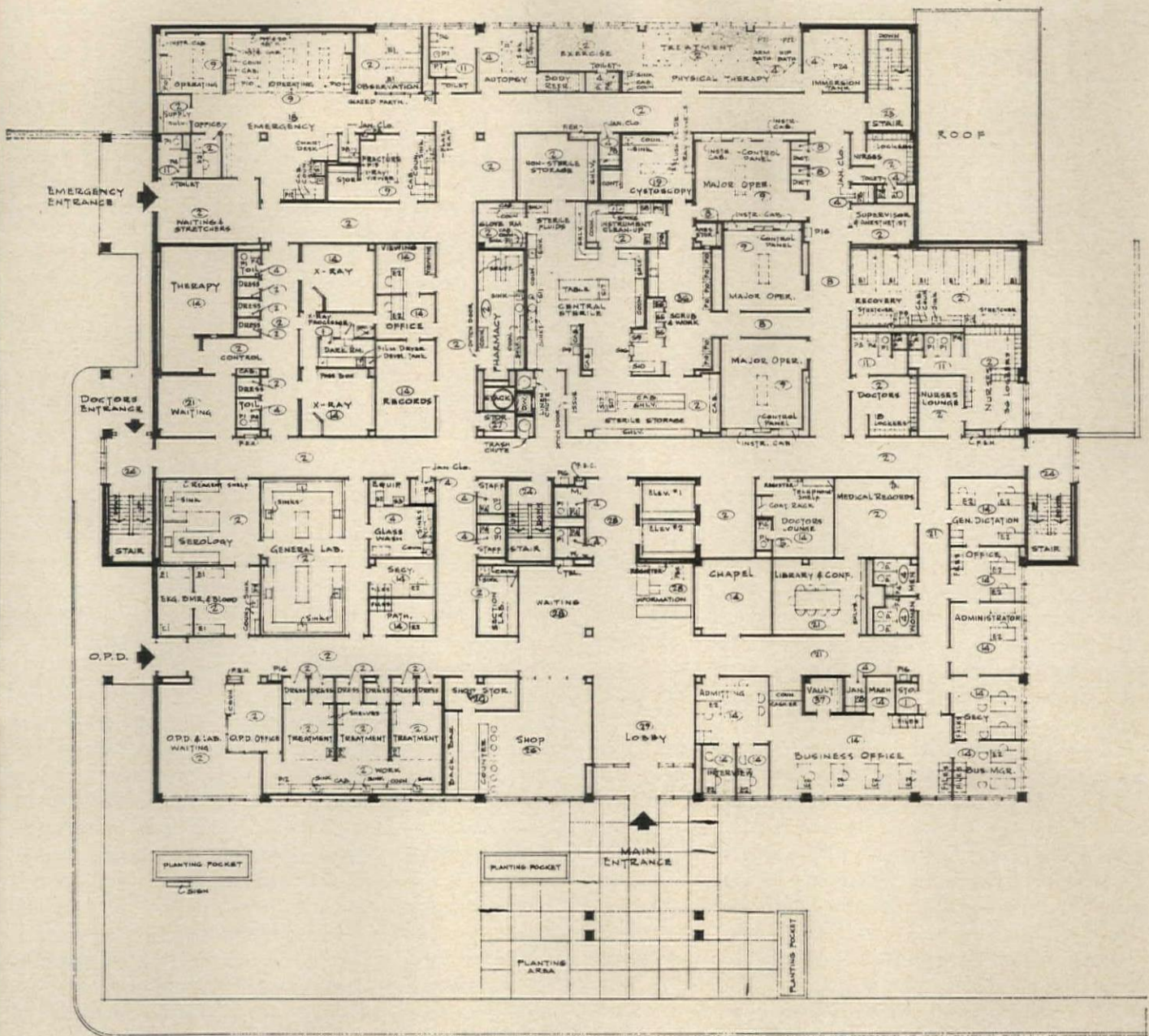
Air view of the Medical Center, West Virginia University Hospital, Morgantown, West Virginia. C. E. Silling & Associates, architects; Schmidt, Garden & Erikson, associate architects. A \$30 million teaching and patient care facility, including a basic sciences building, completed in 1957, and a teaching hospital opened in 1960. The two structures form a single building 950 feet long and 6- to 14-stories high. The sciences wing at left provides facilities for the schools of dentistry, medicine, nursing and pharmacy. The hospital wing is in the shape of a cross, with a large, high-rise square at the center. Out-patient clinics occupy extensive areas between the hospital and the sciences buildings and have ready access to the community



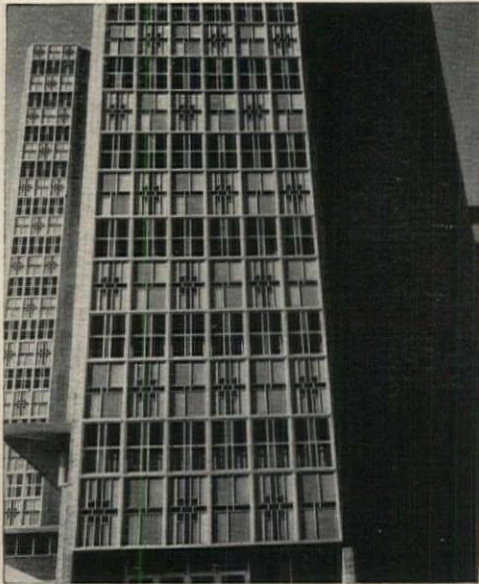
Reynolds Memorial Hospital, Glen Dale, West Virginia. C. E. Silling & Associates, architects. A five-story general hospital with out-patient and emergency areas on the first floor (*see plan, opposite page*). Public entrances, business offices, laboratories and central sterile storage are also on the first floor. A 10-bed maternity station is on the second floor with nurseries and ancillary spaces. Gynecology and surgical suites are on the third floor; pediatrics on the fourth. A 50-bed long-term-care station is on the fifth floor



College of Engineering, West Virginia University, Morgantown, West Virginia. C. E. Silling & Associates, architects; Schmidt, Garden & Erikson, associate architects and engineers. High-rise tower, completely air conditioned, houses administration offices, classrooms, design and drafting rooms, research labs and staff offices. Horizontal base varies from one to three stories, houses campus boiler plant (also used for instruction) and other large engineering labs, each strictly utilitarian in design and each with direct access to grade



Preliminary drawing of first floor plan of Reynolds Memorial Hospital, drawn at 1/16-inch scale and reproduced here at 1/32-inch scale, retains clarity of detail at 50 per cent reduction. Furnishings and equipment are included in preliminary plans to communicate dimensions in terms familiar to client. Preliminary estimates can be made with reliable accuracy based on careful and complete preliminary drawings. Bay size for this hospital is 22 by 24 feet. Room layout retains modular coordination with full flexibility. Working drawings are drawn to 1/8-inch scale and keyed to careful sections and details at still larger scale



Detail of curtain wall at the University of West Virginia Medical Center. Wall was developed as a system compatible with modular design through conferences with the glass manufacturer who produced the integrated panels. This sort of custom design retains the economies of the modular technique while permitting free exercise of the architect's design function

simply because small jobs are rarely undertaken. Clients are public utilities, federal and state agencies, universities, hospitals, technical laboratories, banks and office buildings. Work is paced through the office one job at a time, and everyone works on and keeps informed about that single project as it proceeds.

The Silling estimate, although a simple relationship of past experience to a current cost index, is a responsible document. A file of cost histories on past jobs is the key to preparation of estimates on current work. Most new jobs can be related rationally to recorded experience which can be readily and accurately updated. Actual bids invariably bracket the estimate within a small margin.

Preparation of specifications and bidding documents is detailed and complete, but as brief as possible, concise and streamlined, omitting such phrases as "the contractor shall," "as noted on the drawings," "according to plans," etc. Bidding documents aim to tell the story once, concisely, but completely.

One of the primary disciplines having a far reaching effect in the control of costs at the Silling office is the use of modular measure in all design work. This is by no means a restrictive discipline, Silling points out. It means simply that for each building a single module develops out of detailed preliminary programming and is then applied rigorously throughout the design. The module for a \$30 million medical center at West Virginia University, for instance, was 9 feet 8 inches; that for a \$4 million office building was 5 feet; each was derived from an extensive study of building functions and each is a multiple of the fundamental 4-inch cube.

The use of modular measure, says Silling, not only makes possible considerable reduction of building costs through dimensional coordination of mass produced materials, it also has an effect on the cost of

preparing both preliminary and working drawings. For example, at an early design stage sketches of an over-all building area at  $\frac{1}{32}$ -inch scale can be dimensioned closely enough to relate accurately to budget figures.

Modular measure permits rapid delineation of detail at large scale keyed to plan drawings which are clear and accurate at small scale. General contractors have encouraged Silling to prepare working drawings at  $\frac{1}{16}$ -inch scale using the modular grid. They say they can estimate faster and more accurately with the whole plan on one sheet supplemented by a well-detailed materials palette. It should be noted, however, that the use of standard details is strictly avoided as restrictive of design.

Contributing to both stature and solvency of the Silling operation there are, of course, many factors which reside in the imagination and personalities of the architects. Their ability to assemble the practicalities of their West Virginia community into some advancement of architectural amenities, says Silling, is perhaps not to be measured in the absolute terms of "great architecture in being." But when the University of West Virginia was about to build a barn-like and hazardous structure for the test firing of native coals, it was architect Silling who probed resources of the Bureau of Mines and found an appropriation that could be transferred for use in construction of a full Bureau of Mines Experiment Station. And it was he who threaded through the intricacies of effecting the transaction. Again, when a local group wanted to build a needed hospital but could not raise sufficient funds, Silling demonstrated how a bond issue could be arranged, and the project went forward. It is that kind of imaginative service that has enabled this firm to gain for its profession and for its members a respected place in their community. "Expanded services?" asks Silling, "Is there any other kind?"

# Architectural Engineering

## School Components Move Forward

This column reported in July progress of the School Construction Systems Development, headquartered at Stanford University, whose objective is to develop an integrated system of standard school building components, offering architects greater design flexibility, and reducing school costs and construction time. Now the First California Commission on School Construction Systems, encompassing 13 local school districts in Northern and Southern California, and organized under California law, has issued contract documents and performance requirements on which building product manufacturers can base bids for up to 2,400,000 sq ft of schools. A high degree of coordination in the design of the components is desired, especially for environmental services. It is hoped that these components can be integrated at their design stage between architects and industry so that they are multi-functional: structure may form or contain air ducts and act as a light reflector; light fixtures may perform heating functions. Final submission of bids from manufacturer is set for October 31. By August, 1964, a mock-up structure is to be built. By September, 1966, the first school buildings are to be ready.

## Shell-Covered Schoolhouses

The potential of concrete thin shells in the school field lies not as a topping for the traditional, small "classroom boxes" but as a roof covering for large, flexible one-room schoolhouses. This opinion was expressed by architect William W. Caudill in a new report released by Caudill, Rowlett and Scott, based on Caudill's speech given at the World Conference on Shell Structures last year. He cited the firm's design for public school P-219 Q in New York City, with a dome-shaped shell to cover a space for 150 children, kindergarten through second grade, who will be taught by a five-member teaching team. "The shell seems to be a generic solution to team teaching," Caudill states. "This is a far cry from the one-teacher teaching box."

## Calculated Cooling

For some time now FHA has been concerned with the problem of air-conditioned houses having sufficient thermal insulation to keep operating costs within a reasonable range. Two years ago, as a result of FHA urging, the air-conditioning industry developed the All-Industry for Heat Gain Calculation (ARCHITECTURAL RECORD, February, 1961) to provide a uniform method for determining heat gain.

Now, the National Mineral Wool Insulation Association has developed a fast, accurate tool for calculating summer heat gain to assure compliance with the FHA's new Minimum Property Standard on insulation for centrally air-conditioned homes. The calculator (four tables and four graphs plus worksheets) comes in eight versions to cover design temperatures ranging from 90 to 105 F. It is available for \$2.50 from the National Mineral Wool Insulation Association, 1270 Sixth Avenue, New York 20, N. Y.

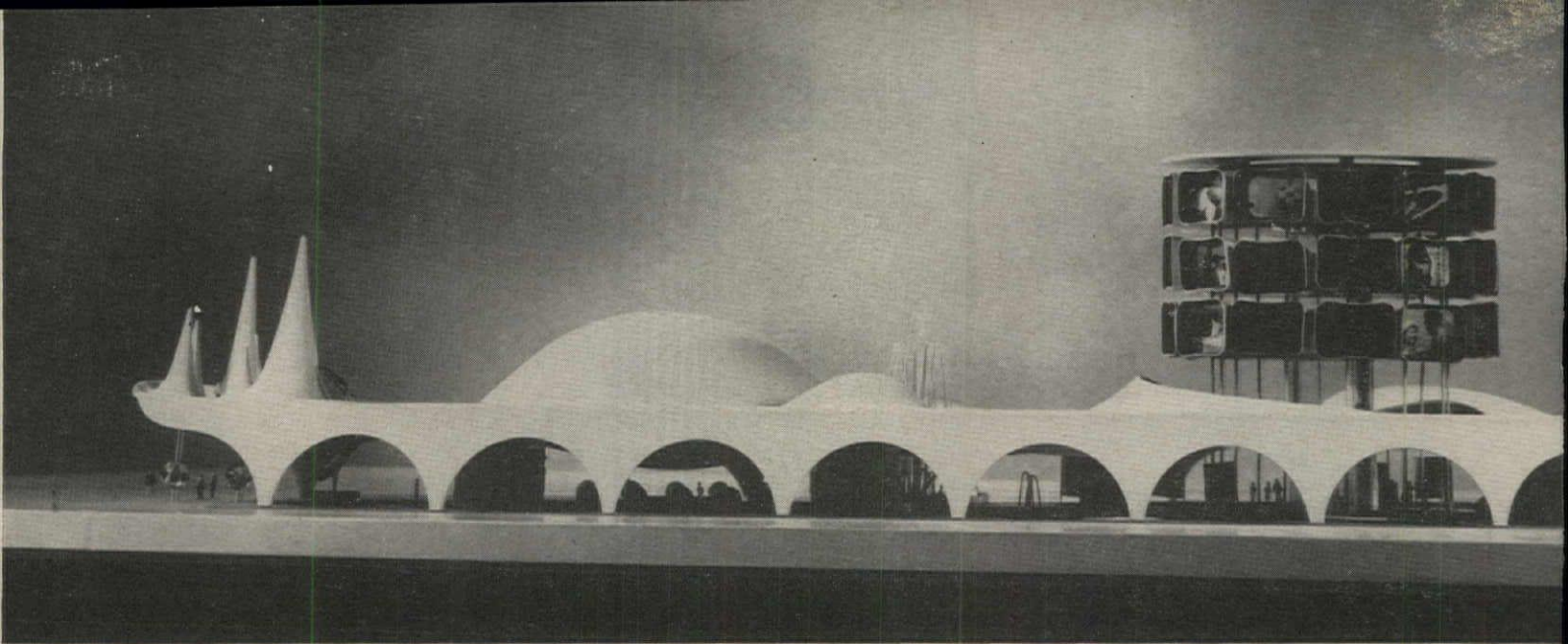
## New Ways of Sticking Together

Two different scientists have offered forecasts on how materials may be held together in the future. Speculating on possible applications of the laser beam, an intense ray of light several thousand times brighter than the sun, University of Cincinnati physicist Dr. Isay Balinkin forecasts a mortar-free structure of bricks fused together in a matter of seconds with the laser. Dr. Balinkin said many materials considered non-fusible today may be welded by the laser beam tomorrow, including bricks and stones.

Another scientist, Dr. Richard F. Blomquist of the Department of Agriculture's Forest Products Laboratory, a pioneer in the use of wood glues for house parts in the early thirties, predicts that adhesives much like those we use today to bond furniture, house parts and wings of supersonic aircrafts may soon be holding together auto engines, clothing and even broken bones.

## This Month's AE Section

*STRUCTURAL DESIGN OF A FREE-FORM SHELL*, page 222. *THE MERITS OF TWO MODEL TESTING TECHNIQUES*, page 225. *TIME-SAVER STANDARDS: Apartment House Mail Receptacles*, page 229. *BUILDING COMPONENTS: Flexible Wiring for Laboratories*, page 235. *Products*, page 237. *Literature*, page 238.



## STRUCTURAL DESIGN OF A FREE-FORM SHELL

Since the Eastman Kodak Pavilion has an arbitrary shape, no traditional analysis was possible. The engineer, Lev Zetlin, cross-checked the design by mathematics and model testing

Most thin shells have a geometrically defined shape—such as cylinders or hyperbolic paraboloids—for which mathematical design methods have been formulated. But what can a structural designer do when the shell has a free form, consisting of a wavy surface without a geometric twin? This was the problem facing engineer Lev Zetlin in the structural design of the Eastman Kodak Pavilion for the 1964-1965 New York World's Fair. To achieve maximum economy of reinforcing steel and concrete consistent with safety, Zetlin utilized three different mathematical approaches, combined with structural model analysis, to provide cross-checks for determining stress values and deflections.

The shape (shown in the model photos) could have been built of steel or wood trusses; of concrete using heavy beams and girders plus arches; or as a concrete thin shell. But even though the shell might cost more to design, Zetlin estimated that up to \$500,000 would be saved in construction cost.

For purposes of budget estimate, Zetlin determined concrete thicknesses and amount of steel reinforce-

ment through extrapolation and application of past experience in shell design to this particular shell.

The general mathematical differential equation for shells which describes any arbitrary surface has been impractical to solve, since it is a nonlinear equation requiring trial and error solution. In some thin shell design theories, for example that of cylindrical shells, certain terms of this general equation are dropped to make solution practical, but the solution will be an approximate one rather than exact. The problem with this approach is that one can't be sure how much error creeps in as certain terms are dropped.

While it is possible by this method to develop a mathematical solution for a surface that approximates the arbitrary surface (can be done for any continuous shape), the work involved might take as much as six months, and still the structure would not be completely solved because it would be based on elastic theory.

It is also possible with a shell such as is being discussed here to subdivide the shell into geometrically defined surfaces which are treatable mathematically. But even here the

mathematical work is exceedingly long and involved.

Taking all this into consideration, Lev Zetlin decided to utilize four separate approaches:

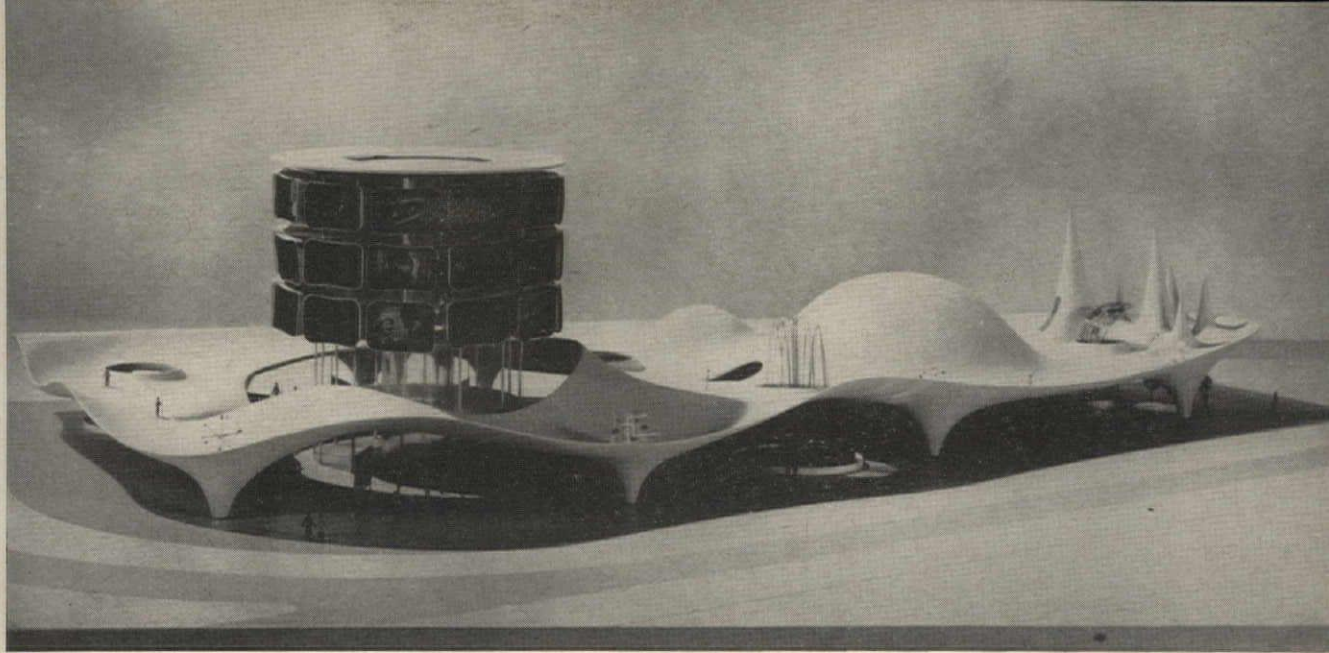
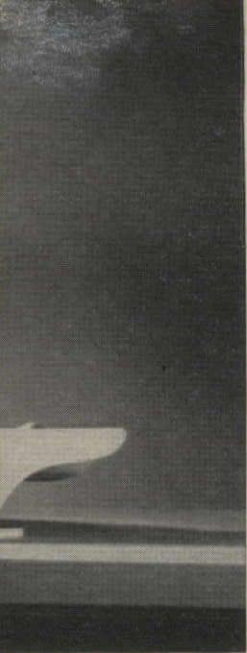
1. Elastic theory of shells
2. Yield line theory applied to shells similar to the limit design of flat plates
3. Beam and arch analysis
4. Structural model analysis

The elastic theory of shells was employed to check the stresses at design load of various critical sections.

Flat plate limit design which is called yield line theory is used to determine theoretically the crack pattern in the concrete plate at failure for different shapes and loads.

The yield line theory for flat plates which was developed by Johanssen of Denmark, and is accepted by code in the Scandinavian countries, has had little application in this country. Furthermore, to Zetlin's knowledge it has never before been adapted for the design of a thin shell.

If you assume that the yield line theory is only 40 per cent correct with a particular design load of  $W$ , and failure determined by the theory to occur at  $3W$ , then the structure can



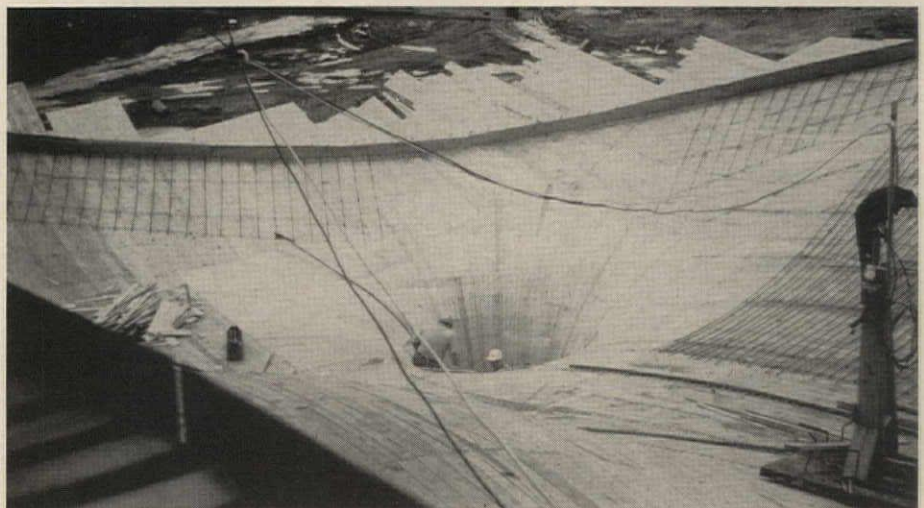
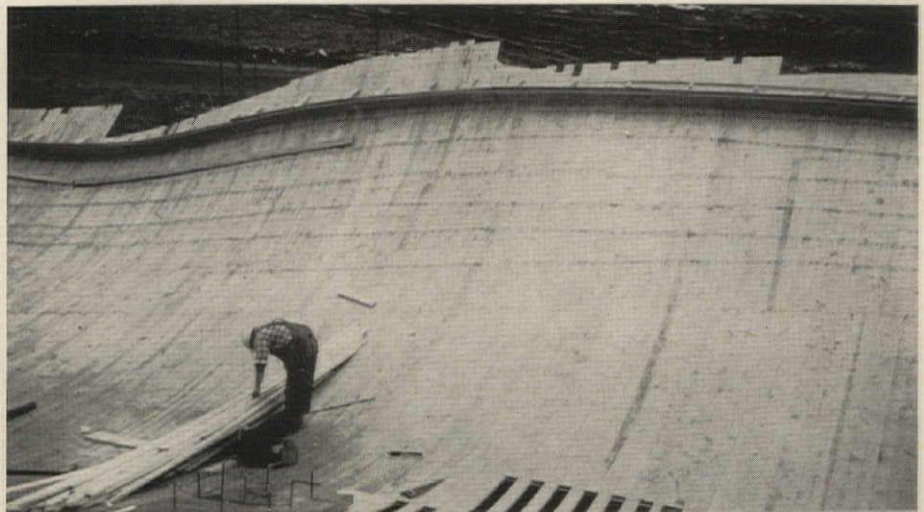
The Eastman Kodak Pavilion for the New York World's Fair is a concrete thin shell varying from 6 to 14 in. in thickness, except at the opening for the steel tower where it is 18 in. thick. The arbitrary curvature plus the unsymmetrical column supports called for a nonconventional structural design approach. The two "hills" on tops are basically wood structures: laminated beams covered by wood sheathing and a skin of concrete. Designer, Will Burtin; architects, Kahn & Jacobs; engineers, Lev Zetlin & Associates

be assumed to fail between 1.8  $W$  and 4.2  $W$ . Thus minimum factor of safety based on an assumed 40 per cent accuracy is 1.8.

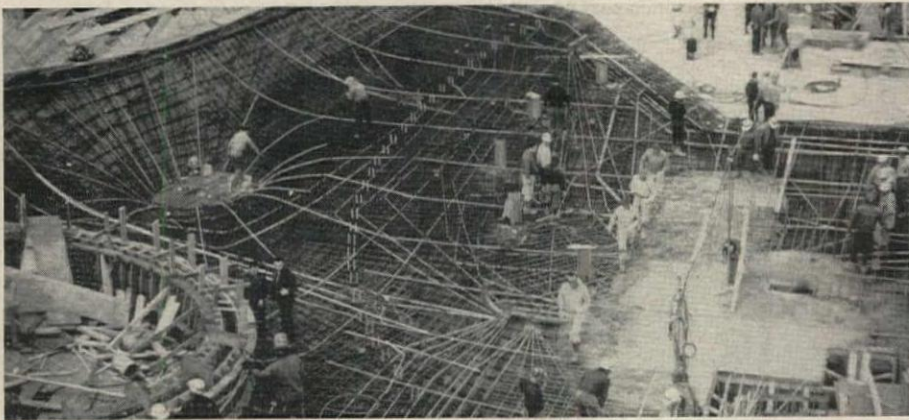
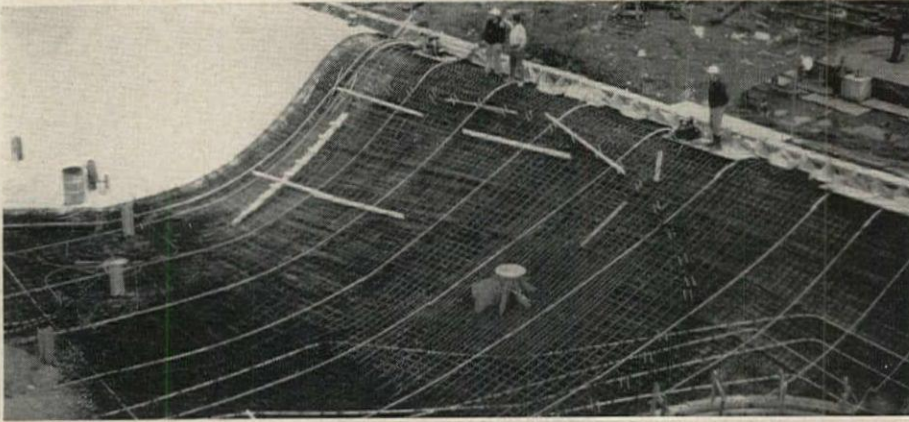
From the model analysis performed by Wiss, Janney & Associates (see "How Structural Models are Used in Practice," ARCHITECTURAL RECORD, April 1963, pages 206 to 209), stress values were plotted over the surface and stress contour lines drawn. Lev Zetlin reports that 90 per cent of the values for determining actual amount of reinforcement came from the model analysis.

What did Lev Zetlin and his associates learn from the job, and what sort of out-of-the-ordinary attention to detail did they put into the job? These were the factors listed by Lev Zetlin:

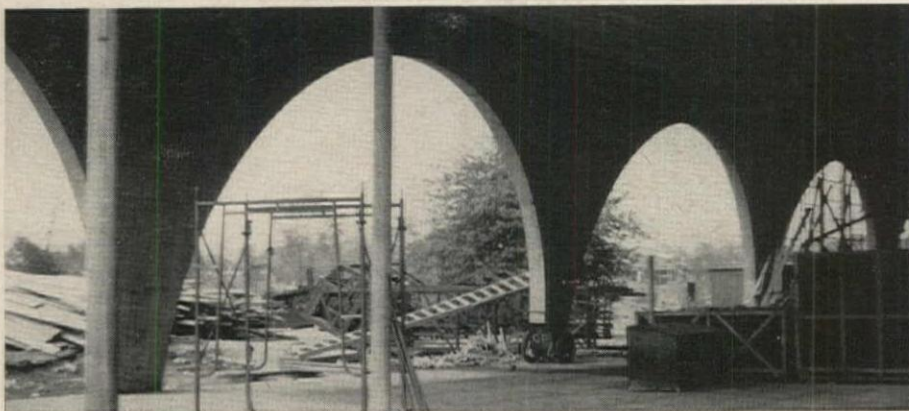
1. Whatever is conceived in the engineer's mind with the proper theory and judgment can be built in the field—both in terms of the possibility of building the structure and in terms of predicted structural behavior.
2. The structural field is wide open for innovation and new structural systems.



The free-form shape was molded by high-quality formwork to provide a smooth appearance underneath. The photo (top) shows one of the tilted edges; (bottom) is formwork for one of the huge circular columns which span over 100 ft in the long direction. A few steel columns are used near the tower opening to relieve the bending moments. As the formwork was decentered the engineers kept a close eye on deflection of the concrete by taking transit readings



Within the concrete thickness of the shell is a large amount of steel reinforcement and a maze of piping and conduits. Since there is considerable catenary action in the shell, the reinforcement has a tendency to want to straighten out. This was prevented by tying the upper and lower meshes together by means of welded or hooked reinforcing ties. The concrete was placed in four separate pieces, with shrinkage strips provided between them



One side of the shell is supported by thin, flat arches on fairly short spacing. The other side, however, is held up by giant-sized tapered columns which are 112 ft apart. One of the very important parts of the design analysis was to determine reactions of forces at these columns. Even though the shell surface was based on arbitrary shape, its various hills and valleys offered fairly good shell action in many areas

3. In a three-dimensional concrete structure, it takes 36 hours for the concrete to distribute the load; i.e., pick up all stresses and strains. When forms were first removed, deflection was only 70 per cent of that occurring after one and a half day's time.

4. Concrete can sag as much as 14 in. over a fairly large span without cracking.

5. Details are important, particularly in the attention to confinement of concrete at large openings, both in terms of stress concentrations and distortion effects. These could be progressive and affect deflections in other areas. This confinement was achieved by "stirrups and more stirrups."

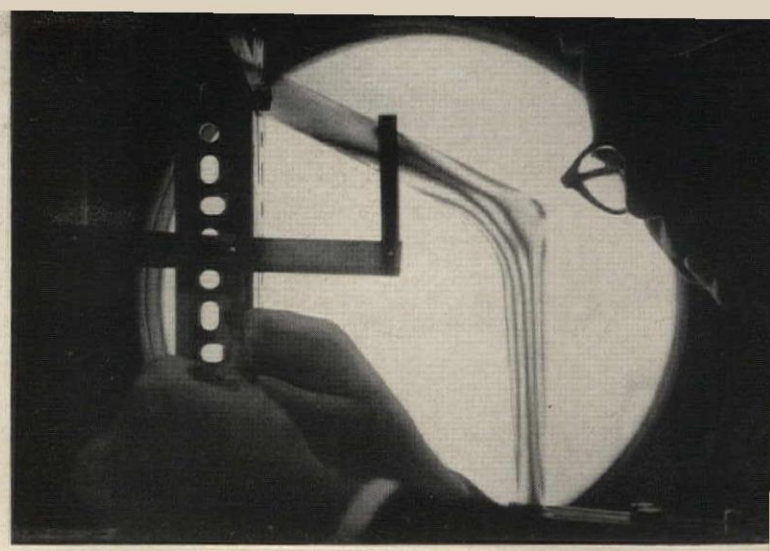
6. In a structure of this size (400 ft long and 220 ft wide) it is good practice to provide shrinkage strips. These are small strips left between pours of concrete, provided with lapped reinforcement. The shell was poured in four pieces. The three shrinkage strips were left open for 28 days and then filled in. Shrinkage during this curing period amounted to  $\frac{1}{4}$  in. in 100 ft. If the shrinkage strips had not been provided, cracks perforce would have had to develop to relieve the shrinkage stresses.

7. The A432 steel reinforcement was always kept to 60 per cent of the amount of that which would result in brittle failure. The reason for this is that in case of an unforeseen overloading that might occur, it would be better for failure to occur in the steel than the concrete. If steel fails first, the failure will be slow and give warning; if the concrete fails first, the structure will snap with a bang and fail almost immediately.

8. A comprehensive testing program was conducted on concrete mixes so that there would be correlation between the stresses taken from the model analysis and the strengths required by the concrete. Twenty-eight different mixes with varying ratios and proportions of aggregates were tested for: (1) tensile strength; (2) modulus of elasticity; (3) compressive strength. All of these were tested with variable slumps. Actually the slumps were changed during and within each of the four pours; e.g., a low slump was required on steep slopes.

9. If he had the same design to do all over again, Zetlin states that he wouldn't alter the design procedure.





Graduate architectural students at Princeton studied two model testing techniques during an eight-day seminar conducted by the authors: strain gage measurements (*left*) and photoelasticity (*right*). Strain gage measurements read on a meter when model is loaded (by vacuum) are converted to stress values. With photoelasticity, pattern on loaded plastic model can be translated into stress values

## THE MERITS OF TWO MODEL TESTING TECHNIQUES

One based on strain measurements, the other on a visual pattern of stresses provide a better understanding of structural behavior, serve as companion tools to mathematical analysis

By David P. Billington, Jack R. Janney and Robert Mark

*Structural model analysis is valuable both in engineering practice and in education. In practice it complements the traditional mathematical approach. In education it can make structural behavior more easily understood, and can give mathematical calculations more meaning as they relate to direct experience. Both aspects were demonstrated early this year at a seminar for graduate students in the School of Architecture at Princeton University. The full seminar, from which this article has been abstracted, will be published this fall.*

*The discussion of model testing of a number of actual structures during the seminar by Jack Janney has already been covered in an article in the April issue of ARCHITECTURAL RECORD, page 206*

It is well to recognize that all mathematical analyses are approximate: they are all based upon an idealization of a real structure and never the real structure itself. The use of mathematics depends upon some correlation with an actual physical model. The power of the mathematical "model" is that we can generalize and that each time we design a structure we do not need to build something prior to the construction of the prototype itself. Therefore, physical model analysis must be thought of as secondary in importance to mathematical model analysis as far as the structural engineer is concerned. The mathematical model is always to be preferred if it can be carried out in a reasonable length of time and if the idealization upon which it is based is reasonable.

There are, nevertheless, a number of difficulties associated with mathematical models and we shall list several of them here:

1. All structures have three dimensions and thus have stresses in three dimensions but the analyses for most of the structures that are built are based on a one-dimensional analysis; that is to say, one of the di-

mensions of the structure predominates over the other two, and hence a very much simplified mathematical analysis is possible.

2. All loading on structures is achieved by the movement of a force. For example, when the forms are removed from a concrete structure the structure moves and the dead load is applied. However the movements are so small in these cases that we can normally assume a static loading condition. In the case of moving live loads on bridges or crane girders, wind loads and seismic loads, it is really not precise to assume equivalent static loads; but, based on test results and on the observation of existing structures, we are able to convert these dynamic loads to reasonably equivalent static loads for simplicity of analysis.

3. No material behaves in a truly elastic fashion even under working loads, and yet most analyses assume elastic behavior. However, tests demonstrate that under normal working loads structural steel is elastic and even reinforced concrete can be considered approximately elastic as well.

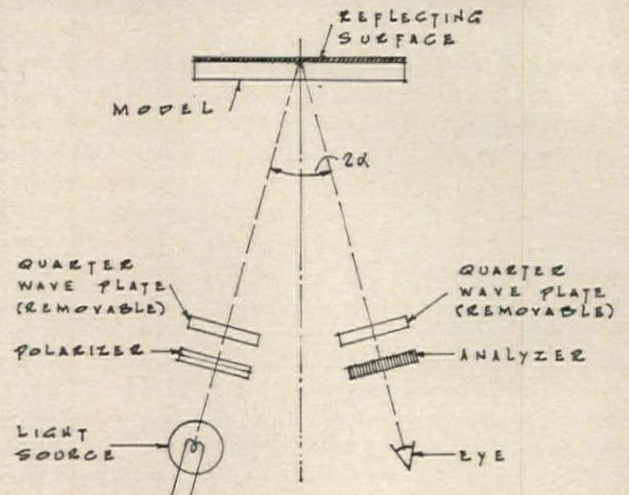
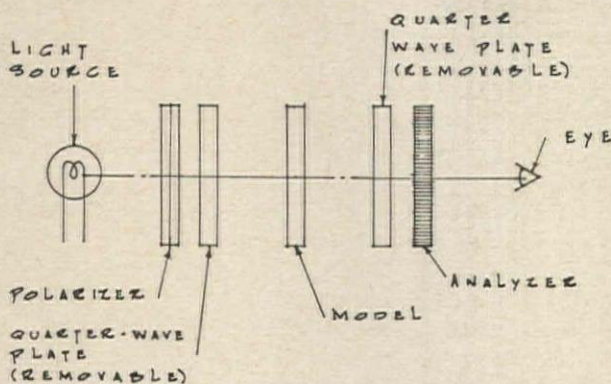
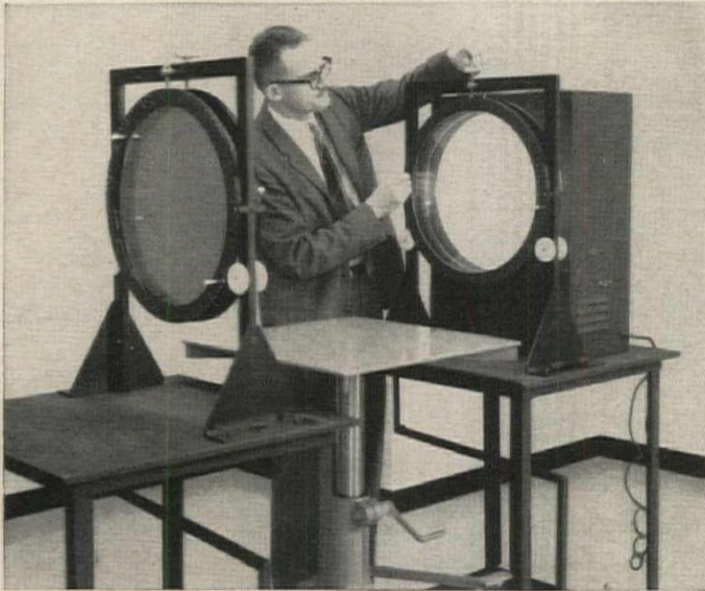
4. The deformations in most structural systems are so small that we

DAVID P. BILLINGTON is associate professor, Department of Civil Engineering, Princeton University. JACK R. JANNEY is partner, Wiss, Janney & Associates, Chicago. ROBERT MARK directs photoelasticity laboratories both in the Department of Civil Engineering, and the Plasma Physics Laboratory at Princeton

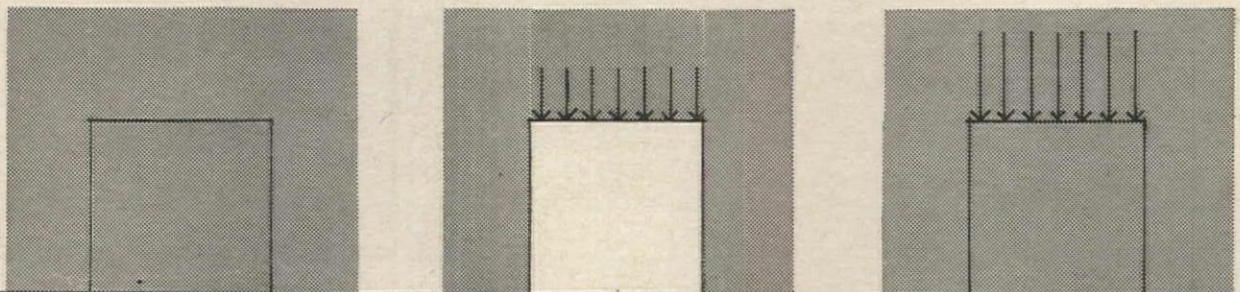
Elizabeth G. C. Menzies



Student is watching manometer as he adjusts vacuum loading of plastic flat plate model to 0.145 psi. Strain gage test value for bending moment at midpoint of one end of 30 by 30 by ¼-in. plate with fully fixed edges was only one-quarter of that given by standard formula



Transmission polariscope (left) is used mainly for single-plane models. Slices through stress-frozen models of plates and shells are also tested; lower photo (opposite page) shows type of pattern that will be seen. Reflecting polariscope (right) can be used to study stresses in three-dimensional structures such as thin shells. It is less accurate than the transmission type



These sketches illustrate in simplified form what happens when a block of plastic is viewed via the transmission polariscope. Unloaded it looks dark. Load is applied and it reaches a maximum brightness. Scientists' term for this condition is fringe order equals one-half ( $N = \frac{1}{2}$ ). Further load is added and the block reaches maximum darkness; fringe order equals one ( $N = 1$ )

can normally neglect their effect upon the geometry of the structure. However, such changes always do take place and in thin plates and shells they can be important.

5. Mathematical analyses based on elastic behavior cannot be used very easily to determine the true safety factor of the system because, near collapse, a structural system is behaving in many places plastically. However, it has been found that analyses which are based on elastic behavior for working loads do give structures which seem to behave satisfactorily at ultimate load with a reasonable safety factor.

Clearly one can reproduce any of the effects stated above in a physical model and determine whether the effects which are neglected in a normal mathematical analysis are important for any given system. Our discussions here are confined to analyses of structural systems under static loads based on elastic behavior for working load conditions. Thus, we are idealizing part of the problem just as the mathematical model analysis idealizes it. We do, however, gain the advantage of being able to observe stresses in three dimensions rather than one dimension, and we can see the effects of nonlinearity or changes in geometry under loading.

For a model analysis to have significance, it is necessary that the model results be convertible to anticipated results in a prototype. This means that there must be a similarity between the model and the prototype for which clearly defined relations exist. These relations are usually expressed by the principles of similitude of which three types must be satisfied.

First is *geometric similitude* which in theory means that each dimension of the prototype is scaled down by a constant factor to a corresponding dimension in the model. Often it is not possible to make all of these properties similar and we have, therefore, a distorted model.

Second is *material similitude* which usually implies a constant relationship between modulus of elasticity and Poisson's ratio.

Third is *loading similitude* which involves both the distribution and the magnitude of the applied loads. For uniformly distributed loads on the prototype we often provide discrete concentrated loads on the model because of convenience of

construction and ease in assuring the proper distribution. Where the loaded surface is relatively flat, as in a plate or shallow shell, distributed loading may be easily applied by vacuum. The magnitude of the loads is less important than the distribution for elastic models, since we assume a linear relationship between loads and strains or displacements. However, the load must be large enough so that the measurements obtained can be accurately read and yet small enough so that excessive model displacements do not occur.

#### Model Analysis with Strain Gages

Although we call this process "stress analysis," it is, in almost all cases, really an analysis of measured deformations. We find that direct measurements of stress are quite difficult and, therefore, we must resort to these measurements of movement from which we may derive stresses.

Electrical resistance strain gages are made up of small wires securely glued to the model. When the model is strained the wire is also strained thus changing its cross sectional area and hence its resistance. This change is read on an instrument calibrated in terms of strain.

In order to convert strain values to stress values the modulus of elasticity for the model material must be determined experimentally.

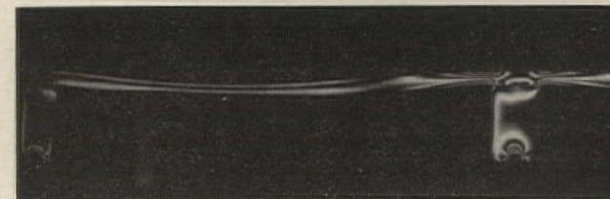
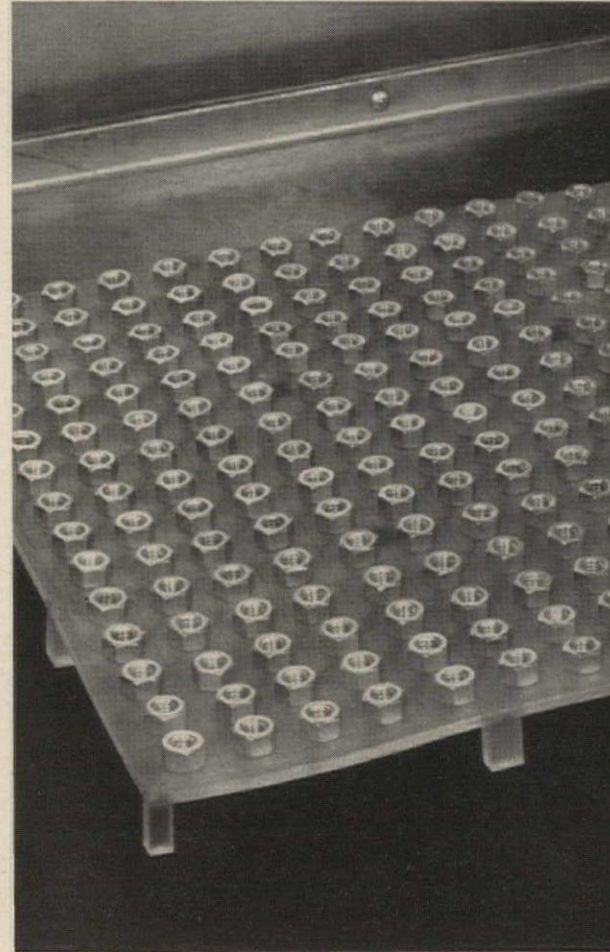
Strain gages may be applied to models in three different ways:

1. If the structure is in the form of a plate or shell, which may be subject to bending or axial load in any direction, a three-gage rosette must be used in order to obtain the values of the principal stresses as well as their direction.

2. If the element is in the form of a plate or shell and the direction of the principal stresses is known, two gages may be used which are oriented in the direction of known principal stresses.

3. If the element will be subjected primarily to bending or axial load, such as a beam or direct stress member in a truss, one gage may be used, applied in the direction of anticipated stress.

In the last case, the conversion from strain to stress is simply a matter of multiplying the strains by the modulus of elasticity. In case 2, where the direction of the principal stresses were known, the measured strains may be used to produce the



To study stresses in a three-by-three-bay flat plate model, the stress-freezing technique was employed. Steel nuts provided uniform load while model was heated to 300 F in a furnace and then cooled. When a slice taken from the model was examined through a transmission polariscope, the locked-in stresses showed up in the pattern shown at the bottom. Columns rested on ball bearings to permit rotation; were cemented by epoxy to plate at top

values of principal stresses by making use of the expression which includes Poisson's ratio as well as the modulus of elasticity.

**Model Analysis with Photoelasticity**

While considerable interest was generated in the thirties in the use of polarized light for photoelastic stress analysis, not much has been heard of this technique recently. When it was being used then by stress analysts, the elements studied were generally of small size, and often represented only a small segment of a structure. Now through the availability of new plastic materials and new photoelastic techniques, stresses of whole building structures can be studied.

Photoelasticity is the technique of measuring elastic model behavior from visual observations of light-interference patterns (darks and lights) caused by polarized light passing through a plastic model in a stressed condition. Photoelasticity can be used to analyze both single-plane models such as arches and trusses and multiplane models such as flat plates and thin shells. Its prime advantages are: (1) essentially, readings can be obtained at a point in a direction perpendicular to the viewing axis. This is in contrast to the strain gage reading which represents an average value for the length of the gage; (2) over-all distributions are observed from visual patterns on the model itself, instead of gage to gage readings of the strain-gage method.

There are two basic types of instruments used for photoelastic measurements: the transmission polariscope and the reflecting polariscope. The following description is concerned only with the use of the circular-transmission polariscope with monochromatic light (light of essentially a single frequency).

The photoelastic effect is illustrated by the following simplified example: an unloaded block of a clear material viewed in the polariscope would show an entire dark field. With the application of a force, the block will appear to lighten. As the force is increased, the block will again achieve maximum brightness and then darken until extinction is again obtained. Further increasing the load will cause the process to be repeated. The unloaded block is said to exhibit a zero order fringe ( $N = 0$ ). At maximum brightness the fringe or-

der was  $\frac{1}{2}$ ; when dark again, its fringe order was 1. As the load is increased it will then go through  $N = 1\frac{1}{2}$  (bright), 2 (dark),  $2\frac{1}{2}$  (light), 3 (dark) and so on. Thus the fringe order is determined by counting the extinctions as the model is loaded.

Almost all optically clear materials exhibit the photoelastic effect when viewed in the polariscope. However their fringe constants ( $f$ ) vary greatly. In general, the materials having lower values are more useful as long as they are not too easily deformed; i.e., modulus of elasticity is not too low. Acrylic plastic has a fringe constant ( $f$ ) of 800 lbs/fringe-in. and modulus of  $\frac{1}{2} \times 10^6$  psi. Epoxy plastic has a fringe constant of 80 and the same modulus as acrylic plastic.

When a loaded single-plane model is observed in the polariscope, patterns of light and darkness are seen across the model surface. These may be directly related to the distribution of stress in the model by applying the stress-optic law:

$$(\sigma_1 - \sigma_2) = Nf/t \text{ (psi)}$$

$\sigma_1$  = major principal stress

$\sigma_2$  = minor principal stress

$N$  = fringe order

$f$  = fringe constant (lb/fringe-in.)

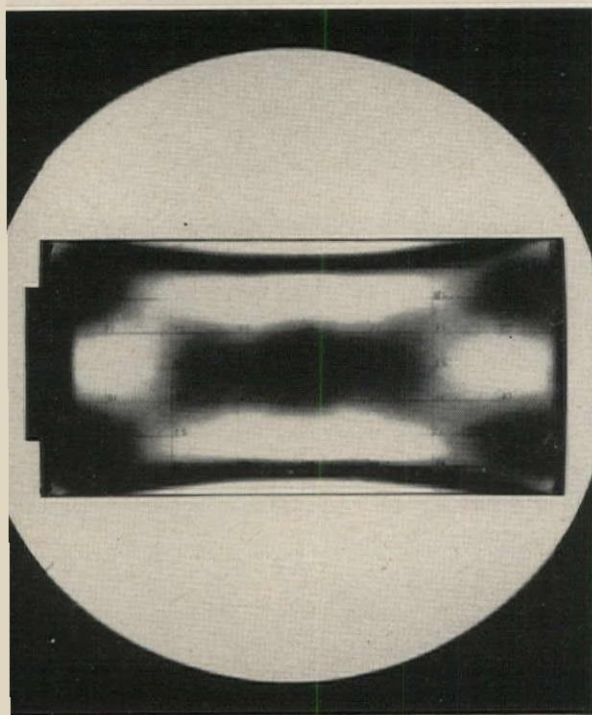
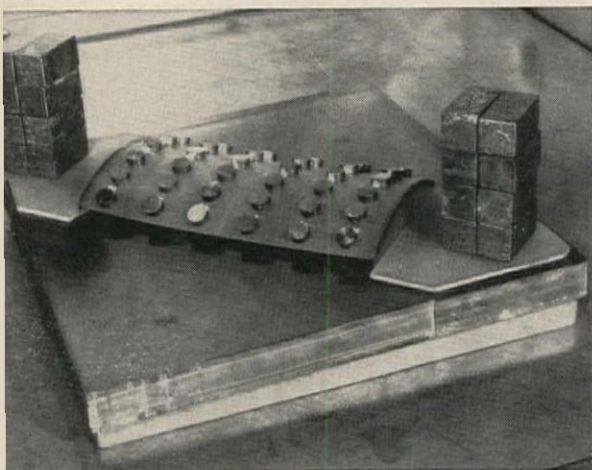
$t$  = model thickness (in.)

Note that the value obtained is a difference in principal stresses rather than the value of any one stress.

Fringes are distributed throughout a more complex model just as contours are distributed on a topographical map. The same general rules for reading the map apply to the model. The "minimum elevation" corresponds to zero order. A zero order fringe can always be identified as the fringe which appears black on the model when white light is used in the polariscope for illumination. All the higher order fringes appear colored in white light.

Although it is only possible to determine difference in stresses within the boundaries of a model directly, nonetheless it is possible to determine maximum principal stresses at an edge directly from photoelastic observation. Since shear along a free edge must be zero, principal stresses must be acting along the edge and normal to it. Hence, for an unloaded edge the principal stress perpendicular to the edge is zero. Therefore, the formula for maximum principal stress at an edge is:

$$\sigma_1 = Nf/t$$



Model of barrel shell also was tested by the stress-freezing method. Supported by edge diaphragms and loaded by cylindrical metal weights, the barrel was heated to lower modulus of the plastic and increase deformation. View of model through polariscope after cooling indicates differences in in-place stresses throughout the shell. Maximum stresses at the shell surfaces would be found by examining slices taken from the shell.

## APARTMENT HOUSE MAIL RECEPTACLES: 1

*Principal requirements of the Post Office Department from Section 155.6, Postal Manual*

Delivery of mail in apartment houses, family hotels, residential flats, and business flats in residential areas, containing three or more apartments having a common street entrance, is contingent on the installation and maintenance of United States Post Office approved mail receptacles, one for each apartment, including resident manager and janitor, unless the management has arranged for the mail to be delivered at the office or desk for distribution by its employes.

**Construction of Receptacles***Materials*

The receptacles must be manufactured of material of such strength and thickness as to provide reasonable safety to the mail deposited.

*Capacity*

Both horizontal- and vertical-type receptacles must be of sufficient capacity to receive long-letter mail 4½ in. in width and certain large and bulky magazines, unrolled as well as rolled, and must be so constructed and of such height or length and capacity that magazines 14½ in. in length and 3½ in. in diameter, if rolled, may be deposited and removed with facility.

*Individual Doors and Locks*

a. Each individual receptacle must be equipped with a full-length door through which the mail may be removed by the tenant. The doors of the receptacles must be secured by key locks or combination keyless locks. If key locks are installed, manufacturers must provide a sufficient number of key changes to prevent the opening of receptacles by the use of a key to any other receptacle in the same house or in the immediate locality. These locks must be securely fastened to the door. Each lock should be clearly numbered on the back so that if a key is lost, a duplicate may be ordered by number.

b. The dimensions of the clear opening of the door frame of each horizontal-type receptacle must be identical to the cross-sectional measurements of the receptacle itself.

*Master Doors and Locks*

a. Each group of front-loading

receptacles, must be equipped with a master door which, when open, makes the entire group of boxes accessible for the deposit of mail by the carrier. The master door should be machined to accommodate an inside Arrow lock furnished by the local postmaster for use so long as mail is delivered by letter carriers. Master doors for horizontal-type receptacles shall be hinged on the side only and shall be no wider than 30 in.

b. The master lock must be attached to the group of receptacles by the owner or builder of the apartment house, or by his direction, under the supervision of the postmaster's representative who will see that they are securely attached. The plate to which the master lock will be fastened should be riveted to the face of the box. A metal plate is not required between the Arrow lock and door of a horizontal-type installation with wood master doors.

*Slot*

In the face of each receptacle there must be provided a slot 2 in. in length and ⅛ in. wide for the deposit of carrier and special delivery notices.

*Backs of Front-Loading Receptacles*

These units must have solid backs.

*Numbers and Name Cards*

a. Mail receptacles must be satisfactorily numbered or lettered in numerical or alphabetical sequence from left to right so as to enable the carrier to expeditiously deliver the mail.

b. Each receptacle must be equipped with a clasp or holder to accommodate a name card for identifying the patron or patrons using that box. Preferably, this holder or clasp should be on the frame above each receptacle, but it may be located inside at the rear of the box where the patron's name will be easily visible to the carrier when the master door is open. The holder must be large enough to take a name card at least ¾ by 2½ in. in vertical-type installations; and in horizontal-type installations, as large a space on the unit will permit.

**Installation***Arrangement and Location*

a. Receptacles in apartment houses must be located at points reasonably near the entrance in vestibules, halls, or lobbies, adequately lighted, so as to afford the best protection to the mail and enable carriers to read addresses on mail and names on boxes easily and without interference from swinging or opening doors. In vertical-type installations, the receptacles must be placed so that the center of the barrel of the master lock of the upper tier will be no more than 5½ ft from the floor, and the center of the barrel of the master lock of the lower tier will be no less than 30 in. from the floor.

In horizontal-type installations, the distance from the finished floor to the tenant locks on the top tier of boxes must be no more than 66 in.; and to the bottom of the lowest tier of boxes, no less than 30 in. Where a group of vertical receptacles tilts away from the wall to allow deposit of mail through the tops of the boxes, the distance from the finished floor to the center of the barrel of the master lock of the upper tier shall be no more than 56 in.

b. No more than two tiers of vertical-loaded boxes may be installed. They should be arranged so as to permit the installation of the largest number of boxes with the smallest number of master locks. The minimum number of boxes to which one master lock may be attached is three.

c. Vertical-type receptacles must be arranged in groups, as many in each group as is consistent with safety, but never less than eight in a group, except where the number of apartments is less than eight or where the number of boxes cannot be evenly divided into multiples of eight or where telephone units are installed with the receptacles.

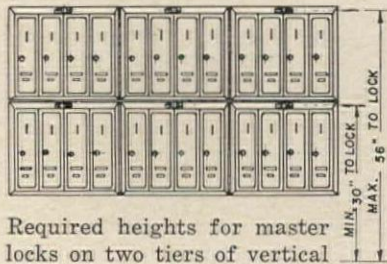
*Horizontal-Type Receptacles*

Access to rear loading installations must be provided by a door fitted with an inside Arrow lock opening into a room having at least 3 ft of unobstructed work space from the rear of the units

## APARTMENT HOUSE MAIL RECEPTACLES: 2

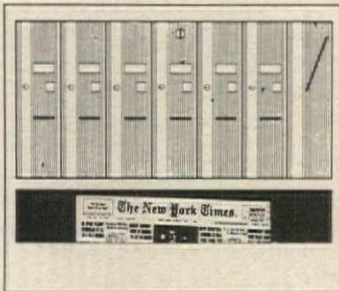
*Principal requirements of the Post Office Department from Section 155.6, Postal Manual*

*Bommer Spring Hinge Co., Inc.*



Required heights for master locks on two tiers of vertical boxes

*Dura Steel Products Co.*



Bottom receptacle holds bulky mail

*Auth Electric Company, Inc.*

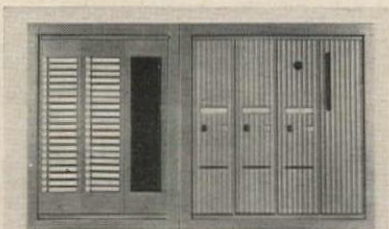


Boxes tip out to receive mail



Call buttons are at left of three mail receptacles

*Jensen Industries*



Directory combined with receptacles

*Cutler Mail Chute Co.*



Horizontal receptacles, keyed lock, (left); combination lock, (right)

*Corbin Wood Products Div.*

a complete directory of all persons receiving mail must be maintained. Where an apartment house is divided into units with separate entrances and 25 or more receptacles are installed to the unit, a separate directory must be provided for each unit. In addition, where mail is not generally addressed to specific units, a directory must be kept at the main unit of the building, listing all persons receiving mail in the various units.

The directory must be of legible type, in a suitable frame for protection purposes, and attached to the wall immediately above or to the side of the mail receptacles where it can be easily read.

### Manufacturers and Distributors

Manufacturers and distributors of one apartment house mail receptacles approved by the Post Office Department are:

#### *Vertical Type*

1. Accessories Manufacturers, Ltd., 595 St. Remi St., Montreal 30, Canada
2. Auth Electric Co., Inc., 34-20 45th St., Long Island City 1, N. Y.
3. Bommer Spring Hinge Co., Inc., Landrum, S. C.
4. Dura Steel Products Co., 1774 E. 21st St., Los Angeles 58, Calif.
5. S. H. Couch Co., Inc., Boston 71, Mass.
6. Florence Manufacturing Co., Inc., 2406 S. LaSalle St., Chicago 16, Ill.
7. Jensen Industries, 1946 E. 46th St., Los Angeles 58, Calif.
8. Perma-Bilt Steel Products Co., 8324 Graham Ave., Los Angeles 1, Calif.

#### *Horizontal Type*

1. American Device Mfg. Co., Steeleville, Ill.
2. The American Hardware Corp., Corbin Wood Products Division, New Britain, Conn.
3. Cutler Mail Chute Co., 76 Anderson Ave., Rochester 7, N. Y.
4. Florence Manufacturing Co., Inc., 2406 South LaSalle St., Chicago 16, Ill.

to the wall. The room must be adequately ventilated and lighted. The rear of the unit must have a screen or cover of plywood or other suitable material to prevent the removal of mail from adjacent boxes and to prevent mail from falling out the back. This cover must be securely fastened and easily opened by the carrier.

#### *Installation With Telephone Units*

a. Where necessary or desirable to install mail receptacles in conjunction with a telephone unit of a standard size, the vertical-type receptacles may be placed in two tiers, or they may be installed in groups or batteries of less than eight if required for the proper arrangement of the groups in the two tiers. This does not apply where the telephone unit is installed independently of mail receptacles. Although there is no


objection to combining these two services, the mail receptacles must be separated from the telephone or electrical unit. Electric push buttons may be placed in the frame of the installation, connecting with wires outside the mail receptacles, provided the pushbuttons can be removed from the outside and the wire connection with such pushbuttons can be repaired without removal of the receptacles.

b. Telephone units combined with mail receptacle units must be constructed so that access to the telephone units is not dependent on entering the mail receptacle, and the latter must not be accessible when the telephone unit is opened.

#### **Directories**

In all apartment houses where there are 25 or more receptacles,

TOTAL  
COST



**ONLY  
THIS  
MUCH**

**So little of the total building cost  
goes for weatherproofing sealant**

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*...is an air distribution system*

*...is a flush lighting system*

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*...is an acoustical finished ceiling*

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## Mahonaire\* ceiling system

*Economy of materials and installation are added bonus benefits to the superior conditioned air handling characteristics of Mahonaire ceilings.*

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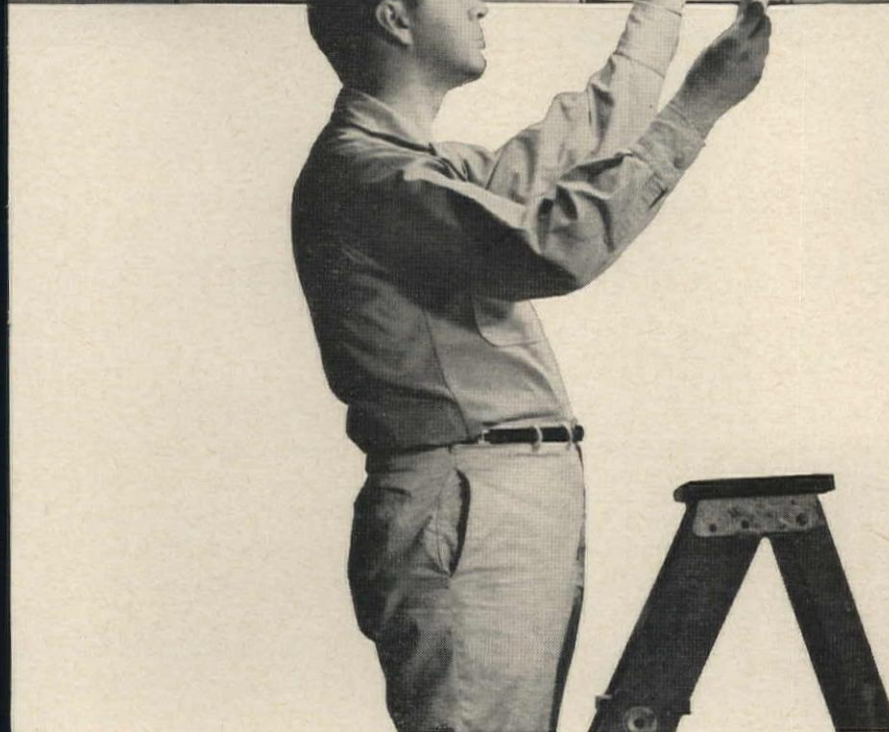
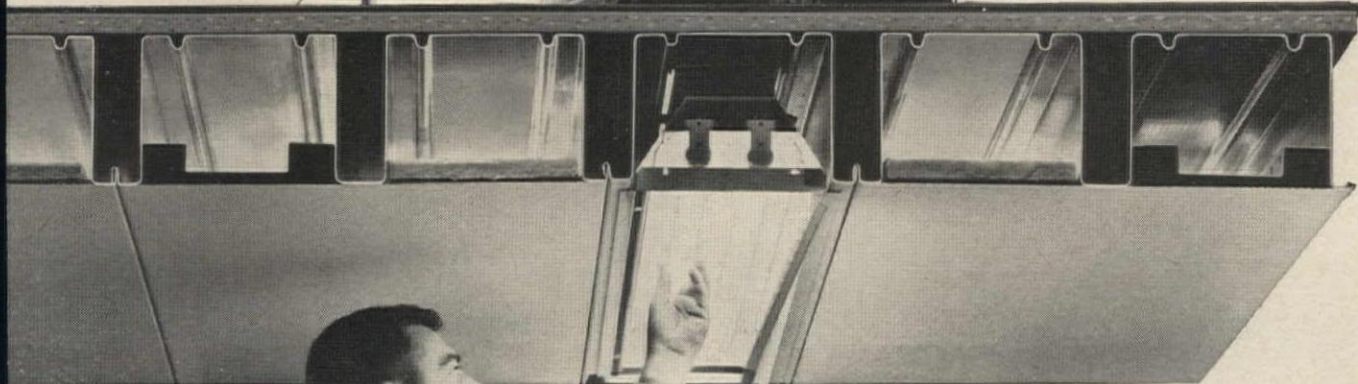


Hardin Jefferson High School / Sour Lake, Texas



Wyatt C. Hedrick & Associates, Architects & Engineers of Houston, Texas designed the new Hardin Jefferson High School in Sour Lake, Texas. School board requirements called for a 90,000 square foot building . . . built and basically equipped and air conditioned throughout (except for the gym and two shops) . . . for \$10.00 per square foot.

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the cost specification but also allowed the inclusion of extra "deluxe" items such as electric drinking fountains, a general lighting system over 100 F/C, structural glazed tile, face brick, etc.

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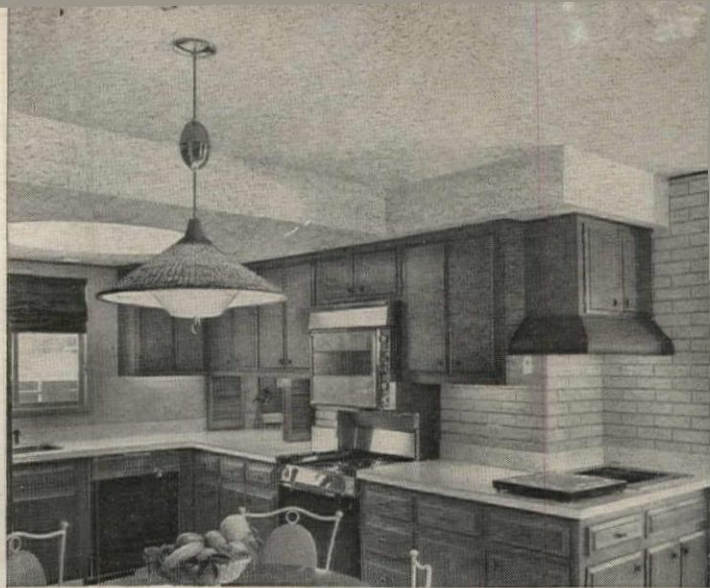
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*Home of Living Light, Denver, Colorado. Architect: Edmund J. Schrang, AIA, Milwaukee. Associate Architect: Oluf N. Nielsen, AIA, Denver. Builder: W. L. Herder & Associates, Denver.*

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New, lighter building materials, open room planning, and increased use of appliances virtually demand acoustical treatment in today's fine homes. More than ever, discriminating home owners appreciate the unique comfort of sound conditioning.

Until recently, residential acoustical ceilings were limited to "bevel edge" tile which, when installed, produced a segmented surface pattern. But new Armstrong Fashiontone, designed especially for today's better homes, combines superior acoustical properties with elegant, monolithic ceiling design. The square-edged tiles fit together snugly. You can scarcely see a seam.

And Fashiontone's deep fissures form a handsome, uninterrupted surface. In addition, because of its mineral-fiber composition, Fashiontone is officially rated "Class A—Incombustible," offering the protection of a fire-retardant material. And it's ideal for high-humidity areas of the home.

For data and a free sample of Fashiontone, write on your letterhead to Armstrong, 3909 Rock Street, Lancaster, Pennsylvania.

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## DEVELOPMENT OF AN ELECTRICAL RACEWAY FOR LABORATORY APPLICATION

By B. F. Winckowski

Development of a new, modular electrical raceway, with multiple outlets for a variety of electric current services, grew out of a need imposed by the great variety of electrical services now required for the normal functioning of laboratories engaged in applied and fundamental research.

Some of the electrical services which are usually provided in various types of laboratories are as follows:

1. Alternating Current
  - a. 120 and 208 volts, single and three phase, 60 cycles
  - b. 120 and 240 or 115 and 230 volts, single phase, 60 cycles
  - c. 460 volts, three phase, 60 cycles
  - d. 400 cycles
2. Direct Current
  - a. 120 and 240 volts
  - b. 0-240 volts

B. F. WINCKOWSKI is chief of the electrical division of Voorhees Walker Smith Smith & Haines, New York, N. Y.

3. Standard Frequency
  - a. Time pulses
  - b. 60 cycles to 1 megacycle in fixed increments
4. Miscellaneous
  - a. Ground
  - b. Fixed laboratory interconnecting facilities

An evaluation of the various existing techniques for providing designated electrical facilities in work areas indicated that other methods should be considered. The large number of outlets and raceways required made a workable installation difficult to achieve. Since the outlets usually were of capacities that can be accommodated by standard boxes and cover plates, the idea of developing an appropriate raceway to accommodate all outlets was conceived.

Because of the number of electrical services required, it was determined that the new raceway should have the following characteristics:

*Safety.* It should comply with national, state and local electrical codes and afford effective equipment grounding.

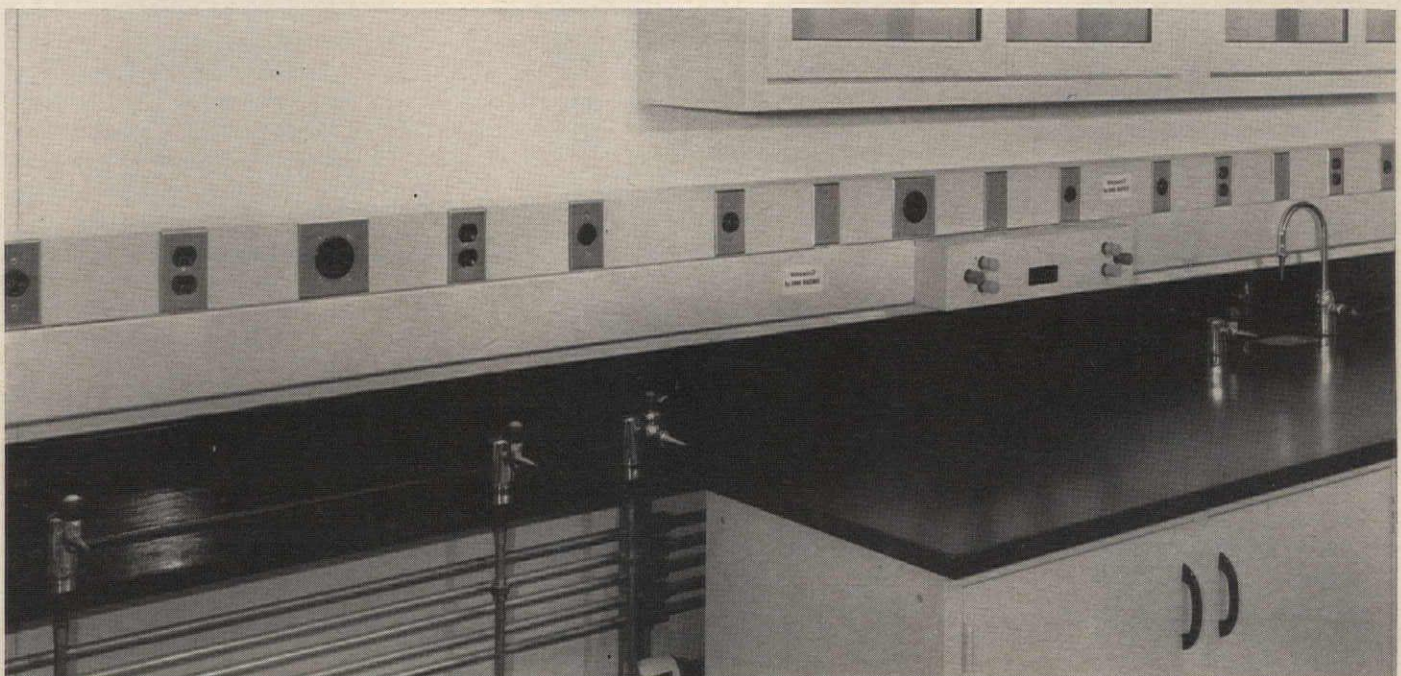
*Adequate capacity.* It should be of sufficient size to accommodate a number of conductors with proper allowance for bending of conductors required at termination of wiring devices, receptacles, binding posts, connectors, circuit breakers, etc.

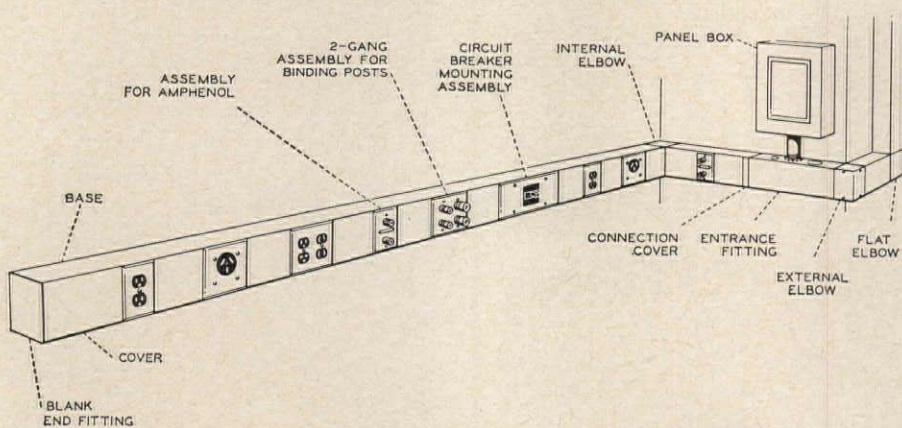
*Adaptability.* It should permit termination with standard distribution facilities such as panelboards, junction boxes and conduits.

*Flexibility.* It should be arranged to permit changes or addition of services with a minimum of effort, time and disturbance of laboratory work.

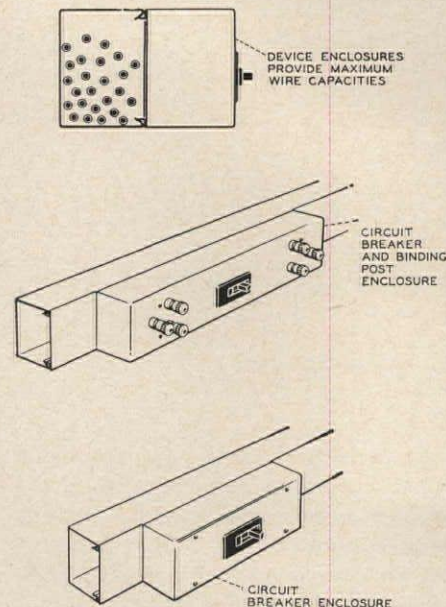
*Magnetic shielding.* It should be constructed to minimize low frequency electrical interferences.

*Economy.* It should be easily installed and permit the acceptance of standard and readily available wir-





Components of the laboratory raceway consist of 4-ft sections of channel housing on the face of which various standard electrical assemblies can be affixed at any desired spacing. Section (above right) shows multiple conductors running along the base channel to which an enclosure for devices too large to be recessed into the channel can be affixed. Circuit breaker enclosures (right) represent this type of facility



ing devices and related cover plates. *Attractive appearance.* It should be a simple clean functional design in keeping with the trend of modern laboratory installations.

Thus, it was determined that the new raceway would be made of 0.060 steel. It would be of sufficient face size to accommodate standard wiring devices with cover plates and of sufficient depth to permit multiple wiring to pass in back of the devices. It should also be suitable for use as a raceway without wiring devices.

Cross-sectional size of the raceway was initially established as  $4\frac{1}{2}$  by  $3\frac{3}{4}$  in., determined by the height of standard device cover plates and the depth required to leave sufficient space within the raceway after standard wiring devices are installed. The length of the raceway module was established as 4 ft, which happened to be a modular laboratory dimension as well as a convenient length for handling. Cover for the raceway had to be provided in lengths to accommodate selected devices, and was originally arranged for fastening to the base with screws. The creation of the sectional elements also led to development of couplings for joining adjacent sections, end closures, connection covers and terminating units for admitting leads from power distribution facilities. Since grounding continuity was an important consideration, it was determined that the interior and all joining surfaces would be galvanized.

All a-c wiring circuits generate external magnetic fields and create

low frequency electrical interference. Where highly sensitive instruments are to be used for careful electrical measurements in the laboratory, the effect of the low frequency interference must be minimized, and the raceway assembly was designed with grounded metal enclosure for that purpose.

Subsequent development of the raceway led to a change from  $4\frac{1}{2}$  to  $4\frac{3}{4}$  in. height to provide some margin for standard device plates thereby improving the appearance. Width of the raceway was reduced from 3 to  $3\frac{9}{16}$  in. coordinating it with other types of services in the laboratory. Further, in concert with The Wiremold Company, Hartford, Connecticut, a snap-in cover was developed which eliminated the screws previously used, the raceway base was modified to accept a snap-in cover and the manner of fastening wiring devices was redesigned. Thus, standard outlets and plates could be used in any arrangement desired, outlets could be changed at will without major modifications, parallel runs could be made to accommodate still more outlets and devices, or conductors alone could be simply carried from one place to another.

But in spite of the versatility provided for accommodating common standard wiring devices, physical impediments appeared when it was decided to incorporate other laboratory control facilities in the raceway. For example, the attempt to employ circuit breakers to control certain outlets in the raceway could not be

accomplished within the raceway itself because the circuit breaker depth was excessive. Therefore, an enclosure to contain the circuit breaker was made for mounting on the front of the raceway, replacing its own length of standard cover when used. Enclosure height matches the raceway height while its depth and length accommodate the desired control devices.

Development of the control device enclosure for mounting on the front of the raceway led to the consideration of employing this technique for many other purposes such as ganged assemblies of particular outlets, switching functions with indicating lights and meter indications, and many other functions that can be installed and removed at will while the basic system arrangement remains unchanged.

Effective utilization of a laboratory is influenced to a significant degree by ready access to service facilities such as air, water, gas, vacuum, steam and electricity. Development of a facility that can accommodate initial requirements and anticipate operational or service modifications without major building and service disruption is a prime consideration, as is also the concept of modular service arrangements integrating all types of services.

Although the raceway was initially designed as a surface unit, it can also be flush mounted. When properly applied, it can accommodate a great variety of electrical requirements in laboratories and elsewhere as well.

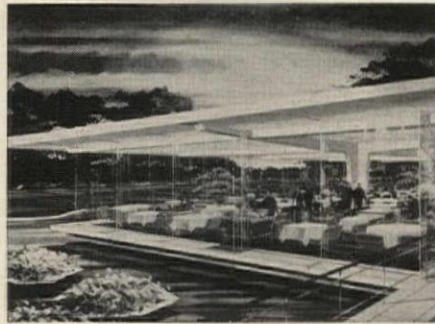
For more information circle selected item numbers on Reader Service Inquiry Card, pages 251-252

## SUSPENDED GLASS CURTAIN-WALL SYSTEM ELIMINATES FRAMES

Suspended glazing, a new glass framing system developed by a German engineer, is now available in this country. F. H. Sparks Company, U. S. licensee, supplies the complete assembly.

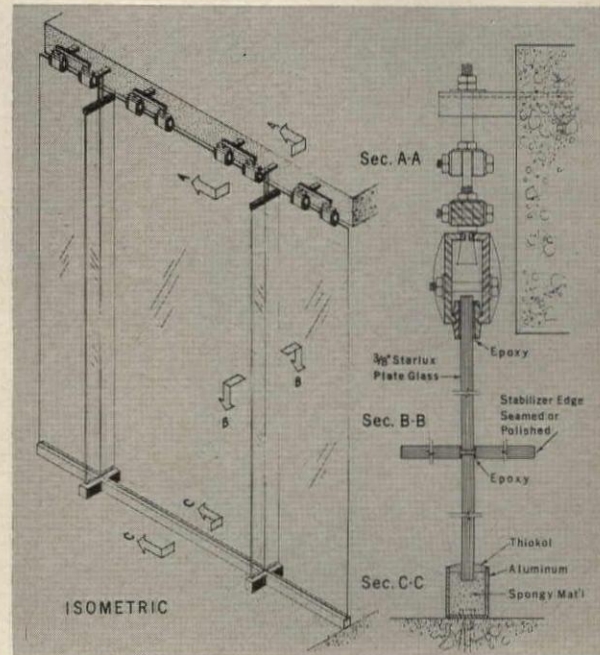
In suspended glazing, as its name implies, huge expanses of glass are hung from concealed metal clamps. The maximum width of glass varies according to wind loads. Epoxy cement seals adjoining lights, and a pair of vertical glass stabilizers, also suspended, hold the wall rigid against wind load. Caulking will keep out moisture along the floor line.

The licensee points out that there is a safety factor not present in regular glazing, in which glass supports most of its own weight. When glass breaks under the new system, the glass above remains in place.



The first U. S. application of this system will be at the Festival of Gas Pavilion at the 1964 World's Fair in New York. The Pavilion features 8½ by 10 ft lights of American-Saint Gobain *Starlux* heavy plate glass. F. H. Sparks Company, 49 W. 45th St., New York, N.Y.

CIRCLE 300 ON INQUIRY CARD



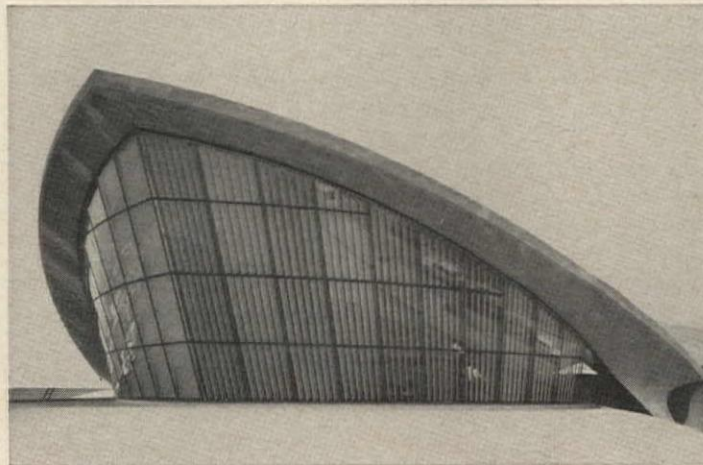
## PERFORATED VERTICAL BLINDS COME IN FOUR PATTERNS

Du Pont has introduced a perforated vertical blind of *Triglas*, a vinyl-coated, glass-based fabric, which affords an open, airy feeling but shuts out the sun's glare.

The blind was originally specified for installation in the new TWA terminal at Idlewild by Eero Saarinen and Associates.

It is now available in gray and white in four different patterns. The snowflake-type Hurley pattern is shown (far right). E. I. Du Pont De Nemours & Co., Wilmington, Del.

CIRCLE 301 ON INQUIRY CARD

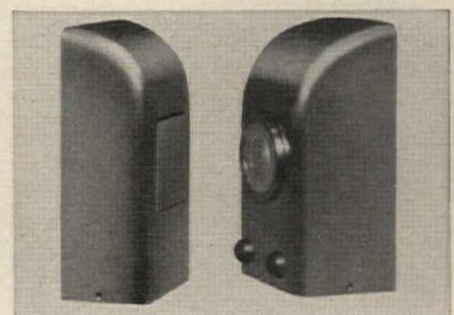


## MAGNETIC FIRE DOOR CONTROLLER

A new electro-magnetic hold-open device for fire and safety doors that utilizes remote alarm systems has been developed by Yale & Towne. Used in conjunction with any Underwriters' approved smoke, gas and fire detector and an automatic door closer, the Silent Sentry allows

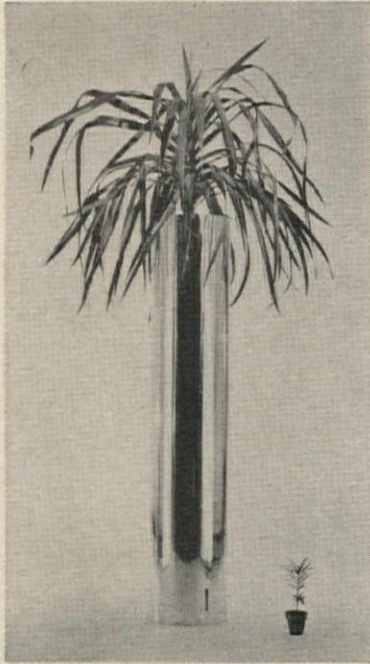
doors to close when the sensor detects an abnormal rise in temperature, smoke, carbon monoxide or other combustion by-products. Yale & Towne, Chrysler Building, New York 17, N.Y.

CIRCLE 302 ON INQUIRY CARD  
more products on page 262



# Office Literature

For more information circle selected item numbers on Reader Service Inquiry Card, pages 251-252



## PLANTERS

Photos and descriptions of floor, desk and wall planters, in a variety of woods and metal finishes, are presented in a 28-page catalog. An insert lists contract-dealer costs and list prices. *Habitat Inc., 363 Third Ave., New York 10, N. Y.*

CIRCLE 400 ON INQUIRY CARD

## SOUND CONTROL

How sound is measured, analyzed and controlled scientifically at the York Sound and Vibration Laboratory, especially as it relates to air-conditioning equipment, is explained in an illustrated, 18-page booklet. *York Corp., York, Pa.\**

CIRCLE 401 ON INQUIRY CARD

## CLOSURE STRIP

"The Closure Strip Guide," a performance analysis of commercially available closure strips for sealing corrugated roofing and siding, has been issued as the result of a two-year study of materials and techniques. Methods of identification of various rubbers and plastics and engineering data on tests and performances are included. *Building Rubber Division, Asphalt Corporation of America, California & Daniel Streets, Danville, Ill.\**

CIRCLE 402 ON INQUIRY CARD

## TIMBER DECKING

The description of three types of heavy timber decking is accompanied by tables of allowable loads and suggested specifications in a twelve-page brochure. *Timber Structures, Inc., P. O. Box 3782, Portland 8, Ore.\**

CIRCLE 403 ON INQUIRY CARD

## LIGHTING FIXTURES

A new line of recessed and surface square lighting fixtures is illustrated in folder. Estimator charts are included. *Kurt Versen Co., Englewood, N.J.\**

CIRCLE 404 ON INQUIRY CARD

## INDUSTRIAL P.A. SYSTEMS

Amplifiers and sound systems for industrial applications are fully described in a 20-page catalog. Included are sections on evaluating amplifiers and how to design and use a commercial sound system. *Harman-Kardon, Inc., 55 Ames Court, Plainview, L.I., N.Y.*

CIRCLE 405 ON INQUIRY CARD

## TRANSLUCENT PANELS

Information on new "Seaporlucent" translucent fiber-glass wall panels is contained in a technically complete brochure. *Architectural Division, Caloric Corp., Topton, Pa.\**

CIRCLE 406 ON INQUIRY CARD

## STEEL TUBING

Produced as a design guide for architects and engineers in the building field, a four-page brochure on cold-formed square and rectangular structural steel tubing includes seven tables incorporating data on design, tolerances, chemical composition and mechanical properties. *Welded Tube Co. of America, 2001 S. Water Street, Philadelphia 48, Pa.*

CIRCLE 407 ON INQUIRY CARD

## MOVABLE WALLS

A complete line of movable walls and a new system of movable interior partitions are described and illustrated in a 28-page catalog. *The Mills Company, 975 Wayside Road, Cleveland 10, Ohio.*

CIRCLE 408 ON INQUIRY CARD

## BAR SUPPORT STANDARDS

"Recommended Practice for Placing Bar Supports, Specifications and Nomenclature," prepared by the Concrete Reinforcing Steel Institute, presents revised standards intended to meet the new American Concrete Institute Building Code tolerances on proper bar location. *Concrete Reinforcing Steel Institute, 228 No. LaSalle St., Chicago 1, Ill.*

CIRCLE 409 ON INQUIRY CARD

## FLOOR TILE

Close-ups of 135 different tile designs plus suggestions for installations are available in a pocket-size color folder. *B. F. Goodrich, 200 Second Avenue, New York 17, N.Y.\**

CIRCLE 410 ON INQUIRY CARD

## RESIDENTIAL LOCKSETS

A line of residential locksets with a full range of decorative trims and accessory parts is illustrated in an eight-page, full-color catalog. Included are a lockset that glows in the dark and electric door openers. *Security Hardware Mfg. Co., Inc., 1515 Hart Pl., Brooklyn 24, N.Y.*

CIRCLE 411 ON INQUIRY CARD

## EXPANSION DIVIDING STRIPS

A technical bulletin on a complete line of expansion dividing strips, featuring neoprene and plastic cores, contains photographs and installation details, as well as suggested usages. *Manhattan Terazzo Brass Strip Co., Inc., Dept. E, Willard Rd., Norwalk, Conn.*

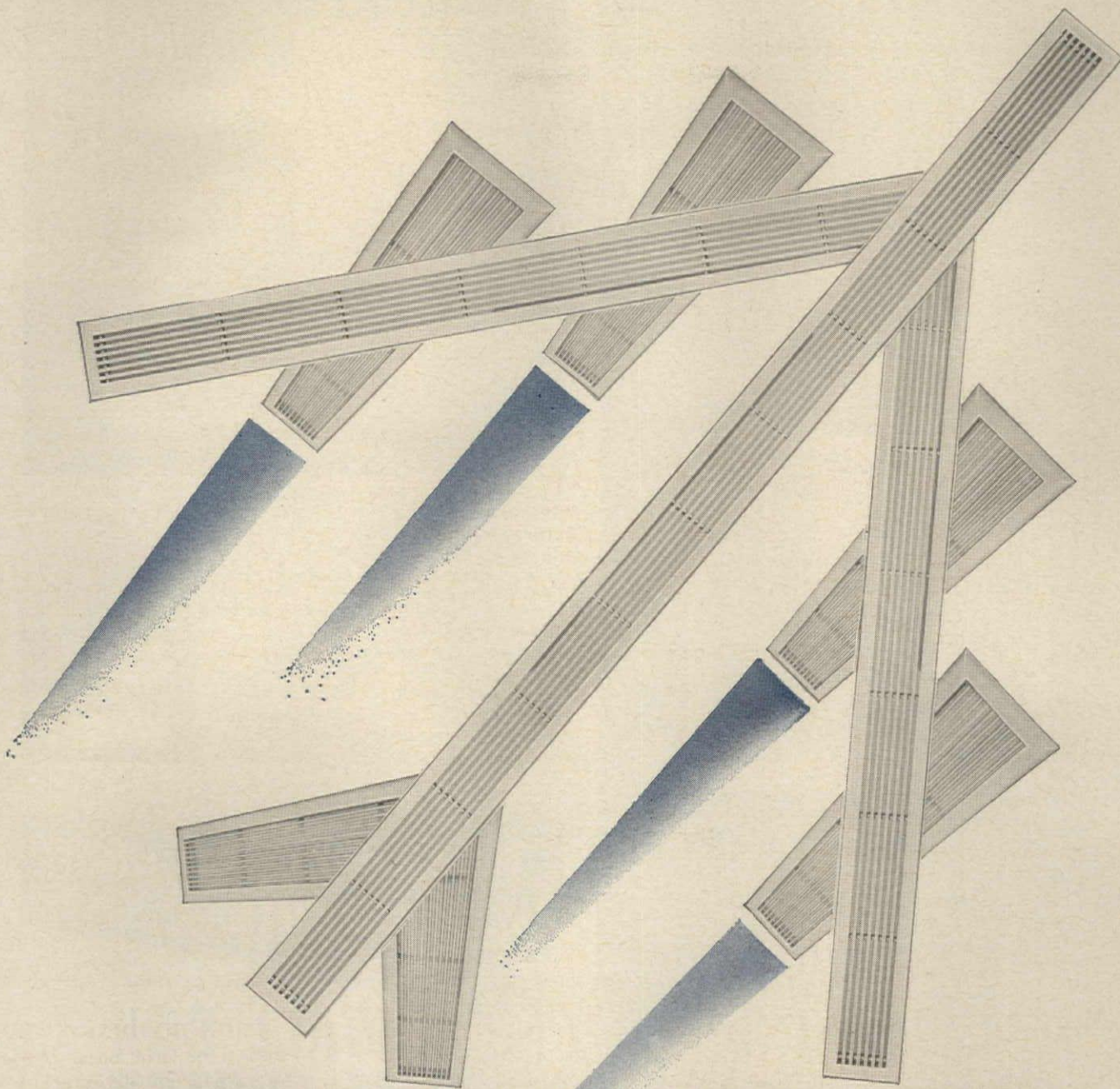
CIRCLE 412 ON INQUIRY CARD

## CANVAS

"Decorating & Shading With Colorful Canvas" suggests a variety of residential and commercial uses, such as for carports, patios and windbreakers. The booklet also describes various types of canvas and presents 40 color schemes. Price 25 cents. *Canvas Awning Institute, Inc., P. O. Box 9907, Memphis 12, Tenn.*

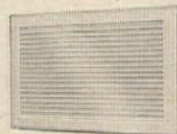
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\* Additional product information in Sweet's Architectural File  
more literature on page 296

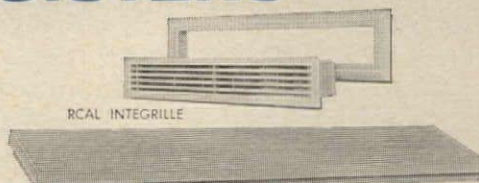


# WATERLOO AIRLINE GRILLES AND REGISTERS

**TREMENDOUS  
FLEXIBILITY  
OF DESIGN  
EXCLUSIVE SATALUM<sup>®</sup>  
FINISH...EXTRUDED  
ALUMINUM ONLY**



AL 45 RETURN AIR



F. G. FLOOR GRILLE

## WATERLOO AIRLINE GRILLES AND REGISTERS

are being used for supply and return air in floor, baseboard, sill, sidewall and ceiling applications. Waterloo Airline products are selected repeatedly because of their proven high quality, distinct styling, beautiful exclusive SATALUM finish and flexibility resulting from the widest choice of border styles, bar deflections and attachments frames.

For complete details, contact our representative or write Waterloo Register Company, Inc., P. O. Box 147, Waterloo, Iowa.

Member of Air Diffusion Council



WATERLOO REGISTER COMPANY, INC.

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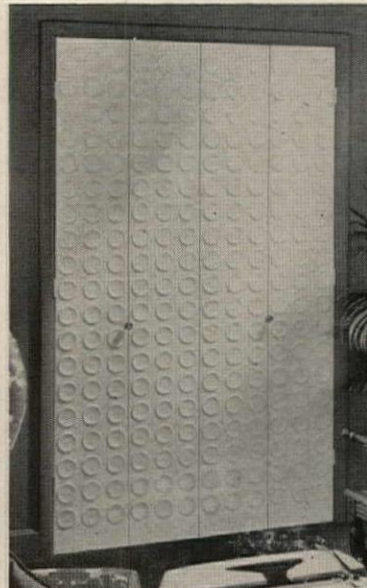
G-E Textolite—an ideal maintenance-free surfacing for free-standing or built-in dormitory furniture. Wide range of patterns and colors offers unlimited design flexibility. Available through leading contract furniture manufacturers. Write for samples.

**GENERAL ELECTRIC**

GENERAL ELECTRIC COMPANY, Coshocton, Ohio Dept. AR-93  
 Send samples of G-E Textolite® laminated plastic.

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**NEW!**  
**HOMESHIELD**  
 PRE-HUNG  
 FOLDING  
 DOORS!

IDEAL FOR HOMES,  
 MOTELS, OFFICES  
 AND APARTMENTS

DESIGN: CARROUSEL

Unlike any other folding closet doors . . . completely pre-hung . . . install in less than 10 minutes! Available in 4 distinctive decorator door panel designs.

They compliment any decor whether traditional, contemporary or modern. Packaged in a carton as one integral unit, ready for immediate installation.

Investigate the advantages of pre-hung folding doors by HOMESHIELD today. Write for full specifications and details to: AMERICAN SCREEN PRODUCTS COMPANY Chatsworth, Illinois • Dept. AR-9 Now celebrating our 25th anniversary.



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**For big dividends in client satisfaction . . .**

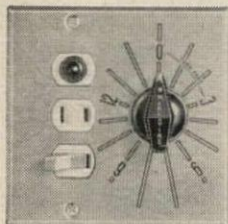


**WALL BOX TIME SWITCH**

Reduces electric bills to a bare minimum

**Set it-Forget it!**

The Mark-Time "90,000" is the proven, economical time control for turning "OFF" outside and garage lights, ventilating and attic fans and bathroom space heaters after pre-determined time intervals. Models available to turn "OFF" from 3 minutes to 12 hours maximum. For motels, schools, public buildings, homes.



Flush mounts in standard switch box. Optional face plate (illustrated) provides for Despard type interchangeable devices.

Available from electrical wholesalers . . . or write for literature.



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**HARTFORD 6, CONN.**

In Canada—M. H. Rhodes (Canada) Ltd., Ottawa 5, Ontario

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# 98%

mechanized laundry  
produces over

# 66 lbs.

of work per operator  
**per hour** at  
St. Vincent Infirmary,  
Little Rock, Ark.

This type of creative planning by American assures your clients the utmost in efficient, productive laundry facilities

The almost complete mechanization of this laundry operation has so streamlined the work flow that soiled linens are processed and back in the clean linen room in just 63 minutes!

Conveyor systems provide a continuous flow of work to CASCADEX washer-extractors, to ZONE-AIR drying or ROTAIRE conditioning tumblers, to SUPER-SYLON ironers and TRUMATIC folders and to DYNA-PAK apparel press units. There are no delays, no unnecessary and non-productive handling of work. Accurate records indicate that laundry production (including all press work) is averaging more than 66 lbs. per operator per hour.

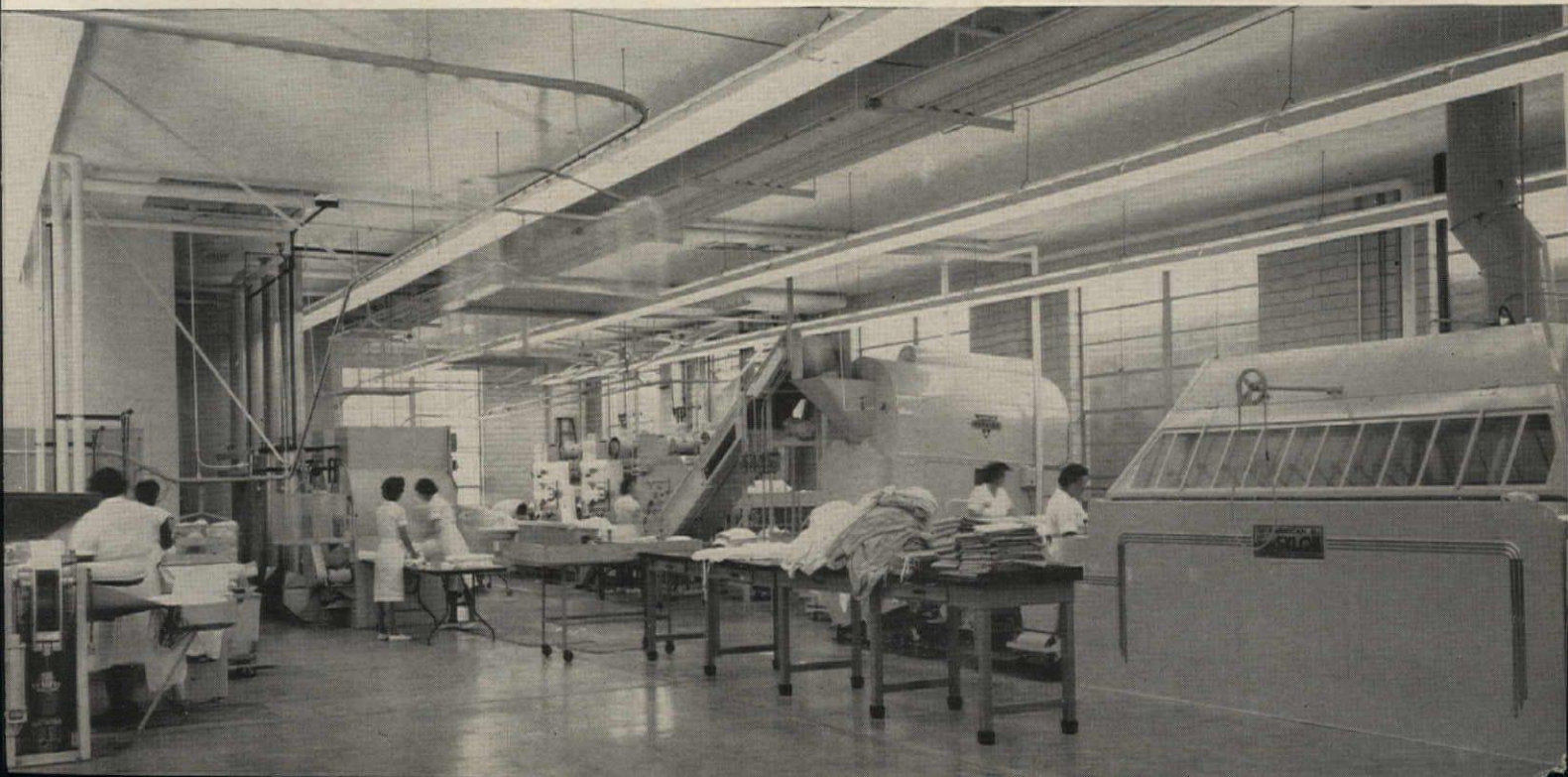
This installation is an outstanding example of the creative engineering and planning you can expect from American. This, plus American's complete line of modern, automatic laundry equipment will give you the most efficient, most productive laundry department possible. Ask your nearby American representative to tell you the complete story about the unique system of laundry processing at St. Vincent Infirmary, or write for complete information.

For more data, circle 84 on Inquiry Card

You get more from

**American**

American Laundry Machinery Industries • Cincinnati 12, Ohio





OFFICE & RESEARCH CENTER, REXALL CHEMICAL CO., Paramus, N. J. Finne-Lyman-Finne, architects. Weny Bros. & Storms Co., builder. To create this distinctive perforated facade, the architects designed their own grilles in architectural terra cotta. Eight-inch thick through-wall units with plastic insert were formed by two 4" thick white grilles.



## Colorful grilles in Ceramic Veneer custom-made to your specifications

Would the building on your boards benefit from a solar screen, perforated facade, or room divider? Would you like the creative freedom afforded by a wide selection of grille designs, colors and finishes? And whenever a very special grille unit is desirable, wouldn't you like to create it with the knowledge that it can be custom-made to your precise specifications? All these advantages are offered by Ceramic Veneer, the modern architectural terra cotta. If you haven't seen Federal Seaboard's solar screen brochure which illustrates 12 smart grille patterns, write for it today. Ceramic Veneer's quality is time-proved; its range of colors and finishes is virtually unlimited; its cost is less than you would expect. Without charge we will furnish construction detail, data, advice and estimates on preliminary sketches involving Ceramic Veneer grilles, plain surfaces, or polychrome panels.

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SEABOARD  
TERRA COTTA  
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## Muzak at State Farm

STATE FARM, a progressive and outstanding leader in the insurance field, has created an office atmosphere of enviable efficiency and congeniality. Considerate of public and staff alike, State Farm has provided pleasant, non-distracting Music by Muzak for over seven years.

At State Farm and thousands of other leading companies the world over, Muzak has demonstrated a unique ability to mask noise, replace cold silence and enhance smart architectural design and decor. Muzak's scientifically-planned office and industrial programs provide employees with


precisely-measured, hour-by-hour musical motivation...to boost efficiency by combating tension, monotony, boredom and fatigue.

*A versatile communications tool*, the Muzak sound system is used by State Farm and other companies, for Muzak distribution, paging, public address, civil defense and emergency warnings. Specify Muzak in early planning stages. A.I.A. File 31-I-7, Sweet's Catalog 33a/Mu. For specifications, literature, write Muzak Dept. B-3.

*"In State Farm offices, Muzak is an important environmental aid—for attracting and keeping qualified personnel, and improving employee efficiency. Additionally, the Muzak sound system is useful in providing instantaneous communication of important company news to our employees," says Mr. Paul Mitzner, State Farm Vice President, Personnel.*



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United States • Canada • Mexico • Argentina • Brazil • Colombia • Uruguay • Peru • Great Britain • The Philippines • Australia • Belgium • Finland • Denmark

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## Model Testing

continued from page 228

It has been noted that when white light is used in the polariscope, fringe patterns are colored. These patterns are called *isochromatics*, which are related to the principal stress difference at any point in the model.

If the quarter-wave plates are removed from the polariscope, the iso-

chromatics may be observed, but at the same time black interference patterns are present which are called *isoclinics*.

Unlike the isochromatics which do not change as the model is rotated about the optic axis in the polariscope, these black patterns appear and disappear. Isoclinic interference occurs when the principal stress directions (called stress trajectories) are aligned with the vertical axis. For a complex model, we may plot the isoclinics related to different orienta-

tions of the model in the polariscope and form a complete picture of the trajectories.

### The Reflecting Polariscope

Instead of polarized light being transmitted through the model to the analyzer, it may be reflected back to the analyzer by means of a reflective coating applied to one surface of the model. This is the principle of the reflecting polariscope.

The reflecting polariscope is not quite so accurate as the transmission type for reading stresses in rapidly changing stress fields because of the small angle between incident and reflected ray.

Photoelastic coatings can be cemented or cast on models of the same material as the prototype or to the prototypes themselves. This allows the observation of elastic and plastic behavior of prototype materials with the reflecting polariscope, instead of only the elastic systems observed with plastic models.

In general the transmission polariscope is best suited for studies of single-plane plastic models. The reflecting polariscope is primarily used in three-dimensional studies.

### Complex Structures

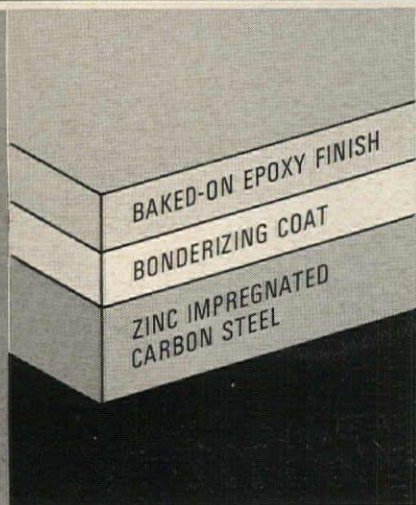
Plates and shells have applied forces and deformations outside the plane of the model surface and out of the plane of normal photoelastic observation. Thus the techniques described earlier must be vastly modified.

There are two basic approaches to the photoelastic analysis of plates and shells. The first employs a model fabricated in bonded layers with reflecting surfaces below the outer layers so that interference patterns will be seen through a reflecting polariscope.

The second approach utilizes a technique called "stress freezing." Fringe patterns are "locked" into loaded (stressed) materials as they cool down after having been heated to a critical temperature in an oven. This phenomenon was observed many years ago, but the technique became practical for the analysis of models only during the last decade when the epoxies were introduced at relatively low cost.

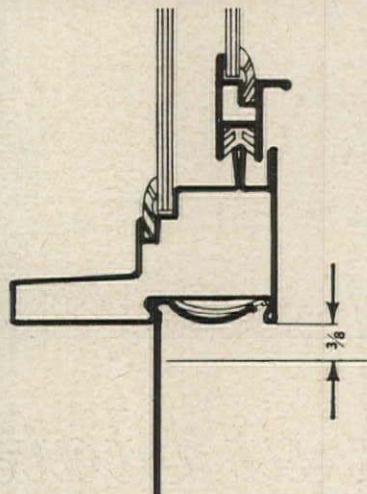
Slices are taken from the stress-frozen model along trajectories indicated by the isoclinic patterns to reveal the principal stresses directly.

## What Rusco does to steel makes the difference in Rusco windows!



### RUSCO STEEL IS TRIPLE-PROTECTED

first by hot dip galvanizing, then by bonderizing and finishing with a factory applied, baked-on epoxy finish... available in any of 19 colors that won't chip, peel, crack, blister or fade. This is why RUSCO Windows maintain their original beauty years longer than other windows.



### RUSCO USES TUBULAR STEEL FRAME CONSTRUCTION

Underneath that epoxy finish is a framework of tubular steel that is so well designed and constructed that RUSCO guarantees ease-of-operation for 20 years! This design and construction affords maximum rigidity, minimum weight and provides dead air space for greater insulation.

Send for A.I.A. File showing full details.

# RUSCO



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WINDOWS  
IN COLOR

Rusco Division • Rusco Industries, Inc. • 1409 Lakeside Ave. • Cleveland 14, Ohio

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**Friendly footing for little feet**      *And equally friendly to the school budget that calls for the lowest floor maintenance costs. It's hard to imagine a school, whether designed for either total excellence or for lowest long-range cost, without quarry tile prominently employed in its important hard-traffic areas. Possibly no other flooring so well combines utter toughness with colorful beauty. It is well known that Carlyle Quarry Tile is the quarry tile with the most in color selection and in coast-to-coast service. Colors and surface textures give wide choice. Available just about everywhere. Pattern possibilities are practically limitless but there's nothing richer in the world of building than a solid area of just one quarry tile color. And both regular and abrasive-surface tile can now be ordered four-square ground (after firing) to permit narrower than usual joints. For full-size high-fidelity printed sample sheets of all Carlyle Quarry Tile (Ironton) colors, ask your Mosaic Representative or write The Carlyle Tile Company, Ironton, Ohio. For literature on Carlyle Quarry Tile made in California by Jordan Tile Mfg. Co., write The Mosaic Tile Company, 131 N. Robertson Blvd., Beverly Hills, Calif.*

For free estimates on Mosaic Tile, see the yellow pages for your Tile Contractor, Ceramic



Flowers School, Montgomery, Ala. Architect: Samuel D. Collier. Tile Contr.: Robert F. Henry Tile Co.

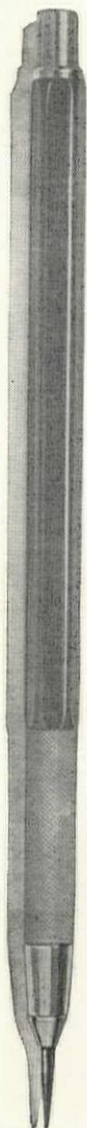


**CARLYLE  
QUARRY**

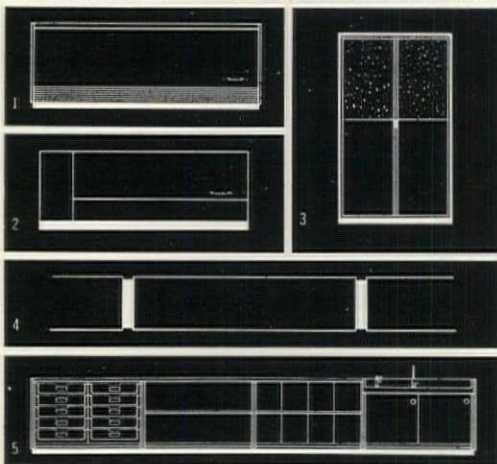
**MOSAIC TILE**

®

# Nesbitt Roommate Air Conditioner



- 1 Syncretizer Unit Ventilator and Year-Round Conditioner.
- 2 Roommate, the new dramatic year-round air conditioner.
- 3 Tall Storage Cabinets for wardrobe and general utility.
- 4 Architectural Sill-line, high-style perimeter radiation.
- 5 Storage Cabinets for use with Syncretizer and Roommate.



## designed with you in mind

**Y**ou are the man who must compose all the parts of a building—including the heating, ventilating and air-conditioning equipment—into an esthetic as well as utilitarian structure. You share the engineer's concern for a product's technical competence, quality construction, and proved performance, of course; but you value also the good elements of line, form, mass, space, and color—your tools of design.

In more than 45 years of product development, we believe we have proved our ability to meet the needs of mechanical engineers and contractors—nor have we failed with architects and owners! But of recent years especially, Nesbitt has become more mindful of your particular need (and your narrowing choice) of heating, ventilating and air-conditioning equipment that is styled to serve the contemporary mode. A special department of styling and the counsel of Designer Paul McCobb have given us products such as those pictured on this page, and on the next two pages in living color.

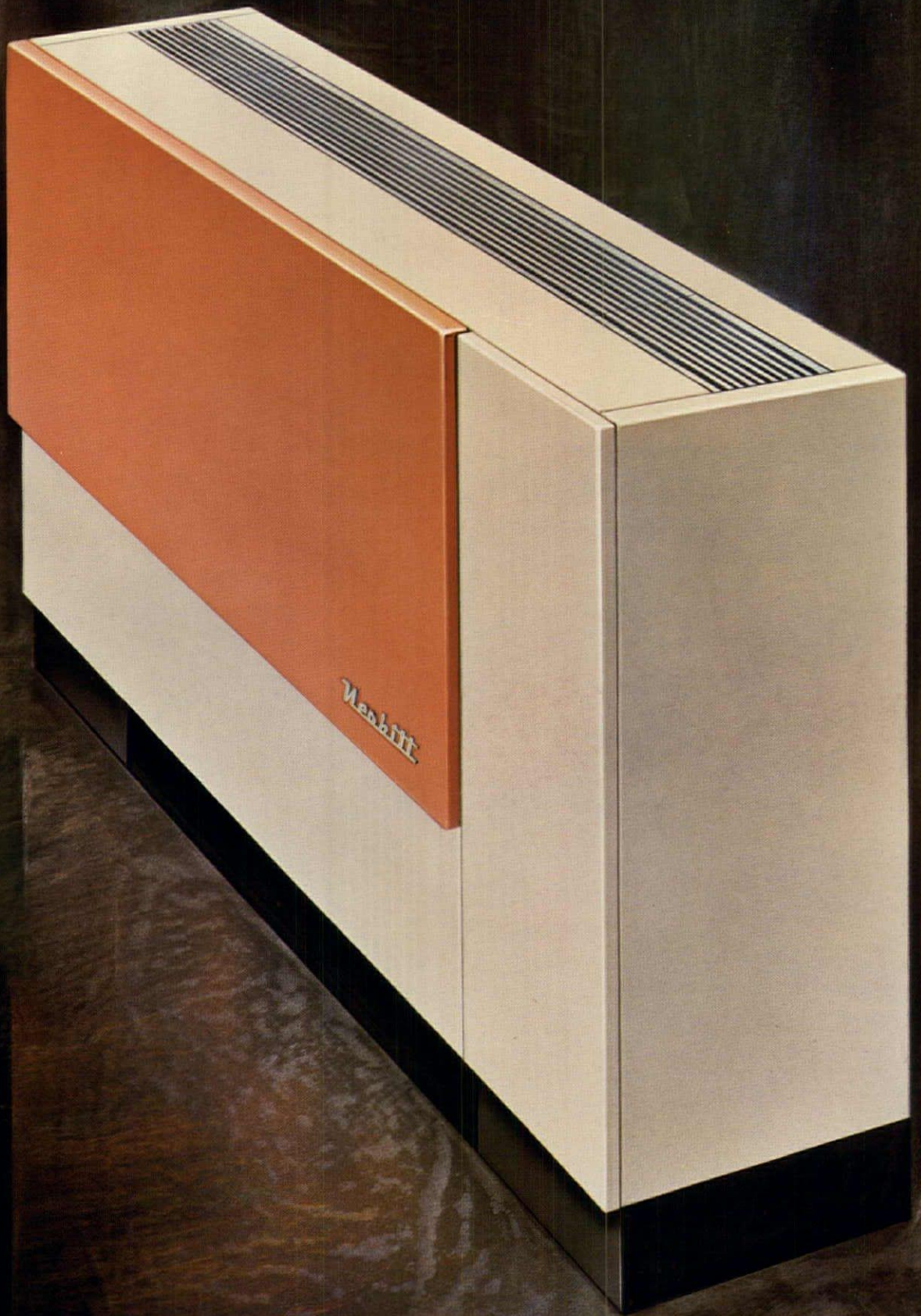
Beauty and performance are but two facets of Nesbitt Excellence.

# Nesbitt

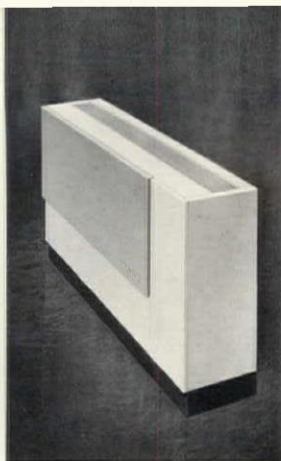
## THERMAL COMFORT ALL WAYS

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Kenhill



## NESBITT ROOMMATE AIR CONDITIONERS

These dramatic year-round "personal weathermakers" are designed for offices, motels, apartments, schools, hospitals, and similar spaces. Installed without expensive ducts, they are individually controlled for maximum economy and efficiency—particularly when equipped with the Nesbitt exclusive Humid-a-Guard Control System (described below). Comfort and contemporary styling are perfectly mated in the Roommate.

### ARRANGEMENTS



Exposed, floor-mounted arrangement



Concealed, floor-mounted arrangement



Built-in, ceiling-mounted arrangement

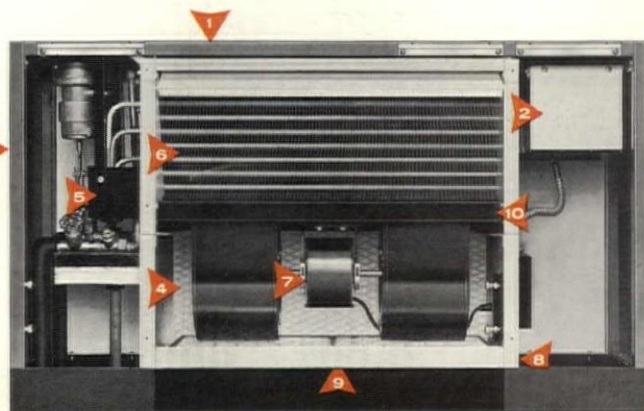


Recessed, floor-mounted arrangement



Semi-recessed, wall-mounted arrangement

Pictured above are but a few of the dozens of possible arrangements of Nesbitt Roommates—more fully described in Publication 62-1, a copy of which will be sent to you on request.



1 Distinctive extruded aluminum (optional) or stamped metal grille; with adjustable discharge vanes if specified.

2 Easy-access control box—for finger-tip selection of fan speeds and outdoor air.

3 Cabinet parts are washed, degreased, and finished with a rust-preventive primer and beautiful baked enamel.

4 Cabinets are well insulated to absorb sound and to prevent condensation.

### FEATURES

5 Optional H-G Valve for the very precise Humid-a-Guard control of heating, cooling, and dehumidification.

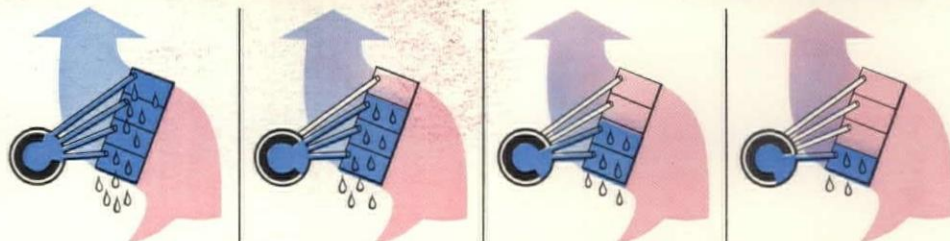
6 Heating-cooling element is positioned with entering-air side to front, permitting instant access for cleaning.

7 Direct-drive motor and fan assembly is sturdy, vibration-free, and easily removable as a single unit for cleaning.

8 Nesbitt stabilizer-damper admits desired quantity of outdoor air through wall intake regardless of wind pressure.

9 Full-width indoor-outdoor air filter can be removed in seconds without detaching the front panel of the unit.

10 Easily removable drain pan is rust-proofed, insulated, and pitched toward the drain.



### The Exclusive Nesbitt Humid-a-Guard Control System

The Humid-a-Guard system is, in effect, four separate coils and modulating valves combined in one assembly. As the cooling load decreases, the four-ported H-G valve throttles the water flow to successive sections of the element.

As one or more circuits close, the remaining sections receive their full water quantity and continue to dehumidify. Quick response, full modulation, and positive shut-off characterize this refined control of both heating and cooling.

**CAPACITIES** Nesbitt Roommates are available in seven standard lengths, 36" to 88"; and in 24" height; all with three-speed motors. Air capacities range from 200 to 1200 cfm; nominal heating capacities, from 10,000 to 70,000 Btu/hr (180° entering water); nominal cooling capacities, from 1/2 to 3 tons (45° entering water).

**COLORS** A selection of six modern decorator colors is offered (color card free on request). Roommates may be ordered in any one of these, selected as a single color to harmonize with your decor. Or a two-tone treatment is possible: with the front accent panel of the unit finished in a second color, selected for its bold or muted contrast to the basic color. Nesbitt finishes are baked enamel, following a five-step preparatory and rust-inhibiting process.



Made and sold by  
John J. Nesbitt, Inc., Philadelphia 36, Pa.  
Offices in principal cities





## The man with the flashing blade ... and the inside story

Slice PERMALITE<sup>®</sup> any way you want. This mineral roof insulation is rigid, tough, scuff-resistant. Yet it cuts like cheese.

Want better roofsmanship? PERMALITE fits like a glove to roof vents, apertures, vertical adjuncts. No thermal leaks here!

And no moisture "leaks". You can bury PERMALITE in water for 24 hours. Less than 2% moisture pries in. Structure is cellular; no wick-up, no water-creep.

And PERMALITE has the edge on fire, too. Heat a penny red-hot on this amazing material. It won't burn, won't dissolve. (Some others do.)

PERMALITE is PERMALITE all the way through. Rigid, light, permanent, dimensionally stable, it's the sworn enemy of mildew, rodents, vermin.

No other roof insulation board that offers so much of any one thing offers so much of everything else.

That's sticking our chin out. (And

For more data, circle 92 on Inquiry Card

it's glass.) Volcanic glass, heat expanded and annealed to form today's almost perfect product.

Write us now for an interesting demonstration. You'll be glad you did.



PERMA PRODUCTS DEPARTMENT  
Great Lakes Carbon Corporation  
333 N. Michigan Ave., Chicago, Ill.  
Phone FR 2-5445



## Look to RōWAY for a door to fit your plans

RōWAY Overhead Doors are designed to enhance any style of architecture.

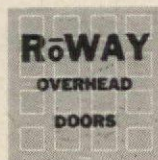
No restrictions . . . no harsh contrast . . . for RōWAY Doors give an appearance of "belonging" to every plan you create.

Fit a RōWAY Door into your design . . . you'll be doing justice to your own creative talents . . . and your customers' budget. RōWAY Doors stress attractive appearance, strength, ease of operation and economy.

No other door offers more!

*there's a RōWay for every Doorway!*

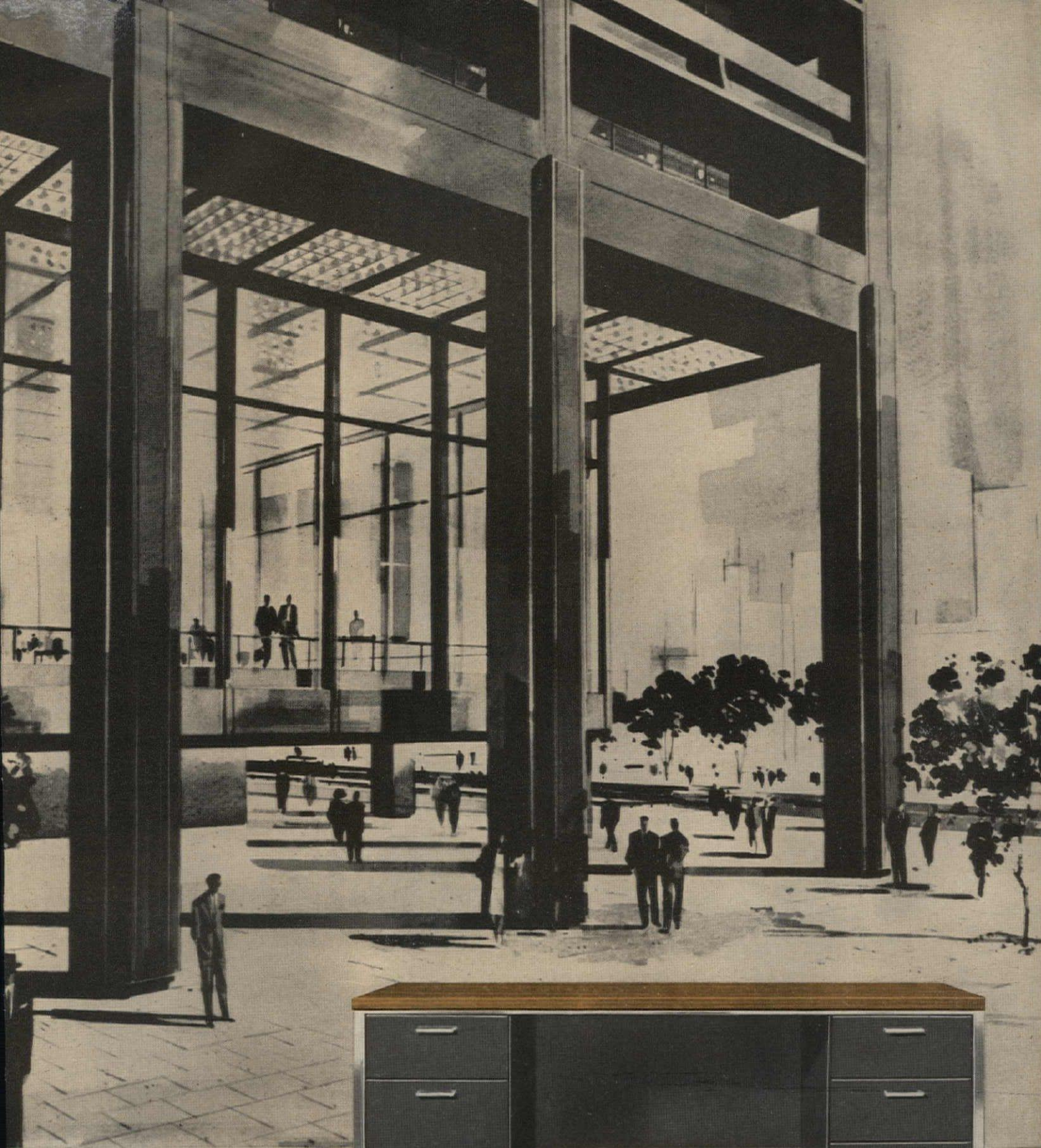
COMMERCIAL • INDUSTRIAL • RESIDENTIAL



ROWE MANUFACTURING COMPANY  
Department AR963, Galesburg, Illinois



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*1065F with Oiled Teak top, one of the 1000 SERIES models being used in the new 33-story headquarters building of Tennessee Gas Transmission Company, Houston, Texas.*

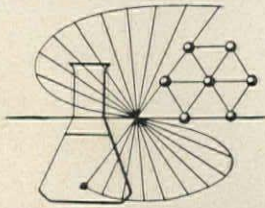
## what you can't see is important, too...

*Their superb architectural styling alone is reason enough to select GF 1000 SERIES desks. But there are important hidden values, too—highest quality materials, advanced construction techniques and superior craftsmanship. No wonder the offices of so many of America's leading business firms are being furnished with these magnificent desks. Want more information? Call your nearby GF branch or dealer. Or write Dept. AR-18 for a color brochure. The General Fireproofing Company, Youngstown 1, Ohio.*

For more data, circle 94 on Inquiry Card

**GF**  
BUSINESS FURNITURE

# FRESH!



## IMAGINATIVE USE OF STIMULATING MATERIALS

You can select distinctive Haws fountain designs that keep pace with your *own* architectural ideas. They're fresh! Here are a few for your appraisal: detailed specs are yours for the asking.

### Fiberglass

**HDFC** electric water cooler, AIR COOLED! Semi-recessed wall model, molded in strong fiberglass. In 3 colors or white.

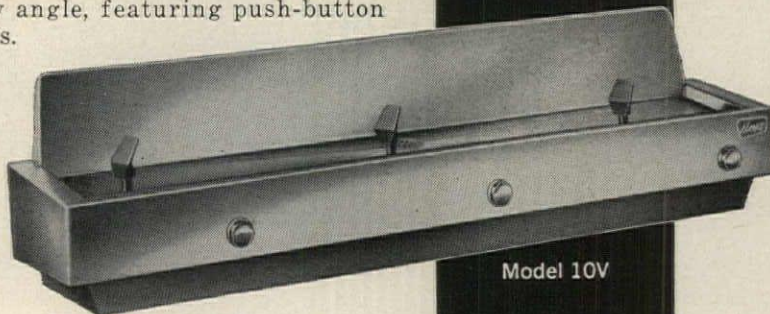
### Hard Anodized Aluminum

**7L** wall fountain in cast Tenzaloy aluminum, hard anodized to rich bronze finish that stands up under rough usage. Here's a real beauty: and practical, too!

**7J** wall model with same hard anodized finish as 7L, above. Features Haws easy-action push-button valve.

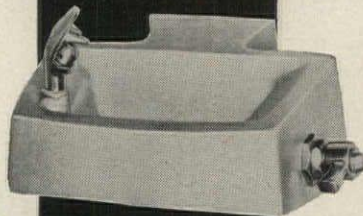
### Stainless Steel

**10V** multiple wall fountain, *new* from every angle, featuring push-button valves.

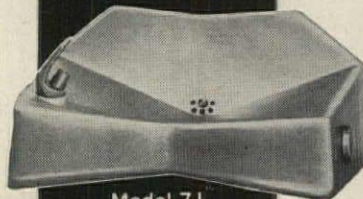


Model 10V

Model HDFC



Model 7L



Model 7J



## Product Reports

continued from page 237

### FIRE-RATED CEILING

Reinforced with extra fiber glass content, a new incombustible gypsum ceiling tile made in 24- by 24-in. panels has a two-hour fire rating. *Best-wall Certain-teed Sales Corporation, 120 E. Lancaster Ave., Ardmore, Pa.*

CIRCLE 303 ON INQUIRY CARD

### "GRASS" CARPETING

*Ozite Terrace Green* is a new all-weather outdoor carpeting material that looks like Bent grass and is guaranteed by the company not to fade. It is being marketed for high-rise apartment balcony terraces, areas around swimming pools and other outdoor uses. *Ozite Corporation, Merchandise Mart Plaza, Chicago 54, Ill.*

CIRCLE 304 ON INQUIRY CARD

### HUMIDIFIER CONTROL

A new humidifier-sensing device that "samples" the air in the return plenum of a forced air heating system and sends its findings to the control box directly outside the plenum, is available with all *Auto-flo Power Humidifiers*. According to the manufacturer, 6 per cent accuracy can be maintained within a relative humidity range of 15 to 50 per cent. *Auto-Flo Corporation, 12085 Dixie St., Detroit 39, Mich.*

CIRCLE 305 ON INQUIRY CARD

### CONTRACT FURNITURE

A novel corner unit consisting of a full-sized and half-sized couch with a large corner table servicing both couches is ideal for rooms with little wall space, particularly in motels and hotels because the couches open into beds. *Beautycraft Furniture Industries, Inc., Miami, Fla.*

CIRCLE 306 ON INQUIRY CARD



more products on page 266

# HAW'S DRINKING FOUNTAINS

products of

**HAW'S DRINKING FAUCET COMPANY**  
1441 Fourth Street • Berkeley 10, Calif.

Since 1909

For more data, circle 95 on Inquiry Card

# TESTS PROVE IT!



A fixture ballast with this emblem delivers longer ballast life, longer lamp life and saves on installation costs...and has less need for service

Because this CBM emblem on a fluorescent lighting ballast means assurance of specified performance . . . characteristics "tailored to the tube". Certified CBM Ballasts—made by leading manufacturers—*must* meet definite performance standards . . . as checked by Electrical Testing Laboratories *before* certification . . . and repeatedly thereafter. Thus whether you are a fixture manufacturer, architect, lighting engineer, distributor, contractor or user . . . you can count on dependability from Certified CBM Ballasts. It pays to insist on CBM Ballasts for extra value from your lighting. For the latest information on ballast developments, as well as the answers to many of your questions, ask us to send you CBM NEWS.

**CERTIFIED BALLAST MANUFACTURERS**, 2116 Keith Building, Cleveland 15, Ohio.

Participation in CBM is open to any manufacturer who wishes to qualify.

4-63

For more data, circle 96 on Inquiry Card



## Florida total-electric co-op over 50% sold out in 30 days



Coral Ridge Towers, latest project of Admiral J. S. Hunt, is total-electric from infrared ceiling heaters in baths to completely equipped General Electric kitchens.

Architect C. F. McKirahan, A.I.A., utilized General Electric's engineering and design assistance for all-electric construction.

Results in this high-rise Medallion apartment.

Sales results have been little short of sensational. The combination of top design, excellent living values and sound promotion resulted in the sale of more than half the units in only 4 weeks. The quick success prompted Adm. Hunt to start building two additional all-electric high-rise projects—both equipped by General Electric.

Find out how General Electric's engineering, design, technical assistance and customized promotional programs can be of service in your total-electric projects by writing: Residential Market Development Operation, General Electric Co., Appliance Park, 6-230, Louisville, Kentucky.

*Admiral James S. Hunt, whose second co-op, Coral Ridge Towers North, will be completed this winter, is accepting rentals on his total-electric Royal Admiral and planning still another Medallion high-rise project.*



**GENERAL  ELECTRIC**

For more data, circle 97 on Inquiry Card

# WOULD YOU HAVE GUESSED THAT THERE ARE 22 POTENTIAL "TROUBLE SPOTS" IN THIS PICTURE

where copper has been applied for lasting protection?



1-2—Flat seam roof • 3-4—Cornice flashing  
5—Brick corbel flashing • 6—Chimney flashing • 7—Adjacent wall flashing

8—Standing seam roof • 9—Valley flashing • 10—Gutter • 11—Cornice flashing  
12-13-14-15—Concealed adjacent wall flash-

ing • 16—Gutter • 17-18-19—Downspouts  
20—Adjacent wall flashing • 21—Flashing at change of roof slope • 22—Flat seam roof.

This photograph shows only a small section of the Jefferson Hall Dormitory at Ohio University, Athens, Ohio, yet there are 22 places spotted, where Revere Sheet Copper has been used . . . 18,500 lbs. of it for the entire building.

This is a striking example of the myriads of ways in which Revere Copper can protect the potential "trouble spots" in a building. Many of those spots can't even be seen! All of them are vital to the sound construction and effective weatherproofing and protection of this building.

Regardless of design, the buildings you are now planning need the lasting protection that only copper can give.

For the material that has virtually unlimited design possibilities and is easy to fabricate . . . for the material that lasts through the centuries . . . "Design with Copper in Mind." Revere's Technical Advisory Service will be happy to work with you in formulating your plans.

SEND TODAY FOR THESE FREE, HELPFUL BROCHURES!

Revere's 140-Page "Copper and Common Sense," illustrating the design principals and techniques of sheet copper construction. "The Revere System of Copper Flashing," (20 pages) for the complete weatherproofing of masonry buildings. Write Dept. T-1.

Architects: POTTER, TYLER, MARTIN & ROTH, Cincinnati, Ohio. Sheet Metal Contractor: TRI-STATE ROOFING COMPANY, Parkersburg, W. Va.



## REVERE

COPPER AND BRASS INCORPORATED

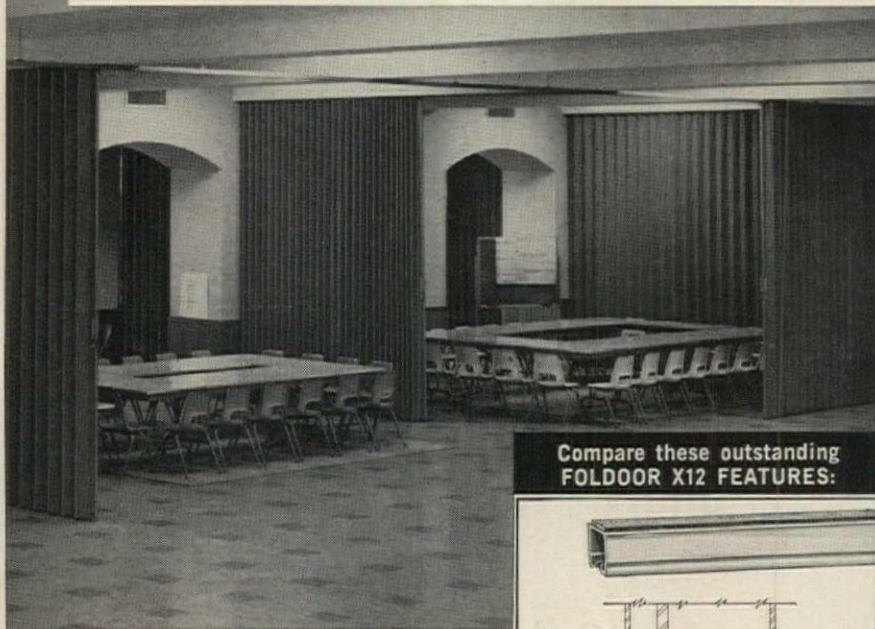
Founded by Paul Revere in 1801

Executive Offices: 230 Park Avenue, N. Y. 17, N. Y.

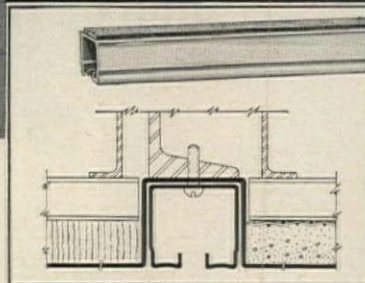
Sales Offices in Principal Cities. Distributors Everywhere

# ENGINEERING SUPERIORITY

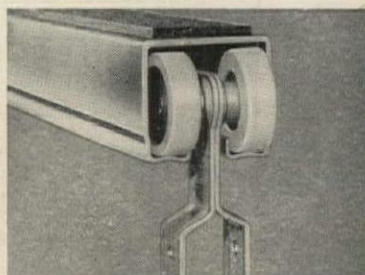
... and exclusive warranty proves it



Compare these outstanding FOLDOOR X12 FEATURES:



**1. TRACKS**—Foldoor tracks are engineered and contoured for strength and durability without excess weight. Convex treadways cut rolling friction to an absolute minimum . . . side wall contouring guides trolleys in a straight, smooth-flowing line without scraping or side play.



**2. TROLLEYS**—Folddoors feature a heavy duty trolley at every second hinge pair. This gives balanced weight distribution, adds to ease of operation and prevents sagging. Foldoor trolley pins are case hardened 3/4-inch steel for extra strength.



**3. HINGES**—Foldoor hinges are 16 gauge embossed steel, 3 1/2 inches wide, with double-thick unpierced metal at mid-section and a total of 4 1/2 inches at the pivot point. Foldoor's superior hinge strength eliminates the need for double top hinge rows except on partitions 15 feet high or over.

Foldoor's superior track, trolley and hinge system . . . backed by the strongest warranty in the folding partition industry . . . provides year after year of easy operation . . . dependable service.

In the normal operation of a folding partition, the track, trolley and hinge system absorbs the most strain and stress. The proof of Foldoor's superior design is evidenced by its dealer warranty. Hinges, trolleys and trolley pins are warranted for nine years over and above the usual one year warranty on the entire door and all accessories. The track is warranted for the lifetime of its original installation.

For sound control and fabric information, see your Foldoor representative. Ask him about his "Warranty Plus" program. See the complete Foldoor line in SWEET'S ARCHITECTURAL FILE 16f/Ho.



A new concept in decorative styrene grillework for space dividers and screens . . . factory fabricated with customized framing.

VISIT AIA CONVENTION BOOTH NO. 604

**HOLCOMB & HOKE MFG. CO., INC.**

Department D35  
1545 Calhoun St. • Indianapolis 7, Ind.

Please send complete information on:

Folddoors  FliGrille

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



For more data, circle 99 on Inquiry Card

## Product Reports

continued from page 262

### HOLLOW-CORE PANELS

*Marlite Korelock*, a rigid hollow-core panel with a predecorated finish, can be applied quickly over joists or studding, furred or unfurred, and to furred plaster, brick, block or other masonry walls. The panel comes in 11 colors and six woodgrains. The 5/8-in. paneling is made in 2 by 4 ft and 2 by 8 ft sizes. *Marsh Wall Products, Inc., Dover, Ohio*

CIRCLE 307 ON INQUIRY CARD

### WOOD-FINISHED REFRIGERATORS

The new *Avanti* refrigeration unit has a natural wood finish and totally invisible inner workings. Paneled on all sides, the refrigerator can be used as a room divider. *Franklin Appliance Division, Studebaker Corp., 635 S. Main St., South Bend, Ind.*

CIRCLE 308 ON INQUIRY CARD



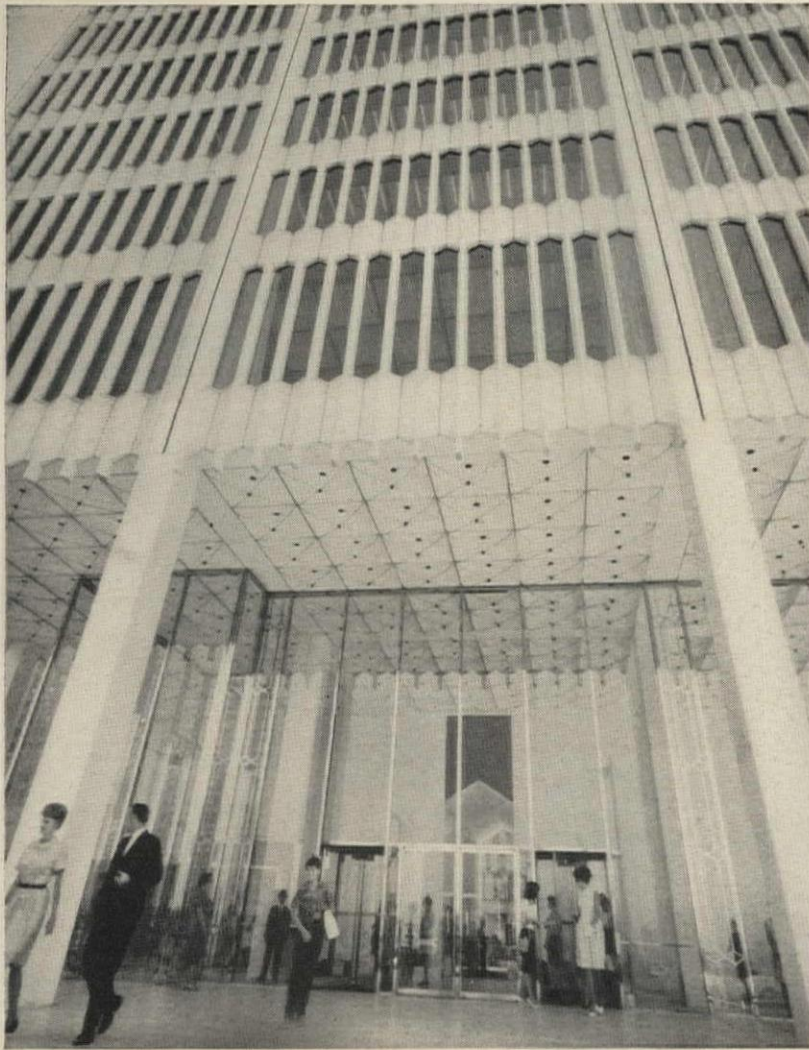
### PREFABRICATED STEEL COLUMN

A prefabricated, fire-resistive steel column for single or multi-story use in industrial, commercial and institutional buildings eliminates field fireproofing. The column consists of a load-bearing steel structural member encased in a proprietary insulation which is permanently protected by a decorative outer shell. It can be used with concrete slab construction as well as conventional steel frames. *Fire-Trol Corp., 8001 S. Western, Chicago, Ill.*

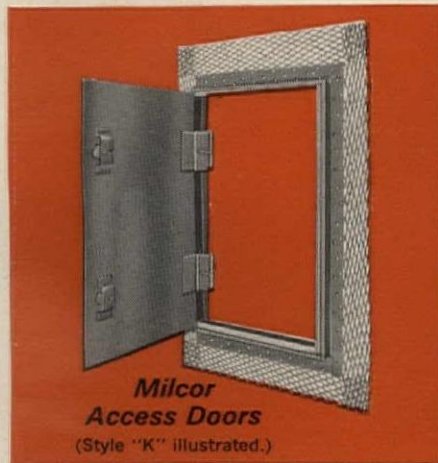
CIRCLE 309 ON INQUIRY CARD

more products on page 270





In Detroit's 28-story Michigan Consolidated Gas Company shown here — and in buildings stretching across the Nation's skyline—Milcor Steel Access Doors provide service openings without encroaching upon design.



**Known for the company — and beauty — they keep.** In this, his first skyscraper, Minoru Yamasaki has availed himself of the beauty of plaster walls and ceilings. Milcor Steel Access Doors finished flush with the surrounding plane keep service openings inconspicuous. ■ Only Milcor Access Doors have casing beads on their frames. These provide protective plaster terminals and serve as grounds for better plastering. You are assured of a clean, straight-line connection with the plaster. ■ There are five styles of Milcor Steel Access Doors — 17 sizes — each suited to a particular surface. All are constructed rigidly; they install economically, require minimum maintenance. See Sweet's section 16 k/In, or write for Catalog 210.

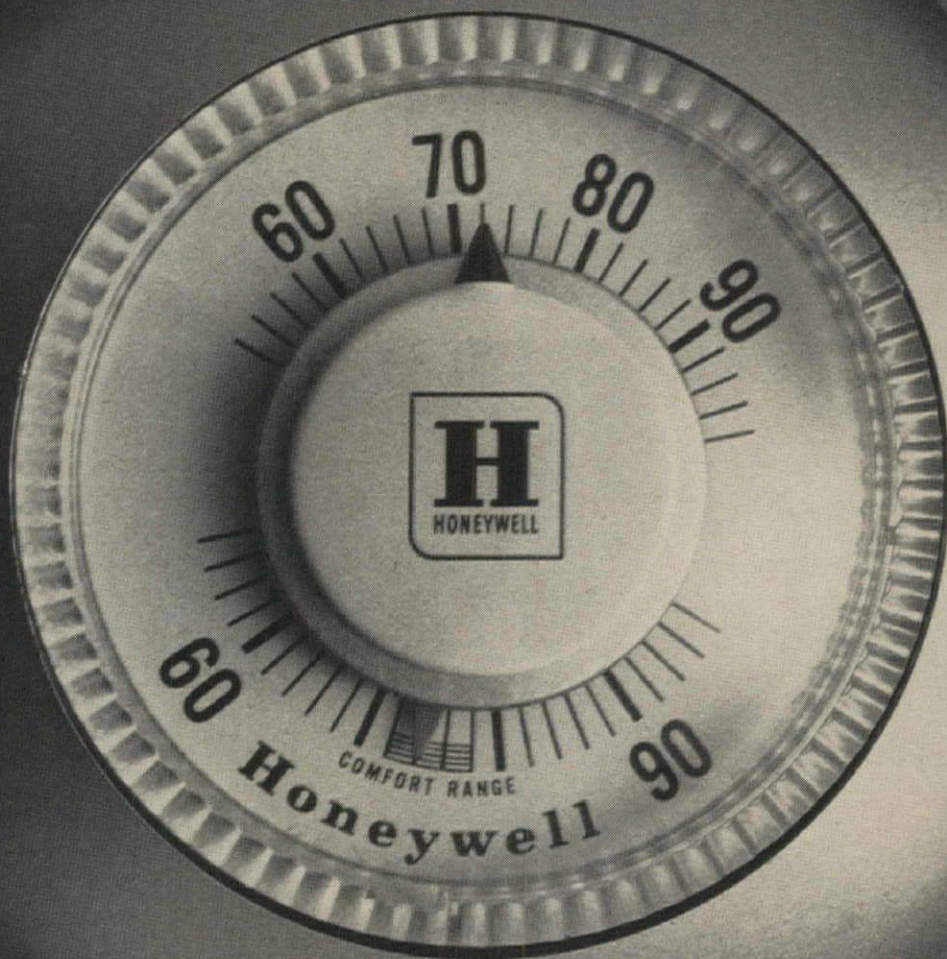
**MILCOR**®



**Inland Steel Products Company** DEPT. 1, 4033 WEST BURNHAM STREET, MILWAUKEE 1, WIS.  
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

85-2

For more data, circle 100 on Inquiry Card



**Roofmate FR holds down some costs for years.**



### On others, it pays off now.

One dollar a square is a typical installation saving with Roofmate® FR roof insulation. It has millions of tiny, independent air cells. It's lightweight, pleasant to handle, easy to cut and fit. We make Roofmate FR polystyrene foam board just like Styrofoam® insulation, but give it a high-density skin for extra strength. Roofers can run a loaded

wheelbarrow over Roofmate FR, lay it fast without a worry.

Roofmate FR also saves on heating and cooling over the years. It won't absorb water; maintains its low "k" factor (0.261). No more wet, soggy insulation that fails its job and runs up your estimated costs—not with Roofmate FR. No more roof blistering and cracking

caused by water-soaked insulation, either. Roofmate FR stays dry.

Roofmate FR comes in thicknesses to meet standard "C" factor requirements. Want more data and specifications? Just see our insert in Sweet's Architectural File, or write us: The Dow Chemical Company, Plastics Sales Dept. 1004N9, Midland, Michigan.



For more data, circle 101 on Inquiry Card

## For Better Doors, EVERYTHING POINTS To Kinnear...

For the extra advantages of coiling, interlocking-steel-slat action (originated by Kinnear) —and ...

... for doors that open completely out of the way...

... for efficient doors that offer even greater convenience when power-operated...

... for all-metal protection against wind, weather, intrusion and vandalism...

... for doors that permit full use of surrounding floor, wall, and ceiling space at all times...

... for doors that often deliver 30, 40 — even 50 or more years of low-cost service...

... for heavily galvanized doors that give many extra years of corrosion-free service...

# Kinnear Metal Rolling Doors



—and for exclusive REGISTERED doors for which all parts are always replaceable from master details kept in fireproof vaults, insist on —

### The KINNEAR Mfg. Co.

FACTORIES:

1860-80 Fields Ave., Columbus 16, Ohio  
1742 Yosemite Ave., San Francisco 24, Calif.  
Offices and Agents in All Principal Cities

**KINNEAR**  
ROLLING DOORS  
Saving Ways in Doorways

For more data, circle 102 on Inquiry Card

## Product Reports

continued from page 266

### DRAFTING MACHINE

An automatic digitally-controlled plotter provides high-accuracy graphic display of digital information on a broad 5- by 12-ft horizontal or vertical plotting surface. Basic line drawing accuracy is better than  $\pm 0.015$  in. divergence from a straight line, the manufacturer states. *Gerber Scientific Instrument Company, P.O. Box 305, Hartford, Conn.*

CIRCLE 310 ON INQUIRY CARD



### WASTE HANDLING SYSTEM

The compact, single-unit, close-coupled *Somat Integral Specials Series* of waste handling systems will shrink refuse volume 80 per cent, the company claims. Capacities are 100, 200 and 400 lb per hour dry weight. *Somat Corporation, P.O. Box 831, Coatesville, Pa.*

CIRCLE 311 ON INQUIRY CARD

### COOL BEAM FIXTURES

Lighting Services, Inc. has adapted several fixtures for use with their cool beam lamps. The 300 w fixtures are available with open vent port in back of housing; and the 150 w fixtures consist of porcelain socket, swivel and means of mounting. *Lighting Services, Inc., 77 Park Ave., New York 16, N.Y.*

CIRCLE 312 ON INQUIRY CARD

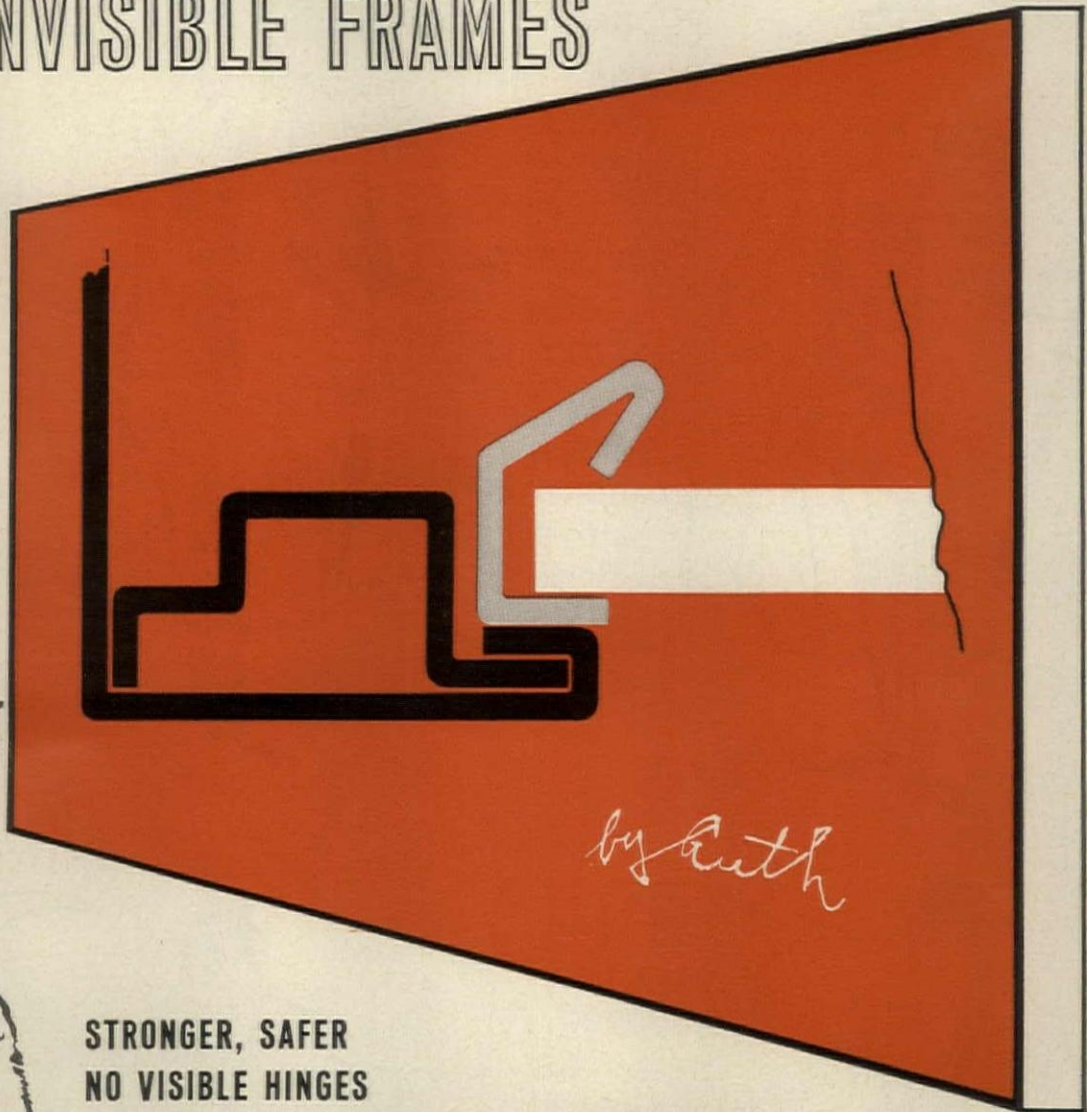
### ENAMEL PAINTS

*Super Dampcoat* enamel can be applied over damp surfaces and leaves no residual odor. This chemical-, yellowing- and fungus-resistant coating has found wide use in hospitals, breweries and chemical plants, the manufacturer reports. *The Wilbur & Williams Co., Inc., 650 Pleasant St., Norwood, Mass.*

CIRCLE 313 ON INQUIRY CARD

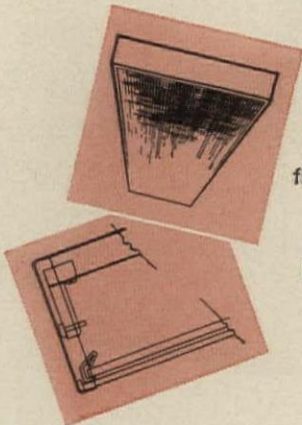
more products on page 274

# INVISIBLE FRAMES



**STRONGER, SAFER  
NO VISIBLE HINGES  
NO UNSIGHTLY BOLTS OR LATCHES MAR BEAUTY  
NO VISIBLE FRAME**

## In Guth Surface and Recessed Luminaires With Solid Lenses and Panels



Lately much is said about the "Frameless Look", yet Guth originated this frameless appearance over ten years ago.

In Guth fixtures the frames are *invisible* once installed in the fixture. These unique frames lie safely and solidly on built-in ledges. New stronger frame-rails are custom-fitted to securely hold lenses and panels in place — no clips necessary. And, Tubular-like design of frame side rails affords greater strength and rigidity.

Fixture trim exteriors are smooth, clean-sweep neat. No bolts or latches protrude beneath the fixture trim. No hinges or nuts are visible. No ill-fitting frame visible from below. The few working parts are "backstage" — hidden inside the fixture.

For Cleaning — just shift over and out — in less time than it takes to unscrew bolts or fiddle with latches on other makes. Are they strong? The 1' x 4' invisible frames and hinging devices withstand 135 lbs. load-test!

Seeing is believing. Ask your Guth sales engineer to show you a sample. Or, write us for details.

**THE EDWIN F. GUTH COMPANY, 2615 WASHINGTON AVENUE, P. O. BOX 7079, ST. LOUIS 77, MISSOURI**



For more data, circle 103 on Inquiry Card



1.

I'm in the roof deck business. We tell architects and contractors they don't need any reinforcement with our deck.



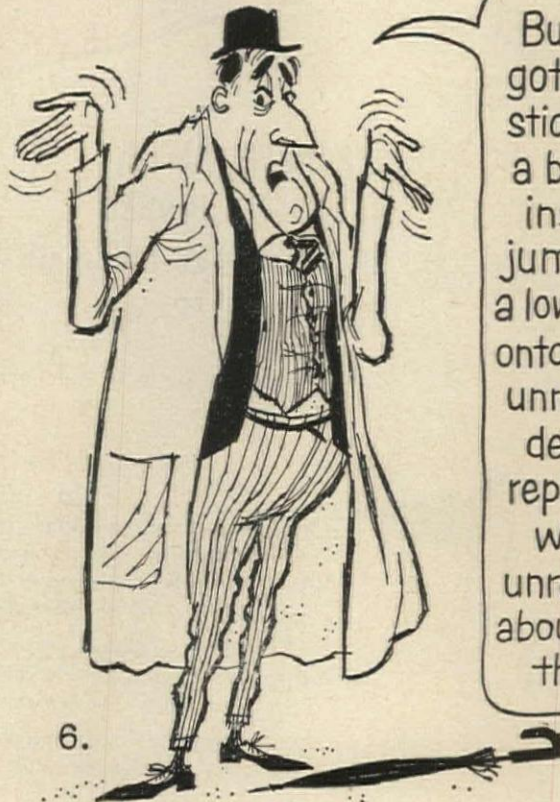
2.

"After all," we say, "Decks are only required to be designed for uniform static loads. Why worry about impact loads?"



5.

And when workmen dropped materials on the deck after the roofing material was on, well...nobody got wise that the material beneath was shattered. After all, the roofing material covered it up.



6.

But things got a little sticky when a building inspector jumped from a low parapet onto one of our unreinforced decks. His replacement was very unreasonable about okaying the deck.

KEYSTONE STEEL & WIRE COMPANY Peoria, Illinois



3.

"Besides," we say, "Our decks do have some impact resistance. If a 75 lb. man falls 6 inches onto our deck he won't bother it a bit. If he doesn't do it too often,"



4.

Well, we sold a few of our roof decks at first. But after they were up, it seemed when wheelbarrows loaded with heavy materials turned off the runs, spider cracks showed up in our unreinforced deck.



7.

If you're not interested in one of our unreinforced roof decks, I have a nice line of pencils and shoelaces.



*This advertisement published by the makers of*  
**KEYDECK**  
*that remarkably good roof deck reinforcement*



• MAKERS OF KEYCORNER • KEYSTRIP • KEYWALL • KEYMESH® AND KEYMESH PAPERBACKED LATH • WELDED WIRE FABRIC • NAILS

For more data, circle 104 on Inquiry Card

# HOW RUST-OLEUM® LONG LIFE

enables maintenance  
coating buyers to  
LOOK FAR BEYOND  
FIRST YEAR  
COSTS!



# RUST-OLEUM®

## STOPS RUST!

RUST-OLEUM CORPORATION  
2507 Oakton St. • Evanston, Illinois  
Rust-Oleum (Nederland) N.V.—Haarlem, The Netherlands

For more data, circle 105 on Inquiry Card

Remember? Many coating buyers used to look at first year costs only. They added up the cost of labor and the cost of the coating—and that was that! Rust-Oleum *long life* is helping to change all this. For example, Rust-Oleum *long life* enables maintenance coating buyers to look far beyond first year costs and helps them achieve the *lowest cost per square foot per year of protection*. This is the true cost of a maintenance coating job. And *long coating life* is the key! While most protective coatings may look alike in the pail—Rust-Oleum performance and long life make the difference. A difference that's backed by over forty years of proof in industry and municipality!

Take that tank, fencing, steel sash, piping, bridge, tower, roofing, siding, structural steel, machinery, etc. With application running about 75% of the total coating job cost, it's sound economy to specify a coating that *lasts and lasts*. That's why so many purchasing, engineering, and maintenance executives look far beyond the cost of the coating alone. They know that Rust-Oleum long life creates a new dimension in the evaluation of square foot coating costs—the dimension of *time!*



Distinctive as your own fingerprint

They know that Rust-Oleum *quality* runs deep—from its specially-processed fish oil vehicle and unique New Color Horizons System—to the many other Rust-Oleum coating systems.

What is *your* cost per square foot per year of protection? Your nearby Rust-Oleum Distributor will be happy to pin-point these figures for you, using specially-prepared Value Analysis Coating Charts. Contact him, or write for your free copies of the Rust-Oleum Value Analysis Chart, "Long Life Facts," and "101 Rust-Stopping Tips."

## Product Reports

continued from page 270

### SHEET FILE SYSTEM

New size models and colors have been added to the *Martin Sheet File System*. The new smaller 24-in. and 36-in.-wide units are available in tan, green and blue as well as standard finishes. All models feature rubber-tipped lock clips used to hold sheets flat in the 10 removable hangers. *Lewbill Industries, Inc., P.O. Box 221, Scottdale, Pa.*

CIRCLE 314 ON INQUIRY CARD

### ACOUSTICAL PAINT

A nonflammable casein paint decorates acoustical surfaces without impairing their sound-absorption or fire-retardant properties when applied according to directions, the manufacturer states. The ceiling paint is also self-dusting and has a high reflecting factor. *Luminall Paints Div., National Chemical & Manufacturing Company, 3617 S. May St., Chicago 9, Ill.*

CIRCLE 315 ON INQUIRY CARD

### HOSPITAL SHELVING

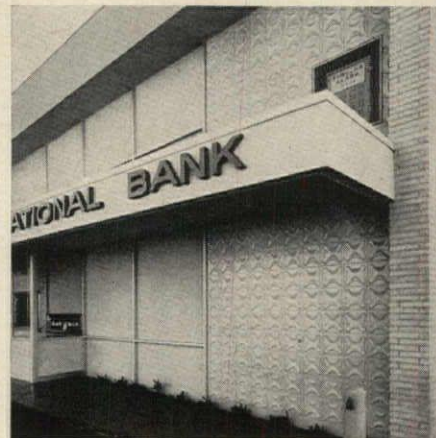
Versatile *Marketier Modular Hospital Storage Systems* featuring modular units and accessories permit a wide variety of combinations for many storage needs. The shelving is available in stainless steel or aluminized steel. *Market Forge Company, Everett 49, Mass.*

CIRCLE 316 ON INQUIRY CARD

### CERAMIC FACING

*Contours CV*, a lightweight 12 in. by 12 in. by ½ in. architectural ceramic facing, is available in 19 colors and 12 three-dimensional designs and also custom designs. *American Olean Tile Company, Inc., Lansdale, Pa.*

CIRCLE 317 ON INQUIRY CARD



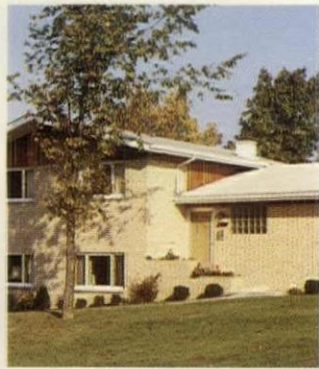
more products on page 284

For more data, circle 106 on Inquiry Card





1



2



3



4



5



6



7



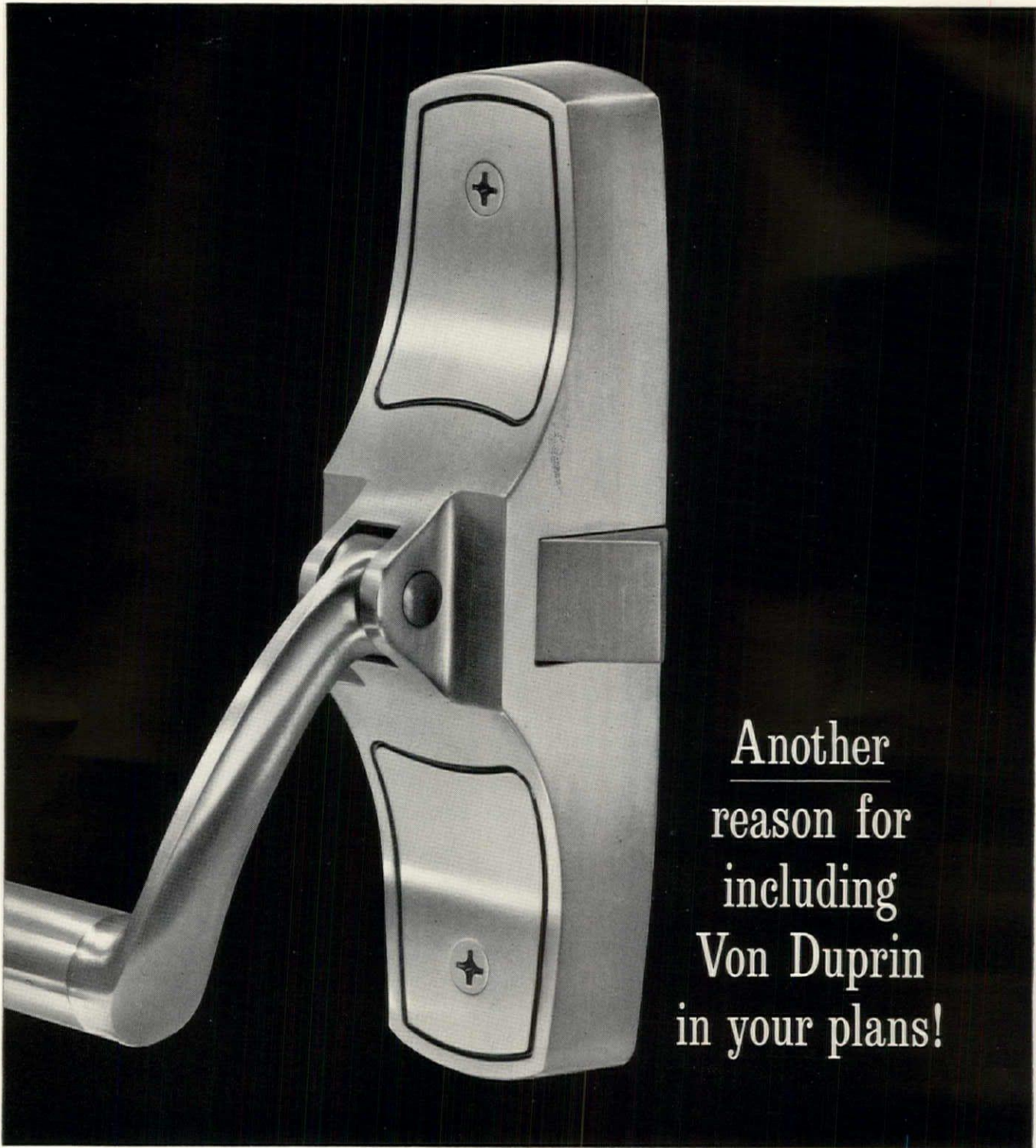
8

## new ideas in ageless structural clay—brick by Natco

New imaginative uses of brick—one of man's oldest building materials—are now made possible because of the many new colors . . . new ceramic glazes . . . new textures and sizes. ■ Photos above show some of the dynamic buildings with Natco Face Brick facades. **1.** Charlottetown Mall, Charlotte, N.C. **2.** Dr. E. R. Thomas residence, Poland, Ohio **3.** Municipal Building, Oak Ridge, Tenn. **4.** Atlanta Police Headquarters, Atlanta, Ga. **5.** Joseph Horne Co., Pittsburgh, Pa. **6.** 225 Barrone Building, New Orleans, La. **7.** Cornhusker Motor Club, Omaha, Neb. **8.** WOW Television Studio and Kiewit Plaza Office Building, Omaha, Neb. ■ Natco Face Brick is available in all standard, norman, roman, jumbo and norwegian sizes . . . modular and conventional dimensions . . . plain and textured finishes . . . various unglazed shades, and a multitude of ceramic glazed colors are available to meet every design requirement. For complete information, write for catalog #B-163.

**Natco** corporation

**GENERAL OFFICES:** 327 Fifth Avenue, Pittsburgh 22, Pa. **BRANCH SALES OFFICES:** Boston • Chicago • Detroit • Houston • New York • Philadelphia • Pittsburgh • Sayreville, N. J. • Birmingham, Ala. • Brazil, Ind. • **IN CANADA:** Natco Clay Products Ltd., Toronto.



Another  
reason for  
including  
Von Duprin  
in your plans!

● As you can see from this 77 model shown here, Von Duprin leadership in exit hardware covers design as well as engineering . . . and "the safe way out" is also the smart way out. Lock and hinge stile cases and other major components are drop-forged bronze, assuring lasting service and dependable operation in any opening. The 77, in bronze, or chro-

mium finish, is also available with six color choices of tough vinyl fabrics—applied permanently to cases and/or crossbars. Write for free, full-color Bulletin 631, showing 77 rim, mortise lock and vertical rod devices that *look* best and *work* best in any opening.



VON DUPRIN DIVISION, VONNEGUT HARDWARE CO.  
402 W. MARYLAND ST., INDIANAPOLIS 25, INDIANA

# Von Duprin® 77 Exit Devices

For more data, circle 107 on Inquiry Card

For more data, circle 108 on Inquiry Card ➔



**DULAVOIR** one-piece cast iron double bowl lavatory. Luxury Trim Fittings with exclusive never-drip Met-L-Pak® faucet controls.

**MASTER MEADOW** bathtub of enameled cast iron. Integral stop automatic diverter bathtub filler. Recessed soap dish at each end.

Cafe Au Lait—one of U/R's three exciting new colors

**CAMEO** one-piece siphonic action jet closet. Uni-Tilt® flush valve ends running water nuisance forever! Elongated bowl. Quiet action.

**FIT FOR A QUEEN OR A BUDGET.** With these U/R fixtures you can go first class...far ahead in design, color and performance. Or you can go the economy route and get extra-value features at no extra cost. **Turn page...**



**plumbing fixtures**



Choose from 6 fade-proof colors and Arctic White. This is new Petit Rouge.

**MAYFAIR** 38" x 39" enameled cast iron receptor tub with corner seat. Combines best features of tub and shower.

**CARLETTE** is an all new regular rim closet combination with low-tank design and Uni-Tilt flush valve efficiency. Powerful Direct Siphon Action.

**ORBIT** cast iron basin bowl looks smart in single or twin installation. Concealed front overflow.

**These U/R fixtures look and perform like higher priced fixtures, yet are competitively priced.**

Exclusive Met-L-Pak® cartridges prevent dripping faucets. Save water, money and maintenance. Now in all U/R Luxury Trim Fittings at no extra cost. **Lifetime guarantee.**



Patented Uni-Tilt® flush valve stops running water nuisance. Only fully adjustable tank flush valve made. Once it's set, customers never have to jiggle the toilet handle again!

**WRITE FOR FREE CATALOG...**  
**UNIVERSAL-RUNDLE CORPORATION**  
 740 River Road, New Castle, Pennsylvania

I am  an architect  a builder  an engineer  
 a plumbing contractor  a plumbing wholesaler  
 Send new U/R catalog with specs, roughing-in details and nearest source.

NAME \_\_\_\_\_  
 FIRM \_\_\_\_\_  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



**plumbing fixtures**  
*The World's Finest Plumbing Fixtures*



**NEW  
60"  
WIDE  
COOLITE  
heat  
absorbing  
glass**

*Fortified with MISCO, Diamond-Shaped Welded Wire*

Thanks to advances in manufacturing techniques, Mississippi has answered the demand for the production of Coolite glass up to 60" wide. To our knowledge this is the first time that domestically produced, heat absorbing, obscure wire glass has been made available in this width. In line with the trend toward larger glazed openings, it extends the field of usage in today's functional architecture for this attractive, blue-green pattern.\* And the inclusion of popular Misco, diamond-shaped welded wire, contributes added appeal to this long established and favorably regarded product—a recognized fire retardant. Specify Coolite, heat absorbing glass, the glass engineered to afford better light . . . better sight . . . greater comfort.

\*Recommended maximum size for Coolite wire has been increased from 10 sq. ft. to 20 sq. ft.

Send for new  
**WIDE Coolite**  
Catalog. Free  
Sample, with  
or without  
special Glare  
Reducing  
finish, on  
request.



**MISSISSIPPI GLASS COMPANY**

88 Angelica Street • St. Louis 47, Missouri  
NEW YORK • CHICAGO • FULLERTON, CALIF.

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

CREATE A WHOLE NEW WORLD



OF *Beauty and Utility with...*

**COOLITE**

HEAT ABSORBING GLASS



Coolite, Glare Reduced, installed in Pacific High School, San Leandro, California.  
Architect: Schmidts, Hardman & Wong, Berkeley, Calif. Glazing by W. P. Fuller & Company

**SPECIFICATIONS  
NEW WIDE COOLITE**

**1/8" LUXLITE COOLITE**

plain, maximum width 48";  
maximum length 132"

**1/4" LUXLITE COOLITE**

plain (not wired), maximum width  
60"; maximum length 144"

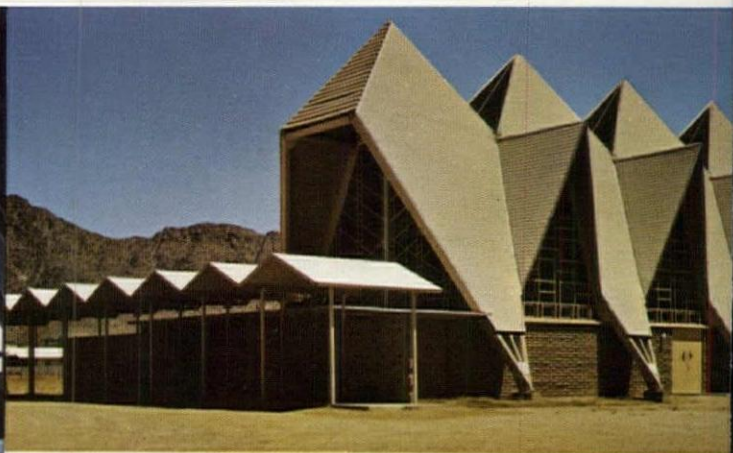
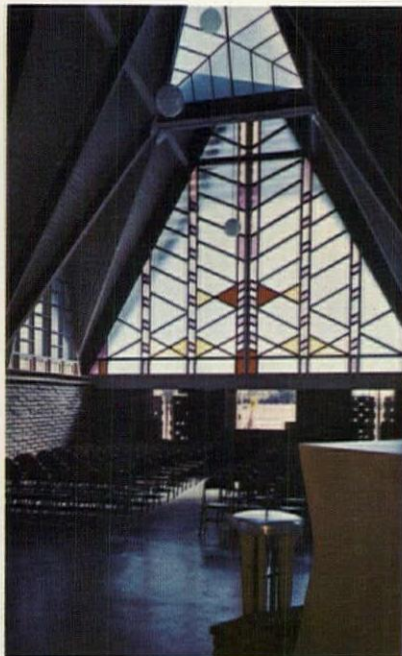
**1/4" LUXLITE COOLITE  
MISCO**

(diamond-shaped welded wire)  
maximum width 60"; maximum  
length 144"

**NOTE:**

Recommended maximum size for  
Luxlite Coolite Misco (wire) has  
been increased from 10 sq. ft. to 20  
sq. ft. No maximum limit on 1/8" or  
1/4" Luxlite Coolite, plain.

Coolite, heat absorbing glass, controls light  
and temperatures in Parkway Consolidated  
School, St. Louis, Mo. Architect: Schwarz  
& Van Hoefen. General Contractor: Swan  
Construction Company.



Coolite wire glass graces Prince of Peace Lutheran Church,  
Phoenix, Ariz. Glazing Contractor: W. P. Fuller & Company.

Coolite wire glass spans western elevation in  
Belleville Township High School gymnasium,  
Belleville, Ill. Associated Architects: Charles  
E. King & Wesley W. Chorlton.

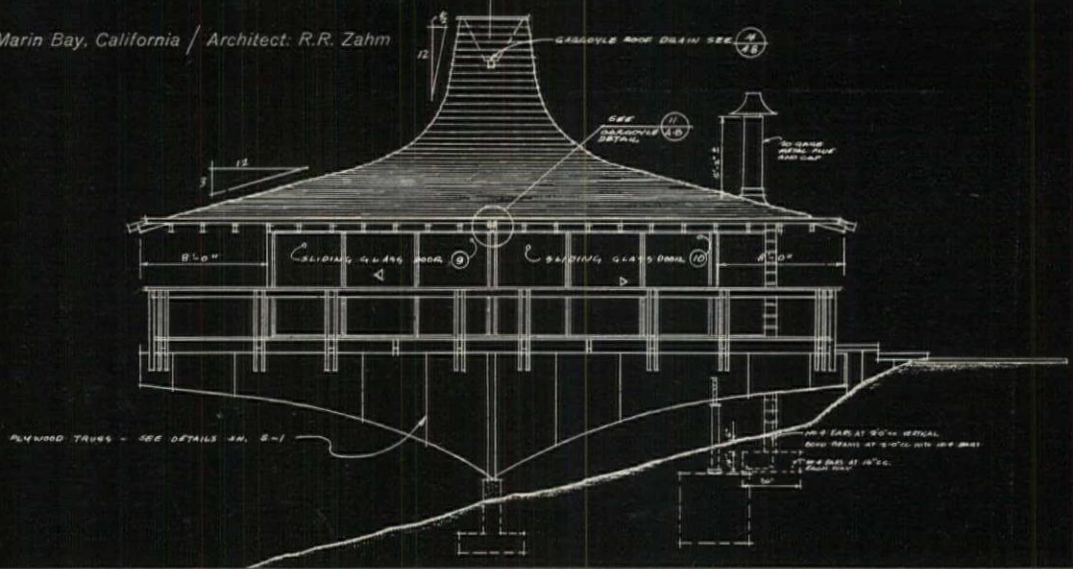


**MISSISSIPPI GLASS COMPANY**

88 Angelica Street • St. Louis 47, Missouri  
NEW YORK • CHICAGO • FULLERTON, CALIF.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

Residence, Marin Bay, California / Architect: R.R. Zahm



## Red Cedar Shingles: Classic material for contemporary design

No imitation material matches the strong, natural design accents of genuine Red Cedar Shingles. And, the beauty of this classic roofing is more than skin deep. Strong, lightweight, insulative, and remarkably durable, a cedar roof is maintenance-free

and gains beauty over the years. For more information about specifications or applications write: Red Cedar Shingle Bureau, 5510 White Building, Seattle 1, Wash. (In Canada: 550 Burrard Street, Vancouver 1, B.C.) **RED CEDAR SHINGLES**



## ARE STRINGS ATTACHED TO YOUR DESIGNS?

Look closely. There just might be.

This string might well be the laundry facilities that you've included in your plans. And a mighty expensive piece of string it is... one that will keep your client snarled with needless overhead costs.

Why get him all entangled with personnel problems and costs? with expensive-to-buy, expensive-to-maintain equipment? with costs of electricity, water, supplies and linens?

Unravel the muddle before it starts. Call the linen supply man\* nearest you. He'll show you how your client

can save money, time and space by arranging for all his linens on a money-saving, pay-as-you-use basis. He's the greatest little knot-unraveller you'll ever meet!

*\*See the Yellow Pages under "Linen Supply" or "Towel Supply".*

### FREE DESIGN GUIDES!

They give case histories and suggestions for providing more efficient linen supply service in motels, hotels, schools, restaurants and hospitals, as well as for commercial firms, professional offices and various institutions. Write today.

**LINEN SUPPLY ASSOCIATION OF AMERICA • 975 Arthur Godfrey Road, Miami Beach 40, Florida**

For more data, circle 114 on Inquiry Card





# TORGINOL *DURESQUE*

SEAMLESS-RESILIENT FLOORING

CONTINUOUS FLOW OF SEAMLESS-RESILIENT FLOORING WITH PERMANENT BEAUTY  
Office, apartment buildings, and homes now can be beautified with a permanent flow of wall to wall seamless beauty that will not collect dirt, moisture or germs... Torginol *Duresque* is a combination of scientifically prepared colored chips and liquid glaze that can be solidified over new or existing floors of wood, concrete, and most other firm surfaces. Torginol *Duresque* can be applied to exteriors as well as interiors and utilized as a coving and wainscot providing a monolithic tough thin wearing surface not attacked by most acids, alkalies or hydrocarbon solvents. Exterior *Duresque* is cushioned with Torginol's rubber-like substance, "Torga-Deck" that waterproofs and furnishes elaborate elongation characteristics.

This majestic flow of three dimensional permanent beauty can be obtained in any combination of colors and patterns giving the architect and decorator desiring uniqueness in flooring design... *design latitude*.

For further information, check the Yellow Pages for your nearest Torginol Dealer or write:  
Customer Relations Department, Torginol of America, Inc., 6115 Maywood Avenue, Huntington Park, California.



For more data, circle 115 on Inquiry Card

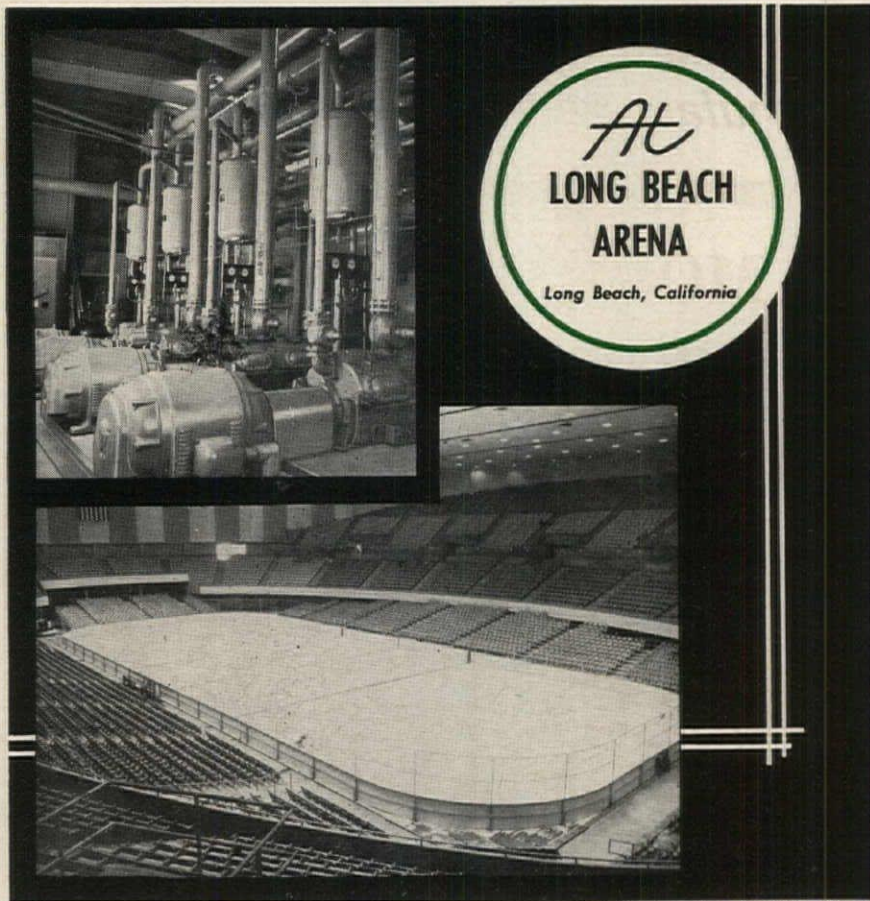


Photo Courtesy—Long Beach News Bureau

## Vilter® refrigeration equipment provides air conditioning and simultaneously freezes 85' x 200' ice rink

Built at a cost of \$8 million, the luxurious Long Beach Arena was designed to be a center for conventions, exhibits and sports. For most events it will seat 15,000; for ice hockey it can accommodate 11,932.

This new California landmark includes Vilter refrigeration equipment which will dependably and economically air condition the Arena and, when required, simultaneously freeze an ice surface for an 85' x 200' ice rink.

The 800-ton capacity refrigeration system is completely automatic in operation. It includes the four Vilter 12-cylinder, Refrigerant 22 VMC compressors shown above and a variety of Vilter vessels including water chillers, shell and tube condensers and liquid receiver.

Year 'round air conditioning of the Arena is accomplished by a chilled water/hot water circulating system with pumps feeding air handling units. There are over 50,000-ft. of 1 1/4" pipe in the rink floor and the freeze-thaw programming system is set to permit a 24-hour change cycle. Ice is formed by means of a spray machine in approximately 8 hours.

Vilter has a near-century of experience in the design and manufacture of quality refrigeration equipment and systems. Whatever your requirements for air conditioning or refrigeration, be sure to contact your Vilter representative or distributor, or write direct.

Ask for Bulletins 220, 143, 140

Vilter equipment sold and installed by Vilter distributor, Refrigeration Machinery Corp., Wilmington, California.

ARCHITECT: Kenneth S. Wing

CONTRACTOR: Gust K. Newberg

MECHANICAL ENGINEER: Kenneth G. Ambrose



**MANUFACTURING CORPORATION**  
2217 SOUTH FIRST STREET • MILWAUKEE 7, WIS.

REFRIGERATION AND AIR CONDITIONING

- Air Units • Ammonia and Halocarbon Compressors • Two-Stage and Booster Compressors • Water and Brine Coolers
- Blast Freezers • Evaporative and Shell and Tube Condensers • Pipe Coils • Liquid Transfer Systems
- Valves and Fittings • Pakice and Polarflake Ice Machines • Air Agitated Ice Builders

For more data, circle 116 on Inquiry Card

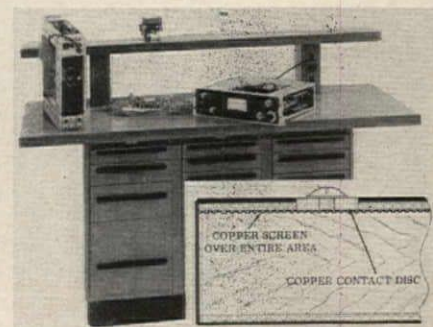
## Product Reports

continued from page 274

### LAB COUNTER TOP WITH COPPER SHIELD

A copper-shielded laminated counter top, 2 in. thick, is useful in areas with radio frequency interference problems. The copper screen is laminated between a plastic surface and a wood core, with two holes exposing the screen for grounding contact. Manufacturer found insulation resistance to be more than 50,000 megohms per sq ft. Drawers, doors, tops and accessories are available in standard sizes. *Sturdilite Products, Inc., 3001 Palmolive Bldg., Chicago 11, Ill.*

CIRCLE 318 ON INQUIRY CARD



### DIAZO PAPER

Six new all-purpose *Ozalid* bond papers for general office use that also serve as masters for high quality diazo copying have the appearance and feel of regular bond, yet can be used with standard diazo office copying equipment. General Aniline announced. The company has also introduced a new *Ozalid* 24 lb paper available in two speeds, standard 205 M and rapid 208 M, which has "a brilliant white background and optimum-density blue-line image," according to the manufacturer. *General Aniline & Film Corporation, Binghamton, N.Y.*

CIRCLE 319 ON INQUIRY CARD

### ROLLER-PARTITION CURTAINS

The *Singer Glide-wall*, a partitioning curtain carried on a track attached to ceiling, I beams or wall-to-wall, is suitable for use in hospitals, restaurants and institutions. This flame-resistant room divider can also be used as a free-standing partition and is available in many materials. *Singer Safety Products, Inc., 850 W. Weed St., Chicago 22, Ill.*

CIRCLE 320 ON INQUIRY CARD

more products on page 288

*Square D Sells More Panelboards  
Than Any Other Manufacturer---and---*

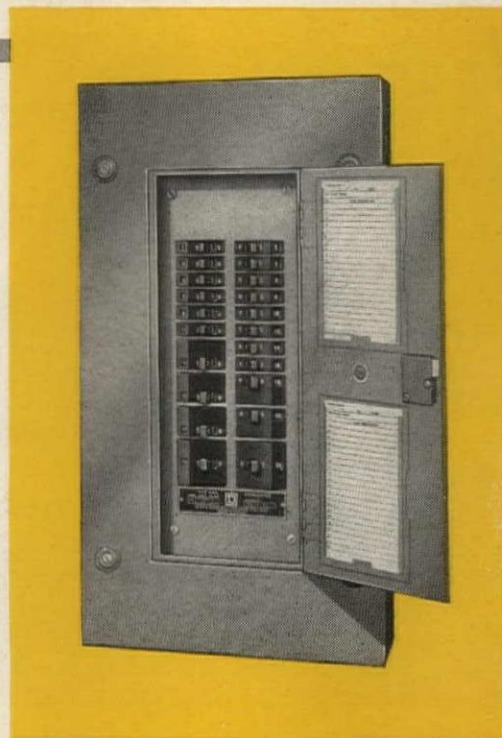
# **NQO** IS THE MOST VERSATILE AND MOST POPULAR OF ALL SQUARE D PANELBOARDS

## *Here Are Some of the Reasons:*

- ✓ **They're versatile** • Use them for lighting only; for power distribution only; or for a combination of both—in one compact unit
- ✓ **They're available** • A national network of stocking distributors, backed by regional assembly plants, provides exceptional delivery and service
- ✓ **They're flexible** • A complete line of 1, 2 and 3 pole breakers, rated 15 through 100 amperes, can be arranged in any order in the panelboard
- ✓ **They're NI** • All Square D panelboards have the same Class NI visible system (exclusive design) which affords full compliance with code non-interchangeability requirements
- ✓ **They're compact** • In many rewiring and modernization jobs they can replace outdated fusible and circuit breaker panelboards without rewiring existing box and conduit. Standard interiors and custom-built trims provide new panelboard appearance and performance
- ✓ **They're rugged** • Built to take the usage of the heaviest, most exacting industrial, commercial or institutional installations

**write for Panelboard Bulletin.**

Address Square D Company, Dept. SA.,  
Mercer Road, Lexington, Kentucky



## **QO BREAKERS**

are the "heart" of NQO panelboards. They give positive protection against "flash" shorts



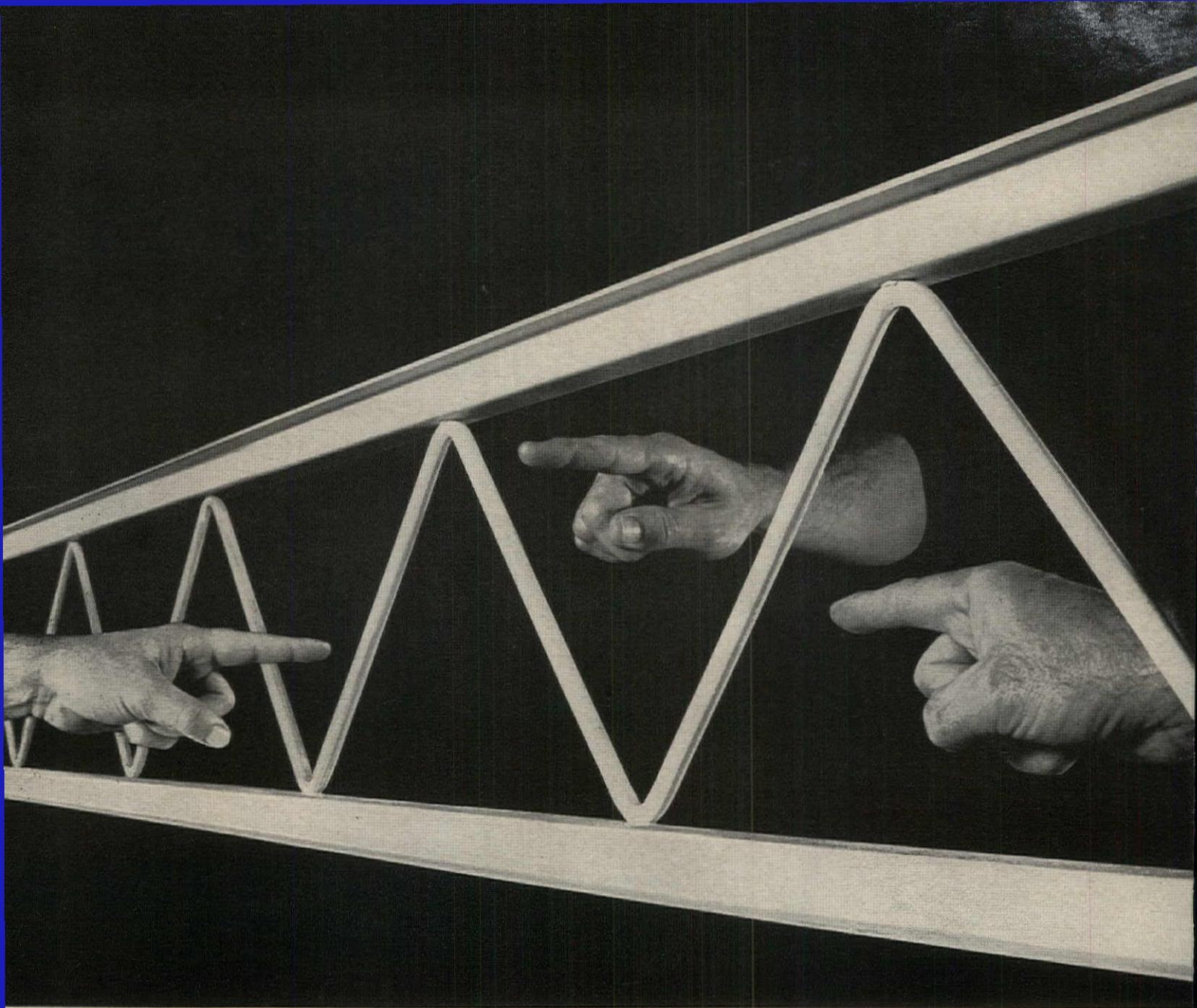
QO 1-POLE 15-50 Amp.	QO 2-POLE 15-70 Amp.	QO 3-POLE 15-60 Amp.	Q1 2-POLE 70-100 Amp.	Q1 3-POLE 70-100 Amp.
-------------------------------	-------------------------------	-------------------------------	--------------------------------	--------------------------------



# **SQUARE D COMPANY**

*wherever electricity is distributed and controlled*

For more data, circle 117 on Inquiry Card



*The spaces in the steel  
make floor systems  
with open-web joists  
completely flexible*

It's no trick at all to provide for heating lines, recessed lighting, air-conditioning, complicated communications set-ups, sprinklers—when you design with Bethlehem steel open-web joists. You can provide for lines running in any direction. Simplifies mechanical and electrical layout. Saves money and installation time while the building goes up.

Steel joists are incombustible, can't warp or sag. Termites can't eat them. They arrive at the job completely fabricated, ready for immediate placing. And with steel, properly designed, there's plenty of strength. Call the nearest Bethlehem sales office. We'll be glad to talk over your next building with you.

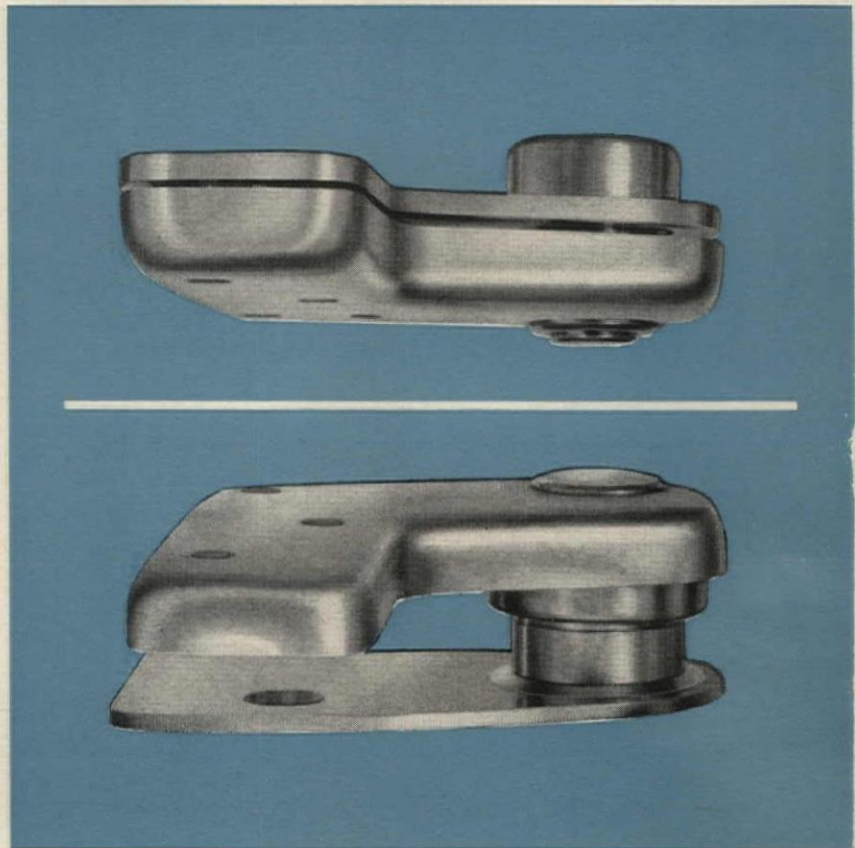
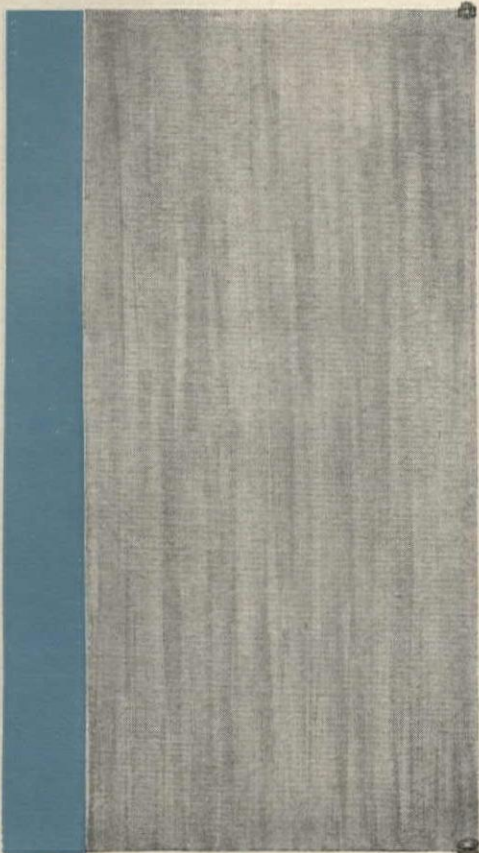


BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Sales: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**

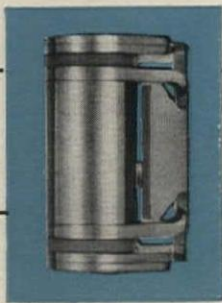


the **FIRST** in  
**STAINLESS STEEL** Pivot Sets  
 by **RIXSON**



**no. 33<sup>\*</sup> offset**

*Priced amazingly low!*  
 Advantages of pivotal hanging  
 . . . economical for ALL doors.



**no. 333<sup>\*</sup> stainless steel side jamb pivot**

\* PATENT APPLIED FOR

*Write for full description and details*

**RIXSON**  **Inc.** FRANKLIN PARK, ILLINOIS • TORONTO, CANADA

For more data, circle 118 on Inquiry Card



## NEW CLASSICISM in EXTERIORS with ARCHITECTURAL GRILLES

Functional, durable and economical, IRVICO architectural grilles as guard rail components provide an element of classic simplicity, balance and harmony. They give an appearance of lightness and airiness; yet inherent "third dimension" affords complete privacy when viewed from below.

Minimal installation costs make IRVICO architectural grilles, with their aesthetic and functional advantages, most economical. Framing is not required and panels are simply and rapidly secured to tubing by specially designed clips.

For complete information write



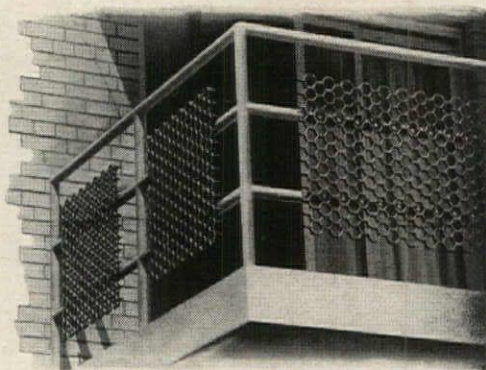
**IRVING SUBWAY  
GRATING CO., Inc.**

**ORIGINATORS OF THE GRATING INDUSTRY**

Offices and Plants at

50-62 27th ST., LONG ISLAND CITY 1, N. Y.  
1862 10th ST., OAKLAND 20, CALIFORNIA

For more data, circle 119 on Inquiry Card



- 85% open mesh.
- Available in finished steel and color anodized aluminum.
- Flexible panels for contoured installations.

## Product Reports

continued from page 284

### HOSPITAL CASEWORK

*Mediscope*, a new line of hospital casework equipment featuring stainless steel construction modified with enameled steel parts is available at prices said to be competitive with conventional enameled steel units. *Metalab Equipment Company*, 270 Duffy Ave., Hicksville, Long Island, N.Y.

CIRCLE 321 ON INQUIRY CARD



### SKYLIGHTS

*Vent-A-Dome Skylight* provides ventilation and daylight through one roof opening. The hip-type form of the dome has a flange hip which houses a standard, heavy-duty 100 CFM blower. It is mounted on a self-flashing extruded aluminum frame, and no curb is required. *Plasteco, Inc.*, P. O. Box 9123, Houston, Texas

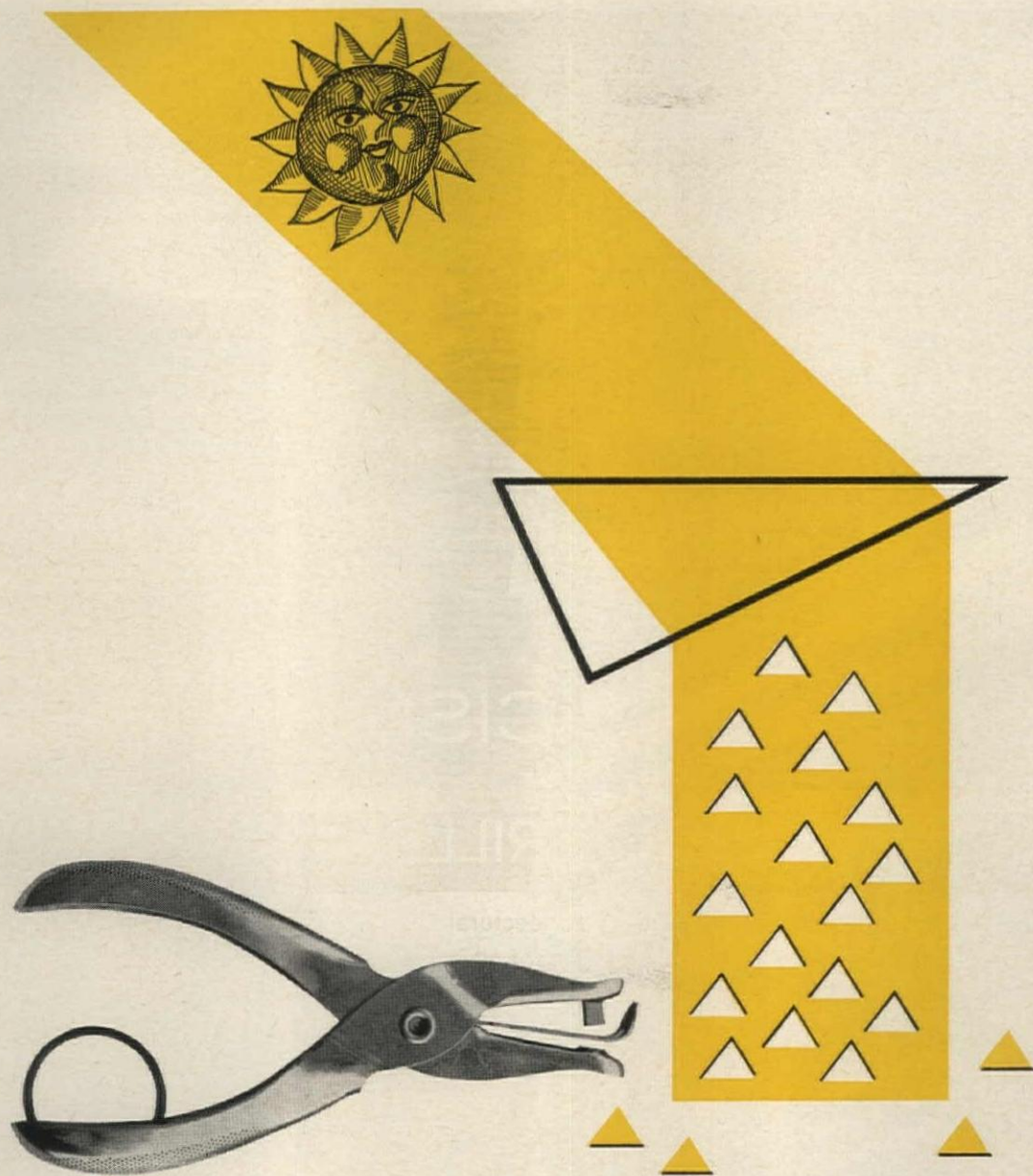
CIRCLE 322 ON INQUIRY CARD

### STEEL POLES

A lightweight, seam-welded, sectional steel floodlight pole can be assembled by two men in 15 minutes on the job site, the manufacturer reports. The pole, which supports four *Crouse-Hinds* floodlights, requires no grounding. A 9½-ft pole weighs 37 lbs, and supports a 225-lb load. *Crouse-Hinds Company*, Syracuse, N.Y.

CIRCLE 323 ON INQUIRY CARD

more products on page 292



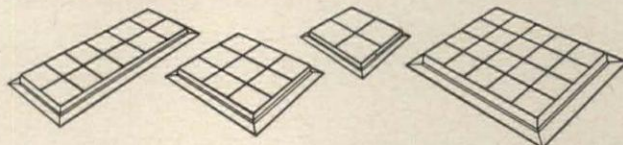
## Daylight Ticket Taker

Hundreds of little prisms in Toplite Roof Panels guard the gateways for all light rays. Intense rays from the high summer sun are punched out or rejected. These prisms admit only low-angled light from the north sky and winter sun—just the ticket for soft, uniform day lighting, free from glare or shadows. Thus, Toplite's exclusive prisms also reduce heat build-up, transmitting only about one-third as much heat in summer as conventional skylights.

Toplite Roof Panels have a low profile that does not affect the appearance of the structure. They are avail-

able in a variety of sizes for easy installation on buildings of all types.

Mail the coupon for complete technical information on the only skylight offering optical control of sunlight.



SEND FOR TECHNICAL DATA

Products Research Company Dept. AR-963  
2919 Empire Ave., Burbank, Calif.

Please send me complete information about Toplite Roof Panels.

NAME \_\_\_\_\_

FIRM NAME \_\_\_\_\_

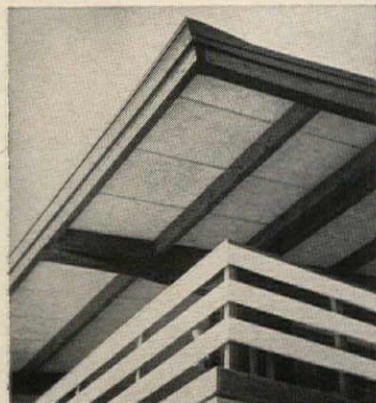
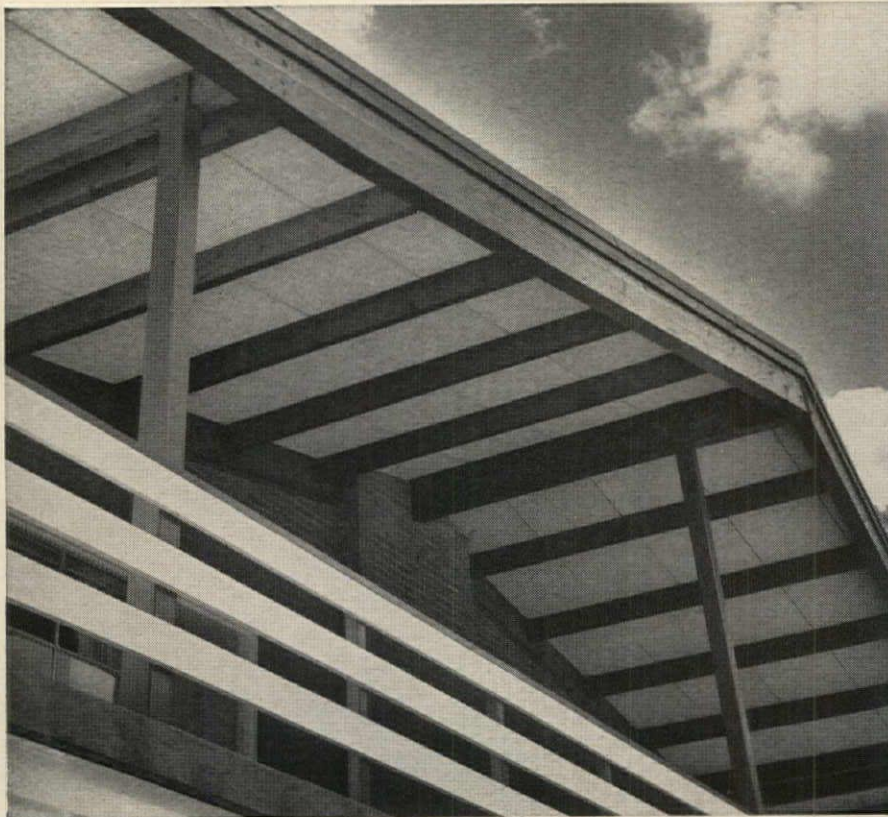
ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



Research is our middle name  
**PRODUCTS RESEARCH COMPANY**  
2919 Empire Ave., Burbank, California  
410 Jersey Ave., Gloucester City, N. J.

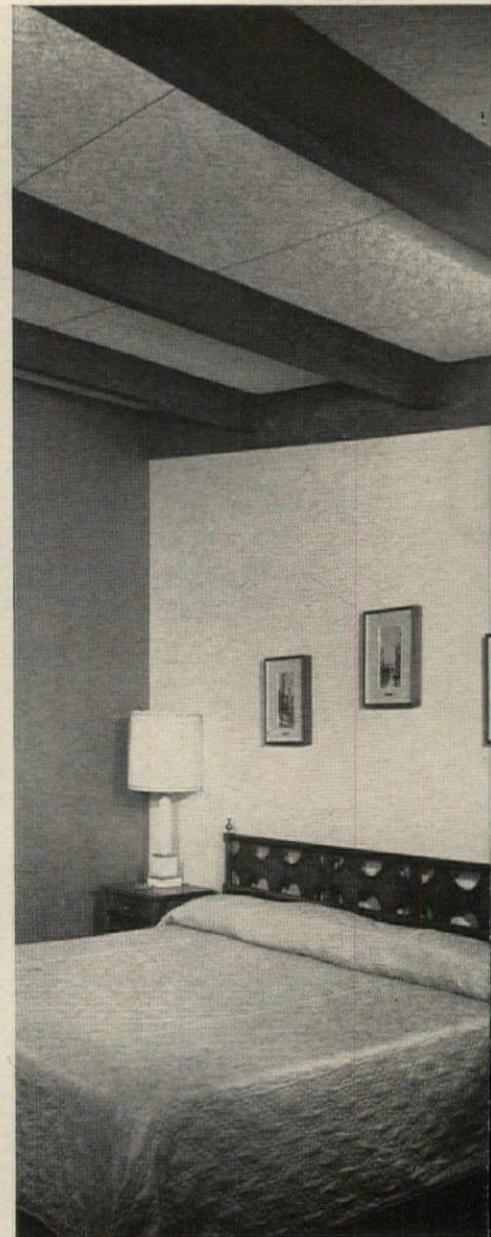
For more data, circle 120 on Inquiry Card



At the east end of the new unit . . . tucked away beneath a cooling Tectum overhang . . .



you can have a luxurious studio . . .



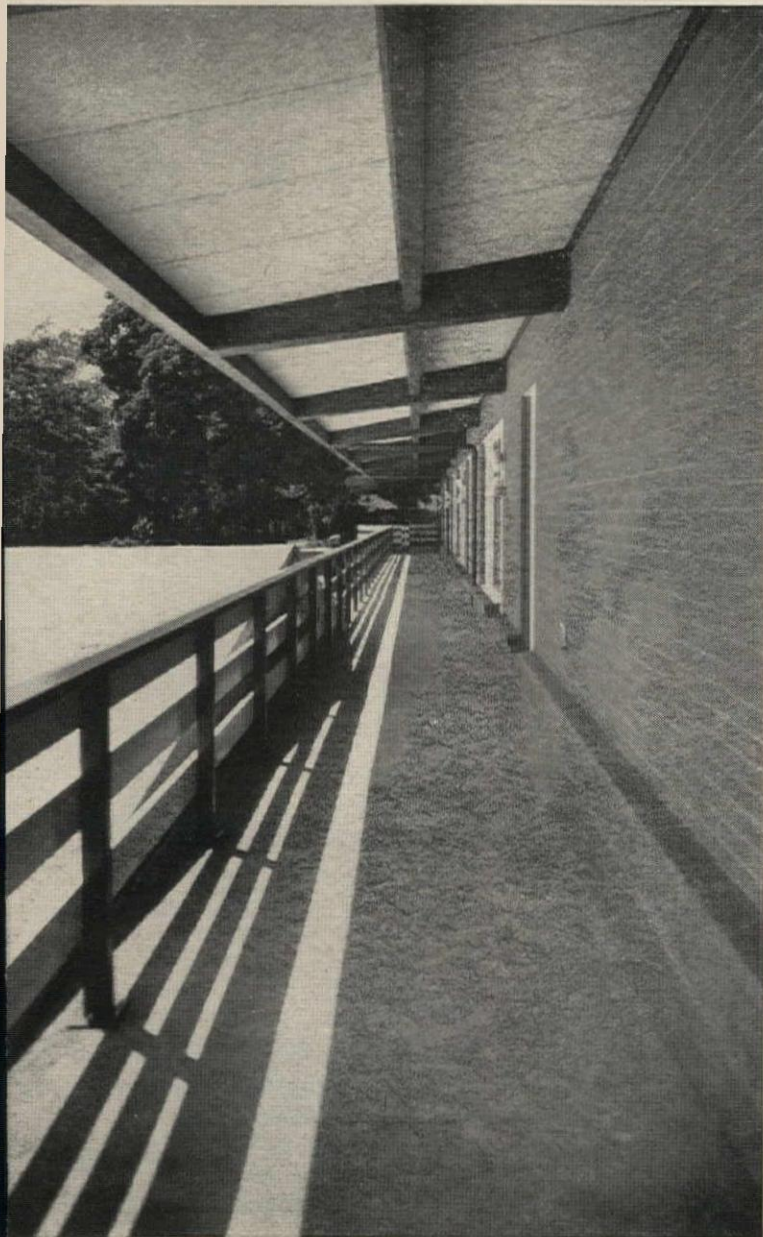
or a comfortable bedroom.

## The Gold Bond difference is Tectum at Sewickley Motor Inn, Sewickley, Pa.

**Architect:**  
Geo. R. & Geo. L. Simons, A.I.A., Pittsburgh 6, Pa.

**Contractor:**  
Mellon-Stuart Co., Pittsburgh, Pa.





Thanks to Tectum, your walk-way . . . resembles a cozy patio . . . overlooking your own private pool.



Mr. Forest Early, Mgr.  
Sewickley Motor Inn

**"Our business is people  
-keeping them happy  
-and comfortable"**

"When planning our latest expansion, I suggested Tectum roof decks," Mr. Early states.

"Tectum contributes much to the atmosphere of comfort and hospitality we strive to achieve. It has an intrinsically beautiful textured surface.

"Quiet and privacy within each room are assured because of the basic wall structure and because of Tectum's insulating and sound-absorbing qualities in ceilings. Guests like the 'studio' look and the casual, homelike atmosphere.

"We were especially pleased with the wide overhanging design for balconies and walkways. The material helps create that important first impression so vital in our business."

A Tectum roof deck over beam or joist is a specification for fast erection, multiple values in easily handled, quickly anchored, lightweight planks. Tectum is structural, fire-safe, and factory finished to save painting costs. And it's popular with the most successful motor inn builders. For complete information write Dept. AR963 or call your local Tectum Distributor. National Gypsum Company, Buffalo 25, New York.

**Gold Bond materials and methods make the difference in modern building**

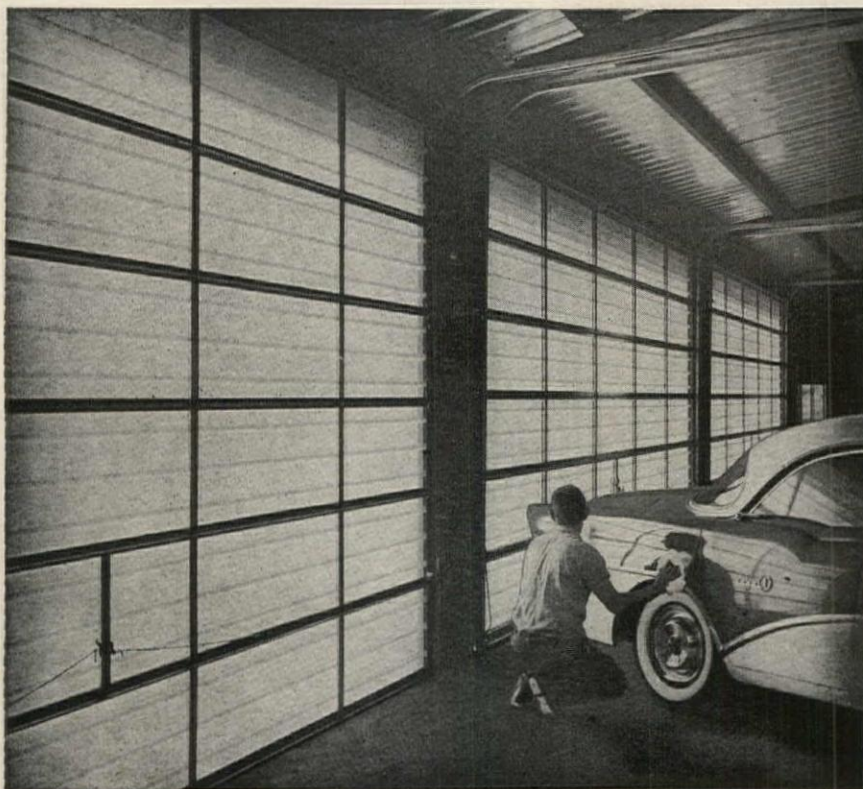


For more data, circle 121 on Inquiry Card

GET MORE LIGHT ON EVERY JOB WITH

*Filuma*®

THE TRANSLUCENT FIBERGLASS DOOR  
FOR MODERN INDUSTRY



- No maintenance, no painting, no glazing, just hose off dust and dirt
- Five colors—white, tan, yellow, coral or green
- Torsion springs, easily adjusted for perfect balance
- Weighs one-third as much as wood doors.
- Sizes to 24' wide by 16' high
- Quality hardware features

Filuma gives you all of the advantages of overhead door operation—manual or motor powered—plus the undeniable advantage of extra daylighting.

You get more light on every job because Filuma admits 60 to 70 percent of the daylight. Yet the sturdy reinforced fiberglass panels pressure-sealed in extruded aluminum frames provide great strength and wind load capacity. And Filuma is maintenance-free.

The smart sculptured design of Filuma enhances any architectural motif. In addition you have a choice of five colors.

Fill in and return the coupon for complete specifications without obligation.

Design Pat. No. 194094

Nationally Distributed through Lumber and Building Supply Dealers

**FRANTZ MANUFACTURING COMPANY, STERLING, ILLINOIS**

See  
**SWEETS**

Lt. Const. 5d/Frn  
Arch. 16j/Fr  
Ind. 13a/Fr

Gentlemen: Please send complete details of the Frantz Filuma Sectional Overhead Door and free brochure in color.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

For more data, circle 122 on Inquiry Card

## Product Reports

continued from page 288

### STEEL FORMS

Permanent galvanized steel forms for concrete slabs are now being produced with "bonding buttons" to provide greater bonding quality between concrete slab and steel form, Republic Steel announced.



Called *Trusform*, the roll-formed sheet ribs eliminate reinforcing bars and provide formwork immediately, the company reported. Republic Steel Corporation, 1315 Albert St., Youngstown 5, Ohio

CIRCLE 324 ON INQUIRY CARD

### MODULAR FIRE ALARMS

A new series of four coded and three noncoded modular constructed fire alarm systems offer greater flexibility in the planning of multiple-dwelling units. Edwards Company, Inc., Norwalk, Conn.

CIRCLE 325 ON INQUIRY CARD

### DAMPER REGULATORS

The *Farr Trim-Lok* is a new damper regulator for air-handling systems that will not shake or vibrate loose as the spring-locking action automatically locks the damper in place. Farr Company, P.O. Box 90187, Airport Station, Los Angeles 9, Calif.

CIRCLE 326 ON INQUIRY CARD

### CONCRETE ADMIXTURE

Admixture gives concrete floors a tile-like finish to seal against moisture and acid penetration, increase wearing life and prevent dusting. *Trip-L-Seal Concrete Admix* can also be used for structural slabs, concrete walls and cement mortars. *Trip-L-Seal Waterproof Co.*, 600 F St., N.W., Washington 4, D.C.

CIRCLE 327 ON INQUIRY CARD

# MR. ARCHITECT

## MEETING YOUR EXACT

### SPECIFICATIONS

in distinctive store fixtures and equipment is assured when you work with "American". Our unlimited versatility gained through fifty years of wide and varied experience is your assurance that every detail will be beautifully executed.

●  
**MODULE WALL SYSTEMS**

●  
**METAL FABRICATION and FINISHING**  
including . . .

- Electro-plated finishes
- High-Temperature oven-baked Epoxy color enamel finishes
- NicKold Custom Color Finishes

●  
**WOOD WORKING and CABINET MAKING**

●  
**PLASTIC LAMINATING . . .** wood grains and colors to your specifications.

●  
**EXPERIENCED INSTALLATION CREWS**  
are available to YOU when YOU work with . . .



**AMERICAN FIXTURE INC.**

TRIMLOX STORE EQUIPMENT

U.S. PATENT NO. 2,808,414; CAN. PATENT NO. 602,808

Please send complete information about American Fixture Inc. Special Services To:

Interior Designers  Store Planners  Store Architects

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

FIRM \_\_\_\_\_

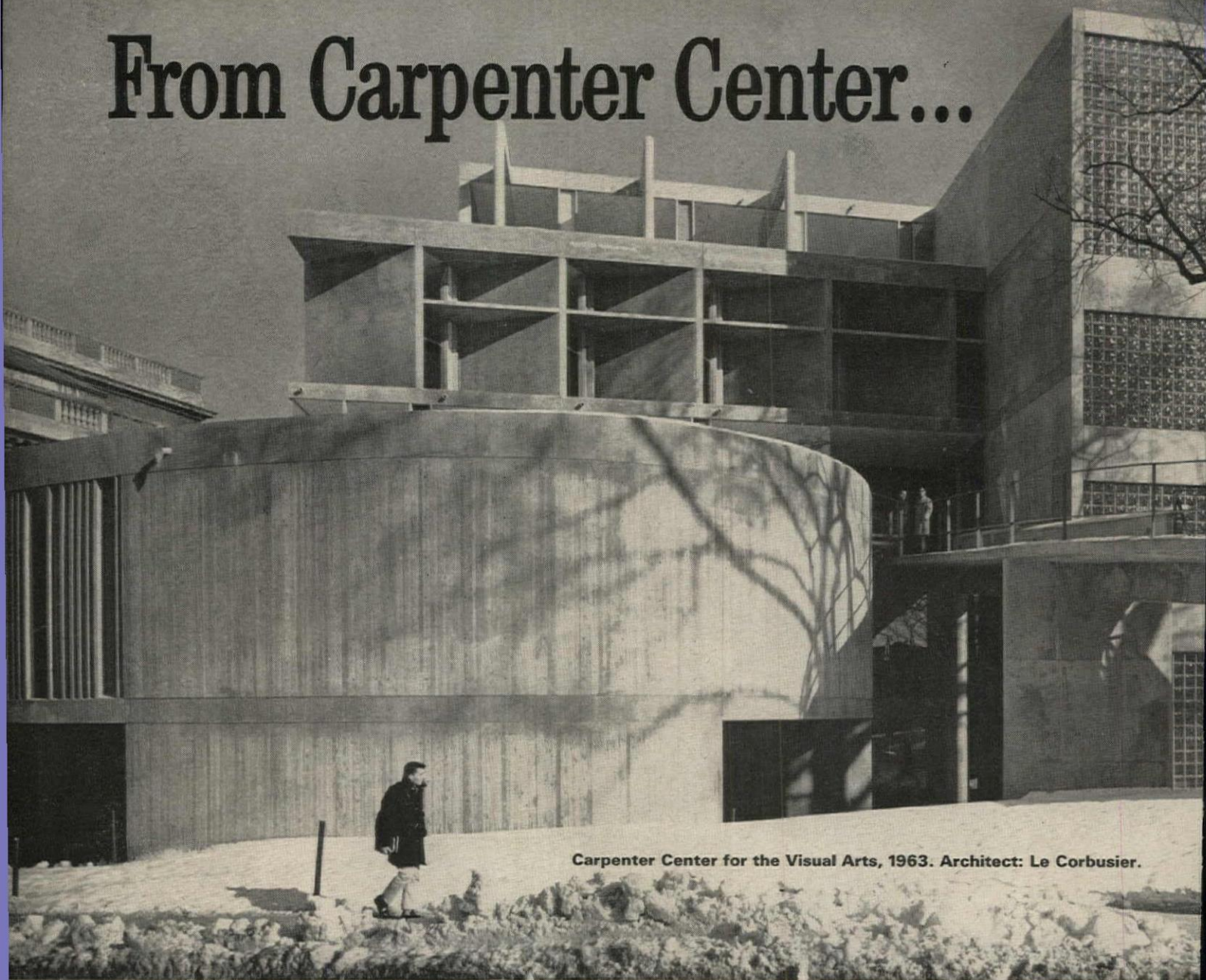
ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

American Fixture Inc. • Dept. AR 936 • 2300 Locust St. • St. Louis 3, Mo.

For more data, circle 123 on Inquiry Card

# From Carpenter Center...



Carpenter Center for the Visual Arts, 1963. Architect: Le Corbusier.

## Honeywell's at Harvard...controlling temperature

Just two men at two Honeywell Selectographic Control Centers supervise the whole job in Cambridge! One man at each centralized control panel can check and change temperature . . . start, stop and monitor fans, heating and air conditioning equipment. He can even operate steam valves and monitor flood valves . . . all from a console about the size of an ordinary desk.

Three years ago, an analysis showed "an inordinate amount of time" needed for operating men to go from building to building to perform routine functions. Harvard was ready for automated control.

The Harvard campus poses some interesting problems for an automated control system. For one thing, it's big . . . both in area and in number of buildings. For another, the buildings themselves differ greatly in age, size, design and requirements. Finally, Harvard is growing

fast. They had to have a system that could handle the expansion they plan in the years ahead. Working with Honeywell engineers, they decided the best solution was two centrally-located Honeywell Selectographic Data Centers.

As the map shows, one center controls 67 campus buildings north of the Harvard Yard. Another, in Holyoke Center, will control 40 buildings south of the Yard. As an indication of the capability of these systems, one man at the north Data Center can:

1. view 37 schematic diagrams (projected from slides) representing systems for the 67 buildings.
2. start, stop, or listen to 42 fans up to  $\frac{1}{2}$  mile away.
3. operate 32 steam valves.
4. check temperatures at 100 points.
5. get immediate warning of humidity changes in steam tunnels or library



# To Divinity Hall



Divinity Hall, landmark on campus since 1826. Drawn and supervised by Tomas W. Sumner.

## and equipment in 107 buildings, all sizes, all ages

areas (which include, among other treasures, priceless Oriental manuscripts).

Reports indicate that savings from this automatic control program will amortize the investment in two years, besides improving service. And, Harvard has a modern control system that can accommodate new facilities as they're built.

Automated control is an important part of any modern building program . . . any expansion plan. The booklets offered at right are designed to help you in the planning stages of your newest project. And, whether it involves new or old buildings, one building or hundreds, Honeywell has the systems and the know-how to survey, plan, install and service any job efficiently and economically. 112 offices in the U.S. . . . others in all principal cities of the world.



FIRST IN CONTROL SYSTEMS

Mail coupon for project analysis, planning guides.  
Honeywell, Dept. AR9-82,  
Minneapolis 8, Minn.



Send me the following free planning guides:

- Security and Surveillance
- Clock Programming Systems
- Automatic Fire Protection
- Temperature Control
- Automation Techniques
- Preventive Maintenance Programs

- I'd like a free automation analysis for a project.
- I would like to see a typical installation in my area.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

## Honeywell

For more data, circle 124 on Inquiry Card

## Office Literature

continued from page 238

### BUILDER PRODUCTS

The second edition of a comprehensive pocket-size catalog includes 129 new products added to the company's complete line of electric heaters, lighting fixtures, fans, intercoms and door chimes. *Emerson Electric, 8100 Florissant, St. Louis 36, Mo.*

CIRCLE 414 ON INQUIRY CARD

### LIQUID CHILLERS

File-size folder tells about a newly developed line of *Packaged Liquid Chillers* of 40- through 100-ton capacity designed to meet commercial and industrial air-conditioning and refrigeration requirements. The bulletin, catalog No. 91-519, tabulates capacity ratings for six water-cooled and six air-cooled models. *Acme Industries, Inc., 600 N. Mechanic St., Jackson, Mich.*

CIRCLE 415 ON INQUIRY CARD

### CEILING KITS

Complete information on *Packaged Ceiling Kits* is given in an eight-page booklet. Typical residential and commercial suspended ceiling applications are shown. *Artcrest Products, 255 W. 79th St., Chicago 20, Ill.*

CIRCLE 416 ON INQUIRY CARD

### PLASTIC LAMP ENCLOSURES

Information on the first use of acrylic plastic for incandescent lamp enclosures is contained in "Cubic," a four-page brochure. *Holophane Company, Inc., 1120 Avenue of the Americas, New York 36, N.Y.*

CIRCLE 417 ON INQUIRY CARD

### HIGH-RISE CONCRETE FRAMING

A new report describes the 24-story "One Charles Center Building" in Baltimore designed by Mies van der Rohe. This building typifies the growing trend towards reinforced concrete framing for high-rise commercial structures. *Ceco Steel Products Corporation, 5601 W. 26 St., Chicago 50, Ill.\**

CIRCLE 418 ON INQUIRY CARD

### SCHOOL WINDOW SHADES

Vividly colored (as well as white and neutral) school window shades in a variety of styles to meet many lighting control needs, are described in a new six-page folder. *Joanna Western Mills Company, 22nd and Jefferson Sts., Chicago 16, Ill.\**

CIRCLE 419 ON INQUIRY CARD

### STRUCTURAL STEEL

An eight-page guide to the chemical and mechanical properties of the company's line of structural steels also includes welding data, fabricating practices and other technical information. *United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.*

CIRCLE 420 ON INQUIRY CARD

### SCALE MODELS

Pamphlet outlines the varied possibilities for scale models in plant and office layouts, engineering design, displays and other applications. *Visual Industrial Products, Inc., Oakmont, Pa.*

CIRCLE 421 ON INQUIRY CARD

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

more literature on page 302



Eastman Reading Garden,  
Cleveland Public Library,  
George Creed, Architect;  
Heights Paving Co., Contractor.

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Easily applied by the dust coat method when concrete slabs are poured, HYDROMENT requires no additives or mixing at the job site. Indoors or outdoors, HYDROMENT adds superior strength, hardness and density where it is needed — at the surface. Non-toxic, odorless, waterproof. Available in Tile Red, Tan, Terra Cotta, French Gray, Green, Grass Green, Black, Brown, White and Natural Cement. Write for catalog.



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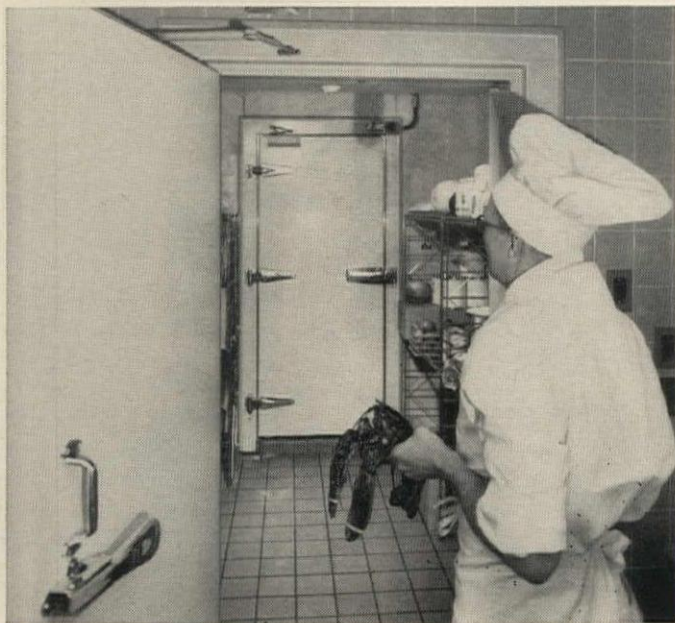
4805 LEXINGTON AVE. • CLEVELAND 3, OHIO  
In the West: HYDROMENT, INC. • 829 N. Coffman Drive • Montebello, California

For more data, circle 125 on Inquiry Card

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ONE-HAND OPERATION is easy with lightweight JAMOLITE. Door above is light blue, harmonizing with blue ceramic wall tile and red floor tile.



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Write today for complete details on Jamolite Doors to Jamison Cold Storage Door Co., Hagerstown, Md. Ask for Catalog 7.

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*Sno-Melter*

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building's prestige in snowy weather  
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Beneath concrete, asphalt or slate, pre-engineered Sno-Melter operates unseen — at the flip of an electric switch. Only the results show. Melts snow and ice and slush which too often detract from building design. *Cleans up the approach to your building* all winter long. Two systems available: pre-assembled wire mats, or stock-packaged mineral insulated Sno-Melter MI Cable. Write for illustrated spec sheets.

**EASY-HEAT**

DIVISION OF EMPIRE ELECTRIC CORP., DEPT. 350, LAKEVILLE, INDIANA

For more data, circle 128 on Inquiry Card

*Office Literature*

*continued from page 296*

**PAINTING PERFORMANCE**

A technical booklet from the paint and lumber industries outlines procedures for improving the performance of painted wood through sound construction practices. In particular this booklet describes control measures and construction features to prevent condensation. *National Lumber Manufacturers Assoc., Technical Services Div., 1619 Massachusetts Ave., N.W., Washington 6, D.C.*

CIRCLE 422 ON INQUIRY CARD

**TEXTILE LIGHTING**

"Textile Lighting," a 16-page brochure, discusses the principles, economics, techniques, equipment maintenance, and other factors concerning lighting systems for textile plants. Fourteen case studies are presented. *Inquiry Bureau, General Electric Company, Dept. TP-117, Nela Park, Cleveland 12, Ohio*

CIRCLE 423 ON INQUIRY CARD

**MASS SEATING**

A new 44-page "Commercial and Institutional Seating Catalog" illustrates the manufacturer's expanded custom design seating line available in various materials, finishes and fabrics. Significant additions to *Tri-Par's* square tubular steel stacking chairs, and their modular, fiberglass, wood and aluminum base pedestal chair lines, are among the more than 200 chairs and accessories included in the catalog. A special four-color insert illustrates and describes the standard silicon enamel, parminized enamel, plated and wood finishes available on all company chairs. *Tri-Par Manufacturing Company, 1740 Pulaski Rd., Chicago 39, Ill.*

CIRCLE 424 ON INQUIRY CARD

**BACKDRAFT DAMPERS AND MOTORS**

A complete line of newly designed dampers to exclude backdrafts from fans, gravity ventilators and other appliances, is described in catalog sheet LD-62A. Technical data on a new line of electric motors, which are custom built for use with the company's backdraft dampers, is given in catalog sheet LD-62B. *Penn Ventilator Co., Inc., 11th St. and Allegheny Ave., Philadelphia 40, Pa.*

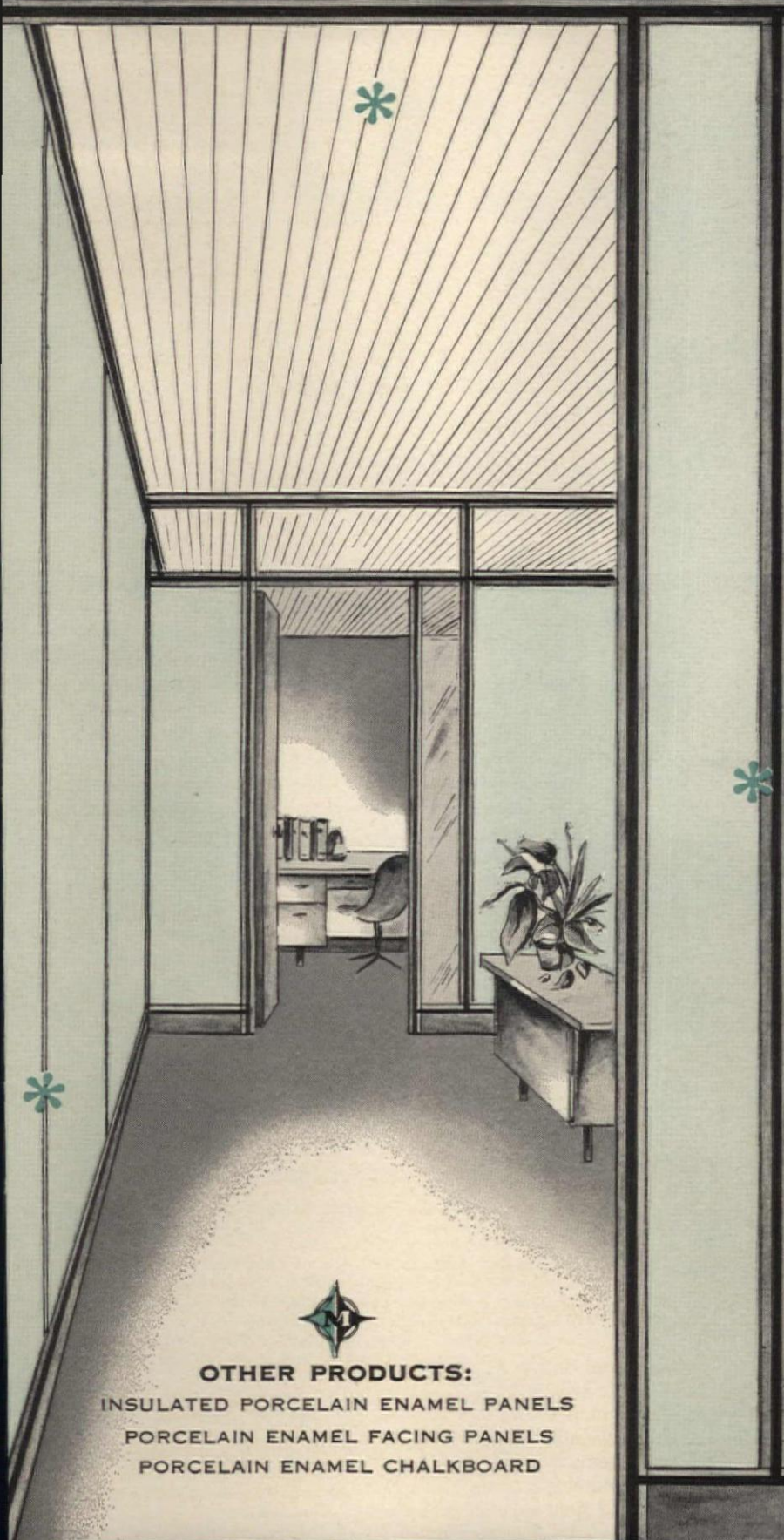
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*\*Additional product information in Sweet's Architectural File*



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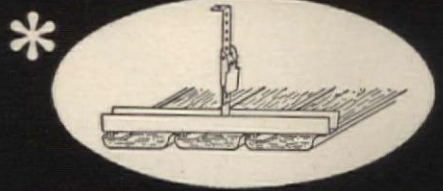


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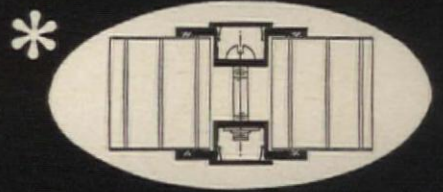


**STRIP CEILING**—A pleasant awareness of something new in aesthetics comes into every room finished with this ceiling. A finely perforated aluminum strip is finished in baked enamel, insulated with fibre glass and snapped into a suspended channel. Sound conditioning at its best. Accommodates plenum ventilation.

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Professional interest and participation reached a new high in the history of Ruberoid's architectural competitions. The opinion of the Competition Jury was that important new ground was broken by the winning awards in a challenging area of American life. It felt also that many of the ideas presented will be brought into existence and make a contribution to housing of the future.

The winning designs will be reproduced in a brochure later this year. For a copy write to The Ruberoid Co. on your letterhead.



◀ THE DISTINGUISHED JURY that selected the winners (Left to Right)

- Herbert J. Gans, Research Assoc. Prof. of City Planning Inst. for Urban Studies and Dept. of City Planning, University of Pennsylvania, Phila., Pa.
- David A. Crane, A.I.A., Dir. of Land Planning and Design, Boston Redevelopment Authority, Boston, Mass.
- Lewis E. Kitchen, Lewis Kitchen Realty Co., Specialist in urban redevelopment; Kansas City, Mo.
- Albert Mayer, F.A.I.A., Chairman of Jurors, eminent architect and consultant, specialist in town, city and rural planning and development, New York, N. Y.
- Sir Leslie Martin, F.R.I.B.A., Prof. of Architecture, Univ. of Cambridge, England, Past Vice-Pres. Royal Inst. of Architects, leader in urban planning and redevelopment.
- Milton Mollen, Chairman of Housing and Redevelopment Board of City of New York, eminent lawyer.
- Harry Weese, F.A.I.A. widely experienced engineer, architect, and community planner, Chicago, Ill.
- B. Sumner Gruzen, F.A.I.A. (not shown) professional advisor to Competition, leading architect and engineer, Principal of Kelly & Gruzen, New York, N. Y.

# Fifth Annual Design Competition

# AWARDS

## GRAND NATIONAL AWARDS

- FIRST PRIZE \$10,000** Thomas H. Hodne, A.I.A., James McBurney,  
Kermit Crouch, Robert Einsweiler, A.I.P.,  
James Solverson, Vern Svedberg and  
Tokiaki Toyama Hodne Associates  
Minneapolis 14, Minn.
- SECOND PRIZE \$5,000** Felix J. Martorano . . . Shreve, Lamb & Harmon, New York, N. Y.  
Ricardo Scofidio . . . Richard G. Stein, New York, N. Y.  
Edvin K. Stromston
- THIRD PRIZE \$2,500** Amiel Vassilovski . . . Pedersen & Tilney, Boston, Mass.  
Hanford Yang

### (6) MERIT AWARDS \$500 EACH

- Ena M. Dubnoff, Richard K. Fleming, Eugene P. Flores, Ellis D. Gelman, Lewis A. Greenberg . . . Dubnoff, Fleming, Flores, Gelman & Greenberg  
Los Angeles 4, Calif.
- R. E. Alexander, FAIA, C. R. Wojciechowski . . . Robert E. Alexander & Assoc., Los Angeles, Calif.  
Paul R. Drag . . . William L. Pereira & Assoc., Los Angeles, Calif.
- John Dollard . . . Huntington, Darbee & Dollard, Hartford, Conn.  
Tai Soo Kim . . . Philip Johnson Assoc., New York, N. Y.
- Robert W. Brantingham, Thomas J. Eyerman,  
Thomas O. Schnell, Robert N. Wandel . . . Ohio State University, Columbus 1, Ohio
- Joseph J. Schiffer . . . Joseph J. Schiffer, Concord, Mass.
- Thomas E. Selck  
George C. Winterowd, Assoc. Prof. of Arch. . . Miami University, Oxford, Ohio

## SPECIAL STUDENT AWARDS

- FIRST PRIZE \$2,000** Robert P. Holmes . . . University of Illinois  
Robert L. Wright Urbana, Illinois
- SECOND PRIZE \$1,000** Michael Wurmfeld . . . Princeton University  
Princeton, New Jersey
- THIRD PRIZE \$500** Woodrow W. Jones, Jr.  
Gerrard E. Raymond . . . North Carolina State College  
Philip A. Shive Raleigh, North Carolina

### (4) MERIT AWARDS \$250 EACH

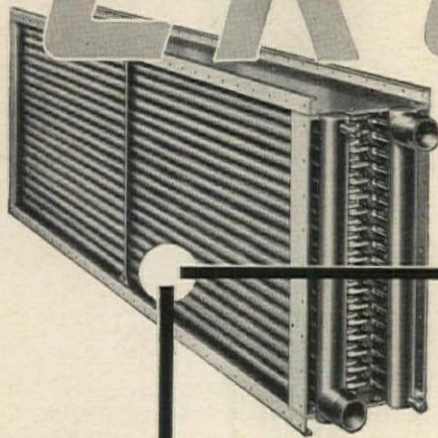
- Peter R. Bromer . . . Rensselaer Polytechnic Institute, Troy, New York
- John D. Duell, David S. Traub, Jr. . . . University of Illinois, Urbana, Illinois
- Iwao Onuma . . . University of Southern Calif., Los Angeles, Calif.
- J. Stroud Watson, Jr. . . . University of Illinois, Urbana, Illinois

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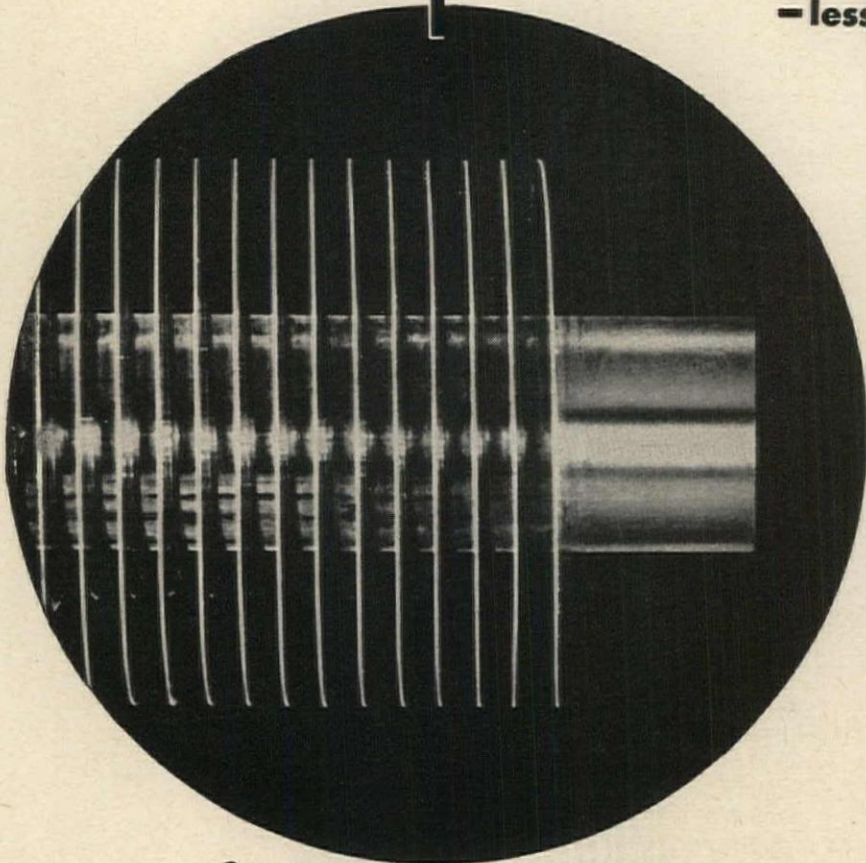
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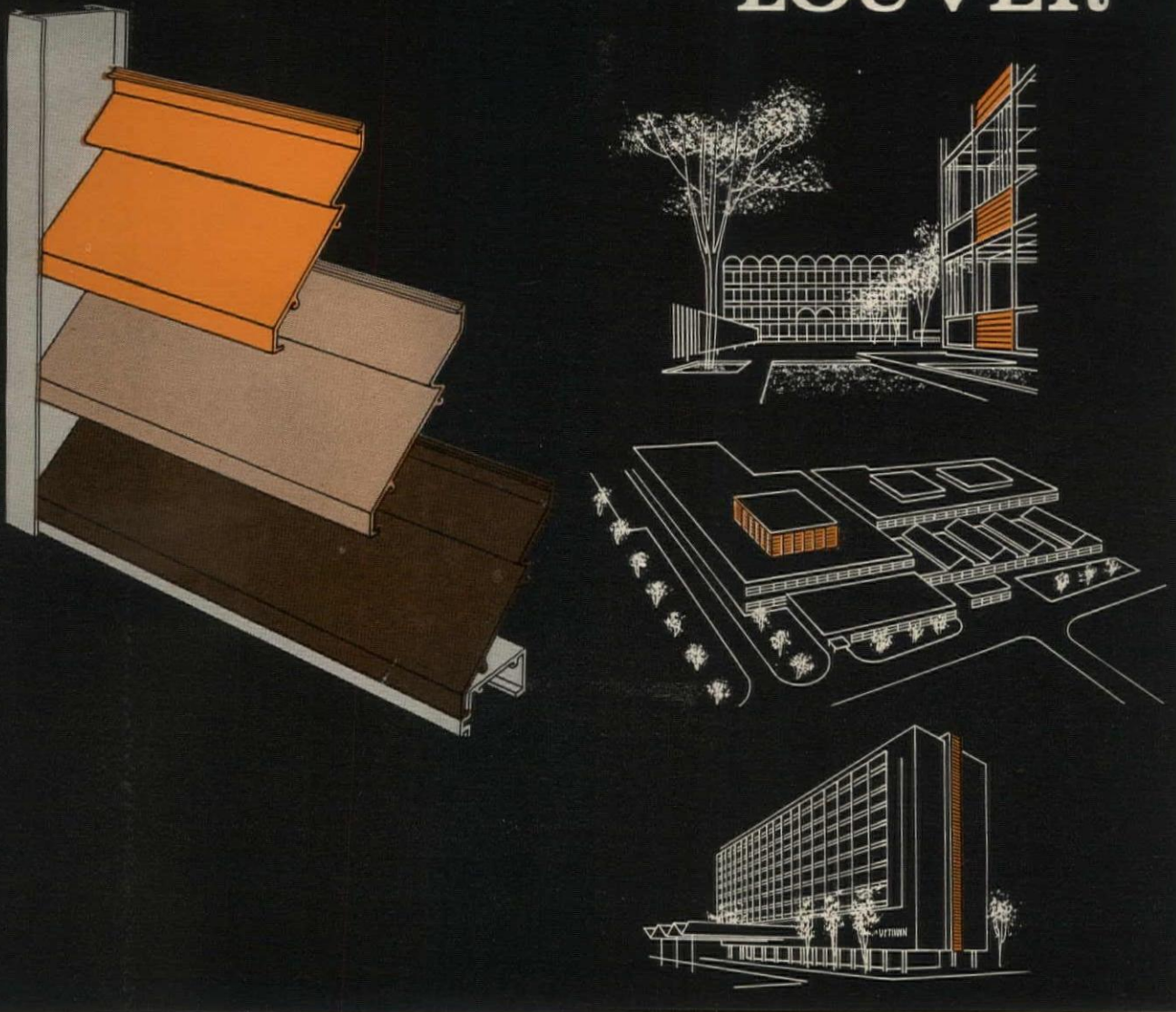
101 Greenway Ave., Syracuse 3, N.Y.

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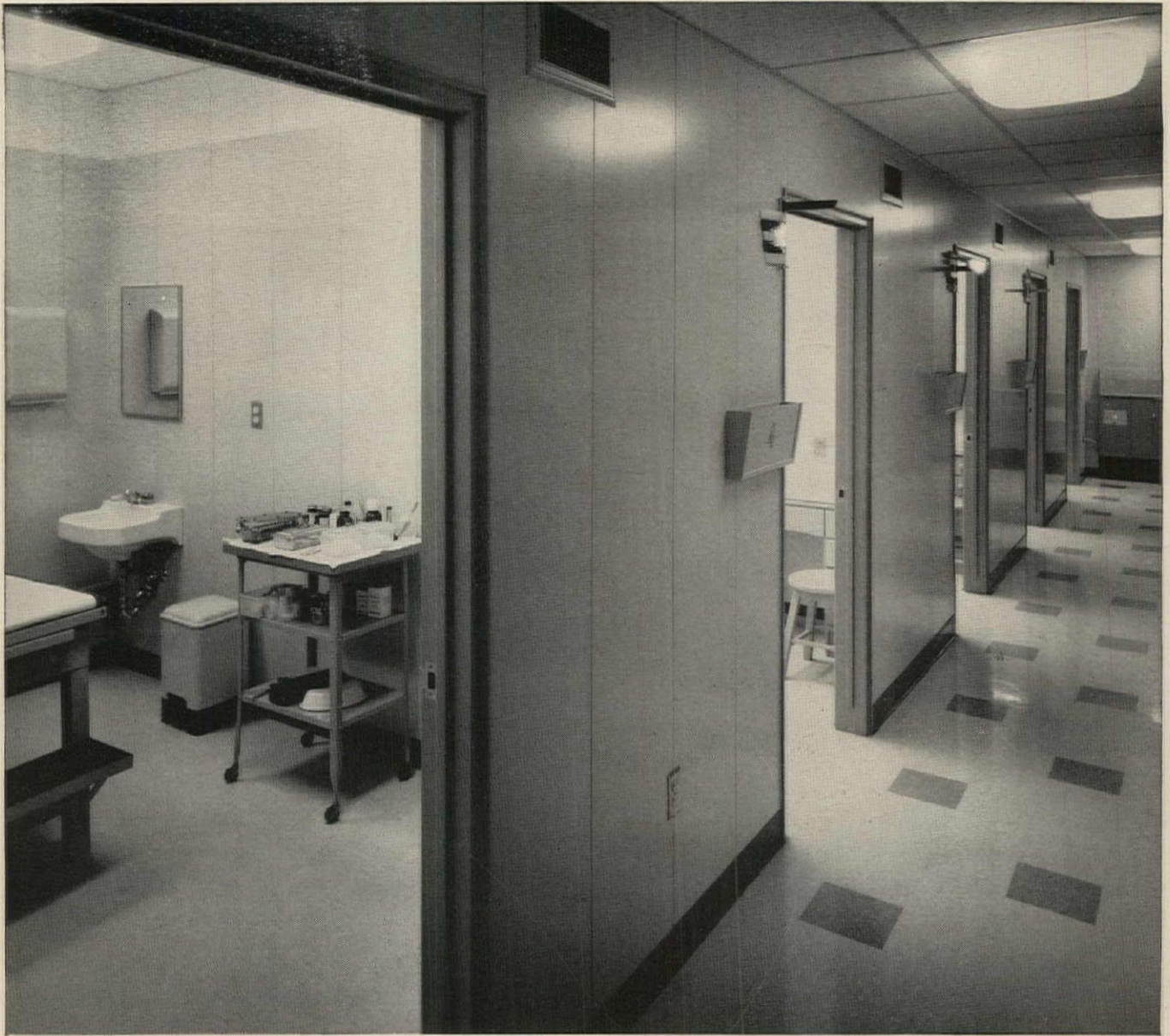


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**BUILDING:**

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Los Angeles, California

**OWNER:**

Century City, a joint venture of  
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**ARCHITECT:**

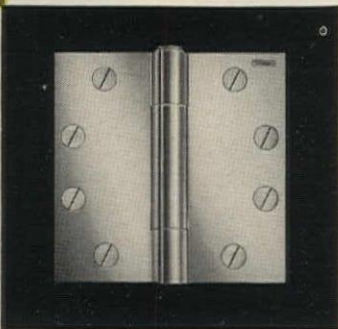
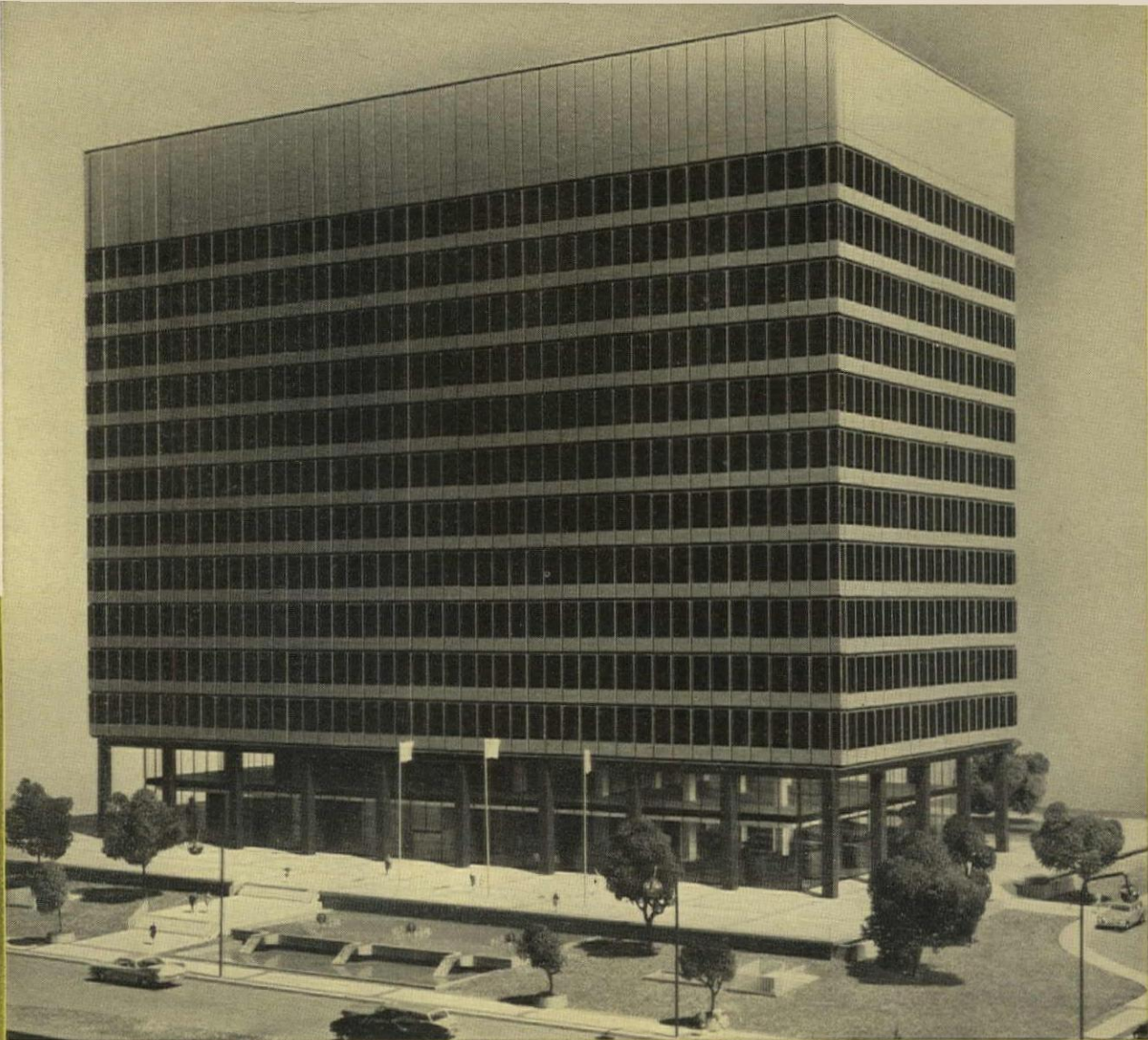
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Gateway West is a 13-story, multi-million dollar structure which makes dramatic use of aluminum. Welton Becket, F.A.I.A., says, "The Gateway buildings are designed to set the pace for the future construction within Century City. For this reason, we have put special emphasis on new and exciting quality materials and finishes." This emphasis on newness and excitement is reflected, too, in the choice of hinge design — the sleek, streamlined styling of Stanley BB1600 aluminum capped Hinges.

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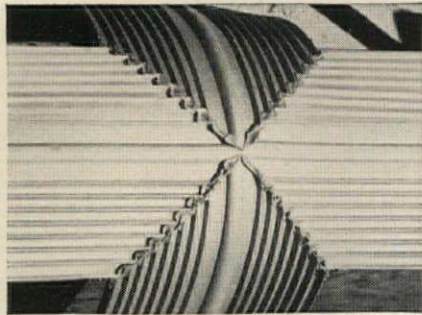
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## On the Calendar

### September

- 9-12 International Conference on Production Engineering Research—Carnegie Institute of Technology, Webster Hall Hotel, Pittsburgh
- 18-20 42nd Annual Meeting and Chapter Presidents' Conference, The Producers' Council—Shoreham Hotel, Washington, D.C.
- 29ff VII Congress, Union Internationale des Architectes; theme, "Architecture in Developing Countries"—Havana
- 29ff 1963 National Planning Conference, Community Planning Association of Canada; through Oct. 2—Chateau Frontenac Hotel, Quebec City
- 30ff National Fall Meeting, American Welding Society; through Oct. 3—Statler Hilton Hotel, Boston

### October

- 6-11 Ninth annual convention, Prestressed Concrete Institute, presented in cooperation with the University of California, Berkeley, with sessions jointly sponsored by the American Society of Civil Engineers—Sheraton-Palace Hotel, San Francisco
- 6-12 Fourth Congress of the International Association of Painters, Sculptors and Graphic Artists—New York City
- 8-12 International Symposium on Architecture, sponsored by the Union Internationale des Architectes—Mexico City.
- 10-20 National Decoration and Design Show—New York Coliseum, New York City
- 12-18 Second Pacific Rim Architectural Conference; 18th Annual Convention, California Council, American Institute of Architects; Fifth California Regional A.I.A. Meeting; 13th Annual Meeting of the Women's Architectural League of California—Maria Isabel Hotel, Mexico, D.F.
- 14-16 Continuation of ninth annual convention, Prestressed Concrete Institute—Surfrider Hotel, Honolulu

continued on page 318



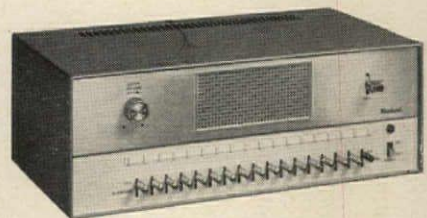
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#### SPECIFICATIONS SHEETS

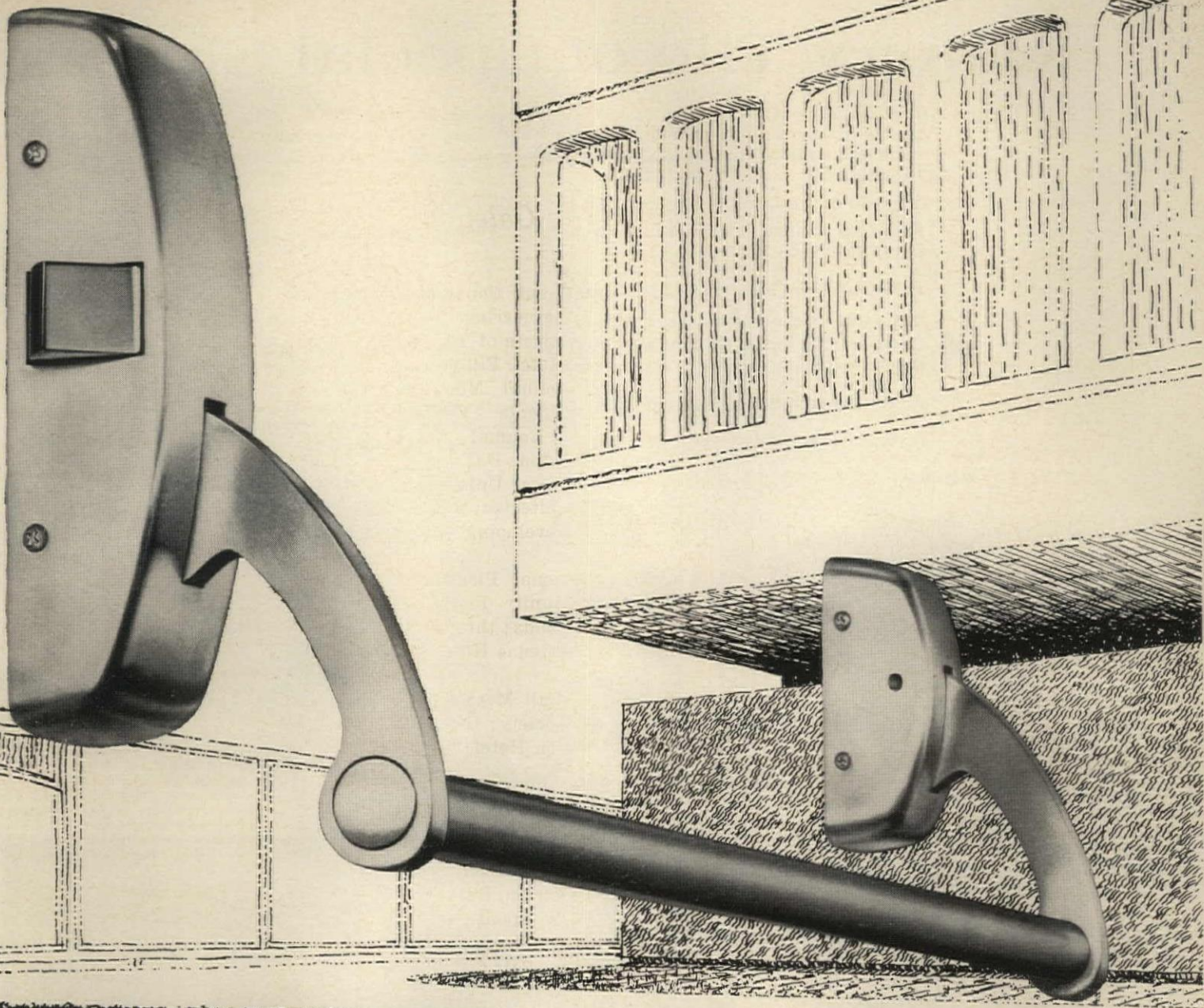
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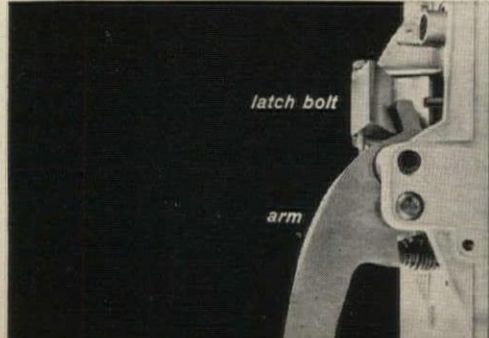
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*exclusive chassis mount permits easy installation, inspection and maintenance.*

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

For complete information and the name of your nearest distributor write:

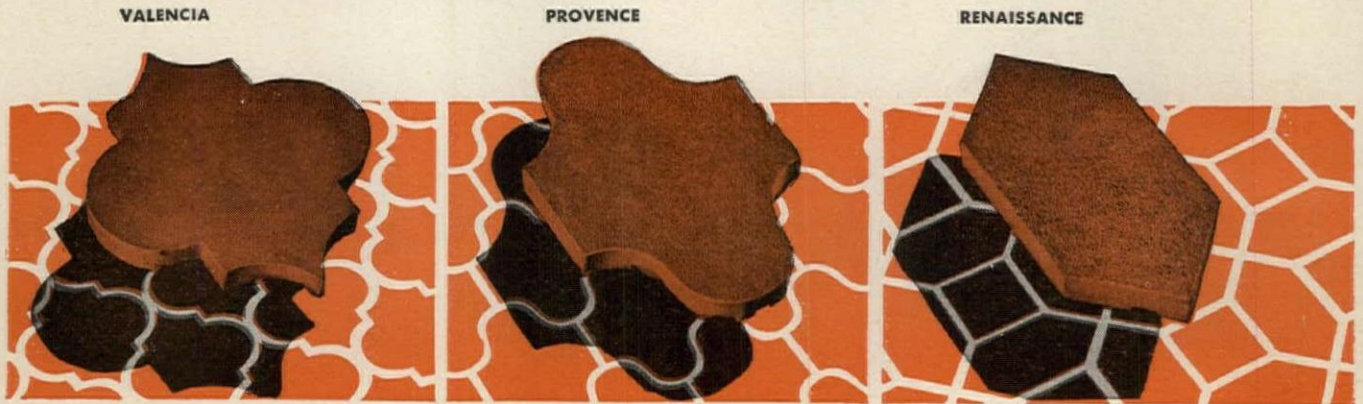
**FLOORING TILE DIVISION—Dept. R. H.**



**LUDOWICI-CELADON CO.** • 75 East Wacker Drive, Chicago 1, Illinois  
Manufacturers of quarry tile, the nation's largest producer of roofing tile and NAILON Facing Brick

**WEST COAST REPRESENTATIVES:** Gladding, McBean & Co., Los Angeles, San Francisco, Portland, Seattle, Spokane, Phoenix

**HAWAII REPRESENTATIVES:** Lewers & Cooke, Ltd., Honolulu



For more data, circle 138 on Inquiry Card

**EPCO PULLS AND KNOBS ARE DESIGNED TO LOOK BETTER, WEAR LONGER, AND INSTALL EASIER!**



The GP-14, GP-15 and GP-16 extruded aluminum snap-on pull, and the GP-17 plastic snap-on pulls are for 1/4" sliding glass or panel doors. The WP-18 and WP-34 are screwed to 3/4" sliding doors.

EPCO pulls for doors and drawers are of extruded aluminum. Special anodized finishes are available.

EPCO knobs are machined from aluminum or brass bar stock. Both aluminum and brass knobs are available in standard finishes.



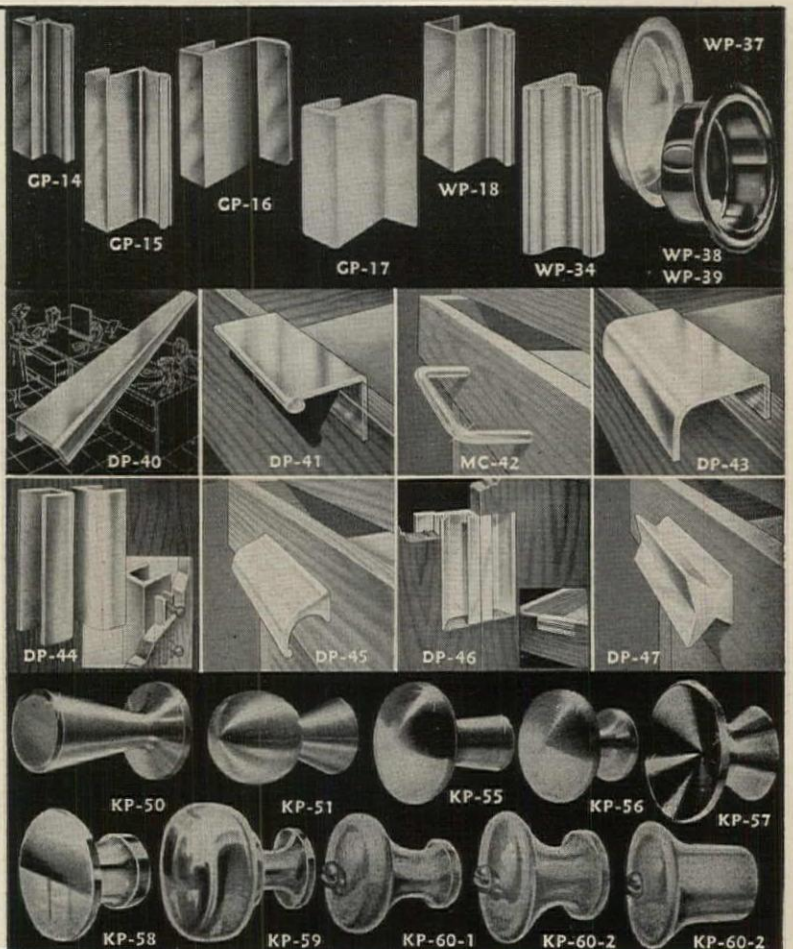
Free 32-page Catalog on all EPCO pulls, track and magnetic catches available on request.

See Sweet's Catalog Arch. File 19g-En and Light Construction File 7b-En.

**PULLS**  
for  
Sliding  
Doors

**PULLS**  
for Doors  
and for  
Drawers

**KNOBS**  
for Cabinet  
and  
Furniture  
Doors and  
Drawers



**THE ENGINEERED PRODUCTS CO.**  
P.O. BOX 108 - FLINT, MICHIGAN - PH. CE 9-8689

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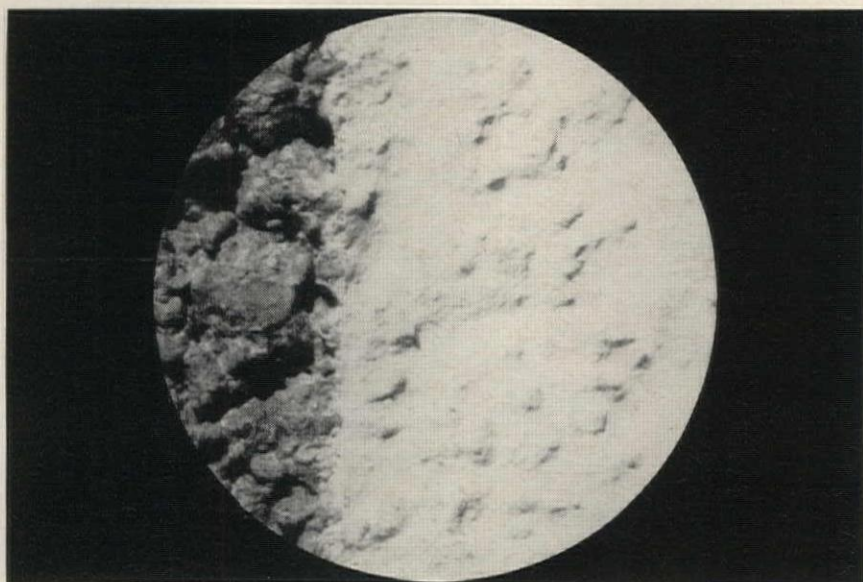
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# GLIDDEN

## DISCOVERS A BETTER WAY TO

## FILL AND SEAL MASONRY—WITHOUT PINHOLES!

New Filler-Block-Sealer, in powder form, is a unique combination of reinforcing resin and select cementitious aggregates. Easily applied by spray or brush, it becomes an integral part of any masonry surface. No risk of improper curing because Filler-Block-Sealer *eliminates* wall wetting. Once applied, the coating doesn't revert to powder on aging in moist environment. It gets harder and harder. Gives masonry block a smooth, continuous, paintable surface. Finished jobs look better, last longer. Worth remembering, and specifying: "Filler-Block-Sealer."



See how Glidden Filler-Block-Sealer gives a continuous, pinhole free surface in the highly magnified, unretouched photo above. See the contrast between uncoated medium texture block, and the same surface filled with Filler-Block-Sealer. No cracks or voids. Total protection against water seepage.

**For interior or exterior use . . .** above and below grade. Structural and atmospheric moisture promote rock-hard curing. Develops completely filled, pinhole free, nonshrink surfaces with a minimum of labor. No mud cracking. Takes all types of finish coats. Can be tinted to pastel colors. *Resists hydrostatic pressure* and wind-driven rains. "Breathes" to allow structural moisture to escape. Apply over concrete block, poured concrete, clay building tile, brick, stucco, stone, plaster, wallboard, glazed tile, weathered asbestos shingles, porous clay or concrete roofing tile.



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900 UNION COMMERCE BUILDING • CLEVELAND 14, OHIO  
IN CANADA: THE GLIDDEN COMPANY, LTD., TORONTO, ONTARIO

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**HOSTESS "CONTRACT" TABLET ARM (Model HC-304)**  
 . . . cushioned seat and backrest, 6 colors in silk-textured vinyl, also available without tablet arm

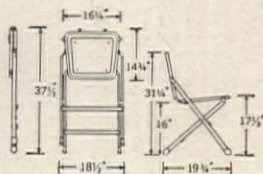
*Contemporary classic . . .  
 with a world of seating comfort*

**KRUEGER** *Hostess*  
**oval tubular steel folding chairs**

With "Decorator" and "Contract" Chairs, Krueger offers both quality and economy models to fit your clients needs — distinctive designs which meet today's demands for comfort, durability, and functional flexibility. Krueger "Hostess" Chairs feature the sound engineering of X-frame construction, fold-away convenience for easy handling, and generous upholstered comfort in backrest and seat. Select from a wide range of mix-or-match colors that blend so well with the five frame colors — truly a decorator's delight.



**HOSTESS "DECORATOR" (Model HD-404)** . . . foam-cushioned comfort . . . smart texture-woven fabric in eight colors.



Write for complete line catalog.



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**APARTMENT HOUSE INTERCOM**

*For Apartment Buildings of every size . . .*



*New* **TALK-A-PHONE**

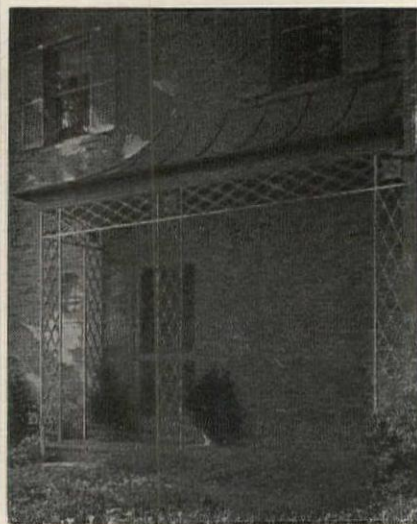
Provides instant and direct 2-way conversation between any Apartment and Vestibule . . . Greater Performance with Exclusive Talk-A-Phone Features:

- **Ample Volume**—Voice heard clearly without "boom".
- **Automatic Privacy**—On all Apartment Units.
- **Volume Selector**—Each Apartment selects own volume. Concealed yet easily accessible.
- **Built-in Buzzer**—Pleasant sound, in each Apartment Unit.
- **Contoured Push Button**—Operates electric door opener.
- **Fanning Strip-Terminal Block** for easy connection.

Distinctively styled. Quality Engineered.  
 Built to withstand continuous use.

Send for Apartment House Intercom Catalog Dept. AR-9  
**TALK-A-PHONE CO.**, 5013 N. Kedzie Ave., Chicago 25, Illinois

For more data, circle 110 on Inquiry Card



*J. Linerd Connare, Architect  
 Chestnut Hill, Pa.*

*For Enduring Charm*

*. . . Specify*

Architectural METAL WORK

by Fiske

Aluminum, Bronze,  
 Stainless Steel and Iron

**J. W. Fiske** ARCHITECTURAL METALS, Inc.

113-115 Pennsylvania Avenue, Paterson 3, N. J.

ESTABLISHED 1858

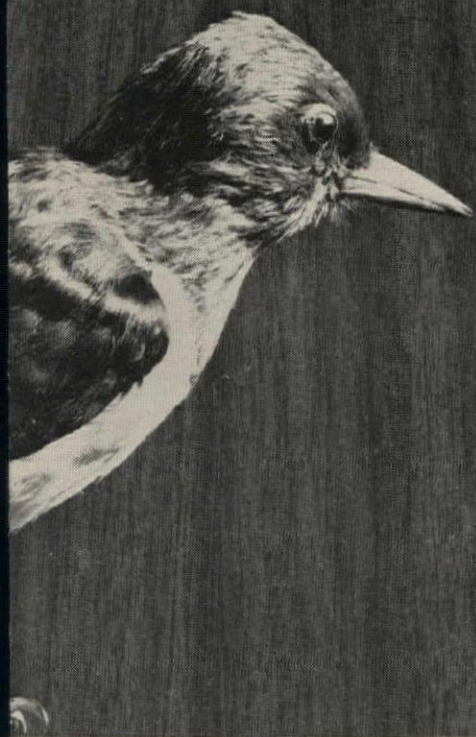
For over 100 years, Architects have relied upon Fiske for the widest choice of artistic designs, materials, craftsmanship and dependability. Now, more than ever, Architectural Metal Work by Fiske . . . in Aluminum, Bronze, Stainless Steel and Iron . . . represents the finest obtainable.

Write for our catalog of designs or send blueprints for quotations.



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DESIGN MAKES THE DIFFERENCE



## Micarta's new "Oil Rub" finish is so natural, only a woodpecker knows for sure

Is it wood or isn't it? It looks and feels like real wood. It's a breakthrough in high pressure laminate surfacing. The new Micarta "Oil Rub" finish takes oil or wax finishing like fine wood veneers, but it wears like the mar-resistant, long-life laminate it is. The new Micarta "Oil Rub" finish is avail-

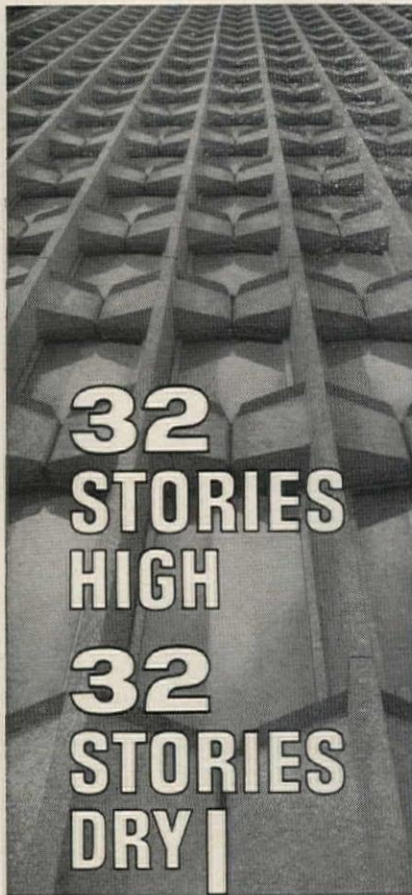


able in standard  $\frac{1}{16}$ " and  $\frac{1}{32}$ " thicknesses. For "Oil Rub" samples write to: Howard Grosh, Marketing Manager, Westinghouse Micarta, Hampton, South Carolina. Micarta is distributed and is available everywhere through U. S. Plywood Corporation. You can be sure . . . if it's Westinghouse.

J-08724

**We never forget how much you rely on Westinghouse**

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**32  
STORIES  
HIGH  
32  
STORIES  
DRY**

**WILLIAMS  
EVERLASTIC**  
SEALS AND GASKETS  
SELECTED TO LOCK  
MOISTURE OUT

**building:** Michigan Consolidated Gas Company, Detroit.

**architects:** Minoru Yamasaki—Smith, Hinchman and Grylls, Assoc.

**problem:** Effectively sealing the joints of thousands of pre-cast exterior wall panels and interior marble panels.

**solution:** Williams Everlastic die cut neoprene gaskets and Williams Double Wing seals.

**FREE!** Write for new catalog covering technical details of Williams Seals, Gaskets, Waterstops and the remarkable new EVERLASTIC Polyurethane Sealing Compound.

**WILLIAMS**  
SEALS and GASKETS DIV.  
WILLIAMS EQUIPMENT and SUPPLY CO., INC.  
Box 86, Hazel Park, Michigan

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*On the Calendar*

*continued from page 310*

16-18 13th Annual Gulf States Regional Conference, A.I.A.—Dauphin Island, Mobile, Ala.

30ff Semi-Annual Meeting, Consulting Engineers Council; through Nov. 1—Disneyland Hotel, Anaheim, Calif.

**November**

11-14 16th fall meeting, American Concrete Institute—Royal York Hotel, Toronto

11-14 48th edition, National Hotel and Motel Exposition—New York Coliseum, New York City

11-15 International Conference on Permafrost—Purdue University, Lafayette, Ind.

13-27 1963 International Building Exhibition, theme, "Industrialized Building"—Olympia, London, England

17-20 Annual meeting, Air-Conditioning and Refrigeration Institute—The Homestead, Hot Springs, Va.

18-22 10th National Plastics Exposition, sponsored by the Society of the Plastics Industry, Inc.—Sheraton-Chicago Hotel and McCormick Place, Chicago

18-24 Annual convention, National Warm Air Heating and Air Conditioning Association—Americana Hotel, Miami Beach

19-21 1963 Fall Conferences, Building Research Institute—Mayflower Hotel, Washington, D.C.

*Office Notes*

*Offices Opened*

**Adleman, Collins & Dutot** have opened offices for the practice of landscape architecture and site and planning design at 121 North 18th St., Philadelphia 3, Pa. The partners are **Marvin I. Adleman, John F. Collins** and **David M. Dutot**.

**FSA Incorporated**, an architectural firm, has opened Chicago offices at 520 North Michigan Ave. **Alan Briskman** is Director of Projects and head of the new office.

**Duncan Gray**, structural engineer, has established offices at 805 Fifteenth St. N.W., Washington 5, D.C.

**Griswold, Heckel & Keiser Associates** of New York have opened

*continued on page 327*



**Series 700**

**THE HEAVY-DUTY  
SWITCHES THAT  
MAKE ALL OTHERS  
LIGHTWEIGHTS!**

Rugged, versatile, profitable... real heavy-weights! That's Slater's new heavy-duty AC switches *Series 700*. Choice of side or side and back wiring in over 80 different models. Install quickly, work quietly, eliminate unprofitable callbacks...*Series 700* stay in there swinging long after others have thrown in the towel. *Specification Grade only*. All have design extras that label them "Slater-engineered". So why settle for less when you can have the odds-on favorite...Slater's new *Series 700*?

Want to see what gives these switches their punch? Write us today—or better yet, see your Slater Distributor. He'll be happy to show you how *Series 700* can build profits for you.

**Slater**  
Slater Electric, Inc. • Glen Cove, New York

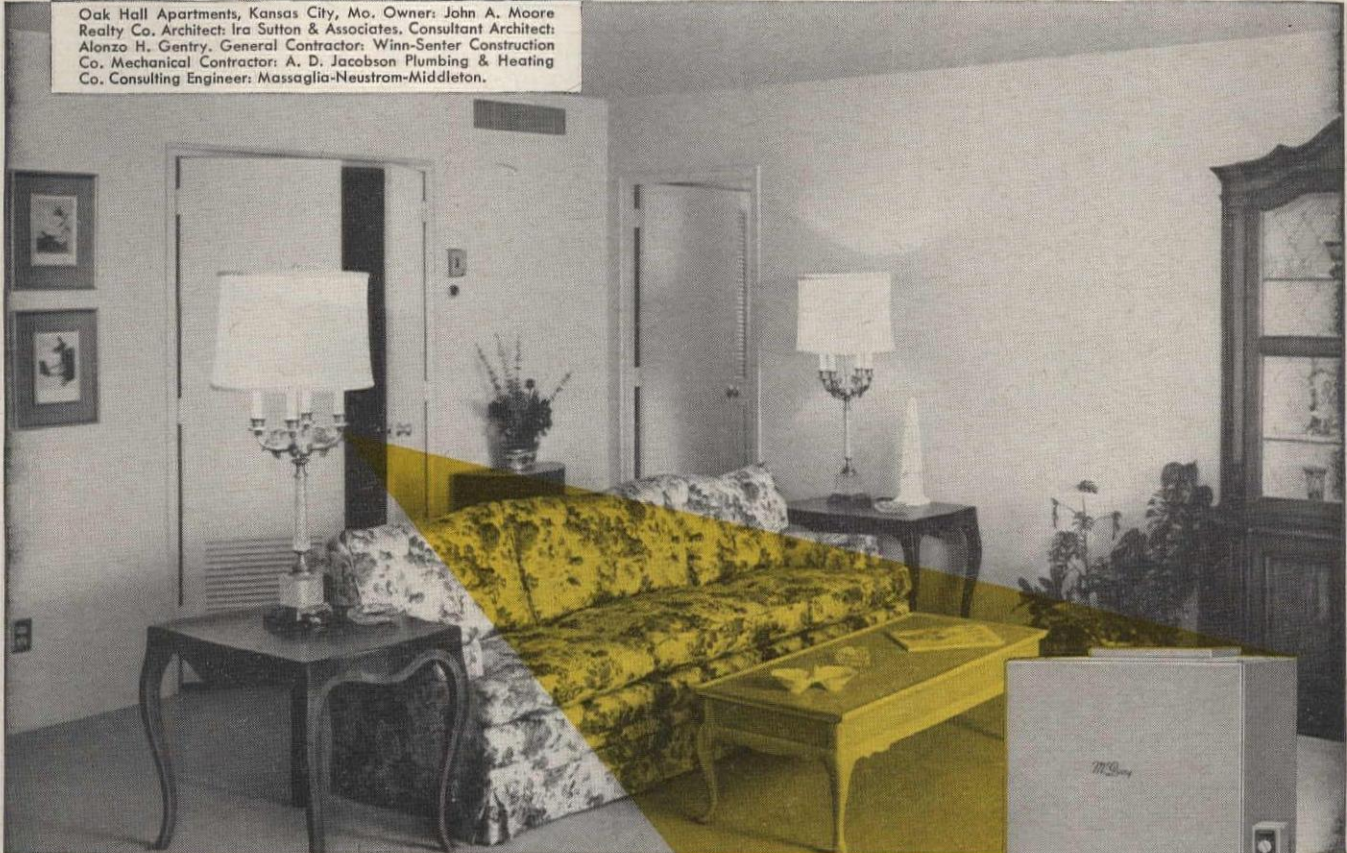
For more data, circle 144 on Inquiry Card



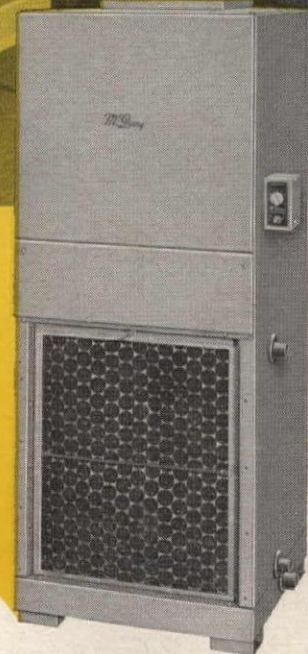
air condition an entire  
multi-room unit with one

# APARTMENT Seasonmaker®

Oak Hall Apartments, Kansas City, Mo. Owner: John A. Moore Realty Co. Architect: Ira Sutton & Associates. Consultant Architect: Alonzo H. Gentry. General Contractor: Winn-Senter Construction Co. Mechanical Contractor: A. D. Jacobson Plumbing & Heating Co. Consulting Engineer: Massaglia-Neustrom-Middleton.



Gracious living means air conditioning, and for the residents of the beautifully appointed, 164-unit Oak Hall Apartments in Kansas City, Missouri, the ultimate in living comfort is provided by McQuay Apartment Seasonmakers. Offered in answer to a challenge, the Apartment Seasonmaker combines the simplicity of a fan coil unit with the advantages of a central station system—a design in contrast. Ultra-quiet but delivering full rated capacity, compact but flexible, durable with true economy, the McQuay Apartment Seasonmaker was designed in four sizes—800, 1200, 1600, and 2000 cfm—to completely air condition the entire multi-room unit . . . and with individual control. At Oak Hall, or in any apartment building where only the best is good enough, the premium quality and performance of McQuay Apartment Seasonmakers are perfectly matched to the high standards of good building for good living. See your McQuay representative, or write McQuay, Inc., 1605 Broadway N.E., Minneapolis 13, Minnesota.



The Apartment Seasonmaker is installed out of the way but in an easily accessible space of its own, as shown above.

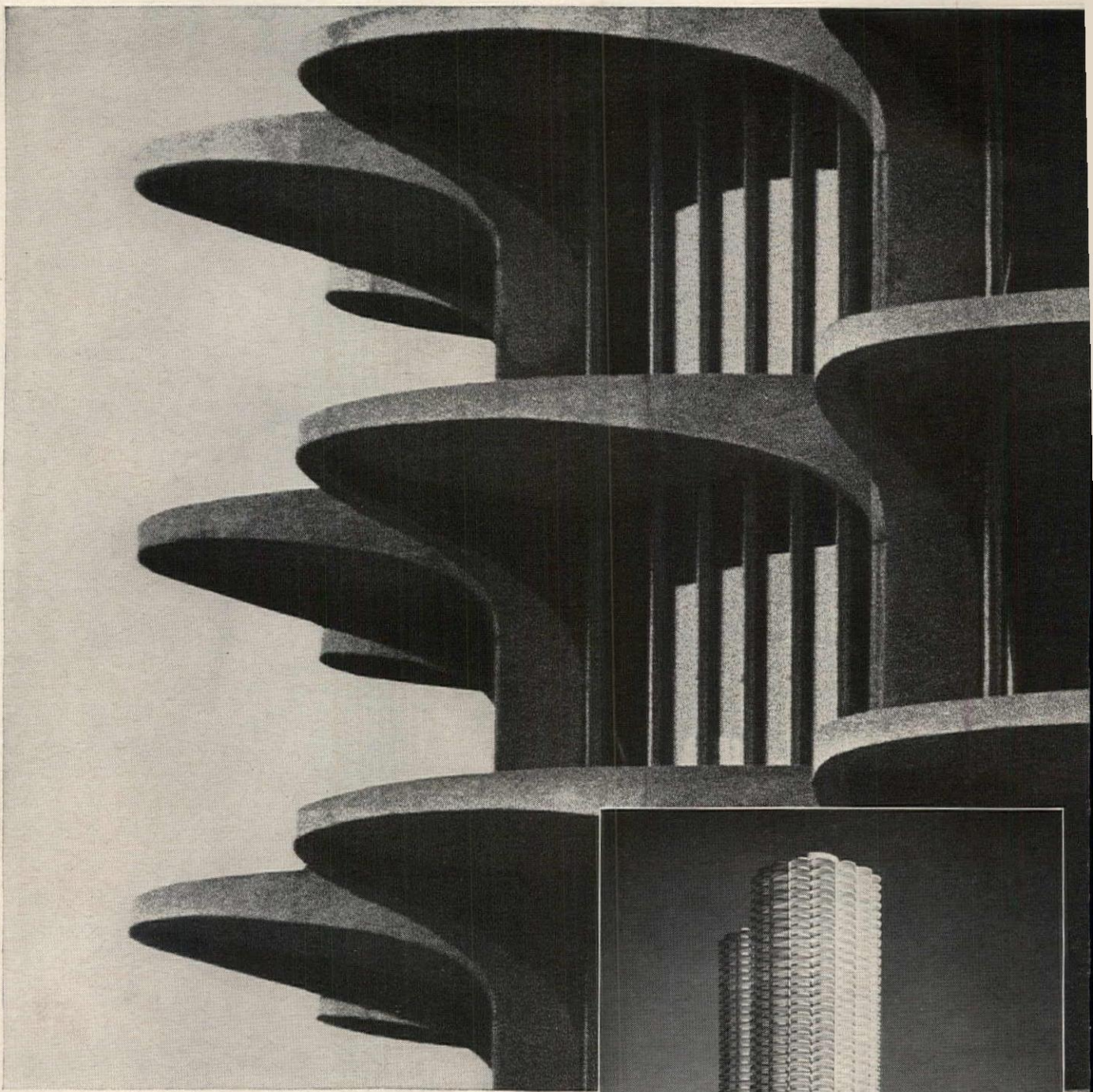
**McQuay** INC.  
MEANS QUALITY



AIR CONDITIONING • HEATING • REFRIGERATION

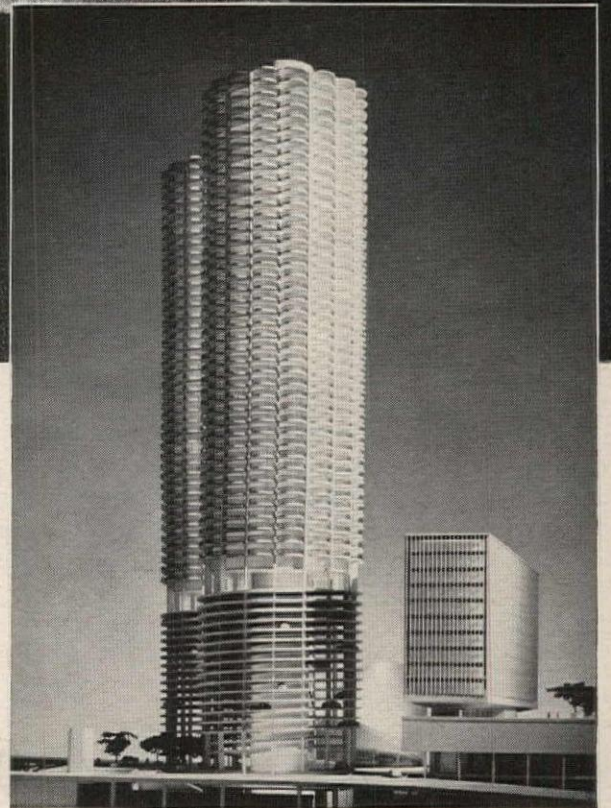
MANUFACTURING PLANTS AT FARIBAULT, MINNESOTA • GRENADA, MISSISSIPPI • VISALIA, CALIFORNIA

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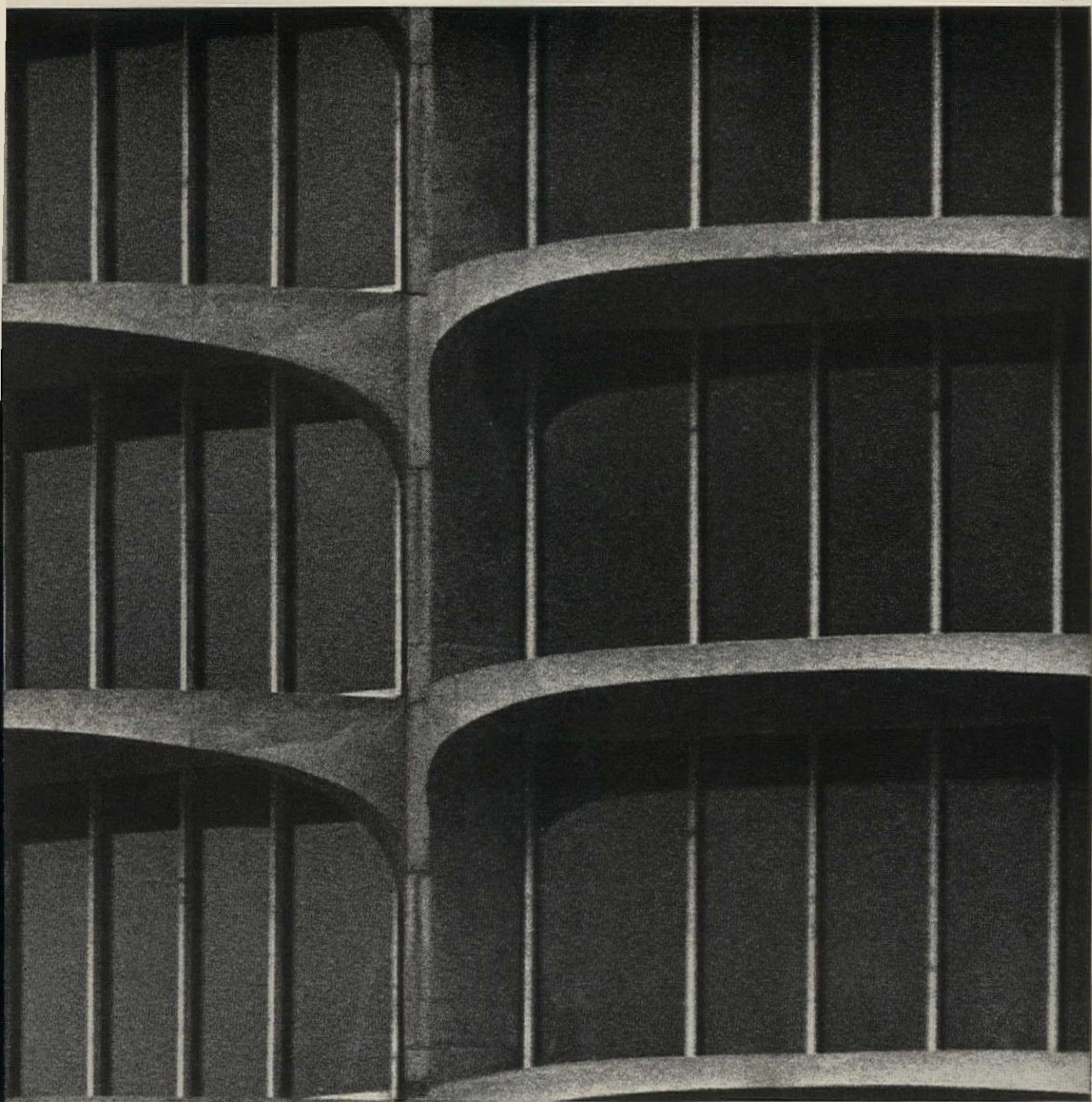


*Marina City, Chicago, Illinois  
New twin-tower apartment buildings presently under construction  
Architects & Engineers: Bertrand Goldberg Associates  
General Contractors: James McHugh Construction Company*

exciting  
designs  
take form







■ Monolithic reinforced concrete continues to be the most desirable material for the construction of buildings of all heights. No other structural method offers architects such broad design horizons. The new 60-story twin towers of Chicago's Marina City are dramatic proof. For your next building, consider the many outstanding advantages of this superior construction method.

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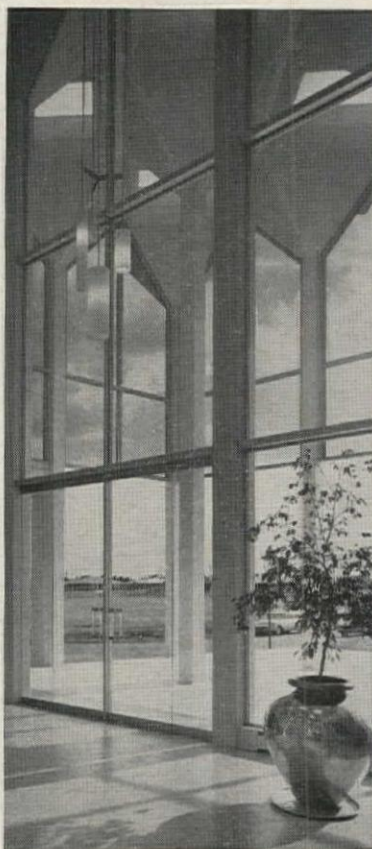
CONCRETE REINFORCING STEEL INSTITUTE  
38 SOUTH DEARBORN STREET • CHICAGO 3, ILLINOIS



14-62



Harrelson Hall, North Carolina State College, Raleigh.



ABOVE LEFT: Shapiro Forum, Brandeis University, Waltham, Mass. ABOVE RIGHT: Main entrance, The Hockaday School, Dallas, Texas. BELOW: Student Dormitory, University of Miami.



## On today's school jobs... the word for color is Devoe

It's no accident that some of the largest and most imposing schools and universities in the country proudly sport "school colors" in Devoe Paints.

For one reason, the architects who conceived these buildings know Devoe quality and performance. Equally important, they know the ability of the Man from Devoe to assist on the technical aspects of paint engineering... his ability to help assure the finishing touch that can make the building!

Architects and their color consultants, of course, start with a keen insight into the color harmonies as only they can see them. But here's where the Man from Devoe can come in. He'll help them achieve an exact color match from the Devoe Library of Colors® system, featuring over 1,000 colors ranging from the bold to the subtle. He can supply data on how interior or exterior paint will perform under varying circumstances. He can help them project costs of application and maintenance; even work out and supervise delivery schedules to the building site for maximum efficiency in paint application. (This is particularly important if construction is in another city several hundred miles away.)

Finally he can advise on special coatings for laboratories, gymnasium floors and other surfaces requiring exceptional protection from chemical elements, wear or other corrosive factors. It is the job of the Man from Devoe to serve the architects in his area... without cost or obligation. To find out about the infinite details the Man from Devoe can shoulder for you, call or write the Color Consultant Service of your nearest Devoe Office. Write us direct at Louisville, Ky., for a free "Rainbow Selection" of 300 colors from the Devoe Library of Colors. A real help when you're "doodling" with colors!



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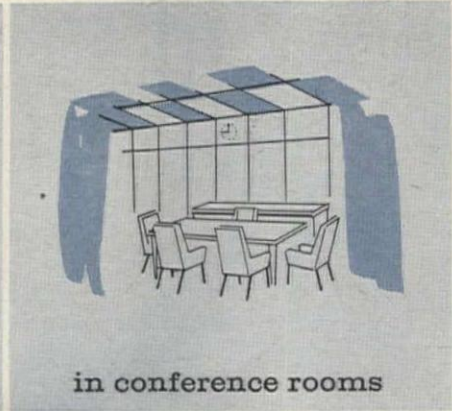
# ADVANCE FLUORESCENT DIMMING SYSTEM

## To Control Illumination

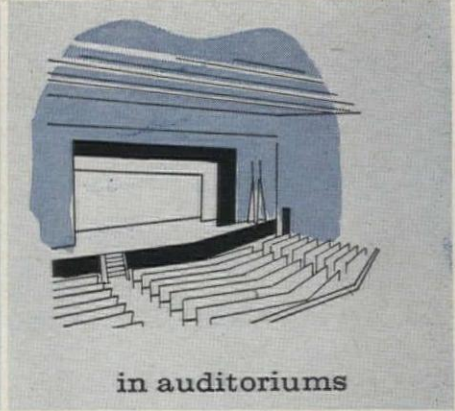
### for any Visual Requirement



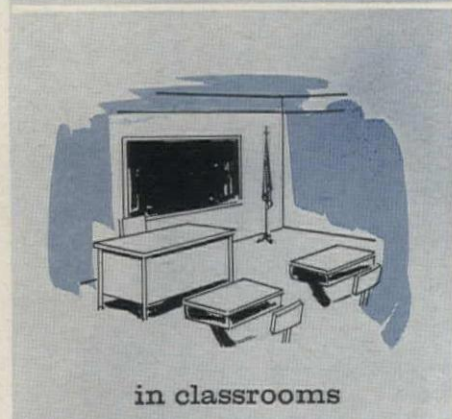
in offices



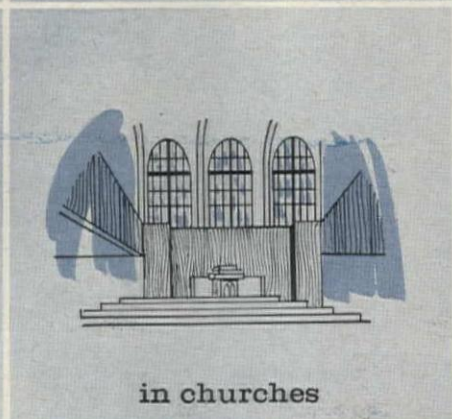
in conference rooms



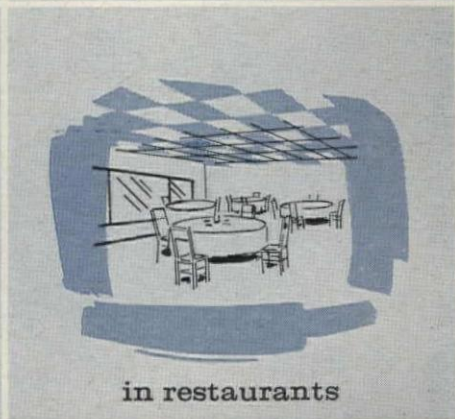
in auditoriums



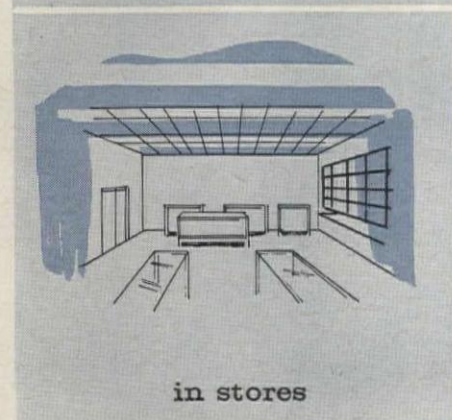
in classrooms



in churches



in restaurants



in stores



in homes

**Be Sure You  
Have the  
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Advance  
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Dimming System**

Advance Transformer Co.'s new Fluorescent Dimming System is the most versatile and efficient system ever offered to the lighting industry. Because of its high efficiency and perfect dimming characteristics, this new system is the first to make fluorescent dimming practical for use in commercial as well as residential interiors. Unlike other fluorescent dimming systems which operate at reduced wattage and provide only 50% of the rated lamp output . . .

the Advance Fluorescent Dimming System operates at 95% of the rated lamp output with a 500 to 1 dimming ratio . . . and permits operation of any number up to thirty-six (36) 40W T12 Rapid Start lamps from a single control.

To learn more about the advantages of controlled illumination levels in fluorescent lighting, contact your Advance ballast representative or write for bulletin No. 1229.

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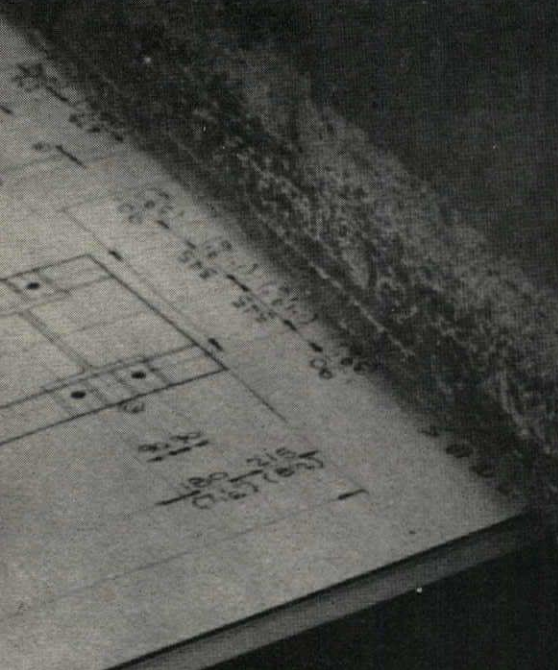
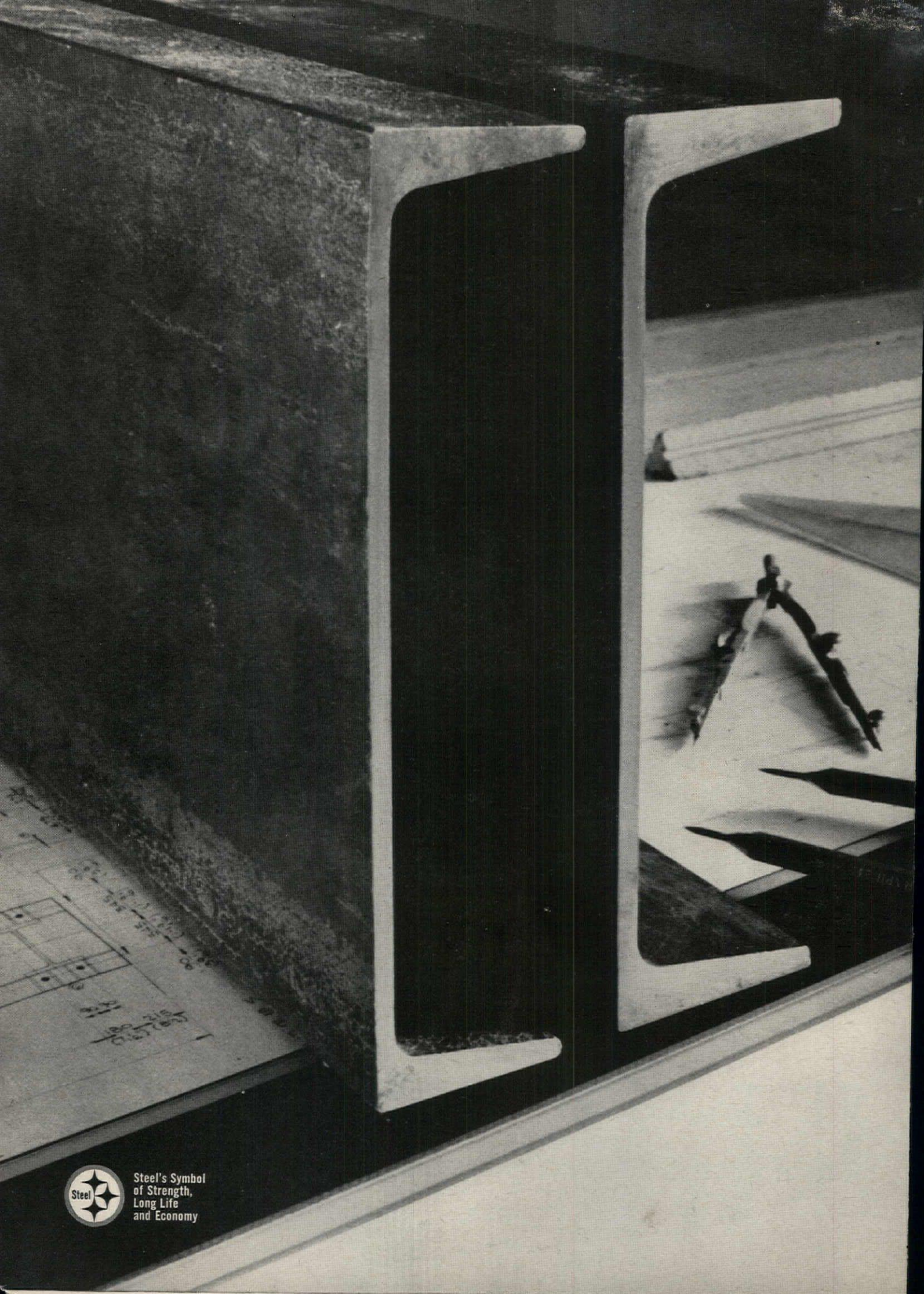
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2950 NO. WESTERN AVE. CHICAGO 18, ILL. U.S.A.

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Steel's Symbol  
of Strength,  
Long Life  
and Economy

# NEW J&L 8-INCH CHANNEL CUTS WEIGHT 26%...COST ...EASES FABRICATION

Jones & Laughlin announces a completely new 8-inch standard channel weighing 8.5 pounds per foot—three pounds less than the conventional standard channel. And it's ready for market, now, in both carbon and high-strength steels.

This new section, because of its 26% less weight, is easier to fabricate and install. Handling and shipping costs drop sharply, too. And, of course, lightweight frames afford new flexibility in selecting other materials for your jobs.

So, to those concerned with the design and construction of apartment houses, schools, hospitals, garages and all commercial and industrial structures—your inquiries are invited! As are those of trailer and truck body builders, makers of construction and materials handling equipment, and building component producers—everyone interested in strong, lightweight frame construction.

The J&L 8-inch lightweight channel is the newest addition to a broad line of lightweight steel structurals ranging from 6-inch Junior Beams and Channels on up to 14-inch light beams. Full information is in the hands of your J&L representative. To get it into *your* hands, contact him today!

STANDARD CHANNEL

Nominal Size	Wt. Per Foot	Area	Depth	FLANGE			AXIS X-X			AXIS Y-Y			
				Width	Avg. Thickness	Web Thickness	I	S	r	I	S	r	X
in.	lb.	in. <sup>2</sup>	in.	in.	in.	in.	in. <sup>4</sup>	in. <sup>3</sup>	in.	in. <sup>4</sup>	in. <sup>3</sup>	in.	in.
8x1 $\frac{7}{8}$	8.5	2.49	8.00	1.875	.321	.180	23.6	5.9	3.08	.65	.45	.51	.45

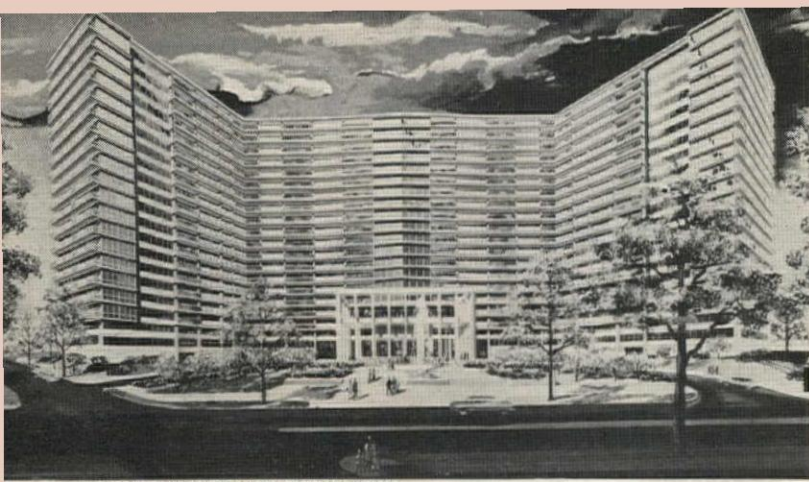
STANDARD CHANNEL

Depth of Section	Wt. Per Foot	FLANGE		WEB		DISTANCE					Grip	Max. Flange Rivet	Usual Gage g
		Width	Mean Thickness	Thickness	Half Thickness	a	T	k	gl	c			
in.	lb.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
8	8.5	1 $\frac{7}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$	1 $\frac{3}{4}$	6 $\frac{1}{2}$	$\frac{3}{4}$	2 $\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	1 $\frac{1}{8}$

**Jones & Laughlin Steel Corporation**  
3 Gateway Center, Pittsburgh 30, Pennsylvania



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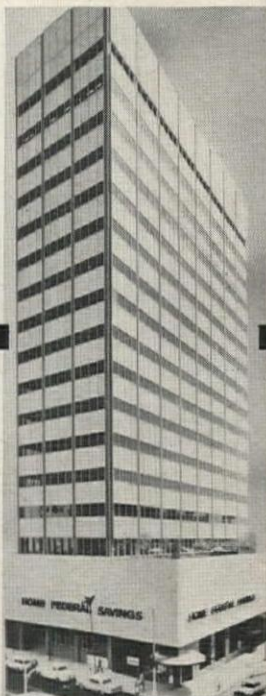
BLANTON TOWER, DALLAS



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## OPPORTUNITY...PART OF OUR PRODUCT LAMINATED GYPSUM WALLBOARD SYSTEMS WERE DEVELOPED 25 YEARS AGO . . . by E. B. Hummer

and the patents were acquired by Bestwall Gypsum Company. Since that date Drywall Systems have become much more versatile and are now used in commercial, institutional, and residential constructions of the most advanced systems of walls, ceilings and partitions. This development provides greater opportunity for Architects and Designers to find more extensive and profitable markets for their imaginative skills. • Bestwall Gypsum Wallboard, reinforced with glass fibers, and Firestop (originally developed by Bestwall and now containing more glass fibers than ever), in various assemblies meet the requirements of the Owner, Architect, General Contractor, City Building Codes, FHA, Loaning Agencies. They provide long-lasting construction erected at low cost with speed and minimum waste, reduce sound transmission, and achieve 1, 2 or 3 hour fire ratings. • Bestwall provides qualified Systems Engineers to assist in all Gypsum Wallboard Partition Systems whether single layer, multi-layer laminated, metal stud application, or metal framing movable. We urge you to see our new, full-color film demonstrating the step-by-step installation of laminated gypsum wallboard systems. Call our nearest office or Bestwall Gypsum Company, Ardmore/Pa.



# LINE VOLTAGE Mercury Switch THERMOSTATS by MERCOID



## Air Conditioning

Built-in thermometer. Available SP-ST, DP-DT or Double Circuit, Single Throw. Furnished with adapter plate for mounting directly to standard wall switch box.

## UNIT HEATERS

Has three position manual selector switch marked "no heat," "automatic" and "fan." Position marked fan operates fan continuously for ventilating purposes.

## EXPLOSION-PROOF

All above types available with explosion-proof enclosure. The mercury switch as well as all electrically live parts are housed in an explosion-proof chamber.

WRITE FOR BULLETIN No. 47-862  
THE MERCROID CORPORATION



4205 Belmont Avenue  
Chicago 41, Illinois

## Office Notes

*continued from page 318*

an office at 419 Boylston St., Boston. It is headed by **Charles H. Crombie**, architect.

**Norton and Hume, Architects**, a new firm formed by **Thomas A. Norton, A.I.A.**, and **Thomas Hume, A.I.A.**, has its offices at 66 Broad St., Stamford, Conn.

**Tigerman and Koglin, Architects**, have announced the opening of offices at 105 South La Salle St., Suite 320, Chicago. The partners are **Stanley Tigerman, A.I.A.**, and **Norman A. Koglin, A.I.A.**

### *New Firms, Firm Changes*

**Rex Whitaker Allen and Associates, Architects**, 259 Geary St., San Francisco, have announced these additions to the firm's staff: **Nicolay Terziev**, architect; **Johan van Lengen**, designer; **Angus Ramsay**, architect; **Mily Tomaskovic**, designer-draftswoman; **Richard Ainslie**, design planner; **Robert E. Smith**, architect.

**Bentel & Bentel, A.I.A.**, have appointed **Michael J. Kranyak Jr.** as an associate. Offices are in Locust Valley, L.I., N.Y.

**Alden B. Dow, Associates, Inc., Architects**, is the new designation for the former firm of **Alden B. Dow, Inc.** Offices remain at 315 Post St., Midland, Mich.

**John Hans Graham and Associates, Architects, Engineers and Planners**, 2000 K Street, N.W., Washington, D.C., have appointed **Joseph William Sabol** head of the firm's Engineering Cost Control Department.

### *New Addresses*

**Lawrence L. Anglin, Architect**, 3014 Corrine Dr., Orlando, Fla.

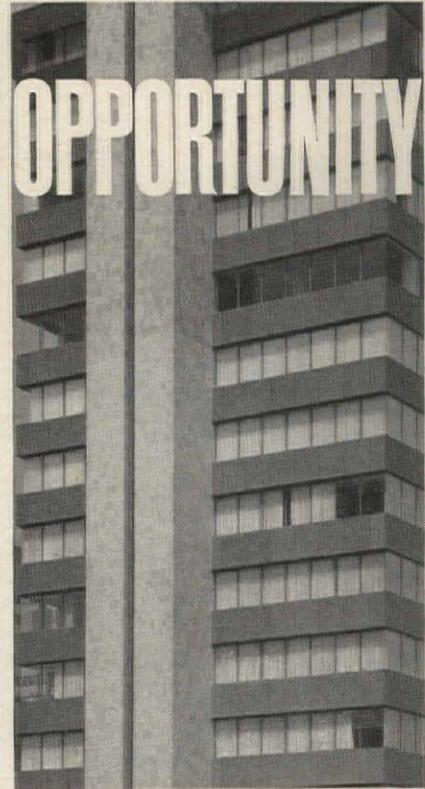
**Crosier & Greenberg**, consulting civil and structural engineers, 213 Notre Dame, Winnipeg 2, Canada.

**Higgins & Root, A.I.A., Architects**, 400 Blossom Hill Rd. at Route 17, Los Gatos, Calif.

**Katz and Metsky, Architects**, 875 Broad St., Newark 2, N.J.

**Maguolo and Quick, Architects-Engineers**, Administration Offices, Specifications and Electrical Engineering Departments, 4908 Del-

*continued on page 334*



## DO YOU NEED A STRONG RIGHT ARM?

Every day, exciting changes take place in the building industry. To meet these rapidly-changing conditions and to utilize new designs, materials and techniques, experienced guidance often is needed.

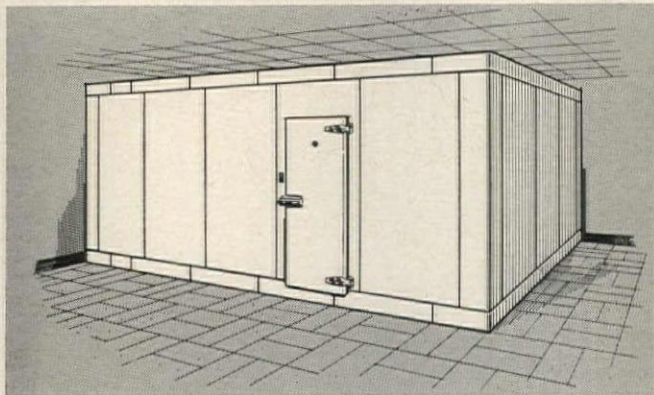
To provide this technical assistance, and to help insure quality construction at minimum cost, Bestwall Certain-teed has now made available a staff of trained Systems Engineers—men experienced in many phases of construction involving schools, hotels, apartments and offices, as well as all residential construction. There is no charge for this assistance.

Gypsum Drywall Systems, Roofing Shingles, Roll Roofing, Siding, Building Insulation, and Lath & Plaster are among the installations where our Systems Engineers can assist you. Contact your Bestwall Certain-teed Sales Corporation office.

# BESTWALL CERTAIN-TEED

For more data, circle 150 on Inquiry Card

For more data, circle 151 on Inquiry Card



Combination normal and low temperature Walk-In installed at Manhattan State Hospital, Wards Island, N.Y.

Specifications prepared by the State of New York, Department of Public Works, Division of Architecture, Albany, N.Y. for the Department of Mental Hygiene.

## Bally pre-fab walk-ins *all-metal coolers and freezers*

World's most advanced design. New materials and construction techniques offer architects an opportunity to provide tremendous refrigeration advantages to their clients.

Urethane 4" thick (foamed-in-place) has insulating value equal to 8½" fibreglass. Standard models can be used as freezers with temperatures as low as minus 40° F. Urethane has 97% closed cells... cannot absorb moisture... ideal for outdoor use.

Speed-Lok Fastener designed and patented by Bally for exclusive use on Bally Walk-Ins. Makes assembly accurate and fast... easy to add sections any time to increase size... equally easy to disassemble for relocation.

New foamed door, so light in weight it ends forever the "hard pull"... the "big push". Door is equipped with new type hand lock (with inside safety release) and convenient foot treadle for easy opening. Also has special hinges that close door automatically. Magnetic gasket guarantees tight seal.

Self-contained refrigeration systems combine balanced capacity condensing units and refrigeration coils. Mounted and hermetically sealed with necessary controls on small wall panel. Simplifies installation. Four-hour factory test assures quiet, efficient, trouble-free operation.

Write for Free Architect's Fact File which includes 12-page brochure... Specification Guide... and sample of urethane wall construction.



See Sweet's File, Section 25a/Ba



Bally Case and Cooler, Inc.  
Bally, Pennsylvania

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## The next building you design will be a better building if you specify a built-in ADT protection system

Better because functionally *complete*, from your client's point of view. Better because protective devices and wiring can be installed more economically, and with minimum exposure to view. Better because security hazards will be minimized from the day your client moves in.

Whether urban, suburban or rural, your project can be protected through one of many versatile, flexible, reliable ADT systems. Three basic types—connected to ADT central station, direct-connected to fire and police headquarters, or to client's proprietary center—adaptable to *any* plant security requirement. See Sweet's File, Section 33 b. Or call nearest ADT office (Yellow Pages) for free consultation, survey or specification data.

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# NEW DRAINLINE BULLETIN!

## CORROSIVE WASTES A PROBLEM?

Find out why PYREX® brand drainline is your one best answer. Get the facts on how easily it installs.

Write today for Bulletin PE-39 to Building Products Department, Corning Glass Works, 8509 Crystal Street, Corning, New York.



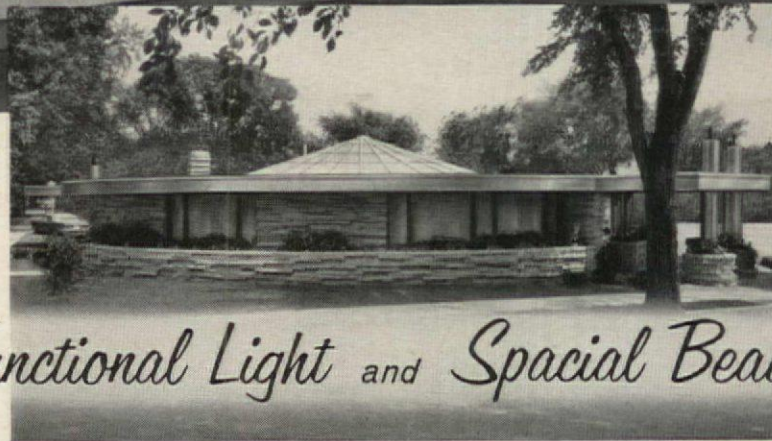
**CORNING**  
CORNING GLASS WORKS

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20b  
SU



FIRST NATIONAL BANK OF STOUGHTON  
STEINMANN ARCHITECTS  
MONTICELLO, WISCONSIN

combine *Functional Light* and *Spacial Beauty*

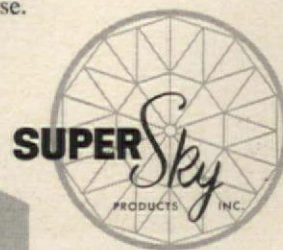
*through Super Skylighting*

Super Sky helps you achieve the unusual in visual environment . . . combine the design advantages of open space with the illuminating beauty of natural light. In this case, the architect has employed Super Sky's self-supporting geometric dome as the nucleus, using it as the architectural focal point to create space and light in a fresh dimension.

Let Super Sky's engineers help you plan your next project from drawing board to completion. From *your* plans we will design, fabricate and erect the skylight . . . and even *guarantee* it! Standard domes to 30 ft., as well as custom units, are available. Write for detailed drawings, engineering data, estimates and suggestions. No obligation, of course.

**Engineering Features**

- 1-slope geometric-design, 36' in diameter
- Dome completely self supporting
- 1/8" polyester fibreglass sub-ceiling
- Rafters, ridges, curbs and cross-bars of extruded aluminum, with continuous neoprene glazing strips for weatherproofing.
- 1,120 sq. ft. of heat-absorbing glass
- Exposed aluminum gold-anodized

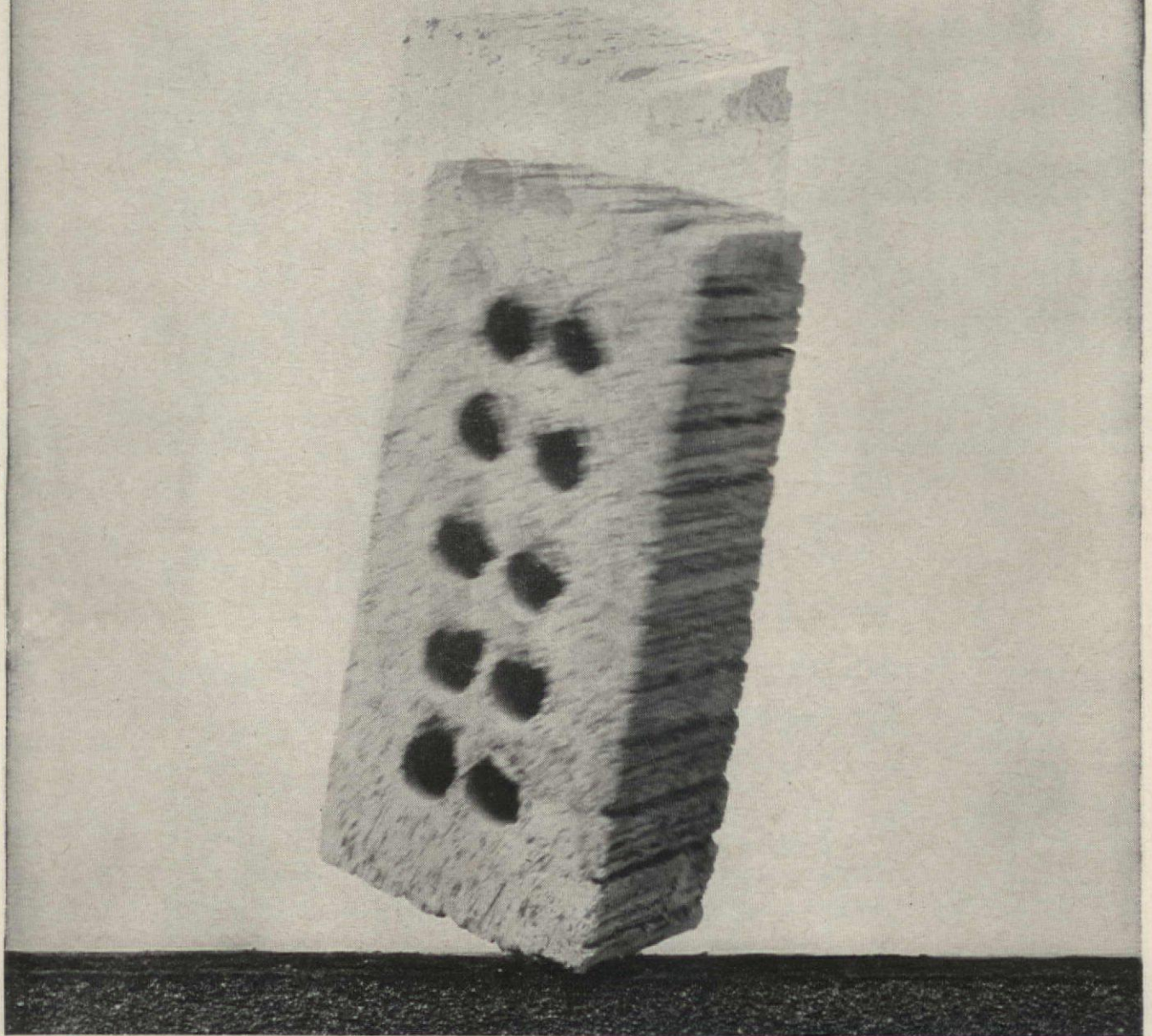


For more data, circle 152 on Inquiry Card

FREE illustrated booklet — "A New Concept in Dimensions Unlimited" — at your request. Write Super Sky Products, Box 113-AD, Thiensville, Wisconsin.

**SUPER SKY PRODUCTS**  
BOX 113-AD, THIENSVILLE, WISCONSIN  
PHONE: CHEstnut 2-2000  
Milwaukee phone: FLagstone 4-6700

# CATCH IT! BEFORE IT RUINS YOUR CLIENT'S ROOF



Picture it. The roof's down on your client's building. A workman carrying bricks for further construction above it drops one from a ladder or scaffold. Wham! It punctures the roofing. What happens to the insulation the next time it rains?

It depends. If it's FOAMGLAS,<sup>®</sup> there's nothing to worry about. The insulation value won't change.

And we guarantee this kind of security for 20 years, in writing, without charge to your client.

You see, FOAMGLAS stays dry indefinitely. Its sealed glass cells can't absorb moisture. That's pretty comforting when you consider the 101 human errors that can damage a roof. Things like ladders, wheels, heels, knives, tools, and pipe can all cause punctures that go undetected until

it's too late. Next thing you know the insulation's wet. You may have to replace the whole roofing system.

Considering the added value of *constant* thermal efficiency in reducing the investment in air conditioning equipment and in cutting operating costs, you'll do your client a service that lasts the life of the building if you specify FOAMGLAS Roof Insulation.

Write today for your sample of the FOAMGLAS guarantee. Remember, it will be like money in the bank when we're asked to sign it.

Write to Pittsburgh Corning Corporation, Box B-93, One Gateway Center, Pittsburgh 22, Pa.

**PITTSBURGH**  
**PC**<sup>®</sup>  
**CORNING**

For more data, circle 153 on Inquiry Card

# AMERICAN LOUVERS PROVIDE THE RIGHT ANGLE FOR CRITICAL VISUAL TASKS

## CREDITS

Architects & Engineers:  
Argonaut Realty,  
Div. General Motors

Electrical Contractor:  
Hatfield Electric

Luminated Ceiling:  
Themotank, Inc.  
Detroit, Mich.



## HIDDEN BUT NOT HAMPERED...

sprinkler heads, air conditioning, heating and ventilating systems can be installed before illuminated ceiling is hung. Although covered by American Louvers, function of ducts and sprinklers is not hampered — air, water, dust and dirt falls freely through open plastic panels, keeping ceiling cleaner.



## LIGHT INTRIGUE, NOT SIGHT FATIGUE...

was achieved at the Delco Remy Division of General Motors, Anderson, Indiana, with the installation of 85,000 sq. ft. of 9/16 in. cube, 45° shielding American Louver Plastic Panels. 76.5 percent of the louver surface is open, permitting 200 footcandles maintained. This permits high-level light transmission below while louver cells and translucent vertical vanes, viewed from a distance, blend together for overall low-brightness appearance.

Where seeing is important, American louvers provide the maximum in visual comfort. Performing critical tasks, such as the Delco Remy drafting room above, require high illumination levels with a minimum of glare. The open depth of the louver panels allow the light to reach the work surface without brightening up the panel. Open cell louver construction assures no loss of light due to dust accumulation.

American louvers are offered in a variety of over-all dimensions, shielding angles and cell sizes. Write for complete catalog.

Specify...  
...the best buy

**american louver company**

5308 NORTH ELSTON AVENUE • CHICAGO 30, ILLINOIS

HEAD OFFICE  
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Branch Warehouse

CANADA  
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5780 PARE ST.  
946 ERIN ST.

TORONTO  
MONTREAL  
WINNIPEG

# A new acoustical ceiling

Look-alike  
acoustical and  
plain panels  
balance sound.

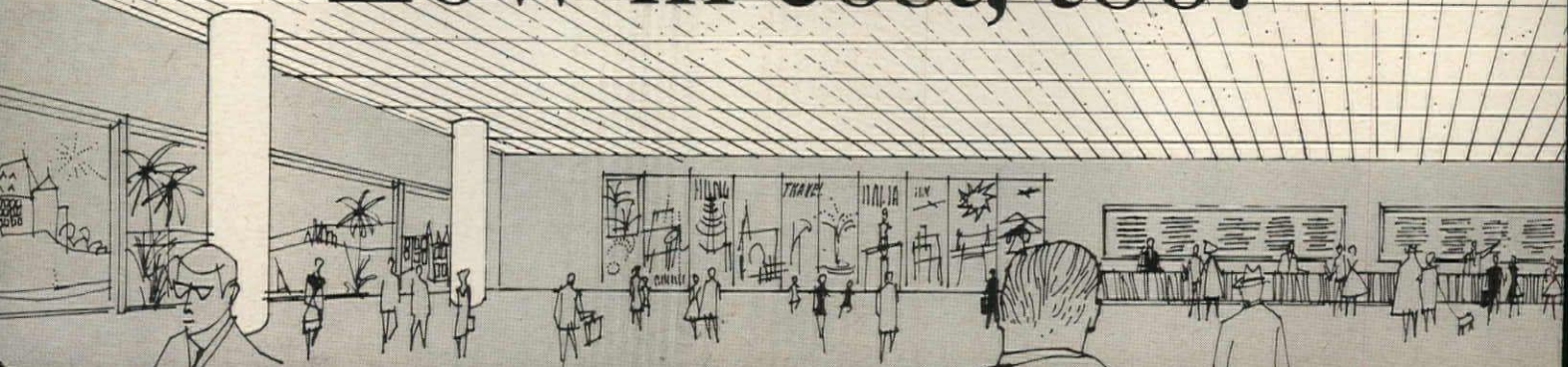
## Non-combustible

Mineral gypsum  
core withstands  
heat and flames.

## Washable

Vinyl-plastic  
surface is treated  
to resist soiling.

## Low in cost, too!



# TEXTONE\* Panels

—a designer's ceiling that gives  
you all these advantages:

- **ACOUSTICAL PANELS**, with NRC of .60, have the same surface appearance as plain (non-acoustical) panels. Intermixing of both types balances acoustical performance precisely to your job requirements.
- **WASHABLE VINYL-PLASTIC** surface, treated to resist soiling, can be wiped clean if necessary, thus ending costly interruptions for periodic painting and ceiling maintenance.
- **DESIGNED TO FIT** standard grid suspensions and to provide complete access to above-ceiling plenum areas, TEXTONE Panels are available in 23 $\frac{3}{8}$ " x 23 $\frac{3}{8}$ " x  $\frac{3}{8}$ " and 23 $\frac{3}{8}$ " x 47 $\frac{5}{8}$ " x  $\frac{3}{8}$ " sizes.
- **CLASS "1" FIRE-RESISTANT**, with "0" flame spread, rugged gypsum core; not only absorbs sound but also provides inherent fire protection and superior damage resistance—thus eliminating major problems encountered in ceilings composed of fragile fibers and flammable binders.
- **80% LIGHT-REFLECTIVE** white vinyl-plastic surface is lightly textured, complements other materials to provide an attractive, functional, over-all room finish.
- **TOUGH, DURABLE, ATTRACTIVE** and practically 100% salvageable, TEXTONE Panels are excellent for either new construction or remodeling.

These are more than design advantages; they're selling features for your designs, as well. *Acoustical qualities* enhance any application—school, restaurant, store, office. *Non-combustible rating* adds valuable protection. *Easier maintenance* certainly benefits your clients. And what architect—what client—doesn't keep a sharp lookout for cost-saving opportunities! TEXTONE Panels truly serve the interests of maximum economy, in both initial cost and long-term maintenance.

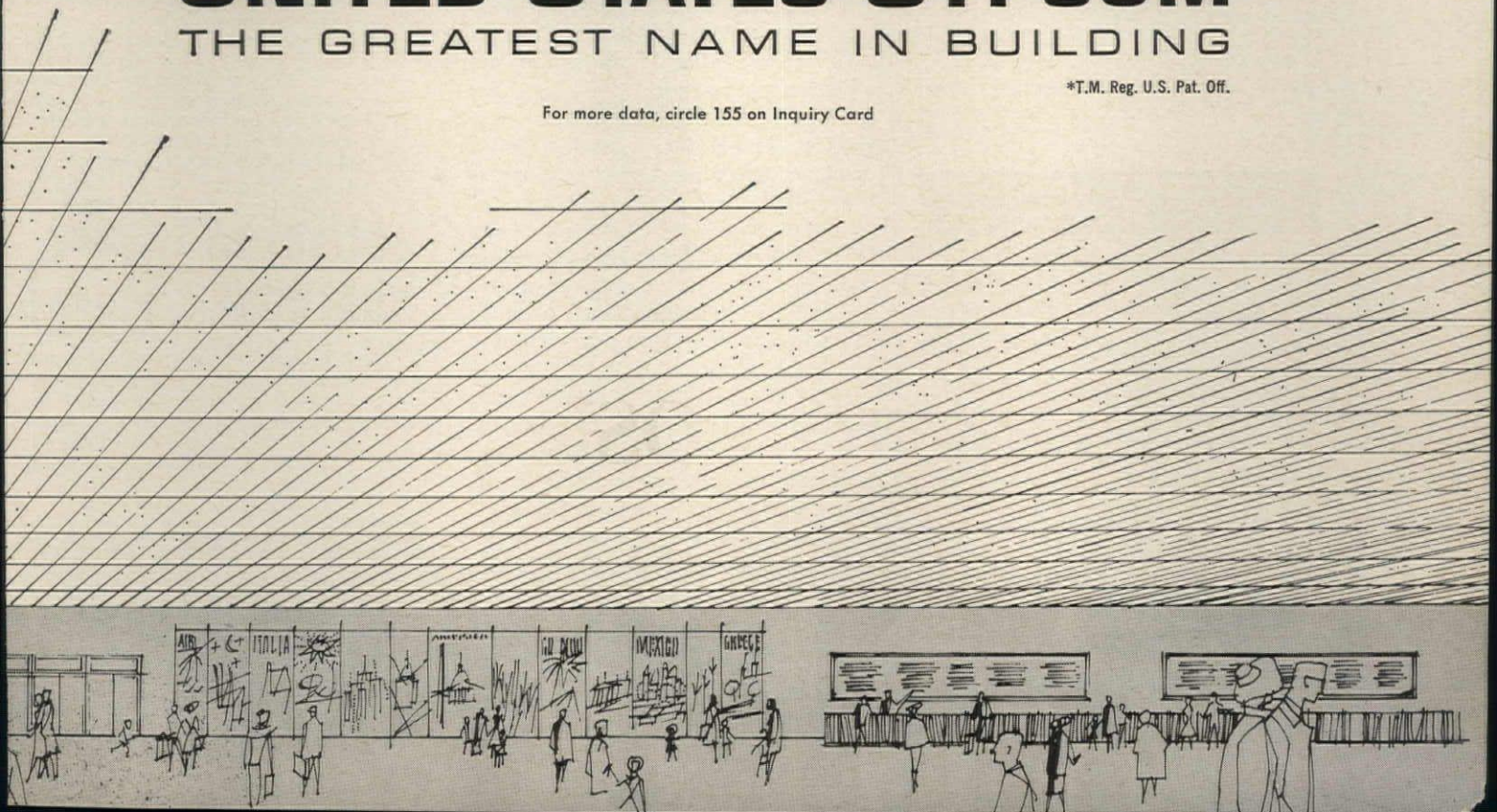
TEXTONE Panels are installed by acoustical contractors throughout the United States. For specifications and complete information, contact your nearest acoustical contractor, your U.S.G. Architect Service Representative; or write Dept. AR-34, 101 South Wacker Drive, Chicago 6, Illinois.

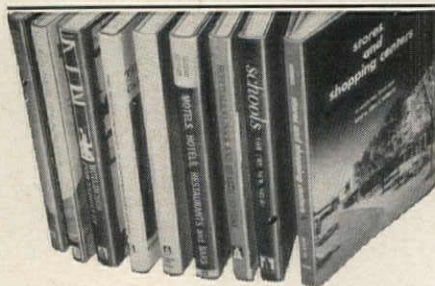
## UNITED STATES GYPSUM

THE GREATEST NAME IN BUILDING

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

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## HUNDREDS OF FRESH, WORK-ABLE PLANS AND IDEAS

for designing all types  
of modern buildings

Now you can have instant access to today's most ingenious architectural plans and ideas encompassing many hundreds of superb business, residential, and service buildings the world over. Practical in every respect, this giant, nine-volume Library alerts you to important developments and trends in everything from homes, stores, hospitals, and schools to motels, hotels, office buildings, and research laboratories.

### ARCHITECTS MASTER LIBRARY OF BUILDING TYPES

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2,324 pages, 8 3/4 x 11 5/8, over 5,500 illustrations,  
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Hundreds of outstanding buildings are covered, with plans, interior and exterior views, and other information to give you a ready-reference treasury of ideas for meeting all kinds of modern architectural design problems. Here is a great source of proven ways to meet your clients' demands for appearance and function, provide spatial flexibility, hold construction and maintenance costs down, permit easy alterations or future expansion, etc.

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Send me Architects Master Library of Building Types, 9 vols., for 10 days' examination on approval. In 10 days I will (check one)  remit \$69.50; or  \$9.50 and \$15 monthly for 4 months. Otherwise I will return books postpaid.

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McGraw-Hill Intl., N. Y. 36 AAR-9

### On the Calendar continued from page 327

mar Blvd., St. Louis 8; Architectural Drafting Department, 5427 Manchester, St. Louis.

Perkins & Will, Architects, Washington office, 1100 17th St., Washington, D.C.

### Addenda

In a Buildings in the News story on the Westinghouse Electric Corporation Telecomputer Center, Pittsburgh, April, page 12, Deeter & Ritchey were named as architects. The name for the associate architect for design—Eliot Noyes & Associates—was omitted.

Photographs of the Civil Air Terminal, Dhahran, Saudi Arabia, by Minoru Yamasaki (March 1963, pp. 145-148) were incompletely credited "courtesy Ralph M. Parsons Company." The photographer was Tom Walters. We regret the omission.

### CONGRESS PASSES RECREATION LAW

A new law outlining responsibilities of the Bureau of Outdoor Recreation has been passed. Secretary of the Interior Stewart L. Udall said it marked "the beginning of a new era of government recognition of its responsibilities for coordinated effective nationwide planning, acquisition, and development of outdoor recreational resources."

The law authorizes the Secretary of the Interior to "prepare and maintain a continuing inventory of the outdoor recreation needs and resources of the United States; prepare a system for classification of outdoor recreation resources; formulate and maintain a nationwide outdoor recreation plan; provide technical assistance and cooperate with the States . . . ; encourage interstate and regional cooperation in planning, acquisition, and development of outdoor recreation; sponsor, engage in and assist research and education programs; encourage interdepartmental cooperation and promote coordination of Federal plans and activities generally relating to outdoor recreation; and accept and use donations for outdoor recreation purposes."

more news on page 342

## how to sweeten a furnace



Your furnace shows a shocking lack of discrimination. It heats anything you give it through the return air ducts. Many smart furnace and air conditioner users slip an inexpensive activated charcoal filter into the system behind the dust filter. It adsorbs all odors as sweet as you please.

## how to smell no evil



Some people wear gas masks (containing activated charcoal). Others breathe air freshened with activated charcoal air purifiers. They (the people) work better, more safely. You save money by recirculating warmed or cooled air instead of blowing it away. Suggest you ask your plant or consulting engineers about it.

## how to save the day



Evil days befall when contaminated air robs your employees of efficiency or your neighbors of neighborliness. This has a way of turning balance sheet ink from black to red. Whether you save your air and dump the contaminant—or dump your air and save the contaminant, an activated charcoal system will save the day. It's doing it now in many plants.

## activated charcoal

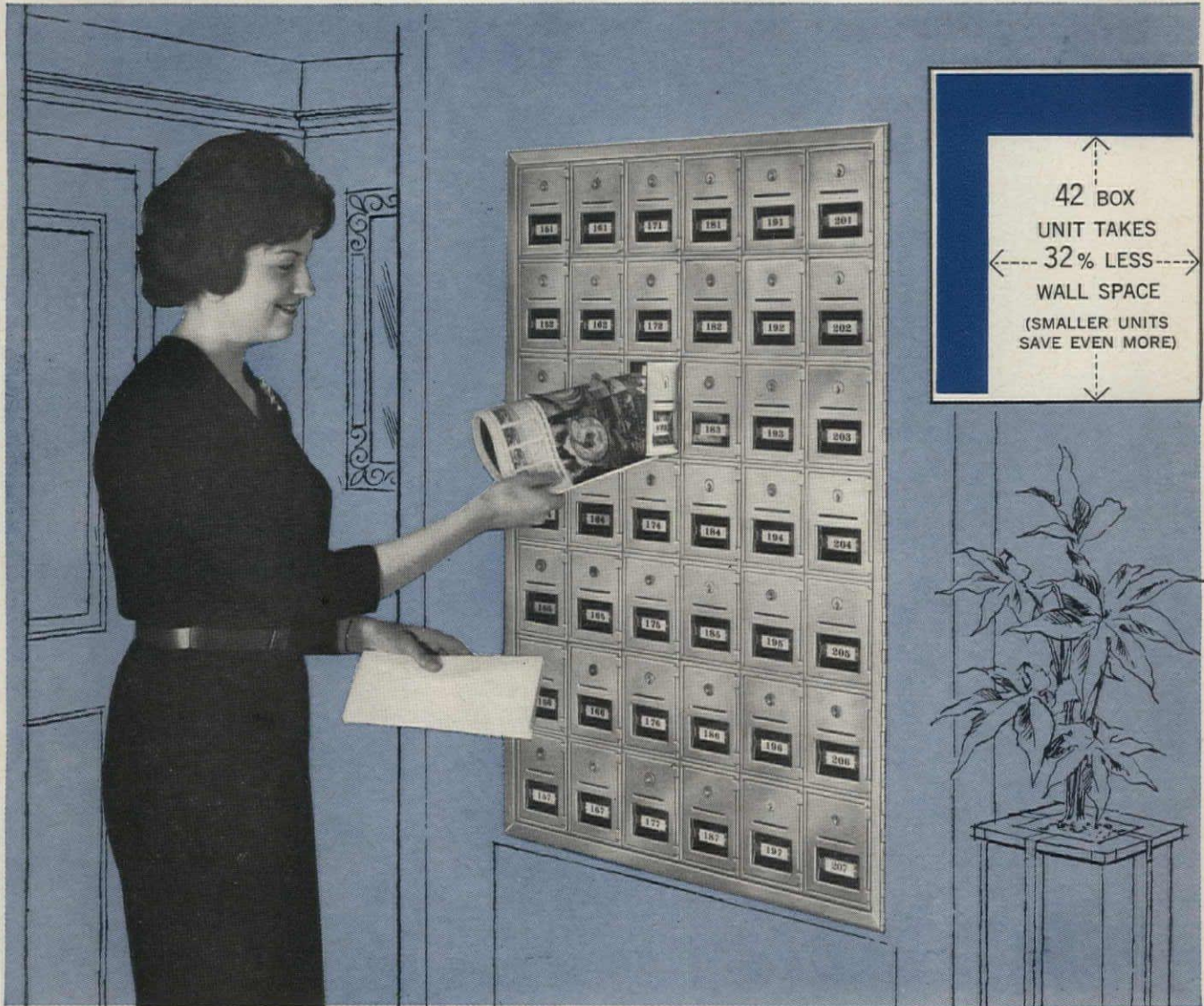


Activated charcoal acts as a molecular sponge, purifies air, gases, liquids—recovers solvents—removes odors and impurities. Write for Literature Group 63-2L Barnebey-Cheney, Columbus 19, Ohio.

# Barnebey Cheney

For more data, circle 156 on Inquiry Card

# New Corbin SLIM-MASTER UNIT\* saves letter box space... gives you slim, modern design



↑  
42 BOX  
UNIT TAKES  
←--- 32% LESS ---→  
WALL SPACE  
(SMALLER UNITS  
SAVE EVEN MORE)  
↓



New AR 150 S Letter Box in Corbin Slim-Master Unit meets Post Office specifications effective Jan. 1, 1963. Cast bronze. Key operated. Slotted door, 4" wide by 5" high. U. S. 10 satin bronze or U. S. 26D satin chrome.

Where your letter box space is limited... or where you want compact, modern design... the new Corbin Slim-Master Letter Box Unit is your answer!

This new unit — equipped with standard-size, Post Office approved letter boxes — takes less space than any similar mail receptacle. 42-box units saves up to 32% wall space...

smaller units save even more. Narrow 3/4" extruded rails and stiles make the difference.

You'll like the slim, modern design, too... and the strength-tested construction that includes a stainless steel, piano-type master door hinge.

For full details—or a free layout (tell us the number of boxes and wall dimensions)—write Dept. B9.

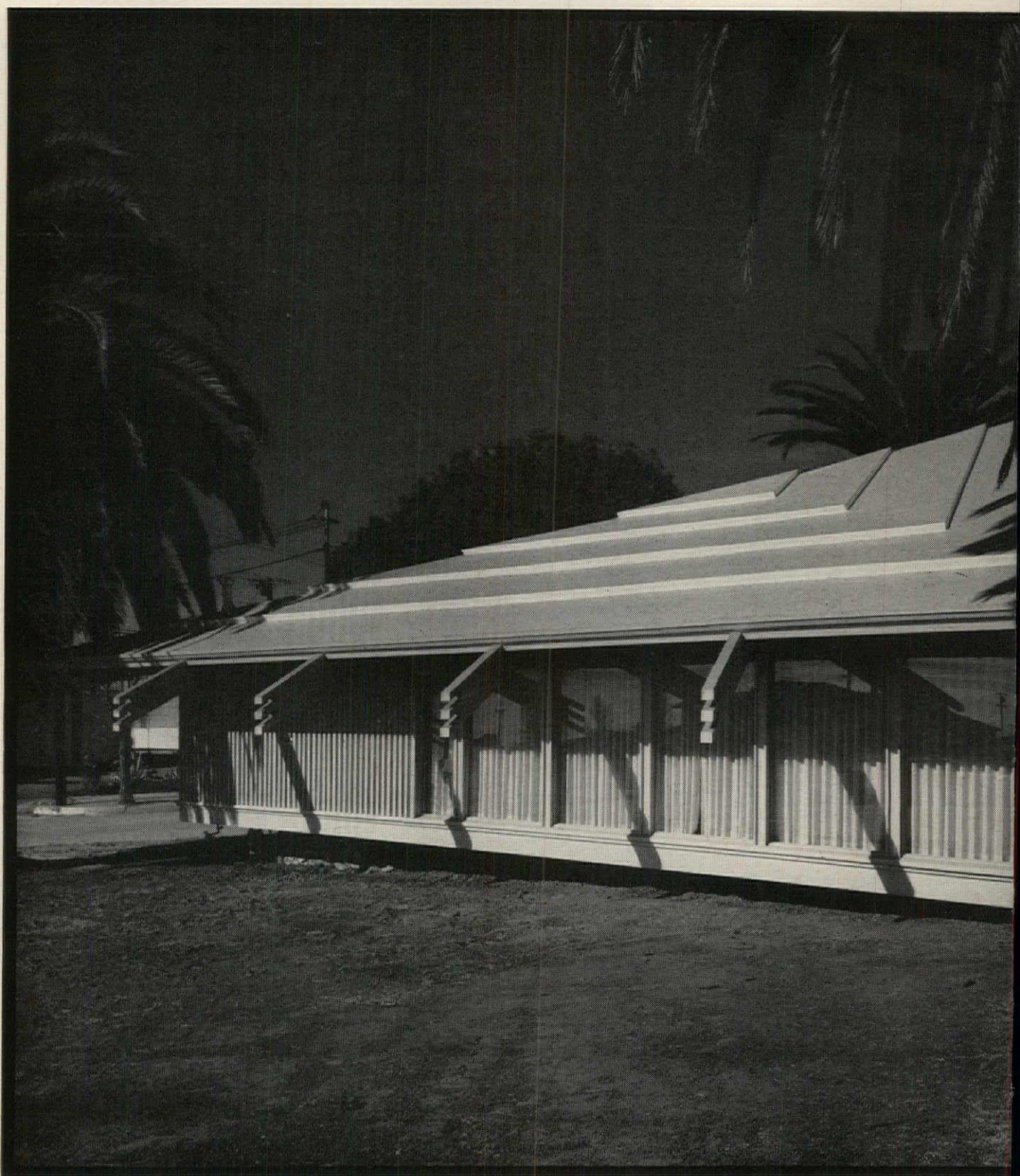
\*Trade Mark

## CORBIN WOOD PRODUCTS DIVISION

THE AMERICAN HARDWARE CORPORATION  
NEW BRITAIN, CONNECTICUT



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CHAMBER OF COMMERCE BUILDING, SAN CLEMENTE, CALIF. ARCHITECTS: CHRIS ABEL AND ASSOCIATES.

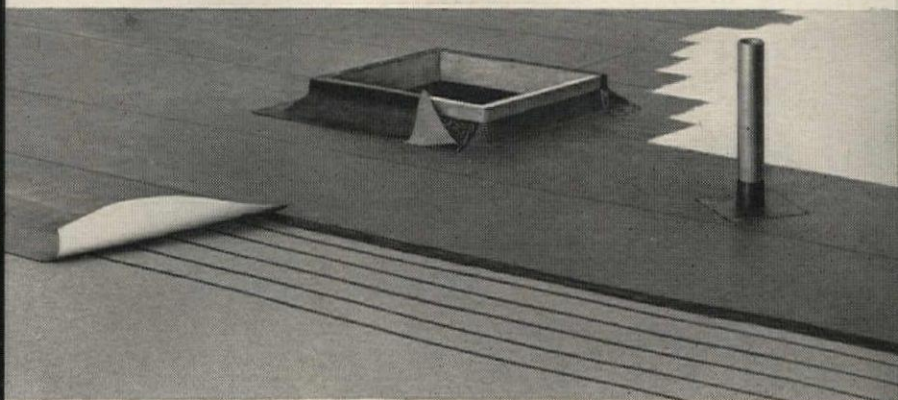
Now, you can design  
a "skin-tight" roof in any configuration,  
any slope, and in white or colors...  
with new **LAST-O-ROOF!**

Here's the newest development in a roof that conforms to any configuration or slope of the most imaginative roof design . . . and in color, too! New Johns-Manville **LAST-O-ROOF** is a *one-ply* plastic elastomer roof designed for one-step cold application . . . a roof that gives monolithic protection and lasts for years.

**LAST-O-ROOF** is light in weight,



SIMPLICITY IS THE PRINCIPAL FEATURE OF **LAST-O-ROOF**



**Last-O-Bestos**, the one-ply roofing membrane, is the main component of Last-O-Roof . . . consists of a weathering surface supported by an asbestos reinforcement. These are combined by a method that makes them inseparable so they form a true, one-ply membrane. Black in color, the weathering surface is a tough, durable polyisobutylene film. The light-colored supporting reinforcement is made of plastic-elastomer-bonded asbestos. Last-O-Bestos is applied in ribbons of **Last-O-Bestos Cement**, a pourable polyisobutylene adhesive that sets in a short time and gives a lasting bond. Side and end laps of Last-O-Bestos are sealed with **Last-O-Lap**, a brushable polyisobutylene adhesive reinforced with asbestos fibers for flow control . . . For use as through-wall flashing and at parapets, eaves or skylights, the one-ply membrane **Last-O-Flash** is provided. It has a weathering surface consisting of a heavy polyisobutylene film supported by a woven glass scrim and is adhered with **Last-O-Flash Cement**, an adhesive of heavy consistency . . . For roof projections such as vent pipes, **Last-O-Film** provides an elastic polyisobutylene film which is easily stretched and shaped to give a tight, weatherproof fit.



**Last-O-Lume**, the reflective surface finish, is an elastomer-based coating, formulated for compatibility with all Last-O-Roof membranes and adhesives. It's available in durable aluminum, white and metallic pastel colors to harmonize with any building design. The highly reflective surface will aid in lowering roof and interior temperatures.

Get the full details on this newest development in membrane roofing. Ask your J-M man about LAST-O-ROOF. Or call or write Johns-Manville, Dept. AR3, Box 111, New York 16, N. Y. Cable: Johnmanvil.

actually *stretches* to accommodate normal stress and distortion. And, it's a roof that's reflective and colorful, too. LAST-O-ROOF is made up of compatible components based on the elastomer, polyisobutylene . . . and this roof is approved by Underwriters Laboratories, Inc., for Class A construction.

What's more, it's a roof that can

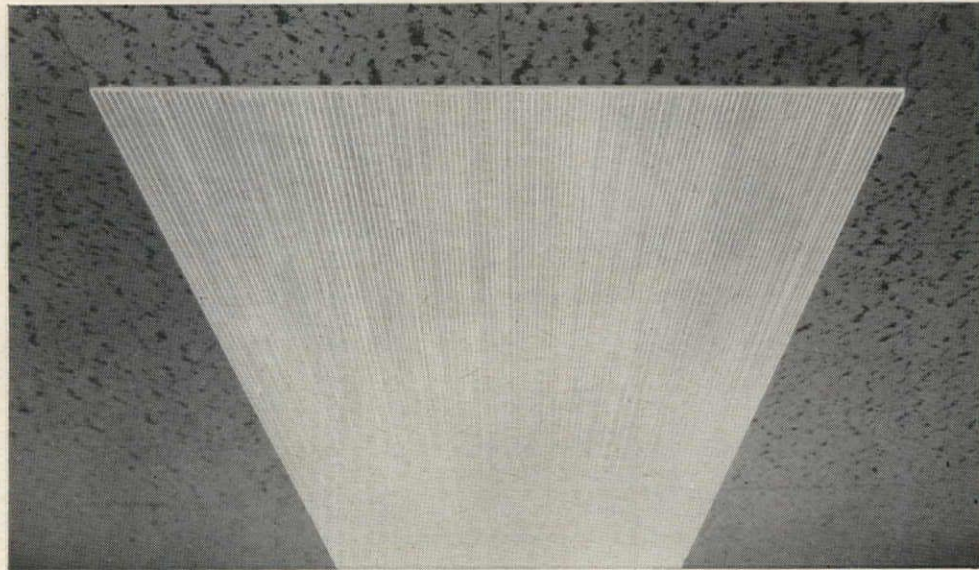
be speedily applied to permit quick building closure. The result is a smooth, water-tight, completely ho-

mogeneous roof that will not crack, blister or shrink under extremes of heat and cold.

**JOHNS-MANVILLE**



For more data, circle 158 on Inquiry Card



## ABSOLUTELY NO TRIM

The ultimate in architecturally clean recessed lighting design. No frame, no flange, no trim.\* A simple, absolutely uncluttered sheet of light in the ceiling without surrounding metal of any kind. A full 12" or 24" illuminated area. For virtually all ceilings supported by concealed members. Shielding opens or closes from either side or may be completely removed without any tools or visible hardware. With the linear lens shown here in acrylic or styrene. Or with the new regressed prismatic lens (acrylic or styrene) for those who prefer a dramatic sculptured effect. One-foot wide in 4-foot and 8-foot lengths for 2 or 3 lamps. 2-foot widths for 2, 3, 4 or 6 lamps.

\*Patent applied for.



**Smithcraft Trimless Troffers**

SMITHCRAFT CORPORATION, CHELSEA 50, MASSACHUSETTS

For more data, circle 159 on Inquiry Card

The Key to  
**"THE APARTMENT"**  
should be a  
**LOCKWOOD** key

◆ Lockwood has a complete line of quality hardware for every door in the apartment building, from the main entrance, to the most insignificant closet door. Lockwood locksets, both mortise and cylindrical, are world famous for dependable security and performance.

Where economy is a factor, locksets are available in different grades with matching design, and can be master keyed or keyed alike.

Make your next apartment building a Lockwood installation—you and your client will be assured of top security and long trouble free service.



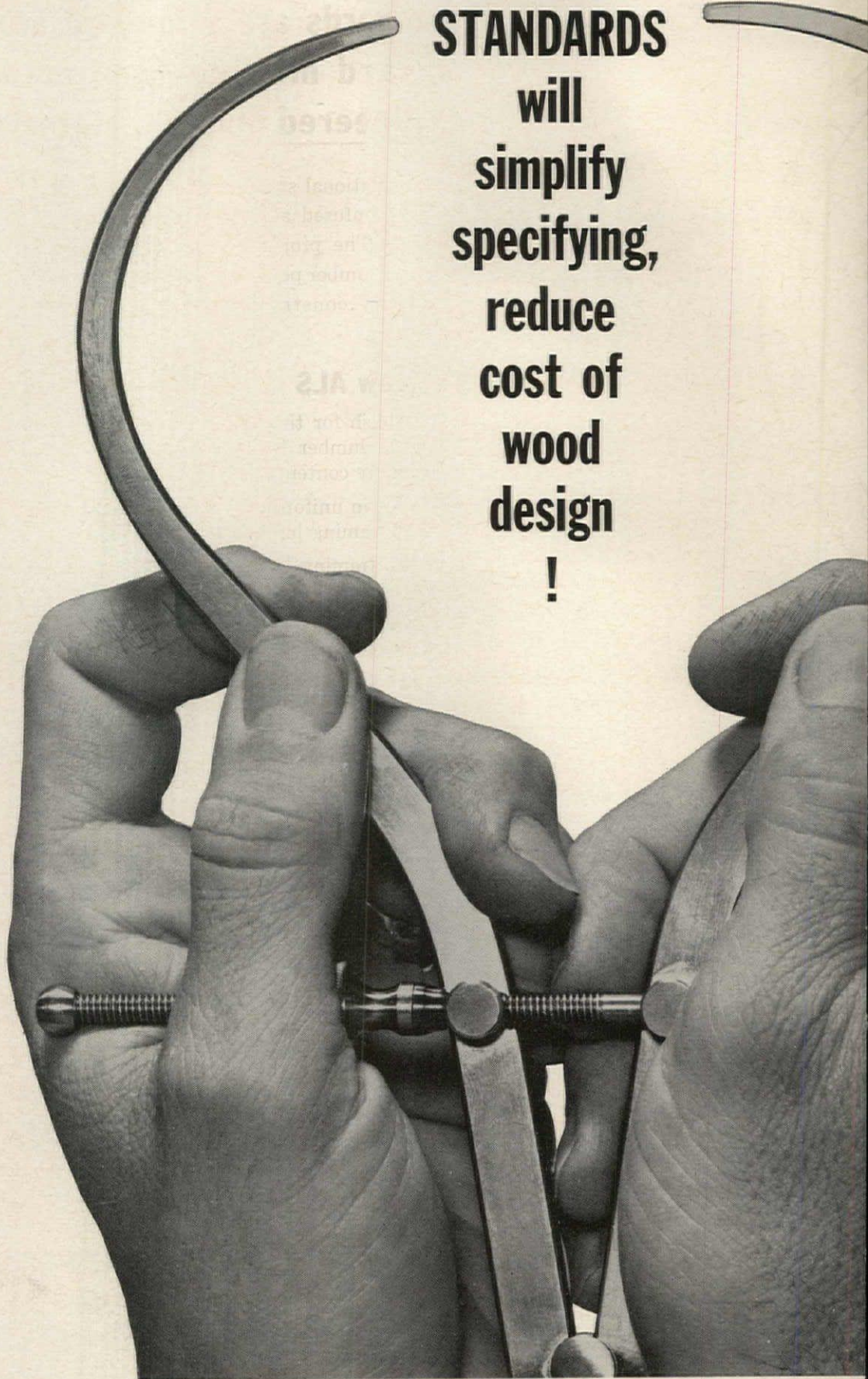
**LOCK UP WITH LOCKWOOD**

**LOCKWOOD**

LOCKWOOD HARDWARE MANUFACTURING COMPANY, FITCHBURG, MASS.

For more data, circle 160 on Inquiry Card

**NEW  
LUMBER  
STANDARDS**  
will  
simplify  
specifying,  
reduce  
cost of  
wood  
design  
!



## **ALS proposals for new lumber standards are a forward step toward making lumber an engineered building material**

Present national standards for light framing lumber are confused and unrealistic. Reform is long overdue. The proposed new standards will lead to better lumber performance, lower building costs in quality construction and simplification in specifying.

### **The new ALS standards will:**

- Establish for the first time a definitive, measurable lumber standard with sizes based on moisture content.
- Result in uniform "in-place" dimensions for all light framing lumber.
- Make framing lumber sizes easier to compute and compatible with panel thicknesses.
- Provide more accurate structural values and more efficiently engineered wood structures.
- Provide clear identification of dry lumber.
- Reduce the waste and overbuilding caused by oversized dry lumber.

The great weakness of the present system is the requirement that dry lumber be manufactured oversize to satisfy span tables based on the lesser strength of green lumber. The new standard establishes a realistic minimum thickness for dry lumber of 1-1/2" and tightens up moisture content requirements.

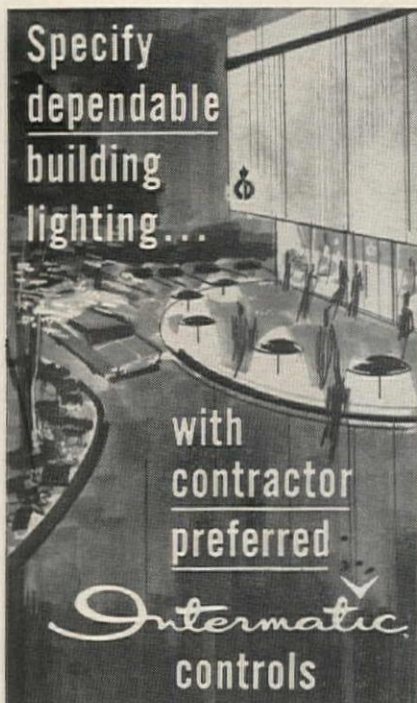
The new standards are being circulated now as revised *Simplified Practices Recommendation 16-53*. Although Weyerhaeuser is one of the largest producers of green lumber, we support revised SPR 16-53 in the interest of architects and specifiers everywhere. We strongly urge that you write the Department of Commerce, Washington 25, D. C., now expressing your support.



**Weyerhaeuser Company**  
Wood Products Division  
Tacoma 1, Washington

For more data, circle 161 on Inquiry Card

Specify  
dependable  
building  
lighting...

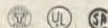


with  
contractor  
preferred

*Intermatic*  
controls

### TIME SWITCHES

Contractor preferred because they're designed to save installation time and cost, engineered to give positive, trouble-free performance year in and year out. Models for any lighting application—from controlling a single apartment to an entire building **inside and out**; from repeat on-off operations to completely different programs every day. Each is T-Rated, UL and CSA approved with heavy duty industrial type motor, hi-power switching mechanism, and large, easy-to-set dial. Sold, serviced and preferred everywhere.



### PHOTO ELECTRIC CONTROLS



Contractor preferred because they give positive performance in any part of the country in any weather. Relay-resistor design gives longer cell life, insures smooth operation over a wider voltage input range. Relay delay prevents interruption of service by momentary light flashes.

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## ART EXHIBITIONS: TURNER PAINTINGS TO TRAVEL



"The Transept, Tintern Abbey, Monmouthshire"—about 1794, from exhibition, "Turner Watercolors"

Two major art exhibitions with paintings of special architectural interest will be shown in various cities under the auspices of the Smithsonian Institution Traveling Exhibition Service (Washington 25, D.C.).

"Turner Watercolors," 80 watercolors by the English Romantic painter, includes paintings of buildings and cities he saw during journeys through England and the Continent. The paintings to be shown are from the British Museum.

The exhibition will open at the National Gallery, Washington, D.C., September 14 and will travel to Museum of Fine Arts of Houston (Nov. 1-30); DeYoung Memorial Museum, San Francisco (Dec. 14-Jan. 15, 1964); Cleveland Museum of Art (Jan. 28-March 1); William Rockhill Nelson Gallery of Art, Kansas City, Mo. (March 15-April 15); and Brooklyn Museum (May 1-31).

"Eighteenth Century Venetian Drawings from the Correr Museum in Venice" has 120 drawings, including architectural sketches. The show will be at the National Gallery (Oct. 26-Nov. 24); Museum of Fine Arts of Houston (Dec. 7-Jan. 5, 1964); Los Angeles County Museum (Jan. 18-Feb. 16); and California Palace of the Legion of Honor, San Francisco (March 2-31).

more news on page 352

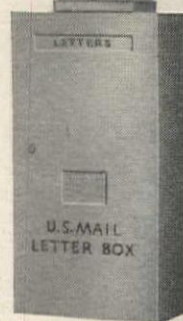
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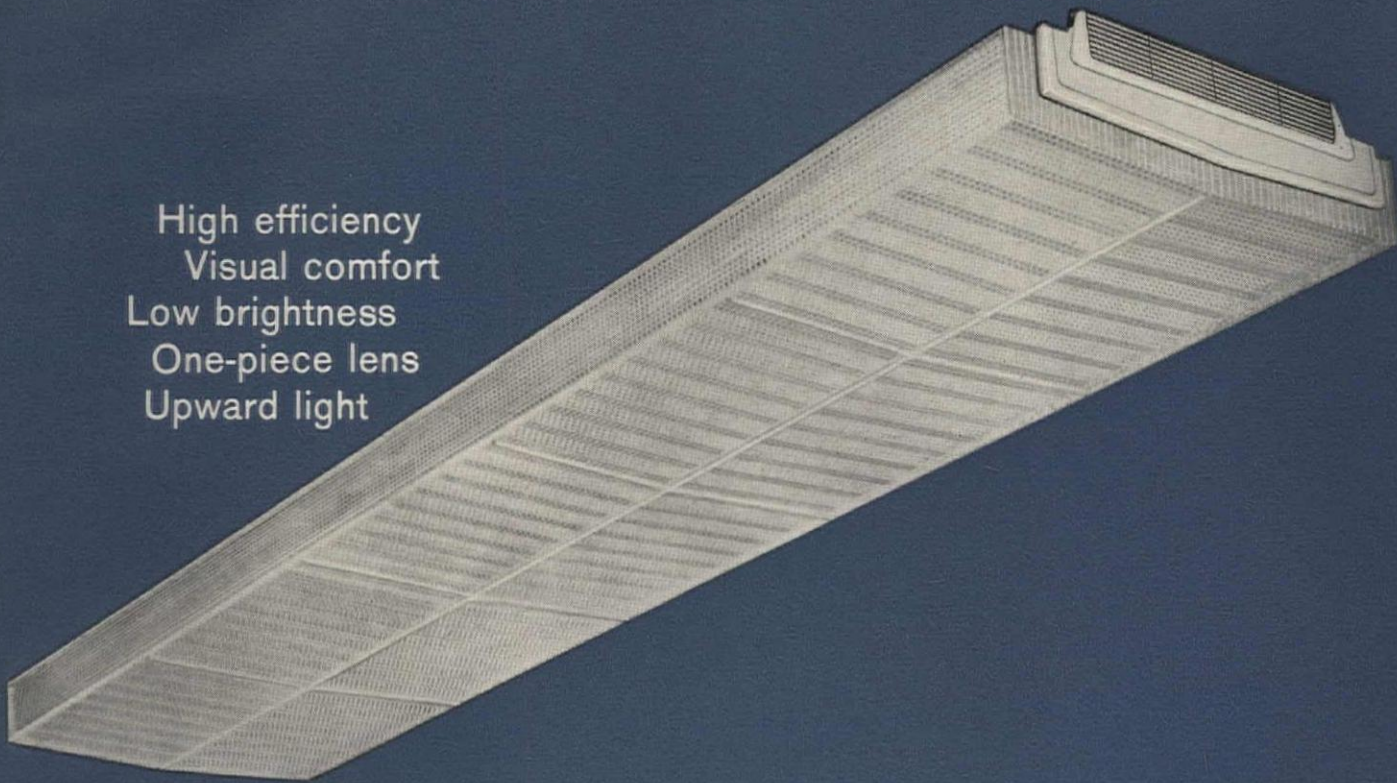
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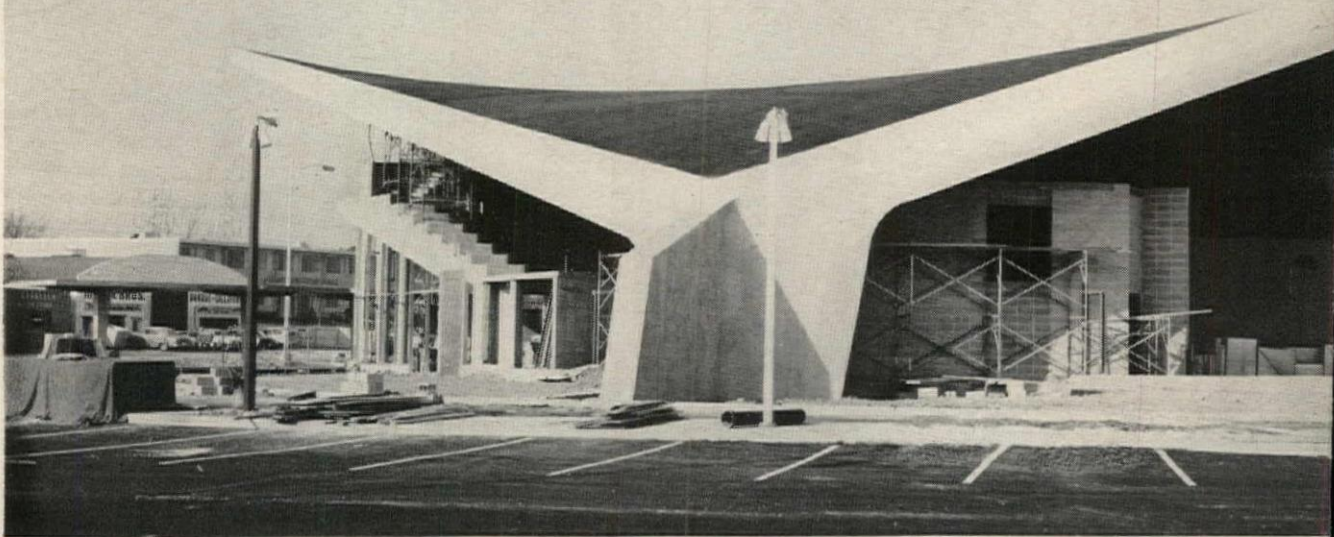
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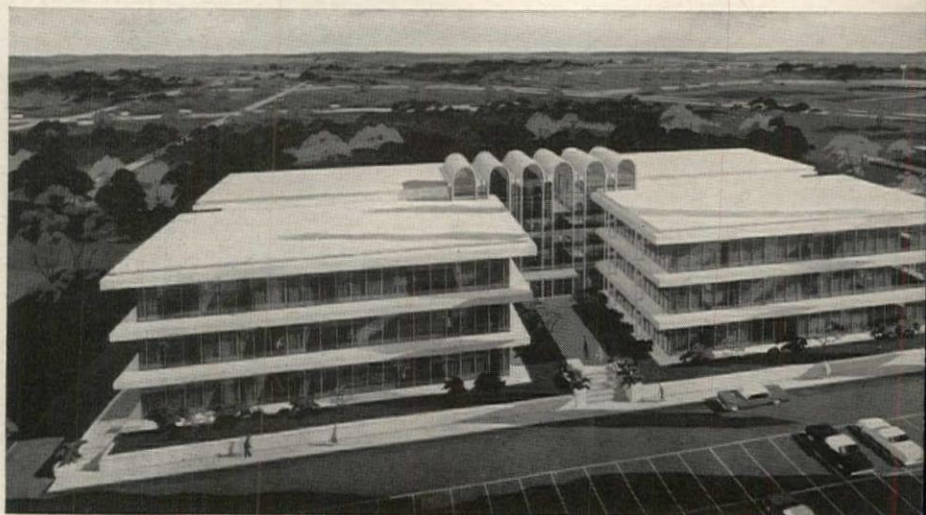
# LONGER SPANS, LIGHTER SLABS

with **RYERSON**  
post-tensioning for prestressed  
concrete



**NATION'S LARGEST HYPERBOLIC PARABOLOID ROOF** keynotes the design of Edens Theater, Northbrook, Illinois. This saddle shell roof (only 4 inches thick) stretches 159 ft. between working points at abutments; 221 ft. from tip to tip. The entire shell is rotated about the abutment points so that one tip is 5 ft. above lobby floor level; the other 39'6". Vertical Ryerson post-tensioning tendons prestress the abutment walls, and these walls rest on post-tensioned foundation pads. To absorb horizontal thrust, the pads are connected by a post-tensioned tie beam. **Architect:** Perkins and Will, Chicago. **Engineer:** The Engineers Collaborative, Chicago. **Contractor:** Chell and Anderson, Chicago.

**SOUTHFIELD OFFICE PLAZA** In suburban Detroit uses Ryerson post-tensioning to give reduced structural depth despite long spans and relatively heavy loads. Sitting on a 4-ft. terrace the handsome building contains 137,000 sq. ft. of floor space in four rectangular units joined by a central service core under an arched roof. In the structural framing, 50 poured-in-place, post-tensioned beams are supported by double-legged columns placed to provide 24-ft. cantilevers. 5½ ft. overhangs at each level shade the continuous windows and conceal air-handling equipment. **Designed by** Samuel P. Havis, presently Havis, Glavinisky Assoc., Detroit. **Engineers:** McWilliam & Keckonen, Birmingham, Mich. **Contractor:** Harold Soble Construction Co., Southfield, Mich.





# LOWER COSTS


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Adaptable to almost any design concept, Ryerson post-tensioning permits greater column-free areas at reasonable cost...often achieves savings by reducing structural depth...and is widely used in lift-slab structures because it solves deflection control problems and lightens slab weight for easier lifting.

Architects and engineers from coast to coast specify Ryerson post-tensioning with confidence. Among the reasons: Ryerson is the nation's largest supplier of fabricated steel for concrete reinforcement, and Ryerson post-tensioning service can provide a complete package including everything from detailing and placement plans to technical help in placement, stressing and grouting of quality-controlled tendons.

Three current projects using Ryerson post-tensioning are shown here. On *your* next project consider the advantages of post-tensioning and get in touch with us for comparative cost data, preliminary layouts, force development calculations and any other information that would be of help.

\*Precast concrete members may also be economically prestressed by this system.



**NURSING CARE BUILDING**, Lyngblomsten Retirement Center, St. Paul, Minn., uses Ryerson post-tensioning to maximize the economies and efficiencies of lift-slab construction, and provide deflection control. Four-story structure has 2 lift-slabs (connected by a joining strip after lifting) on each of 5 levels. Each two-unit slab measures approx-

imately 250 ft. x 60 ft. and maximum column spacing is 28 ft., 8 in. x 18 ft., 10 in. **Architect:** Sovik, Mathre & Madson, Northfield, Minn. **Engineering Consultant:** Kolbjorn Saether & Assoc., Chicago. **General Contractor:** H. Halverson Construction Co., Minneapolis. **Lifting Contractor:** Northwest Lift Slab Co., Portland, Oregon.

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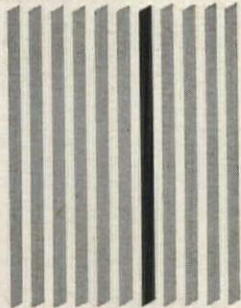
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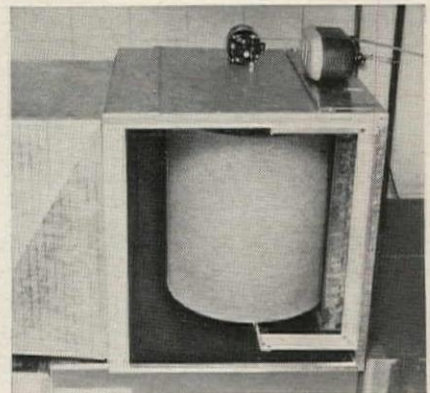
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solves the problem  
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NEW DESIGN — ASSURES HIGH CAPACITY . . . POSITIVE OUTPUT

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The 160 is mounted in the warm air stream of the furnace. It utilizes a polyurethane evaporator pad on a motor-driven, spiked drum which rotates in a pan of water. Warm air is circulated through the rotating pad where it is moisturized and then forced through the duct system.

The water level in the pan is automatically maintained by Skuttle's single pivot float valve. The unit uses a 115 volt, moisture-sealed motor with graphite bearings to assure long trouble-free service. The usual water pump and drain have been eliminated, and there are no moving parts to wear or require servicing.

The Model 160 DRUMATIC humidifier is also designed to eliminate mineral dust in the air. Deposits form on the evaporator, pad and, when filled, it can be easily cleaned or replaced. All air-water, parts are stainless steel and the cabinet is made of heavy duty galvanized steel.

The Model 160 has an output capacity of up to 7 gallons of water per hour.\*

\*Maximum output requires a 100,000 BTU output furnace capable of 950 CFM @ .5 S. P.

Skuttle manufactures DRUMATIC humidifiers with capacities from 1/2 gallon to 7 gallons per hour.

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## Memorial Hospital of Long Beach

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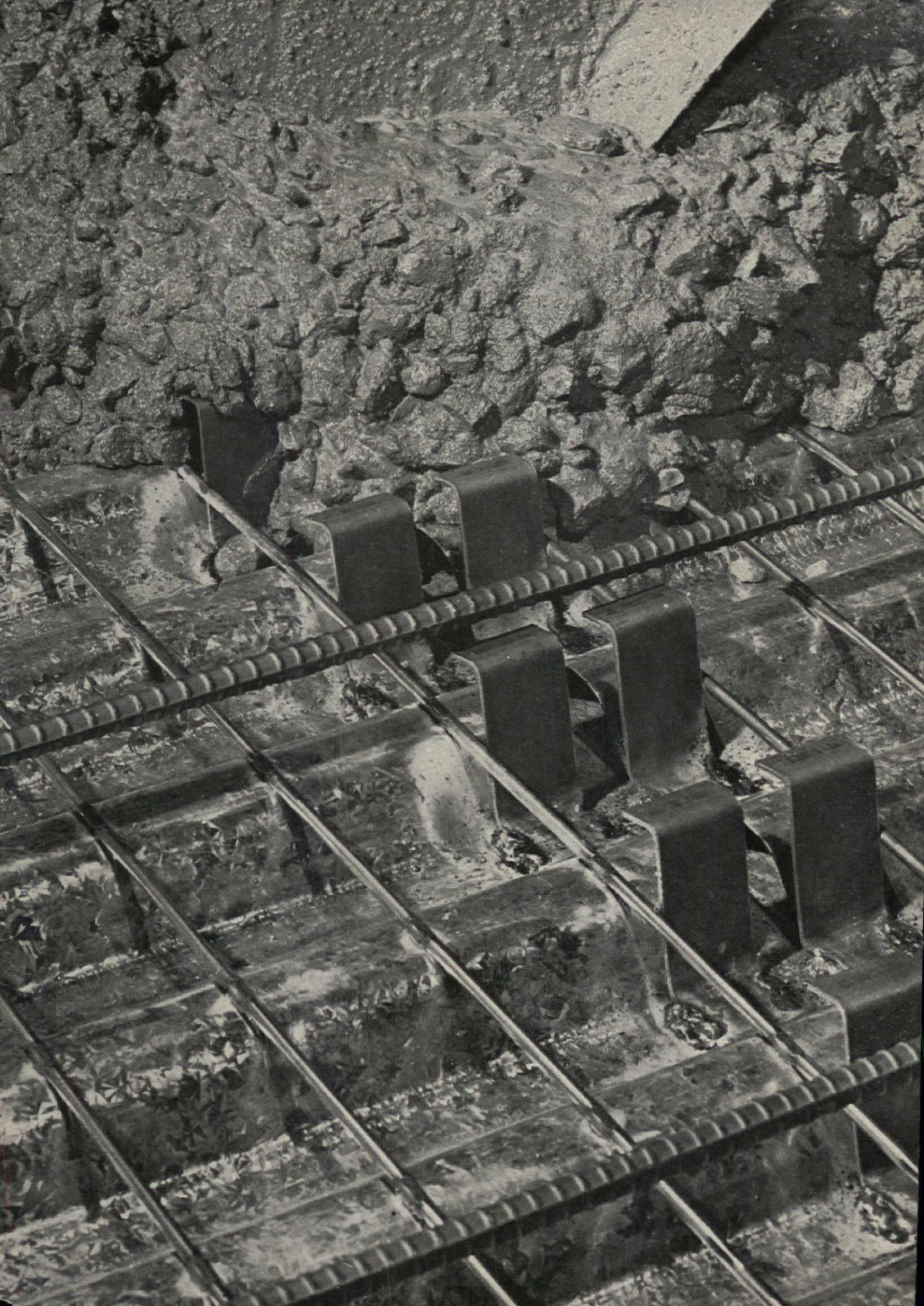
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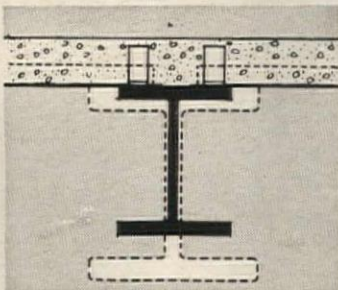


# New Cofar<sup>®</sup> shear connectors reduce the cost of composite construction



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Important savings in materials, space and money begin with *Cofar* composite construction. *Cofar*—now available with shear connectors



(Pat. Pend.). When field-welded to the beams, these "J"-shaped pieces of steel make the slab work as an integral part of the supporting members; thus beam sizes may be reduced.

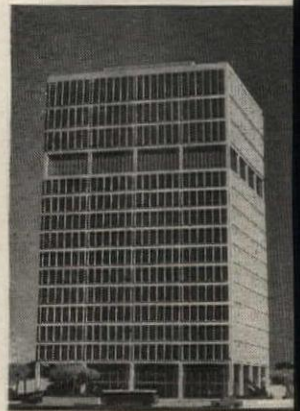
The main benefit of *Cofar* composite construction is the substantial reduction in steel tonnage because you get equivalent strength with lighter beams. Additional benefits are gained

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*Cofar's* economy has been well established in the building industry. *Cofar* is the 4-in-1 product—form, working deck, bottom reinforcing steel and temperature steel for a structural concrete slab. Construction is fast—proven—economical. Now with the development of the *Cofar* shear connector, even greater economies are yours by using *Cofar* composite design.

For more information, write for Catalog No. 103-B-62: GRANCO STEEL PRODUCTS COMPANY, 6506 North Broadway, St. Louis 15, Missouri. A subsidiary of Granite City Steel Co. Our catalogs are filed in Sweet's.

*Illustrated at right:* 16-story Pierre Laclede Building, now under construction, Clayton, Missouri, which utilizes *Cofar* composite construction.



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Smith and Entzeroth  
Engineer:  
Fruco and Associates, Inc.  
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*Hugh Stubbins & Associates, Architects*

*Turner Construction Company, Contractors*

A chief source of interest in this apartment building is in the arrangement of bays formed by angular window wall units. In each bedroom the large, glazed opening gives a feeling of airy spaciousness while the adjoining apartment is blocked off by its own solid wall on the interior angle. Thus all the building's 78 apartments enjoy both privacy and a view.

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*Write for Hope's Catalog No. 169.*

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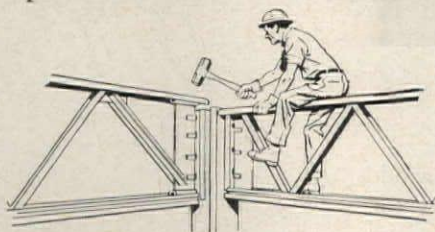
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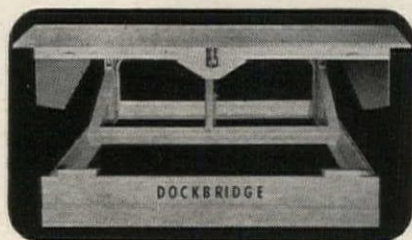
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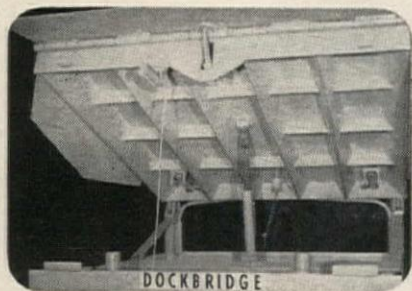
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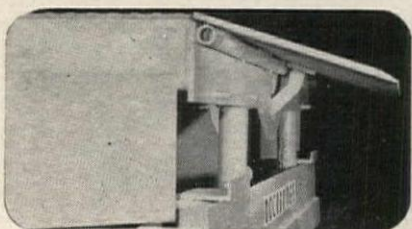
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## FELLOWSHIPS AND SCHOLARSHIPS ARE AWARDED

Thomas Jon Rosengren, a fifth year student in the University of Illinois department of architecture, has won the annual \$5,000 Lloyd Warren Fellowship, 50th Paris Prize in Architecture. First alternate is Robert L. Wright, also of the University of Illinois.

The 44 finalists in this national competition were selected by 34 architectural schools from 534 submissions to a three-day preliminary competition. Subject of the preliminary was the design of a "University for Diplomatic Study." The finalists selected were required to design the library in the university.

The jury of award was chaired by Caleb Hornbostel, N.I.A.E. director of education, and Sidney L. Katz, chairman of the committee on architecture and scholarships.

Three students have won architectural fellowships for graduate study in hospital design. They are: Neil L. Astle, Omaha, Neb., who received a master of architecture degree in 1959 from M.I.T., and will use the fellowship to study toward a doctor of philosophy degree in architectural psychology, man's reaction to his physical environment; Don A. Leon, New York City, who received a bachelor of architecture degree in 1960 from Cornell University, and will study for a master of science degree in architecture; Bertis C. Rasco, Cullman, Ala., who received a bachelor of architecture degree from Auburn University in 1957, and is also a candidate for a master of science in architecture.

The fellowships, sponsored jointly by the American Hospital Association and the American Institute of Architects, carry an award of \$1,500 each.

James Thomas Flynn of Stockholm, Sweden, is the winner of the \$5,000 Rotch Travelling Scholarship for 1963. Mr. Flynn received his masters in architecture at Harvard University in 1960.

Robert T. Cooke of Providence, R.I., was the alternate. This year the program had 37 applicants.

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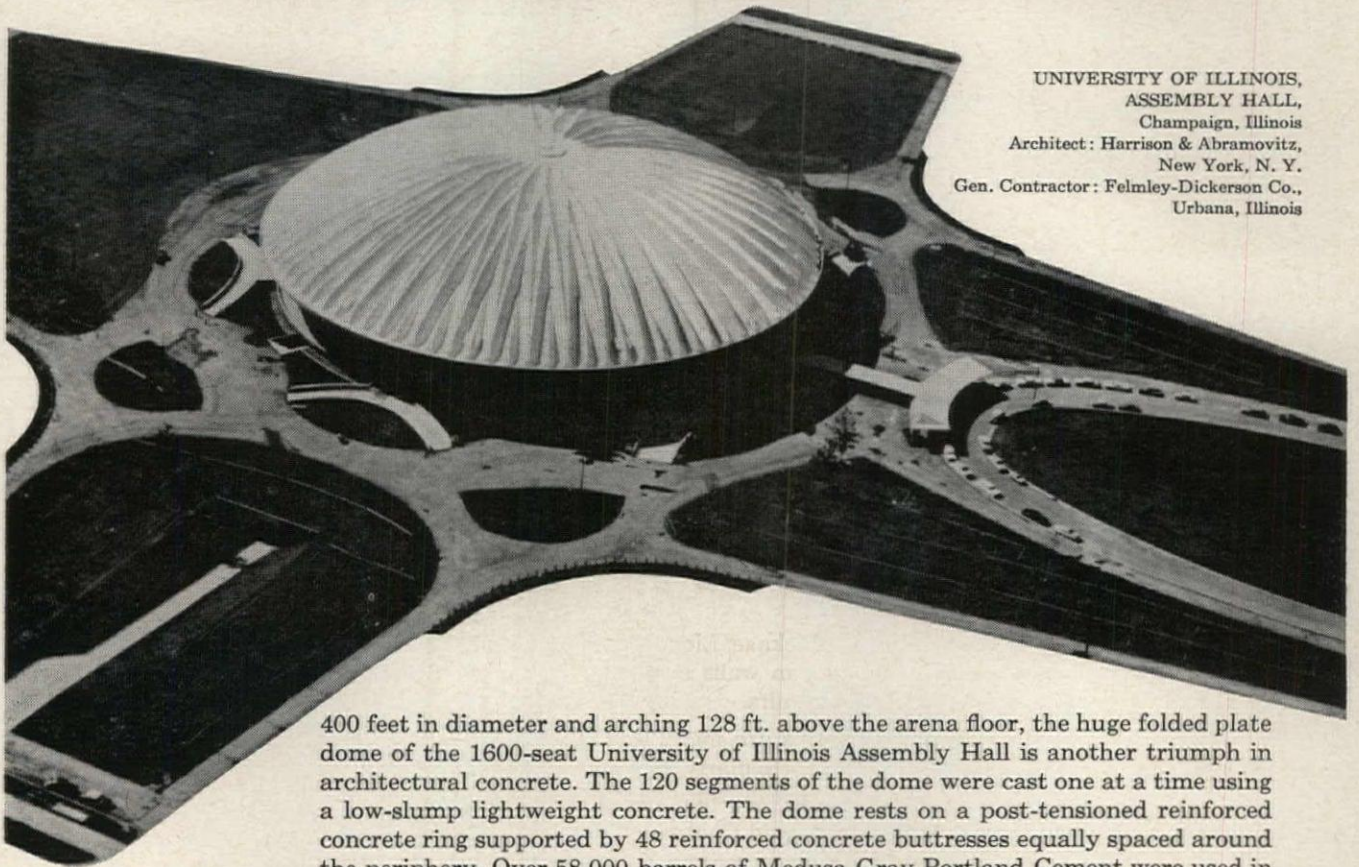
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ASSEMBLY HALL,  
Champaign, Illinois  
Architect: Harrison & Abramovitz,  
New York, N. Y.  
Gen. Contractor: Felmley-Dickerson Co.,  
Urbana, Illinois

400 feet in diameter and arching 128 ft. above the arena floor, the huge folded plate dome of the 1600-seat University of Illinois Assembly Hall is another triumph in architectural concrete. The 120 segments of the dome were cast one at a time using a low-slump lightweight concrete. The dome rests on a post-tensioned reinforced concrete ring supported by 48 reinforced concrete buttresses equally spaced around the periphery. Over 58,000 barrels of Medusa Gray Portland Cement were used in the concrete work.

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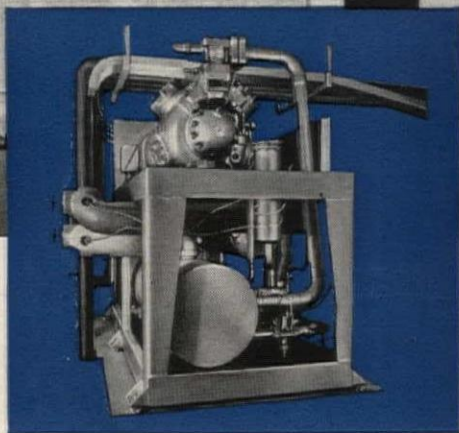


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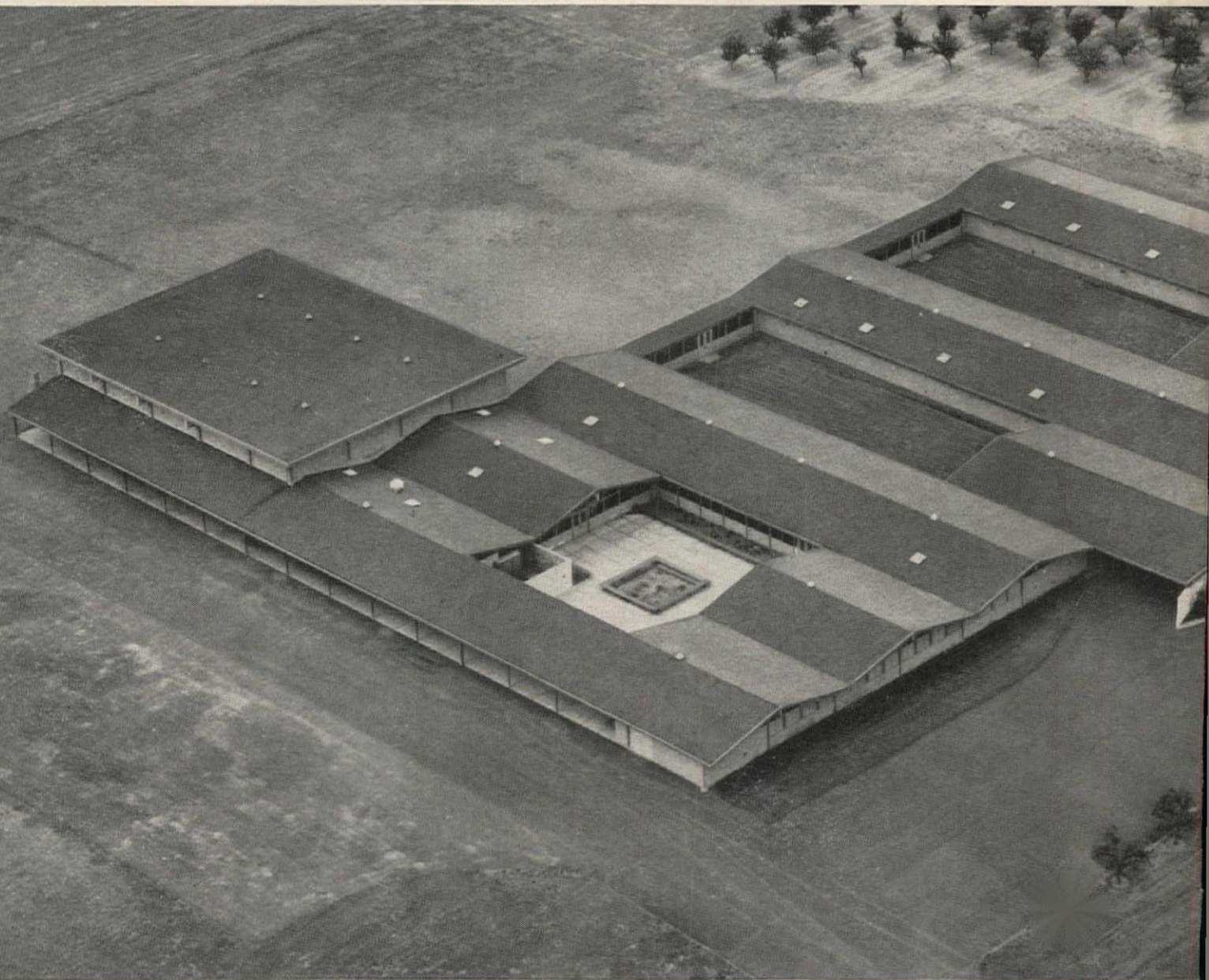
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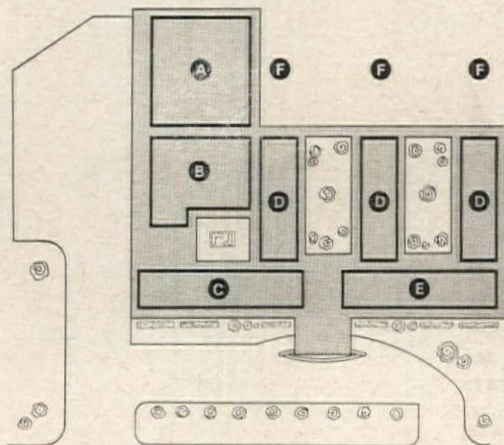
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# Why architects talk to total school air



Mabel Rush Elementary School, Newberg, Ore. Superintendent of Schools: Loran A. Douglas.  
Architect: James C. Gardiner, A.I.A., Portland, Ore. Consulting Engineer: Omer T. Jacobson, Portland.

- A. Auditorium and Gymnasium
- B. Dining Room
- C. Administrative offices
- D. Classrooms
- E. Library and special facilities
- F. Future Classrooms



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Newberg, Oregon's Mabel Rush Elementary School is one of the nation's first to utilize an electric-powered, air-to-water heat pump as a source of heating or cooling.

The school consists of nine classrooms, administrative offices, a combination auditorium and gymnasium, library, cafeteria, and three special education rooms.

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Classrooms are equipped with TRANE Air Conditioning Unit Ventilators with Kinetic Barrier Action, the exclusive feature that provides continuous, powered ventilation and heating or cooling from room-wide air outlets. Result: a Unit Ventilator system that works with full effectiveness whether it's heating or cooling!

A central TRANE Heat Pump provides the heated or chilled water circulated to these Unit Ventilators.

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TRANE is one of the very few organizations of manufacturing engineers with depth of experience in all the related fields of total air conditioning . . . in heating, cooling and ventilating.

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That's why TRANE equipment is selected for many complex air conditioning applications. For skyscrapers, jet planes and subway trains . . . homes, hotels and motels . . . ocean liners and railroad refrigerator cars . . . for schools and universities of many sizes, shapes and styles.

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Working with your TRANE Sales Engineer, you're free to pick-and-choose from these product lines and base your specifications entirely on *what's best with your plans!*

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Here constant research and testing result in new designs and new techniques to produce the kind of quality equipment you want in the schools you design.

## LOCAL TRANE SERVICE FOR THE SCHOOLS YOU DESIGN

With TRANE there's the added assurance of on-the-spot service available from TRANE Offices in 113 major cities. Trained, experienced Service Engineers are on call to assure equipment performance for the life of the school.

**FOR GREATER SCHOOL DESIGN FLEXIBILITY,** plus the air conditioning that's best with your plans, contact your local TRANE Sales Office. Your TRANE Sales Engineer will be happy to give you specific information on the complete TRANE lines of school heating, cooling and ventilating equipment.



# 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, Utah  
Trane Company of Canada, Limited, Toronto • 113 U.S. and 20 Canadian Offices.

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### It's Trane for total school air conditioning requirements.

CENTRAVACS® (Centrifugal water chillers)—hermetic to 1350 tons; open to 2200 tons • ABSORPTION COLD GENERATORS—hermetic design, 100 to 1000 tons • RECIPROCATING COLD GENERATORS—sizes to 150 tons • CENTRAL STATION AIR HANDLING UNITS—from 1200 to 47,000 cfm, 2 to 100 tons • PACKAGED AIR CONDITIONERS—2 to 60 tons • UNIT VENTILATORS—for steam, hot water, chilled water or electric heating, 2 heights, 28 and 32 inches • INDUCTION UNITRANE—16 models • WALL-FIN CONVECTORS • UNIT HEATERS • TORRIVENTS • FORCE-FLO HEATERS

We found our place  
in the sun.



## Again.

To a list of distinguished hotels on Miami Beach provided with Century equipment we are proud to add the new Doral Beach Hotel, where Century architectural lighting, stage lighting and lighting control equipment are installed. Write for detailed information.

Lighting Consultants: General and accent lighting fixtures and dimmer equipment in all public areas were supplied to the specifications of Wheel-Garon, Inc.  
Interior Designer: Tom Lee, Ltd.  
Architects: Melvin Grossman and Philip Birnbaum

# CENTURY LIGHTING

New York 521 West 43rd St., N.Y. 36  
Calif: 1820 Berkeley St., Santa Monica

For more data, circle 182 on Inquiry Card

## SCHOOLS AND GYM FLOORS OUR SPECIALTY!

Up to 50% Less Expansion  
in the Use of Edge Grain

(ACCORDING TO FOREST PRODUCTS LABORATORIES)

Available in REZILL-CUSH\* System —  
"Continuous Strip" — Regular Strip

Avoid Buckling and Warping of  
Maple Flooring with —

★ EDGE GRAIN ★  
**CONNOR'S "LAYTITE"**  
SEE SWEET'S FILE Specs. #13J/CO<sup>®</sup>

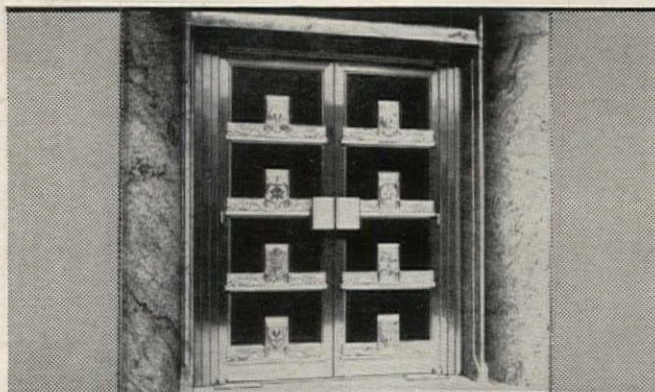
**CONNOR LUMBER  
AND LAND COMPANY**

PHONE VI 2-2091

P. O. BOX B-810- • WAUSAU, WIS.

® U. S. PAT. OFF. \*TRADEMARK

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## THE CROWNING GLORY FOR IMPOSING ENTRANCES NEWMAN BRONZE DOORS

"NARROW STILE" Doors "tailored-to-order" for  
original structures or remodeling.

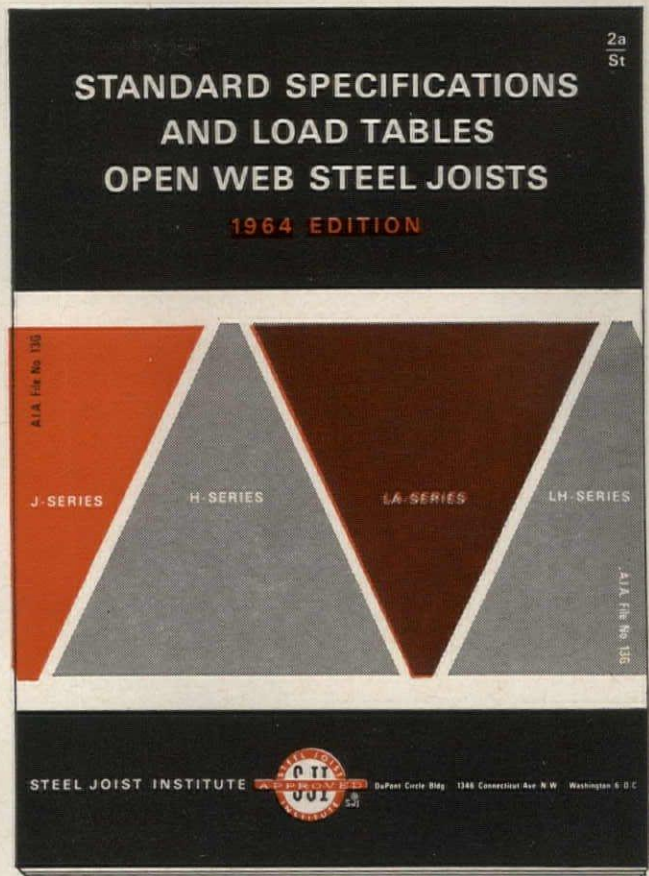
Fabricated exclusively of NEWMAN heavy ex-  
truded sections, engineered for MAXIMUM  
ECONOMY. Materials stocked to assure  
QUICKER DELIVERY. Costs cut by use of stand-  
ard members throughout. ANY REQUIRED  
SIZES.

Write for colorful bulletin.

**NEWMAN**  
BROTHERS, INC.  
EST. 1882

5611 Center  
Hill Ave.  
Cincinnati 16,  
Ohio

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**NEW!**

# REVISED!

## 1964 EDITION SPECIFICATIONS & LOAD TABLES FOR HIGH STRENGTH OPEN WEB STEEL JOISTS

INCLUDING:

- |                  |   |                  |  |
|------------------|---|------------------|--|
| <b>J-SERIES</b>  | joists made from 36,000 PSI minimum yield strength steel. | <b>H-SERIES</b>  | high-strength joists made from 50,000 psi minimum yield strength steel |
| <b>LA-SERIES</b> | longspan joists compatible with the J-Series              | <b>LH-SERIES</b> | Longspan joists compatible with the H-Series                           |

Here's all the information you need for fast and accurate specification of joists to carry uniform loads on spans up to 96 feet. Send coupon today for your copy of this practical, up-to-the-minute, 36-page reference manual from the Steel Joist Institute.

**STEEL JOIST INSTITUTE**  
WASHINGTON, D. C. 20036



6304

**STEEL JOIST INSTITUTE**  
DuPont Circle Bldg., Washington, D. C. 20036

Please send me a complimentary copy of the 1964 Edition of Specifications and Load Tables

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

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**STRIPLINE**  
**DISTINCTIVE**  
**AIR DIFFUSERS**

*Designed to enhance beautiful interiors*

Stripline extruded aluminum slot-type air diffusers are designed to blend in perfectly with the decor. They are made with separate plaster frames and removable diffusing cores. Stripline is easy to install in sections or as a continuous unit. **No mounting screws on face of unit... surface unmarred.**

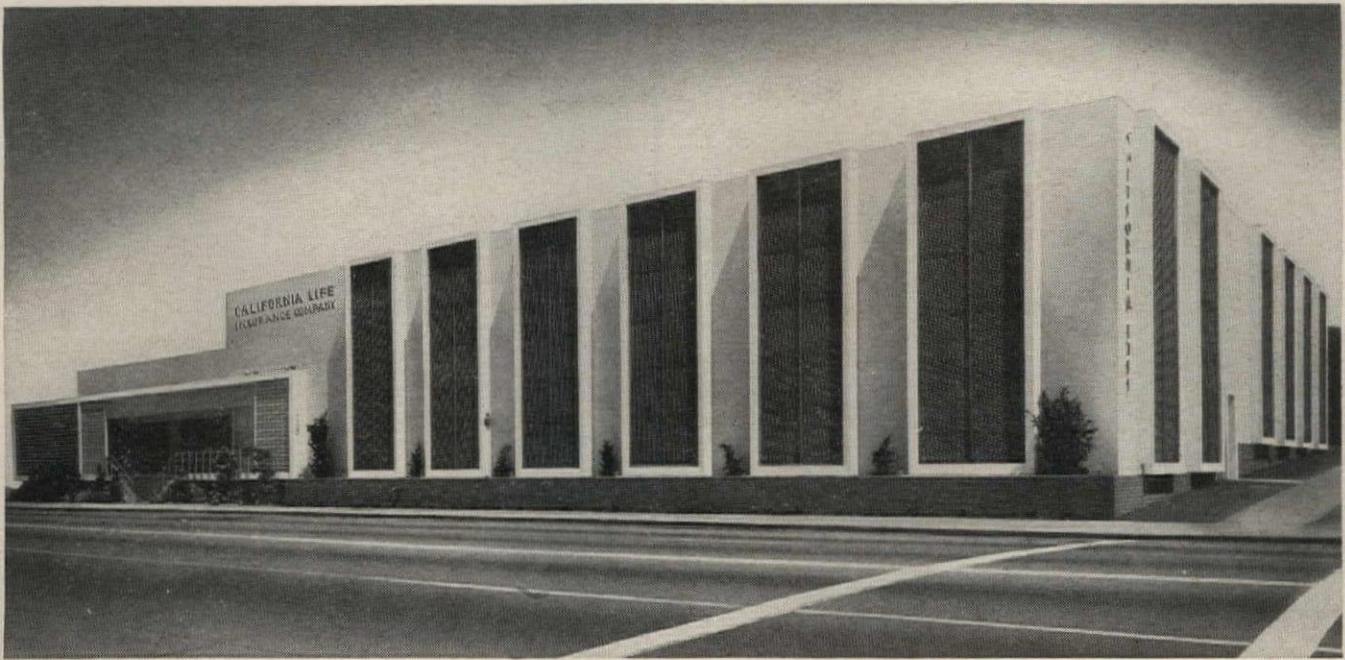
Stripline can be located in walls... ceilings... coves... moulds... window sills and the air mixing vanes in the diffusing cores assure draftless air distribution regardless of location or length of unit.

You should have the Stripline catalog.  
Write for your copy today.

**AIR DEVICES INC.**  
185 Madison Avenue  
New York, New York

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# HIGH-QUALITY **SPEEDHIDE**® PAINTS CHOSEN FOR STILL ANOTHER MAJOR BUILDING

Used exclusively for new California Life Insurance Company home office, designed by architects J.H. Pomeroy & Co., Inc.

**T**he snowballing preference among architects for Pittsburgh's complete line of SPEEDHIDE professional finishes is no mere accident.

- Thanks to PPG research leadership, these unusually tough coatings represent today's greatest values, for both exterior and interior use.
- Many outstanding architects now regularly specify the SPEEDHIDE line, because these richly pigmented finishes provide exceptionally high hiding, superior color retention and remarkable durability under even the most severe conditions.
- Once you've checked the fine quality of the entire SPEEDHIDE line, we believe that you, too, will want to specify SPEEDHIDE for your forthcoming buildings.

**FREE**—illustrated brochure explaining the modern Pittsburgh COLOR DYNAMICS® Painting System.

COLOR DYNAMICS is scientifically based on known psychological reactions to the energy in color. For an interesting Color Dynamics brochure, just mail the coupon, or contact your local PPG representative.



**NOTE:** Specifications for the new SPEEDHIDE line can be found in Section 15 Pi, Sweet's Architectural File.

**Pittsburgh Plate Glass Company,  
Paint Div., Dept. AR-93, Pittsburgh 22, Pa.**

- Please send booklet with full information on new Pittsburgh SPEEDHIDE line.
- Please send me your free brochure on COLOR DYNAMICS.
- Please have your Architectural Representative contact me.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

ZONE \_\_\_\_\_

STATE \_\_\_\_\_

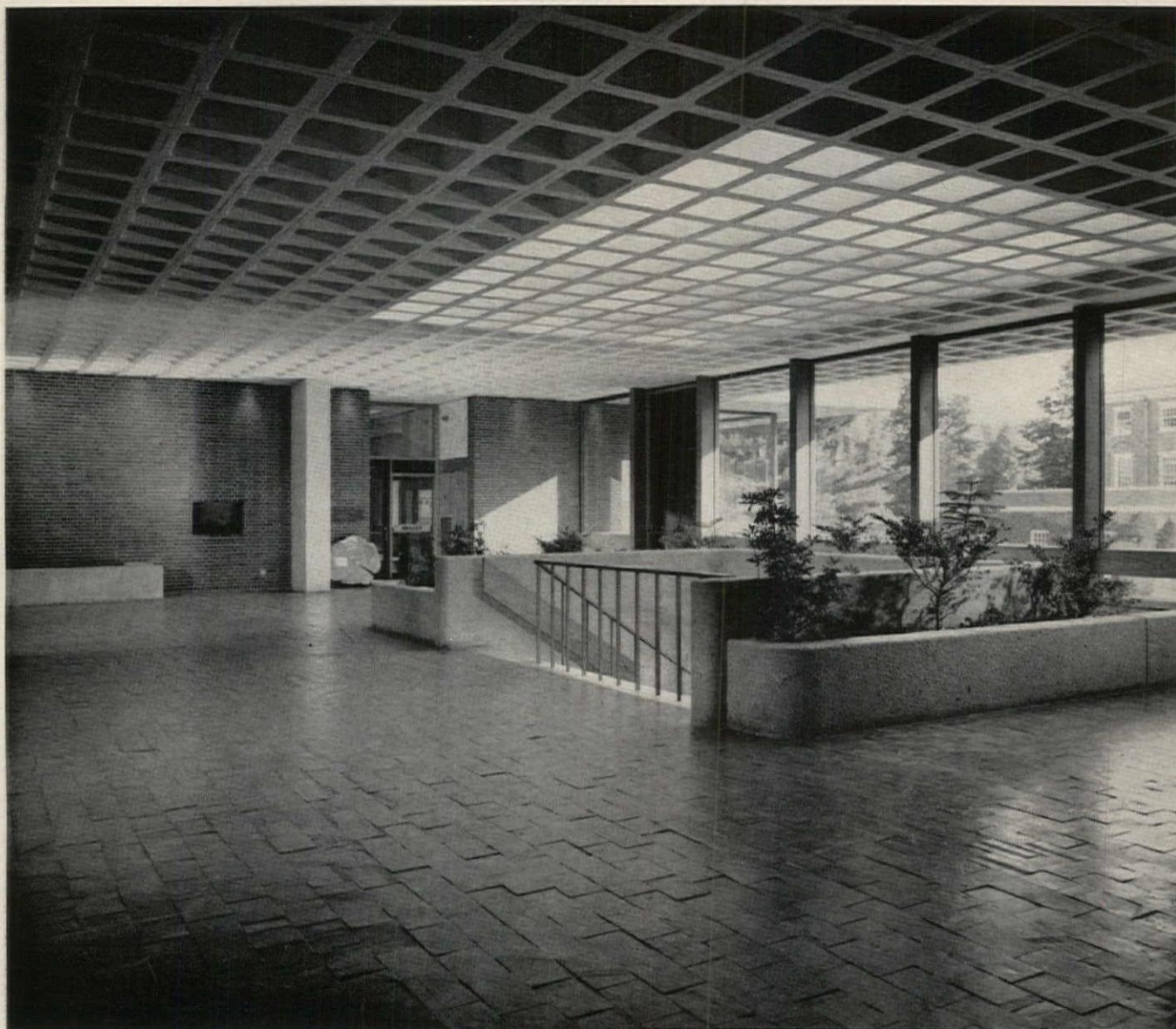


**PITTSBURGH PAINTS**  
PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS  
PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



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The Thomas M. Evans Science Center, Phillips Academy, Andover, Mass. Slate flooring is also used in the Art and Communications Center and the Sylvia Pratt Kemper Chapel. Architects Collaborative, Boston; Benjamin Thompson, Partner in Charge.

## "RIBBON" SLATE FLOORING

Three buildings in the expanded Phillips Academy gain quiet dignity with Pennsylvania Ribbon Slate Flooring in its distinctive natural cleft finish. Set in concrete, these 6" by 9" slate tiles enhance the tastefully modern architecture of the Science Center, the Art and Communications Center and the Sylvia Pratt Kemper Chapel, and of course Pennsylvania slate's neutral dark blue grey will permit color scheme changes in the years to come.

Write for brochure illustrating and describing slate's many structural uses. Specific inquiries invited.

Pennsylvania Slate is extremely well adapted to all underfoot uses, indoors and out, because its unusual strength resists hard usage. Once laid, slate requires little or no expense for maintenance. Its first cost also is surprisingly low. It is available in either the distinctive Quarry Cleft or the Standard Rubbed Surface, in a wide variety of regular and random sizes.

### THE STRUCTURAL SLATE COMPANY

Home Office and Quarries at Pen Argyl, Pa.

Branch Offices at:

- Boston      • Philadelphia      • Washington, D.C.
- Cleveland      • Chicago      • Minneapolis

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For more data, circle 188 on Inquiry Card ➔

# NEW PRODUCT BULLETIN

**CARNES  
CORPORATION**



**VERONA, WISCONSIN**

IN CANADA: VAPOR CARNES,  
LTD., 3955 COURTRAI AVE.,  
MONTREAL 26, QUEBEC.

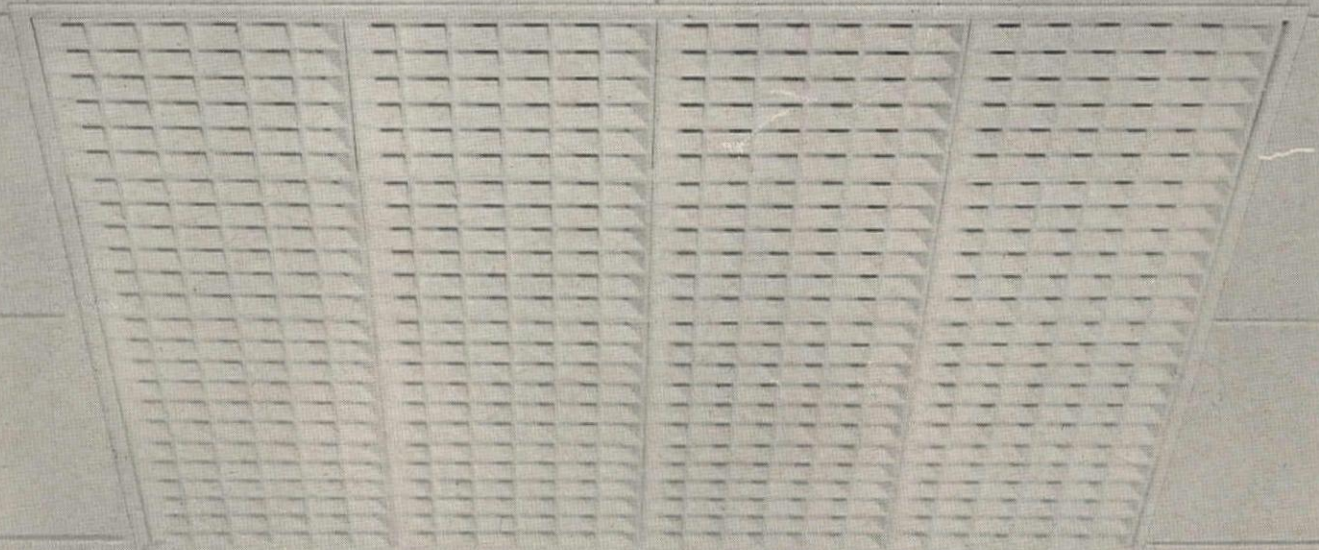
## HERE'S AN AIR DIFFUSER THAT REALLY GIVES YOU DESIGN FREEDOM

Take a close look at the New Carnes Modular Diffusers! They fit flush with the ceiling. Their texture and whiteness blend inconspicuously with any material. That's why you can barely see them, especially when you specify the new slim line or concealed frames.

Carnes Modules are only 6" x 6" in size. They fit practically anywhere — butted to light troffers, between lights, alternating lines with lights, continuous strips around ceilings and columns, along windows, on side walls as returns. Combine these modules into any width or length. How's that for design freedom? Modules come in three different air throws or patterns: one way throw, two way throw or corner throw. In combination, you can direct air in 1, 2, 3 or 4 directions to cover any air handling problem.

Modules are high impact Lexan.\* Fire-resistant. Excellent color and dimensional stability. Modules snap in and out of their metal frames (no tools) for changes in air flow, for checking or remodeling. Carnes new slim line frames are only  $\frac{3}{8}$ " to  $\frac{3}{4}$ " wide. Concealed frames for metal-pan ceilings are also available. Start enjoying this new design freedom. Write for Catalog M21K.

\*G. E. trade mark.



# REPUBLIC STEEL BUILDING PRODUCTS?

You'll find 80 pages of them in Sweet's Architectural File, under:

38b

**LOCKERS**

2a

**OPEN TRUSS STEEL JOISTS**

Re

Tr

17a

**ALUMINUM WINDOWS**

2i

Tru

**STEEL ROOFDECK**

Tr

...AND 16 MORE PAGES IN SWEET'S  
LIGHT CONSTRUCTION FILE, UNDER:

6b

**ALUMINUM WINDOWS and METAL DOORS and FRAMES**

Tr

# 16b

## METAL DOORS and FRAMES

**ALSO...IF YOU'D LIKE SEPARATE,  
A.I.A.-NUMBERED REFERENCE,  
THESE ARE AVAILABLE.  
JUST USE THE COUPON.**

# Trs 3d

Standard Steel Windows, A. I. A. No. 16-E

Aluminum Projected Windows, A. I. A. No. 16-E

Aluminum Classroom Windows, A. I. A. No. 16-E

Aluminum Double and Single-Hung Windows, A. I. A. No. 16-E

Aluminum Top-Hung Windows, A. I. A. No. 16-E

## CURTAIN WALL

Aluminum Vertical Pivoted Windows, A. I. A. No. 16-E

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Metal Lath, A. I. A. No. 20-B-1

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Hollow Partition Studs, A. I. A. No. 20-B-11

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# 17b

## STEEL WINDOWS

**...EVERY ONE AN ARCHITECT'S  
AND BUILDER'S PRODUCT, WITH  
COMPLETE SPECIFICATIONS!**

# Tr 12a

## METAL LATH

# Tr

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YOUNGSTOWN, OHIO 44505

Send separate, fileable reference on the following  
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**REPUBLIC STEEL**  
CORPORATION  
MANUFACTURING DIVISION  
Youngstown, Ohio 44505

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"... look of luxury  
at low cost..."

says Howard Rivenburg of Builders and Developers—  
owners of Kent-Lincolnia Apartments in Alexandria, Va.



"We wanted both safety and beauty for our balconies in the Kent-Lincolnia Apartments. Anchor's All-Aluminum Picket Railing provided the positive protection we needed, plus a look of luxury at low cost—and I'm speaking of initial cost. We don't expect to spend a cent on maintenance."

Anchor's All-Aluminum Picket Railing can make balconies, walkways, or other similar areas, more desirable. Bright, rust-proof Reynolds Aluminum pickets, posts, and handrails promise longer life. Anchor's national network of skilled erectors assures fast and efficient installation.

For detailed information, call your local Anchor office or write: ANCHOR POST PRODUCTS, INC., 6688 Eastern Avenue, Baltimore 24, Maryland.



Plants in Baltimore, Houston, and Los Angeles.

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## FASCINATING FOUNTAINS

any size... for every setting

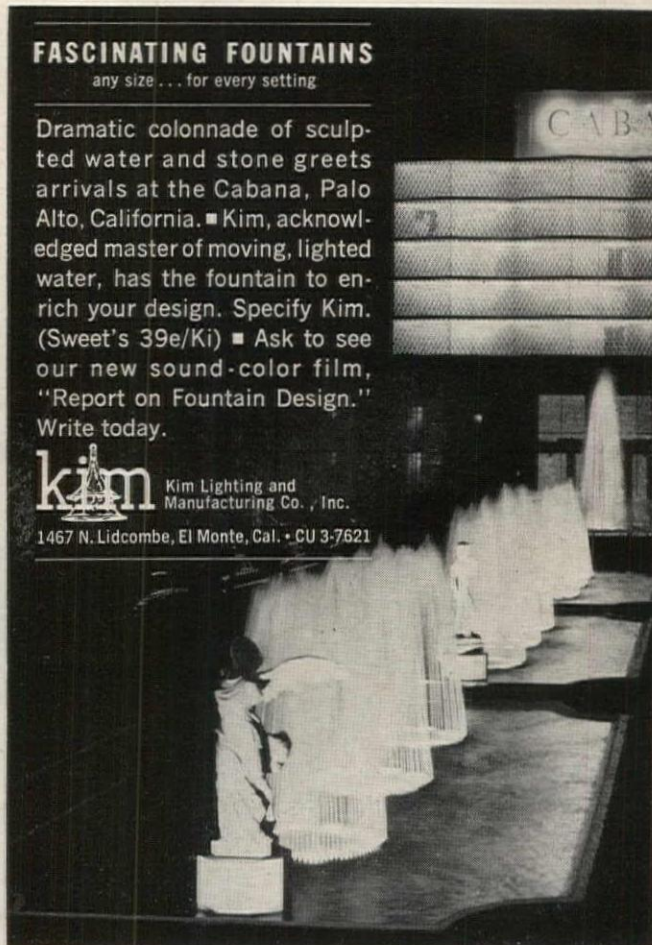
Dramatic colonnade of sculpted water and stone greets arrivals at the Cabana, Palo Alto, California. ■ Kim, acknowledged master of moving, lighted water, has the fountain to enrich your design. Specify Kim. (Sweet's 39e/Ki) ■ Ask to see our new sound-color film, "Report on Fountain Design."

Write today.



Kim Lighting and  
Manufacturing Co., Inc.

1467 N. Lidcombe, El Monte, Cal. • CU 3-7621

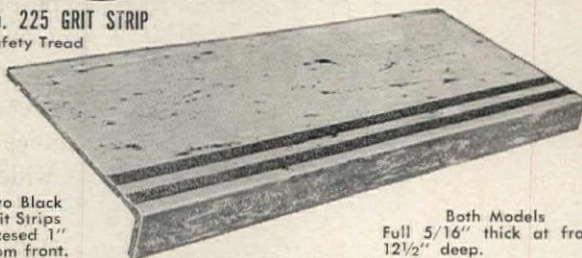


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New-Safety Designed  
**MUSSON**  
HEAVY DUTY RUBBER  
STAIR TREADS  
FOR PAN-FILLED OR CONCRETE STEPS

No. 225 GRIT STRIP  
Safety Tread



Two Black  
Grit Strips  
recessed 1"  
from front.

Both Models  
Full 5/16" thick at front.  
1 1/2" deep.

Sizes: 36", 42", 48", 60"—easily cut to fit.

SMOOTH TREAD  
No. 725



Nose drops  
down to  
cover 1 7/8"  
of front  
of step

Both Models  
Marbled Colors: Red, Green,  
Gray, Mahogany, Black, Birch,  
Beige, Walnut

NOTE: Both treads have 5/16" radius underneath nose, for better fit.  
Write for Catalog, Samples and Prices

**THE R. C. MUSSON RUBBER COMPANY**  
1322 EAST ARCHWOOD  
AKRON 6, OHIO

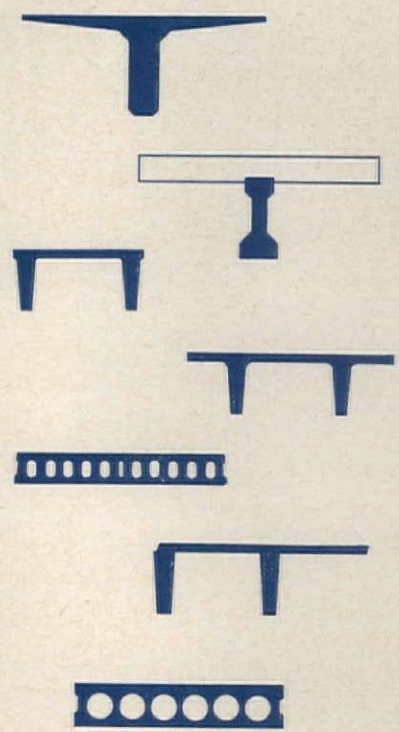
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**on PRESTRESSED CONCRETE means more than fire protection**

Over 100 fire tests have been run on prestressed concrete assemblies in the United States. In addition to this extensive testing program the performance of prestressed concrete in actual fires has been excellent. ■ Two-hour Underwriters' Laboratories label service on commonly used prestressed concrete members gives *practical, measurable assurance* of protection for personnel and property.\* ■ Beyond this is a long line of practical benefits: Should a fire occur, prestressed concrete's retardation of heat and flame enables damage to be localized and minimized. Chances are, operations can be resumed immediately—avoiding costly shut-downs. ■ Type of construction is a key factor in the determination of insurance rates. Low insurance premiums for buildings framed in prestressed concrete result in continuing savings. ■ Need for fireproofing, painting and other maintenance is eliminated for further permanent economies. ■ A wide range of architectural and structural shapes are available for virtually every type of permanent quality structure. ■ For these and other reasons—longer spans with shallow depth, construction speed, flexibility in design and low initial cost—consider prestressed concrete.



\*Three-hour UL service on lightweight single Tee's.

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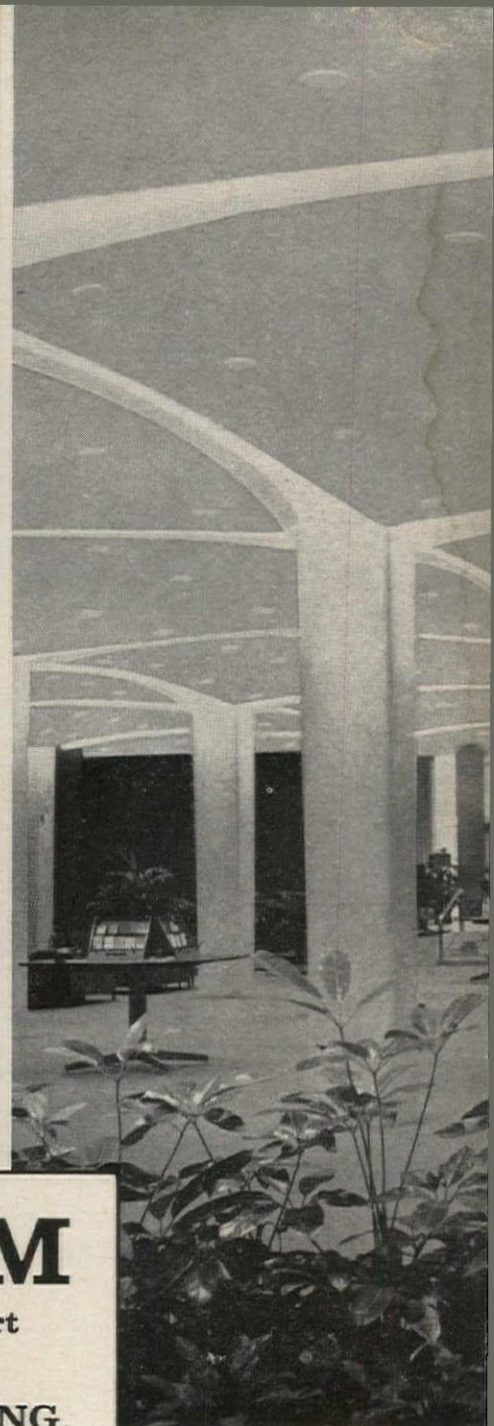
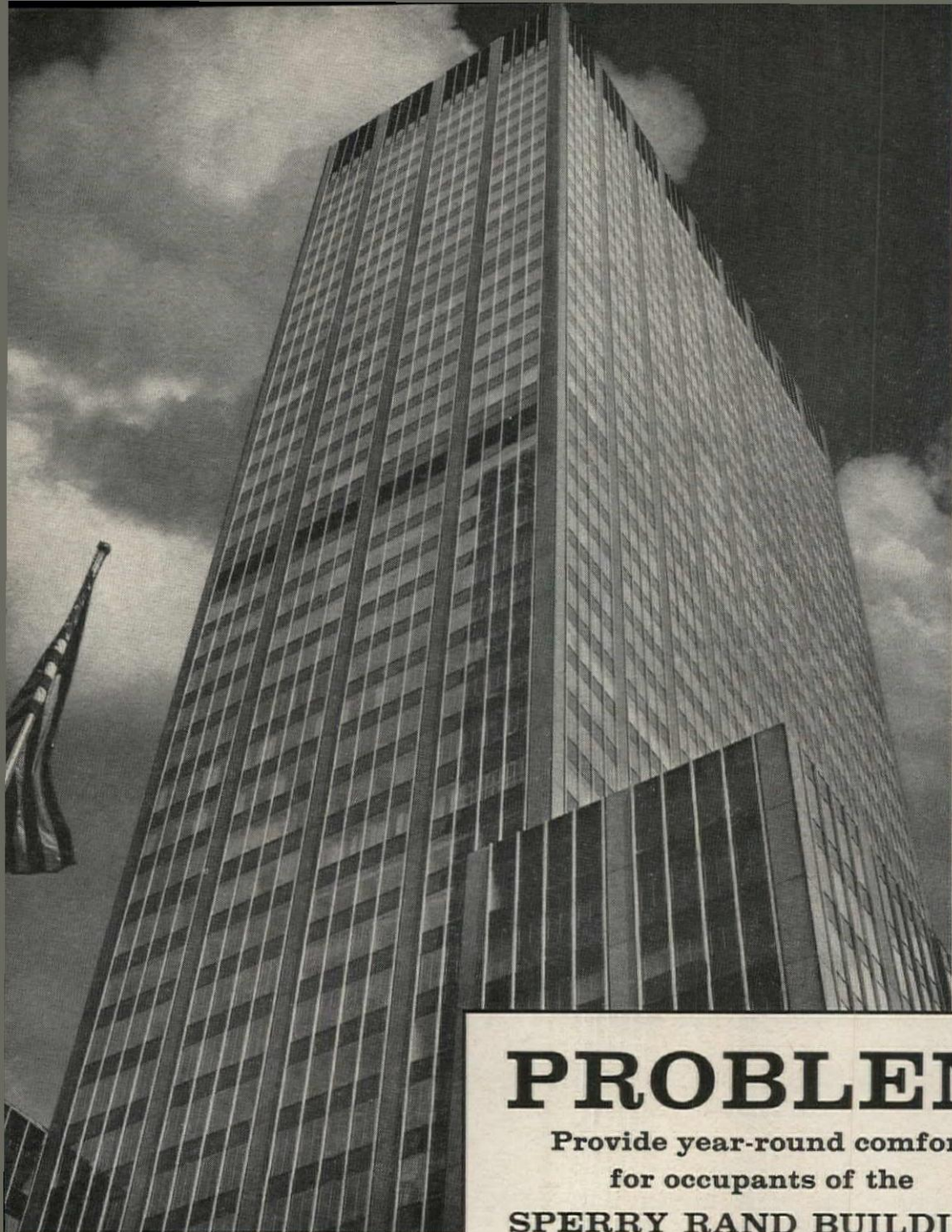
**PRESTRESSED CONCRETE INSTITUTE**

205 W. WACKER DRIVE, CHICAGO 6, ILL.



PLAN TO ATTEND PCI ANNUAL CONVENTION, SAN FRANCISCO, OCT. 6-11. WRITE FOR INFORMATION.

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## PROBLEM

Provide year-round comfort  
for occupants of the  
**SPERRY RAND BUILDING,**  
New York, N.Y.

Owner: Rock-Uris, Inc.  
Builder: Uris Buildings Corp.  
Architect: Emery Roth & Sons  
Consulting Architect: Harrison & Abramovitz  
Mechanical Engineer: Jaros, Baum & Bolles  
Mechanical Contractor: H. Sand & Co., Inc.

## SOLUTION... a YORK heats, cools, ventilates

**Fifth largest office building in New York—43 stories high—comfort-conditioned throughout by York!**

The Sperry Rand Building, at 1290 Avenue of the Americas, is one of the many distinctive high-rise buildings recently constructed in New York City. It is modern in every respect: in design, layout and in the application of York equipment for tenant and owner satisfaction.

**Air conditioned by York.** The 1.7 million square feet of net rentable space is

cooled and heated by approximately 3500 York Hi-I high capacity induction units that may be controlled individually, or in groups. The system was installed by H. Sand & Co., Inc.

**Refrigeration for chilled water** is supplied by two York Turbomaster 3500 horsepower steam turbine-driven centrifugal units, each rated at 3300 tons. In addition, a separate 500-ton refrigeration system is used to provide extra-sensitive control in the special computer areas of the Sperry Rand Corporation.

**Peripheral areas** of the building are air conditioned by high pressure, high velocity air induction systems, zoned by geographical facades to meet changing solar effects. Individual room terminals on the periphery are controlled by the occupant, who may choose the climate he wants. Interior spaces are served by medium velocity, medium pressure air handling systems—through vertical shafts in the building core.

**Plan ahead with York** and York's 75 years of pace-setting experience in com-

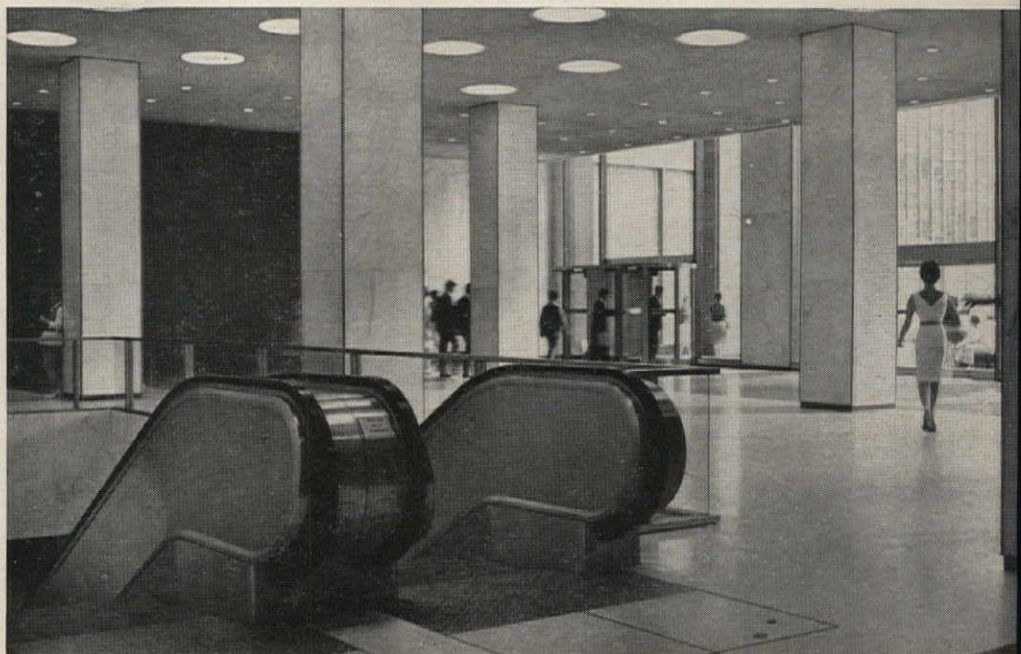




The Irving Trust Company area is one of New York's largest branch bank offices; York air conditioning heats, cools, ventilates this 48,000 sq. ft. of space.



Executive group confers in office of Elmer L. Ward, President of Palm Beach Company. York system is designed so temperature in each office may be individually controlled.



Building lobby, finished in white marbles and Brazilian rosewood, is heated and cooled by the York system.

## AIR CONDITIONING SYSTEM that 1.7 million sq. ft. of rentable space!

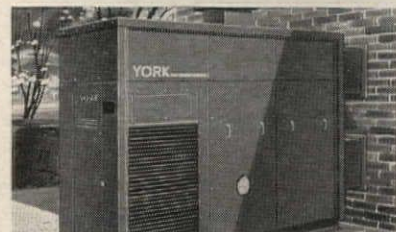
fort conditioning for all types of multi-story buildings. For facts on York equipment, call your nearby York Sales Office; or write York Corporation, York, Pennsylvania. In Canada, Shipley Company of Canada, Ltd., Rexdale

Boulevard, Toronto, Ontario. Ask for information on the York Certified Maintenance Program, and the York Lease Plan that lets your clients install air conditioning equipment now, without capital investment!

**YORK** CORPORATION  
Subsidiary of Borg-Warner Corp.  
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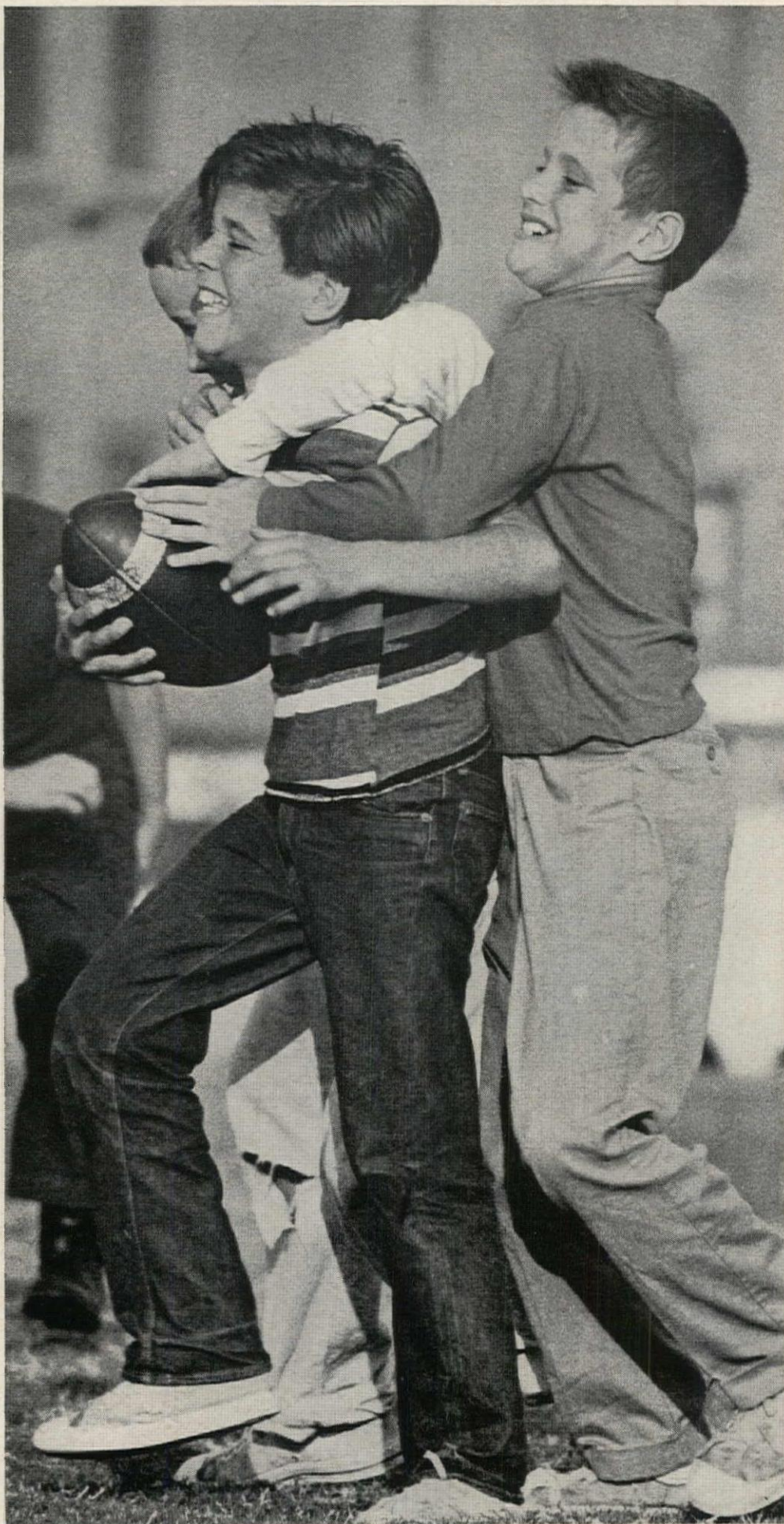


THE QUALITY NAME IN AIR CONDITIONING AND REFRIGERATION



**ANOTHER YORK SOLUTION!**  
For single story buildings, this York SUNLINE Rooftop Air Conditioner heats, cools, ventilates; takes no floor space!

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## The men you hire tomorrow

## are the kids you help today

Contributions made to United Funds or Community Chests are really an investment. An investment in *your* future. United Fund agencies take the edge off hunger and misery, sure, but they go way beyond that. They do an awful lot for youngsters—providing recreational facilities, finding homes for the homeless, steering puzzled teen-agers onto the right road. So it makes good sense to give the United Way. Your company can make a contribution, and you can make it convenient for your employees to join in through payroll payments. This once-a-year appeal cuts down on the confusion and duplication of separate drives, too. So give United. Could be, the kids you help today will be helping your business tomorrow.

**One gift works many  
wonders/GIVE THE  
UNITED WAY**

PHOTO BY PHIL BATH

Space contributed as a public service by this magazine.

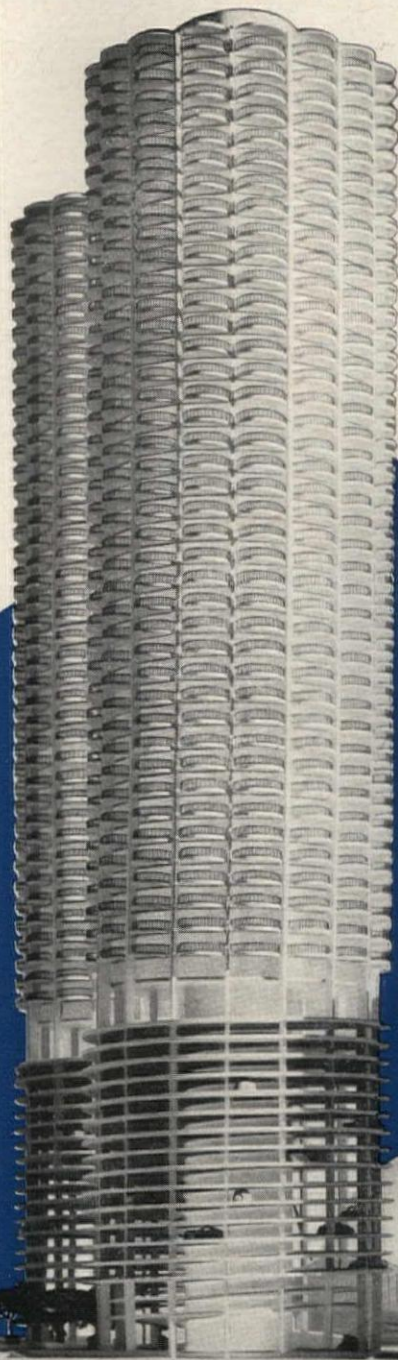
# PARAHEX LOUVERS

NEW CONCEPT IN DIFFUSER DESIGN CONFORMS WITH  
MARINA CITY'S NEW CONCEPT IN ARCHITECTURAL DESIGN

Bertrand Goldberg Associates, the architectural firm who designed Chicago's new Marina City—a city within a city—selected Sinko PARAHEX LOUVERS in their polished, metalized finish.

Sinko PARAHEX LOUVERS were chosen because Marina City's new design in architecture required a diffuser that conformed with this new design and provided higher levels of illumination, with excellent visual comfort.

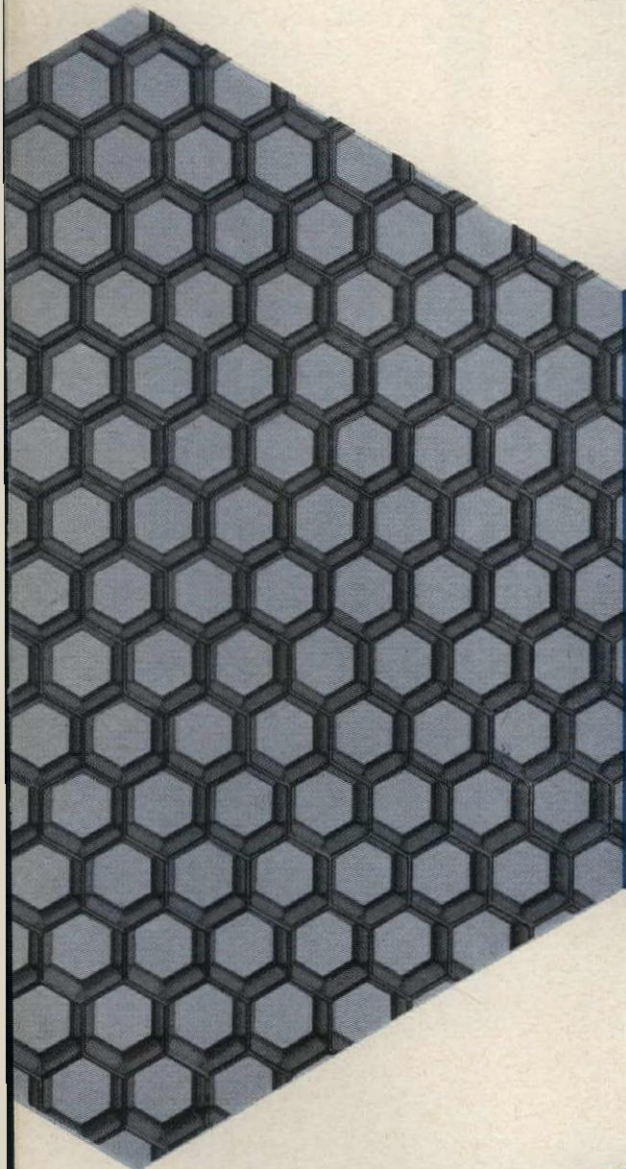
We invite you to write for details on how Sinko PARAHEX LOUVERS can meet both your lighting and design requirements.



MARINA CITY

Architect  
BERTRAND GOLDBERG  
ASSOCIATES

Electrical Contractor  
GERSON ELECTRICAL  
CONSTRUCTION CO.



Manufactured under License from  
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SINKO MANUFACTURING & TOOL COMPANY  
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1801 ST. JAMES STREET WEST, MONTREAL, QUEBEC

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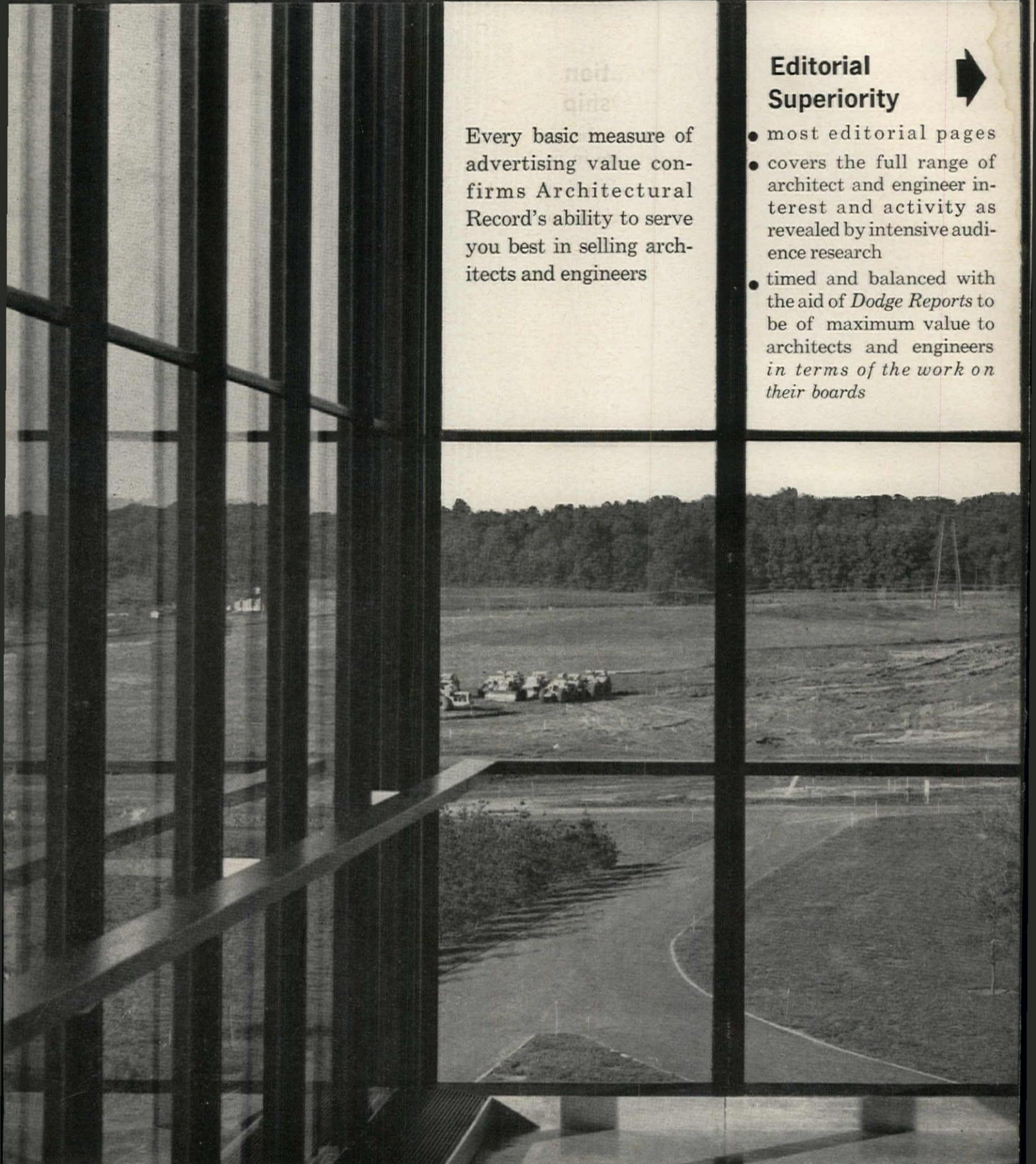
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learns to another... and another...

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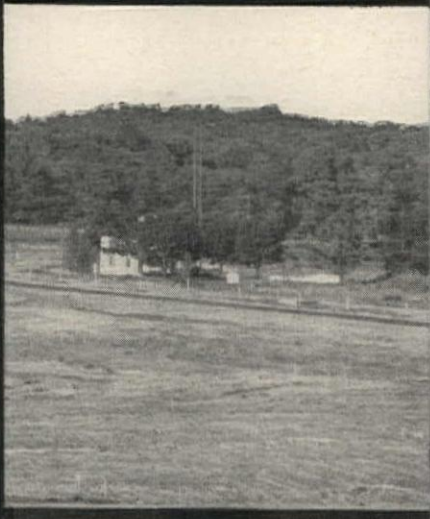
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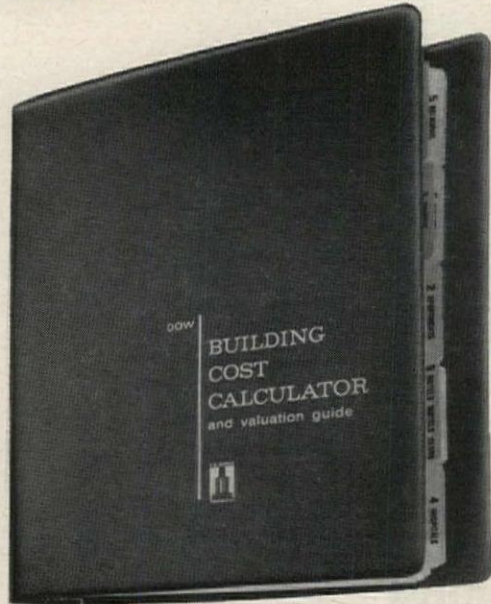
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F. W. DODGE



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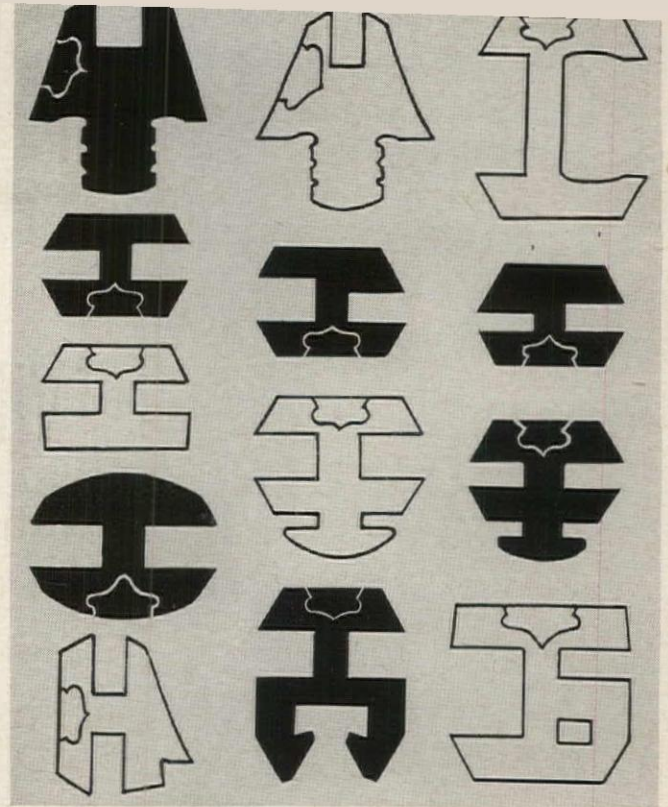
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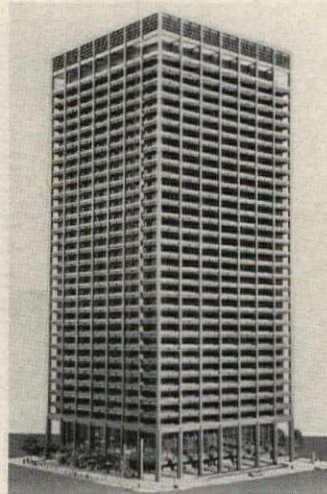
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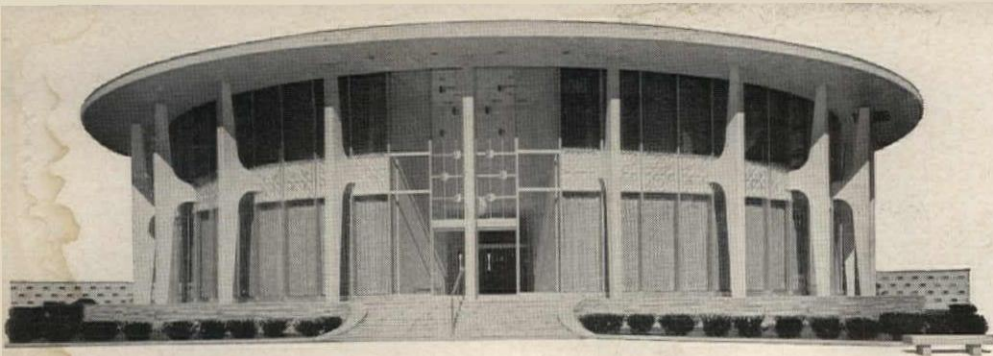
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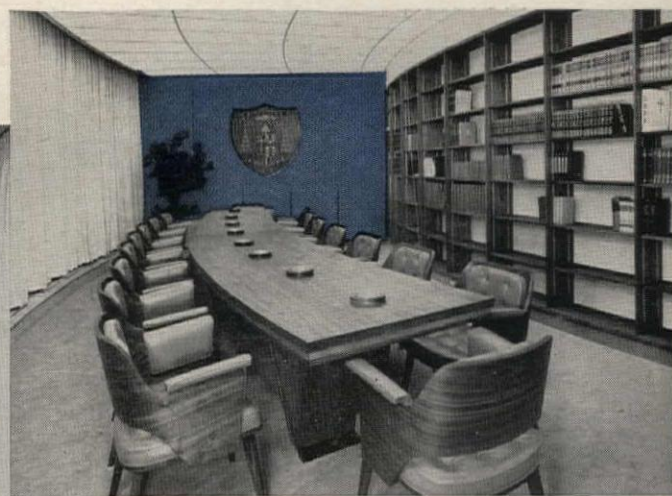
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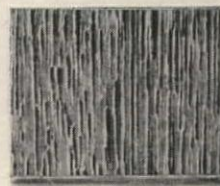
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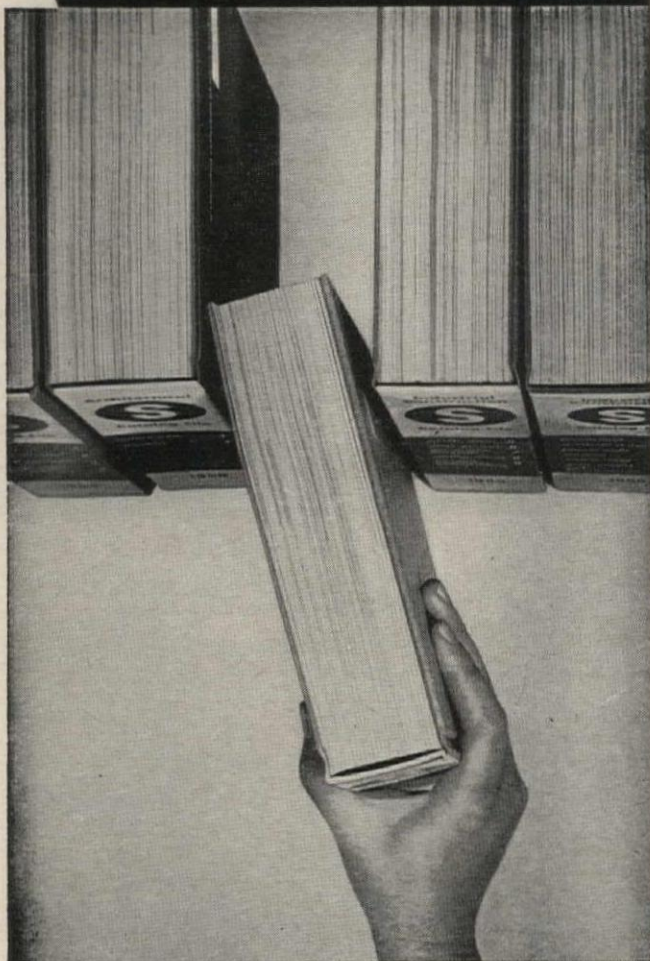
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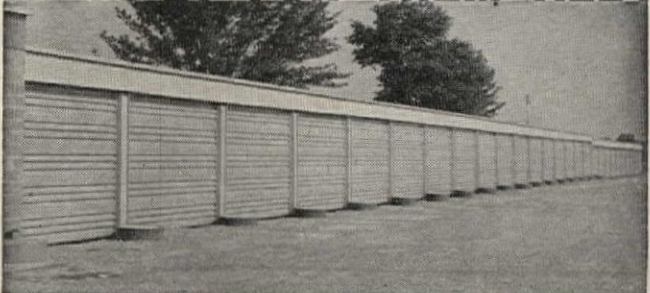
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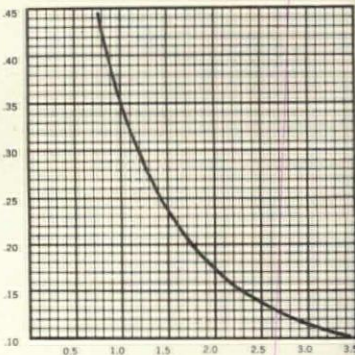
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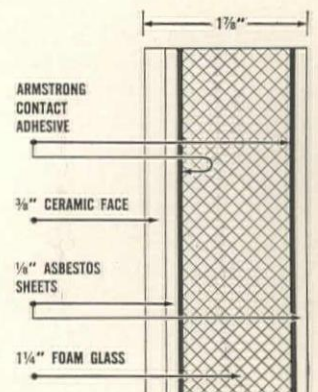
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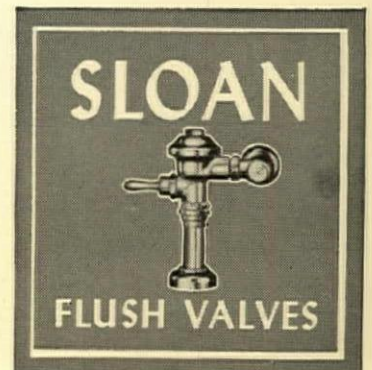
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