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appened to Brooklyn Bridge (p. 122)... Prefab schools for burgeoning communities (p. 133)



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APRIL 1955

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photo by Andreas Feininger

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A more important question than ever . . .

WHICH RESILIENT FLOOR OVER CONCRETE?

There are at least two reasons why it is now more important than ever for architects to be aware of the problems involved in specifying resilient floors for installations over concrete. First, the use of concrete in direct contact with the ground has vastly increased during the past decade. Second, the resilient flooring industry has developed new types of floors and improved others, especially to provide resistance against the harmful effects of alkaline moisture, so that many more installations are involved.

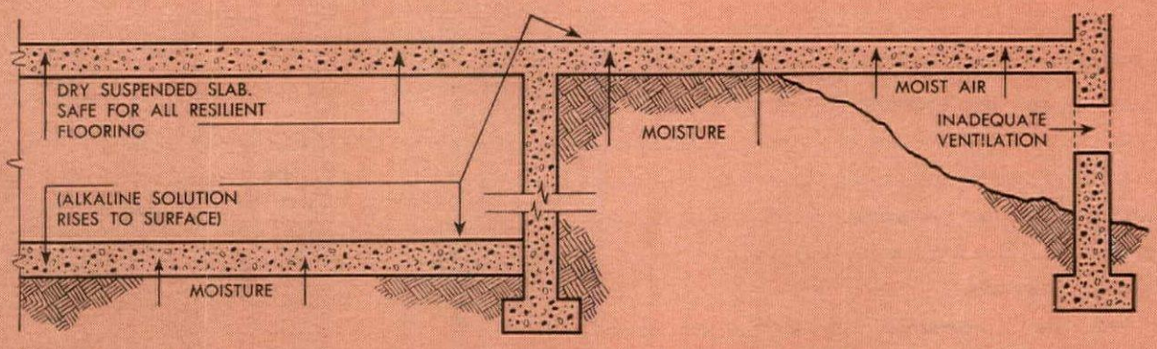
It is important to understand the "moisture problem." As most architects know, alkaline salts are present in concrete under any conditions. Their presence does not, however, affect resilient floors to any serious extent unless moisture is present, as it invariably is when the subfloor is in contact with the ground. Since the degree of moisture present is the main factor determining the seriousness of the alkaline condition, the distinction between "suspended," "grade-level," and "below-grade" subfloors is of prime importance. The moisture conditions in these three categories are illustrated in the drawing below.

Suspended Subfloors On adequately ventilated and dried suspended concrete subfloors, all the same types of resilient floors that are suitable for installation over wood subfloors may unhesitatingly be specified. However, the importance of allowing adequate time to permit suspended concrete subfloors to dry thoroughly cannot be overemphasized. Wherever possible, concrete should be permitted to dry out for several months. Every effort should be made to provide heat and good ventilation. In every case, suspended concrete should be tested for moisture before installation of re silient flooring. (See illustration on opposite page.)

Below-Grade Subfloors Improvements in the formulatio of resilient flooring materials themselves as well as recer adhesive developments now provide a much wider range c flooring suitable for basement installation than was avai able just a few years ago. Asphalt tile was long the onl resilient flooring which could safely be specified for base ment use, and it remains an excellent low-cost floor for thi purpose. Armstrong Excelon Tile, a vinyl-asbestos mate rial, is a recent development providing a floor of superic durability and appearance which is greaseproof and full resistant to basement alkaline conditions.

The use of a special adhesive, Armstrong No. S-10 Chemical-Set Waterproof Cement, now makes possible th installation of Armstrong Rubber Tile and Armstrong Cus tom Corlon Tile over below-grade concrete slabs. Severa years of laboratory tests, and trials under actual conditions have proved that such installations will give satisfactor service for the normal lifetime of the tile.

On-Grade Subfloors Armstrong Rubber Tile and Custon Corlon Tile may now safely be specified under normal on grade conditions over concrete with a new one-part, factory mixed adhesive, Armstrong No. S-225 On-Grade Cement Armstrong Cork Tile may also be installed with No. S-225 i the surface of the slab is at least 12 inches above grade, th ground slopes away from the building, and the slab is wel cured and visibly dry. Asphalt tile and Excelon Tile ar installed on-grade with Armstrong No. S-160 Emulsion



This drawing shows how moisture from the ground or from an inadequately ventilated air space below penetrates the concrete slab, bringing alkali to the surface in solution. This solution attacks the oil binders of most resilient flooring materials, causing a chemical change. Linoleum and all other resilient flooring materials may be used on dry suspended floors. On below-grade floors which contain ground moisture, asphalt tile or vinyl-plastic-asbestos tile (Excelon) are normally installed. In addition, rubber tile and Custom Corlon Tile may be installed below grade with a special adhesive. Cork tile may be installed over certain on-grade concrete subfloors. (See "On Grade" above.)

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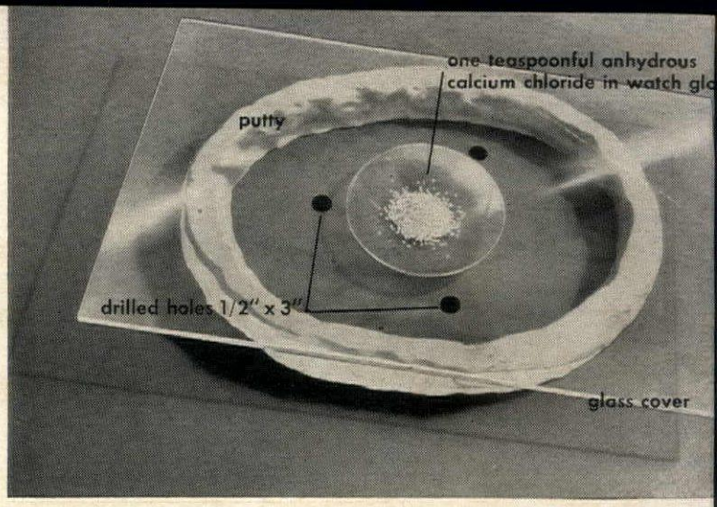
Floor May Appear Dry It is never safe to assume that a concrete slab always be dry because it has appeared dry for several years. Rapid poration at the surface will make a concrete floor appear free from mois- but when a resilient flooring is cemented to this surface, evaporation is vented or slowed down and the alkaline solution collects under the floor- material.

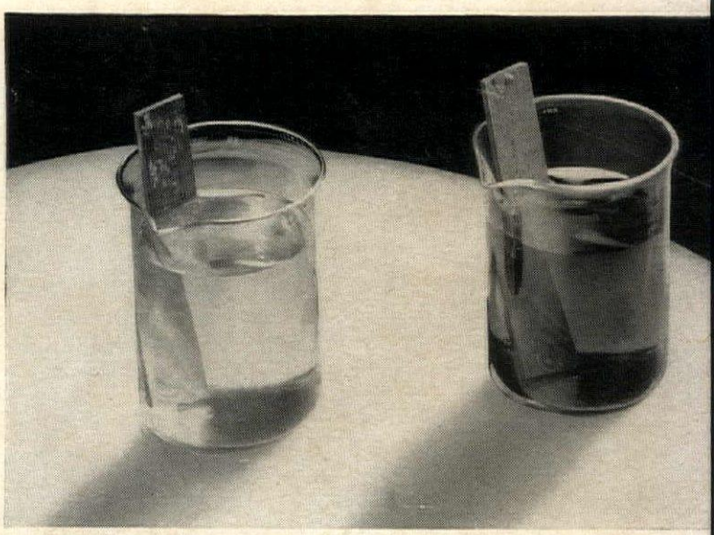
There have been many attempts to find ways to waterproof concrete slabs make on- and below-grade use of all types of flooring materials possible. date, the only method which has been proved to work satisfactorily is the mbrane method. Specifications for such construction are beyond the propriate scope of Armstrong recommendations. Even when resilient floor- s approved for use without membraning are specified, it is advantageous nclude a membrane in slab floors when possible. In any case, it is highly irable, when concrete slabs are in direct contact with the ground, that the be placed on a well-drained base.

gional Conditions While alkali and moisture present difficulties every- ere, there are a few sections of the country where the aggregates used in mpounding concrete contain excessive amounts of alkaline salts. As the soil moisture seeps through such concrete subfloors, it dissolves the alka- salts within the concrete, carrying them to the surface. These salts accu- late underneath the tile or are deposited on the edges of the tile as the isture evaporates. The alkaline deposits build up over a period of time and y gradually force the tiles up from the subfloor or permanently adhere to surface edges of the tile unless removed promptly. Generally this condi- n is of a temporary nature and will gradually be eliminated as the con- nous passage of moisture dissipates the alkaline salts within the subfloor. experienced local floor contractor is the best source of useful advice where se special circumstances are encountered.

Another important factor in considering the correct choice of a resilient tile installation over concrete is the alkali resistance of the pigments used in manufacture. The Armstrong Laboratories have worked on this problem years and have developed specifications for alkali-resistant pigments for the flooring materials recommended for use over concrete in direct con- t with the ground. These pigments prevent fading and "color bleeding" the tile.



This moisture test should always be made on newly poured suspended concrete floors of all types before the installation of materials that are affected by alkaline solutions. If floor is too moist, calcium chloride is partly dissolved in 24 hours.



Immersion for 2 hours in a 2% solution of sodium hydroxide determines color permanency of pigments in tiles specified for use over below-grade concrete. Beaker at right shows bleeding of colors from pigments that are not alkali resistant.

Use of a special adhesive, Armstrong No. S-104 Chemical-Set Waterproof Cement, permits the installation of rubber tile and Custom Corlon Tile over below-grade concrete slabs. A two-part adhesive that sets through chemical action, it is mixed on the job and each area installed within a critical time period.



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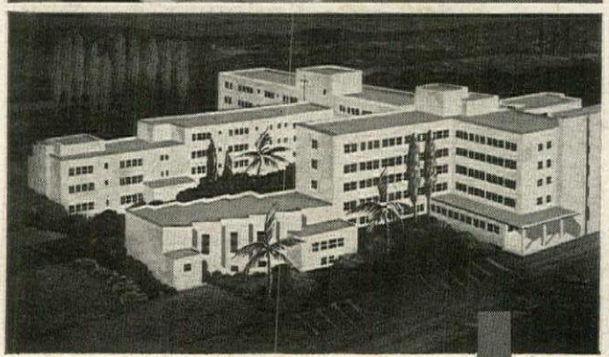

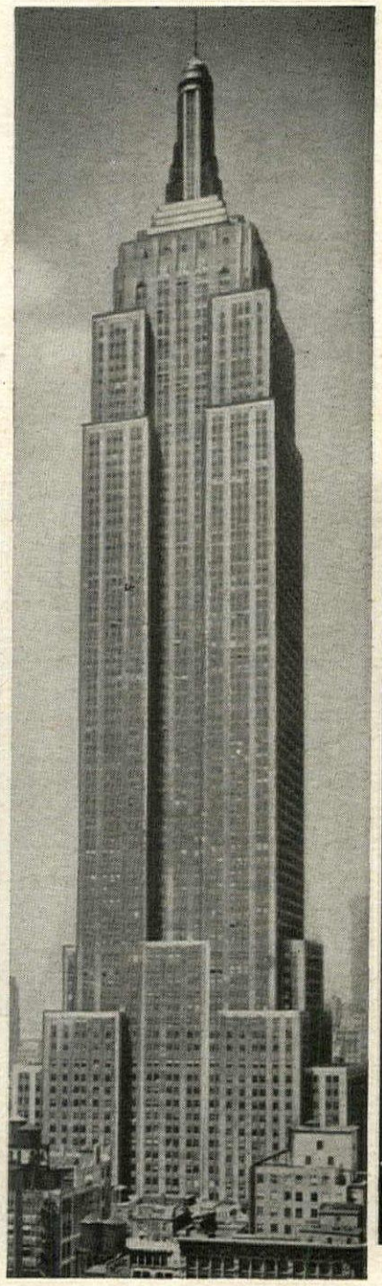

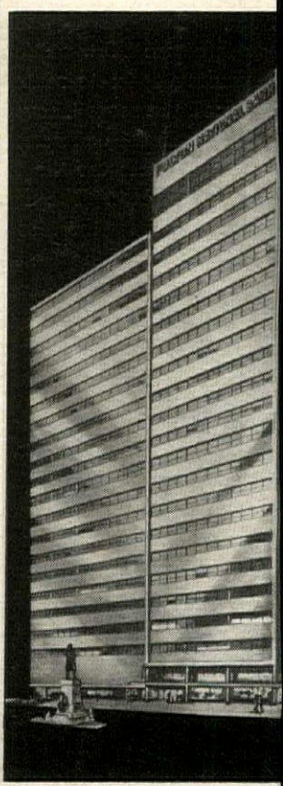

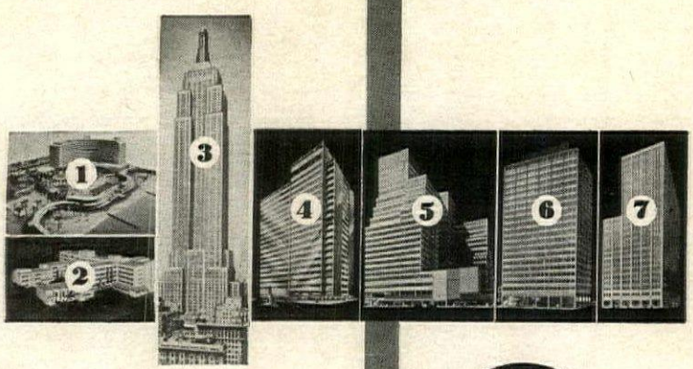

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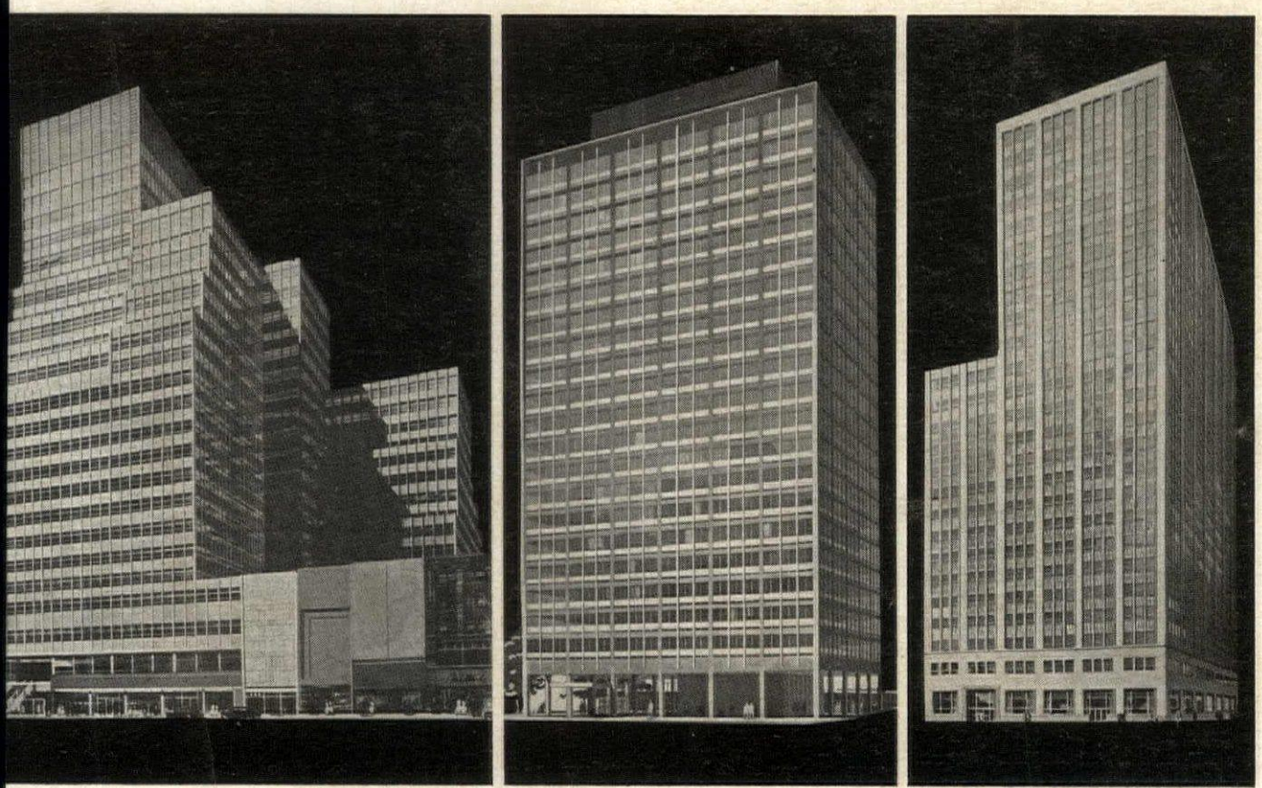

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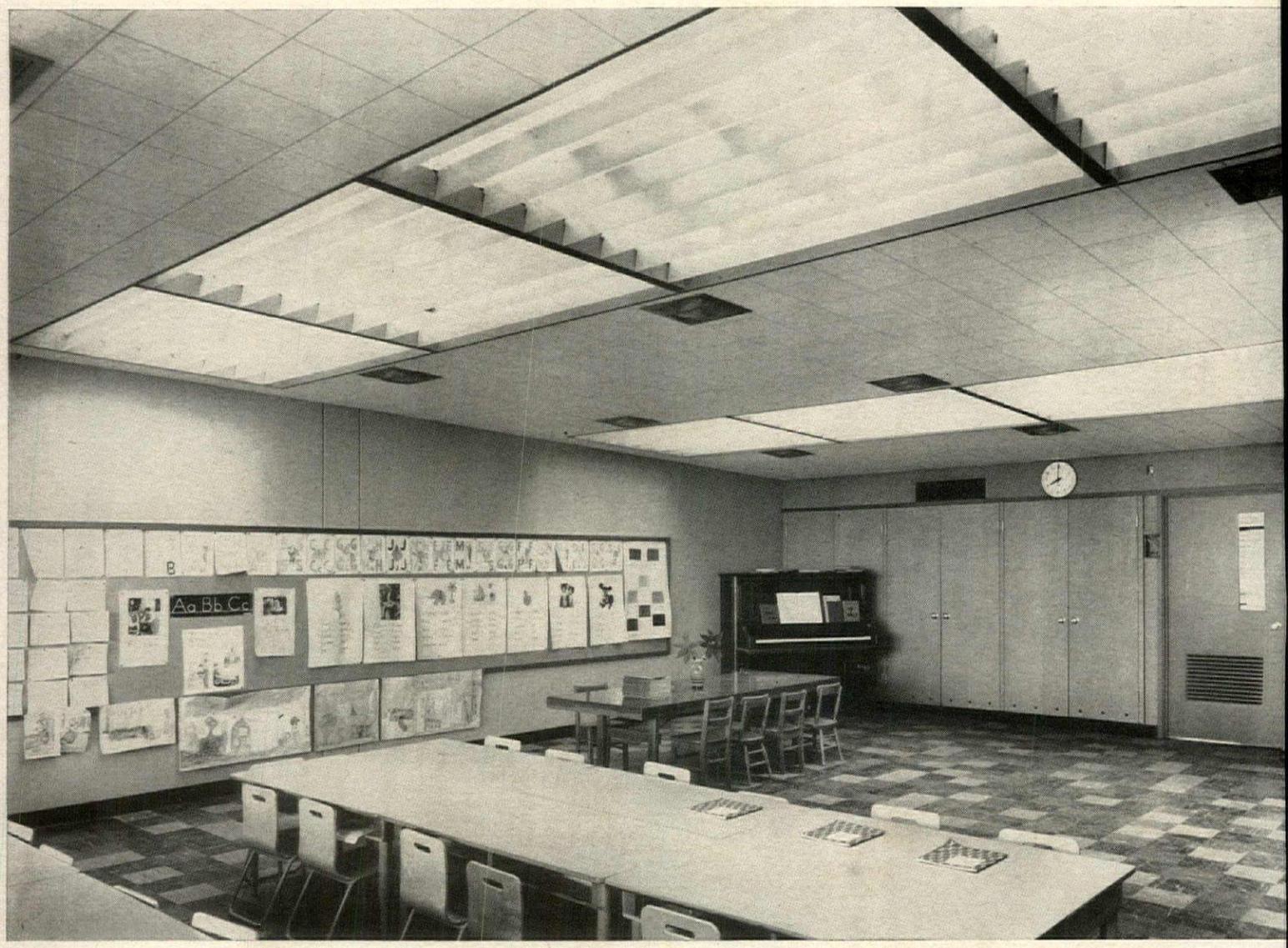

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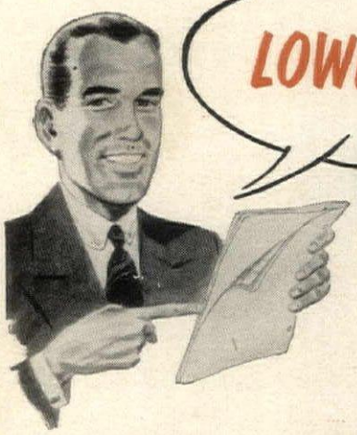

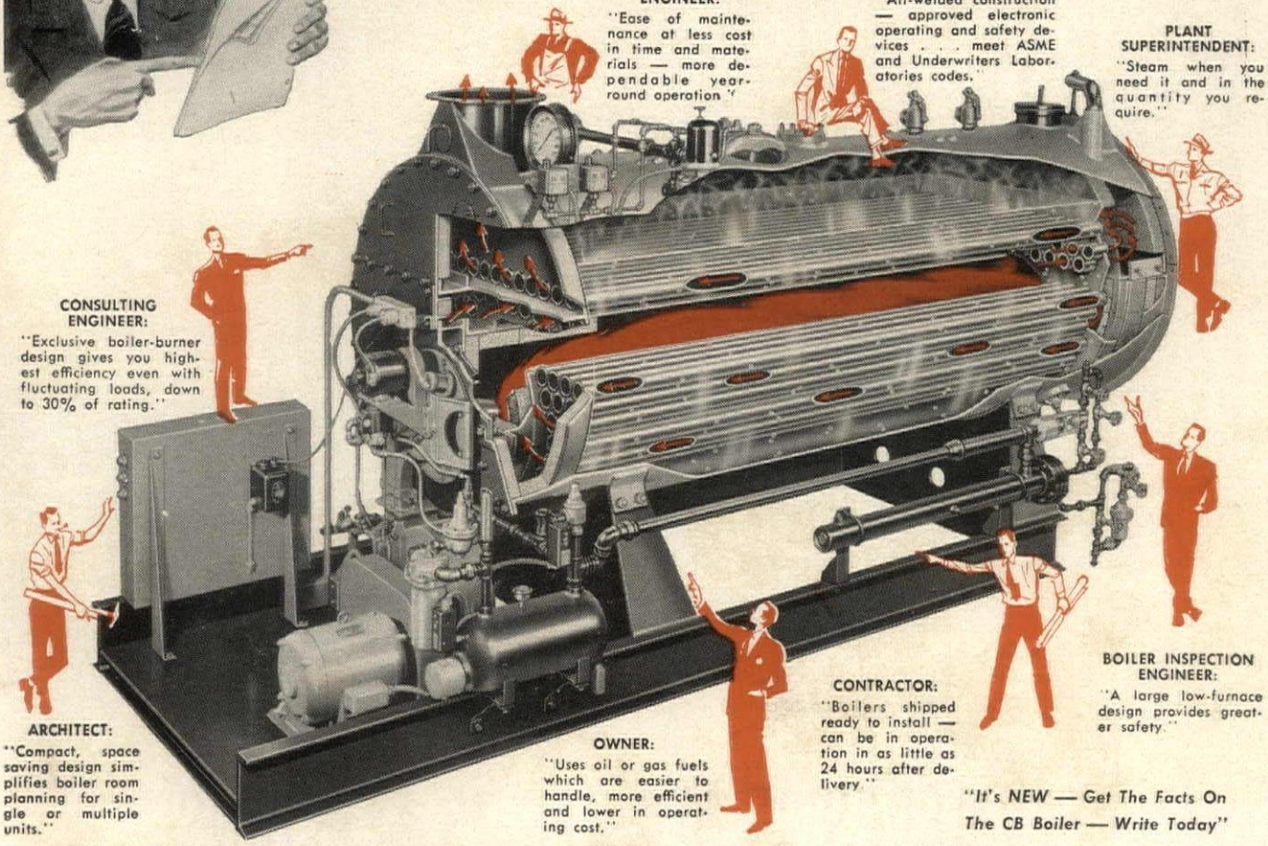

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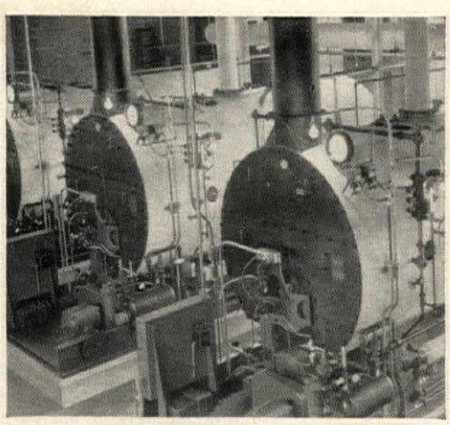

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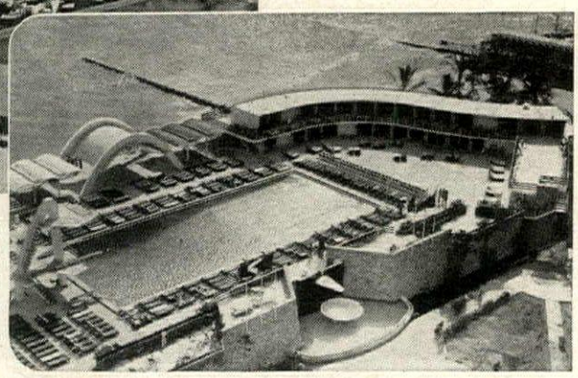

The Cabana Club, centered by a king-size pool and situated between the spectacular new hotel and the beach, is a major attraction. Its below-surface coffee shop has huge picture windows of 2-inch plate glass facing the water, affording diners a close-up view of the expert under-water swimmers.

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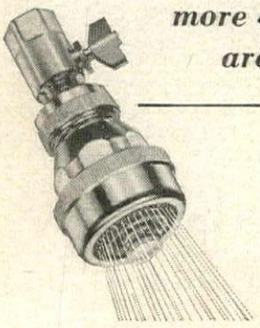
• Let imagination run riot and even world travelers could not dream of hostelry splendor and luxury to compare with that which is enjoyed by guests at the fabulous Fontainebleau, resort hotel at Miami Beach. It features 565 superbly appointed guest rooms, and lavish main lobby, formal dining room, grand ballroom, night club, Boom Boom Room and other public rooms which proudly overshadow their contemporaries. Outdoor attractions include 265 cabanas, each with private tiled bath, an Olympic-sized pool and private yacht anchorage. Its landscaping includes faithful reproductions of the formal gardens of Fontainebleau Palace in France. In this area are tennis courts, golf driving range, putting green, shuffleboard court and other diversions. Architecturally and decoratively, the Fontainebleau is proclaimed a masterpiece. Here, as in thousands of other fine buildings, are SLOAN *Flush* VALVES, famous for efficiency, durability, economy.



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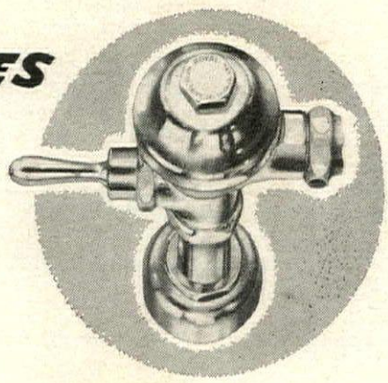

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SEAGRAM'S PLANS PLAZA TOWER IN NEW YORK

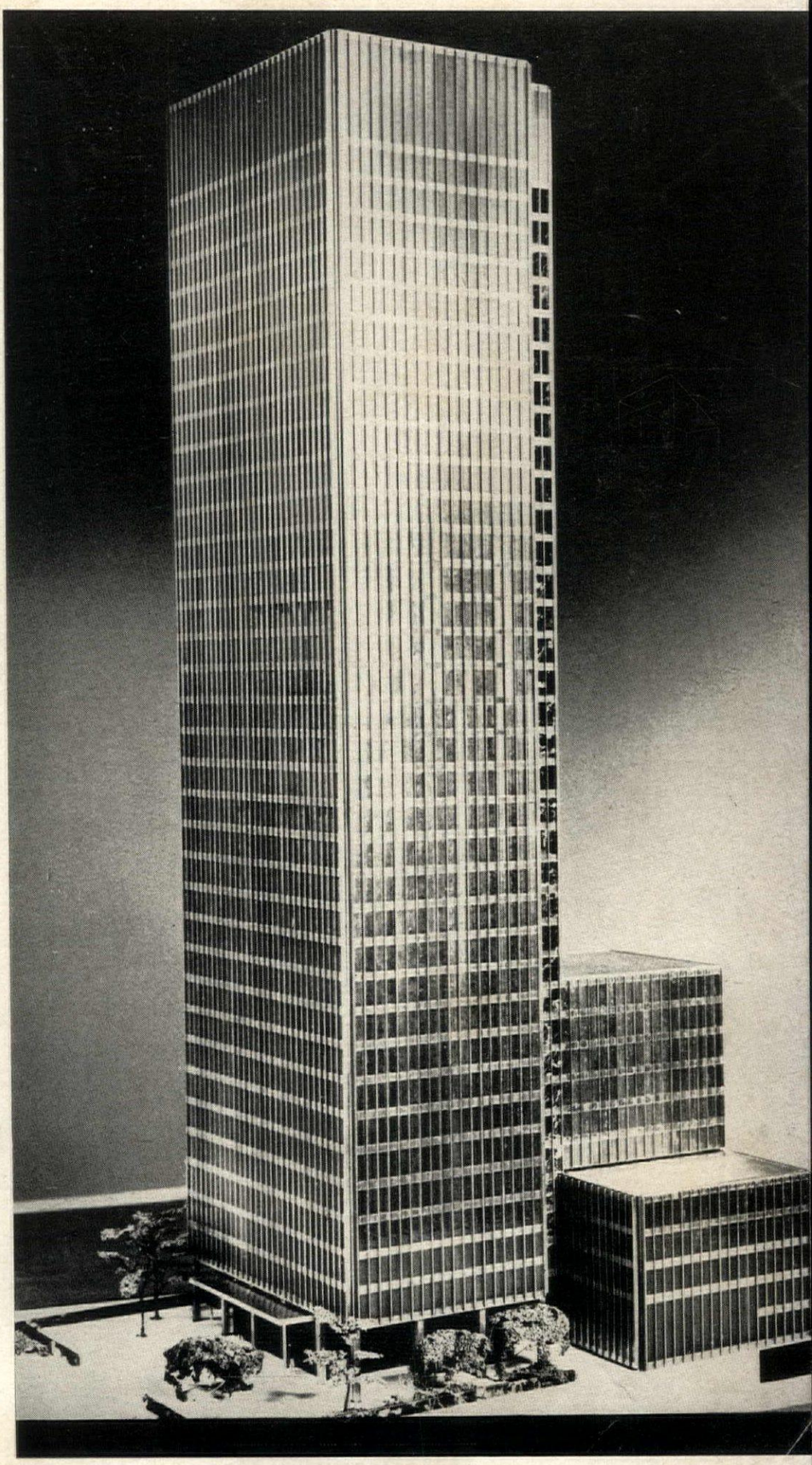
and Mies van der Rohe designs his first skyscraper office building

Seagram's, whose Park Ave. building has been awaited with intense curiosity ever since its owners switched architects last year and chose Mies van der Rohe, released its secret by the end of the month. This proved to be a no-setback building but a building all set back, on a plaza stretching from 52nd St. to 53rd along the east side of New York's swank Park Ave.—a heady expenditure of dollar-laden ground area for an effect remarkably monumental. Like Lever House cater-cornered on 53rd St., the new squarish 38-story tower is to be clad in a restrained curtain wall of metal and glass, but the metal will likely be other than aluminum and steel (perhaps, like the model, brass) and the glass is almost certain to be all in color—but warm-toned, not blue. And the tower, unlike Lever House (with its one brick end), will have the same panelized wall treatment all the way around, marble where not glazed. Against a reported trend toward smaller windows, here is a stack of offices, glass-enclosed head to toe, for the first time in New York or any US city.

Its designer is Chicago's famed Mies van der Rohe, working for the first time in New York, with his partner-ad-hoc Philip Johnson and Associates Kahn & Jacobs. Its proud owner is Samuel Bronfman, head of the Seagram group, who ever since repeal of Prohibition in 1933 has dreamed of a stunning Manhattan headquarters for his world-wide empire, and now expects to put $20 million into its golden glow. But closely responsible, along with him, is a daughter, Mrs. Phyllis Lambert, herself a painter and now a patron of the arts. Seeing her father's first version of the building (AF, Aug. '54) in the Paris edition of the *Herald Tribune*, and not adequately impressed, Mrs. Lambert had crossed the ocean and joined the building committee, headed by Ellis D. Slater, president of a Seagram's subsidiary. Upshot was the selection of Mies as the new architect.

Mies, arriving in New York, was disgusted with the antiquated pre-1914 setback zoning of the metropolis; he gave no moment's rest to himself or his clients until all had accepted a simple shape with simple columns "all the way down to the ground," as contrasted with the complicated framing imposed by setbacks. "What you gain in ground you lose in interest on the high costs," snorted Mies. Then, looking at the handsome plaza raised on a podium, across from the Ambassador Hotel, he added in a fatherly way: "The Ambassador might build a whole new wing of rooms to look out on it."

Other associates: Severud-Elstad-Kruger, structural engineers; Jaros, Baum & Bolles, mechanical engineers; George A. Fuller Co., general contractors; Cushman & Wakefield, Inc., rental agents.



38-STORY TOWER faces Park Ave. across raised plaza, is backed by two lower wings. Seagram's expects to occupy about one third of building.

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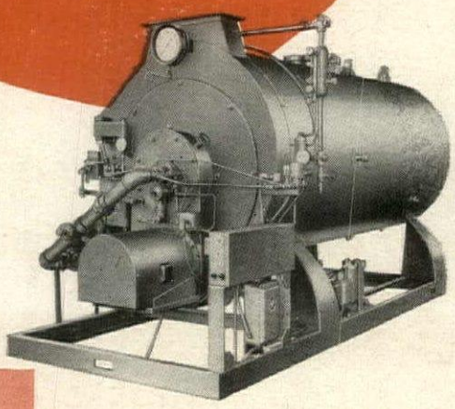

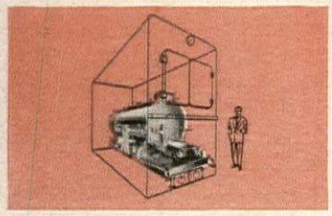

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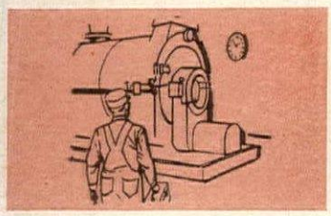
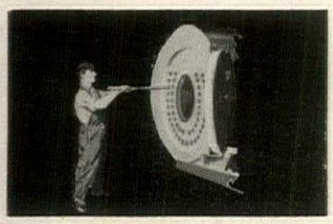


3. The Finest Service Facilities In Steam Generation! *A nation-wide network* of factory-trained servicemen are available at any hour, weekdays and weekends.



4. Simplified Maintenance Saves Up To 50% In Costs! One maintenance man can clean return tubes . . . replace and clean burner nozzle. Firetube never needs cleaning.

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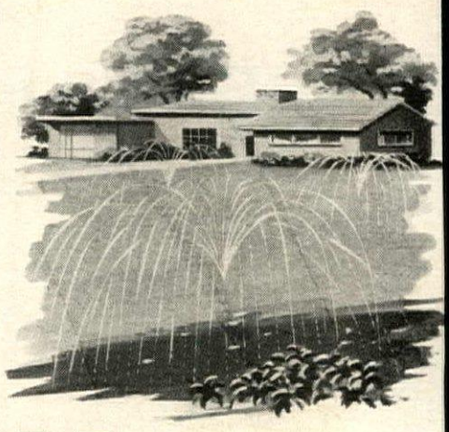

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HERE'S HOW EASY IT IS TO INSTALL NOMA SPRAY...

STEP 1 Extend Noma Spray over the area to be covered, attach to faucet or garden hose, turn on water.



STEP 2 · Make incision in ground with spade... **5 inches deep** ..insert Noma Spray, adjust volume of spray with key...that's all!

30 FOOT UNIT WITH 3 SPRAY HEADS. SHOWERS OVER 750 SQUARE FEET.	RETAIL $14.95	50 FOOT UNIT WITH 5 SPRAY HEADS. SHOWERS OVER 1200 SQUARE FEET.	RETAIL $24.95	20 FOOT UNIT WITH 2 SPRAY HEADS COVERS OVER 500 SQUARE FEET	RETAIL $10.95

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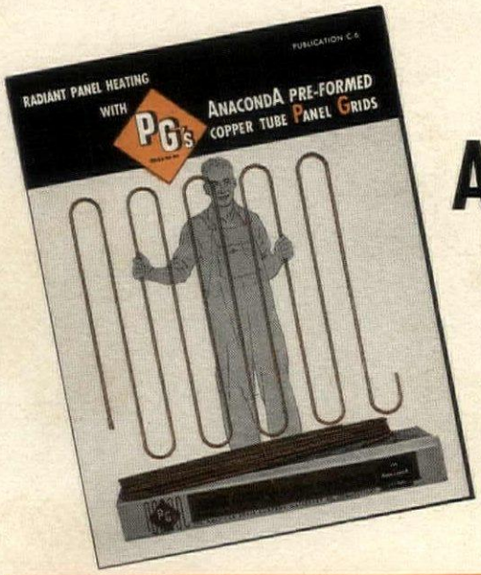

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APPLICATION DATA BOOK

On Anaconda Pre-Formed Panel Grids Helps You

DESIGN · LAYOUT · INSTALL

Radiant Panel Heating Systems

CONTENTS

- Description of Anaconda Pre-Formed Panel Grids
- Theory and Application of Radiant Panel Heating
- How PG's Simplify Planning and Design
- Calculating Panel Heating Systems with PG's
- Design Tool for PG Heating Systems
- A Two Zone PG Heating System Layout
- Installing PG's
  - Ceiling Installations
  - Floor Installations
- Sizing Mains and Selecting Circulator Capacities
- Supply and Return Piping
- Precautions
- Other Applications
  - Farm Buildings
  - Snow and Ice Melting
- Boiler Institute Heat Loss Factors

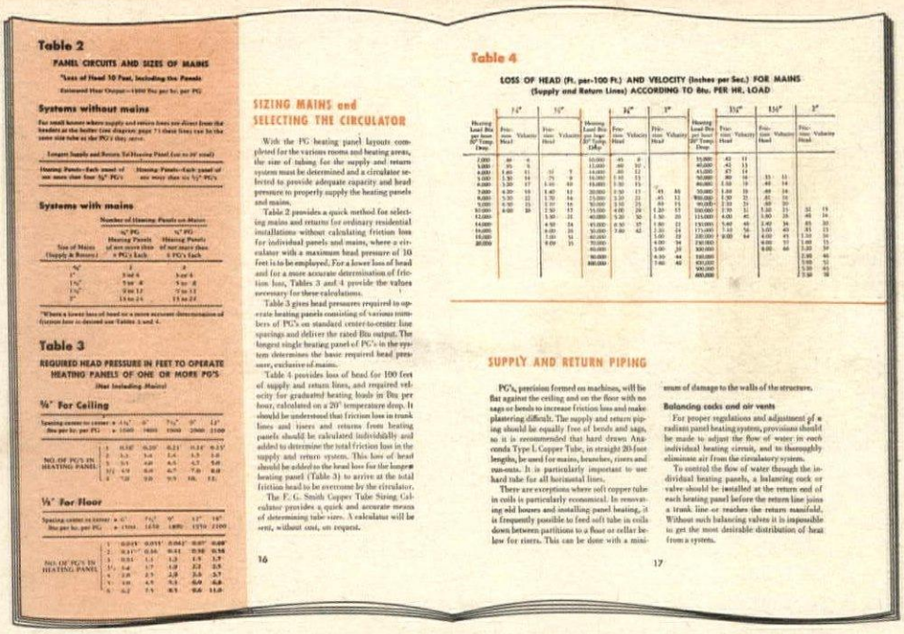

Table 2

PANEL CIRCUITS AND SIZES OF MAINS

"Loss of Head 10 Feet, Including the Panels

Estimated Heat Output—1000 Btu per hr. per PG

Systems without mains

For small homes where supply and return lines are direct from the headers at the boiler (see diagram page 7) these lines may be the same size tube as the PG's they serve.

Longest Supply and Return Tel Heating Panel (not to 20' total)

Heating Panels—Each panel of one more than four ½" PG's	Heating Panels—Each panel of six more than six ½" PG's

Systems with mains

Size of Mains (Supply & Return)	Number of Heating Panels on Mains: ½" PG Heating Panels of not more than 6 PG's Each	¾" PG Heating Panels of not more than 8 PG's Each
¾"	3	3
1"	3 to 4	3 to 4
1¼"	5 to 8	5 to 8
1½"	9 to 12	9 to 12
2"	13 to 24	13 to 24

*When a lower loss of head or a more accurate determination of system loss is desired use Tables 3 and 4.

Table 3

REQUIRED HEAD PRESSURE IN FEET TO OPERATE HEATING PANELS OF ONE OR MORE PG'S

(Not Including Mains)

½" For Ceiling

Spacing center to center	4½"	6"	7½"	9"	12"
Btu per hr. per PG	1500	1400	1300	1200	1100
NO. OF PG'S IN HEATING PANEL 1	0.10'	0.20'	0.21'	0.14'	0.15'
2	3.3	3.4	3.4	3.5	3.6
3	5.5	6.0	6.5	6.7	7.0
4	7.5	8.0	8.7	9.0	9.2
5	9.0	9.8	10.5	10.	11.

¾" For Floor

Spacing center to center	6"	7½"	9"	12"	18"
Btu per hr. per PG	1750	1650	1600	1570	1500
NO. OF PG'S IN HEATING PANEL 1	0.015'	0.015'	0.042'	0.07'	0.08'
2	0.21''	0.36	0.41	0.58	0.58
3	0.51	1.1	1.3	1.9	1.9
4	1.4	1.7	1.9	2.2	2.5
5	2.0	2.5	2.8	3.6	3.7
6	3.0	4.5	5.1	6.0	6.8
7	4.2	5.5	6.5	8.6	11.0

SIZING MAINS and SELECTING THE CIRCULATOR

With the PG heating panel layouts completed for the various rooms and heating areas, the size of tubing for the supply and return system must be determined and a circulator selected to provide adequate capacity and head pressure to properly supply the heating panels and mains.

Table 2 provides a quick method for selecting mains and returns for ordinary residential installations without calculating friction loss for individual panels and mains, where a circulator with a maximum head pressure of 10 feet is to be employed. For a lower loss of head and for a more accurate determination of friction loss, Tables 3 and 4 provide the values necessary for these calculations.

Table 3 gives head pressures required to operate heating panels consisting of various numbers of PG's on standard center-to-center line spacings and deliver the rated Btu output. The longest single heating panel of PG's in the system determines the basic required head pressure, exclusive of mains.

Table 4 provides loss of head for 100 feet of supply and return lines, and required velocity for graduated heating loads in Btu per hour, calculated on a 20° temperature drop. It should be understood that friction loss in trunk lines and risers and returns from heating panels should be calculated individually and added to determine the total friction loss in the supply and return system. This loss of head should be added to the head loss for the longest heating panel (Table 3) to arrive at the total friction head to be overcome by the circulator.

The F. G. Smith Copper Tube Sizing Calculator provides a quick and accurate means of determining tube sizes. A calculator will be sent, without cost, on request.

16

Table 4

LOSS OF HEAD (Ft. per-100 Ft.) AND VELOCITY (Inches per Sec.) FOR MAINS (Supply and Return Lines) ACCORDING TO Btu. PER HR. LOAD

Heating Load Btu per hour (20° Temp. Drop)	¾" Fric. Head	¾" Velocity	1" Heating Load Btu per hour (20° Temp. Drop)	1" Fric. Head	1" Velocity	1¼" Heating Load Btu per hour (20° Temp. Drop)	1¼" Fric. Head	1¼" Velocity	1½" Fric. Head	1½" Velocity	2" Fric. Head	2" Velocity
1,000	.60	.6	10,000	.45	.6	35,000	.42	11				
2,000	.85	.9	11,000	.60	.72	40,000	.52	13				
3,000	1.40	1.1	12,000	.70	.77	45,000	.65	14				
4,000	1.50	14	13,000	1.10	13	50,000	.80	16	.35	11		
5,000	2.00	17	14,000	1.30	15	60,000	1.10	19	.49	14		
6,000	2.50	18	15,000	1.50	17	70,000	1.40	23	.69	16		
7,000	3.30	22	16,000	1.70	18	80,000	1.70	25	.85	19		
8,000	4.00	24	17,000	1.90	21	90,000	2.10	27	1.05	21		
9,000	4.80	28	18,000	2.10	23	100,000	2.50	31	1.30	23	.54	19
10,000			19,000	2.30	25	110,000	3.00	34	1.50	25	.65	20
11,000			20,000	2.50	27	120,000	3.40	36	1.80	28	.75	22
12,000			21,000	2.80	29	130,000	3.80	38	2.00	30	.85	23
13,000			22,000	3.00	31	140,000	4.20	41	2.20	32	.95	25
14,000			23,000	3.20	33	150,000	4.60	43	2.40	34	1.05	27
15,000			24,000	3.40	35	160,000	5.00	45	2.60	36	1.15	29
16,000			25,000	3.60	37	170,000	5.40	48	2.80	38	1.25	31
17,000			26,000	3.80	39	180,000	5.80	50	3.00	40	1.35	33
18,000			27,000	4.00	41	190,000	6.20	52	3.20	42	1.45	35
19,000			28,000	4.20	43	200,000	6.60	54	3.40	44	1.55	37
20,000			29,000	4.40	45	210,000			3.60	46	1.65	39
			30,000			220,000			3.80	48	1.75	41
			31,000			230,000			4.00	49	1.85	43
			32,000			240,000			4.20	51	1.95	45
			33,000			250,000			4.40	53	2.05	47
			34,000			260,000			4.60	55	2.15	49
			35,000			270,000			4.80	57	2.25	51
			36,000			280,000			5.00	59	2.35	53
			37,000			290,000			5.20	61	2.45	55
			38,000			300,000			5.40	63	2.55	57
			39,000			310,000			5.60	65	2.65	59
			40,000			320,000			5.80	67	2.75	61
			41,000			330,000			6.00	69	2.85	63
			42,000			340,000					2.95	65
			43,000			350,000					3.05	67
			44,000			360,000					3.15	69
			45,000			370,000					3.25	71
			46,000			380,000					3.35	73
			47,000			390,000					3.45	75
			48,000			400,000					3.55	77

SUPPLY AND RETURN PIPING

PG's, precision formed on machines, will lie flat against the ceiling and on the floor with no sags or bends to increase friction loss and make plastering difficult. The supply and return piping should be equally free of bends and sags, so it is recommended that hard drawn Anaconda Type L Copper Tube, in straight 20-foot lengths, be used for mains, branches, risers and run-outs. It is particularly important to use hard tube for all horizontal lines.

There are exceptions where soft copper tube in coils is particularly economical. In renovating old houses and installing panel heating, it is frequently possible to feed soft tube in coils down between partitions to a floor or cellar below for risers. This can be done with a minimum of damage to the walls of the structure.

Balancing cocks and air vents

For proper regulations and adjustment of a radiant panel heating system, provision should be made to adjust the flow of water in each individual heating circuit, and to thoroughly eliminate air from the circulatory system.

To control the flow of water through the individual heating panels, a balancing cock or valve should be installed at the return end of each heating panel before the return line joins a trunk line or reaches the return manifold. Without such balancing valves it is impossible to get the most desirable distribution of heat from a system.

17

This 24-page booklet is a handy compilation of time and money-saving suggestions for planning and installing radiant heating systems with PG's. It gives the complete story about ceiling and floor types of these machine-formed radiant panel heating coils. Contents, shown at left, also includes over 40 illustrations, plus valuable tabular data on heat output, panel circuits, sizing mains and head pressures as applied to PG's. Mail the coupon below *today* for your copy.

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PG's

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FULL HOUSE of enthusiastic members turned out for first general session in the Hotel Roosevelt International Room

AGC convention: New Orleans meeting hears predictions of more "all-time" building records, gets Navy promise of price readjustments for government delays

In bustling, dynamic Los Angeles a year ago the Associated General Contractors of America opened their annual convention to a chorus of gloomy forecasts. Said the report accompanying the replies from the preconvention telegraphic survey of members on the volume of construction activity they saw ahead:

"With more contractors doing less work during the next six months it is just simple arithmetic that there will be less work per contractor. . . . The possibility that some will have to reduce the size of their organizations and others will fall by the wayside was seen in many of the replies."

In calmer, decorous New Orleans last month the organization opened its 1955 convention to greetings from President Eisenhower observing that "in 1955 our nation needs another great year of building"—and a succession of rosy predictions that construction this year will be "propelled to new heights" set a new "all-time record."

Returns from this year's preconvention survey on the construction outlook for the next six months make an interesting comparison with last year's expectations:

Replies anticipating	% of replies 1955	1954
BUILDING CONTRACT WORK		
Increase	58	35
No change	31	26
Decrease	11	39
HEAVY CONSTRUCTION		
Increase	56	17
No change	21	29
Decrease	23	54
HIGHWAY CONTRACT WORK		
Increase	72	46
No change	14	34
Decrease	14	20

The current survey also found AGC members anticipating 1) little change in material and equipment prices during the next six months, 2) a tendency for wage rates to rise, 3) a continued decline in bid prices, and 4) more intense competition among contractors.

Easier Navy rule. Cheerful words were passed to the New Orleans convention by Rear Admiral J. R. Perry, chief of the Bureau of Yards and Docks, who disclosed plans to protect general contractors on navy projects against "unforeseen government delays."

At present there is no provision for price adjustment when unforeseen government interruptions or suspensions delay a contractor's work, said Admiral Perry, and this "imposes on him a risk which I believe we in government are obligated to eliminate."

As now phrased, he added, a proposed "delays damages" clause in future navy contracts will authorize an "equitable adjustment" if such delays boost the contractor's costs. There will be two conditions: written notice of the delay from the contractor within ten days; a written statement of the amount of damage being claimed within 30 days after the delay ends.

The army spokesman at the convention was Brig. Gen. D. H. Tulley, assistant chief of engineers for military construction. He called construction power "the bulwark of national defense" and warned that "in time the nation's shortage of professional engineering talent is bound to have an adverse effect upon the construction field." (At a highway division session, Deputy Commissioner A. C. Clark of the Bureau of Public Roads said current estimates show "a little over 4,000" additional engineers are required for each $1 billion of new highway work.)

Wage scale protection. In harmonious forum style, the convention was addressed by Frank A. Bonadio, secretary-treasurer of the AFL building trades department, and National Labor Relations Board Member Philip Ray Rodgers. Bonadio listed construction labor's current legislative objectives (see p. 21). Rodgers explained current NLRB policies, defended the board as "neither proemployer nor prounion," and praised the Taft-Hartley Act as "one of the outstanding legislative enactments of our time."

More importantly, however, the AGC labor committee brought in a significant recommendation for better labor relations among its own members. To avoid difficulties that arise sometimes when a contractor operating outside of his home territory upsets prevailing labor conditions in a distant locality, the committee recommended: "That contractors proposing to work in an area should consult the [local AGC] chapter serving that class of work *before bidding* and if awarded the work seek to conform to the *wage rates and working conditions* which have been established in the area by that chapter."

The resolution adopted on wages said construction pay has "increased commensurately with the cost of living and generally with labor's contribution to productivity," and, now that the cost of living has been stabilized, "demands for increased wage rates and welfare benefits should be resisted to the fullest extent."

Apprentices wanted. On recommendation of the apprenticeship committee, which reiterated that the number of building trades apprentices is not sufficient to supply the industry enough competent craftsmen, plans were approved for a new AGC apprenticeship news letter to promote increased apprenticeship porgrams. The public relations committee also gave this craftsmanship problem its attention and in outlining proposals for expanding its work declared: "that more work can be done in . . . developing material that will attract more skilled workmen, and engineering and administrative personnel into the industry."

Another public relations committee proposal said: "more work can be done in cooperation with the labor committee in

providing information about the economics of the construction industry to our workmen." Still another proposed that more be done to give bankers and public officials fuller information on "the advantages of contract construction and on the operations of the industry."

Management savvy vital. In an address for members on construction industry economics, Dun & Bradstreet's President J. Wilson Newman reported that more than half of the industry's 1954 failures occurred among concerns in business five years or less, and about half where the head of the business "was long on technical knowledge in his specialty, but short on management experience." These figures, he said, suggest that knowing how to build is not enough to assure success—another essential ingredient is how to manage; "the cost computation and projection becomes as crucial to the financial health of the contractor and the project as the engineering technique is to the structural health of the project."

Urging "economic statesmanship and leadership within the industry," Newman said the absence of reasonable profits over any sustained period weakens the aggressiveness of management as well as the confidence of customers and suppliers. "Where there are signs of the growth of abuses or unhealthy practices in the building business," he added, "it should be the recognized responsibility of the industry itself to solve its own problems. The only alternative is statutory regulation."

Almost 2,500 persons registered for the New Orleans meeting of the AGC, which now has more than 6,500 members and for the coming year adopted a budget totaling $712,000. Elected as new officers of the building contractors division: Chairman, James W. Cawdrey of Seattle; vice chairman, Earl Wheeler of Cincinnati.

Plastic range concrete might give one-time bomb protection

Civil engineers' and architects' wistful hopes that atomic-bomb-resistant buildings could be designed were given some encouragement a month ago at the American Concrete Institute's annual convention in Milwaukee. A new method of building with reinforced concrete making use of the plastic range of materials was described by Charles S. Whitney, partner of Ammann & Whitney, New York and Milwaukee consulting engineers. Whitney is well known for his work with reinforced concrete structures.

Most construction designing is done in the elastic range, taking into account the ability of materials under stress to return nearly to their original shape. Whitney, who was elected president of ACI during the convention, told members about experiments in the plastic range of reinforced concrete, in which there is permanent change of shape. Buildings designed in the plastic range, built at 5% to 15% above conventional costs, said Whitney, might suffer permanent but not mortal damage when hit by earthquake, severe storm or blast from an atomic bomb exploded a few thousand feet away. Trouble is, he explained, the price of such extraordinary strength probably would be that the building would stand only one such shock.



PRESIDENTIAL HUDDLE at Welcome Night Party brought together new President George C. Koss of Des Moines and Mrs. Koss (l); 1951 President Glen W. Maxon, Dayton, Ohio, and retiring President John MacLeod, Paramount, Calif. (r).

Photos: AGC—Leon Trice



"CONSTRUCTIONDISING" AWARD was presented to George A. Schmeltzer, Harrisburg, Penn. (l) by San Franciscan Fred J. Early Jr., chairman of construction markets committee—which also urged boost in US funds for local planning.



MERITORIOUS SERVICE citation from National Safety Council for accident prevention work was awarded Pittsburgher H. B. Alexander (r) by Dallas AGC member George O'Rourke, who also is an NSC construction section officer.

LABOR COMMITTEE conferences reviewed proposals for amending federal laws affecting employment on construction jobs for government, helped draft resolution against extending Davis-Bacon Act to US-"assisted" projects.

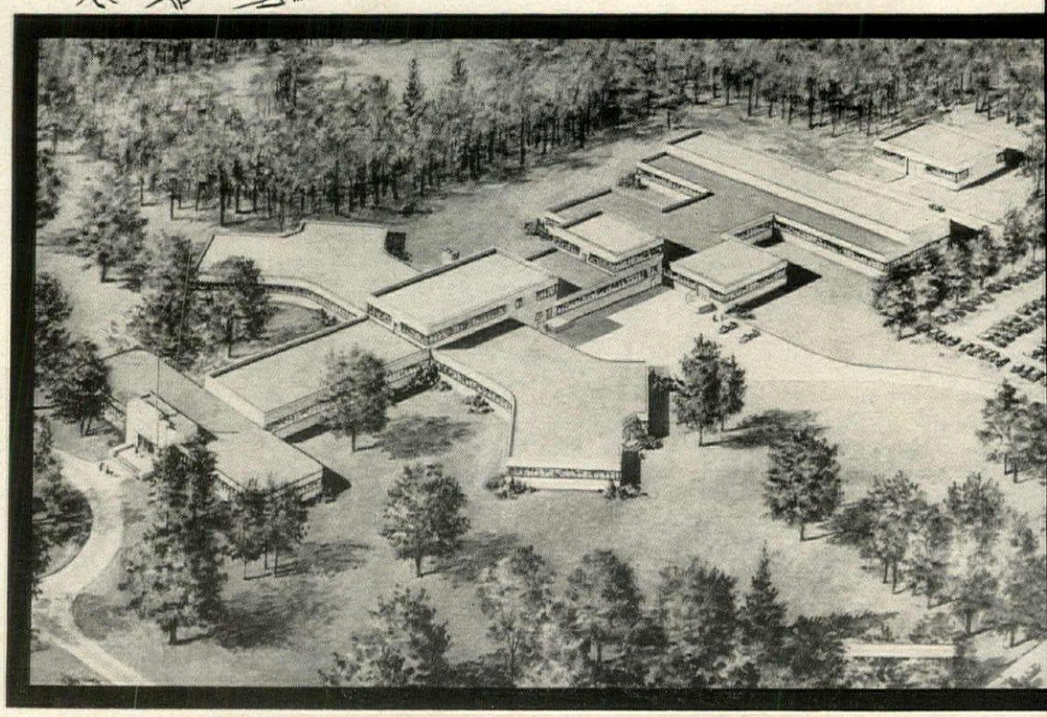


NEWS *continued on p. 1*

Industrial research will never end...



• The soon-to-be-completed Research and Development Center of the American Can Company in Barrington, Illinois, typifies modern planning for ever-continuing progress. Situated in attractive surroundings in the countryside northwest of Chicago, it will provide a new home for objective research and practical application for years to come.



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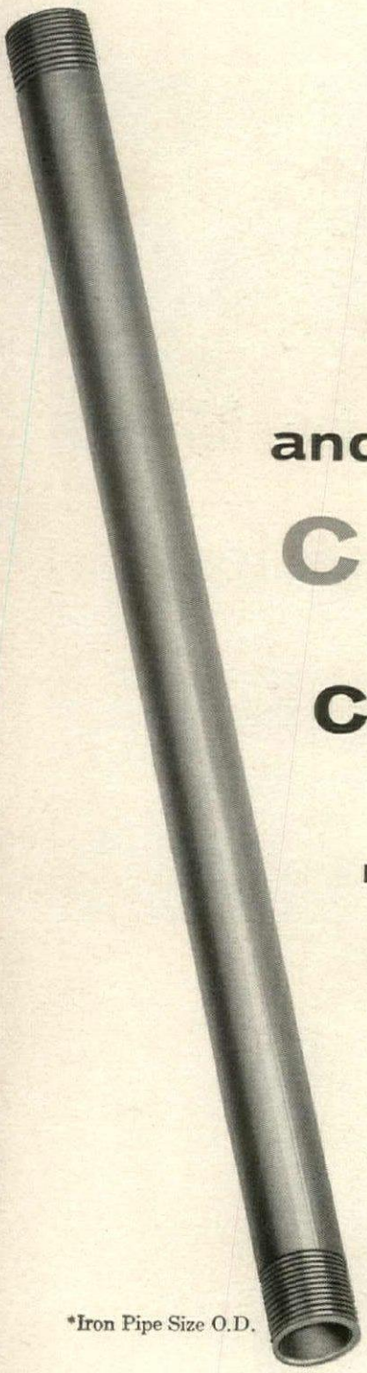

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Clow (threaded) Cast Iron Pipe has same O.D. as steel pipe, is available with plain or threaded ends, in 3, 4, 5, 6, 8 and 10" sizes in 18' random lengths. Also available with integral calking hub on one end (other end plain in 18' random lengths 4, 6, and 8" sizes.

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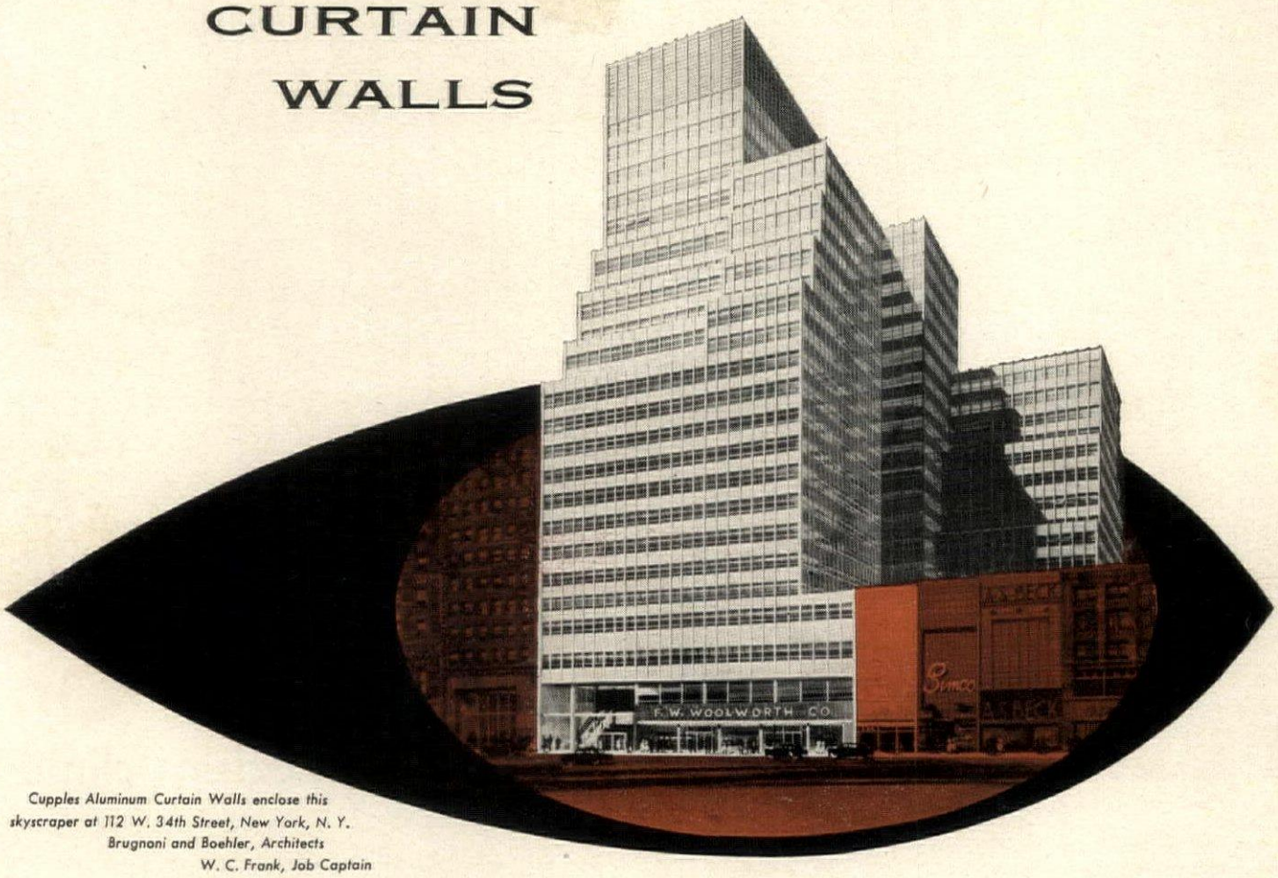

Cupples Aluminum Curtain Walls enclose this skyscraper at 112 W. 34th Street, New York, N. Y.
Brugnoni and Boehler, Architects
W. C. Frank, Job Captain

A leader in the development of Curtain Wall design and construction, Cupples is best equipped by experience and facilities to assure complete satisfaction. That is why Cupples is identified with so many Curtain Wall accomplishments.

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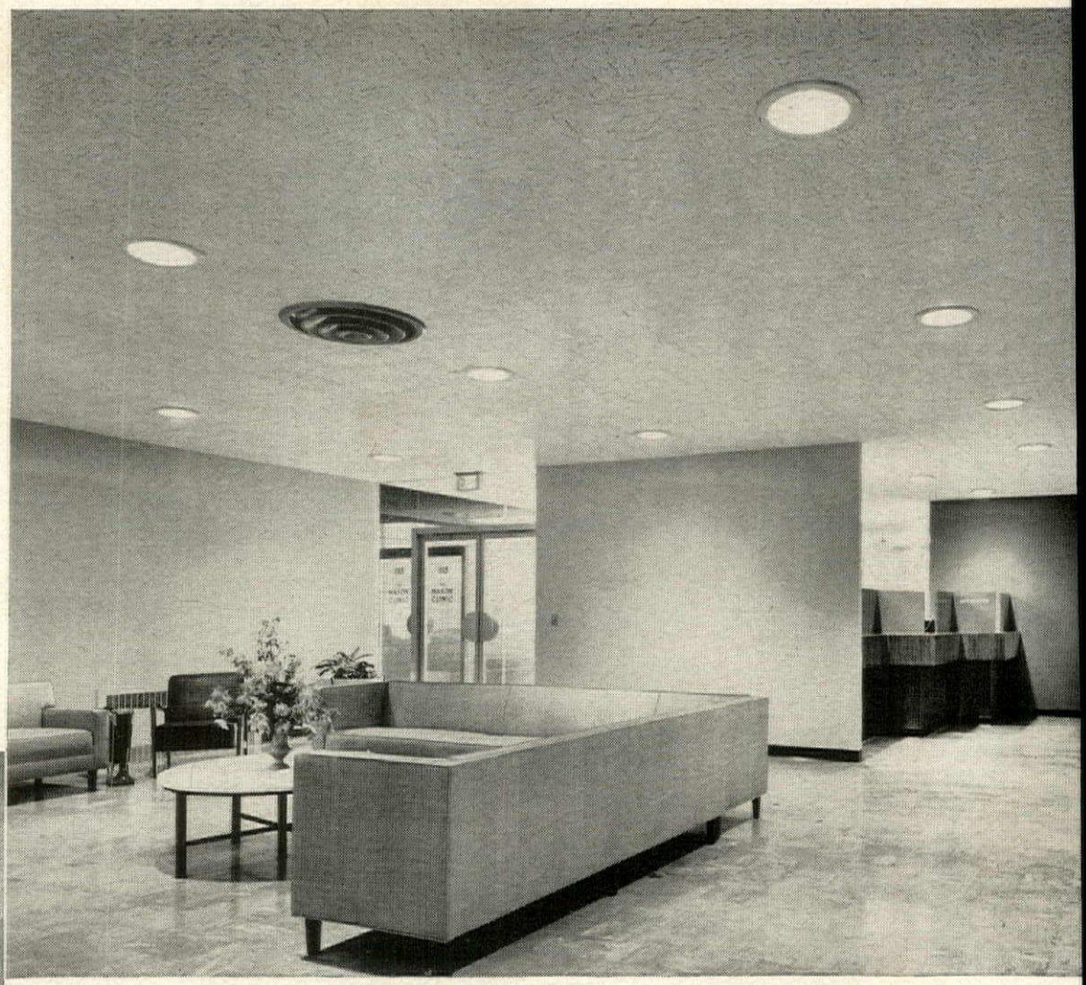
Armstrong Travertone
Armstrong Cushiontone



Rated incombustible, the Armstrong Travertone in this attractive lobby meets the strictest fire-safety codes. It's quickly installed by conventional cement or suspension methods, can be easily scored and cut to fit around ceiling fixtures.



A smartly fissured surface gives the Travertone ceiling in this private office the distinctive appearance of travertine marble. Its two-coat white paint finish has high light reflectivity and can be washed or repainted whenever desired.

Acoustical treatment adds beauty, as well as quiet, to modern clinic

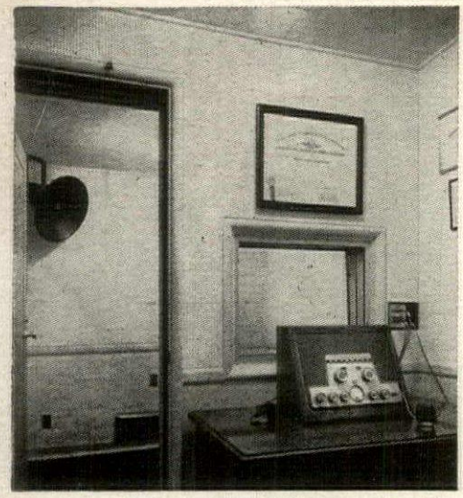
Aluminum facing members and glareproof blue-green glass give the facade of Seattle's Mason Clinic a trim, uniform appearance. Inside, modern materials such as acoustical ceilings of Armstrong Travertone* and Cushiontone promote a cheerful and quiet atmosphere.

Used throughout the first floor of the clinic to add beauty and eliminate any chance of noise problems, Travertone absorbs as much as 80% of the noise that strikes it. Travertone's handsomely fissured, white painted surface has the smart appearance of travertine marble and stays new looking for years with a minimum of upkeep. Made of mineral wool fibers, Travertone is rated incombustible.

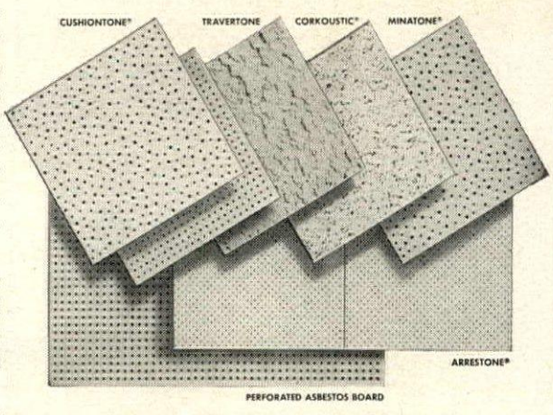
Cushiontone sound conditions the upper floors of the building. Both efficient and economical, this perforated wood fiber tile is frequently chosen when large areas must be acoustically treated at low cost.

Travertone and Cushiontone are two of the complete line of Armstrong sound-conditioning materials. Call in your Armstrong Acoustical Contractor for helpful advice in solving your noise problems. With a wide range of special features to choose from, there's an Armstrong material that meets the needs of every job. For your copy of the new 1955 edition of "Armstrong Acoustical Materials," write Armstrong Cork Company, 4204 Rooney Street, Lancaster, Pa.

* Trade-Mark



High acoustical efficiency makes Armstrong Cushiontone a logical wall and ceiling material for this audio testing room. To meet high clinical sanitary standards, Cushiontone can be washed frequently without losing its effectiveness.



Armstrong

ACOUSTICAL MATERIALS

Cushiontone • Travertone • Minatone
Arrestone • Corkoustic • Perforated Asbestos Board

Glassmakers expand to offset price rises and large increase in demand

Since World War II glass manufacturers, like most other industrialists, have been busily expanding their plants and modernizing production techniques to ride the crest of the immense postwar construction wave. But they have hardly been able to keep up with demand. They faced a singular problem—a desirable one for them: demand for glass in construction was being multiplied both by increased building volume and by the use of more glass per building.

Design pioneers such as Mies van der Rohe, Pietro Belluschi and Skidmore, Owings & Merrill have preached the doctrine of vast window expanses. Transforming structural skeletons into objects of admiration by clothing them in glass skins, they also started a postwar boom in plate glass that has kept the producers busier than ever before.

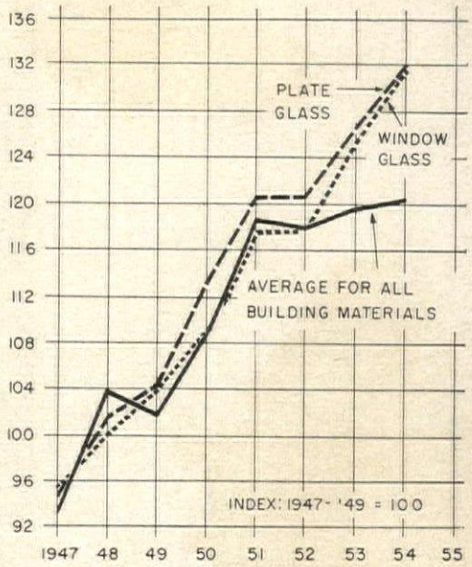
A glass shortage? Some manufacturers say there is a glass shortage; glass contractors are not sure, and architects insist there is not. At times recently, sash manufacturers in some areas have had to curtail production and lay off workers, but many of these order on a week-to-week basis and would be the first to feel even a slight pinch in window glass production. Architects and engineers specifying plate panes and other structural glass for large buildings, however, normally act far enough in advance so production lags will not affect them. Pressed by abnormal seasonal demand—aggravated by last fall's East Coast hurricanes and the frenzied automobile production race—manufacturers may see a shortage in what is perhaps only a strong market.

If price alone were a market criterion, however, there might appear to be a shortage, for glass prices, after following the average for building material wholesale prices since the war, rose well above the average in 1953 and 1954 (chart, p. 21). Manufacturers cited no special causes, such as an exceptional rise in labor cost or in the price of their raw materials.

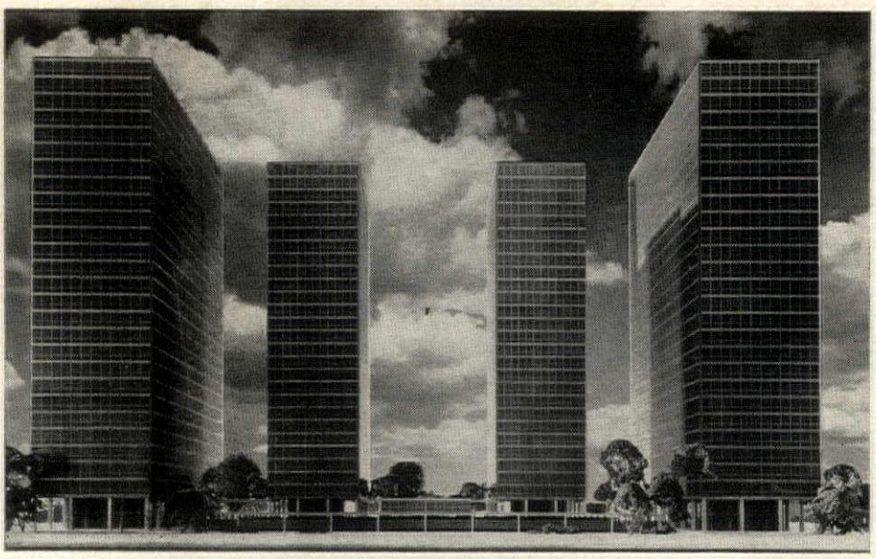
These sharp price increases occurred in the face of rough competition from foreign producers in 1953, when tariffs on imports were pared. US glass contractors found they could buy European plate and window glass for 3% to 5% less than American glass, and imports rose from a yearly average of $7.6 million between 1946-50 to a high in 1953 of $30.2 million. Libbey-Owens-Ford and Pittsburgh, who together account for 60% of US plate glass, and 90% of window glass, cut production and laid off workers to roll with the import punch. Last fall, after the European building boom had sopped up most foreign production, both had difficulty meeting again the entire US demand.

Large expansion programs. The big manufacturers, expecting the use of glass in construction to double in the next 20 years, as it has in the past two decades, are racing against each other to expand and modernize their production facilities. Libbey-Owens-Ford put the nation's first continuous-strip, twin-grinding plate-glass plant into operation last year at Rossford, Ohio, at a cost of $27 million, and this year will spend another $25 million for expansion. Pittsburgh Plate, which has spent $60 million on plant since World War II, is building a $34 million precision-ground plate-glass plant at Cumberland, Md. Owens-Corning, biggest producer of glass fiber, put $60 million into production facilities in the last decade. Owens-Corning which had dominated the glass-fiber field (last year's Owens-Corning sales were about

continued on p. 21



GLASS PRICES stayed close to average for building materials from 1947 to 1953, then soared, BLS wholesale price index showed.





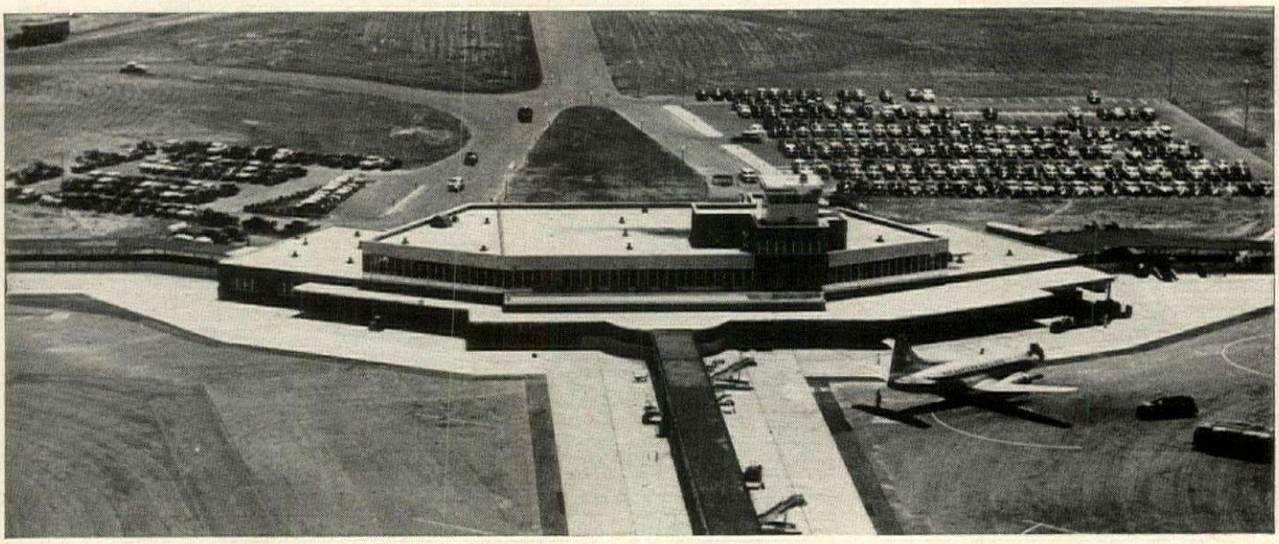
Several records likely for six more Mies apartment towers on Chicago lakefront

Builders Herbert S. Greenwald and Samuel N. Katzin staked out advance claims for a number of building records last month when they announced plans for six more Chicago luxury apartments designed by Mies van der Rohe in association with Friedman, Alschuler & Sincere. Two 29-story units (r) with a total of 533 apartments (2,358 rooms) will be erected next to the Mies-designed 860-880 Lake Shore Dr. buildings Greenwald and Katzin developed in 1951. Four other 28-story units (l) with a total of 750 apartments (3,750 rooms) will go up on another lakefront plot bought from the Lehmann estate.

Frank J. Kornacker, serving as structural engineer, said the new towers will be "the tallest flat-slab, reinforced concrete buildings in the country, and possibly the world." Exteriors will consist of 9′ x 21′ prefabricated aluminum frames, designed to eliminate as many construction joints as possible. Greenwald predicted these large, 189 sq. ft. panels will "revolutionize the entire concept of skins for buildings, ushering in a much faster, cheaper technique than ever used before; we fully expect to set a construction time record with them."

Other features of the $25 million, six-building enterprise to be c mpleted in 18 months: an Equitable Life Assurance Society $11 million, 20-year mortgage billed as "the largest conventional loan ever made for new apartment construction in Chicago"; more than 7½ acres of tinted glass for the vertical prairie window walls; ceiling-high doors; 12-room suites.

Combustioneer Stokers Heat Charlotte's New $2,000,000 Airport Terminal Building!

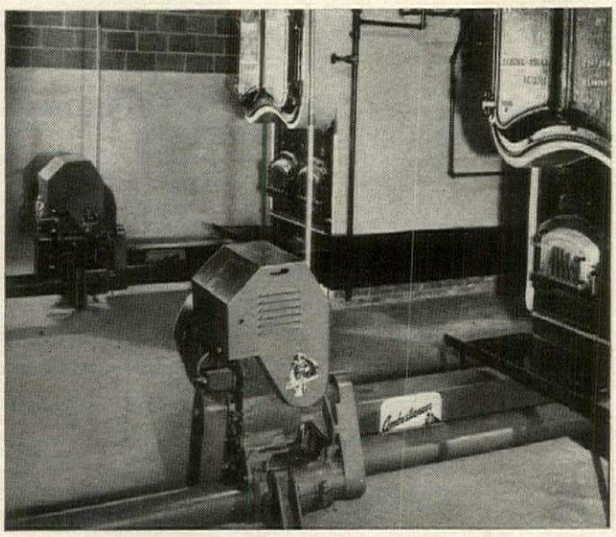


Highest architectural and construction standards result in choice of Combustioneer Automatic Stokers for best heating

When the City of Charlotte, North Carolina, built its new Airport Terminal Building, outmoded limitations were abandoned. A whopping $2,000,000 went into the newest and best features of airport planning and building. Walter Hook and Associates, Charlotte architects, produced one of the South's very finest Airport Terminal Buildings.

These very high standards naturally demanded fully automatic heating. For this, the L. L. Hyatt Company, Spartanburg, S. C., installed Combustioneer Automatic Coal Stokers to fire the large steam boilers . . . constantly, day and night, reliably and economically . . . assuring convenience and health protection as well as luxurious comfort for airport passengers and visitors.

PHOTOS BY JAKE HOUSTON



Two of the three Combustioneer Automatic Coal Stokers serving the new Charlotte Airport Terminal Building. These are 500 lb. Bin-Feed Models, drawing coal directly from the bin, fully automatic, eliminating hand-firing completely! A No. 7½ Combustioneer is also in use.

Combustioneer Stokers, the natural choice for this most demanding service, are famous for the exclusive features that assure the maximum of automatic, quiet, dependable and economical operation. Only Combustioneer has the *Agitating Transmission* that keeps the fire-bed always open and free-burning and the *Automatic Respirator* that controls air delivery for maximum combustion efficiency and smoke-free stacks. Combustioneer Stokers always balance the heat output with the load demand. Fuel savings up to 25% are not uncommon.

Combustioneer Hopper and Bin-Feed Models range in capacity from 9 to 1000 lbs. per hour. All are precision-made, rugged, with proven ability to give long life in hard service.

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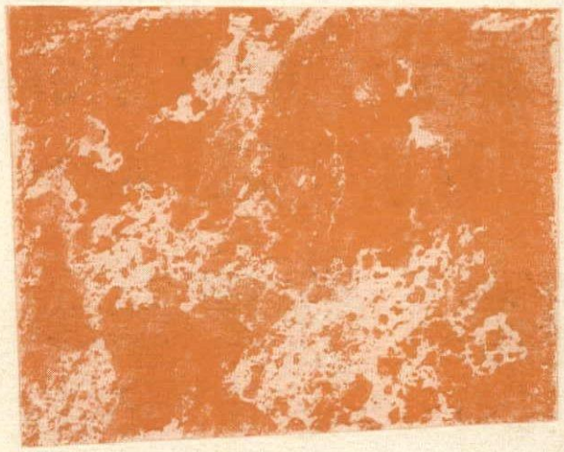


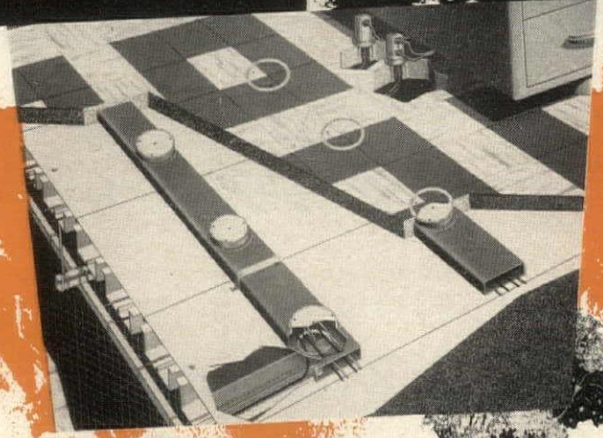
Fairfield, Alabama's new Lloyd Noland Hospital is an outstanding example of how modern design cuts owner's operating cost . . . provides for continuous business growth without costly electrical alterations in office layout.

National Electric Header Duct, the all-steel, grounded, electrical underfloor raceway system, was installed in conjunction with the cellular steel flooring. The result: a combined raceway system that provides the convenience of electrical outlets in any square foot of the floor area.

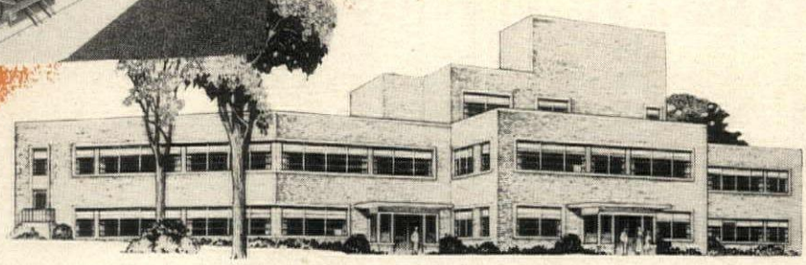
Make sure your plans for cellular steel floor construction include a National Electric Header Duct feeder raceway system. It's the economical way to give your owners the flexibility of fast, simplified electrical changes in office layout without tearing up floors or other costly alterations that disrupt office routine.

Listed by Underwriters' Laboratories, Inc.

a National Electric header duct installation



LLOYD NOLAND HOSPITAL
Fairfield, Alabama



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80% of the total output of glass fibers) was in for competition. A month ago L-O-F Glass Fibers Co., a well-heeled subsidiary of Libbey-Owens-Ford, merged with Glass Fibers, Inc., an independent producer long on knowledge and short on capital. The new firm kept the name L-O-F Glass Fibers Co.

Almost submerged in the struggle of big glassmakers are a handful of comparatively small manufacturers of window and plate glass. One of them, American Window Glass Co., found itself being squeezed out in the war years. American fought back, came out of the red in 1947 and, putting profits back into plant, more than quadrupled its net sales by 1954.

Sales and earning figures for the big glassmakers since the war are impressive:

(millions of dollars)

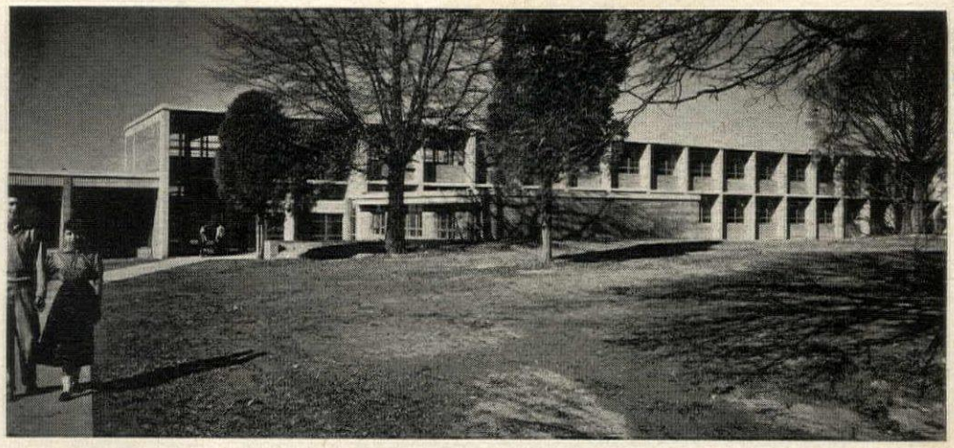
	Lib'y-Owens Ford		Pitt. Plate		Owens-Corning		Am. Wind. Glass	
	net sales	net inc.	net sales	net inc.	net sales	net inc.	net sales	net inc.
1947	99	11	262	28	40.6	4	4.3	.7
1948	113	14	280	33	51.1	3	3.9	.9
1949	134	21	281	38	48.5	2	12.3	.2
1950	170	25	337	42	78.3	8	17.0	.6
1951	176	15	404	31	97.4	6	18.4	.7
1952	166	15	402	37	113.4	5	16.2	.2
1953	212	19	452	37	131.7	5	19.8	.3
1954	212	24	431	39	136.5	8	18.4	.5

Delinquent on research? A good many architects, especially those whose feeling for open, light buildings undoubtedly has contributed to the pleasant profit picture of plate-glassmakers, are disgruntled over what they claim is backwardness of manufacturers in conducting research in construction glass. They complain that plate makers have not come through with a variety of shaded and tinted glasses that come anywhere near solving glare and heat problems.

Mies van der Rohe, father of skeletal design emphasis, is known to be prodding two plate glass makers toward producing big sheets in a variety of colors that will reduce infrared transmission well below the 33% limit characteristics claimed for most of today's heat-resisting plate glass.

Curtailment factors. Some architects, thinking ahead, have warned that office workers, squirming and squinting in hot, glary buildings designed mostly for appearance, may become antiglass, causing a swing away from big-glass designs. Often overlooked in the commotion over big windows and more and more glass is the use of smaller windows in several big air-conditioned buildings—Pittsburgh's Alcoa building and two aluminum-skinned buildings in New York are examples—and the use in a few industrial buildings of no windows at all, or at most, "psychological" windows, so workers will not feel completely caged in.

Whether in response to architects' clamoring, or otherwise, the glass industry has produced plenty of new construction products, and is broadening its research programs to develop even more. Some of the latest new building glasses: Pittsburgh's electrically welded, double-glazed window unit; Owens-Illinois' ceiling panels which pass sunheat in the winter, deflect much of it in the summer; L-O-F's tough, shatter-resistant plate glass, used in mental institutions, school windows and doors (it pulverizes rather than shatters when it breaks).



Joseph W. Molitor

School plan contest shows trend to higher design level

Judges said entries in *The School Executive* magazine's fourth better school design competition disclosed little "that was different . . . the excitement created by the new was largely lacking." But "the general quality level," they noted, "was the highest yet. . . . What the designs did show was honest effort to improve conceptions, refine earlier efforts and unify the quality of design throughout each building." They awarded five equal top honors to:

▸ Graves & Toy, Charlotte, N.C. for West Charlotte High (top cut): "Well-composed campus-type plan, designed on a good scale for youth . . . suggests easy maintenance though built at low cost."

▸ Eberle M. Smith Associates, Detroit, for a transportable four-classroom elementary school (side cut): "Ingenious solution which shows considerable study and research. Communities could borrow and lend these units to relieve shortages."

Lens Art Photo



▸ Ketchum, Gina & Sharp Hollow Tree Elementary, Darien, Conn. (AF, Dec. '54).

▸ Kelly & Gruzen, New York, for Passaic (N.J.) High (AF, March '54, *News*).

▸ Charles P. Colbert, New Orleans, for Phyllis Wheatley Elementary, New Orleans.

AFL leaders buttonhole congressmen, but look for few legislative gains

Fourteen hundred state and local leaders of the 19 major construction unions crowded into Washington's fashionable Mayflower Hotel ballroom last month to be briefed by AFL leaders from President George Meany down, and then fanned out over Capitol Hill to make their complaints and legislative wants known to their Congressmen.

After the union leaders had gone back to the 45 states from which they came, there was general agreement on the Hill and in the offices of the AFL Building and Construction Trades Dept. that the legislative conference —biggest yet—was a whopping success in getting construction labor's points across to Congress. But there was little optimism among union leaders that any but a small—but not necessarily minor—part of their wants would be translated into law.

Davis-Bacon revisions. What the unions want from Congress is embodied in bills introduced in the Senate by Earle C. Clements (D-Ky.) and in the House by John E. Fogarty (D-R.I.), one-time president of a Rhode Island bricklayers' local. One bill, which sent shudders running through employer groups in both commercial construction and housebuilding, would extend the Davis-Bacon Act to require contractors to pay prevailing area—usually union—wages on all projects made possible by federal loans, grants, insurance and lease-purchase arrangements. This would include single-family houses and roads built with federal aid. Construction union leaders have long had their eye on the 50% of housing workers who are not union members, and President Eisenhower's proposed $101 billion road program, they knew, could attract a big work force, much of it nonunion.

Also sought was extension of Davis-Bacon coverage to include contractor-financed health, welfare and retirement plans and cash allowances for workers' travel, a sizable item in open-country construction.

Taft-Hartley Act changes desired by building unions were the same ones passed in the Senate last year but turned aside in the House: legalization of contractor-union prehire contracts (in recognition of the impracticality of conducting union representation elections on every construction project), re-

continued on p. 25



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. . . states Mr. Robert S. Arnold, AIA Architect, Highland Park, Illinois (letter on request)

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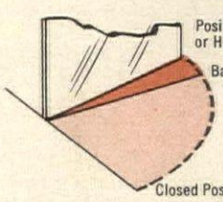

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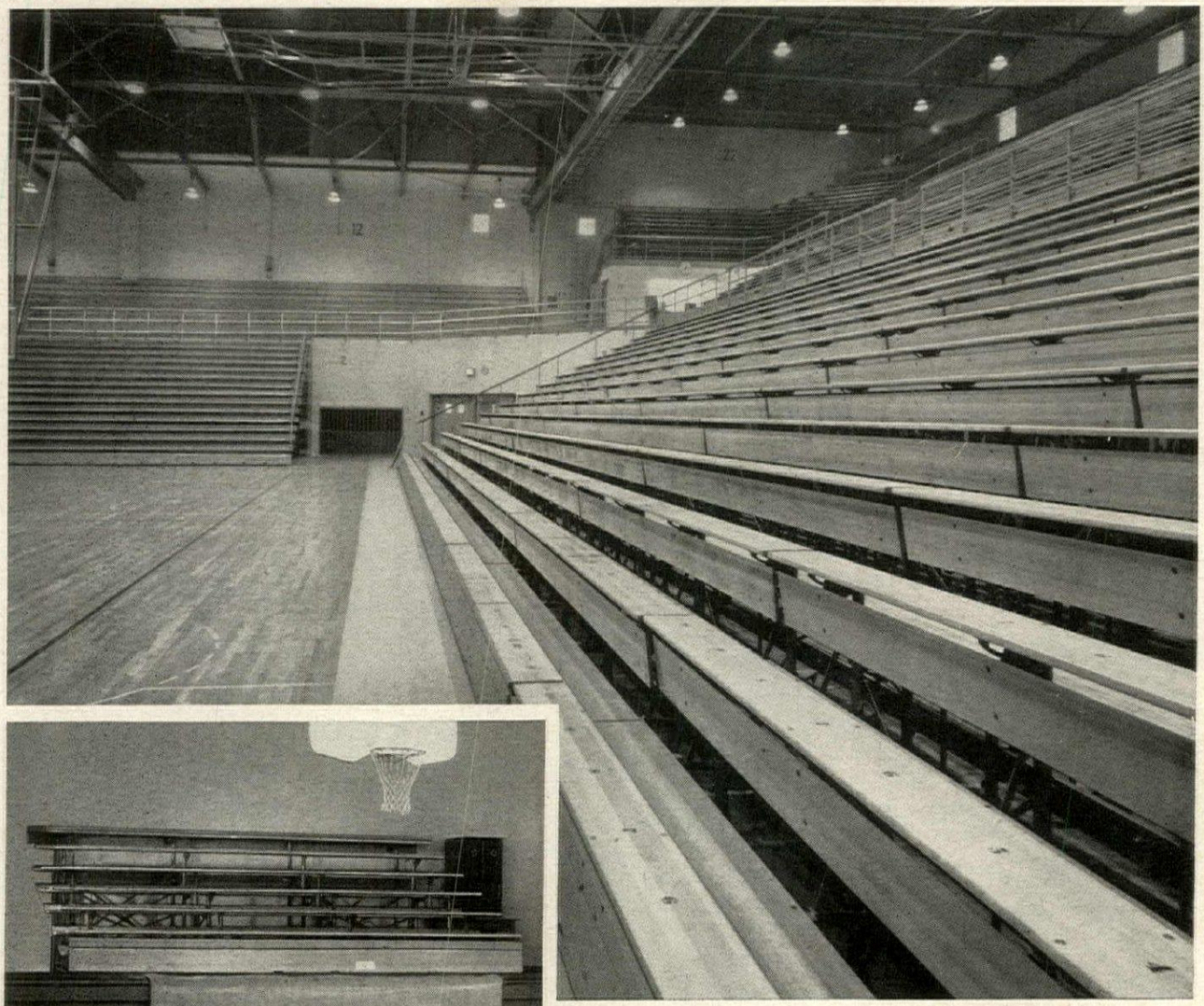

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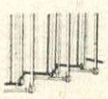

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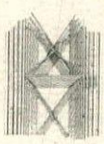

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duction from 30 to seven days of the waiting period after which an employee must join a construction union to keep his job on a union-shop project, and elimination of T-H Section 14B which allowed 19 legislatures, so far, to enact so-called "right-to-work" laws.

The realities. What building union leaders expected to get from Congress was another matter. Privately, they said they would pass up most of the Davis-Bacon changes if the law could be extended to cover federally aided roadbuilding. The counterthreat by contractor groups, who want Congress to make Davis-Bacon wage determinations subject to judicial review (instead of the prerogative of the Secretary of Labor), does not deter the top leaders of the building unions; they are willing to trade possible delays in the courts for a crack at organizing workers in the big future highway program.

Only the unbridled optimists among labor leaders expect any basic changes in the Taft-Hartley Act. The big labor drive to kill section 14B, for instance, has little chance of success for two reasons: it may be neutralized by a well-financed employer effort to extend state "right-to-work" laws, and southern Democrats in Congress, upon whose support labor must depend for repeal of any part of T-H, are from the very states where laws restricting union shops are prevalent.

A repetition of last year's congressional standoff already was shaping up: no House or Senate committee hearings on either bill were expected for at least a month.

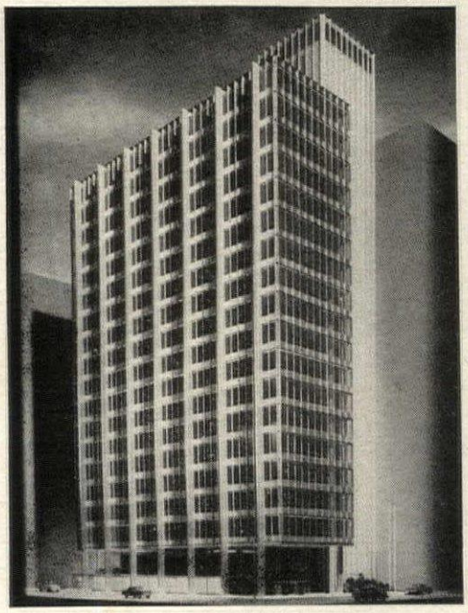
Inland Steel plans glass tower for Loop in Chicago; Carson Pirie Scott, a new store

Chicago's first major new Loop building in 20 years is likely to be a $6 million 19-story modern-design structure of glass and stainless steel to be started in the fall on the corner of Dearborn and Monroe Sts. for Inland Steel Co.

To dramatize the 10′ cantilever on each end of this structure, Architects Skidmore, Owings & Merrill are planning a recessed ground floor and mezzanine (without any stores or shops). Its main portion will have absolutely clear 58′ x 177′ floors, with all elevators, fire stairs, washrooms and utilities in a separate 23-story windowless stainless-steel tower about 50′ square. The bulk of the building will occupy only about 57% of its 120′ x 92′ site.

The entire main structure will be supported on seven pairs of steel columns (fireproofed and then covered with stainless steel) with a new application of torsional connections through 36″ spandrel beams. The latter will carry 16″ beams and a new type of cellular steel flooring that will house the complete heating and air-conditioning system and electrical and telephone raceways. The 14 primary columns will be about 2′ wide and will extend out about 4′ from the exterior wall, instead of causing any breaks in the interior wall lines.

© *Ezra Stoller*



LOOP TOWER BUILDING FOR INLAND STEEL

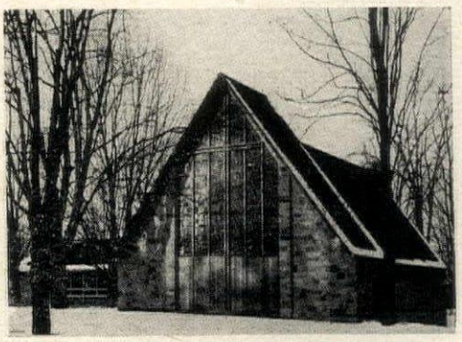
Litigation against the city was started last month to facilitate construction of a second modern glass and stainless-steel Loop office tower, also designed by SOM. This would be a $5- to $6-million 20-story building for the Harris Trust & Savings Bank (FORUM, Sept. '54), for which the owners first sought a zoning variance last May. After the zoning board of appeals and city council refused the variance, the bank went into Circuit Court to sue for a building permit. It claimed the 1942 ordinance limiting new Loop buildings to cubage not more than 144 times the area of the lot was unconstitutional, discriminatory and unfair.

Meanwhile the Loop also was promised a new modern department store building for Carson Pirie Scott & Co. that would cost from $3 to $5 million, depending on final plans. Withdrawing their $7.2 million offer to purchase from the Otto Young estate the leased building they occupy at State and Madison Sts., store officials retained Holabird & Root & Burgee to design modern air-conditioned quarters on the extensive Wabash Ave. property they control on the same block. It will tie into their Wabash-Monroe building. Another new connecting structure will provide a major entrance from State St.

Zeckendorf and Stevens given Grand Central agency job

To handle "all negotiations for development, sale or lease" of Grand Central Terminal and its many adjacent properties, the New York Central Railroad appointed as its agent last month Realty Developers William Zeckendorf and Roger Stevens. They will review and analyze for the railroad proposals submitted by all other potential developers, or may still make redevelopment propositions of their own to it in competition with any other offers. In awarding him the agency, the Central accepted an offer by Zeckendorf to leave the amount of his compensation entirely to the discretion of the railroad "after the fact of accomplishment."

Robert L. Sowers



CARTER'S ST. GEORGE EPISCOPAL CHURCH

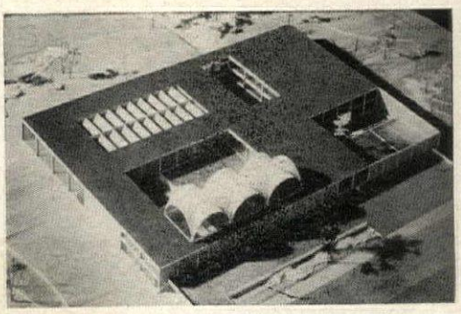
Contemporary structures win all awards of church guild

After contemporary designs won all the honors in the competition of the Church Architectural Guild of America, Canon Darby Wood Betts of New York's Cathedral of St. John the Divine, head of the five-member awards jury, said: "The basic principle underlying the decisions was that good church architecture is simply good architecture designed for church use. The jury was not guided by any preconceived style as representing 'church architecture.' . . . It felt the designs submitted in 90% of the cases represented the architect's awareness of the willingness of church members to take advantage of twentieth-century materials and techniques."

First award for churches for less than 300 persons: John A. Carter, Nashua, N.H. for St. George Episcopal, Durham, N.H. (see cut), which has a dramatic chancel window by Robert L. Sowers that also won the design and craftsmanship silver medal of the Architectural League of New York last month.

No first, second or third awards were made for churches for more than 300 persons, but for hypothetical (not completed or in use) churches the top prize was awarded to Paul Schweikher, chairman of Yale's department of architecture, for Grace Lutheran Church, Teaneck, N.J. (see cut). This $1 million structure to be started this fall will include a school, gymnasium and cafeteria separated from the main sanctuary (covered by concrete groin vaulting) by a series of inner courtyards within one huge rectangle.

New president elected in Cincinnati at the guild's joint conference with the church building bureau of the National Council of Churches of Christ in the USA: Architect Edward F. Jansson of Chicago. Harold Wagoner of Philadelphia was elected first vice president succeeding Jansson, Maurice R. Salo of New York second vice president.



SCHWEIKHER'S GRACE LUTHERAN CHURCH

for news about PEOPLE—*p. 29*

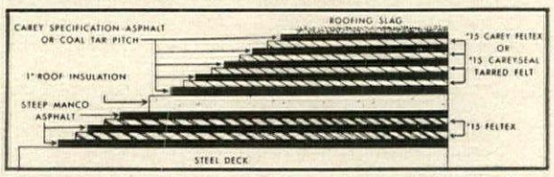
Most important developmen

FIRE-CHEX

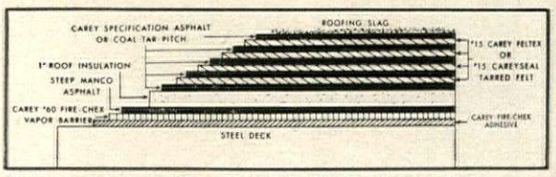


At the Carey Research Laboratories, this fire test of a conventional-vapor seal, with insulation and built-up roofing over steel deck, showed the dripping of asphalt from the vapor seal igniting as 1800° of heat builds up under the roof construction and melted bitumen flows through the joints in the deck.

Fire test of conventional-type built-up roof with new *Fire-Chex 1-ply Vapor Barrier* over the steel deck (see diagram). Here you'll note a *complete* absence of any dripping material and only slight burning of gases. Practically no fuel is contributed to the fire by vapor barrier.



Cross-section view of conventional-type 2-ply asphalt vapor barrier, insulation and roof.



Cross-section view of Fire-Chex type 1-ply asbestos-plastic vapor barrier, insulation and roof.

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In Carey Fire-Chex, you have a vapor barrier that does not contribute to fire or cause it to spread. Even when installed over a standard steel deck that becomes red hot in a fire, Fire-Chex remains intact. Does not release melting asphalt and excessive gases.

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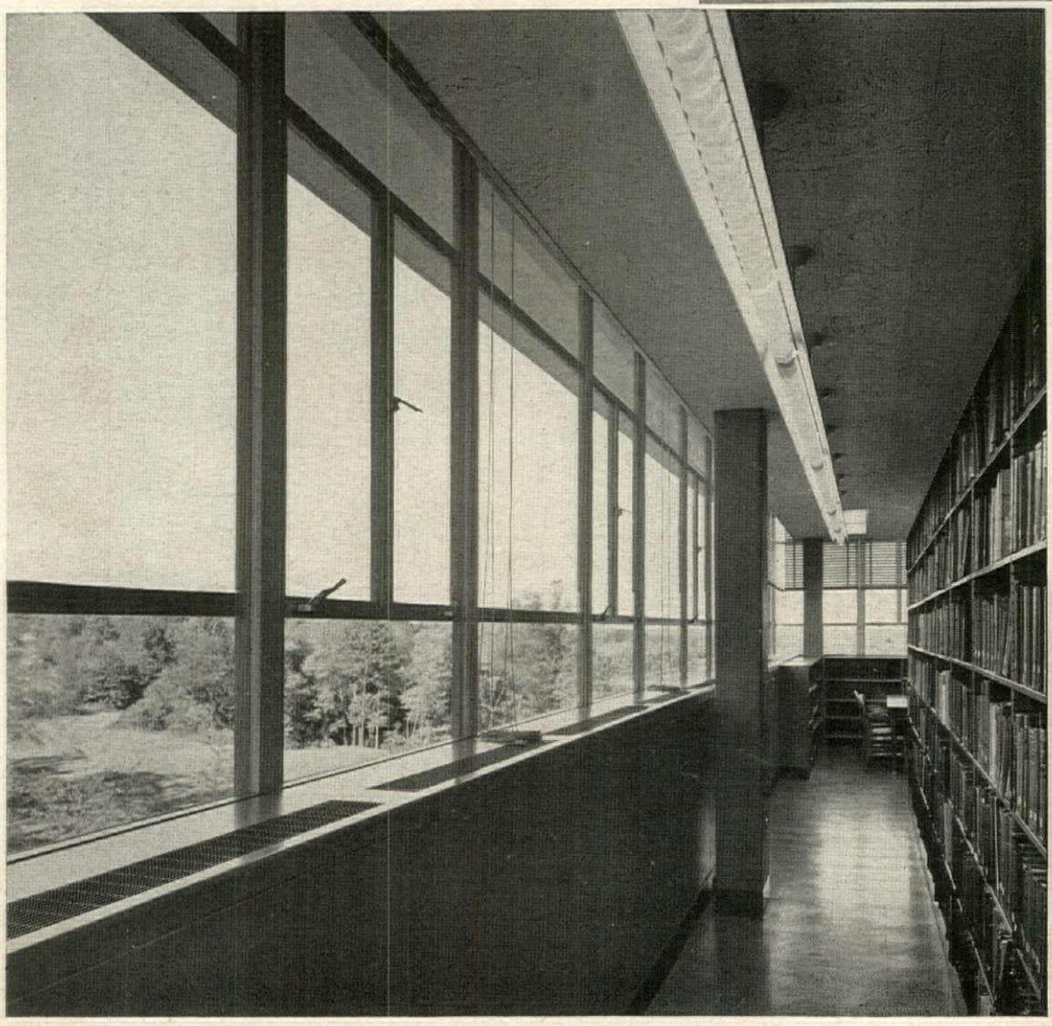
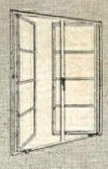


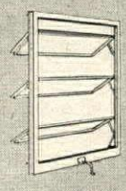
General Chemical Research Laboratory, Allied Chemical and Dye Corp., Morristown, New Jersey.
Architects: Fellheimer and Wagner, New York City.
Contractor: George A. Fuller Co. New York City.
Windows: Lupton Master Aluminum Projected, some fixed and some with ventilating sash.



LUPTON MASTER ALUMINUM PROJECTED WINDOW



LUPTON CASEMENT ALUMINUM OR STEEL



LUPTON ALUMINUM AWNING WINDOW



LUPTON ALUMINUM DOUBLE HUNG WINDOW

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PEOPLE

Smykal, Chicago's top slum fighter, finishes ahead in first year on job; Morris becomes president of Urban Land Institute

Lt. Gen. Richard Smykal, who organized a supply system for Vinegar Joe Stillwell's campaign in Burma, has never had a tougher assignment than he has today. He is Chicago's acting building commissioner, directing the city's war against slums. Smykal, 54, a congenial man with a steel nerve, is a national guard general in war, a small-scale house-builder in peace. He moved into his city hall office last April after his predecessor, **Roy T. Christianson,** quit under fire from the press and civic groups who charged he had failed to crack down on slum-makers. In his first year Smykal has:



SMYKAL

- Effected a team system so that slum buildings get simultaneous scrutiny by building, housing, plumbing and electrical inspectors.
- Begun in-service training for inspectors.
- Mechanized complaint and inspection paperwork.
- Persuaded the city council to boost his budget by nearly $1 million, the extra money coming from increased fees.
- Hired 96 inspectors and put them—and many old ones—under a civil service merit plan.
- Opened division offices to cut out inspectors' daily trips—often nearly an hour each way—to and from city hall.
- Begun legal tests of stiff new laws curbing slum operators who move into middle-aged neighborhoods.

Grumbling of the AFL Building Trades Council, which long dominated both policy and operating levels of the pre-Smykal department of buildings, became open hostility last December. **Robert P. Brooks,** assistant business manager of Local 134 of the International Brotherhood of Electrical Workers, ordered Smykal's electrical inspectors, all members of Local 134, to boycott slum-inspections teams and division offices. Smykal won the crucial showdown fight: his chief electrical inspector, **David J. Talbot,** torn between loyalty to his union and to Smykal, resigned, and Brooks, who had spoken not only for his union but also for associations of contractors and electrical suppliers, lost much of his support. Today electrical inspectors are cooperating.

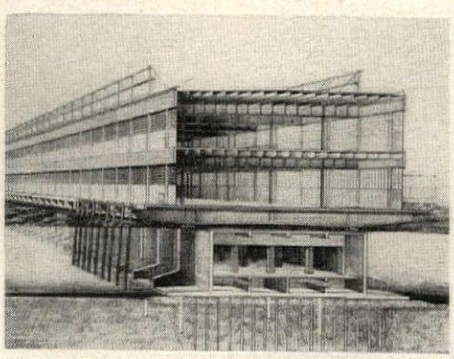
Chicago's new mayor, elected early this month, will feel plenty of pressure from the press and the Association of Industry and Commerce to keep Smykal on the job. His right to the $20,000-a-year commissioner's salary, challenged in a suit by the Illinois Association of Architects, would have to be clarified, for he is not a registered architect, a statutory requirement for the post. Outgoing Mayor **Martin H. Kennelly** recently appointed **William W. Benn** to a $10,000-a-year job as supervising architect under Smykal.

One of the weakest links hampering the efficient growth of large cities arises from the fact that planning commissions can usually recommend, but seldom have the power to execute development policies. Although the ideal solution to this problem may never be found, New York was stepping up its effort to reduce associated fringe difficulties. City Administrator **Luther Gulick** drafted **Henry Cohen,** the city planning commission's research director, and made him a management consultant with a brand new type of city government assignment, "responsible for organizing and coordinating social, statistical and demographic studies in the different city departments and relating them to management and planning policies of the city." In simpler, nonbureaucratic terms, Cohen's job was to get better research, "staff work" and coordination among various city departments so the planning, programming and execution of long-range projects took full account of the changing political, sociological, economic and taxable character of the city's inhabitants as well as merely its changing physical characteristics and current public works needs.



COHEN

AWARDS: Gold medals went to only three of six classifications in the annual exhibition of the Architectural League of New York: architecture, design and craftmanship, and engineering. **Skidmore, Owings & Merrill** were awarded the architectural medal for their glass-walled 5th Ave. branch of the Manufacturers Trust Co. in New York, and **Harry Bertoia** received the design and craftsmanship medal for his sculptural metal screen in the same building (FORUM, Dec. '54). The engineering gold medal went to **E. H. Praeger, Madigan-Hyland** for the new buoyant concrete-box Pier 57 in the Hudson River for the New York City department of marine and aviation (see cut). The prefabricated hollow concrete boxes that form the foundation for this unusual pier are not only fireproof and immune to marine borer attack, but provide valuable underwater parking and storage space.



BUOYANT CONCRETE-BOX DESIGN FOR PIER 57

ELECTED: **Warren L. Morris,** president of Ostendorf-Morris Co., Cleveland real estate firm, president of the Cleveland Real Property Inventory, and past president of both the Cleveland Real Estate Board and the American Institute of Real Estate Appraisers, as the eighth president of the Urban Land Institute; Los Angeles Architect **Henry L. Wright,** chairman of AIA's national committee on school buildings, as president of the California Council of Architects; Roanoke, Va. Architect **Henry B. Boynton** as president of the Virginia chapter, AIA.



MORRIS

NAMED: **Frederick K. Weyerhaeuser** of St. Paul, Minn., president of Weyerhaeuser Sales Co., as board chairman of Weyerhaeuser Timber Co., parent firm, succeeding **Laird Bell,** 71, Chicago lawyer and civic leader; **Walter Isard,** associate professor of regional economics at M.I.T., as director of a five-year study in the city and regional planning department of M.I.T.'s School of Architecture and Planning of ways to increase efficiency in the use of US human and natural resources, sponsored by the Ford-Foundation–financed Resources for the Future, Inc.; **David C. Slipher,** since 1945 technical director for two big West Coast house-builders, and **Martin Meyerson,** associate professor of land and city planning at the University of Pennsylvania, as field service director and research director of the American Council to Improve Our Neighborhoods (ACTION).

DIED: **Albert F. Heino,** 50, airport design authority and initiator of AIA's national honor awards program, Feb. 12, in Dolton, Ill.; **Timothy G. Griffin,** 69, inventor of the Griffin Wellpoint system of dewatering foundation sites, president of Griffin Wellpoint Corp. and Griffin Equipment Corp., Feb. 21, in Yonkers, N.Y.; **John G. Little,** 74, San Francisco structural engineer, building inspection superintendent for the City and County of San Francisco and consulting engineer for the Golden Gate Bridge District, Feb. 26, in San Francisco; **Christian G. Norman,** 87, a founder in 1903 of the Building Trades Employers Assn. of New York City, and the chairman of its board of governors (1921 to 1948) March 17, in New York.

for news about TRENDS—*p. 32*

In buildings that mak

– IT'S PLASTER

Lever House, New York, N. Y.
Architect: Skidmore, Owings & Merrill, N. Y., N. Y.



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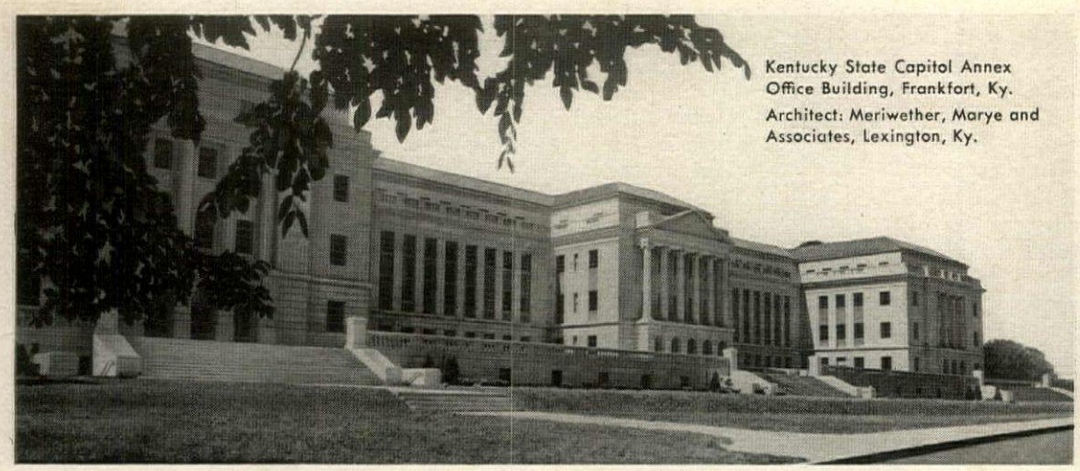
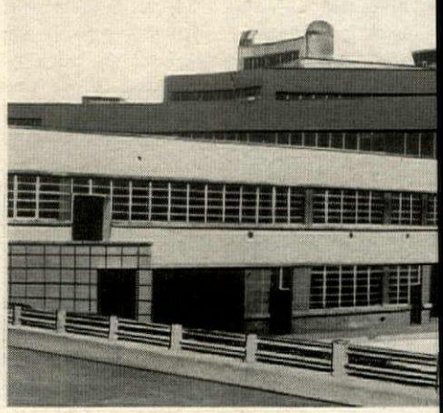


Kentucky State Capitol Annex Office Building, Frankfort, Ky.
Architect: Meriwether, Marye and Associates, Lexington, Ky.



architectural news

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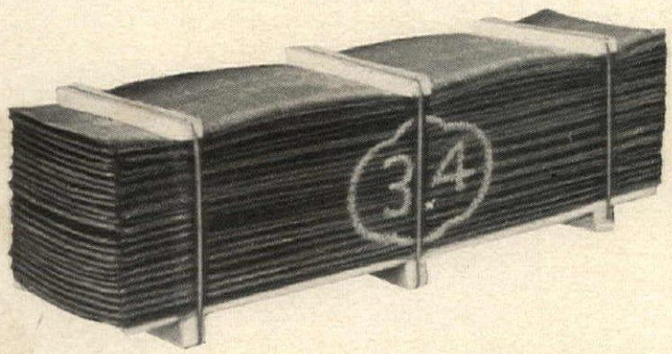

What do these four diverse building projects all have in common? Smooth, crack-free plastered walls . . . walls that will keep their trim, sleek look for years because they all have a firm foundation of Wheeling Metal Lath. But Metal Lath has an economy side, too. Just see the page at the left for solid saving reasons. You'll see why Wheeling Metal Lath and plaster play such an important role in so many buildings that make architectural news.

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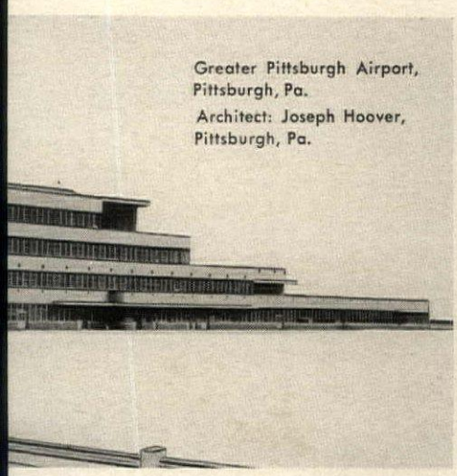
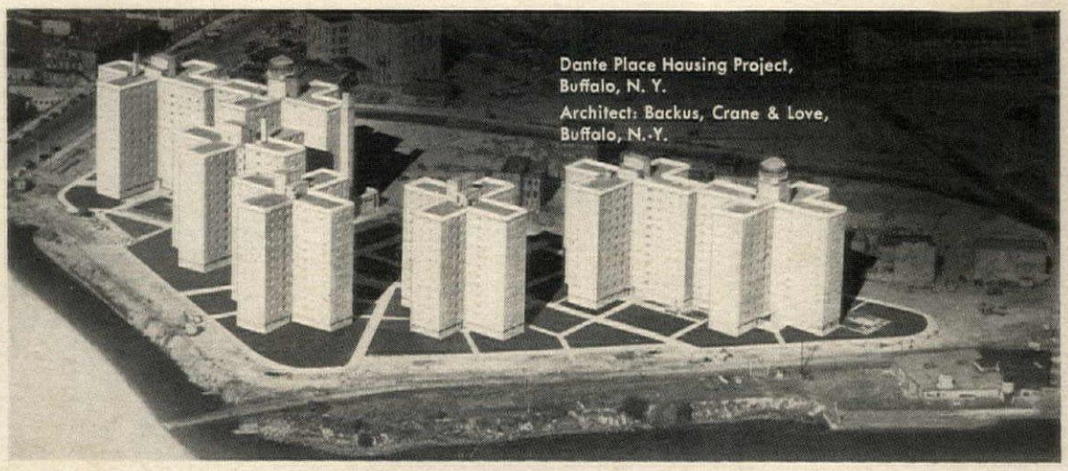


Greater Pittsburgh Airport,
Pittsburgh, Pa.
Architect: Joseph Hoover,
Pittsburgh, Pa.



Dante Place Housing Project,
Buffalo, N. Y.
Architect: Backus, Crane & Love,
Buffalo, N. Y.

TRENDS

Steel output soaring after slump that hit 1954 earnings; upturn ends two-year slide in unfilled structural orders

Near boom conditions developed in the steel industry during the first quarter, a situation that seems to have surprised the industry as much as anyone else. Production reached a two-year high, running at an annual rate of 116 million tons, compared to the 1954 full-year level of 88.3 million tons. New orders also rose to a two-year peak and for fabricated structural steel, the backlog of unfilled orders turned upward after two years of almost uninterrupted decline (see chart).

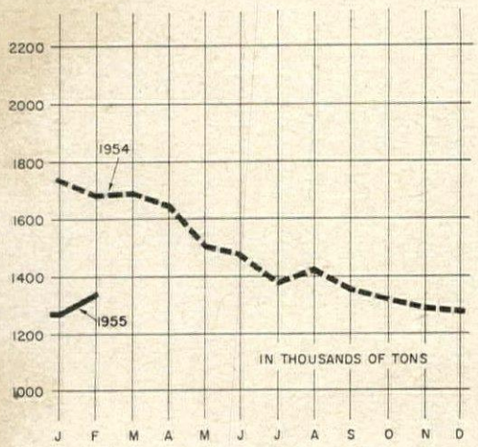
Current steel activity was even more marked when contrasted with the comparative doldrums of 1954, reflected in the earnings of several of the major producers (see table). Only Inland Steel showed a gain.

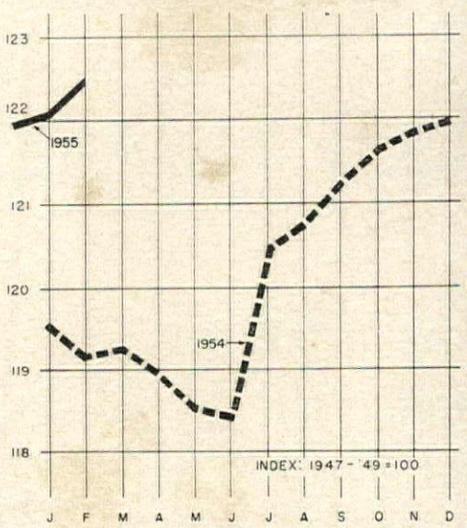
While the recent upsurge in production was attributed largely to auto and appliance industry buying, construction demand was also an important factor. As structural steel orders began their seasonal increase, the American Iron and Steel Institute recently pointed out that construction and agricultural demands are causing several producers to expand investments in continuous galvanizing equipment.

Outlays for plant improvement and expansion generally have continued on a high level throughout the steel industry. Last year $680 million was spent, and it is estimated another $695 million will be expended in 1955. US Steel alone spent $227.4 million in 1954; Bethlehem has $200 million worth of expansion authorized or in the works; Inland's $30 million program last year included a start on the installation of facilities for producing wide-flange beams —a program designed to increase Inland's share of the construction market.

In the midst of present prosperity, however, there were two disquieting factors: one is a virtual certainty that the Steelworkers Union will seek a wage rise this year—ranging anywhere from 8¢ to 12¢ an hour. And, in US Steel's annual report, chairman B.F. Fairless recommended that the government liberalize its tax allowance for depreciation. It expects steel and other industries to continue making high investments for expansion and modernization programs. "Continuance of present tax policies in respect to wear and exhaustion of equipment," he said, "automatically guarantees something of a future crisis. It could result in forcing higher prices for steel."

UNFILLED STEEL ORDERS



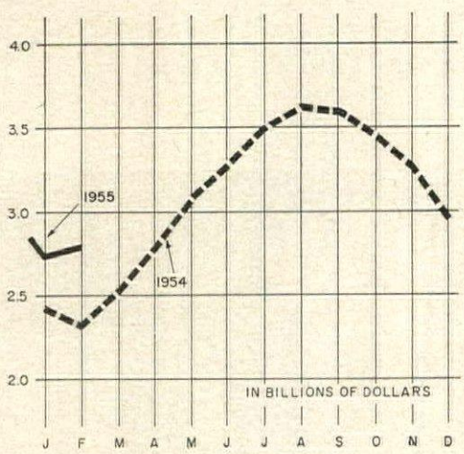


MATERIALS PRICES, measured by BLS' wholesale index, hit another new peak in February. An 0.4 point gain brought it to 122.5, 2.8% above Feb. '54. Increases in lumber and concrete offset declines in asphalt roofing and millwork.

Construction expenditures running 13% ahead of 1954 rate

(millions of dollars)	Feb. '55	First two months 1955	1954	% ±
PRIVATE BUILDING				
Residential	1,034	2,145	1,574	+36
Nonresidential*	547	1,088	960	+13
Industrial	184	369	355	+4
Commercial	197	385	321	+20
Religious	53	108	83	+30
Educational	39	81	77	+5
Social and recreational	18	36	32	+13
Hospital; institutional	29	57	52	+10
Miscellaneous	27	52	40	+30
Public utilities	294	596	591	+1
*PRIVATE TOTAL	1,986	4,047	3,347	+21
PUBLIC BUILDING				
Residential	22	45	71	—37
Nonresidential	312	642	699	—8
Industrial	77	165	283	—42
Educational	170	345	300	+15
Hospital; institutional	23	47	46	+2
Military	76	158	142	+11
Highways	110	255	255	0
Sewer; water	70	147	137	+7
*PUBLIC TOTAL	650	1,376	1,443	—5
*GRAND TOTAL	2,636	5,423	4,790	+13

* Minor components not shown, so total exceeds sum of parts.



CONSTRUCTION SPENDING in February totalled $2.6 billion, a record for the month and 12% above Feb. '54. The first 2-month total also was a new high, 13% above a year ago. While spending in several nonresidential classifications was far above Feb. '54 levels, the biggest gain was in expenditures for new dwelling units—up 41% over last year. A record of 90,000 new units was started—2.3% above January and 19.7% over Feb., '54.

COMPANY EARNINGS

(thousands of dollars)

Company	Net profit 1954	Net profit 1953	% Change
MATERIALS MANUFACTURERS			
US Steel	195,237	222,088	—12.1
Bethlehem Steel	132,837	133,948	— .008
Westinghouse	84,594	74,323	+13.8
Inland Steel	41 287	33,867	+21.9
Weyerhaeuser	35,510	36,751	— 3.4
US Gypsum	32,371	19,559	+65.5
Johns-Manville	16,656	19,661	—15.3
National Gypsum	13,144	7,821	+68.1
Armstrong Cork	11,914	9,265	+28.6
Sherwin Williams[a]	10,643	9,970	+ 6.9
Otis Elevator	9,623	8,653	+11.2
Lehigh Cement	7,959	6,308	+24.6
Carrier Corp.[b]	6,863	6,107	+12.3
Certain-Teed Products	5,316	3,941	+34.8
Flintkote	5,096	5,032	+ 1.3
Masonite[a]	3,607	3,671	— 1.8
Celotex[b]	3,203	3,025	+ 5.9
Ruberoid	4,629	4,576	+ 1.2
Lone Star Cement	3,064	2,673	+14.6
Devoe & Raynolds[c]	1,334	1,687	—20.9

(For glass company earnings see story, p. 17.)

Company	Net profit 1954	Net profit 1953	% Change
CONSTRUCTION FIRMS			
Morrison-Knudson*	5,559	5,761	— 3.5
Merritt-Chapman & Scott	3,212	3,495	— 8.1
Raymond Concrete Pile	2,654	2,404	+10.4
Arthur G. McKee[p]	1,800	2,498	—27.9
Utah Construction[b]	1,116	2,110	+47.1
Arundel	931	1,015	— 8.3
George A. Fuller.	661	682	— 3.1
Turner Constr.	629	346	+81.9

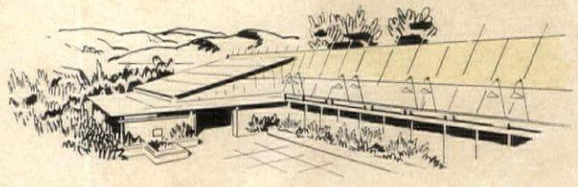
[p] Preliminary
[a] Year ended Aug. 31
[b] Year ended Oct. 31
[c] Year ended Nov. 30
* And domestic subsidiaries consolidated, including H. K. Ferguson

NEWS *continued on p. 38*



Corrulux®

SOLVES A PROBLEM FOR FRANK LLOYD WRIGHT



For uniform, effective, and dramatic daylighting of his famous exhibition "Sixty Years of Living Architecture," Mr. Wright chose lightweight, shatterproof roof panels of translucent Corrulux Maxlite.

For your own exacting daylighting requirements, investigate this new building material. Corrulux in thousands of installations has proved superior in performance and practical from the point of view of construction costs. For complete details, write L·O·F Glass Fibers Company, Department "C" P. O. Box 20026, Houston 25, Texas.

In stores, restaurants, hotels, institutions...

New, Versatile Consoweld 10

assures interior walls that please clients!



Color and beauty, style, easy maintenance, low first cost—you get these advantages with Consoweld 10 on interior walls. Consoweld 10—the new 1/10-inch-thick plastic laminate—can be applied directly over sheathing-grade plywood, gypsum lath, even over cement or cinder block. Carpenters can easily handle a Consoweld 10 installation using mastic-type adhesives and . . .

Consoweld Twin-Trim® Matching Mouldings, which make possible unbroken expanses of pattern and color in large areas.

For horizontal surfaces, use either Consoweld 10 or Consoweld 6, the widely used conventional 1/16-inch laminate.

Consoweld is a high-pressure thermosetting laminated plastic manufactured in a wide selection of patterns, colors, wood grains, and marbles. Consoweld is produced in two thicknesses and a wide variety of panel sizes.



Mail coupon below for folder showing the complete range of Consoweld patterns, color-tuned and preference-tested by Color Research Institute of America.

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the nation's finest plastic surfacing

...good for a colorful lifetime







Consoweld Corporation
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AF-45

Please send me new Architectural File insert, reproducing all Consoweld colors and patterns and giving additional technical data.

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Vina-Lux .. a finer flooring for superior schools



Kuehne, Brooks & Barr, Architects, Austin, Texas



Better schools need better floors. Vina-Lux is designed to meet that requirement. It is an effective answer to the need for a better performing resilient floor for modern school houses.

Vina-Lux combines the virtues of vinyl resin and asbestos fiber. The result is an exceptionally smooth-surfaced floor with a remarkable resistance to abrasive wear in fresh new light-reflecting colors. Its vinyl resin binder makes it greaseproof and highly resistant to acids and alkalis. It is quiet and safe to walk and work on and its easy-cleanability is a boon to school custodians.

We honestly believe Vina-Lux will out-perform any other type of resilient flooring in school houses on a dollar and cents basis. Over a period of years it costs less per square foot per year.

School folks are mighty enthusiastic about this new, more efficient school flooring. Get all the facts about Vina-Lux for school use — ask us for a copy of the new Vina-Lux brochure — complete with color chart and factual data.

Vina-Lux®

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FROST BANK BUILDING • SAN ANTONIO, TEXAS
MAKERS OF VINA-LUX • AZROCK • DURACO • AZPHLEX



IDEA STARTER! Take a tip from the week-end handyman! He's discovered a new world of decoration and utility in Fiberglas*-reinforced Paneling. From simple sun screens like the one above, he's gone on to room dividers, carports, patios, greenhouses—setting standards by which your *new* homes will be judged. Consider this versatile paneling. Although it looks like translucent glass, it can't shatter. Despite its light weight, it's strong and weatherproof. It never needs painting because the color goes all the way through. Available in flat and corrugated sheets. Get all the details. Write for new A. I. A. folder. Owens-Corning Fiberglas Corporation, 598 Madison Avenue, New York 22, N. Y.

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FIBERGLAS

Owens-Corning supplies Fiberglas reinforcement to panel manufacturers. It does not manufacture paneling itself. *T. M. Reg. O-CF Corp.



The pacesetter in hardwood cabinetwork since 1893!

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TO FINISH



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Mutschler Brothers Company was founded just a few years after the B & O railroad first laid its tracks through the hardwood forests of northern Indiana.

And, today, descendants of the area's pioneer Dutch and Swiss woodworkers are still producing with pride only the finest of hardwood products. This heritage of manufacturing quality and skill is complemented by the technical knowledge of Mutschler sales engineers, who are qualified to advise school boards and their architects on the very latest in school department layouts.

If you have a building or remodeling project in mind for your school system, it will pay to talk with a Mutschler representative. Let him explain, without cost or obligation, how schools of the nation are getting more for their money with Mutschler.

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Nappanee, Indiana

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AMERICAN SEATING CO.—Philadelphia 30, Pa.; Pennsylvania, New Jersey (south) Delaware

SOUTHEAST and SOUTH
SOUTHERN DESK COMPANY—Hickory, N. Carolina; Maryland, West Virginia, Virginia, North Carolina, Tennessee, Mississippi
AMERICAN SEATING CO.—Atlanta 3, Georgia; South Carolina, Georgia, Alabama, Florida
ALL STATE SUPPLY CO.—Little Rock, Arkansas; Arkansas

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HALDEMAN-LANGFORD CO.—St. Paul 4, Minnesota; Minnesota
V. A. STUMP—Middleton, Wisconsin; Wisconsin
P. O. WILKINS—Dearborn, Michigan; Michigan
J. S. LATTA AND SON—Cedar Falls, Iowa; Iowa
L. P. REIGER COMPANY—Bellwood, Illinois; Illinois
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AMERICAN SEATING CO.—Los Angeles 3, California; California (southern)
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BUSH UNITS WITH ALL COPPER WATER SURFACES

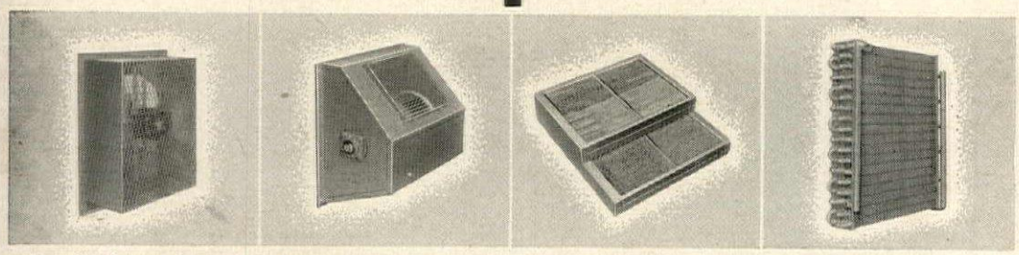
Here at last is a line of high efficiency water-savers built to last *indefinitely*. ALL WATER SURFACES ARE OF COPPER. And because copper cannot rust or rot, these Bush units provide uninterrupted, trouble-free service for years and years.

Complete standardization of parts permits a 4-way flexibility never before available. With copper coil installed it's an evaporative condenser. Substitute the copper decking and it's a cooling tower. And either type of unit can be arranged with blower fan or propeller fan assembly.

Cooling tower or evap, you'll be amazed at the compact size of these Bush units. Arranged as the CDT cooling tower or IEC evaporative condenser, shallow depth of all copper decking or all copper Inner-Fin coil provides high capacity with minimum bulk. Reduced static pressure and low fan horsepower assure quiet, economical operation.

Available in a wide range of models to meet demands of commercial, residential and industrial installations.

Request Bush Bulletin #830, containing complete information and specifications.



Propeller fan can be used on unit arranged as either cooling tower or evap.

Blower fan can be used on unit arranged as either cooling tower or evap.

With ALL COPPER decking installed, unit is a cooling tower

With ALL COPPER Inner-Fin coil installed, unit is an evap.

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NEWS

Continued from p. 32

Wiring conference eyes big commercial market

The electrical wiring industry, which h done much to acquaint homebuilders a buyers with the need for adequate wiri turned some of its attention last month adequate wiring standards in multidwelli and commercial buildings.

J. O. Covington, manager of the Adequa Wiring Bureau of New York's Consolidat Edison Co., urged the National Adequa Wiring Conference in Chicago to exte "adequate wiring promotions to the apa ment field because those landlords a customers need your help." A Con Edis survey of 541 apartment buildings, he r ported, found 78½% were inadequate wired to supply the equipment owned by t tenants and 57% of these tenants expect to buy additional equipment. "It is o opinion," he said, "that adequate wiring w be installed in apartments . . . only if t public demands it. There is not sufficient i centive for builders to provide it. . . . W will have to convince [the public] that it a genuine benefit and worth its added co that is, rental."

W. R. Milby, assistant director of cu tomer service for Detroit Edison Co., to the conference of a projected booklet whi will promote rewiring in commercial buil ings. The booklet, expected to be availab through New York's Edison Electric Ins tute, will point up the reasons why rewiri of old commercial buildings is good busines will show how new developments in the wi ing industry (e.g. the use of outside co duits) will make the wiring job easier.

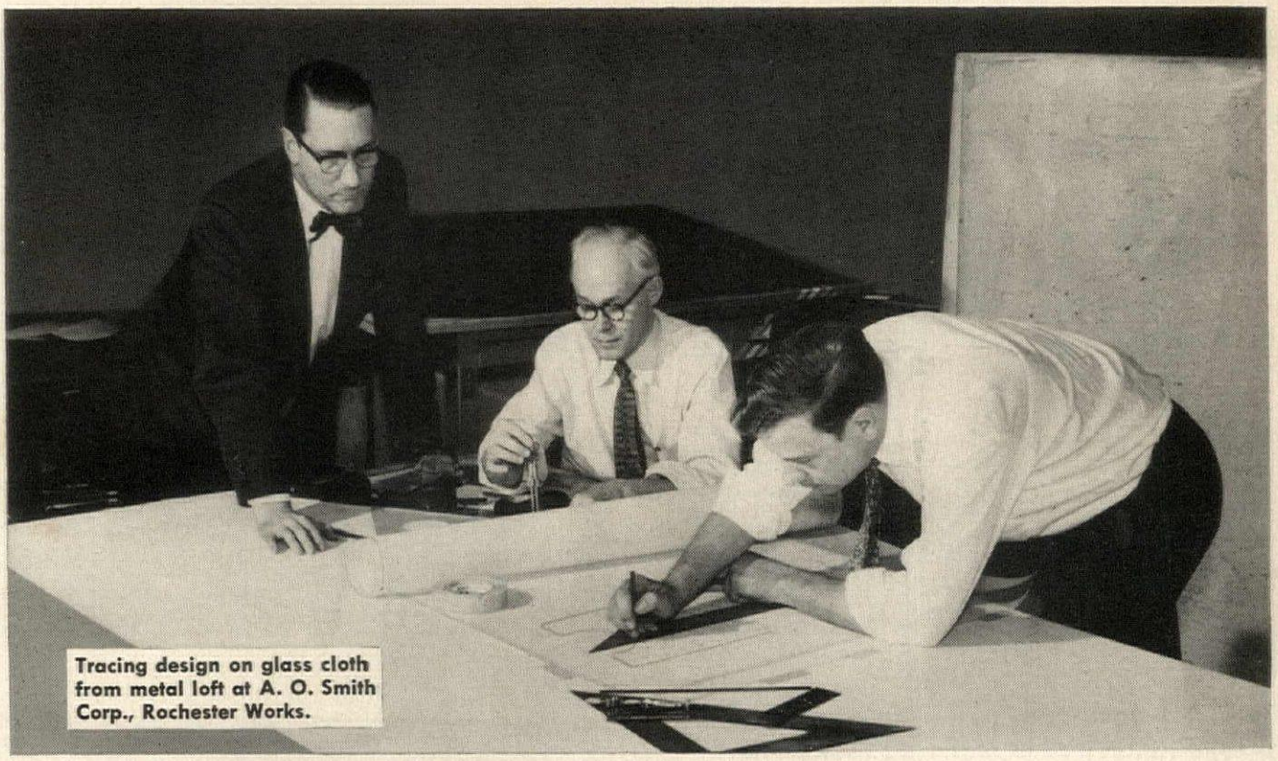
ASCE studies transit; opposes Pittsburgh move

Urban transit problems were one of th principal topics at the convention of th American Society of Civil Engineers in Sa Diego in February. There was little argu ment that mass transit systems, probabl subsidized, and improved beyond the stand ards in most American cities nowadays, ar still necessary to make city growth some thing besides a nightmare of congestion (For one argument see p. 206—ED.)

Two inescapable principles ran throug much of the talk: mass transit involve strictly the movement of people, not cars daily movement of people in cities is limite by time, not distance.

Mass transit plans for two big West Coas cities were talked about: George W. Burpee of Coverdale & Colpitts, New York consult ing engineers, described a proposed 46-mi monorail system linking much of metropol itan Los Angeles which, he said, could at tract enough people from their automobile to make it self-supporting. Rush F. Ziegen felder gave the engineers a peek into a big two-year transit study his firm, Parsons Brinckerhoff, Hall & MacDonald, also o New York, has been making of the San

continued on p. 4



Tracing design on glass cloth from metal loft at A. O. Smith Corp., Rochester Works.

Valuable originals protected against wear and tear

At the A. O. Smith Corp.'s Rochester (N.Y.) Works, large drawings are made exactly to scale on glass cloth. Since these drawings often cost several hundred dollars each, A. O. Smith naturally does not wish to expose them to possible damage during print-making and to the wear and tear of excessive handling. Instead, they use intermediates made on Kodagraph Autopositive Paper.



Costing but a few cents a square foot, Autopositive produces positive photographic prints directly from the original drawings — without a negative step or darkroom handling. It can be exposed in standard print-making equipment and processed in standard photographic solutions. (A. O. Smith uses a vacuum-frame printer, which accommodates drawings up to 8 x 4 feet in size.)

No worries with Autopositive intermediates — they turn out sharp, legible shop prints time after time. Their dense photographic black lines do not smudge or smear. And they can be run at uniform, practical speeds in the company's direct-process machine.

In addition, A. O. Smith keeps an "Autopositive File" showing the history of changes in all their drawings. Before each revision, an Autopositive intermediate is made. Later on, direct-process prints showing the complete story of each design can be made from the intermediates as needed.

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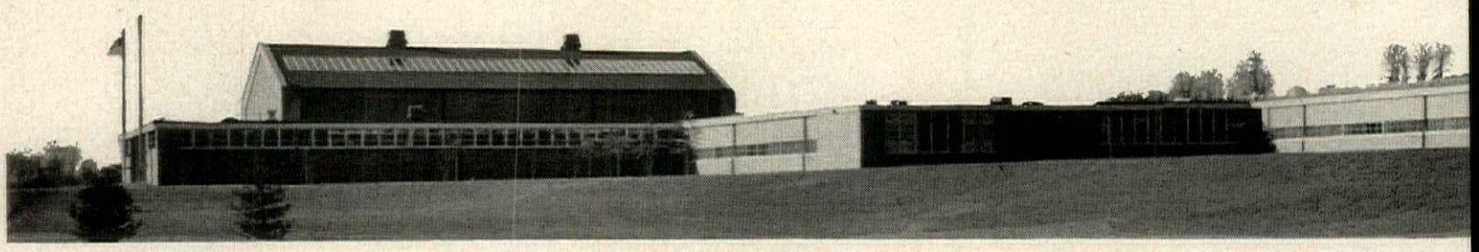


Why Honeywell Customized Temperature Control is a "must" in modern buildings

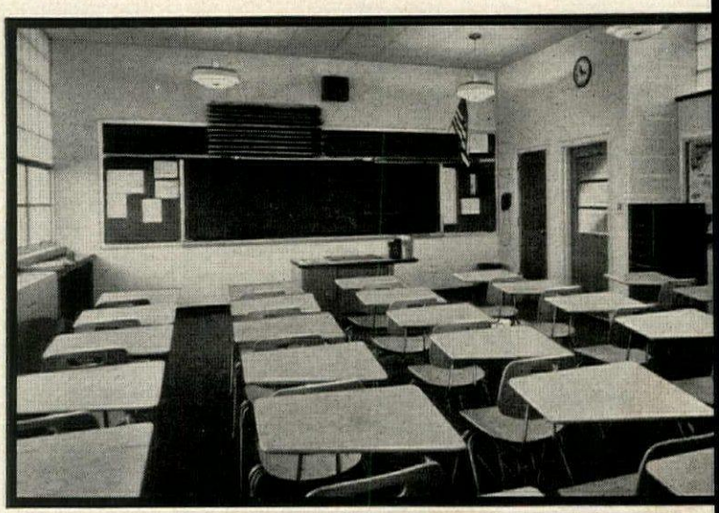
Providing modern comfort in a genuinely modern building presents no real difficulty if you approach your problem with genuinely modern control thinking—Honeywell Customized Temperature Control.

Take the case of the Cumberland Valley Joint High School, the Pennsylvania school that was picked as one of the twelve best designed and engineered schools in the U.S. last year.

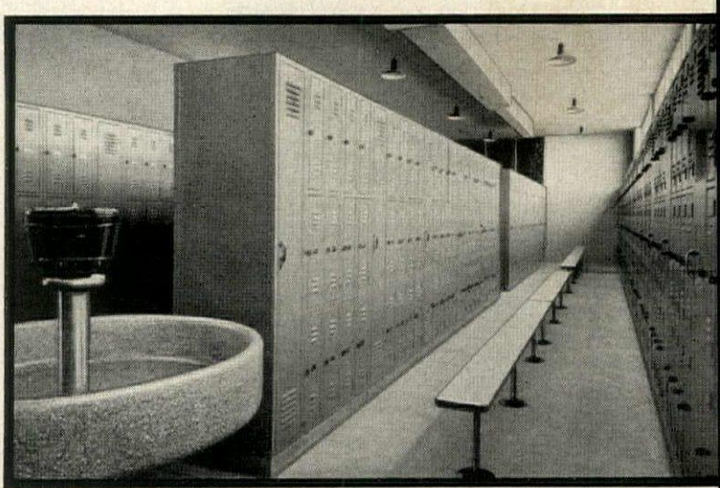
Strategically placed Honeywell thermostats (see floor plan) compensate for every possible occupancy, exposure and use comfort factor. In doing so, they help make students more alert—and make possible better learning.

The *techniques* used in the Cumberland school can help you provide the Indoor Weather required for your clients' facilities—for a Honeywell Customized Temperature Control installation is *designed to fit the needs of the building and its occupants*. This applies not only to heating and cooling, ventilating and humidity control, but to industrial control as well.

Only Honeywell can provide true "customized" control. Because only Honeywell manufactures all three types of controls—electronic, pneumatic and electric.



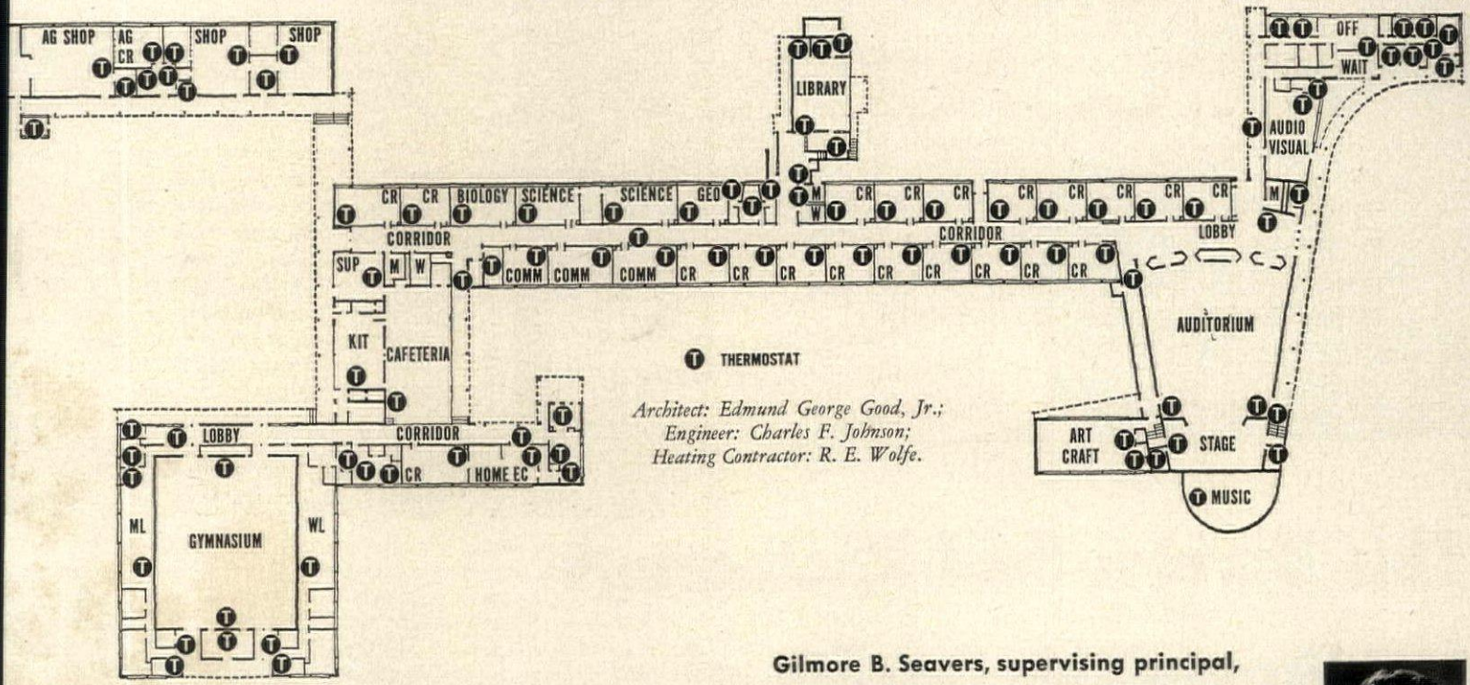
Exposure and occupancy comfort factors are the big control problems classrooms where the aim is to keep children attentive. The generous u of glass makes the heating load vary greatly because solar radiation varie How many students are in a room—and this varies, too—is quite importa in determining the heating load. But with a thermostat in each classroo control is precise—and students and teachers are always alert.



The "use" factor is the biggest problem in locker rooms. The heating ventilating load shifts abruptly with the in-rush or exit of students. Thermo stats easily meet this problem here, as well as variants of the "use" prob lem found in the school's gym, auditorium and cafeteria.



"Rambler" construction of Cumberland Valley Joint High School dramatically demonstrates need for Honeywell Customized Temperature Control.



Architect: Edmund George Good, Jr.;
Engineer: Charles F. Johnson;
Heating Contractor: R. E. Wolfe.

For comfortable, more productive temperature in new or existing buildings—of any size—specify Honeywell Customized Temperature Control

Whether it's a school, office, motel, hospital, factory—any building of any size—new or existing, Honeywell Customized Temperature Control can help meet your clients' heating, ventilating, air conditioning and industrial control problems.

You can give your clients more comfort and efficiency, and they'll save fuel, too.

For full facts on Honeywell Customized Temperature Control, and the economical Honeywell Periodic Maintenance Plan, call your local Honeywell office. Or write: Honeywell, Dept. MB-4-29, Minneapolis 8, Minnesota.

Gilmore B. Seavers, supervising principal, Cumberland Valley Joint High School, says:

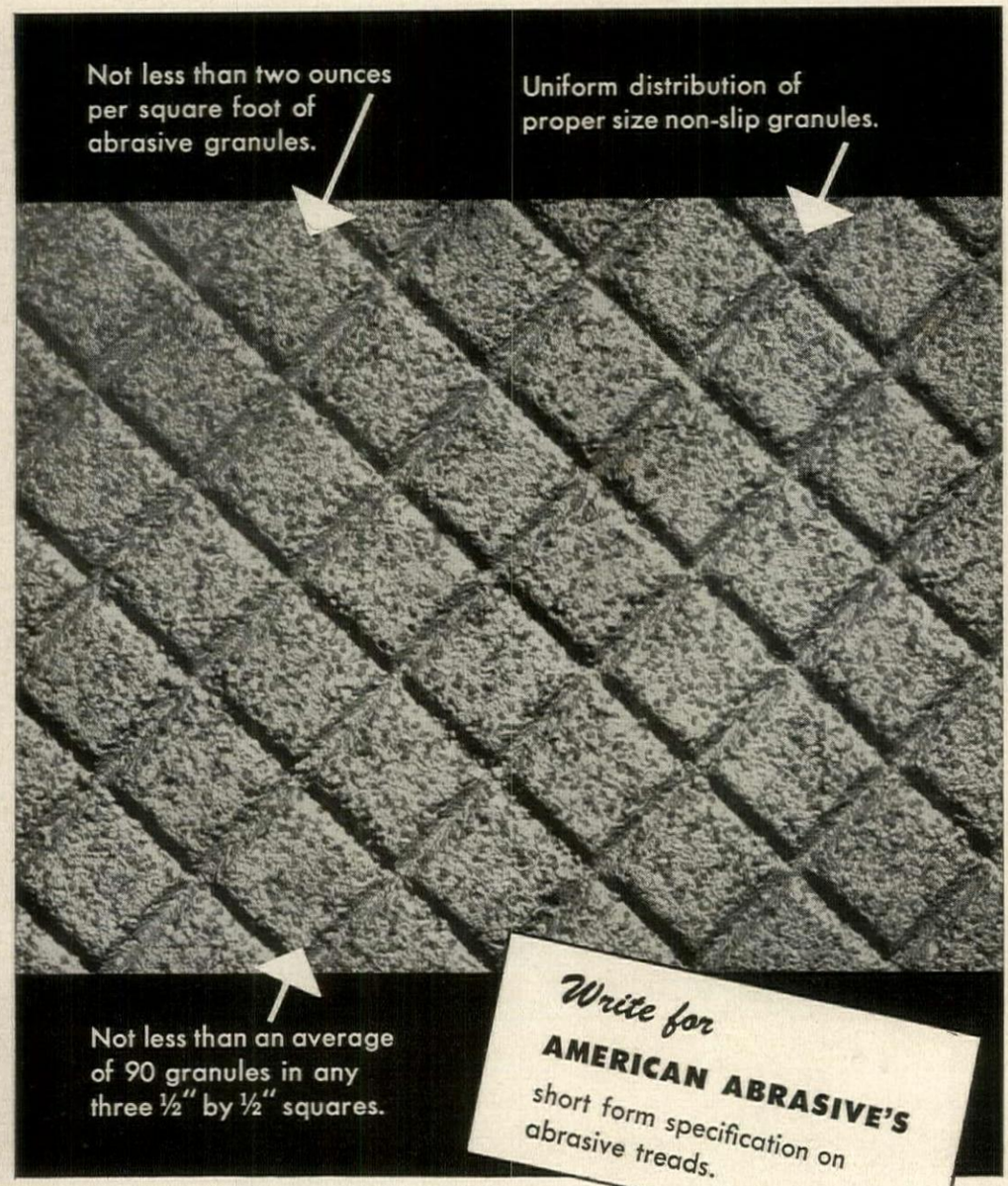
"It is our point of view that the thermal environment of a modern secondary school is a major factor in the interest of health, happiness and alertness of students and that the adequate and efficient control of a modern heating and ventilating system is therefore essential. Honeywell Customized Temperature Control has our sincere endorsement."



MINNEAPOLIS
Honeywell

Customized Temperature Control

112 offices across the nation



This Unretouched Photograph Proves the Quality of FERALUN

This is an unretouched photograph of a Feralun tread taken after acid treatment. (Paint is removed and acid is used to eat away the metal base so as to isolate the actual abrasive content of the tread.) Note the full and even distribution of abrasive — for greater safety, longer wear. In fact, American Abrasive has set the quality standards shown above. That's why Feralun abrasive treads cannot be equalled.

Feralun has provided lasting safety — free from maintenance for the past 35 years. Available as treads, thresholds, floor plates and elevator sills. Also in Bronzalun, Alumalun and Nicalun. See Sweet's Catalog 1955—12b/Am.

AB 126

AMERICAN ABRASIVE METALS CO. • IRVINGTON 11, N.J.

NEWS

Continued from p. 38

Francisco metropolitan area's future ne

The search of ASCE, and four other engineering societies, for a new home to place their outgrown building in New Y was still on as a result of action by ASC board of directors at the convention. Two fluential committees of the four societies recommended two different cities, New Y and Pittsburgh, as the engineering capi ASCE officials rejected the Pittsburgh rec mendation, made by the presidents of f of the five societies, leaving New York in a leading position.

Supermarkets bigger, more comfortable, survey shows

Supermarket operators, rubbing their ha over sales figures for 1954, were beginn to think last month that they had adde third ingredient to their successful sa formula (self-service + low per-unit pr = big sales). It began to look as though more supermarkets they built and the big and more elaborate were the stores, the l ger was their share of the nation's spend for food.

The figures were eloquent in their s plicity: a survey by *Supermarket Merch dising*, trade monthly, showed that 1,: supermarkets were built during 1954 a that the supermarkets' $18.2 billion chunk the country's $33.5 billion food bill v 13.1% higher than their 1953 share.

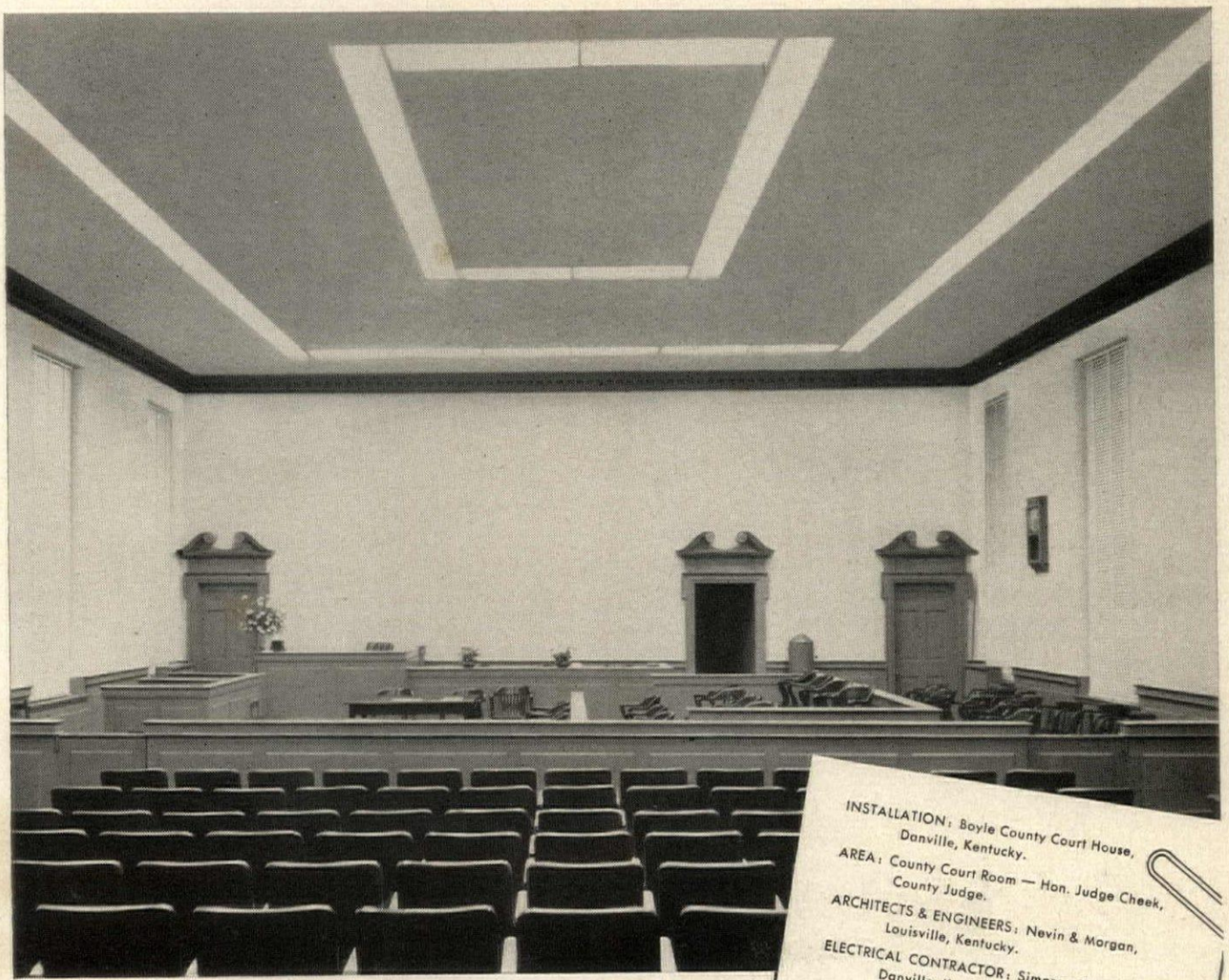
Other findings of the survey, which c ered 886 markets: the 1954 supermarket v bigger (12,110 sq. ft. average) than its 19 predecessor (11,950 sq. ft.); last yea model had more parking space (2.8 times store area) than its 1953 predecessor (times). Supermarketeers were finding su

continued on p.



IBM engineering building will have aluminum siding

International Business Machines Corp. started construction on two two-story interco necting buildings in Poughkeepsie, N.Y. whe 500 engineers will work on developing electron computers. Designed by Eliot Noyes & Ass ciates, the buildings will be of steel frame co struction with aluminum siding. The two stru tures, one 46,000 sq. ft., the other 49,000 sq. f will be connected by a double-decker passage 1,000 sq. ft. Each building will have individu controls for regulating the summer and wint air-conditioning systems. Contractor is Turn Construction Co. of New York.



INSTALLATION: Boyle County Court House, Danville, Kentucky.
AREA: County Court Room — Hon. Judge Cheek, County Judge.
ARCHITECTS & ENGINEERS: Nevin & Morgan, Louisville, Kentucky.
ELECTRICAL CONTRACTOR: Simpson Electric Co., Danville, Kentucky.
CEILING HEIGHT: 16 Feet, Approximately.
CEILING: Flat White.
WALLS: Light Green.
FLOOR: Brown Cork.
FIXTURES: Litecontrol No. 5828 2-lamp recessed louvered troffers and No. 5838 3-lamp recessed louvered troffers, using T12 96 slimline lamps.
SPACING: 8'-6" on centers.
INTENSITY: Approximately 37 footcandles average in service.

LITECONTROL'S

CASE OF THE MISSING SHADOWS

Examine this courtroom carefully. Note the even illumination . . . the ease of seeing — designed to keep keen eyes and wits alert through tedious hours of legal battle.

Now, count the shadows! That's right. Not even one. Light but not bright, every point in this room offers maximum visibility — without harsh contrasts or tiring glare.

Secret here is standard LITECONTROL fixtures No. 5828 and No. 5838, slightly modified to arrange in rectangles. Better to look at, better to look with, these beautiful fixtures also reduce maintenance to a minimum.

For light, looks, and low cost on your next lighting installation — make yours standard fixtures by LITECONTROL.

LITECONTROL *Fixtures*

KEEP UPKEEP DOWN

LITECONTROL CORPORATION, 36 Pleasant Street, Watertown 72, Massachusetts

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

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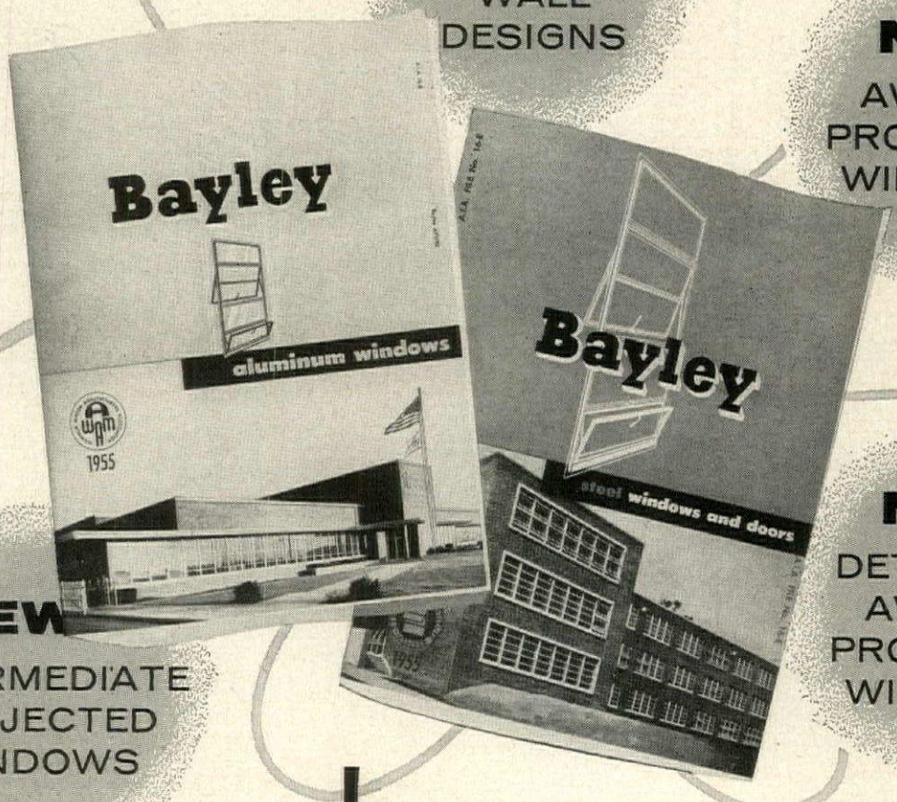

NEW INTERMEDIATE PROJECTED WINDOWS

NEW DETENTION AWNING PROJECTED WINDOWS

QUALITY APPROVED P-A2



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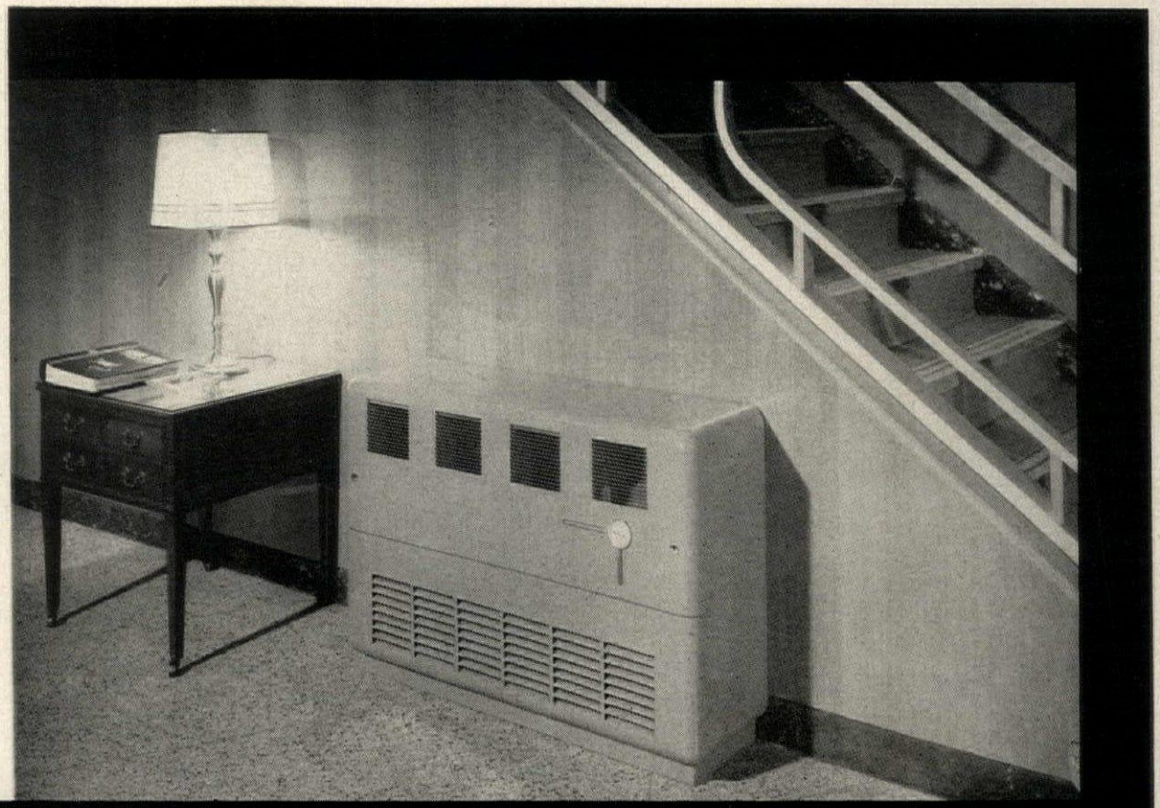

HERMAN NELSON

console

heater

infinite **variety...**

FLOOR INSTALLATION	WALL INSTALLATION	INVERTED INSTALLATION	CEILING INSTALLATION
Top Discharge	Top Discharge	Top Discharge	Top Discharge
Front Discharge	Front Discharge	Front Discharge	Front Discharge
Fully Recessed	Fully Recessed	Fully Recessed	Fully Recessed
Semi-Recessed	Semi-Recessed	Semi-Recessed	Semi-Recessed

Here at last is the heater that combines a *definite* graceful beauty all of its own with the highest standards of performance. You'll want to use the Herman Nelson Console Heater in stores, restaurants, institutions and offices—for it is almost *infinitely* adaptable. Whether installed on floor, wall or ceiling—whether recessed or inverted—it adds both a rich style accent and a new heating efficiency.

Quiet performance and surprisingly economical operation are other important "pluses" you'll value in the Herman Nelson Console Heater. Fan wheels turn with an almost imperceptible sound. Units are simple to install . . . operate with either steam or hot water. Mail coupon below for complete information.

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Now Ready!

Here are all the facts on the beautiful new Herman Nelson Console Heater!

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Please send me my free copy of Bulletin No. 727 immediately.

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There's one way to be sure when you specify plywood for form work . . .

LOOK FOR THE DFPA* TRADEMARK!

DFPA® TESTED QUALITY

When you specify grade-trademarked fir plywood, you're sure of material manufactured under the rigid industry quality control program and independently quality-tested by DFPA* to protect the buyer. Here are grades expressly made for form work:

1. INTERIOR PLYFORM—made with highly moisture resistant glue for multiple concrete form re-use.

2. EXTERIOR PLYFORM—made with waterproof glue for maximum form re-use.

3. OVERLAID PLYWOOD—glossy, smooth, tough resin-fiber surface fused to Exterior plywood. Gives greatest re-use plus smoothest concrete. EXT-DFPA® on panel means 100% waterproof glue.

EXT-DFPA

*DFPA—Douglas Fir Plywood Association, Tacoma, Wash. is a non-profit industry organization devoted to product research, promotion and quality maintenance.



NEWS

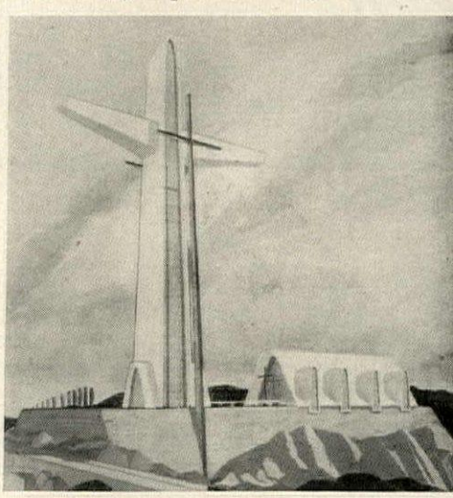
Continued from p. 42

urban shopping centers less attractive a sites; last year only 22% of the new supe markets were built in shopping centers, com pared with 40% in 1953.

Blockmakers mechanize, vary output to meet competition

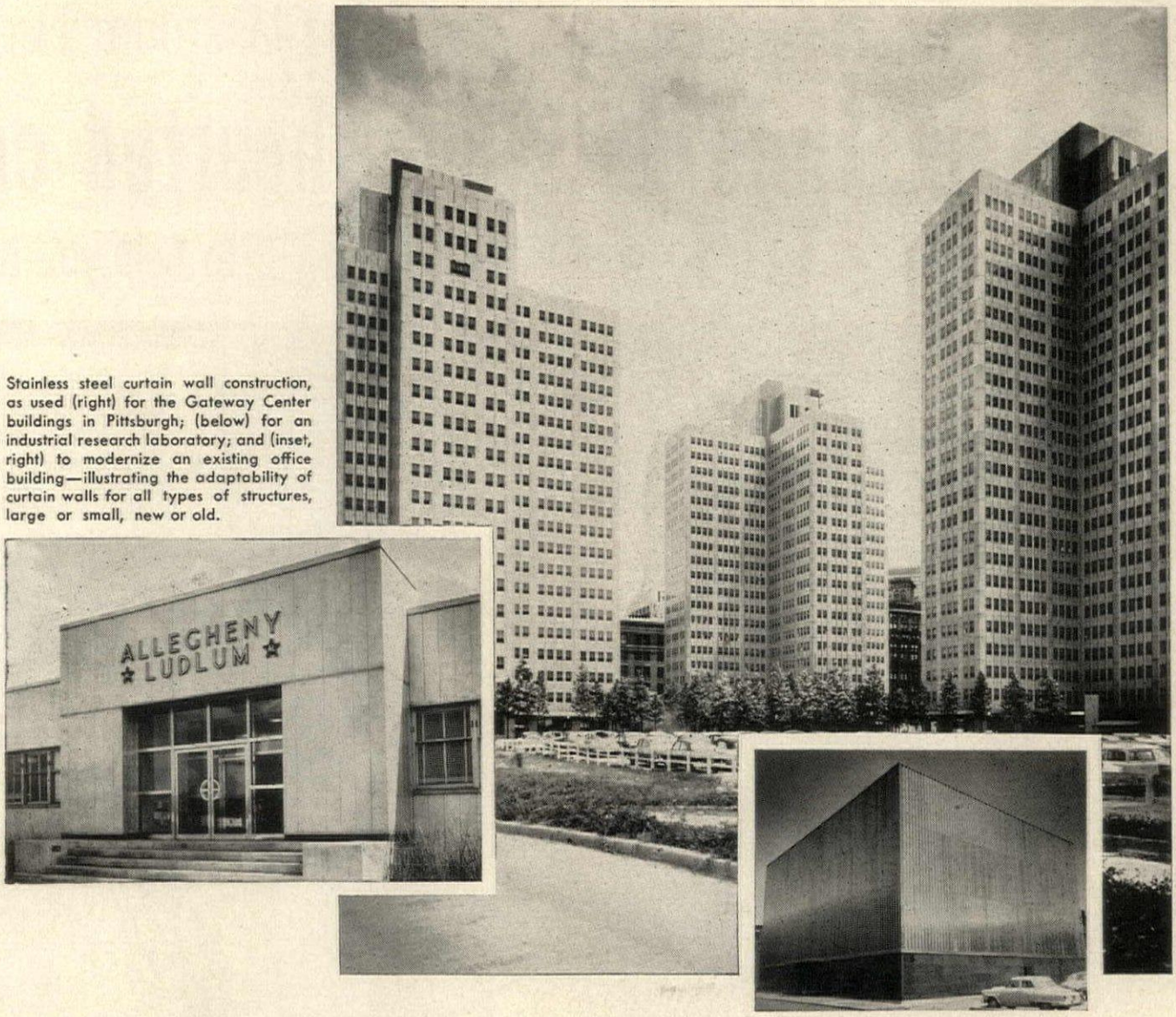
Competition from other materials has bee accelerating the trend toward more researc and mechanization in the masonry industry At the Mason Contractors' Assn. conventio in St. Louis in February, Carl Smithwick president of the National Concrete Masonr Assn., reported that where once a bloc producer would confine his output to a fe standard sizes, today they are made in "7 **to 100 varieties of shapes and sizes. . .** Much progress has been made in achievin a great variety of textures, colors an over-all architectural effects." He pointed ou that annual production has more than quad rupled in the past 20 years—to an annua average of 2.5 billion blocks—and noted tha the recent trend in architecture to a "one operation wall has contributed in no sma degree to the amazing growth of the con crete masonry industry."

The convention was told that a survey b *Masonry Building* magazine showed tha contractors now use from $500 to $1,700 o equipment (e.g. lift-trucks, conveyors) pe man, and that this may well increase to a much as $2,500 per man in a year or two.



World's tallest cross to be erected in southern Illinois

Construction will start in June on what its sponsors claim will be the world's largest cross, a 500'-high shrine atop Bald Knob Mountain in southern Illinois. Its $3 million cost will be met by a fund drive opened last month by the General Federation of Women's Clubs. Chicago Architects Barancik, Conte & Associates have yet to decide on materials. One possibility, to meet the wish that the shrine be visible over a 7,500 sq. mi. area, is a cross with glass walls on its east and west sides (see cut) and with neon lighting inside. Shrines, reading rooms and display areas will be included, and a US Forestry Service lookout station will be on top. When finished late in 1956, the cross will relegate to second place a 467'-high crucifix in Spain.



Stainless steel curtain wall construction, as used (right) for the Gateway Center buildings in Pittsburgh; (below) for an industrial research laboratory; and (inset, right) to modernize an existing office building—illustrating the adaptability of curtain walls for all types of structures, large or small, new or old.

YOU CAN BUILD FOR THE AGES . . . with a STEEL FOR THE AGES

"INFO" for Architects and Builders . . .

Write for your copies

1 "AL Structural Stainless Steels" —12 pages on stainless grades, properties, forms, finishes, standard "specs," uses and advantages.

2 "Stainless Steels for Store Fronts and Building Entrances" —40 pages of valuable data on examples and details. A1A File No. 26D.

3 "Stainless Steel Curtain Walls" —A 24-page progress report on methods. A1A File No. 15-H-1.

Address Dept. B-64

What's the building on *your* mind? Maybe a big multi-story structure—or an industrial building, like our own Research Laboratory (see above)? Maybe a plant office building—or a bank, store, school, power station, warehouse, hospital, hotel? Or perhaps it's an existing structure that needs a face-lifting—modernizing the exterior, as well as the interior.

In any case, you're sure to consider *curtain wall* construction, because it's the newest, most modern method. Packed with advantages over masonry, too: such as fast, all-weather installation, more space per floor; more floors on a given foundation, etc. And you'll be equally sure to realize that *stainless steel-surfaced panels* (again, see above) promise the best long-term protection for the building investment. No other surfacing material is at once as hard, tough, strong, and lastingly beautiful, as impervious to wear and as resistant to heat and corrosive influences as stainless steel.

That's just why Allegheny Metal generally figures to last longer and cost less in the long run—wherever you use it. Let us help you to realize its benefits. *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.*

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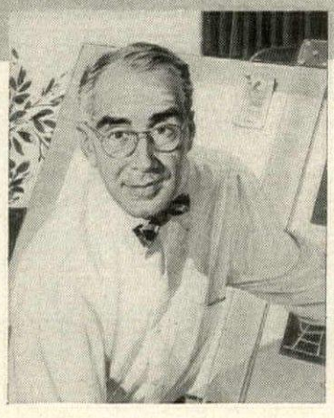
- **NEW BEAUTY AND DURABILITY** with Hard Wood or Plastic work surfaces!

The Mobile Samsonite *Open Front Desk* gives maximum storage space! Forms related unit with matching Pivot-Back chair.

New Samsonite *Pivot-Back Chair* has silent, rubber cushioned glides, kick-proof "spats". Pivot-back swivels *silently*, adjusts to individual body contours.



Design magic of *Russel Wright* only with Samsonite Classroom Furniture!

NEW CATALOGUE

New Samsonite Classroom Furniture Catalogue. Complete specifications on new Samsonite Classroom Furniture. Fully illustrated in color. Write Shwayder Bros., Dept. Q9, Classroom Furniture Division, Detroit 29, Mich. for a copy and for the name of your nearest distributor.



# of Tomorrow...**TODAY!**

and comfort into your classrooms

brighter, happier students!

reated by Russel Wright and Samsonite ..never before has there been classroom rniture as exciting and practical as this!

Paint-Box Colors make classrooms bright nd fun to work in! Tested on school offiials in 30 states, the colors mix or match armoniously, blend with every wall color!

Shaped for Tomorrow! The gracefully curved contours are posture-designed to build healthy bodies, make attention less tiring, learning more fun!

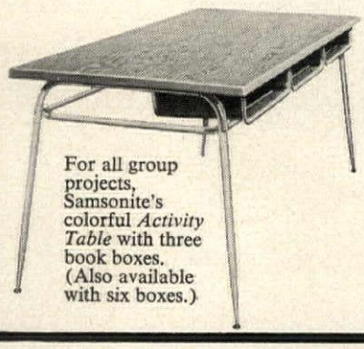
Miracle of Mobility! Mix these units, move them room to room, with never a conflict in color or contour.

Mischief-Proof! Aluminum "spats" on legs defy kick and mop marks! Desk-lid hinges and countersunk "bumpers" can't be loosened, even with a screwdriver!

It's Not Expensive! Samsonite actually costs *less*...because it's strongest, lasts longest!



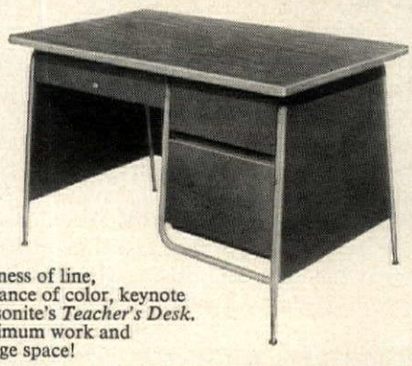
A new note in schoolroom urniture, Samsonite's *Circular Table* lends an nformal, non-institutional look to the classroom!



For all group projects, Samsonite's colorful *Activity Table* with three book boxes. (Also available with six boxes.)



Samsonite's colorful *Lift-Lid Desk* is noiseless, slam-proof, tamper-proof. Fingers can't be caught between lid and book box.



Newness of line, brilliance of color, keynote Samsonite's *Teacher's Desk*. Maximum work and storage space!



290 square inches of writing surface! New Samsonite *Tablet Desk Chair* plays multiple roles in classroom, meeting rooms, lunchroom.



Samsonite *Student Desk* can also serve as table. Several can be pushed together for group projects.



New Samsonite *Trapezoid Table* adapts in groups to endless combinations for varied schoolroom activities.



New rolling contours in Samsonite's *Unit Chair!* Available with Samsonite's new *swivel back*. Back swivels to cradle every body movement!



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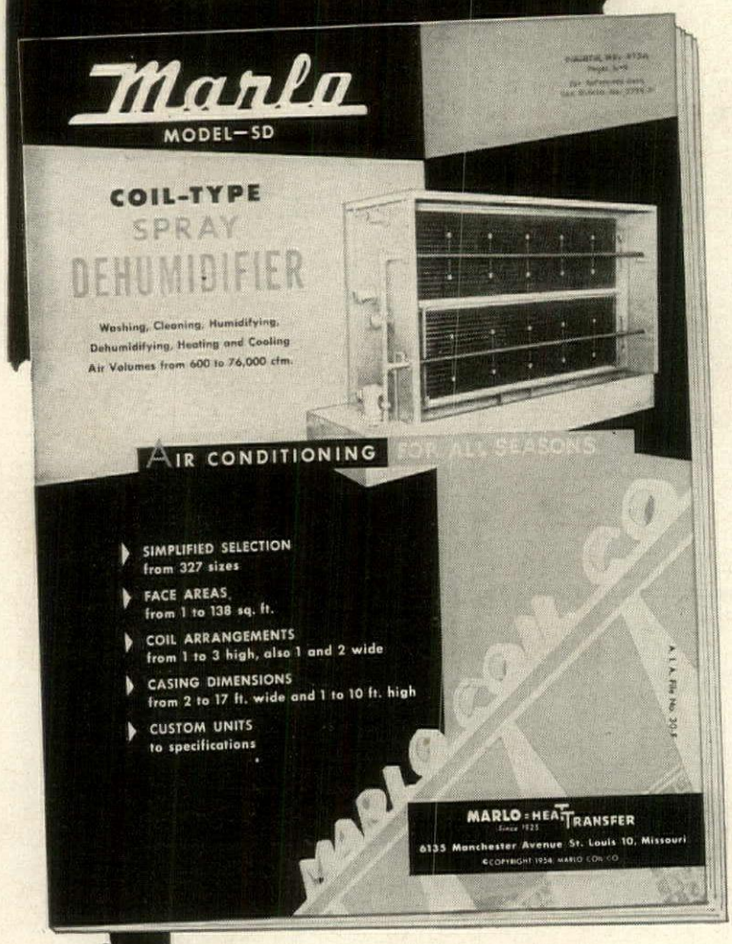

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DATES

American Institute of Steel Construction, annual conference, **April 18-19,** Muehlebach Hotel, Kansas City, Mo.

Building Officials Conference of America, annual meeting, **April 18-21,** Milwaukee.

Building Research Institute, annual meeting, **April 18-19,** Woodrow Wilson Hall, Princeton University, Princeton, N.J.

Prestressed Concrete Institute, first annual convention, **April 21-22,** Lagamar Hotel, Fort Lauderdale, Fla.

Western Mountain District, American Institute of Architects, regional meeting, **April 28-30,** Camelback Inn, Phoenix, Ariz.

South Atlantic District, American Institute of Architects, regional meeting, **May 5-7,** Fort Sumter Hotel, Charleston, S.C.

National Restaurant Assn., annual convention, including an architectural and remodeling exhibit, **May 9-13,** Navy Pier, Chicago.

Application of Automation to Building Design and Construction, symposium conducted by the Michigan State College School of Engineering, **May 12-13,** East Lansing, Mich.

National Housing Conference, annual meeting, **May 16-17,** Statler Hotel, Washington, D.C.

Air Pollution Control Assn., annual meeting, **May 22-25,** Sheraton-Cadillac Hotel. Detroit.

Hospital Planning Institute and Workshop, a seminar sponsored by the American Hospital Assn., the AIA and others, **May 30–June 3.** Shamrock Hotel, Houston.

Design Engineering Show, exposition and technical conference devoted to the problems of design engineers, **May 31–June 3,** Convention Hall, Philadelphia.

British Architects Conference, June 8-11, Harrogate, Yorkshire. For details address C.D. Spragg, secretary, 66 Portland Place, London, W. 1.

National Association of Building Owners and Managers, annual convention, **June 19-23,** Netherlands-Plaza Hotel, Cincinnati.

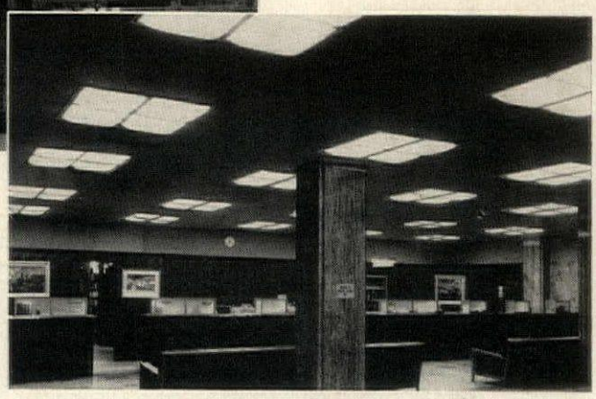
Forest Products Research Society, national meeting, **June 20-23,** Olympic Hotel, Seattle.

American Institute of Architects, annual convention, **June 21-24,** Radisson Hotel, Minneapolis.

First International Building and Public Works Equipment and Materials Fair, Saint-Cloud National Park, Paris, **June 25–July 10.** For details address M. Charles Chéreau, Commissariat Général, 29 Rue Cambon, Paris 1.

Fourth Congress of the International Union of Architects, July 9-16, the Hague. Further details available from AIA in Washington.





A main lobby in the University of Wisconsin Memorial Library. Drop bowls of Corning Alba-Lite create interest in the ceiling, prevent any feeling of "weight." Luminaires are easy to maintain.

Alba-Lite equipped luminaires blend in perfectly with the architectural scheme, enriching the various colors through warm, soft, complementing light. Each luminaire has four 75-watt lamps. Illumination level is 45 foot-candles and can be increased simply by installing lamps of higher wattage.

Architect:
Roger C. Kirchhoff

Lighting Engineer:
Albert M. Koga
Hub Electric Co.

Electrical Contractor:
Russell Hainstock
Havey Electric Co.

Consulting Engineers:
Robert E. Hattis

Luminaires:
Corning Alba-Lite

Complex requirements determine choice of Alba-Lite in $5,000,000 University Library

How would *you* choose luminaires for key areas in one of the world's largest and most beautiful university libraries?

The architects and engineers set up a list of rigid lighting requirements for the University of Wisconsin Memorial Library. Against this list, they evaluated all possible choices to select the one that would best meet their standards.

When it came to luminaires for lobbies and corridors, the choice was large luminous elements with 24" square bowls of Corning Alba-Lite.

Luminaires equipped with Alba-Lite possess the qualities of character and beauty required in a building so richly conceived. They are distinctive without being conspicuous—another key point on the architect's list. And they highlight the beauty of architectural design, besides having a look of "belonging."

Pleased with results

Alba-Lite filled the requirement of variation in light output without obvious difference in brightness. And, the luminaires also fit into the long-term picture of low maintenance cost. A wipe with a damp cloth keeps Alba-Lite looking bright and new. And there's never any discoloration or fading with age.

How would you summarize final results? The completion report said simply, "The architect was immensely pleased with results."

And that about sums up the opinion of everyone who is concerned with Alba-Lite installations. We'll be happy to send you complete information on beautiful, practical and versatile lightingware, if you'll just return the coupon.

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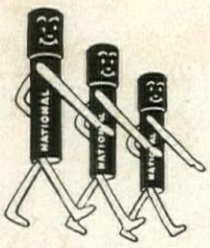

It's uniform throughout—National Pipe is uniform in metallic structure, ductility, strength, corrosion resistance, surface finish and diameter.



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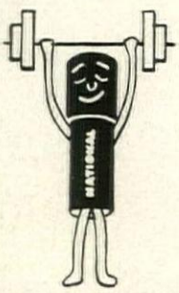
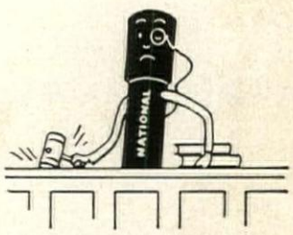


It's strong—Close metallurgical control of chemical and physical properties gives National Steel Pipe "built-in" strength.



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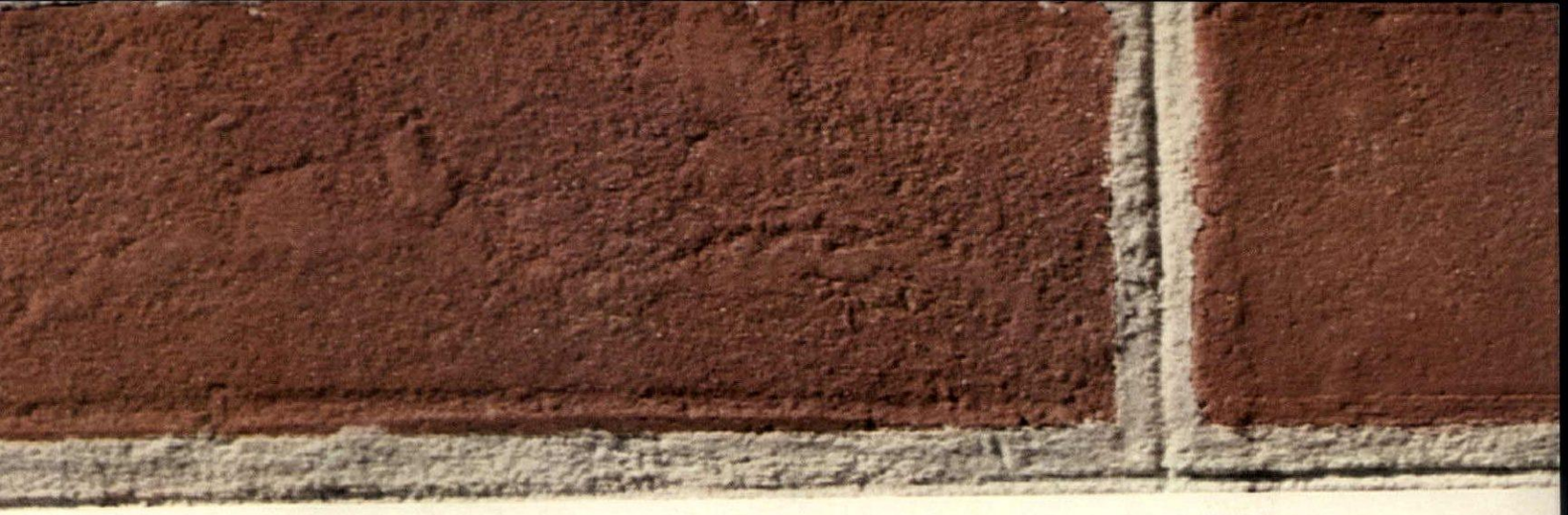

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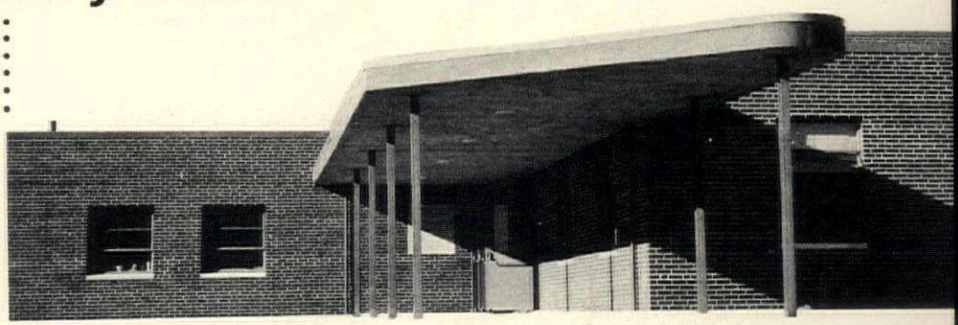
But what about initial costs? The answer is that they are a lot lower than most people assume. In many regions, brick and tile construction costs compete directly with those of less permanent and less attractive materials.

For proof, write for a new study by the Structural Clay Products Research Foundation of comparative costs in nine new Midwestern schools.



Boonville-Boone Township School, Evansville, Ind.
Ralph Legeman Associates, architects

Cost: $9.82 *per sq. ft., total*
$6.67 per sq. ft., structural
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Glenwood School, Evansville, Ind.
Ralph Legeman, architect

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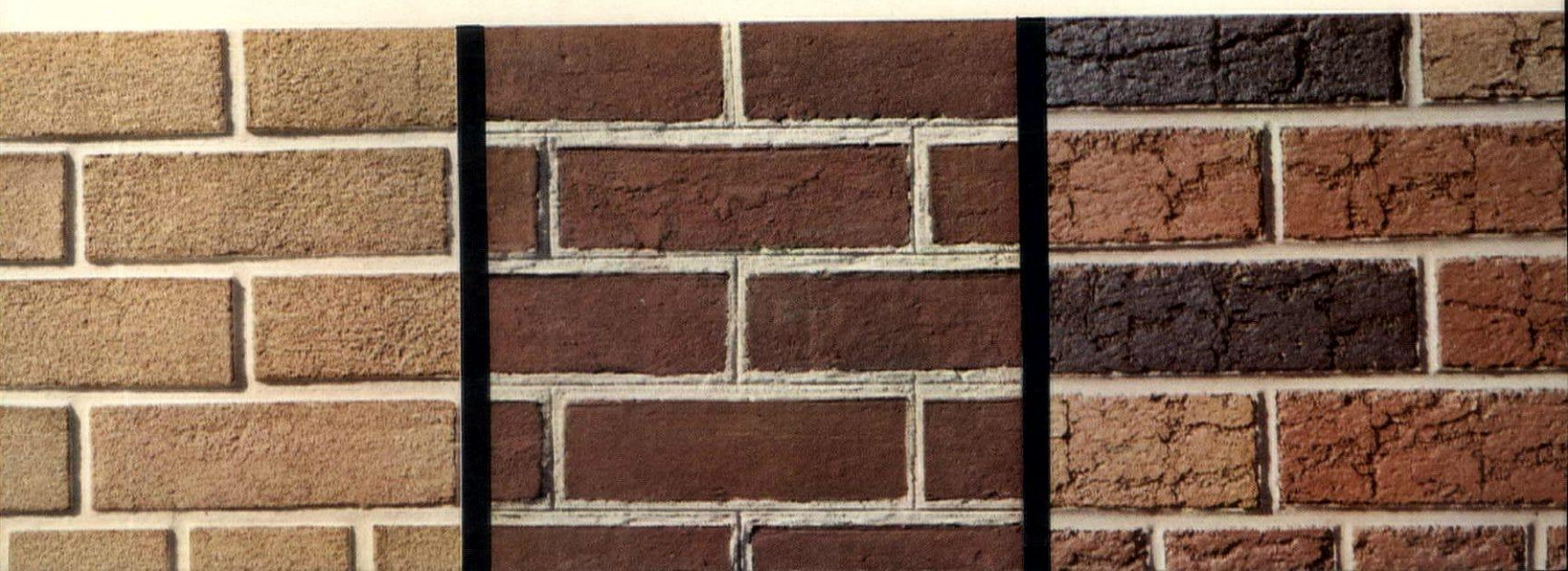



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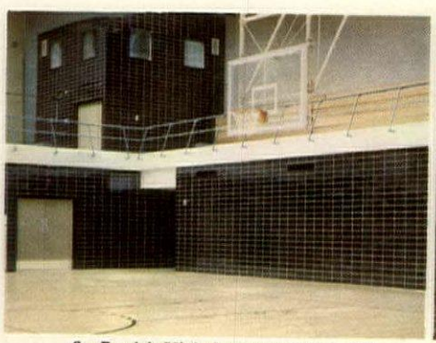
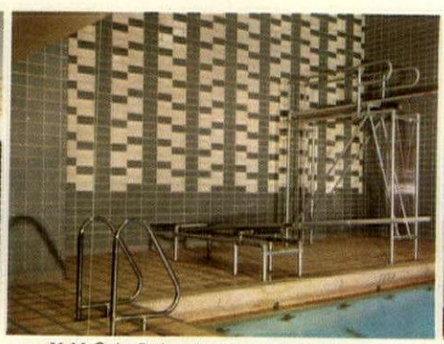
Here is a way to keep school building and maintenance costs down — and make classrooms more cheerful, too.

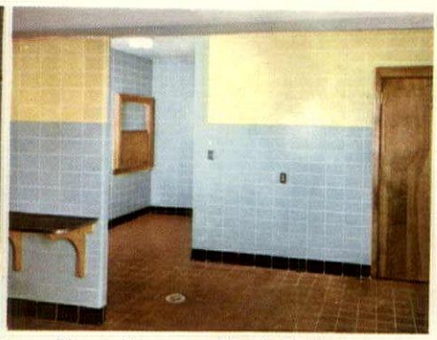
Structural Clay Facing Tile builds load-bearing partitions and permanent, colorful interior finish in one operation. For this kindergarten, natural clay unglazed units and soft green glazed tile provide a pleasing contrast of colors and textures.



St. Patrick High School, Chicago, Ill.
Edo J. Belli, Architect



Y.M.C.A. Swimming Pool, Oak Park, Ill.
Philip D. West, Architect



Lincoln Elementary School, Sterling, Ill.
Louis Kingscott & Associates, Architects

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the best way
to air condition a
SHOPPING CENTER?



Acme Supermarket in Shoppingtown, DeWitt, N. Y., features a modern, year-round Carrier air conditioning system. Peripheral ducts carry cooled air from a 30-ton Weathermaker, warm air from two gas-fired duct-type unit heaters.



The Addis Company is an exclusive specialty shop in this new shopping center. It has its own 40-ton Carrier system complete with an evaporative condenser for 95% water saving, and gas-fired unit heaters for economical winter heating.



Candlelight Shop, Shoppingtown's gift center, packs a self-contained Carrier Weathermaker* into a side wall. The unit taps into ductwork previously installed for warm air furnace. New air-cooled Weathermakers require no water.

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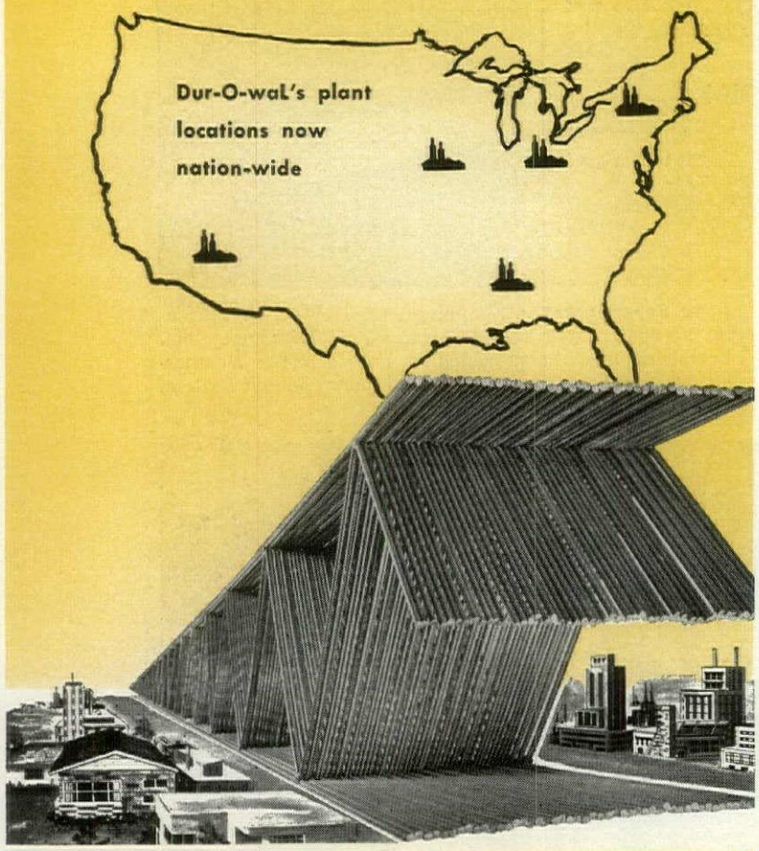

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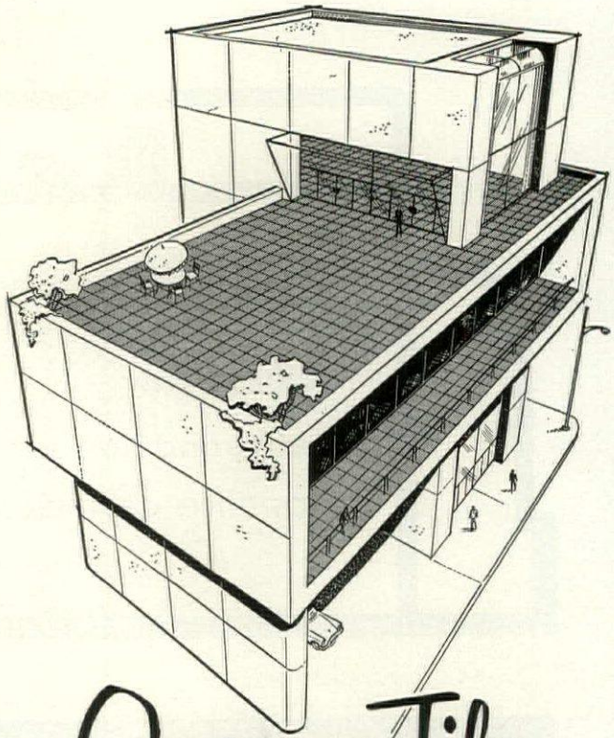

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■ When all is said and done; what is the most important feature of a floor? We think that you will agree that it's wearing quality.

When you specify Summitville Quarry Tile, you specify lifetime durability without fading or deterioration in addition to these plus features.

INHERENT BEAUTY—Summitville Quarry Tiles are famous for consistent, deep, rich color.

WEATHER-PROOF—Once properly installed, Summitville Quarry Tiles are frost-proof, water-proof, and will not crack or fade...equally "at home" inside or outside.

SANITARY—Quarry Tile is acid-resistant and will not spot or stain.

MAINTENANCE-FREE—No other flooring material requires less maintenance. Sweep it... damp mop it... and original beauty is restored. Never needs waxing.

For the full Quarry Tile story, as well as estimates, check the Yellow Pages of your telephone directory for "Tile Contractors—*Ceramic*."

Summitville TILES, INC.

SUMMITVILLE, OHIO

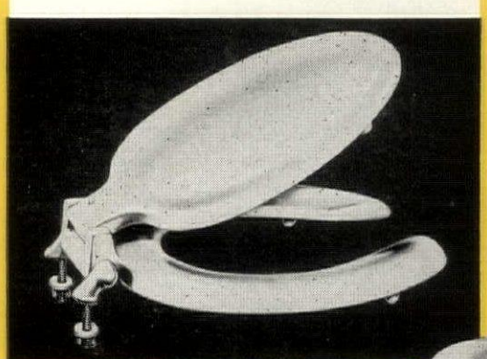
Throughout one of the World's newest and most luxurious hotels

The Fontainebleau MIAMI BEACH, FLORIDA



ARCHITECT: Morris Lapidus, Miami Beach, Fla.
General Contractor: Taylor Construction Co., Miami, Fla.
Mechanical Engineers: Sasnett and Bennett, Miami, Fla.
Mechanical Contractors: Markowitz Bros., Inc., Miami, Fla.

SOLID Olsonite SEATS



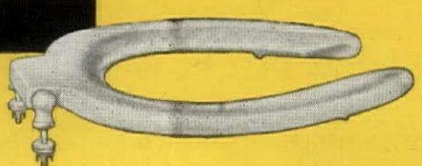
Olsonite model No. 56 Solid color seats were installed throughout the Fontainebleau Hotel.

For every deluxe and standard bathroom throughout Miami Beach's new Fontainebleau Hotel—one of the world's most fabulous—Solid Olsonite Seats were specified and installed.

Olsonite No. 56 open front seats with cover were specified in a variety of plain colors to match the pottery of the colorfully appointed bathrooms. Like all Olsonite seats, these plain color models are solid one-piece construction. There's no sheet covering or applied finish of any kind to crack, chip or peel.

Selection of Olsonite for the Fontainebleau is another indication of Olsonite's ever increasing popularity. Equally popular for hotels are Olsonite *white seats* both with and without cover. Unlike ordinary white seats, they will not fade or discolor even after years of use.

For a complete catalog of all Olsonite models, please write on your letterhead.



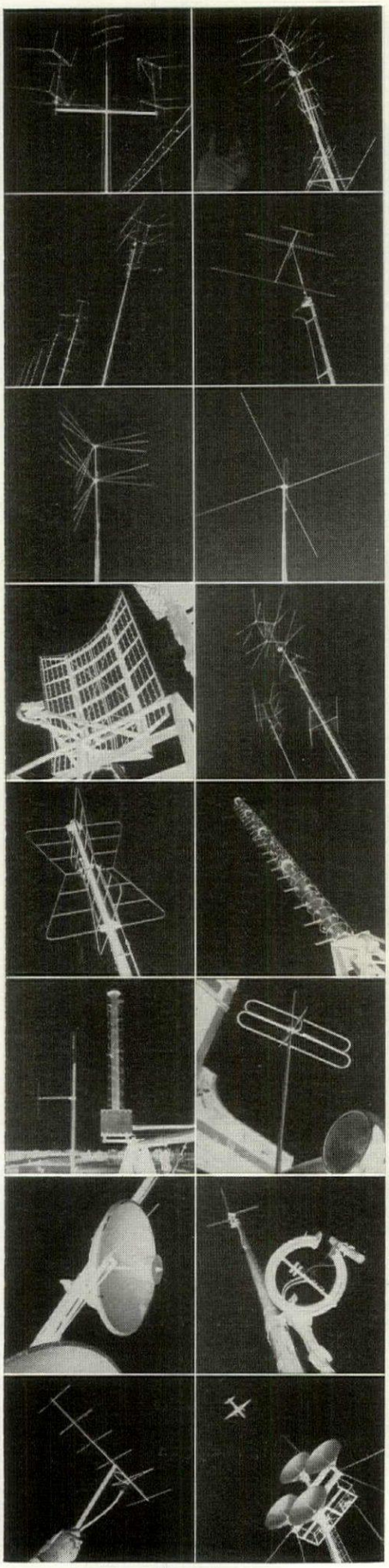
Olsonite models 5 and 10 (both with and without concealed check hinge) are also ideal for hotel installations.

A-3-55

SWEDISH CRUCIBLE STEEL CO. *(Plastics Division)* 8561 Butler Avenue, Detroit 11, Michigan

PARENTHESES

(AN INTERLUDE)



Way down at the bottom of Webster's New International definition of parenthesis are the words "interval or interlude." These paragraphs, when they appear, will be something like that—an interval or interlude among the more important and detailed matters of the building industry. For instance, take a look at the skyline:

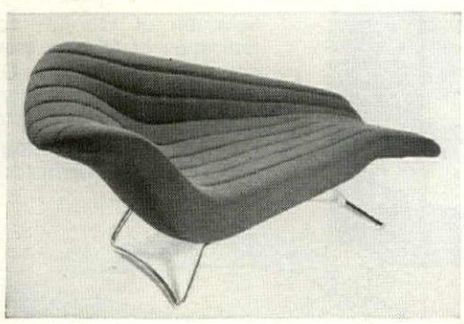
(ANTENNAS)

Everyone is reaching up into the air trying to grasp something; our times are the antenna age. In the column to the left is evidence: a collection of photographs of these spindly structures which stretch up to stand in silent expectancy of a message, or a song, or the electronic shadow of approaching aircraft—to sense it in the air and slip it quickly down to be dialed and transformed into entertainment (television), information (wireless) or warning (radar) for people who wait below. The photographs were taken by George Burns for General Electric.

Architecturally the antenna age is very apparent. In a way, the antenna has even replaced an ancient, recently disreputable device, the heavy ornamented cornices which architects for generations used "to make a building end against the sky." The cornices had gone out of style even before the antenna age, of course, but perhaps this was in anticipation of the times. There is not an ending against the sky any more, but a beginning, a reach up into its transparent mystery.

(FURNITURE)

Madame Récamier is making a comeback in the latest line of furniture, but modern overcrowding has had its effect. Instead of a chaise longue, Manufacturer Fabry well might call its latest piece a chaise short. The newly abbreviated longue for the famous old French posture has, however, a few advantages Madame Récamier never schemed of, such as foam rubber from nape to knee, and a comfortable taper to a "natural leg line."

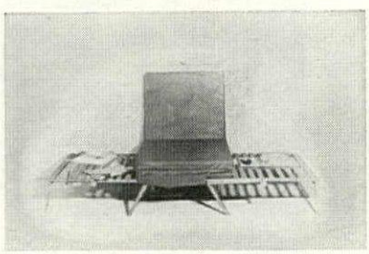


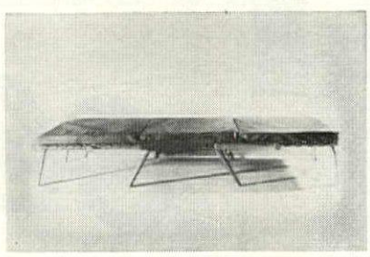
The retail price: $460. It is too bad there is not a modern version of Madame Récamier lounging in the photographs to give an idea of scale. She would probably be wearing a pair of those long, slim, black velvet slacks modeled in the fashion magazines by those long, scaleless girls.

An entirely different approach to the horizontal is made in this Italian import, on sale in New York. This one is probably for bachelors. It starts firm and upright but as the evening progresses, the chair can too.





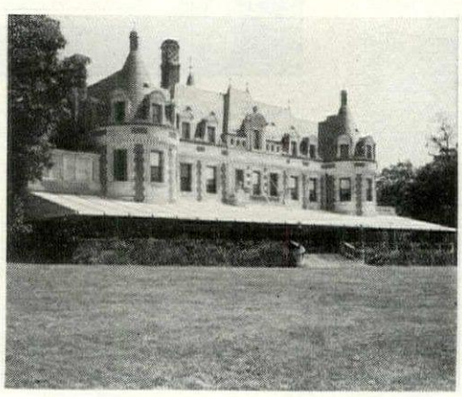




(PALING THE BREW)

Today's taste for "dry" beer has been condemned bitterly by some brewers, who prefer manufacturing the darker, lustier traditional beer; but now the matter of whether brewers themselves should be dry comes up.

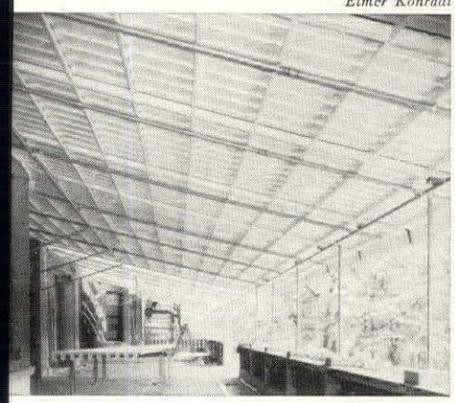
On the St. Louis estate of Mrs. August A. Busch Sr., mother of August A. Busch Jr., president of Anheuser-Busch Inc., maker of



dweiser beer (medium dry), there is a ndsome old stone and brick house. Tur- ed and spired, it has long stood, benign d expansive, over the wide lawn, banded front by a porch 153′ wide x 30′ deep. This rch is quite a social site in St. Louis; it o has come in for increasingly heavy use m attenders at sales conventions at the heuser-Busch home office.

Because of this, the porch was recently ver ed by an aluminum roof on pipe frame, that guests will not get wet when it rains. his is a very hospitable gesture, of course, t it looks like a Chris Craft flying bridge Old Ironsides. Although the fabricators e to be complimented for a deft, thought- l job (the roof is demountable, and the one was not scarred for pipe sockets, etc.), re was a job that wanted a sympathetic de- gner to bridge the gap between old and w, to blend malt and hops.

Elmer Konradi



The Busch estate is famous for its thought- l care of animals—deer, elk, swans and eese roam freely and safely through the 281 cres. The place is also held in sentimental cclaim for the careful preservation of US istory there; the estate occupies land once armed by Ulysses S. Grant, and his cabin s carefully kept up as a historic shrine. His- orical sentiment is even an ingredient in udweiser; where the symbol of Rheingold s a pretty girl, repainted every year, Bud- eiser is generally identified fondly with a airy old buffalo on the Midwest prairies of he 1800's, pursued by Calamity Jane and he Iroquois, or with a team of strapping ray horses, or with the lithographed mem- ry of General Custer surrounded by a hos- ile rodeo. General Custer probably would ot be caught dead on this porch.

(TALK)

Rueful architects frequently accuse artists nd sculptors of deserting architecture. In he English winter of 1857, John Ruskin made the reverse admonition in a lecture to an audience of architects, and perhaps he could still be correct:

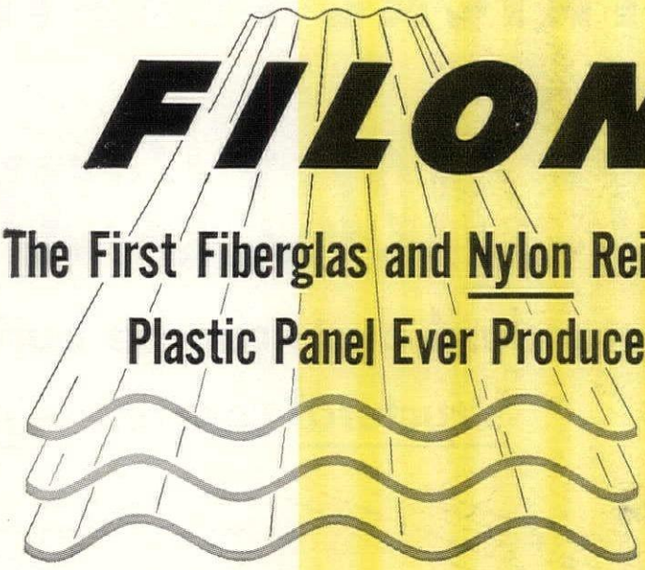
"Whatever is easy you call architecture, whatever is difficult you call sculpture. For you cannot suppose the arrangement of the place in which the sculpture is to be put is

continued on p. 60

For Greater Strength Uniform Thickness and Color

FILON

The First Fiberglas and Nylon Reinforced Plastic Panel Ever Produced



FILON Gives You Greater Strength

After many months of research, FILON is now produced with Fiberglas and Nylon strands for greater strength and uniformity. Actual tests show that an 8 oz. per sq. ft. FILON panel can support over 200 lb. load per sq. ft. on a 4 ft. unsupported span. (U. S. Navy standards are only 100 lbs. per sq. ft.)

FILON is Produced by a Unique Method

FILON is produced by a fully automatic, electronically controlled process, in the world's largest and most modern plant in its field. This method makes possible continuous lengths as well as all standard sizes of panels. Lengths are limited only by convenience in handling.



FILON is Uniform in Thickness and Color

Better impregnation and dispersion of pigments make FILON more uniform in thickness and color. Every FILON panel bears a label stating *type, grade,* and *color* ... your assurance of getting the quality you specify.

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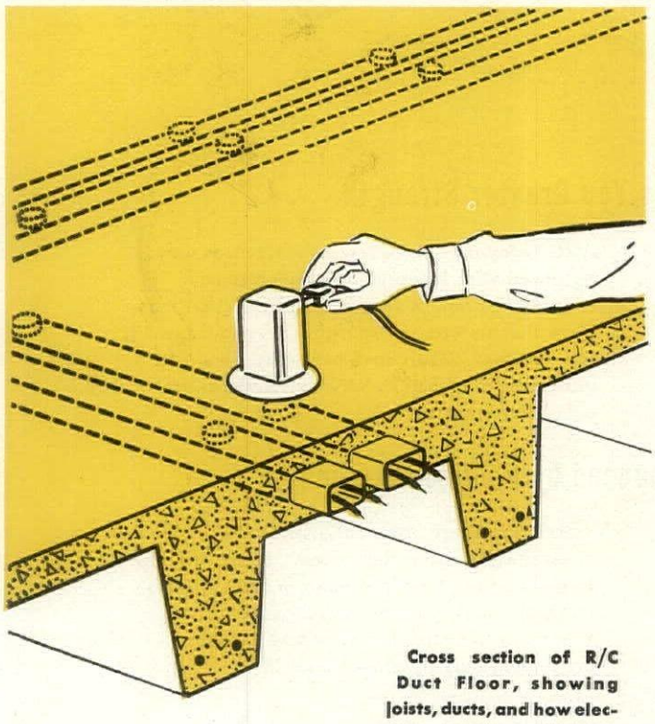
ELECTRICAL FLEXIBILITY...
at a new low cost!

standard ducts can be buried in structural concrete—no fill needed



Cross section of R/C Duct Floor, showing joists, ducts, and how electrical outlet is attached.

R/C Duct Floors provide you with a complete network of underfloor electrical outlets for power, light, telephone, and intercom systems... *at low cost!*

R/C Duct Floors consist of electrical distribution ducts set in standard reinforced concrete joist floors. No fill is needed as the ducts are buried in the structural slab of the floor. As a result, electrified R/C Duct Floors can be constructed at a cost that is appreciably less than the cost of cellular steel flooring.

The underfloor ducts, which can be run at any desired spacing, have blank risers every two feet of their length. Electrical outlets can be connected to these risers in a matter of minutes to serve each desk without ripping up or drilling through floors or ducts. This provides 100% electrical flexibility for future change and growth.

Recent tests made at Underwriters' Laboratories prove that R/C Duct Floors, with the ducts in the structural slab, have a fire rating which meets all building code requirements.

Before you design your next building, investigate R/C Duct Floors. They can be built with standard forms and ducts, and require no special engineering. And, compare the cost of R/C Duct Floors with cellular steel type construction!

R/C DUCT FLOORS

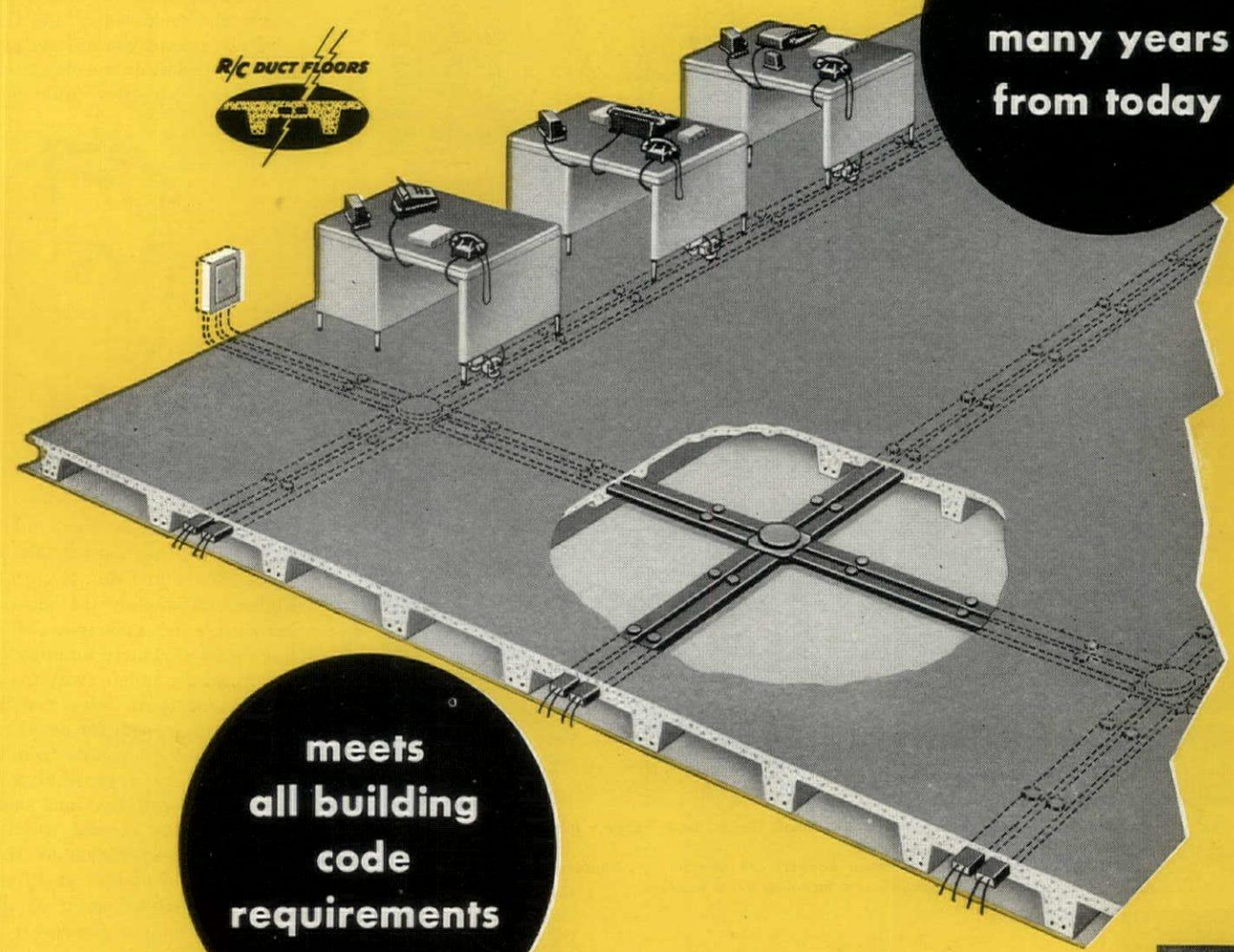
(Electrified concrete joist floors)

ELECTRICAL OUTLETS

wherever you need them

today, or many years from today

R/C DUCT FLOORS



meets all building code requirements

Send for New 16-Page Bulletin



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Please send me a copy of your new bulletin on R/C Duct Floors.

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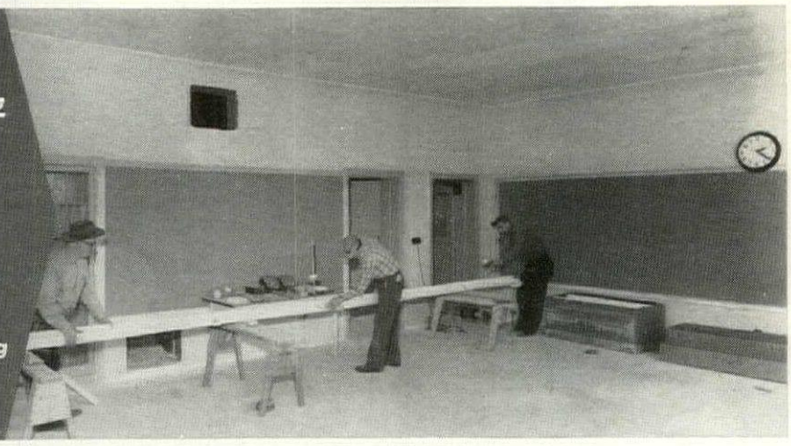
WITH *Speed-line* FIXTURES ARE PRE-ASSEMBLED AND PRE-WIRED AT FLOOR LEVEL
no separate external mounting channel needed



No extra mounting channels are used with Garcy *Speed-line* . . . saves cost and bulk. Garcy "joiners" connect super-reinforced Garcy Fixtures into rigid, easily-handled units . . . straight as a die.

WITH *Speed-line* ENTIRE RUN IS RAISED TO CEILING AS A SINGLE UNIT . . . *and uses fewer stem hangers*



No straining at top of ladders. Simply hook Garcy Stem Hangers into hickeys and then connect house wiring.

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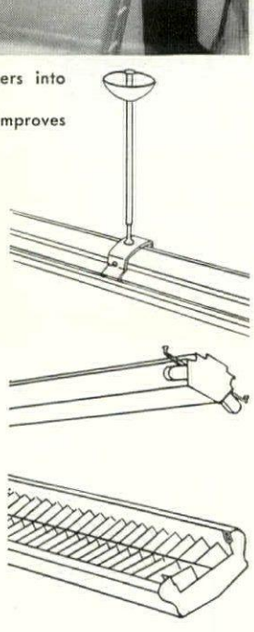
WITH *Speed-line* YOU CAN HAVE PREMIUM LIGHTING AT THE COST OF STANDARD FIXTURES

Check with lighting contractors about Garcy *Speed-line*. The savings in labor cost enable the contractor to quote a lower total price . . . and still furnish the highest quality commercial fixture made, the Garcy VISUALIER. This aristocrat of fixtures provides 45° x 45° shielding, illuminated sides and a one-piece shielding body. *Speed-line* installation techniques were specially developed to take full advantage of the Garcy VISUALIER'S rugged construction features. For budget jobs *Speed-line* is also available with the Gar-See-Lite series of fixtures.

Send today for Bulletin 551-L.



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GARDEN CITY PLATING & MFG. CO., 1736 N. Ashland Ave., Chicago 22, Ill.
In Canada: Garcy Co. of Canada, Ltd., 191 Niagara St., Toronto

PARENTHESES

continued from p. 57

so difficult or so great a part of the desi as the sculpture itself. . . ."

"Do you think the man who designed t procession on the portal of Amiens was t subordinate workman? That there was architect over him, restraining him with certain limits, and ordering of him bishops at so much a miter, and his cripp at so much a crutch? Not so. Here, on t sculptured shield, rests the Master's han this is the center of the Master's though from this, and in subordination to th waved the arch and sprang the pinnacle.

"But perhaps you answer again, our scu tors at present do not design cathedrals, a could not. No, they could not; but that



merely because we have made architectu so dull that they cannot take any interest it, and therefore, do not care to add to the higher knowledge the poor and comm knowledge of principles of building. Yo have thus separated building from sculptur and you have taken away the power of both for the sculptor loses nearly as much b never having room for development of a co tinuous work, as you do from having reduce your work to a continuity of mechanism You are essentially, and should always b the same body of men, admitting only suc difference in operation as there is betwee the work of a painter at different times, wh sometimes labors on a small picture, an sometimes on the frescoes of a palace ga lery."

(TUNNELING)

If architecture can be sculpture, perhap the reverse also is true, that painting an sculpture can become architecture. Bot arts may be working toward each other i darkness like two sandhog crews boring mys teriously from opposite sides of a river t meet underneath and complete a tunnel. A two evening symposiums held this winter i New York on this subject there were plent of the usual accusations of desertion by bot sides, artists-from-architecture and archi tects-from-art. But the acrimony did denot some anxiety on both sides.

Meanwhile an exhibition shown recently i Houston, Tex. may have detected a connect ing tunnel being started from art's side o

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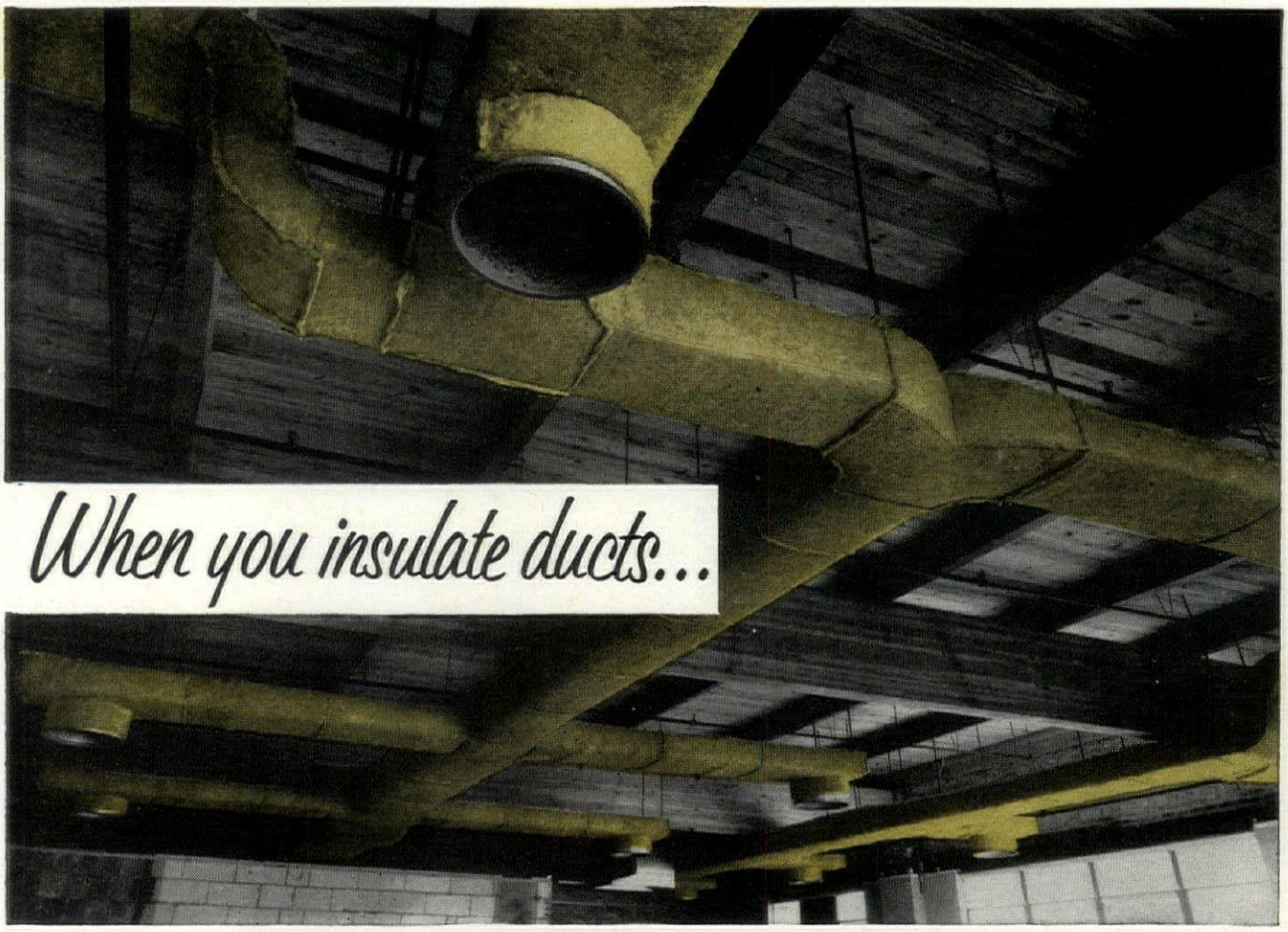
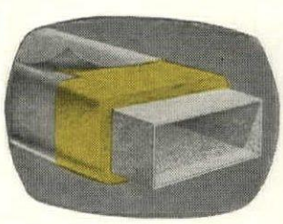


When you insulate ducts...

think of ULTRALITE...*first!*

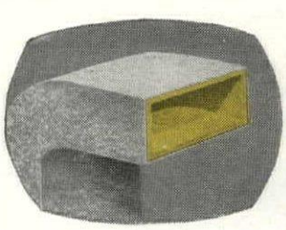
When you want *performance* you can count on — and prompt *delivery* you can count on — specify ULTRALITE, the only insulation of long glass fibers!



first flexible duct insulation of fine glass fibers on the market! Only Ultralite, introduced in 1945, has a *10-year* record of completely satisfactory performance — without losing thickness or thermal efficiency.

first flexible duct insulation of fine glass fibers available with factory-applied vapor barrier. Ultralite is still available plain or with a wide choice of facings — some for appearance, some as vapor barriers.

first flexible glass fiber insulation to spring back to full original thickness every time after being compressed!



first flexible duct liner of fine glass fibers. Recent examinations of Ultralite Duct Liner installed 7 years ago show no indications of air erosion.

first flexible duct liner on the market with spray coating (1948).

first flexible glass fiber insulation available nationwide at convenient stocking points for immediate delivery. And ULTRALITE is still available *more* readily, in *more* cities, than any other glass fiber insulation!

Ultralite distributors are listed in the Yellow Pages in 57 Cities.

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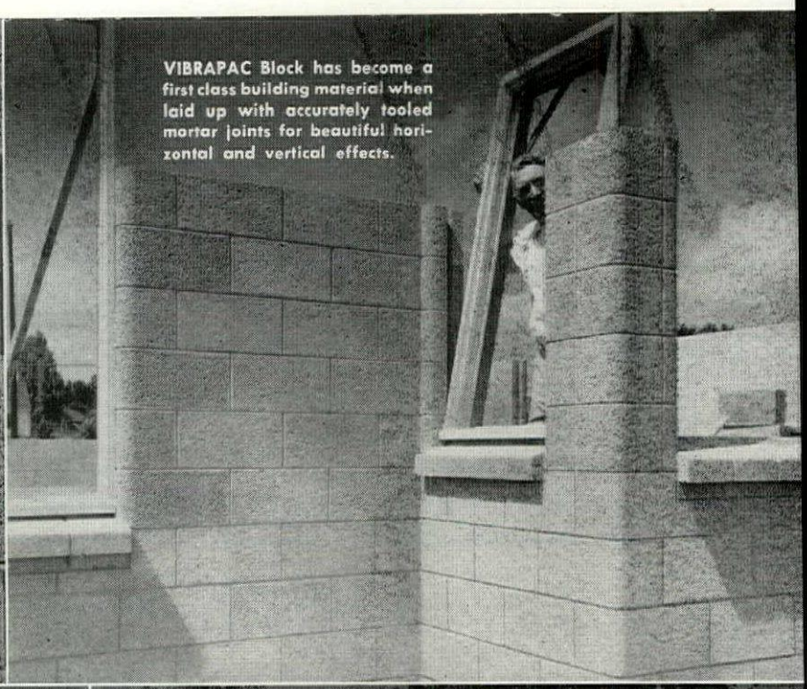
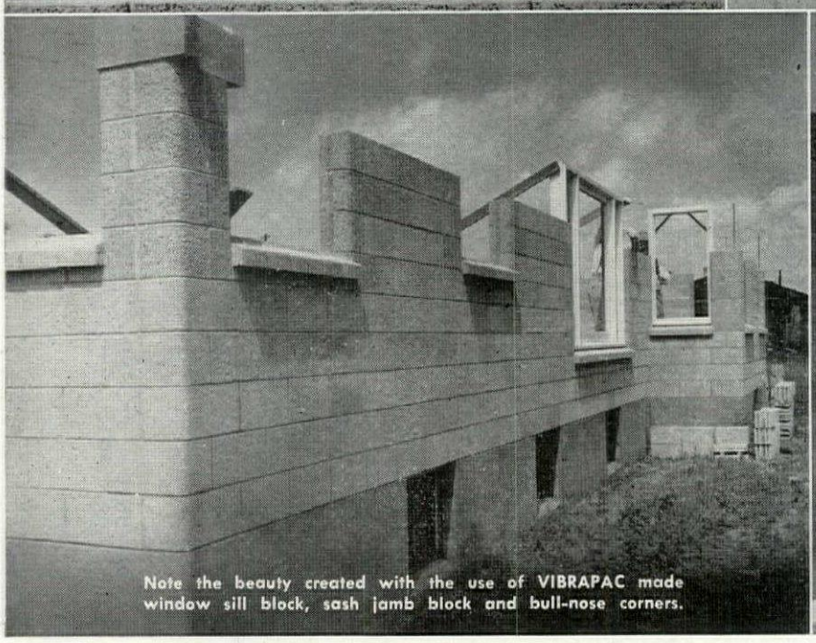
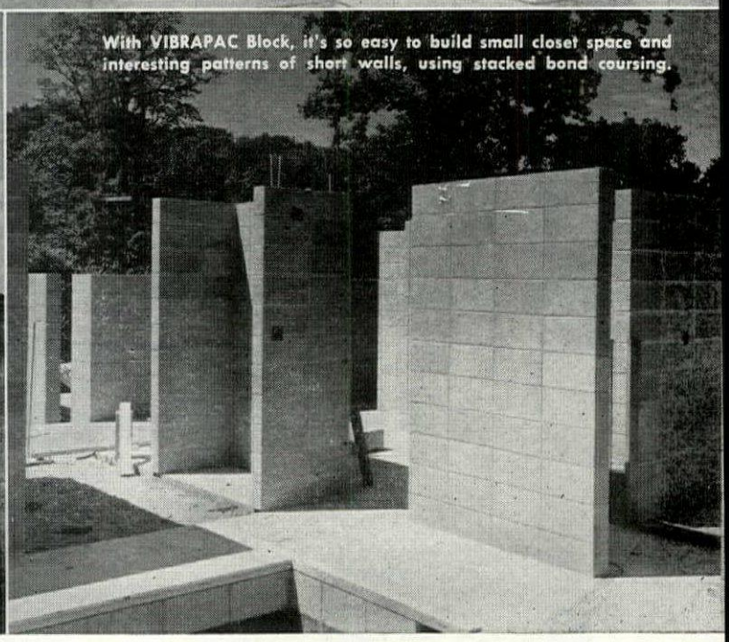


VIBRAPAC Block has become a first class building material when laid up with accurately tooled mortar joints for beautiful horizontal and vertical effects.



Note the beauty created with the use of VIBRAPAC made window sill block, sash jamb block and bull-nose corners.



With VIBRAPAC Block, it's so easy to build small closet space and interesting patterns of short walls, using stacked bond coursing.

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You avoid cutting and fitting, in many details of construction, when you build with VIBRAPAC Block. Their modular dimensioning coordinates with other modular building elements. Door and window openings, for instance, come out right for standard framing. No wasted time fitting door and window frames into openings. By eliminating block cutting and fitting, building costs are materially reduced.

Almost unlimited opportunities for creative architecture and structural versatility are provided by VIBRAPAC Block. Building code requirements are easily met . . . ruggedness with substantial structural loads . . . fire-safety . . . high insulation values. Write to us for name and address of nearest plant producing VIBRAPAC Block of highest quality.



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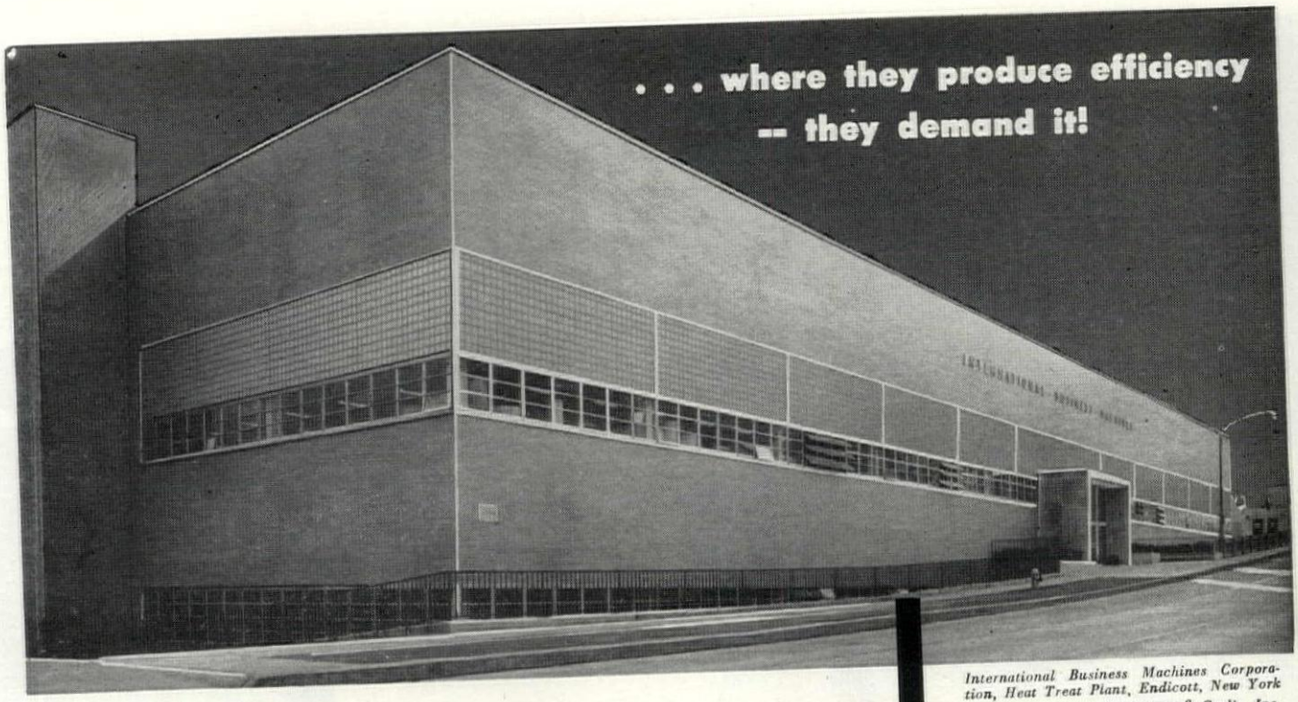

International Business Machines Corporation, Heat Treat Plant, Endicott, New York
Architects: Smith, Hinchman & Grylls, Inc. Detroit, Mich.
General Contractors: Sordoni Construction Co., Wilkes-Barre, Pa.

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for efficiency and long-term economy

Efficiency experts that they are, IBM can be expected to accept only those materials which measure up to their own exacting standards. In specifying Ualco Aluminum Awning Windows for this job, architects Smith-Hinchman-Grylls, Inc. selected windows which, like the rest of the building, were designed and engineered for trouble-free operating efficiency.

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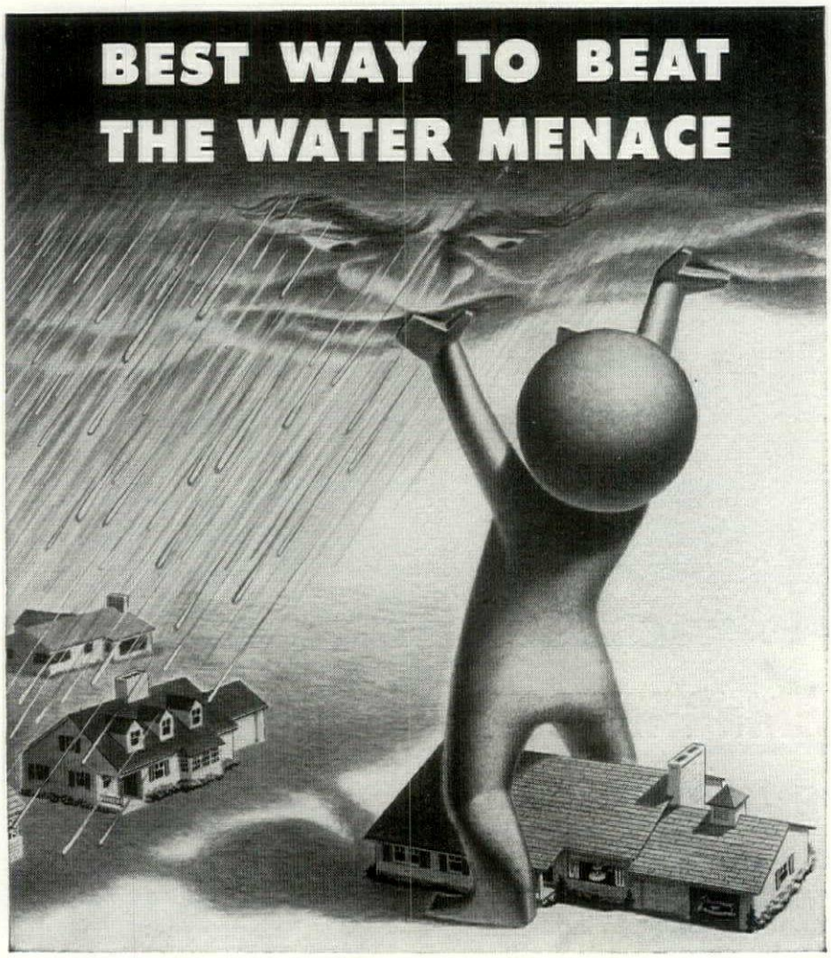


...masonry water repellents made with G-E DRI-FILM® silicones

No wonder masonry water repellents containing silicones have become the standard in the industry!* They offer *lasting* protection against the Water Menace because they're *erosion resistant!* They provide "defense in depth"—penetrate masonry pores deeply to keep water out—yet permit masonry to "breathe"!

Masonry water repellents made with General Electric DRI-FILM silicones prolong the life and preserve the beauty of structures, old and new. Easily applied, they retard spalling and cracking, control efflorescence and keep surfaces cleaner.

Ask your water repellent supplier about a treatment based on G-E DRI-FILM silicones! For the names of suppliers using DRI-FILM in their products, just write to General Electric Company, Section 155-2A, Waterford, New York. (IN CANADA, write to Canadian General Electric Company, Ltd., Toronto.)

**Sales by suppliers have jumped almost one million dollars each year since 1950!*

Paint and Chemical Manufacturers!

DRI-FILM silicones offer you a profitable opportunity to add a superior masonry water repellent to your product line. Ask us about DRI-FILM 103, a new G-E silicone with important manufacturing advantages!

G-E silicones fit in your future

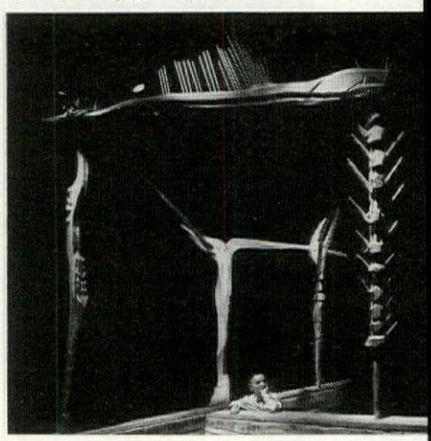
GENERAL ELECTRIC

PARENTHESES

continued from p. 60

the dividing river, a nicely impertinent ging operation with reference to both sh pure architecture and pure art.

Frederick Kiesler's newest are called " axies" and are groups of sculptures or pa ing into which the viewer walks. They round him, perhaps even include him



pictures) if he is appropriate. Adding dimension of participation, they seem logical projection of the school of abstr art which desires physical involvement the spectator in the space rather than al withdrawal; for instance, the kind of scu ture peered through, such as Henry Moor Kiesler's sculptural galaxies go further, become a kind of adult, mental jungle g of art, significantly similar in feeling to sc recent playground equipment of a conscio sculptural cast.

Coming from a man who was an ar alone, this might be too impudent for ma architects, who like to allot a muralist a c tain wall space to "do." Here would be artist reaching out to devour space, architect's dish. But Kiesler is an archite too.

Photos: LIFE—*G. P*



He is not above impertinence, of course. nimble little man, he likes to pinch dignifi ladies at cocktail parties. He is a good ma to have around to pinch the profession als

continued on p.

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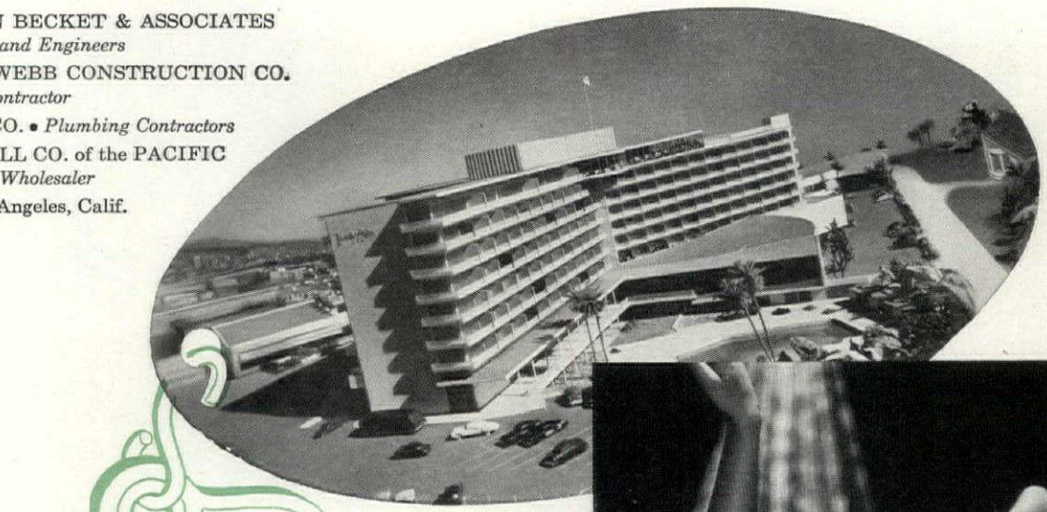

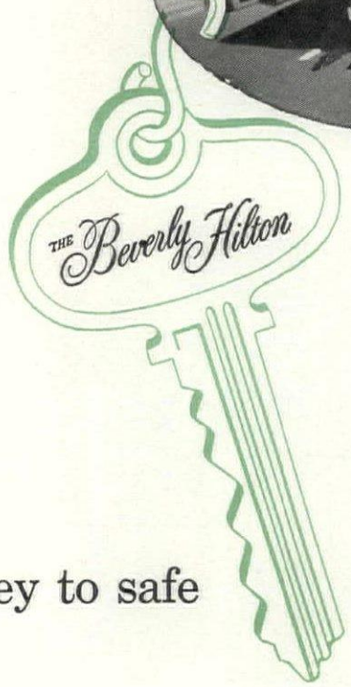



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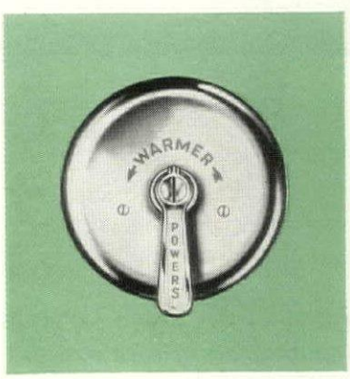

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(c19)

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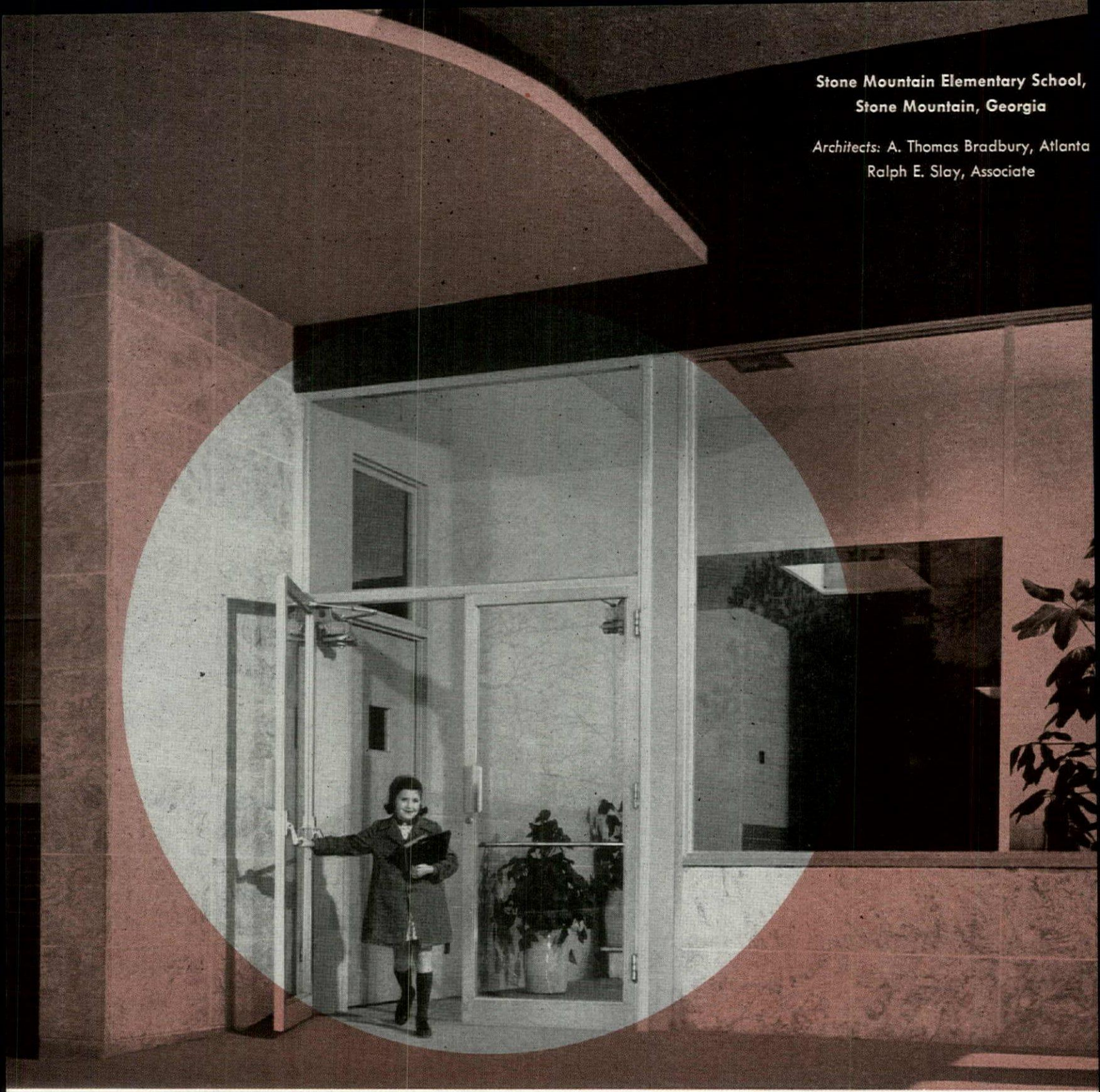

Stone Mountain Elementary School,
Stone Mountain, Georgia

Architects: A. Thomas Bradbury, Atlanta
Ralph E. Slay, Associate

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HONEYLITE troffer louvers in modern room housing IBM 702 electronic data processing machine at IBM's Poughkeepsie, New York, plant. Inset shows close-up of aluminum honeycomb.

IBM

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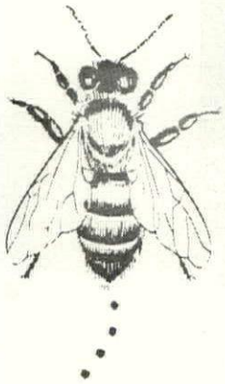

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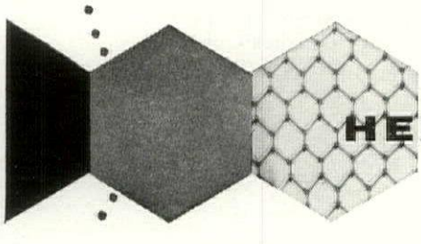

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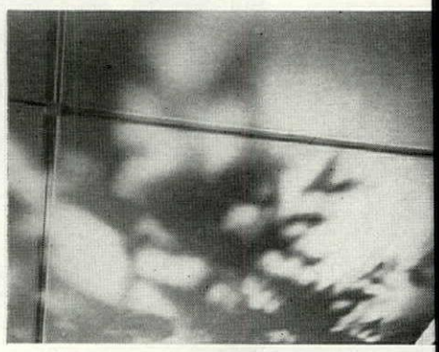
PARENTHESES

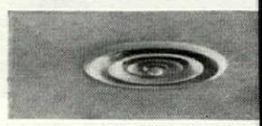
continued from p. 64

(ENTER AIR)

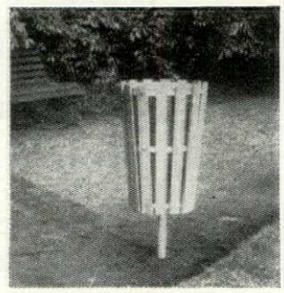
In the sleek offices of the Columbia Bro casting executives in New York (AF, J '55), a design consideration occurred wh will be familiar to many. The designers cided the use of the standard air diffu would jar the angular character of the of the design. Their answer: slots wh run across the ceiling and divide it into tilinear panels, like this:



instead of:



But a footnote should be added to our cov age of that office. In practice, it has be found difficult to make the slot diffuser wo with entire satisfaction.



(RELAX)

Here comes spring. In England the litt baskets in the royal parks will soon be filli with summer debris.

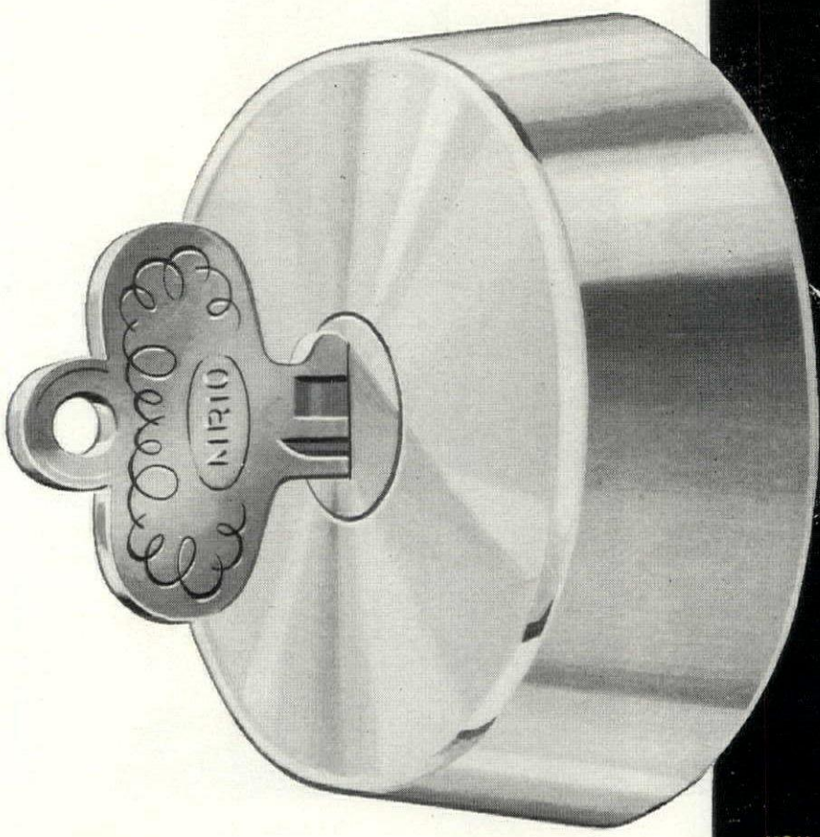
In Manhattan, one of our most famo architects, L. Mies van der Rohe, took walk in the nice weather, and sighed, loo ing about him, "Here in New York t people think that to build a three-legg horse is to economize."

On Long Island's well-plotted map, builder of split-level houses who probab never even met Clyde Powell (remember will soon be swinging into action (the buil er's name is Seymour Pristine).

In California, at Sacramento, the Shu Construction Co. will be presenting the luxurious line of "pre-engineered modul homes" which do not have mere carport (They have carportes.)

And if you have made any such significan observations recently yourself, you migh put them between parentheses and sen them in.—W. McQ.

4 ways you can look at hardware ...of stainless steel



For any hardware item — from door-pulls to wall ties, escutcheon plates to finish trim — no other metal can match Crucible stainless steel for both beauty and long-term economy. For its use is well justified, not by its beauty and strength alone, but by the care, cleaning and maintenance it saves . . . throughout its service life.

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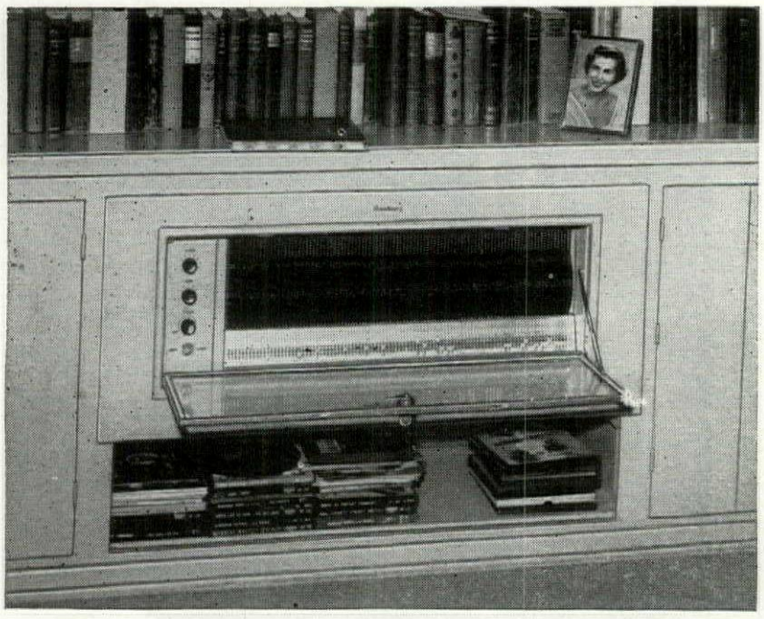
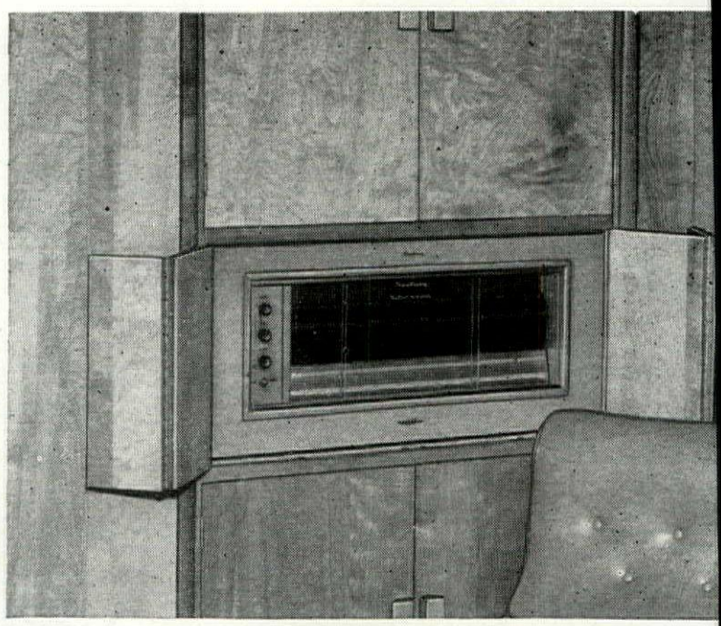
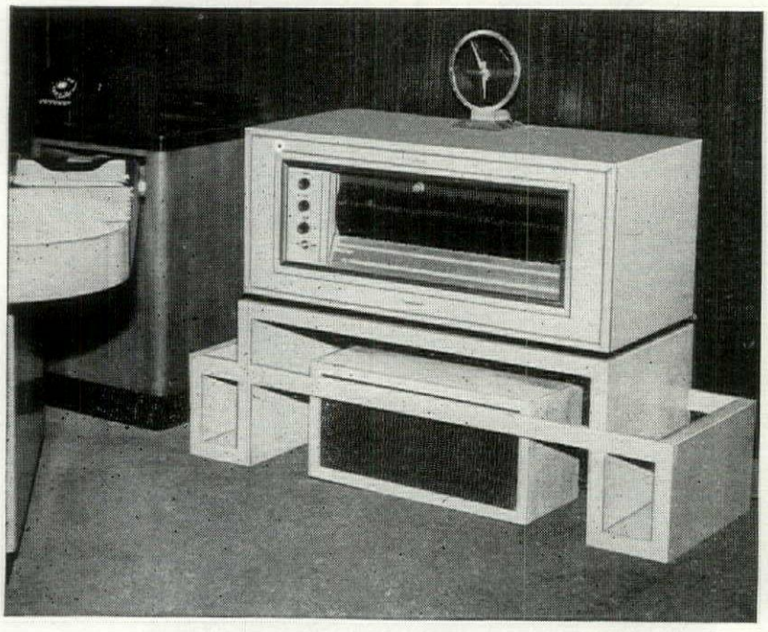




The Seeburg Custom Unit for built-in installations.



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The Seeburg Console.

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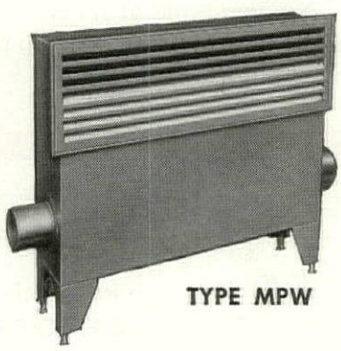

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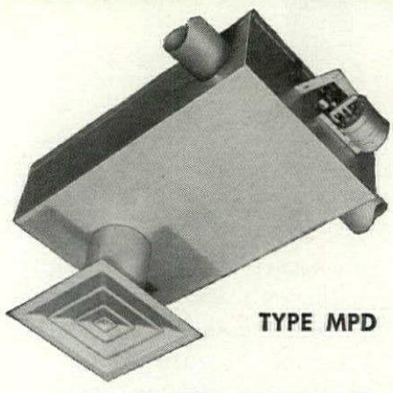

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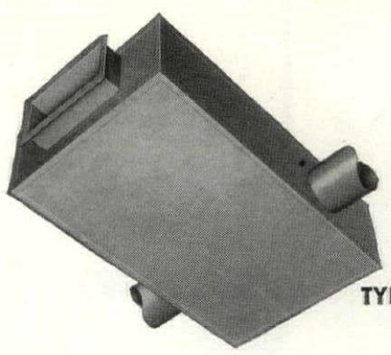
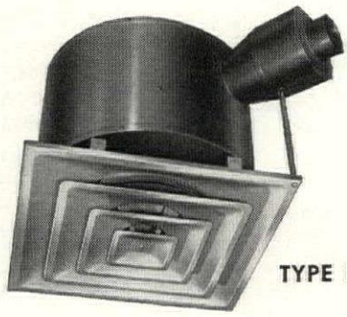


TYPE MP



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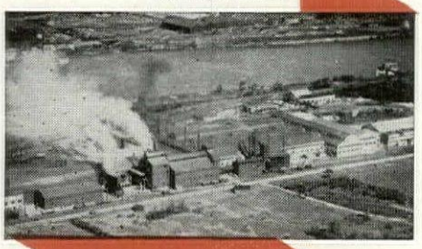

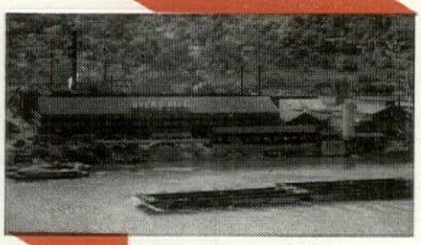

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LETTERS

GLASS RECORDS

Forum:

In your December issue you state that the Manufacturers Trust Co. building in New York has the biggest panes of glass ever put into a building—22′ x 9′-8″. This statement is incorrect. While in business in New York City, I installed the largest ¼″-thick plate glass window in New York City. Gimbel Bros. department store on the 32d St. side between Broadway and 8th Ave. has several large sheets of glass, the largest of which is 220″ x 156″. These plates were installed in 1914.

HERMAN H. GLASSER
Miami Beach, Fla.

• Reader Glasser wins on the basis of area (by 3,096 sq. in.) but loses on the basis of weight (by about 560 lb.). The bank's window glass is ½″ plate.—ED.

ARCHITECTURE IN FACTORIES

Forum:

I want to tell you how pleased we are with the article on our Canadian plant in your February issue.

Mr. Breuer has done a wonderful job for us. I hope that over the years people will realize, more and more, the soundness of putting good architecture into factories.

ANDREW GAGARIN, *president*
Torrington Manufacturing Co.
Torrington, Conn.

OUTDOOR SPACES

Forum:

The idea of the article on "Grand Central's Outdoor Concourse" (AF, Feb. '55) is an excellent one. I am very pleased indeed to see the FORUM discussing questions of design such as this one.

While I admire the effort you made to stress the importance of space in architectural composition and urban design, I felt that the term "outdoor room" is somewhat too static and limited to convey exactly what you are driving at and that the photographs failed adequately to convey the character of such spaces and the pleasure that can be associated with them.

I hope that you will take another shot at this subject and perhaps many more after that, for it is indeed one of the most important ones that there is and represents, in my opinion, a blind spot in the perspective of "most Americans" and also, unfortunately, of many practicing architects as well.

EDMUND N. BACON, *executive director*
City Planning Commission
Philadelphia, Pa.

MODERN ARCADES

Forum:

I have read your very interesting article, "The Arcade Makes a Comeback," in the January issue of FORUM. The historical background of the use of the arcade was most interesting.

The City of Nashville has one arcade

continued on p. 76

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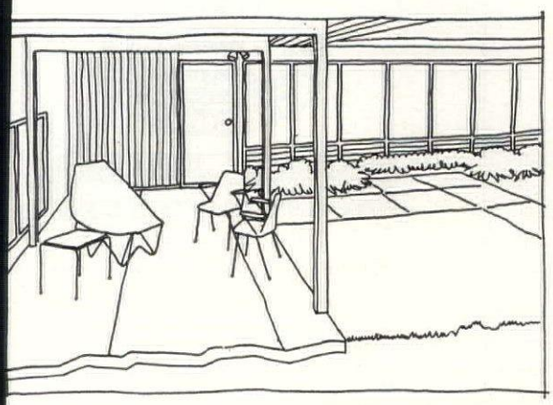
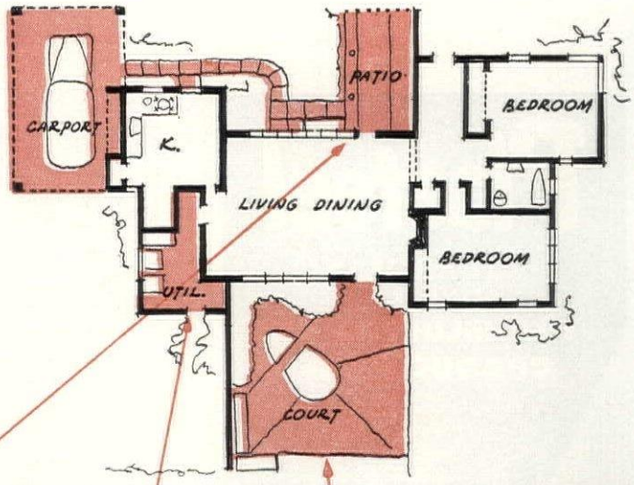
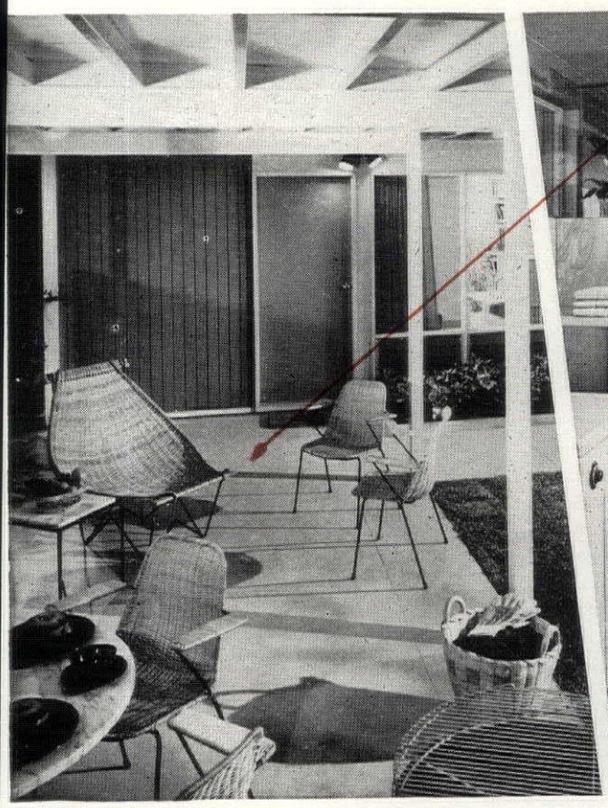


Fused color. *Not a paint or coating! Colorundum is troweled into the concrete topping and becomes an integral part of the surface, producing beauty and durability.*

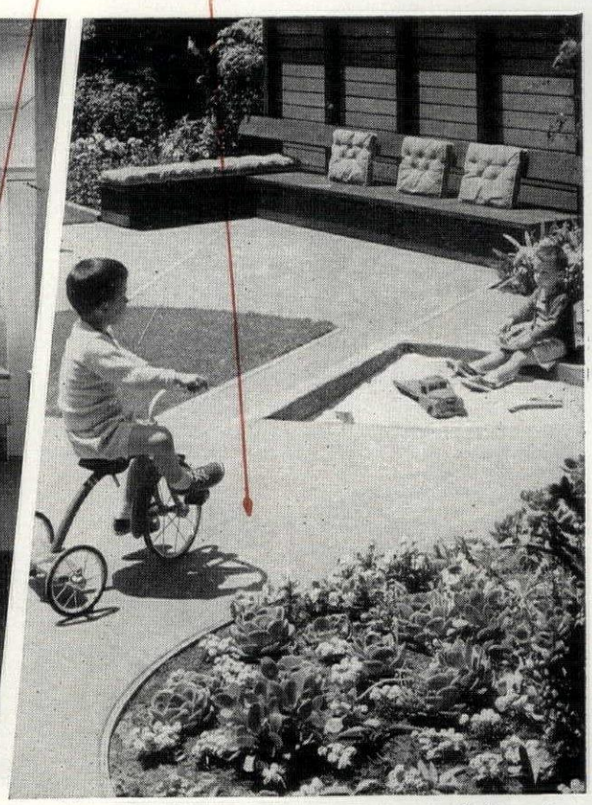




Nat'l Homes Corp. photo



J. Shulman photo



E. Braun photo

Beautify concrete floors

Colorundum floors give luxury appearance and extra wear resistance at low cost

Here's a simple and economical solution to the problem of exposed or uncarpeted areas of drab, colorless concrete. It's called Colorundum. And the fused-color concrete floor it provides lends a dramatic and practical accent to patios, walkways, and service floors. Colorundum cuts air conditioning costs, too, because its color properties keep sunlit areas substantially cooler than ordinary concrete. Yet its cost is just a fraction of that of tile floors.

Colorundum is far more resistant to traffic than ordinary concrete floors. It is a balanced formulation of nonslip aggregate (next to the diamond in hardness), water-repellent compounds, and durable colors . . . contains no silica, quartz, or sand. It is easy to keep clean, and since it contains no metal, it will not rust or stain.

Colorundum is available in eleven decorator colors.

Subsidiary of Sun *Chemical Corp.*

HORN **A. C. Horn Co., Inc.**

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Please send me complete information on Colorundum.

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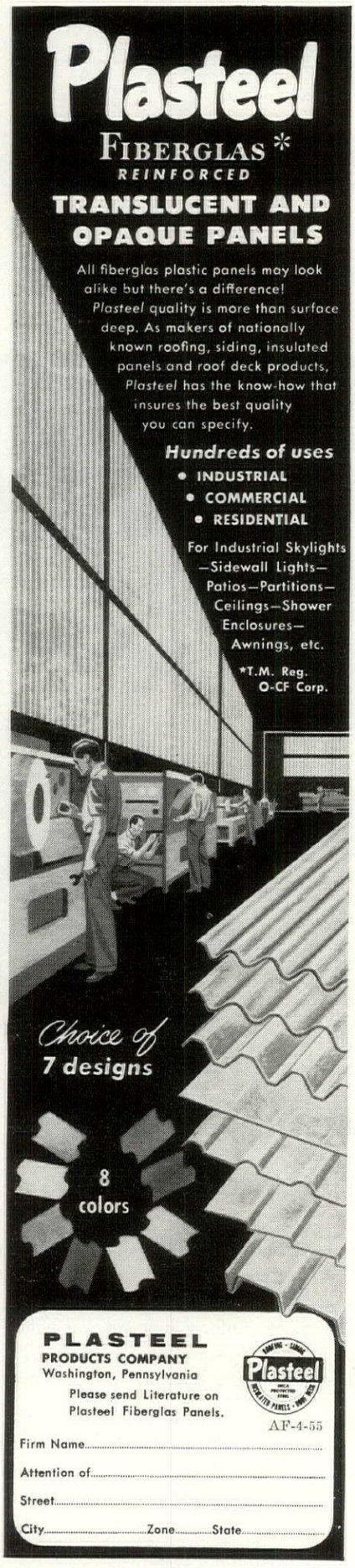

LETTERS

Continued from p. 74

which has been a great help to pedestrian traffic in our heaviest traffic area, but in a very short time we will have to build a recessed arcade along our main street, Church St. Nashville is an old city and our main streets downtown are very narrow. We now prohibit parking on six blocks of Church St., but our sidewalks are so narrow that it is necessary at certain periods of the day for people to walk out into the middle of the street to get anywhere at all in any reasonable length of time. This, of course, is very dangerous.

There have been a number of shopping centers built outside of the city which are endangering the main downtown business district. The city is losing the taxes which come to the city from the business property. To stop this decay, I believe we need recessed walkways on our main streets, with possibly a similar type of construction on one or two of the parallel and cross streets.

Your article revives in a very fine way our thinking on this matter, and I believe will help stimulate our program.

W. A. COOLIDGE
Director of Public Works
Nashville, Tenn.

Forum:

You might have included some information on the advantages that for centuries have been enjoyed by the majority of towns and cities of old Spain, such as Salamanca, Madrid, Santiago de Compostela, Alcalá de Henares, etc. Traditional Spanish architecture is at present serving as the basis for many of the modern constructions in this country.

M. MOLDES
Madrid, Spain

SCHOOL FINANCE

Forum:

I am delighted with your editorial on our national problem of school financing (AF, Feb. '55).

If the editorial has a fault, it is that it does not go far enough. I believe that it is literally true that the cost of schools is of almost no significance to the average taxpayer.

School financing needs to be related to the over-all cost of educating children. If you accept 50 years as a reasonable life for a school building, you will find that it is a rare district where the cost of the building represents more than 12% of the cost of educating a child. In established districts where high standards are set, building cost (meaning cost of interest and amortization) barely exceeds 5% to 7% of the total budget. Under such circumstances, the cost of the school could be doubled and affect the average taxpayer very little. By the same token, if the schools were given to the districts for free, very little would be saved.

It strikes me that the good citizens who are fighting for better education should cease being defensive and should attack.

continued on p. 78

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The Mid-West Acoustical & Supply Co., Cleveland, Akron
OKLAHOMA
Harold C. Parker & Co., Inc., Oklahoma City
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OREGON
Acoustics Northwest, Inc., Portland
Commercial Tile Co., Eugene
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Elliott Bay Lumber Co., Seattle
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Building Service, Inc., Milwaukee
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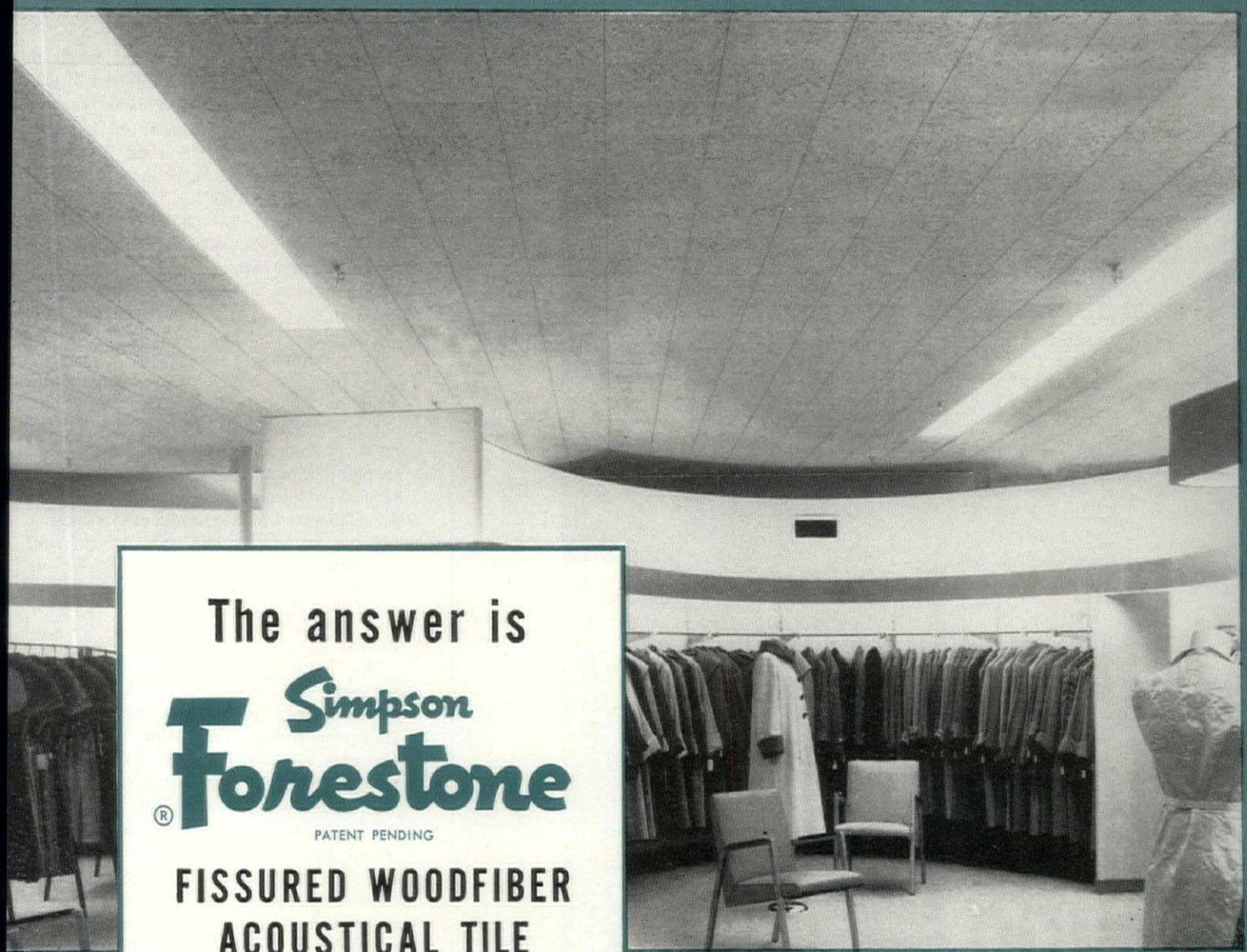
F. Drexel Company, Ltd.
Vancouver, B. C., and Victoria, B. C.
Hancock Lumber Limited, Edmonton, Alberta

Where beauty and economy are factors...



Webbers Department Store (Parks, Snow Chain), Beverly, Mass. Architect: H. E. Davidson, Boston. General Contractor: W. H. Porter, Watertown, Mass. Acoustical Contractor: Acoustical Contractors, Inc., Brighton, Mass.

The answer is Simpson Forestone®

PATENT PENDING

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For the first time ...a fissured tile at economical cost

Stores, bars, restaurants, hotels and other institutions serving the public must control noise through sound conditioning . . . but they must also present an attractive appearance. Before Simpson created *Forestone* there were only two choices among materials that are readily maintained; the rigid, mechanical pattern of perforated tile, or beautiful—but costly—fissured *mineral* tile. *Forestone* offers the beauty of fissuring, with woodfiber economy. Investigate this *exclusive* Simpson product today.

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Ask your nearest Simpson Acoustical Contractor to show installations or photos . . . or mail this coupon today for further information.

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Simpson Logging Co., 1010 White Bldg., Seattle 1, Wash.
Please send full details on Forestone Acoustical Tile.

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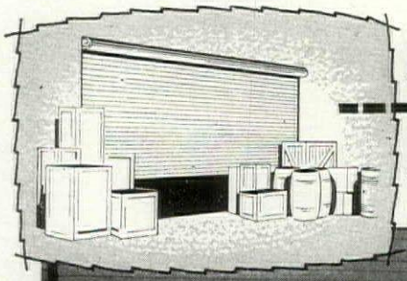
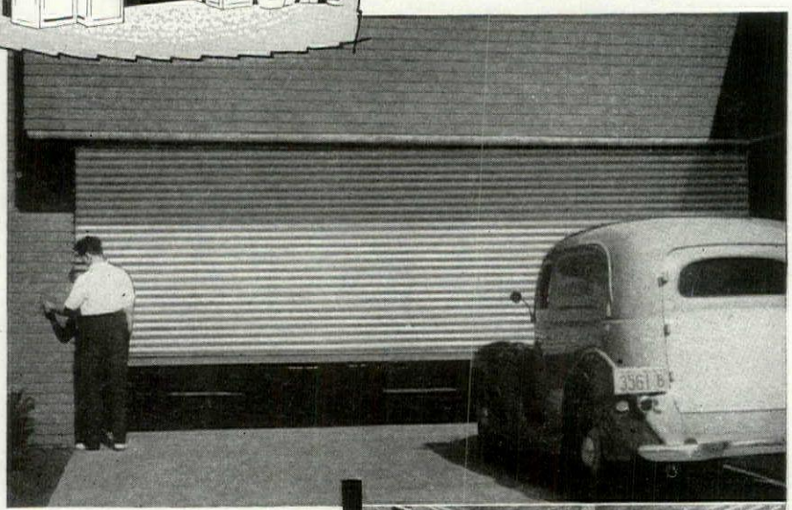
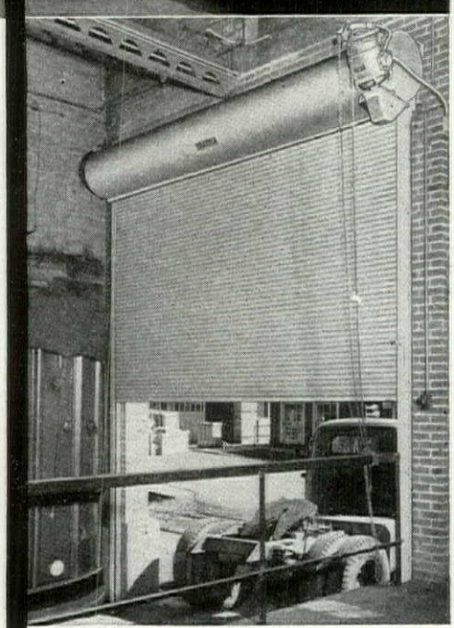


save space



with

Kinnear Steel Rolling Doors



Opening straight upward, Kinnear Rolling Doors coil out of the way above the opening, into the compact hood mounted on the wall (or often within the wall, where desired).

They give you full use of all space around doorways at all times. *No extra space of any kind is needed for their opening action and closing action.*

The rugged interlocking steel-slat curtain *(originated by Kinnear)* also gives you added protection against fire, theft, vandalism, storms, and accidental damage.

For extra resistance to weather and corrosion, Kinnear Rolling Doors are heavily galvanized, with 1.25 ounces of pure zinc per square foot of metal (ASTM standards).

Kinnear Rolling Doors are built any size, for easy installation in either old or new buildings of any construction. Manual-lift, chain, or crank operation—or motorized push-button control. ***Write for full details.***

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Offices and Agents in All Principal Cities

LETTERS

Continued from p. 76

Cheaper schools are scarcely an objectiv worth fighting for, but better schools mos certainly are.

The reason why there is so much mis directed attention given to the cost of schoo buildings is quite simple. This is frequentl the one item which appears on a citizen' tax bill concerning which he is consulte and on which he has a chance to vote. H can't do much about his income taxes, hi corporate taxes, his sales taxes or eve levies for the educational fund. He can however, save himself a dollar or two b voting against a school bond issue.

What we need is perspective. It is sober ing to think that for the cost of one of ou modern high-speed long-range bombers w could build a high school with the mos complete facilities imaginable for 3,000 o our country's youth. It is also a sad com mentary that we spend money more readil to pamper our vices than support our vir tues as witness the tremendous sums spen for cigarettes, liquor and horse racing.

I repeat, let's not defend—let's attack!

PHILIP WILL JR.
Perkins & Will, architects & engineers
Chicago, Ill.

Forum:

We have had a state school building authority which has incurred none of the disadvantages which you are afraid of. However, giving a town that has a present tax rate of over 100 mills an opportunity to go further in debt is not the answer t our school problem. The town of Chelsea, for example, has recently built its first school building in over 100 years. They now find themselves not only with an in creased burden to pay for school teachers, buses and bus drivers, but they still have a teaching load of 40 pupils per teacher and they need two more rooms.

It is easy to say, "Well, let the town dig up more tax money," but the fact is that this town has been digging up tax money for over 100 years in order to educate children to send out of state. (Population figures demonstrate that young people do not stay in Chelsea.) This is true of very many other Maine towns.

CLYDE RUSSELL, *exec. secretary-treasurer*
The Maine Teachers Assn.
Augusta, Me.

● If Chelsea is educating the rest of the nation, it should not be ashamed to let the rest of the nation help.—ED.

URBAN REDEVELOPMENT

Forum:

I have found very stimulating and excit ing your editorial on downtown building in the January issue. I am having copies made which I am pinpointing to a number of local people. It ties in beautifully with a number of things here in San Francisco, including our recent report "Modernizing Downtown San Francisco."

PAUL OPPERMANN, *director*
Department of City Planning
San Francisco, Calif.

continued on p. 8



Turns daylight into dollars

Paul H. Johnson uses Verticle siding, brick, and vast areas of insulating glass in loadbearing Fabrow Window Wall Frames . . . to achieve exciting contemporary architectural effects at lower costs . . .

Design for daylight drama

Fabrow Flexible Fenestration offers interesting modular styles in almost unlimited combinations . . . give your Professional and Office Buildings appealing individuality—Insulating glass reduces noise . . . air-conditioning and heating cost.

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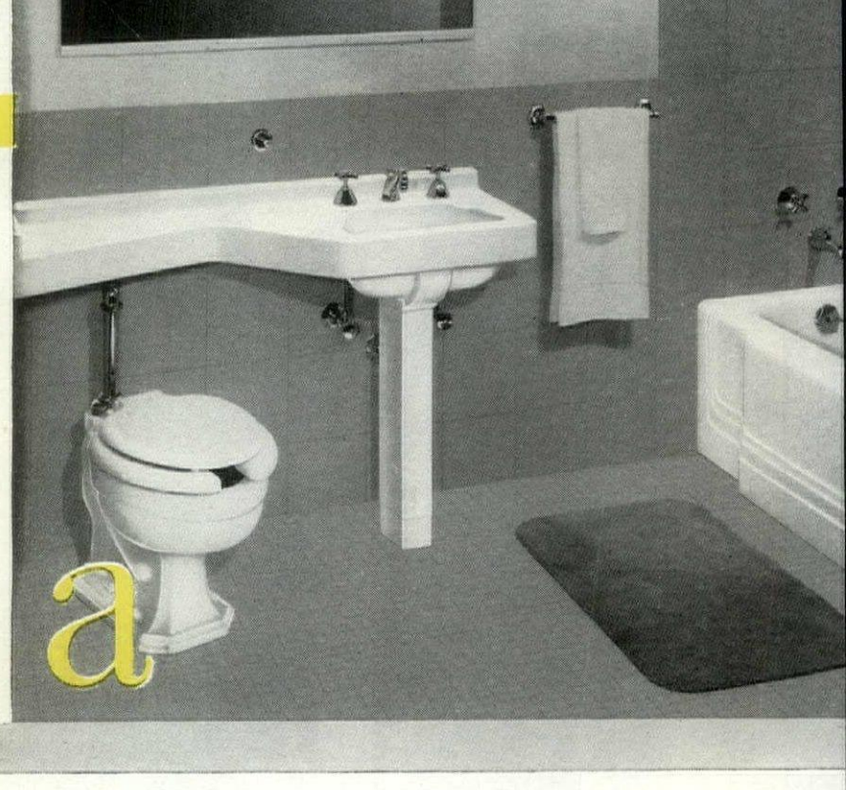
combination especially suitable for hotel or motel baths. It's a notable space-saver, since the toilet can be so positioned as to serve as a dressing table stool as well. Made of genuine vitreous china with non-tarnishing fittings, the Guestledge is low on maintenance, high on guest appeal.

Totally Recessed Application. The new Model TRA Remotaire Room Conditioner is for totally recessed application, with 100% air recirculation. Placed in the peripheral zone of large buildings with interior ventilation systems, it is installed within an enclosure of your own design. Like all Remotaire units, the TRA has individual room temperature controls.

Complete System. Remotaire Room Conditioners are available in several sizes and types to meet all requirements in multi-room installations. Central-plant Remotaire Systems use one simple piping circuit to carry hot water in winter, chilled water in summer. And American-Standard provides water chillers and boilers to give you a complete Remotaire heating-cooling system.



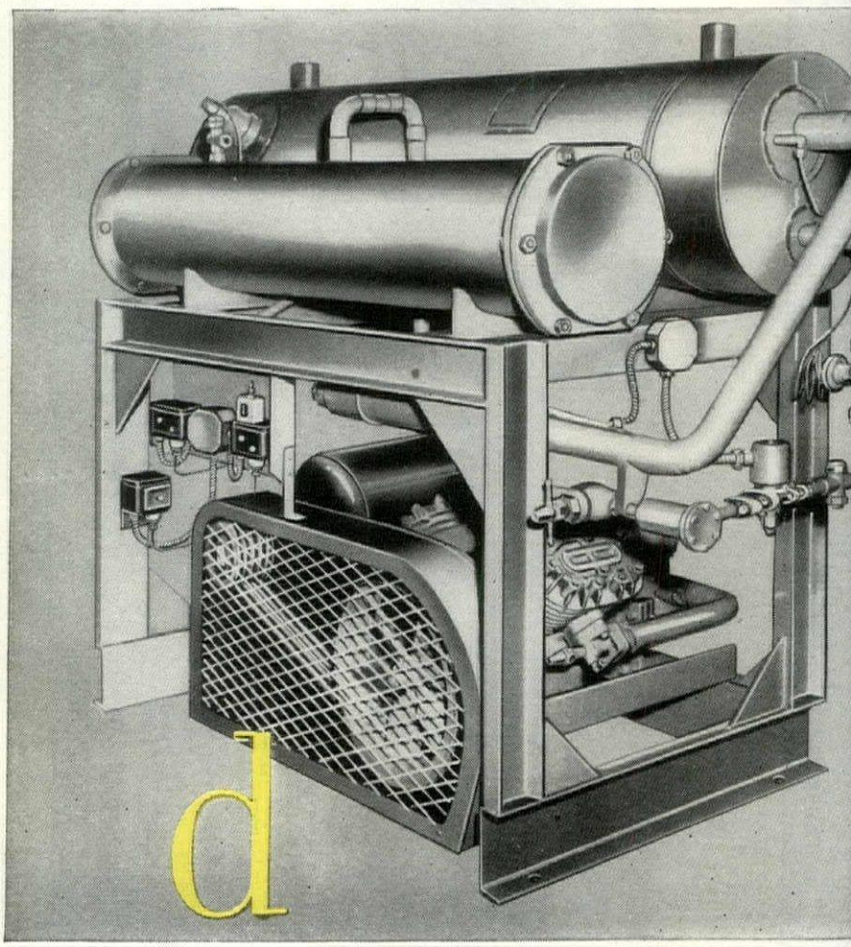
Picture studies in function and

d

New Water Chiller. New American-Standard Water Chillers come factory assembled with circuits completely piped, wired and tested. Available in sizes from 2 to 75 hp. for all commercial and residential requirements, they may be used as a chilled water source for all air conditioning systems.

e

Series heating. Standard 4-G gas boilers will keep any building warm, whatever its size. They come in a wide range of capacities, and can be hooked up in series for large jobs, as shown here. Rugged, dependable, and automatic, they combine high heating efficiency with low-cost operation.



These are just a few of the many plumbing, heating and air conditioning products made by **American Radiator & Standard Sanitary Corporation,** Pittsburgh 30, Pennsylvania.

AMERICAN-Standard

Serving home and industry: AMERICAN-STANDARD
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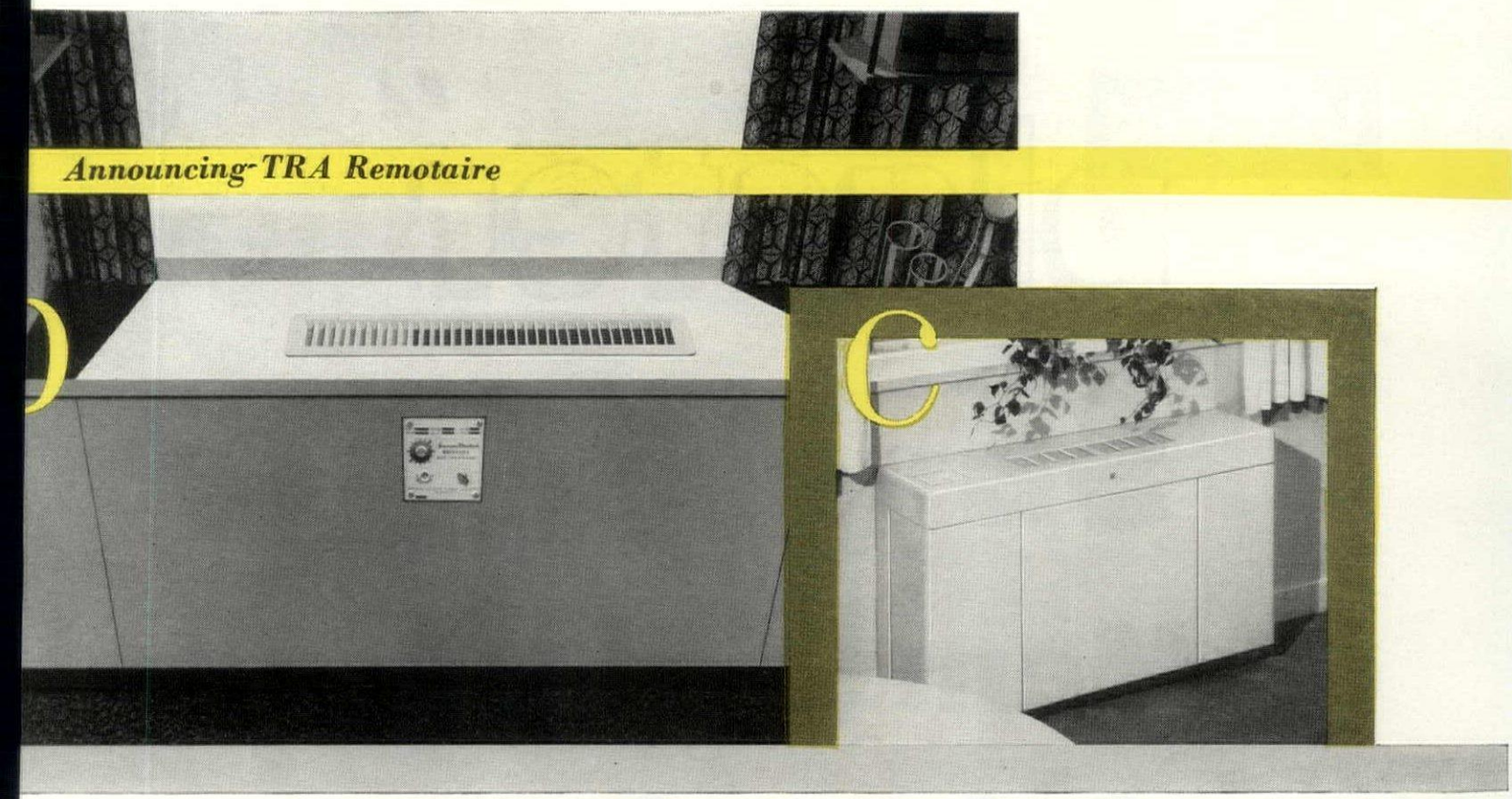
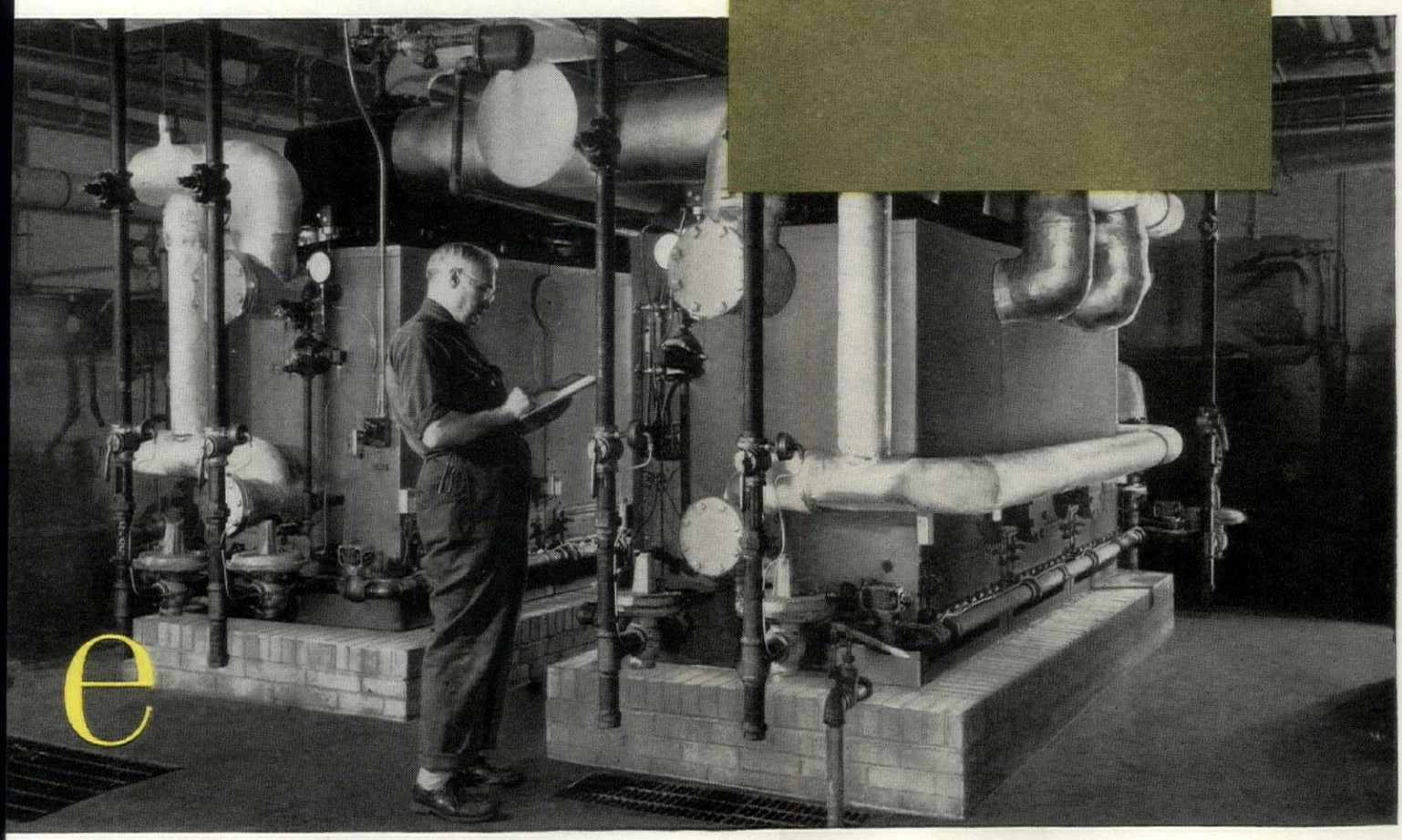
DETROIT CONTROLS • KEWANEE BOILERS
ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS



Announcing TRA Remotaire

design by American-Standard



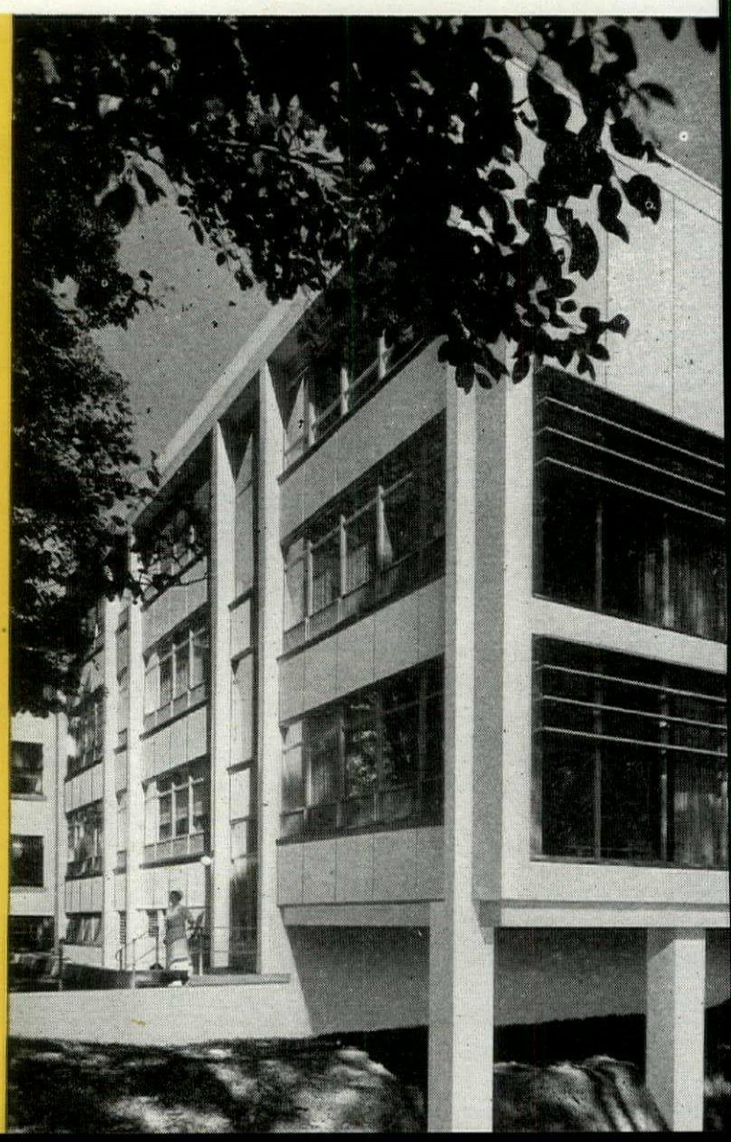
LATH and plaster

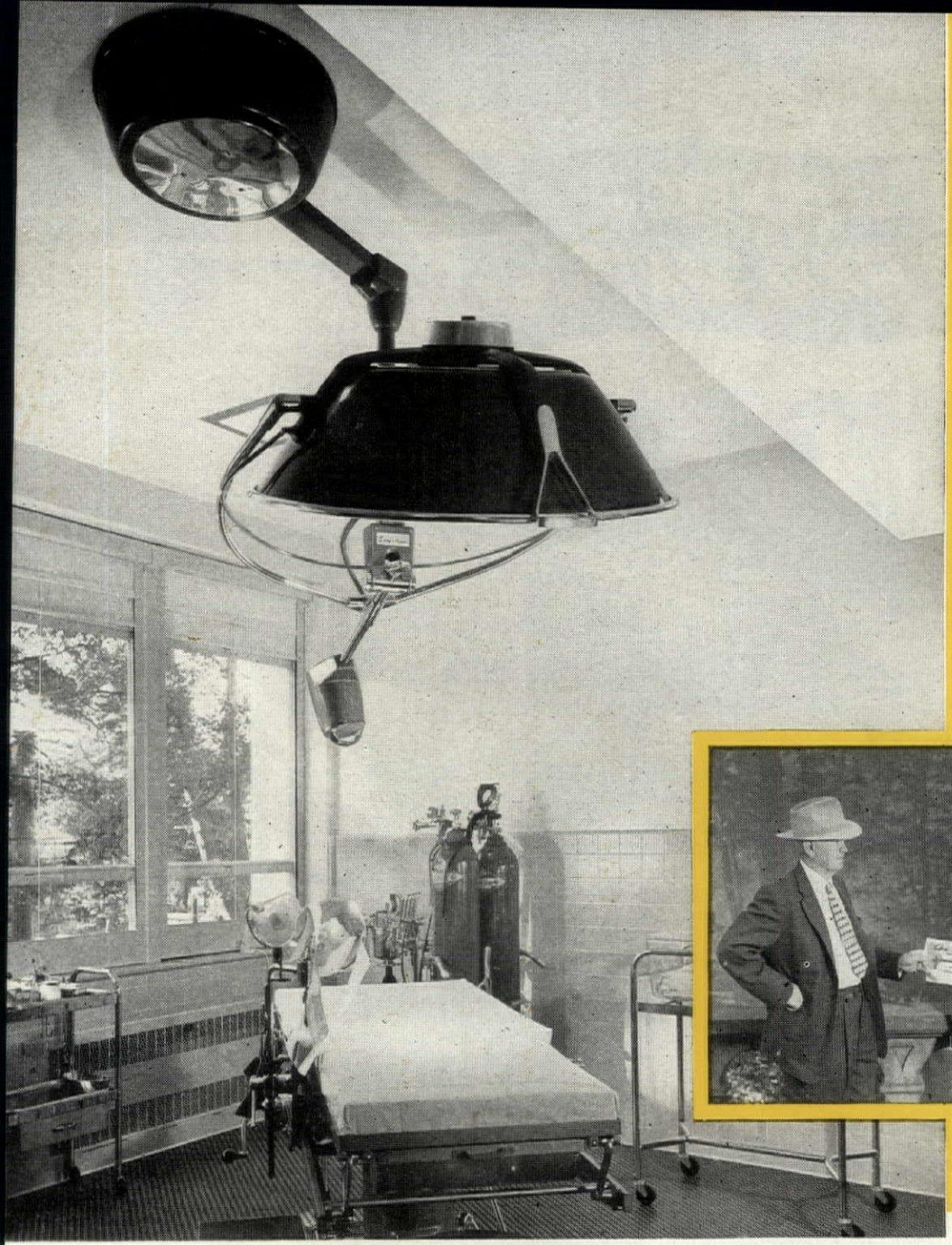
Saves $3613 on Memorial Hospital, Salem, Oregon

Mr. A. V. Petersen, president of A. V. Petersen Co., General Contractors, says: "The basic specifications called for masonry partitions for Salem's new Memorial Hospital. However, the architect included in his specs an alternate for steel stud and lath and plaster partitions which, to our surprise, showed a saving of $3613.00

"The plaster and open steel stud construction enabled the electrical, painting and plumbing contractors to lower their bids. Furthermore, it reduced construction time. And it gave us the permanency, sanitation and sound absorption that are absolutely essential in hospital construction."

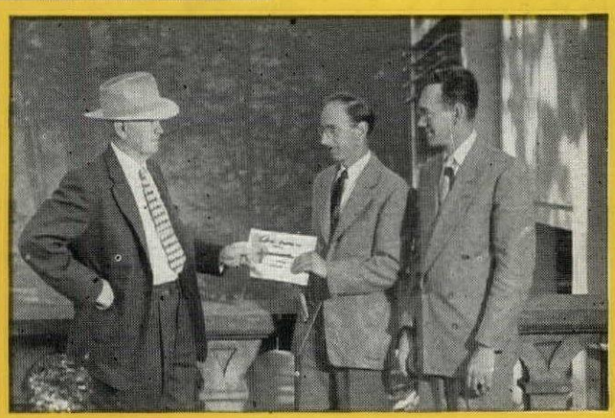
James L. Payne, A.I.A.,
Architect,
Salem, Oregon





• Delivery Room of new Memorial Hospital, Salem, Oregon

• R. E. Green, Plastering Contractor on Memorial Hospital, presents Certified Craftsmanship Certificate covering project to Mr. Fred Kruse, representing Architect and Mr. Irwin F. Wedel, Hospital Administrator.



Certified Craftsmanship IN ACTION!

The Certified Craftsmanship Certificate is a written pledge of adherence to work schedules, job cooperation, work of craftsmanship caliber and nationally recognized standards of quality. A certificate is yours for the asking from lathing and plastering contractors adhering to the Code of Standard Practices for Lathing and Plastering.

We suggest a thorough reading of the Code of Standard Practices which appears on the back of every certificate. Ask your lathing and plastering contractor for a copy, or write National Bureau for Lathing and Plastering, 1401 K Street, N.W., Washington 5, D.C.





• *This is the emblem of the National Bureau for Lathing and Plastering. It symbolizes high standards of job performance and responsibility.*

Associated Manufacturers
of Lathing and Plastering Materials
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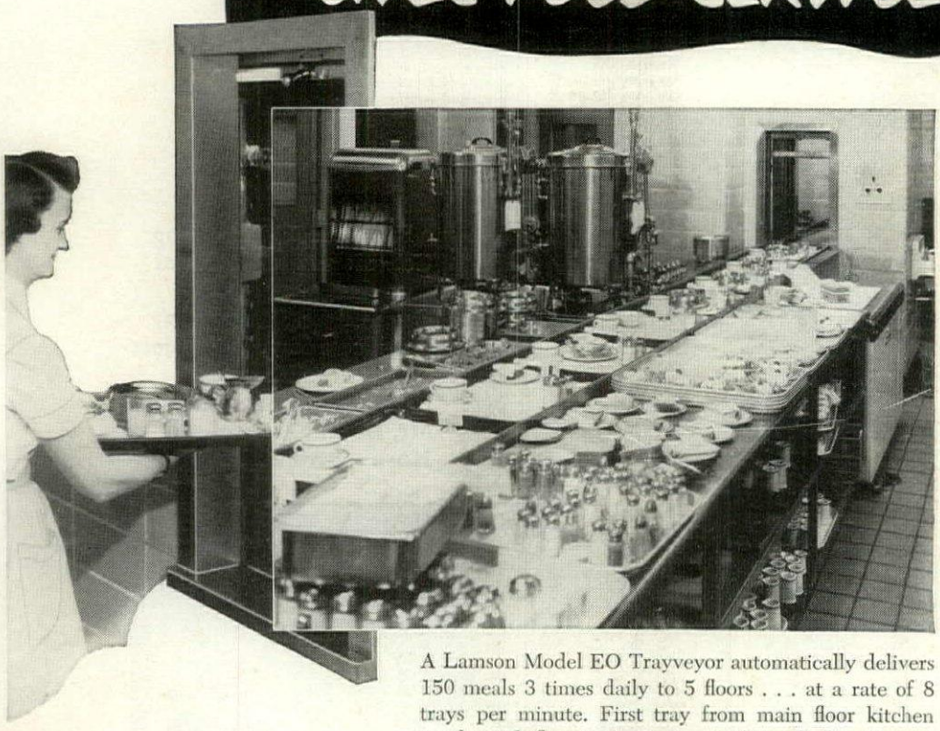
LAMSON TRAYVEYOR GIVES FOOD SERVICE



A Lamson Model EO Trayveyor automatically delivers 150 meals 3 times daily to 5 floors . . . at a rate of 8 trays per minute. First tray from main floor kitchen reaches 6th floor in 1 minute. At the end of each meal period, Trayveyor is reversed and returns empty dishes to central kitchen.

ASSEMBLY LINE EFFICIENCY!

At the Euclid-Glenville Hospital, in Cleveland, Ohio, a Lamson Trayveyor has speeded meal delivery . . . has eliminated mealtime congestion of elevators with hot food carts . . . has given the central kitchen greater control over patients' diets.

Lamson Trayveyor Systems are space- and time-savers for buildings still in the planning stage or structures already existing. Adapt easily to any particular building arrangement to give maximum use in limited space. More meals can be served in fewer sq. ft. of serving area.

Lamson Trayveyor Systems expand your building without adding an inch to its dimensions. Discover how a Lamson Trayveyor can provide you with fast, efficient service within minimum space requirements.

LAMSON 75th YEAR

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Plants in Syracuse and San Francisco Offices in Principal Cities

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3424 Lamson Street, Syracuse 1, N. Y.
Please send me a free copy of "Faster Food and Dish Handling." Without obligation, of course.

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ADDRESS_____
CITY_____ ZONE____ STATE_____

LETTERS

Continued from p. 78

SOCONY-VACUUM

Forum:

Forum's article on the Socony-Vac office building was of a great deal of int and emphasizes the point that there is a more to designing an economically s office building than its architectural lo

There was certainly a great deal of s planning behind this project which will it a long, useful life and make it eco cally sound. Entirely too many building built without the reasoning displaye Mr. Galbreath and Mr. Ruffin. I cong late you on your article.

STERLING BIGLER, *building man Girard Trust Bldg. Philadelphia, Pa.*

Forum:

The Socony-Vacuum story and pres tion (AF, Jan. '55) was exceedingly done, indicating a great deal of able s work.

JOHN B. PETERKIN, *arch New York, N.Y.*

HOW TO DESIGN ARCHITECTS

Forum:

I was very much surprised to find tha the round table discussion at Princeto "How to Design a Good Architect" (Jan. '55), there were no students pre

As a student at the school of architec at Harvard, I feel that the job of educa is as much our responsibility as that of faculty, and sometimes more so, because are the ones being "designed." Where I t the student's point of view might have b of value is in what he expects of himself how this fits in with what is expected of

STEVENSON FLE *Cambridge, Mas*

Forum:

The weakest link in our system of train architects is the period following gradua from school. Many practitioners do not h the time or the patience to do the job teaching that is required to finish train the college graduate so that he will be architect. The profession is becoming m and more concerned with this problem I am sure that this period of training be handled in a much more orderly within the next few years.

The industrial revolution which starte little over a hundred years ago is "shifting to high gear." Architecture, ar tects and architectural education will be ing through many more violent changes the years ahead—"so hold onto your ha

LEONARD WOLF, *head Department of Architecture Architectural Engineering Iowa State College Ames, Iowa*

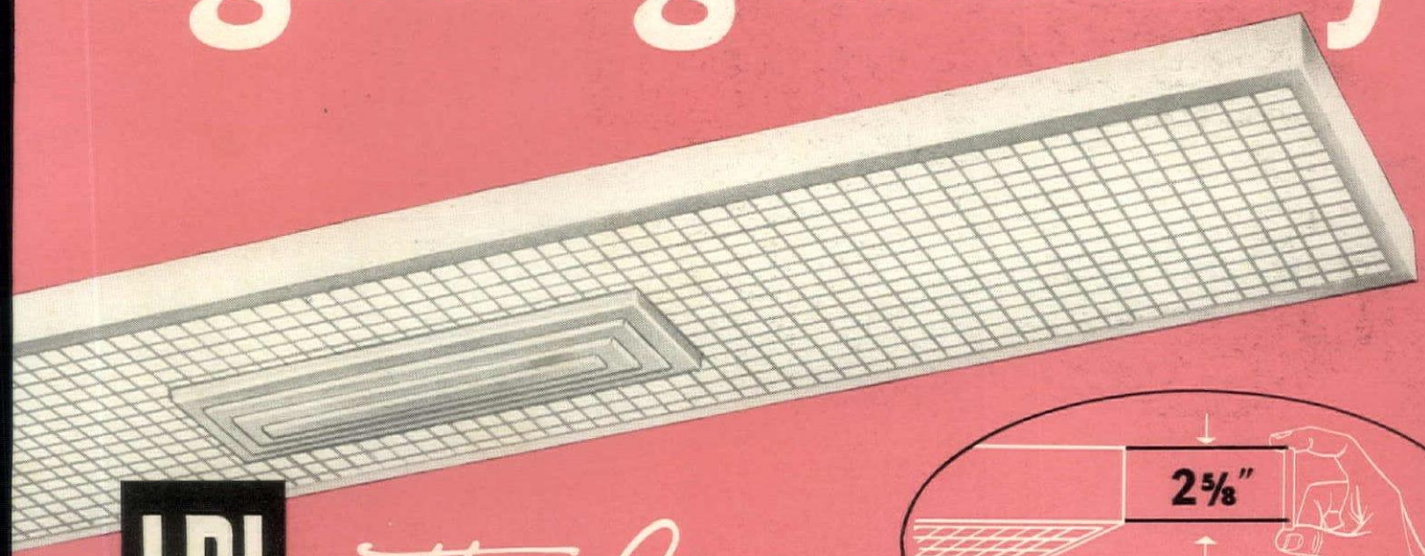
Forum:

It is encouraging that architects from offices and architects from the schools getting together to talk about the future

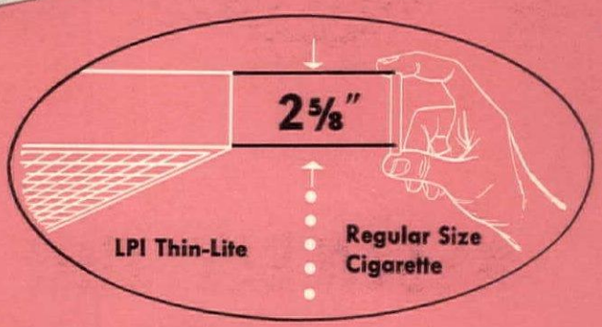
continued on p.

It's making

lighting history!



LPI *Thin-Lite*



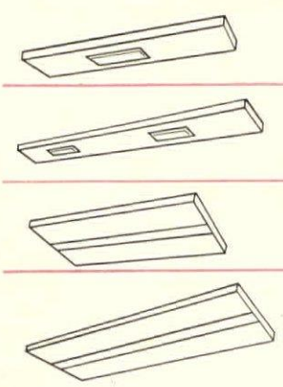
World's Thinnest Shielded Luminaire

No wonder Thin-Lite is creating such a sensation from coast to coast. Here, at last, is a surface mounted fixture so shallow that its depth below ceiling is essentially the same as that of troffers fitted with dished shields. Thin-Lite actually creates a semi-recessed effect.

The four different models (right) can be mounted end to end or side by side, in any combination, to form an unlimited variety of lighting patterns up to any desired size. A few suggestions are shown below.

Thin-Lite luminaires feature metal-framed, molded plastic louver panels, secured by LPI's patented floating hinge which cannot be seen from any angle, and which eliminates unsightly latches and fastening devices.

Available through leading electrical wholesalers, Thin-Lite luminaires are wired with standard E.T.L. ballasts.



THR 240—49" long, 12¼" wide, 2⅝" thin. Two 48" Rapid Start lamps.

THS 296—97" long, 12¼" wide, 2⅝" thin. Two 96" 430 MA. lamps.

THR 440—49" long, 26¾" wide, 2⅝" thin. Four 48" Rapid Start lamps.

THS 496—97" long, 26¾" wide, 2⅝" thin. Four 96" 430 MA. lamps.

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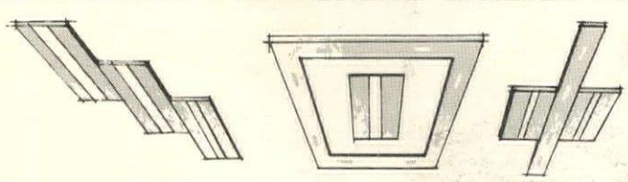

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LIGHTING PRODUCTS INC. Dept. 2 Highland Park, Illinois

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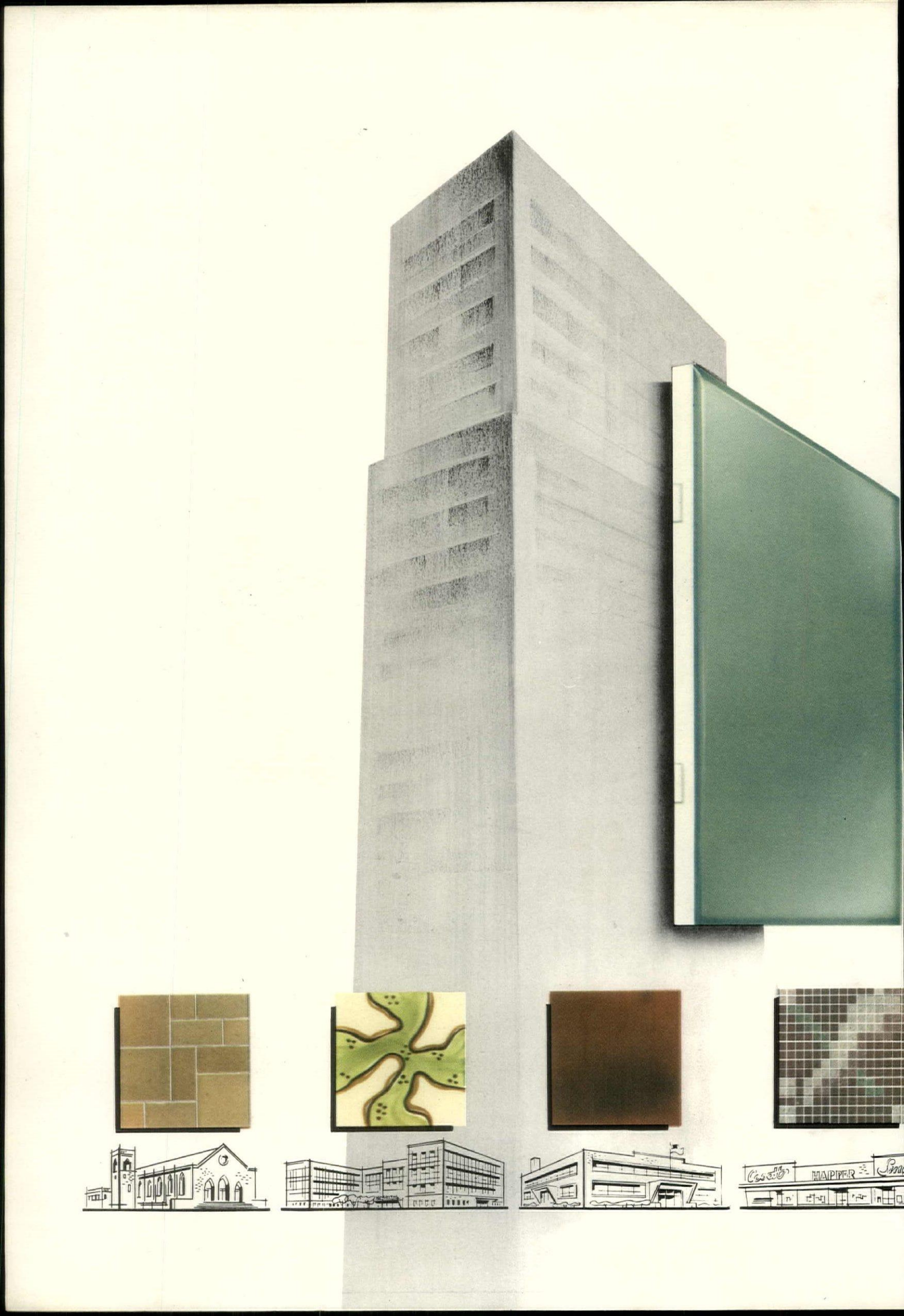
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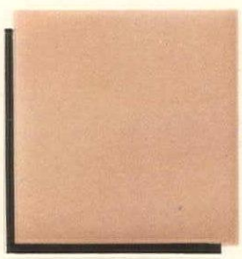
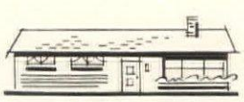






For Free Estimates on (MOSAIC) *Tile, see your phone book for the name of* **Your Tile Contractor** *(Ceramic)*



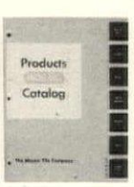
You'll want complete data on the complete Mosaic tile line. Ask your Mosaic Representative, or write us at Dept. 51-5, Zanesville, for these new Mosaic tile books: **(A)** The Mosaic Clay Tile Workbook for Architects; **(B)** The Mosaic Tile Book of Beautiful Homes; **(C)** The Mosaic Products Catalog.



A



B



C

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NOW add color to classrooms with this new Bulletin Board Material

Armstrong TACKBOARD

IN 4 MODERN PASTEL TONES

- ★ SAGE GREEN – No. 752
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- ★ CORK TAN – No. 756
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Now you can add that final touch of functional color to your classroom decorating schemes—by specifying one of the four pastel tones of new Armstrong Tackboard.

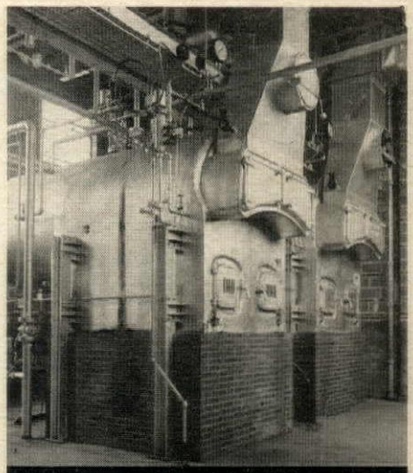
Armstrong Tackboard colors are permanent, go all the way through. The fine-textured resilient surface has high light reflectance. It's designed to help reduce eyestrain and nervous fatigue. And even though Armstrong Tackboard is soft enough to make tack removal easy, it will stand up under years of constant use without painting or other refinishing. Most soil spots can be removed with a soft rubber eraser.

You can order Armstrong Tackboard from leading school supply houses all over the country. It comes in 1/8"- and 1/4"-gauge continuous rolls, 48 or 72 inches wide. And for easier installation as well as a more attractive, more durable job, bulletin boards up to 85 feet long can be installed in one piece.

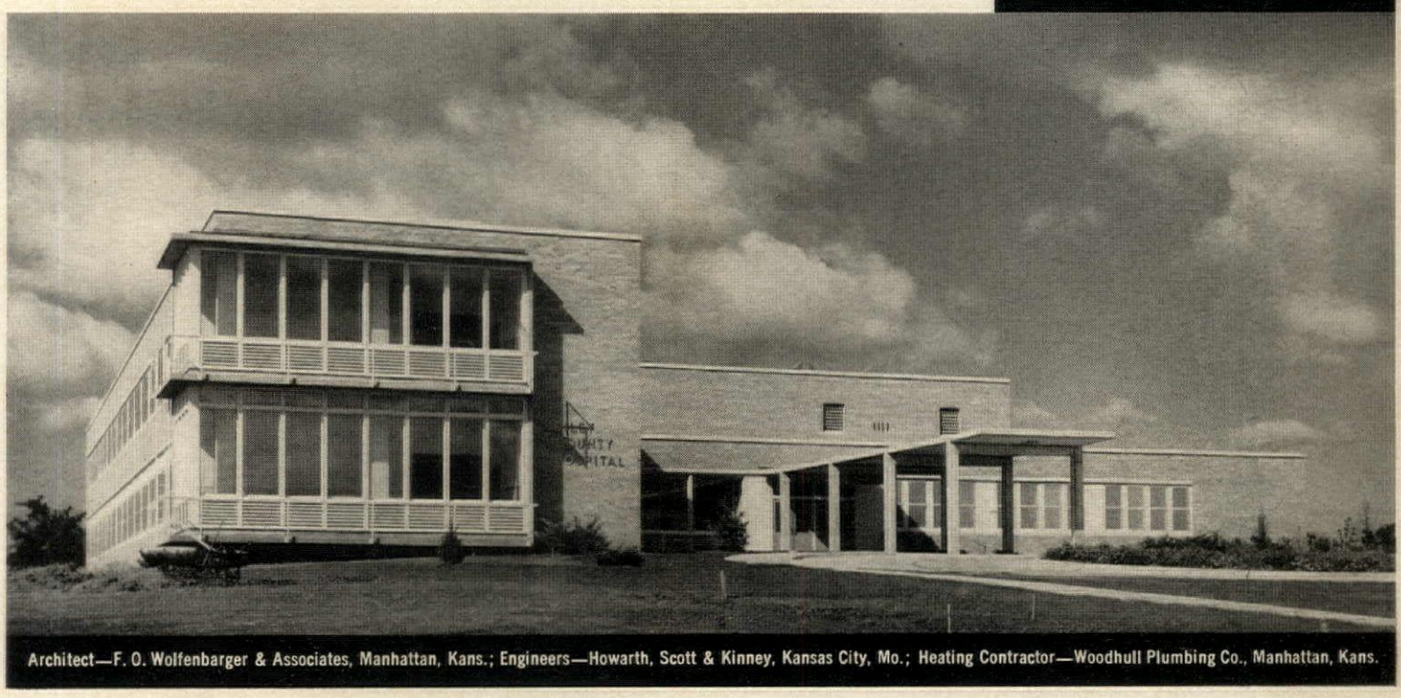
We'll gladly send you samples of Armstrong Tackboard in each of the four attractive colors. Write on your letterhead to Armstrong Cork Company, Industrial Division, 8304 Drake Street, Lancaster, Pennsylvania.

Armstrong TACKBOARD

PROTECTION OF LIFE BEGINS IN THE BOILER ROOM OF A HOSPITAL . . .



Here are 2 #584 125# Firebox Steam Boilers for gas or oil



Architect—F. O. Wolfenbarger & Associates, Manhattan, Kans.; Engineers—Howarth, Scott & Kinney, Kansas City, Mo.; Heating Contractor—Woodhull Plumbing Co., Manhattan, Kans.

KEWANEE

reserve plus rated boilers . . .

GUARANTEE EXTRA POWER TO MEET EMERGENCIES

When you think of protecting life in hospitals, you probably first think of spotless operating areas, sanitary rooms, fresh clean linen on gleaming white beds. And they're all important, too. But such safeguards would be for naught if power failed in the boiler room when emergency called. So, Architect F. O. Wolfenbarger and Engineers Howarth, Scott & Kinney made sure in planning for the Riley County Hospital, Manhattan, Kansas. Kewanee Reserve Plus Boilers were selected because they are certified to deliver 50% extra power, that measure of protection always "on call" no matter what the need. So, don't be misled by promises that a boiler delivers enough steam to meet average daily requirements. Be sure there is extra reserve to take care of unusual conditions. For that is when performance beyond the call of usual duty is a necessity. Kewanee Reserve Plus Rated Boilers guarantee that protection.

KEWANEE BOILERS

KEWANEE-ROSS CORPORATION, Kewanee, Illinois

Division of American Radiator & Standard Sanitary Corporation

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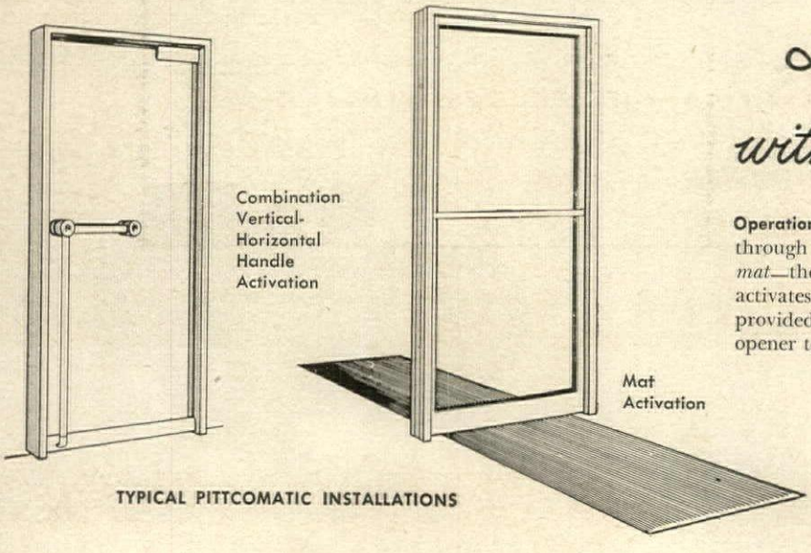
YOU can depend on KEWANEE engineering





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Doors open at a touch—with the PITTCOMATIC®

Operation of the Pittcomatic: The power unit supplies smooth hydraulic power, through ⅜" copper lines, to the hinge under the door. In the *handle*—or *mat*—there is a 10-volt circuit which passes through the control box and activates the power unit. The action of the door is regulated by adjustments provided in the control box and hinge. Here is the *safest* automatic door opener to operate; it's the easiest to install and maintain.

For complete details on Pittsburgh Doors, see Sweet's Architectural File . . . sections 15a/Pi and 15d/Pi, or write to Pittsburgh Plate Glass Company, Room 5214, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa. Ask your local Pittsburgh distributor for a copy of the de luxe Store Front Detail Book.

Pittsburgh Doors are unsurpassed for beauty, architectural adaptability and ease of installation

Whether your building calls for a single door or a multi-unit entrance, Herculite and Tubelite Doors are unexcelled—in their handsome appearance, flexibility and time- and labor-saving features. It is important to you to know, too, that Pittsburgh can be your single, dependable source for all your doorway needs.

HERCULITE®

These attractive doors, equipped with Pittsburgh's Pittcomatic Hinge—"the nation's finest automatic door opener"—were an important part of the remodeling plans of the Imperial Hotel, Portland, Oregon. Four doors and four sidelights were utilized here. Herculite doors are obtainable in 1/2" and 3/4" thicknesses. This glass is polished plate, subjected to a special tempering process. It is four times stronger than ordinary glass of the same thickness.



TUBELITE®

Tubelite doors and frames represent a distinct advance in hollow metal entrance design. They are easily adapted to any type of construction. Here are clean and simple lines, with a unique interlocking construction which assures maximum rigidity. Glazing and installation of these doors is quick and easy. They offer the architect and building owner the most value at the lowest cost. Architects: Smith and Hegner, Denver, Colorado.

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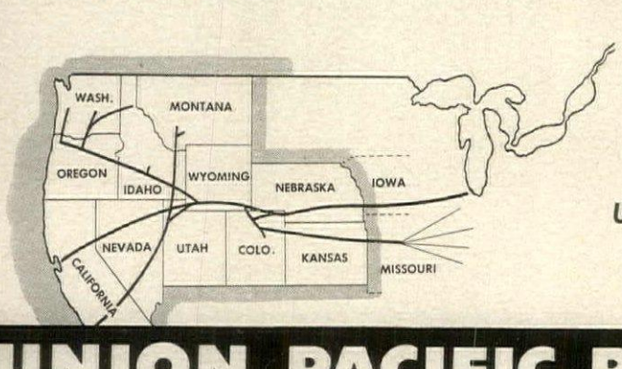
The Union Pacific serves a number of western states as pictured on the map. This vast territory contains an abundance of natural resources in addition to being a healthful, progressive region in which to work and live. As you know, it offers boundless opportunities for outdoor recreation.

If you're thinking about an assembly plant, warehouse, distribution center, or whatever it might be, in a western locality—then we offer this suggestion—

Contact your nearest U.P. representative. Tell him what you have in mind regarding an industrial site to meet your specific requirements. Then he can get in immediate touch with U.P. headquarters in Omaha . . . obtain for you the information you want about available sites.

Or—if more convenient—write, phone or wire the Industrial Properties Department, Room 365, Union Pacific Railroad, Omaha 2, Nebraska.



Map at left shows states served by Union Pacific Railroad

UNION PACIFIC RAILROAD

LETTERS

Continued from p. 84

the profession. But for the group to co sider economics as it affects the design buildings and to omit discussion of eco mics as it affects design of architecture to avoid one of the major professional pro lems of our times.

The AIA Commission on Education a Registration has pointed out that the pro sion of faculty and facilities of high quali and adequate quantity in our universiti will be a central factor in the developme of architects who can serve the needs of th country in the years ahead.

But compared to the resources in facu ties and facilities for agriculture, busine engineering, law, medicine and the other pr fessions, architecture has almost nothin The AIA Commission reports that facul salaries in architecture are among the mo niggardly of all professions and that phys cal facilities for the education of architec are generally little more than academic slum

Surely, architects want faculties and faci ities for the education of architects tha compare favorably with those available fo the eduction of other professional men. Th public whom we serve deserves no less.

There ought to be far more discussio throughout the profession of the economic of educating good architects.

WILLIAM T. ARNETT, *dean*
College of Architecture and Allied Art
University of Florida
Gainesville, Fla.

Forum:

I enjoy reading about and participating i round table discussions of this type, and believe them to be a very healthy way t bring together professional opinions wit teaching philosophy. However, after attend ing many, I am inclined to feel that the become repetitious and many of the sam points are different only in phraseology. A I read this latest report I had the feelin of having attended the session.

SIDNEY W. LITTLE, *dean*
School of Architecture and Allied Arts
University of Oregon
Eugene, Ore.

BUILDING ABROAD

Forum:

I congratulate you on the story of US Building Abroad (AF, Jan. '55). I don't recall having read any story in such great detail as I did that one. It was an informative and interesting account—presented in a highly readable manner.

HAROLD BURSON, *president*
Burson-Marsteller Associates, Inc
New York, N.Y.

Forum:

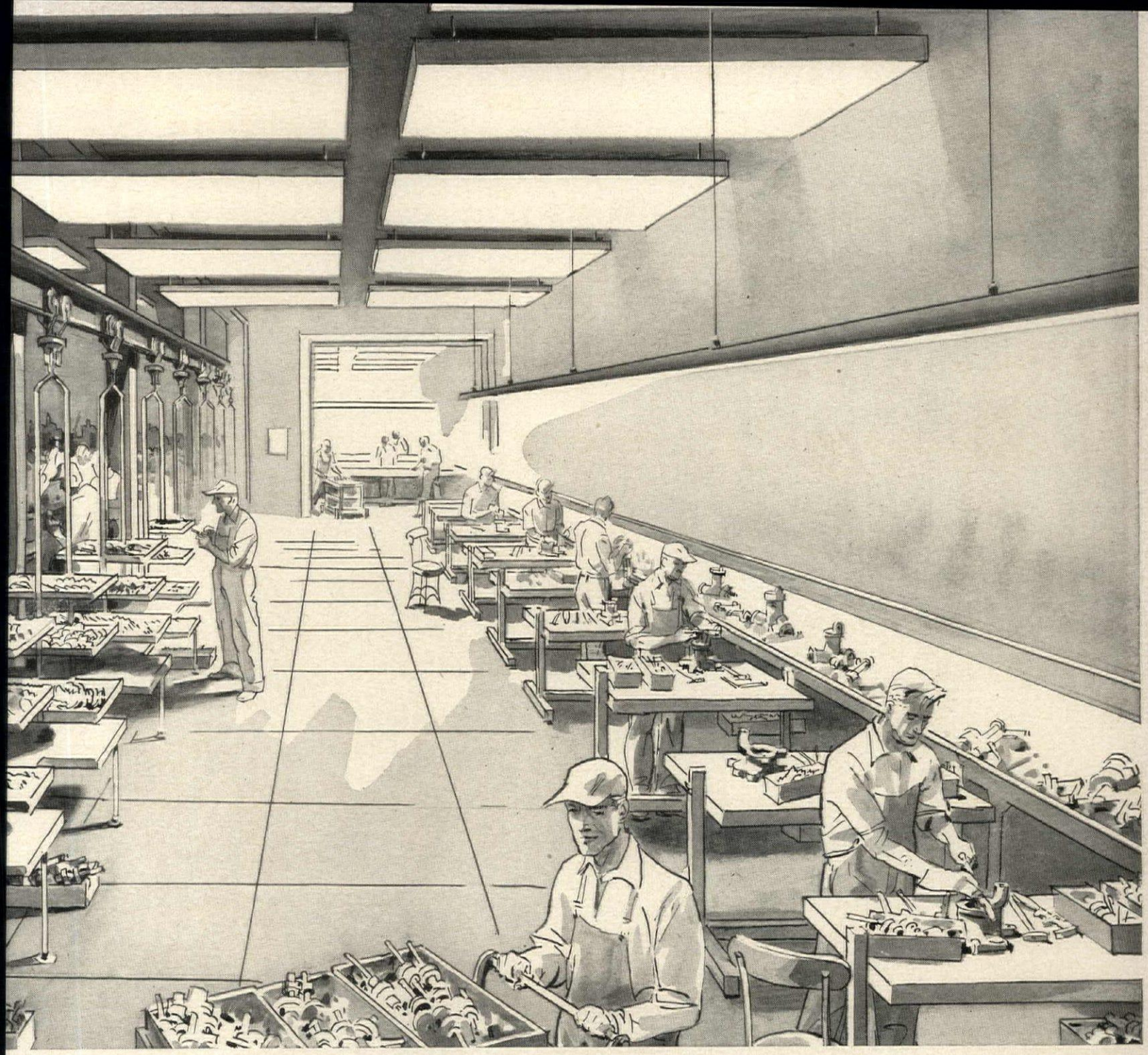
. . . A wonderful job.

WALTHER PROKOSCH
Knappen-Tippetts-Abbett-McCarthy, engineers
New York, N.Y.

Forum:

In a caption describing the Indian Power Plant in your Jan. '55 issue you write: "Designed and built by International General Electric Co. of India, with Harza En-

continued on p. 92



9:3:1—the light ratio for peak work efficiency

Specular glare and shadows now eliminated with diffusers of extruded Du Pont LUCITE® acrylic resin

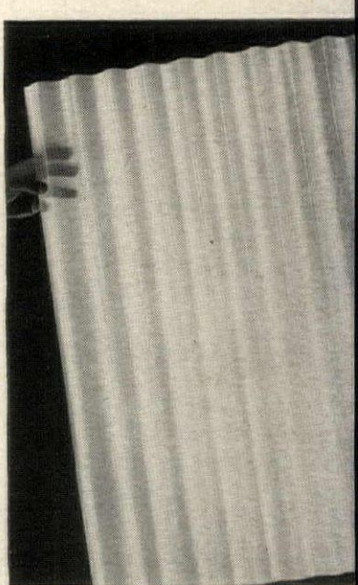
Workers perform tasks with greatest accuracy, speed and comfort under well designed lighting conditions. Lighting engineers have established that a brightness ratio of 9 at light source to 3 at task area and 1 at background is the best lighting environment.

Diffusers of Du Pont "Lucite" effectively assist in achieving this ideal ratio. Extruded sheets and panels of this durable engineering material transmit optimum light while eliminating reflected glare and shadows. The rated lumen output of properly maintained fixtures of translucent white "Lucite" remains essentially constant through years of service, and they resist discoloration and weathering.

Complete information on lightweight, shatter-resistant "Lucite" is available on request. Write to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Room 294 Du Pont Bldg., Wilmington 98, Del.



A four-foot-square modular unit formed from extruded "Lucite." Its permanence and lasting beauty allow years of low-maintenance performance. These panels resist discoloration and outdoor weath-



Extruded "Lucite" allows flexibility of design to meet custom specifications. Du Pont "Lucite" has excellent shatter resistance, color stability and blends harmoniously with

DU PONT

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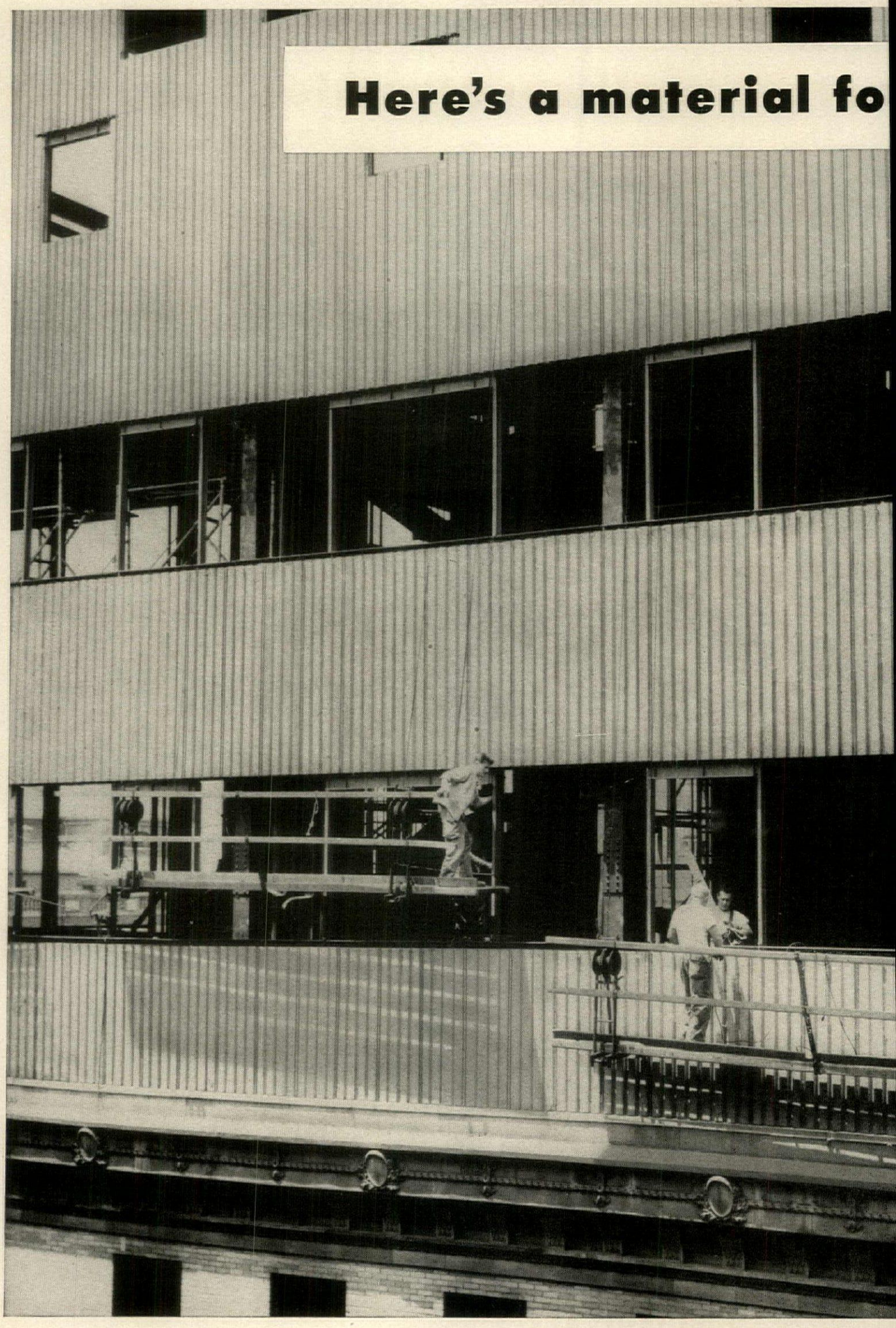
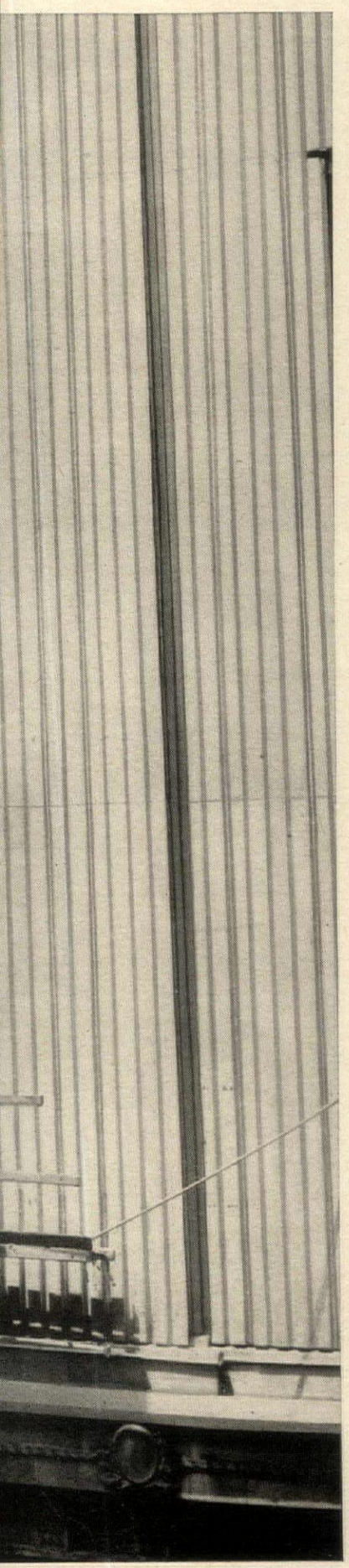

Here's a material fo

urtain wall construction



that solved a weight problem in Bellevue Hospital expansion

STAINLESS STEEL

One of the primary advantages of Stainless Steel as a material for curtain wall construction is the saving in weight its use makes possible. Because Stainless is inherently strong and because no allowance need be made for the effect of corrosion, thin sections can be used.

Never has this advantage of Stainless Steel been better illustrated than in the addition of two floors to New York City's Bellevue Hospital. Existing foundations were limited in the amount of additional weight that could be carried. Stainless Steel panels, weighing 14 pounds per square foot compared with 130 pounds for masonry, were used. This permitted the structural steel to be far lighter, too.

The attractive appearance of Stainless Steel was another factor in its use on this hospital. The architect sought to give the addition the appearance of a totally new facility, rather than a mere expansion without aesthetic appeal. Stainless panels accomplished this, along with permanent good looks.

Erection was handled rapidly with a four-man crew installing four 30-square-foot panels an hour. The construction had more than the required 2-hour fire ratings and the panels had the insulating quality of a 12-inch masonry wall.

As the producer of USS Stainless Steel, we have worked closely with the fabricators of Stainless Steel panels for curtain wall construction. We'll be glad to send you further information and put you in touch with these fabricators. Write to United States Steel Corporation, Room 4683, 525 William Penn Place, Pittsburgh 30, Pa.

* * *

SEE The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

Newly installed Stainless Steel panels on the Bellevue Hospital addition. Architects and engineers: Fellheimer & Wagner. General contractors: Buhl Construction Company. Design and construction under the supervision of the New York City Department of Public Works. Stainless Steel panels fabricated by H. H. Robertson Company.

UNITED STATES STEEL CORPORATION, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND
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UNITED STATES STEEL

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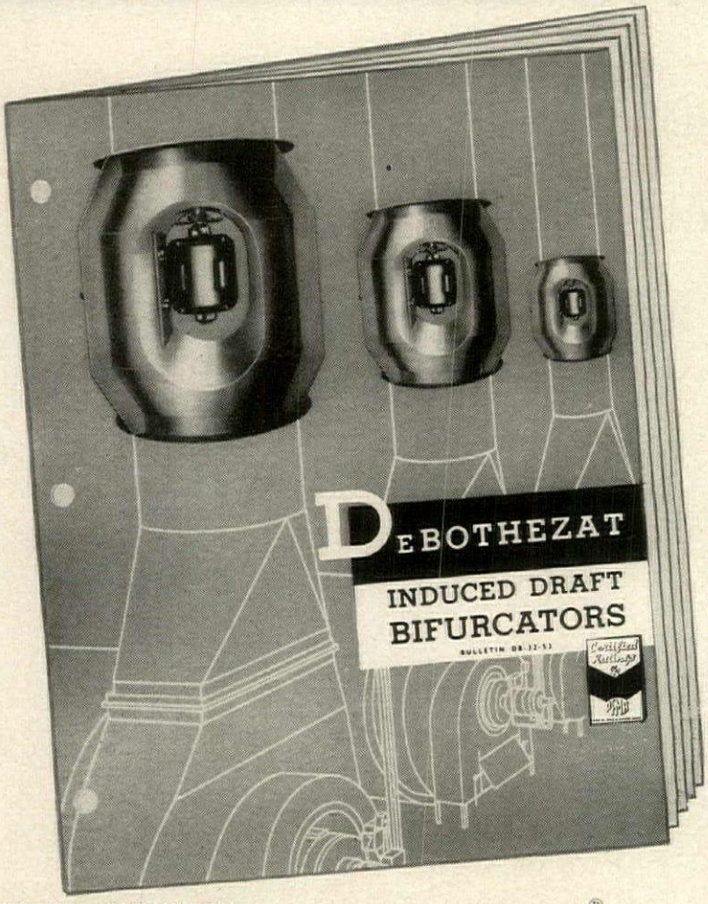
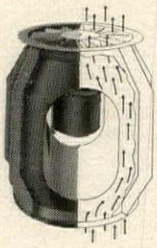


FEATURED EQUIPMENT: Induced Draft Bifurcator® Fan

ITS PURPOSE: to cut cost of providing boiler draft

This data-packed bulletin may indicate that the Induced Draft Bifurcator Fan is your best way to avoid the cost of a tall stack — or to provide additional draft for newly added boilers. An Induced Draft Bifurcator Fan costs only a fraction as much as a tall stack and provides positively controlled boiler draft in any weather. What's more, by eliminating the tall stack, you preserve the design of a modern building.



The Induced Draft Bifurcator is an axial-flow fan in a divided housing. Flue gases bypass the motor which stays cool, clean and accessible. This fan unit can be used with high-pressure boilers delivering up to 60,000 pounds of steam per hour, or low-pressure boilers rated up to 190,000 EDR.

The bulletin illustrates how the Induced Draft Bifurcator installs as easily as a section of flanged breeching. Drawings show how to install it horizontally, vertically or at any angle, either inside the boiler room or on the roof above. The bulletin also contains selection data, specifications and special Bifurcator features. Send for your copy now.

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Division of American Machine and Metals, Inc.,
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Please send free Bulletin DB-32-53 containing full data on Induced Draft Bifurcators.

FIRM NAME

STREET ADDRESS

CITY ZONE STATE

ATTENTION OF MR.

LETTERS

Continued from p. 88

gineering Co. of Chicago." You also cal
a hydroelectric plant.

Harza had nothing to do with this po
plant—although they may have been
nected with other phases of the over-all
velopment of this area of India. Actua
Bokaro was designed by The Kuljian C
in cooperation with International Gen
Electric Co. We might also add that Bok
is not a hydroelectric plant, but a ther
plant, its source of power being deri
from coal.

RICHARD G. MO
The Kuljian Corp
Philadelphia, Pa.

ERRATUM

Forum:

Your December issue featured an art
on the lightweight curtain wall for the Do
las elementary school in Kansas City,
This article would lead the general pu
to believe that full credit for the engine
ing should go to the Barrows Porcel
Enamel Co. Window walls for the Doug
school were designed and developed entir
by Hope's at the invitation of the architec

R. W. GANE, *advertising mana*
Hope's Windows, Inc.
Jamestown, N.Y.

CARACAS PLANNING

● FORUM's story in Nov. '54 on Caracas, Venezu
and its ambitious new building program has dra
fiery comment from several quarters because
author, May Lumsden, made no mention of the
played by Francis Viollich, acting chairman of
Department of City and Regional Planning in
architectural school of the University of Califor
at Berkeley, and others.

Rather than publish the letters separately, we s
quote some of them to extract the greatest values
Mr. Viollich's South American contribution
planning.

Says Catherine Bauer: "FORUM's article gi
about as incorrect an idea of city planning
Caracas as it possibly could. Neither Jose S
Maurice Rotival, nor Robert Moses had much
anything to do with it. The guy who did is Viol
who has been spending his summers there for ye
(he has a Venezuelan wife) as official continu
planning consultant. The result combines the best
both Latin American and US planning experie
(our contribution being the notion that a perman
professional staff is necessary, and legislation
chinery as well as pretty pictures or big ideas)."

Viollich says Venezuela started its planning in 1
and only Maurice Rotival, among planners mention
was in at the start, and his activity was great
up to about 1950. Sert spent about 2½ weeks in 1
and Moses "only a few days" some ten years af
the start. On the other hand, Carlos Raul Villanue
mentioned in FORUM's article only in a footnote
connection with planning the university, served
important role from 1937 on.

Most important was setting up continuing m
chinery under the Comision Nacional de Urbanism
This included extensive studies of Caracas and
other important cities as basis for master plans a
for US zoning methods adapted to Venezuela. F
this work Viollich has been a continuing outsi
planning consultant since 1950, spending a minimu
of three months each summer working full time wi
the Comision staff. One result: two staff membe
came to study city planning in the US.

Mrs. Lumsden, author of FORUM's article, repli
that Viollich's major work and effort has been qu
recent, taking place after she assembled material f
her article; that her conversations on the spot
Caracas indicated Rotival and Sert had fired t
young men's imagination; that persuading individu
istic Caraquenos to accept a zoning ordinance w
indeed an achievement by Viollich.

Various others have earned credit for work
Caracas but their turn will have to come as t
booming city comes into the news again, on futu
occasions.—ED.

ACCLAIMED IN THOUSANDS OF INSTALLATIONS

. . . as the complete answer to the problem of . . . . GREASE INTERCEPTION

Josam SERIES "JH"

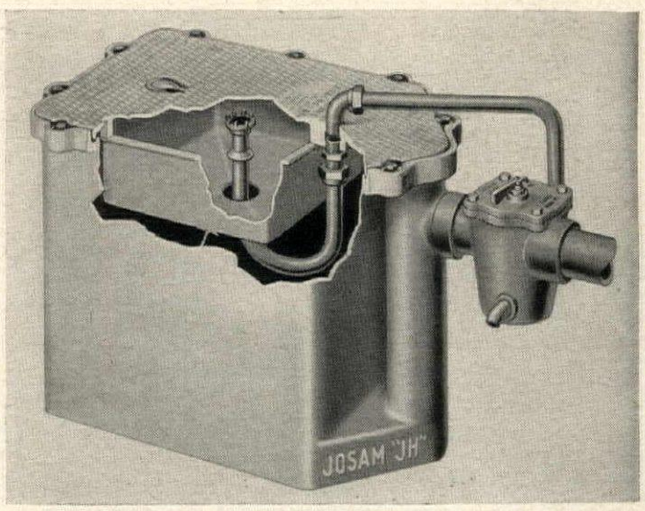
the only GREASE INTERCEPTOR

that draws off grease automatically at the turn of a valve!

☆ *You don't take off cover!*

☆ *You don't remove grease by hand!*

☆ *Intercepts over 95% of grease in waste water!*



● Wherever it has been installed, the JOSAM Series "JH" Interceptor has been acclaimed as the long-needed solution to the problem of grease interception. It's no wonder because—the JOSAM Series "JH" is the *only* grease interceptor that draws off grease *automatically at the turn of a valve.* This *exclusive* JOSAM feature not only keeps grease out of pipe lines but allows for quick, easy draw off of the accumulated grease into separate containers.

Every inconvenience formerly associated with grease interception is now eliminated—there's no mess, no inconvenience, no odor . . . and the clean grease can be readily sold!

Now there is no need to take chances on the trouble, expense and violation of municipal codes caused by grease-clogged pipe lines . . . when the JOSAM Series "JH" solves this problem easily and permanently. Send coupon below for complete details on exclusive Josam Series "JH" Interceptors.

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Please send me free folder on Series "JH" Grease Interceptor.
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Address_____
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In the rolling hills

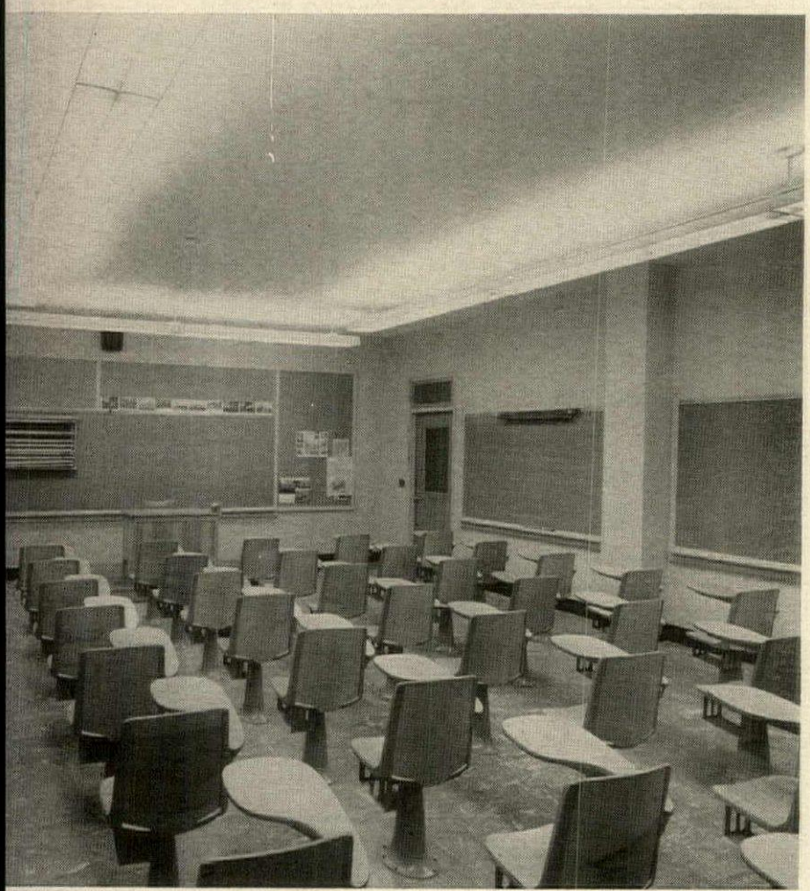




of North Carolina

Eye comfort is all importan

Western Carolina College at Cullowhee installs Day-Brite LUVEX® fixtures in classrooms and departments, symmetrical strip in the library, big 4 by 4 units in the main reading room.



The famous Day-Brite LUVEX "U" pattern for classrooms provides ample light on the desk tops and chalkboards and an emphasis of light on the teacher's desk.

Six Associates, Inc., Architects of Asheville, designed these two recently completed science and library buildings... The famous Day-Brite LUVEX fixture was selected for classrooms and departments — mirrored surface reflector strips for book stacks — 4 by 4 units for the main reading room. How fully their choice was justified is shown in the interior views pictured on these pages.

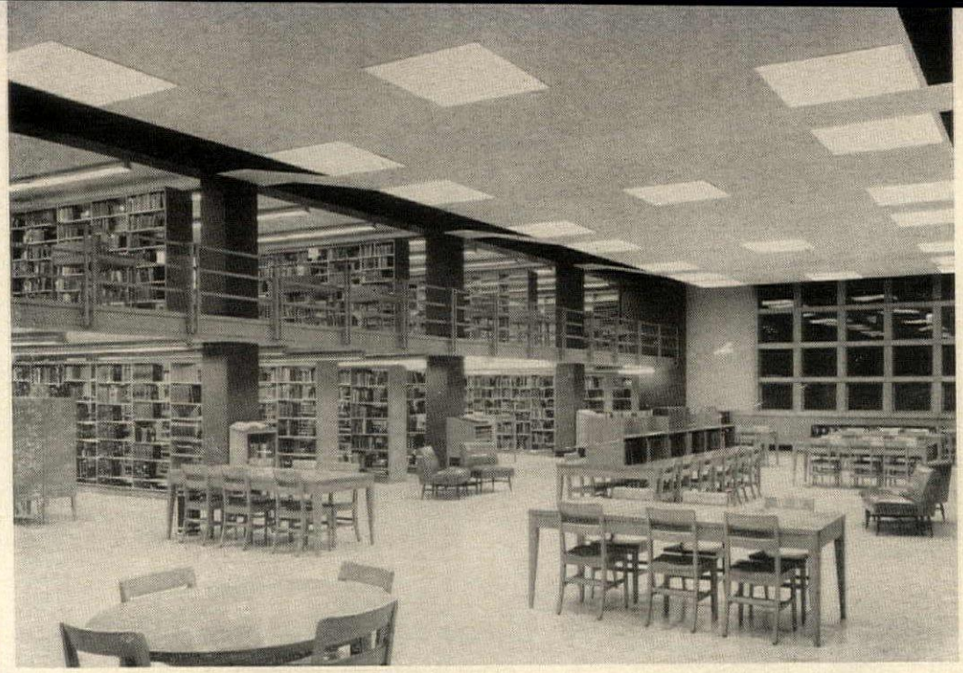
Their comment on the installation is interesting.

"Please say that the owners and architects are pleased indeed with the lighting job that Day-Brite fixtures are doing at the College and that in the Library reading rooms, which are used a great deal at night, the lighting is such that seeing is effortless and at the same time the atmosphere is restful."

By installing LUVEX fixtures, full advantage was derived from the light-colored walls and ceilings — since LUVEX design combines 50% *upward* lighting with 50% *downward* lighting, ceiling gloom is "washed out." This results in adequate lighting PLUS all-important eye comfort.

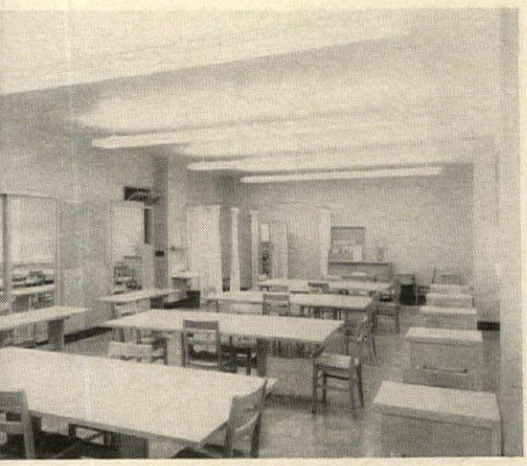
CALL OR WRITE YOUR NEAREST DAY-BRITE LIGHTING REPRESENTATIVE FO

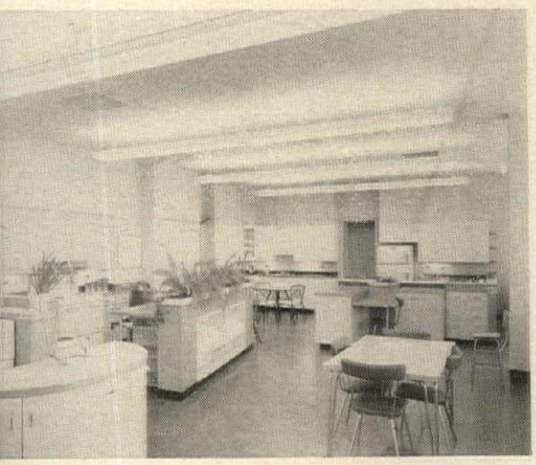
Day-Brite Lighting, Inc., 5471 Bulwer Ave., St. Louis 7, Missouri.
In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.



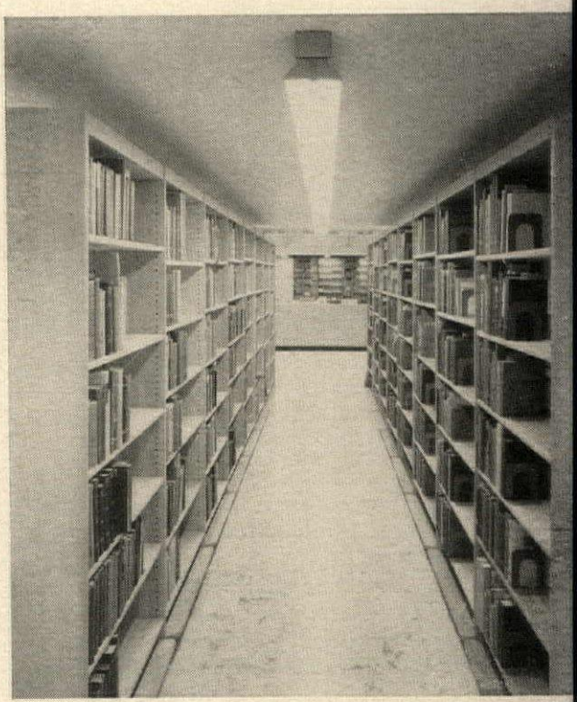
Large rooms such as this library reading room were, in the past, apt to suffer the discomforts of inadequate lighting. Not so with this one. Here. Day-Brite's big 4 by 4 units become integrated into this spectacular ceiling, and in addition, provide a minimum of 50 comfortable foot candles — enough light to read the smallest text with ease.

o Western Carolina College





Here, in the sewing lab and the home economics kitchen, LUVEX fixtures are mounted on eight-inch stems across the width of the room. Comfort is not dependent upon the orientation of this fixture to the working area.



From the top to the bottom shelves in these stacks an ample 30 to 40 ft. candles allows swift and easy identification of any volume. A perfect application of Day-Brite's standard single-lamp STRIP units with symmetric polished alzak reflectors.

5425

NFORMATION ON ANY LIGHTING PROBLEM

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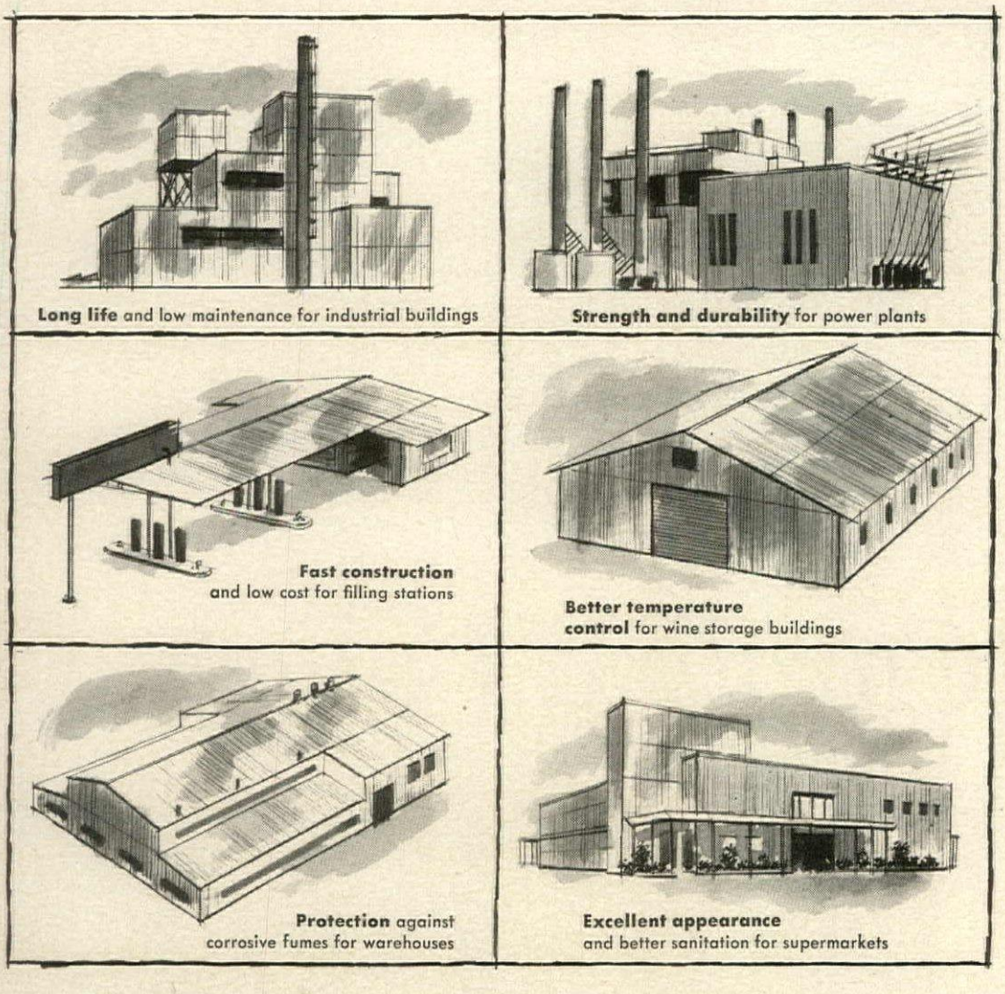
DAY-BRITE®
Lighting Fixtures

Nation's Largest Manufacturer of Commercial and Industrial Lighting Equipment



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Fast construction and low cost for filling stations

Better temperature control for wine storage buildings

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For more value at low cost— figure first in Kaiser Aluminum!

The structures above are only a few of scores that have demonstrated this fact to architects and builders...

No other building material offers as many advantages as Kaiser Aluminum corrugated industrial sheet—at such a low cost!

Kaiser Aluminum sheet gives extra value because it's strong and durable, lasts for generations without painting or costly maintenance. It provides its own insulation, keeping structures warmer in winter, cooler in summer. It resists corrosive fumes and gases.

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County fathers in Houston, Texas, took no chances when they were approving a $1,500,000 conditioned air system for the new $11,000,000 Harris County Court House. Barber-Colman equipment was specified throughout this modern structure, assuring finest possible end results from the sizable investment in conditioning apparatus. Air is distributed efficiently, quietly, unobtrusively, for heating, cooling, and ventilating from the Line-O-Flo and Venturi-Flo Ceiling Diffusers, and the Uni-Flo Sidewall Diffusers and Return Grilles. Not only are the results above par, but the air distribution units are easier to install, harmonize beautifully with the contemporary design, and last a lifetime with a minimum of service.

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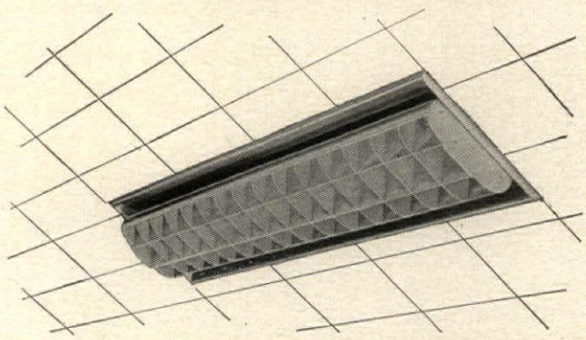
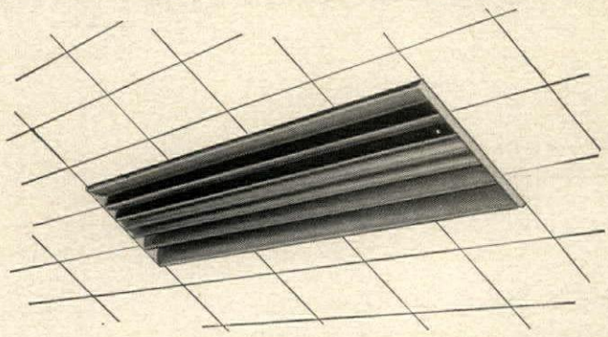
Eight-story court house, except for the jail area, is completely air conditioned. Four primary systems, located on the roof, heat, cool, ventilate, and control humidity as outside conditions require.



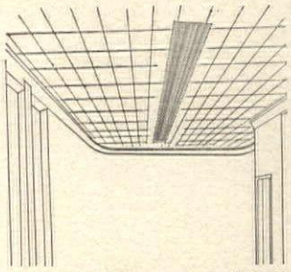
Line-O-Flo Ceiling Diffusers in lobby and court room areas quickly equalize temperature differential between supply and room air, preventing stratification and eliminating drafts. Combine readily with light fixtures.



Model LL Line-O-Flo is designed to receive a Day-Brite light unit, which is isolated from the air stream. Flange arrangements permit individual or continuous mounting.



Model LS Line-O-Flo, as used in Harris County Court House, provides positive control of air volume, plus uniform distribution over entire length. Individual or continuous mounting.



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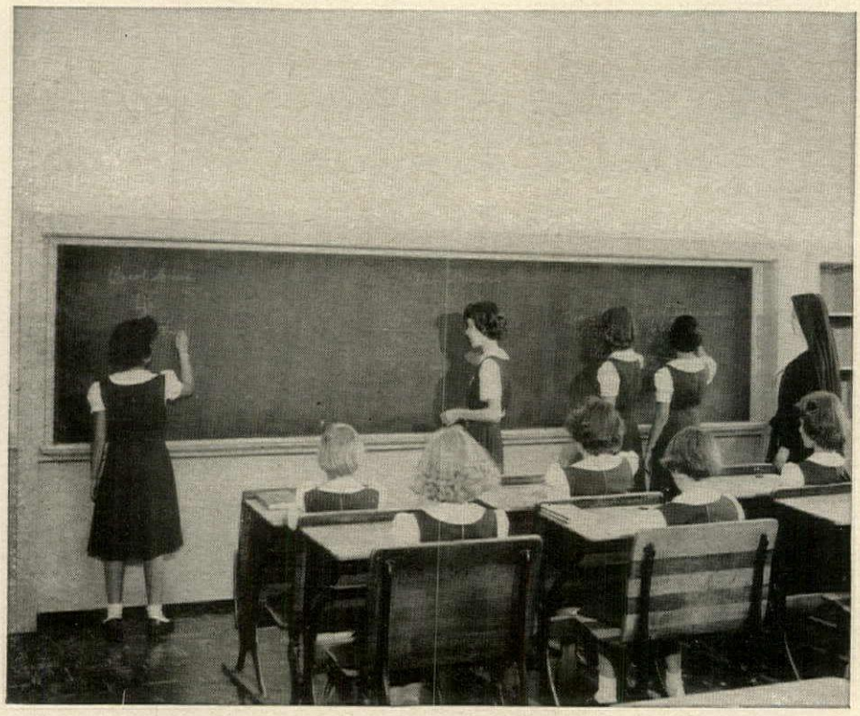


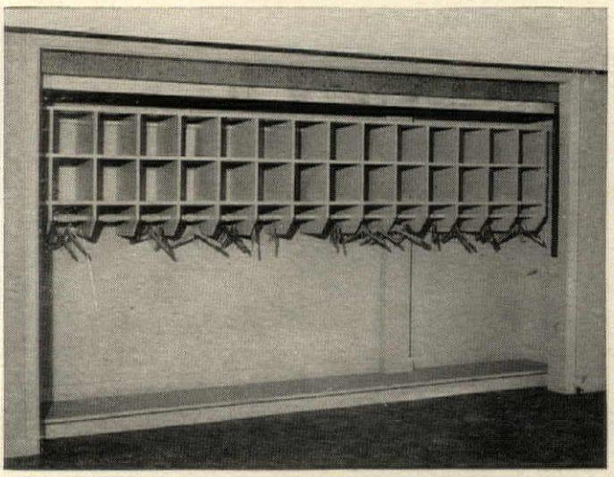
MORE FLOOR AND WALL SPACE is usable in this classroom through installation of a Barcol WARDROBEdoor. Shown here equipped with a chalkboard, its wide, unbroken, flat surface can also be furnished with a tackboard or combination of the two, or with any desired veneer finish. Note examples on opposite page. Conserves classroom area too—space-saving, vertical-action WARDROBEdoor requires no extra floor space for clearance.

Left: St. Augustine School, Rochester, N. Y.

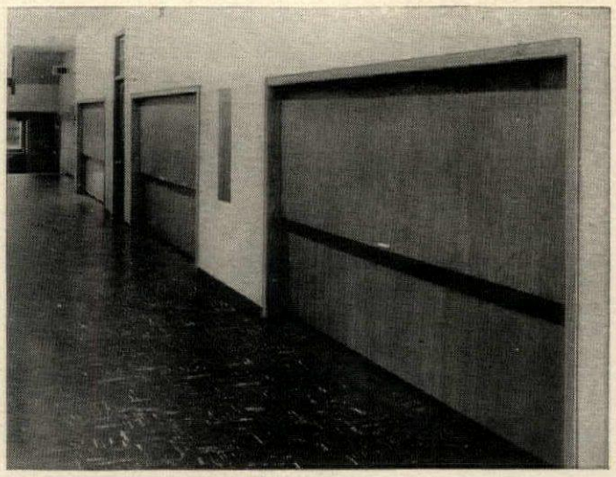
UNOBSTRUCTED CLOAKROOM ACCESS is afforded by the Barcol WARDROBEdoor, which opens vertically into the wall. Annoying door interference with clothing and rubber footwear is eliminated. Absence of pivots, hinges, and other hardware makes cleaning easier. Full-view opening gives the teacher complete control of the "cloakroom rush." Standard coat hooks or any desired custom-built storage arrangement can be provided.



Right: Heuvelton Central School, Heuvelton, N. Y.

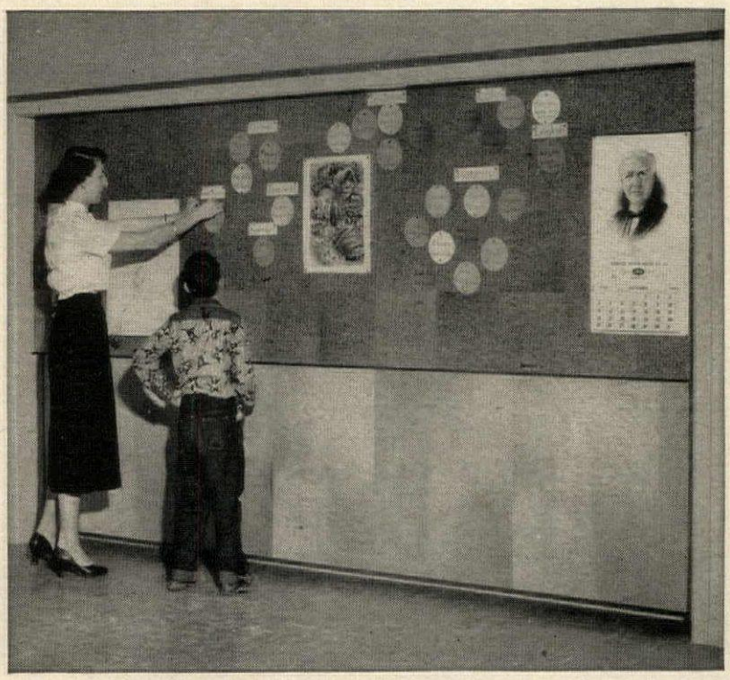


Note footwear ledge in custom interior at Craig School, Schenectady, N. Y.

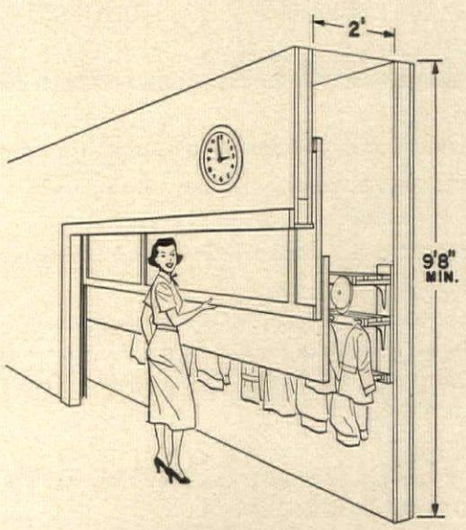


Hallway installation of WARDROBEdoors at Amherst School, Snyder, N. Y.

EASY, FINGERTIP OPENING of Barcol WARDROBEdoor is made possible by accurate counterbalancing of its weight plus high-precision manufacture of the operating unit. Quiet operation is assured by nylon rollers running in continuous steel tracks. A chain and sprocket arrangement links the door sections and counterbalancing weights. The bottom section rises at twice the speed and clears the opening at the same time as the top section. A variety of decorative effects is obtainable by the use of beautiful veneers on the bottom section or both sections of the WARDROBEdoor to match interior trim. Two standard sizes are available—12′ x 6′, for 48 students and 10′ x 6′, for 40 students.



Cork tile on tackboard area at Craig School, Schenectady, N. Y.



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ARCHITECTS WHO SPECIFIED Barcol WARDROBEdoors for installations shown here are:

Frank Quinlan, Rochester, N. Y.—St. Augustine School

John C. Ehrlich, Geneva, N. Y.—Heuvelton Central School

Sargent, Webster, Crenshaw and Folley, Syracuse, N. Y.—Craig School

Wm. C. Lurkey, Buffalo, N. Y.—Amherst School

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For complete literature on the WARDROBEdoor call your Barcol distributor—he's listed under "Doors" in your 'phone directory—or write:

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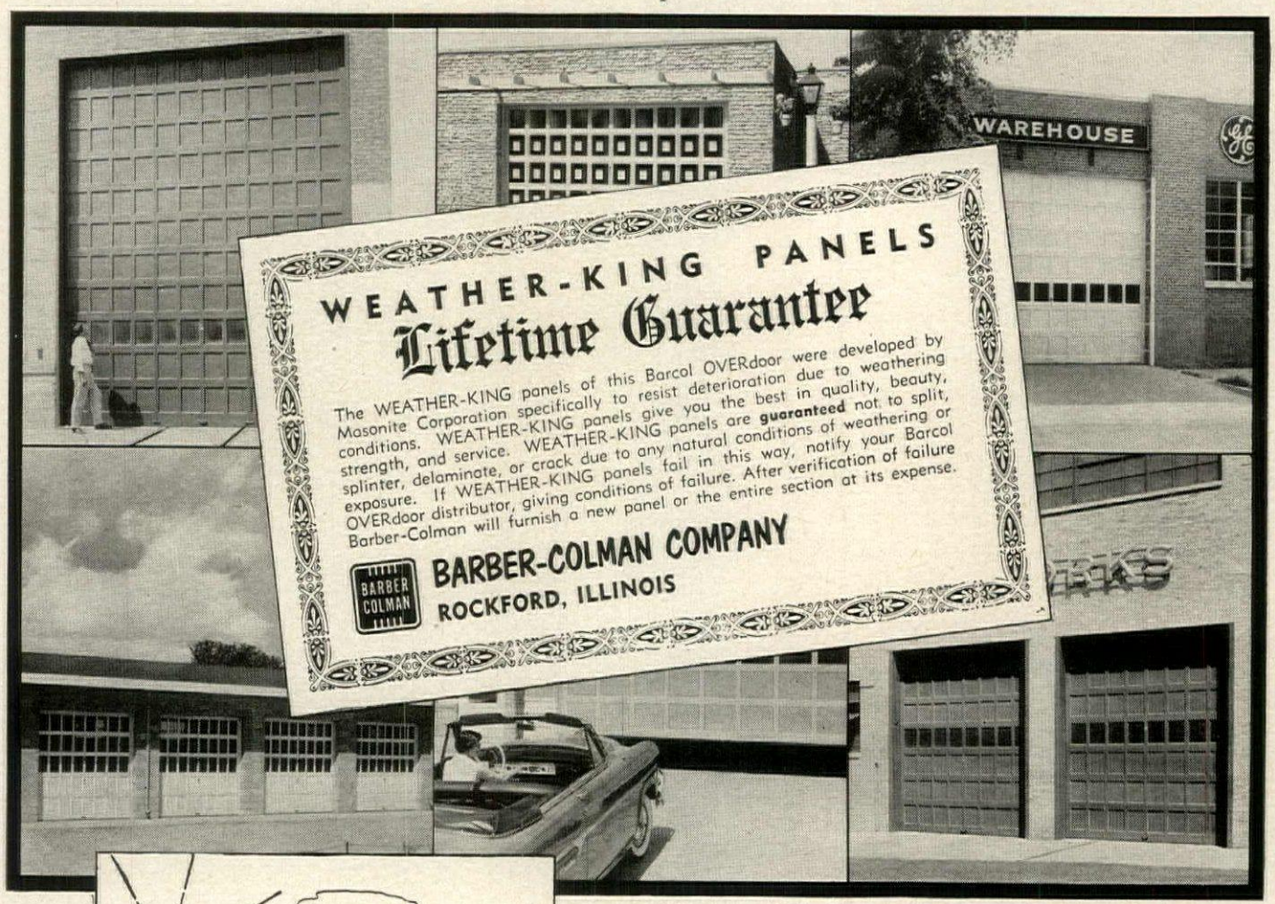

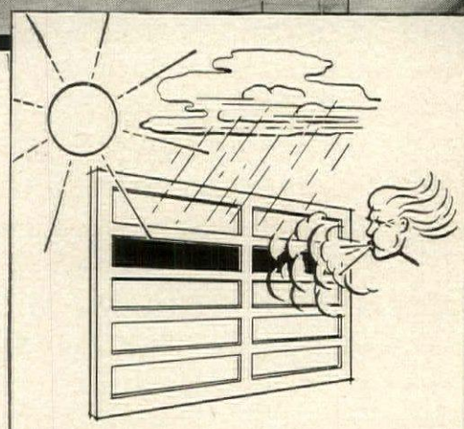

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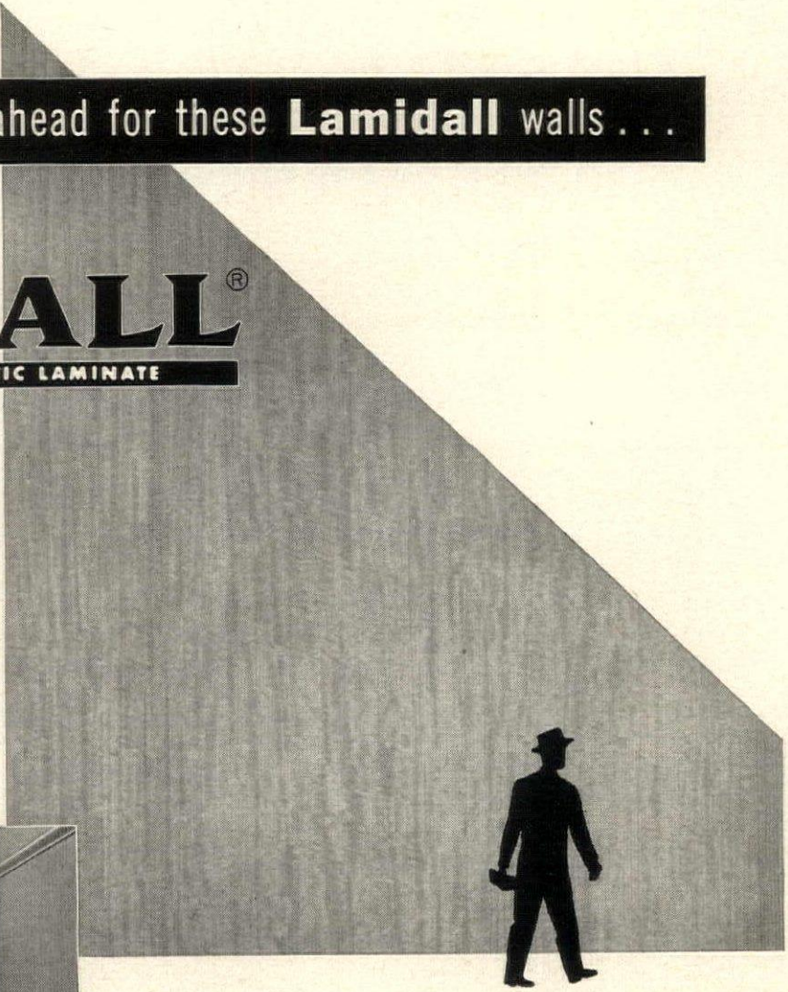
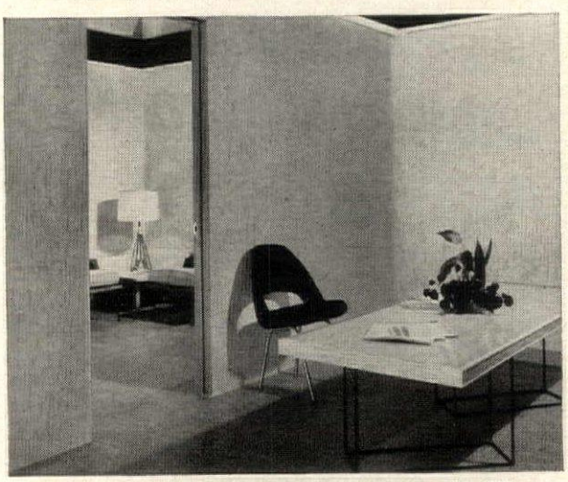




Lamidall wood grain panels are a wise choice for the busy corridor walls of this remodeled building owned by Harvard University and managed by the R. M. Bradley Company, Boston.



Attractive Lamidall Prima Vera wood grain walls in this modern Chicago office suite make these rooms practically maintenance-free. Designed and constructed by Schurect Inc., Morton Grove, Ill.

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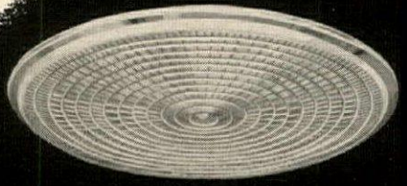

SEMI-FLUSH SYMMETRIC
Four Sizes:
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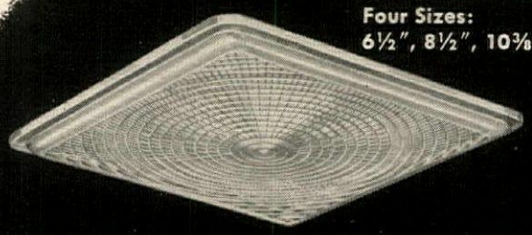

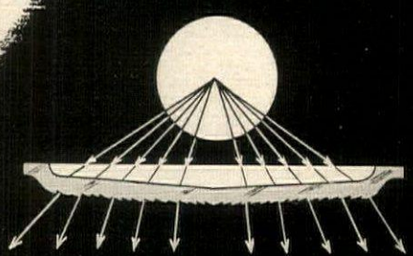

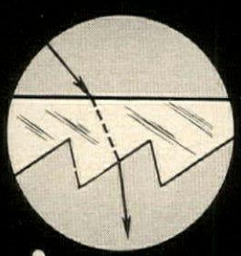

This enlarged segment of Amcolens illustrates prism detail. AMCOLENS utilizes clear glass prisms, the most exact means known to science for controlling the direction of light.

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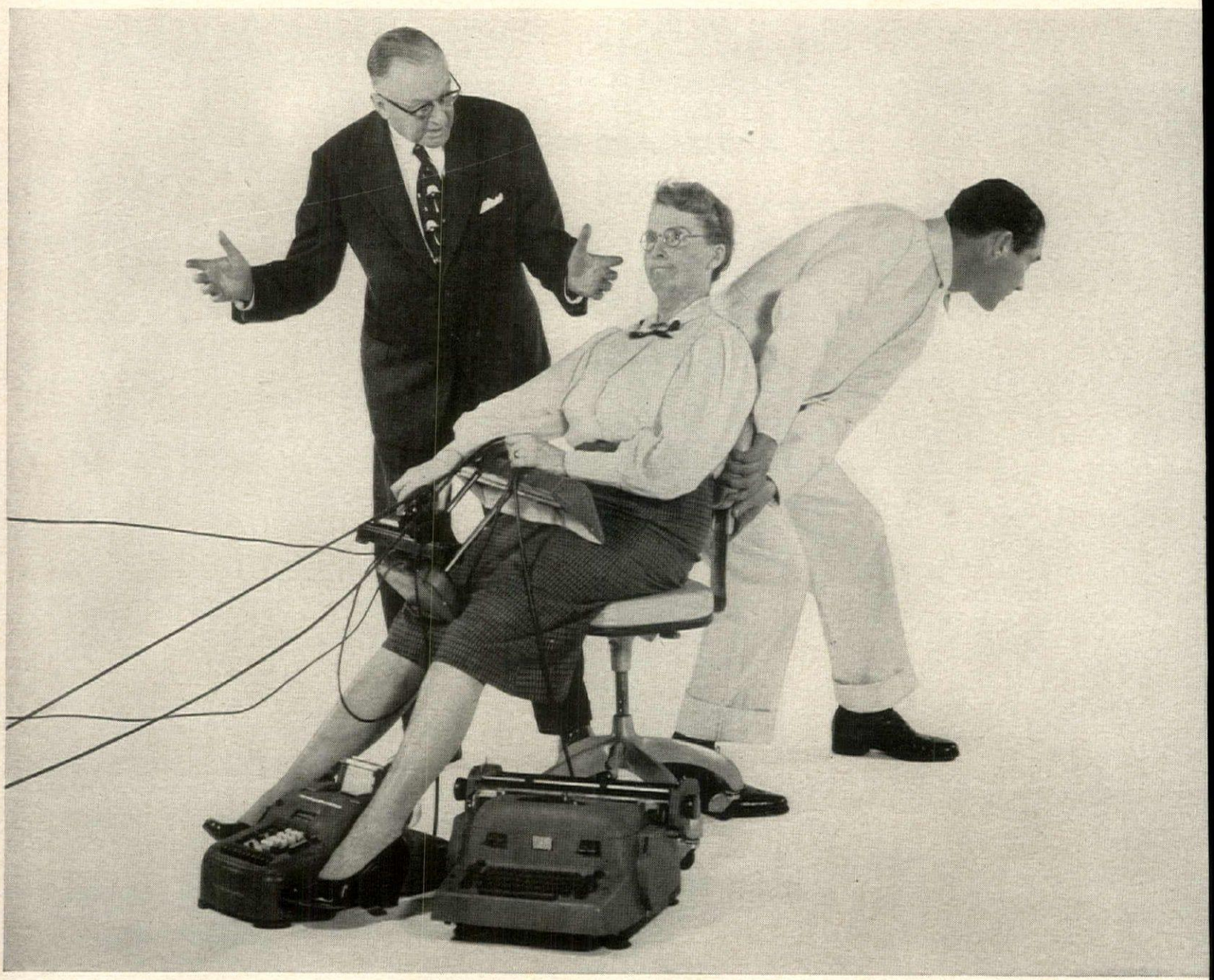

Miss Foster hates to lose her connections

Moving can be a hardship on employees if electrical outlets are not conveniently located.

Electrical availability for dictating machines, telephones, intercoms, and other electrically operated equipment can be quite a problem when office space is relocated. Whether you plan or build offices for your own use or for rental, it's good business to plan to have enough electrical outlets to provide for efficient space utilization — without costly replacement work and unsightly makeshifts. The answer to electrical flexibility is General Electric Q-Floor wiring, the system that makes every square foot of floor space available for outlets.

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For more information on General Electric Q-Floor wiring systems, call your G-E Construction Materials district office or write to Section C51-44, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

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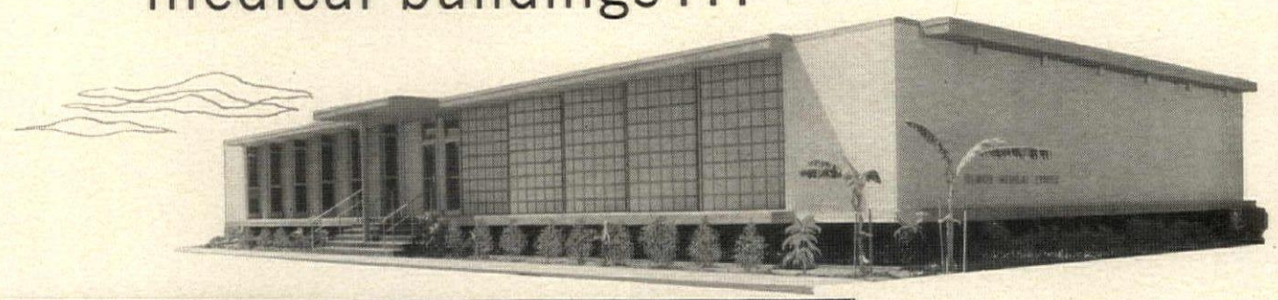



The new 48-room Olmos Medical Center (San Antonio) is cooled by a central station, RK 25 h.p. The RK contains all elements of a built-up system —blower section, cooling section and evaporative condenser—in one cabinet. The evaporative condenser saves 95% on water consumption costs and eliminates the need for an outside water tower. Architect is Cerf Ross Associates; Engineer: Martin E. Staley; Contractor: G. H. Dillard Co., all of San Antonio, Texas.

The mammoth 500-bed Nathan B. Van Etten TB Hospital in the Bronx, N.Y., recently completed, is one of America's largest medical buildings. usAIRco equipment includes 47 heating coils, 8 unit ventilators, 6 unit air conditioners and 44 blowers. Architects: Pomerance & Breines; Guy B. Panero, consulting engineer; General Contractor for the N.Y.C. Dept. of Public Works: Gerace & Castagna; Heating Contractor: Heating Maintenance Corp. of New York.

In today's finest, most up to date medical buildings, large or small, you see the usAIRco name on air conditioning, heating and ventilating equipment again and again. Equipment that is designed to fit any requirement, unmatched in engineering excellence, equipment backed by 30 years of manufacturing experience . . . these are the reasons for today's trend to usAIRco. Typical examples of architects' preference for usAIRco products in America's outstanding medical structures are these two recent installations: The $14,000,000 Nathan B. Van Etten TB Hospital, Bronx, New York, and the single story Olmos Medical Center, San Antonio, Texas.

For descriptive literature write Robert S. McLain

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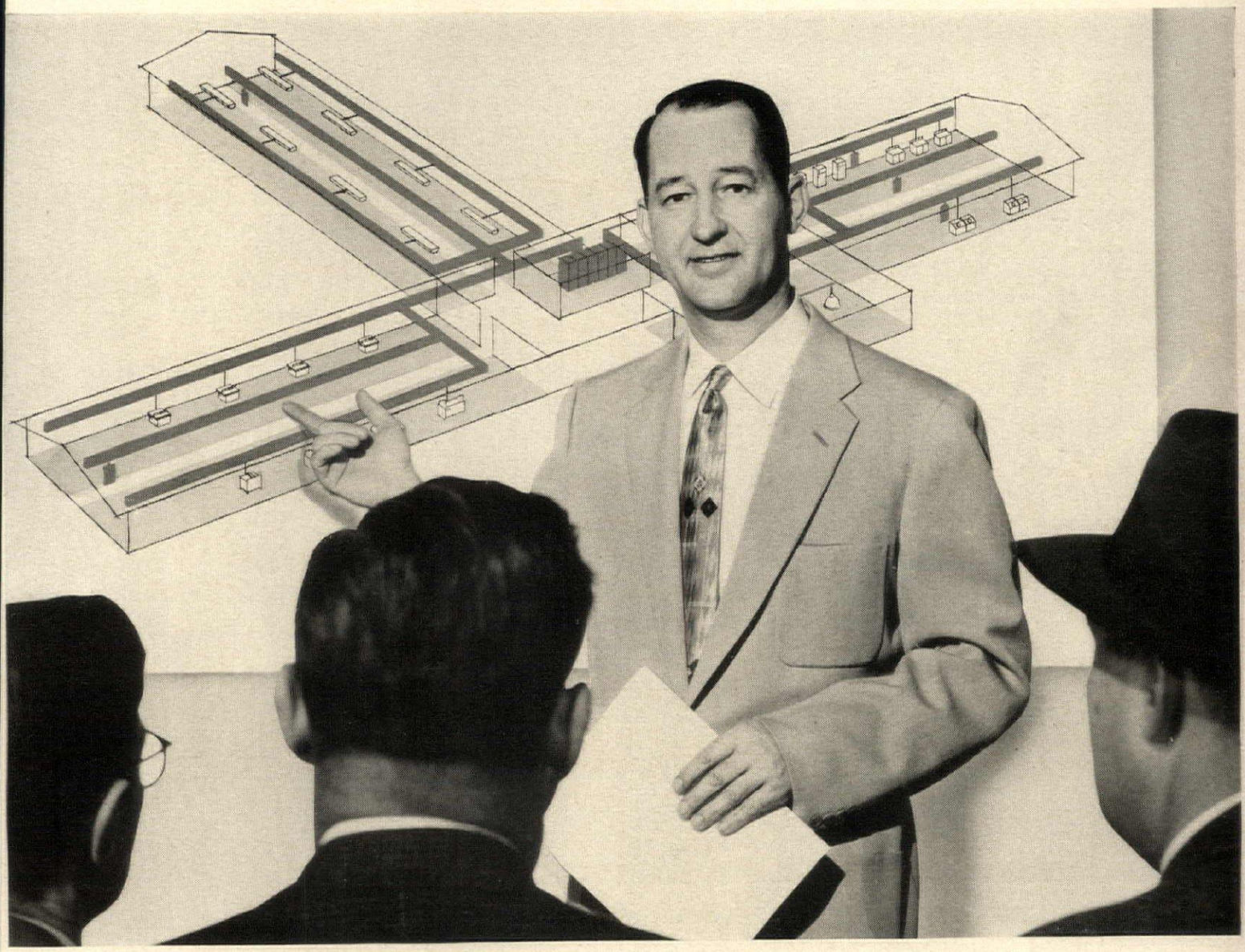
ASPHALT AND ASBESTOS BUILDING MATERIALS



FACT: FROM SCHOOLS TO SKYSCRAPERS YOUR ELECTRICAL PROBLEMS ARE OUR ASSIGNMENT



Westinghouse men like these are working with architects throughout the country on all types of building construction.

They are electrical specialists.

Their assignment is to help you solve electrical problems—from classroom lighting in a school to a complex electrical system for an industrial plant.

Check the examples on the next three pages.

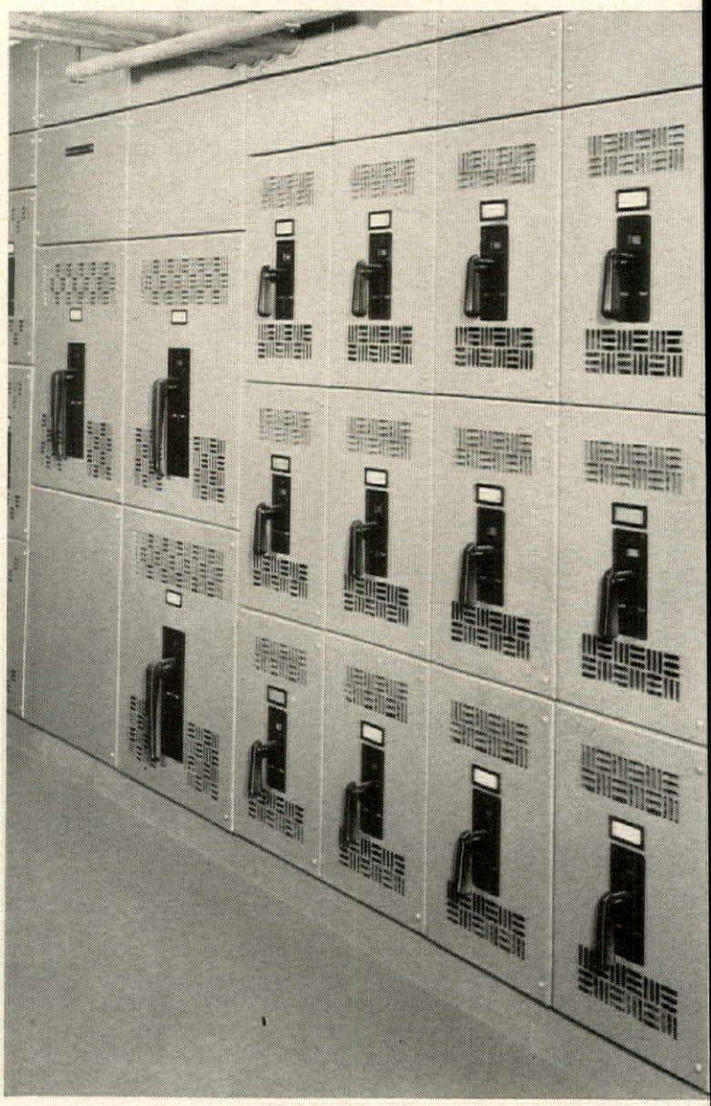
THE MAN WITH THE FACTS

He's the construction sales engineer in your nearby Westinghouse office. His assignment is to analyze your electrical problems, then quarter-back the team of specialists that help you solve them. We call him *The Man With The Facts*. Why don't you call him? DP-5010-A

YOU CAN BE SURE...IF IT'S Westinghouse



Genesee Hospital, Rochester, N. Y. Architects (for new section): Waasdorp & Northrup. Consulting Engrs: Crocker, Cherne & Dickason, Associated Consulting Engineers.



Building-type switchboard is a factory-assembled unit containing modern circuit breaker protective devices. Switchboard is compact and completely safe.

FACT: THEY ASSURED DEPENDABLE SERVICE THROUGH CIRCUIT BREAKER PROTECTION

Dependable electrical service, to insure trouble-free operation of patient services, was a paramount consideration when the Genesee Hospital extension was planned. Proper protection of valuable equipment and operating personnel was a necessity.

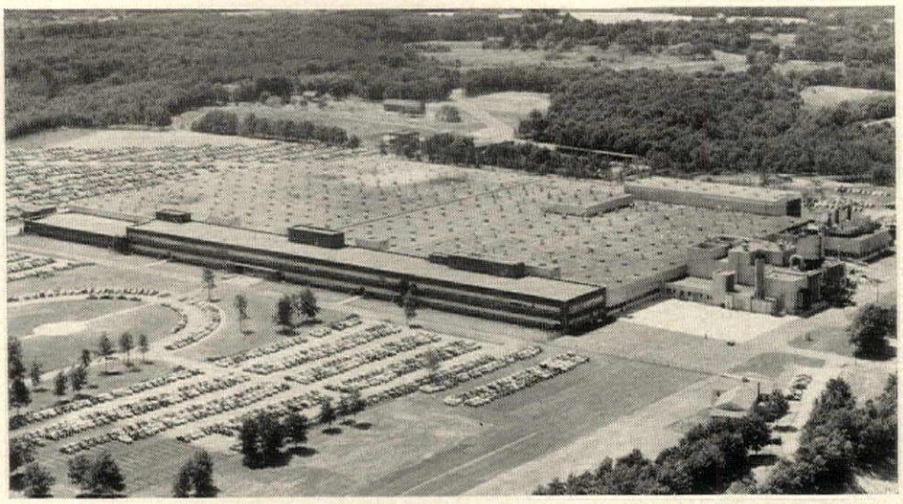
A Westinghouse apparatus specialist was asked for advice on an electrical system that virtually eliminates outages. The foundation is a Westinghouse building-type switchboard with circuit breaker protection for the 24 feeders. In case of a fault or overload, service is restored quickly. A flip of the breaker handle does it.

Why not have your Westinghouse specialist help you with similar problems?

DP-5010-B

YOU CAN BE **SURE**...IF IT'S

Westinghouse



Hamilton Standard Division
of United Aircraft Corp.,
Windsor Locks, Conn.
Architects and Engineers:
Albert Kahn Associated
Architects & Engineers, Inc.

FACT:

THEY MET RIGID PRODUCTION REQUIREMENTS WITH HIGH-VOLTAGE DISTRIBUTION

For efficient operation of a plant's production line machines, voltage must be held constant.

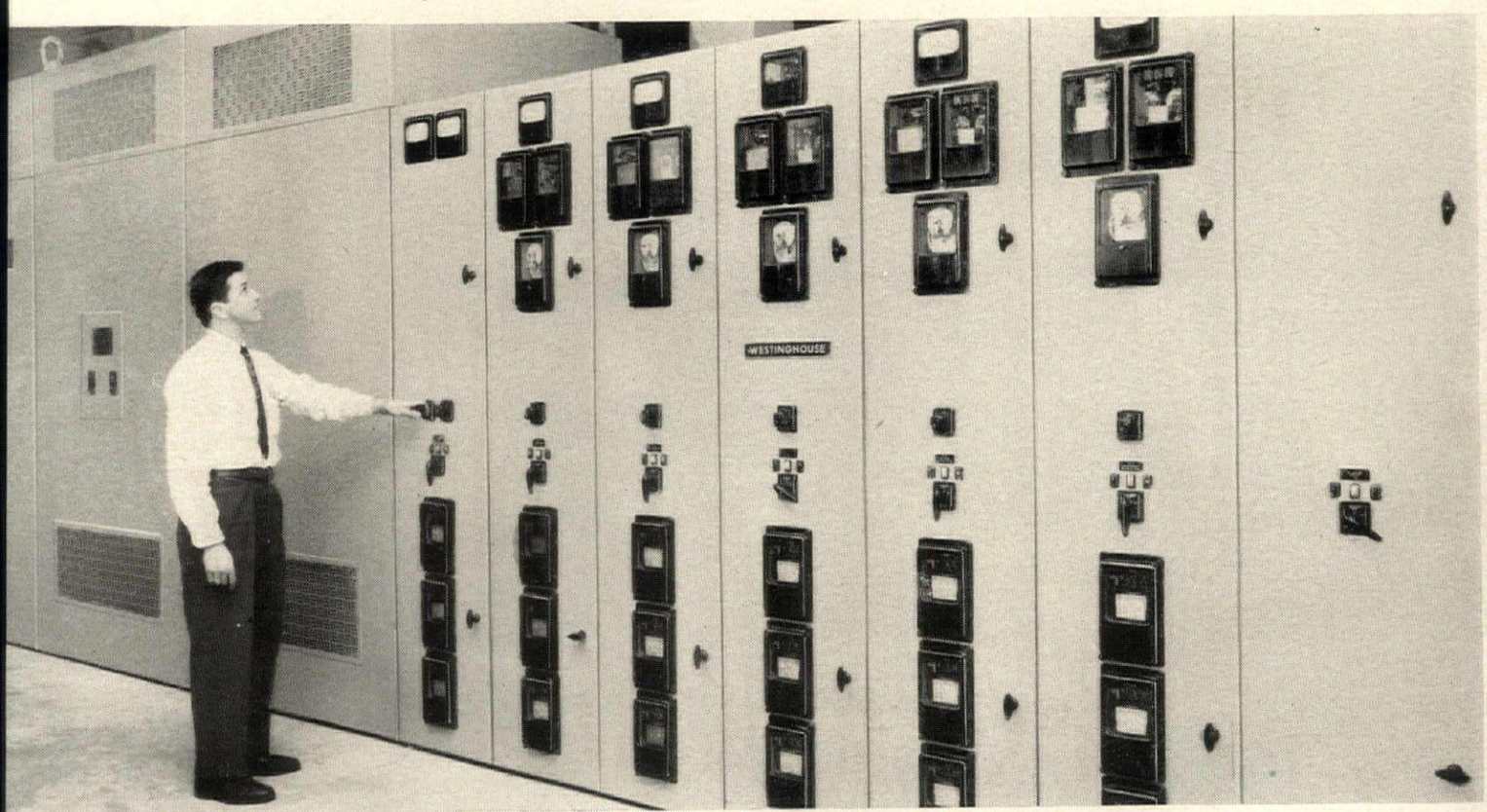
This Westinghouse installation incorporates an electrical system that utilizes a main high-voltage switchgear station. Each high-voltage circuit breaker in the switchgear line-up protects a feeder to a production load area.

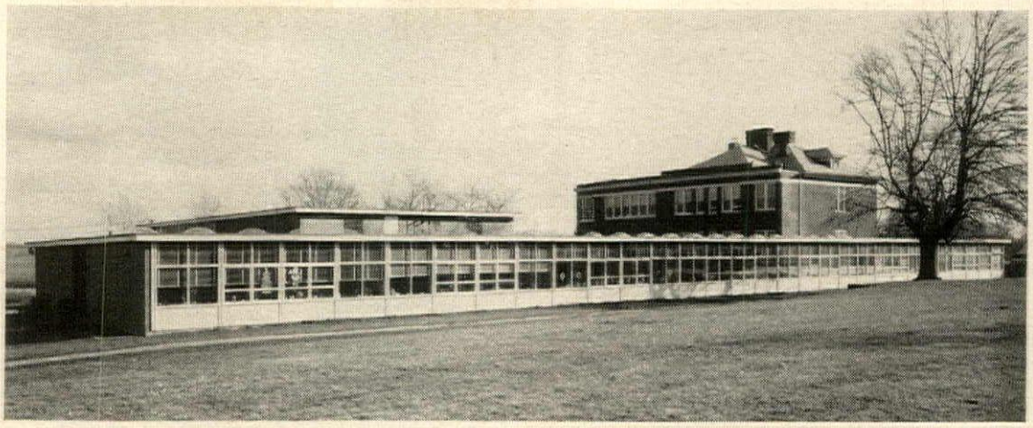
At each center of load, a step-down power center provides operating voltage, distributed in short runs. Voltage variations are minimized.

Your Westinghouse specialist can work with you on similar electrical problems. Call him in through your Westinghouse construction sales engineer.

DP-5010-C

High-voltage switchgear station is the hub of the electrical system. It provides maximum protection and efficiency.





Elm Hill School, Newington, Conn. Architects (for new extension): Carl J. Malmfeldt & Associates, Hartford, Connecticut. Consulting Engineers: Henri B. van Zelm & Associates, Hartford, Connecticut.

FACT: THEY SOLVED SHADOW PROBLEMS CAUSED BY LOW CEILING JOISTS

Main support joists in this new classroom created a lighting problem: the possibility of shadows due to the broken ceiling surface.

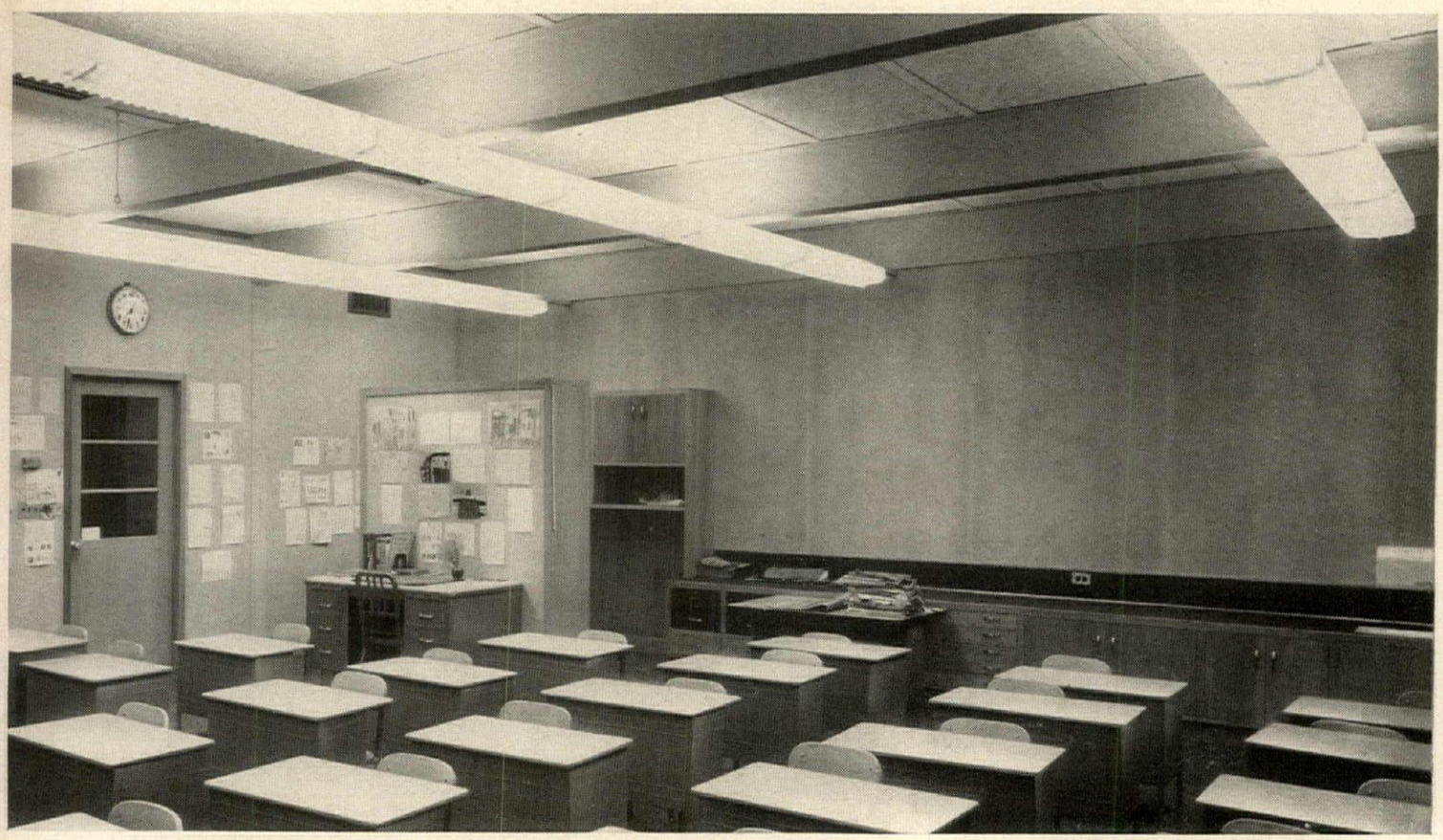
The architect and consulting engineer approved the new Westinghouse LC luminaire, mounted in continuous rows perpendicular to the ceiling joists.

Shadow problem: solved. In fact, 50 foot-candles of shadowless, direct-indirect illumination were provided—a result you, too, can secure.

Why don't you call your Westinghouse specialist to help you solve similar problems?

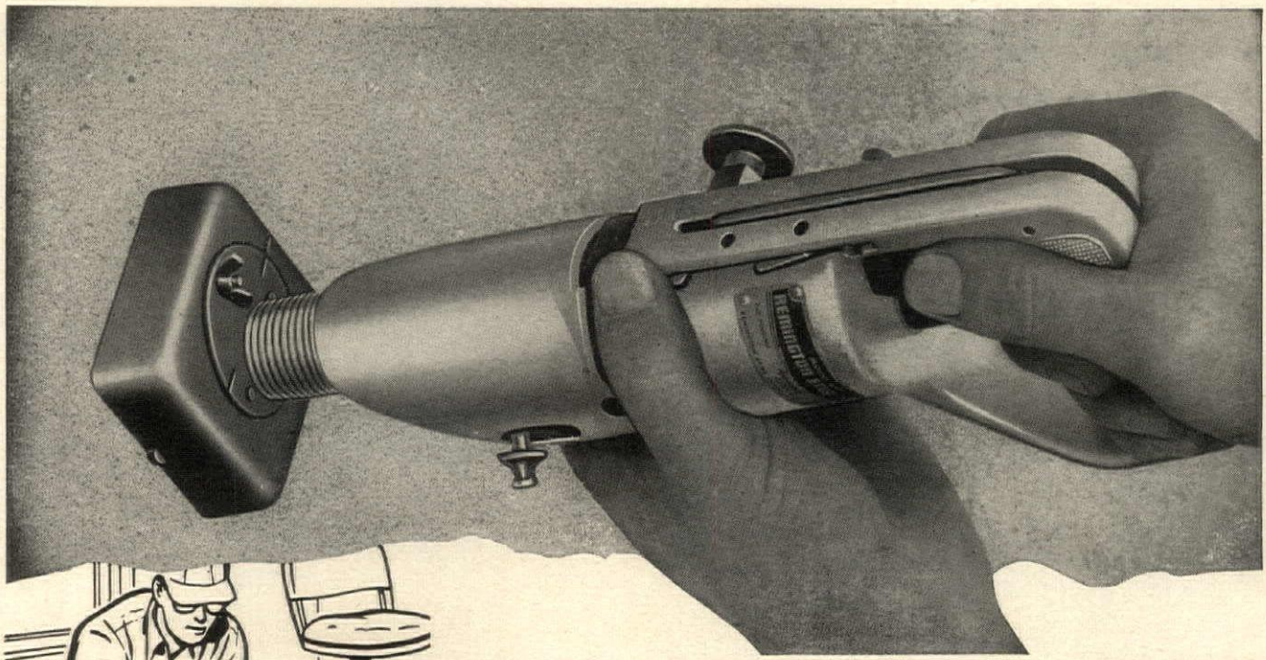
DP-5010-D

LC fluorescent luminaire, a direct-indirect type, provides high illumination in all parts of the room.



YOU CAN BE **SURE**...IF IT'S

Westinghouse





Anchoring seats, bar stools to concrete



2" x 4" plates to concrete floor



Carpet gripper anchored to concrete

REMINGTON STUD DRIVER

saves up to 80% fastening costs on "special" jobs

When it's an unusual fastening job that has to be done quickly, efficiently—let the Remington Stud Driver take over. There are special guards, interchangeable with the standard guard, that adapt it for practically any application. And the Stud Driver's cartridge-powered action enables one man to set up to 5 studs a minute—a saving in time and labor of approximately 80% over old-style methods.

Setup time is cut to a minimum with the Stud Driver. There are no holes to drill; no laborious hammering is necessary. A squeeze of the trigger and the tool's powerful cartridge drives the stud home—solidly and permanently into steel or concrete. Compact and portable, the Stud Driver has a field of use limited only by where a man can go.

DISCOVER FOR YOURSELF how this lightweight (6 lbs.) fastening tool can cut costs for you. Let us send you our new booklet which shows how the Remington Stud Driver anchors furring strips, structural channels and many other fabricated materials to concrete or steel. Just clip and mail the coupon for your free copy.

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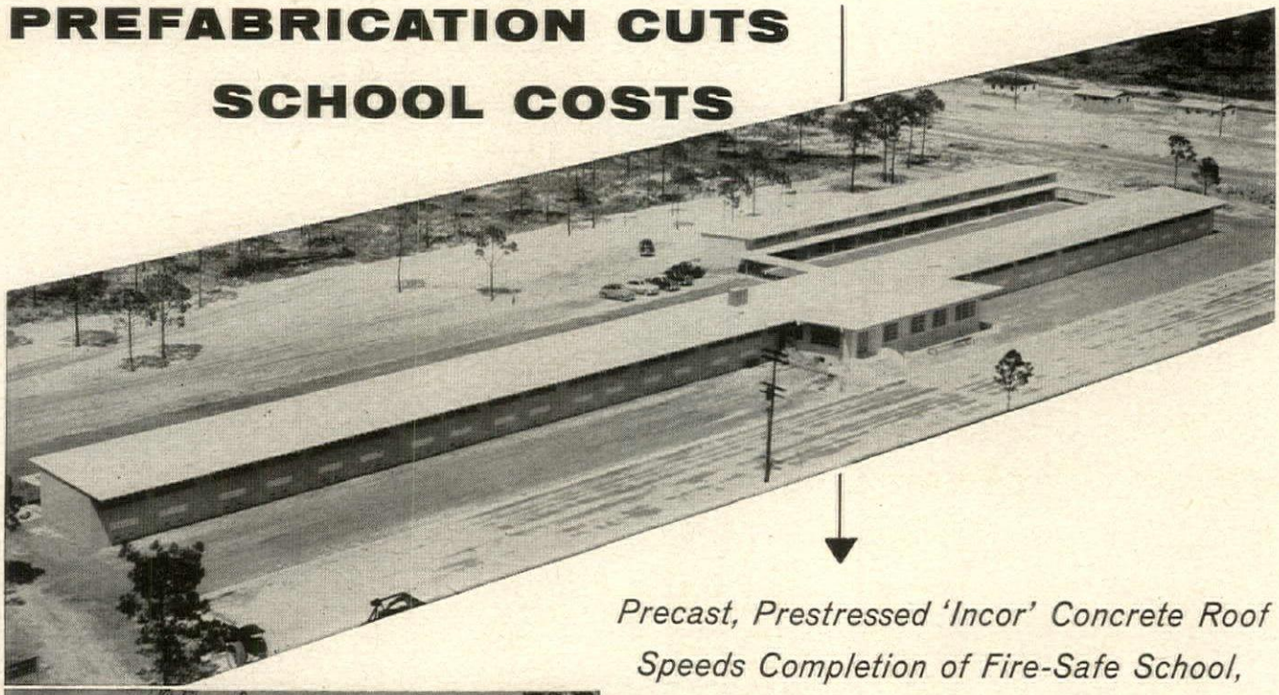
PREFABRICATION CUTS SCHOOL COSTS



Precast, Prestressed 'Incor' Concrete Roof Speeds Completion of Fire-Safe School, At Big Saving in Cost



● With enough children being born every fifteen minutes to fill a classroom, and a million pupils in sub-standard quarters, the nation faces a race against time in solving the school problem.

Fort Lauderdale comes up with a sound solution. Dillard Elementary School, with 21 classrooms and about 25,000 sq. ft. of floor space, was completed 18 weeks ahead of schedule. Cost, $273,000.—$38,500. under the appropriation.

Built of fire-safe concrete, speed and economy pivoted on the roof system, consisting of 32,000 sq. ft. of double-tee, precast, prestressed roof slabs, 221 in all. Each slab is 34½ ft. x 4 ft., with 23 ft. clear span and 6 ft. cantilever on one side, 4 ft. on the other.

With ten hours' steam-curing, dependable 'Incor'* high early strength produced 4000 psi in 20 hours for pretensioning and stripping immediately thereafter . . . 11,000 sq. ft. of roof slabs placed in an eight-hour day . . electric conduits and outlet boxes precast in the slabs.

DILLARD ELEMENTARY SCHOOL
FORT LAUDERDALE, FLA.

Supervision:
BROWARD COUNTY BOARD OF PUBLIC INSTRUCTION

Architect:
VAN W. KNOX, JR.

General Contractor:
CALDWELL-SCOTT ENGINEERING & CONSTRUCTION CO., INC.

Precast, Prestressed Units

Designed by:
LAKELAND ENGINEERING ASSOCIATES, INC.
Lakeland, Fla.

Made and Installed by:
R. H. WRIGHT & SON, INC.

—all of Fort Lauderdale, except as otherwise noted



Double-tee design gives pleasing beam effect. Quality concrete, with smooth exposed roof and ceiling surfaces, only required painting to finish.

Another example of attractive, fire-safe construction, faster and at less cost, thanks to the two I's —Ingenious design and 'Incor' performance.

*Reg. U. S. Pat. Off.



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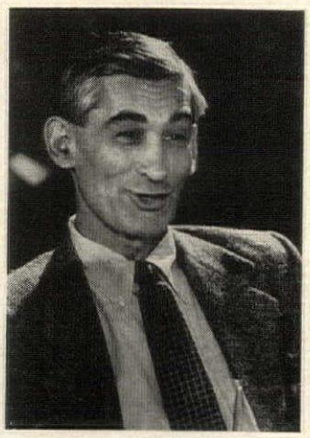
architectural **FORUM**
the magazine of building

Men behind the blueprints in this month's FORUM

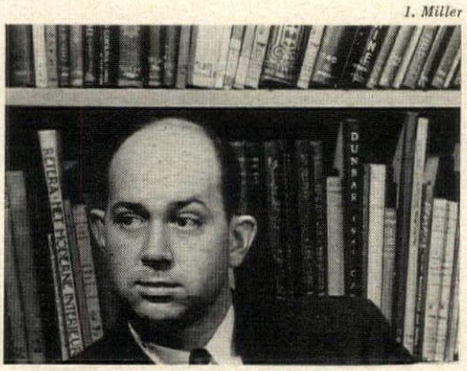


1



2

I. Miller



3

1. **ENGINEER:** John Todd, an energetic Scotsman, is the technical director of 20 other Scottish engineers who have been sent to the US by Thermotank Ltd. to see what they could do in the highly competitive engineering market. They have done very well indeed. Their knowledge of high-speed air movement through small ducts, gained in the air conditioning of Britain's most famous ships (from the Lusitania to the Queen Elizabeth), has opened the building department doors of some of the biggest companies in the US, including Ford and General Motors (p. 162).

2. **ARCHITECT:** Charles M. Goodman is known for outstanding buildings at either end of the size scale: small, modern houses in several Virginia subdivisions and the big International Terminal at the Washington National Airport. Like his house designs for Client Price (below), his new prefab schools reflect these two passages from his design creed: "Unaffected obviousness wears longer and better than the spectacular" and "above all, remember the buildings we create are still, as far as we know, to be inhabited by people."

3. **BUILDER:** James R. Price, whose National Homes, Inc., prefabricates one out of every 48 houses built in the US today, is tooling up to produce classrooms on the same basis. Price got into prefabrication through the back door: He tilled 160 acres of farmland for three years, sold mortgages for six and homes on the side. One day, after selling a Gunnison prefab, he decided to go into prefabrication for himself. That was in 1940, some 75,000 prefabs ago. Fortunately for the families who purchase his houses and the communities who purchase his schools, Price has a higher regard for architects and architecture than most homebuilders. Chuck Goodman (above) has designed his houses and has at least headed him in the right direction on his schools (see p. 133).



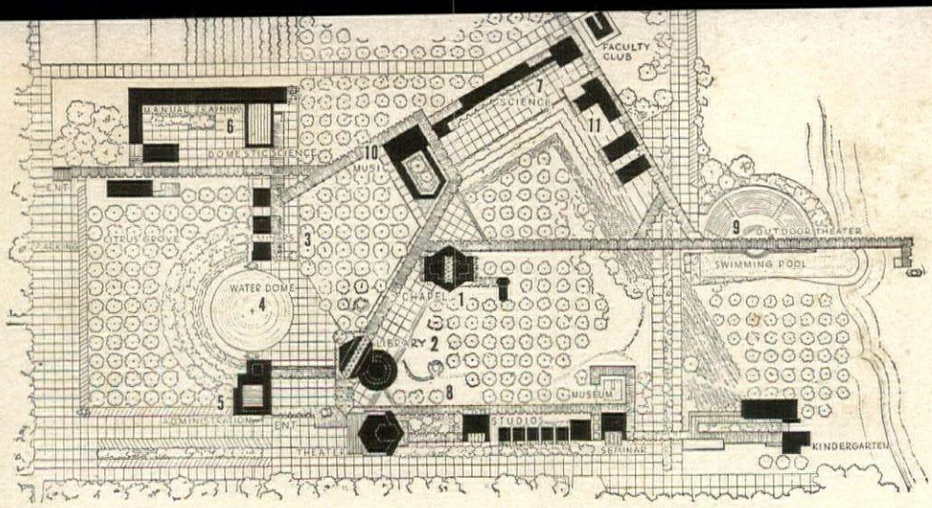
FRANK LLOYD WRIGHT



Photos: © Ezra Stoller

completes a long, low industrial arts building for Florida Southern University

. . . and begins a civic center for the capital of his home state (p. 120)



Projects numbered 1-6 in original plan have been completed: chapel and library (AF, Jan. '48 and Jan. '51) seminars, pond, administration (AF, Sept. '52) and industrial arts building (shown in detail on these pages). Excavation in air photo (below) is for science building, now abuilding.

IN 1936 Frank Lloyd Wright and Ludd M. Spivey, president of Florida Southern University, made a plan for a new campus for the small southern institution. In terms of money and architecture it was called a harmless dream.

But perhaps the most engaging thing of all about the turbulent master of architecture is the habit his dreams have of coming true. Over a lunch table in New York last month he was reminiscing: "A few months back they dug up a house I had done plans for long ago but never built. My God, it looks as if I designed it *yesterday* and it was going to be built *tomorrow* . . . when was it designed? 1896. And so it goes."

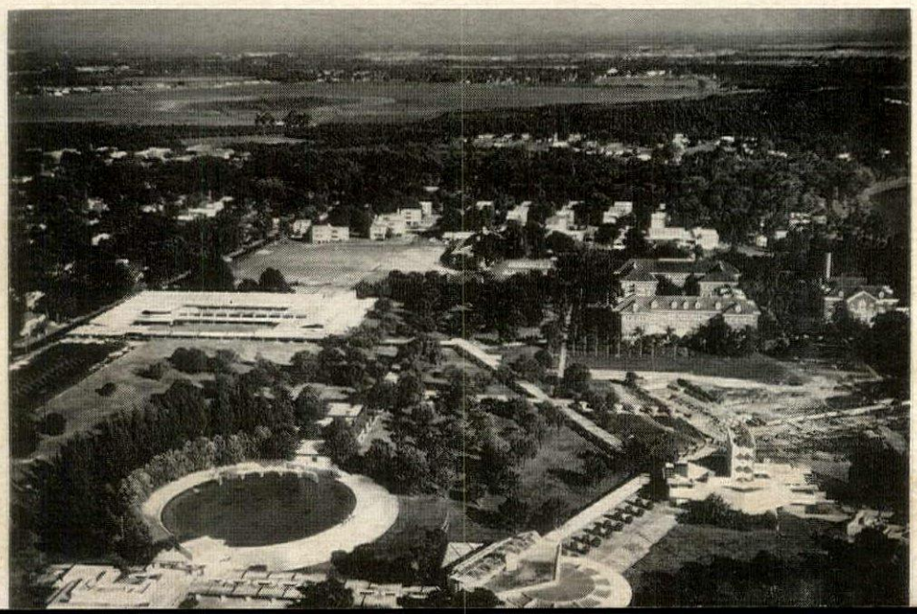
And so it does go. In 1936 Wright, just turned 67, was only beginning his second, or third, or fourth growth. The original master plan for the new section of Florida Southern sketched then has since been changed in detail, but in character it is intact—and almost complete. The newest addition is the industrial arts building shown on these pages.

Outside view of industrial arts building shows how light is flooded high into wing of workshops. Pattern in concrete block appears on all other campus buildings.

Long, low and muscular, this structure is approached by walking down a campus path protected from the southern sun under the cloisterlike esplanade that, Wright says, "runs all over and finally gets together and makes a building."

The building does remain in character essentially a widened and heightened version of the esplanade, with walls added. It encloses two courts and includes a round theater and spaces for the fine arts department (studios), the industrial arts department (shops), the home economics department (a combination of shop and studio) and a student lounge. Most of the spaces are generalized; it is a comfortable building. With its beams growing from sculptural buttresses and angled in an emphatic riblike row, it is very direct structurally. But it is equally indirect as the expression of a creative mind which continues to value subjective humanism more than science: "Do you know what a scientist is, boys? He's a man who takes our machine apart and strews it all over the floor and can't assemble it again. It takes a poet to find the monkey wrench and put it back together."

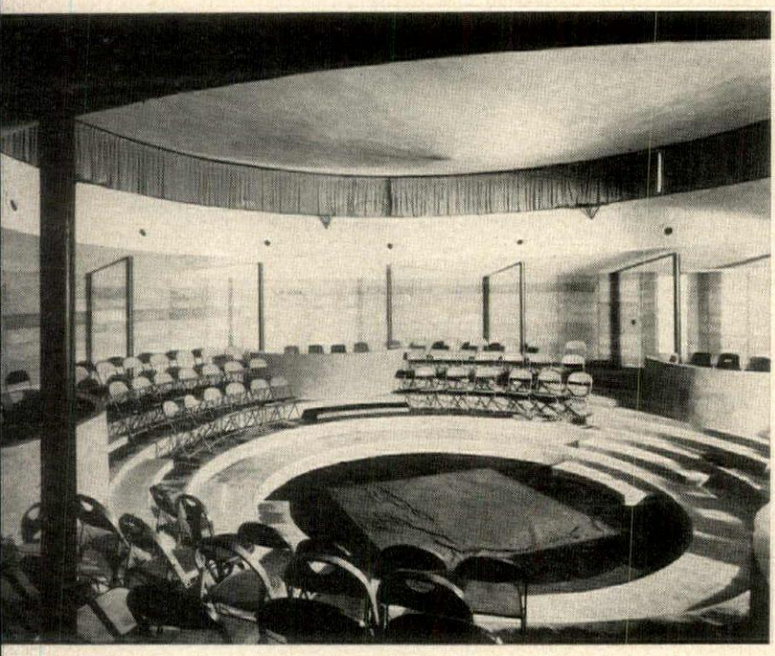
Inside court is one of pair enclosed by building. Clerestory panes are painted against glare. Theater-in-round is at far corner. Court is covered with gravel.

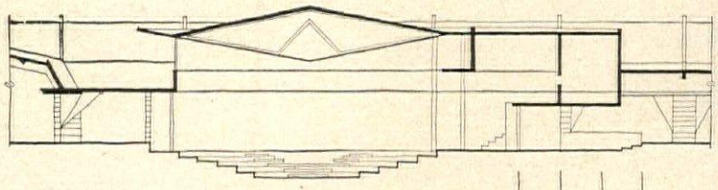




Photos: © Ezra Stoller



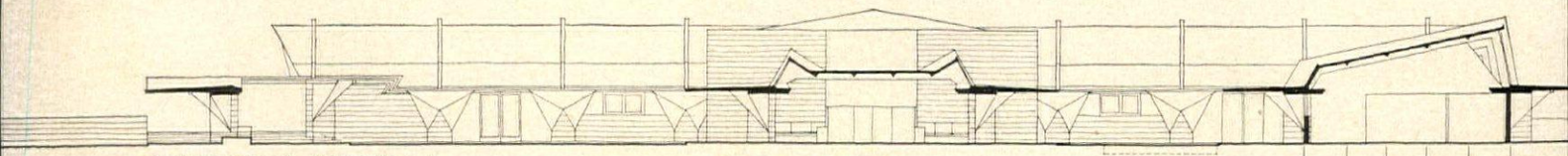




SECTION THROUGH THEATER

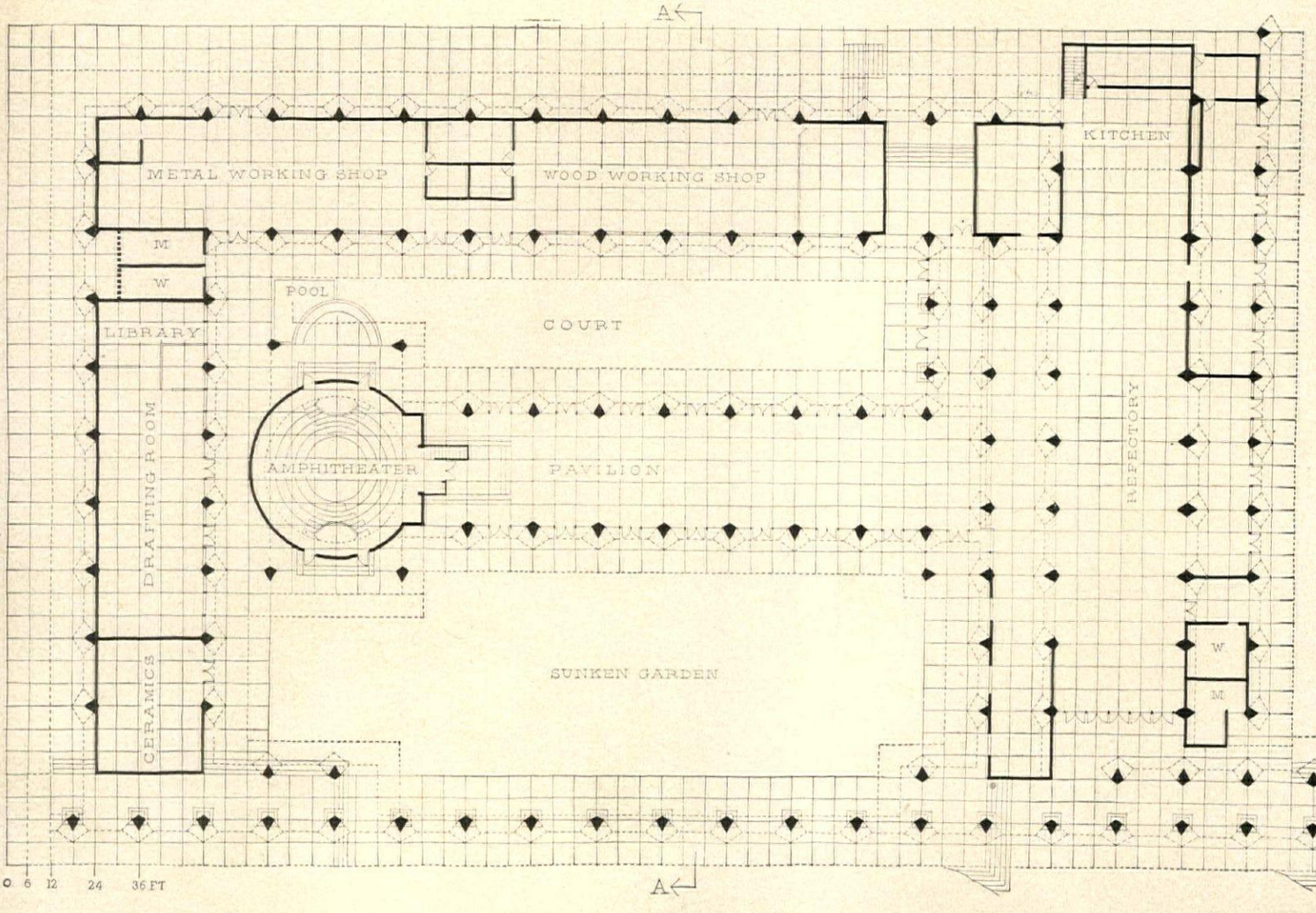
0 5 10 15 FEET

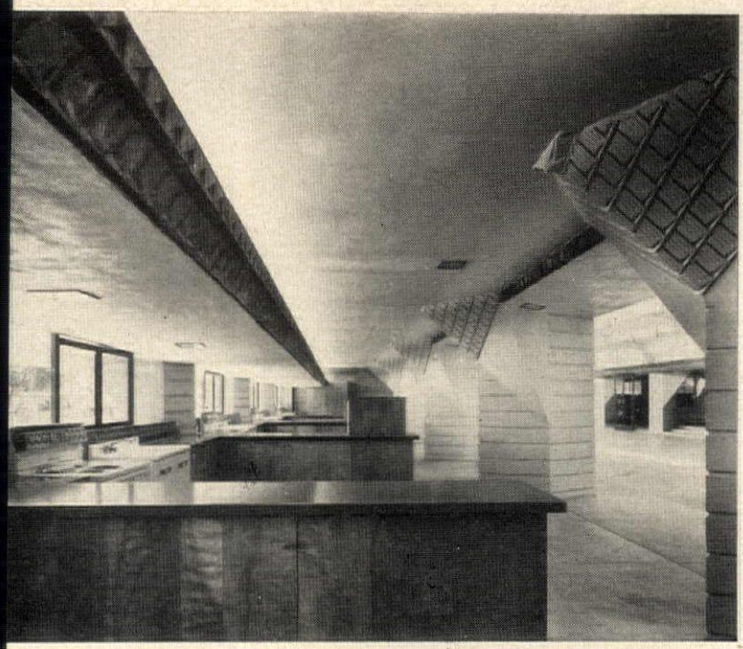
Amphitheater is used as theater-in-the-round and for lectures. When slides are shown, two-way screen is placed in center. Upside-down ceiling cone was designed for acoustical efficiency. Clerestory window (curtained in picture) runs around most of periphery.



TRANSVERSAL SECTION A-A

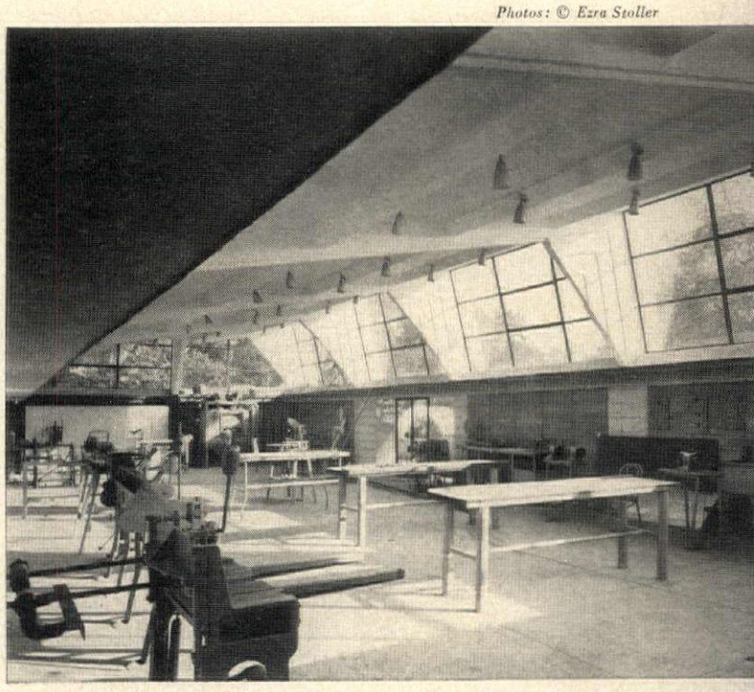
0 5 10 15 20 25 FEET





Integral decoration is cast into piers supporting roof over home-economics space. Note how windows are framed into the glass wall, separate and defined from structure.

Photos: © Ezra Stoller



Shops find richness innate in their structure and simple finishes. Cast joists are triangular in section, expressing stresses and adding great delicacy to strong ceiling.

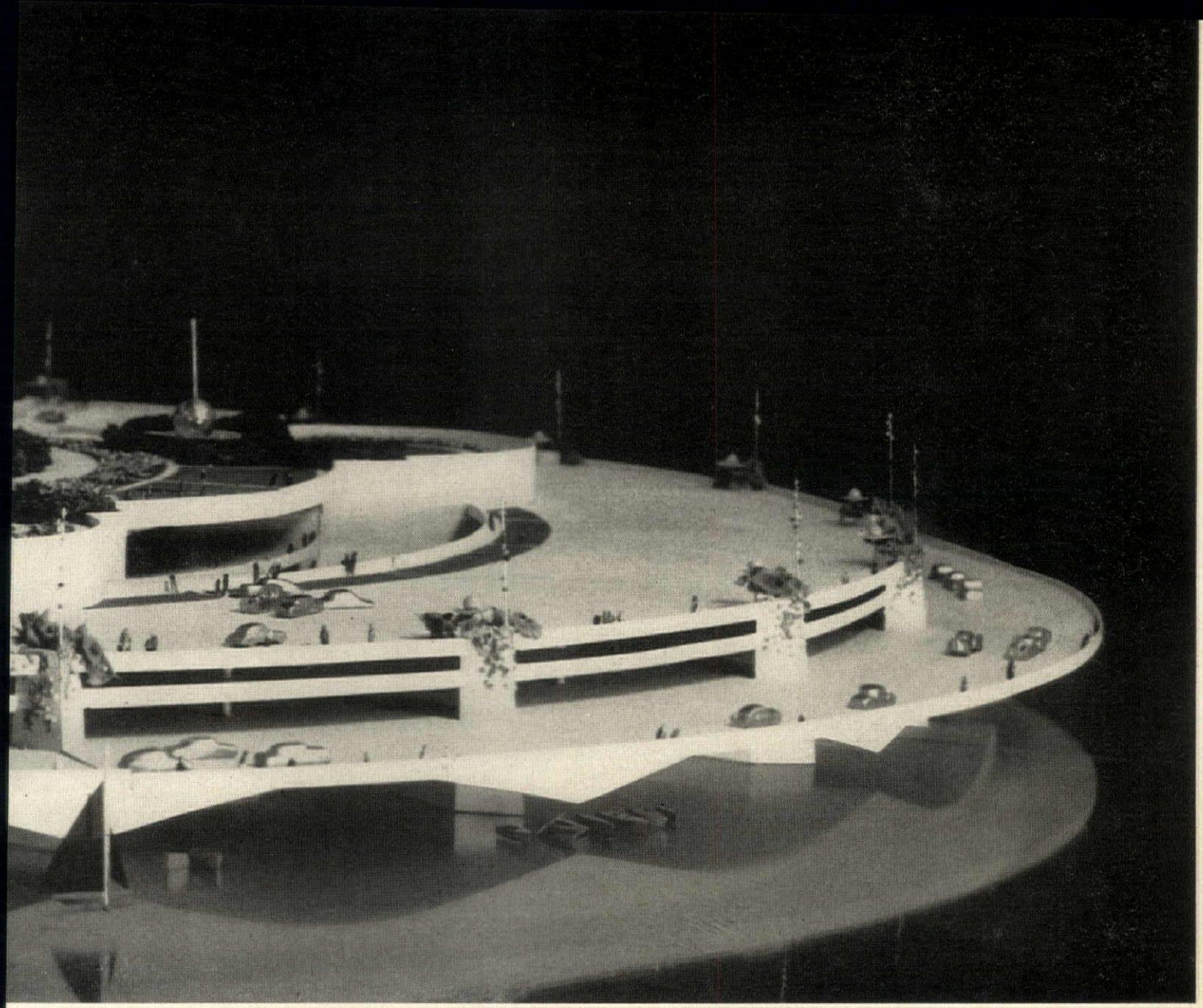
High-ceilinged hall, used for formal banquets, is entered from low-ceilinged corridor, familiar device in Wright's designs.



Arched peninsula is topped by gardens and three translucent globes, lighted from within, which represent earth, sun and moon. Twelve peripheral supports symbolize signs of zodiac.

FRANK LLOYD WRIGHT

Semicircular plan is bounded by railroad tunnel (on flat side) and curved road. Upper levels are for parking and promenading. Two circular buildings are exhibition halls. At center, beneath rooftop garden, is big circular auditorium.



voted commission by public to plan civic peninsula for Madison

Architect Wright was virtually voted into office to complete his newest design, the Monona Terrace Project, a civic center to be built in Madison, Wis. on an extension of the shore front out into Lake Monona. A nervous city administration put it up to the voters in a referendum which asked, roughly:

What about the site?

How about the money?

What about the architect; should it be Frank Lloyd Wright?

All motions swept the day. "Democracy in architecture, finally," Wright smiles.

The project is enormous, and is to be built in three stages. The first stage will project an apron out into the lake to include malls, exhibition space, concert hall, yacht basin, club facilities, an auditorium "smuggled into the terrace" and a railroad station. Then the peninsula will be extended to include wide platforms for lake-front auto traffic. Finally two towers, one for offices, the other a hotel, will be added. (This end stage is not shown in photo; a complete showing of this design will appear in a future issue.)

The theme binding the design is Wright's repetition of rows of arches of various proportions. The most significant ones may await the completion of the office buildings, when he presents a new interpretation of the curtain wall. His is a curtain which really will hang, as if rising; steel-framed and suspended in tension, the bottom edge of the curtain will be cut in a series of arches. Twelve feet behind the arches will be slender steel columns, but visually nothing will connect the scalloped bottom of the hanging wall directly with the ground. The same sort of hung arch, but a much flatter one, will be suspended over the lake's edge.

Wright calls the floating arches a pendant screen. To be made of concrete sprayed on lath, inside and out, the arches will add a Romanesque feeling to the design, but a paradoxically graceful, light version of Romanesque.

WHAT HAPPENED TO BROOKLYN BRIDGE



On May 3, '54, with suitable celebrations, the famous old Brooklyn Bridge was reopened to full use after 71 years of service and a $7 million renovation to adapt it to automobile traffic.

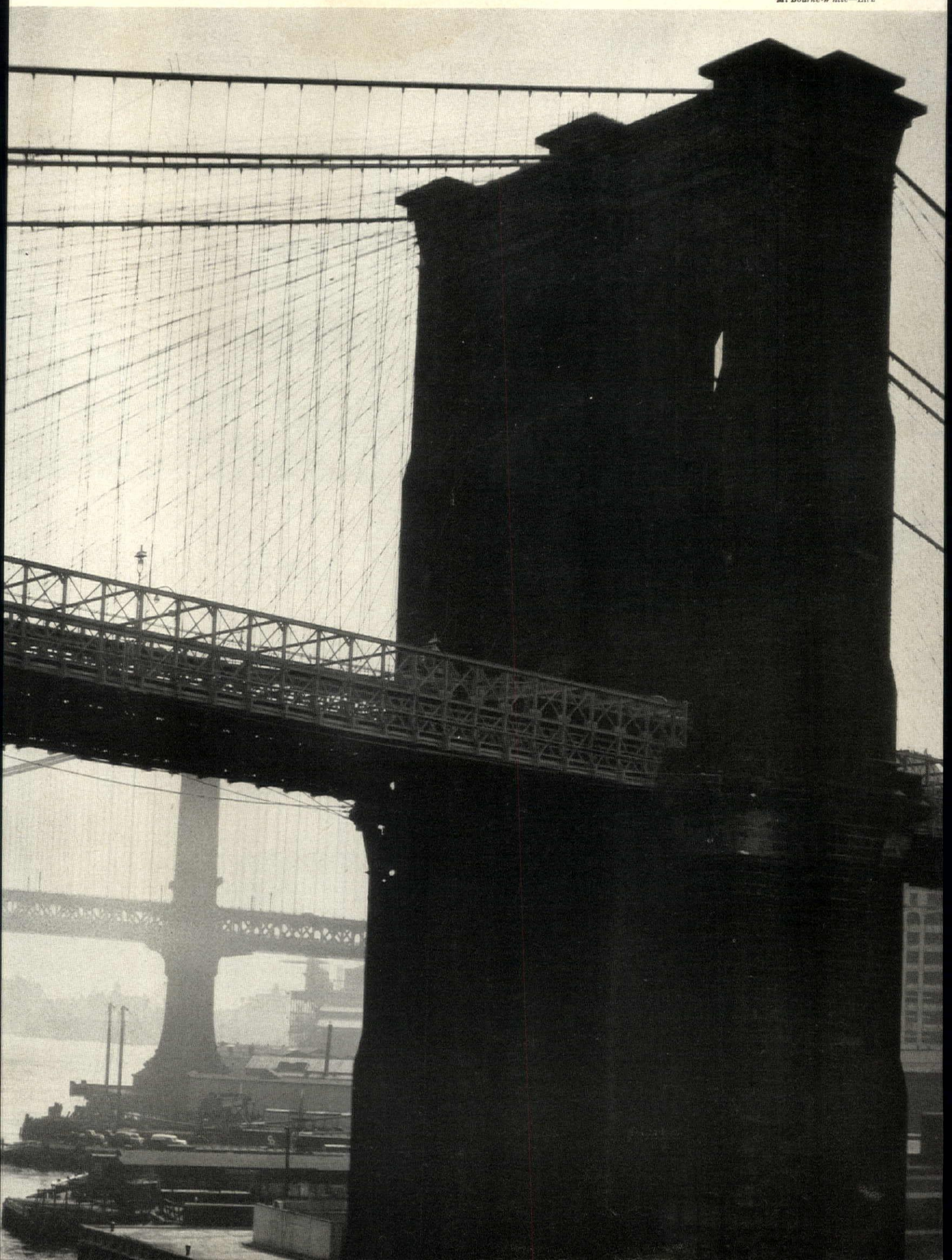
That a bridge so old could, without change to its two great towers or to its four great cables, be made to provide two three-lane roadways, modern and unobstructed, brought many an admiring comment for the surplus of strength and adaptability built into the structure by its creator, John A. Roebling.

The new work was done by Roebling's biographer and disciple, Engineer David B. Steinman, in a spirit of devoted reverence. All went very well except for one small detail which apparently bothered no one.

The main structural expedient used was simple enough to seem like an engineering inspiration. Its ultimate importance to the story warrants the small mental investment by which even a layman can understand it. The floor of any long steel bridge—and this includes suspension bridges—is carried on two or more great longitudinal trusses. These have a steel beam or "chord" top and bottom, connected by a vertical zigzag of posts and braces. If the road structure rides on the top "chords" the traveler looks out on the view across nothing more than a railing. More often the roadway rides on the bottom chords, and the passenger in train or car will remember long afterward the mighty diagonals of the trusses whooshing by. Of such trusses the old Brooklyn Bridge had six. Two intermediate ones were now removed to clear the new wider roadways. To restore the subtracted strength, the two outermost trusses—which Roebling had left providentially lower than the others—were built up to full height and cross-connected to the two remaining inner ones. Your new ride, in either direction, was through a wide steel-skeleton corridor, known technically as a "box truss."—To complete the job the old bridge, for the first time in its long career, had its approaches cleared out and reasonably streamlined.

So great was the confidence of the engineer and the public works commissioner in the engineering deftness of the new design, and in the "minimal disturbance" it imposed on the old bridge lines, that no consulting architect was called, and no submission made to the art commission. So great indeed was the success of the job with those citizen groups which act as the city's watchdogs, that 21 of them joined in acclamation. To no newspaper editor did it occur that a mere sightline which the new builders neglected might have been the invisible kingbeam of the old bridge.

M. Bourke-White—LIFE



When the staging was cleared away the automobiles promptly poured across, but only slowly did there drift back those who always loved the bridge most, its pedestrian enthusiasts. Those Sunday walkers who still explore a great city on foot had always considered Brooklyn Bridge tops among all of New York's eight major walkable bridges, not omitting the mile-long span of the George Washington Bridge across the majestic Hudson. This was owing to a design detail—perhaps an afterthought—for John Roebling was the only designer to place a single footwalk centrally atop his entire thoroughfare, thus putting the individual citizen on his own two legs in command of everything. He, the "little forked radish" that Carlyle called him, was here lord of the one most spectacular view of the world's most spectacular city.

Returning after long-enforced absence to their favorite bridge, these walkers were now aware of a vague discomfort, a peculiar "boxed-in" feeling. Everything was there—except the old soaring magic. Once the eye had been free to look straight and far—far down on the rippling dazzle of water forever trembling like the live bridge itself, free to look far across the Narrows that seemed to frame the great harbor like an inland lake, to look deep into New York's great downtown skyscraper canyon, a man-built geology of clustered pinnacles behind the moraine of the waterfront—all this and much more adding up to a metropolis seen under conditions of enchantment.

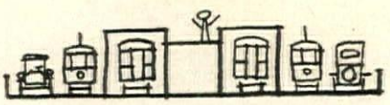
The wire-rope network of long vertical suspenders and diagonal braces carrying the bridge had never interfered with this view but had on the contrary screened, framed and heightened it, as attested by the hundreds of photographs reproduced in the Sunday supplements. Now, however, the immediate foreground contained something very different; for the most important view, the view downward that gave it height, was blocked and frustrated by the newly extended trusswork. And as if to accentuate the insensitivity that had put it there, there had been added overscaled clumsy lightposts with underscaled clumsy bulbs, along with looping festoons of untidy electric wire.

To practical men this might seem a minor loss, important only to sentimentalists. Never had they heard how this one crucial sightline had helped open an epoch and shape the buildings which for all the world spelled America.

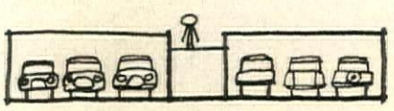
continued on p. 176



Open view of Manhattan was early Brownie camera shot by Walker Evans, possible because original design of bridge suppressed outer trusses and left clear sightlines to shore and water from footwalk.



Cluttered view today is from slightly different viewpoint but fairly conveys how raised and extended trusswork obscures view, messed up still more by clumsy guards, wires, lightposts.



*Photos: (top) Evans—*FORTUNE; *(bot.) Schnall*



Because it involves more of a risk than is publicly admitted, investment in apartment and commercial buildings will lag until small equities, high yields and quick capital return are once again possible—a diagnosis of today's real estate investment market in four parts:

1. The facts and myths of real estate investment (below).
2. The important role of today's tax and depreciation policies (p. 127).
3. The relationship between loan-patterns and the right time to sell real property (next month).
4. The impotency of the government's present policies concerning apartment construction and finance (next month).

REALITIES OF TODAY'S REAL ESTATE INVESTMENT —by Miles L. Colean

part I: Facing the facts

Here are some realities that must be recognized and accepted before we can have a sustained volume of investment in income-producing office buildings, shopping centers or rental housing:

1. The creation of an income-producing property is a highly speculative form of enterprise.
2. As such, it must compete with other forms of venture enterprise for risk capital and must offer a comparable prospect of reward.
3. This means that the amount of risk capital will be limited to what can be recaptured in a short period of time.
4. Therefore, debt financing must cover the great bulk of the financing needs.
5. It is possible for this to be accomplished within legally established loan-to-value ratios by developing a theory of appraisal that finds other elements in value than mere cost of production.
6. Lending institutions are ordinarily willing and able to take the long-term mortgage position because they have no better alternative and because experience has proved that in the long run their practice has been justified.

Activity on low equity

Within the lifetime of old hands at the development of income-producing property, two periods of lush activity stand out. One of these was the great apartment- and office-building boom of the twenties. The other reached its height in the first half dozen years after World War II.

The significant common characteristic of these two periods is that in both it was possible to put up new buildings without putting up much, if any, equity money. The worst situation usually contemplated was the possibility of having to leave the risk capital in the enterprise for a period of a few years.

In the twenties, the mortgage bond issue was the instrument of the boom. The bond houses, which were free of many of the trammels of orthodox institutional investors, were able to create mortgage loans that provided all, or substantially all, the funds needed for the production of the property. In the postwar boom, the device, so far as apartment buildings were concerned, was the FHA-insured mortgage loan. In short, although the means were different, both periods were times in which it was possible to "mortgage out," and, although not every project cost less than the mortgage, the chances that it would were good enough to cause a fever of activity.

It is also significant that, whenever a shift in practice or a dearth of mortgage funds made the investment of substantial amounts of equity money necessary, the work usually did not go ahead. The heavy dependence of income-producing property on the availability of loan funds is further evidenced by the fact that real estate corporations carry a higher ratio of long-term debt to total assets than any other type of nonfinancial enterprise. Equity investment in income-producing property is evidently something to be avoided.

In view of the happy assumptions that have long been made about real estate investment, the question naturally arises—why is all this so?

The myths of real estate investment

A considerable mythology has grown up around investment in real property. It is supposed to be a rock against inflation. It

is said to reach higher levels after each setback. Both of these claims have been to a large degree borne out in history—for real estate investment as a whole. From this general truth has been developed the theory that real estate investment is a safe, long-term proposition from which an investor should be satisfied to receive a modest yield along with the gradual return of his capital over the useful life of the building.

This theory is back of the assumption that in respect to conventional (non-FHA) loans, a ratio of loan-to-value of two thirds means a ratio of equity-investment-to-value of one third. It is also back of the assumption, in respect to FHA-insured mortgages, that the developer of an apartment property will be content with a limited yield of 6% per year over an indefinite period.

The facts are that few if any would undertake the perils of creating an income-producing property if this were so. The facts are that, while a well-located, well-designed, well-built and well-seasoned property may take on the aspect of a secure long-term investment, the creation of such a property is a venture of the most speculative sort, and even the operation of an established property is not without its hazards. The possibility of disastrous miscalculation is present at every turn. The site may prove less attractive than contemplated, or it may lose its appeal after some years of operation. The design may turn out to lack appeal or to become too soon obsolete. Building cost may have been underestimated and operating expense underestimated. The income expectancy may have been overestimated or prove insufficient to make up for the underestimate of expense. And if anything about the outlook is certain, it is that there are likely to be wide variations in income during the long period of the property's economic usefulness.

In addition to the kinds of hazard mentioned, there is now the ever present threat (if not the reality) of rent control of residential and (as New York has demonstrated) even of commercial property. There is the new hazard of hostile political attacks for participation in programs promoted by previous administrations. There are the uncertainties of future tax policy, to which real estate investment is peculiarly exposed. There are, finally, special hazards in the financing pattern itself.

From the point of view of the equity investor, a real estate venture looks very much like any other high risk enterprise. He will favor it if the potential reward seems to overbalance the risk and if the chance of a quick recapture of capital is present; otherwise he will look elsewhere. Income-producing property, therefore, is in competition with other forms of risk venture, and it will draw the money only if it can meet the competition. In an expanding economy such as ours, there are many forms of venture that hold out the enticing prospect of a return of capital in a period of, say, five years or less. Generally speaking, this will mean that, barring the possibility of a profitable sale, the equity investor will hope to recapture his investment from earnings within a period of five years, or less if he can make it.

Adjusting myth to fact

Since the myths of real estate investment are deeply imbedded in social and legislative tradition, it becomes necessary—if real estate activity is not to be unduly inhibited—to preserve the appearance of the myth and, at the same time, to allow the realities of the investment situation to be operative.

The most important device for this purpose is appraisal. If a mortgage loan were to be based on an appraisal of estimated cost, including the market price of land, the amount of equity required would be much larger than a risk capital investor would likely feel justified in making. One escape from this predicament would be through secondary borrowing. Usually, however, second mortgage money is scarce or costly.

A better avenue is appraisal on the basis not primarily of estimated cost but of capitalization of estimated income. Since the capitalization rate used in this process can be chosen with some range of discretion on the part of the lender, it becomes possible to develop a valuation of an amount which the lender's judgment tells him will take the business without incurring undue risk. To make the result agree with an estimate of cost, any amount in excess of the assumed construction cost is attributed to additional land value created by the consummation of the project.

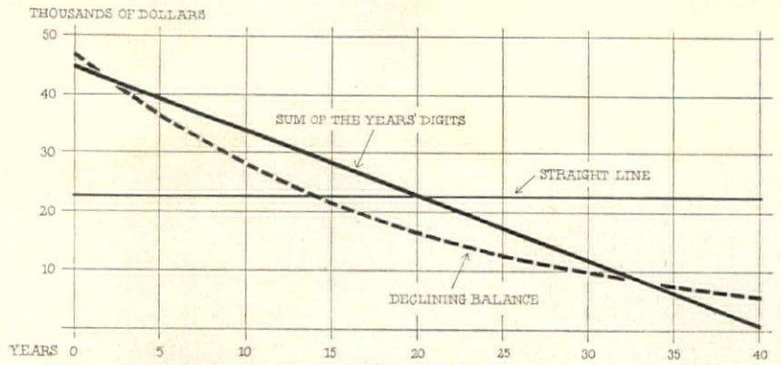
This process is not an irrational nor necessarily a deceptive one. It is of course possible to produce something that is worth more than it costs. If this were not so, very little business would be done, not only in providing income-producing property but also in any line of creative industrial activity. In effect, what the capitalization appraisal does is to impute the existence of value over and above cost that is created by the nerve, ingenuity, competence and luck of the enterpriser. The danger is that, under the myth-imposed restrictions on real estate lending, the process may become an instrument of policy rather than of objective analysis and may end in setting artificial levels of value which may create some special hazards of their own.

Mortgages vs. direct investment

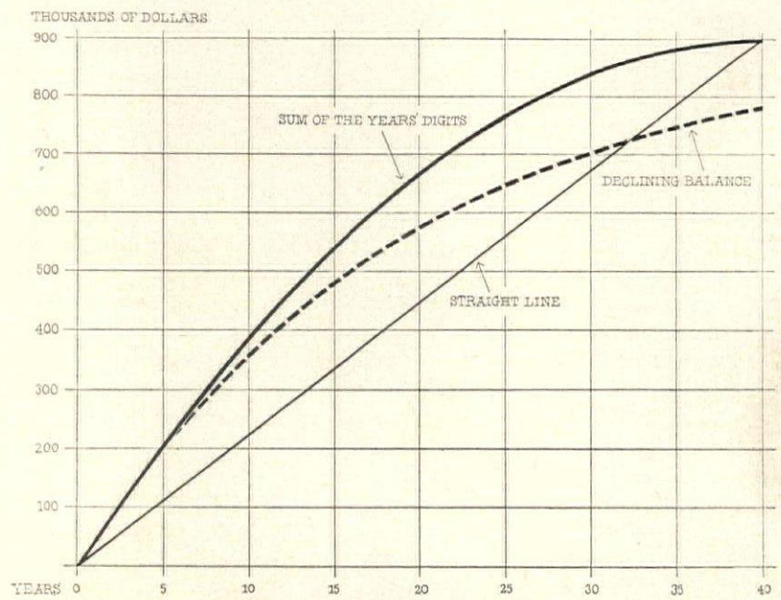
Why are lending institutions willing to take the risk of mortgage lending? Part of the answer is that they cannot help themselves. They are restricted by law to certain types of investments, among which are mortgages; and without investing in mortgages there would be insufficient outlets for their funds. Part of the answer is that mortgages on income-producing property are easy to service and that they bring an attractive net yield in comparison with most other legal investments. But the most persuasive reason is that, over the long pull, including the depression of the thirties, institutional lending practice has been justified. Institutions, like life insurance companies in particular, which make most of the loans on income-producing properties, can afford to take the long view, since their liquidity needs can be pretty well calculated in advance and hedged against.

If lending institutions are willing to take the long view on mortgage investment, why should they not similarly view ownership investment? By so doing they would sidestep the complexities of the mortgage transaction, reduce exposure to overappraisal and gain the profit of the whole enterprise rather than leaving these sometimes substantial gains to those with the lesser stake in the total operation. This question has been raised by the insurance companies themselves; and the argument was sufficiently beguiling to cause them to persuade the legislatures in nearly all key states to permit some degree of ownership investment.

The results, however, are not spectaular;



Annual depreciation deductible for tax purposes on $1 million project ($900,000 depreciation base) varies widely, depending on which of three generally accepted computation methods is used. In early years of project, declining balance and sum-of-year's-digits methods permit depreciation charge-offs twice as lenient as straight-line method.



Cumulative depreciation builds up to $900,000 under straight-line and "digits" methods, to only about $785,000 for declining balance method. At any point, straight-line method may be substituted for declining balance method.

and no company has yet taken full advantage of even the limited opening for such investment provided by the statutes. The chances are that except under unusual circumstances, mortgages will continue to be considered preferable to equities. Among the reasons are these: The institution, after completing a loan transaction, needs to have little concern with the operation so long as the mortgage payments are kept up. It can take advantage of the promotional and operational skills of the equity investor—skills which are more generally found outside than inside institutional walls. It is saved all the entrepreneural, organizational and planning costs of getting a project under way—costs which involve an extremely high risk of loss. It has also the protection gained from the equity investor's incentive to conduct a profitable operation. Since the prospect of the rate of return on a 100% equity investment over a long period is at best only slightly more than the obtainable yield on a mortgage on the same property, there is little inducement to undertake the additional risk and managerial responsibility that an equity investment entails. Finally—and this is particularly true of apartment property—institutions are saved exposure to the difficult public relations and excessive exactions by local governments that have accompanied their ventures into ownership.

As long as the hazards of investment in income-producing property remain as they are, the combination of low equity and high mortgage, which has become deeply imbedded in practice if not always admitted in theory, is needed to get things done.

It gives the mortgage investor a fair amount of insulation against a disaster seriously affecting his long-range interest. By providing the chance of a high yield on a narrow margin of equity, along with a quick return of venture capital, it induces the venture investor to undertake the promotional and construction risks.

These conclusions may not give the picture of real estate investment as some like to see it; but they do give the picture of things as they are. Whether or not some other picture might be possible is a nice subject for speculation, but not one that adds much to the solution of our present problems. On the contrary, it tends to place illusion before reality and to produce more bewilderment than enlightenment.

part II:
The role of depreciation

With corporate and personal income taxes at their present high levels, tax considerations weigh heavily in every business decision. They may even outweigh other considerations, so that a play for a tax advantage may be the compelling reason for a particular decision. Tax considerations exert an especially strong influence on decisions to invest venture capital, because the ability to recapture the investment depends upon the possibility of avoiding the full impact of taxation during the early years of the enterprise. The means of effectuating that possibility are the allowances deductible for depreciation.

The role played by depreciation allowances is best illustrated by a hypothetical example, which, incidentally, will explain the attraction of a high ratio of loan-to-total investment.

A builder buys for $100,000 a plot on which he plans to construct a building to cost $900,000. According to his calculations, the building should produce gross earnings of $150,000 a year and a net income of $82,500 after operating expense (including local taxes) but before depreciation and mortgage interest.

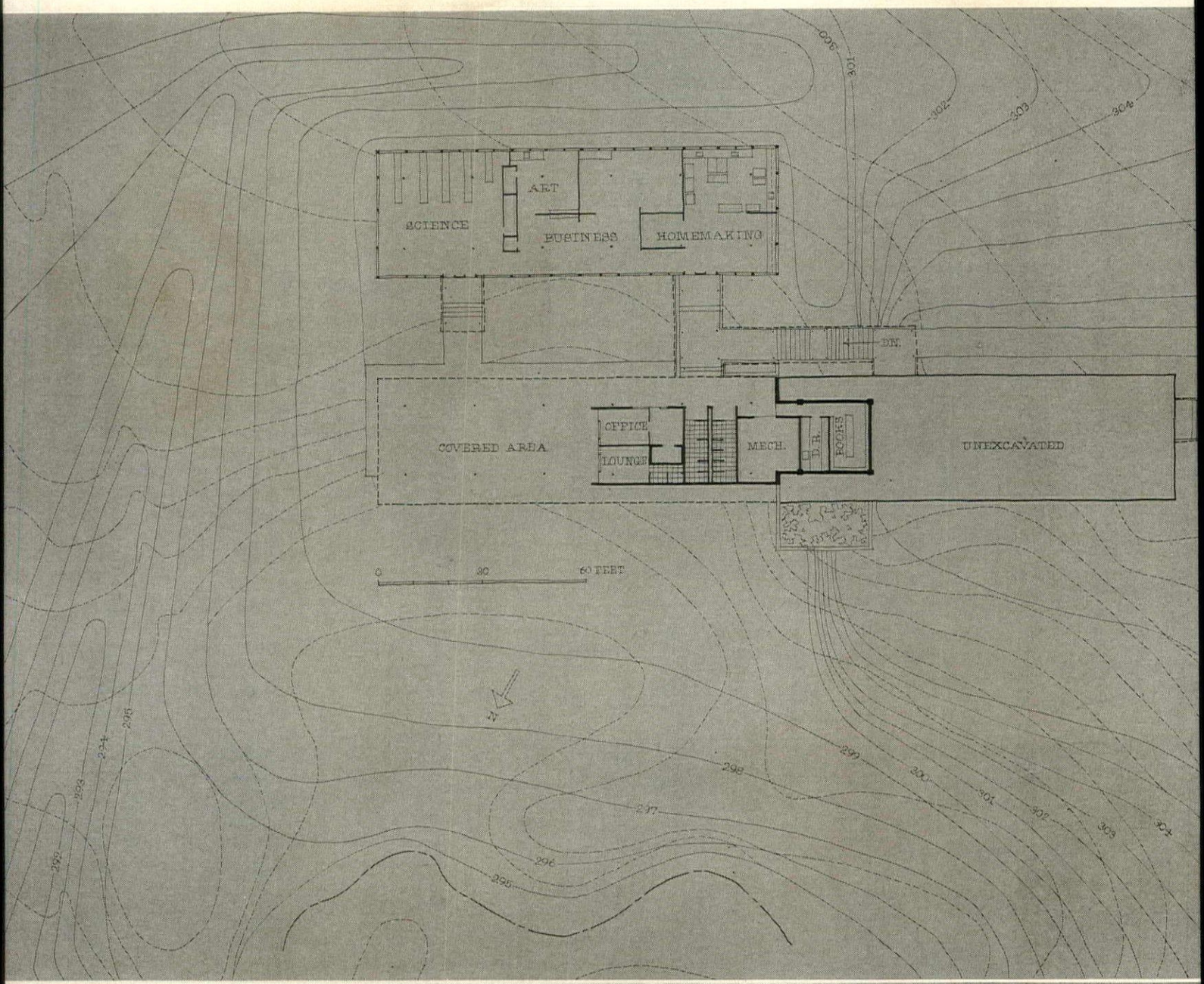
Financing the operation

We may assume that the builder will want to finance the project in such a way that he will have to invest no more of his own funds than he can hope to recapture within what he considers a "reasonable" time—say about five years. His net income of $82,500 a year, or $412,500 in five years, is available for this and mortgage fixed charges.

If he obtains a conventional mortgage of 2/3 of value based strictly on his $1 million cost, he would have to put up about $340,000. Interest on the mortgage—assuming a 4½% loan of $660,000 for 30 years—would come to $142,300 over the five-year period. Deducting this from the $412,500, he finds himself left with only $270,200 net earnings over the five-year period, or $69,800 less than his $340,000 investment.

Unless this man is a very unusual investor, this will not seem to him to be much of a deal, even if he could get the whole $270,200 out taxfree by way of deduction for depreciation (as, in fact, he could not—see below). The deal will look even less

continued on p. 188


SCIENCE
ART
BUSINESS
HOMEMAKING
DN.
COVERED AREA
OFFICE
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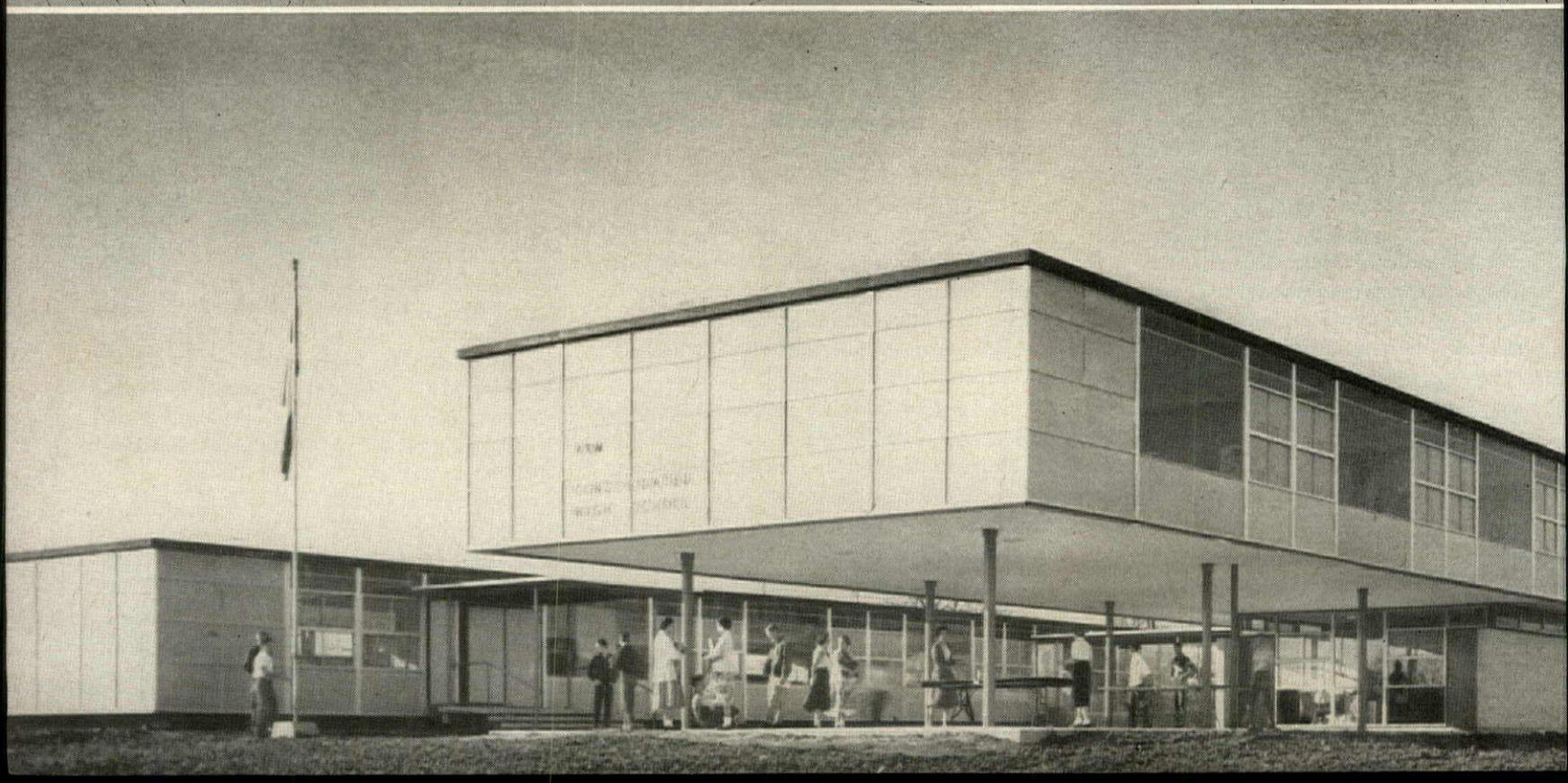
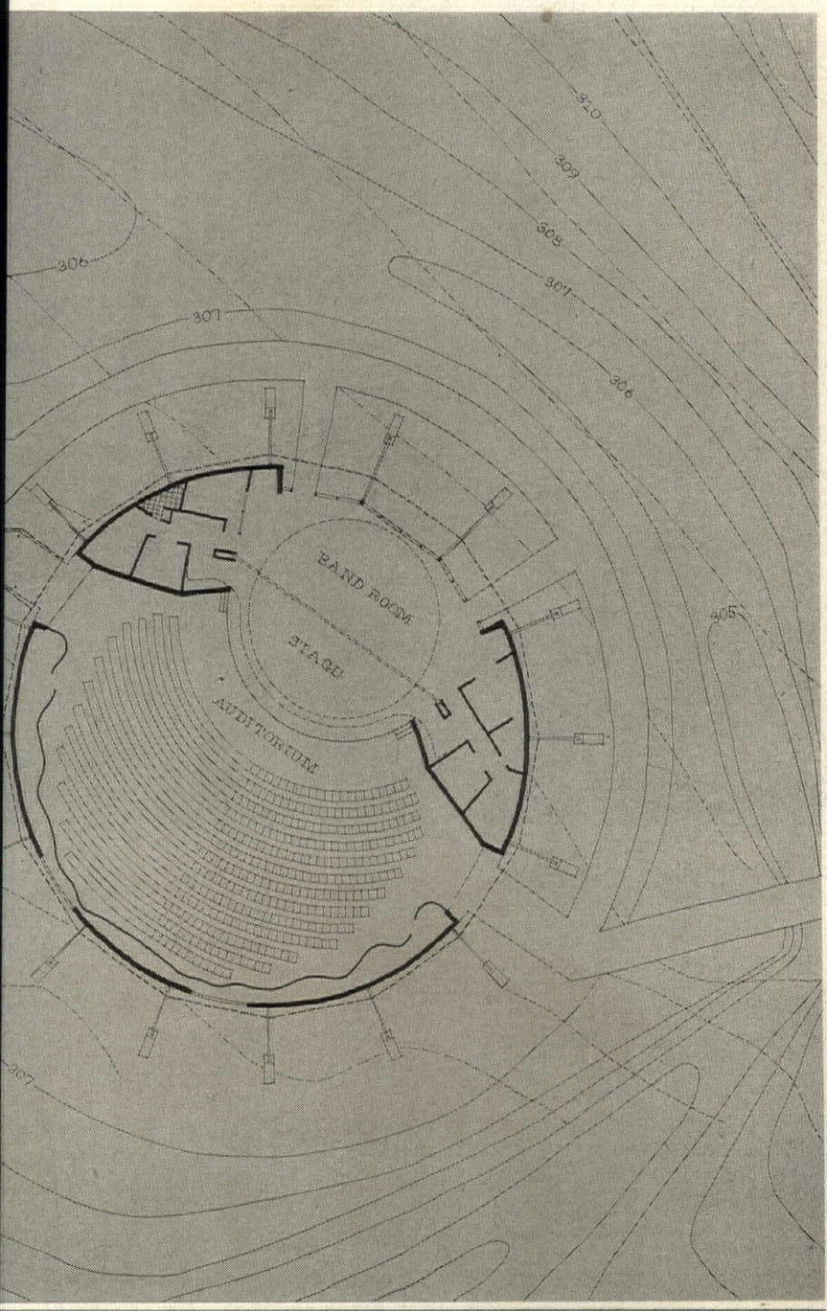


HIGH SCHOOL WITHOUT DOORS

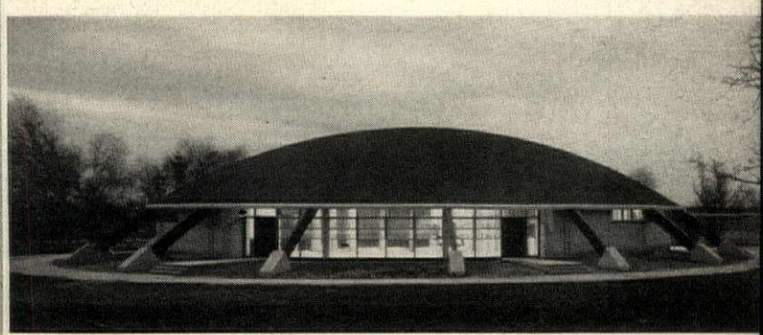


In plan view the new high school in College Station, Tex. looks a little like a sidelong exclamation point and the punctuation is not at all inappropriate. Into this school the designers have for the first time transplanted one of the root ideas of twentieth-century architecture, the open interior plan.

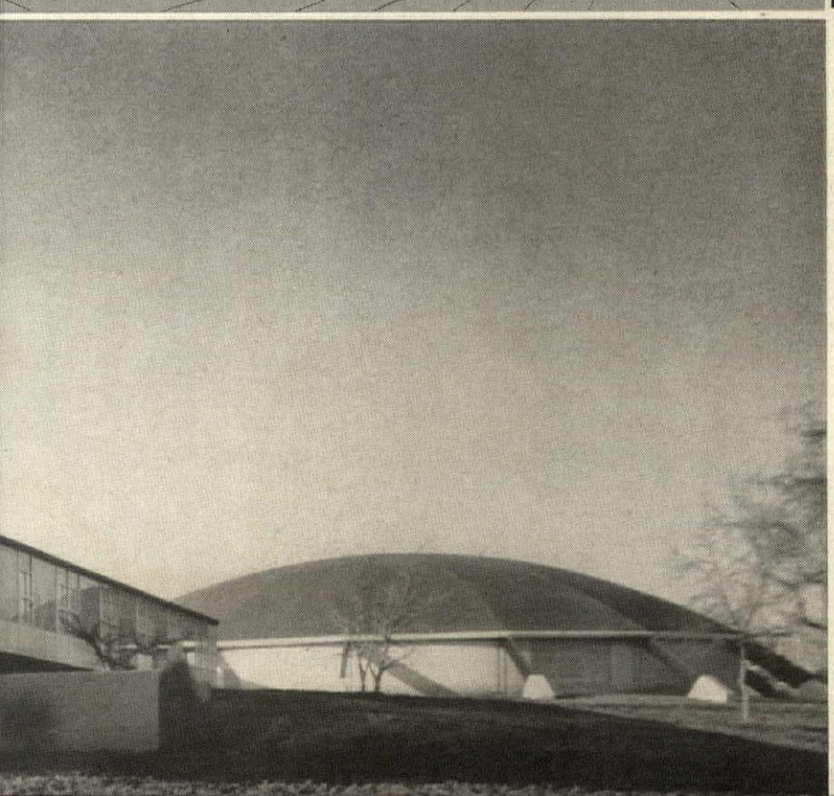
There are no doors within this school. The classroom space is a long narrow loft space divided only by movable panels and partitions (on pp. 130 and 131, see how it works). Behind the design is a quest for ultimate flexibility to meet the ever changing class sizes and curricular requirements in a high school of today. The partitions can be shifted radically any August to meet the classroom needs of a new September enrollment—to make fewer or more classrooms, bigger or smaller ones. Other features of the school:

- The domed auditorium (the dot in the exclamation) which cost even less per square foot than the rest of the economical school—$10.37.
- A hillside social terrace for the high-school students to spin their adolescence out during breaks in the school day.
- Plan division of the school into separate classroom, auditorium and lab building.

ARCHITECTS: Caudill, Rowlett, Scott & Associates
GENERAL CONTRACTOR: Andrews-Parker, Inc.
MECHANICAL ENGINEER: J. W. Hall Jr.
STRUCTURAL ENGINEER: A. M. Martin



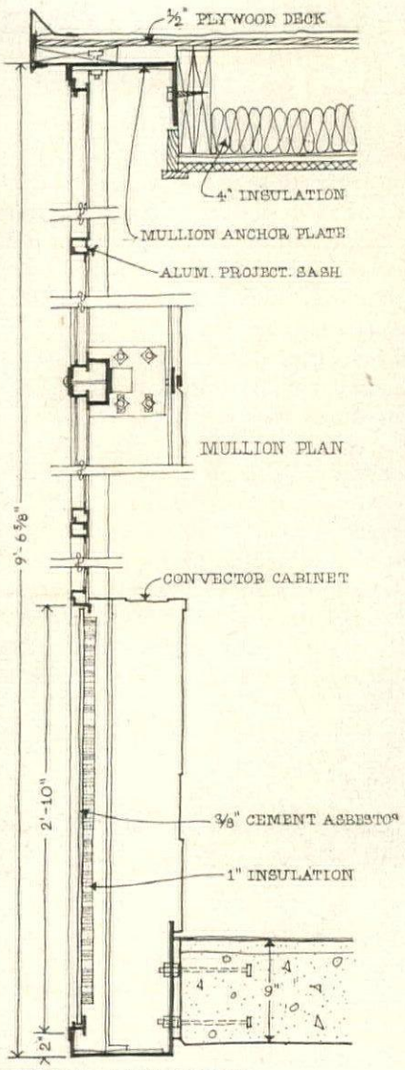
Photos: Roland Chatham



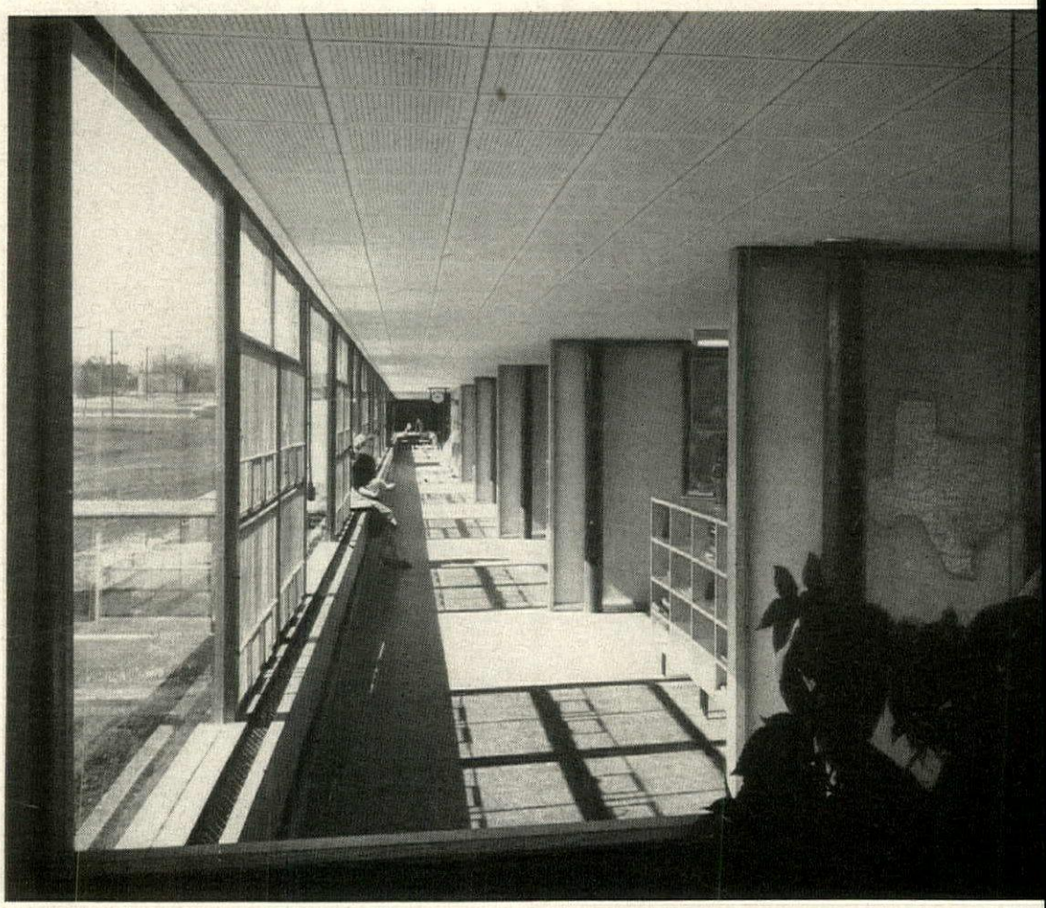
A & M CONSOLIDATED HIGH SCHOOL
College Station, Tex. ▲ 10 classrooms; 210 students.

CONSTRUCTION: ▲ Drilled and reamed footings structural concrete slabs on plowed fill. ▲ Steel columns, major beams, fascia beams in classroom wings. ▲ 2″ x 12″ wood roof joists. ▲ Laminated timber arches in auditorium. ▲ Exterior walls in classroom wings, glass and ¼″ asbestos cement glazed into aluminum windows with continuous convector cab behind asbestos cement panels. ▲ Other exterior walls, all brick, all glass or a combination of both. ▲ Partition walls of classroom units, movable hollow core, 4′ x 8′ panels of chalkboard, tackboard or plywood, or combinations of these three materials. ▲ Ceilings, 12″ x 12″ x ½″-thick acoustical tile, or rubbed concrete surfaces. ▲ Roof, 20-year pitch and gravel on ½″ plywood deck. ▲ Flooring, asphalt tile in classrooms, exposed concrete in auditorium, edge grain pine on stage and band room. ▲ Finned pipe hot-water convectors.

COST: $289,000. Auditorium unit, $10.37 per sq. ft.; classroom units, $11.17 per sq. ft.

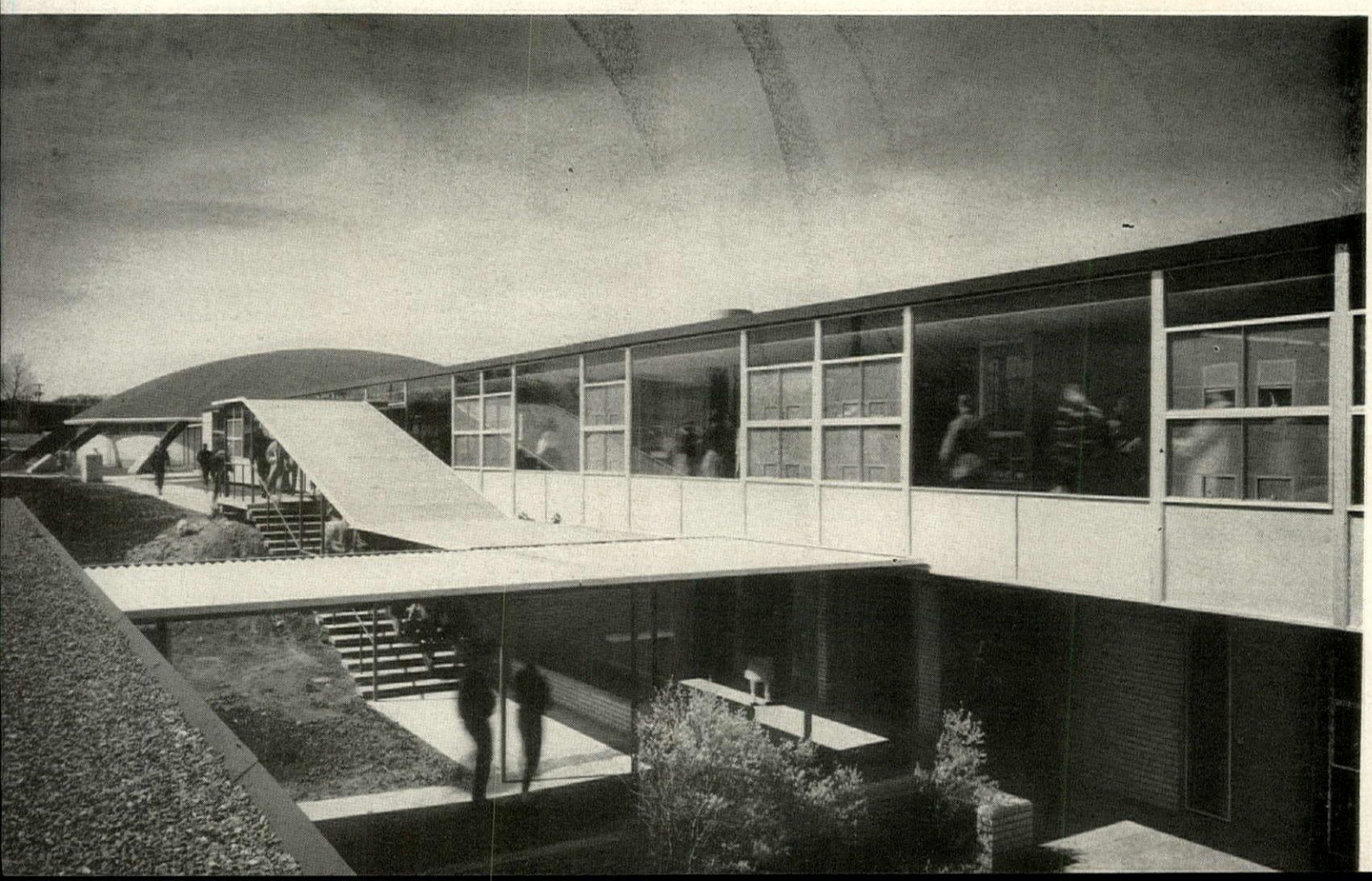


TYPICAL WALL SECTION



Exterior wall of aluminum and cement asbestos hangs lightly on roof and floor. Original specification of marble filler panels would have cost $13,000 more, had to be given up for economy.

Gathering place for between-class society uses the slope of the site pleasantly between the two classroom wings. Terrace extends under the elevated classroom wing for protection from rain.





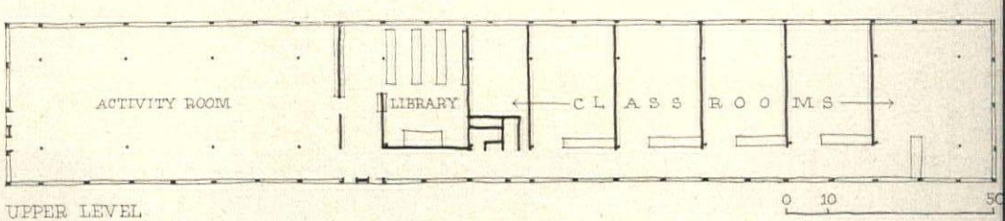
Space dividers between corridor and classroom are usable from both sides and are easily shifted. They cost from $34.39 to $48.50, depending on storage facilities.

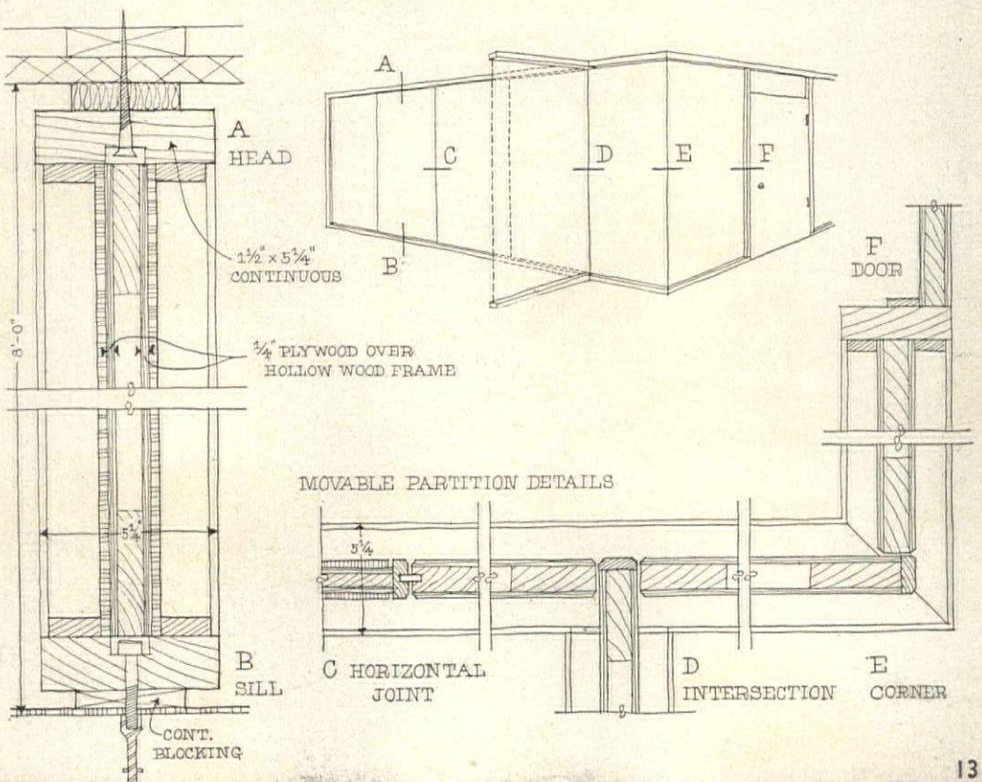
Open classroom plan is flexible and "discovers" space . . .

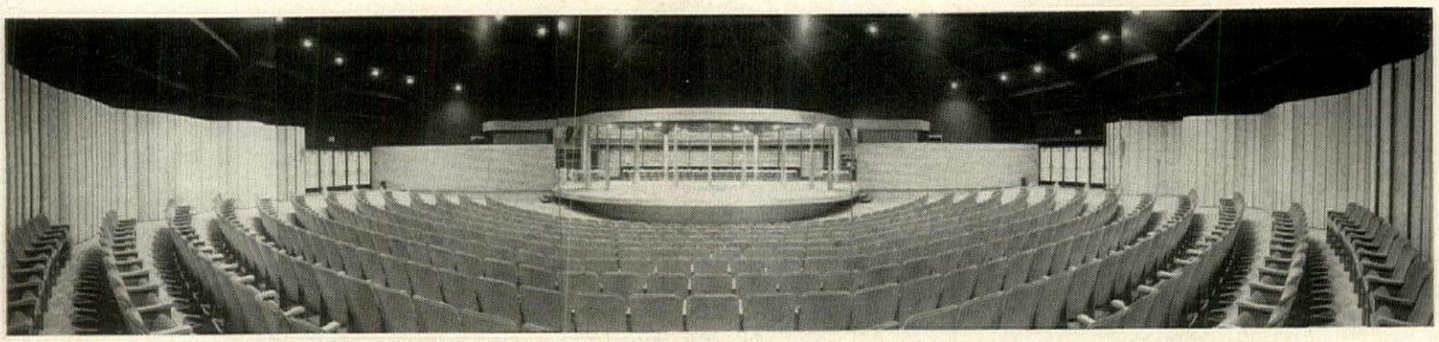
Because the "partition" between classroom space and corridor space is really just a piece of furniture, it can swiftly be moved by teachers and students to include the corridor's area as teaching space. The wall panels, which the architects also refuse to call partitions, cannot be moved quite so quickly, but they permit a custodian plus helpers to reshape the classrooms overnight.

. . . but what about acoustics?

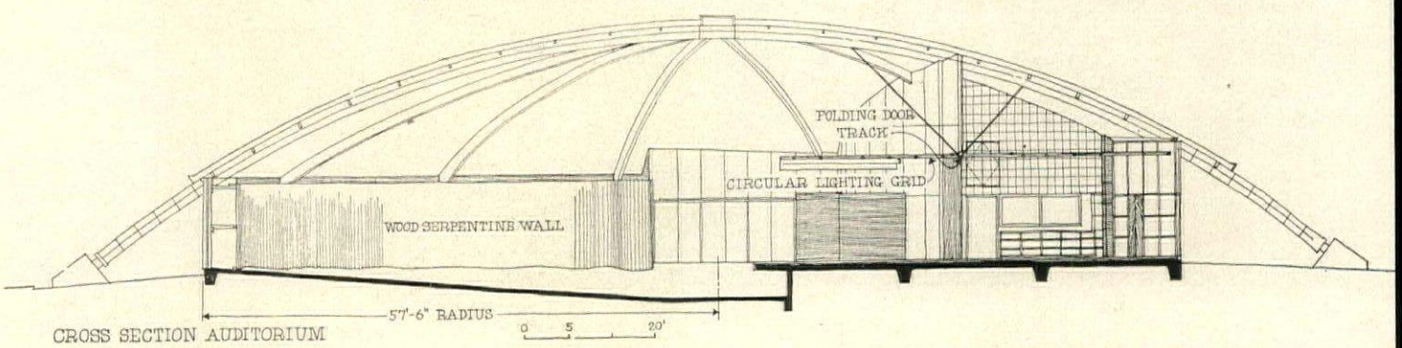
The architects estimate that the effective sound transmission loss in the panel "space dividers" is 20 to 25 db, well below the usual aim in schools. But they were not attempting soundproof classrooms, obviously, since there are no classroom doors. In an earlier school in Oklahoma with a similar plan, they included doors along the corridor, and found that in practice the doors were almost never closed. "The sound control problem in the South is somewhat different from that in the North. The teachers and children in the colder climates operate the majority of the time with the windows closed, while here in our section of the country, the teachers and pupils operate most of the time with both windows and doors open. They have to, for comfort. It makes no difference whether you have soundproof walls or not if adjacent windows and doors are open."







Auditorium under dome is practical answer to important question in architectural theory today: should function or structure shape building? Architects of this building come out roundly for structure. They have built big economical space (circular plan includes more square feet of enclosure per running foot of exterior wall than any other geometrical shape) and saved again by a repetitive use of similar diametrical laminated wood arches. Other architects might fan walls to fit acoustical



CROSS SECTION AUDITORIUM

requirements of an auditorium; these architects plan instead to reconcile structure and function by hanging engineered plaques of corrective acoustical absorbent from arches. (Until then room may sound vast.) Serpentine wall around seating already helps correct reverberation. Auditorium seats 600 in comfortable, widely spaced "continental" arrangement. Band rehearsal room behind stage can be combined with it into theater-in-the-round seating 250 more.



PREFAB SCHOOLS

They may meet the nation's urgent need for more classrooms at lower cost.

The nation's leading prefabber and a top architect show how

More and more US municipalities, alarmed by crowded classrooms and lack of funds, are closing the door on new housing. Unable to finance new schools, they are outlawing big new subdivisions that import hundreds of young children without bringing in sufficient new tax revenues to pay increased educational costs. Some towns have set building permit fees discouragingly high; others have simply upped their zoning beyond the reach of developers, and a few are actually buying up acreage in the public name before community facilities are further burdened by new population.

Builders, as a result, are faced with increasing shortages of buildable land and some real problems in community relations. Where they create a whole new town like Levittown, Pa. or Park Forest, Ill., they have assumed the responsibility for building new schools as well. Where they move into an existing community, some have provided temporary classrooms by leaving partitions out of a handful of ranch houses until permanent schools could be built. Others propose adding the share of a new school to the price of each house.

The latest answer to this problem is a prefab, permanent school that can be put under roof in a day, finished out in a month or two at a cost of $15,000 per classroom. Developed by Architects Walter Scholer and Charles Goodman for National Homes, biggest US house producer with 20,500 prefabs shipped last year, the two-classroom basic unit can be built as homes go up in a development and multiplied in a variety of ways as demand increases (see next page). Wall and roof panels will be manufactured on National's Lafayette, Ind. assembly line, offered exclusively to National's 550 builder-dealers around the country.

National's President James Price expects to start construction in about two months on the pilot model, a 12-classroom school for his own 420-house subdivision in Lafayette. A four-classroom addition to an existing school is also planned for a smaller tract in nearby Fairfield. Price, with the optimism of a successful prefabber, hopes to cut in half the cost of conventional classrooms (up to $30,000 in Lafayette).

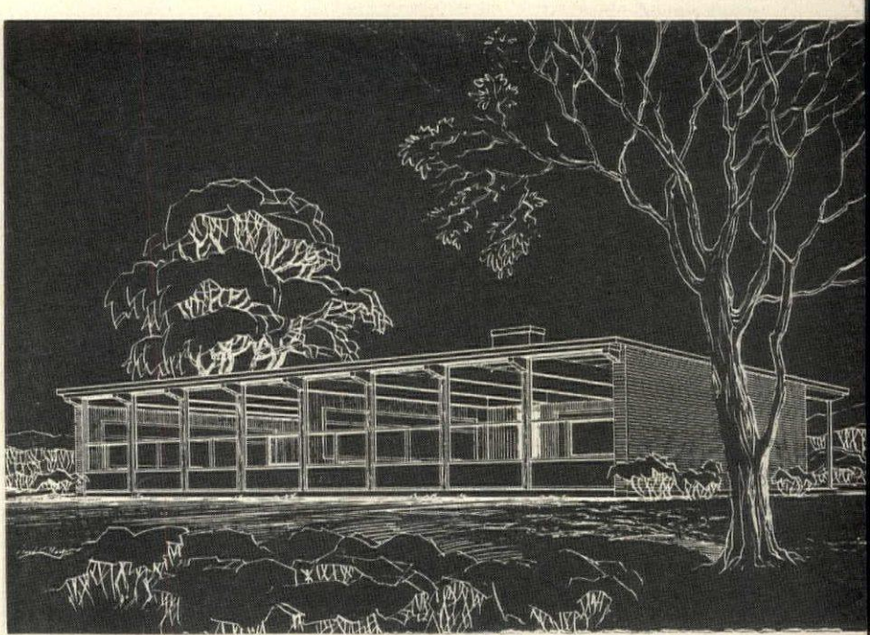
At the same time, Architect Goodman and Builder Robert Davenport are building their own, slightly different version of the paired classroom unit to serve the first 50 of 800 houses in their Belmont-Woodbridge project near Alexandria, Va.

Both the Scholer-Price unit and the Goodman-Davenport unit could be big contributions to the future of US schools, and their test runs will be watched with wide interest. A comparison between the two, however, shows how much difference a few design details can make: Goodman's proportion, detailing and color lift his school out of the ordinary, just as his design details are helping Price dominate the prefab home field.

Clyde Sunderland



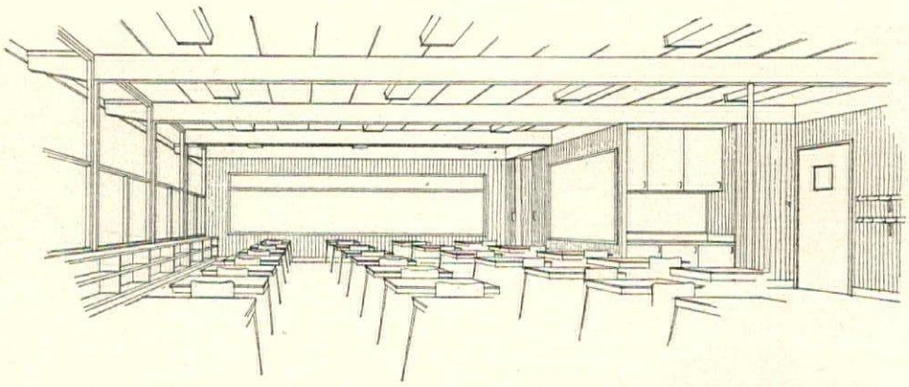
The problem: new communities of small houses can seldom afford ordinary schools at ordinary costs.

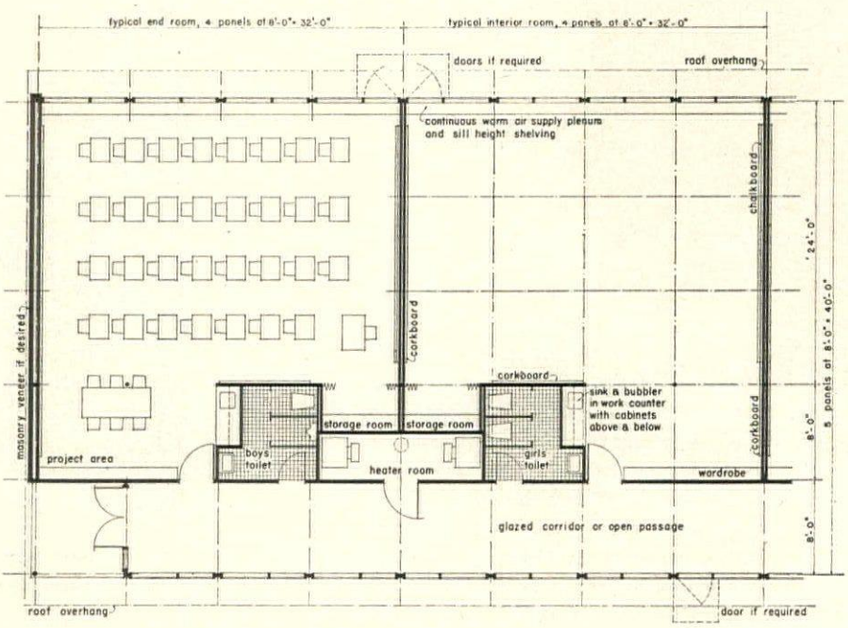


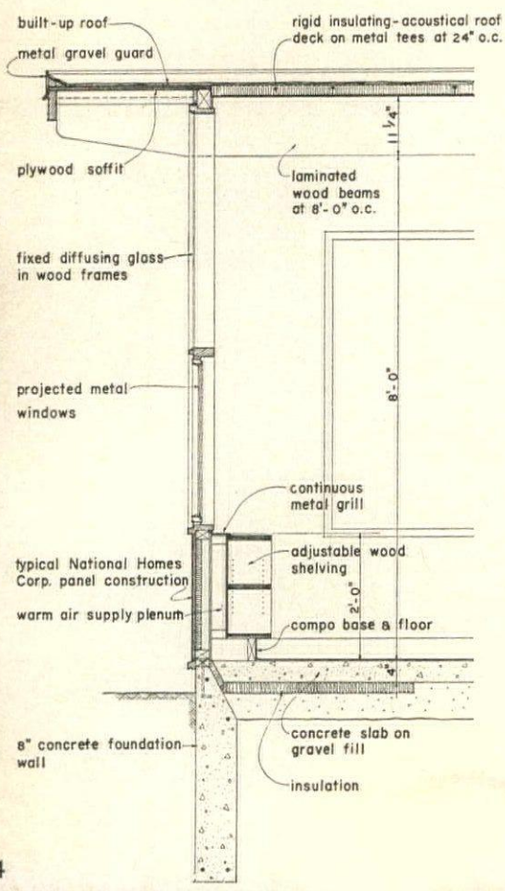
A solution: prefab schools like this which National Homes plans to prefabricate for total cost of $15,000 per classroom.

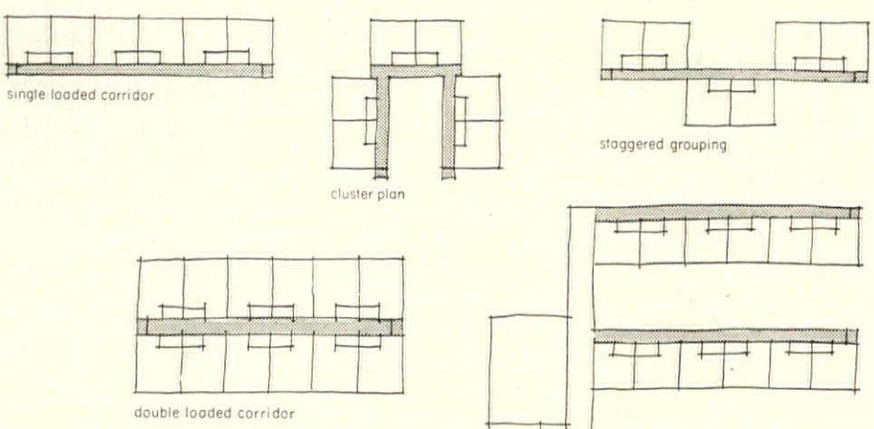
Two-classroom units are self-contained, will be built for about $15,000 per room

Designed by Architect Walter Scholer, National's prefab package will offer its dealers a paired classroom unit of 2,560 sq. ft. (including entrance porch and glazed corridor), laid out on an 8′ bay system for panelizing. A utility core with twin washrooms, forced-air heaters, storage and classroom sinks eliminates the need for central facilities, permits units to be spotted separately and to be added to at will. (Price contends his specially designed counterflow heaters will be cheaper to operate than a conventional central plant.) Where a community must meet emergency school needs, independent classroom units could be put into use immediately and administration building, assembly hall, cafeteria or gymnasium built later. The partition between classrooms can be omitted or replaced by a folding one if the basic unit is to be used as a lunch or meeting room. (The bearing post in the middle of the project area is used to keep spans equal but could present problems in circulation and furniture arrangement.) Classrooms seating 30 pupils have 768 sq. ft. of floor space plus 128 sq. ft. project area, meeting the minimum of 25 sq. ft. per pupil required in all but a few states. The outside exit for each classroom satisfies most fire regulations for one-story wooden schools, but unilateral daylighting and 9′ ceiling might not provide enough deep interior daylight for some antiquated codes.

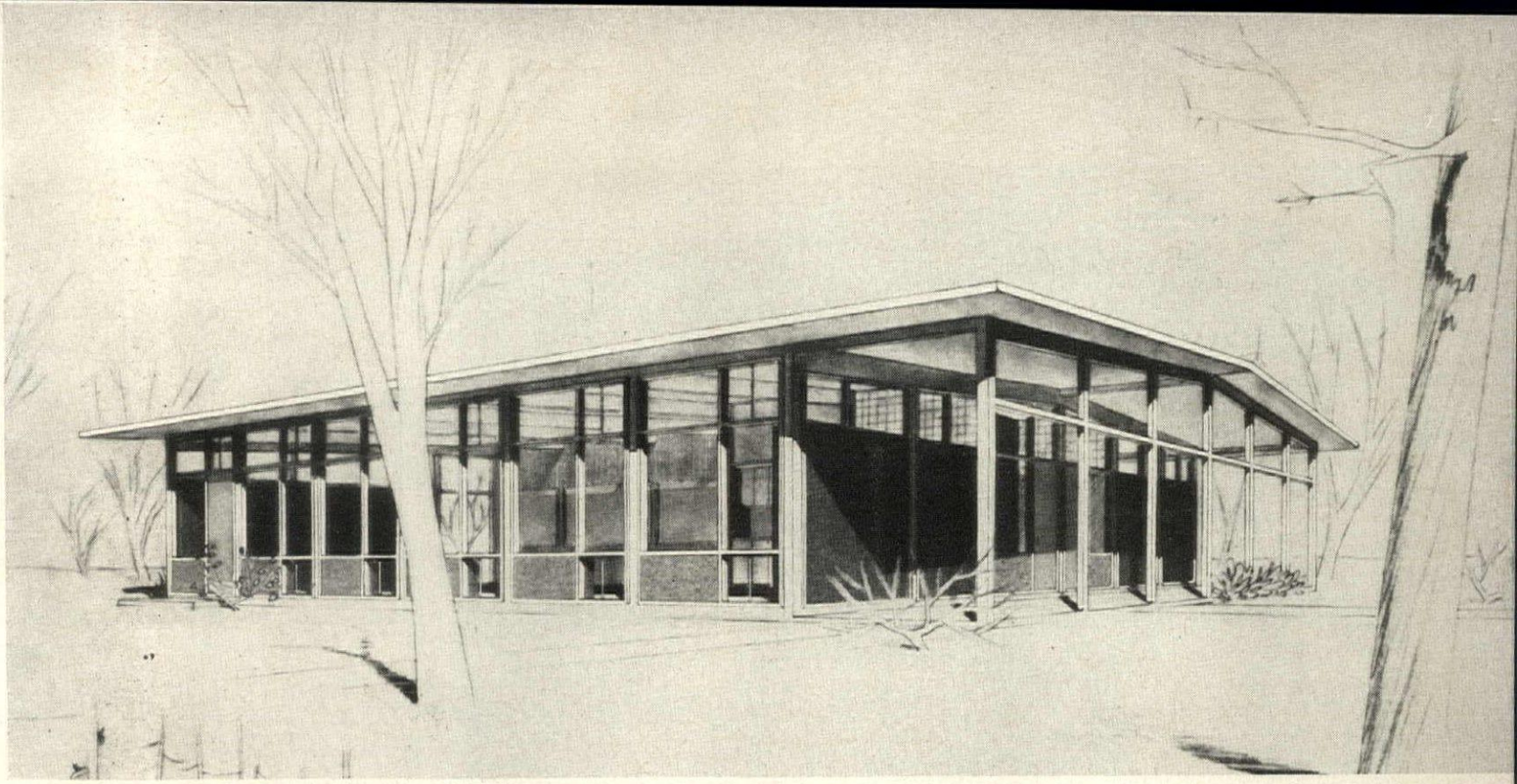








Typical school layouts suggest some of many arrangements possible with basic two-classroom units. Classroom plan is standardized for prefabrication, but alternate with side lighting might allow more flexibility, better orientation in cluster plans.

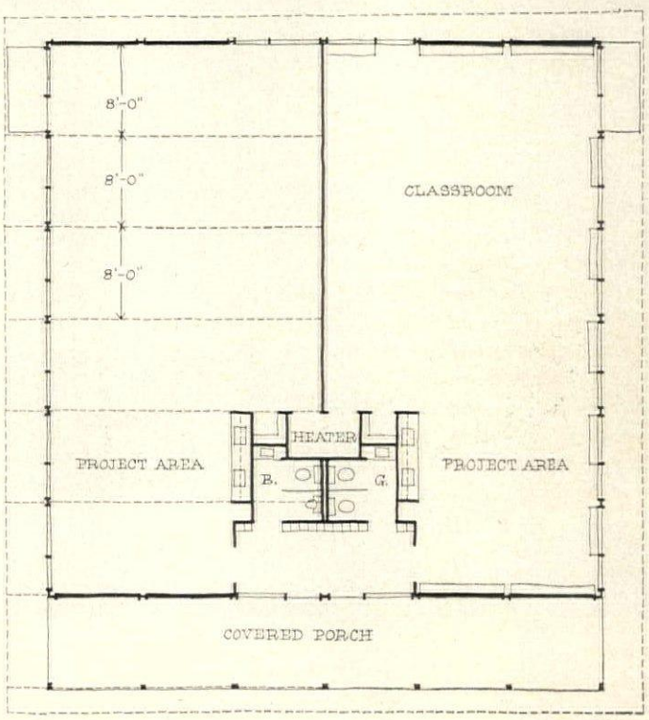


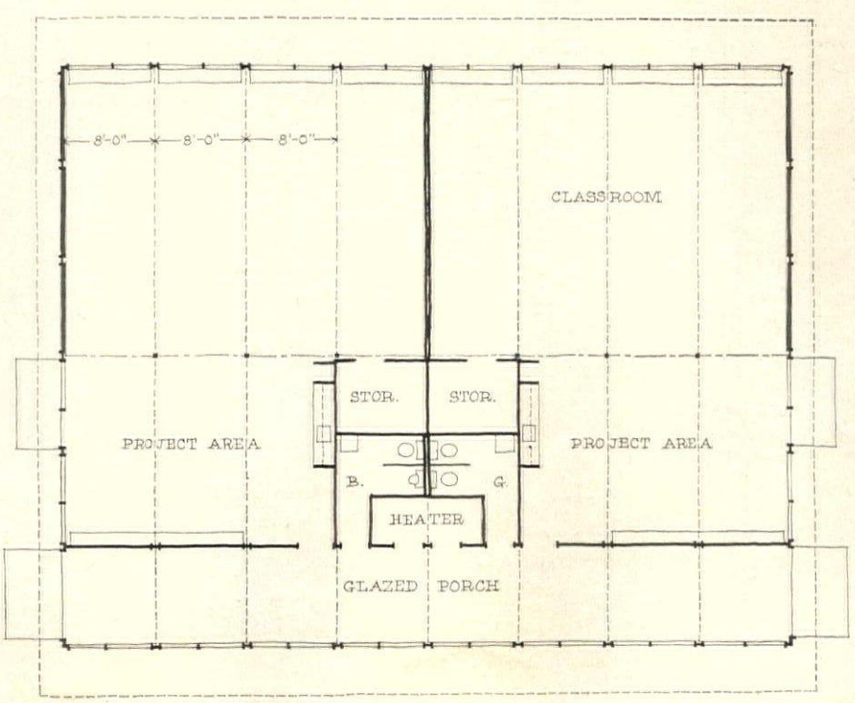
Another version of prefab school enjoys bilateral light and has a domestic roof line

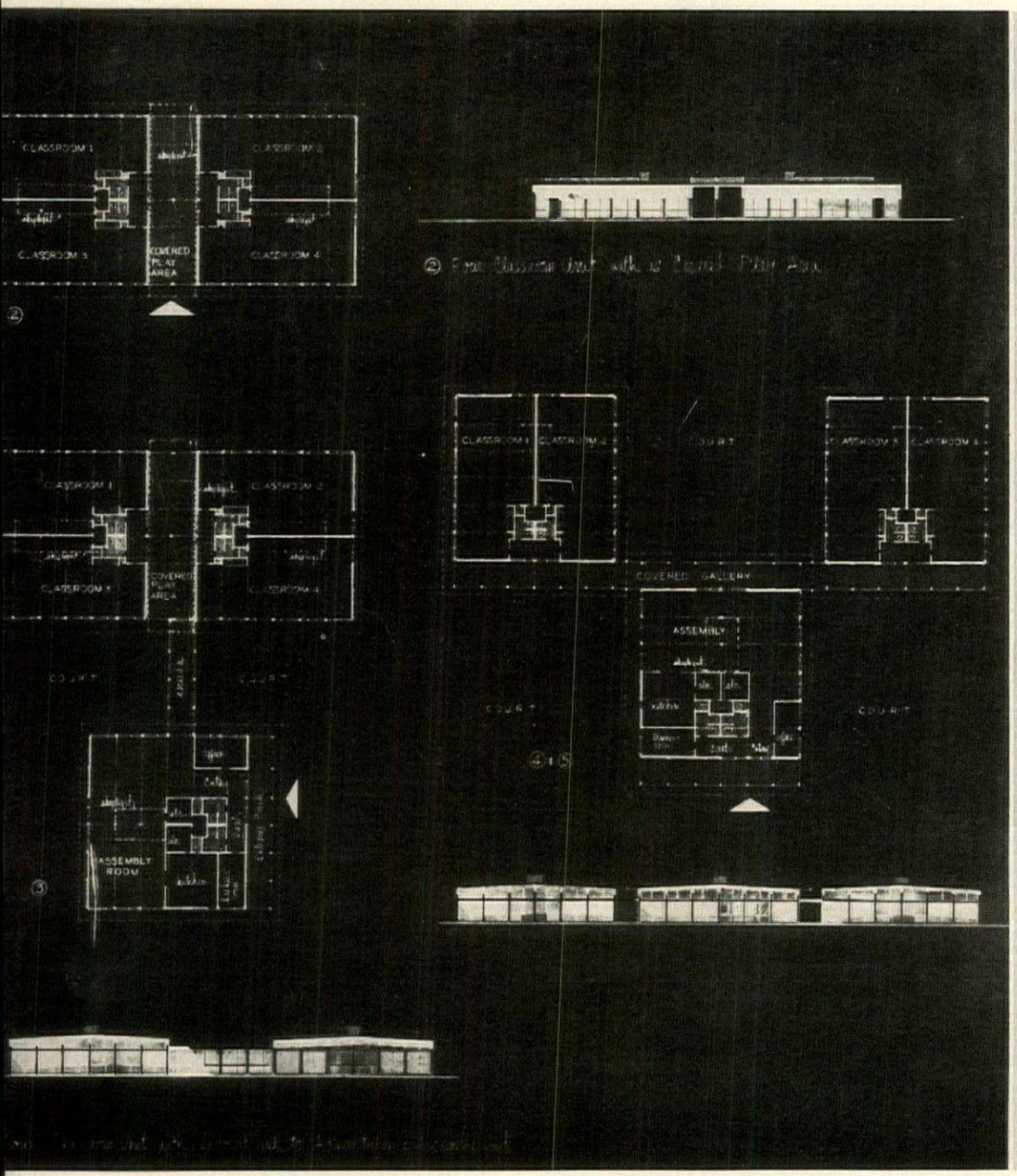
Architect Charles Goodman's double unit of 2,741 sq. ft. (including open corridor) has classrooms oriented the opposite way from the National Homes plan and introduces ample daylight from window wall on long side, an end window and a strip skylight above. Class space is the same (768 sq. ft.) but project area is twice as large and unimpeded by bearing posts. Classrooms are served by a vestibule off the open corridor, heated by a single forced-air unit of standard residential design.

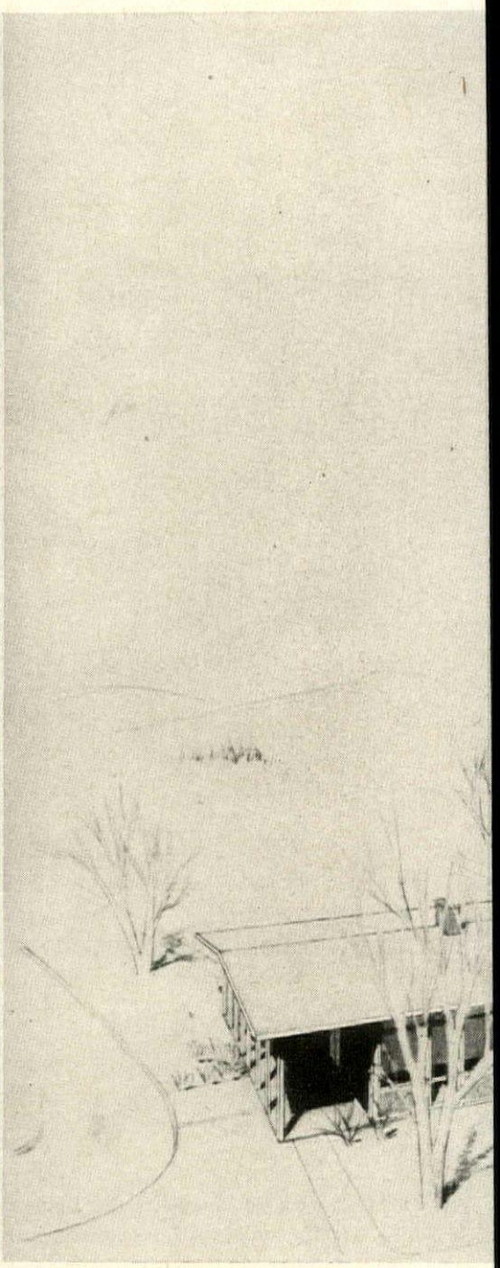
A larger two-classroom unit of 3,130 sq. ft. (plan below) is end-lighted, includes glazed corridor for colder climates, twin heaters, a still larger project area of 384 sq. ft. (Posts in this model do not obstruct project area but still might present obstacles; a steel beam could be substituted at higher cost.) Daylight sources: end wall, side wall opposite project area, high glass strips along corridor. Outside classroom exits in both models permit wood frame and 7'-6" wide corridors to satisfy almost all codes. Goodman hopes to build a pilot model for $13,000 to $15,000 per classroom outside Washington, D.C., and may develop a fireproof steel version to meet urban codes.

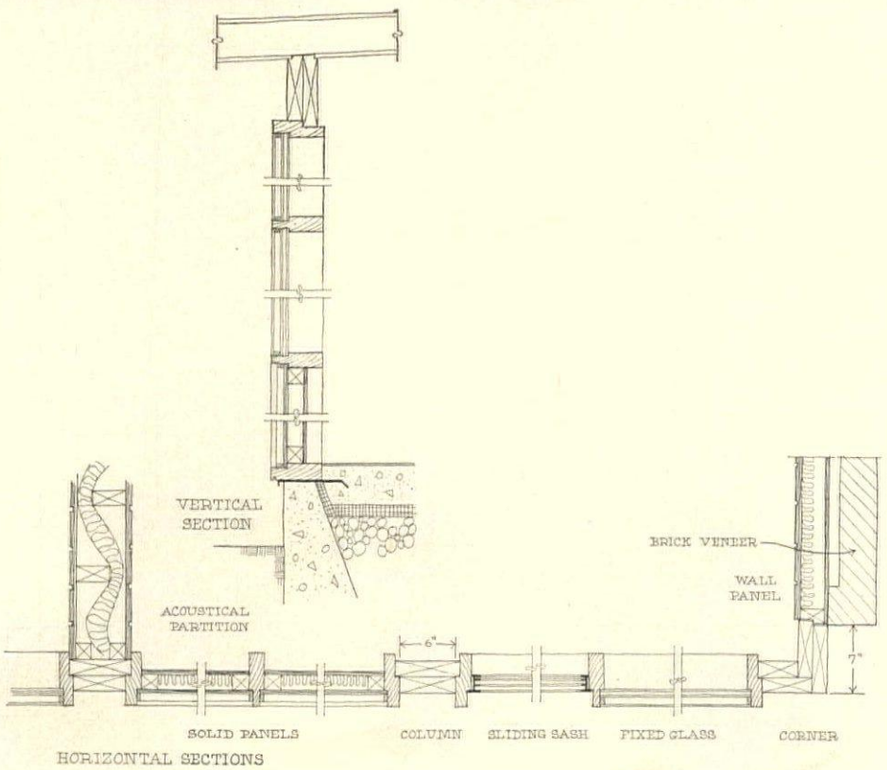
Various combinations of the basic units are shown on the following pages.







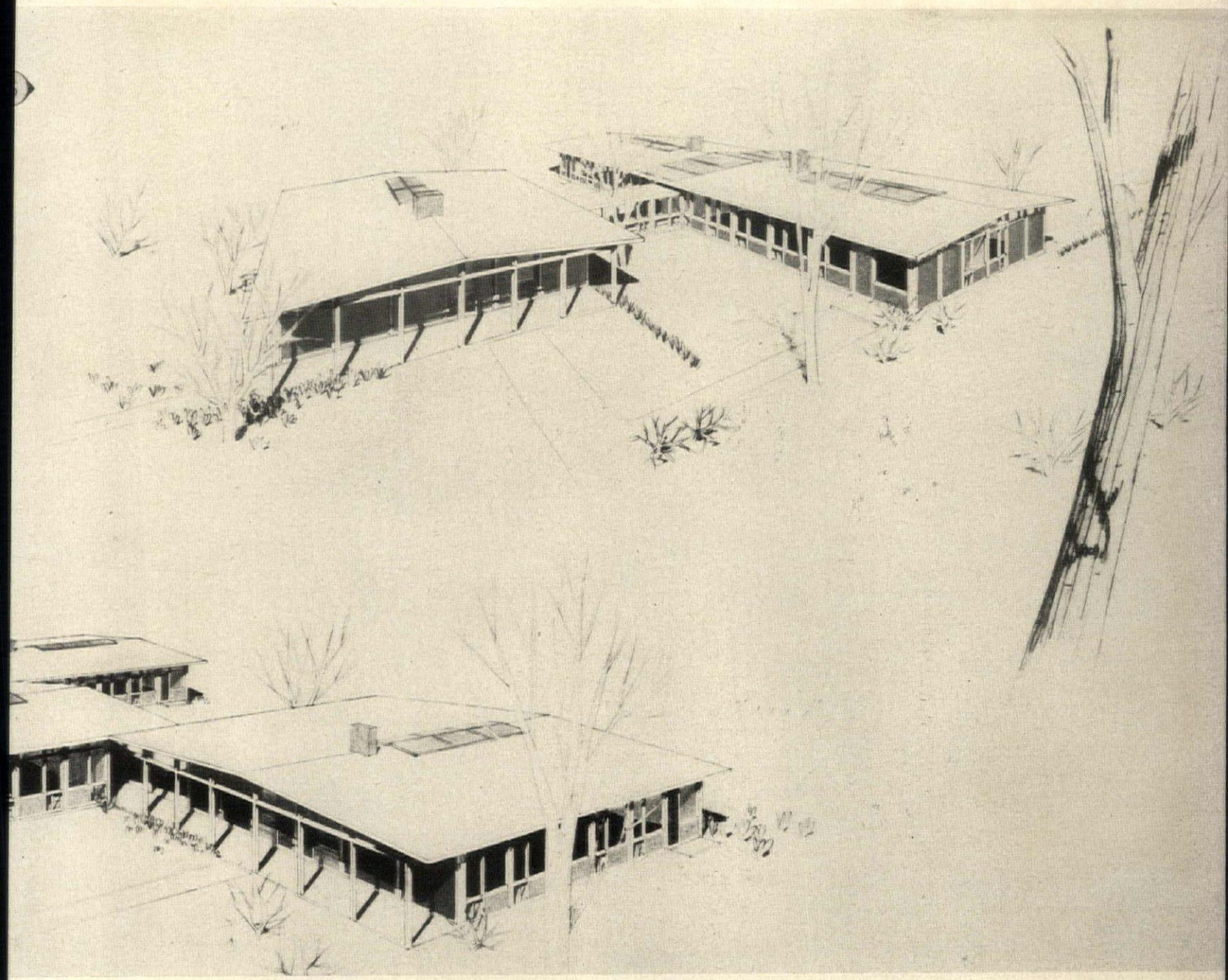


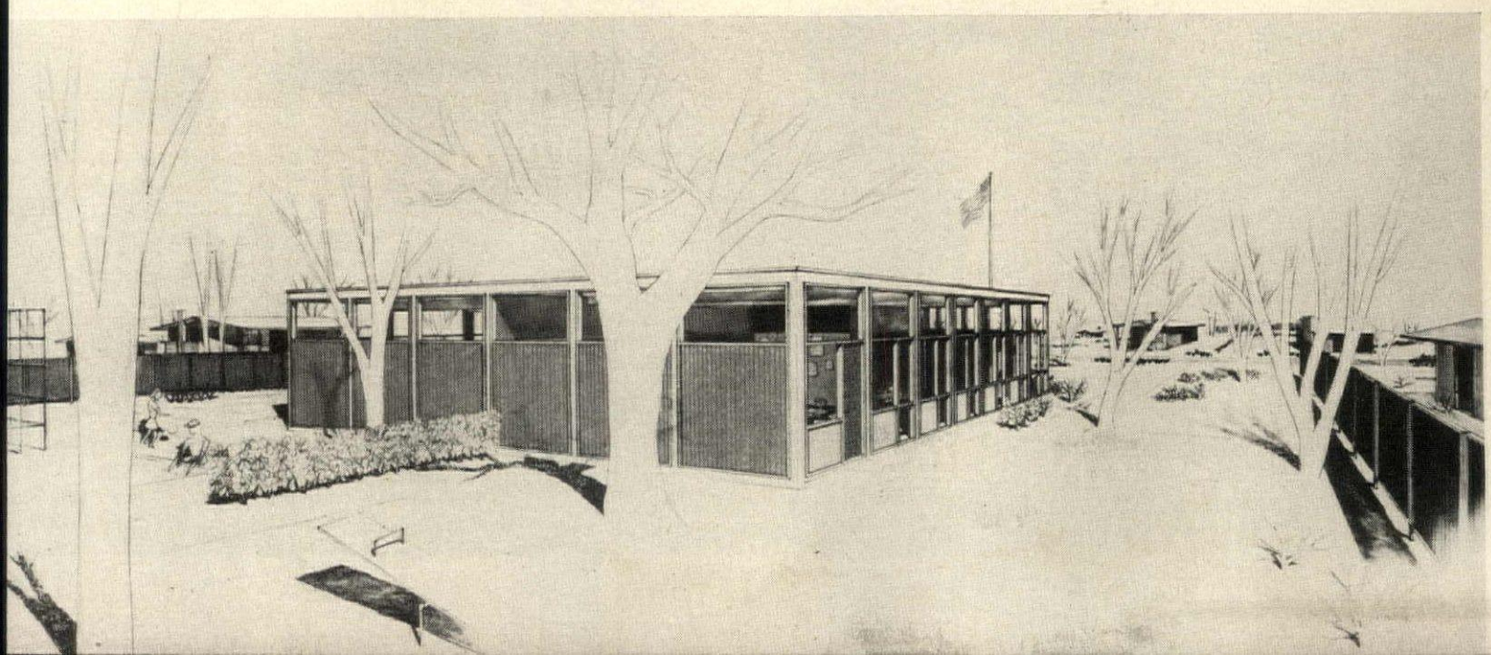


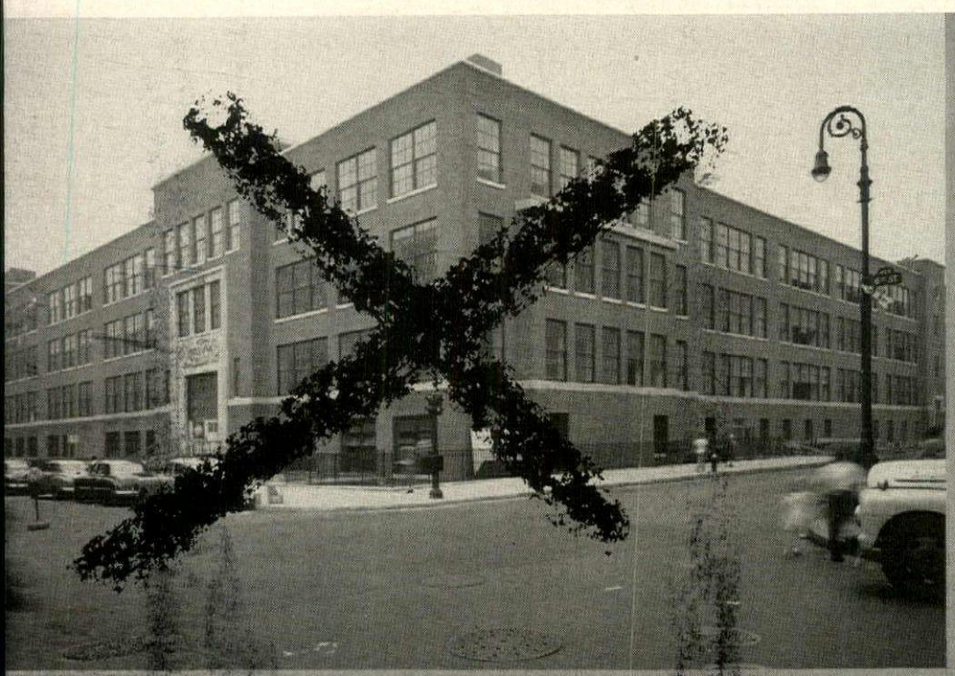
Multiplications of Goodman's basic unit include four-classroom school with covered play space at center (top left), same with addition of basic unit converted to administration-assembly building (lower left and top opp. p.), cluster with administration unit (above).

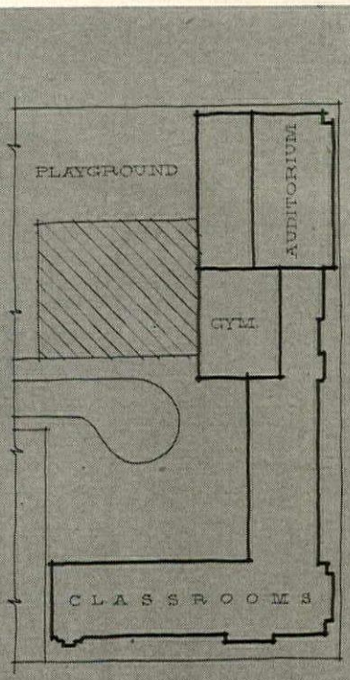
Flat-top version of school will probably be built first in new Alexandria subdivision. Shading devices or trees and ceiling ventilators would help relieve sun load from glassy exteriors without requiring roof overhang.

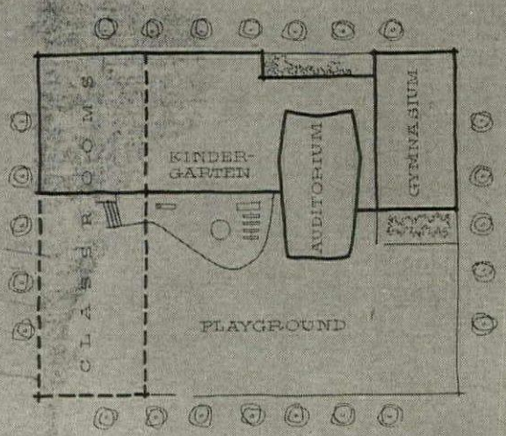
Plan details: posts built up from 2" lumber bolted to foundation receive either wall or window panels, forming strong H-column. Simple millwork evolved from Goodman's experience in low-cost house field is designed for easy construction by homebuilders' crews. Panels will be made on jig table used for houses in previous Goodman-Davenport subdivision.



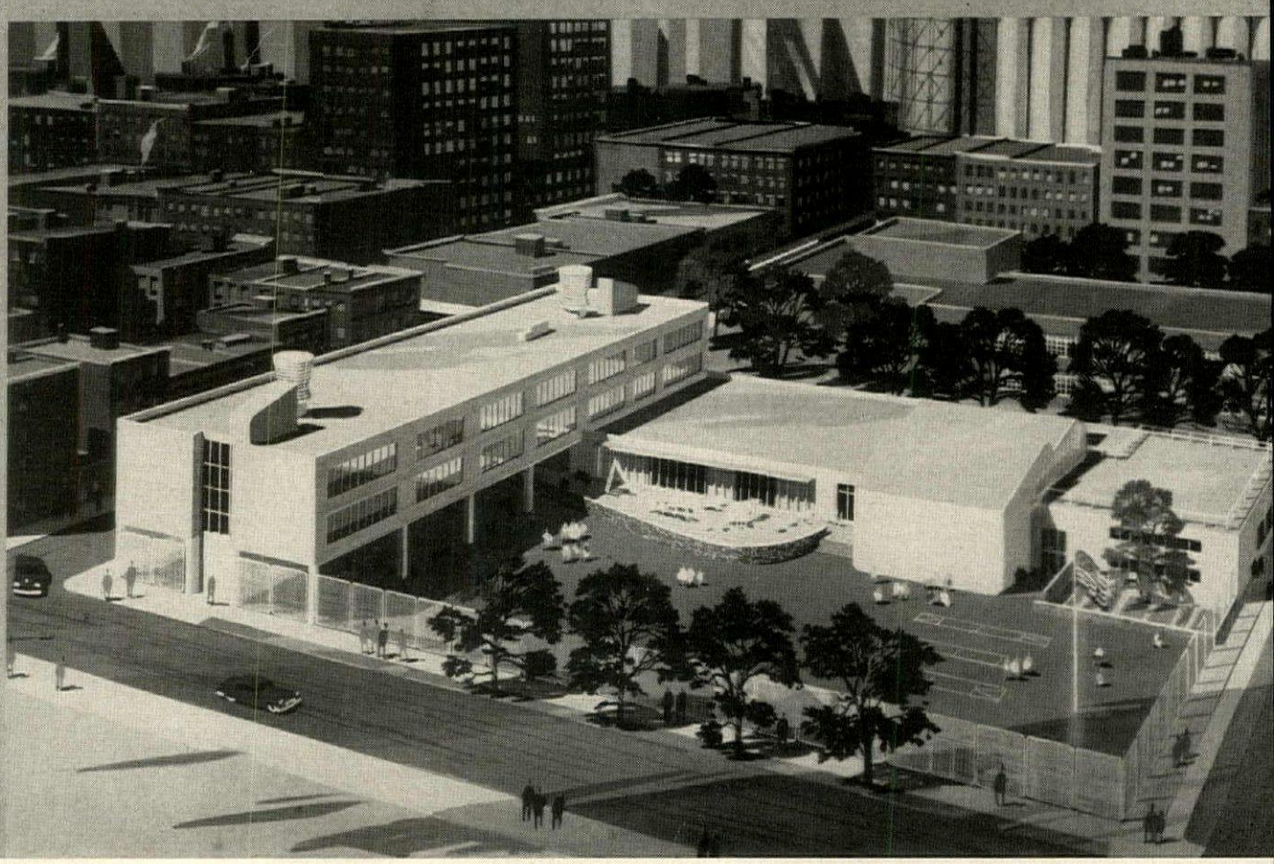








BEFORE 1954 New York City's Bureau of Construction put school children in bulky buildings on cramped sites. Then an enlightened administration got private architects to give the children more light and space for work and play, as in this school for **1955**



P. S. 34
Franklin D. Roosevelt School
Harrison & Abramovitz,
architects

THE BIG CITY SCHOOL

New York at long last is treating its children to some of the suburban school's amenities;

but still unsolved is the problem of bigness

At the left are two largely but not entirely dissimilar buildings. Contrasted, they tell one half, the dramatic half, of an important story. Compared, they tell the other, the undramatic, half.

Here is the dramatic part of the story of these two buildings: the one that looks as if it really came out of the twentieth century was designed only three years after the one that does not, though both are New York City public schools, vintage 1950-'55. The top one was blueprinted in 1950-'51, but has only been in use for about a year. The one below was designed early in 1953, is now halfway finished, should be ready for the children next September.

Obviously, a lot can happen in a few short years, often where you least expect it. Back in 1949, FORUM took a long, hard look at New York City's postwar school-building program, then just getting under way, gloomily wrote it off as hapless, hopeless, bankrupt—bankrupt with a capital B for Bureaucracy (AF, Oct. '49). What has happened (with a capital S for So there!) is that in the interim the "client" in the case—the city's board of education—has had a fundamental change of heart, so far as *design* goes, anyway. Thanks to the pioneering of its own startlingly reinvigorated bureau of construction, the board has at long last been persuaded to shake hands, at least, with modern architecture, and to consign a goodly share—in fact, a lion's share—of all recent projects to private architects; this, in itself, is a major revolution and is, of course, very good news.

The undramatic part of the story is that the "new" new school at left, just like the "old" new school above it, and just like nearly every single New York City public school, old, new or still aborning—is going to have its obsolescence all built-in in advance by being some two or three times too large for the proper performance of its intended function. P.S. 34—like all "P.S.'s"—will be an elementary school; in this instance, what the board calls a K-6 (kindergarten-sixth grade). Into it there will flood over 900 young children; or will the flood perhaps hit 950, 1,000, 1,050? (Across the street from a huge public housing project, P.S. 34 is also but two short blocks and one long one from the Metropolitan Life's 7,859-family, school-starved Stuyvesant Town.) Actually, P.S. 34's enrollment, if held down to the predetermined figure, will run a trifle under the city-wide elementary-school average. In New York the elementaries, where all education begins, now average out at around 1,000; but many of those now on the drawing boards will go to 1,100, 1,200, 1,300, even though there are people over at the board of education who still talk wistfully about their "preferred" maximum of 800 children per elementary school. Junior highs range from 1,500 to 2,000; senior and vocational highs, anywhere from 1,500 to 3,000-plus. (The city's biggest school holds 5,791.) In other words, everything in regard to *size* is just where it was 5½ years ago, only more so—not merely statistically but in terms of the fact that on this point official defenses and rationalizations have now hardened to a still further degree. *Land, sites, tax losses, tenant dislocations, dollars . . . the space for gyms and playgrounds . . . small-school salary schedules . . . one school to every block in areas like Harlem! . . . Why, it's just not possible, not for Manhattan, anyway, or any of the built-up sections of any of the other boroughs*—that is the unanimous opinion of the board of education, the construction bureau, the ubiquitous, all-important bureau of the budget. And that is the other half of the story, also spelled out on the next six pages. *Can* New York or any other US metropolis ever come down to the humane standards of, say, tightly populated Switzerland, where elementary school maxima are enforced at 500?

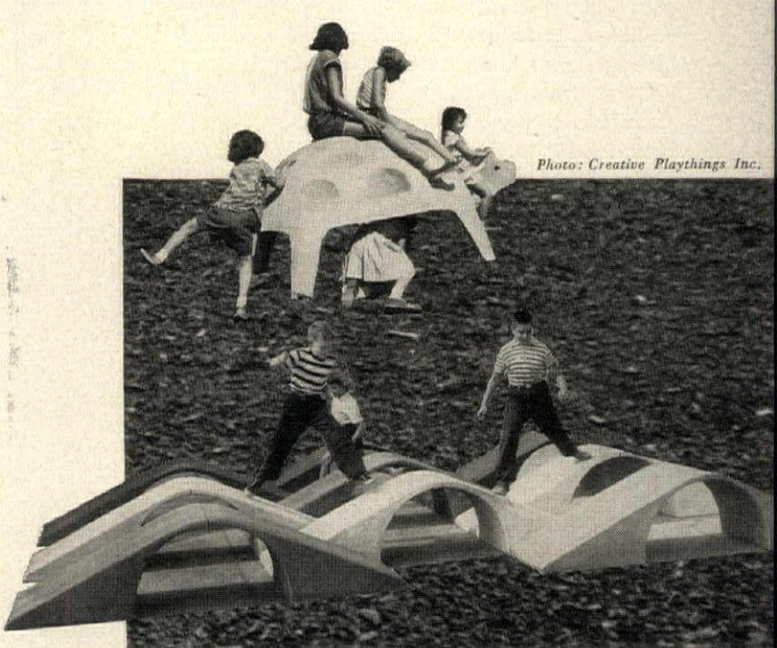
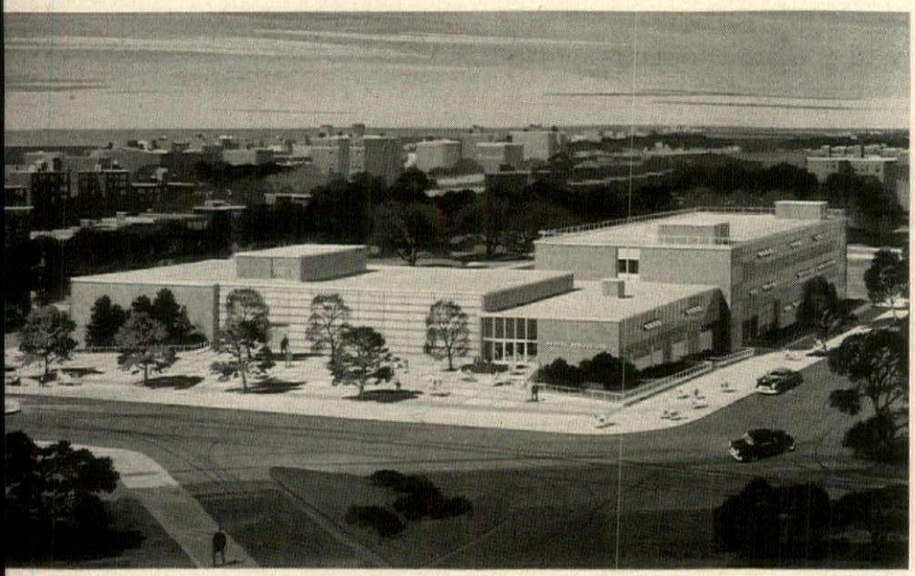


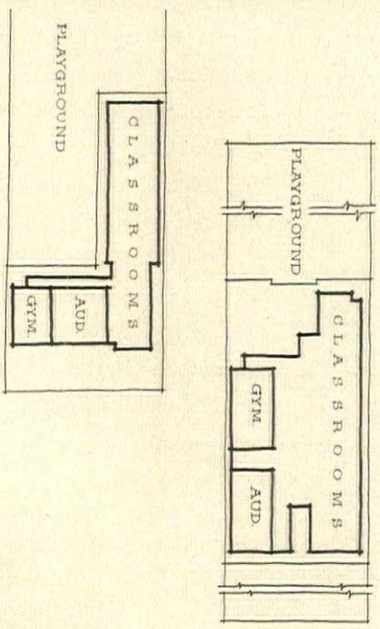
Photo: Creative Playthings Inc.

Kindergarten playgrounds get a new look, too, with these and other modern play sculptures—same ones rejected by Robert Moses for UN Headquarters recreation area. "Baby Turtle" and "Tunnel Mazes" pictured here were designed by Milton Hebald and Sidney Gordin and are factory-produced in quantity. Gordin's mazes won Museum of Modern Art award in 1954. New playgrounds will have more facilities than old at no greater cost.

New York's enlightened officials show how to overhau



P.S. 220 Queens provides good recent example of teamwork between construction bureau and private architect in reducing an initially complex plan to this simple L. School will house 1,058 children aged 5 to 11; its construction will cost $1,750,000. Architect: William F. R. Ballard.



J.H.S. 104 Manhattan (Simon Baruch Junior High School) is intermediate example between old forms and new. Designed in 1953, it will handle 1,824 students aged 12 to 14, mostly from Metropolitan's Stuyvesant Town. Cost: $2,450,000. Architects: Voorhees, Walker, Foley & Smith.



It was John P. Riley of the New York City Housing Authority who formally introduced the board of education's construction bureau —and thus the board itself—to twentieth-century concepts and methods. Riley came over "on loan," from NYHA to education, late in 1951, served as education's coordinator of construction until early 1953.* In that short interval he completely made over the construction bureau, transformed it from a stagnant, chaotic zero into a top-notch, high-spirited agency at least as willing to break with the past as any on the municipal landscape.

Riley's first step in his new job was—like most "simple" steps—a tremendously important one: he split the bureau into two divisions, design and engineering, then distributed his personnel between them according to their skills and functions. Next, he went out into the wide, wide world (not into the civil service lists!) to hunt down precisely the sort of men he wanted for division chiefs: men who, among other things, would be fluent in both civil-service English and private-architect English, for Riley was already planning to farm out many or most of the upcoming schools to private architects.

For chief engineer he found William H. Correale, a big-industry construction engineer who had once put in nine years (1936-'45) as first deputy commissioner of water supply, gas and electricity; when Riley went back to NYHA in 1953, it was Correale, especially groomed for the purpose, who became the bureau's director of construction.

For chief architect, Riley picked Michael L. Radoslovich, a Queens architect-builder who had spent seven years (1938-'45) working for the Manhattan Borough president on such distinguished local projects as the East Side (or FDR Memorial) Drive, the city's asphalt plant, the Battery underpass. Riley chose well when he chose bluff, blunt, affable Mike Radoslovich; an interesting combination of hard-headed horse-trader and ardent idealist, the chief architect is one "bureaucrat" who quite obviously loves his job, and who lovingly does all he can, week in, week out, to push everything (including Radoslovich) just one more inch, and then another, in the general direction of progress.

There is much the construction bureau cannot do, such as determine the sizes and sites of schools or the amount of money that is to be spent in building them, but here are a few samples of the kinds of things the bureau can do and did do as it set about overhauling some 50 years of "tradition" and "theory":

* When he returned to his regular post: director of development, NYHA.

50-year-old theories about big city schools

▸ It went straight to outside architects, engineers, contractors for the best advice possible—and then proceeded to work up a line of new prototype schools, classrooms, playgrounds, both for its own future reference and for that of the private architects who would soon be coming into the picture in increasing numbers.

▸ It went from crabbed H- and U-shaped structures to simple open L's and rectangles —and is now pointing the way to still simpler *square* buildings, once believed impossible for schools (see photo and plans below). Results to date: a 20% saving in exterior wall area.

▸ It invented a vertical air-duct system (up columns to rooftop exhaust fans) as a replacement for the horizontal system (in corridor ceilings) which had always frozen minimum floor-to-floor heights at 13′.

▸ It promptly reduced floor-to-floor heights to 11′-2″, thereby making classrooms somewhat more inviting for children (though not yet inviting enough) while cutting 150,000 cu. ft. out of average three-story public school building.

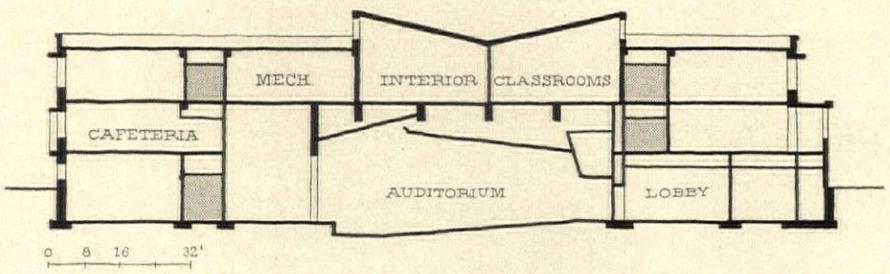
▸ It switched from 23′ x 35′ rectangular classrooms to 29′ square ones; lost nothing thereby in classroom area—in fact, gained a few square feet—yet made a 6′ saving in corridor length for every two classrooms, a 10,000 cu. ft. reduction in over-all volume of any 32-classroom building.

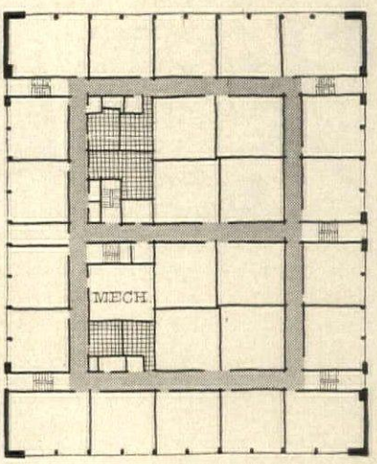
▸ It shrank and simplified all parapets, eliminated cornices and other impedimenta, cut way down on use of expensive facing materials.

▸ It redesigned kindergarden classrooms from scratch, cut them down from 50 seats per room to 25; introduced flexible storage units and shelving, stacking furniture, folding doors to toilets (since small children sometimes have a fear of being trapped inside); put all play materials (paints, clay, etc.) into a set of mobile carts, to be ranged along wall when idle.

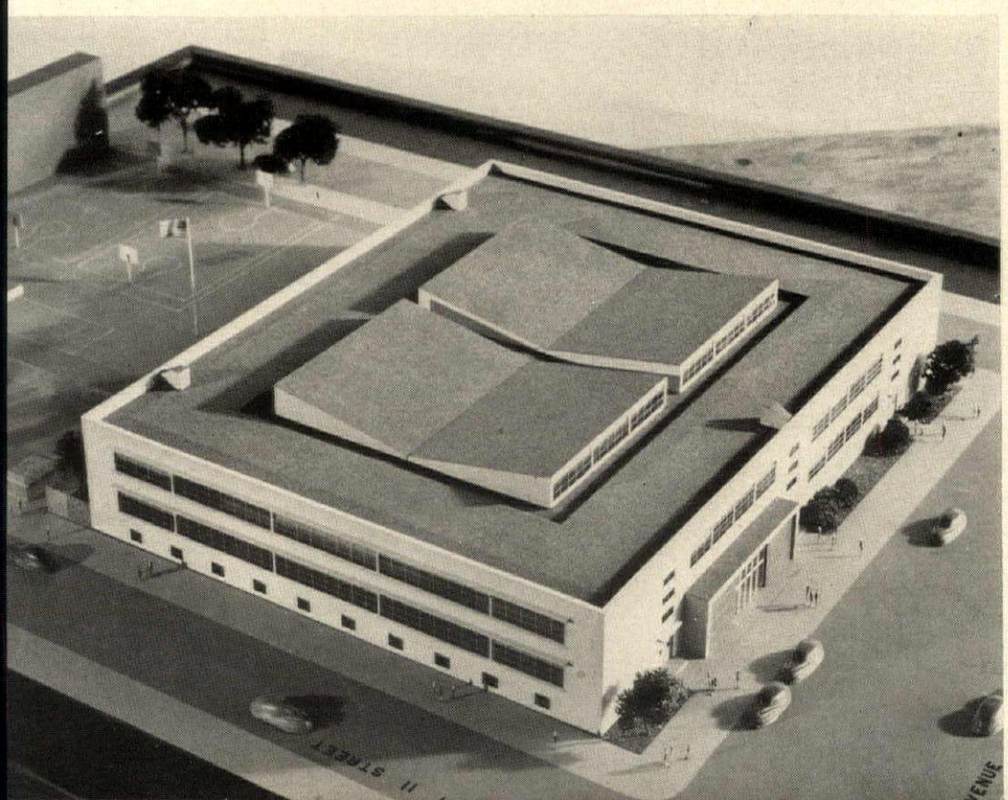
▸ It redesigned playgrounds (see p. 139) and home economics units, giving the latter warmth, color, modern styling.

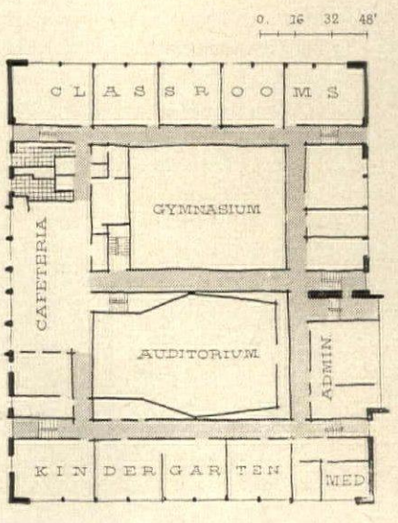
If these and their like were good design innovations, they were also, of course, good for the budget. Over the two-year span for which figures are now available—1951-'53—the bureau brought elementary school costs down from $1,665 to $1,488 per pupil, junior high costs down from $1,511 to $1,280. (Since the building cost index meanwhile rose from 233 to 255, this was about a 20% real saving.) There is no proper way to determine comparative figures for high schools or vocational highs, the last of the old ones having been built in 1941 (with 1941 dollars), the last one before *that* in 1925. On top of which, a glance at the huge new structures on pp. 144 and 145 will show that there could be no proper basis for comparison in any event. But that is the other part of the story, as already indicated.





P.S. 19 Manhattan is interesting sample of work now being done by construction bureau itself. This near-square building (200′ x 160′) uses clerestory windows to light eight interior classrooms lodged above central core of gym and auditorium. If P.S. 19 proves successful, pattern will be repeated elsewhere. Architect: Michael L. Radoslovich.









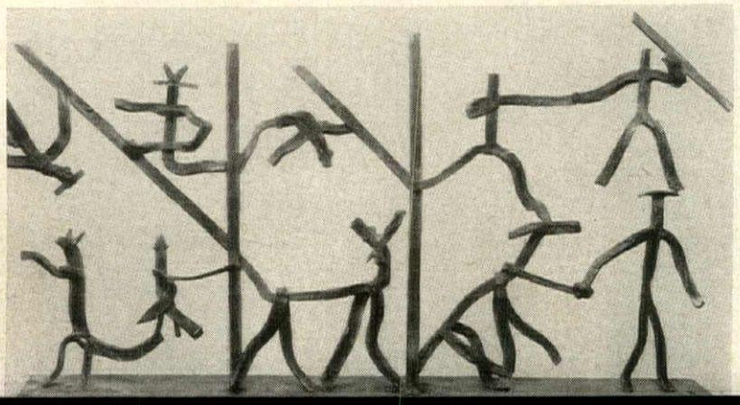
CONSTANTINO NIVOLA has been commissioned to do one of his *haut-reliefs* and . . .

. . . BEN SHAHN is going to supply a mural for the big new William E. Grady Vocational High School (see p. 144). The Shahn-Nivola works shown here do not necessarily indicate what either artist has in mind for the Grady High School commission

Another way to strive for grace: the way of art

Ever since its "new deal" set in, the construction bureau has looked with a remarkably kindly eye on all private-architect suggestions to the effect that it would be nice if we could only get an allowance out of the School X appropriation for something to be worked up for the entrance-way, say, by Sculptor Y or Painter Z. And many of these proposals have gone through—right on up and through the budget bureau, which, while it has struggled manfully to keep up with the recent enlightenment, still does not too much like gambits such as this one. Less yet may it warm up to Radoslovich's latest recommendation to higher headquarters: that from now on there be a regular art allowance for all new schools, $7,500 per P.S., $10,000 per J. H. S., $30,000 per high school—less than ½ of 1% of typical construction costs. (Federal projects have 1% art allotment; NYC schools currently get but 1/10 of 1%.)

MARY CALLERY: ironwork sculpture—illustrating fables of La Fontaine for P.S. 34 (p. 138)

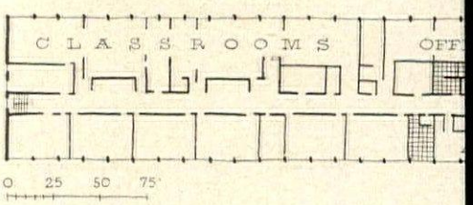


Big banjo, first new high school,

Here, completed, and now in use—it opened in January—is George W. Wingate High, the "banjo" school that FORUM previewed in Nov. '52: the first high school the city has built since 1941; the most radical departure to date from official preconceptions of what a school should look like.

New as Wingate may be, it is already possible to say a few things about how it is working out. Though the school was still less than half full (ultimate enrollment: 3,200) when FORUM went out to Brooklyn a few weeks back to take a look at it, there were plenty of people around who were only too happy to speak their minds:

▸ A 16-year-old student (girl): Yes, she likes it, she is proud of it. At first the rooms seemed crowded, the layout in the circle building a little complicated, the whole place a bit impersonal. But now she has learned the "short cuts"—to tell at a glance whether to go clockwise or counter-



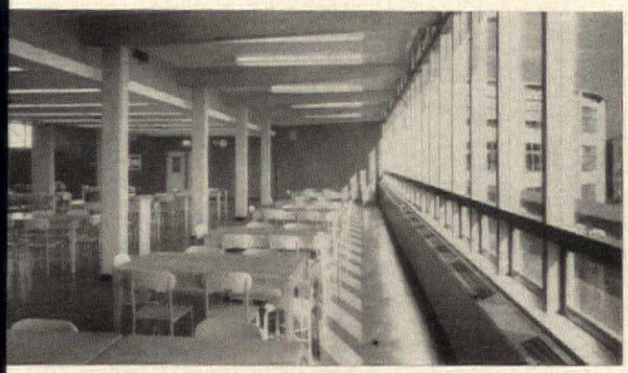
clockwise in the circle—and all is well.

▸ A graphic arts teacher: The school is very nice, but it was designed for the kids, not for the faculty. All faculty facilities are too small, too few, too far away. The equipment in the school, however, is sensational—except for the drastic lack of adequate blackboard surface.

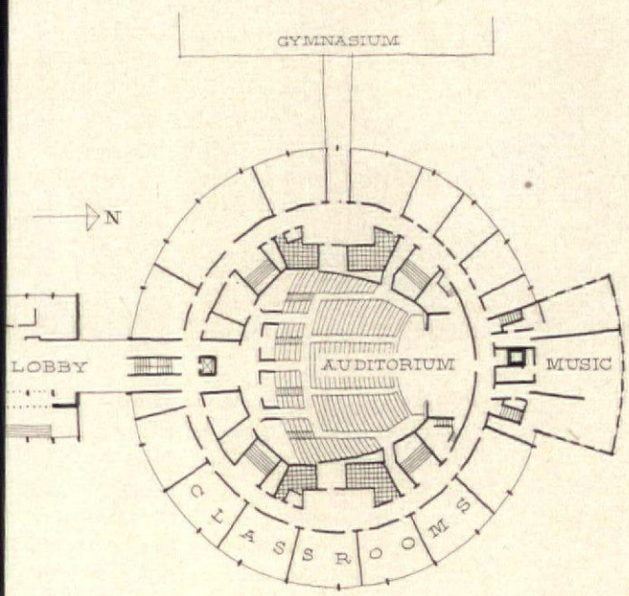
▸ A department head: One has to like it for its light and spaciousness, its audio-visual facilities, its splendid auditorium. But there is not nearly enough storage space anywhere, and he is a little worried about how it is going to be without cross-ventilation in the circle come early summer.

▸ Dr. Woolf Colvin, Wingate's principal: The school is beautiful, interesting and, on the whole, practical. The circle is good, whether for one-way traffic or two. The auditorium, the skylighted studios, the isolation of the music wing—all these are fine. Likewise the library—neat, clean, centrally located, "and so full of light and air." *But* the teachers' lounges give almost everyone claustrophobia, the teachers' cafeteria is too small, the standard-sized circle classrooms are too small, there are no proper offices or facilities for department chairmen. Nevertheless, put this in the magazine: "The children, when given a building like this, respond in *interest, alertness* and *conduct* to the fact that they at last have something that is fresh and vital . . . and not stereotyped."

earns praise of students and faculty



Library is flooded with daylight, has sky-blue floor

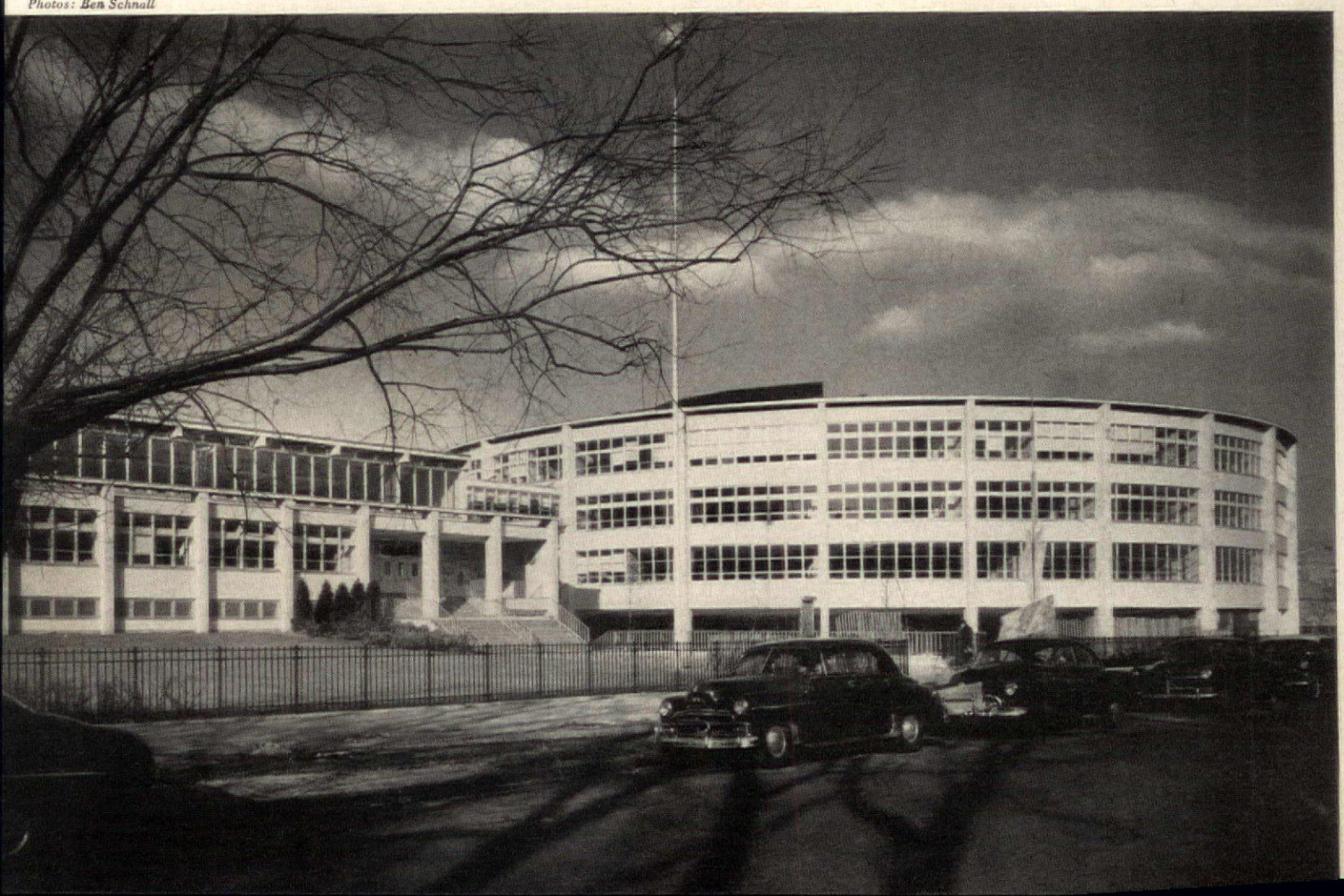


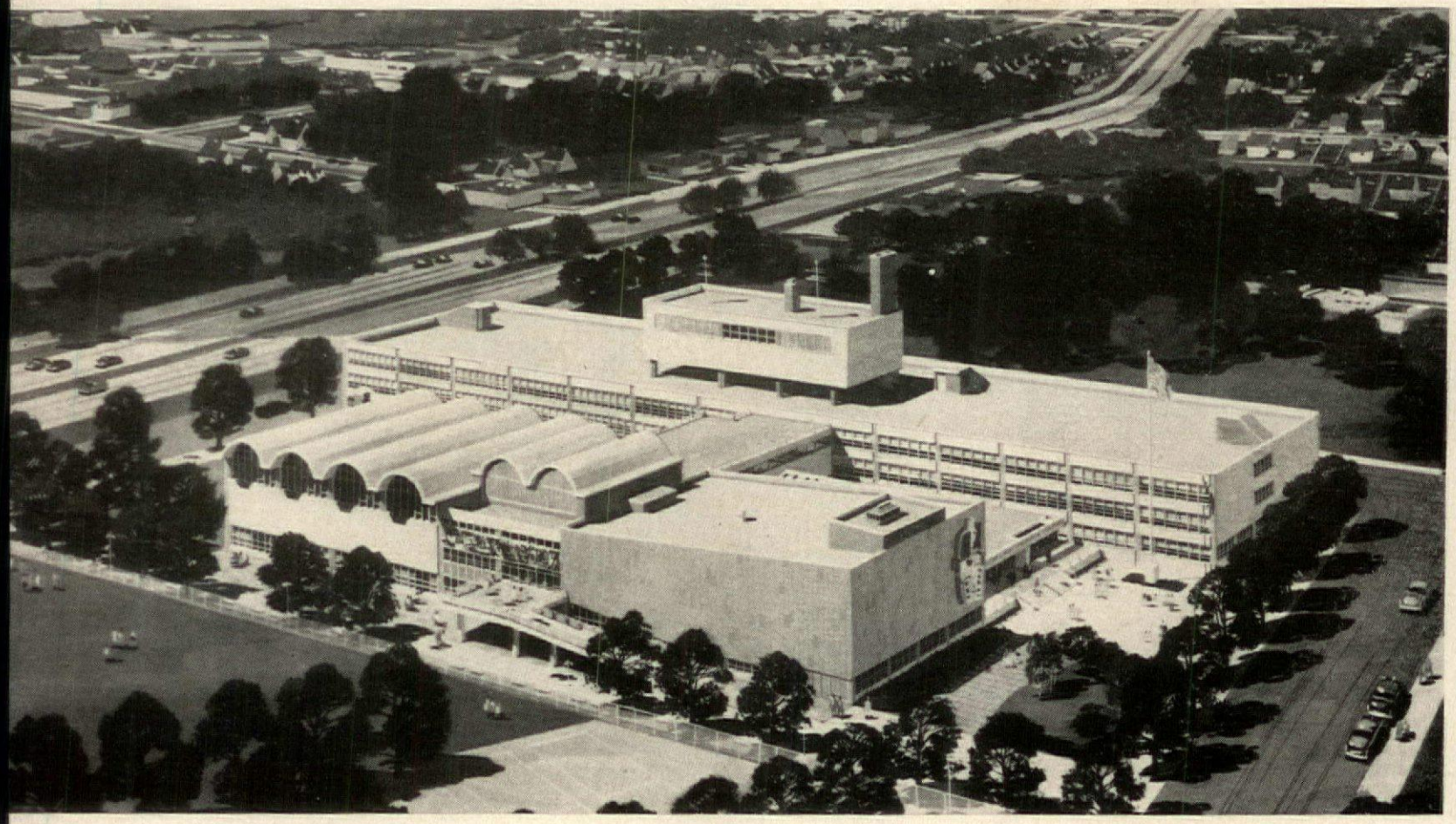


Banjo's exterior gleams with glass, aluminum, greenish-white glazed brick. Rainy-day strolling area surrounds cafeteria.

Circle building houses classrooms; shops, labs are in arts building (left). Construction costs: $5.5 million. Architects: Kelly & Gruzen.

Photos: Ben Schnall





New York high schools of the immediate future

Type: vocational. Capacity: 1,500 to 3,000

With the three modern monoliths on these two pages, we come straight back, chillingly, to Topic A: how to bring New York's schools down to human scale?

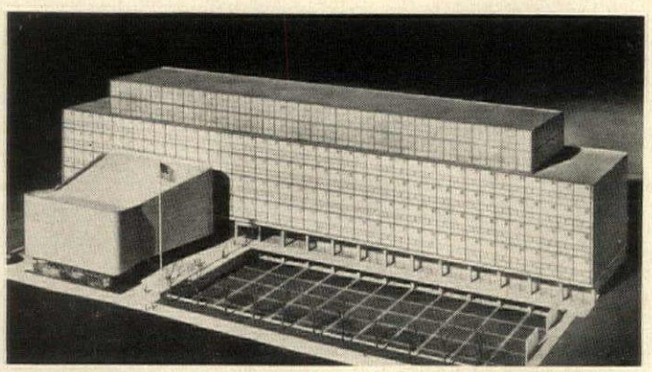
Rooftop schools have been suggested—one-story penthouses atop various existing buildings—but the board of education is against the idea: it is rigidly convinced that school children and outside adults should never mix on stairways or elevators, which is what might have to happen in any such arrangement. There is one exception which the board of education may favor and may actually try: a small one-story school atop another, larger *school,* or atop the large school's gym or auditorium. Such a scheme has been worked out by Architect William Lescaze for little P.S. 59, over in the east fifties: he would put it atop the gym-auditorium of a proposed new high school. The construction and budget bureaus like the idea.

Any other possible solutions? Well, over at the board of education there is an architect-engineer-educator, Dr. Mortimer Cassileth, who for over a decade now has been plumping for small, mobile, portable units—four to eight classrooms—which could go up and down adjacent to existing schools in accordance with rising and falling neighborhood populations. The board is weighing this proposition, but construction is dubious. Meanwhile, everything in the big city just keeps on growing.

William E. Grady Vocational High School, Brooklyn, abuts on Belt Parkway out near Coney Island. Here, 2,400 students aged 15 to 18 will learn the automotive trades, machinery, metalwork, carpentry, boat building, electronics. Rendering shows separation between main entrance (right) beyond Nivola sculpture, and ramp leading beneath Shahn mural to gyms, auditorium. Park in foreground provides fine ready-made playground. Construction costs: around $5 million. Architects: Katz Waisman Blumenkranz Stein Weber Architects Associated.

High School of Aviation Trades, Queens, comes complete with hangar, airplanes, a six-story main teaching wing. Its capacity: 2,500. Construction costs: $5,300,000. Architects: Chapman, Evans & Delehanty. One parting note of hope on city's current school-building program: new schools are going up at rate of 22 a year, as compared with 1949 rate of 13 a year; and present figure rises to 27 or 28 a year when major additions to existing schools are counted, not to mention some seven or eight modernizations now scheduled annually. Of 27 new schools (or "new additions") in 1955 capital budget, 16 have been consigned to private architects, as have six of eight modernizations.

N. Y. School of Printing, Manhattan, is to loom up over W. 49th St. like something out of a René Clair movie, will be first public school in city—perhaps first US secondary school of any sort—to use escalators (street level to top) as well as service elevators and stairs. Sunken playground saves on inevitable site-excavation fill-in costs, gives extra open floor below. Capacity: 2,700. Building may lose seventh story since bids came in $1 million over scanty budget for development. Architects: Kelly & Gruzen.



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EXCERPTS

Outside opinion
and comment on
the building industry
from the rostrum
and the press



Real estate securities market

Last year's records and this year's prognosis—excerpts from an article by Harry R. Amott, president of Amott, Baker & Co., in the February issue of Real Estate Forum

Performance of the real estate securities market in 1954 was little short of spectacular and, by far, the best of any 12 months' period since 1944. The demand for securities of this type showed a marked increase during the last half of the year indicating confidence on the part of the investing public that the improved earnings, increased mortgage activity and higher sales values for properly located improved real estate would continue.

One of the more interesting and significant aspects of the market in 1954 was the unusual activity and sharp price gains registered by the securities of the leading hotel companies (see table). The persistent and widespread gains in hotel bond and stock prices were undoubtedly stimulated to some degree by the highly publicized activities and growth of the nation's two largest chains—Hilton and Sheraton. The increased concentration of more and more of the leading hotels in the corporate hands of these two companies parallels a current trend on the part of many of the leading industrial and commercial concerns: for competitive reasons or otherwise, they have considered it advantageous to strengthen their capital and earnings positions either by merger with or the purchase of other smaller companies in their particular lines of business. There can be no doubt that the larger hotel chains obtain the benefits of large-scale purchasing of food and supplies on a lower price basis, enjoy a stronger credit position and can afford to hire the most experienced and able management personnel.

Notwithstanding the growth of chain operations in the hotel field, the real estate business, as a whole, will continue largely as a business of small local operators.

An interesting development in the field of real estate financing within recent years has been the growth of syndicate deals involving, in some cases, groups totaling as many as 1,000 and more investors in a single deal. We can look forward to a further growth in deals of this kind and, when a more seasoned experience record has been compiled, a broader market in the certificates will develop. But just when the general investing public will begin to buy into deals of this kind only the future can reveal. Certainly the average net return to investors, in most instances, has been unusually attractive and much of the real estate involved has been well-located property with steady earnings.

The major factors which customarily affect the income and earnings of commercial real estate [interest rates, mortgage activity, construction expenditures and disposable income —ED.] provide encouraging signs for the future. There is, accordingly, good reason to anticipate some further strengthening in the general market prices of real estate securities during, at least, the first half of 1955.

REAL ESTATE SECURITY PRICES

	1953	1954	change
STOCKS—price per share			
10 hotels	27	42	+53%
10 apts. & apt. hotels.	33	40	+19
10 office bldgs.	27	29	+ 6
30 composite	29	37	+26
BONDS—price per $1,000 bond			
8 hotels	944	1,101	+17%
8 apartment hotels	761	842	+11
8 apartment bldgs.	569	577	+ 1
16 office bldgs.	979	1,081	+10
40 composite	861	955	+11

Source: Amott, Baker & Co.

Architects' public relations

Excerpts from the Oculus, *bulletin of the AIA's New York Chapter*

The Public Relations Committee recently sent a questionnaire to the membership asking pertinent and impertinent questions about the profession's public relations and, incidentally, their own public relations. A summary of the results shows 80% of those replying think that the profession's public relations are not effective and 70% were not satisfied with their own firm's public relations. But only 12% now employ a public relations counsel, and only 17% had ever employed a PR counsel. Only about 50% said that they send news releases to the press, thus indicating that twice as many architects might be active in calling attention to architectural achievements by informing the press about their own projects and activities. No more than half the respondents cultivate their clients' public relations men, indicating again a lost opportunity to have names of architects used in clients' publicity and public relations. Two thirds indicated that they requested the clients to include their names in any releases. While 43% said they had ideas for improving the chapter's public relations, only 33% agreed to jot them down for the committee's use. We can take pride in the fact that 72% said they are active in local, civic and educational projects, which is one of the most effective public relations works in which architects can engage.



Photos:
(below) LIFE—A. Eisenstaedt;
(left) B. Kramer, courtesy Museum of Modern Art;
(opp. p.) Jean Raeburn

Architect and city

Excerpts from an address by Dean Jose Luis Sert of Harvard's Graduate School of Design before the AIA's Detroit Chapter

In spite of all their shortcomings, the cities of today are in many ways better than those of the past. Their water supplies, sewage systems, hygiene, street paving and lighting, food storage systems and supply systems do credit to our times. Why cannot our generation, then, make these cities more human and more beautiful? Should we now, with all the means at our disposal, have to conclude that our cities cannot parallel in beauty those of other periods—when humanity was living through difficult times, when illiteracy was rampant, when plagues were decimating entire populations and when man's physical force was the only one at his disposal?

One factor I believe is lacking today for undertaking this great task of redeveloping the centers of our cities, making them better and more beautiful places in which to live and work. This factor is faith in a better future. The materialistic attitude of our days has made us forget that our cities are built not only with steel, concrete, brick, mortar and fine highways, but that the first raw material is the spirit of enterprise and the faith and courage of the people. The past generation in this country was a generation of builders and had the courage to make great mistakes—but you can only make great mistakes when you attempt to do great things. Our greatest mistake today in city planning is timidity and lack of courage and confidence in the future. Fear was never a good planner and a good plan—or even a bad one—in its final stage is a three-dimensional statement. To plan is to affirm. Any statement requires courage and conviction.

In the hearts of many old cities you find places of great beauty and harmony. This is not always due to a particular outstanding building but to the happy grouping of several buildings and to the good treatment of open space—and basically to the planning and organization of the whole, which constitutes a visual unit.

Those groupings were designed for the pedestrian. They are all on pedestrian scale, to be used and enjoyed from within and to be lived in. They are civic landscape, man-made artifacts.

Of course, you will all say: "What use can they be to us today, in this time of automobile transportation and technical progress? What relation have they in scale, character and complexity to our needs?

The lesson we can learn from the cores of many old cities is a lesson in human scale and balance resulting from harmony and beautiful proportions. In the best examples there is no false pretense of monumentality in the academic sense; people can recognize their friend, or admire a beautiful woman across the square or promenade, without the aid of a telescope.

The new redevelopment of sectors in our cities should be first determined by a master plan. It is this master plan which should fix their character, size and limits. This it should do at the same time it proposes a classified street system for the city as a whole that will be designed to take the motorized traffic of the coming years and to take into consideration all its requirements and possible increases.

The main arteries of traffic will be dividing lines between the different sectors. This concept is opposed to the Renaissance idea of the street, which still prevails today and is sanctioned by our building codes. The ideal street of the Renaissance, with its bilateral symmetry, makes no sense today as a traffic artery; it was designed for pedestrians.

Once our cities are properly replanned, we should be able to reach each of these sectors easily through traffic arteries and from these, by service streets, to the main parking areas or garages. At these points we leave our cars and should then find in the replanned sectors agreeable, short distances that can be covered on foot to various buildings and open spaces in the areas especially reserved for pedestrians and designed as plazas and promenades to be enjoyed by them. The scale of these pedestrian walks should be agreeable and not monumental. The human step is their measure and it is the same as it has been through all times, and so is the visual angle. These factors have not been changed by mechanization or progress, they are part of man.

In planning these redevelopment sectors, no matter how modern they are to be, we should not forget these basic facts: that the new visual grouping of buildings and open spaces will be new in program, materials, building methods and equipment, but will still have to be congenial to man and to nature. Balanced and animated, they should reinstill in the hearts of our cities that which the fake monumentality of academic planning ignored and those factors which shortsighted speculators and uncontrolled mechanization have destroyed: the beauty that can be achieved only by good planning and good architecture—and the good proportions and rhythms which, though expressed in the language of today, are based on these same eternal factors that have had an emotional meaning to man through the ages.



New York has a future

Excerpts from an article by Construction Coordinator Robert Moses in the New York Times *Magazine*

PROOF I: RECLAMATION. New York's phenomenal, unregulated growth has caused its natural advantages in many cases to be improperly used, exploited for quick profits, neglected or left to decay.

But New York has recently and at great cost learned its lesson. Our top achievement is the rapid restoration and reclamation of these natural resources, the establishment of proper uses and protection for the future by intelligent forethought, planning, zoning and action.

PROOF II: HOUSING AND SLUM CLEARANCE. In the last 20 years New York has done more to wipe out the cancer of slums than all the other old cities of the country put together. Public housing will, when those projects under way and to be started in the next three years are finished, provide 130,000 apartments for over 500,000 people.

This does not include the so-called Title 1 federal projects being built by private capital on written-down land condemned for the purpose. The Title 1 projects approved or in the final study stage run to a total cost of about $400 million. Adding those under preliminary study would increase this to $600 million. New York has more of them actually under way than all the rest of the country put together. FHA-guaranteed speculative housing, in spite of the windfall scandals, provided within the city and largely in outlying parts of it some 105,000 family units accommodating over 400,000 people.

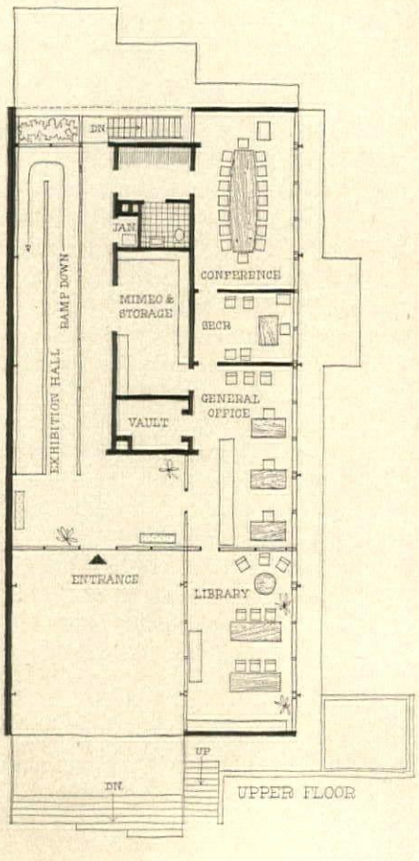
New York's record in housing is far from perfect, but it is ahead of that of any other American municipality with remotely comparable problems. We are literally rebuilding the town.

PROOF III: PARKS, PARKWAYS, RECREATION. We have 626 city playgrounds now as against 119 of 20 years ago. Our park

continued on p. 200

CLUBHOUSE

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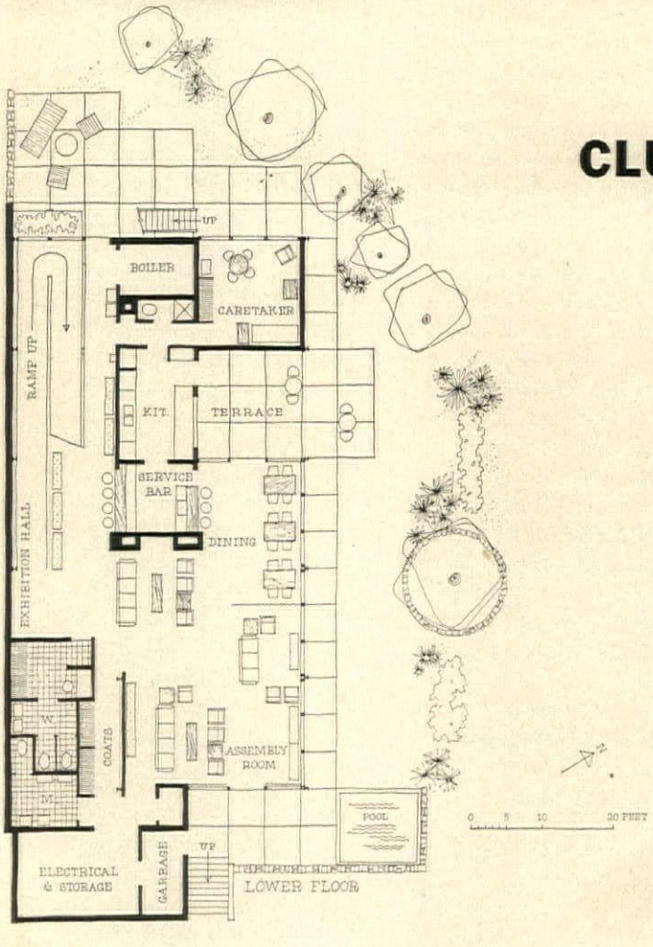
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COATS
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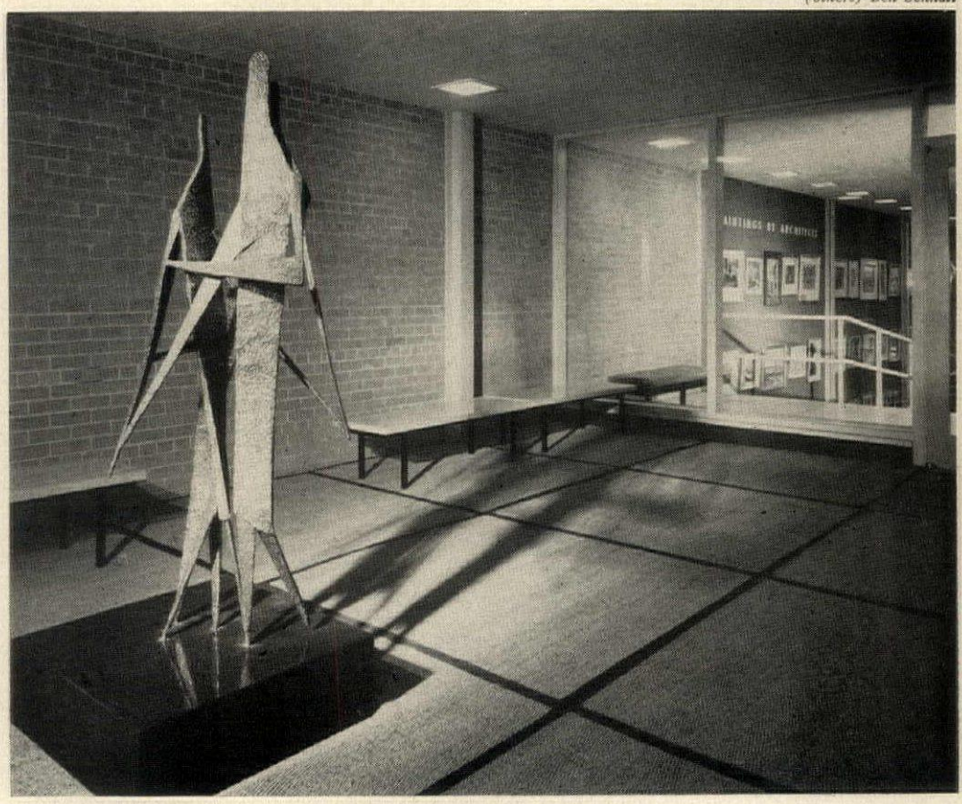
POOL
0 5 10 20 FEET
ELECTRICAL & STORAGE
GARAGE
UP
LOWER FLOOR

OWNER: Ontario Association of Architects, Toronto
ARCHITECTS AND ENGINEERS: John B. Parkin Associates
PARTNER FOR DESIGN: John C. Parkin
ASSOCIATE FOR MECHANICAL ENGINEERING: J. E. Mews
ASSOCIATE FOR STRUCTURAL ENGINEERING: Dr. T. P. Mikluchin
GENERAL CONTRACTOR: Gardiner-Wighton Ltd.

Photos: (bottom) H. Robertson—Panda: (others) Ben Schnall



Street facade. Competition program said sternly: "The jury expects a design that represents the aspirations and the ideals of the association." Fewer than 10% of contestants tried anything but modern. Buff brick end panel, cantilevered out from building, is banded with white steel. All steel connections were welded, then ground smooth.



Entrance patio has sculpture by Jean Horne. Just inside glass wall is exhibition hall with ramps to social rooms on lower floor. Upper floor holds library, general office, secretary's office, board room.

FOR CANADIAN ARCHITECTS

The small clubhouse poses a special problem for the designer: the reconciliation of informality with efficiency. In a way a small clubhouse must be planned like a very sophisticated house, for a family whose interests have a communal core but go off on tangents from there.

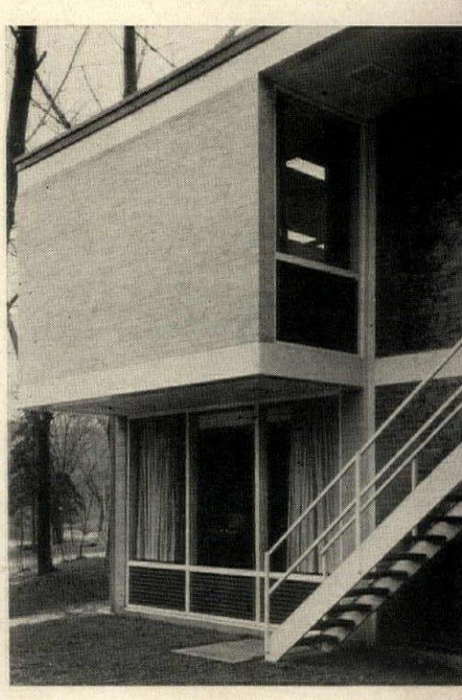
The core of function in the new Ontario Association of Architects' headquarters is exhibition space—a function not restricted necessarily to architects. This is a building which has come into use for a wide range of Toronto exhibitions; architecture, as the "mother of arts," has been able to gather her children for frequent family reunions. With slight variations, it would be equally successful for many other owners, from women's clubs to the American Legion.

The central function is central physically; a single high-ceilinged room of exhibition space contains also the long ramp which connects the entrance office-space level with the downhill social-space level. In transit you cannot miss the exhibitions; and the excitement of the ramp helps dramatize them.

Other architectural groups all over the continent may be interested, above all else, in how the OAA financed their new building, which cost over $100,000. It took five years of careful association budgeting and a $75,000 mortgage. The 706 OAA members pay $55 dues per year, plus $10 to their locals. (In the US, AIA members pay $50 national dues and varying local dues; in New York, $35.) Furnishings for the new building were paid for with money realized from the sale of the old furniture, plus gifts of $3,500 from chapters, plus sale of $20,000 debentures to the members.

The design was selected by competition in 1950. Because of materials restrictions the Canadian architects had to wait until 1953 to build, but the design did not wither or discolor in the tracing-paper roll. It is still bright and handsome, one of the few modern architects' clubs in the world.

Rear stairway leads up from patio, officially is fire escape.





Ramp, seen from rear of building on intermediate level, is framed in structural steel painted white. Ramp floor slabs are terrazzo-finished concrete with nonskid strips of carborundum. Other interior floors are the same or of ¾" plywood supported on 2" x 12" joists, 12" o.c., and covered with broadloom carpeting or composition tile. The building, measuring 40' x 80', is on a 59' x 132' lot, formerly a house site.

Vertical open planning: the well for the ramp is a two-story exhibition hall



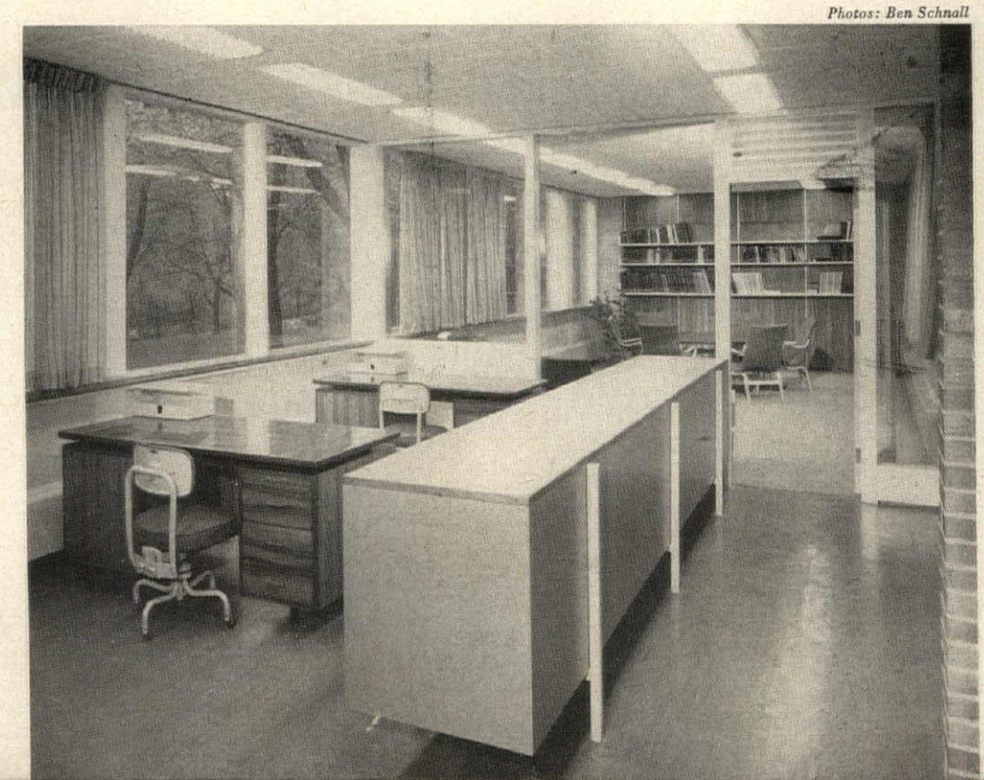
Board room and executive-suite partitions are of matched, flat cut French walnut finished with refined linseed oil over silicon-uniforming filler stain. Table is variation in same material. Architect-designed table and chairs were bought for less money than was realized by the sale of their antique pieces. Furnishings are of local origin only where local economics and design won out.

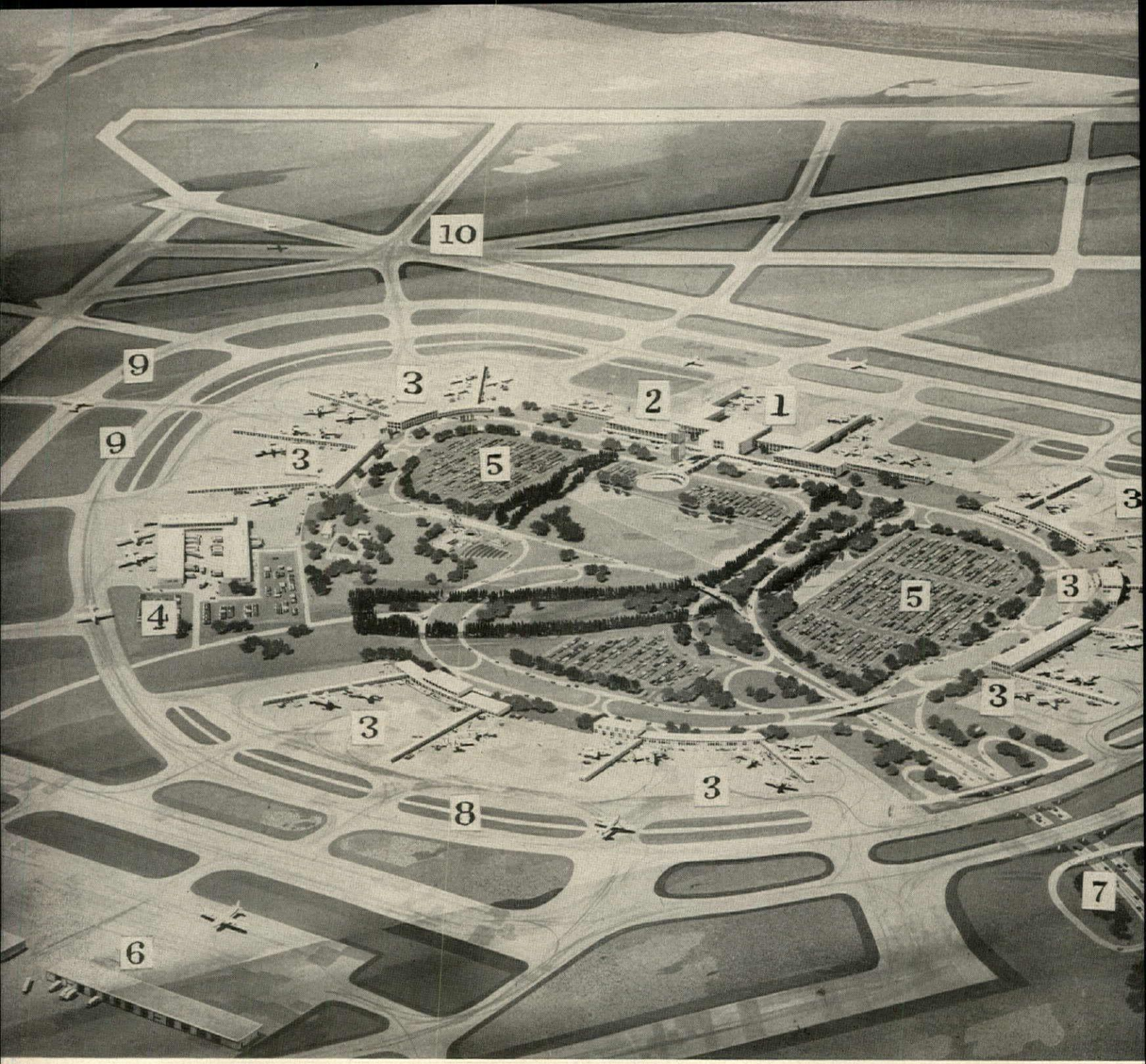
Lounge-dining area features fireplace at end of central service core. It is purple brick, darkened by linseed oil. Building overlooks municipally maintained park.

Bar and restaurant are open at midday, and for parties. Bar is also open in early evening and on Saturday; OAA expects to register small profit from it, but none from kitchen.

Photos: Ben Schnall

Reception desk and general office overlooks library. A module of 5′ is extended to all significant elements of building in dimensional rhythm that makes use of doors and ramps (5′ wide), ceiling height (10′), over-all height (20′) and plan dimensions (40′ x 80′). Floor, wall and ceiling divisions are in 5′ multiples, and furniture is designed to fit. Lighting fixtures set into ceiling also conform to module, creating really orderly building for architect-owners.





IDLEWILD: UNLIMITED AIRPORT

Fragmentation of its new $60 million central terminal area was dictated purely and simply by its overpowering statistics

Idlewild's new $60-million terminal development constitutes a design revolution in reverse—a deliberate giant step in the "backward" direction of *fragmentation,* whereas all up-to-date airport design-theory favors more and more *consolidation.* It was a step dictated, in the end —after a prolonged flirtation with consolidation—by the sheer statistics of the case: Idlewild's planners feel that perhaps in taking it, and taking it to its extreme, they have moved all the way through "backwardness" and come out smack on the other side, face to face with progress, the only kind of progress for an airport of *these* dimensions. One thing is sure, in any event: New York is at long last going to get itself the greatest airport in



1 INTERNATIONAL ARRIVALS BUILDING WITH FOREIGN FLAG WINGS
2 CONTROL TOWER
3 UNIT TERMINALS
4 OPERATIONS BUILDING
5 PARKING
6 FREIGHT TERMINAL
7 APPROACH ROAD
8 SERVICE ROAD
9 AIRPLANE TAXIWAYS
10 RUNWAYS

NEW YORK INTERNATIONAL AIRPORT TERMINAL DEVELOPMENT

BAYARD F. POPE, acting chairman

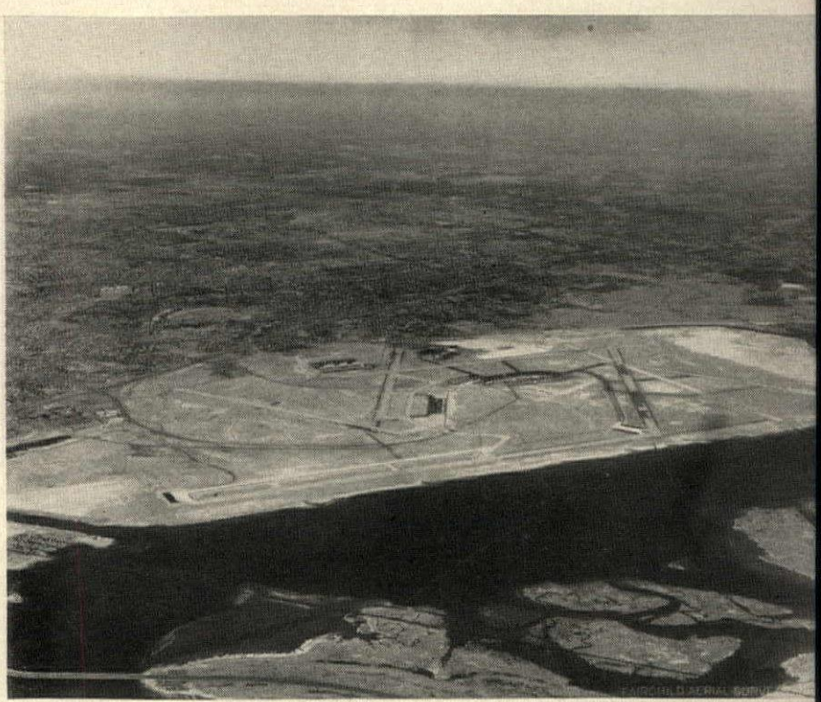
FRED M. GLASS, director of aviation, Port of New York Authority

THOMAS M. SULLIVAN,
chief, aviation planning division, Port of New York Authority

WALLACE K. HARRISON,
coordinator of exterior architecture, design consultant, landscaping

SKIDMORE, OWINGS & MERRILL,
architects for international complex and certain other structures

Airliner view of Idlewild from the southeast—all 5,070 acres of it



Fairchild Aerial Surveys, Inc.

the world in terms of almost any of the usual operation criteria—terminal acreage, airplane gates, passengers per year, airplane movements (take-offs and landings) per year, per day, per peak hour. (The last mentioned is the one that *really* counts.)

At Idlewild, the raw material, the space, has always been there, awaiting further development—and here is where the statistics begin to come into it. La Guardia *in toto* adds up to but 550 gerrymandered acres, many of them vulnerable to flooding during northeast storms; Newark *in toto* adds up to but 2,300 acres, many of them now to lie forever idle by virtue of flight restrictions imposed after the Elizabeth crashes. Thus Idlewild, with its 5,070 acres, equals nine La Guardias, some two to three Newarks: intrinsically, it has always been, as far as anything can be, the unlimited airport. This was the way the Port of New York Authority—to which, in the late forties, all three major metropolitan airports were leased for half a century—has always thought of it. This was the way the Port chose to develop it, in spite of all obstacles. And this is what has determined the unit-terminal patterning, the fragmentation—most emphatic ever yet attempted—of the Idlewild of tomorrow.

Where do you begin when you sit down to plan an airport? You begin by locking yourself in a room fully equipped with birth-rate tables, air-traffic tables, an IBM machine or two, and a crystal ball. Then you throw everything you have into the hopper, try to make sense of what comes out. Here is what came out for both the Port and the airlines people when, working independently, they took a turn at the prophecy business:

Ten years from now, in 1965, the annual number of domestic-airlines passengers in the New York–New Jersey region will have risen from 8.1 million (as of 1954)



Control tower connects with International Arrivals building by elevated promenade. Tower design is undergoing further study, may emerge somewhat different from this rendering.

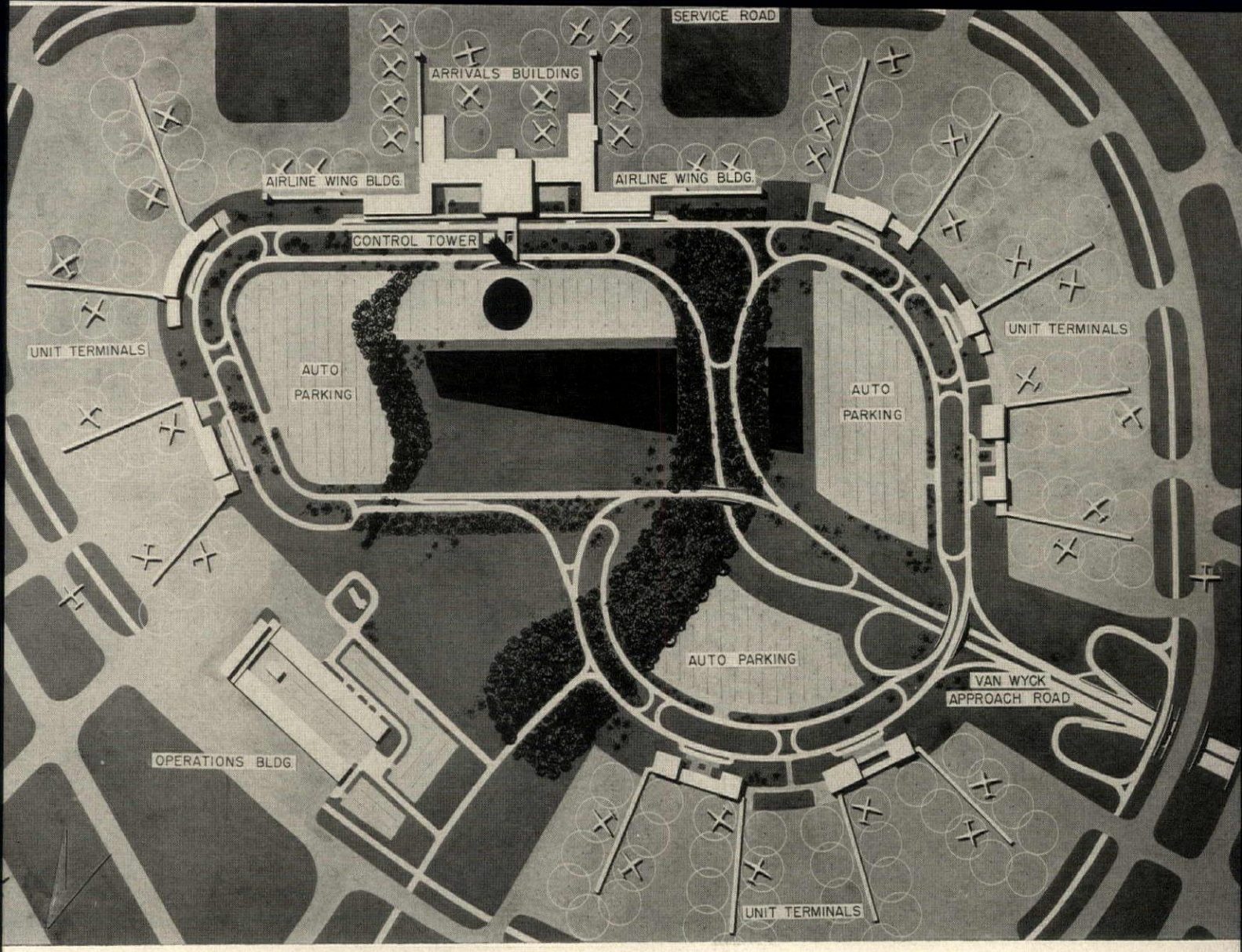
to something over 15 million; the annual number of overseas passengers, from 1.1 million to about 1.75 million.

Idlewild will get all of this overseas traffic, plus one half the long-haul (over 500-mi.) domestic traffic, plus one fourth the short-haul domestic traffic—a total of 6.75 million domestic passengers, which when added to the 1.75 million overseas passengers makes a grand total (just at Idlewild, remember!) of some 8.5 million air travelers per year, roughly equal to the population of New York City. Or to translate that into a more meaningful figure, around 250,000 airplane movements a year. (Same data, same field, 1954: 2.9 million passengers, 101,000 airplane movements.)

Now you must make a further translation, for as previously indicated, the only realistic criterion is that of peak capacity in peak hours—the hours, generally speaking, of 6 to 8 A.M. and 5 to 6 P.M. Going back to the IBM machines, the Port came up with an estimate for 1965 of 80 airplane movements per peak hour, which in turn indicated a need for at least 80 gates, though the figure soars in a minute, as you shall see; but 80, anyway, just as a starter—an unprecedented number for any airport known to man (La Guardia has 23). Says Fred M. Glass, Port director of aviation: "When you get into 80 gates and upward, which you must amortize in 30 or 40 years or so, you begin to run into quite a problem. And this we learned: you can't design a building, one consolidated building, for 80 gates, on *any* basis—circle, octagon, fingers, I don't care what—without ending up with tremendous walking distances; and I mean *tremendous*. Nor can you do it for less than 50, 60 million dollars."

That was the first thing. The second thing was that they were actually going to need, or want, from 125 to 140 gates: this to enable planes to remain right at gates while being serviced from built-in facilities—a much more efficient, much less expensive procedure than the usual one of towing the ships off somewhere, servicing them, and then eventually towing them back.

At this point—and it was many months in the coming—the Port saw itself faced with three alternatives: 1) go ahead anyway on the basis of an enormous central-type, consolidated building; 2) put a limit on operations—at unlimited Idlewild; or 3) break the operation up into different segments. It chose the third.



Central terminal area will accommodate 140 of largest commercial aircraft in use today, whether propeller-driven or jet. Helicopters will take off and land at tips of fingers.

THE TERMINAL AREA: NOBODY WALKS MORE THAN 400′

Here is the terminal area itself: ten terminal buildings; 140 airplane gates; taxiways, aprons, facilities for all airplanes; 10 mi. of roadways and parking lots for 6,000 cars. The area's 655 acres are 105 more than all La Guardia's, three fourths as many as all of Central Park's. Of the $60 million total investment, $30 million will go into the seven unit-terminal buildings; $15 million into the International Arrivals building and its two adjacent Foreign Flag wings; $15 million into roads, taxi strips, utilities, etc. (The Port will presently—around 1960—lay out another $8 million for the runway which will parallel the present 9,500-footer, thus providing the airfield with the much-desired "open parallel runway" system; will also put another $25 million into new hangars. All in all, by 1965 Idlewild will have cost the city and the Authority something over $200 million.)

Designing of the terminal area will be worked out collaboratively between: 1) the Authority's own planners, architects, engineers, highway experts; 2) Wallace K. Harrison, taken on as landscaper of the 160-acre central plaza, consultant on roadways and building locations, and "coordinator of exterior architecture"; and 3) Skidmore, Owings & Merrill, taken on to do the three international buildings, as well as at least one (so far) of the unit terminals. SOM will also complete Idlewild's half-finished 11-story control tower.

The theory of this terminal is that though there may be a bit of a walk for visitors on days when the parking lots are crowded, no airplane passenger will ever have to walk more than 400′—two short city blocks—from plane to terminal or vice versa. That walk will be under cover, down one of the fingers —and only when the airport, too, is crowded, will it actually amount to as much as 400′. Aviation Director Glass insists that 90% of Idlewild's passengers will not have to walk more than 250′ to or from their planes.

As for the main problem at all airports—smooth-flowing circulation of incoming and outgoing passengers and baggage—that is automatically taken care of, at least in the international section, by inherent incoming-outgoing division between the three buildings (see p. 157). At the unit terminals, the problem ought also to be reasonably capable of solution: only one individual airline, of course, not six or eight, will wholly occupy each such structure. Baggage in all instances will be handled by red caps, direct from building entrances to loading points, or the other way.

The Port is especially proud of its roadway system—"We'll sign it all to hell"—which is so arranged that you can make a mistake anywhere along the line and pick up another turn-off a moment later to take you back to where you want to go. Glass estimates that only 5 or 6% of Idlewild's traffic will consist of "interchange" passengers who have to transfer between terminals. For these, there will be cabs, limousines, and perhaps jitneys like those used at the 1939 World's Fair and Bronx Zoo.

AT THE TERMINAL'S HEART, BUILDINGS DESIGNED FOR ONE-WAY TRAFFIC

Heart of Idlewild's "terminal city" will be the complex of three international terminals on its southeast perimeter. These will consist of a central, three-story International Arrivals building flanked by two great, long two-story Foreign Flag wings (only one of which is shown in its entirety in the plan at right). The three structures will stretch for 2,200′ along their common longitudinal axis: that would be 11 city blocks. Construction will start this fall; completion is expected by early 1957, perhaps even by late 1956. (Construction of unit terminals will get under way, in each instance, as soon as designs are prepared, contracts let.)

There are two principal ways in which this complex will have a "self-determination" of free-flowing traffic:

1. *Incoming* passengers will be handled by International Arrivals, *outgoing* ones by the Foreign Flag wings.

2. Within Arrivals itself, passengers and visitors will be split apart on separate floors until passengers are through with the actual "business" of arriving. On its ground floor, Arrivals will house the federal inspection services (health, immigration, agriculture, customs) through which all debarking travelers must clear—and into which they will all automatically be fed by whichever of the two fingers their plane pulls up at. As they proceed through the last of these checkpoints (customs), those who have come out to the airport to meet them will be able to wave hello from a mezzanine watching-and-waiting area—one quite conveniently close, as it happens, to bar, snack bar, shops, a 3,300′ indoor-outdoor observation deck, a penthouse cocktail lounge and restaurant.

The Foreign Flag wings will contain, in boxcar fashion—making for separate access—the lobbies, ticket counters, offices of Air France, BOAC, KLM and about a dozen other European or South American airlines. These buildings will have no restaurants.

PAST IMPERFECT, PRESENT INDICATIVE, FUTURE IMPERATIVE

Fifteen years ago, the Idlewild of today and tomorrow was a vast tidal swamp, owned and operated by the mosquitoes. Airports? Well, 8 mi. north and west across the Island, the city (thanks greatly to WPA) had just built itself the latest word in airports, had with much hoop-la thrown it open for business amid all the concomitant hoop-la of the 1939 World's Fair. Just a few months later, high over the swamp, the DC-3's were wheeling and banking all day long in lazy, glittering circles through the upper air—wheeling, banking, piling up, jockeying for position in the La Guardia traffic pattern. Those who were not afraid to face the truth—notably, Fiorello La Guardia himself—saw with terrible clarity that to all intents and purposes the brand new municipal airport had been obsolete the day it had opened.

So 13 years ago they went to work down in the swamp, pumping the sand-fill up out of Jamaica Bay. Here they would build a field *twice* as big as La Guardia—1,100 acres—and fit it out with the best and most expensive of all known runway systems, the 12-runway tangential system: 12 airstrips radiating from a central hub, like the spokes of a wheel, at roughly 30° angular intervals.

Then came the war—and with the war, and after, the kind of aircraft that would need 8,000′ to 10,000′ of runway, not 5,000′ or 6,000′. At the end of the war, they were still pumping—would indeed go on pumping through most of the next decade, until in the end they had transferred 68 million cu. yd. of fill from bay to swamp, enough to cover Manhattan 8′ deep from 49th St. to the Battery. The whole 1,100-acre concept was by now itself obsolete; as was the whole 12-runway tangential theory; as were the two shortest of the six runways they had already laid down. (These two runways were never in fact to be put to use, are today considered permanently closed except for emergencies.) It had also by now become manifest that Idlewild's cost would eventually have to climb into the hundreds of millions—far more than the city's capital budget could ever possibly accommodate—and the city began to look around for ways of disembarrassing itself of the project. There ensued a bitter interagency struggle for accession between the forces of Robert Moses and those of the Port Authority—a struggle against a handsome model produced by Moses and won by the Port when it produced convincing evidence of having well-studied financing plans.

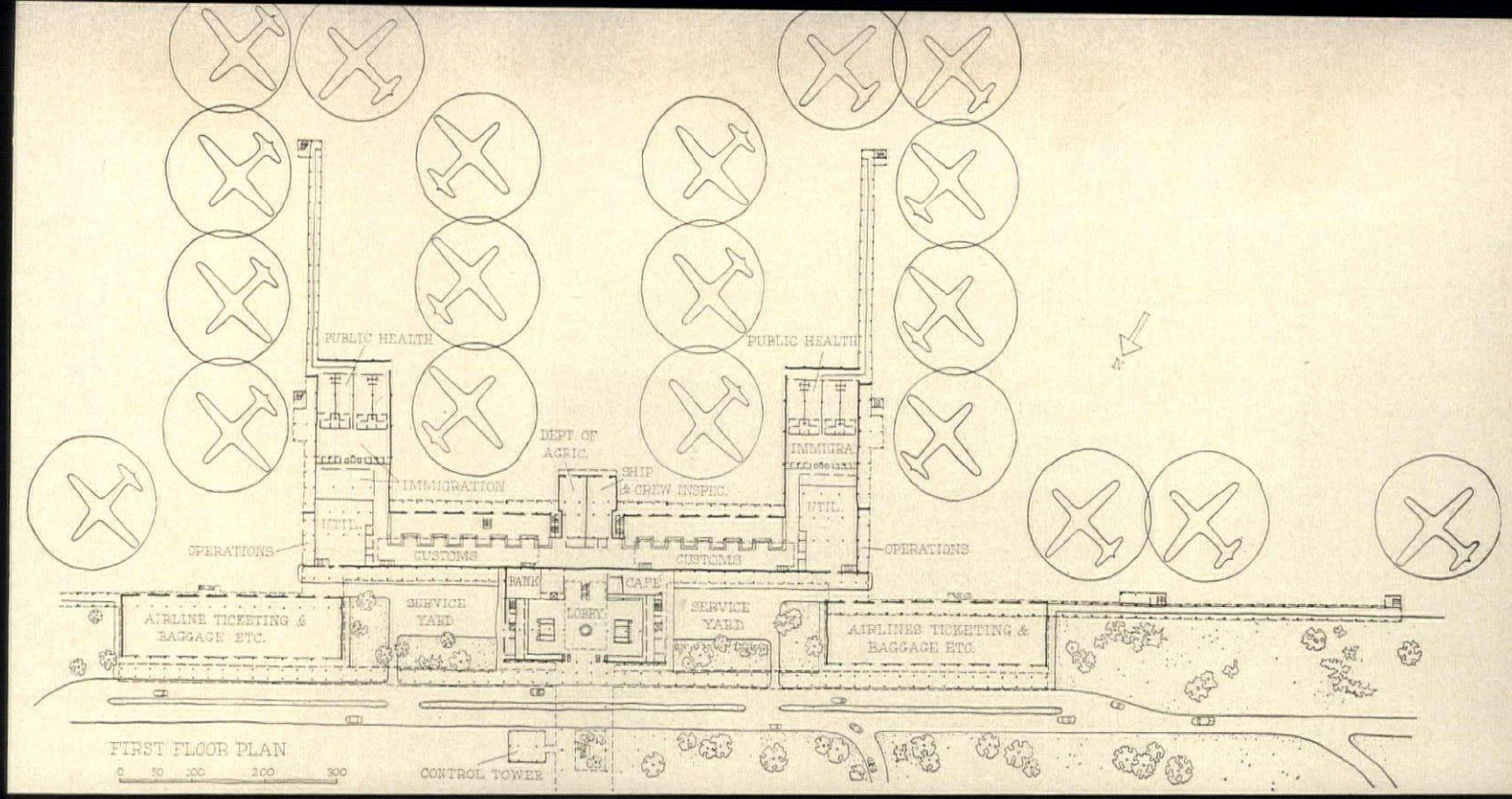
On June 1, '47, unfinished Idlewild and messed-up La Guardia were leased to the nonprofit, bistate authority for 50 years; ten months later it got Newark (N.J.) Airport on a similar lease, and in 1949 acquired by outright purchase the last piece needed to complete its regional jigsaw puzzle: semideveloped Teterboro (N.J.) Airport, into which it has shuttled most of the area's private, corporate, instructional and nonscheduled flight activity.

Thus far at Idlewild—and before a single brick or rivet goes into anything shown on any of these pages—the Port has spent or committed some $66.5 million, most of it for hangars and therefore ultimately recoverable through rentals; but a fair chunk has gone into such things as the big new instrument runway ($2.3 million) and the soon-to-be-scrapped temporary terminal buildings ($3.2 million), all of which must presumably be recovered through future income.

What sort of income is expected from the new Idlewild, particularly in view of the quantities of red ink gulped by the old? All that the Port will say at present is that it has every confidence in Idlewild's capacity, from here on out, not merely to carry itself but to amortize itself. And this is what in at least a moral sense the airfield *must* do, since like all Port projects it has been and will continue to be funded through revenue bonds. On the other hand, the Port recently decided that all forthcoming bond issues will be general Port Authority obligations, not earmarked for any particular development as such; thus the Idlewild series will tacitly be backed by the full credit of the authority as a whole, with its $500 million worth of income-producing bridges, tunnels, piers, and marine and inland terminals.

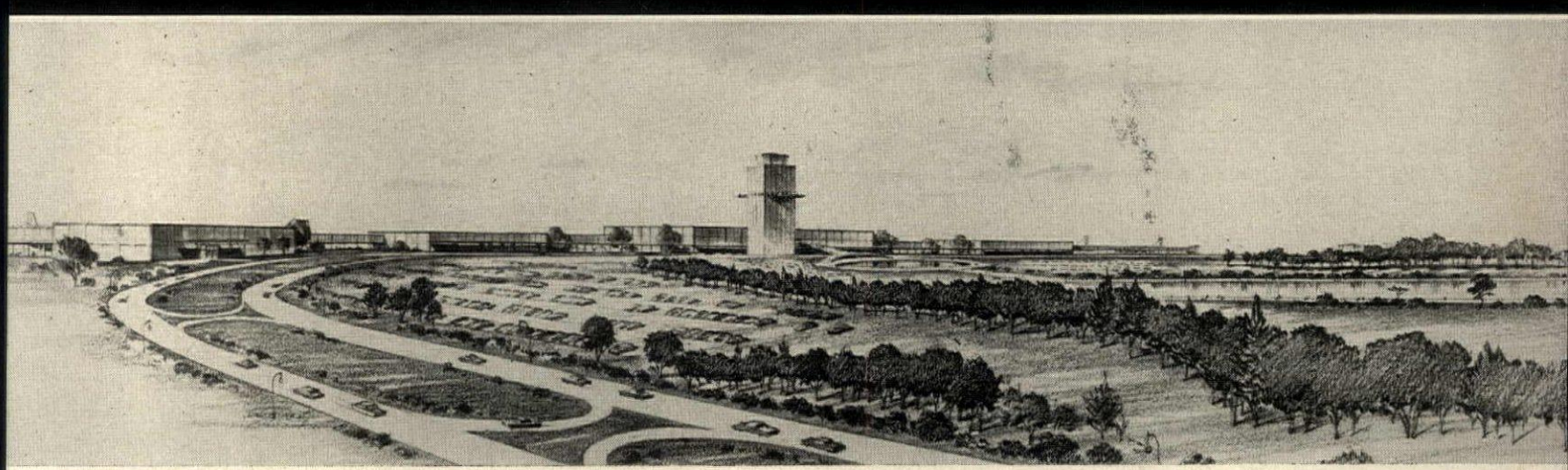
Much of the Port's investment will naturally come back 1) in rentals from the international airlines and the US government; 2) in rentals from US airlines on their long-term unit-terminal leaseholds; 3) in interest and amortization from those of the US lines for which the Port puts up the unit terminals (the airlines *may* build for themselves, if they so choose). Apart from these and other standing incomes—landing fees and the like—Idlewild will try, like every airport, to rake in the dollars from every possible sort of concession. Most fruitful source of all may well be the parking lots, in which department Washington National Airport now nets about $120,000 a year, La Guardia something over $300,000. Everything else being equal, Idlewild should do twice or thrice as well as both of these put together.

All such income depends of course in the first instance on a pleased, an enthusiastic public—both the flying public and that part of the populace which comes, year in, year out, just to look and eat and enjoy itself through the long, bright afternoons. Public enthusiasm will directly depend, in turn, on how much the public thinks of Idlewild's efficiency, convenience, attractiveness. And *that* will depend on nothing so much as the planning now in progress—the first real planning Idlewild ever got—and then, of course, on its execution.





NORTH ELEVATION



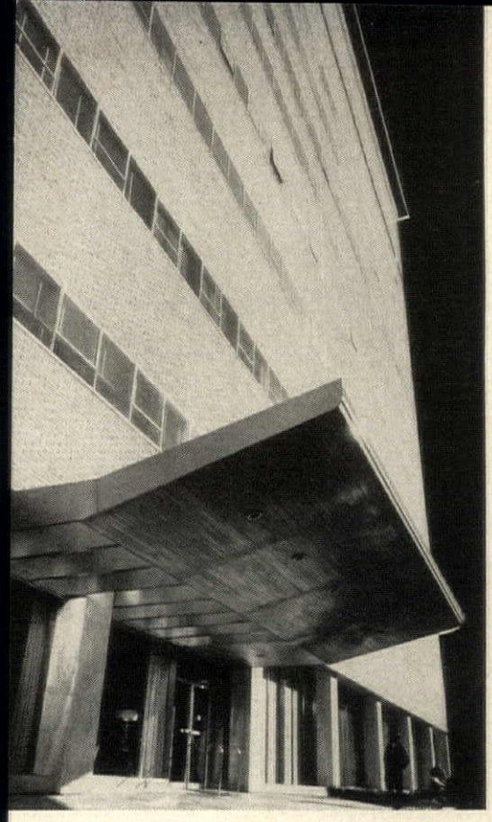
Loading area behind International Arrivals building can accommodate six big planes on apron between two projecting fingers. One finger is shown at right raised on stilts.

International terminal consists of three-story Arrivals building behind huge control tower and two-story Foreign Flag wings for departures. Arrivals building is extended by two perpendicular fingers to center of plane unloading area. Each departures wing has lateral extension along the loading area. Combined, these elements can handle about two dozen big planes at once. At left of rendering is one of seven smaller airline unit terminals.



Photos: Lawrer





Canopy is framed with steel members used as outriggers; facing is stainless steel.



Lobby gets spacious look from glass walls, light well through canopy, planting by sidewalk.

DOWNTOWN HOSPITAL ANNEX

JEFFERSON MEDICAL COLLEGE HOSPITAL, PHILADELPHIA
ARCHITECT: Vincent G. Kling
(Harry Ahrens, associate-in-charge)
MECHANICAL AND ELECTRICAL CONSULTANT:
A. Ernest D'Ambly
GENERAL CONTRACTOR: Wark & Co.

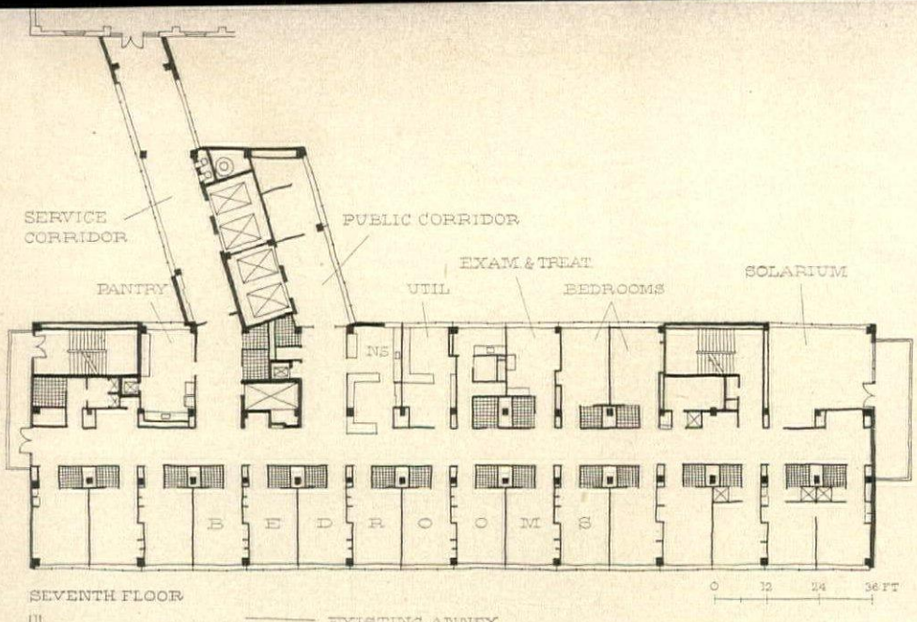
For 127 years Jefferson Medical College has been operating a teaching hospital on this same busy street corner in the heart of downtown Philadelphia, and from all indications it expects to be doing business at the same stand for another century or so. The suburbs hold no lure for institutions of this kind; location at a metropolitan transportation hub and close to the densest centers of population is too important.

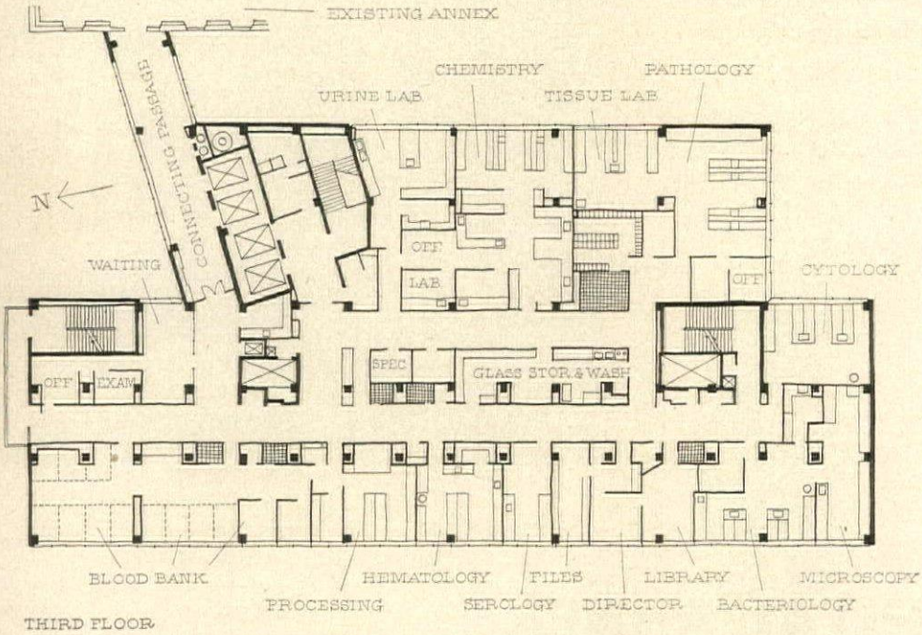
As a building job, this hospital had many of the general problems of big urban construction—witness Architect Vincent Kling's solutions to his foundation and electric distribution problems (p. 161) and his demonstration of how to get an effect of spaciousness by the sacrifice of a little building space at the sidewalk line.

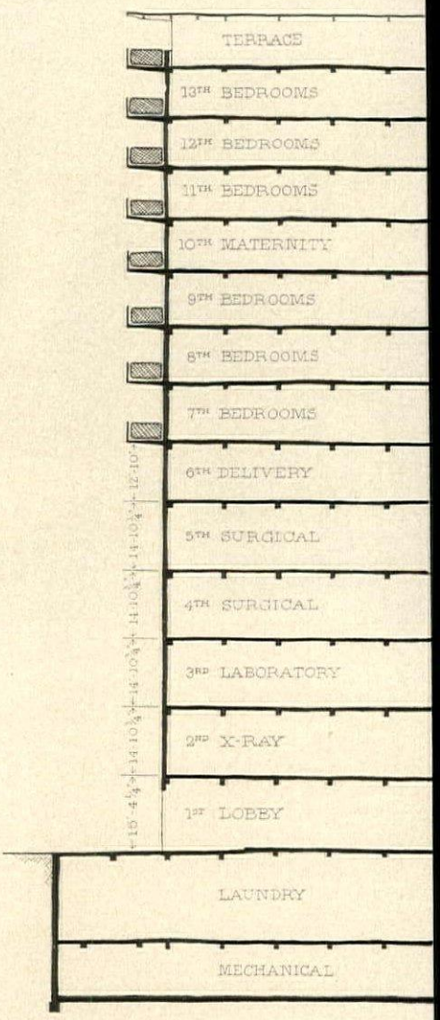
As a hospital it involved more than the usual headaches: bad orientation, inescapably institutional appearance, tight city lot—handicaps which were dealt with very nicely indeed. "Institutional" has become a bad word in hospital circles, and rightly so, but if it cannot be escaped it can be dealt with gracefully. Design sensitivity and style show up not only in this institutional exterior and lobby, but even in operating rooms and nurses' stations—in fact show up better than in the "softer" elements, such as patients' rooms and lobby furnishings. As for the tight site, the excellent circulation within this uncompromising rectangle suggests that the discipline of putting a hospital together under such demanding circumstances can be a refining influence on interior planning.

Size: 300 beds; adjunct and surgical facilities for 1,400 beds. Cost: $6,055,000 not including fees but including Group I equipment; $26.96 per sq. ft.

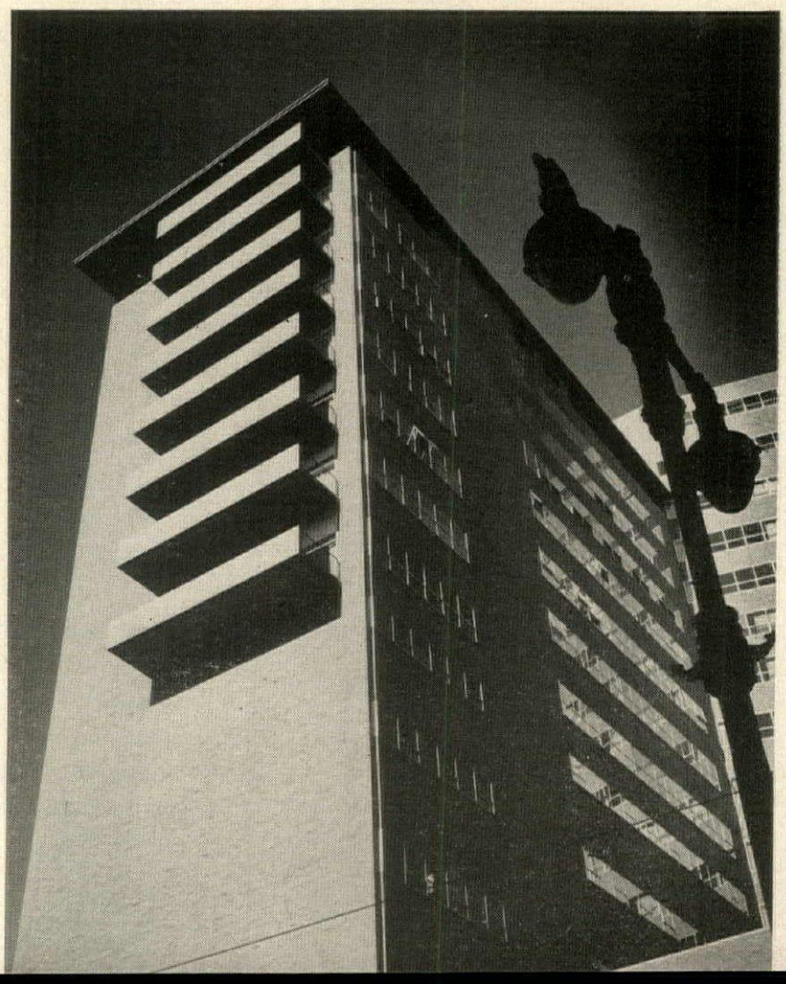
New annex in the heart of downtown Philadelphia is joined to 1906 building by stack of glazed corridors.

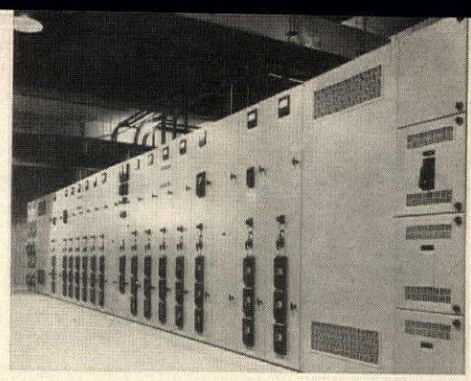




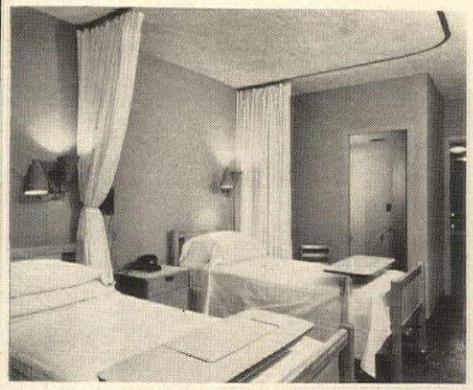


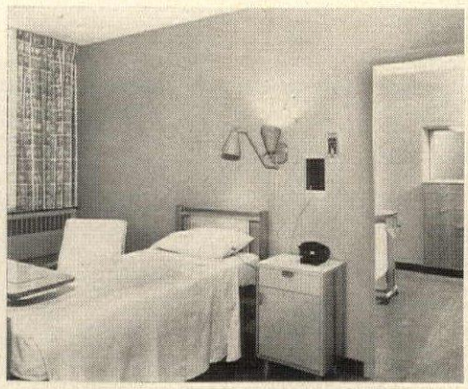
The plan: because this building is an annex, it is not by itself a complete hospital. For instance, recovery rooms are omitted from operating and delivery floors and consolidated instead on the fifth floor of the older adjoining building. The typical program thus gives, in some respects, a highly special plan. Note, however, treatments of some common problems: 1) vertical transportation for the new annex is placed in the link to the older building and is arranged for separation of public from staff and patient circulation. The link corridor is purely a hospital corridor. 2) The unusually complete laboratory floor includes a blood bank, well located with respect both to donor access and to associated laboratories. 3) Interior columns every 12′ lighten framing; their frequency is no disadvantage because the architect wanted frequent mechanical risers anyway to eliminate offsets in mechanical lines, an excellent provision for maintenance. Effect can be best seen on plan of nursing floor. 4) Facilities requiring air conditioning are all consolidated on the first six floors (see section). 5) The architect made fine visual use of fire-stair access provisions (see photo, right), giving drama, scale and pattern to what might have been a faceless cliff.





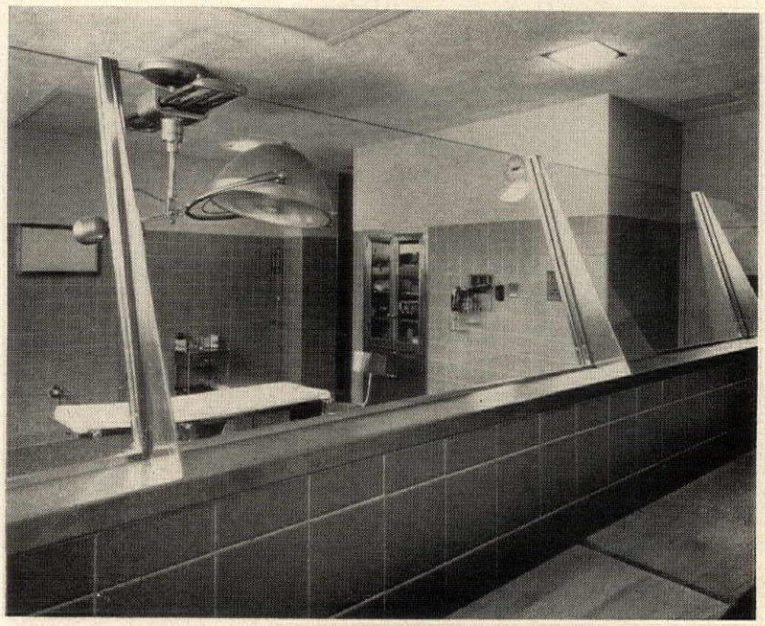
Electrical system should interest all who have the problem of wiring large buildings with big electrical loads. The main transformer in the subbasement (photo above) does not step down the entering 13,200-v. current to service voltage. Instead it sends 4,200-v. current to four substations, where it is reduced to 208-v. service current. This is not unusual where separate buildings are involved, as on a campus, but it is unusual for one building. The architect reports that running high-voltage cable within the building saved tremendously on copper wire mileage. For instance, a single, heavy-duty cable goes from the subbasement to the top-floor substation, from which service wires run only to the three floors below. It also greatly reduces the loss of electricity in transit; besides saving on power costs, this gives better voltage regulation on secondary circuits so that electrical equipment operates at peak efficiency.





Patients' bedrooms show trim ceiling-curtain detailing. One push sends the curtain really sliding. Installation of the recessed tracks required no patch plastering because the tracks were inserted, after plastering, into a specially designed recessed channel. Both window and cubicle tracks were detailed in this fashion. Ceilings are acoustic plaster, it being Architect Kling's experience that eventual painting with casein base paints does not harm the acoustic properties. Because most patient rooms unavoidably face due west, windows have heat-resistant glass plus Venetian blinds, plus draperies. Various combinations of blind and drapery give a wide range of light control, and, with both drawn, the rooms can be darkened even on brilliantly sunny days.

Subbasement foundations extend 34′ below street level. Normally this would have meant that excavation would eat into the middle of the street, tying up downtown traffic. So cofferdamlike construction was used, but the steel sheeting was left in and a lean concrete fill poured in the 2½′ space between sheeting and concrete basement wall. It gives a remarkably dry basement.



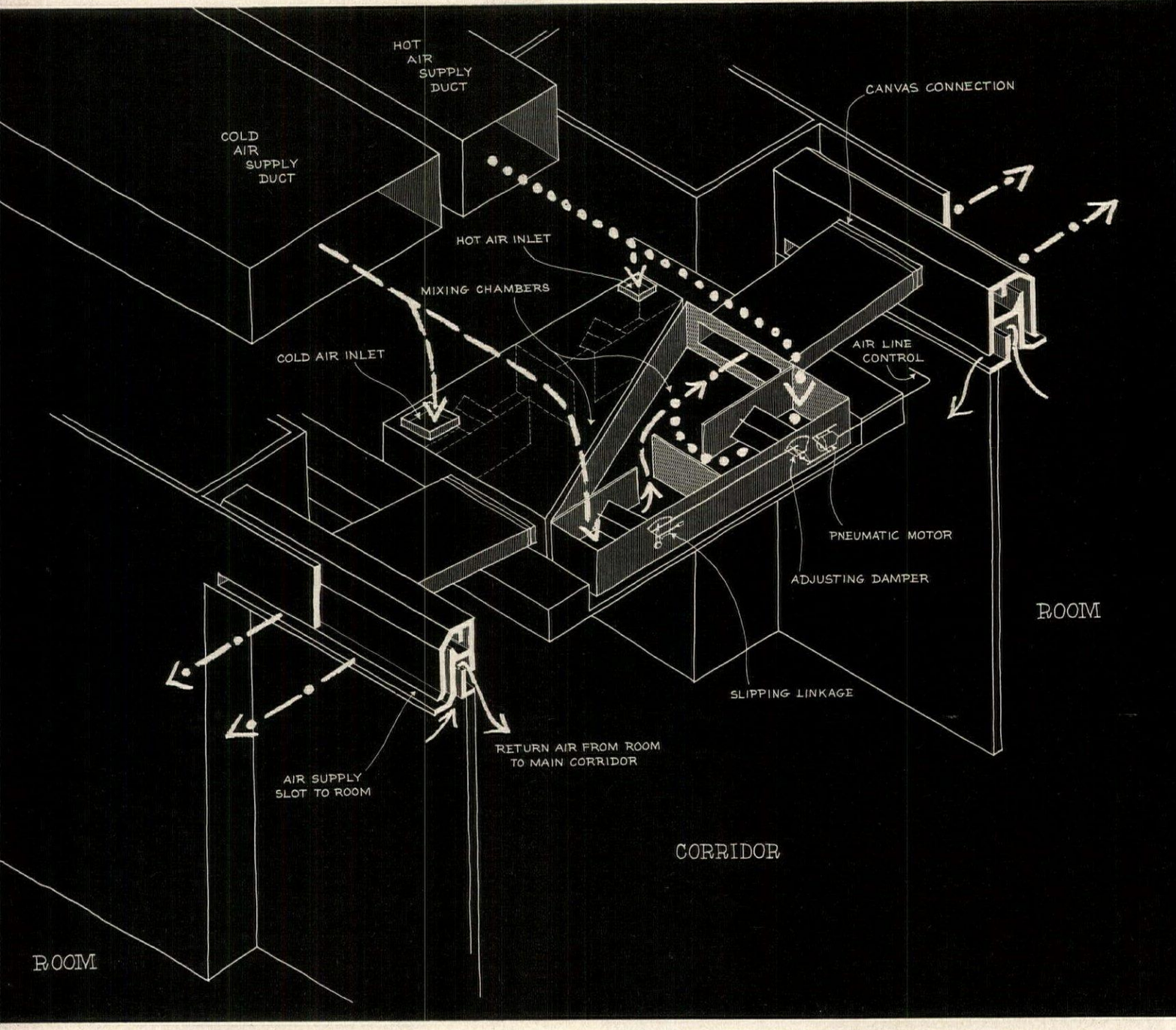
Observation galleries are included in one delivery room and in neurosurgery operating room, even though operating procedures may be televised. Note the angle of the glass which cuts down reflections, also gives observers room to lean forward without pressing their noses against panes. To prevent accumulation of potentially explosive mixtures, odors and contaminated air, operating room and laboratory air is not recirculated. These floors have 100% fresh air change every three minutes. Air conditioning in lobby and X-ray floors uses recirculated air in usual 70-to-30 mixture.

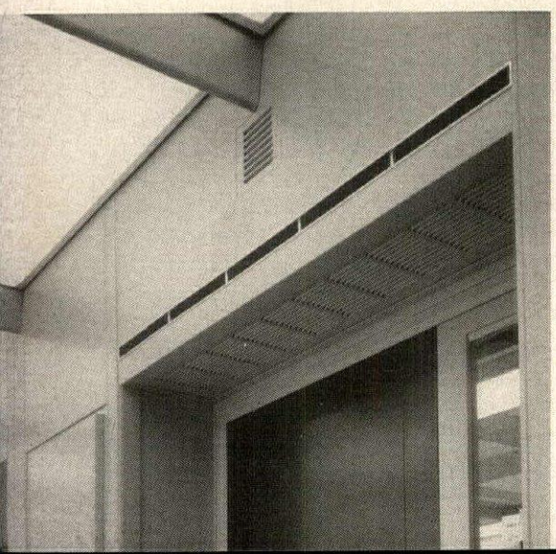


Nurses' station has ample charting desk (visible at rear of photo), handy sink used not only by nurses but by internes before rounds. Floor secretary, rather than a nurse, directs visitor traffic from the front desk. The station's control of floor circulation can be seen on plan (opposite page). Machine on front desk is instrument for audiovisual (lights) communication with patients' rooms. With volume tuned up, it is also audible at charting desk. The floor also has several decentralized communication stations, should nurses be busy away from the main station.

BUILDING ENGINEERING

1. *Rapid air flow adds to air-conditioning efficiency*
2. *Multistory office floors prestressed in two directions*
3. *Engineering notes—brief reports of noteworthy development*





EXPANSION BOX (above) mixes air from hot and cold supply ducts, reducing air speeds from 5,000 fpm in main ducts to 2,000 fpm at outlets. It is acoustically treated.

WALL OUTLET (left) is long and narrow. It ejects streams of 2,000 fpm conditioned air across upper part of rooms toward opposite window walls.

DAMPER CONTROLS (right) at mixing boxes are mechanically linked. Quadrant settings can be adjusted to modify air proportions when laboratories are changed from one heat-load classification to another.



1. HIGH-VELOCITY AIR CONDITIONING

Careful duct design reduces pressures, noises and costs, helps give GM buildings the advantages of smaller ducts, lower floor heights and flexibility

Marking a highly significant advance in building economy and building comfort, General Motors in its famed Technical Center buildings has made high-velocity air conditioning truly practical.

Five years ago, almost all air conditioning was done in either of two ways: 1) air was distributed from a centrally located refrigeration plant at slow speeds (2,000' per minute) through big ducts to ceiling outlets, or 2) air was conditioned in the rooms by small local cooling units located under the windows. Both systems were (and still are) highly efficient. But GM, about to build 17 office and laboratory buildings at its Detroit Technical Center, was interested in saving every possible cubic foot. Central high-velocity ducts concentrated in the spine of the building promised big space savings, because they are shorter and smaller and permit reduced floor-to-floor heights. (If duct velocity is increased four times, duct size can be decreased 75%.) And, of course, the smaller vertical ducts also save considerable floor space. Other advantages:

- Smaller ducts are easier and cheaper to install and insulate.
- A double-duct supply system, with hot and cold ducts operating at 5,000 fpm, is highly responsive and flexible, facilitating in-between cooling of a sunlit south side of a building when a north side away from the sun requires cooling.
- High outlet velocities (2,000 fpm) produce good movement of room air without causing drafts, thus permit greater temperature differentials between supply and room air and reduce the amount of chilled air needed to cool a given space. High outlet velocities also facilitate perimeter zone control without the use of space-consuming window units and perimeter ducts.
- High-velocity systems using air alone eliminate the cost of utility services required for under-window units; no chilled or condenser water piping, insulation or drainage is required.

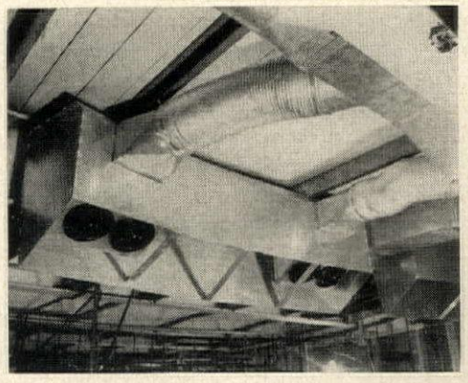
In 1949 when GM's consulting engineers, Smith, Hinchman & Grylls, wanted to try high-velocity air conditioning, they thought they had to invent their own system. For help, they called in Inventor W. J. Caldwell (AF, July '50). Two years later they called for more help from a firm of Scottish engineers who were experienced in the air conditioning of British ships. The Scotsmen knew how to move air at high speeds through tight spaces. By more careful duct design they obtained better results.

Now, thanks in part to its own pioneering in this field, GM today can call on at least four US firms for a high-velocity air-conditioning system and can get it at competitive costs. In 1949, when the GM Engineering office building was designed, mechanical contracts for the 6,000 fpm Caldwell system ran 80% higher than a standard 2,000 fpm low-velocity system and 20% higher than a 3,000 fpm under-window-type perimeter system. In the new GM Laboratory building, high-velocity air conditioning cost only 10 to 20% more than low-velocity and proved cheaper than perimeter systems. When duct layout is considered in the initial design of a building, high velocity may prove even cheaper than low velocity. Against this must be set the increased operating cost of the high- vs. low-velocity system due to the greater fan horsepower required. However, electricity costs are comparatively minor and the power requirements can be kept down by careful attention to static regain principles in the duct layout.

The Caldwell experiment. In GM's first three buildings, GM's Consulting Engineers Smith, Hinchman & Grylls adapted W. J. Caldwell's cyclone-type centrifugal air washers and dual supply ducts operating at up to 6,000 fpm. The air was expanded down to 3,000 fpm in damper-controlled mixing boxes and released into the offices through centrifugal ceiling outlets.

While recognized as a definite advance in air-conditioning technique, this system proved difficult to balance and operate. Control problems were finally overcome by a complete balancing system of pressure-regulating dampers. Noise was also a problem—noise from the equipment, the ducts, the expanders and the outlets. Moreover, the unique centrifugal air-washing equipment was unable to extract the nonwettable, greasy particles that appeared in the return air from the laboratories. And, since

Photos: General Motors Photographic Section

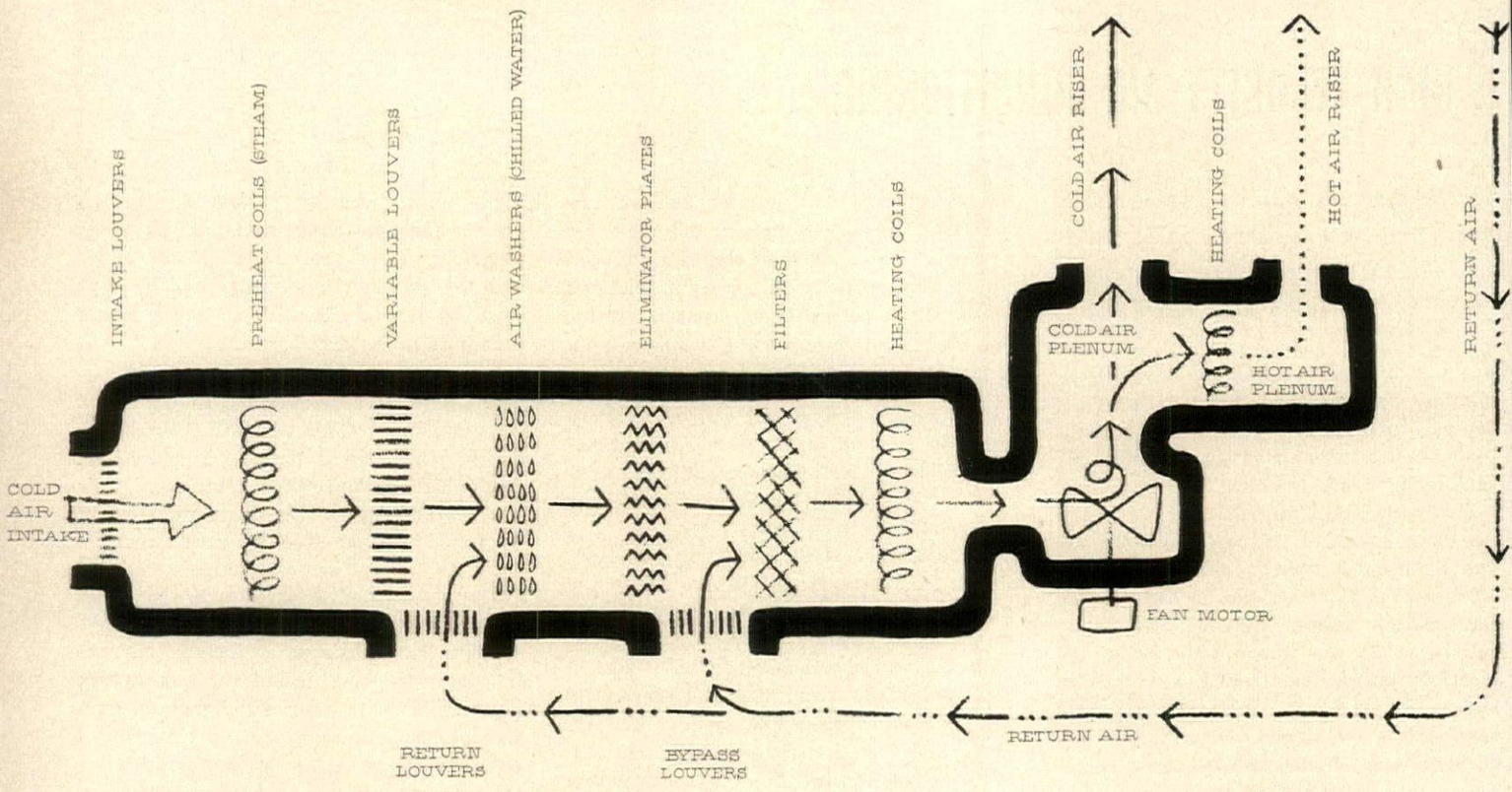




CEILING DIFFUSERS receive primary air from mixing boxes via flexible tubular ducts. Sprinkler head is at center of each diffuser.



EMPLOYEES RESTAURANT in basement of GM's Research Laboratory building is air conditioned by adjustable nozzle diffusers (pictured at top) set in ceiling above a wooden lattice screen. Building is by Eero Saarinen & Associates, Architects; Smith, Hinchman & Grylls, Architects & Engineers.



there was no air bypass at the washer, it was impossible to control humidity.

Enter Thermotank. To help solve these problems, GM invited the Scottish firm of Thermotank Ltd. to add their experience to the building team. Using their own techniques of streamlined duct design, balanced pressure controls, highly efficient, noiseless mixing boxes and high-velocity ejection outlets, Thermotank engineers helped Smith, Hinchman & Grylls prepare a new high-velocity double-duct air-conditioning system for GM's fourth major structure, the 207,000 sq. ft. Research Laboratory building. Since it also contracted the job, Thermotank was willing to guarantee performance.

Originally designed to be air conditioned by the Caldwell system, this three-story building had a basement and a subbasement to accommodate the 20'-high centrifugal washers. However, it was found that conventional in-line conditioning equipment (see diagram, above) could be installed in the subbasement, saving 5,800 sq. ft. of space.

Heat loads. The 690' x 60' building contains interchangeable laboratory and office space, a 123-seat auditorium and a top-floor library. Its big heat load comes from five sources: 1) a heavy solar load on the long south wall, estimated to require 150 tons of refrigeration on a hot day; 2) an electric load from lights and office machinery, averaging 7 w. per sq. ft. and demanding 235 tons of cooling; 3) the body heat load of 300 lab workers, requiring a further 15 tons; 4) a fluctuating heat load from laboratory equipment estimated at 700 tons; and 5) the heat-load generated by the compressors and the air-conditioning equipment itself, estimated at 150 tons. Total air-conditioning load: 1,250 tons. This refrigeration is provided by 60 compressors of 20 hp each, supplying 4,000 gpm of water at 42° F.

GM's own engineers set the performance standards for the building. In summer the offices were to be kept at 80° F. and 50% relative humidity with outside temperatures at 95° F. dry bulb and 75° F. wet bulb. In winter they were to be at 75° F. dry bulb and 30% relative humidity with outside temperatures of −10° F. Noise from the ducts and equipment was to be kept below 45 db in the offices, 40 in conference rooms and about 30 in the auditorium. There were to be no less than six air changes per hour, using not less than 20% outside air. Further, individual room controls were to be available throughout the building, which was to be designed for maximum flexibility in changing space requirements.

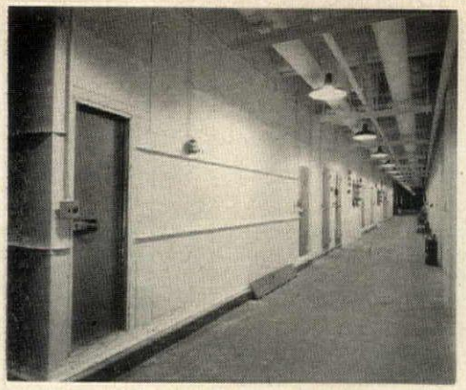
The solution. Conditioned air is supplied at 5,000 fpm through a series of double-duct risers, one hot and one cold, with parallel 48" x 20" cold and 28" x 20" hot horizontal duct take-offs laid above the corridors on each floor.

The main ducts are designed along modified static regain principles, i.e., the ducts are generally the same size throughout, thus reducing power-consuming pressure losses and maintaining static pressure relatively constant at all points of the system. In effect, the high air velocity (kinetic energy) at the first take-off is gradually converted into static pressure (potential energy) to offset duct resistance in the remaining run.

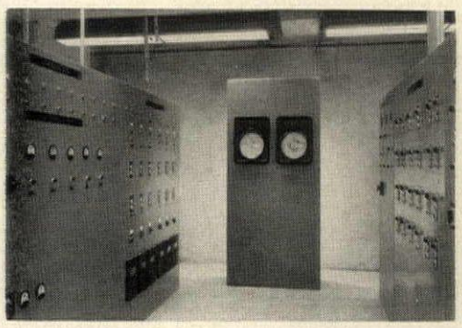
Mixing boxes are spaced about 5' apart between the main ducts and room air distributors. For ease of accessibility, these boxes are usually located immediately beneath the ducts in the corridors. The boxes have two functions: 1) to proportion and thoroughly mix the hot and cold air so that each outlet supplies air at the correct temperature to satisfy the heat loads of the space served (the temperature of the cold ducts is maintained constant at 55° F. throughout the year; the hot duct temperature operates at 80° to 155° F. varying inversely with outside temperature); and 2)

EFFECTS OF INCREASING DUCT VELOCITIES:

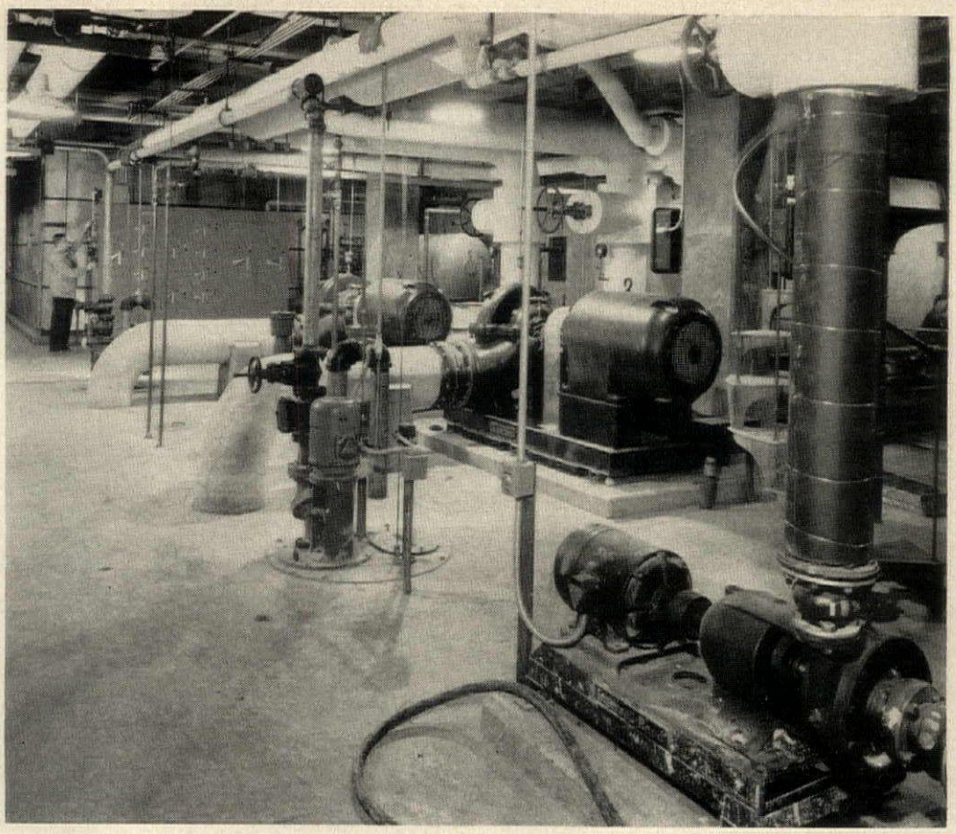
DUCT VELOCITY	DUCT DIA.	FRICTION LOSS PER 100' OF DUCT	VELOCITY PRESSURE	TOTAL PRESSURE	FAN HP FOR 10,000 CFM.
1,000 fpm	43"	0.026" w.g.	0.06" w.g.	0.032" w.g.	0.072 hp
2,000	30"	0.15"	0.25"	0.40"	0.9
4 000	22"	0.87"	1.0"	1.87"	10.5
6,000	18"	2.40"	2.25"	4.65"	4.2



INSULATED CHAMBERS in basement contain in-line air-conditioning equipment.



NERVE CENTER of system maintains balance through pneumatic and electronic controls.



REFRIGERATING PLANT with sixty of GM's small 20-hp compressors cools building's 1,350 ton heat load.

to act as a sound attenuator. (The boxes have built-in sound baffles and acoustical lining.)

Due to the high variation of venting requirements in the building, it was necessary to provide for adjusting the air flow from the mixing boxes. An adjustable mechanical linkage of the hot and cold dampers (see sketch and photos, p. 162) permits the owner to adjust air supply when laboratories are changed from one heat load classification to another without a major alteration in the basic air distribution system. Calibrated heat load scales on the valve quadrants at each mixing box simplify the adjustments. The hot and cold mixing dampers are linked together mechanically and operated by pneumatic motors, which are controlled by individual room thermostats located 5′ from outside walls. The dampers are designed to work in parallel to ensure a proper balance between the combined air volume and temperature of the mixture. The hot damper has to be tightly shut to avoid leakage of hot air during the cooling season.

Two main types of room outlets are used. Ceiling outlets, spaced about 10′ apart and connected to the mixing boxes by flexible round ducts, eject up to 225 cfm of conditioned air at velocities up to 2,000 fpm. These outlets are shaped to diffuse the air around the room near ceiling. They are solidly built with sound-absorbing material on an inner cone and are free of vanes to reduce noise. Some have sprinkler heads incorporated in the design.

Perimeter offices have wall outlets which eject 900 cfm of air at 2,000 fpm from a 1¼″ x 56″ horizontal slot just below the ceiling. These high outlet velocities increase entrainment of room air with the fresh air, thus avoiding drafts through stratification or cascading.

Return air is collected from corridors into vertical shafts leading back to the equipment room. To avoid drafts, air flow in the corridors is limited to 55 fpm. Air pressure in the building is kept about 0.2″ water gauge above outside pressure, in effect pressurizing the building and eliminating drafts at the entrances.

Control of the system is fully automatic, generally pneumatic and supplemented by more precise electronic controls at critical points. Economising features: 1) throttling control of air supply to reduce steam consumption of the main heater; 2) bypass dampers to allow return air to be used for reheat, reducing steam consumption in the after-heater and facilitating humidity control; 3) when outside temperature permits, outside air is used directly, thus saving refrigeration in spring and fall; 4) the supply fan is slowed to half speed at nights and week ends, reducing power consumption to one eighth of full speed consumption.

DESIGN PRINCIPLES OF HIGH-VELOCITY DUCTWORK

As with nearly all advances in engineering, the advantages of high-velocity air distribution are accompanied by numerous practical problems. GM's experience highlights some of these advantages and problems:

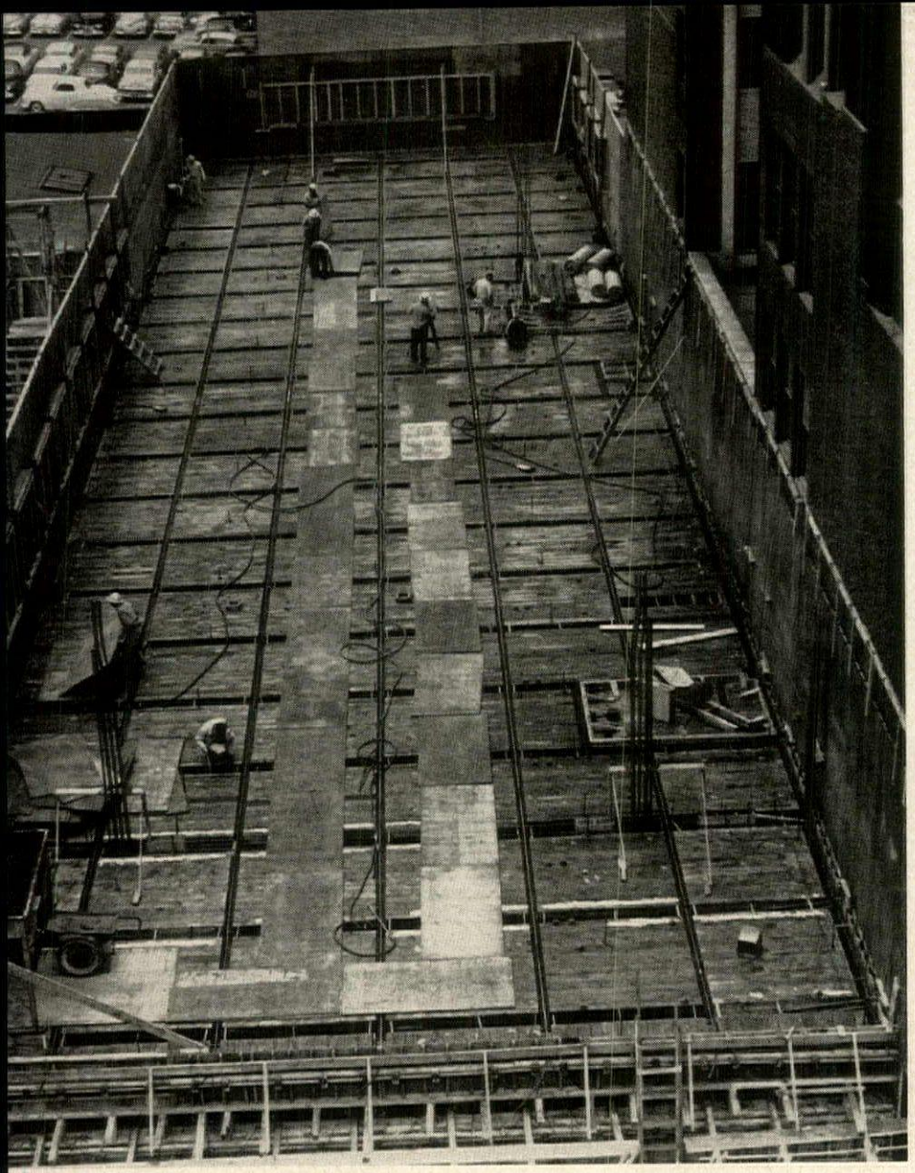
▸ High-velocity systems, operating at duct speeds of over 4,000 fpm, require special pressure control, acoustical treatment and particularly fine engineering, both on the drawing board and in the field. Slight obstructions or leaks in ductwork that might escape notice in a low-velocity system become noisy and play havoc with controls with higher duct velocities.

▸ Smaller ducts save space—if duct velocity is doubled the size of the duct can be halved for a given air flow. But greater fan pressures are required to overcome both the increased friction resistance of the smaller ducts and to pump the air around at the higher velocities. Doubling the static pressure nearly triples the horsepower required at the fan (see table at left).

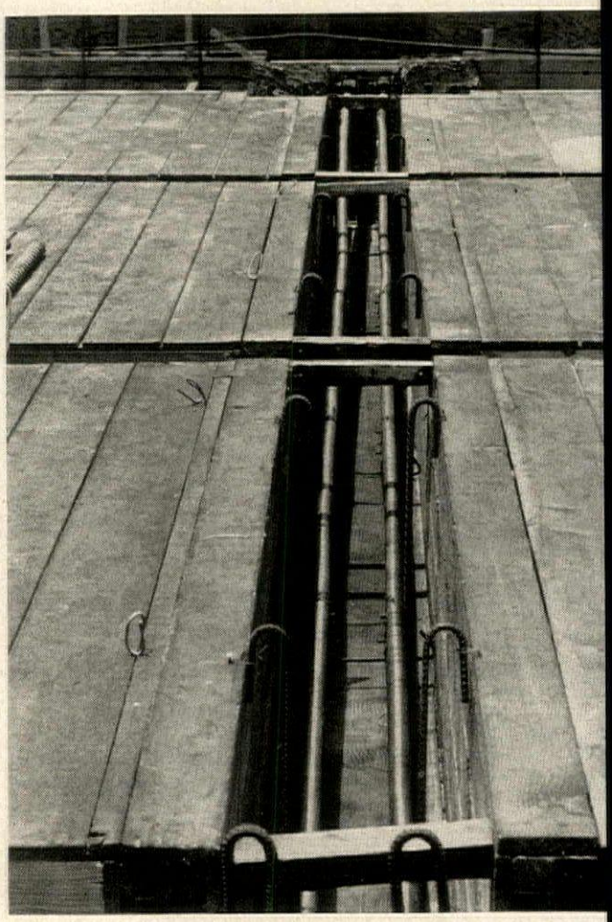
▸ In general, high duct velocities should be used only where necessary to save space, since larger ducts are more economical to operate. Further, for a given duct velocity, friction losses are considerably greater in the smaller diameter ducts, therefore lower velocities should be used in the smaller branch ducts. (These can often be flexible to facilitate relocation of ceiling outlets.)

▸ Rectangular ducts need less head room and are more readily available than round ducts but they must be braced, must be made of heavier gauge metals and have slightly greater friction losses than round ducts. However, round ducts can often be fabricated in relatively long lengths, thus reducing the number of joints and saving time in installation.

▸ All ducts must be airtight. Each section can be checked for leaks by blocking it off and temporarily attaching an auxiliary blower producing a pressure of up to 8″ of water. Leaks are revealed by the noise generated. Adequate expansion joints should be provided since thermal movements are a frequent cause of leaks.



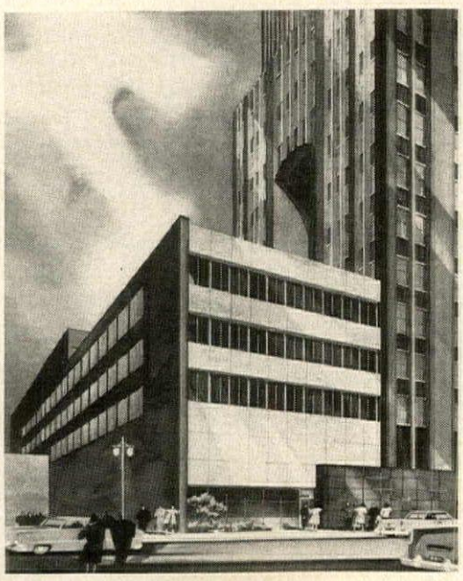
THIRD FLOOR prestressing cables being positioned in four-story and penthouse addition. Cables are 46′ long in main beams, 170′ in longitudinal joists.



TRANSVERSE BEAMS, 11½″ x 24″, are prestressed by six post-tensioned cables, joists by single cables. Floors are cast before bearing walls.

2. MULTISTORY PRESTRESSED CONCRETE

Two-way prestressed floors, only 20″ *deep, provide* 46′ *clear spans in Los Angeles office building*



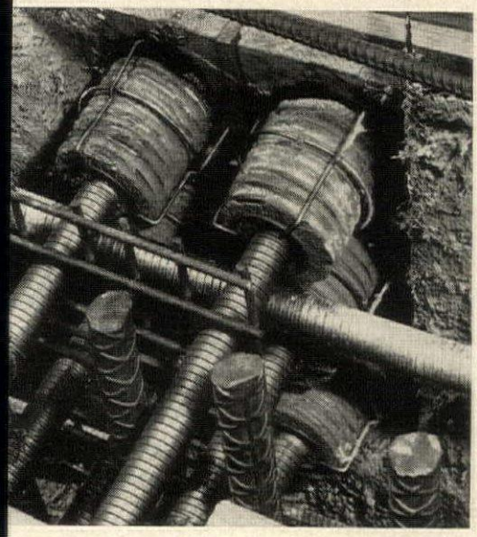
COMPLETED BUILDING for Richfield Oil Co. in Los Angeles will be faced with precast wall slabs.

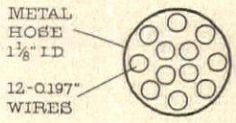
The first multistory prestressed building built under rigid city building codes is this four-story and penthouse addition to the Richfield Oil Co. office building in Los Angeles. Each 46′ x 170′ column-free floor slab is supported on prestressed concrete main beams 8′ o.c. in the short direction, and prestressed ribs 7′-6″ o.c. in the other direction. The 46′ clear spans cost only 60¢ per sq. ft. more than a design with undesirable interior columns, and the prestressed construction cost 10¢ per sq. ft. less than alternate clear spans built in plain reinforced concrete or structural steel.

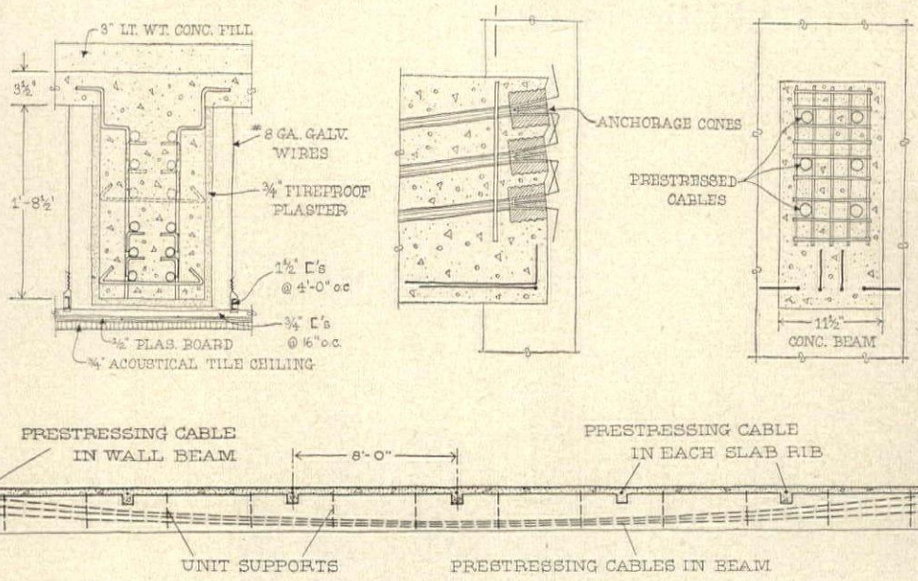
Since the addition shares the main entrance and services (elevators, electricity and plumbing) of the existing building, the new structure had to conform to existing 10′-9″ floor-to-floor heights, yet was to be fully air conditioned. This necessitated floor thicknesses as little as 20″, and, without sacrificing clear spans, this could only be achieved efficiently in prestressed concrete. Reinforced concrete gave excessive deflections; steel was too heavy and expensive.

To obtain a building permit, the architects prepared a research report on the design criteria proposed for the prestressed structure. It recommended allowable working stresses and minimum concrete coverage required for two-hour fire protection, and listed the results of tests on the strength and fire resistance of prestressed concrete structures. This report was approved by Los Angeles' farsighted Board of Building and Safety Commissioners and a building permit followed.

Structural design of the building is the same for each floor. Main beams are 11′-6″ x 24″ in section, post-tensioned with six high-tensile steel prestressing cables laid in parabolic arcs supported by metal spreaders 3′-9″ o.c. (shallower fourth-floor beam sec-





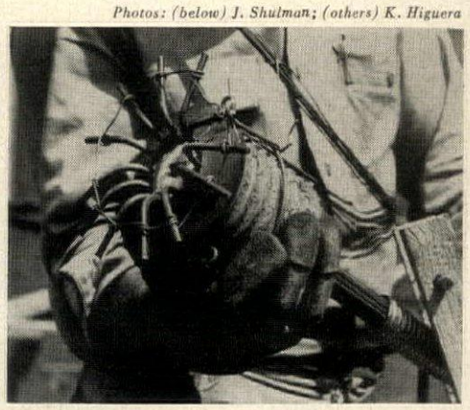


ANCHORAGE DETAIL (top) shows anchoring cylinders in which individual wires are clamped by cone wedges. Wires are sheathed in spiral steel hose and grouted after tensioning.

Photos: (below) J. Shulman; (others) K. Higuera



CLAMPING MECHANISM: 12 wires in each cable are tensioned by hydraulic jack, clamped by driving inner cone into cylinder.



COMPLETED ANCHORAGE of cable against cylinder is formed by cutting and securing wires which are then embedded in bearing walls.

tions are 13'-6" x 20", each with eight prestressing cables). Longitudinal ribs are 5'-6" x 8'-9", each post-tensioned with a single 170'-long prestressing cable laid along the axis of each rib. Floor slabs contain 3" lightweight concrete fill with no reinforcing other than the prestressing cables. The building is carried on 10" reinforced concrete bearing walls, with the prestressed floors serving as diaphragms to distribute seismic loads to the external shear walls. Tensile flange stress in each diaphragm is carried by a prestressing cable around the perimeter of each floor. Floors are designed to carry 50 psf (200 psf on the floor of the equipment penthouse). Under these loads, long-term deflection of the main beams is estimated to be under ¼".

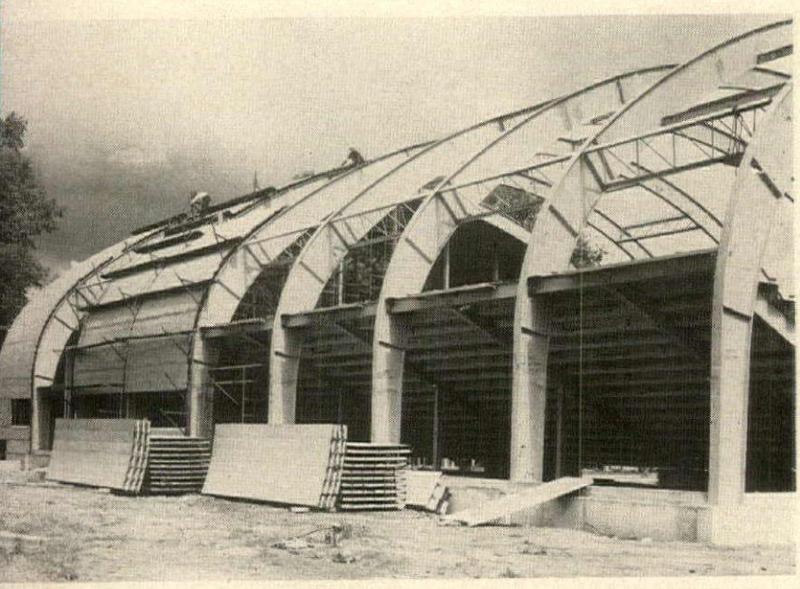
To allow for shrinkage each floor was poured, cured and prestressed before its supporting wall was cast beneath it; the walls thus provided good concrete coverage around the anchorage cones at the ends of prestressing cables. Prestressing was carried out after 28 days when the concrete had a minimum compressive strength of 5,000 psi. Cables in the main beams were tensioned from one end only, while the 170'-long rib cables were tensioned from both ends, using a staggered alternating sequence of tensioning throughout to give minimum eccentric loading on the structure.

The twelve 0.197"-diameter high-tensile steel wires in each prestressing cable are enclosed in spiral steel hose and have a minimum ultimate tensile strength of 240,000 psi. They are tensioned to 145,000 psi (giving a prestressing force of 160 tons in each of the main beams). To secure each stretched cable, a make-wedge cone was driven into the Freyssinet anchoring cylinder by an auxiliary plunger on the hydraulic tensioning jack, clamping each wire firmly in place. Finally cement grout was pumped into each cable to protect the wires against corrosion and, through bond, to provide additional strength for the beam. To provide the two-hour fire protection demanded by Los Angeles' building codes, all prestressing cables have a minimum concrete coverage of 2" and each main beam is further covered by ¾" vermiculite plaster.

Because of low headroom a high-pressure double-duct air-conditioning system was installed in the new building. Hot and cold ducts supply air at velocities up to 4,000 fpm (in the main ducts) via low pressure mixing-box take-offs to ceiling diffusers laid out on an 8' module. The system is balanced by electronically controlled air valves, with individual temperature controls in each office. Recirculated air is cleaned by electrostatic filters.

Like the old building, the addition is faced with precast slabs made with large quartz and marble aggregate. Construction cost of the addition: $1 million ($27.80 per sq. ft. or $1.75 per cu. ft.). Albert C. Martin & Associates, architects and engineers; Guy F. Atkinson Co., general contractor. Freyssinet Co., Inc. designed and fabricated the prestressing equipment.

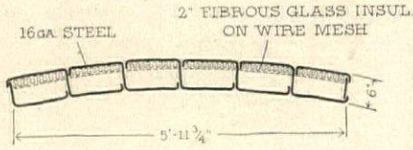
ENGINEERING NOTES



LIGHT-GAUGE STRUCTURAL ROOF

Insulated panels of 16-ga. steel weigh 6½ psf, have U-value of 0.12

Prefabricated Z-panels, spanning 18′ between rigid welded steel arches without purlins, form both exterior and interior walls of this field house at Allegheny College, Meadville, Pa. The 6′ x 18′ steel panels, containing 2″ of glass-fiber insulation, were engineered and fabricated in the shop of Pittsburgh–Des Moines Steel Co. at Pittsburgh and trucked 90 mi. to the site. They are tack-welded on the outside flanges of the arches. Closure pieces are welded along gaps where the panels meet, and neoprene sealing compound is extruded into the joints. Panels are made of 16-ga. steel, bent before fabrication to conform to curvature of the arches. Panels in the two lowest courses are made of ⅛″ steel to resist denting. Three coats of vinyl paint—brick red outside, Chinese red inside —are applied, and the upper half of the field house covered with a black insulmastic weather coating dusted with stone chips. Architect was Lorimer Rich Associates.



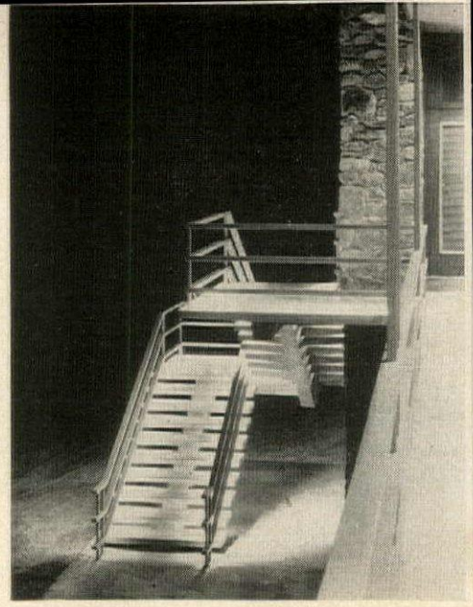
ROOF DECKS FIRE TESTED

Perlite and vermiculite concretes stand up under UL punishment

Two insulation concretes for steel roof decking have been given inferno tests by Underwriters' Laboratories:

In one test a roof of 3″ of reinforced vermiculite insulating concrete on a ribbed steel deck with exposed underside was subjected to fire at temperatures up to 1,830° F. for 1 hour and 49 minutes. According to the Vermiculite Institute, deflections were "nominal."

In another test, an unprotected 24-ga. corrugated steel roof deck covered with an insulating slab of 2⅞″ of perlite concrete was tested by UL over flames up to 1,700° F. for 1 hour. The top of the slab, reported the Perlite Institute, reached only 187° F.



UNUSUAL FLOODLIGHTING

Lamps in channels of bannisters light outside stairway in Atlanta

Design by David S. Cuttino & Associates of a roofless stairway on the outside of a golfers' pavilion at Druid Hills Country Club in Atlanta precluded floodlighting from either yard, from the building or from a stone pylon rising between the staircase and building. So L. Ralph Bush, Atlanta electrical engineer, put continuous reflectors in the bottom channel of a three-channel bannister. Twenty-five-watt tubular lamps over the ends of each of the concrete steps and over the landings give glareless illumination —about 40 foot-candles at the ends of the treads and about 25 foot-candles at their centers.

LEVEL, INTEGRATED CEILING

Air diffusers, lighting fixtures, acoustical tile are interchangeable

Integration and flexibility of ceiling components controlling sound, light and air have been achieved by Architects Holabird & Root & Burgee in designing the Sinclair Oil office building in Chicago. Elements are interchangeable between a network of 6¾″ exposed metal panels attached to 1½″ channels. The panels have ⅜″ flanges that carry perforated mineral fiber tiles and air diffusers. Lighting fixtures, supported independently by a furring grid, are aligned with the dead-level ceiling by set screws.



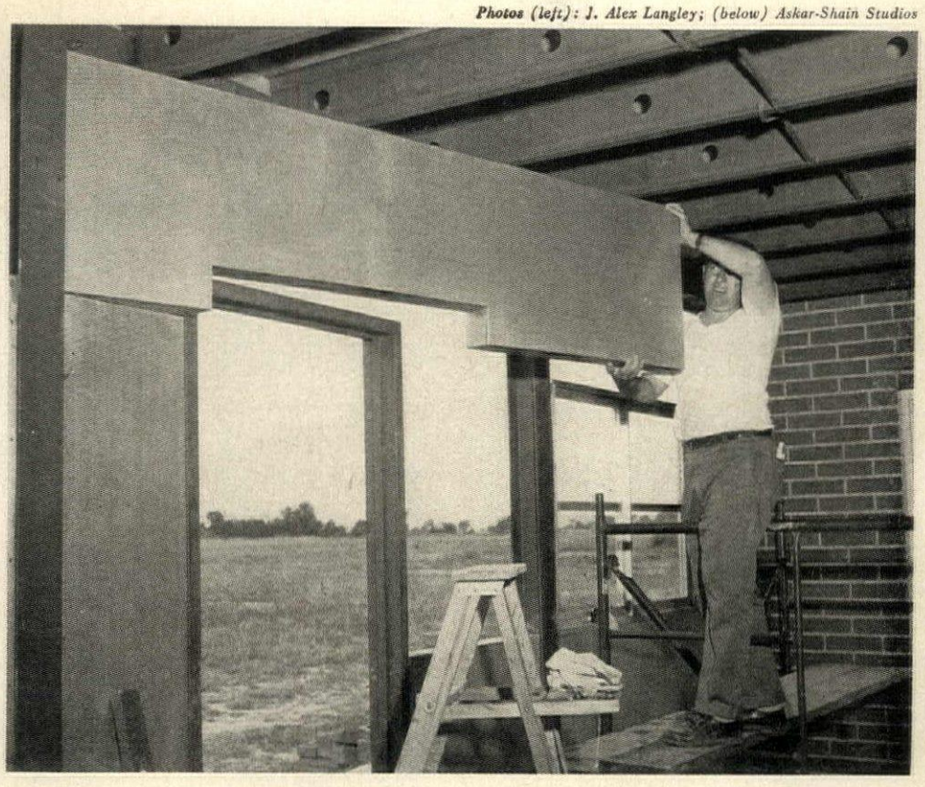


IT'S ALL DONE WITH LIGHTS

Stagecraft adds story to lobby of New York office building

A master of illusory lighting, Abe Feder, New York stage lighter, was called in by Tishman Realty & Construction Co., builders of a 26-story aluminum-faced office building at 99 Park Ave., N.Y., to create a visual impression that the skyscraper's two-story entrance loggia, seen from the street, sweeps back the full length of the lobby. In reality the lobby ceiling is a full story lower. Feder used square molded-plastic lighting forms that seem to be hanging in space, with the ceiling far above them. He used eight T-6 warm-cast, 42" fluorescent lamps in each box to keep light soft, evenly diffused. Nighttime contrast between lobby and outside is minimized by a band of Fresnel lens spotlights in the loggia ceiling which produces a transitional curtain of light. Architect was Emory Roth & Sons.

Photos (left): J. Alex Langley; (below) Askar-Shain Studios



STRESSED SKIN WALL PANELS

Honeycomb paper core between aluminum faces forms lightweight wall panels, costs $1.80 per sq. ft. erected

Rigid panels made from 0.024" aluminum faces bonded to a 4" core of resin-impregnated honeycomb paper provide economical and efficient walls for a new administration building at the St. Clair County Airport, Marysville, Mich. One of these panels, weighing only 1½ psf, is shown above during erection. Their lightness makes for speedy erection, only 20 minutes per panel. Erected cost: $1.80 per sq. ft. including fabrication.

Using factory construction methods, the panels are simply set between 5" steel columns spaced 8' o.c., wedged between the column flanges to avoid metal-to-metal contact, the joints filled with expanding vermiculite cement and the faces flashed with calking compound. The 4" thick panels have a "U"-value of 0.145, a noise-reduction coefficient of 31 db, a crushing strength of 70 psi and, considered as beams, they have a rigidity equivalent to that of six times their weight in plywood, or 23 times their weight in solid steel. The panels are designed by Chas. M. Valentine, architect, and Reynolds Metals Co.

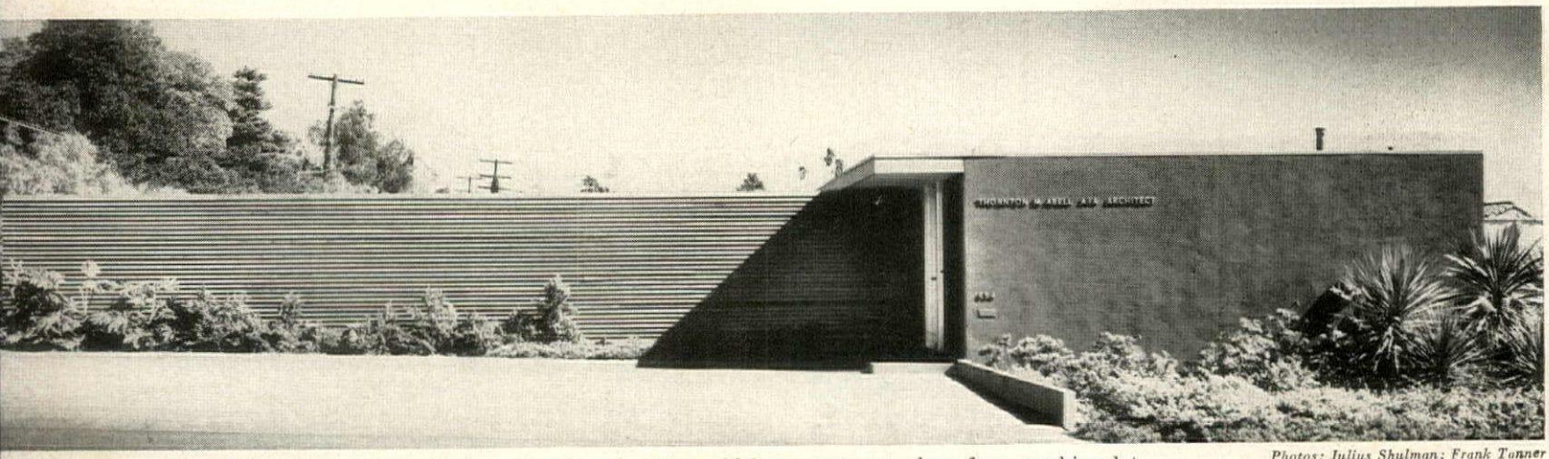


ROOF SLABS INSTALLED FAST

Installers put down 18,000 sq. ft. of roof panels per day at peak speed

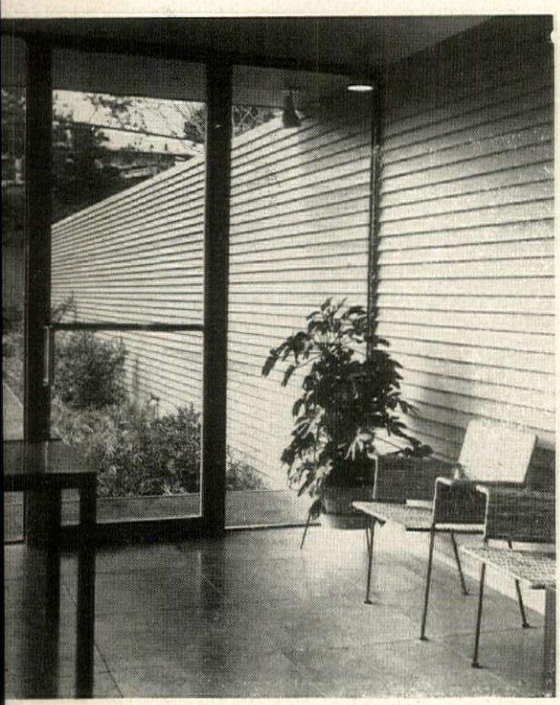
When installers of precast concrete slabs hit their stride on the 700,000 sq. ft. roof of Pennsylvania Railroad's freight car repair shops at Hollidaysburg, Pa., they placed more than 1,200 slabs—18,000 sq. ft. of concrete—per day. Spaces between the 2' x 7½' slabs on the big, continuous roof are sealed with asphalt asbestos mastic. Workers in picture are spreading impregnated paper over slabs as first layer of built-up roofing. Hughes-Foulkrod of Philadelphia was contractor.

OFFICE OF MERIT: a regular department devoted to new ideas in finishes, fixtures and furnishings—this month from the prize-winning offices of a Los Angeles architect



Street front is dominated by shiplapped redwood screen which separates gardens from parking lot

Photos: Julius Shulman; Frank Tanner



Reception room features continuation of redwood screen through glass entry wall. It is stained sagebrush green; accent color is deep lemon yellow. Floor of pressed wood, finished natural, has pigskin tan color.



Conference room overlooks garden on other side of redwood screen. Ceiling is light green oyster color; exposed structural members and glass wall divisions are painted warm charcoal color.

OFFICES OF THORNTON M. ABELL, LOS ANGELES
ARCHITECT: Thornton M. Abell
STRUCTURAL ENGINEERS: Hillman & Nowell
MECHANICAL ENGINEER: J. S. Hamel
LANDSCAPE ARCHITECT: Robert H. Forrey
GENERAL CONTRACTOR: Harold Marks

Specifications

FINISHES: Floors—tempered hardboard in 2′ squares, Lebanite, Cascades Plywood Corp.; floor treatment—Tungseal, McCloskey Varnish Co.; Walls—plasterboard, redwood and acoustic tile, Simpson Logging Co.; redwood stain — Samuel Cabot, Inc.; paints—Gelvatex Coatings Corp.

FIXTURES: Fluorescent lighting—Light Control Co.; other lighting, Lightolier Co.; hardware—Schlage Lock Co., Oscar C. Rixson Co., National Lock Co. and (cabinets) Washington Steel Products Co.; skylight—Fiberglas plastic, Plymolite, Plymold Co.; sliding partitions—Woodal Industries Inc., Masonite Corp., Plymold Co.; sliding glass doors—Slideview Steel Door & Window Co.

FURNISHINGS: Honeycomb core drafting tables—US Plywood Co.; linoleum tops — Congoleum-Nairn; stools — J. C. Moore Associates, Inc.; conference- and reception-room tabletops—Formica Co.; cabinets—Forest Fibre Products Co. and J. B. Thomas Co.; all other furniture—Van Keppel-Green.

Built temporarily on an increasingly desirable suburban business site which may ultimately be put to more intensive use, this little building meanwhile demonstrates several devices for making any office better —devices which helped earn a top award of the AIA's Southern California Chapter:

▸ It is beautifully finished (see photos).

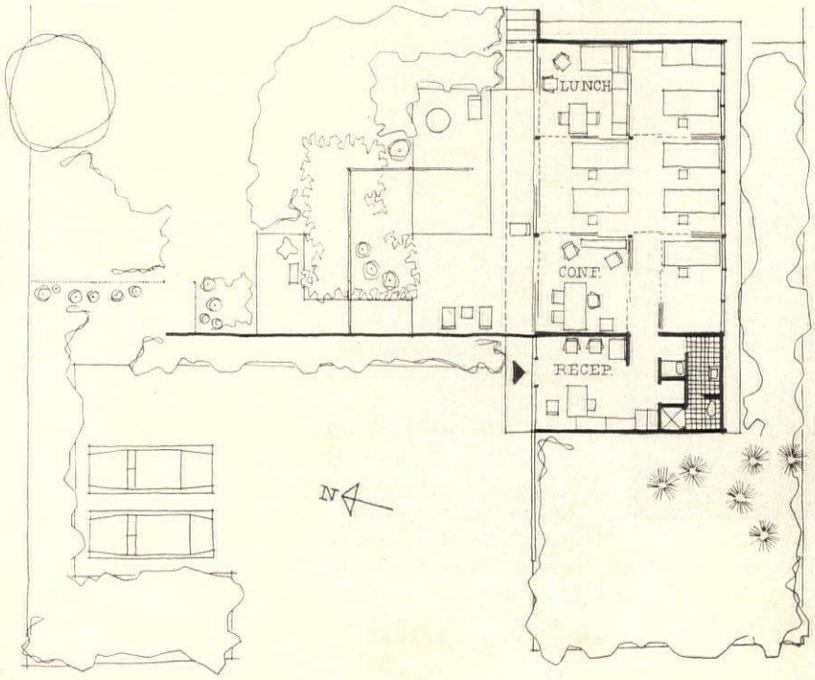
▸ It is flexibly planned. Except for the reception room and a tight little group of utility rooms, the building is one big room, 24′ x 36′. This space is divided into 12′ x 12′ bays, or combinations of bays by prefabricated sliding panels—some opaque (pressed wood), others translucent (plastic). One bay is a conference room; another, a private office. The central 12′ x 24′ is a drafting room which can expand into the two rear bays. By moving the differently colored panels, the architect-owner can vary his floor plan, his color scheme and his ventilation.

▸ It uses the outdoors for interior decoration. A big redwood screen between the parking area and garden penetrates the building to form one wall of the reception room, and thus provides a division between public and private areas inside and out. Sliding panels of glass form the wall along the garden side of the building.

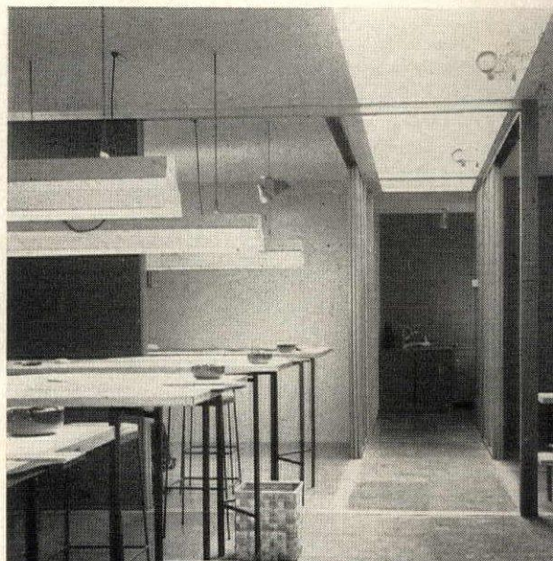
▸ It is inexpensive. The building cost only about $13,000, or $10.50 per sq. ft., and is highly salvageable. It can easily be moved and converted into a store or house.



Space dividers are glass, plastic and pressed-wood panels of different colors which slide to permit varying degrees of openness and ventilation. Conference room is at left of picture, drafting room, beyond.



Drafting room tables and stools (below), like other furniture, have slim black metal supports. Rattan waste baskets echo chair materials in other rooms.



for all concerned

AMERICA'S COMMERCIAL CAPITAL

The problem of figuring a future for the Grand Central area in New York has now been handed to realty promoters William Zeckendorf and Roger Stevens.

This plot is probably the key site today in the nation's commercial capital. What the Mall is to Washington, the station and its surroundings should be to New York. In practical effect this means future developments must be more open—not only to give the commercial capital needed dignity but to give the metropolis needed breathing space.

Because no public aid is promised on this problem of great public interest, the solution must be made in terms of profit to the stockholders, as was done at Penn Center in Philadelphia.

Since World War I the US has built mighty few commercial developments that could be called contributions to the twentieth-century downtown city. They include Rockefeller Center, the Pittsburgh Point, Penn Center in Philadelphia, and proposedly the Boston Center which is still in negotiation. Every one of these has taken at least a step toward the newer ideal of "the city in a park": by introducing some light, some openness, some air and some easing of traffic. Nowhere else, commercially, has this been achieved at big scale, downtown, in the US, for nowhere else has land been available under single control in big enough parcels.

Open space continues to be architecture's greatest luxury, but it is one in which this prosperous country is conspicuously running short downtown, so much so that we may shortly wake up to find ourselves the world's first-class second-rate nation. Rome, which we regard as old and crowded, has space in front of its new station equal to the distance from Grand Central to 34th St., and a wholly new scale of openness rules new cities of South America.

The Grand Central tract was among all large-scale metropolitan developments the first to receive correlated commercial development, under Vanderbilt. We look to Zeckendorf and Stevens to continue Grand Central's traditional leadership. We know that these progressive men will do all they can to assure that anything built preserves open spacing and the city's chance to breathe—consonant with a profit. In the long run, however, the preservation of city breathing space must engage active participation of public authorities.

Economic health for the whole city demands this.

Meanwhile open space, architecture's greatest luxury, continues to be valuable also under roof, and part of the Grand Central problem is still what to do with the big, handsome, spacious interior of the existing concourse. The 220 forward-looking architects who joined in an open letter asking preservation of the big room (AF, Nov. '54) suspected that nothing new could be built at today's costs that could rival it as a big space. Other architects have since contradicted this; and they should have their chance to demonstrate that a new concourse might be built combining today's efficiency and expressiveness with a generous volume. However, the burden of proof will lie heavily upon them. What they show must be wonderful indeed, to overcome the strong desire of the people for some contact with their past, some sense of continuity, some sense of permanence, in a room which over a long period of time has proved emotionally so satisfactory.

As Ieoh Ming Pei has said: "The one justification for tearing down a monument is to build a new monumental concept." Moreover, such a concept must be not merely big but noble. Until such a monumental concept comes forth for appraisal, thoughtful men will continue to urge preservation of the present concourse.

Ben Schnall



Modern New York, less open



Modern Rome, more open

HISTORY'S TIMELINESS

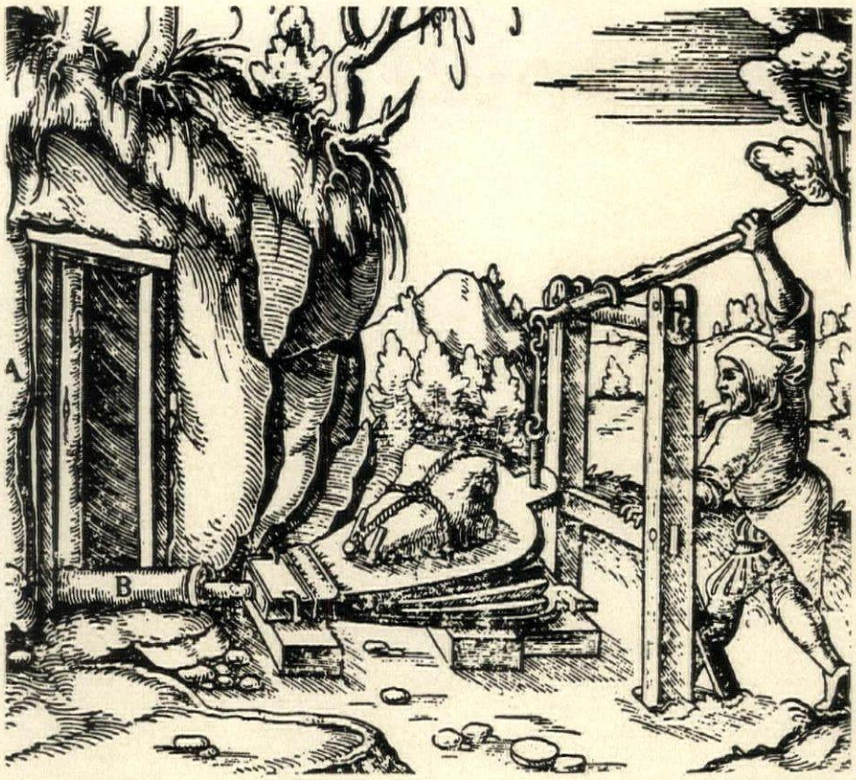
Last month Professor Vincent Scully of Yale electrified the Society of Architectural Historians with a paper on the teaching of architectural history. The present trend toward slurring or dropping historical studies received no sympathy. The tendency of the active architect, said Scully, is naturally to mingle his respect for old buildings with a degree of hatred, for they challenge his capacities and, if he give way, threaten to possess his soul. But the historian cannot yield, by confining his teaching to aspects of the past that are "palatable to the architect's objectives of the moment" or by sticking politely to construction and technics. For the fine achievements of the past are complex and they carry much that the present has forgotten but that may seem doubly important tomorrow or the day after. Sc the historian must act as "keeper of memory" for a past that "is no longer either enemy or refuge. It is simply part of ourselves, open and usable, living in us. It neither restricts nor confines, but liberates, and its study leads us to believe that the future may be as inexhaustible as mankind itself."

To these fine remarks it might be added that the problem is more than academic. Older buildings exist not only in books but on the street. Today's owner and architect have ever before them problems of modernizing these buildings, adding to them, or building next to them, in cities that were not born yesterday and will not die with us but should be a harmonious continuity yesterday, today and tomorrow. The problem might be how to finish a Gothicized cathedral, or how to reintroduce the half-forgotten device of the arcade, how to modernize a historical bridge, or more modestly how to revise an oversized old lobby.

The automobile industry has brought about a false set of values in this country, the belief that only the latest model can be truly beautiful. The Parthenon contradicts this. Real excellence, as it attests, is extremely permanent—and so is the beauty of polite manners. The mark of fine designs new and old is that they get along remarkably well together.

Douglas Haskell

Need help
on your
Air Conditioning
problem?



The Bettmann Archive

This 16th century woodcut shows a "one manpower" air conditioning unit. From the size of that bellows, it looks as if this fellow could use some help. If you need assistance on air conditioning problems for your clients, let Airtemp help you.

Just call on AIRTEMP

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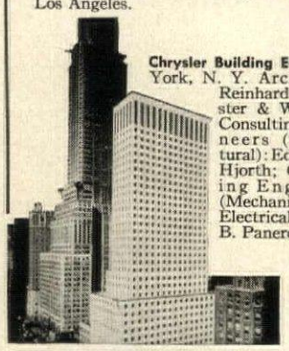
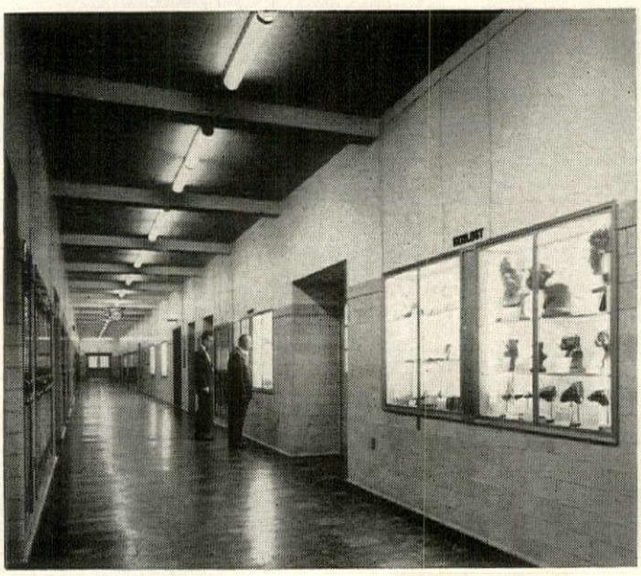
Harold Grubman Company, North Hollywood, Calif. Engineer: Sam L. Kaye, Los Angeles; Builders: Craig and Randall, Los Angeles.



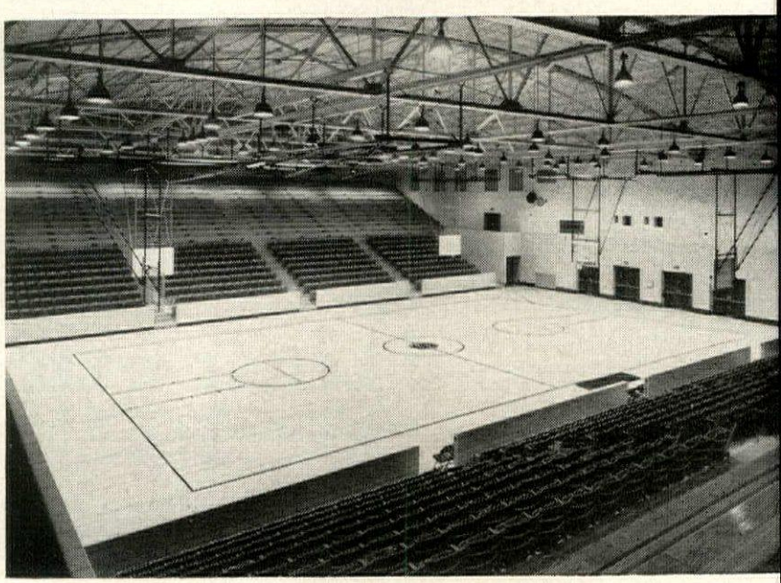
Chrysler Building East, New York, N. Y. Architects: Reinhard Hofmeister & Walquist; Consulting Engineers (Structural): Edwards & Hjorth; Consulting Engineers (Mechanical and Electrical): Guy B. Panero.

AIR CONDITIONING • HEATING FOR HOMES, BUSINESS, AND INDUSTRY

Elm Hill School, Newington, Connecticut. Architect: Carl J. Malmfeldt & Associates. Engineer: Henri B. van Zelm & Associates. Electrical Contractor: Du-All Electric Co.



CL-40 luminaires' simple, modern lines combine functional beauty and easy maintenance—ideal lighting for corridors.



Westinghouse Millites provide maximum illumination for sporting events and gymnasium activities.



Complete lighting comfort for his 900* hours in school

The average student spends at least 900 hours in school, annually. Every second of this crowded schedule his eyes are constantly active... going from textbook, to blackboard, to teacher, to writing pad—thousands of times. In fact, most of his school life *is* spent under artificial illumination. Illumination that must be comfortable, glare-free and built to last for years. That's why many school officials and architects specify Westinghouse lighting fixtures in classrooms, manual training shops, gymnasiums—in fact all through the school.

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Let your architect and electrical contractor know your preference for Westinghouse lighting fixtures. More information? Make a point to see your nearby Westinghouse distributor, or write Westinghouse Electric Corporation, Lighting Div., Edgewater Park, Cleveland, O.

* *As published by* Nation's Schools *magazine.* J-04361

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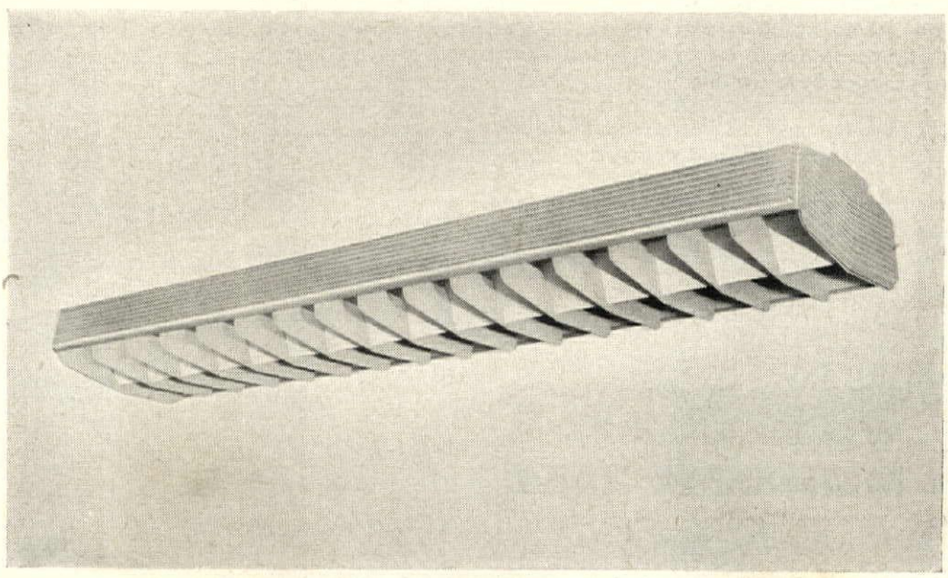

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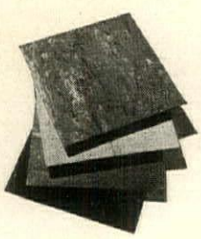

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BROOKLYN BRIDGE

Continued from p. 124

The story of Brooklyn Bridge is a
minder of the fact that masterpieces wh
people love seem to take on ever new mea
ings. The original creator launches such
work, but after that history feeds it. Lo
after the master has died the work continu
to unfold new lives of its own, beyond an
thing he could have dreamed of. Hence t
artist is almost by definition one who do
better than he knows how—and the reason
not entirely mysterious. For he acts as
sensitive receptor so his work is not his alo
but of coming forces that seek to wo
through him.

Of this migration of interest Brookl
Bridge is an unusually vivid example. Wh
was most appealing in it at first is no long
so now; and indeed not until half a centu
after it was built did it start to convey wh
has more recently been its chief messag
And those who live torpidly on, interpreti
it as it once was, are capable of doing
damage, all unwitting.

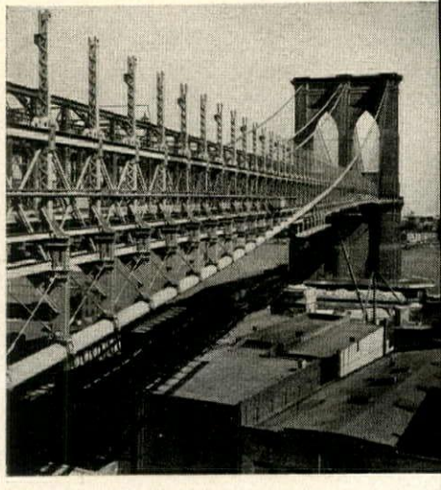
Entirely commercial considerations ga
the bridge birth, for Engineer Roebling had
high degree of business acumen. To the i
fluential men of Brooklyn and New Yo
whom he approached in 1857, Roebling pro
ised simply that the bridge would unite the
two cities into a single great "emporium"
even greater, he thought, than thrivi
Liverpool! They listened with eagerness
cause his past ventures had been outstan
ingly successful.

Yet what the public saw in the bridge wh
it finally opened in 1883 was already a se
ond version—not the great stroke of co
merce but the "eighth wonder of the world
as a miracle of "mechanics" and enginee
ing. Indeed the crowd was so thrilled, a
so scared by the imagined danger of it, th
one day several people were trampled
death on the bridge in a sudden panic.

The third interpretation of the bridge w
by men of culture—and it was negativ

continued on p. 1

A. Feininger—L



Steel verticals show just how much heig
was added to outer truss, blocking views.

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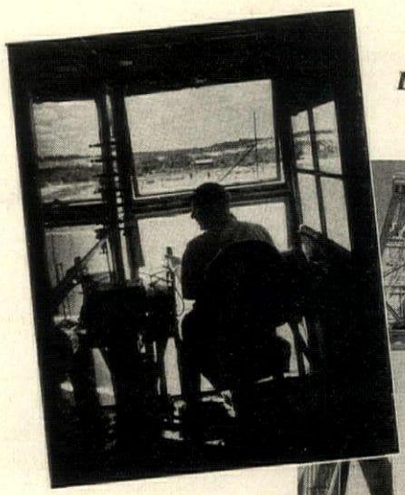

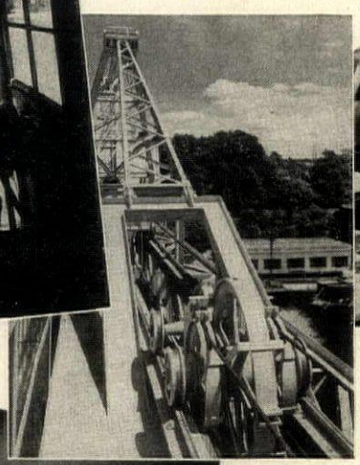

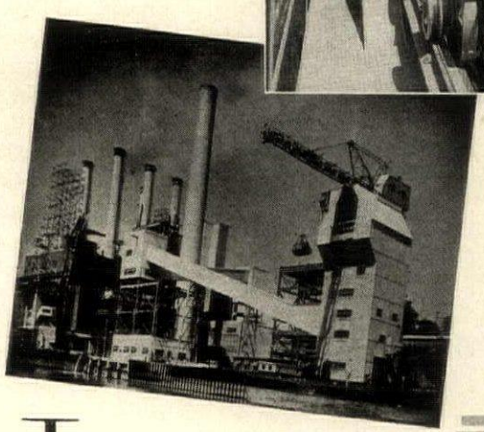

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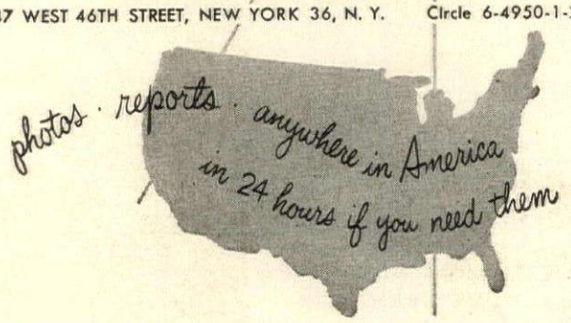

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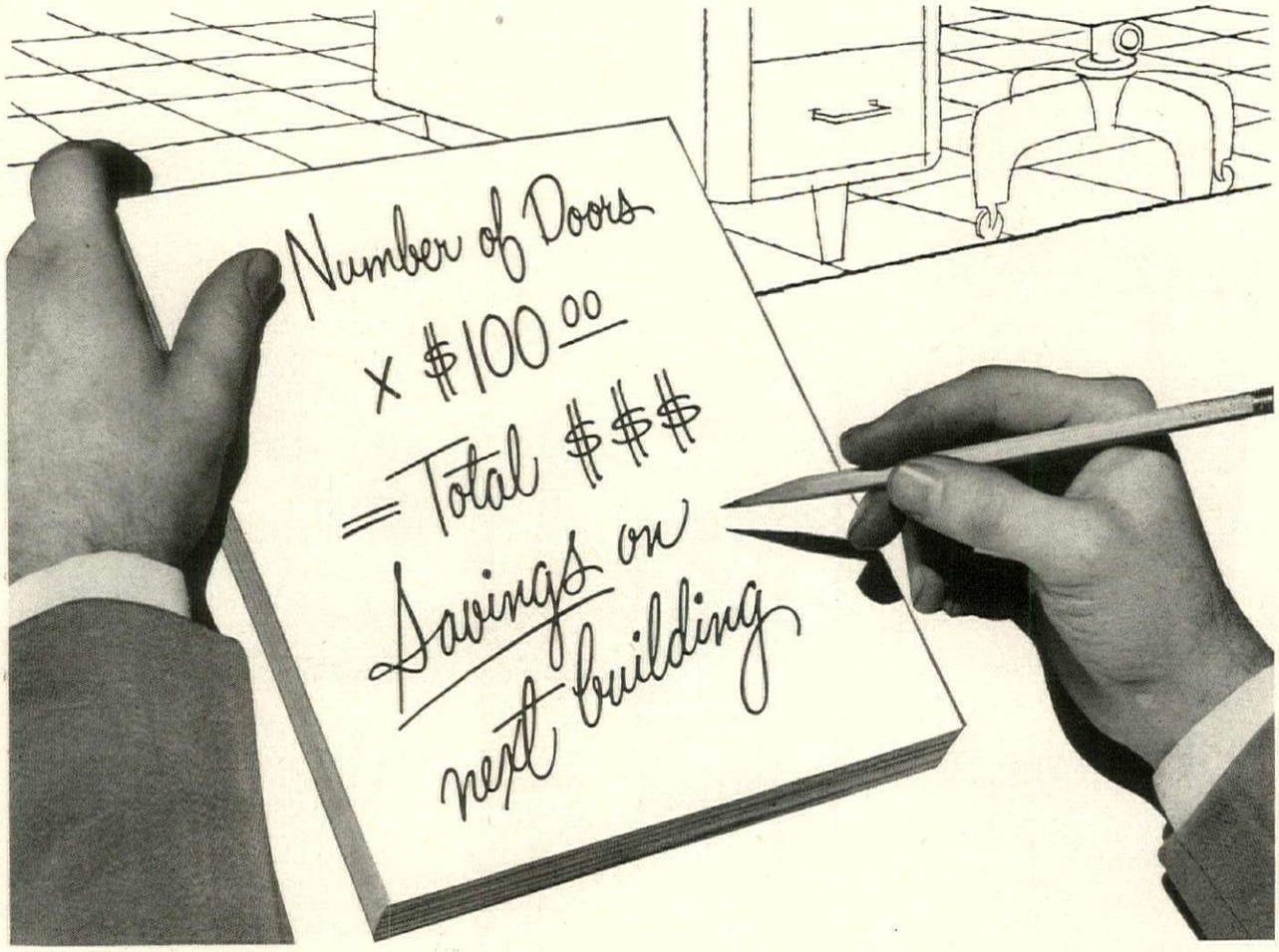

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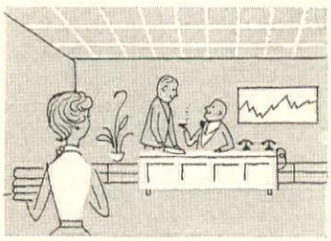





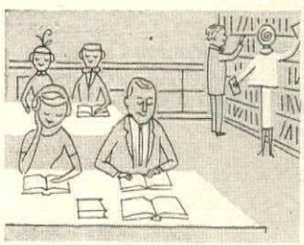





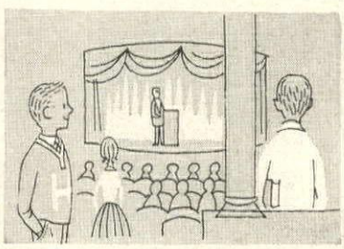

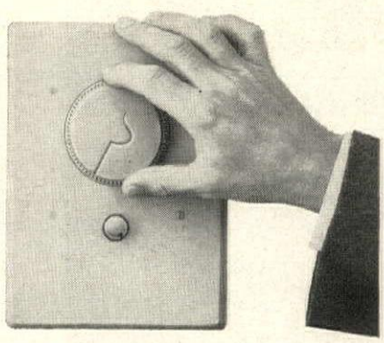

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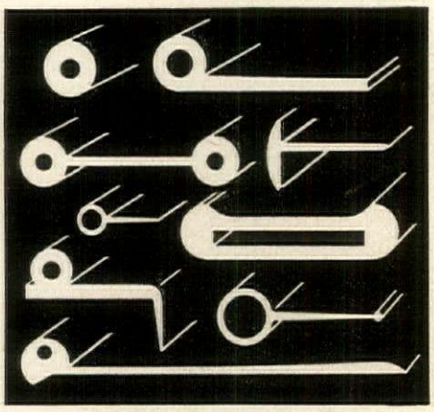

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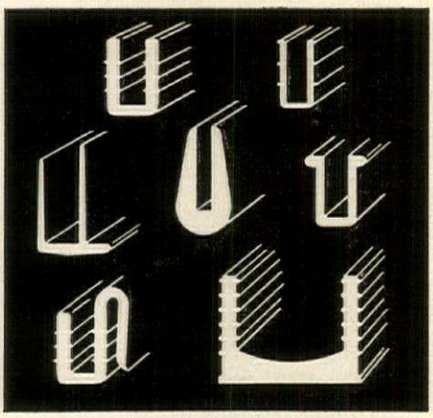
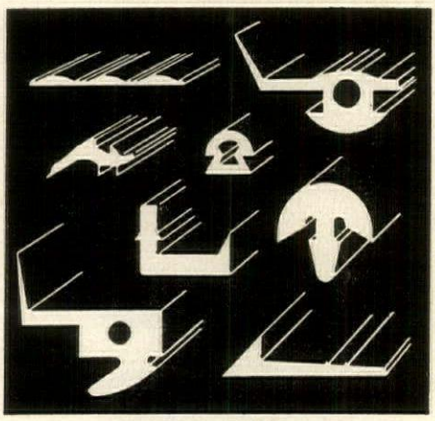


CHANNELS



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BROOKLYN BRIDGE

Continued from p. 176

Critic Montgomery Schuyler, writing in 1892, found the bridge "not a work of architecture" at all despite its noble engineering. He described the "deadness" of its masonry compared to the expressiveness of "Amiens, Strasbourg and Notre Dame," and laid the blame not on the engineer but on the age, for being "utilitarian." We know now that Schuyler's method of observation was deficient, for he reported only the experience of looking *at* his bridge as at a monument, without accounting for the experience *on* it; and, more than he realized, he saw it through the schoolbooks.

Only much later, after World War I, did the bridge get its next lease on life, and this time through men of imagination—painters and poets. Too naïve (if you please) to regard the structure as an architectural scholar would, they went straight where experience of it was most intense—up on its foot walk. And so there opened a new vision, through the bridge, that was to go far beyond it.

Up on the footpath John Marin, intoxicated from the exhilaration of this flying road, full of the sense of walking on air high above land and water, made his etching of the bridge, deliberately breaking up, with nervous strokes, the granite solidity of the towers, breaking up even the clean sweep of the miraculous cable, the better to convey how it felt to be so close to the clouds, so at home with the gulls, in a wild exuberance of power.

And here, too, the photographers now took their stance, fervidly registering the view out through the rope network to the new leaping skyscraper city. This was a way of looking at architecture different from Schuyler's, although these men were quite unconscious of this, and you might say it occurred because history was ready for it.

In any event the new way of looking was to have the most practical and far-reaching consequences.

In not only pointing at a building but reporting the experience of living in it, on it, looking outward from it, the new way of looking came closer to the reality of all architecture.

In seeing the thrilling view through the great cable-screen, the new eye forwarded an age of transparent enclosures, when all sorts of buildings would interpose the merest curtain between the occupant and the sky, between him and his surroundings, him and his fellows.

In combining the near view with the far, it made men unconsciously unhappy with the cramped spaces of the nineteenth-century city.

In accepting the great height the new view overcame vertigo in high man-made places, and in accepting the constant tremor

continued on p. 184

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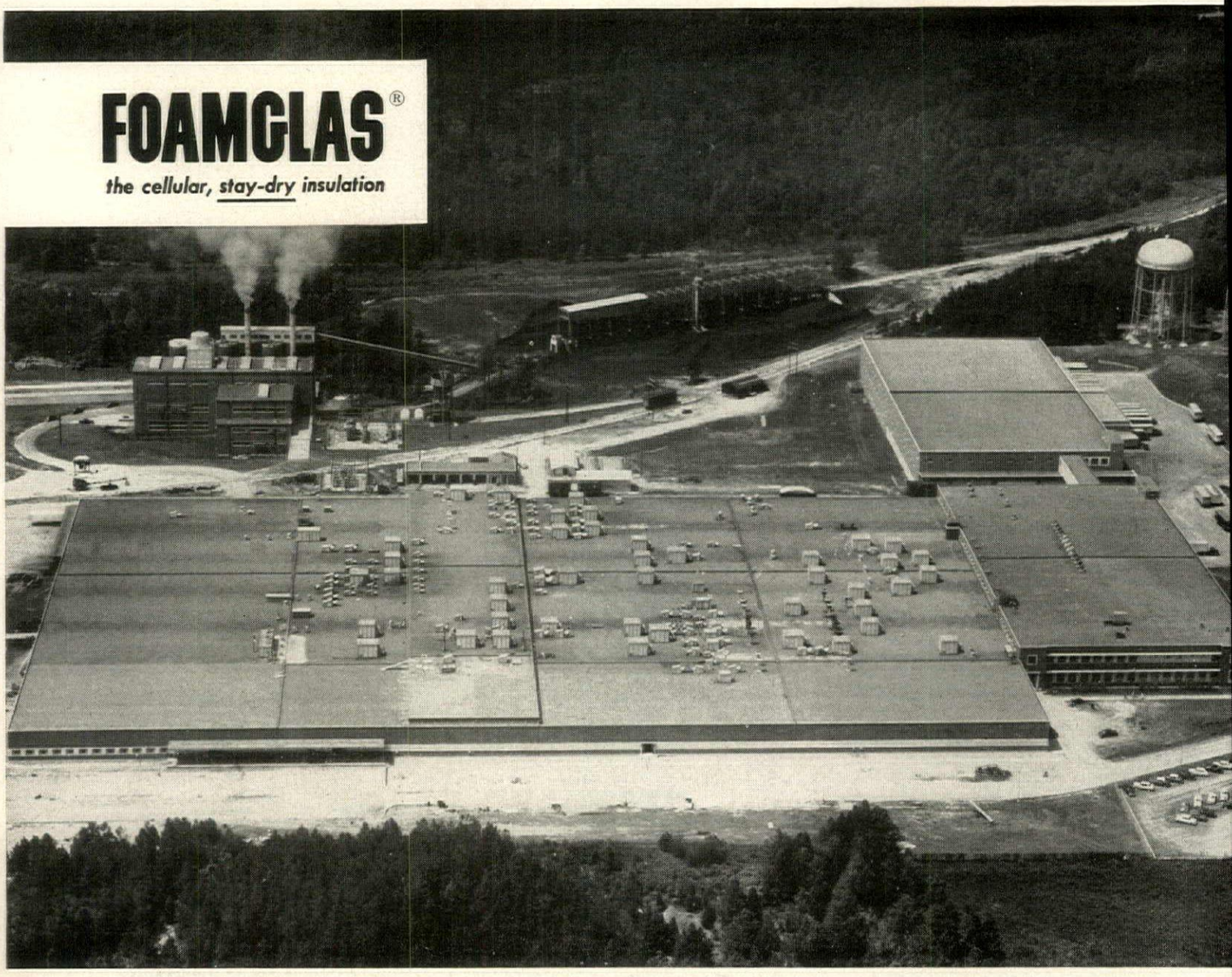

Airview of Grace Bleachery, the world's largest . . . recently enlarged by The Springs Cotton Mills at Grace, S.C. *Engineers and Architects:* Robert & Co. Associates, Inc., Atlanta, Ga.; *Roofers:* Ingold Company, Inc., Hickory, N.C. and Arvett & Ledbetter Roofing and Heating Co., Charlotte, N.C.

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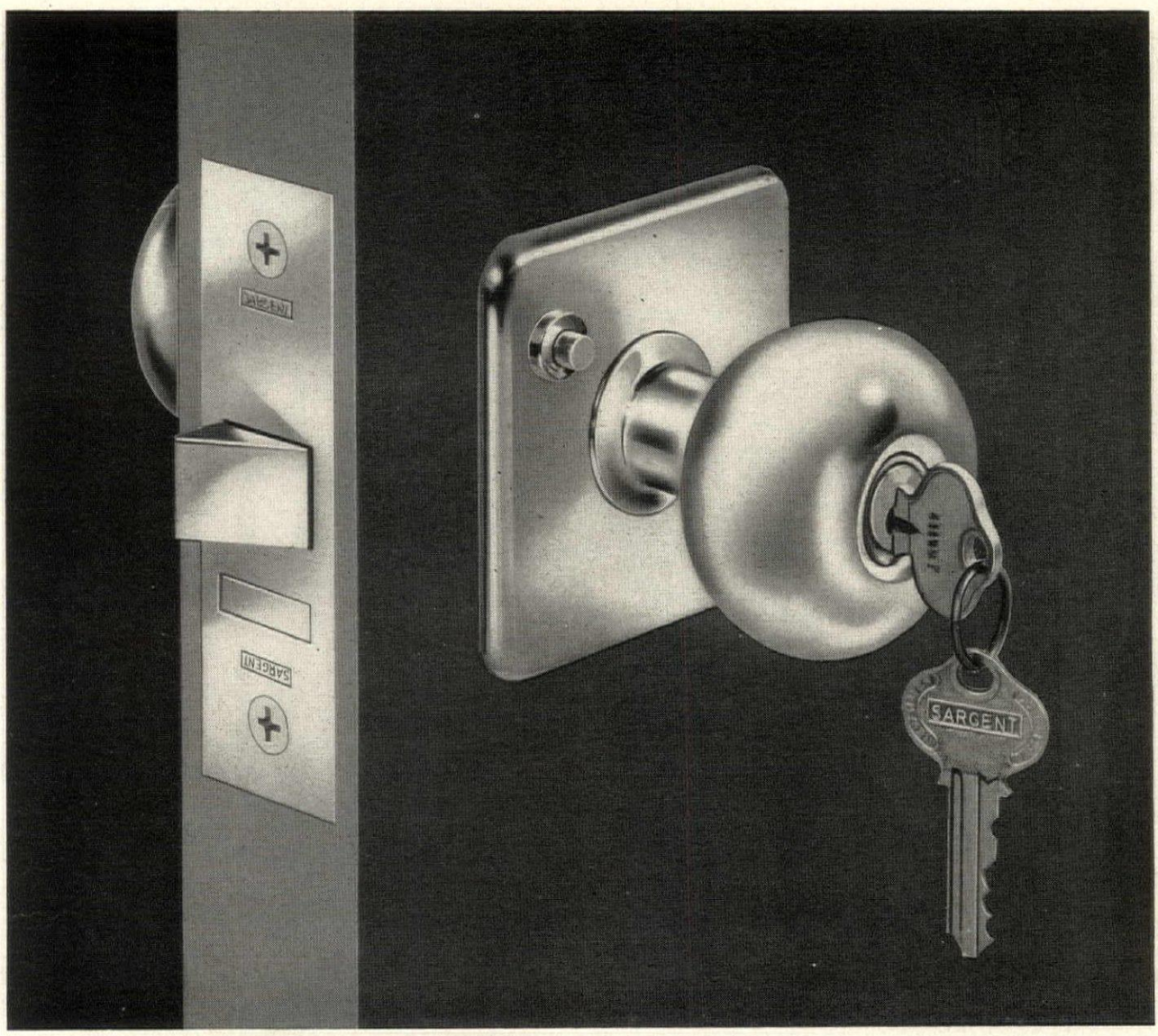

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BROOKLYN BRIDGE

Continued from p. 180

of the bridge it may even have prepared people the quicker for the "live" feel of unsupported flying.

This sense of a direct experience from a great structure, this sense of safe height, of transparent screened outlook, of immense scope and scale and of union with what is far distant, does not of course exhaust the experience of the bridge. Hart Crane, the poet, writing in 1930, would, we can be sure, never have made such a great reassuring presence of the bridge, except for its unique *combination* of opposites: all that is free and airy being anchored by the immovable mass of ageless granite reaching down to rock far underneath the river. This contrast, which the Brooklyn Bridge has all alone among New York's suspension bridges, contributes mightily in making it, alone among all of them, a poem. Here, however, the discussion is first of all about a foot walk.

Such major consequences might seem exaggerated to draw from so limited a source. Yet we must remember that millions visited the bridge, or saw the pictures, at a time when the only modern buildings in New York that might have inspired new imagination were some unnoticed cast-iron fronts built when the bridge was.

Then again the juxtaposition might seem to be accident. But was it? Roebling did go out of his way to make those outermost trusses lower ones, and Roebling, though he is always spoken of as an engineer, had the full training of an architect. So whether he did so fully aware, or whether as the agent of forces not fully understood, the sightlines that are now destroyed *he put there.*

The English Critic Roger Fry has often insisted that esthetics, which is the study of form, is the powerful antecedent of all sorts of investigations which men connect with science or with progress. Again and again men have failed to make even the most obvious new combinations in their own interest, for the one and sufficient reason that they simply did not *see* the possibilities in them.

They were unable to give their new notions shape as usable ideas, because they had no form to put them in. The value of a striking new combination, such as Roebling achieved when he found just that position for a foot walk at just that height with just those sightlines past trusses suppressed in just that way, in the presence of just that view, is that the flash of vision it inspires suggests and formulates other new ideas.

All in all, then, it is a dangerous thing for a developing civilization to let people with the best intentions but ordinary vision revise so much as a truss on a historic bridge, without consulting those whose business it is to see and to keep on seeing.


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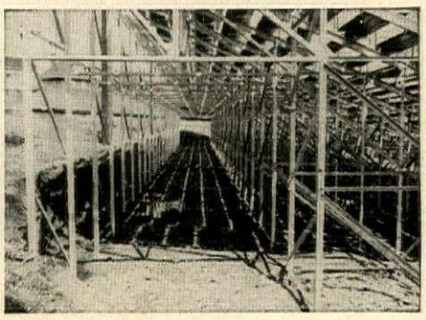
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It's the Blue Ridge *Securit** Interior Glass Door.

This door is economical. Installation is quick and simple, for there's no cutting or mortising to do. The hardware comes to the job with the door, all parts pre-fitted for quick assembly. And this door will never need refinishing . . . it's all glass.

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Blue Ridge Securit *Interior Glass Door, flanked by a panel of Blue Ridge Corrugated Glass. Both are in the same rich Muralex pattern.*

BRIEF DATA

Glass—3/8" thick. Muralex patterned on both surfaces.

Tempered—three to five times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—2'6" x 6'8" 2' 5 1/16" x 6' 7 1/16"
2'8" x 6'8" 2' 7 1/16" x 6' 7 1/16"
3'0" x 6'8" 2'11 1/16" x 6' 7 1/16"
3'0" x 7'0" 2'11 1/16" x 6' 11 1/16"

Closers—when specified, the door can be shipped with a Sargent closer or prepared for use with an LCN concealed closer.

For more complete information, see the Securit Door insert in Sweet's Architectural File.

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SAVE | detailing time – building costs – maintenance expense

Keramet

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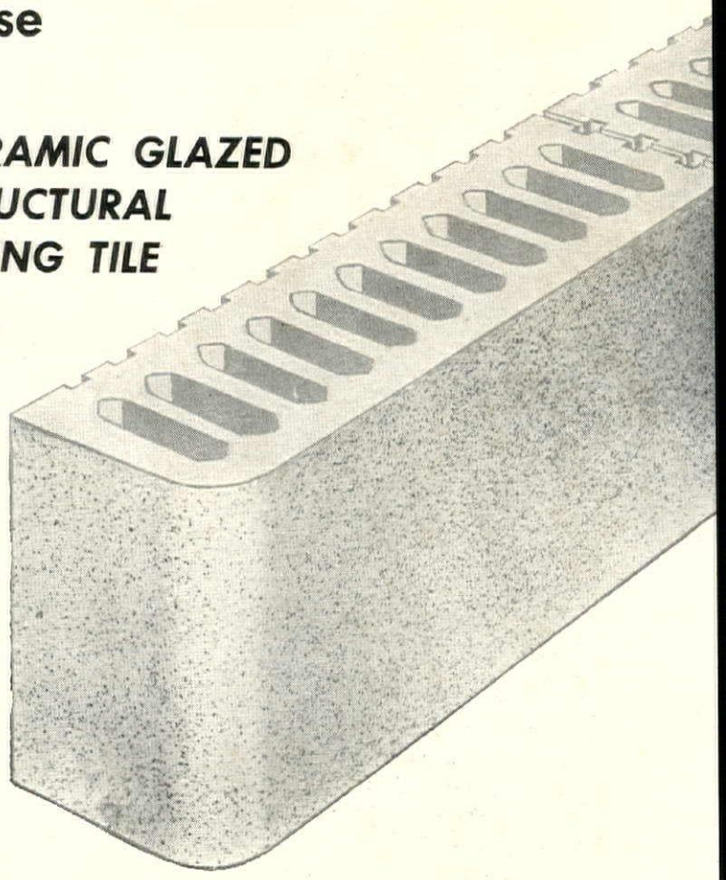

Particularly adaptable to school and hospital construction wherein *economical first cost* and *reduced maintenance* are major factors. Check these features:

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Vincent G. Kling
A.I.A. Architect

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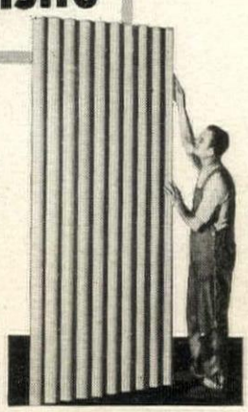

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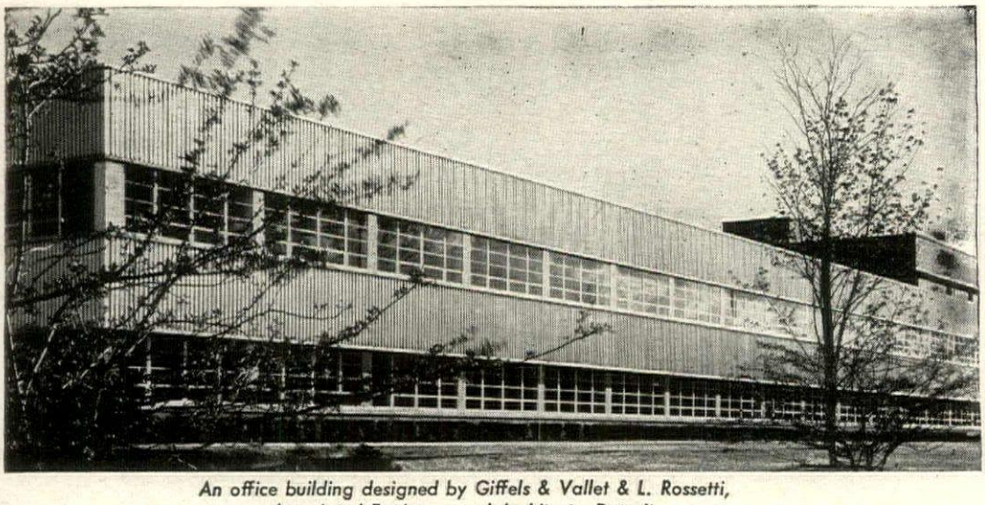
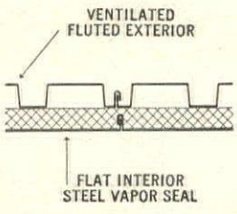


An office building designed by Giffels & Vallet & L. Rossetti, Associated Engineers and Architects, Detroit.

3 Good Technical Reasons For Specifying Robertson Q-Panels

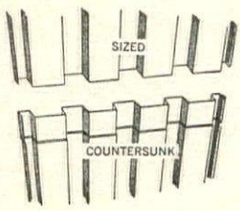
1

Continuous Sealed Joints The interlocking side lips on both the inner and outer surfaces of the panels are caulked to provide a continuous sealed joint. Thus, when the panels expand or contract, the joints do not separate but remain in contact with the caulking material. This efficient side joint effectively maintains the insulation qualities of the wall and prevents the infiltration of air, dirt and moisture.



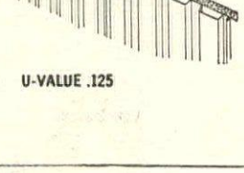
2

Flush Lap Joint Special conditions often make end-joints unavoidable. All standard Robertson Q-Panels are die-set and countersunk at the end lap, producing neat, almost invisible joints, with full insulation at that point. This feature eliminates the inefficient butt-joint with its unattractive through-wall flashing and consequent insulation loss.



3

Efficient Insulation The U-Value of an M-Type Q-Panel wall is .125 BTU per sq. ft. per hr. per °temp. diff., F. This was established by careful tests made at one of the nation's leading industrial research laboratories. Special attention was given to thermal conductivity at all critical points along the wall and the established U-Value is an average over a stretch of wall involving several side laps. Use the coupon to write for details.



H. H. Robertson Company

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Send me new Q-Panel book giving structural details.

NAME TITLE

FIRM

ADDRESS CITY

REAL ESTATE

Continued from p. 127

attractive when he calculates that $58,5 will have been paid in amortizing the mo gage over the five-year period. In a sen this of course represents an addition to t value of the equity, but probably not in t sense that he has in mind. It certainly do not represent cash that might be used in new venture—which is the kind of capit return he is looking for.

To improve the deal, the builder-invest will try to reduce his own cash stake by i creasing the loan. In view of the prese state of the appraisal science, this shou not be too difficult. Although the calculatio may be more involved, the result of his neg tiations will likely be something like thi If it is assumed that the property is wor roughly eight times gross income, a valu tion of $1,200,000 would be justified. It it assumed that the net income could be cap talized at, say, 6¾%, a valuation of arou $1,220,000 might be recognized.

On these findings, a lending institutio that had had good experience with th builder and needed to put money to wo would probably make him a loan of $800,00 If the institution found good loans scarce the time and had plenty of funds in th till, it might find a 6½% capitalization ra acceptable and hence justify a mortgage loa perhaps as high as $850,000. If it mad its own estimate of replacement cost—as probably would, to be thoroughly prudent- it might agree with the builder's $900,0 cost estimate and find that the very exis ence of the new project would have produce a land value in the range of $300,000 $350,000.

Taking the conservative position, we ma assume a willingness to make an $800,00 loan. The builder's investment therefor would be reduced to $200,000. Assumin again that the loan would be amortized ove 30 years at 4½%, the interest payment ove a five-year period would be $172,500 and th residual income $240,000, out of which th builder will expect to extract his origina $200,000 investment. He has also to kee in mind that in a five-year period he wi have to pay $70,900 toward amortizing th mortgage.

Enter depreciation

Just how good the proposition will now seem to the builder-investor depends on the wa he can set up a tax deduction for depreciation.

Three depreciation formulas are offered in the revised Internal Revenue Act: th *straight-line* method, the *declining-balance* method, the *sum-of-the-years'-digits* method (Other formulas are possible with the con currence of the Internal Revenue Service but since we do not know what IRS migh or might not concur with and since the mat ter is complicated enough as it is, we shal

k to the three published formulas.)
n any case, we may assume a depreciation base of $900,000 (the cost of the building) and an expected useful life of 40 years. ing the straight-line method this would e a deductible amount equal to 2½% each r of the original amount of the depretion base; using the declining-balance thod, an amount equal to 5% each year the undepreciated amount of the base; or, ng the sum-of-the-years'-digits, an amount ived by an ancient formula familiar to ountants and which only an accountant make absolutely clear. The accompanygraphs (p. 127) show how each of these mulas works on an annual basis and a nulative basis.

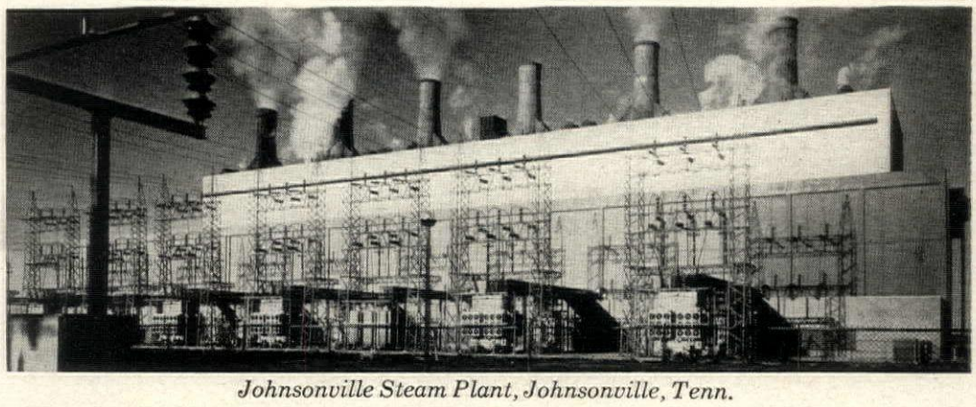
First, the builder would test the straight- method, which prior to the passage of revised code was practically the only one ilable. Over a five-year period, the total luction obtainable from this method would only $112,500. Subtracting this from the 0,000 accumulated net earnings (after ying interest), he would find himself with esidual $127,500 that is exposed to corpoe income taxes and—if he attempts to e it out of his building corporation—to rsonal income taxes also. Moreover, since would have to pay amortization of $70,900 ring the period, his actual recovery from depreciation allowance would be only 1,600 ($112,500 minus $70,900).

The straight-line method obviously does not er a satisfactory solution to the problem th the size of mortgage contemplated. The ilder might find it satisfactory if he could rease the mortgage so as to leave him th something less than $100,000 in the al; but the accomplishment of this might ain the appraisal process unless the income pectancy were considerably augmented.

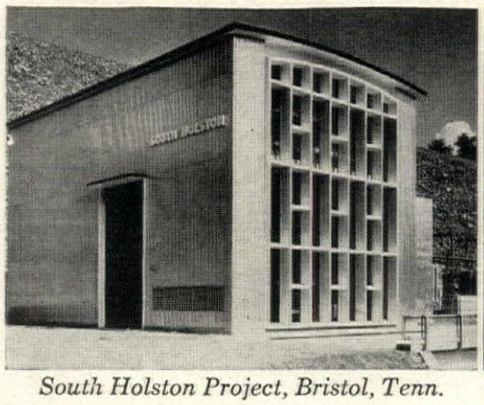
Consequently he turns to the declining- lance method for calculating his depreciaon deduction. This offers him a total deducon of $203,600 over five years, and hence uld permit him to make the $70,900 in ortization payments and to take out $132,- 0 in the form of a tax-free dividend. Only 6,400 (the difference between the $240,000 t earnings and the $203,600 depreciation owance) would be exposed to taxation. The al is looking better but could still be proved.

He now turns to the sum-of-the-years'- gits method. This he finds would give him total deduction of $208,500 over a five-year riod, or $4,900 more than the declining- lance formula, and would permit him a tax- ee capital dividend out of the depreciation owance (after paying amortization on the ortgage) of $137,600. He will also be able pay out a stock dividend on the remainder the income ($240,000 minus $208,500, or 1,500) which, after paying the present corrate income tax, would amount to $22,100.

continued on p. 194



Johnsonville Steam Plant, Johnsonville, Tenn.



South Holston Project, Bristol, Tenn.



Turbine and Generator Building, Watauga Dam, Elizabethton, Tenn.

Robertson Q-Panels helped bring both beauty and utility to TVA installations

In TVA installations, as in power stations everywhere, Robertson Q-Panel walls are popular because they are practical as well as beautiful. Beyond good looks, here are some very practical reasons for specifying Q-Panels: 1. Q-Panels are permanent, dry and noncombustible, yet may be demounted and re-erected elsewhere to keep pace with expansion programs. 2. Q-Panels are light in weight, thus reducing the cost of framing and foundations. 3. Q-Panels have high insulation value . . . superior to a 12″ masonry wall. 4. Q-Panels are quickly installed because they are hung, not piled up. An acre of wall has been hung in 3 days. For more good reasons for using Q-Panel construction, use the coupon below to write for literature.

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FIRM

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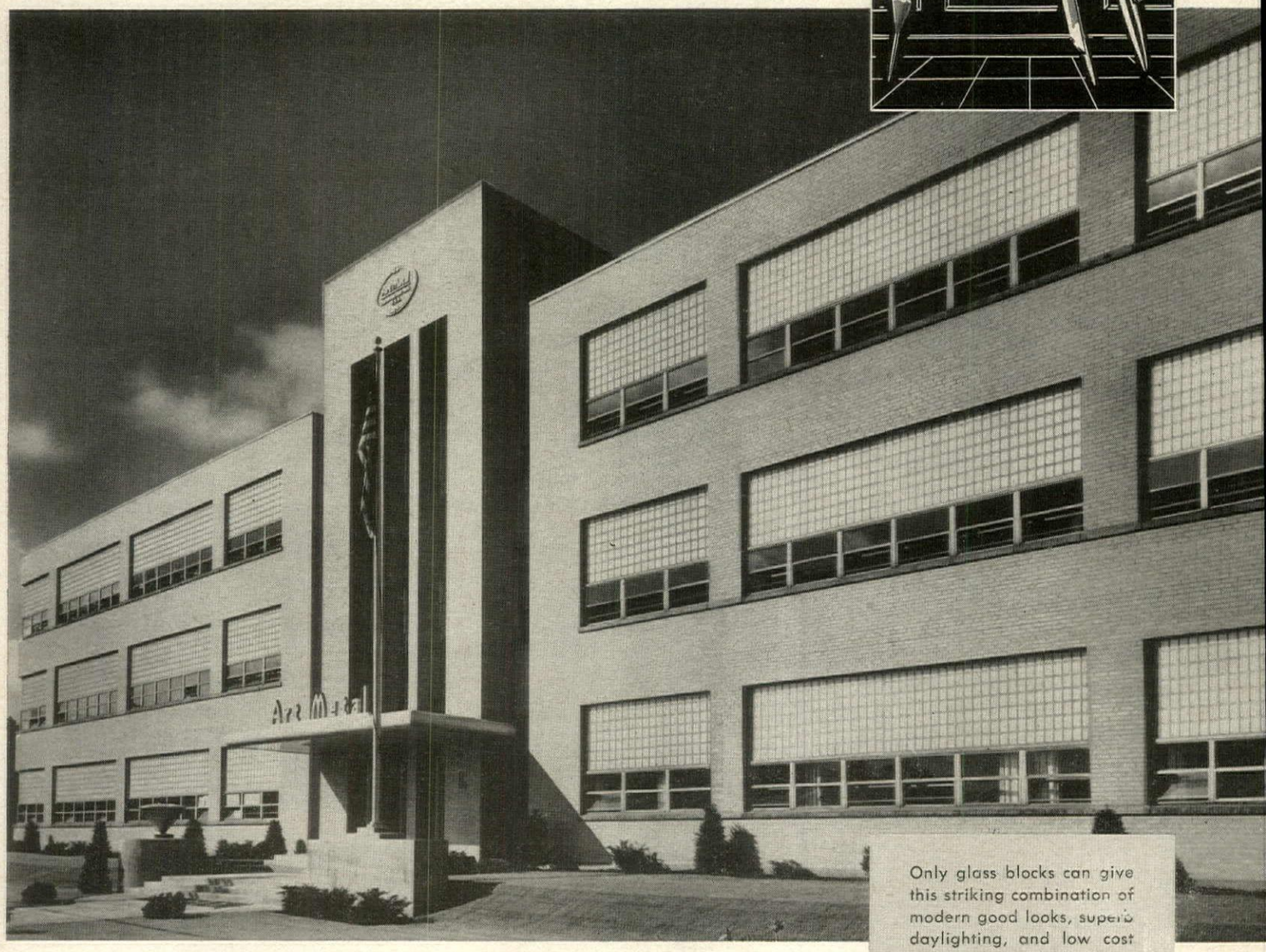
Today, as you know, PC Glass Blocks are radically different from the early blocks. PC Functional Glass Blocks are engineered *optical units* that give the architect a wonderful new light-controlling tool. And when sound design principles are followed, a panel of glass blocks has a delightful, pleasing texture.

The whole technology of glass-making has been up-graded. An increasing variety of patterns and sizes is being made available, until today many architects consider the glass block panels to be an important part of the *aesthetic* effect of the building. Imaginative design, daringly applied, has resulted in glass block panels that literally seem to float in air.

In matters of design, no two architects think alike (thank heaven!). But we think that the photograph on this page proves that glass blocks can look mighty attractive when properly used.





Only glass blocks can give this striking combination of modern good looks, superb daylighting, and low cost maintenance. The building is owned by Art Metal Construction Company, Jamestown, N. Y. Architects: Freeburg & Lindquist, A.I.A., Jamestown.

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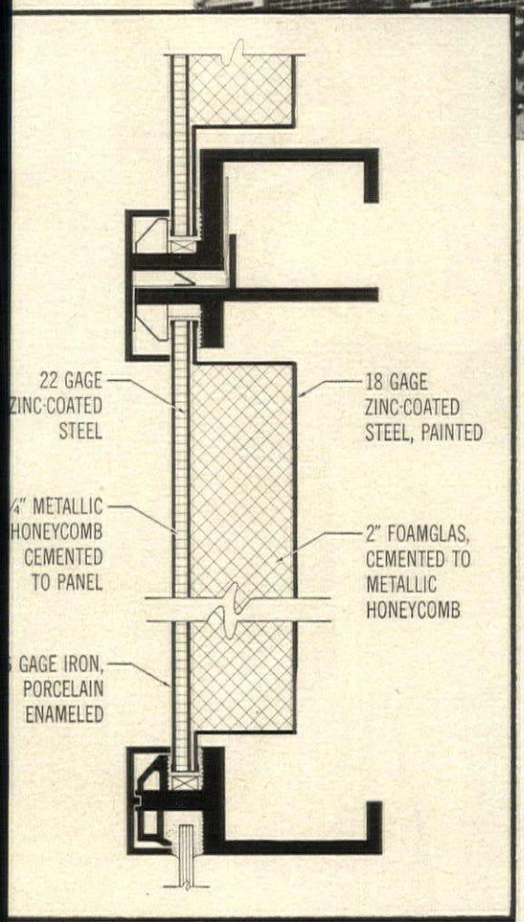

s-section of curtain panel

New office building with

Porcelain Enameled Curtain Walls

Ford Motor Company's new Central Staff building now under construction in Dearborn, Michigan, will have 90,000 square feet of porcelain enamel-faced curtain wall. This is one of the largest applications of porcelain enamel ever made on a single office building.

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Armco Enameling Iron, the "World's Standard," serves as the base for the porcelain enameled panel facing.

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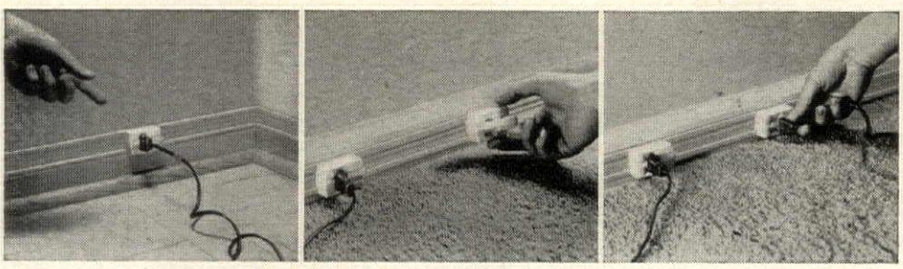

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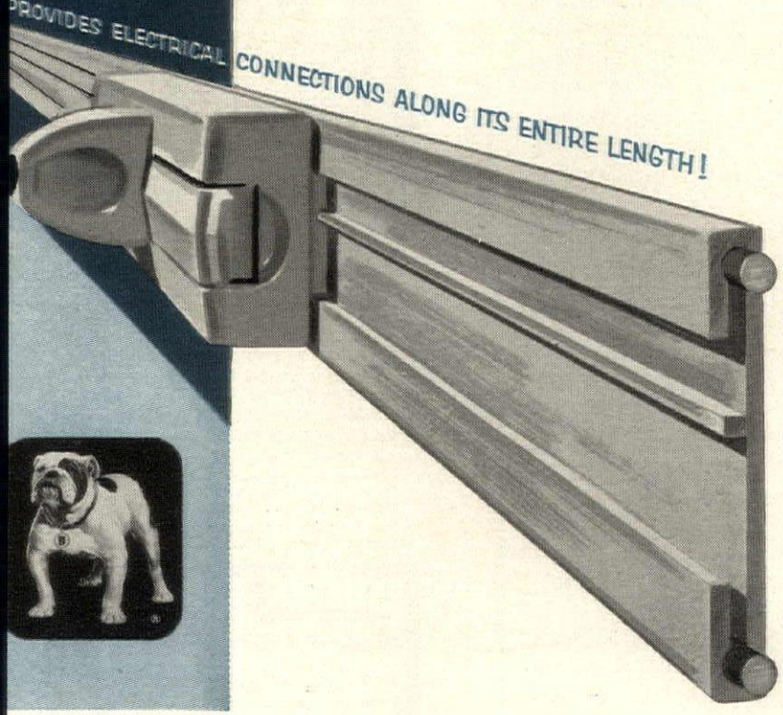

Give your clients electrical outlets they can move as they move furniture, change lighting arrangements or shift office layouts. Specify safe, new BullDog Electrostrip®—the modern electric outlet system that provides an outlet every inch along its length . . . *eliminates all outlet planning.*

Ideal for modernization or new construction, BullDog Electrostrip is now being used in hotels, shops, stores, institutions and homes. Outlets can be moved at no expense. Outlets added at only the cost of receptacle plugs. And there's no more inconvenience from fixed wall outlets or hazards from unsafe, unsightly extension cords.

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• See Sweet's Files or write for further information.

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REAL ESTATE

Continued from p. 190

The builder-investor still has not completely recaptured his capital (according to his way of figuring) within a five-year period. He would, however, be able to do so within another two years under both the declining-balance and sum-of-the-years'-digits formulas, and, during the same time, pay fairly substantial stock dividends. This, he may decide, is satisfactory enough. Or he may decide to make a play for the $850,000 mortgage. Probably he would, because this difference in the mortgage amount would make one or two years' difference in the time in which he would have his initial investment available for other purposes.

Effects on investment attitudes

This example shows that the innovations in calculating tax deductions for depreciation may have some effect on investment motivations. In this case, the man with the risk capital might be willing to as much as double the outlay he would have felt justified in making under the limited provisions of the old tax code. Or, because of the more advantageous provisions now available, he might be able to work out a deal that would not have gone ahead at all under the old arrangements.

Thus, the new depreciation formulas stimulate activity and somewhat encourage equity investment. They do not, however, change any of the fundamental characteristics of equity investment in income-producing realty or alter the underlying attitude of the knowledgeable investors toward it. Moreover, the advantages of the new formulas are greatest in projects that have earnings high enough in relation to the depreciation base as to leave no question as to the ability of the project to earn the accelerated allowances. They offer less help to the type of project where the income, though holding the prospect of considerable stability over a long period, is too low to earn depreciation on any but a straight-line basis.

The new provisions may also encourage the initial investors to retain ownership of the property during the early years when both the possibility of high returns is great and the need for managerial skill is especially urgent. This could prove to be a considerable advantage from the point of view of obtaining soundly conceived, well-established projects. At the same time, these new depreciation devices present the owner with some very real problems as to what is best to do after his capital has been recaptured and what inducements may motivate a subsequent purchaser of the property.

Decisions in these matters will be much influenced by the relationships between the tax-depreciation pattern and the loan pattern. Since any consideration of real estate investment must take these relationships into account, the discussion will next month turn in this direction.

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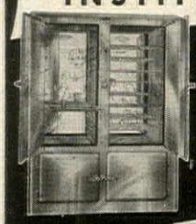

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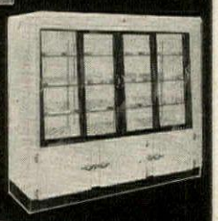
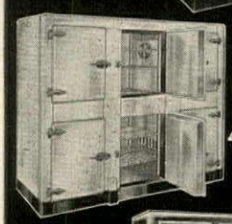
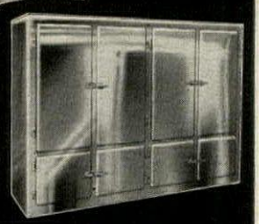


DAIRY-DELICATESSEN CASES
5 Models



STORAGE FREEZERS
3 Models
4, 6 & 8 Doors



REACH-IN CABINETS
51 Models
20 to 90 Cu. Ft.



DRY BEVERAGE COOLERS
7 Models
Remote & Self-contained

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★ Tubular Electric-Welded Steel Frame
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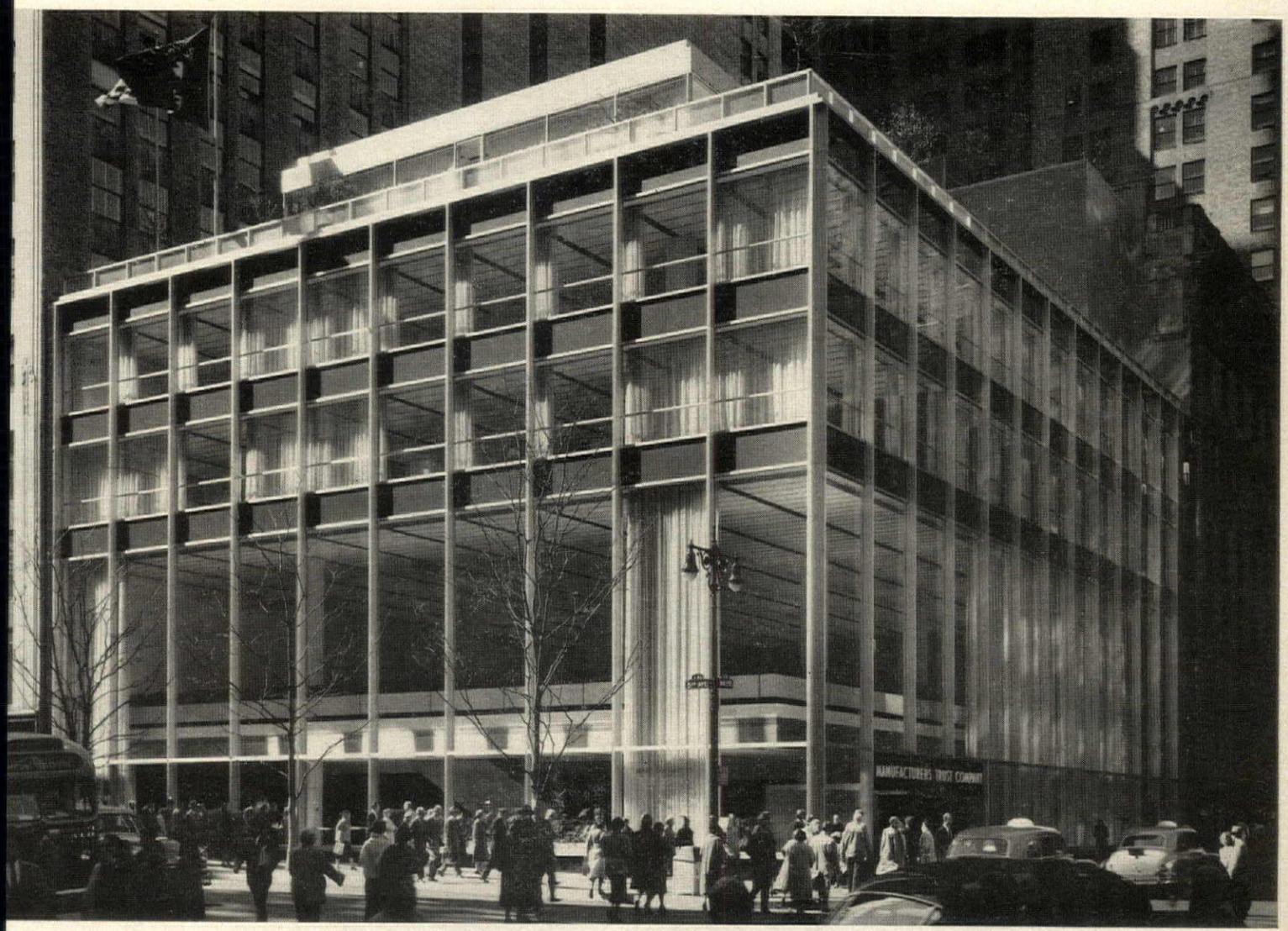
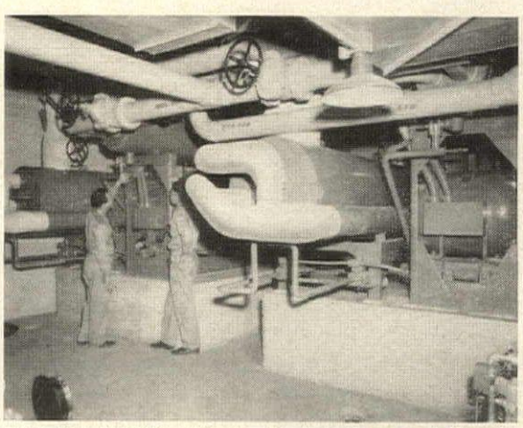


GLASS-SHEATHED Manufacturers Trust Building in New York is fully air conditioned by a Worthington central station system.

New "glass bank" air conditioned by Worthington



TWO 150-TON Worthington packaged water chillers in basement handle entire cooling for new bank building.

Polished aluminum and the largest panes of glass ever made in this country highlight this striking new building housing the Fifth Avenue office of Manufacturers Trust Company.

This vast expanse of glass posed a tough air conditioning problem. The job is taken in stride, however, by a modern Worthington central station system consisting of two 150-ton packaged water chillers. These chillers circulate water to a central air distribution system; from there, cool, filtered, dehumidified air is sent throughout the building.

For over half a century, Worthington air conditioning installations have been serving business and industry. Today, the complete Worthington line is ready to meet any assignment, large or small. Get in touch with your nearest Worthington district office or write to Worthington Corporation, Section A.5.20.FO, Harrison, N.J. A.5.20

WORTHINGTON

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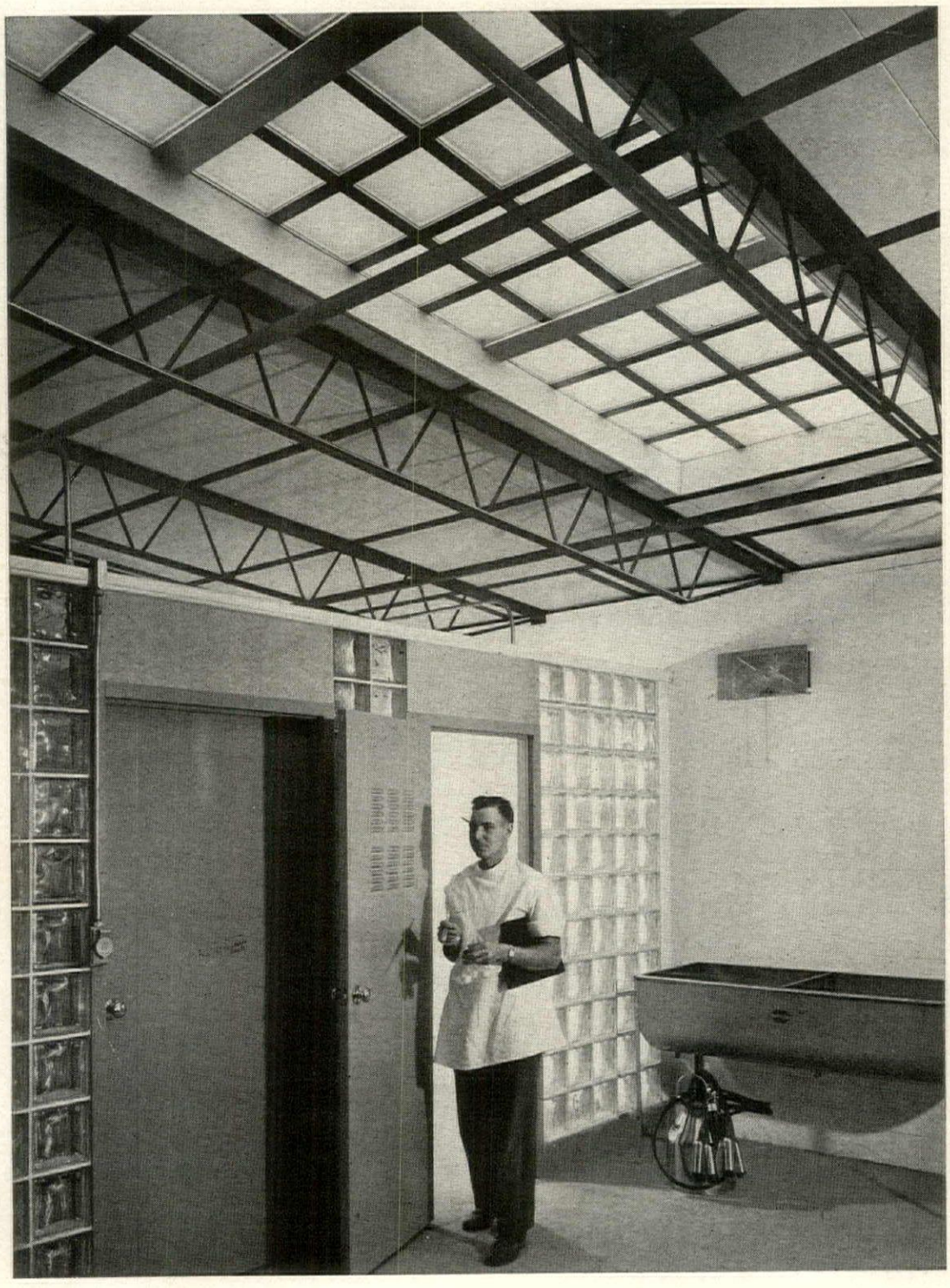
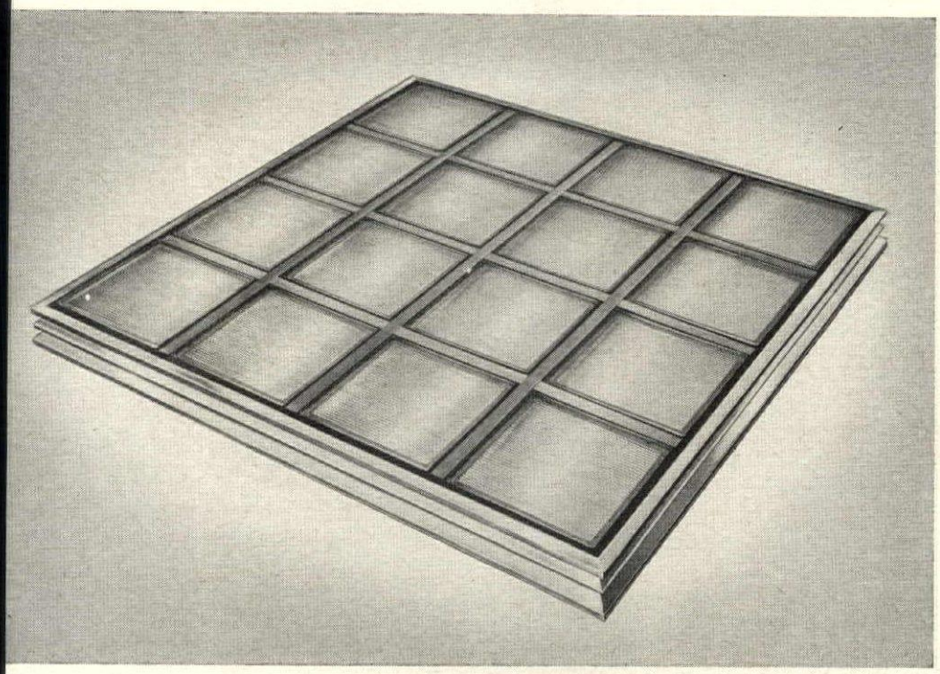
Glass Panels bring cool daylight in through the roof...



Owens-Illinois Toplite installed in the North-Central Substation of the Ohio Agricultural Experiment Station near Castalia, Ohio. Acting as a daylighting team, the Toplite Panels and glass block provide sufficient daylight during normal days without need for artificial lighting.

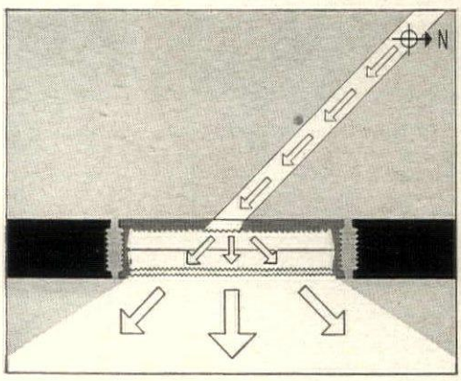
Toplite Panels may be installed in continuous strip, pattern, or in individual panels. Use a Toplite Panel as you do a lighting fixture. They permit daylighting of all building areas regardless of location or distance from exterior walls.



Toplite Roof Panels are factory-fabricated ...ready to install

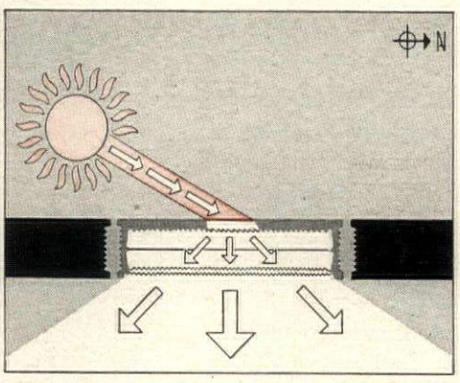
They are shipped in individual crates marked to show correct orientation and directional positioning; for speed and ease in installation. Panels arrive on job site ready to install. They are set on prepared curbs and anchored ready for flashing by the roofer.

Why Owens-Illinois TOPLITE meets the demand for good daylighting



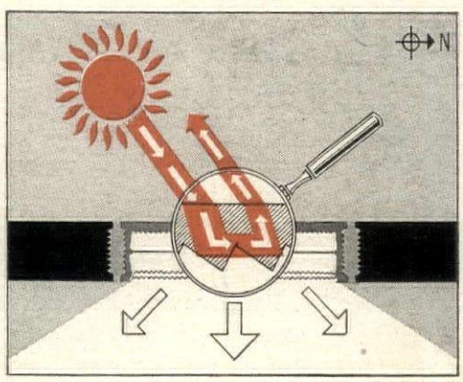
Transmits north light

Maximum transmission of north light is a desirable quality in toplighting because of its uniformity and freedom from glare and solar heat. Note how the prism structure of Toplite affords efficient transmission of north light.



Accepts winter sun

Since low winter sun is comparatively weak in relation to high summer sun as far as glare and solar heat are concerned, maximum transmission is again desirable. This illustration shows how Toplite accepts and transmits winter sunlight.



Rejects summer sun

Other materials which transmit north light and low winter sun also transmit high percentages of light during the hot, summer months. Toplite rejects direct light and heat from hot, summer sun, but transmits much of the cool, north light.

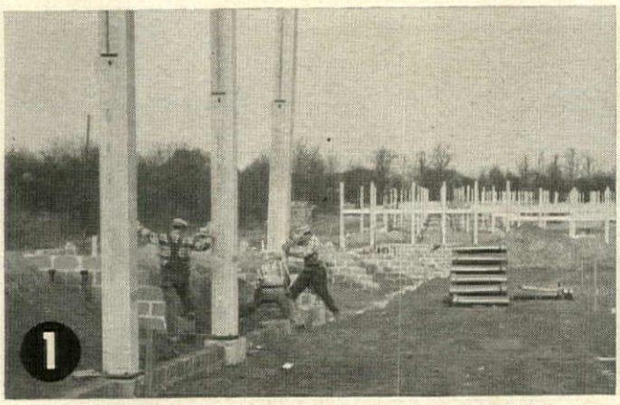


Write for free booklet on Toplite Roof Panels

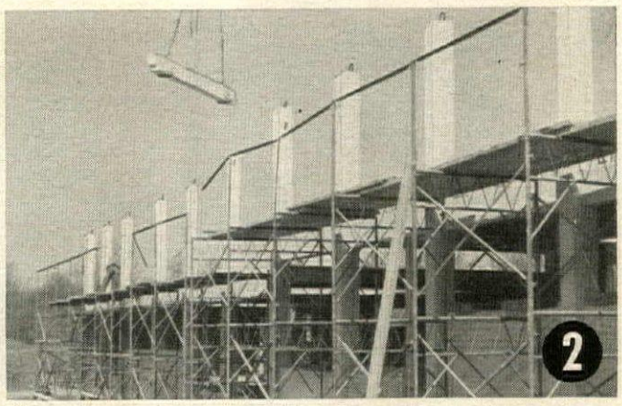
The complete story of this great new advance in efficient utilization of free daylight is available in this new bulletin. For your free copy write today: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AF-4, Toledo 1, Ohio.

TOPLITE ROOF PANELS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO



First step was to erect the two-story precast concrete columns.



Next, the second floor spandrel beams were lowered into position.

Precast Concrete Units Cut Erection Time and Cost in Philadelphia Housing Project

Use of precast concrete columns, floors and roof decks for the 52 two-story buildings of the Liddonfield Housing Project in Philadelphia made possible fast construction at low cost per sq. ft. The 20 ft. wide buildings, ranging in length from 150 to nearly 200 ft., went up at a rate of two a week. Photos show the construction sequence employed.

Built for the Philadelphia Housing Authority, the 500,000 sq. ft. low-rent housing project consists of 412 firesafe dwelling units plus central-heating, community and management buildings. Liddonfield Architects of Philadelphia designed the project. Stofflet & Tillotson was the general contractor.

Fast, economical construction is possible in any structure designed to utilize precast concrete units. It can be built to conform with applicable building codes and will offer all the advantages of conventional concrete construction for frames, floors and walls.

For additional information write for free literature. Distribution is limited to the U. S. and Canada.

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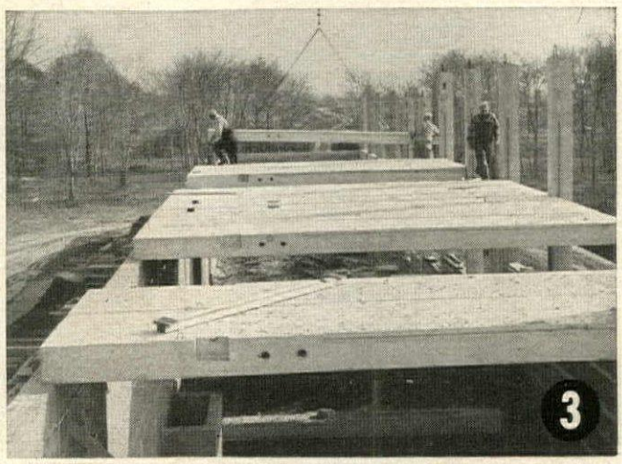
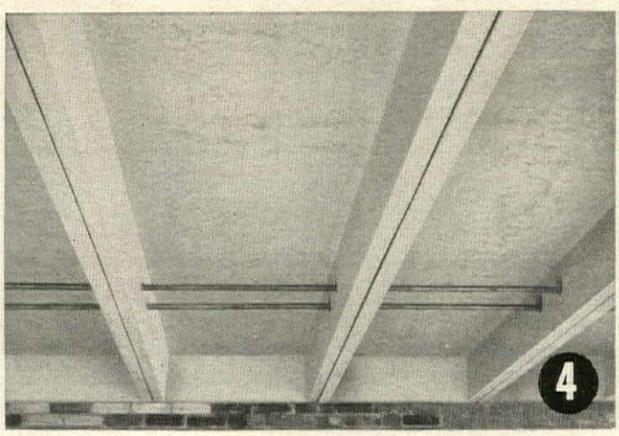


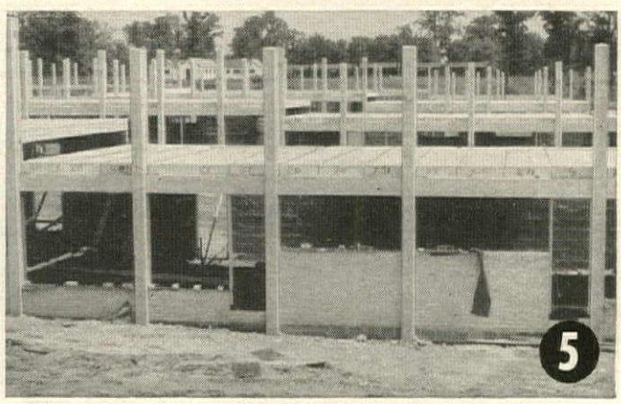
After rear walls were brought to second floor elevation, 3-ft. wide precast concrete floor channels with 10-in. legs were placed across the entire width of the buildings. Below is a view of the underside of the floor showing how conduits pass through sleeves in the legs.

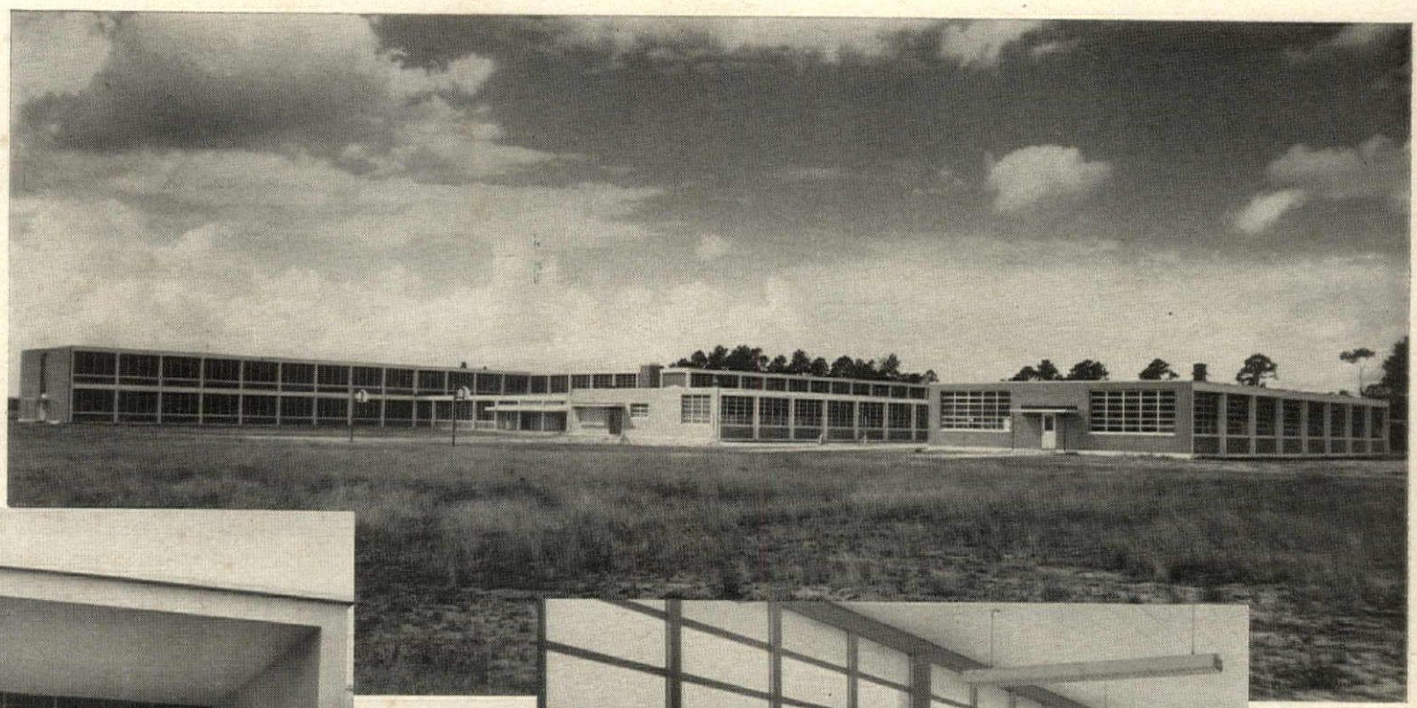


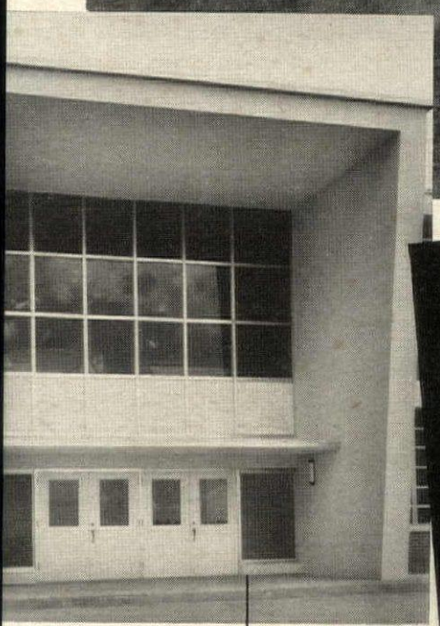
General view before roof spandrel beams and roof slabs were erected.

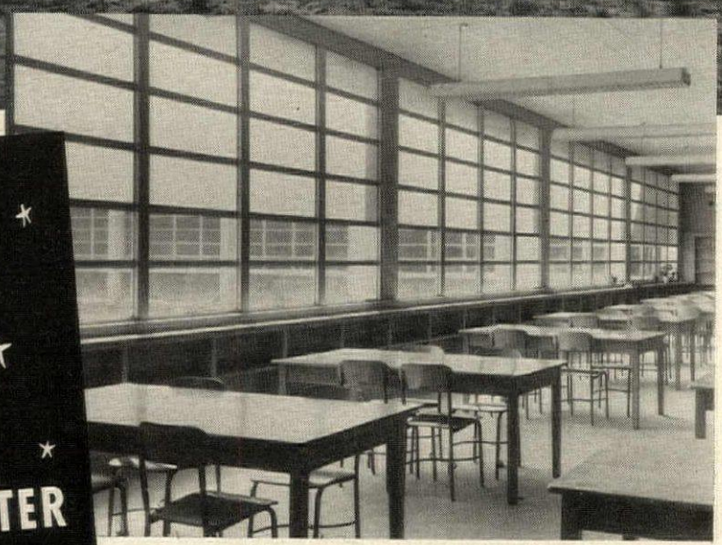


Finished building. Precast roof slabs project 2 ft. to form sunshade.









BUILT TO BE BRIGHTER

Architect: Bernard W. Close, Jacksonville, Fla.

Contractor: East Coast Construction Co.

Glazing: Pittsburgh Plate Glass Co.

11,000 Square Feet of Coolite Glass Provide Plenty of Better Quality Daylighting For Florida School

Architects of the Paxon Senior High School were determined to make the most of that fabulous Florida sunshine; so they used Mississippi glass lavishly throughout the structure. In this outstanding example of modern school design, Coolite, Heat Absorbing, Glare Reducing glass, floods rooms with great quantities of natural illumination from which the harmful qualities of "raw sunlight" have been removed. This glare-reduced glass cuts eye-fatiguing harshness and sharp contrasts . . . makes seeing tasks easier, more comfortable. And Coolite's famous ability to absorb excess solar heat permits such extensive glazing, yet helps keep interiors comfortably cool.

Translucent, light diffusing glass makes the classrooms seem larger, friendlier. Students feel better, work better when they see better, in this modern environment.

Other Mississippi patterns used in the Paxon structure include Structural Corrugated glass for its decorative beauty; Polished Misco Wire Glass for positive protection plus beauty; and attractive Factrolite for its light dispersing value.

The practicality and beauty of Mississippi glass—available in an extremely wide range of patterns and surface finishes—have recommended them to leading architects everywhere. Specify Mississippi when you build or remodel. There is a pattern for every school daylighting need in line with every school building budget.



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EXCERPTS

Continued from p. 147

acreage has grown from 14,000 to 27
Park facilities are five times what they
in 1934. Parkways' mileage is 95.4
against 21.7. The best and most dram
evidence is along the waterfront. Here
new marginal parkways, parks, dr
beaches and housing, many of them on
claimed and filled land. The Chicago
as built in the busy Burnham days for
World's Fair, as improved from time to
to meet traffic challenges, and as now in
ously redesigned in three stages, is all
well. It represents applied civic imagin
and conspicuous front-window progres
single great plaza giving on a magnif
lake. Fine as it is in being and in pros
the whole Loop is insignificant in the
of the almost unbroken miles of our w
front reclamation here in New York. I
no wish to precipitate a blowing match
the Windy City. The only moral is tha
are just too damn sophisticated, hypocri
and ashamed of vaunting ourselves to
credit where credit is due.

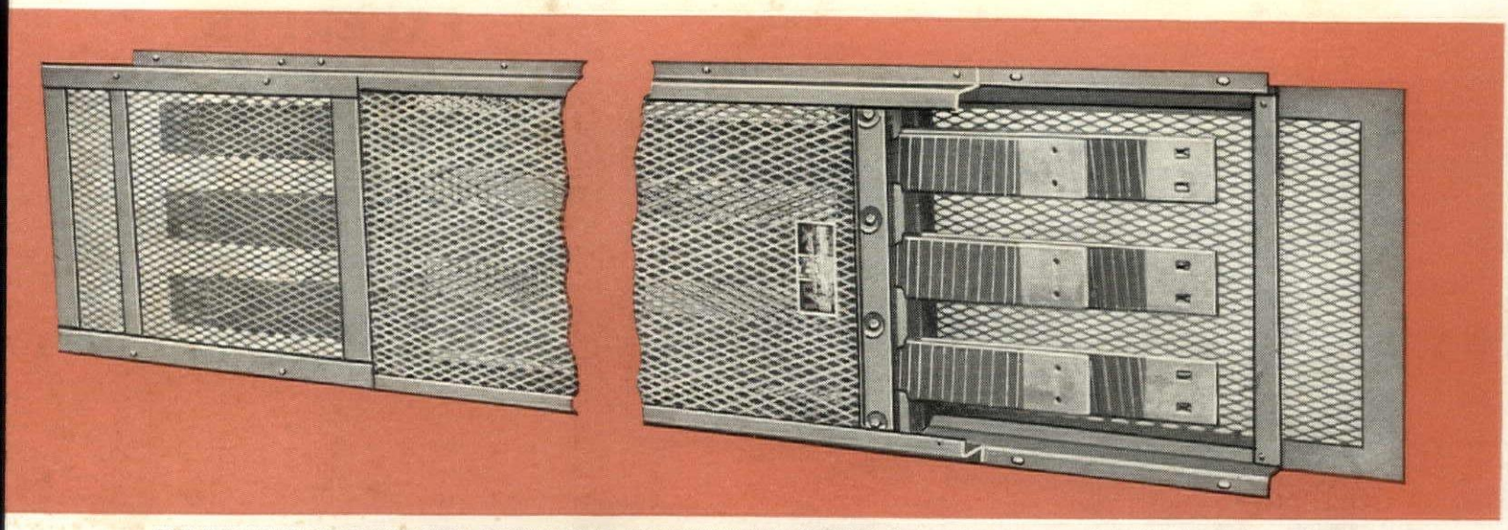
PROOF IV: ARTERIAL IMPROVEMENTS. G
ine expressways are becoming the fr
work for a new city—not of exped
through travel but fixing the avenue
growth and the preferred routes of buil
and high values. No other large city is
dertaking anything like our program
scope, in engineering standards, in cost.

PROOF V: INTEGRATED NEW NEIGHBORH
Throughout the city we are creating e
new integrated neighborhoods. The pr
is slow. It appears haphazard, form
even freakish to the uninitiated, to the
crackers, smart alecks and sidewalk sup
tendents, but in the end these seemi
isolated improvements take shape,
together, form a new pattern and final
complete picture.

PROOF VI: ARTS AND AMUSEMENTS.
York has become the undisputed the
opera and music, and sports center of
nation. New York has long sought an
quate modern convention hall in a ce
location. It is now rising from deep fou
tions and in another year will be functio
The difficulties in the way have been nu
ous and formidable. The fact that we
overcome them should be another proof o
toughness and determination to keep a
of the procession. Cities which don't ex
to magnetize visitors don't build coliseu

PROOF VII: INDUSTRY, MANAGEMENT. W
half a dozen big corporations threate
move into the suburbs, citing conges
taxes and what-not as the reason, and
ing the beauties of the semiopen spaces
mourners, crepe hangers and regional
ners fill the air and press with dismal

continued on p.



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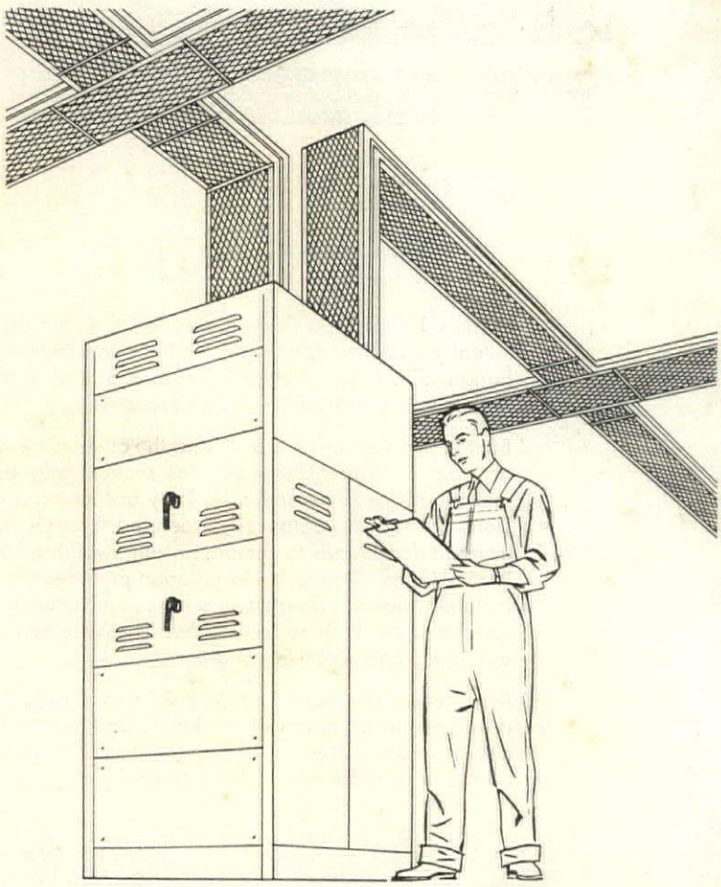
BULLDOG LO-X BUS DUCT WITH LIGHTWEIGHT

Aluminum Bus Bars

costs less to buy—
less to install



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ur clients benefit two ways when you install llDog Lo-X® Bus Duct with lightweight minum bus bars: (1) They save money. They get a more flexible, more efficient der system.

e weight saved by using aluminum cuts handling and installation costs. This, plus lower first cost, are prime reasons for the widespread use of BullDog aluminum bus duct in plants everywhere. What's more, the weight saved by using aluminum eases the strain on building superstructures and other supporting members.

Dependable BullDog Lo-X Bus Duct is both efficient and flexible—can be easily relocated to fit any plant rearrangement. Let your BullDog Field Engineer or Qualified Distributor tell you about the *many* advanced BullDog products. Or, write: BullDog Electric Products Company, Detroit 32, Michigan. © BEPCO

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Designer: H. J. Brunnier, Structural Engr.
San Francisco, Calif.

Genl. Contractor: Barrett & Hilp
San Francisco, Calif.

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Byrne Canopy Type Doors have, for many years, been consistently specified by major air lines for their maintenance hangars. This Type K door is installed at the United Air Lines Maintenance Base at South San Francisco.

Built in two sections, one 103′ and the other 77′ wide, the door provides a closure 180′ x 50′. The sections may be operated individually or simultaneously. They are motor operated, upward-acting, with balanced suspension through cables which transmit dead loads to compact counterweights. Like all other Byrne Hangar Doors, this installation provides the features of fast operation . . . snug weathering . . . minimum maintenance . . . savings in floor space . . . and complete safety under all operating and weather conditions.

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Dept. f-9

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EXCERPTS

Continued from p. 200

and ambitious country realtors cheer for dear old Westchester. For every management outfit that moves, half a dozen others build themselves new and better multistory modern midtown buildings. Of these who actually move, most soon wish they hadn't.

PROOF VIII: LEARNING, INFORMATION. New York is today the greatest urban educational center in the country, measured by its facilities for higher and adult education. Practically all of these facilities are being reconstructed and expanded on an astonishing scale. New York has more avenues and means of communication than any other big city anywhere. There seems no limit to the competition to convey news, educate, entertain, divert, argue, philosophize. The simple fact is that even Washington at the height of Congress, and Hollywood at its busiest and most confused, do not meet this metropolitan competition in the field of communications—another proof of New York vitality.

PROOF IX: MEDICAL CENTERS. New York has long had its great hospitals. Now it has five medical centers in its bounds. In this and many other humanitarian fields New York is a leader.

PROOF X: THE NEW YORKER. Finally, we come to the New Yorkers themselves—the men and women who make the town what it is. They come from all over—from the great hinterland and from abroad. Many are natives, but most are not. It is the metropolitan New Yorker who makes New York.

CONCLUSION AND CLINCHER. Here in New York we are too captious, critical, self-deprecating and modest about our accomplishments. Let us without boast or brag occasionally celebrate them lest the heathen rejoice and the outlander claim we have nothing to be proud of.

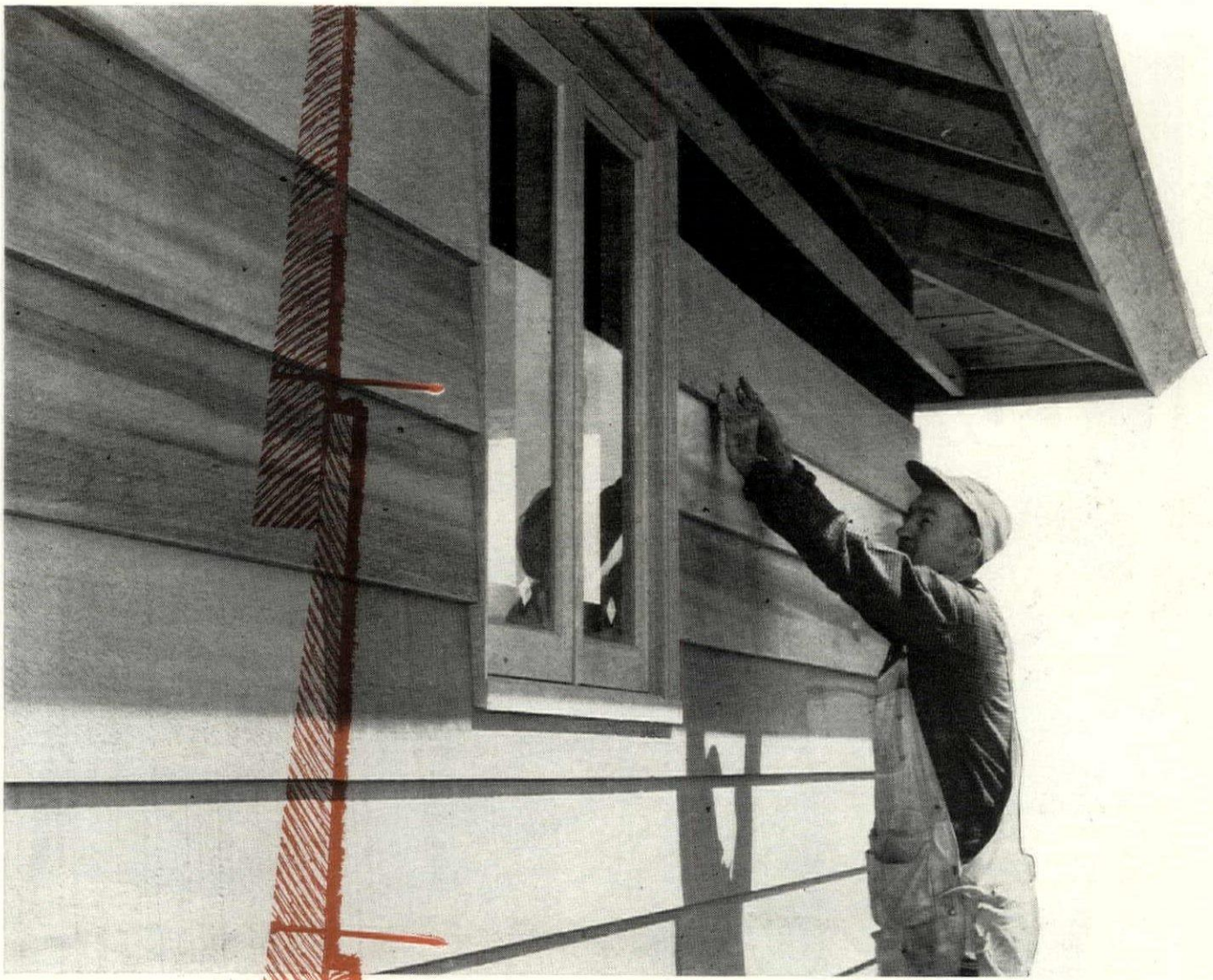
Has New York a future? I'll say it has!

Building's boo-boos

A collection of unusual design details which prove that architects and engineers are human—excerpts from an article by Arthur W. Baum in The Saturday Evening Post

The classic story of the basement-built boat that was too large to get out is no myth. A new airplane-assembly plant in the South completed its first plane before discovering that the exit doors were smaller than the airplane. Someone designed a factory truck

continued on p. 206



RECOMMENDED APPLICATION OF BEVEL SIDING

Use rust-resisting casing nails, not less than 6d for bevel and 8d for bungalow. Nails should be located at each stud above lap as shown in diagram. Minimum headlap (FHA) should be 1″ for 4″ and 6″ siding, 1¼″ for widths over 6″.

This nailing procedure is recommended to prevent any possibility of cupping or splitting. Tip of siding is left "floating free" to allow for normal dimensional changes. Siding nails should be set and puttied. (Note: If necessary, to prevent splitting near ends of pieces, holes should be prebored through the siding for the nails.)

USE WEST COAST LUMBER FOR DISTINCTIVE SIDING

Siding of versatile West Coast lumber, with its natural pattern lines and flexibility of use, offers the widest variety of interest-arousing treatments. Wood performs better, too... for lumber is durable, has high insulation value, and is easy to use, regardless of building style or plan.

Choose from these popular West Coast lumber species... Douglas Fir, West Coast Hemlock, Western Red Cedar and Sitka Spruce.

whatever the job, consider WOOD FIRST!

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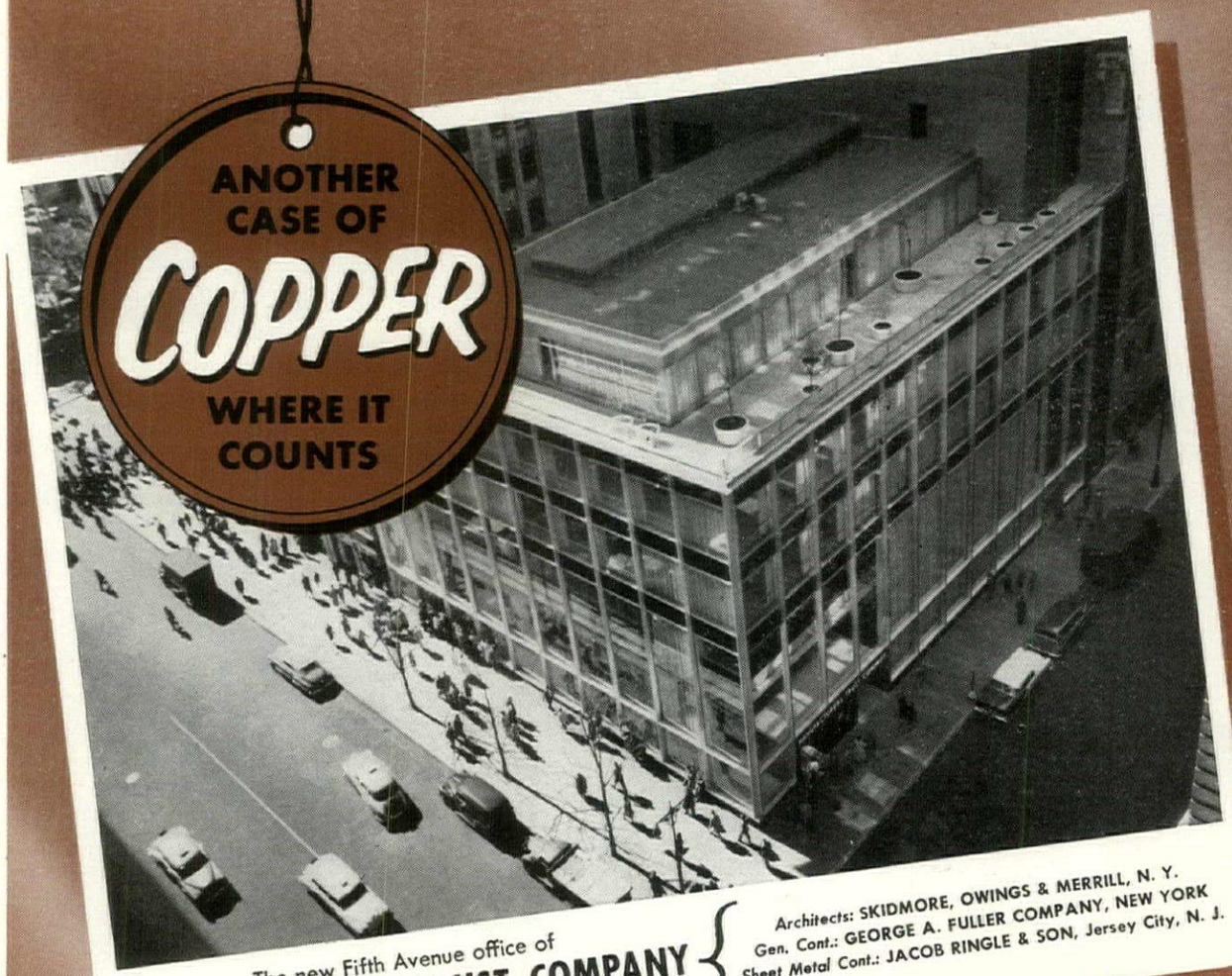
ANOTHER CASE OF

COPPER

WHERE IT COUNTS

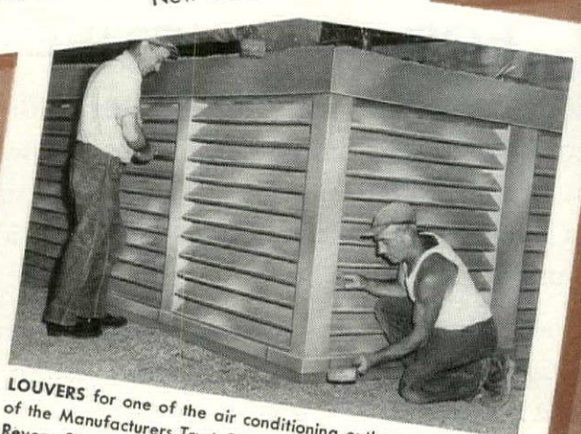


The new Fifth Avenue office of

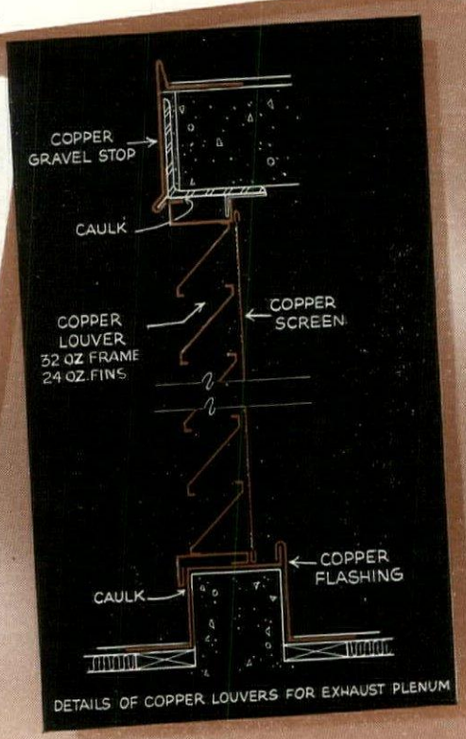
MANUFACTURERS TRUST COMPANY

New York, N. Y.

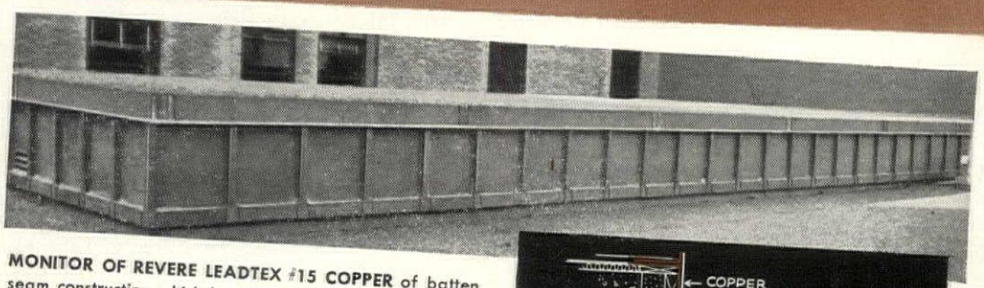
Architects: SKIDMORE, OWINGS & MERRILL, N. Y.
Gen. Cont.: GEORGE A. FULLER COMPANY, NEW YORK
Sheet Metal Cont.: JACOB RINGLE & SON, Jersey City, N. J.



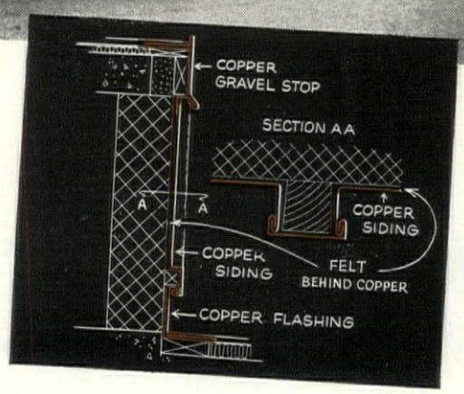
LOUVERS for one of the air conditioning outlets atop the roof of the Manufacturers Trust Company being finished off. 32 oz. Revere Sheet Copper was used for the frame and 24 oz. for the fins. Detail shown at right.



DETAILS OF COPPER LOUVERS FOR EXHAUST PLENUM



MONITOR OF REVERE LEADTEX #15 COPPER of batten seam construction which houses the air conditioning ducts in the Fifth Avenue office of Manufacturers Trust Company. Of enduring, "ageless" copper, the centuries-tested metal, it will not rust, rot or deteriorate, seals against weather damage. One of Revere's Technical Advisors worked with the architects in the design of this monitor. Detail at right.



● In describing this drastic departure in banking institution design, Horace C. Flanigan, President of Manufacturers Trust Company, said, "The architecture of this bank, departing from the classic design of the past, uses to advantage the latest in form, construction and materials."

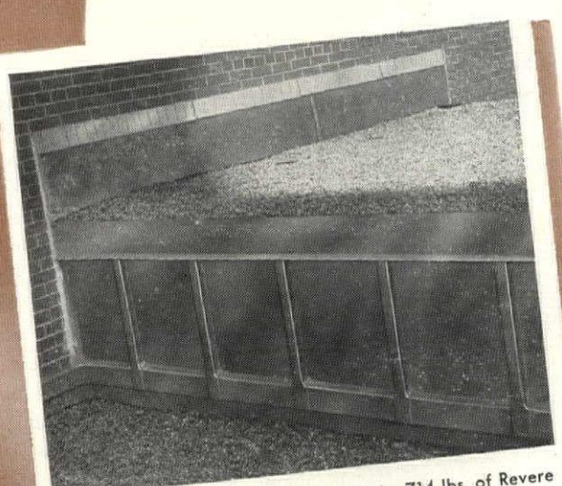
Among those materials is copper, not only man's oldest metal but in modern designs, such as this, man's newest metal, too. From its use on the 6-ton decorative screen of copper, nickel and brass to the flashing and monitor on the roof, the "ageless" metal copper stands ready to serve through the years without rotting, rusting or deteriorating.

In order to blend more perfectly with the off-white glazed brick used on the exterior of this great building, the architects specified Revere Leadtex #15 Sheet Copper. Revere Plain Sheet Copper was also used where color was unimportant. Altogether some 20,000 lbs. of copper were used.

One of the advantages architects will find in working with an organization such as Revere is a wealth of experience that can be a great help to them in many ways. In this particular instance one of Revere's Technical Advisors had the good fortune to be able to work closely with the architects in the design of the monitor which you see in the photograph at the top of this page. The architects and contractors were well pleased with the design which resulted from the Revere man's suggestions.

Why don't you take advantage of Revere's more than 153 years of experience in copper and its alloys? Also, we believe you'll find it worth your while to find out about the many money-saving advantages of Revere Keystone Thru-Wall Flashing.*

*Patented



AT TOP OF PHOTO YOU SEE part of the 714 lbs. of Revere Keystone Thru-Wall, 3-Way Flashing used where monitor joins main wall of building. Weather is kept in its place (outside) with enduring Revere Copper Flashing on the job.

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EXCERPTS

Continued from p. 202

bay into which loaded trucks passed nicely, but when the cargo was unloaded and the trucks rose on their springs they could not get out again. The company also once planned an understreet crossing for a pipe line that turned out to be 18″ above the street level.

Some of the big boo-boos of the two professions have been hair-raising. A traveling crane was built into a steel-plant building in the Midwest for the purpose of carrying 50-ton ladles of molten metal to the end of the building, where the ladles were to be deposited on flatcars. The flatcars were then to rush the hot metal to the next operation elsewhere in the plant. On opening day the crane carrying its initial ladle sped the length of the building toward the first waiting flatcar. Unhappily, the crane missed connections by 10′. It was impossible to reach the flatcar. The end of the building had to be torn out and rebuilt.

Although dozens of people normally check building steel before it is fabricated for a job, the steel columns for a large school managed somehow to turn up 3′ short, and a nationally known architect once designed a school 4′ longer than the city block on which it was supposed to fit. The error was unearthed only after contracts had been let and staking out had begun.

An engineer once solved a compelling problem of ventilation where gasoline fumes underground were to be dispersed. A dozen inspectors had failed to find out why the system did not work—a huge fan was running backward. A similar misperformance in a giant steam-pressure vessel was uncovered by dismantling the vessel. A workman had left a pair of overalls, a stool and a paint bucket inside.

It is unthinkable to picture a laboratory without Bunsen burners, yet a large one was completed before anyone discovered that no facilities had been provided for gas. And possibly the most humiliating of all cases was unearthed on the proud day of dedication of a new post office. Someone had a reasonable impulse to mail a letter, only to find that there was no mail slots anywhere in the building.

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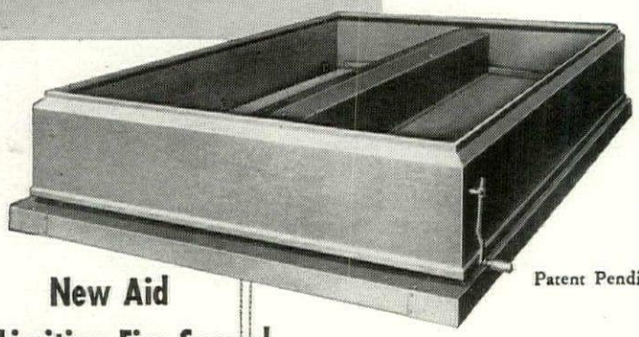
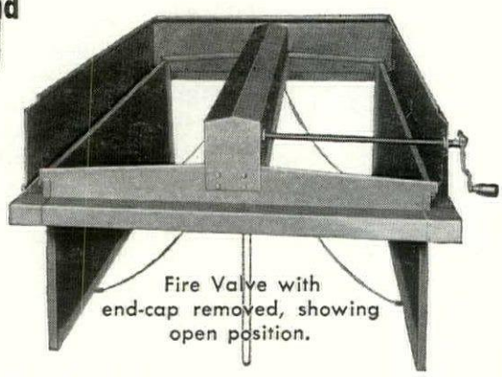


Patent Pending

New Aid for Limiting Fire Spread ... opens in seconds



Fire Valve with end-cap removed, showing open position.

Meeting demands of industry, architects and builders, fire prevention and insurance authorities, the Fire Valve provides unobstructed opening whenever under-roof temperature reaches a predetermined point. Each unit supplies 46 square feet of free area opening when the two dampers drop, released by a fusible link device. Can also be opened by emergency pull chain. Units are only 21 inches high. Permits fighting of fire from roof. Fire Valve serves as extra or emergency ventilator when needed in good weather. It's weatherproof when closed and can be insulated to reduce heat loss. Write for Bulletin 350-O.

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POWER PLANT EQUIPMENT • PROCESS INDUSTRY CONTROLS

Mass transit vs. the auto —a revolution in land economy

Excerpts from an article in The Appraisal Journal *by Frank C. Balfour of the California Division of Highways*

It has been proposed that extensive programs of publicity will resell the idea of mass transportation to the motor traveling public.* The historical background clearly indicates that mass transportation is not a solution to our traffic ills, and conscientious research does not indicate that any form of mass transportation would retain property values in a declining central business area.

Any efforts to perpetuate a declining mode of transportation are not only doomed to failure, but by expending public monies for antiquated solutions will create an economic loss to the community in excess of that which might accrue by taking no action whatsoever.

The customary recurring argument by mass transportation proponents is that the private automobile is the most uneconomical method of transportation that can be devised. They maintain that to consider its

continued on p. 208

*See excerpts from address by Edson L. Tennyson (AF, Oct. '54)—ED.



Adventures in Architecture start with **Stylon** *Tile*

Departures in design *begin* with Stylon Ceramic Tile — and often end, excitingly, in new renderings of color, line, and space.

For Stylon Tile, alone among ceramics, offers the architect a vastly *flexible* and *versatile* new building tool.

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And *these* are vital, modern colors, chosen by *architects* for today's interiors.

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EXCERPTS

Continued from p. 206

use in comparison to mass transportation, with each operating unit carrying 50 to 100 people, is ridiculous. The modern citizen is not in agreement with this idea and it is obvious that so long as he can physically operate and afford an automobile, he will continue to use it in preference to mass transportation.

The central business district landowner wants all passenger-carrying vehicles to be forced to pass through the central business district and then have all of the taxpayers supply means of storing the vehicles while the motorists shop. The effect is to retain high property values in the central business district. These property values were built up because mass transportation facilities did formerly pick up potential customers from the residential areas and deposit them in the central business district at certain "hot spots," thereby creating location advantages that could not be duplicated.

In these cases, the cost of doing business at locations with excessively high land value is transferred to the purchaser in the form of distribution cost.

With the private automobile and a relatively unlimited choice of purchasing locations, the matter of scarcity of location ceases to be a prime factor.

There can be no question but that this change in our land economy is in progress. Regardless of what attempts are made to retain the mass transportation system to uphold unreasonably high land values, they will represent nothing but a delaying action. Therefore, it would seem to be only a matter of time before the land use in the central business district of our larger cities will adjust to activities compatible with such locations or decline to a point that is commensurate with their business production ability.

As this change-over is taking place the motor vehicle, insofar as the family is concerned, is no longer an uneconomical method of transportation. It becomes an instrument in the creation of economically justified higher land values in the locations within its radius of operation.

In summarizing the effect of freeways on land value it can be said that:

1. It has been proved by factual information, over and over again, that the removal of through traffic from a community has increased property values along the street in the community from which the traffic was removed.

2. As the adjacent areas build up, there are going to be more people and more cars. The merchant is going to have to compete to gain this business. If there is sufficient development, a new shopping area will be built to take care of the community's needs, a shopping area in direct competition to the older or so-called downtown district. It is going to develop because highways are maintaining the fluidity of our population.

3. The businessman who thoroughly understands his business and the inherent hazards of merchandising is not going to waste his time, effort and money to attract patronage to his established location when that location is limited by traffic congestion and inadequate transportation. He will establish a second merchandising outlet in a newer location.

The automobile has eliminated to some extent the factor of scarcity in locations. With improved methods of transportation, the area in which comparable locations can be found is greatly extended. This does not necessarily mean that the central business area is becoming a ghost town, not by any stretch of the imagination, but by following natural economic laws, it will change in character. It will be put to uses requiring no greater transportation system than it now enjoys.





NO LOSS of sales reported when Hess Brothers, Allentown, Pa., department store, installed this high pressure air conditioning system on its three upper floors. Linked with system already in use on lower floors, it points up the advantages of...

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...were selected by the architects for the Frederick Douglass Stubbs School, Wilmington, Del.
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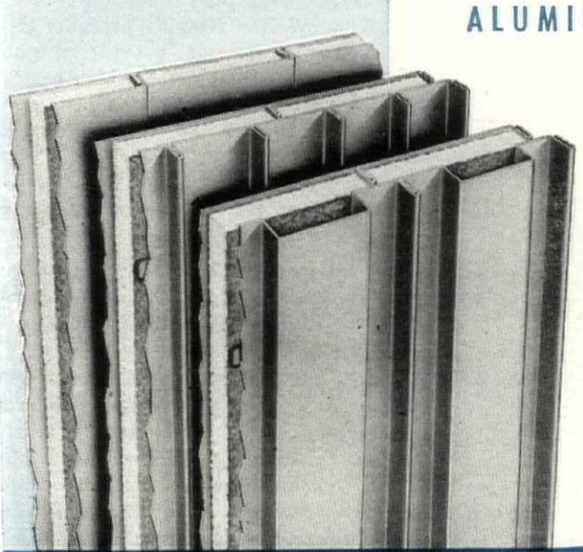

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Architects and owners across the country are today turning to Insulated Metal Walls for low-cost permanence in new, modern buildings of virtually every type. These new light-weight, metal curtain walls are not only flexible in adaptation to building types, but present unlimited possibilities in architectural treatment of exterior design. Bright areas of aluminum or stainless steel in combination with brick, glass block, stained wood, tinted cement plaster, or other materials, offers designers a broad field in the development of distinctive and individualized exteriors. The industrial building below is a typical example. In this type of construction, important building economies are realized through lower material cost, low labor cost, and the cumulative savings and other advantages deriving from reduced construction time . . . buildings can be quickly enclosed with Insulated Metal Walls —even under extreme low temperature conditions. Mahon Insulated Metal Walls are available in the three exterior patterns shown at left . . . the "Fluted" or "Ribbed" wall can be field erected up to sixty feet in height without a horizontal joint—a feature of Mahon Walls which, from an appearance standpoint, is extremely important in powerhouses, auditoriums or other types of buildings where high expanses of unbroken wall surface are common. See Sweet's for complete information including specifications, or write for Mahon Catalog B-55-B.

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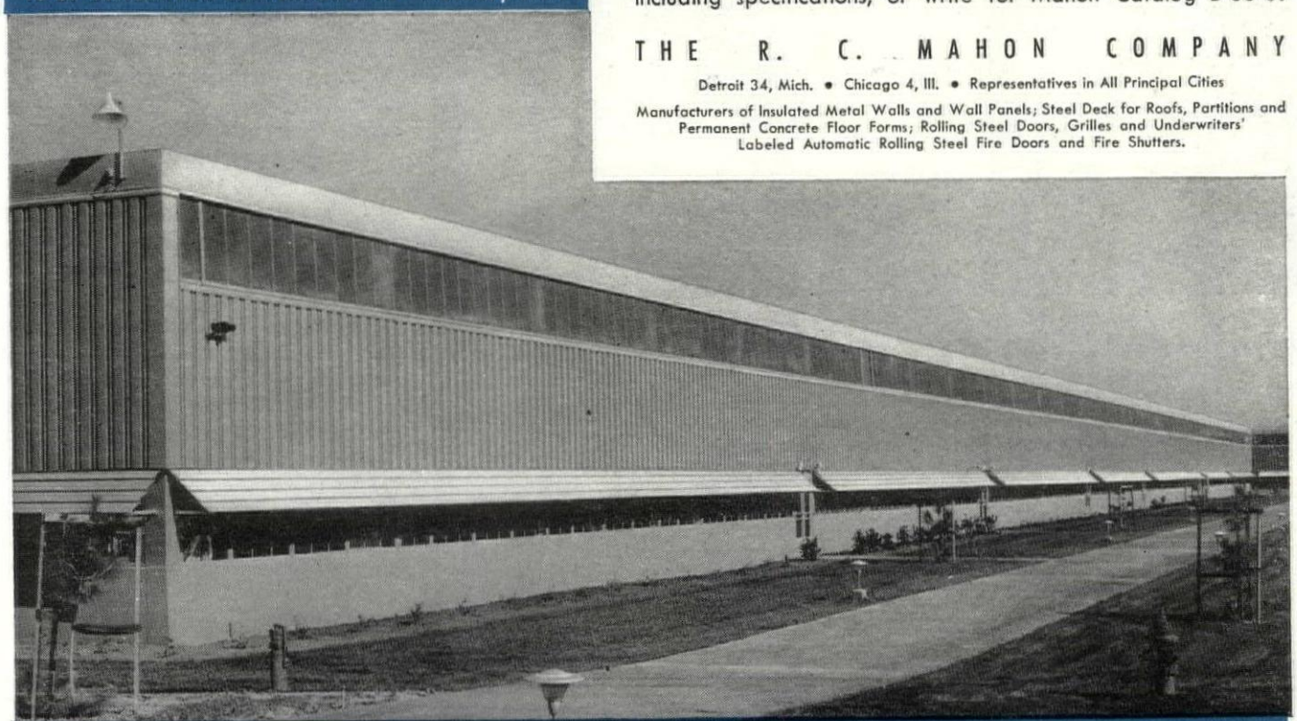

New manufacturing plant for Beckman Instruments, Inc., Fullerton, California. In this 160,000 Sq. Ft. project, 24,000 Sq. Ft. of Mahon Insulated Metal Walls were used. Donald R. Warren Co., Designers. M. J. Brock & Sons, Inc., General Contractors. Olympic Steel Products Co., Los Angeles, Erectors of Mahon Metal Walls and Mahon Steel Roof Deck.

MAHON

BOOKS

SCOPE OF TOTAL ARCHITECTURE. By Walter Gropius. Published by Harper & Brothers, 49 E. 33rd St., New York 16, N.Y. 185 pp. 5¼" x 7¾". Illus. $3

"Creation and love of beauty are elemental for the experience of happiness. A time which does not recognize this basic truth does not become articulate in the visual sense; its image remains blurred, its manifestations fail to delight.

"Since my early youth I have been acutely aware of the chaotic ugliness of our modern man-made environment when compared to the unity and beauty of old, pre-industrial towns. In the course of my life I became more and more convinced that the usual practice of architects to relieve the dominating disjointed pattern here and there by a beautiful building is most inadequate and that we must find, instead, a new set of values, based on such constituent factors as would generate an integrated expression of the thought and feeling of our time.

"How such a unity might be attained to become the visible pattern for a true democracy—that is the topic of this book. It is based, essentially, on articles and lectures written—with a few exceptions—during my years in Harvard University as chairman of the department of architecture (1937-1952)."

Thus Walter Gropius prefaces this welcome collection of previously published articles—one chapter of which comes from an earlier issue of this magazine: "Eight Steps toward a Solid Architecture," by Walter Gropius (AF, Feb. '54).

ANALYSIS OF STATICALLY INDETERMINATE STRUCTURES. By John I. Parcel and Robert B. B. Moorman. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y. 571 pp. 6" x 9½". Illus. $9.50

In the first half of this textbook is a complete presentation of the basic theory of deflections and statically indeterminate structures. The remainder of the study offers practical, authoritative coverage of the problems facing structural engineers. Special attention is given to the solution of numerous examples by a wide variety of methods. Design office procedures are used in solving problems in continuous girders, frames, arches, secondary stresses and suspension bridges.

John I. Parcel is vice president of Sverdrup & Parcel, Inc., a St. Louis firm of consulting engineers. Robert B. Moorman is on the staff of Syracuse University, where he is professor of civil engineering and chairman of the department.

SELLING BUSINESS REAL ESTATE. By Arthur B. Sherman. Published by Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N.Y. 278 pp. 6¼" x 9¼". Illus. $5.95

A primer on real estate selling and appraisal to challenge and encourage the one-family-house realtor in small cities to expand into the commercial property market. This is a very readable outline of the elementary functions and responsibilities of the realtor in conventional sales of smaller commercial and industrial properties. But its scope is limited; it contains no explanation or discussion of more involved transactions such as purchase-lease deals, or sales based primarily on special tax considerations.

WHEN YOU BUILD YOUR CHURCH. By John R. Scotford. Published by Doniger & Raughley, Great Neck, N.Y. 246 pp. 5½" x 8¼". Illus. $3

Based on the composite experiences of hundreds of churches in every part of the country, of every size, this book is a valuable guide for ministers and laymen.

John R. Scotford, an ordained Congregational minister, is a building consultant who has worked with more than 700 churches.

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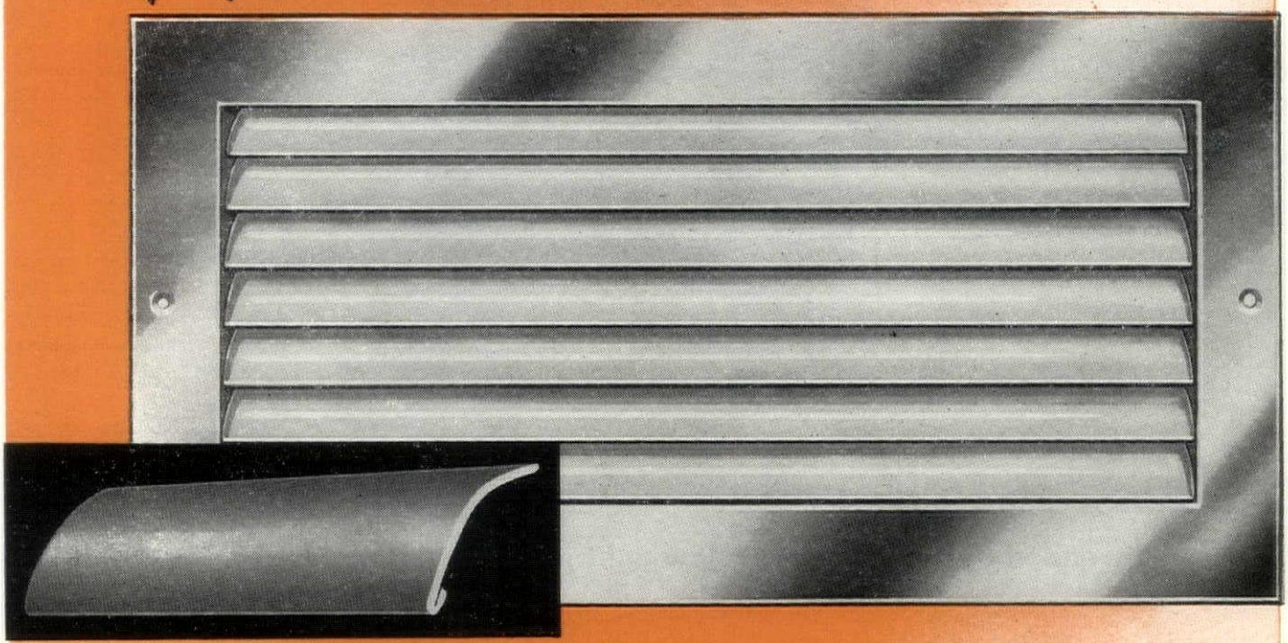

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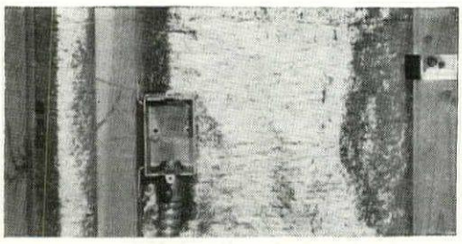
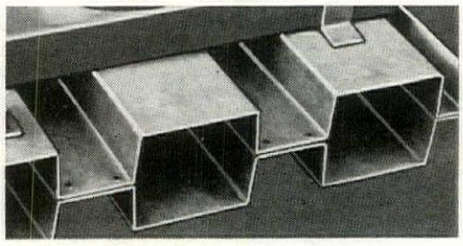
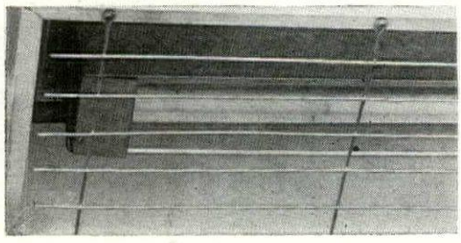


Outlets on warm side of insulation (p. 218)

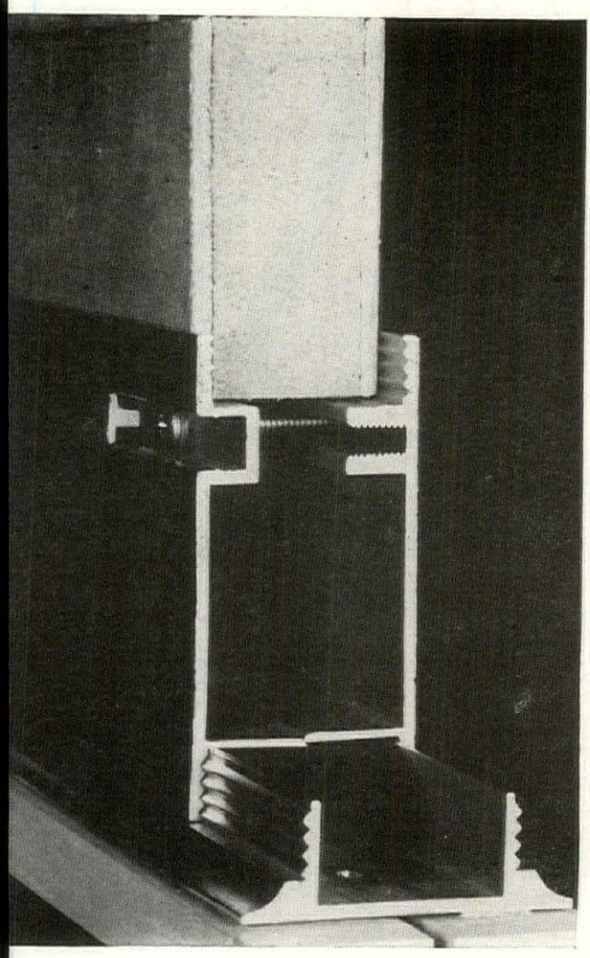


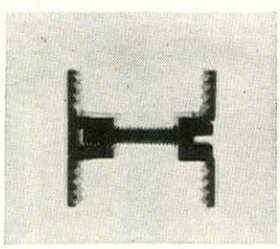
Power anywhere in cellular subfloor (p. 244)

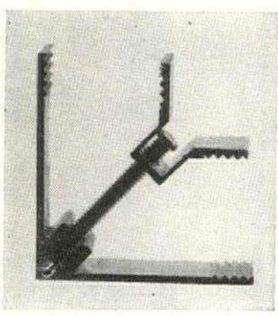


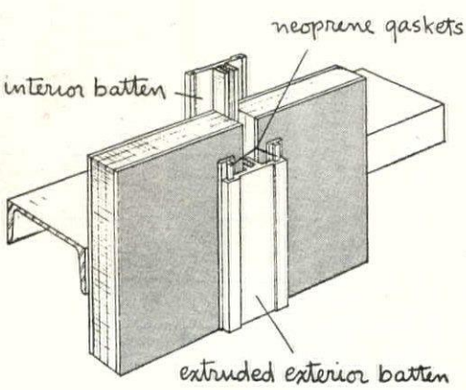
Comforting heat from glowing quartz (p. 266)

Threaded battens dress off low cost panel board in partition and wall systems









Hammitt & Birum's catalogue is packed with sundry devices for securing roofing and siding, and for setting up movable partitions and walls. But architects will be most intrigued perhaps by H&B's extruded batten and related assemblage of base plates, corners, door and window moldings which can be used to set up anything from a movable partition (no bolts show) or warehouse wall with low-cost insulating panels (no calking needed). Key to H&B's partition and insulated panel system is the integrally threaded batten; more than a seam cover, the brushed aluminum extrusion, made in lengths up to 16′, has a continuous threaded receiving channel inside the face half which gives bolts a biting place—no matter where bolt holes are drilled along the center line of the counterpart batten. No nails or bolts are driven into the panels themselves. A right-angle variant of the batten is used to set up partition and wall corners. On members designed for exterior use, neoprene gaskets make calking unnecessary. And on many one-story buildings, a kind of semiframeless construction can be used; i.e., no steel or wood supports, just the H&B battens with angle irons for floor bracing. Horizontal battens and cover plates for the junctions are available for use on multistory curtain walls. Prices of some of the many extrusions and accessories available are: exterior batten, 50¢ per lin. ft.; interior batten (with holes 12″ o.c. and bolts included) 46¢; outside corner, $1.35; inside corner, 90¢; and the exterior weather plate, 50¢ each.

Manufacturer: H&B Enterprise Corp., 1150 Southard St., Trenton 8, N.J.

continued on p. 218

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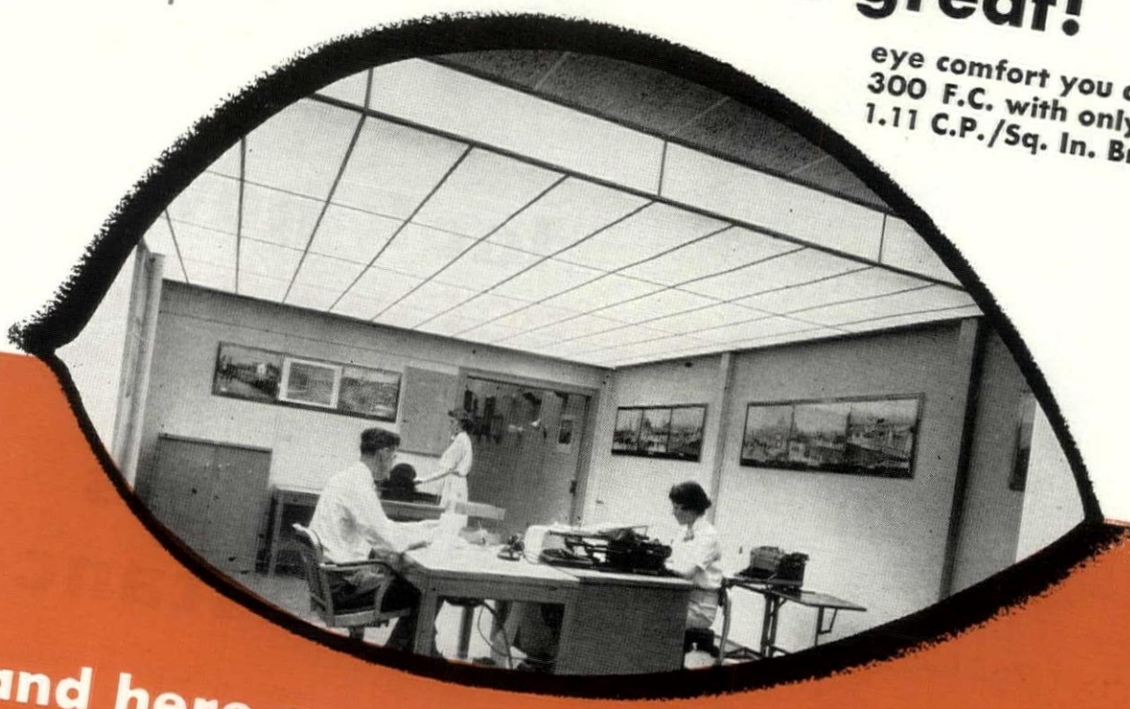
eye comfort you can measure
300 F.C. with only
1.11 C.P./Sq. In. Brightness



and here are the figures to prove it . . .

In our own showrooms we've installed a 15′ x 16′ GrateLite Ceiling. By switching on various lamp arrangements we can deliver from 28 to 300 foot-candles 7′ 9″ below the GrateLites. Measurements at right give GrateLite efficiency figures and brightness readings at 30° and 45° below the ceiling.

THESE FIGURES PROVE GRATELITE in a class by itself for modern high intensities, safely within comfort ranges plus a high degree of diffusion.

AREA: *15′ x 16′ (240 Sq. Ft.)*
GRATELITES: *Suspended 18″ below ceiling*
FT.-CANDLES: *Taken 7′ 9″ below GrateLite*
BRIGHTNESS READINGS: *Taken with "Spectra" Electronic Meter*
LUMINAIRES: *Guth M-5385/TO*
ROOM COLORS: *3 walls—light green—60% R. F. Floor—15% R. F.*

Foot-Candles, Efficiencies, Brightness Readings

Item No.	No. of 8′ Lamps & M. A.	Total Lamp Wtg.	Foot-Candles With Gratelites	Foot-Candles Less Lvrs.	EFF. With-÷ Without	Brightness At 30° F. L.*	Brightness At 30° C. P.† Per Sq. In.	Brightness At 45° F. L.*	Brightness At 45° C. P.† Per Sq. In.
1	8 @ 200	400W	28	36	78%	50	0.11	50	0.11
2	16 @ 200	800W	58	75	77%	100	0.22	110	0.24
3	24 @ 200	1200W	85	108	79%	130	0.29	140	0.31
4	24 @ 430	1800W	135	170	79%	195	0.43	210	0.46
5	8 @ 200 24 @ 430	2200W	163	200	82%	230	0.51	250	0.55
6	16 @ 200 24 @ 430	2600W	188	230	82%	290	0.64	325	0.72
7	24 @ 200 24 @ 430	3000W	210	260	81%	320	0.71	350	0.77
8	48 @ 430	3600W	240	310	77%	380	0.84	520	1.15
9	8 @ 200 48 @ 430	4000W	265	340	78%	410	0.91	570	1.26
10	16 @ 200 48 @ 430	4400W	285	360	79%	470	1.04	620	1.37
11	24 @ 200 48 @ 430	4800W	300	390	77%	500	1.11	650	1.43

*F. L.—Foot Lamberts †C. P.—Candlepower

*U. S. & Can. Pats. Pend. Trademark Registered

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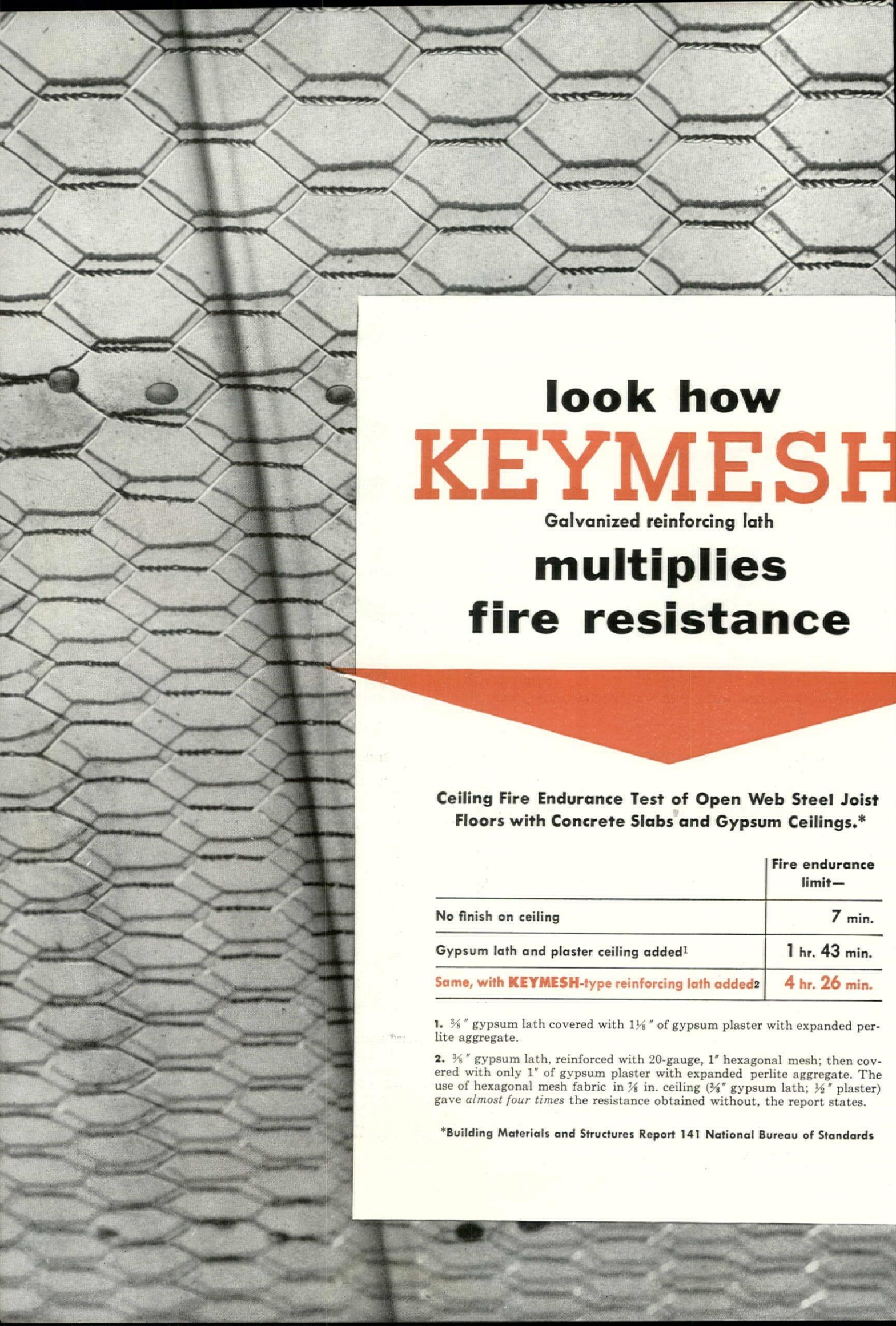

look how KEYMESH

Galvanized reinforcing lath

multiplies fire resistance

Ceiling Fire Endurance Test of Open Web Steel Joist Floors with Concrete Slabs and Gypsum Ceilings.*

	Fire endurance limit—
No finish on ceiling	7 min.
Gypsum lath and plaster ceiling added[1]	1 hr. 43 min.
Same, with **KEYMESH**-type reinforcing lath added[2]	4 hr. 26 min.

1. 3/8" gypsum lath covered with 1 1/8" of gypsum plaster with expanded perlite aggregate.

2. 3/8" gypsum lath, reinforced with 20-gauge, 1" hexagonal mesh; then covered with only 1" of gypsum plaster with expanded perlite aggregate. The use of hexagonal mesh fabric in 7/8 in. ceiling (3/8" gypsum lath; 1/2" plaster) gave *almost four times* the resistance obtained without, the report states.

*Building Materials and Structures Report 141 National Bureau of Standards



Once again Keymesh-type plaster reinforcing lath has demonstrated its ability to multiply firesafety at amazingly low cost. First, as part of a new, low-cost system for fireproofing structural steel and beams. Next, 50% greater fireproofing when added to gypsum lath and plaster ceilings of wood frame construction. Now, over twice the endurance on open web steel joist construction.

How can Keymesh add so much at such low cost?

Here's why! The complete coverage of this multidirectional reinforcing holds the plaster in place so it continues to fight fire until structural failure occurs. At the end of the 4 hour and 26 minute period, "*no plaster had fallen*". On the test without the 20-gauge hexagonal mesh "nearly all the ceiling was down".

In addition to greater firesafety, Keymesh produces stronger ceilings; gives far more crack resistance.

Why build to burn, when it costs so little to multiply the fire resistance of buildings with lath and plaster, reinforced with Keymesh.

Recommended and used by America's leading lathing and plastering contractors.

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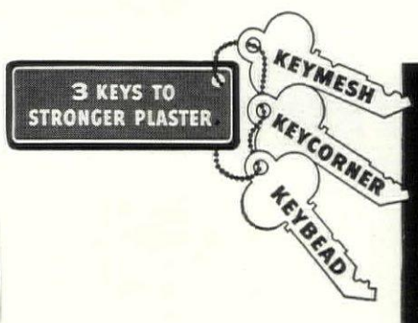

see our CATALOG in SWEET'S FILE

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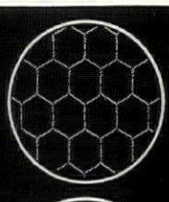
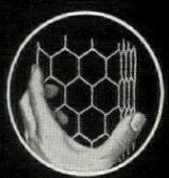
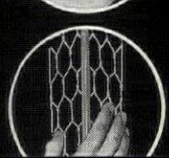


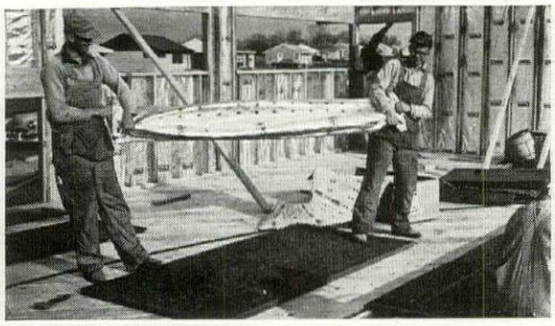
KEYMESH lath for over-all reinforcement. Made of galvanized woven wire. Especially recommended for ceiling construction.



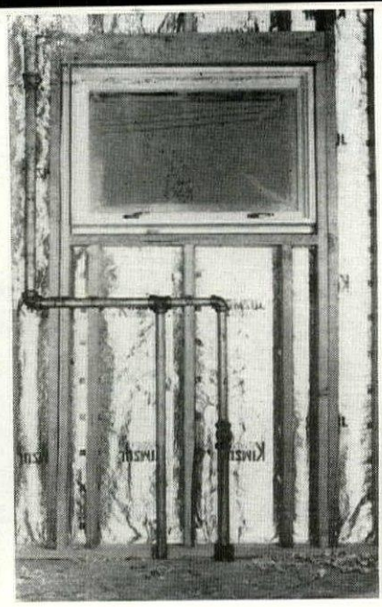
KEYCORNER strip lath, preformed to fit snugly in corners. Lies flat when applied to joints. Galvanized to prevent rust streaks.



KEYBEAD corner lath with precision formed bead for outside corners. Open mesh assures strong, *solid* plaster corners.

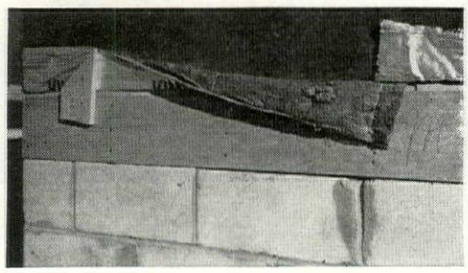


Pulled to size, blanket is tacked to sheathing





Utility lines and subfloor are protected by insulation applied from outside the framing.



BLANKET INSULATION puts wraps on building from the outside

A few years ago *Kimsul* announced a unique development in insulation: batts with attached aluminum foil vapor barriers. Now Kimberly (coated papers) Clark has a new trend-maker insulation: a 4'-wide reflective blanket, marketed currently for the home-building market, but suitable for one-story commercial structures of metal frame as well as for conventional stud, prefab panel, and tilt-up wood construction. Stapled to 4' x 8' sheathing or taped to metal siding (K-C has not yet tested the latter but feels that it would be perfectly feasible) the big fibrous blankets are put on the outside of framing members. *Kimsul 48* goes up quickly; it takes only a few minutes to tack it temporarily to the sheathing and, once the sheathing (or siding) is in place, so is the insulation, creating an unbroken cocoon around the building. No draft-inviting tears need be made in the insulation during construction for access to ducts or switch boxes. The continuous blanket protects areas above windows and doors, and an air sealing margin of the material can be wrapped beneath the subfloor and around framing openings. Because the reflective blanket is back a few inches from the inside wall finish, plumbing lines, electric cable and even the framing members get protection against cold and condensate by being on the warm side of the exterior wall. *Kimsul 48* sheathing blanket, priced 3½ to 6¢ per sq. ft., comes on the job precut, compressed in compact cartons, and is stretched to full size by appliers. The insulation itself is made of K-C's regular chemically treated wood fibers in crimped plies with myriad air spaces for good thermal protection.

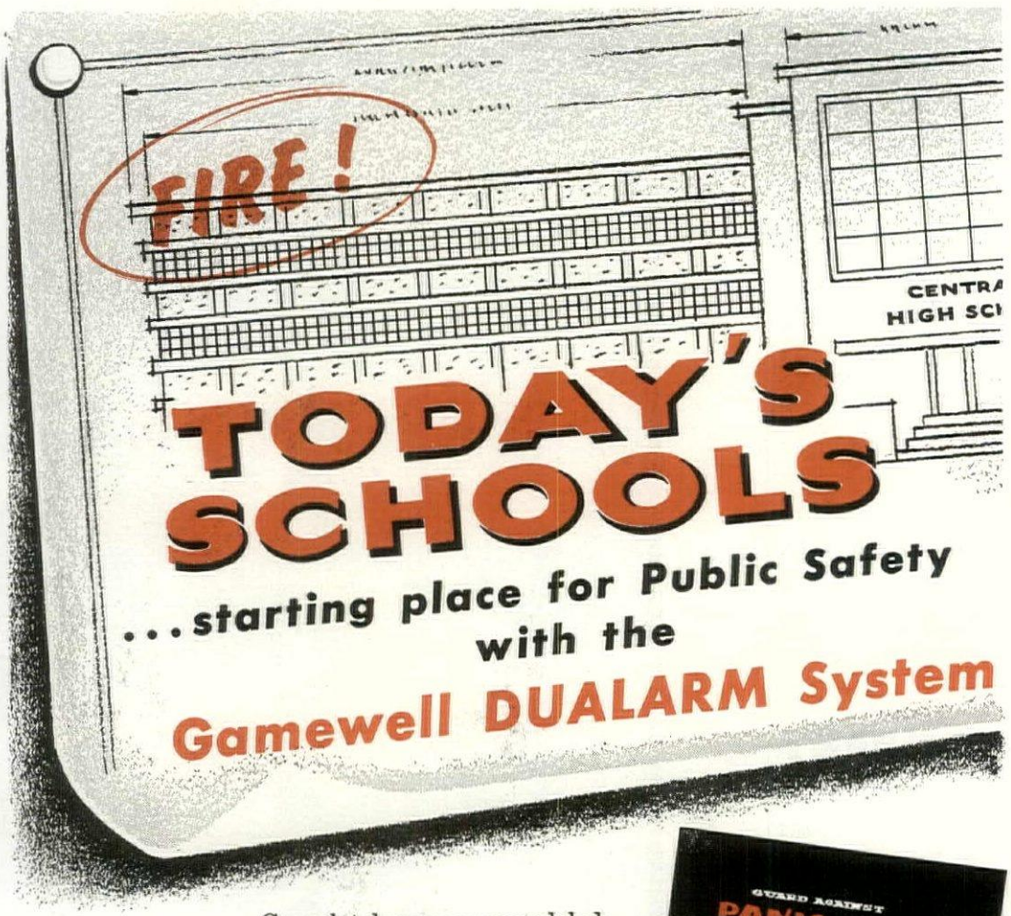


Manufacturer: Kimberly-Clark Corp., Neenah, Wis.

ELECTRIFIED FLOOR keeps pace with building's expanding power needs

Milcor Celluflor is the latest to join the élite group of prewired steel subfloors highly esteemed by contractors for their easy installation, and by building managers for

continued on p. 224



Completely new or remodeled, today's school buildings require the complete and foolproof protection that the DUALARM System provides.

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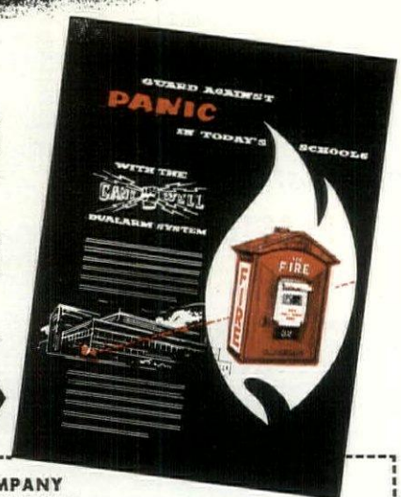

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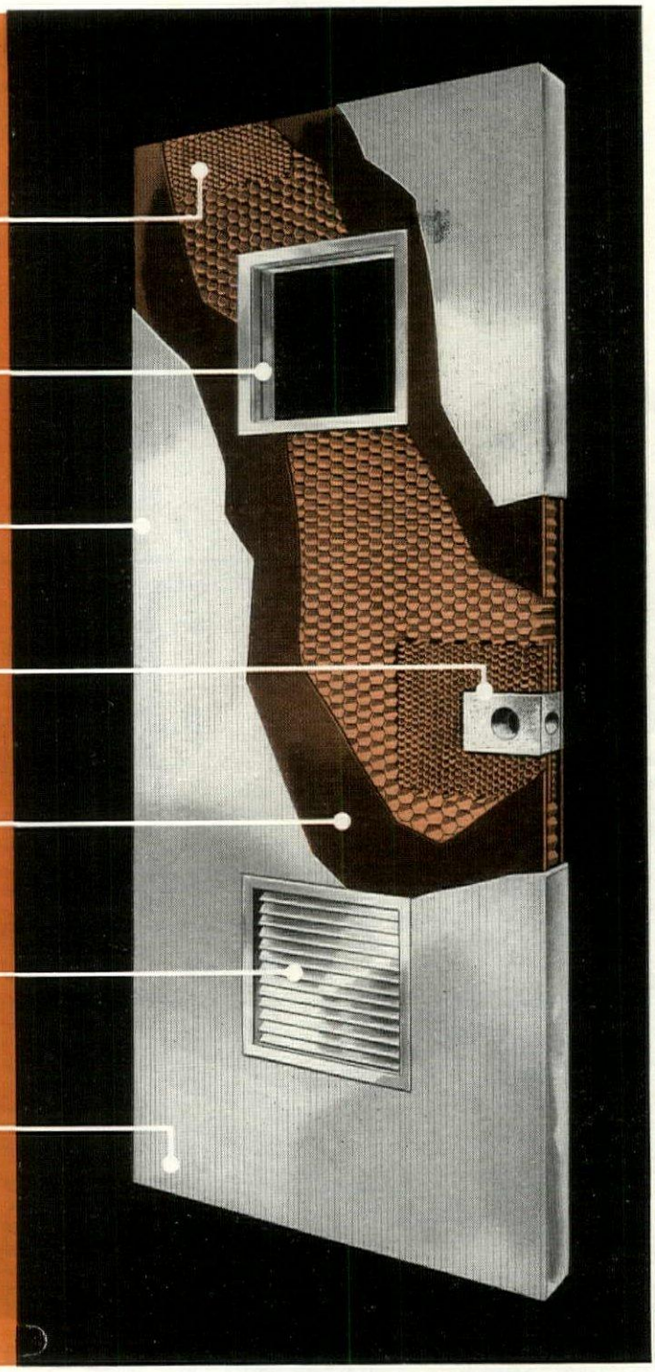
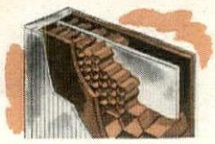
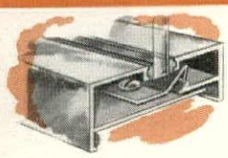
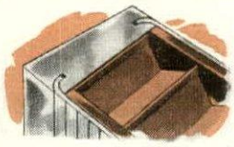




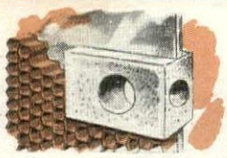
1/8" steel plate centered in dense honeycomb area provides solid support for surface hardware.



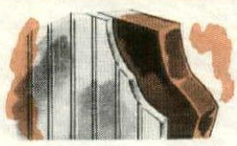
Mitered frame with no exposed screws. Spring clip construction allows glass to float safely within its strong, resilient support.



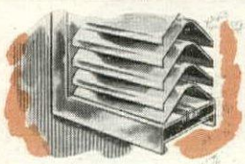
Aluminum skin is interlocked with solid aluminum stile for invisible skin-rail construction.



Styrofoam insert at the lock location prevents the infiltration of moisture.



Attractive ribbed aluminum sheet laminated to hardboard backup sheet. Exceptionally high impact resistance is built-in.



Alumilited aluminum louver assembly for optional use in resilient frame.



For doors on floor closers, the concealed aluminum channel welded to pivot stile transmits reaction over the entire door area.

NEW TRIPLE-STRENGTH FLUSH DOOR

Sandwich with Honeycomb Core Formed on Hot Platen Press
Built like a sandwich with a honeycomb core, the new Kawneer Flush Door is 10 times stronger than the obsolete girder type and will last many years longer than ordinary doors. It has a high strength/weight ratio with great resistance to flexure and impact making it ideal for heavy use such as in hospitals or offices. Surface of *standard* door is handsome, *subtle-ribbed* aluminum with alumilited finish to insure lasting beauty. Special surfaces in aluminum and plastic can be provided on special order.

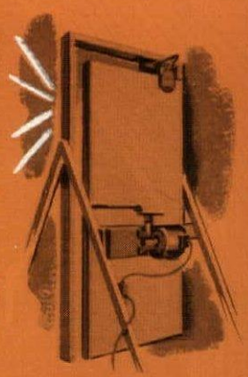
- Economically priced. Competitive with top quality wood core or hollow metal.
- Built for rugged duty in high traffic areas.
- Practically impossible to dent under normal use.
- Easily cleaned, virtually no maintenance.
- Suitable for both interior and exterior use.
- Absolutely cannot peel apart.

Kawneer

manufacturers of architectural metals, doors and entrances, and sun-control products, aircraft and appliance products.

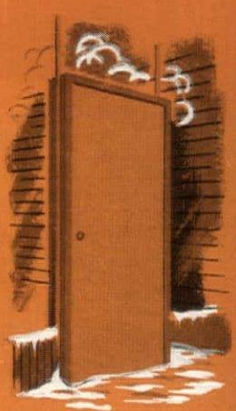
Extremely *Rigid*
Remarkably *Moisture proof*
Passes Critical Tests

1,000,000 slam test



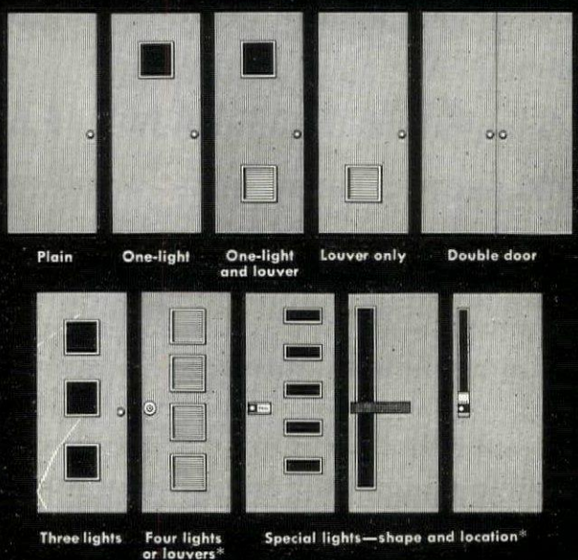
This new honeycomb door outperformed its girder-type competitor 10 to 1 in a slam test. This test specifies that the door be slammed repeatedly against a metal jamb until failure. The old-type door failed completely after 98,761 slams, whereas the new honeycomb core door was still plumb and true after 1,000,000 slams! It was needless to continue the test until failure. The test proves it will stand up many years in high traffic areas.

4 month saturated steam moisture test



Subjected to saturated steam day and night in a controlled chamber on one side for nearly 4 months and regular atmospheric conditions of late winter and early spring on the other side, this remarkable door survived without separation of laminations, warping or sagging. The new Kawneer door will withstand extremes in weather and still provide excellent service. The moisture resistance of this door makes it just as practical for exterior use as well as interior.

Freedom of design with Honeycomb



Because this new door is completely free of interior structural girders, there is a wide flexibility for positioning lights and louvers within the following limitations*:

1. One light not to exceed ⅓ of door area.
2. Two lights not to exceed ½ of door area.
3. Special size lights not to be placed closer than 1" to edge of stile or 6" from top to bottom.

BOTH STANDARD AND SPECIAL SIZES AVAILABLE...

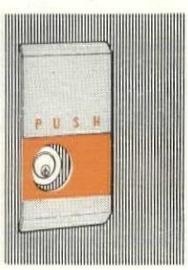
To provide complete flexibility the Kawneer honeycomb door is available in both standard and special sizes. The standard frames are extruded tube type for double and single acting doors. Frames in aluminum or steel can be provided to meet structural requirements.

Standard Sizes	Special Sizes
Single doors—2'6", 2'8", 3'0", 3'4" x 6'8" or 7'0"	From: 2'0" x 6'8"
Double doors—5'0" and 6'0" x 6'8" or 7'0"	To: 4'0" x 8'0"

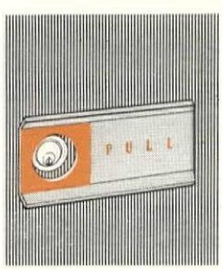
Hardware in COLOR

To blend the new honeycomb door with any room decor, push and pull hardware is available in color. An attractive band of color is silk-screened on the hardware in the area of the lock opening. Lock is semiconcealed behind hardware, yet is easily accessible. Blue-green color standard. Other special colors from which to choose.

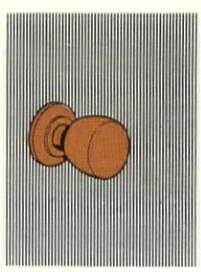
Door knob hardware is attractive tear drop design. It is available with knob latch, thumb turn, or standard cylinder deadbolt.



Lock is semiconcealed in distinctive Kawneer-designed push-pull hardware.



Push and pull plates for special doors available with or without attractive blue-green color band.



Tear drop design; available with knob latch, thumb turn, or standard cylinder deadbolt.

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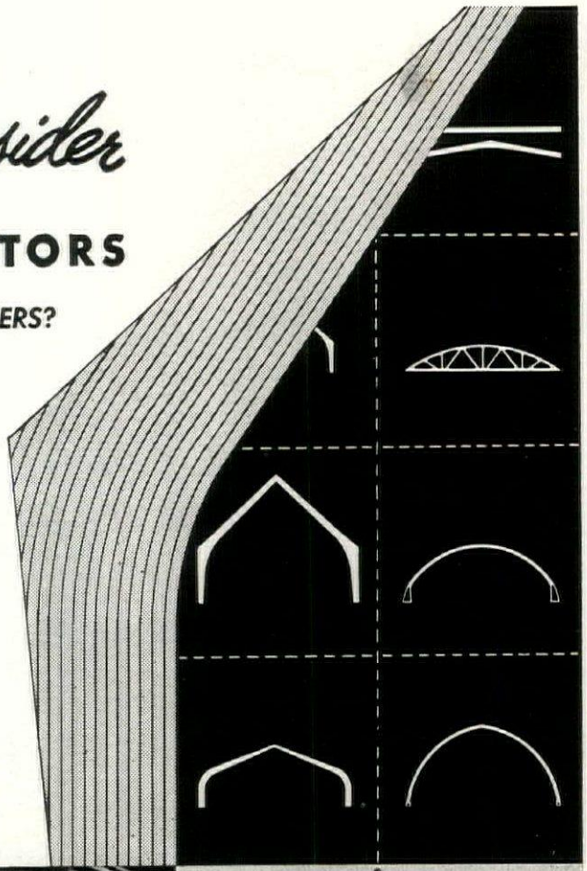

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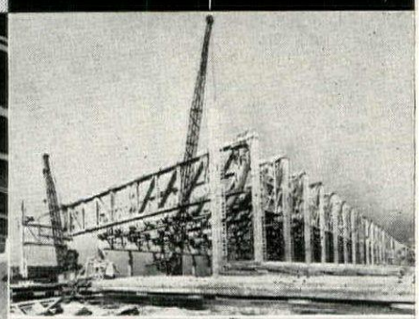

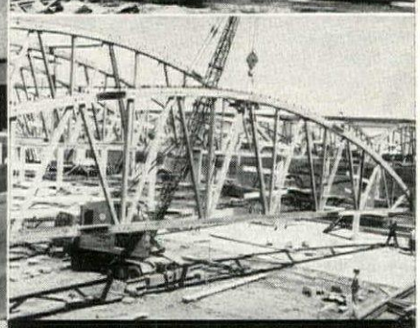

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Architect Morris Lapidus

Plastic shields give soft glareless light



Tinted light shields produced by **QUANTALITE, Inc.**, 101 Park Ave., New York City, and made of BAKELITE Rigid Vinyl Sheet were developed especially to color-correct fluorescent light.

Architect Morris Lapidus wanted bathroom lighting that would render the truest possible skin tones for shaving and makeup... lighting as close to daylight as possible. His choice: fluorescent fixtures with lightshields made of tinted BAKELITE Brand Rigid Vinyl Sheet. These color-correcting shields, according to Mr. Lapidus,

. . . *"gave us the soft, glareless light we were looking for, and the truest skin tones I have seen outside of actual daylight."*

The shields have other advantages, too; high light transmission, high resistance to warping, cracking or discoloring with time. Finger marks, creams, soaps and cleaning materials won't harm them. In fact, they can be cleaned in soap and water whenever necessary.

In such ultra-modern projects as the Fontainebleau and the new Manufacturers Trust Company building in New York, BAKELITE Rigid Vinyl Sheets are proving both beautiful and practical. Uses include light shades, corrugated illuminated ceilings, pressed panels, screens, a variety of decorative applications. Why not inquire about them? For complete data, write to Dept. GM-14.

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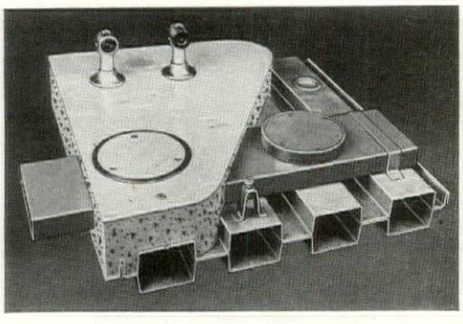
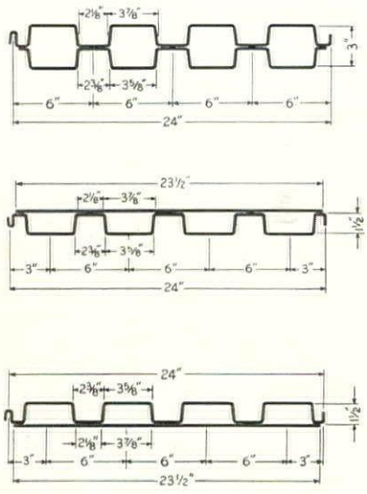
BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

PRODUCTS

Continued from p. 218

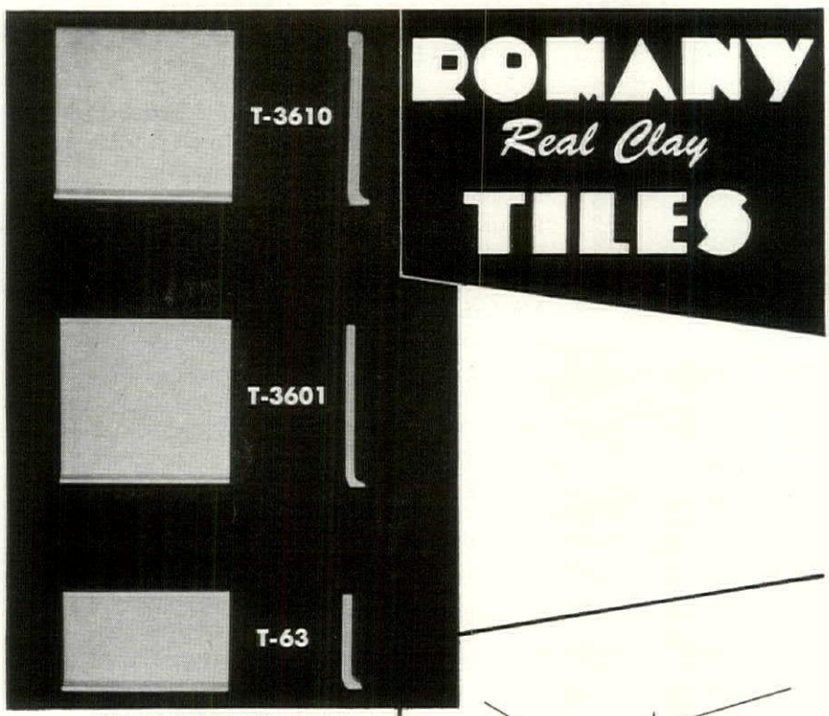




their complete electrical accessibility. Hollow hexagonal cells in the spot-welded formed sections are factory electrified as raceways with Walker's system of header ducts and service fittings. Spaced 6" o.c., these longitudinal runs give *Celluflor* built-in capacity for all kinds of wiring—power, telephone and intercom—that can be tapped with outlets at any point in the floor for the building's life, regardless of occupancy changes or step-ups in wiring needs.

Arriving on the job ready for erection, the noncombustible metal floor makes a safe area for workmen and material storage; it needs no wood frame or shoring. Made from Inland Ti-Co galvanized steel, the *Celluflor* has a tough zinc coat that will not flake or chip to protect the metal during handling and for years afterward—even where the under-surface is left exposed. *Milcor* panels are produced in 12- to 18-ga. steel in five basic section types with bending-strength and deflection coefficients to meet a wide range of load and span requirements. Type *BB-16 16* (pictured above, left) costs about $1.45 per sq. ft., electrified and in place.

Manufacturer: Inland Steel Products Co., W. Burnham St., Milwaukee 1. Wis.



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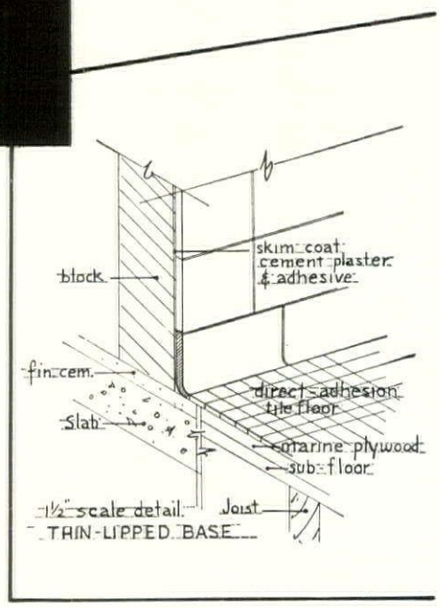
TILES

ROMANY
THIN LIPPED BASES

Available in three sizes and in all ROMANY Buff Body Colors shown in Sweet's. T-3610 is a 6"x5½" sanitary round top base. T-3601 6"x5⅝" and T-63 6"x3⅜" are for use with a Ceramic tile wainscot. All these bases are designed for use with Ceramic Floors installed with adhesive and composition floors such as Linoleum, Asphalt, Rubber and Cork. The use of these pieces eliminates necessity for having sub floors of different levels.



Every Architect should have our Sample Tile Chart No. 15. It's free.

UNITED STATES CERAMIC TILE COMPANY

Member: Tile Council of America and Producers' Council, Inc.

217-J FOURTH ST., N.E., CANTON 2, OHIO



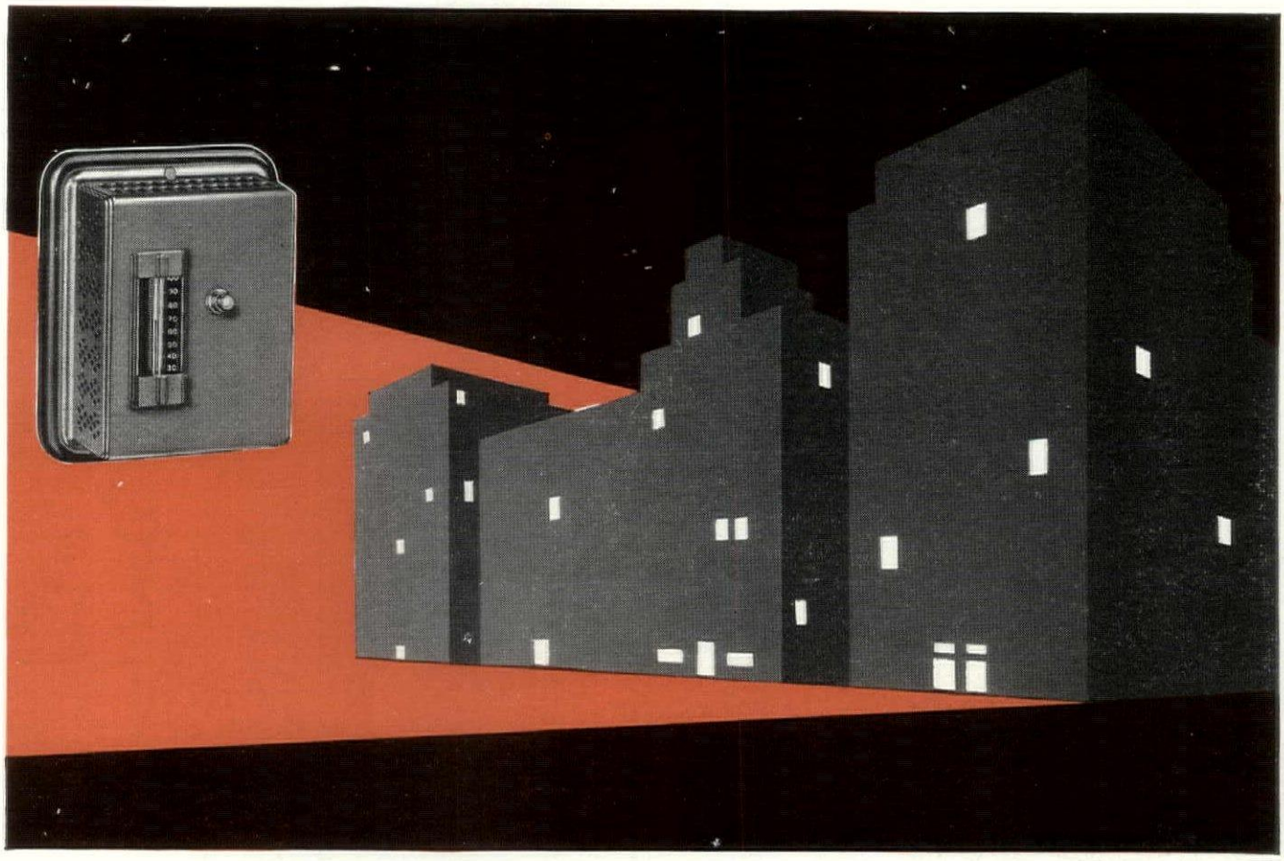
SMALL GRATE SAFETY PLATE rebuffs abuse of heavy truck traffic

Klemp's latest *Hexteel* floor armor, a miniature mesh of ⅜" cells, exposes 18.15 sq. in. of metal yet weighs only 1.7 lb. per sq. ft. Filled with hot or cold mastic, the 16-ga. steel nonskid grid is suitable surfacing for such hard-wear areas as garage floors, factory aisles, runways, loading ramps and docks. Labor and materials for fastening the ⅜" *Hexteel* to an existing concrete floor with powder actuated pins and filling it with mastic runs about $1.45 per sq. ft., and about 20¢ less on top of wood. The armor itself is 65¢ per sq. ft. F.O.B. Chicago. Sides and ends of the steel sections fit together in a continuous mesh which reportedly eliminates cracking, swelling and shrinking.

In addition to its use as new topping for downtrodden concrete or wood floors, *Hexteel* can be applied in new construction to offset the brunt of heavy rolling loads. For the latter, a ⅜" depression should be specified on unfinished concrete floors and aisleways. Other grates are made in ¾", 1" and 1¼" x 14- and 12-ga. steel.

Manufacturer: Klemp Metal Grating Corp., Chicago, Ill.

continued on p. 230



HEAT ONLY THE OCCUPIED ROOMS—CUT FUEL COSTS with JOHNSON *DUAL* TEMPERATURE CONTROL

In most buildings today, certain offices continue to be occupied after regular working hours. Keeping those few offices comfortably warm, *without the expense of heating the entire building,* is a serious problem to building owners and managers. Installing separate steam mains is usually both impractical and too costly. Manual control of radiators in unoccupied offices is equally unsatisfactory.

The simple, effective answer to this "after-hours" heating problem is a modern *Dual* System of Johnson Automatic Temperature Control. Briefly, here's how it works:

During regular working hours, a Johnson *Dual* Thermostat in each office automatically maintains every space at the ideal comfort level. At the end of the day, all *Dual* Thermostats in the building may be reset, from a central control panel, to operate at *reduced, non-occupancy temperatures.*

In those offices which continue in use, merely pressing the button on the *Dual* Thermostat restores them to normal occupancy temperatures, *without changing the economy settings of the other thermostats in the building.*

Johnson *Dual* Control offers the finest in modern individual room temperature regulation—and at a tremendous reduction in fuel costs. Heating only the occupied rooms quickly saves enough fuel dollars to pay for the cost of the entire system!

These and many other important comfort and money-saving advantages of Johnson *Dual* Control are readily available to any new or existing building. Conversion of existing single temperature systems to Johnson *Dual* is both simple and inexpensive. An engineer from a nearby Johnson branch will gladly give you all the facts without obligation.

JOHNSON CONTROL
TEMPERATURE ↕ AIR CONDITIONING

PLANNING • MANUFACTURING • INSTALLING • SINCE 1885

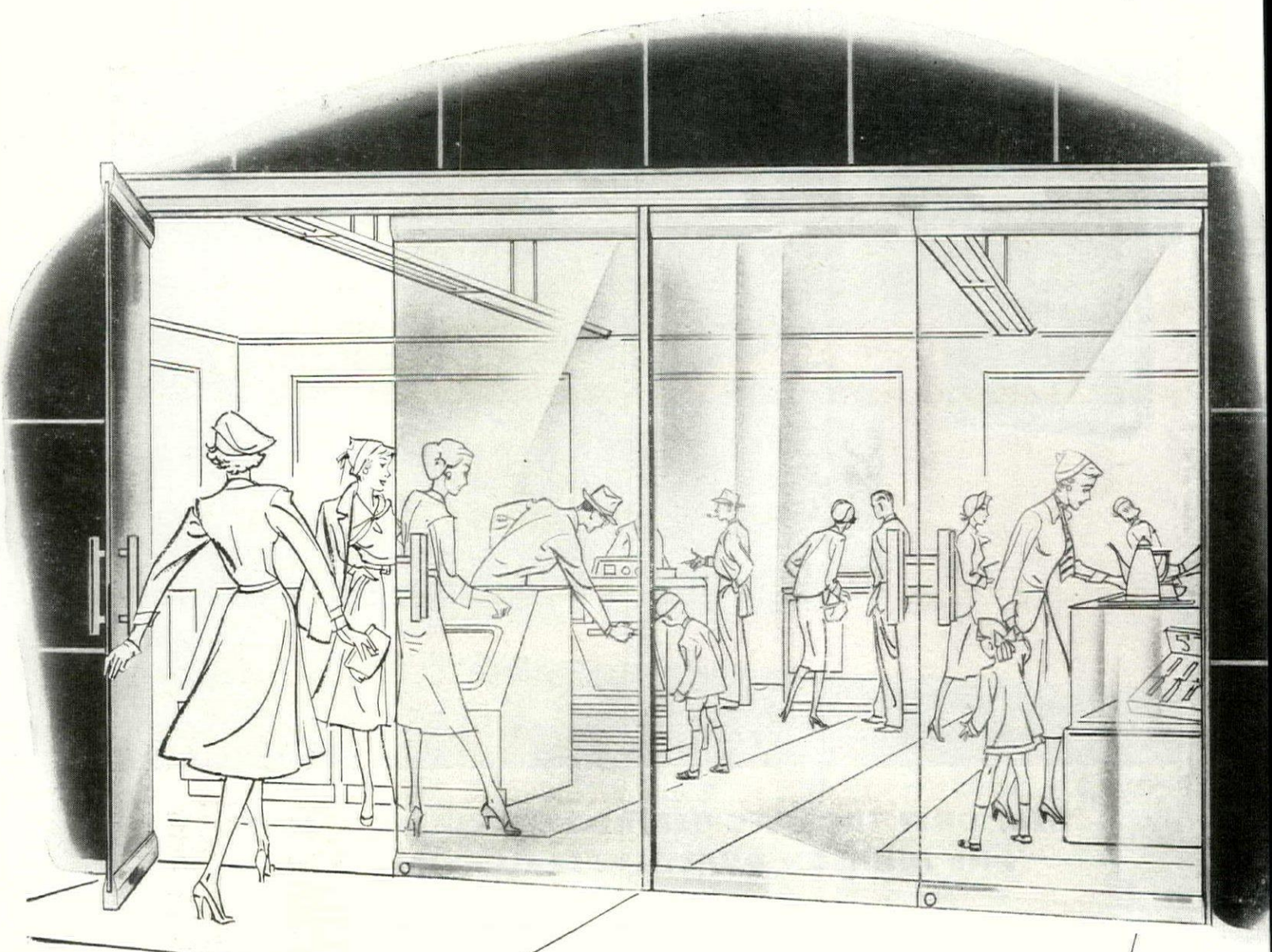
JOHNSON SERVICE COMPANY
507 E. Michigan St., Milwaukee 2, Wisconsin

I'd like more information about Johnson Dual Temperature Control.

NAME_____

ADDRESS_____

CITY & STATE_____



THESE DOORS INVITE PEOPLE INSIDE

Frameless L·O·F *Tuf-flex** Glass Doors make people *want* to come inside by showing them *what's* inside.

And *Tuf-flex* Doors are designed to handle the large number of people they attract. They are 3 to 5 times stronger than regular plate glass of the same thickness. They are available in ½″ and ¾″ thicknesses.

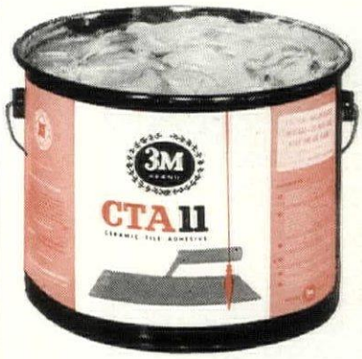
L·O·F *Tuf-flex* Glass Doors are an economical, and highly successful, answer to building owners who feel the competitive need to remodel their storefronts or building entrances.

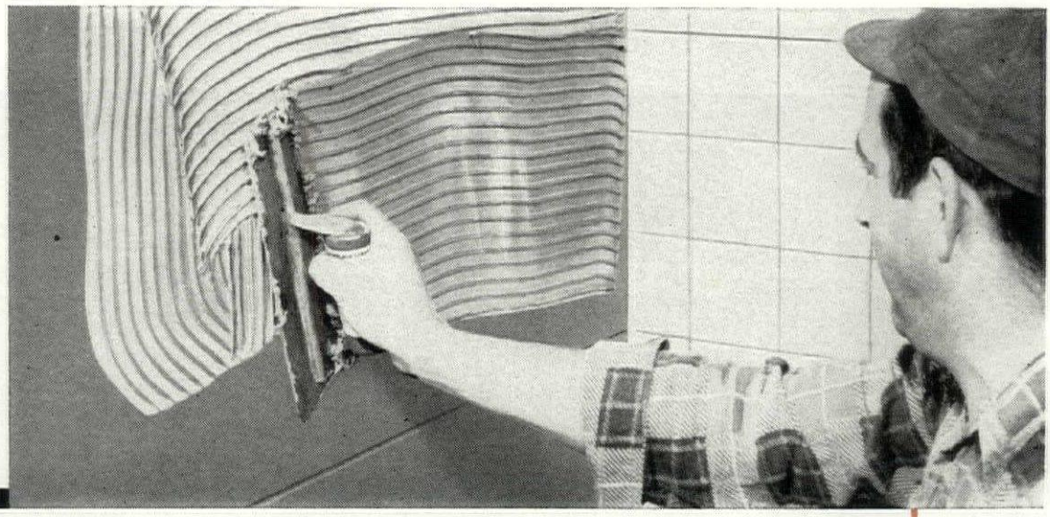
Get complete information from your L·O·F Glass Distributor or Dealer (listed under "Glass" in phone book yellow pages). Or write to Dept. 3445, Libbey·Owens·Ford Glass Company, 608 Madison Ave., Toledo 3, Ohio. *®

L·O·F GLASS

TUF-FLEX GLASS DOORS

LIBBEY • OWENS • FORD *a Great Name in Glass*





NEW! The "butter" that holds a ton per tile!

The easy-to-use clay tile adhesive that saves time,

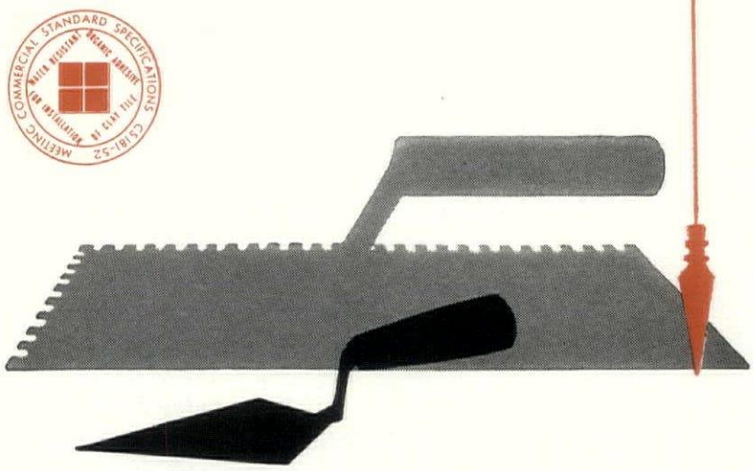
cuts costs up to 20% and more!

CTA 11

Here's the new, clean, quick way to set clay wall tile—the modern way to get luxury-tile results while cutting costs in the bargain.

It's CTA 11, the easy-spreading adhesive that is ready to go to work right out of the can. No premixing. A trowel is the only tool needed. And once this "butter" takes its grip on a tile, a full ton of stress can't remove it!

Now, you can specify a beautiful, lifetime clay tile installation on virtually ANY plumb surface—plaster, metal, cement block or dry wall—for new installations or remodeling jobs. CTA 11 is resilient and durable, too . . . resists cracks, moisture and settling. Architects, builders and tile contractors can start cutting costs by specifying and using CTA 11 now. For details on CTA 11—and its companion adhesive for tiling floors, CTA 12—write 3M, Dept. 184, 417 Piquette Avenue, Detroit 2, Mich.



MINNESOTA MINING AND MANUFACTURING COMPANY *ADHESIVES AND COATINGS DIVISION*

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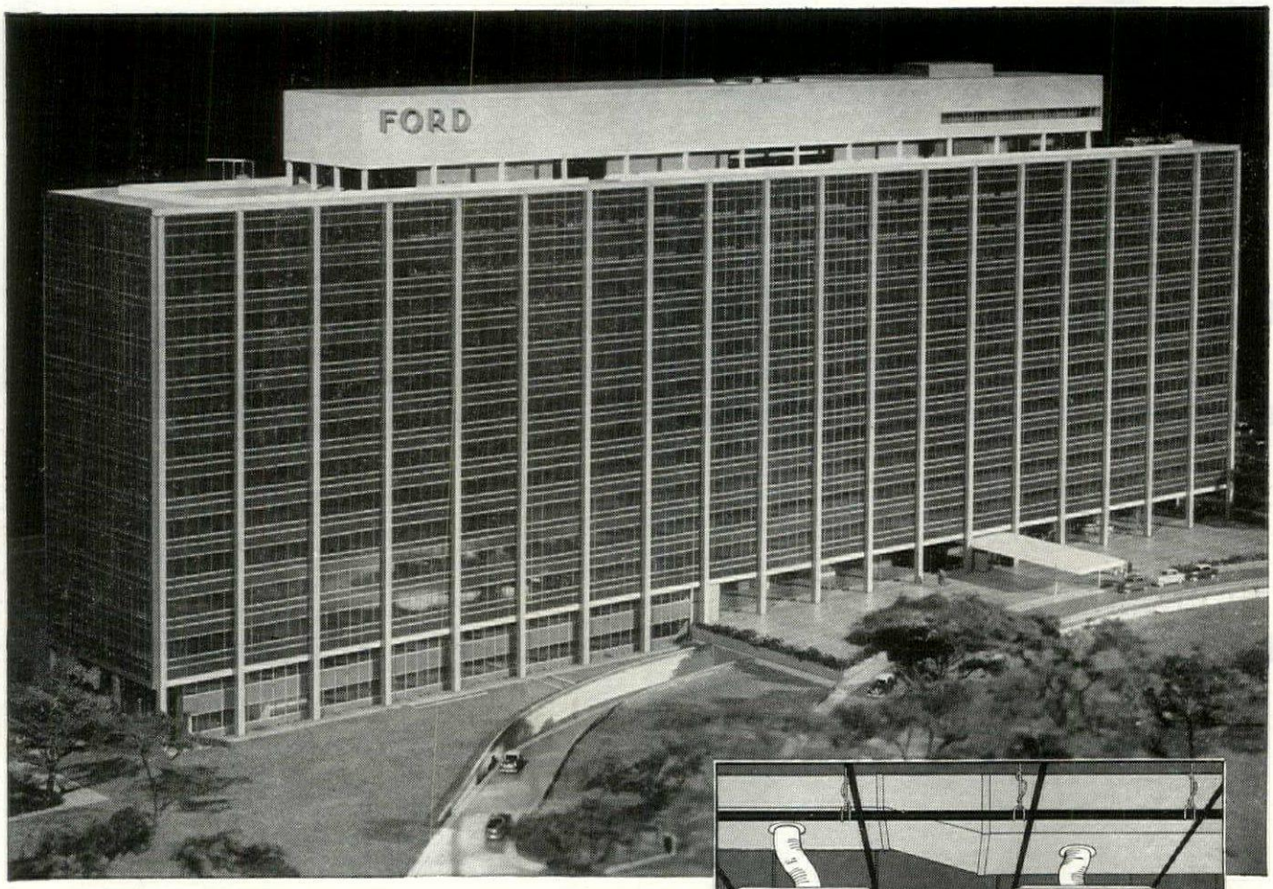

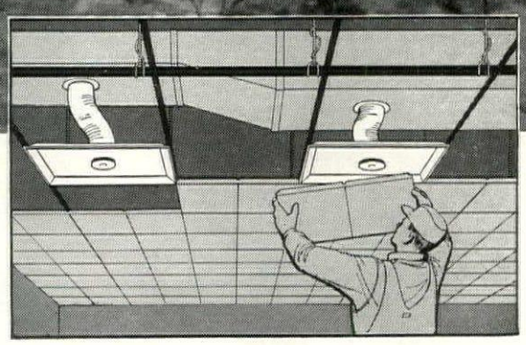

True Air Conditioned Comfort with multi-vent®

LOW VELOCITY AIR DIFFUSERS

SPECIFIED FOR FORD...coast to coast

Modular Multi-Vent panels will provide a quiet, concealed, draft-free air distribution system in the four new FORD buildings listed at the right.

The Multi-Vent story is simple...this system distributes conditioned air at low velocity by gentle pressure displacement. This unique feature not only eliminates all draft complaints but also allows complete freedom in locating or relocating moveable partitions without repositioning the outlet panels.

In addition Multi-Vent can handle as many as 60 air changes per hour and still maintain an even, draftless, low rate of room air motion!

These are only a few of the many reasons why Multi-Vent is the choice of the nation's leading office buildings, hospitals, laboratories, factories, hotels and restaurants.

DEARBORN, MICHIGAN
Ford Central Staff Office Building (Illustrated above)
Architects and Engineers: Skidmore, Owings & Merrill, New York
Mechanical Engineers: Jaros, Baum & Bolles, New York
Contractor: Bryant & Detwiler, Detroit
Mechanical Contractor: Thermotank, Inc., Detroit

LOUISVILLE, KENTUCKY
Ford Assembly Plant Office Building
Albert Kahn Associated Architects and Engineers

MAHWAH, NEW JERSEY
Ford Assembly Plant Office Building
Giffels & Vallet, Inc.
L. Rossetti Associated Engineers and Architects

SAN JOSE, CALIFORNIA
Ford Assembly Plant Office Building
Architects and Engineers: F. A. Fairbrother & Geo. H. Miehls, Detroit
Consultants: Albert Kahn Associated Architects and Engineers, Detroit

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Nobody likes to be shut in. Least of all a youngster.

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Cuts costs, too. Artificial lighting isn't needed so much. Less wall area to paint and maintain. Lower construction costs. In cold climates your daylight walls should be *Thermopane*® insulating glass for maximum comfort and heating economy. Please write for your free copy of "How to Get Nature-Quality Light for School Children". Dept. 4245, Libbey·Owens·Ford Glass Company, 608 Madison Avenue, Toledo 3, Ohio.

THERMOPANE · PLATE GLASS · WINDOW GLASS

LOF GLASS

DAYLIGHT WALLS

. . . THAT LET YOU SEE

LIBBEY · OWENS · FORD GLASS COMPANY

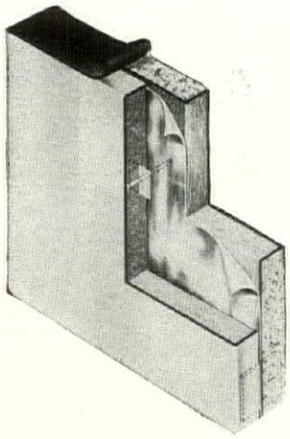
PRODUCTS

Continued from p. 224

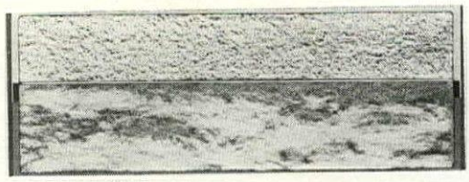
MECHANICAL SANDWICHES cannot come apart; dense fill adds solid sound

Like hostesses laminate certain canapés with toothpicks instead of mayonnaise, some sandwich-wall makers are using screws instead of glues. Here is how two new porcelained panels are put together to stay together.

Erie Enamel's adhesiveless *U-16*, made in sizes from 2 sq. ft. up to 32 sq. ft., is adaptable to many construction uses—shallow



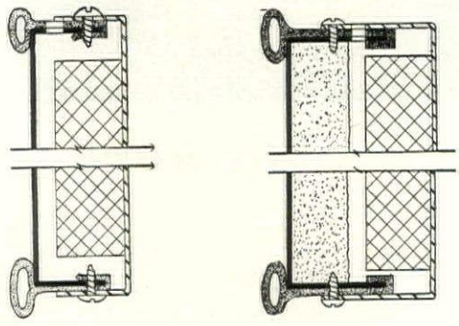
bulkhead, interior partition or building-high façade. Skin of the 2"-thick acid-resistant *U-16* (named for its .16 U factor) is a flanged pan formed of enameling iron with welded and ground corners, and porcelained inside and out for rust prevention. Copper-coated studs welded to the pan's inside surface 9" o.c. and flat spring clips positioned on each stud act as anchors for a rigidizing, insulating and sound-deadening concrete fill. (Even with this dense backup, panel weight is 9 psf.) An aluminum foil kraft paper vapor barrier and 1" glass-fiber blanket are impaled



over the projecting studs. The roomside backing—also pan-shaped—of galvanized, porcelain enameled or plain sheet metal, is secured to the exterior face with stainless steel fasteners. All raw edges are sealed with 2"-wide moistureproof vinyl or foil tape and, when set in place, get the added protection of a mastic bed shielded by exterior stop molding. F.O.B. prices start at about $2.10 psf for large orders of panels porcelained outside only, run up to $3.50 for small footage, with both faces enameled in any of Erie's 50 solid colors or infinite multitone combinations.

Manufacturer: Erie Enameling Co., Erie, Pa.

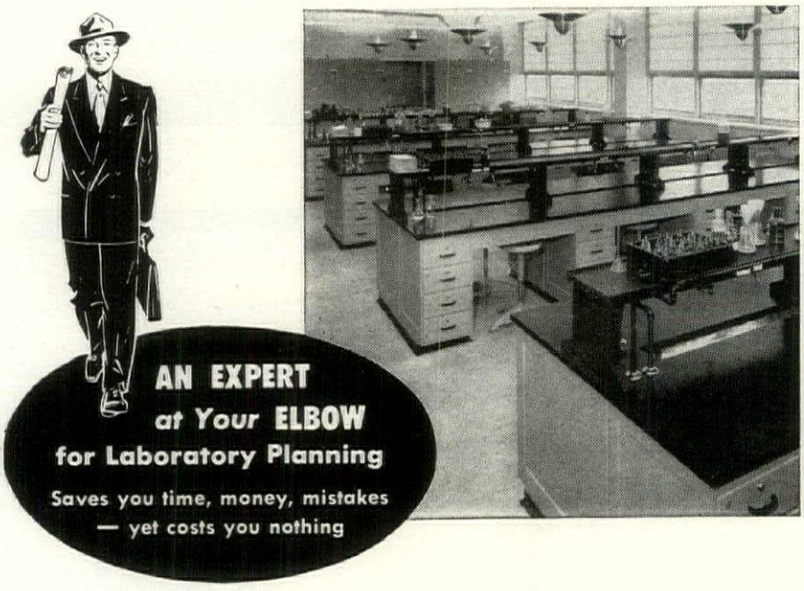
Designed to work with standard framing in almost any fenestration and spandrel arrangement, *Davidson's* versatile *type A* sandwich, with porcelain-fused-to-steel facing, depends on self-tapping stainless-steel screws to clamp inner and outer sections. The enameled units' glass-fiber cores, too, are held in place mechanically to avoid any possible problem of adhesive failure. But eliminating one of condensation's aftereffects does not do away with the trouble source. So, to



minimize internal moisture and prevent clamminess on interior faces, *Davidson* makes allowance for atmospheric changes within the wall by leaving a breather space between insulation and outside surface. Whatever condensate does form inside the panel is permitted to drain freely through weep holes.

Many school, hospital and commercial jobs require sound-muffling walls. This characteristic—soothing physiologically to student, pa-

continued on p. 236



Planning the most efficient, convenient and economical installation of laboratory equipment—to fit your specific needs—is a specialist's job. That's why it's so important to consult Kewaunee during the planning stage.

Start with the man who knows – the Kewaunee Laboratory Engineer. Available to you without cost or obligation, he'll show you how to achieve work-saving convenience and time-saving efficiency... how to save money . . . how to plan for future expansion . . . how to avoid future regrets. And he'll explain the Kewaunee Unit Assembly Plan, which permits the installation of the very finest laboratory equipment—in wood or metal—at modest cost.

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Like to see our catalogs? Write for free copies, showing complete lines of wood and metal laboratory equipment.

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With this **ANNOUNCEMENT** of Porcenell Chalkboard, it is not an overstatement to say that a new concept in modern school chalkboard history begins. BENJAMIN ELECTRIC, long a pioneer in lighting, is proud to follow its advancements in school illumination with this further advancement in better seeing and instruction.

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Chalk "flows on" with minimum pressure due to micro-fine, super-hard, "suede-coated" surface which also facilitates erasure; eliminates ghosts.

Papers can be held to board with magnetic holders

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Quicker, "care-free" cleaning with water restores board to original efficiency; there are no deep pores to retain chalk particles; dulling is thus eliminated.

Superior Durability

Never needs replacement due to age . . . will not become shiny in a lifetime of normal use; cannot fade . . . completely resistant to moisture . . . cannot warp.

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NOT slate, glass or plastic...
NOT conventional porcelain enamel...
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it's an ENTIRELY NEW TYPE VITREOUS ENAMEL Chalkboard

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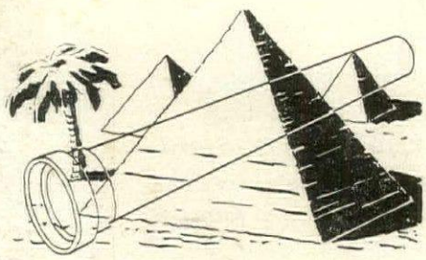
Porcenell is a patented, vitreous process developed by Vitreco, Inc., a research organization jointly owned by Youngstown Sheet and Tube Co. and Poor and Company. The Porcenell development is the result of over 15 years and three quarters of a million dollars of research. In this product there has been achieved an entirely new, non-warping, lighter weight, finer, vitreous, hard chalkboard surface never before commercially available.

6 Sound Reasons Why
ARCHITECTS and BUILDERS
Specify Permanent
CAST IRON SOIL PIPE
and Fittings .... *From Roof to Street*

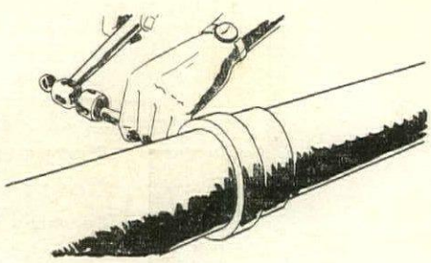
Architects and builders recognize that their responsibility to clients includes the structure and all of its connections straight through to the street. That's why so many specify permanent cast iron pipe for these sound reasons:

Lasts for Centuries



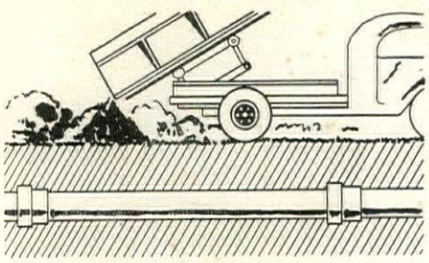
Rugged cast iron soil pipe has a record of longevity in stacks and plumbing drainage systems unequalled by any substitute material. It will outlast any home. In the oldest house in Chicago, built in 1836, the original cast iron soil stack and cast iron sewer line are still in perfect condition.

Roots Can't Clog



Joints of cast iron pipe are packed with oakum and caulked with molten lead. This combination provides a joint that absolutely prevents root penetration—the cause of so many clogged sewers, torn up lawns and unhappy home owners.

High Structural Strength



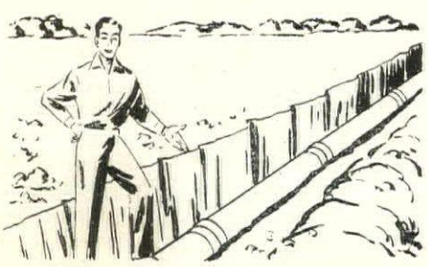
Cast iron soil pipe is self-supporting and can stand heavy loads, such as high driveway pressures, without injury. It withstands fracture by ground settlement, root growth or vibration. It cannot be penetrated by nails and spikes driven in the walls of a building.

Zero Moisture Absorption



Cast iron pipe is non-absorbent—inside and out. Wet earth won't cause softening, distortion or loosening of its joints. It stands up indefinitely against damage by the continued passage of hot soapy waste.

Easy to Lay



No complicated trenching is required when cast iron pipe is laid from house to street. It can be laid shallow or deep. The trench is backfilled in the usual way with no special underlays for joints or barrels.

Approved by All Building Codes



Cast iron soil pipe is the only pipe approved by all national, state and city codes for drainage both inside and outside the building. Cast iron is also the only material permitted underground beneath the building by all codes.

When you specify cast iron — inside and out — of any home you can do so with confidence that there will be no complaints or comebacks.

* * * * * * * * * *

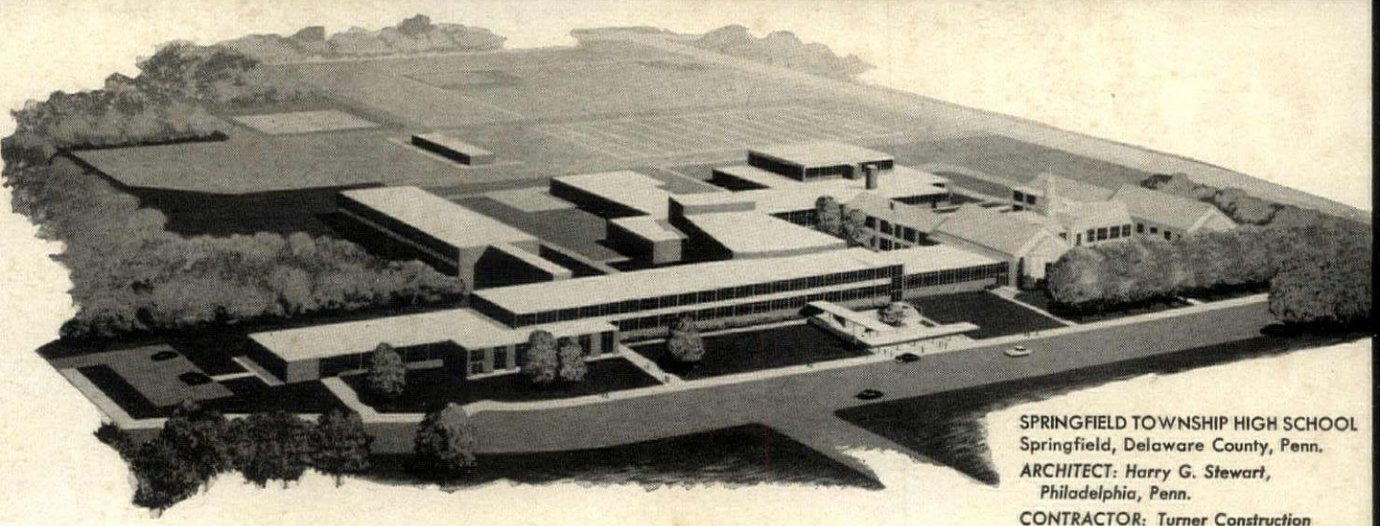
Woodward Iron Company does not manufacture cast iron pipe, but supplies many of the nation's leading foundries with high grade pig iron from which pipe is made.

WOODWARD IRON COMPANY

WOODWARD, ALABAMA

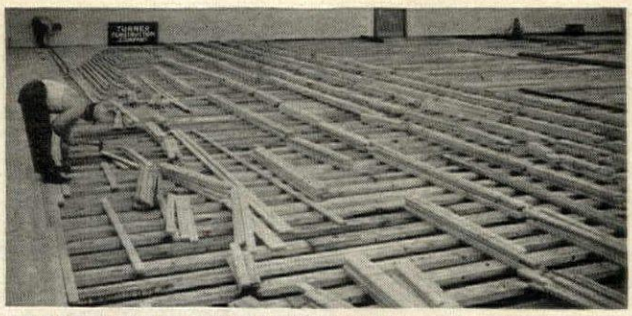
Architects, Owners Know rom Experience:

Monsanto Penta Protects Wood, Insures Permanence

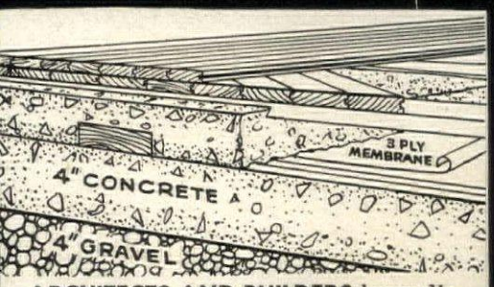


SPRINGFIELD TOWNSHIP HIGH SCHOOL
Springfield, Delaware County, Penn.
ARCHITECT: Harry G. Stewart, Philadelphia, Penn.
CONTRACTOR: *Turner Construction Company*

WOOD SUBFLOORING FOR THE GYMNASIUM in this new school was pressure-treated with Penta, before installation. Result: a clean wood floor protected against decay and insect attack. These natural enemies of wood are at work in every region of the U. S.! Penta protects wood best because it hits *deep*, repels insects and resists decay, stays locked in wood for years. Penta treatment multiplies the service life of exposed wood up to 4 times! That means longer building life, lower maintenance cost, greater client satisfaction with the buildings you design and build. For informative, FREE booklet on Penta and a list of 75 Penta pressure-treating plants in the U. S., mail coupon below.



CLEAN, ODORLESS, EASY TO HANDLE. Penta pressure-treated wood is clean, can't "burn" hands or stain clothing because Penta won't bleed or leach out of wood. Ideal for indoor application, Penta-treated wood can also be painted, if specified.



ARCHITECTS AND BUILDERS have discovered that versatile Penta can solve countless construction problems. For instance: when wood screeds are pressure-treated with Penta, they are protected from decay caused by absorption of moisture from on or below grade concrete. Result: Penta-protected screeds provide extra-long life for the gymnasium floor diagrammed above.

PENTA PROTECTS
Studding and Rafters • Sills and Plates • Joists and Girders • Subflooring and Screeds • Factory Flooring • Roof Plank Platforms and Decking • Millwork • Wood Fences • Stadiums and Grandstands • Cooling Towers • Posts and Guardrails • Bridge Timbers • Mine Props and Timbers.

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Organic Chemicals Division
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Box 478-D-3, St. Louis 1, Missouri

Please send ☐ FREE Booklet on PENTA
☐ List of 75 Penta pressure-treating plants

Name.....

Address.....

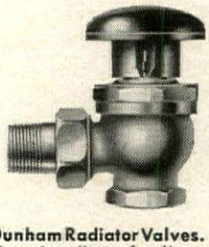
City..... *State*.....

New beauty for along-the-

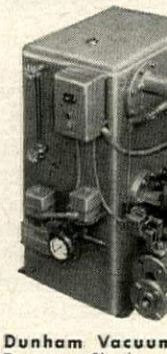


New Thermo Vector painted to simulate wood paneling in office of Mathias Klein, President, Mathias Klein & So
Architect: Wright, Martin & Assoc., Wilmette, Ill. Heating Contractor: Fettes, Love &

From radiator traps
to fully engineered systems
you can DEPEND ON DUNHAM for
everything you need in heating

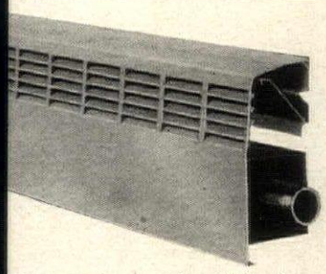


Dunham Radiator Valves. Complete line of radiator valves, traps and other specialties for steam heating.

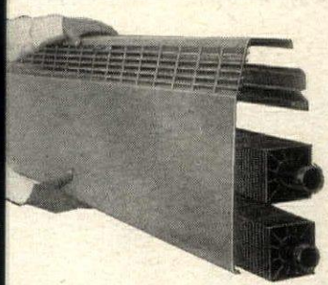


Dunham Vacuum Pumps. Single a models. No close cle Only one moving e

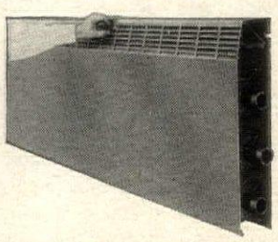
diation jobs...Dunham Thermo Vector



Here you see the tailored, trim lines of new Thermo Vector.



Here you see how easily new Thermo Vector is installed using "hanging strip."



Here you see the lever-operated damper installed in three tier Thermo Vector.

—with a tailored, trim look

New Dunham Thermo Vector looks good ANYWHERE! Its smooth, unbroken horizontal lines blend beautifully in any office or commercial building . . . and Thermo Vector is sturdy enough to stand up for years and still look good in any industrial or institutional installation.

—with "built-in" versatility

New Dunham Thermo Vector is used flush mounted along the walls . . . one, two or three tiers high . . . with steam or hot water . . . steel or nonferrous elements. Use with full back or just use "hanging strip." Front outlet grille eliminates wall smudging—lets you install Thermo Vector ANYWHERE.

—with cost-cutting ease of installation

To install Dunham Thermo Vector, all you do is position the back or "hanging strip" on wall. Attach element support to it and hang elements. Mount one-piece cabinet . . . then accessories which conceal elements and piping for the "finishing touches." Fronts, backs and lever-operated damper easily cut on the job.

For further information, write for Bulletin AF-4, C. A. Dunham Company, 400 W. Madison St., Chicago 6, Ill.

DUNHAM®

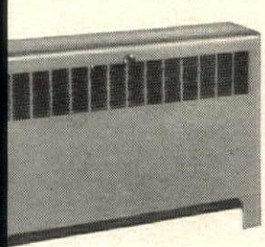
THERMO VECTOR RADIATION

TRADE-MARK

RADIATION • CONTROLS • UNIT HEATERS • PUMPS • SPECIALTIES

Quality First for Over Fifty Years

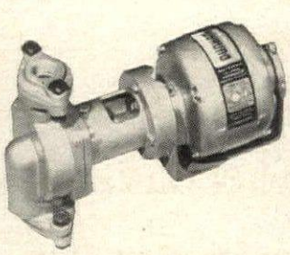
C. A. DUNHAM COMPANY • CHICAGO • TORONTO • LONDON



ham Radiation. Full range zes and types of convectors, board and finned tube radi- n.



Dunham Unit Heaters. Line includes heating-cooling units, vertical, horizontal discharge and large blower unit heaters.



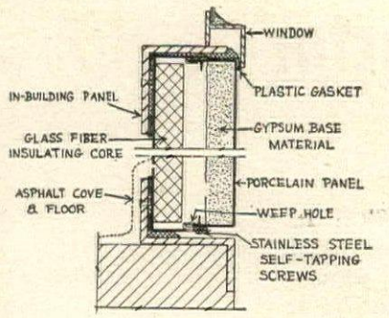
Dunham Circulators. Heart of Dunham's complete hot water line. Single-spring motor coupling. Brand-name motor.

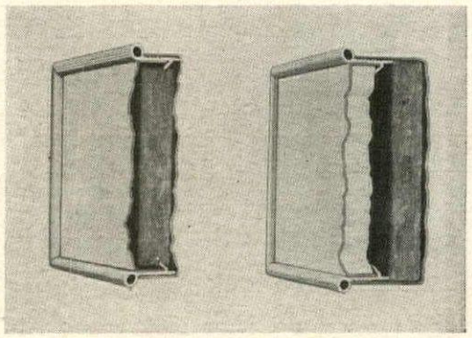


Dunham Vari-Vac®. Precision temperature control system uses continuous-flow "cool" steam, cuts fuel costs up to 40%.

PRODUCTS

Continued from p. 230





Breathing space between outer skin and insulation prevents sweating on roomside face.

tient and office worker, and reassuring psychologically to any skeptic of metal-building sturdiness—is obtainable with the *Davidson type C panels.* Its cast-in-place backing of shrinkproof gypsum base material kills noise and is said to keep the panel absolutely flat, permanently.

No gook-type calking is needed for either *Type A* or *C* units; each has a built-on, watertight seal of nondeteriorating *Koroseal* surrounding all panel junctions. Hollow and resilient, this continuous strip (corners are mitered and fused) gives or takes, as panel expansion or contraction warrants, without yielding its seal.

In-place costs of *Davidson double-wall* panels range from $2.50 to $6.50 psf depending on kind of core and treatment specified for interior facing.

Manufacturer: Davidson Enamel Products, Inc., 1104 E. Kibby St., Lima, Ohio.

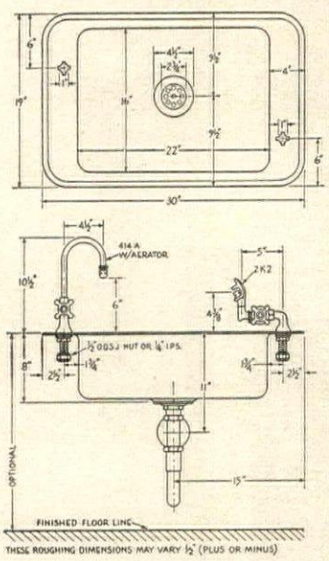
Now!

THE POPULAR HAWS DECK-TYPE DRINKING FOUNTAINS



HAWS Model No. 2350

in STAINLESS STEEL



HAWS Series 2300, Model No. 2350 (Pat. applied for)



HAWS Model No. 2255

Now! The HAWS stainless steel Series 2200 and 2300 with all the features that have made the white enamel cast iron HAWS Series 2000 so popular for school classrooms. Raised and sloped mounting rim that keeps water off deck or table top... VANDAL PROOF socket flanges and fittings...chrome plated sink strainer with non-removable grid... *and availability with any combination of HAWS faucets and fixtures.* For *Acid-Resisting Enamel* finish, specify HAWS Series 2000.

Write today for illustrated Detail Sheets on 2000, 2200 and 2300 Series!

HAWS DRINKING FAUCET CO.

1443 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA



BENDABLE INSULATION made for hot and cold piping lines

As the trend to dual-delivery air conditioning steps up, so does the need for an easily applied sheath to isolate hot and cold lines from their surroundings and from one another. *Armaflex,* a resilient foamed plastic withstanding temperatures from 32° to 200° F., seems to be just such a material. Produced in tubular form, the flexible insulation can be slipped on pipes or tubing while the air-conditioning system is being installed; or, if lines have been connected and tested, *Armaflex* can be cut to size, slit lengthwise, snapped over the straight or curved pipe and sealed with adhesive. A fine vapor barrier in itself, the material has a thermal conductivity of .28 at 75°—about as low as cork. *Armaflex* comes in 6′ lengths in sizes to fit piping commonly used in heating-cooling systems—⅝″, ⅞″, 1-⅛″ and 1-⅜″—at prices ranging from approximately 33¢ to 45¢ per lin. ft. The adhesive is 75¢ a pint.
Manufacturer: Armstrong Cork Co., Lancaster, Pa.

MOLTEN GLASS BLOCK oven baked with hard top frosting

An unscientific but often devastating test foamed materials are submitted to by specifications writers and product reviewers is

continued on p. 244

to meet your lighting requirements . . .

BENJAMIN "MAGNA-FLO"

goes to great NEW lengths!



To bring you Better Industrial Lighting, Benjamin "Magna-Flo" goes to great new lengths with these 5 IMPORTANT ADVANCEMENTS!

1. **Easy-to-clean "Life-Time" Porcelain Enamel with 85%-or-higher Reflection Factor.**
2. **Available with Diffuser-Reflector for Greater Upward Light.**
3. **Just 2 lengths of channels and 4 basic reflectors form backbone of "Magna-Flo" systems!**
4. **13° Shielding minimizes lamp glare.**
5. **Made for 48" and 96" T12 Slimline Fluorescent Lamps . . . 2 or 3-lamp units.**

No matter where you want fluorescent light . . . high ceilings or low ones, assembly lines or drafting rooms, inspection or mass-production lighting . . . there's a "Magna-Flo" System to exactly match the need. Bulletin 5705 brings you complete details. For your free copy write:

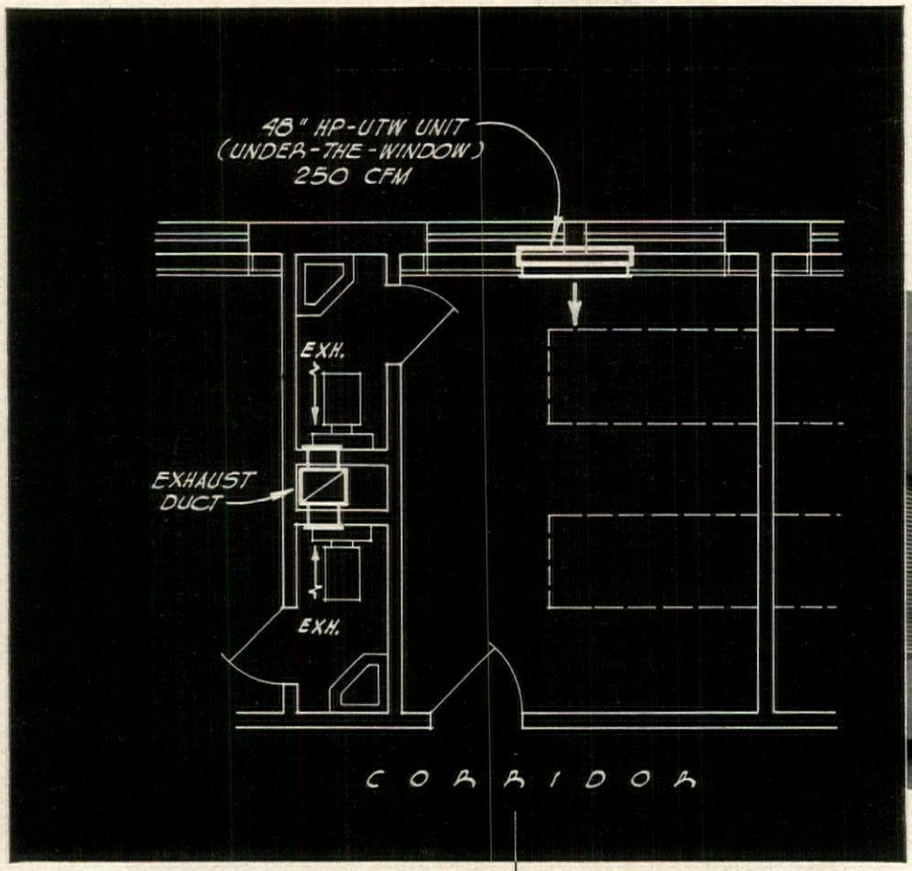
Benjamin Electric Mfg. Co., Dept. YY, Des Plaines, Ill.

CUT MAINTENANCE COSTS and RE-LAMPING TIME

with exclusive, rust-resisting, depressible, metal-clad "Springlox" Lampholders, featuring patented, instant-contact spring design.

BENJAMIN RLM

Sold Exclusively through Electrical Distributors

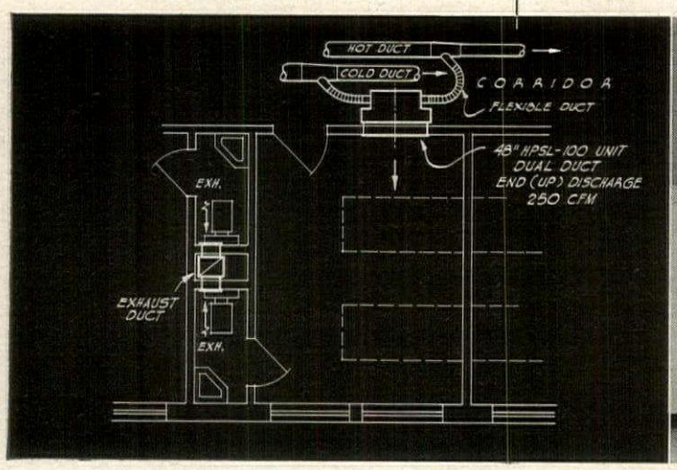


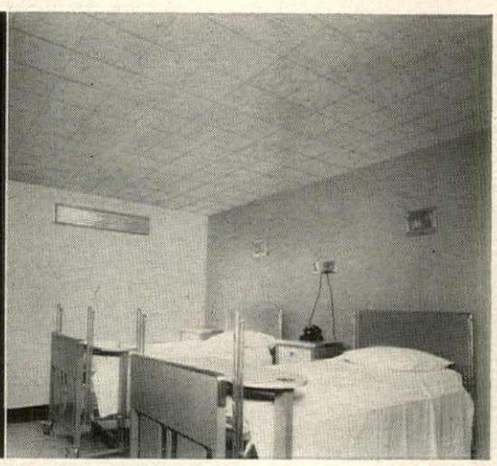


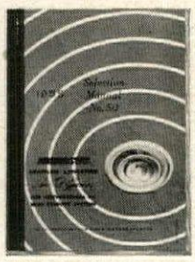
All-air high velocity units for **hospital air conditioning**

In successful use in many hospitals throughout the country, Anemostat HV round, square and straight line units are adaptable to a wide variety of architectural designs. Diagrams and photographs show typical applications of straight line units.

The All-Air High Velocity system of draftless air distribution offers many important advantages for hospital air conditioning. High velocity units, used with smaller than conventional ducts, save space and money. They substantially reduce sheet metal required, can be installed faster, with less labor. Since there are no coils in All-Air HV units, clogging and odors are eliminated. They operate entirely with air processed in the main equipment room; no fans, filters or electric motors are needed with All-Air HV units.







• *For latest data on All-Air High Velocity units,* write on your business letterhead for *new Selection Manual 50* to Anemostat Corporation of America, 10 E. 39 Street, New York 16, N. Y.



Get full 28 Day Curing for Greater Density with CEM-SEAL

Unless properly sealed, a new concrete floor has a natural tendency to deposit alkaline salts on the surface as it cures. This causes surface powdering, called "dusting" or "bloom."

CEM-SEAL acts as a cap or dam to hold moisture down below the surface. This prevents formation of the damaging salts — and it also prolongs the curing period of the concrete. The surface comes through denser, harder, more resistant to wear.

Application is simple and easy. Treat acres of floor in a short time with big sheepskin applicators. Floors can be opened to traffic in just 4 hours.

CEM-SEAL is also an ideal primer for renewing old concrete floors.

Check these CEM-SEAL advantages — never before available.

1. **Goes on easy — just sweep floor and apply.**
2. **1-coat quick dry application — seals moisture in the concrete.**
3. **Complete curing of concrete gives you a dense, uniform surface with longer life.**
4. **Protects floor from stains while other building trades are at work.**
5. **Prevents "dusting" and efflorescence.**
6. **Gives you a smoother surface for easy maintenance.**

HILLYARD CHEMICAL CO.
St. Joseph, Mo.
Please send me full information about Hillyard CEM-SEAL.

.....for new concrete

.....for renewing old concrete

Name .....

Address .....

City ..... State .....

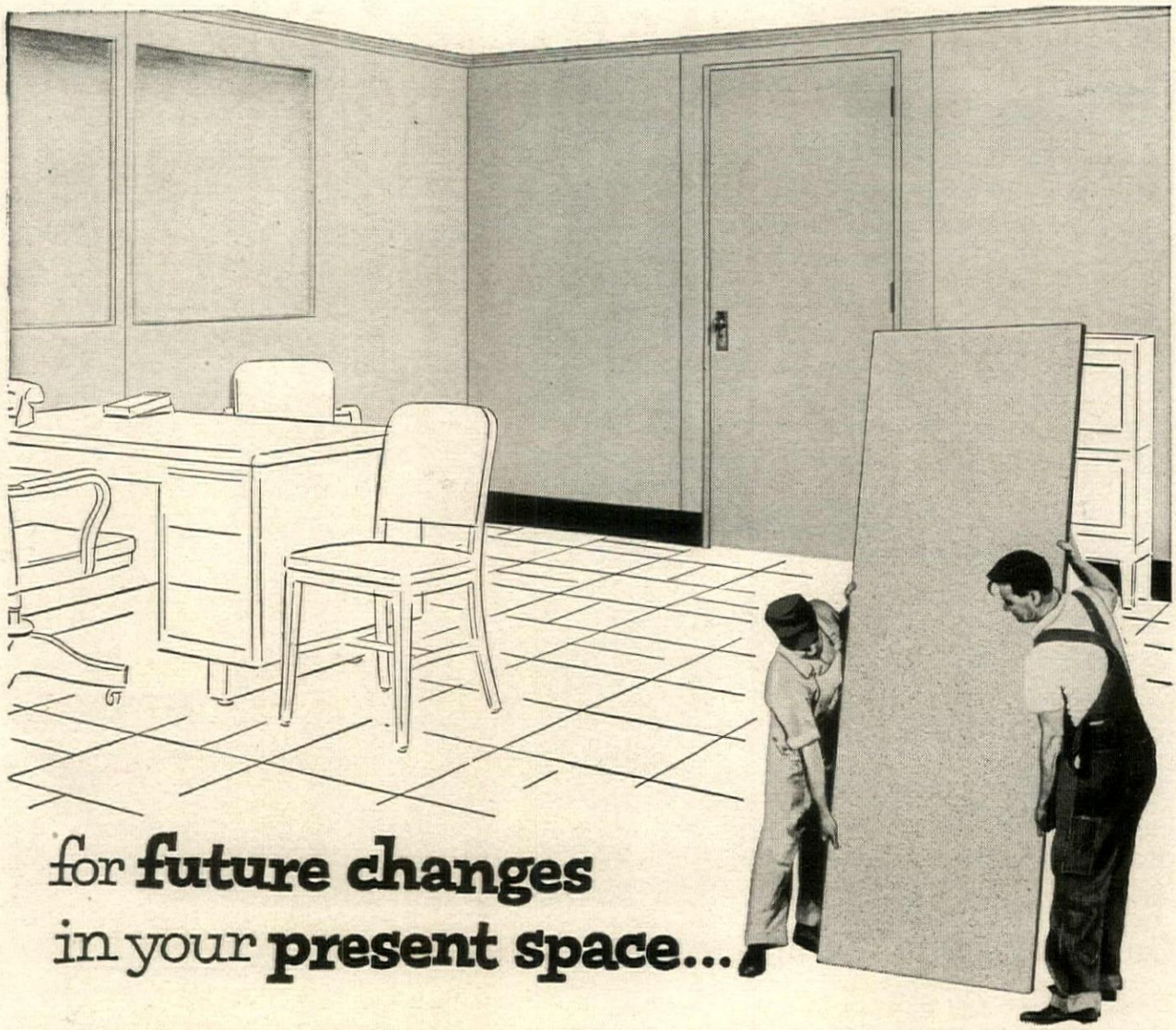
Mail This Coupon Today

Hillyard Maintaineers®, trained floor experts, are stationed in principal cities. There is one near you, who will be glad to consult with you on your problem of treatment or maintenance of any type floor. No charge, no obligation for this service.



FLOOR HILLYARD TREATMENTS

ST. JOSEPH, MISSOURI
San Jose, Calif. Passaic, N. J.
Branches in Principal Cities



for **future changes** in your **present space...**

J-M Class A Asbestos Walls are movable . . . save space and make space . . . are noncombustible, moderately priced . . . come in pleasing colors

New Johns-Manville Class A Movable Walls offer you advantages never before combined in an asbestos movable wall. They are modestly priced. They are noncombustible. They have a textured, stipple finish in restful colors. They reduce maintenance and relocation costs to a new low.

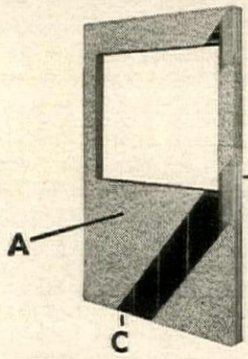
The finish of Class A Movable Walls is a tough, hard film many times thicker than on the usual movable partition. It is mar and scratch resistant . . . rejects stain and soil . . . can be easily washed and even scrubbed, if necessary. If damaged, it can be touched up inexpensively to look like new . . . and, unlike other types of factory-finished partitions, can be repainted with ordinary paint.

Undivided responsibility for a complete job

These flush or glazed partitions are erected by the Johns-Manville Construction Department complete with doors, door hardware, glass and trim.

• • •

For details about J-M Class A Asbestos Walls, consult your Sweet's Architectural File, or write Johns-Manville, Box 158, Department AF, New York 16, New York. In Canada, write 565 Lakeshore Road East, Port Credit, Ontario,



A Noncombustible asbestos-cement surfaces

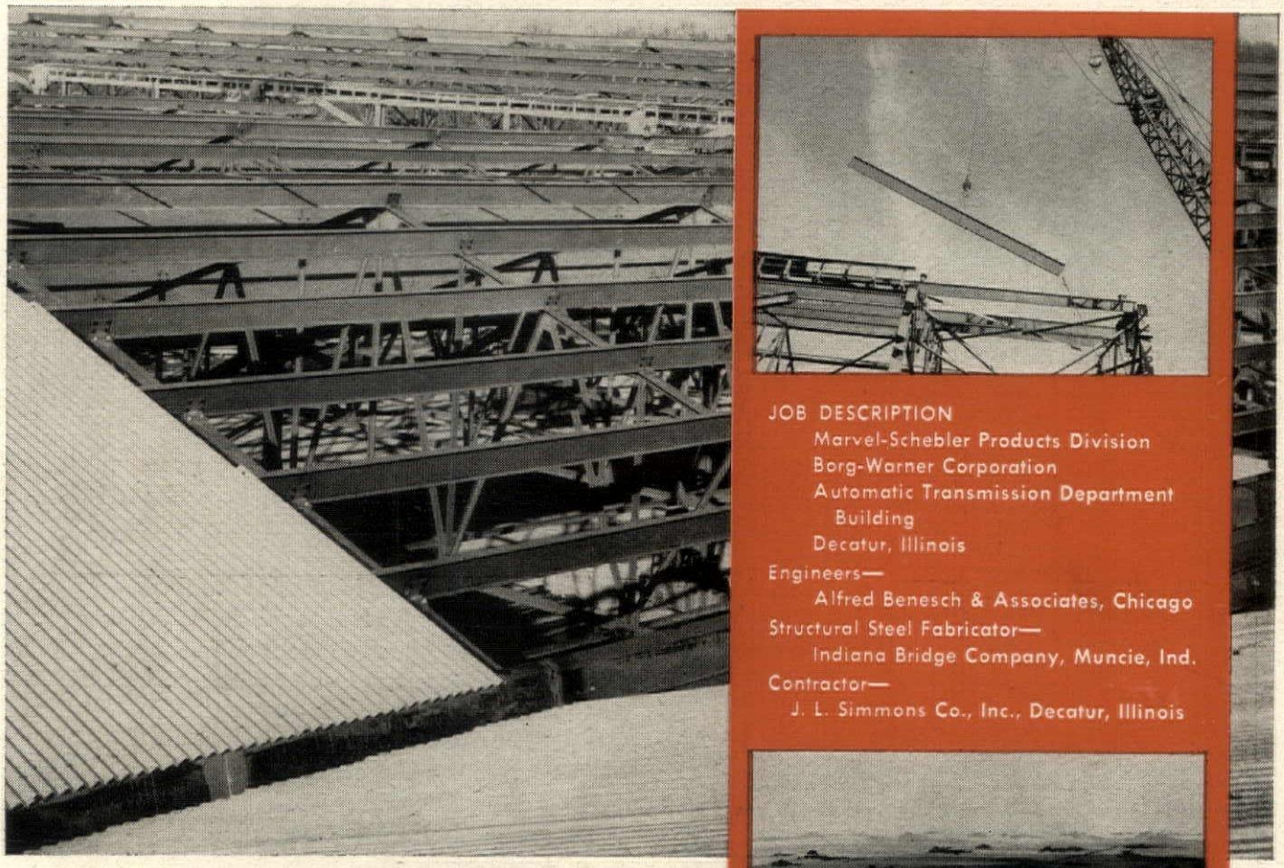
B Generous reinforcing for added strength

C Noncombustible all-mineral insulating core

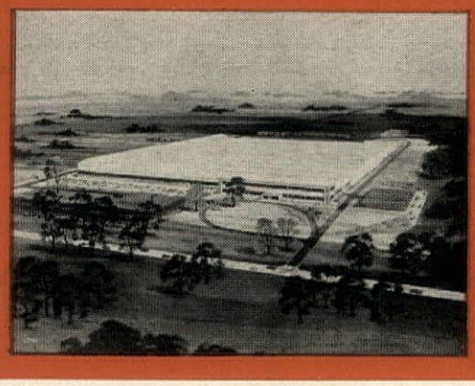
JOHNS-MANVILLE PRODUCTS

Johns-Manville

BUILDERS BEAT A DEADLINE WITH J&L JUNIOR BEAMS



JOB DESCRIPTION
Marvel-Schebler Products Division
Borg-Warner Corporation
Automatic Transmission Department
Building
Decatur, Illinois
Engineers—
Alfred Benesch & Associates, Chicago
Structural Steel Fabricator—
Indiana Bridge Company, Muncie, Ind.
Contractor—
J. L. Simmons Co., Inc., Decatur, Illinois



2400 tons of steel structurals, including over 500 tons of J&L Junior Beams, in 75 days . . . that was the "unusual" erection schedule laid down for the new automatic transmission building of Borg-Warner Corporation's Marvel-Schebler Products Division. And the schedule was met with a few days to spare!

The men on the job give lightweight Junior Beam roof purlins a big share of the credit for this outstanding accomplishment. Here are just some of their reports.

"The time for delivery of steel . . . was the essence of the contract. We chose J&L Junior Beams because of their availability, simple fabrication and ease of erection."

H. E. WRAY, Assistant General Manager
INDIANA BRIDGE COMPANY

"We could never have met the schedule that was laid down without these J&L Junior Beams. They have a wider seating area and double footings which gave our workmen a safer, faster area of moving around aloft. If we had used the usual channels, we would have had to slow down for safety's sake. We would have had foot room on only one side of the bottom of the channels, compared with a place on either side for a man to get foot support on the beams."

CECIL STODGHILL, Construction Superintendent
INDIANA BRIDGE COMPANY

Take a tip from the men that are using them, J&L lightweight Junior Beams can help you cut building costs. Experience shows that J&L Junior Beams are the most economical hot rolled purlin sections available. They're adaptable, easy to install, rigid and vibration resistant.

Write today for more information on this modern lightweight J&L structural.

Jones & Laughlin
STEEL CORPORATION — *Pittsburgh*

J&L STEEL

Jones & Laughlin Steel Corporation
491 Gateway Center, Pittsburgh 30, Pa.

☐ Please send me a free copy of your booklet on J&L Junior Beams.
☐ Please send me comparative cost figures on purlin sections.

Name_____
Company_____
Address_____

JUNIOR BEAMS ARE READILY AVAILABLE FOR PROMPT DELIVERY

Lifelong floor beauty at *low annual cost*...



EASY-TO-CLEAN TERRAZZO pays dividends with less maintenance. Philadelphia General Hospital. Architects & Engineers: Gilboy & O'Malley —Alfred Claus, Architect-Partner; General Contr.: McCloskey & Co.; *Terrazzo* by United Marble Co., Philadelphia, Pa.

TERRAZZO

Beautifies any building — a natural for low-budget jobs that call for lasting resistance to heavy foot traffic

Handsome terrazzo floors are often the most *economical* floors you can buy, because moderate first cost, ease of maintenance and long life make terrazzo's annual cost remarkably low. School, depot and hospital installations have proved that terrazzo stands up under the heaviest foot traffic . . . stays fresh and new-looking year after year.

Terrazzo gives architects almost unlimited freedom of design. And when terrazzo is made with Atlas White Cement, almost any desired color effect can be achieved.

For your next job, institutional or commercial, that calls for floors that will stay good-looking and yet be economical to clean and maintain, consider terrazzo floors made with Atlas White Cement. Ideal for wainscoting and stairways, too.

For more information, see SWEET'S Catalog, Section 12g/Un and 3d/Un, or write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



TIME-PROOF TERRAZZO withstands heavy foot traffic . . . stays new-looking for the life of the building. Transfiguration Parochial School, Philadelphia, Pa. *Terrazzo* by Belfi Bros. & Co., Philadelphia.



GOOD-LOOKING TERRAZZO offers architects wide freedom of design. Mankato High School, Mankato, Minn. Architects: Pass & Rocky; Gen. Contractor: Heckstrom Constr. Co.; *Terrazzo* by Mankato Tile & Terrazzo Co.; all of Mankato, Minn.



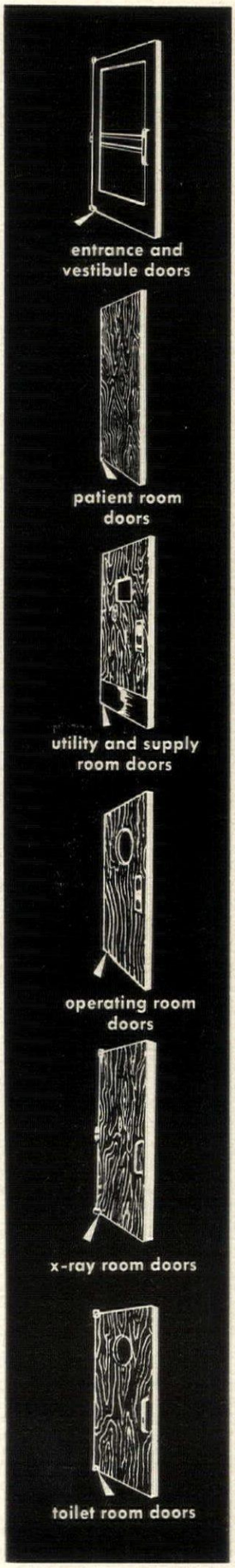
AF-WCT-83

FOR BEAUTY AND UTILITY

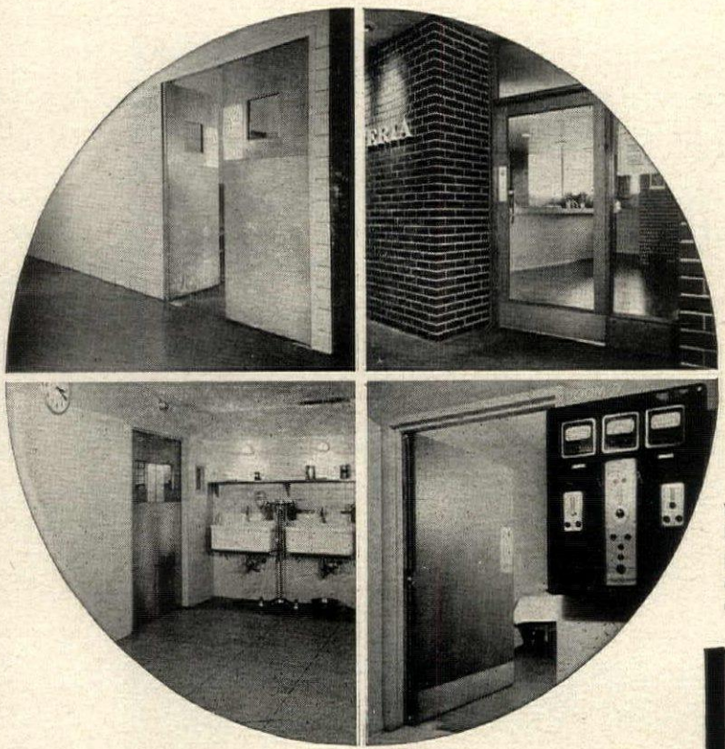
ATLAS WHITE CEMENT

FOR TERRAZZO, PAINT, SLABS, STUCCO

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.



All "*working*" hospital doors should close automatically with RIXSON concealed closers



Weiss Memorial Hospital Interiors, Chicago.

LOEBL, SCHLOSSMAN and BENNETT, architects, Chicago.



RIXSON concealed closers are firmly embedded in the RIGID FLOOR

Where patients, visitors and a busy staff pass through doors . . . a safe, controlled door closing action is important. Every "working" hospital door, including entrance and vestibule doors, utility room, toilet, and patient room doors—should be equipped with RIXSON floor type closers. The doors will open with a light, easy push and then close gently, quietly, and automatically. RIXSON Closers are out of the way, firmly concealed in the rigid floor where they cannot gather dust or dirt and cannot obstruct the door opening. No unsightly arms or mechanism exposed.

There's a silent, automatic RIXSON Closer to suit every interior and exterior door requirement — from the lightest patient room door to the extra heavy X-ray room door.

Most RIXSON Closers available with built-in hold-open.

THE OSCAR C. RIXSON CO.

9100 w. belmont ave. • franklin park, ill.

PRODUCTS

Continued from p. 236





the fingernail dig. Actually, the dents indicate nothing of a material's thermal value or vapor resistance (often laboratory-proved as excellent); they merely show that cloud-weight synthetics can be gouged. But Pittsburgh Corning's new *Duraface Foamglas* is no such softie. Processed in a 1,700° oven from a double batch of regular *Foamglas* and a denser mix of pulverized glass and chemicals, the annealed and solidified unit has in fact twice the impact resistance of a cement plaster finish. Walls faced with *Duraface* are not only treated to extremely good insulation but get at the same time a rugged finished surface. Permanently fused, the pale gray ceramic face cannot peel or delaminate. Having high compressive strength and rigidity, the lightweight units also can be built into unsupported walls. Hot asphalt or cold adhesive can be used on the units which may be laid up with straight or staggered joints.

Completely inorganic, *Duraface Foamglas* cannot rot and offers no incentive to fungi or vermin. Particularly suited to installations where humidity is high or temperature low, such as in refrigerated food storage rooms, *Duraface* walls can be kept immaculate by scrubdowns whenever necessary; the material's unlinked cellular structure makes it absolutely nonabsorptive. Present applied costs of the 18" x 12" blocks run about $1 per sq. ft. for 4" thick, slightly less for 3". For easy sealing of joints, block face edges are beveled ¼".

One architect's comment on seeing a sample *Duraface* block: "If this were made in other attractive shapes, it could be a very adaptable building unit as well as a utility material."

Manufacturer: Pittsburgh Corning Corp., 411 Seventh Ave., Pittsburgh 19, Pa.



will *your* specifications be outdated?...see the *newest!* **See an Acusti-Luminus Ceiling near you!** *Lighting, sound control, air flow combined!*

The trend is to allover ceilings of glareless, shadowless light that also provide sound control and a ceiling-wide plenum for air conditioning and heating. ACUSTI-LUMINUS CEILINGS are easy to maintain. They're made from unbreakable, corrugated LUMI-PLASTIC and labeled by UL for installation under sprinkler systems. Three essential elements for modern interiors are combined at a cost that's lower than conventional illumination and sound control alone.

over 4500 installations!

See the functional beauty of an ACUSTI-LUMINUS CEILING for yourself... *send the coupon below for* free *illustrated booklet and location of an installation near you.*



Luminous Ceilings, Inc.
Dept. A-2, 2500 W. North Ave.
Chicago 47, Ill.

Please send me your free illustrated booklet and tell me where I can see an ACUSTI-LUMINUS CEILING installation!

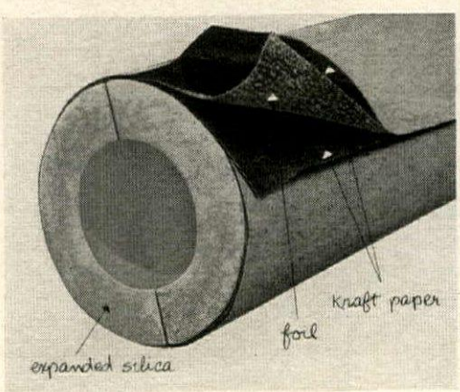
Name and title_____

_____

Firm name_____

Address_____

City & State_____



PIPE INSULATION of exploded silica die-formed for perfect, lasting fit

Fabricated for use on heating, plumbing and air-conditioning lines in the 35 to 350° F. temperature range, *Fibrocel* is an effective, stable, lightweight and clean thermal insulation. Made from silica aggregate vaporized under high temperatures, the expanded inert chemical is die-formed to standard pipe sizes. *Type C Fibrocel,* furnished with a canvas jacket, and *type G,* with white plastic-coated

continued on p. 248



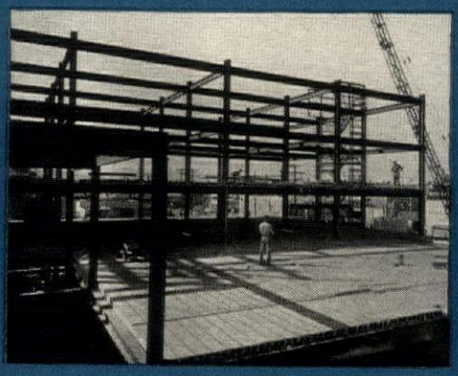
1. FACTORY addition ahead 30 days.



2. CHURCH floor placed in 2 days.



3. HOSPITAL saves almost 2 months.



4. HOTEL opens 2 months early.



5. APARTMENT rents 2 months sooner.



6. OFFICE building saves 30 days.



7. GARAGE roof takes 12 hours.



8. SCHOOL ready 1 month earlier.



9. PLANT speeds construction 25%.

HOW FLEXICORE CUTS JOB TIME, SAVES ONE WEEK TO TWO MONTHS!

People moved into these buildings way ahead of schedule, because *precast floors and roofs* cut construction time.

When the jobs were ready for floors or roofs, the Flexicore slabs were all ready to be installed. Erection was fast, averaging 2500 square feet a day in almost any weather.

Architects, superintendents and owners reported savings of one week to two months on the jobs pictured above.

Flexicore slabs are easy to work with. You can clear-span up to 22′ 0″ or 26′ 0″, depending on cross-section sizes ranging from 6″ x 12″ to 8″ x 16″. Hollow-casting reduces their dead load. Cores can be used for wiring, piping, even heating and cooling. Smooth under-surface makes finished ceiling. Saving of on-the-job labor makes the cost low.

See Sweets for more information. For all the facts, phone your nearest manufacturer or write for catalog.



THE FLEXICORE MANUFACTURERS ASSOCIATION — PRODUCERS OF PRECAST CONCRETE FLOOR AND ROOF SLABS

Alabama—Birmingham
Alabama Cement Tile Co.
Phone 4-8651

Colorado—Denver
Flexicore Co. of Colorado
MAin 6456

Florida—Miami
Universal Concrete Pipe Co.
Phone 2-1472 (Hollywood)

Florida—Tampa
Universal Concrete Pipe Co.
Phone 4-3931

Illinois—Chicago
Mid-West Concrete Pipe Co.
GLadstone 5-0127

Indiana—East Chicago
Calumet Flexicore Corp.
Phone 940

Michigan—Detroit
Price Brothers Company
WOodward 5-6376

Minnesota—St. Paul
Molin Concrete Products Co
CApital 6-8818

New York—Buffalo
Anchor Conc. Products, Inc.
HUmboldt 3152

North Carolina—Lilesville
W. R. Bonsal Co., Inc.
Phone 661

Ohio—Cincinnati
Tri-State Flexicore Co.
REdwood 9705

Ohio—Columbus
Arrowcrete Corporation
CApital 1-5506

Ohio—Dayton
Price Brothers Company
HEmlock 7861

Rhode Island—Saylesville
Durastone Flexicore Corp.
PAwtucket 3-1288

Texas—Houston-Deer Park
Flexicore of Texas
GRand 9-2216

W. Va.—Wheeling
Universal Concrete Pipe Co.
Phone 2404

Wisconsin—Beloit
Mid-States Conc. Prod. Co.
DUnkirk 9-2249

Canada—
Ontario—Toronto
Murray Associates Ltd.
EMpire 4-4362

Puerto Rico—
Rio Piedras
Flexicore of Puerto Rico, Inc.
Phone Rio Piedras 1205

Weldwood Movable Partitions to be used in new Ford Central Staff Office Building

Ford Motor Company orders over 6 *miles* of Weldwood Movable Partitions — the *only* partitions that combine the beauty of real wood with low-cost *movability*.

Early next year in Dearborn, Michigan, a magnificent new administration building will be completed to house the complex nerve centers of a modern industrial giant. Designed by architects Skidmore, Owings and Merrill, it will take full advantage of the latest advances in office planning and technology. Naturally it will have movable office partitions.

Weldwood Movable Partitions throughout the building provide 4 advantages:

1. The beauty of fine hardwood paneling adds warmth and dignity that are important factors in employee morale. The handsome wood paneled look complements any decorating scheme.

2. New offices overnight. Weldwood's unique metal key construction locks panels together firmly, yet allows rearrangement by the regular maintenance crew.

3. No painting—no redecorating. Occasional cleaning and waxing is the only maintenance needed! Weldwood hardwoods, such as Weldwood Korina® being used for the Ford installation, look like new indefinitely.

4. Fire resistant Weldrok® panel core is a sound barrier. It's *twice as effective* as a 2 x 4 stud partition with metal lath and plaster on both sides.

SEND THE COUPON for more details or call any of the 82 United States Plywood or U. S.-Mengel Plywoods showrooms in principal cities.

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

DE .LLK262 PD=DETROIT MICH 9 257PME=
UNITED STATES PLYWOOD CORP= 1955 MAR 9 PM 3 23
ATTN PARTITION DEPT NYK=

CONFIRMING TELEPHONE CONVERSATION HAVE RECEIVED ORDER FROM FORD MOTOR COMPANY FOR APPROXIMATELY 33,000 LINEAR FEET OF WELDWOOD MOVABLE PARTITIONS. WILL BE INSTALLED IN NEW FORD CENTRAL STAFF BUILDING NOW UNDER CONSTRUCTION. DETAILS WILL FOLLOW=

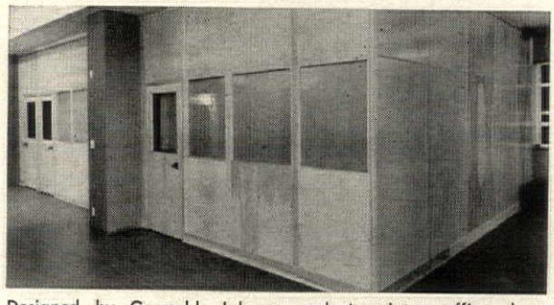
I G JAMES PRESIDENT DETROIT PARTITION CO=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Another new Weldwood Movable Partition installation— at the Milwaukee offices of the Wisconsin Telephone Company.



Natural birch Weldwood Movable Partitions in private offices of Wisconsin Telephone Co., Milwaukee, Wisconsin.



Designed by Grassold, Johnson and Associates, offices have Weldwood Stay-Strate® Doors to match partitions. Partition distributor: Hartmann-Sanders, Inc., Chicago. Dealer: E. T. Ver Halen Co.

Weldwood®

MOVABLE PARTITIONS

A product of

UNITED STATES PLYWOOD CORPORATION

World's Largest Plywood Organization

United States Plywood Corporation **AF-4**
55 West 44th Street, New York 36, New York

Please send me your latest data sheet on Weldwood Movable Partitions ☐ and Weldwood Stay-Strate® Doors ☐.

NAME.....

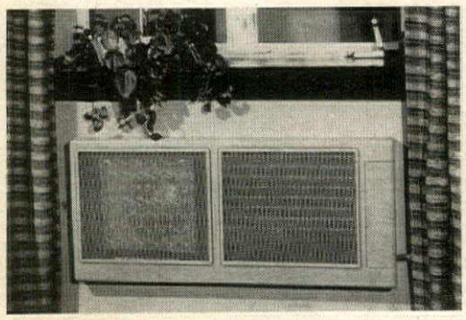
ADDRESS.....

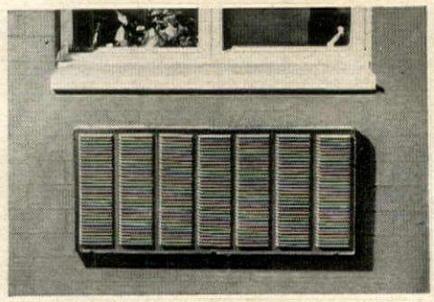
CITY.....STATE.....

PRODUCTS

Continued from p. 244

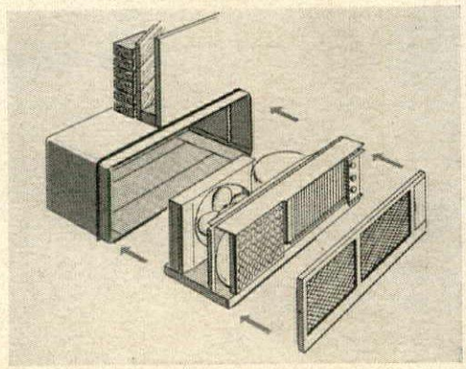
paper sheath, are both suitable for steam or water service lines. *Type VB* (pictured p. 244) for chilled water or dual service lines, has a vapor barrier laminate of metal foil and kraft paper. Prices vary according to insulation thickness and pipe diameter but an estimated cost of 1"-thick *Fibrocel* for 1" copper-tube air-conditioning lines is about 32¢ per lin. ft. plus application time.
Manufacturer: Johns-Manville, 22 E. 40th St., New York 16, N.Y.

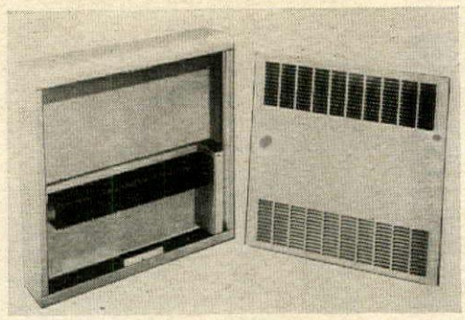




ROOM COOLER almost flush with wall, inside and out

With Republic Steel adding a plastic pipe subsidiary and the Borden Co. adding to its chemical division, it is not too surprising to find a vacuum cleaner manufacturer going into air conditioning. Alex Lewyt has turned his name around, set up the Tywel Manufacturing Corp. and geared the new company to produce 150,000 air conditioners a year. The Tywel unit, however, is not just another room cooler. Measuring 15" deep, 14" high and 32" wide, it fits snugly under a window—or anywhere in an outer wall—with virtually no overhang front or back. Individually controlled, the units are available in ½ and ¾ hp and retail around $200.
Manufacturer: Tywel Manufacturing Corp., 5702 First Ave., Brooklyn 19, N. Y.



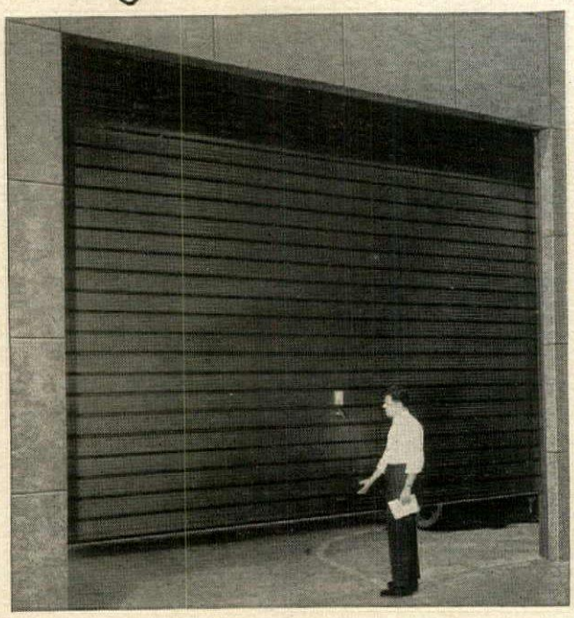


ELECTRIC CONVECTORS come in neat, recessable housings

Architects and builders are finding electric heat not only easy to plan for and install but practical for their clients to live with. It needs little floor space, is inexpensive to put in, provides clean heat, eliminates the need for central equipment and, in any properly insulated building, costs no more

continued on p. 254

Simplicity... *the keynote of* **MODERN** *design*



MORRISON
Roly-Door
steel sectional doors
RESIDENTIAL • COMMERCIAL • INDUSTRIAL

CLEAN, MODERN FUNCTIONAL SIMPLICITY that blends with all types of architecture is the hallmark of Morrison Roly-Doors.

SIMPLIFIED DESIGN ensures safe, easy, trouble-free installation and operation . . . manual, electrical and by remote control.

BONDERIZED, ALL-STEEL, WELDED CONSTRUCTION provides lasting good looks and a durability that defies the weather and years of hard use.

ECONOMICAL INSTALLED COST made possible by sound engineering and modern, precise, mass production . . . Roly-Doors cost no more than ordinary wood or metal doors for the same purpose.

OVER 100 STANDARD SIZES ready for immediate delivery and facilities to produce special sizes to individual specifications provide a Roly-Door for every overhead door requirement.

NATIONWIDE SALES AND SERVICE . . prompt delivery and expert installation service are offered by Roly-Door Distributors and Dealer-Installers located in the principal cities of the U. S. and Canada. They are listed in classified telephone directories.

Complete Roly-Door Specifications are available in Sweet's Architectural File or from:

Roly-Door Division
MORRISON STEEL PRODUCTS, INC.
652 Amherst Street, Buffalo 7, New York
Also manufacturers of MOR-SUN WARM AIR FURNACES and MORRISON SERVICE BODIES
In Canada, Roly-Door Distributors, Ltd., 1330 Bloor Street W., Toronto 4, Ont.

TSBURGH TESTING LABORATORY

ESTABLISHED 1881

PITTSBURGH, PA.

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LABORATORY

FILE N

1 REPORT

February 7, 1955

Report on Tests Conducted on

DMAN WEATHERSTRIPPED INTERMEDIATE PROJECTED WINDOW UNITS

For LUDMAN CORPORATION, North Miami, Florida

TEST RESULTS

The results of the air infiltration, uniform load and hardware load tests along with the specification maximum permissible requirements were reported below.

AIR INFILTRATION TEST

The air infiltration determined on the as received window unit in accordance with the procedure indicated in Paragraph 2.8.3.2 of Aluminum Window Manufacturers Association Specification P-A2 was determined to be 0.09 cubic feet per minute per foot at a static pressure equivalent to a wind velocity of 25 miles per hour.

Specification maximum permissible was 1.00 cubic feet per minute per foot.

UNIFORM LOAD TEST

The maximum deflection of any window member under a load of 15 pounds per square foot as indicated in Paragraph 2.8.3.1B of Aluminum Window Manufacturers Association Specification P-A2 was determined to be 0.068 inches.

Specification maximum permissible was 0.274 inches.

HARDWARE LOAD TEST

The deflection at the free corner of the ventilator with friction shoes adjusted to a firm, but smooth, operating condition when tested as indicated in Paragraph 2.8.3.1A was determined to be 7/8 inches.

Specification maximum permissible was 3-1/2 inches.

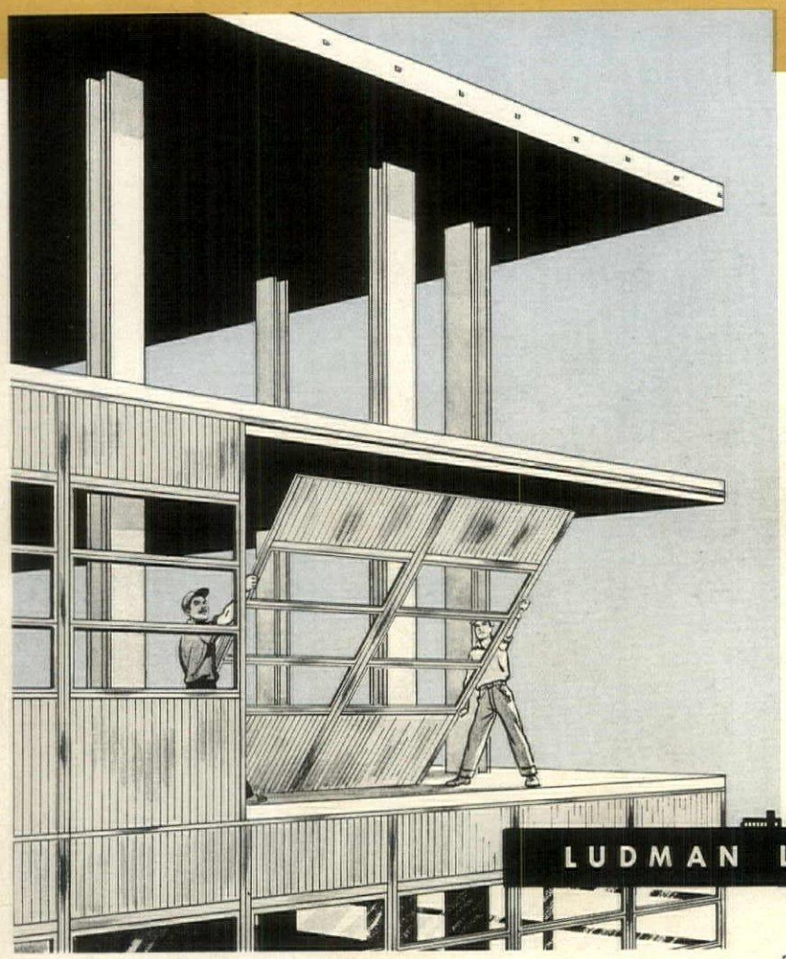


HERE ARE A FEW OF THE ADDED FEATURES THAT PROVE LUDMAN'S SUPERIORITY IN WINDOW ENGINEERING

- White Bronze Corner Brace For Vents
- Adjustable Friction Shoe Compression Spring
- Windows Can Be Inside or Outside Bead or Mastic Glazed
- Hardware & Screws Attached With Threaded Grommets
- Cam Handle With Concealed Strike For Project-In Vents
- Mullion Bars Provide Caulking Pocket For Weathertight Construction
- Mullions Fluted Vertically For Appearance and Strength
- Completely Weatherstripped

SEND COUPON ON NEXT PAGE....

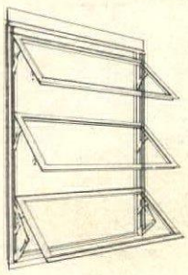
LUDMAN *Window Panels*



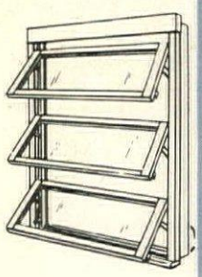
. . . . ANOTHER DEVELOPMENT OF LUDMAN ENGINEERING

Skin-wall . . . Curtain-wall . . . Panel-wall. To assist the progressive architects who are seeking new methods of gaining beauty and utility, while reducing construction costs, through these new building techniques, Ludman is proud to introduce **Ludman Window Panels.** An extremely efficient, very versatile, and thoroughly practical approach to a new construction method, Ludman Window Panels offer you almost unlimited scope in planning. **Consult Ludman engineers for full cooperation in developing your next building** . . . from the inception of the sketches to the final step in construction, **Ludman engineers are at your service.**

LUDMAN LEADS IN WINDOW ENGINEERING



LUDMAN AUTO-LOK ALUMINUM AWNING WINDOWS
The window industry's most outstanding development . . . . the window that has solved so many of the architect's problems.



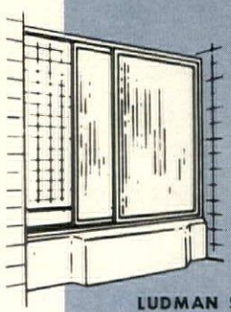
LUDMAN AUTO-LOK WOOD AWNING WINDOWS
The same Ludman quality . . . . the same tight closure . . . . available in wood windows through jobbers everywhere.



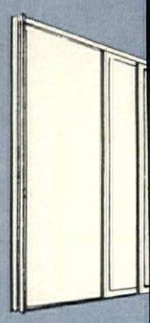
LUDMAN JALOUSIES
Ludman engineering has added more technical improvements to jalousie windows than any other company . . . . produced a jalousie you can specify with confidence.

LUDMAN JALOUSIES IN DOORS
Ludman engineered jalousies available also in doors.

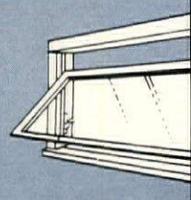


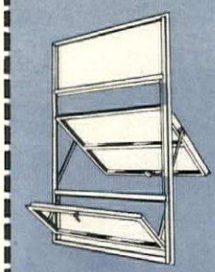


LUDMAN ALL-WEATHER ALUMINUM SLIDING GLASS DOORS
Built to high Ludman standards . . . the only door so completely weather-tight as to be suitable for all climate use.



LUDMAN SHOWER DOOR TUB ENCLOSURE
Top quality fibreglass panels set in beautiful Anodized Aluminum Frames. LUDMAN QUALITY CONTROLLED.





LUDMAN SINGL WOOD AWNING WI
A Single Sash Wood Unit wi ordinary design flexibility. by wood jobbers eve

LUDMAN INTERMEDIATE ALUMINUM PROJECTED WINDOW
The finest Projected Window ever made . . . . complet weatherstripped . . . engineered to high LUDMAN standar

YOUR PRESTIGE IS REFLECTED IN THE PRODUCTS YOU SPECIFY

The architect, as do other professional men, cherishes his prestige . . . knows it as his most valuable asset. Fine products . . . products that look better . . . perform better . . . perform well and economically for the life of the building — these are major factors in supporting the reputation of the architect. And the best products cost so little more to install . . . cost so much less across the years. Protect *your* prestige when you specify!

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Please send me full information on the following Ludman Products:

Auto-Lok Aluminum Awning Windows ☐ Wood Auto-Lok Awning Windows ☐
Jalousies ☐ Jalousie Doors ☐ Aluminum Framed Sliding Glass Doors ☐
Shower Door Tub Enclosures ☐ Intermediate Aluminum Projected Windows ☐
Single Sash Wood Awning Windows ☐

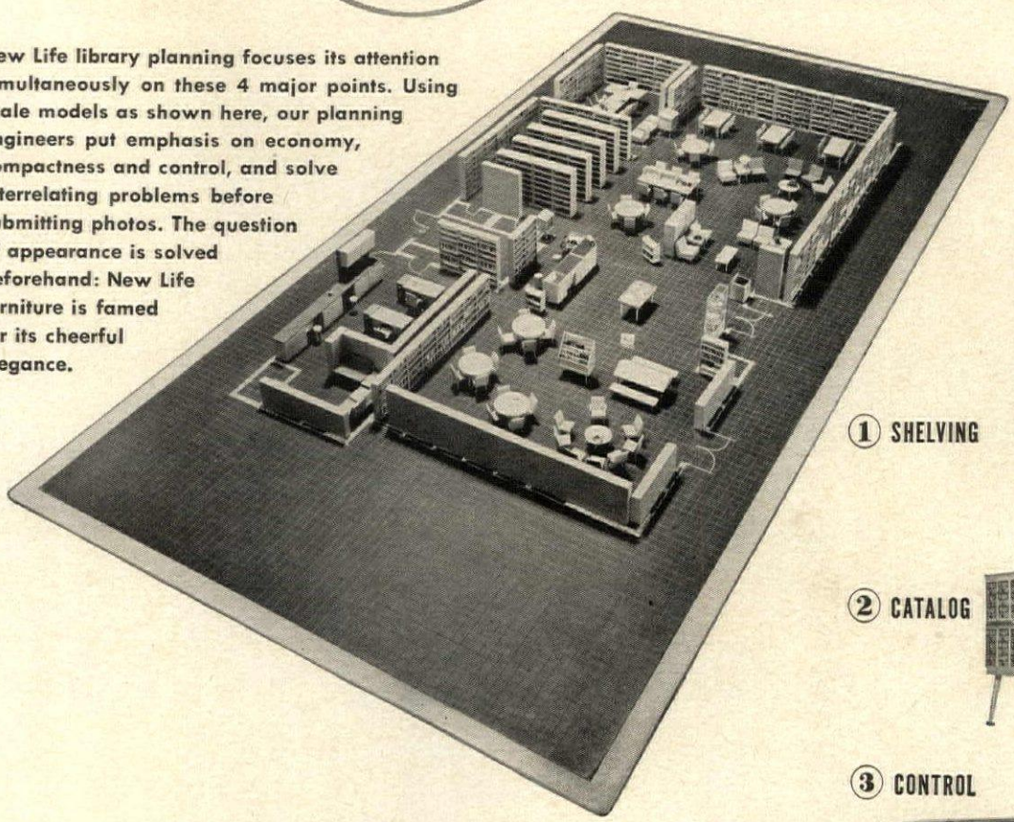
Name.....Firm.....

Street.....City.....Zone.....State .....

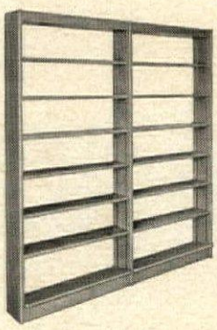
4 POINTS: IN LIBRARY PLANNING

SHELVING
CATALOG
CONTROL
READING

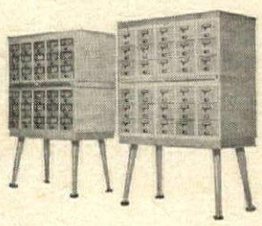
New Life library planning focuses its attention simultaneously on these 4 major points. Using scale models as shown here, our planning engineers put emphasis on economy, compactness and control, and solve interrelating problems before submitting photos. The question of appearance is solved beforehand: New Life furniture is famed for its cheerful elegance.



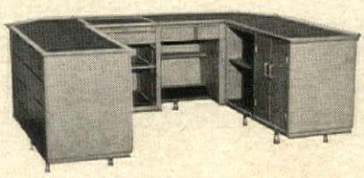
① SHELVING



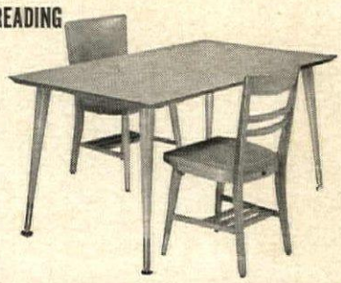
② CATALOG



③ CONTROL



④ READING



① **Shelving** must be planned with consideration for book capacity, wall space, traffic pattern, natural lighting, etc. Slanted bottom shelves and pleasant, light finish are among New Life shelving's many advantages. ② **Catalog** files, the key to the books on the shelves, should be placed strategically for readers' convenience. New Life's index drawers have exclusive features such as one-hand-operated snap lock rods and edge-grain wear surfaces. ③ **Control** is maintained at the charging desk, from where no line of vision should be blocked. Placed close to administrative core, it controls entrance and exit. New Life charging desks are noted for their elegance and operational efficiency. ④ **Reading** area should provide ample, comfortable seating facilities, should utilize best means of lighting, and have an inspiring, flexible table pattern. The Freeline table is gracefully designed to give the reader unhampered freedom of movement.

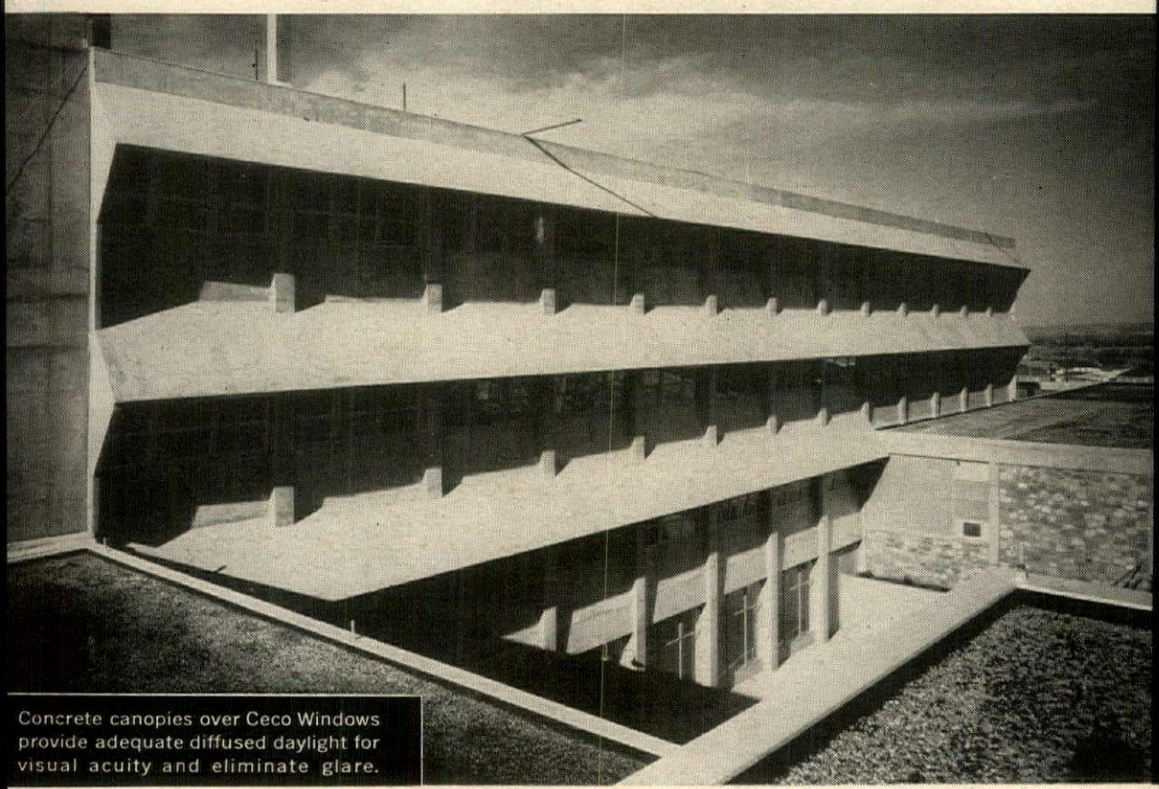
JOHN E. SJÖSTRÖM COMPANY, INC.

designers and manufacturers of

1737 NORTH TENTH STREET, PHILADELPHIA 22, PA.

New Life
LIBRARY
FURNITURE

Windows with eyebrows provide glareless daylighting with eye-resting views



Concrete canopies over Ceco Windows provide adequate diffused daylight for visual acuity and eliminate glare.

Architects create a laboratory as rugged as the Rockies — choose Ceco-Meyer Concrete Joist Construction for rigidity . . . for resistance to wind loads and seismic forces . . . for economy

Architects Pereira & Luckman achieved a unique design when they made forthright use of standard products in creating the Radio Propagation Laboratory, U. S. Bureau of Standards, Boulder, Colorado. With the majestic Rocky Mountains as a backdrop, it was fitting that aesthetics be combined with ruggedness, in a functional, fire-safe structure. Imagination accomplishes the unusual in window treatment. Ceco Steel Architectural Projected Windows are positioned in the openings to obtain best diffusion of daylight. Concrete canopies eliminate glare. Clear glass allows occupants to rest their eyes by focusing on distant views. Window types provide optimum ventilation.

Concrete joist construction was chosen as the best framing method for the building. Less concrete and steel were used than in other monolithic concrete constructions. Reduced deadweight permitted lighter columns and footings. The contractor selected Ceco-Meyer Adjustable-Type Steelforms for the job. The Boulder Radio Propagation Laboratory is another example of Ceco's performance on the architect-engineer-contractor-supplier team. Ceco offers you similar structural engineering and window product services, including erection . . . for *your* next building project. Consult nearest Ceco office or Sweet's files.

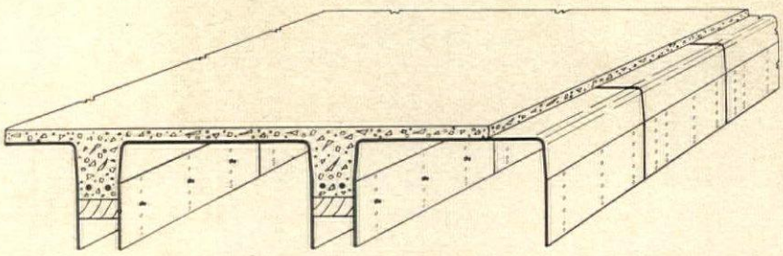
CECO STEEL PRODUCTS CORPORATION

Offices, warehouses and fabricating plants in principal cities. General Offices: 5601 West 26th Street, Chicago 50, Illinois

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE



Radio Propagation Laboratory—U.S. Bureau of Standards, Boulder, Colorado; Architects—Pereira & Luckman; Associate Architect—Robert Ditzen; Contractor—Olson Construction Company

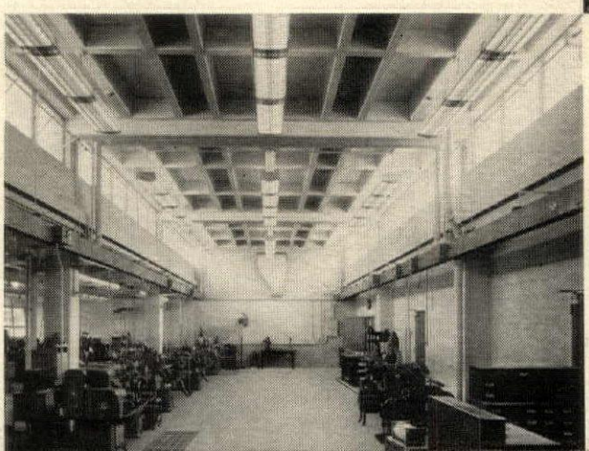


Typical arrangement of Ceco-Meyer Adjustable-Type Steelforms, showing simplicity of erection. Proper joist depth is obtained by nailing through selected holes into the soffit form.

CECO STEEL

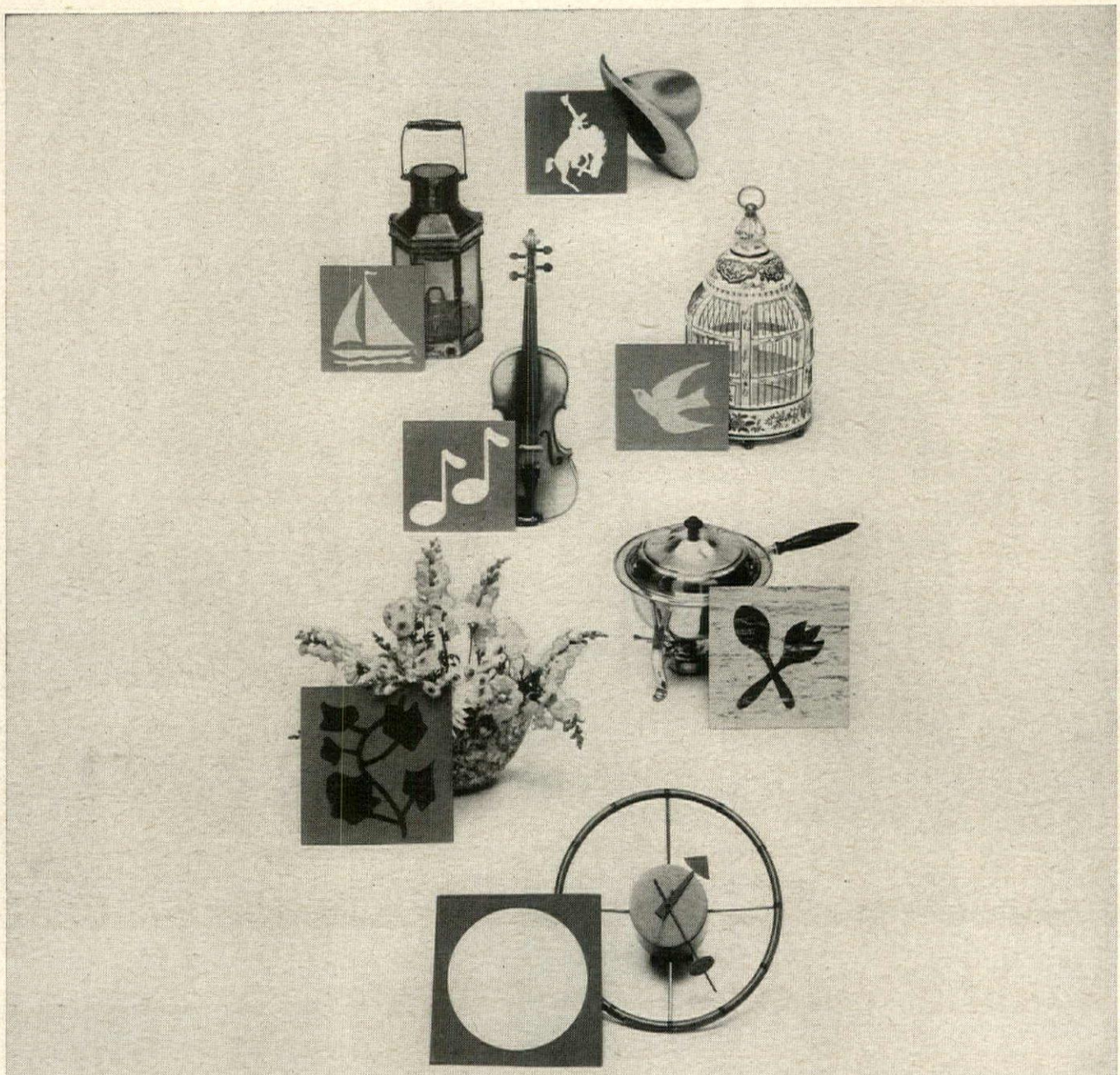


Concrete Joist Construction was also used in the roof of the open walkway.



Abundant daylight is provided by window arrangement in clerestory and at work level. Clerestory windows are mechanically operated. Concrete joist ceiling was formed with Ceco-Meyer Steelforms.

DESIGNED AND CONSTRUCTED UNDER THE SUPERVISION OF GENERAL SERVICES ADMINISTRATION, PUBLIC BUILDING SERVICE



Themetile...short cuts to individuality

ThemeTile are attractively designed inserts that come in a wide range of colors in pictorial, numeral, letter and game court patterns. They are available from stock in Kentile, KenFlex, KenFlor and KenRubber, and harmonize exactly with other tiles of these materials. You can give floors for a new or remodelled retail shop, restaurant, school or home distinctive personality and greater usefulness simply by incorporating them into your designs. On most jobs, the added cost of ThemeTile is so small that it is negligible.

Uniform thickness, accuracy of cutting, trueness and clarity of color, surface smoothness and built-in durability—all of these qualities combine to make this the world's most popular line of resilient tiles.

KENTILE, INC.

America's largest manufacturer of resilient floor tiles

KENTILE: Asphalt Tile . . . Carnival . . . Corktone • KENCORK: Cork Tile for Floors and Walls • KENRUBBER: Rubber Tile • KENFLEX: Vinyl Asbestos Tile . . . Carnival • KENFLOR: Vinyl Tile . . . also available by the yard • SPECIAL KENTILE: Grease-proof Asphalt Tile • THEMETILE, KENSERTS: Decorative Inserts • KENCOVE: Vinyl Wall Base • KENBASE: Wall Base



Photo: Ezra Stoller

MANUFACTURERS TRUST COMPANY

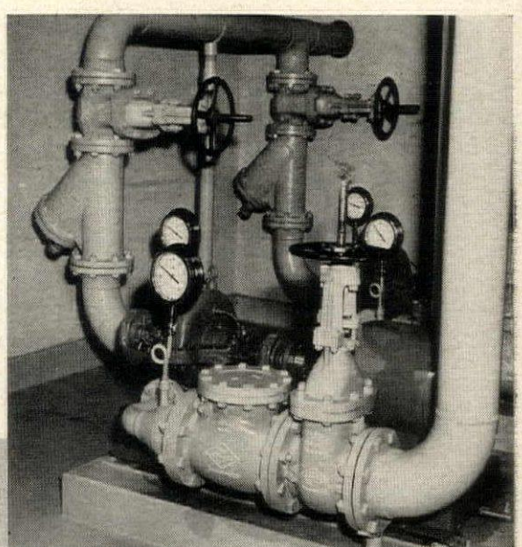
banks on long-term economy of JENKINS VALVES

Architects: SKIDMORE, OWINGS & MERRILL
Mechanical Engineers: SYSKA & HENNESSY, INC.
General Contractors: GEORGE A. FULLER COMPANY
Heating, Ventilating, and Air Conditioning Contractor: BAKER, SMITH & CO.
Interior Design Consultant: ELEANOR LE MAIRE

The New 5th Avenue office of Manufacturers Trust Company is a striking ɛparture from traditional bank design . . . for practical purposes. The many innoıtions are carefully calculated to permit greatly increased efficiency in service to ıstomers . . . to pioneer a merchandising concept new in banking.

Its glass walls include the largest series of panes ever erected, yet the building is chnically windowless. Air conditioning, together with all other mechanical facilities, as carefully planned to provide uninterrupted comfort and convenience. Jenkins alves were selected for all air conditioning, cooling and heating lines, as in so many today's buildings that set the pace for future-minded design.

Confidence in the *extra measure* of efficiency and economy assured by Jenkins andards is shared by leaders in every field of construction. Despite this extra value, *ou pay no more* for Jenkins Valves. Jenkins Bros., 100 Park Ave., New York 17.



These Iron Body Gate and Check Valves on air-conditioning service lines are among the many Jenkins Valves installed throughout the new bank with the "open look".

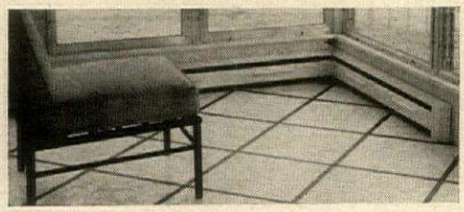
For new installations, for all replacements, let the Jenkins Diamond be your guide to lasting valve economy.

SOLD THROUGH LEADING INDUSTRIAL DISTRIBUTORS

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
SINCE 1864 TRADE JENKINS MARK
Jenkins Bros.

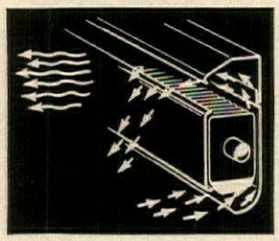
PRODUCTS

Continued from p. 248



to operate than gas or oil-fired equipment. (Hitting its peak use during the normal off-peak periods of the utilities companies, electric heating also is winning over the power people.)

Nicely boxed in gray enameled steel baseboard and cabinet enclosures, *Electrovector* units take advantage of the efficient radiation surface of finned tube elements. For fast weather response, each *Electrovector* is equipped with a two-element thermostatic control. One element, for half the connected electric load, can handle the area 90% of the time; when outside temperatures get really cold, the second element goes on automatically and when indoor temperature rises it shuts off. Cabinet models, all 24" high and 5" deep, come in three widths ranging from 24-½" to 48-½" and are priced at $29.95 to $64.95. Baseboard units, 6-11/16" high by 2-5/16" deep, come in 4' and 8' lengths. Prices run $31.93 to $69.95 depending on size and quantity ordered. The 6,000-w. capacity thermostat lists at $19.75. Both the cabinets and baseboards are designed for recessed or surface mounting.



Manufacturer: Electrovector, Inc., 1660 E. New York Ave., Brooklyn 12, N.Y.

FUEL BUYERS PAY FOR BTU's



Rated at 26,200,000* Btu per ton for bituminous types, *coal* represents one of the greatest sources of latent heat energy, but—the fact that it is *latent* signifies that this potent source must be developed.

If it is not developed to its fullest potential—if smoke and soot occur, or fuel bed condition results in waste of combustible material—a costly percentage of heat that should have been obtained has been lost.

...GIVE THEM MORE WITH

WILL-BURT STOKERS

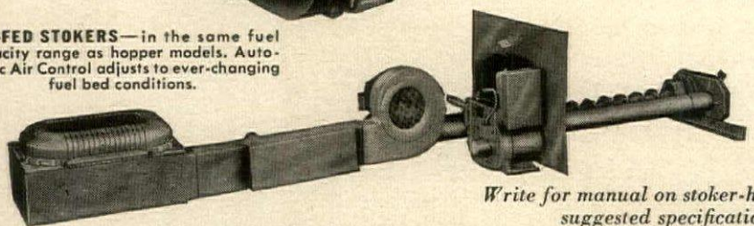
HOPPER MODEL STOKERS —with open or closed hoppers. Capacities range from 20 through 750 lbs. per hour. Features continuous Automatic Air Control for maximum firing efficiency.



Will-Burt Automatic, Air-Controlled Stokers assure complete, efficient combustion, not only during operating periods, but during the critical "off" periods as well.

Fuel buyers *get* the Btu's they pay for when it's a Will-Burt Stoker on the job.

BIN-FED STOKERS—in the same fuel capacity range as hopper models. Automatic Air Control adjusts to ever-changing fuel bed conditions.



Write for manual on stoker-heating, showing suggested specifications and installation diagrams.

* *Reference, Bituminous Coal Institute*

The WILL-BURT Company

OUR TWENTY-SIXTH YEAR IN THE STOKER BUSINESS

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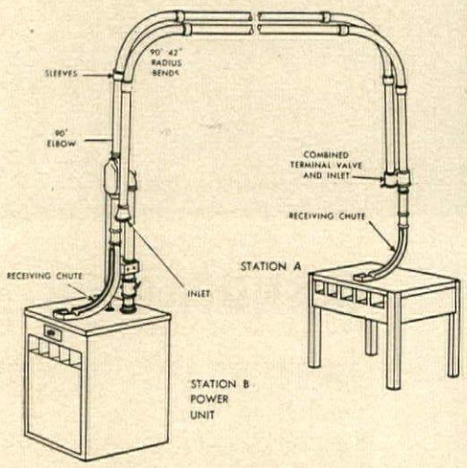


AIRTUBE-CARRIER ASSEMBLY packaged for simple installation

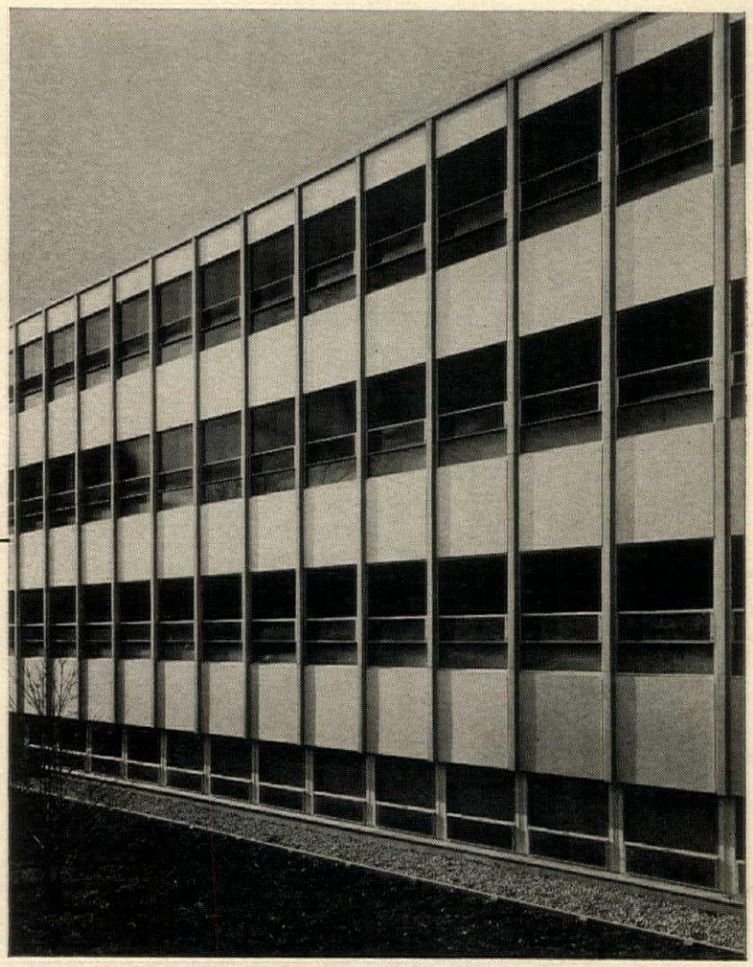
Bad news for prospective office boys, but good news for efficiency-minded office managers is a knockdown two-station pneumatic tube system, sold in kit form, which can be installed in any type building by regular maintenance personnel. The kit (shipping weight: 700 lb.) comes with complete instructions for putting together its tubing, valves, chutes, message carriers and 22" x 23" x 34" cabineted power unit. When assembled this packaged *Airtube* system connects points up to 130' apart, either on the same floor or at different levels, and can handle a carrier every 10 seconds. Additional parts can be obtained for longer runs; the ½ hp exhauster has enough reserve airstream to power the carrier's up to 500 lin. ft. Cost: $525, F.O.B. Syracuse, N.Y.

Manufacturer: Lamson Corp., Syracuse 1, N.Y.

continued on p. 266

crafted by Overly...

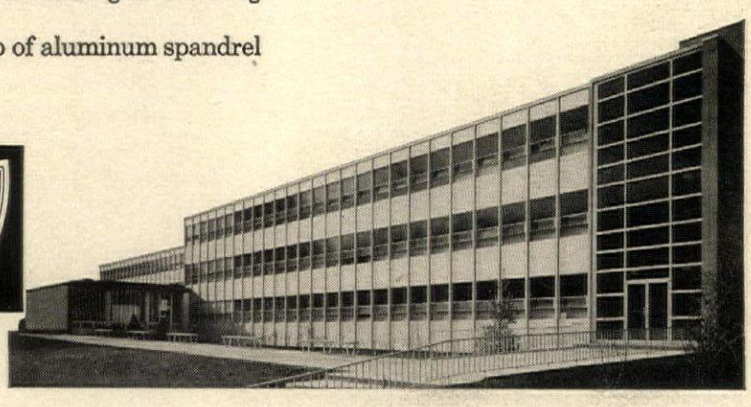
unique spandrel design at Carnegie Tech



The wall-facing design and workmanship on Donner Hall in Pittsburgh, Pennsylvania, are in keeping with high architectural standards of Carnegie Institute of Technology and those of Pittsburgh architects Mitchell & Ritchey. • Overly *flat* spandrel wall panels of aluminum, a new construction technique, and the absence of flashing make this new dormitory for men a prototype for several other metal-faced buildings to be erected elsewhere. • Collaborating with the architects named, Overly design engineers have reached these objectives:
(1) *A unit type wall* with no metal passing through from exterior to interior of the building. This eliminates moisture and frost condensation inside.
(2) *A self-flashed wall.* Special design of flanges on spandrels and mullions provides expansion joints that eliminate the necessity of flashing or caulking compounds.
(3) *A building facade* made up of aluminum spandrel sections that present a completely level and flat finished appearance. By unique jigging and manufacturing methods, the spandrel panel surfaces are entirely free from that "pillow look"—bulges or unevenness. • We offer a design service in metal spandrel construction. And we are now fabricating and erecting various designs of formed spandrel panels in both colored and natural finished aluminum, and in stainless steel. *Write us today for details of the Carnegie Tech job.*

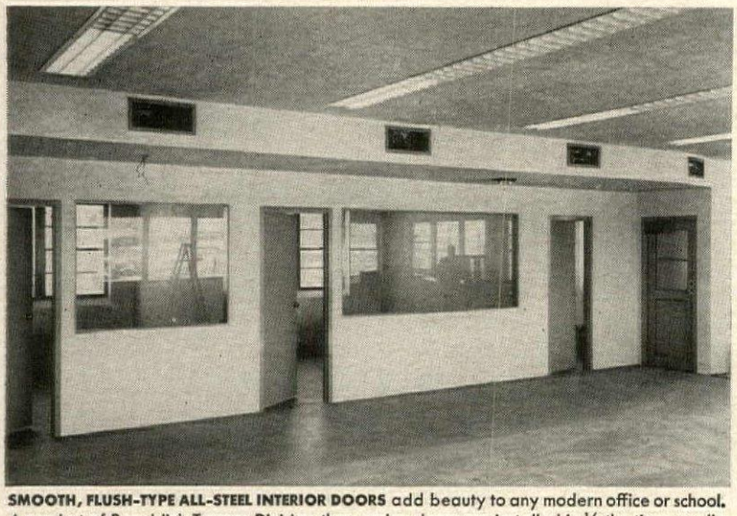
OVERLY MANUFACTURING COMPANY
Greensburg, Pennsylvania
Los Angeles 39, California

METAL PRODUCTS SINCE 1888





They're handle-free...you use a key



SMOOTH, FLUSH-TYPE ALL-STEEL INTERIOR DOORS add beauty to any modern office or school. A product of Republic's Truscon Division, these swing doors are installed in ⅓ the time usually required to hang conventional doors. They are dimensionally stable under all weather conditions—never stick or bind. Frames and hardware are included. All standard door-opening sizes are available. Ask your Truscon representative for additional information. Or mail coupon.



FOR BETTER "HOME ECONOMICS" DEPARTMENTS Republic Steel Kitchens are the choice o home economists everywhere. For beauty. For efficient planning. For work-saving conven ience. Architects appreciate the flexibility of this line which permits unlimited freedom i planning custom kitchens economically from stock units. Republic Steel Kitchens are proving the pacesetter in modern kitchen design; assure you on-time delivery, uniform high quality client satisfaction. Send coupon for details.

REPUBLIC'S

Key-Control

LOCKERS PROVIDE AUTOMATIC LOCKING

Here's a locker with a memory! No matter how forgetful the occupant, he gets full-time, locked protection—*by simply closing the door.*

There is no handle, no locking routine to fuss with. A key unlocks the door . . . then serves as the handle for opening it. The instant the key is removed the door *pre-locks*—and locks *automatically* when shut. Papers, books, clothing and personal effects are always safe day and night behind locked tamper-proof doors.

The exclusive Key-Control locker system, developed by Republic's Berger Division, eliminates all need for handle maintenance, too. Locker fronts are clean and modern in appearance. They're flush and smooth, offer no noise-inviting projections.

Before you specify any locker system for new schools or other institutions, investigate Republic's revolutionary Key-Control. Your local Berger representative will be happy to arrange an interesting demonstration. He can also offer architects, school administrators and other officials a complete planning and installation service, including technical and engineering assistance. Furthermore, Berger assumes full responsibility for proper installation —from start to finish.

Republic's Berger Division is the world's leader in lockers. Only Berger can offer Key-Control— plus the largest selection of standard steel lockers —plus competent engineering and installation assistance. Send coupon for detailed information.

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ASY-TO-FORM TRUSCON METAL LATH is readily adaptable to every kind of architectural eatment—no matter how intricate. It's lightweight, erects quickly, is fire-resistant. Big ruscon line includes more than 40 kinds of metal lath and accessories, all available for apid delivery through building-supply dealers, backed by Truscon's dependable warehouse service. Send coupon for illustrated literature describing complete line.

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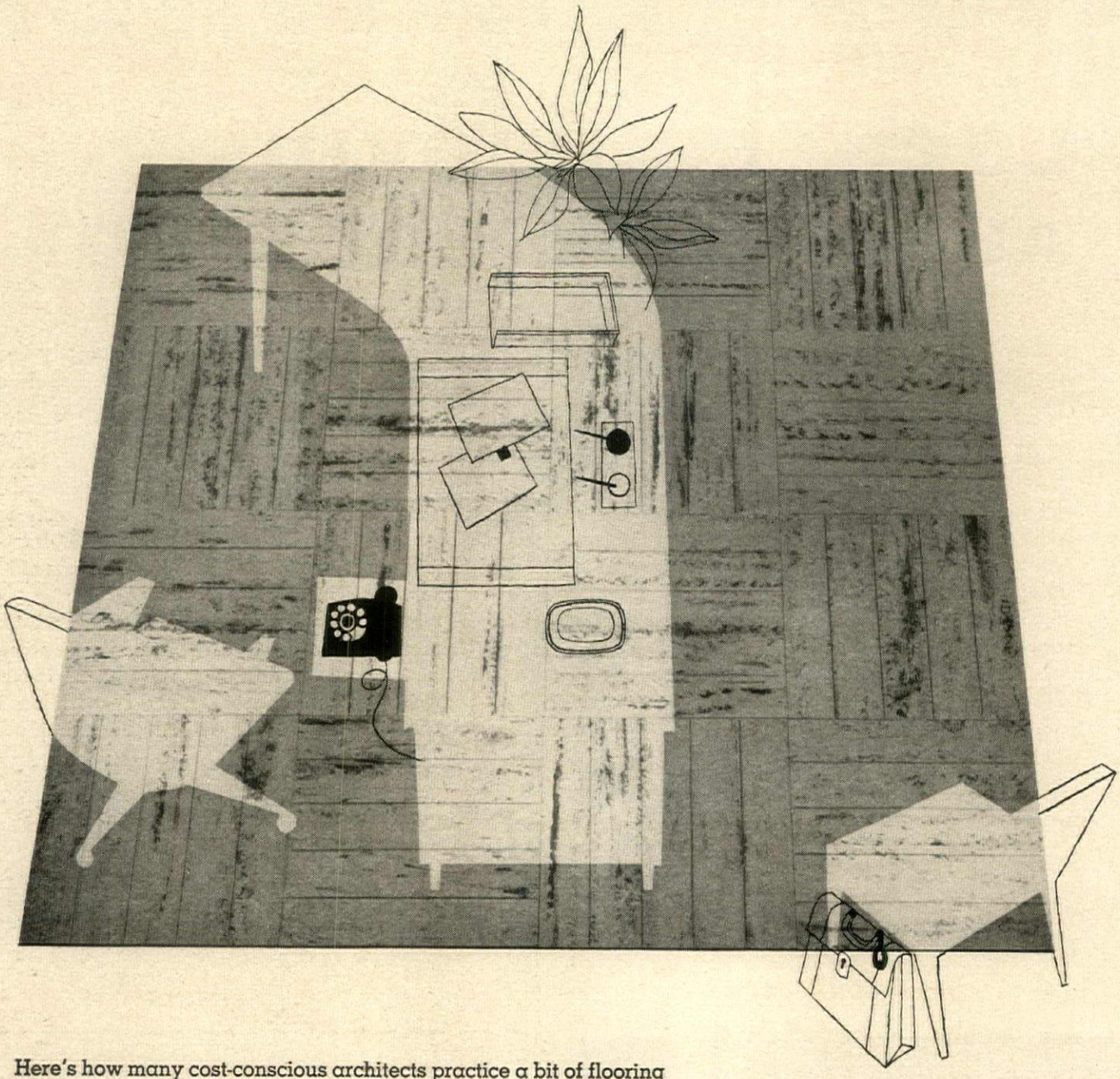
Moultile PARQUETRY TILE FLOORIN

AND THE MODERN OFFICE



Here's how many cost-conscious architects practice a bit of flooring "sleight-of-hand."

When budget is a factor, but good looks are vital, Moultile Parquetry is most often prime in office specifications.

For Parquetry *looks* like fine wood block flooring, but it's actually asphalt tile. Naturally, it costs no more than asphalt tile.

All the other outstanding advantages of asphalt tile are part and parcel of Parquetry, too. Ease of installation, ease of maintenance, long wear, among others. And it can be installed on, above or below grade.

Parquetry is available in four "wood" shades—maple, oak, walnut and mahogany. They combine to make most interesting and pleasing patterns, suitable for almost every type of installation.

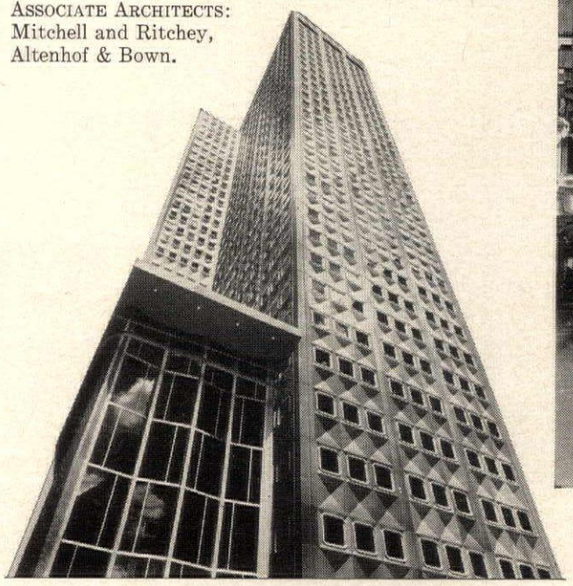
We would be happy to send you specification data.

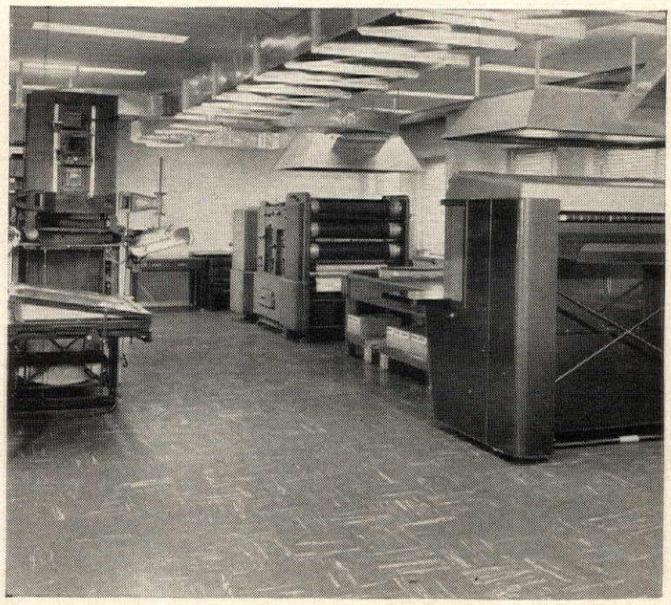
Moultile
PRODUCTS
SINCE 1929

A32

MOULTILE INCORPORATED • Joliet, Ill. • Long Beach, Calif. • Newburgh, N. Y.

The Aluminum Company of America's new home in Pittsburgh, Pennsylvania. ARCHITECTS: Harrison & Abramovitz; ASSOCIATE ARCHITECTS: Mitchell and Ritchey, Altenhof & Bown.





Photostat room in the Alcoa Building. This Flexachrome floor is the last word in resiliency, foot comfort and beauty. It's a cinch to clean. And how it *wears!*

Over 100,000 square feet of Flexachrome bring Floor Beauty and Economy to The Alcoa Building

Modern planning calls for Flexachrome.

That's why this "dressy," durable and distinctive vinyl plastic-asbestos tile is almost everywhere you go at Alcoa.

Flexachrome gives years and years *and years* of trouble-free service at extremely low maintenance cost. It is highly resistant to wear. Highly resistant to acids and alkalies, too. Completely greaseproof. Safe to walk on. Extremely easy to clean because of its close-textured surface.

Exceptionally fine color and design versatility, a wide range of sizes and tile-at-a-time installation, make pattern possibilities almost endless.

Ask your Tile-Tex Contractor about Flexachrome and other Tile-Tex Flooring Products. He is listed in the classified telephone directory. You'll find his counsel invaluable.

THE TILE-TEX DIVISION, The Flintkote Company, 1234 McKinley Avenue, Chicago Heights, Illinois

TILE-TEX—PIONEER DIVISION, The Flintkote Company, P. O. Box 2216, Terminal Annex, Los Angeles 54, California

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See Our Catalog in Sweet's Files.

*Reg. U. S. Pat. Off. †Trademark of The Flintkote Company



Flexachrome adds a pleasant, cheerful note to this Alcoa office. This vinyl plastic tile comes in 23 beautiful colors—solid and marbleized. And the colors are "good all the way through."

TILE-TEX... Complete Flooring Service

Manufacturers of Flexachrome... Tile-Tex*... Tuff-Tex*... Vitachrome*... Holiday†... Mura-Tex*... and Modnar†, the latest development in asphalt tile.*

HERE'S HOW THESE 3 SPACE PROBLEMS WERE SOLVED

AT INDIANA UNIVERSITY'S NEW MEDICAL CENTER*

*Eggers & Higgins, Supervising Architect
Edward D. James, Architect
J. L. Simmons Company, Inc., Builders

PROBLEM 1

Cafeteria dining room must serve as many as 1000 students at once—yet be adaptable for medium size banquets, meetings and student activities. Only a portion of the total area would be used for breakfast and dinner. Closing off the unused area was desirable to save on heating, table setting labor and to provide a closer, friendlier atmosphere.

PROBLEM 2

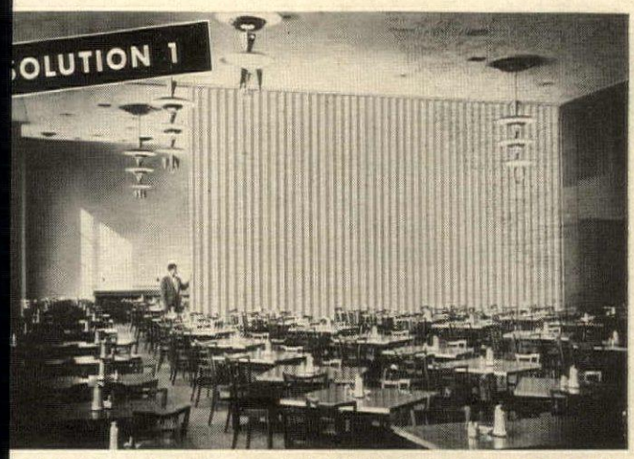
One oversized room must serve primarily as the main lecture hall and as a suitable setting for University receptions. However, to obtain maximum use from this large area—could it also be used as a social room by the students? And how could the space be effectively partitioned for private conferences, parties, teas and small meetings?

PROBLEM 3

One large classroom must provide seating capacity of approximately 75—and be promptly convertible, after conclusion of group lectures, into smaller, private rooms for seminars. Between classes, the division of the total area should be flexible enough to provide accommodations for staff meetings, lectures and displays of widely varying sizes.

Let FOLDOOR Help Solve Your Space Problems

In one section alone of the Indiana University Medical Center (the Student Union and Food Service Building), more than 1100 events were held in a recent 9-month period—proof that FOLDOOR offers a prime way to obtain maximum use of floor space and flexibility at the lowest possible cost. It saves on the cost of walls and partitions, the expense of painting, trimming and hardware. FOLDOOR also brings extra income through multi-purpose use of space in institutions, schools, funeral parlors, hotels and other commercial establishments. For details, see Sweet's File—or your nearby FOLDOOR installing distributor.



RESULT 1

FOLDOOR proved the only practical solution to the problem of dividing this large dining space into two distinct areas. While a banquet is being served in one room, a meeting, a student dance—or even another banquet can be held in the other room at the same time. The spectacular (20′ by 48′ 10″) motor-driven FOLDOOR installation opens and closes at a rate of 35 feet per minute and stores in a pocket.



RESULT 2

As many as four private dinners have been served at one time in this large room, partitioned by four FOLDOORS. When a tea or reception is scheduled, one or more of the doors are folded back so the space will fit the size of the group. During a dance or other large student function, all four doors are stored against the wall and the entire floor area is available.



RESULT 3

After a lecture, this classroom is immediately divided by FOLDOORS into three private areas for more individual student instruction. If the class needs only a portion of the room, the unused part can be closed off and used for other purposes. The flexibility obtained by FOLDOOR also permits the classroom to serve as an excellent location for large or small conferences, as well as University receptions and banquets.

You Get More When You Specify FOLDOOR

tacks into 1½″ per foot of opening—that's less than ny similar door • designed structurally for its largest ize, so all doors have the same strong construction. Welded frame provides 100% pantagraph action • has o "air bellows" action that prevents easy operation, istorts fabric • includes an attractive cornice, where esirable, at no extra cost • has a size for every openng, a type for every need • offers a large selection of olors in either commercially popular smooth fabric r the deluxe fabric that looks and feels like cloth, yet wears and washes like vinyl

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THE SMARTEST THING IN DOORS
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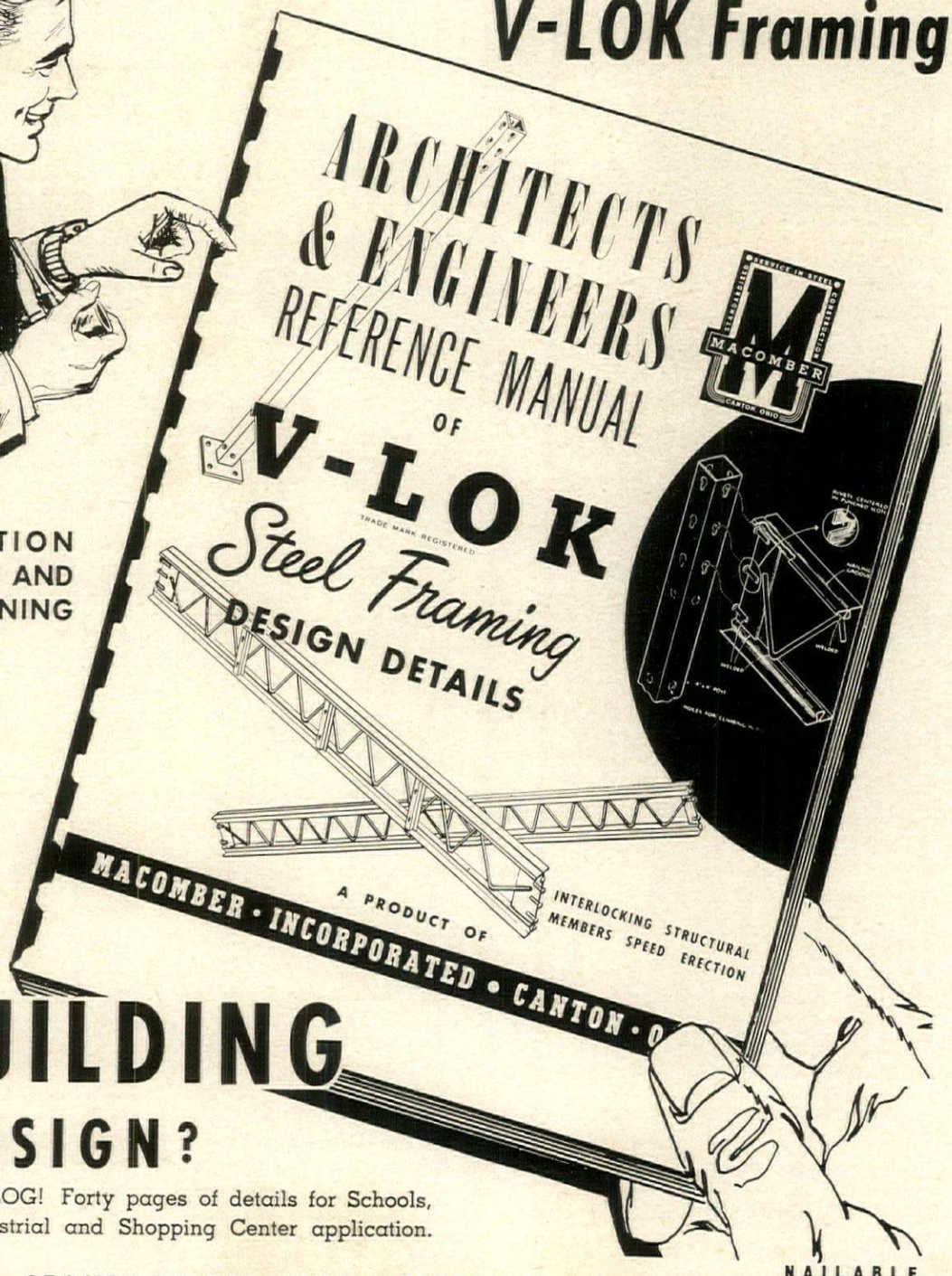
That's The One We've All Been Waiting For – A Design Manual On V-LOK Framing



A REVELATION AWAITS YOU AND YOUR DESIGNING STAFF



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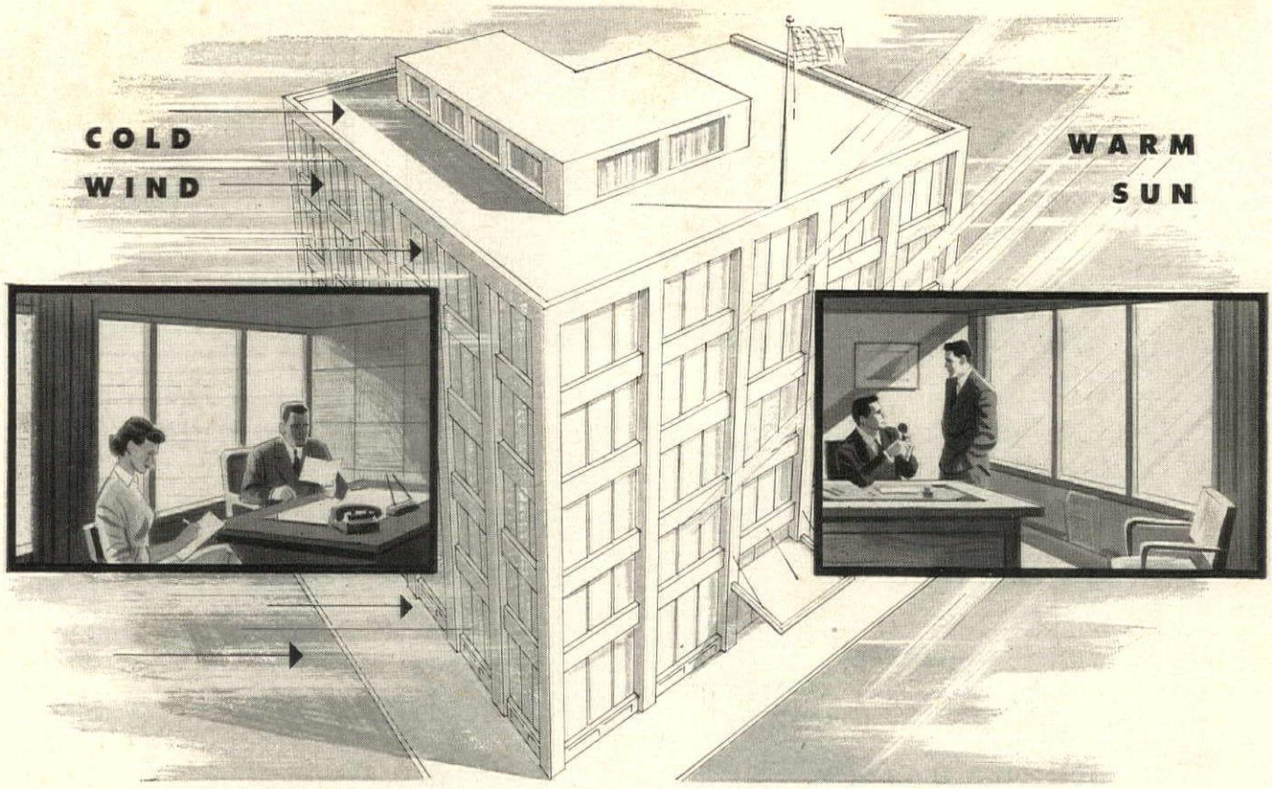

No Heating Problem

Iron Fireman SelecTemp Heating adjusts automatically to heat loss or gain in *each individual room or office*

A thermostat in every room

When every room is a separate heating zone, a lot of problems that a conventional system can't touch are solved automatically.

Each room takes care of its own heat loss or gain, no matter how much conditions may vary in different parts of a building.

Occupants may have any temperature they choose simply by setting the thermostat in their own room or office. They use only the amount of heat they need. No space is overheated. Nor is there any wasteful heating of unoccupied space. Temperature can be reduced in any unused room, and restored to comfort level within a few minutes when needed.

Ideal for motels, hotels, apartment houses and hospitals. Every guest and tenant has his own idea of heating comfort, and is usually vocal about it. SelecTemp heating has eliminated a lot of headaches for building managers, besides making tenants happy.

Iron Fireman SelecTemp heating is especially valuable for hospitals, where it is often desirable to control room temperatures according to individual needs of patients.

Send for descriptive booklet

Iron Fireman SelecTemp heating is fully described in a booklet specially prepared for architects and builders, containing all necessary specifications. Use coupon below.

SELECTEMP HIGHLIGHTS

THERMOSTAT IN EVERY ROOM. Temperatures can be varied in every room to fit the "activity plan" and personal preference of the occupants.

MODULATED HEAT. Air circulation is continuous. Both temperature and volume of air are automatically modulated, as required to offset heat loss from room.

FILTERED, CIRCULATED AIR. Individual room air circulation prevents transmission of odors or bacteria from other rooms. Air is cleaned by a spun glass filter in each room unit. Filtered outside air can be introduced if desired.

BOILER LOCATION. Boiler can be placed in any desired location, with proper distribution of heat to every room. Year-around domestic hot water coils available. Fuels: Gas, oil or coal.

LOW POWER COST. No electricity required to operate circulating fans. Nonelectric thermostats.

LOW INITIAL COST. Easily installed in either new or old construction. Small soft copper tubing (¾ inch I.D.) carries steam to individual room heater units. Return lines are ⅛ inch. Substantial savings in installation costs.

LOW FUEL COST. Temperature easily reduced in unused rooms. Overheating is eliminated.

AUTOMATICALLY BALANCED. No special adjustments of dampers, valves or orifices required to balance heating system. Each unit continuously regulates heat needed for each room. Automatically compensates for external heat sources such as fireplace or solar heat, without affecting temperatures of other rooms.

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MODULATING ZONE HEATING

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Please send literature on Iron Fireman SelecTemp heating.

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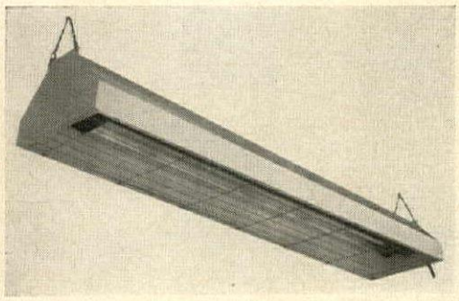
PRODUCTS

Continued from p. 254





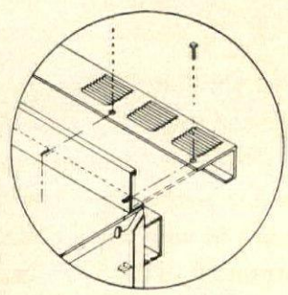


QUARTZ HEATING FIXTURE will warm marquee standees or cure concrete

On cold-weather construction jobs a *Tropic-Ray* heater will warm workmen and materials via its fuzed quartz tubular heating element. Neatly encased in an insulated aluminum reflector complete with junction box and support brackets, the radiant unit has a soft orange glow. It can be hung under existing marquees (as above on Park Ave.'s Ambassador Hotel—see cut) or mounted flush in new ones to warm people below and to melt snow. If a hard driving rain should get to the fixture while it is operating, no harm will be done to highly shock-resistant quartz; and a simple grill prevents papers from being blown against the element. Available with thermostatic control, a single 5′-6″ x 14⅝″ x 8″ *Tropic-Ray* can bring up the ambient temperature 30° to 40° over an 8 to 10 sq. ft. area.

Other applications for the efficient heater include stadium heating, paint drying and fresh plaster protection. Such a rugged heater also makes good sense in open warehouses, loading docks and over hospital ambulance entrances, bus stops and railway stations. The *Tropic-Ray* can be furnished in 208-v. or 220-v., in 4,500-, 5,000- and 6,000-w. ratings and is priced at $150.

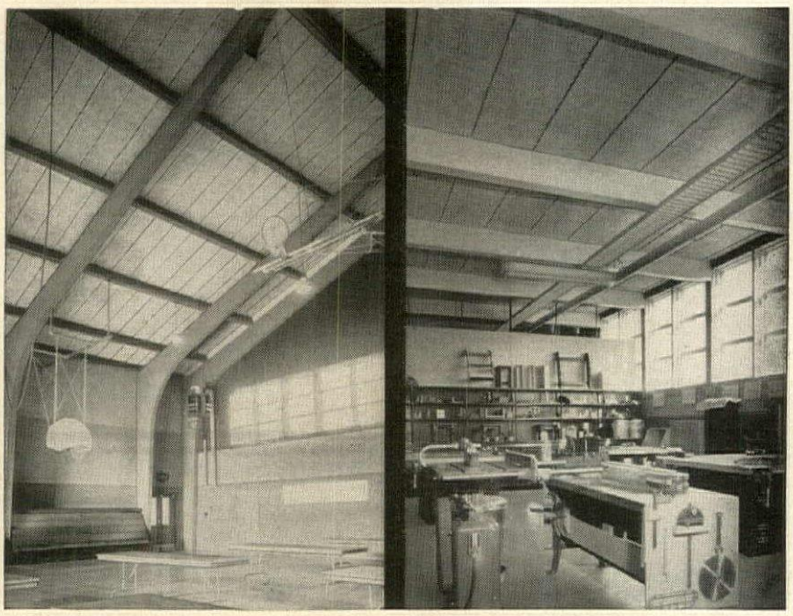
Manufacturer: The Segimont Corp., Bankers Equitable Bldg., Suite 511, Detroit 26, Mich.



BOTTOM CORNICE for school curtains traps light cracks; prevents flapping

Herman Nelson ventilators and allied products have already done much to establish good breathing conditions for pupils all through the school day (AF, May, 52), and now a refinement has been added to the line. This detail is the *Light-Stop* curtain accessory which retains the blackout curtain, keeps it from flapping, and at the same time blocks any light leaks at the bottom. The

continued on p. 270



Junior High School,
Keene, New Hampshire
3¼" Composite Porex
Architect:
J. A. Britton
Gen. Contractor:
MacMillan Co.

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Heat Insulation, Sound Control and Fire Protection ...all in one ROOF DECK!

When roof decks must provide maximum quality at minimum cost, architect after architect specifies POREX . . . because POREX combines all these properties:

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- LIGHT WEIGHT
- NAILABILITY
- INCOMBUSTIBILITY
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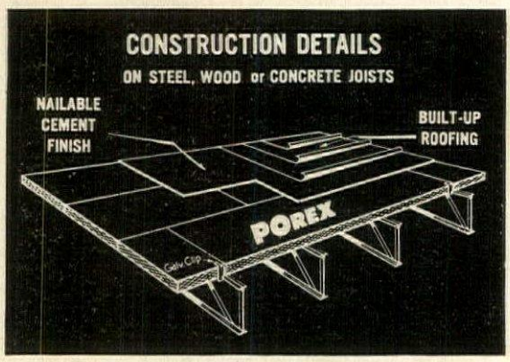
- SOUND CONTROL

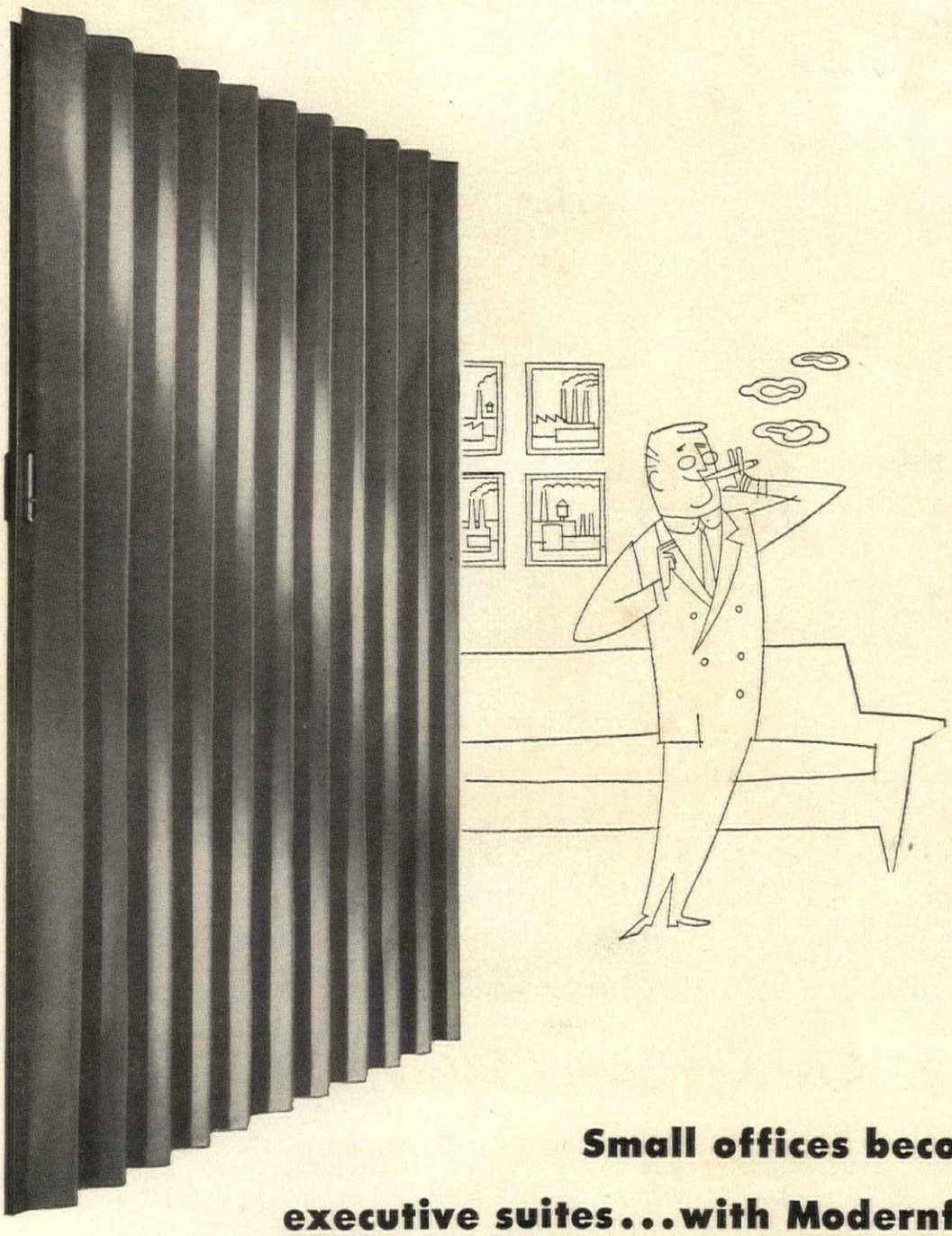
Plain POREX for short spans and Composite POREX for long spans are also ideal for Auditoriums, Gymnasiums, Armories, Churches, Factories and many others.



SAFE UNIFORM LOADS

Type of POREX	Thickness Slab	Thickness Finish	Weight lbs/ Sq. ft.	Safe loads lbs/ sq. ft. span 1′4″	2′8″	3′4″	6	8′
Plain	2″	¼″	7	100	60	—	—	—
Plain	3″	¼″	10	—	90	50	—	—
Composite	3″	¼″	14	—	—	—	100	60

PORETE MANUFACTURING CO., North Arlington, N.J.
Precast lightweight concrete products since 1920



Small offices become executive suites...with Modernfold

Even the smallest offices can be made roomier, more efficient and happier places to work.

All it takes is MODERNFOLD—the door that folds completely *within* the door frame. That's especially important in very small rooms, where a MODERNFOLD door can add 10% to the usable floor space. Just by eliminating old-fashioned door swing, you make room for another chair, table or file cabinet.

To workers in partitioned cubicles, a MODERNFOLD door is like a promotion. It gives them the working environment and prestige of a private office.

Office managers appreciate MODERNFOLD doors for a different reason; their construction. Washable vinyl covers a double strength steel frame that operates smoothly, year after year. And MODERNFOLD offers dozens of cheery morale-boosting colors.

Your clients will marvel at the ingenious way MODERNFOLD doors magically make small offices more roomy and attractive at so little cost!

The MODERNFOLD distributor (listed under "Doors" in classified directories) will be glad to show you the Custom line. Your building supply dealer has the Spacemaster line available. Or write New Castle Products, Inc., Dept. D32, New Castle, Indiana. In Canada: New Castle Products, Ltd., Montreal 6.

Full Details in Sweet's File

modernfold®
DOORS

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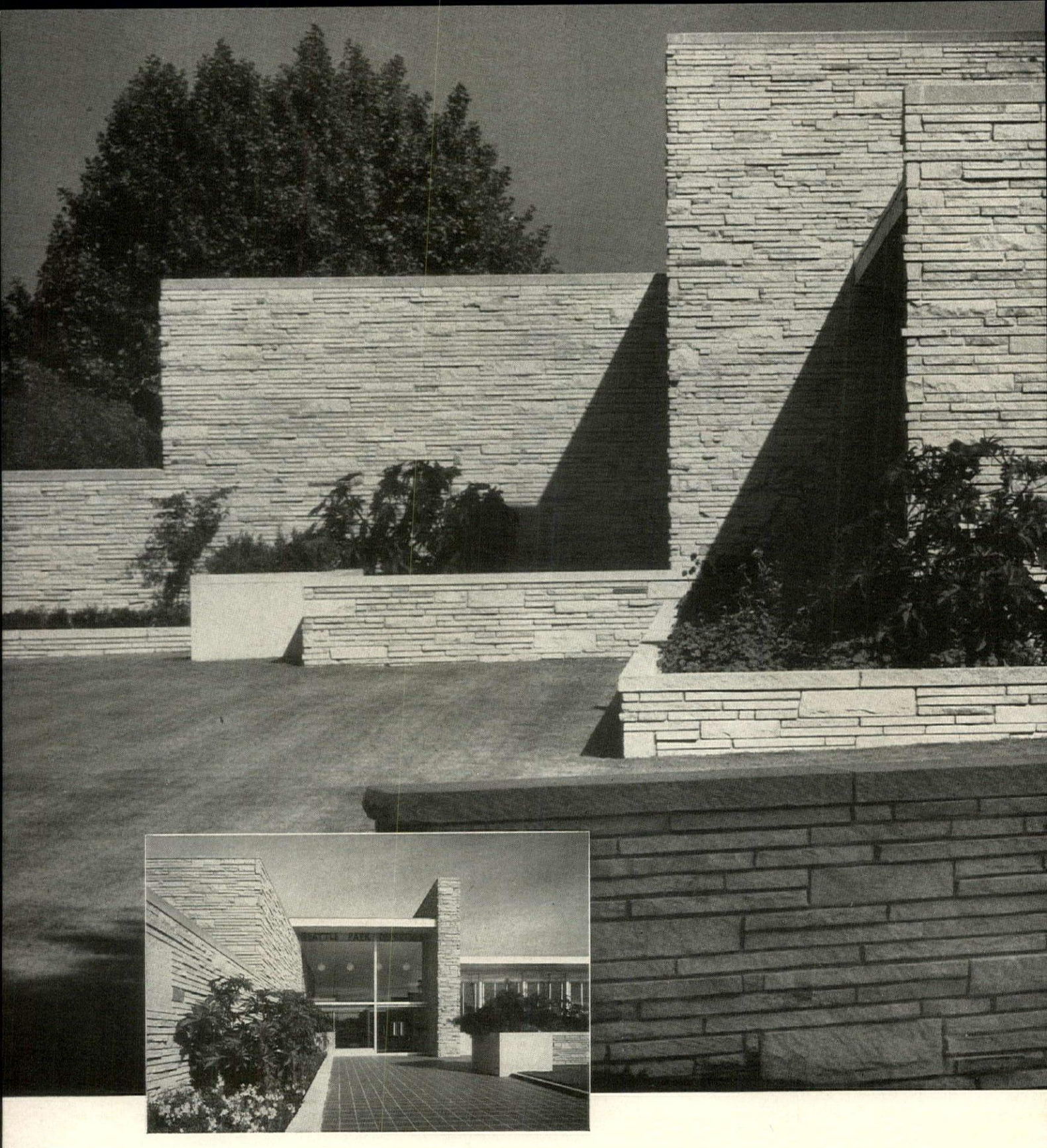


stone

BEAUTY BY THE THOUSANDS . . .

It is only within recent years that ashlar stone veneer, whether split-face or ledge, has been available across the country in a great variety of colors and forms, and at prices to compare most favorably with even the least expensive substitutes. New methods of quarrying and producing these stones are largely responsible for this. Increased use has also helped.



ETAIL FROM THE SEATTLE PARK DEPARTMENT BUILDING, SEATTLE, WASHINGTON • YOUNG, RICHARDSON, CARLETON AND DETLIE, ARCHITECTS • PHOTO BY: DEARBORN-MASSAR.

The increased popularity of ashlar stone veneer should not be surprising. Its beauty is the beauty of nature itself, wonderful in its variety and texture, incomparable in its versatility and permanence. Whether used as a prime building material, or as an important accent, STONE enhances good design, magnifies value, improves the appearance of any community in which it is used.

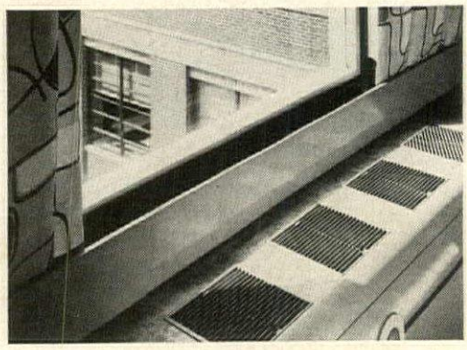
The Building STONE Institute has a wealth of valuable material and information available for architect, builder, or building owner. Contact your nearest member, or write the Building STONE Institute, 2115 Martindale Avenue, Indianapolis, Indiana.

BUILDING
stone
INSTITUTE

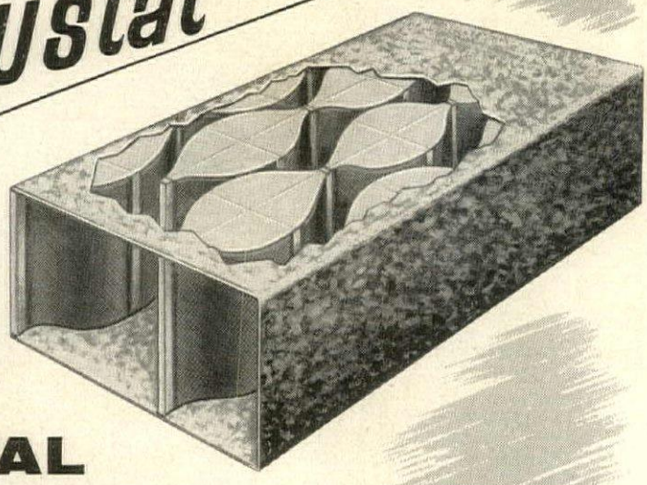
PRODUCTS

Continued from p. 266

5"-wide strip of enameled steel runs the length of the *H-N* classroom unit ventilator, companion shelving and cabinets, and is available only for Herman Nelson equipment. Cost is about $1 per sq. ft.
Manufacturer: American Air Filter Co., Inc., Louisville 8, Ky.



Aircoustat

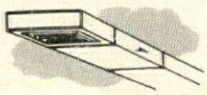


PRACTICAL SILENCING
for AIR CONDITIONING SYSTEMS

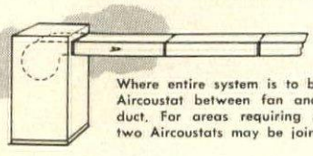
Aircoustat is a compact, *completely packaged* unit for silencing fan and air noise in air conditioning systems. Easily installed directly into the duct work, Aircoustat eliminates the need for costly, extensive duct lining. And results are astonishing: one *7 foot* unit reduces noise level below what *100 feet* of commercial duct lining could accomplish.

Engineered to provide broad band attenuation with low pressure drop, Aircoustat is available in 14 standard sizes for use with all styles and sizes of duct, and 8 types to meet any desired conditions. Selection is no problem: ***if it fits geometrically, it fits acoustically.***

Where to install Aircoustat

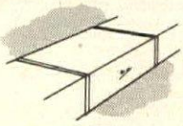


Aircoustats are incorporated as part of the duct work. If only selected areas require quiet, install above individual diffusers.

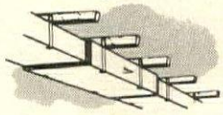


Where entire system is to be silenced, insert Aircoustat between fan and first length of duct. For areas requiring special silencing, two Aircoustats may be joined in series.

How to install Aircoustat



Aircoustat requires no special tools for installing. It is constructed to be joined to ductwork with a lock seam.



If ductwork and Aircoustat differ in size, a canvas or asbestos coupling may be used. If ductwork is hung, support Aircoustat similarly.

SILENCE SERVICE

Industrial Sound Control Inc.
45 Granby Street, Hartford 12, Conn.

WASTE RECEPTACLE stomps down 50 lb. of paper towels

The *Tamp* waste receptacle can do much to eliminate the unsightly overflow from waste baskets in busy public washrooms. The compact steel box's ability to compress 50 lb. of waste paper cuts down on attendant's services, making it ideal for filling stations, restaurants and offices. The *Tamp* features an automatic tamper which goes into action when a foot steps lightly on a treadle to open the waste slot. This same foot pressure raises the tamper, and when the treadle is released the waste is automatically tamped



down and baled in a melamine-treated paper container. When full, the bag can be removed from the back of the unit. *Tamp* units are manufactured at present in two models, the one pictured, $47, and one with a built-on towel dispenser, at $50. In the works are units with multiple dispensers, and a model which can be recessed. Bags cost 10¢ each.
Manufacturer: Pet Metal Co., Wallingford, Conn.

TECHNICAL PUBLICATIONS

AGGREGATES

Systems of Lightweight Construction. Booklet G-66. Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill. 16 pp. 8½" x 11"

CONCRETE

Modern Developments in Reinforced Concrete. Portland Cement Assn., 33 W. Grand Ave., Chicago 10, Ill. 20 pp. 8½" x 11"

Suggestions for Planning Concrete Plants. C. S. Johnson Co., Champaign, Ill. 44 pp. 8½" x 11"

ELECTRICAL EQUIPMENT

Air Break Starters. The Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland 4, Ohio. 4 pp. 8½" x 11"

FIRE PROTECTION

Recent Developments in Fire Protection. W. D. Allen Mfg. Co., 701 Allenco Bldg., 566 W. Lake St., Chicago 6, Ill. 8½" x 11"

continued on p. 274



. . . a distinctive new pattern in popular Micarta

In the refreshingly unique design of new MICARTA "Star Dust", there are opportunities to create striking decorative effects—on built-in furniture, counters, walls, dividers—wherever a surface must withstand the rigors of hard wear. And "Star Dust's" six warm colors —including gray and charcoal—let you achieve appealing color harmony in interiors as practical as they are beautiful. Your United States Plywood representative has samples, or write United States Plywood Corporation, 55 West 44th Street, New York 36, N. Y.

J-06596-C

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- Flatness of a Filled Panel
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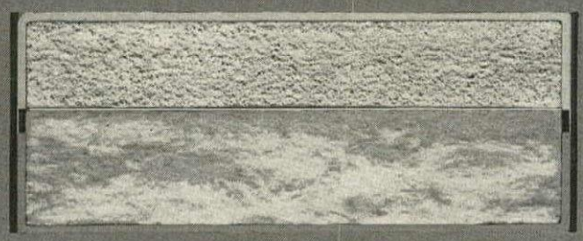
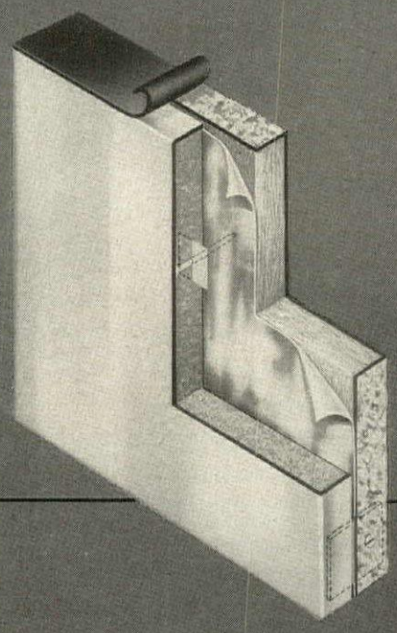
U-16 PANEL

in *Lifetime Porcelain Enamel* for

Curtain Walls • Window Walls Spandrels





The new ERIE U-16 Panel combines all the most wanted features of a general utility architectural panel . . . permanent, mechanical fastening . . . flatness . . . insulating value . . . lifetime Porcelain Enamel finish . . . compact ready-to-install unit form.

Use it to create a 2″ thin wall with a U-factor of .16, weight of only 9 psf with lifetime finish and permanent color. Use it in mullion bar systems or sash frames in panel units up to 32 sq. ft. for fast, low cost erection. Let it end vapor passage and condensation problems. It's called a U-panel because it is universally adaptable to spandrels, curtain walls or window walls of your design.

For more complete technical data . . . write, wire or telephone.



Get this "Lifetime Color Bulletin" reproducing 50 permanent standard Erie colors.

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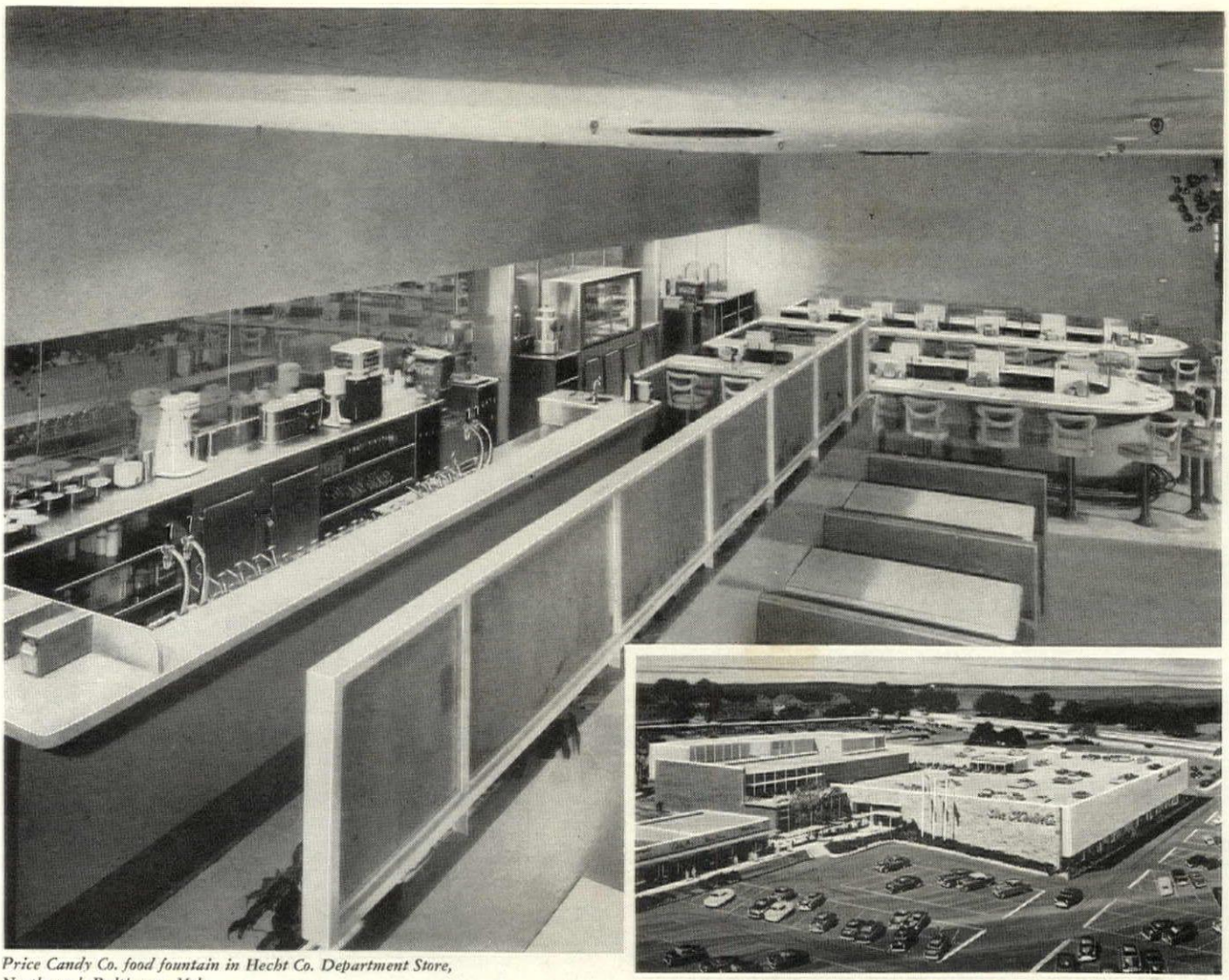

Price Candy Co. food fountain in Hecht Co. Department Store, Northwood, Baltimore, Md.

Bastian-Blessing Plans and Equips Food Fountain in New Store of Hecht Co.

There's more to this attractive installation than meets the eye! Behind the mirrored wall there's a kitchen. It, too, is Bastian-Blessing planned and equipped to assure sparkling cleanliness and low-cost service for years to come.

This food fountain in the new Hecht Co. Northwood store, Baltimore, Md., is operated by Price Candy Company of Kansas City, Mo. Customers are seated in booths and on 40 stools of a two-bay counter. There is a 30-ft. service counter at the gleaming 50-gallon Twin-Serv fountain unit. Along the wall are shelving units and refrigerated cabinets and display case. The kitchen is equipped with griddle stands, food warmers, dish- and glass-washing machines, and much other Bastian-Blessing equipment.

Only Bastian-Blessing offers a complete line of fountain and fast food equipment, plus service that ranges from exploratory discussion of requirements, through the detail drawings to final check-out of the installation. That's why it will pay you to get "help from headquarters" early. Write for information or illustrated catalogs. The Bastian-Blessing Company, 4205 W. Peterson Ave., Chicago 30, Illinois.



EXCLUSIVE FEATURES

1. Dual facilities throughout
2. Easy-reach storage compartment
3. Giant chipped ice pan in center
4. Handy flat work-space lids
5. All ice cream at front and slanted

12-page, colorful Catalog S-156 gives the story of TWIN-SERV. Get your free copy today.



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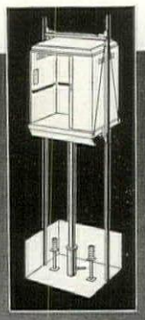
Qualified Sales and Service Outlets in All Principal Cities

WORLD'S LARGEST MANUFACTURER OF SODA FOUNTAINS AND COUNTER FOOD SERVICE EQUIPMENT

Rotary Oildraulic®



the modern elevator for modern hospitals

New Mexico: LEA GENERAL HOSPITAL, Hobbs, N. M.

Architects: Pereira & Luckman
Associate Architect: Truman Mathews
Engineers: Davis & Foster

Builders: BMFP Construction Co.
Rotary Oildraulic Elevator sold and installed by: Hunter-Hayes Elevator Co.

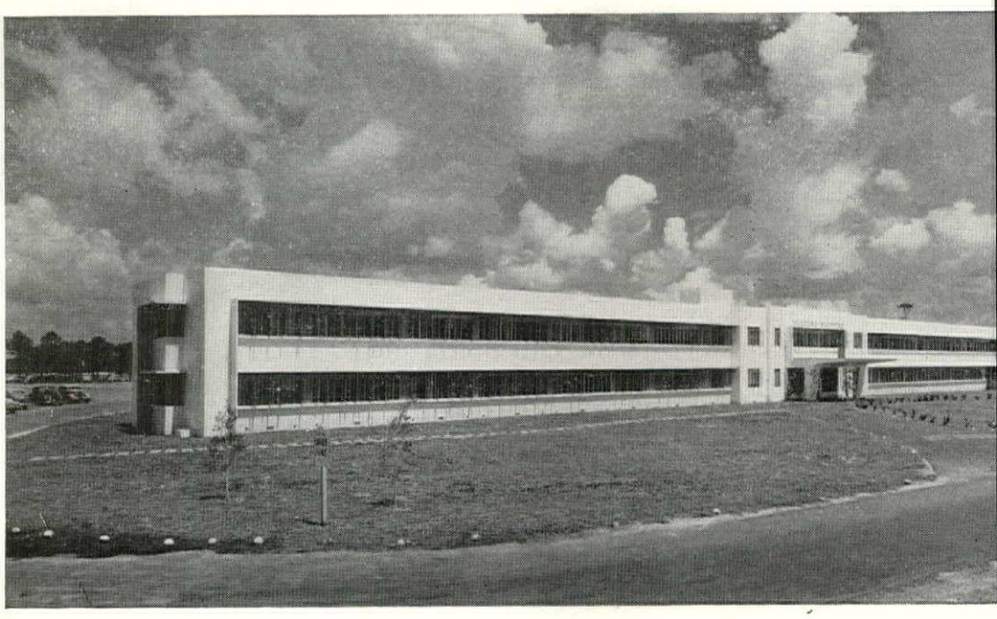
Florida:

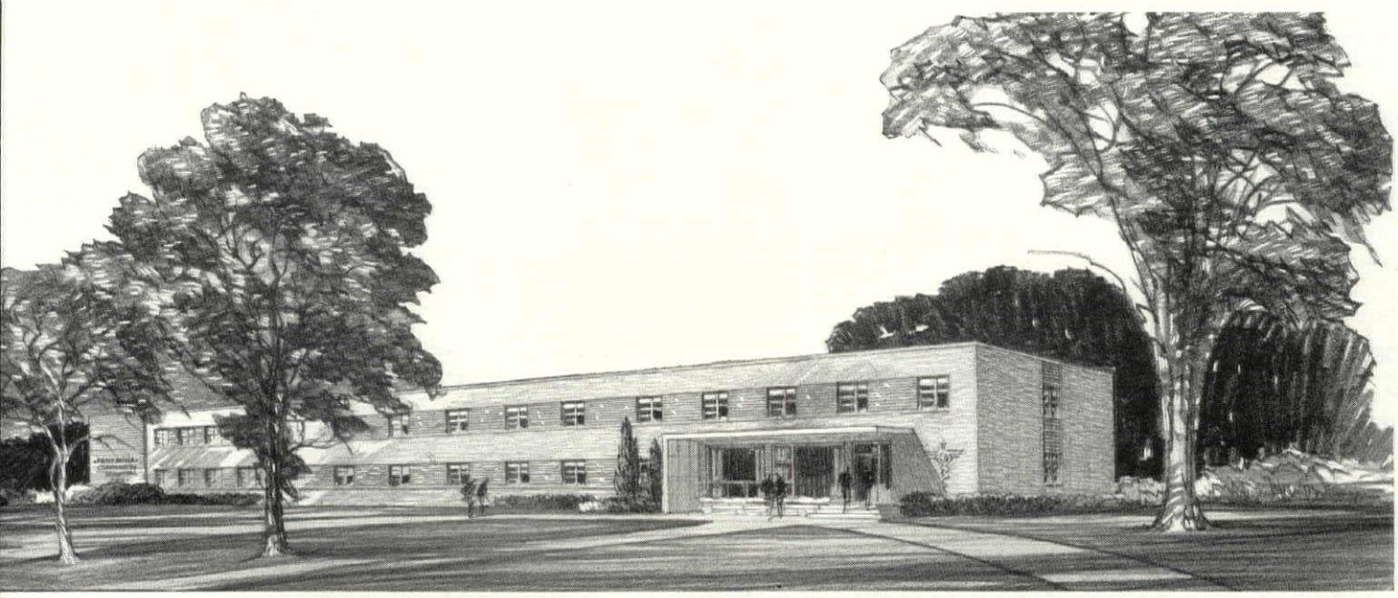
DOCTORS' HOSPITAL
Coral Gables, Fla.

Architects: Stewart & Skinner

Contractors: Fred Howland, Inc.

Rotary Oildraulic Elevator sold and installed by: Miami Elevator Co.





Wisconsin: KAUKAUNA COMMUNITY HOSPITAL, Kaukauna, Wis.

Architects: Frederick W. Raeuber & Associates
Associate Architect: Calvin A. Stein
Contractor: A. H. Nimmer

Rotary Oildraulic Elevator
sold and installed by:
Northwestern Elevator Co.

Improved building designs and lower costs made possible with "the most practical elevator for rises up to 55 feet."

The Rotary Oildraulic Elevator is moved and controlled by oil under pressure . . . the smoothest and most economical power for lifting heavy loads.

No penthouse or heavy sidewalls
The elevator car and its load are supported by the oil hydraulic system—not by the building structure. This eliminates the costly, unsightly penthouse that interferes with modern architectural design. It also makes possible a substantial lightening of the hoistway structure.

Flexibility in power unit location
Rotary's compact power unit can be placed in any convenient location where a pipeline can be run from the unit to the hoistway. Thus it can be located in an area with other building machinery for convenience in servicing and to save space. Or it can be placed in a small machine room built to accommodate the power unit required by the elevator.

Smooth starts, accurate landings
The revolutionary Rota-Flow oil hydraulic power unit gives velvet-smooth starts and cushioned stops. Oildraulic automatic floor leveling positions the car to each landing with exactness—¼" accuracy guaranteed! The new patented Oildraulic Controller handles the functions of eight separate control valves . . . simplifies adjustments and maintenance.

Coast-to-coast service
More than 100,000 Rotary Oildraulic elevators and lifts have been installed and are serviced by Rotary's nation-wide distributor organization. Our Engineering Department will be glad to assist you on plans and specifications for passenger or freight elevators.



Operation without or with attendant
Rotary's fully automatic control system eliminates the costly services of operators. Any specified control or combination can be furnished.

Rotary® OILDRAULIC® ELEVATORS

Write for new catalog RE-307 and complete architectural data

ROTARY LIFT CO., 1008 KENTUCKY, MEMPHIS 2, TENN.

SEE OUR CATALOG IN SWEET'S



PRODUCTS

Continued from p. 270

FLOORS

Ceramic Tile Adhesive for Floors. 4-p. data sheet. Minnesota Mining & Mfg. Co., Dept. Z5-19, 423 Piquette Ave., Detroit, Mich. 8½" x 11"

GYM EQUIPMENT

Wayne Rolling Gymstands. Wayne Iron Works, 844 N. Pembroke Ave., Wayne, Pa. 16 pp. 8½" x 11"

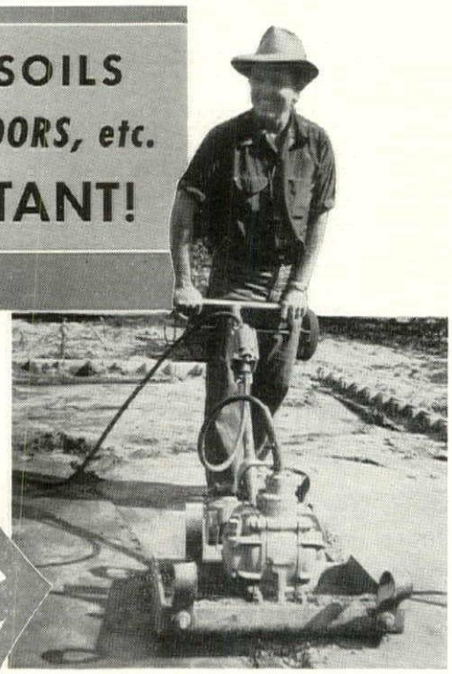
HEATING AND AIR CONDITIONING

The Amazing Story of the Absolute Filter and the New Aerosolve Air Filter. Cambridge Filter Corp., 738 Erie Blvd. East, Syracuse, N.Y. 4 pp. each. 8½" x 11"

Anaconda Copper Tubes and Fittings for Soil, Waste and Vent Lines. The American Brass Co., Waterbury 20, Conn. 8 pp. 8½" x 11"

Hartzell Utility Blowers. Bul. BC-11. Hartzell Propeller Fan Co., Piqua, Ohio. 48 pp. 8½" x 11"

PROPER DENSITY of SOILS
UNDER FOOTINGS, GROUND FLOORS, etc.
***is* HIGHLY IMPORTANT!**



and leading architects and engineers in constantly increasing numbers are including required densities in their specifications.

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JACKSON
VIBRATORY
COMPACTORS

The manually guided, self-propelling JACKSON VIBRATORY COMPACTOR is widely and very successfully used for consolidating granular soils, such as gravel, sand or crushed rock in concrete floor sub-bases, under footings, close to abutments, in trenches, bridge approaches and many other applications. Meets or exceeds specified densities as determined by Proctor and other methods . . . at the rate of 1800 to 2000 sq. ft. per hour using a single JACKSON COMPACTOR, and where twin units are employed (operated by one man) production is practically doubled. In very large projects, including the consolidation of granular soil sub-bases for parking lots, ramps, drives, large fills, and macadam highway construction, the JACKSON MULTIPLE VIBRATORY COMPACTOR, tractor-mounted and having a working width of 13', 3", has been proved by far the most advantageous means of achieving desired densities.

JACKSON VIBRATORY COMPACTORS
are available to contractors on either a purchase or rental basis from equipment dealers throughout the nation. Specify their use on your next project. It's good assurance that your requirements will be met quickly and thoroughly. Fully descriptive literature gladly sent on request.

JACKSON VIBRATORS, INC.
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Marla Multi-Zone Air Conditioning Units. Marlo Coil Co., 6135 Manchester Ave., St. Louis 10, Mo. 8 pp. 8½" x 11"

Mechanical Air Filters. Trion, Inc., 1000 Island Ave., McKees Rocks, Pa. 10 pp. 8½" x 11"

Modernized Coal Serves Today's Hospitals. National Coal Assn., 802 Southern Bldg., Washington 5, D.C. 49 pp. 8½" x 11"

Monobloc Centrifugal Pumps for Better Operating Air Conditioning Systems. Bul. W-306-B3B. Worthington Corp., Harrison, N.J. 4 pp.

Peerless Vertical Industrial Service Pumps. Bul. B-505. Peerless Pump Division, Food Machinery & Chemical Corp., 301 West Ave. 26, Los Angeles 31, Calif. 16 pp. 8½" x 11"

Self-Contained Boilers. AD-137. Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis. 4 pp. 8½" x 11"

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What You Should Know about Modern Steam Heating. The Steam Heating Equipment Mfrs. Assn., 450 E. Ohio St., Chicago 11, Ill. 18 pp. 7" x 10"

LATH

Specifications for Metal Lathing and Furring. Metal Lath Mfrs. Assn., Engineers Bldg., Cleveland 14, Ohio. 20 pp. 8½" x 11"

LIGHTING

Data Sheets on Lighting Units. Century Lighting, Inc., 521 W. 43rd St., New York 36, N.Y. 8½" x11"

Engineered Fluorescent Lighting. Bul. B-5799-B. Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa. 28 pp. 9" x 4"

Lighting for Today. Gross Wood & Co., 230 Natoma St., San Francisco, Calif. 8 pp. 8½" x 11"

LUMBER

Where to Buy Douglas Fir, West Coast Hemlock, Sitka Spruce, Western Red Cedar. West Coast Lumbermen's Assn., 1410 S. W. Morrison St., Portland 5, Ore. 48 pp. 8½" x 11"

MATERIALS HANDLING

Loading Dock Shelters. Dazzo Products, Inc., 152 Bleecker St., New York 12, N.Y. 12 pp. 8½" x 11"

continued on p. 278

BRIXMENT

Better Mortar for Blocks



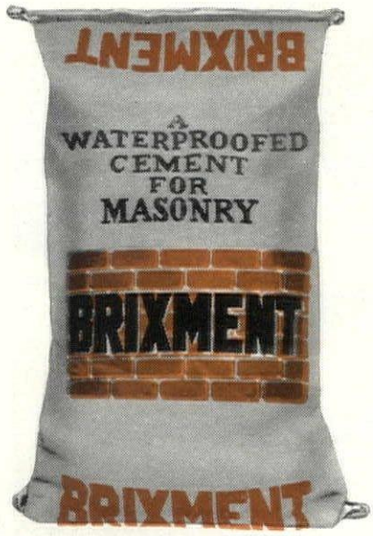
BETTER BODY

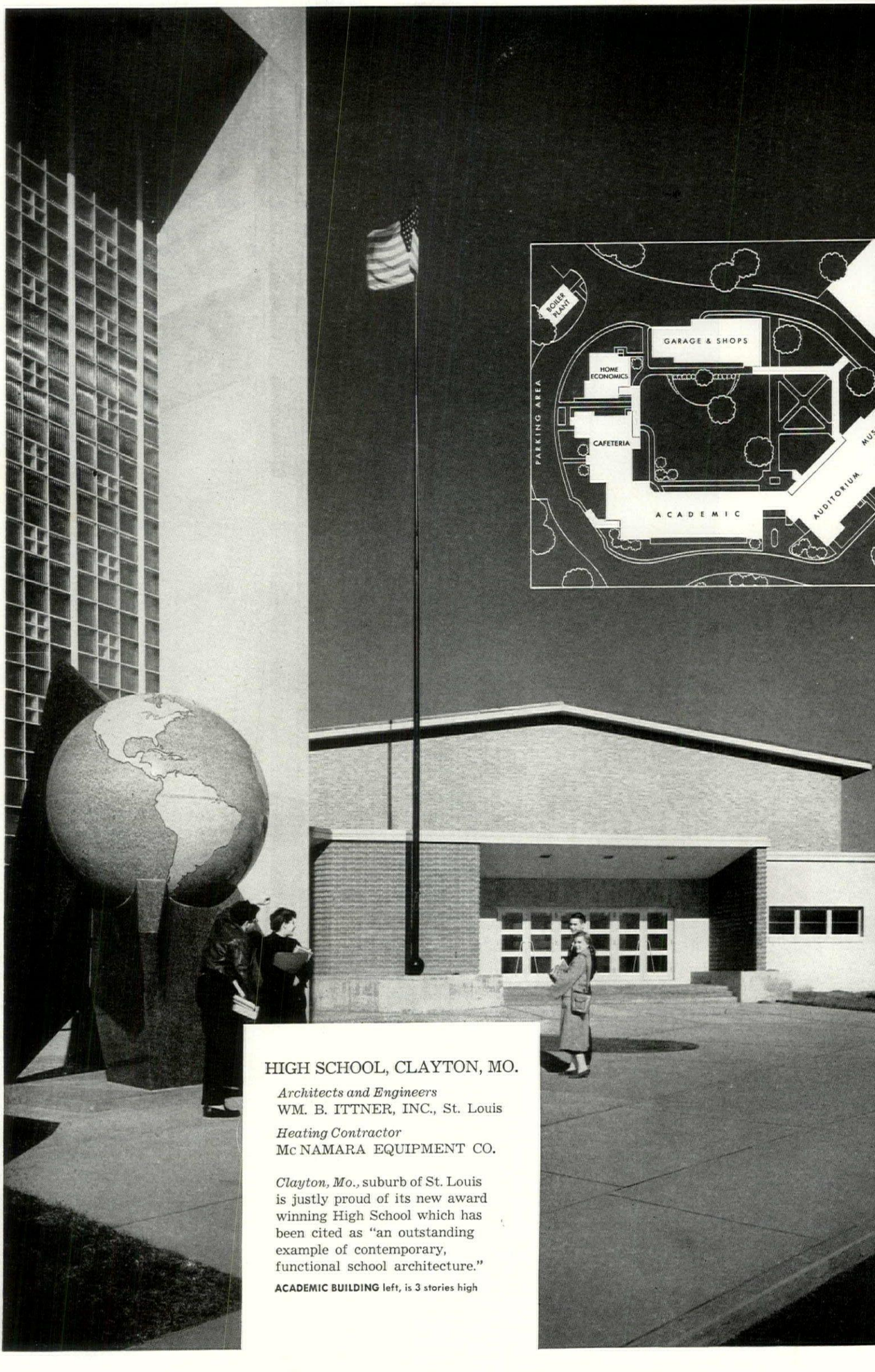
When concrete block are laid, the mortar should have "body", to support the weight of the unit, thus holding it up to the line. If the mortar lacks body, the block will settle below the line even if a thick bed of mortar has been spread.

At the same time, plasticity is required. Unless the mortar is plastic, the bricklayer cannot quickly and accurately tap the block down to the line.

Brixment has body and plasticity. It is firm but not stiff —soft but not sloppy. This combination of body and plasticity makes Brixment the best possible mortar to use with concrete blocks.

Louisville Cement Company . . . Louisville 2, Kentucky





HIGH SCHOOL, CLAYTON, MO.

Architects and Engineers
WM. B. ITTNER, INC., St. Louis

Heating Contractor
Mc NAMARA EQUIPMENT CO.

Clayton, Mo., suburb of St. Louis is justly proud of its new award winning High School which has been cited as "an outstanding example of contemporary, functional school architecture."

ACADEMIC BUILDING left, is 3 stories high

ne of the students, teachers and

taxpayers best friends

. it maintains comfortable, healthy temperatures in every room, each

ith its own independent control . . . prevents OVER-heating and insures

tmost fuel economy . . . users report dependable operation after 25 to

) years of low cost operating and maintenance service –

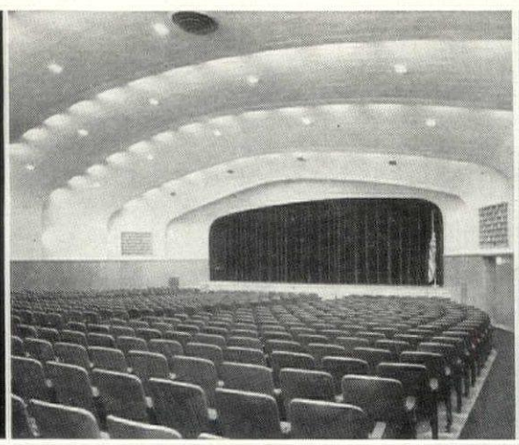
POWERS

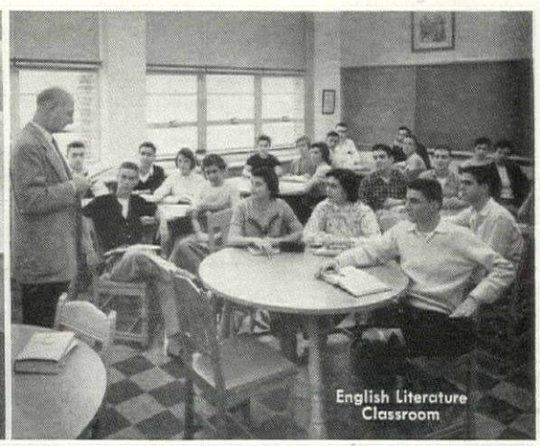
Time tested and proven dependable

Temperature Control

INSTALLED IN THE CLAYTON, MO., NEW CAMPUS TYPE HIGH SCHOOL

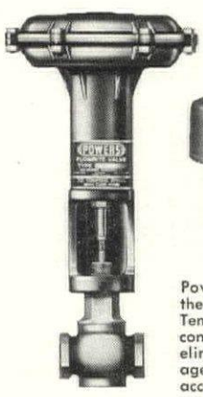
ny of the six buildings here in be occupied at night ithout operating the entire :hool plant. Covered alkways connect the buildings hich being separated olate noise from gym, band nd shops. Water heaters and ıower baths too, are Powers ontrolled also Whirlpool rm-leg bath in gym.



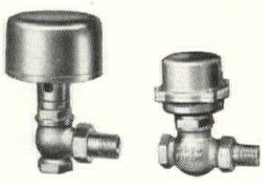


English Literature Classroom

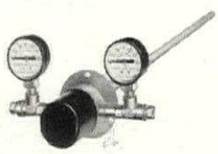
ou too can solve our Temperature Control roblems with Powers . . one dependable source, ne responsibility. onsult Powers on all emperature control problems. ur more than 60 years f experience will save time nd help you get he right control for our requirements.



FLOWRITE Diaphragm Valve



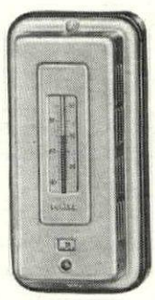
Powers PACKLESS Control Valves – one of the many superior features of a Powers Temperature Control System. Their duo-seal construction reduces valve stem friction, eliminates packing maintenance and leakage of water or steam and gives smooth accurate control.



Above: Powers LIMITEM Low Limit Thermostat. A precision instrument for accurate control of Unit Ventilator discharge temperatures.



POWERSTROKE Damper Operator



Powers Room Thermostat is truly gradual acting and gives smooth control of valves and dampers.

THE POWERS REGULATOR COMPANY

SKOKIE, ILLINOIS | *Offices in chief cities in U.S.A., Canada and Mexico*

Established in 1891 • Over 60 years of Automatic Temperature and Humidity Control

-21)

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PRODUCTS

Continued from p. 274

MAINTENANCE

Caring for Masonry Surfaces with Miracle Method Products. Cat. 17. The Seddon Co., 1526 Wooster Rd., Cleveland 16, Ohio. 12 pp. 8½" x 11"

PAINTS

Luminall Catalogue. Luminall Paints, Dept. SC, Division of National Chemical & Mfg. Co., Chicago, Ill. 12 pp.

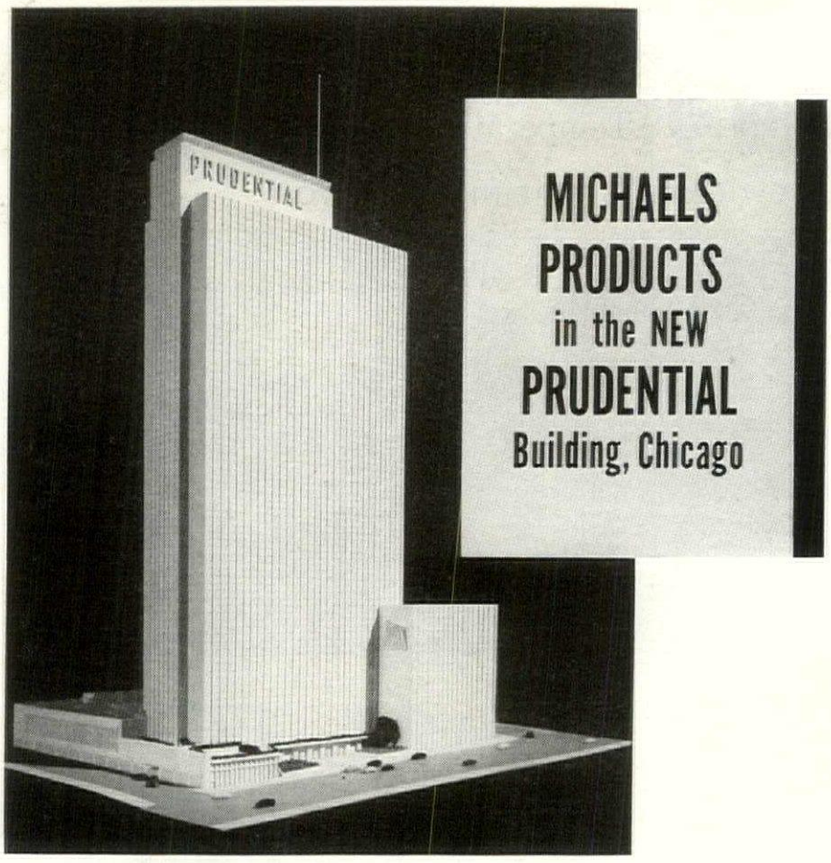
PARTITIONS

Toilet Compartments, Shower Stalls, Hospital Cubicles. Cat. 92. The Sanymetal Products Co., Inc., 1701 Urbana Rd., Cleveland 12. 28 pp.

PLUMBING

Copper Drainage Systems. Northern Indiana Brass Co., Elkhart, Ind. 20 pp. 8½" x 11"

Hydrants. Manual 54-5. J. A. Zurn Mfg. Co., Erie, Pa. 16 pp. 8½" x 11"



Builders of the Mid-America Home Office of the Prudential Insurance Company used Michaels as one source of supply for many of the metal building products being used in its construction. Michaels fabricated all aluminum components except windows and curtain wall panels. These included the letters "PRUDENTIAL" at the top of the building; store fronts; the 20 story high louvers, said to be the world's highest, also all bronze work, and the 24-foot lobby columns of stainless steel. Michaels ferrous and nonferrous metal building products have become an important part of many of the nation's prominent structures.

Recently Michaels moved into a new factory and office building which contains 85,000 square feet of floor space. Here expanded facilities mean even better service for you. Contact Michaels on your next project. The high quality of their products is well known, and you'll find them a thoroughly reliable source of supply.

The Michaels Art Bronze Co., Inc., P. O. Box 668-F, Covington, Ky.

Since 1870 the name Michaels has been a symbol of exceptionally high quality

Loose-leaf catalogue with four booklets on sinks Elkay Mfg. Co., 1874 S. 54th Ave., Chicago 50 Ill. 8½" x 11"

Taylor Forge Foundation Pipe. Bul. 542. Taylo Forge & Pipe Works, P. O. Box 485, Chicago 90 Ill. 8 pp. 8½" x 11"

REFUSE DISPOSAL

Pittsburgh–Des Moines Incineration Plants fo the Modern Municipality. Pittsburgh–De Moines Steel Co., Neville Island, Pittsburgh 25 Pa. 22 pp. 8½" x 11"

SOUND EQUIPMENT

Jobber Sound Products Catalogue. Altec Lan sing Corp., 161 Sixth Ave., New York 13, N.Y 10 pp. 8½" x 11"

STEEL

Alloy Steels Pay Off. Climax Molybdenum Co. 500 Fifth Ave., New York 36, N.Y. 200 pp.

TESTING APPARATUS

Apparatus for Engineering Tests of Soils, As phalt, Concrete, Materials. 1955 Catalogue Soiltest, Inc., 4520 W. North Ave., Chicago 39 Ill. 104 pp. 8½" x 11"

WALL AND FLOOR FINISH

Gold Seal Floors and Walls—1955. Congoleum-Nairn, Inc., 195 Belgrove Dr., Kearny, N.J. 144 pp. 8½" x 11"

Vikon Wall Tile. Vikon Tile Corp., Washington, N.J. 26 pp. 8½" x 11"

WALL PANELS

The Curtain Wall Story. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, Ohio. 20 pp. 8½" x 11"

Davidson Architectural Porcelain for Free Expression of Building Design. Davidson Enamel Products, Inc., 1103 E. Kibby St., Lima, Ohio. 12 pp. 8½" x 11"

WINDOWS AND DOORS

Architectural Window Decor. Vertical Blinds Corp. of America, 1936 Pontius Ave., Los Angeles 25 Calif. 4 pp. 8½" x 11"

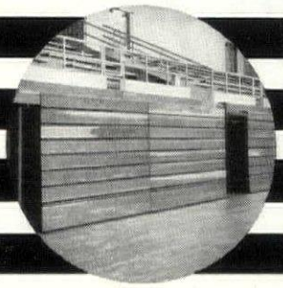
Door Controls—Automatic and Manual. Cat. S-55. Dor-O-Matic, Division of Republic Industries, Inc., 4446 N. Knox Ave., Chicago 30, Ill. 8 pp. 8½" x 11"

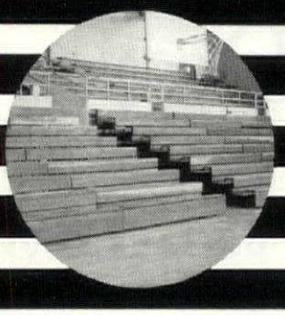
Flush Doors. Atlas Plywood Corp., 1430 Statler Bldg., Boston 16, Mass. 4 pp. 8½" x 11"

Grant Accordion Door Hangers. Grant Pulley and Hardware Corp., 31-85 Whitestone Pkway., Flushing, N.Y. 4 pp. 8½" x 11"

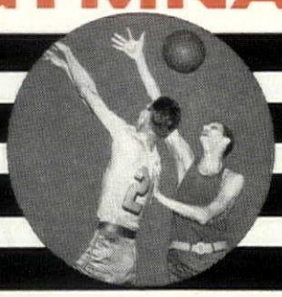
1955 Barber-Colman Overdoor Guide. Barber-Colman Co., Rockford, Ill. 16 pp. 8½" x 11"

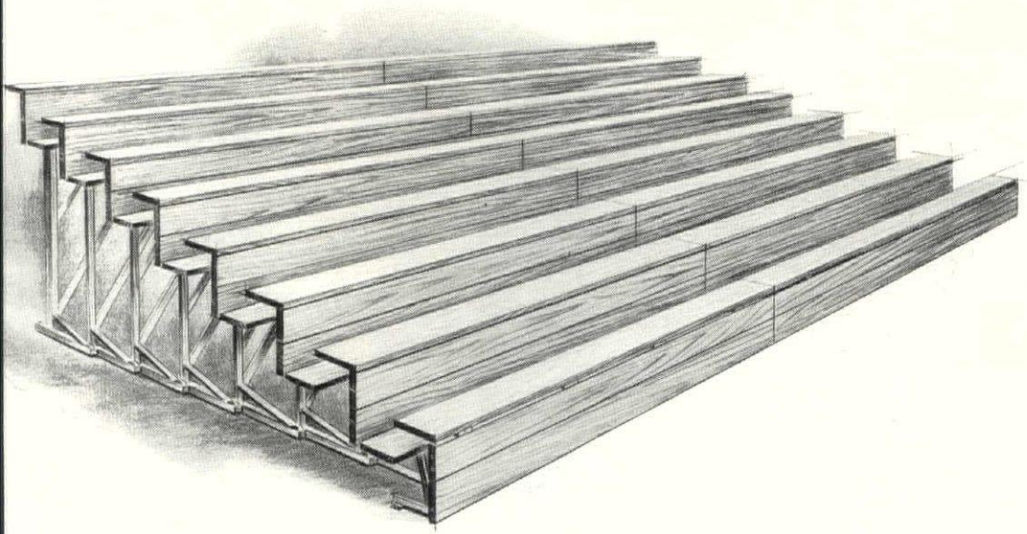
1955 Overly Door Catalogue. Overly Mfg. Co., 575 W. Otterman St., Greensburg, Pa. 20 pp. 8½" x 11"





WAYNE GYMNASIUM SEATING





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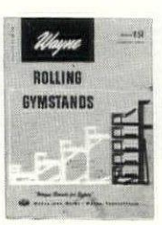
We at Wayne build into our gymnasium seating a smooth, smart, modern appearance that blends well into today's modern gymnasiums. Combined with this are all of Wayne's famous engineering advances. Closed riser board construction for fine appearance and safety. Exclusive alignment frame assembly permits smooth, easy, straight opening and closing operation. Wayne Gymstands are as beautiful as they are efficient.

Compare Wayne appearance . . . and Wayne engineering. For the same investment you'll specify *better seating* . . . Wayne seating!

Wayne's Rolling Gymstand Catalog R-54 free on your request—write direct to Wayne Iron Works, 150 North Pembroke Ave., Wayne, Penna.



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WASTED FUEL DOLLARS SAVED BY HERMAN NELSON DRAFT|STOP SYSTEM GIVE YOU CLASSROOM COMFORT "FOR FREE".



IF you're depending on open windows for classroom cooling and ventilation, you do *have money to burn!* It's the fuel dollars spent for unneeded heat—heat that is literally "tossed out the window" in an effort to bring classroom temperatures down to comfort level.

Herman Nelson DRAFT|STOP lets you keep both windows and heating costs down through balanced two-way temperature control. It heats only when heat is needed. When your "free heat" sources—sun, lights and students—take over, this system assumes the function of cooling, introducing outdoor air in sufficient quantities to maintain classroom temperature at comfort level. And, to make this fuel saving complete, the Herman Nelson method of draft elimination functions without using costly heat.

Comfort and cash savings—let Herman Nelson prove how easy it is to have both. For complete information, see our catalog in Sweet's Architectural File, or write Herman Nelson Unit Ventilator Products, American Air Filter Co., Inc., Louisville 8, Ky.



NEW YORK. With today's critical classroom shortage, this room represents a perfect example of low cost modernization. Even with windows closed and curtains drawn, a Herman Nelson DRAFT|STOP Unit Ventilator keeps this Audio-Visual demonstration classroom at New York University properly cooled and ventilated. Installation includes new Light|Stop Curtain Accessory (see inset) which prevents curtain from billowing due to discharge air from unit ventilator, thereby eliminating distracting light streaks. Co-chairmen National Committee on Buildings and Equipment, Department of Audio-Visual Instruction of the N.E.A.: Dr. A. J. Foy Cross and Dr. Irene Cypher; Architects: Eggers and Higgins.

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AMERICAN AIR FILTER COMPANY, INC.

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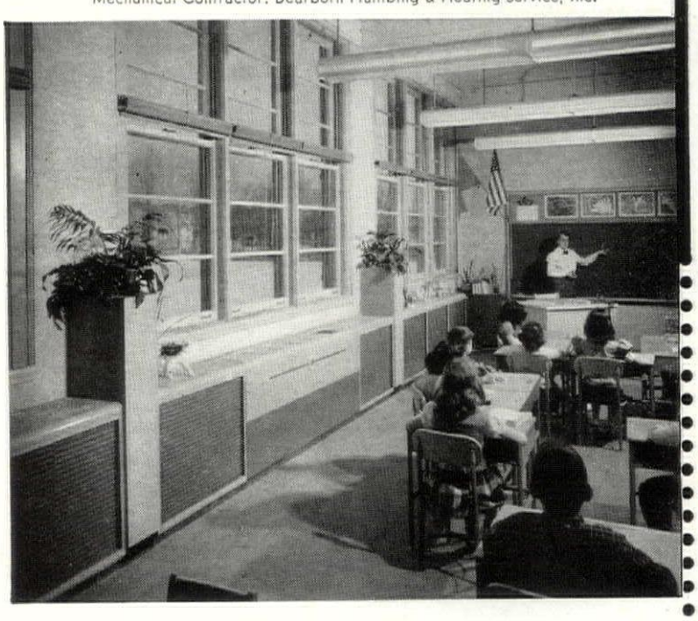
burn?



SOUTH DAKOTA. Large glass areas help insure bright, cheerful classrooms—but cooling, heating and ventilating functions at Lincoln Grade School, Yankton, S. D., are assigned to dependable, efficient Herman Nelson DRAFT|STOP Unit Ventilators. Superintendent of Schools: L. H. Baumann; Architects: Hugill, Blatherwick & Fritzel; Engineers: G. M. Orr Engineering Co.; Mechanical Contractor: Freeman Corporation.

ILLINOIS. Helps them to concentrate in comfort. No chilling drafts — no interruptions from opening and closing windows. Herman Nelson Unit Ventilators meet classroom cooling, heating and ventilating requirements every season of the year at Solomon School, Chicago, Ill. Superintendent of Schools: Benjamin Willis; Architect: John C. Christensen; Engineer: Joseph T. Fatz, Sr.; Mechanical Contractor: Dearborn Plumbing & Heating Service, Inc.



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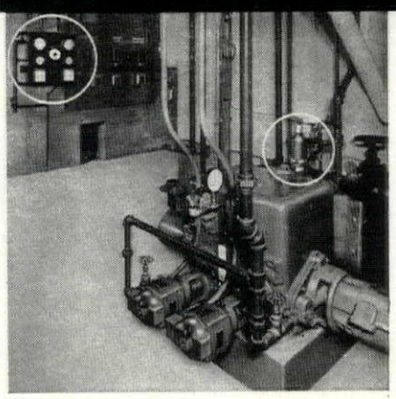

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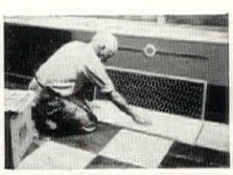
Herman Nelson renewable AMER-glas filter combines the best features of a permanent filter with the time and money-saving advantages of a replaceable filter. Just four easy steps and the classroom filter is restored to its original efficiency.



1. Remove the aluminum filter frame from the unit ventilator and dispose of soiled media.



2. Pull out desired length of clean AMER-glas media from self-dispensing carton and cut with scissors.



3. Insert the clean filter media in the frame and lower hinged top into position.



4. Replace the filter frame in the unit ventilator. It's ready to go!

AMERICAN AIR FILTER CO., INC.
Dept. AF4
Louisville 8, Kentucky

I would appreciate receiving literature describing the following products—

- ☐ Classroom Unit Ventilators
- ☐ **illinois** Selectotherm
- ☐ Renewable **AMER-*glas*** filters
- ☐ Dust Control for Woodworking Shops

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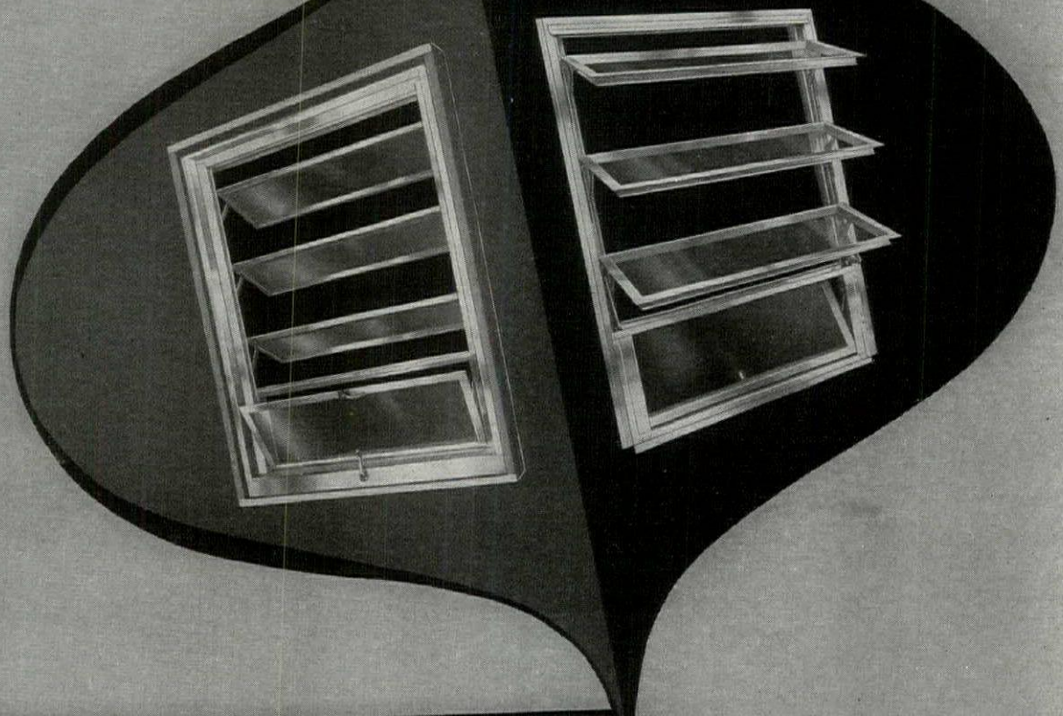

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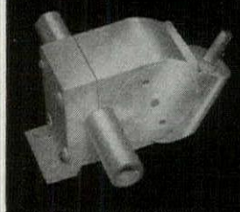
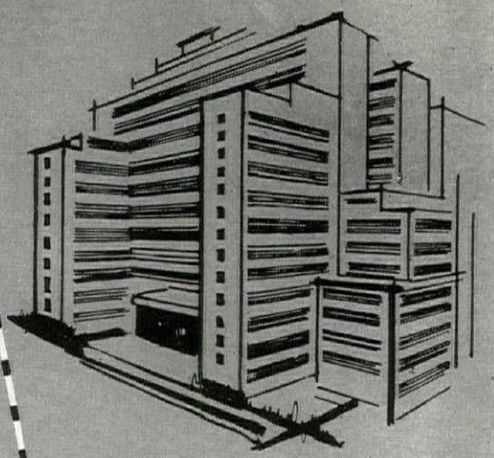


Dimensions of Heavy Compound Operator are 5¼" x 3" x 2"



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- **HEAVY EXTRUDED SECTIONS** — 1⅝" ventilator depth. Minimum thickness of all structural members ⅛".
- **ALL MOVING PARTS** bushed in self-lubricating nylon. All linkage tested for maximum load conditions.
- **EASE OF OPERATION** — Perfect balance and gear ratio permits finger tip control.
- **STRIP PROOF HEAVY COMPOUND OPERATOR** concealed in sill, synchronized distribution of load, unparalleled load safety factor for aluminum awning windows.
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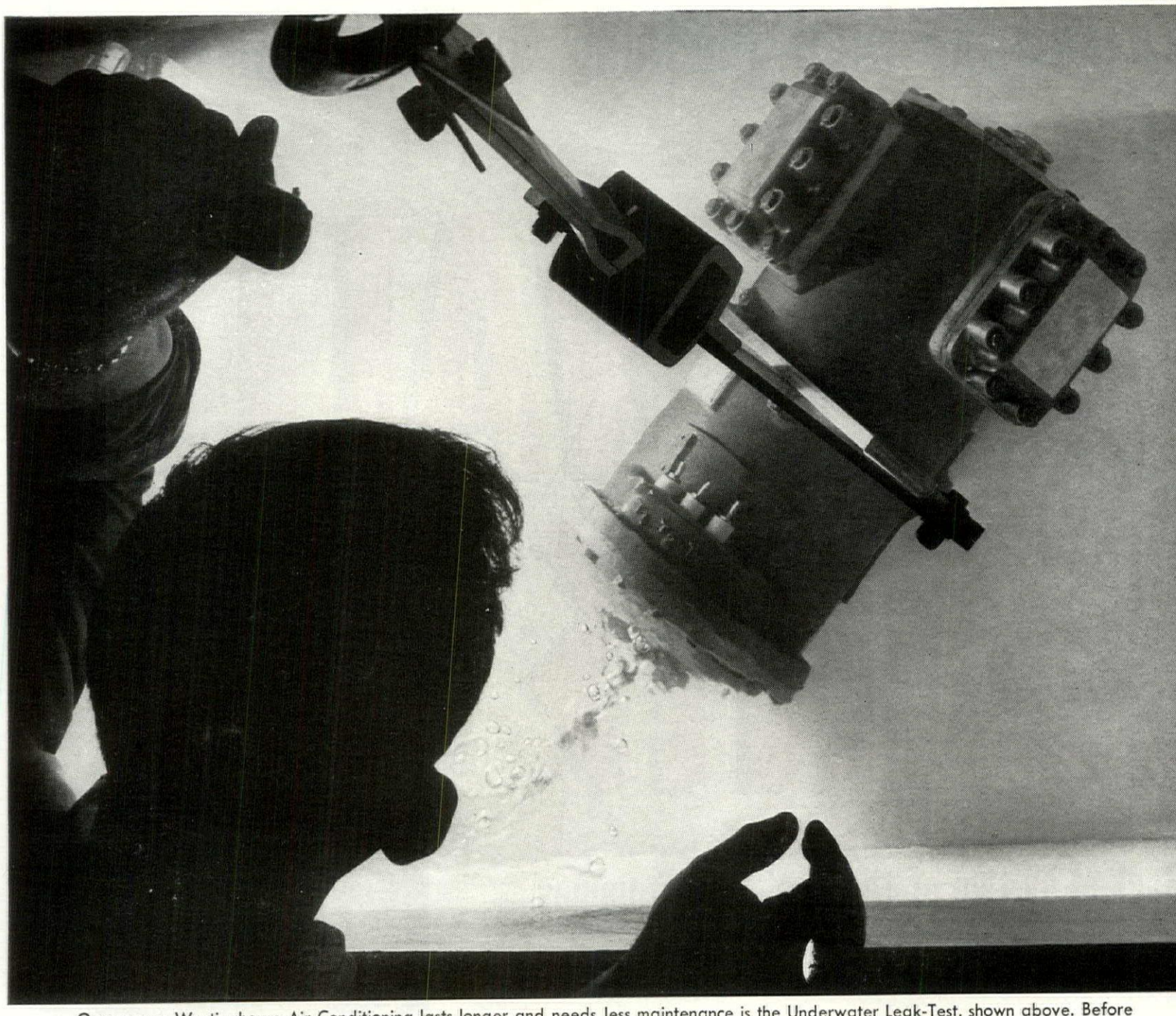

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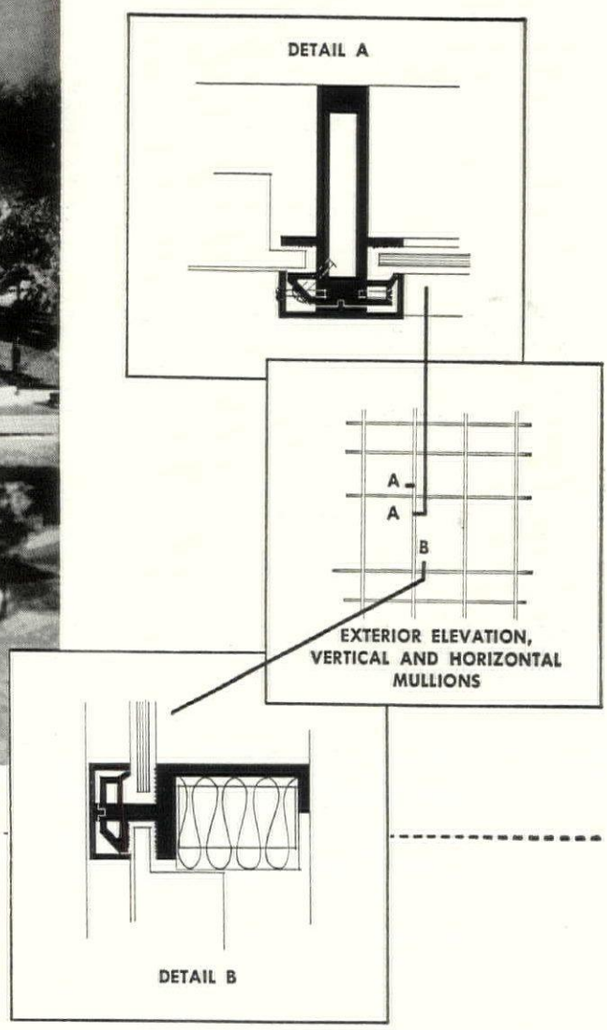

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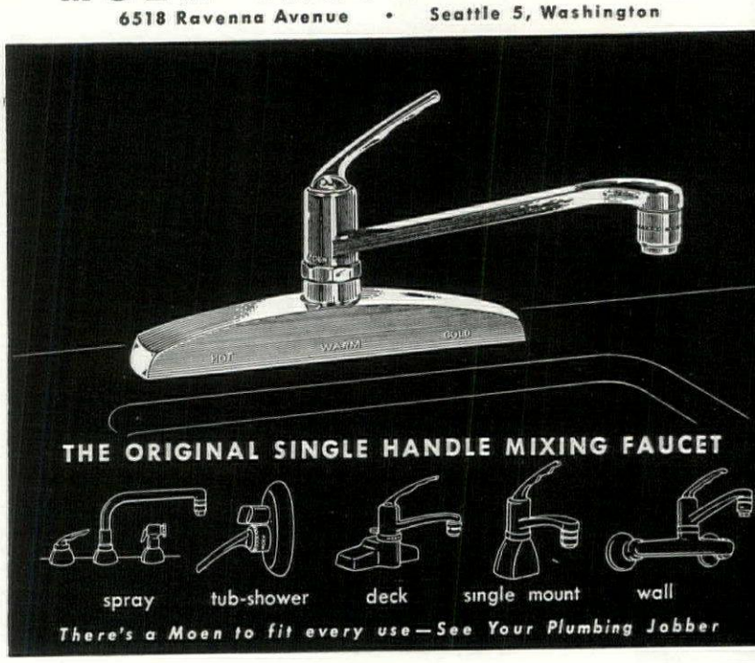

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for stucco, masonry veneer, plaster and concrete floors

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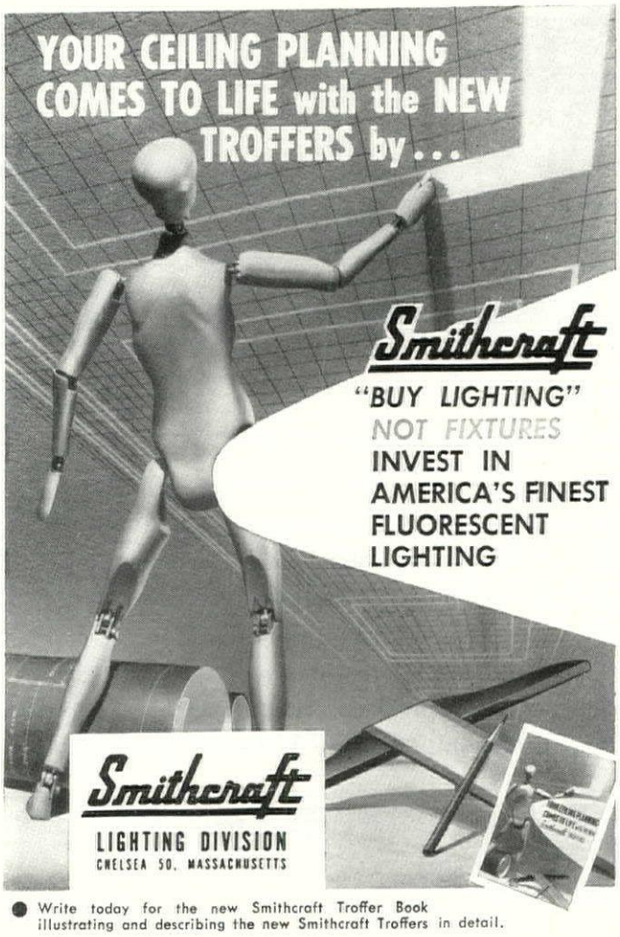

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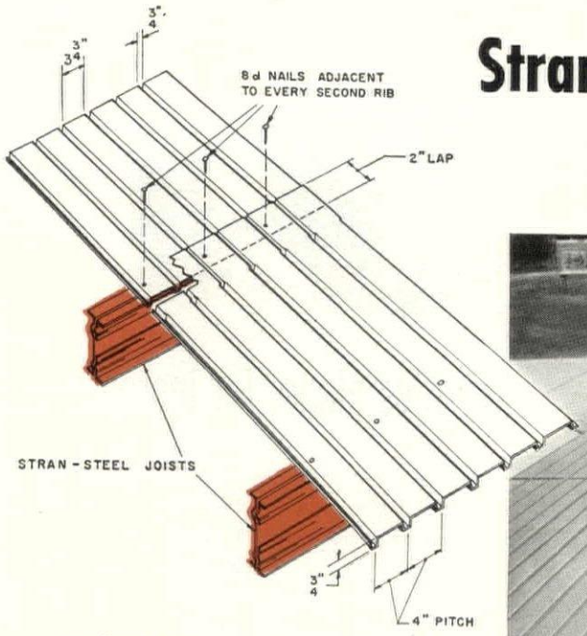



Woodland Acres Shopping Center in Green's Bayou, Texas, utilizes 26-ga. Stran-Steel galvanized roof deck nailed to 9" Stran-Steel joists, on 24" centers. Built-up roof was applied over ½" fiber glass insulation. Architects: DUNAWAY AND JONES, Houston. Distributor: BUIE BLDG. MATERIAL CO., Houston.

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LIGHTWEIGHT but STRONG: Dead load savings up to 10 lbs. Total weight of this dry system, including 1" of insulation board, is less than 3 lbs. per sq. ft. Great strength-to-weight ratio assures maximum economy in materials.

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Great Lakes Steel Corp.
Ecorse, Detroit 29, Mich.

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We're sorry, Miss Le Maire!

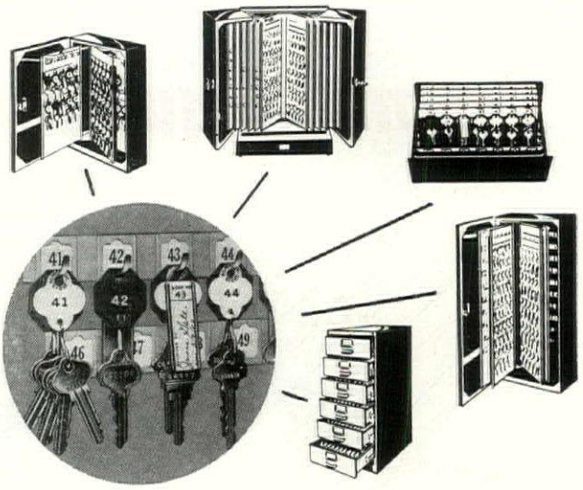
In the December issue of this publication we inserted an advertisement featuring the new 510 Fifth Avenue offices of Manufacturers Trust Company, for which you acted as Interior Design Consultant.

We received our information for this project from sources we believed to be completely reliable; despite careful checking, some embarrassing errors crept into the ad, especially in relation to your official title in connection with this job, and in the identification of some of the photographs.

The advertisement was prepared in complete good faith, which, of course, makes the errors no less regrettable.

Again, we're sorry, and sincerely hope you will not be inconvenienced by the ad's errors.

L. E. CARPENTER & CO., INC., NEW YORK 1



key files alone, for instance . . .

wouldn't give your client effective key control. But a really "complete" TelKee System would, because *only* TelKee assures absolute control over all keys all of the time. It's convenient, profitable, easy to set up and operate. For full details, send for our FREE catalog No. AF-18 today!

The **MOORE KEY TELKEE CONTROL®** *Systems*

P. O. MOORE, INC. 300 FOURTH AVENUE, NEW YORK 10, N. Y.



LABRITECTURE® . . .

A New Technique of Laboratory Planning

INDUSTRIAL LABS



HOSPITALS



EDUCATIONAL

METALAB offers a basic method in laboratory planning . . . called, "LABRITECTURE." This technique will assist and direct you in the modernization and expansion of your laboratory or in planning a new one. Our new 4B Catalog and Manual will give you the sound basis for solving these laboratory problems.

For complete **"LABRITECTURE"** details request our new 180-page Catalog 4B.

METALAB *Equipment Corp.*

218 DUFFY AVENUE, HICKSVILLE, L. I., N. Y.



® -- T.M. Reg.

METALAB EQUIPMENT CORP., 218 Duffy Ave. Hicksville, L. I., N. Y.

Gentlemen: Please send a copy of your new 180-page Catalog 4B to:

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Folding Tables are NOT all alike!

No other tables have as many "Extra Features" as

Mitchell FOLD-O-LEG tables



QUICK, EASY SET-UP OR REMOVAL For *Changing Room Uses*

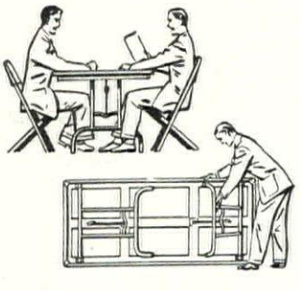
- ★ GREATER SEATING CAPACITY
- ★ MORE LEG COMFORT
- ★ UNEQUALED APPEARANCE, DURABILITY, STRENGTH
- ★ FINEST CONSTRUCTION, MATERIALS, FINISHES
- ★ BUILT FOR LONG SERVICE

SMOOTH, SANITARY TOPS
of Masonite Presdwood, Linoleum, Fir or Birch plywood, Formica and Resilyte

STRONG, TUBULAR STEEL FOLDING LEGS
Fold under for storage in small space

RIGID, STEEL FOLDING BRACES
with simple easy-to-operate, patented spring compression locks

USED IN SCHOOLS, CHURCHES, INSTITUTIONS, HOTELS, CLUBS, LODGES, INDUSTRIAL PLANTS



The Strongest, Handiest Folding Table Made!

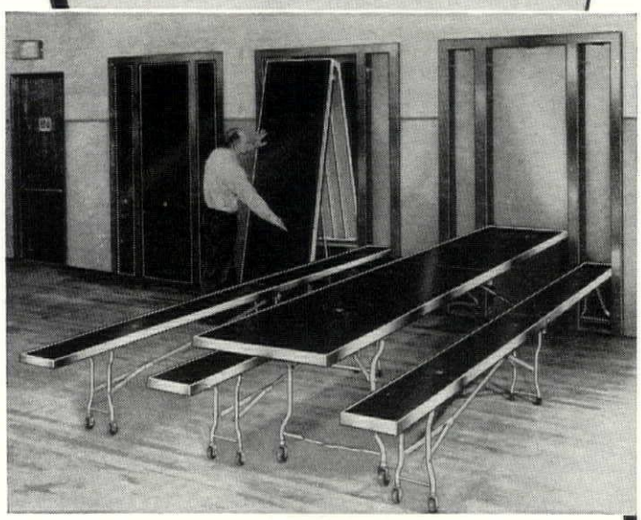
Write for folder with complete specifications

MITCHELL MANUFACTURING CO.

2758 S. 34th STREET • MILWAUKEE 46, WISCONSIN

MFRS. of MITCHELL FOLD-O-LEG TABLES, BAND AND CHORAL STANDS, SEATING RISERS

Approved* Method of Cutting Costs in School Design

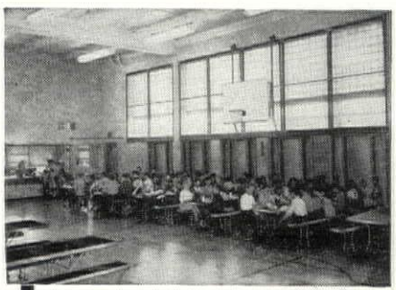


SCHIEBER

FOLDING LUNCHROOM EQUIPMENT

SECTION 22
SWEET'S
ARCHITECTURAL
FILE

Schieber In-Wall and Port-A-Fold equipment is used in thousands of schools from coast to coast. The first installation made 24 years ago is still in daily use and going strong. This is quality equipment that has acceptance and will aid you in keeping costs down where the building budget is restricted.

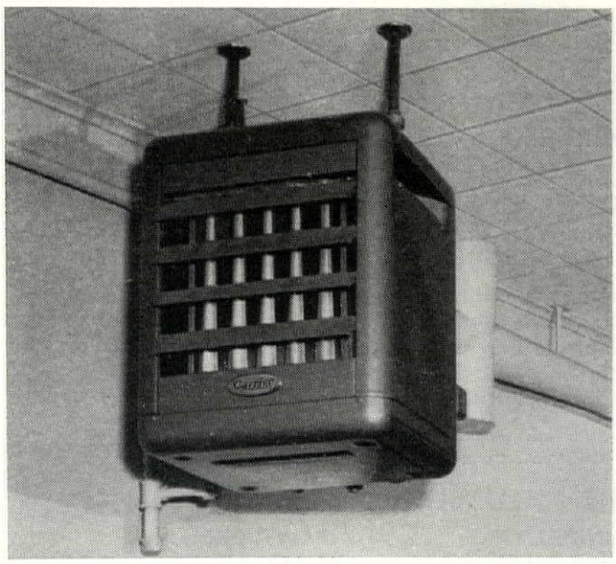


**Activities area serves double duty as lunchroom. Already specified by 1000 architects.*

SCHIEBER SALES CO.
DETROIT 39, MICH.

Carrier knows heating

Over fifty years of leadership in air conditioning have given Carrier unmatched experience in the control of temperature —heating as well as cooling. Yes, Carrier knows heating by experience—and all this engineering skill and leadership contributes to the superiority of Carrier Unit Heaters.



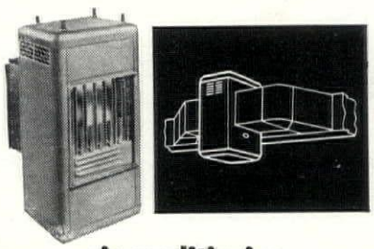
CARRIER GAS-FIRED UNIT HEATERS

begin with the outstanding midget-size Model 46T50/70, shown above. Only 23 inches high and relatively light in weight, this propeller-fan type unit heater packs a hefty 50,000 to 70,000 Btu/hr. input (according to fan-motor size). It is designed for use when both space and heating requirements are important.

And for extra-long life, only the Carrier line embodies the major advantage of 16-gauge ALUMINIZED STEEL heat exchanger. It lasts far longer than one of ordinary furnace steel of heavier gauge. The dozen or more other Carrier features are equally impressive. Six additional sizes.

Get the complete story about the full Carrier gas-fired line . . . propeller-fan and duct models ranging up to 230,000 Btu capacity. WRITE or USE COUPON for a copy of the 12-page folder on Carrier Gas-fired Unit Heaters.

Duct-type unit heaters embody all the major structural and control features of the fan-propelled model—minus fan. By-pass duct application shown here permits year-round air conditioning through the Carrier Weathermaker System. Available in seven sizes.



Carrier

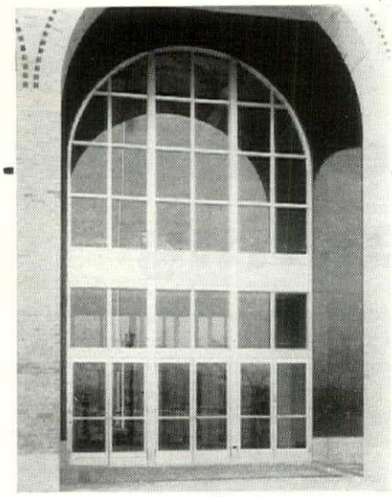
air conditioning
refrigeration
industrial heating

CARRIER CORPORATION, 335 S. Geddes St., Syracuse, N. Y.
Please send me the 12-page folder on Carrier Gas-fired Unit Heaters.

*Name*_____

*Firm Name*_____

*Address*_____



St. Agnes High School, Main Entrance; Brighton, N. Y. Architects: Waasdorp and Northrup, Rochester, N. Y. Furnished and installed by Hires Turner Glass Co., Rochester, N. Y.

ALUMILINE

EXTRUDED ALUMILITED ALUMINUM PRODUCTS

Specified by Leading Architects for:

HOSPITALS · SCHOOLS · RELIGIOUS BUILDINGS · BANKS
STORE FRONTS · OFFICE BUILDINGS · INDUSTRIAL PLANTS
HOUSING PROJECTS · SHOPPING CENTERS

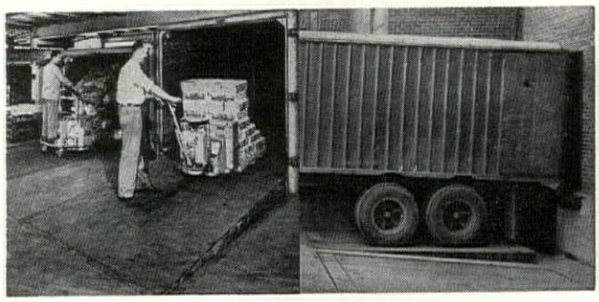
- Extruded Aluminum Store Front Construction
- Extruded Aluminum Factory Assembled Entrance Frames
- Narrow and Wide Stile Extruded Aluminum Doors
- Custom Built Extruded Aluminum Windows
- Curtain Wall Construction

Send for these new 1955 Catalogs: "Alumiline" Store Front Construction and "Alumiline" Entrances and Doors

see our catalog in ARCHITECTURAL FILE or write for copy

THE ALUMILINE CORPORATION
DUNNELL LANE PAWTUCKET, R. I.

For Maximum Efficiency And Safer Dock Handling



More Engineers And Architects Specify Low-Cost Custom Engineered ROWE ADJUST-A-TRUCKS and ADJUST-A-DOCKS



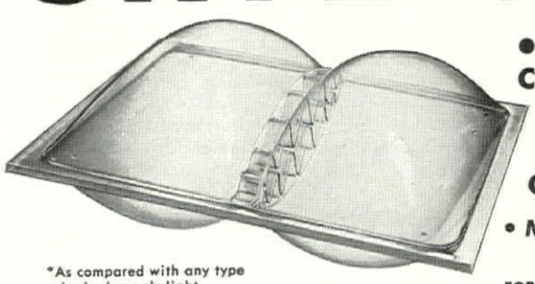
■ Rowe hydraulic dock levelling equipment is engineered for extra efficient, low-cost dock handling. And there are 84 models to choose from, to make it possible to meet your specifications, no matter what the problem.

See our catalog in Sweets Architectural File $\frac{32a}{Row}$ *and Industrial Construction File* $\frac{10b}{Row}$ *or write for your free copy.*

ROWE METHODS, INC.

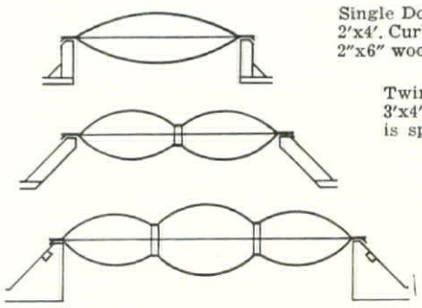
2534-N DETROIT AVENUE · CLEVELAND 13, OHIO

BETTCHER DUBL-DOME PLEXIGLAS SKYLIGHT



*As compared with any type single dome skylight.

- **STOPS CONDENSATION COMPLETELY**
- **STOPS 80% OF HEAT LOSS***
- **MOUNTS ON SLANT TYPE CURB FOR MAXIMUM LIGHT SPREAD**



Single Dome Style sizes include 2′x2′, 2′x3′, 2′x4′. Curb mounting shown here is standard 2″x6″ wood construction.

Twin dome style sizes include 3′x3′, 3′x4′, 4′x4′. Curb mounting shown here is special slant type construction.

Triple dome style sizes include 3′x5′, 3′x6′, 4′x5′, 4′x6′. Curb mounting shown here is standard cement construction. Any of the above domes can be mounted on any or all types of curbs indicated in these drawings.

For additional information, write to:

PAT PEND.

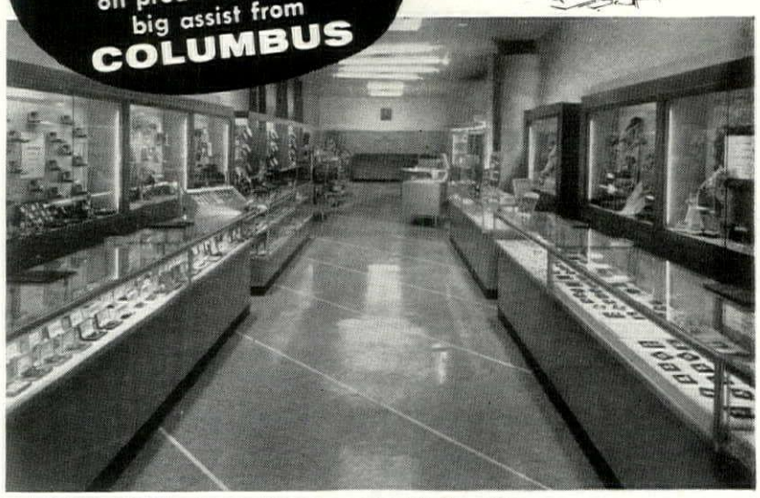
DUBL-DOME

Manufactured by **BETTCHER PLASTICS CO.**
1616 N.W. GLISAN · PORTLAND, OREGON

Certain distribution areas still available



a store plan that keeps on producing with a big assist from COLUMBUS



ROGERS JEWELERS, Graceland Shopping Center, Columbus, Ohio
TELCHIN & CAMPANELLA, Architects, New York City
E. J. WILL & CO., Contractor, Columbus, Ohio

From drawing board to daily sales Columbus equipment stays on the job to make the architects sound planning produce profitable results. Columbus display fixtures are "at work" today moving merchandise in every type of retail operation. Let our Columbus specialists show you the unlimited possibilities of sales-making display equipment that puts no limit on creative planning. You can be sure they'll protect your best interests and those of your client.

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Send for the "Sales Stimulating Suggestions" Portfolio for Architects and information on the complete line of Columbus equipment.



a Weathertight "Wall" with

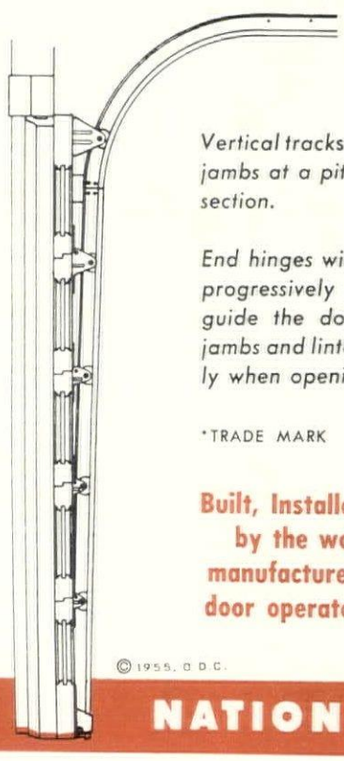
THE "OVERHEAD DOOR"
TRADE MARK

INDUSTRIAL—COMMERCIAL—RESIDENTIAL



MIRACLE WEDGE*

Weathertight Closure *. . . originated by Overhead Door Corporation in 1921, this feature is the basic construction of every door, from the smallest residential garage door to the largest industrial door.*



Vertical tracks incline away from jambs at a pitch of ¼" per door section.

End hinges with roller sleeves of progressively graduated height guide the door tightly against jambs and lintel, yet free it quickly when opening.

*TRADE MARK

Built, Installed and Serviced by the world's largest manufacturer of doors and door operators exclusively!

© 1955, O.D.C.

For easy solution of heating problems, employee protection, traffic speed-up and lasting satisfaction under constant hard use, insist upon The "OVERHEAD DOOR," first and finest in its field. This quality door is built of wood, steel or aluminum in any size to fit the opening . . . a "custom" door at production line prices. Consult our engineering and research staff about unusual installation problems.

Equip All Doors with
ELECTRIC OPERATORS
and Remote Control

Electric operation from a centralized control board pays for itself in man-hours saved. It lengthens the life of the doors because they move at a steady speed proper for their size and weight, without sudden strains.

OVERHEAD DOOR CORPORATION

Hartford City, Indiana

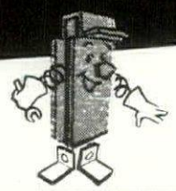
America's Great Name in QUALITY DOORS...

MANUFACTURING DIVISIONS:
HILLSIDE, N.J. CORTLAND, N.Y.
NASHUA, N.H. LEWISTOWN, PA. OKLAHOMA CITY
DALLAS, TEX. PORTLAND, ORE.

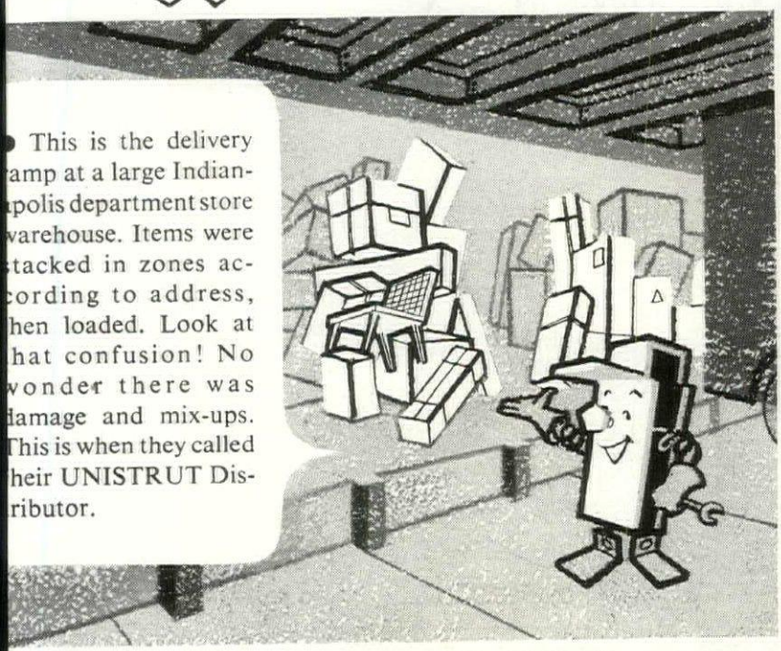
NATION-WIDE SALES • INSTALLATION • SERVICE

The Sky's The Limit"

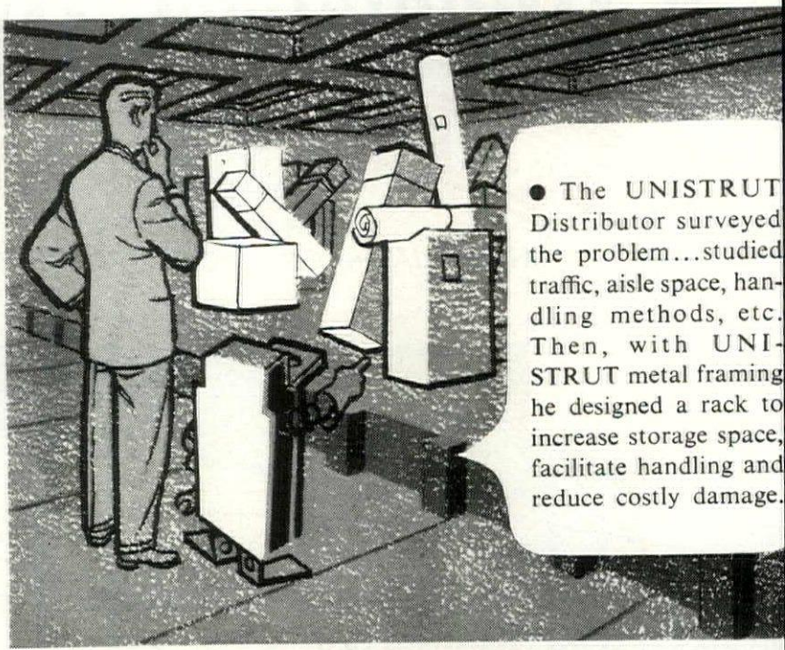
—when you build with UNISTRUT®



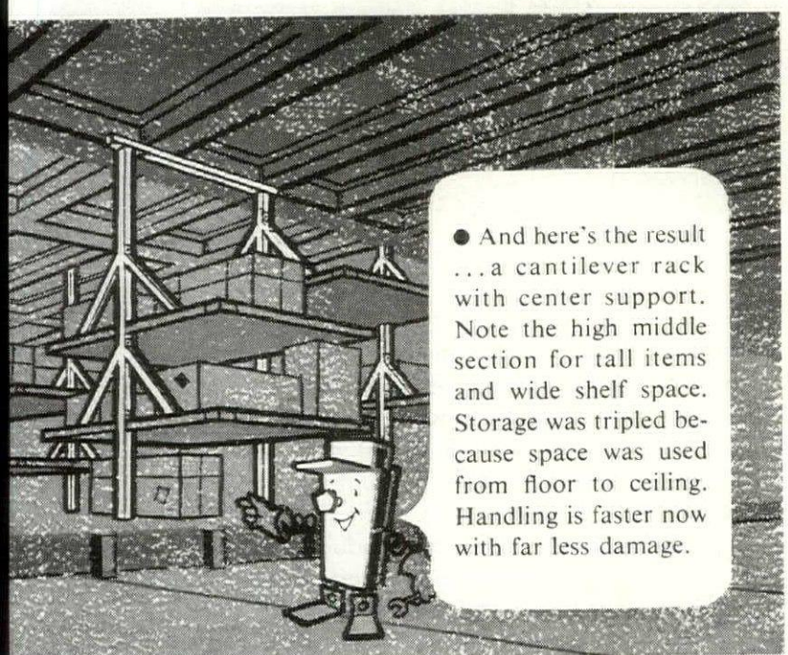
Mr. Strut cuts handling costs for Indiana department store with unique UNISTRUT® rac



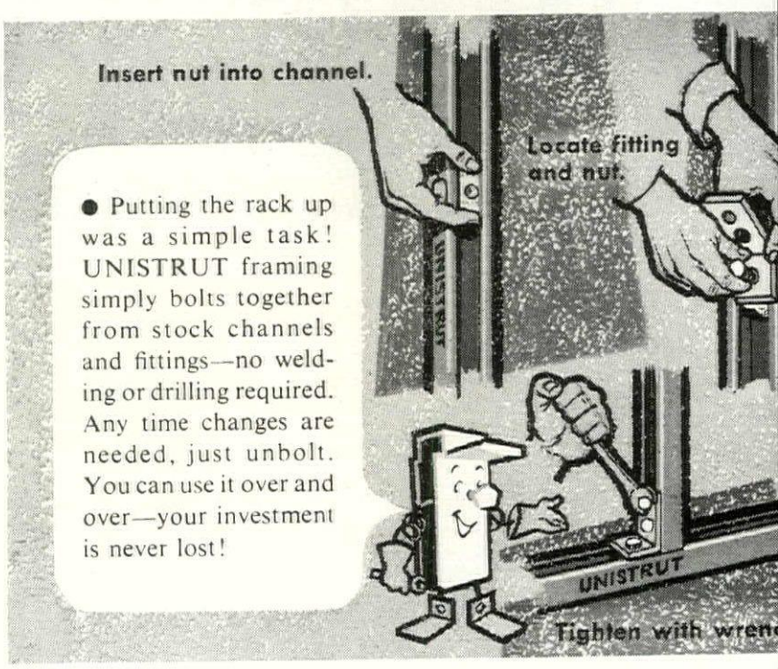
● This is the delivery ramp at a large Indianapolis department store warehouse. Items were stacked in zones according to address, then loaded. Look at that confusion! No wonder there was damage and mix-ups. This is when they called their UNISTRUT Distributor.



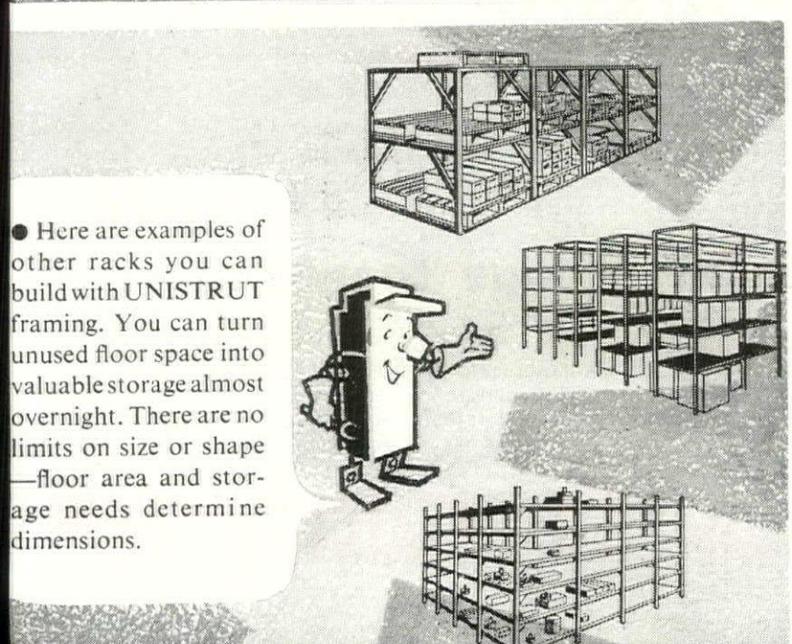
● The UNISTRUT Distributor surveyed the problem...studied traffic, aisle space, handling methods, etc. Then, with UNISTRUT metal framing he designed a rack to increase storage space, facilitate handling and reduce costly damage.



● And here's the result ...a cantilever rack with center support. Note the high middle section for tall items and wide shelf space. Storage was tripled because space was used from floor to ceiling. Handling is faster now with far less damage.



● Putting the rack up was a simple task! UNISTRUT framing simply bolts together from stock channels and fittings—no welding or drilling required. Any time changes are needed, just unbolt. You can use it over and over—your investment is never lost!



● Here are examples of other racks you can build with UNISTRUT framing. You can turn unused floor space into valuable storage almost overnight. There are no limits on size or shape —floor area and storage needs determine dimensions.

Whatever your storage needs, see your UNISTRUT Distributor or m the coupon for free catalogs and UNISTRUT rack designs. Ask ab the new low price of UNISTRUT framing. And be sure to see our la film, "The Sky's The Limit"—at your UNISTRUT Distributor.

Remember, your UNISTRUT Distributor offers a complete service design and engineering. He can help you in many ways to red costs and provide better storage facilities. Complete warehouse sto in all principal cities. In Canada, Northern Electric Company.

The World's Most Flexible All-Purpose Metal Framing

U. S. Patent Numbers

2327587	2380379
2329815	2405631
2345650	2541908
2363382	2696139

Other patents pending

UNISTRUT PRODUCTS COMPANY
1013 W. Washington Blvd.
Chicago 7, Illinois
Dept. F-4

☐ 15 rack designs ☐ rack catalog No. 600

☐ Information on UNISTRUT film, "The Sky's The Limit."

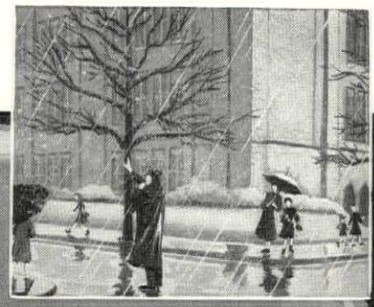
Name.....

Address.....

Company.....

City..... Zone..... State.....

Fire bricks (used in test because of low density) here demonstrate water repellency of LINDE Silicones. Treated brick, unchanged in appearance, floats indefinitely. Untreated brick soaks up water and sinks.



How buildings can keep their heads above water

You can keep water out of your above-grade brick and masonry walls just as it's kept out of that floating brick, above.

Above-grade masonry water repellents made with LINDE Silicones do the job. Tests already indicate they last ten years and up.

Damage to interiors from seepage is eliminated. Repair and maintenance costs really drop.

Fully protect new buildings. Fix up old buildings. These silicone-based water repellents prevent even 100-mile-an-hour wind-driven rain from penetrating brick and concrete. They do not change surface appearance. Yet they *do* keep building surfaces clean, since water simply rolls down the sides, carrying dirt with it. Streaking and efflorescence are stopped. They are easily applied by spray or brush.

These silicone masonry water repellents end spalling and cracking caused by freezing moisture. They even prevent seepage where exhaust fans reduce indoor air pressure. They let no outdoor water in, yet the pores of the masonry can still "breathe."

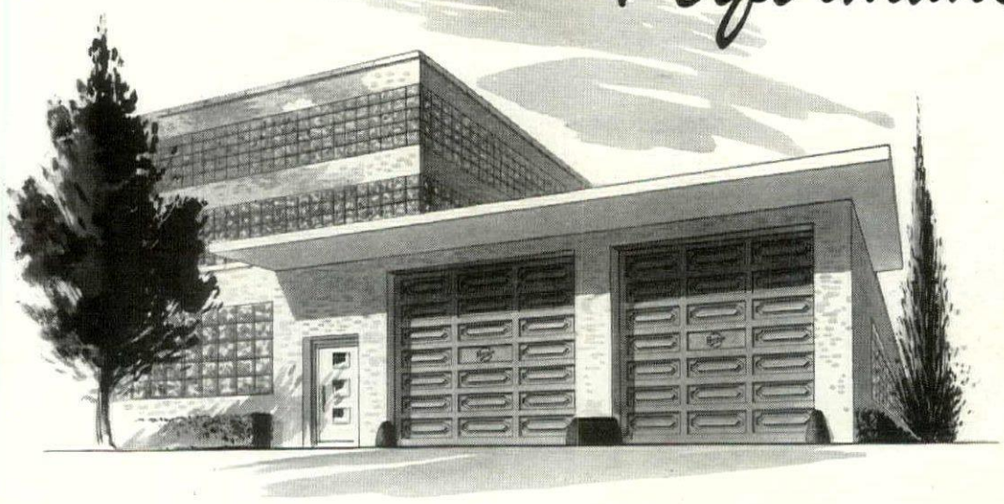
For full details on above-grade masonry water repellents made with LINDE Silicones, and a list of representative suppliers, write Dept. A-4.

Linde AIR PRODUCTS COMPANY | A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

General Offices: 30 East 42nd Street, New York 17, N. Y.
In Canada: Dominion Oxygen Company, Division of Union Carbide Canada Limited

The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.

ARCHITECTURALLY DESIGNED FOR *Performance and Beauty*



RAYNOR CARVED PANEL Wood Sectional Overhead Doors

Adaptable to Any Commercial or Industrial Installation

The perpetual built-in beauty of the Raynor Carved Panel, the quality materials and the co-ordinated construction by craftsmen with door building know-how, are united by RAYNOR in producing the ultimate in overhead door satisfaction.

The complete RAYNOR LINE, residential, commercial and industrial, incorporate such outstanding features as three-way stress construction, plated hardware and Graduated Seal to give your client years of dependable, trouble-free service.

Check your telephone directory for the Raynor representative nearest you or write direct for complete information.

SEE OUR CATALOG IN SWEET'S

RAYNOR

RAYNOR MANUFACTURING CO., DIXON, ILLINOIS

Builders of a Complete Line of Wood Sectional Overhead Doors

FOR BUILDINGS OF ALL TYPES

. . . first in efficiency, economy and client satisfaction

★

TODD BURNERS

GAS OR OIL

★

COMBUSTION EQUIPMENT DIVISION

TODD SHIPYARDS CORPORATION

81-16 45th Avenue
Elmhurst 73, N. Y.

TODD NEW YORK, U.S.A.

THERE ARE 21 BASIC INDUSTRIES—

and

Hendrick Serves Them All!

That's right! Hendrick serves every one of the 21 basic industries designated by the U. S. Department of Commerce under its Standard Industrial Classification list. If you have a perforating problem and are not already familiar with Hendrick's facilities, we stand ready to serve you, too!

If you wish to perforate metal, rubber, plastic or masonite for a screening, straining, decorative, display or acoustical application, Hendrick's long experience can be of real help. Join the list of manufacturers who now derive untold assembling and selling benefits by using Hendrick Perforated Metal as a fabrication material. Call Hendrick today.

Hendrick

MANUFACTURING COMPANY

51 Dundaff Street, Carbondale, Pa.

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Perforated Metal • Perforated Metal Screens • Wedge-Slot and Wedge Wire Architectural Grilles • Mitco Open Steel Flooring • Shur-site Treads • Armorgrids

Chase®

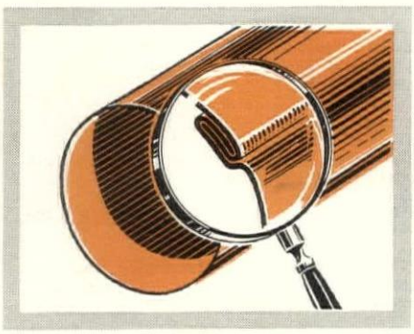
gives you 7 reasons why copper means a better home!



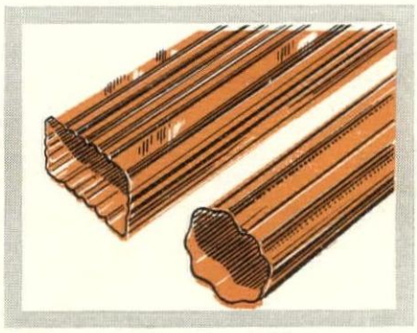
It won't rust and resists corrosion—**Copper's** resistance to the elements is traditional—even in areas where atmospheric conditions destroy other metals. Its performance is proved over centuries of experience.



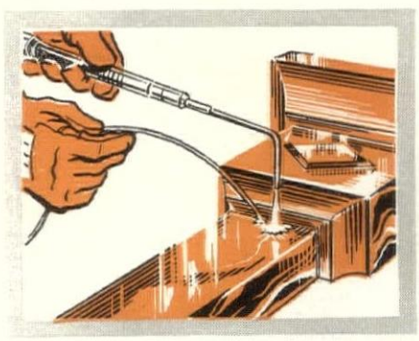
It's full weight—Look for the die-stamped Chase Trade Mark and Weight Stamp—your assurance that Chase **Copper** Roofing Products have stability and permanence.



Seams are adequate—Chase **Copper** Leaders are formed from full-width strips, to assure strong, expansion-proof seams.



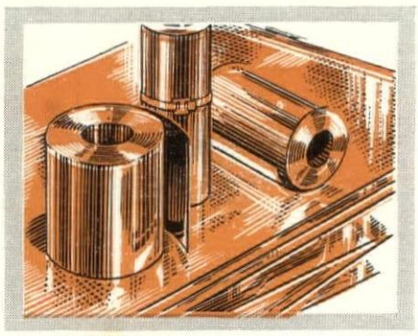
Corrugations are deep and generous—Chase **Copper** Downspouts have full-depth corrugations, ample for temperature ranges in *any* climate.



It can be soldered . . . with ease and economy—Long-lasting, water-tight joints are assured when standard soldering techniques are applied to Chase **Copper** Roofing Products.



It's architecturally harmonious—Modern or traditional design both benefit from **Copper's** rich appearance—a metal protected and beautified by nature itself.



It's economical—The ratio of *first-cost* to *years of service* is at a bare minimum, when **Copper** is used. And, the relationship of copper to overall building costs is as reasonable as it ever was in the past.

Chase®

BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

For maximum life and performance, specify Chase full weight copper leaders, gutters and roofing accessories.

The Nation's Headquarters for Brass & Copper

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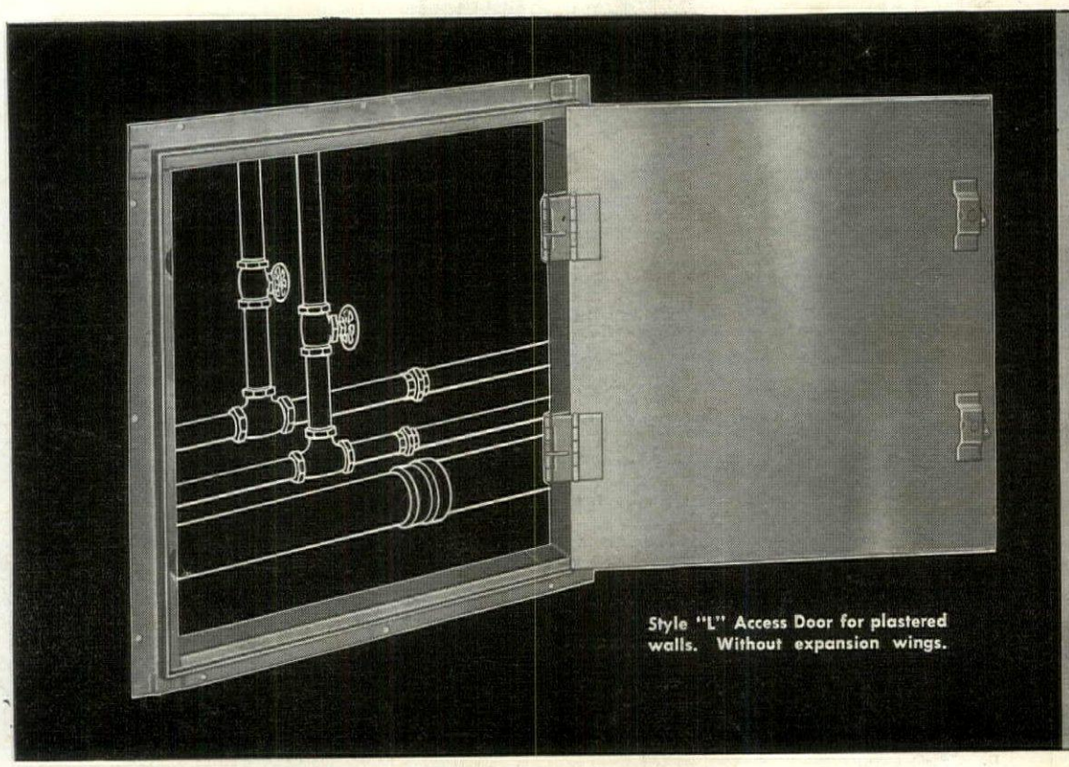

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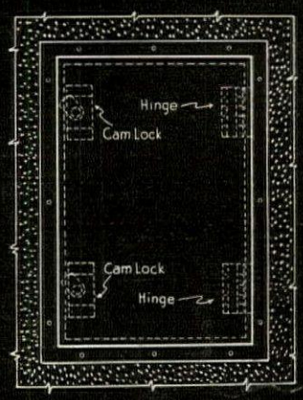
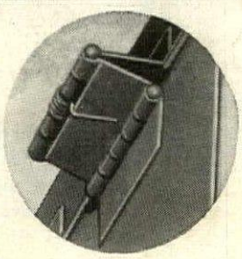


Elevation



Detail of Panel Without Expanded Metal Wing



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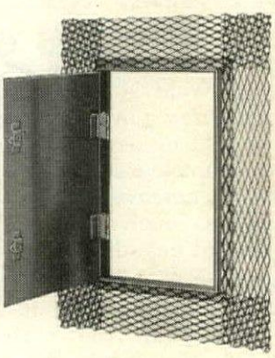

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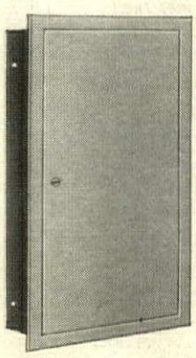

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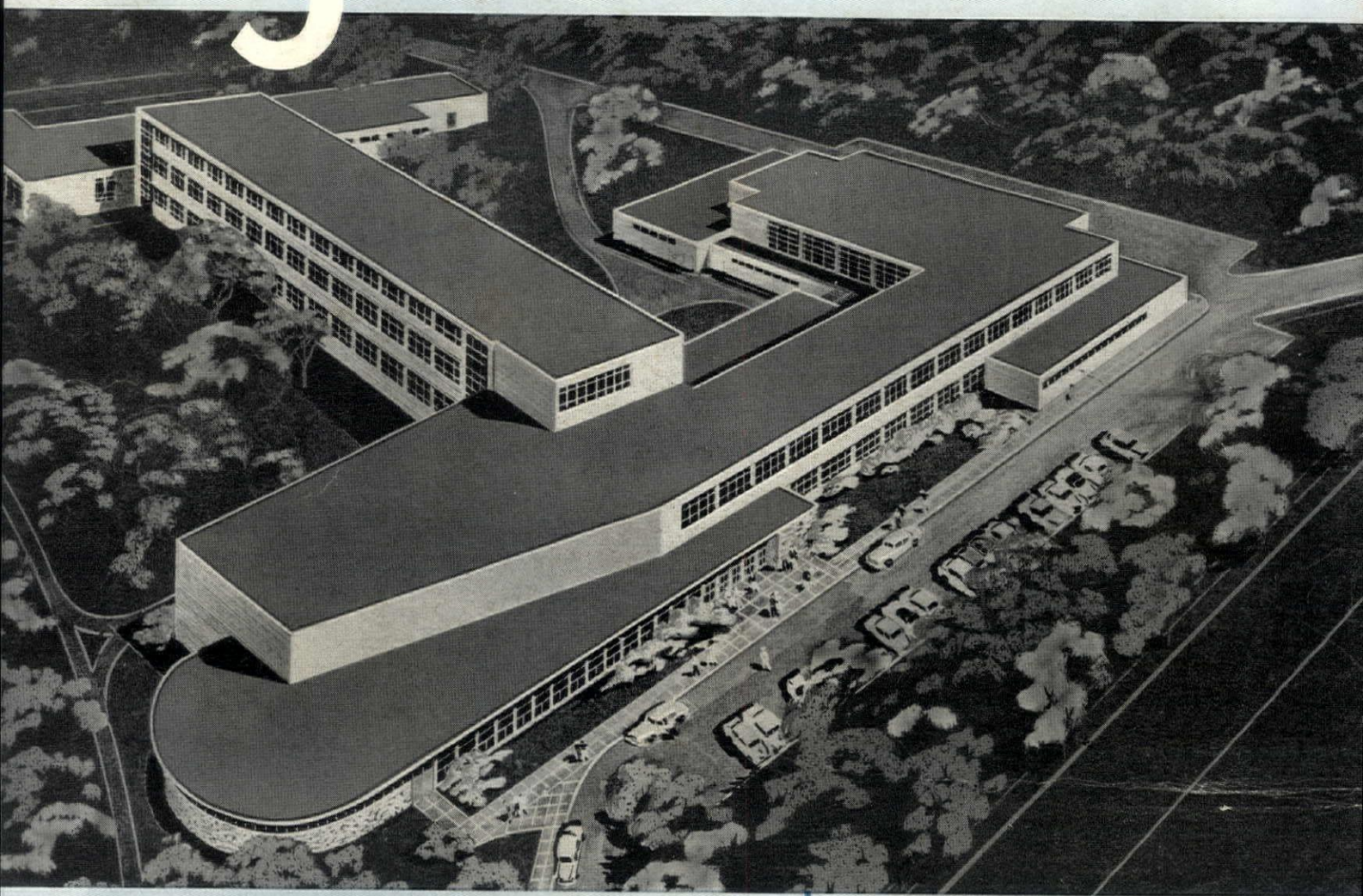

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General Contractor: *H. B. Alexander & Son, Inc.*

Plumbing Contractor: *S. H. S., Inc.*

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