

COPY





the modern look in tile flooring styled for MATICO by Margaret Lowe









NEW MATICO **Margaret Lowe Colors**

in vinyl-asbestos tile

Now choose from two ARISTOFLEX-CONFETTI patterns*

Here it is! The smartest, most colorful style in tile designed for MATICO by Margaret Lowe, famous color stylist. These gay new colors, the distinctive mottling of Margaret Lowe Colors, harmonize perfectly with the new color trend in home appliances, fit beautifully with any style of architecture. And Margaret Lowe Colors come in durable vinyl-asbestos . . . can be installed on, above or below grade ... are easy to maintain because they resist dirt, grease and most household chemicals. If you're looking for an out-of-the-ordinary flooring, a very special color, be sure to consider the new Margaret Lowe Colors in economical MATICO vinyl-asbestos tile.

*Margaret Lowe Colors and regular Aristoflex-Confetti



MASTIC TILE CORPORATION OF AMERICA Houston, Tex. . Joliet, Ill. . Long Beach, Calif. . Newburgh, N. Y.

Aristoflex • Confetti • Parquetry • Maticork • Asphalt Tile Rubber Tile . Vinyl Tile . Cork Tile . Plastic Wall Tile



Q-768













Q-766



Q-767



Q-765



the magazine of building

MARCH 1956

- News 9
- People 25
- Trends 29
- Dates 42
- Parentheses 48
- Letters 74
- Excerpts 90
- Research 165
- Books 186
- Products 194
- Detail of porcelain enameled screen by Cover: Sculptor Harry Bertoia
 - Editorial data (including masthead), 102 subscription and advertising data
 - 262 Advertising index

VOLUME 104, NUMBER 3

Published monthly by Time Inc., 9 Rockefeller Plaza, New York 20, N.Y. Entered as second-class matter at New York, N.Y. Subscription price \$5.50 a year © Time Inc. All rights reserved under International and Pan American copyright conventions.

page 105	About this month's FORU		
	An open	letter	from the editors

106 Architecture in America The engineer's role-Part VI in a series

Gaudi's architecture 112 Decades ago a Spaniard's fanciful architectural details hit on a new geometry for today's molded shapes

Prize winning community buildings 118

The best youth centers and elementary schools in the \$25,000 Porcelain Enamel Design Competition

140 Kitchens designed to be seen

The third in a series of articles on public rooms

A rural executive suite 146

For Fairchild officials, an administrative building with all the comforts of home

Office of merit 150

For a designers' staff, a remodeled city office that combines meticulous efficiency with gracious appearance

153 A pace-setting school annex

For primary school children, a building as pretty as a painted wagon and as modern as today

Critique of MIT's new buildings 156

An international debate about the domed auditorium and the cylindrical chapel

Technology 158

New foundation and soil-testing techniques. . . . Notes on dome construction, radiant heating, air conditioning and light-weight spandrels. . . . Building research

For all concerned 166

An editorial on schoolhouse economy



GRINNELL Ceiling-Type SPRINKLERS

When the management of Rich's, Inc., decided to construct its new department store "downtown" in Knoxville, it was a momentous decision — one taken in the face of a strong, continuing move to the suburbs. But experience has proved the wisdom of that action.

Of course, no small factor in the success of Rich's new store were such design innovations as a 450-car attached garage; outside pool and planting area; and a built-in warehouse. The installation of Grinnell Sprinklers was still another move taken to create a relaxed atmosphere and to build customer confidence.

Grinnell Ceiling-Type Sprinklers are unobtrusive. They do nothing to mar the decor of modern interiors. And yet, should fire occur, they operate quickly, automatically to strike fire at its source, anywhere — anytime, night or day. Moreover, they make impressive insurance savings possible.

The time to plan Grinnell Protection is while your buildings are in the blueprint stage. For advice on the best system, for you, invite a Grinnell Fire Protection engineer to call. Grinnell Company, Inc., 292 W. Exchange St., Providence, R. I.

 Rich's Department Stare in downtown Knoxville. Long, undulating canopy of concrete heightens the dramatic quality of brick and glass construction.



Modern lighting and automatic ceiling sprinklers give a clean, uncluttered appearance to various departments.

GRINNELL PROTECTION AGAINST EVERY FIRE HAZARD

Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878 -



Which Type of Paint for this Job?

This Florida hotel had been painted with a lime-based waterproofing which powdered excessively and presented a poor surface for repainting. Moreover, because of the attendant discomfort to guests, sand-blasting was ruled out and wire-brushing was the only preparation permitted. Keeping these factors in mind, what kind of paint would you specify for the job?

If you don't know the answer, you should know about paints made with PLIOLITE S-5—the synthetic rubber resin. The contractor who did this job chose such paint because of his previous experience with them and their more than 10-year reputation for doing a better job longer on all types of masonry. He also knew they would not crack or peel as do many water-emulsion paints when applied to painted surfaces that have chalked.

PLIOLITE S-5 is specifically designed to resist the alkalies and moisture, found in all masonry, which can attack and destroy conventional paints in a few short months. Full details on how and why paints made with PLIOLITE S-5 resist alkali attack plus weathering up to 20 *times longer* than other paints can be found in the free booklet, "Paint Magic for Masonry." Write for it today to:

Goodyear, Chemical Division, Coatings Dept., Akron 16, Ohio

PLIOLITE S-5 by

ALWAYS SPECIFY MASONRY PAINTS BEARING THIS SEAL



Modern Ceiling Combines Attractive Decoration with Effective Lighting

Here is a dramatically new and efficient ceiling of Acousti-Celotex Acousti-Lux Translucent Panels—designed to transmit the high levels of today's illumination, with ...

- Full, uniform light diffusion—"shadow-free lighting."
- Low brightness-no glare.

- Light sources entirely concealed.
- A "self-extinguishing" ceiling surface; will not support combustion.
- Long-lasting, durable panels with dimensional stability essential for translucent ceilings.
- A ceiling system where acoustical tile and translucent panels can be combined in a layout keyed to the needs of the areas below.
- · Easy maintenance; convenient size for washing,

instant removal for access to light fixtures or other above-ceiling utilities.

- An uninterrupted, level ceiling plane of soft, diffused light.
- Unusual versatility; available in a wide variety of attractive patterns.



ACOUSTI-LUX PANEL—Fabricated of two spaced layers of white vinyl sheeting specially developed for translucent ceilings. Provides excellent balance between high light transmission value and uniform diffusion. 24" x 24" size is ideal for installation efficiency, maintenance ease, and integration with Acousti-Celotex Sound Conditioning Tile.

New United Air Lines Ticket Office, Chicago, III., showing ceiling of Acousti-Celotex Acousti-Lux Translucent Panels (Moorish Dome pattern) on an Alumitee^{*} Suspension. Architect: Rapp & Rapp, Inc., and United Air Lines Facilities Dept., with Raymond Loewy Associates, Inc. General Contractor: B. W. Handler Co. Acousti-Celotex Contractor: James L. Lyon Company, Chicago





FOR COMPLETE DETAILS on Acousti-Celotex* ACOUSTI-LUX* and LUMICEL* Translucent Panels and Sound Conditioning Tile, write to The Celotex Corporation, Dept. A-36, 120 S. LaSalle St., Chicago 3, Illinois.

VITEL

*REG. U. S. PAT. OFF

Products for Every Sound Conditioning Problem—The Celotex Corporation, 120 S. LaSalle St., Chicago 3, III. • In Canada: Dominion Sound Equipments, Ltd., Montreal, Quebec. Mt. Zion Hebrew Temple & School, 1300 Summit Avenue, St. Paul, Minnesota Architect: Eric Mendelshon, Los Angeles, California Contractor: Naugle-Leck, Inc., 714 Baker Building, Minneapolis, Minnesota Aluminum Master Projected Windows



Windows "Cum Laude"

Every Lupton Metal Window is "quality schooled" through fifty years' manufacturing experience. The same precision construction and careful workmanship that established the line continues to assure windows with long service life.

Every step in the production of a Lupton Window, from choice of metal alloy, to shipment, is carefully supervised by men who know metals and windows. The results are quality windows at mass production prices.

Look at the Lupton line before you specify. You'll find the type and size you need, in steel or aluminum, for practically any commission. And for special work, a stock Lupton Window can often be given a custom-look through muntin placement. You'll find Lupton in Sweet's, or write for the complete catalog.

Ask about Lupton Curtain-Walls

There's a new way to erect buildings faster, more efficiently and more economically. It's the new Lupton Simplified Curtain-Wall System . . . proved by actual construction all over the country. Write for the Lupton Curtain-Wall brochure, it explains and illustrates this modern way of building erection . . . walls and windows prefabricated and installed under one contract.

MICHAEL FLYNN MANUFACTURING CO. • Main Office and Plant: 700 E. Godfrey Ave., Philadelphia 24, Pa. New York Office: 51 E. 42nd St., New York 17, N. Y. • West Coast Office: 672 S. Lafayette Park Place, Los Angeles 57, Calif. Stockton Office and Warehouse: 1441 Fremont St., Stockton, Calif. • Sales Offices and Representatives in Other Principal Cities



METAL WINDOWS AND CURTAIN-WALLS



Sprayed "Limpet" Asbestos on the celling of Charlie's Cafe Exceptionale, Minneapolis, Minn., provides a high degree of acoustical correction, contributing to the restful atmosphere of this famous eating place. Four-time winner of the Holiday Magazine Award, Charlie's Cafe Exceptionale is considered one of America's finest restaurants.

For efficient control of heat and sound: Sprayed "Limpet"[®] Asbestos

There's nothing like it! If you're planning an office, restaurant, public building, industrial plant—any structure that calls for efficient control of sound and heat—you should know about Sprayed "Limpet" Asbestos, a unique self-bonding insulating material. "Limpet" is *sprayed* on with special machines to form a continuous felt-like coating that completely blankets ceiling or wall surfaces. There's no nailing, cutting, fitting, clipping.

Echoes are eliminated, annoying noise is reduced

drastically-trapped by thousands of pores between the "Limpet" asbestos fibers.

Costs are cut. An ideal thermal insulator, Sprayed "Limpet" Asbestos cuts fuel and air conditioning bills. Because it's all asbestos, it provides excellent fire protection.

Technical and application data available. See your *Sweet's Architectural File.* Write for additional information and the names of Sprayed "Limpet" Asbestos applicators in your area who have been approved and trained by K&M.

COMPANY · AMBLER · PENNSYLVANIA



Because of its high percentage of vinyl, the more dense surface of Bolta-Floor has greater wearability, easier maintenance . . . will retain its rich natural lustre years longer, with or without waxing.

Bolta-Floor is produced in a full range of 22 fashionable decorator colors...5 solid and 17 marbleized. It's available in 4 tile sizes (6 x 6, 9 x 9, 12 x 12, 18 x 18), 2 roll widths (27" and 54") and in 3 gauges ($\frac{1}{8}$ ", $\frac{3}{2}$ " and .080 gauge).

To be sure of finest quality vinyl flooring with assured top performance, specify Bolta-Floor —another superior product of The General Tire & Rubber Co.

Floor Bolta

FOR HOSPITALS SCHOOLS • OFFICES THEATRES • HOTELS MOTELS • APARTMENTS BANKS • HOMES

WEARS LONGER, WITH OR WITHOUT WAXING

The General Tire & Rubber Co. Flooring Division • Akron, Ohio





Condensation is stopped by closed cell structure and high insulation efficiency under normal design conditions on indoor lines operating as low as 32° F.

Fast, easy to apply, Armaflex can be slit lengthwise, snapped in place, and sealed with adhesive on lines already in operation. If applied at the same time as the piping, it can be slipped over the pipe or tubing and readily follows bends with no cutting.

New insulation for liquid heating and cooling lines goes on fast—in one operation

Armstrong Armaflex* is a new, flexible plastic insulation for commercial and residential air-conditioning and heating lines. Installation is fast, clean, and easy. On cold lines, no separate vapor barrier need be applied, because the closed cellular composition of Armaflex is a positive seal. The only application sundry used is Armstrong 520 Adhesive for cementing joints. Armaflex will not rub off, chip, or crumble, and waste is negligible.

A highly efficient insulation, with a K factor of .28 at 75° F., ½" thick Armaflex will prevent *TRADE-MARK condensation under normal design conditions on indoor lines operating as low as 32° F. On the heating cycle, it will withstand 200° temperatures.

Armstrong Armaflex pipe insulation is made in 6' lengths for copper tubing and iron pipe $\frac{3}{2}$ " to $\frac{3}{3}$ " ID. Thicknesses of $\frac{1}{2}$ " and $\frac{3}{3}$ " are available.

For free booklet containing complete data on this remarkable new insulation, call your nearest Armstrong office or write today to Armstrong Cork Company, 2003 Rooney St., Lancaster, Pa.



A self-extinguishing material, new Armaflex will not support combustion and may be slipped in place over copper tubing before sweat fittings are made.



Rapid fabrication of fitting covers is accomplished by mitercutting pieces of Armaflex and cementing them together with Armstrong 520 Adhesive.



NEWS

Greenwald and Katzin ready to build Detroit project by Mies van der Rohe

For some months it was known that the comprehensive, commendable plans for Detroit's huge Gratiot housing redevelopment project prepared in 1954 for the Citizen's Redevelopment Committee by Minoru Yamasaki, Oskar Stonorov and Victor Gruen (AF, Mar. '55) had little prospect of ever materializing. Several prospective redevelopers had their own ideas for the area's site planning and building designs.

Last month details were announced for the newest plan for this cleared 50-acre site only 3,000' from Detroit's downtown business center. This plan was advanced by two outstanding Chicago builders who were ready to sign contracts that would start construction on the long-idle land before summer. More than ever before, it looked as if the Gratiot project were likely to get under construction in earnest.

Greenwald, Katzin and Mies. The builders ready to begin a \$25 million group of modern two-story, town-house garden apartments and 22-story tower apartments: Herbert S. Greenwald and Samuel N. Katzin. Their architect: Mies van der Rohe.

Over the last eight years, Greenwald and Katzin (a member of the Chicago Housing Authority) have built nearly \$50 million of apartments and other housing in Chicago. Currently they are putting up six dramatic glass and aluminum-skin lakeside towers designed by Mies that will be the highest reinforced concrete buildings in the world to date (AF, Nov. '55).

The Gratiot area's redevelopment under the Greenwald-Mies proposals follows the total-planning city renewal concept of the Yamasaki-Stonorov-Gruen plan. The new community for 1,700 families would form a "suburb within the city" that might set a pattern to reverse the immense automobileage drift of families from the city. It would provide garages or covered parking space for every family.

The major site plan change in the Greenwald-Mies proposal would make two main streets run around, instead of through the project. Six dead-end streets would lead into the community (three from the east side, three from the west). Through its long center would run a 17-acre park strip, 330' wide and seven blocks long.

Middle-income, open-occupancy goals. Greenwald said the project would aim to serve a wide range of consumers, but mainly "middle-income" families, and various units would be available for rent, for outright purchase, or cooperative purchase. High-rise buildings will have mostly oneand two-bedroom suites, the low "townhouse" buildings three- and four-bedroom units. Until final building and financing details are settled, he would not estimate rents or prices, except that the price for a three-bedroom unit might range "between \$15,000 and \$25,000."

Because of the city's acquisition of the Gratiot land with federal Title I subsidy, Greenwald accepted the responsibility for open-occupancy in a statement of seven principles he intends to observe. The most important of these:

• "Every effort must be made to avoid designing dwelling units to minimum standards. It appears unfortunately true that minimum housing standards have become maximum standards far too often.

• "The finest architectural talents should be utilized to plan the new community so as to avoid an institutional atmosphere of regimentation and standardization.

"Selection of tenants should be based on character and responsibility and not on creed and color.

▶ "Commercial facilities should be provided only on the basis that their primary function is to be a convenience to the immediate needs of the people in the development. Commercial enterprises in the central business district and adjacent areas look forward to this project as a source of much-needed economic support. The project should supply them with a good market rather than competition."

Funds for land ready. Technically, Greenwald and Katzin would be "codevelopers" with the Citizens Redevelopment Corp., which would contract to buy the site from the city and redevelop it. This corporation evolved from the management and labor Citizens Redevelopment Committee, composed of Walter Reuther, Foster K. Winter of the J. L. Hudson Co. and other representatives of Detroit's biggest automobile manufacturers, department stores, banks and civic organizations. It has already raised over \$400,000 (including \$80,000 from Ford and \$50,000 from Chrysler) that is available to start buying the land, a section at a time. It also has authority to issue debentures for any more funds it might require.

As each building was completed, how-





KATZIN

ever, Greenwald and Katzin would make full payment to the corporation for the parcel it occupied. When the project was all finished, the Citizens Redevelopment Corporation would have all its money back, which it would then use as a revolving fund to help other redevelopment projects move forward. If this corporation ever disbands, its fund will not be returned to subscribers, but will go to the Detroit city treasury.

Wurster aids Webb & Knapp on San Francisco studies

Urban renewal plans were advancing apace in San Francisco. In North Carolina the state AIA convention passed a resolution recommending amendment to make the state's redevelopment law workable, so HHFA grants may become available for reconstruction-minded Tar Heel cities. In San Francisco:

California University School of Architecture Dean William W. Wurster, senior partner of Wurster, Bernardi & Emmons, was retained by Webb & Knapp of New York "as an associate in the first phase of

the contemplated analysis and schematic planning for the redevelopment of the South of Market and Produce areas." I. M. Pei & Associates also will participate in the contemplated analysis that will include "economic research, market analysis, soil and structural engineering studies" at an estimated cost of at least \$250,000, according to W&K President William Zeckendorf.

▶ The Bay Area Rapid Transit Commission released proposals for a new \$1.5 billion nine-county rapid transit system that would include an underwater San Francisco-Oakland tube and both subway and continued on p. 12

NEWEST GRATIOT PLAN for Greenwald-Katzin was prepared by Mies van der Rohe in association with Joseph Fujikawa, Joseph Burnett, and City Planning Professor Ludwig Hilberseimer.





One of three connected shells at Lambert-St. Louis Municipal Airport, St. Louis, each 120'x120' and constructed of monolithically poured concrete. Architects: Hellmuth, Yamasaki & Leinweber of St. Louis and Detroit. Engineer: Wm. C. E. Becker, St. Louis. Shell consultants: Roberts and Schaefer, Chicago. General contractor: L&R Construction Co. of St. Louis.

Engineered and Prefabricated

saves time and lowers costs on Lambert-St. Louis Municipal Airport Terminal Building

Instead of hundreds of timbers individually cut and fitted for each of three identical buildings, this airport terminal utilized prefabricated roof centering by Timber Structures, Inc.

Carefully engineered and precision fabricated at the factory, this roof centering was quickly erected on jacks and rails for pouring the first shell, then decentered and moved into position for pouring shells of the two other buildings.

Jobsite time and total costs were greatly reduced, and adequate safety margins were maintained at all times. With experience gained through dozens of falsework applications, Timber Structures, Inc. is prepared to make similar savings on your next concrete shell job. Your inquiries are invited.



Offices in Ramsey, N. J.; Garden City, N. Y.; Boston, Centerline, Mich.; Columbus; Rochester, N. Y.; West Hartford; Chicago; Kansas City; Kirkwood, Mo.; Minneapolis; Des Moines; Wichita; Dalla; Houston; Birmingham; Memphis; Charlotte; Seattle; Spokane; Denver.

> TIMBER STRUCTURES, INC. OF CALIFORNIA Richmond • Beverly Hills • Sacramento Local Representatives throughout the United States and Canada

TIMBER STRUCTURES,	INC., P. O.	Box 3782-8,	Portland 8,	Ore.
Please send me informa centering and roof cent	ation on your ering.	r prefabricate	d falsework,	arch

Name	
Company	The second s
Address	Zone
City	State

IN SCHOOLS, THEY CALL IT

"CHILDPROOF" PLEXTONE

and no wonder! This new multicolored paint is stain-mar-grease-scratch-chip resistant!



Never before a paint for school interiors like amazing, rugged Color-flecked PLEXTONE It's revolutionary two or three different colors (sprayed at ONE time from ONE gun WITH-OUT SPRAY DUST) which form a multicolored, textured pattern SCHOOL AUTHORITIES find this new multicolored decorator finish easy on the budget It resists wear, soil and rambunctious youngsters SCHOOL ARCHITECTS find that PLEXTONE's uniform coverage on different types of low-cost surface materials gives them new styling resources and new design possibilities because of its high light reflectivity and durability. PAINTING CONTRACTORS say PLEXTONE goes on easier, WITHOUT SPRAY DUST, makes possible neater, cleaner jobs And MAINTENANCE MEN find it unmatched for ease and low cost of upkeep.

SO RUGGED ! Color-flecked PLEXTONE resists staining by crayon, ink, candy, grease, and other forms of soil. Its harder, thicker paint film cannot easily be scraped or scratched. It can be washed, scrubbed, scoured — *even sandpapered* — without marring And touch-ups, if ever needed, defy detection!

SO PRACTICAL! Imagine! This amazing new paint gives you a color-flecked surface consisting of two or three different colors, sprayed from *one* gun at *one* time in *one* coat *without spray dust*! And PLEXTONE's textured surface has unmatched hiding power cleans quickly and easily!

SO BEAUTIFUL! You've never seen a more unusual, more dramatic; more beautiful effect. PLEXTONE's multicolor finish matches the most skilled spatter-dash painting . . in subtle tones-on-tone or a brilliant circus of colors.



2125 McCarter High	hway, Newar	k 4, New J	ersey
Gentlemen: Please chips and applicati	rush free (on data.	Color-flecked	PLEXTONE color
Name			1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -
Title (or occupation)			
Company			
Address			
City		Zone	State

elevated high-speed lines in San Francisco —altogether 390 mi. of double-track facilities. Supplementing the engineering proposals of New York's Parsons, Brinckerhoff, Hall & Macdonald, will be a report on financing possibilities for such a colossal undertaking due this month from the Stanford Research Institute.

For finer Carolina law. When North Carolina enacted its redevelopment enabling law several years ago, an amendment was slipped in at the last minute that barred the condemnation of any properties that met minimum standards and were not blighted. As a result, there are usually a few "good apples" in every slum area that can not be taken (or could be brought up to standard to avoid condemnation) and it is virtually impossible to plot the coordinated redevelopment of any sizable area. working around good buildings that might remain. In Washington, HHFA simply refused to give any serious consideration to North Carolina projects.

Last year Greensboro secured enactment of a special law to allow it to condemn

Planners urge coordination on renewal and highway plans

The first important recognition of the inter-relationship between large scale highway planning and urban renewal programs occurred last month at the Washington convention of the National Citizens Planning Conference and the American Planning and Civic Assn.

Much discussion on their theme, "Federal Government and Local Planning," centered on the vast federal-assistance highway programs now being projected. In this connection the conference adopted a resolution of Renewal Consultant Carl Feiss recommending that no federal funds for highways planning be advanced to states or counties unless their plans were coordinated with the city planning of all the municipalities that would be involved.

AIR FORCE HOUSING at Otis Air Force Base, Falmouth, Mass. designed by The Architects Collaborative will consist of 53 contemporary split-level single-family houses; 51 two-apartment buildings; two three-unit structures, 71 of four units each, and ten six-unit structures. New York Builder Paul Tishman was awarded the contract for this 505-unit project on a low bid of \$6,937,000, or an average of \$13,700 per unit. Buildings have been designed for efficient all properties in an area that was found to be at least two-thirds blighted. Even so, city counsel refused to act under it, fearing the law could be declared unconstitutional, as special legislation for a single municipality.

At its state convention a month ago, AIA members argued pros and cons of the situation at length, but finally adopted unanimously a resolution urging the Legislature (which meets again in 1957) to make the two-thirds blight rule statewide (constitutional beyond question). They also offered AIA assistance or advice in drafting the necessary amendment—if they were requested.

FHA 100% loans, military operation, spark Armed Forces housing program

Defense Dept. and FHA officials will be watching intently this summer to see how the latest plan for construction of privately-financed, government-guaranteed military housing works out in practice.

The new plan, with many unusual facets, was conceived by Sen. Homer Capehart (R., Ind.) as a substitute for the old FHA Title VIII (Wherry Act) program. Its key feature, believed to be wrapped in many safeguards: FHA guarantees on 100% mortgages.

Builders apparently have found it inviting. Last month 59 projects involving 37,000 units had received joint FHA-Pentagon approval. By June 30 all 100,000 authorized units are expected to be committed. Family housing needs of the Armed Forces are estimated to total almost 220,000, and President Eisenhower in his budget message has already recommended renewal of this section, due to expire Sept. 30.

How it works. The financing mechanics of the program, which seemingly protects everyone against any loss, are complex. Before a project is started the Defense Dept. and local FHA officials confer to set the number of units that will be approved for a given location. If defense officials override FHA and increase the figure (which has not occurred to date) the Pentagon must guarantee FHA against any loss on the "extra" units. In

panelized construction methods, and multifamily structures will all have masonry walls between each family unit. Floor areas will range from 1,500 sq. ft. two-bedroom units and 1,800 sq. ft. three-bedroom units for airmen to 2,200 sq. ft. three-bedroom and 3,000 sq. ft. four-bedroom detached houses for officers.

This is not an FHA-insured project; it is being built with regular military construction funds appropriated by Congress.



effect, however, this is academic. After each project is built, the military will take it over completely from the builder, operate and maintain it as the ostensible owner. It will agree to make all the mortgage payments, and in turn will take a release from the builder that will provide for the Defense Dept. to receive all title to the structure whenever the mortgage is satisfied.

To cover its expenses the military will collect the rents—the easy way. It will withhold quarters allowances of officers and men it assigns to each apartment (which it will also furnish as a rule). Inasmuch as these allowances will cover more than normal mortgage payments, the Pentagon plans to pay off mortgages over 18, rather than 25 years, and also establish a reserve against any projects it may not be able to keep filled.

Reduced insurance premium. The Defense Dept.'s pledge to pay all notes and obligations on taking over each new project means both the mortgage lenders and the FHA are freed of all real concern about foreclosure or default. As one observer commented: "This is government running in a circle, guaranteeing, insuring and lending to itself." (Or in simpler, more accurate terms, the program also might be described as a Defense Dept. lease-purchase housing program, for all practical purposes, financed out of quarters allowances. Through the initial private-enterprise, private-capital arrangement, the 4% borrowing, plus FHA premiums, is considerably higher than the cost of straightforward Treasury borrowing for regular government construction. But for this extra cost the projects are obtained without any indebtedness for them showing in the federal budget.)

Because the FHA is protected by the Pentagon's commitment, Defense officials have asked FHA to consider trimming its "insurance" premium from 0.5% to 0.25%, which FHA has agreed to do after the program gets going.

Because the builders and lenders have virtually a lossproof proposition as good as a government bond, Pentagon and FHA officials have been upset by reports that new Title VIII mortgages at 4% will command a premium, and they may soon take steps to lower this rate.

Other innovations in this program:

As far as the military is concerned, it will be exempt from the need to build re-



serves for replacements and repairs under FHA regulations; nor will it pay fire or hazard insurance under the government's self-insurance program.

• Under the new Title VIII, maximum mortgages can average \$13,500 per unit, compared with \$9,000 under the old act.

After setting the number of units to be

built, the Defense Dept. negotiates for an architect to draw plans for a project.

> The military advertises for bids; if a builder bids too high he may lose the job to another builder. Cost certification is not required. But instead every contract is subject to regular Defense Dept. renegotiation procedures.

Appeal court clears John Lloyd Wright; Bank Building Corp. curbed in Arkansas

One place where architects definitely needed better designs seemed to be in their licensing and registration laws. In January courts in three states wrestled vigorously with these "practice of architecture" statutes; in two cases higher court judges reversed lower court interpretations of poorly drawn statutes.

John Lloyd Wright cleared. In San Diego, for instance, an Appellate Dept. Superior Court reversed the conviction of John Lloyd Wright of Del Mar, Calif. on charges of practicing architecture without a license (AF, Aug. '54, News *et. seq.*).

Wright, the 62-year-old son of Frank Lloyd Wright, was charged with four misdemeanor violations of the California business and professional code more than a year and a half ago. The charges hinged chiefly on the contention that Wright did wrong in advertising that he was a member of AIA and therefore an architect. (He is a licensed architect in three other states, not in California.) Wright drew a 60-day suspended sentence last spring.

The three-judge higher court ruled unanimously that it was permissible for Wright to advertise the fact that he was an AIA member on a sign outside his office. Said the court: "The use of the word American seems to suggest a national rather than a state institution. There ... is conditional provision for designers to draw plans and specifications and render architectural service though not licensed by the state. We hold that with the authority goes the right to inform the public. What the defendant has said in this regard is both true and forthright and constitutes no violation of Sec. 5536."

The appeals court dodged ruling on Wright's contention that the law is unconstitutional, however. One member of the architectural examiners board indicated the board will appeal to the state supreme court.

Commented Assistant District Attorney Arnold Steele, who tried the case: "The statute is not a good one. It's difficult to enforce and it's difficult to interpret. Two persons may reasonably arrive at opposite conclusions about what you can and cannot do."

Bank Building Corp. restrained. In Little Rock the Arkansas Supreme Court ruled that the Bank Building & Equipment Corp. of St. Louis was not licensed "to engage in the practice of architecture" in that state and issued an injunction to restrain it from doing so as requested by the Arkansas State Board of Architects. A lower court had dismissed the licensing board's petition, but the Supreme Court (with one judge not participating) ruled five to one that Arkansas licensing of W. G. Knoebel, head of the firm's 200-man architectural staff, did not give the firm the right to practice in Arkansas.

The main stumbling block for the bank building organization in Arkansas seemed to be that state's ban against licensing of any "partnership, firm or association," although the law allows such combinations to use the term "architects" if *each member* is registered and licensed. Knoebel, the Supreme Court noted, was not even a member of the firm, but only a supervisory employee. In St. Louis, a corporation spokesman stressed that it wished to comply with the law in every respect. He said it probably would be able to find a way to do so, but was not immediately prepared to explain exactly how.

Toledo designer released. Last summer an Ohio grand jury indicted Gennaro G. Albanese, formerly employed in the office of Toledo's city architect, on four counts of practicing as an architect without having been licensed by the Ohio Board of Examiners of Architects, which pressed the case. In January there was a threeday jury trial on the charges in Common Pleas Court. After deliberating for 16 hours over the next three days the jury found Albanese "not guilty" on two charges of illicitly designing a church and a UAW-CIO headquarters, which have not been constructed yet. It could not reach any agreement on charges that he designed a store and a UAW-CIO diagnostic clinic building, which have been built.

Lucas County Prosecutor Harry Friberg has indicated no wish to retry the case on the two counts on which the jury disagreed, although at month's end he was scheduled to confer with members of the architect board on the subject. Friberg has expressed his view that a jury of ordinary men and women would hesitate a long time before hanging a "criminal" tag on a man. He thinks the AIA might advance its ends more effectively through the injunctive route.



Edward Stone designs "garden hospital" for Palo Alto

Pools that supplant cooling towers for airconditioning systems, and decorative concrete grilles to conceal the walkways connecting the two upper floors of building wings (see cut) will be among the features of the "garden hospital" to be built for the Palo Alto-Stanford hospitals and Stanford Medical School. Edward D. Stone is the architect in association with Landscape Architect Thomas Church.

According to Stone, the unified architectural form that will be achieved by grouping all the buildings for both institutions around a ten-acre quadrangle "may rival some of Europe's famed public squares for beauty." Every window will look out upon a garden—in the central "square," in patios between various wings, or on the university grounds. Each hospital wing will have two patient lounges on each floor, one a solarium and the other an enclosed, three-story garden.

All structures will be three stories high and built of reinforced concrete pigmented to harmonize with other campus structures without painting. A 22' module will be used that will allow the use of poured concrete slabs supported by columns concealed in the walls. Molds for the concrete will produce a textured pattern on the exterior walls and columns. Elevators will be provided for moving patients and food between floors; escalators will be installed for doctors, visitors and others.

Construction of the \$4 million Palo Alto Hospital wing will begin next fall. Stanford plans to complete the \$11 million first stage of its medical school wings by the end of 1958, finish its last buildings, costing another \$4-5 million, later. "The Client saved *150,000," says Architect Everett.



"Plus 3 valuable months of construction time...



when we designed around LURIA STEEL FRAMES



Building for Lenox, Inc., makers of fine china • Architect: H. F. Everett & A Allentown, Pa. • Contractor: Ole Hanson & Sons, Inc., Pleasantville,

More and more—Architects are combining the creative scope of CUSTOM DESIGNING with the HIGH SPEED and LOW COST of LURIA STANDARDIZED STRUCTURES

Because the Luria "System of Standardization" permits practically unlimited freedom of building design and architectural treatment . . . because Luria provides the topnotch engineering, thus pro-

viding the architect more creative time . . . because designing around Luria standard structures results in substantial client savings—America's leading architects are investigating, then specifying "LURIA."

LURIA ENGINEERING Company



511 FIFTH AVENUE, NEW YORK 17, NEW YORK . Plant: BETHLEHEM, PA.

14

Typical Guard installation in a university building

Introducing **Guard**. heavy duty vinyl wall covering

Practically indestructible. Takes hard punishment in hotels, hospitals, schools

Guard is a brand new and beautiful vinyl wall covering created especially to withstand daily service in hard-use wall areas. Tough and rugged, it's completely practical for roughest going in corridors, kitchens, dining rooms, bars and other service rooms.

Locked-in beauty. Guard designs and colors are locked-in under a clear vinyl coating. Dirt or grease cannot penetrate it. This means improved sanitation; also easy lowcost maintenance. The virgin vinyl coating is bonded permanently to a tough, cotton fabric.

Pair up with Wall-Tex. Made by makers of Wall-Tex washable wall canvas, Guard pairs up with it perfectly. Guard for wainscotings . . . Wall-Tex for upper walls. It's a combination hard to beat for beauty, durability, economy.

Specify new Guard for wainscoting and walls where a practically indestructible wall covering is desired. Available from Wall-Tex distributors everywhere. Write us for Architect's File Folder and sample swatches.

COLUMBUS COATED FABRICS CORP., DEPT. AF-36, COLUMBUS, OHIO



Look at these unusual features-

- Resistant to scuffing and abuse so common in corridors, stairways and service areas.
- · Flame-resistant on and off the wall.
- Can be used in place of tile—at far less cost.
- · Economical to buy and maintain.
- Stains, grease wash off with soap and water.
- Available in prints and solid colors.

15



AGC meeting: higher building rate seen; lease-purchase bid rules told

An optimistic business outlook set the key for the 37th annual convention of the Associated General Contractors of America in New York last month.

When results of the annual pre-convention telegraph poll of the association's national directors and 124 local chapters had been tabulated they showed greater expectations for increased business in the next six months than in the last semi-annual poll in September.

On the outlook for building work, 90% expected an equal or greater volume in the next six months, compared with 85% last fall. Those expecting an increase were 56% last month, compared with 52% in

PRESIDENT George C. Koss, of Des Moines, as he convened the first general session.







LESTER C. ROGERS giving labor report (top); HORACE SAWYER (I) as he reviewed cement picture

LOCAL CHAPTER PRESIDENTS and vice presidents turned out in large numbers for an informal Sunday morning discussion session led by national President Koss (I)

SUBCONTRACTOR RELATIONS committee mapped continued opposition to federal anti-bid shopping legislation under Vice Chairman R. A. Smith, Los Angeles (far end of table).



September. Only 10% anticipated a decrease in work volume, compared with 15% six months earlier.

Materials up; bid prices steady. On trends in material and equipment prices, 80% look for increases, 20% for no change. No one expects any decreases. On bid prices, the latest survey showed

On bid prices, the latest survey showed that nearly half (47%) expect no change, and 29% expect increases, while a year ago 61% expected decreases.

On competition among contractors there was a marked change of mind from a year ago. Then 81% expected further tightening; last month only 15% expected sharper competition, while 79% expected it would remain unchanged.

Good cement outlook? Survey answers revealed widespread concern about the availability of steel, cement and glass. In one of the main convention addresses, however, President Horace A. Sawyer of the Lone Star Cement Corp. disputed assertions that there is a cement shortage. His summary of the situation:

"Postwar increase in production of Portland cement has outstripped all other production materials, with 100 million barrels production in 1945 and 300 million in 1955. Surveys indicate capacity ranging between 335 and 375 million barrels by the end of this year. Expansion programs point to a total capacity of 400 million barrels in the 1957-1958 period—almost double the capacity of the industry at the end of World War II.

"These facts are easy to overlook in the face of unprecedented demand. That is why we often hear about cement shortage. What is termed a 'shortage' has actually been a shortage of the lowest price cement in a given market at a given time; that is to say, where a large number of projects could not be supplied by the geographically nearest supplier. As a result, some contractors had to go farther afield to get cement and this has entailed additional transportation costs. It is the old problem of meeting peaked-up demand."

Lease-purchase bidding rules. Deputy Commissioner Fred S. Poorman of the Public Buildings Service, GSA, told the contractors about PBS building programs. A condition survey of 4,400 government buildings under PBS jurisdiction is to be completed this spring, he reported. This will be used to program extensive airconditioning and modernization, extension and remodeling; repair, replacement or improvement of mechanical and electrical items.

Describing the agency's lease purchase construction program, Poorman said: "Two types of bidding are under study. One would be a 'package' bid in which each bidder shall quote a lump sum amount for all construction costs and an interest rate





APPRENTICESHIP COMMITTEE at Sunday morning meeting heard of growing support for training courses from local trades.

to be used in calculating the monthly payments necessary to fully amortize the purchase price (construction costs) during the life of the contract. The other would have the same provisions but would specify separate bids for construction, financing.

"Primary responsibility for the selection of sites, and the design and administration of construction will rest with the government. A \$1,630,000 Post Office and Court House at Council Bluffs, Iowa (picture, p. 20) is the first of 26 lease-purchase proposals for which GSA has approved a contemporary design, keynoted to economy and simplicity. GSA will accept package bids on that as soon as construction drawings and specifications are completed this spring."

Military building chiefs. Top officers from the Army, Navy and Air Force construction divisions updated the convention on their work and procedures.

Rear Adm. Robert H. Meade, chief of the Bureau of Yards and Docks, took the occasion to praise the usefulness of negotiated construction contracts in some instances, but also to state why he feels open competitive bid lump sum contracts are usually the best way of doing business. For one thing, he said, "it demonstrates to all that awards are not made on the basis of political or personal influences."

Registering his opposition to alternate bids (except when specifically requested), Meade said: "If the government is willing to accept either of two construction materials, or methods, they should be spelled out in the plans and specifications and allowed as options at the discretion of the contractor. Conversely, contractors should not propose, suggest or submit bids on alternate methods or materials. Such proposals result in delays, bid rejections, and recriminations."

Biggest builder: USAF. Maj. Gen. Lee B. Washbourne, Air Force Assistant Chief of Staff for Installations, called attention to the fact that the Air Force has received about two-thirds of all military construction funds during the past few years. Since 1950 it has awarded \$6.5 billion of contracts, he said, and through 1957 will have received construction appropriations of about \$8 billion. Then, in cryptic manner, Washbourne added:



CONSTRUCTION MARKETS Committee Chairman Fred J. Early, Jr. (I) with fellow committeeman Edwin L. Davis, of Washington, D. C.

"Although the Air Force expects to complete the essential operating bases for its 137-wing force structure at the end of fiscal year 1957, there is reliable indication that the development of new military armaments and other technological advances will continue a program of the present magnitude for the next three to five years."

Hilton announces overseas hotels, settles antitrust suit

News releases on new building and modernization of Hilton-Statler hotels came thick and fast a month ago, and in between came the announcement that the government's antitrust suit against the Hilton Hotels Corp. (AF, July '55, News) was being settled through a consent decree. In chronological order:

• On Jan. 13 President Conrad Hilton announced that Pacific, Far East and Middle East expansion plans for his International division would provide for operation of

NEWS

new Hiltons in Honolulu, Tokyo, Manila, Sydney, Melbourne, Auckland, Djakarta, Singapore, Bangkok, Colombo, New Delhi, Karachi and Baghdad.

Ten days later details were announced for the Honolulu venture. This would be a 400-room, \$10 million, 22-story Waikiki Beach building (tallest in Honolulu), called the Hilton Hawaii Kai. Associate: Henry J. Kaiser (and Homebuilder Fritz Burns) who turned Waikiki developer last year (AF, July '55, News). Architects: Welton Becket & Associates in association with Edwin L. Bauer of Honolulu.

Another ten days elapsed, and then details were given for a \$5-6 million, 450room (largest in Japan) Tokyo Hilton to be built by the Tokyo Electric Express Railway for Hilton operation. Japanese architects will handle design.

▶ Four days later, on Feb. 6, the Department of Justice announced the terms of the consent decree for ending the antitrust suit filed against the Hilton last summer shortly after it acquired the Statler chain. Hilton agreed to sell two of its 27 US hotels (the Mayflower in Washington and either the New Yorker or Roosevelt in New York) and not to buy any big hotels in New York, Washington, St. Louis or Los Angeles until 1961 without first notifying the antitrust division.

▶ Two days later, Feb. 8, Hilton announced a \$2.7 million program for air conditioning all guest rooms in its Waldorf Astoria, New Yorker and Statler hotels in New York with central cooling systems instead of individual room conditioners. According to industry leaders this would make all other (previously reluctant) major New York hotels follow suit with air conditioning for all rooms, instead of only some rooms.

Teamsters' tactics causing concern as unions make big organizing drive

From the first AFL-CIO executive council meeting in Miami Beach last month came indications that construction might have to cope with more trouble than ever from the teamsters union under AFL-CIO merger.

Although the teamsters have seldom acted as ideal teammates with the other 18 unions of the old AFL building trades department (AF, Jan. '56, News), international teamster President Dave Beck announced that all 19 unions have agreed on plans for a big national organizing campaign in heavy construction and homebuilding. So far, teamsters, carpenters, operating engineers, electrical workers, plasterers, plumbers, laborers and bricklayers internationals have pledged \$10,000 each, and other unions \$40,000 (a total of \$120,000), said Beck. Ultimately this campaign fund would reach \$1 million, he predicted. One big objective, he added, would be to keep industrial unions from

moving into construction.

What troubled construction was the leading role of the teamsters in the new drive, and the terrific pressure they could use to back up organizing campaigns of other trades by holding up the delivery of materials to any builder who balked at organization of his workers.

For the insistently optimistic there was one straw to clutch at. If at last the teamsters were really going to work with the other building trades, perhaps the latter might be able to persuade them to be more reasonable on occasion, discourage some of their crippling, costly strikes that have often made thousands of building workers idle for months on end.

Largely discounting this illusion, however, was last month's bitter jurisdictional row between the United Auto Workers and the Detroit teamsters (and in this case building trades). This dispute flared up in continued on p. 20



Foldoor's easier operation makes the difference !

Folding doors are first of all *functional*. And the easier they operate, the better the function. That's one reason why more and more architects, contractors and owners are specifying FOLDOOR—the easiest-to-operate fabriccovered door. Only FOLDOOR is constructed in continuous volutes—without large "pockets" to trap air and retard operation. In addition, FOLDOOR's rugged, simplified hinge-and-pantograph mechanism reduces metal-to-metal friction by an average 61%. But make no mistake: the same streamlined engineering which results in easier action also provides the rugged rigidity you demand on the job . . . as proved by the toughest in-use tests. Get the full facts from your nearby FOLDOOR Distributor—listed under "Doors" in the yellow pages.

HOLCOMB & HOKE MANUFACTURING COMPANY, INC. 1545 Van Buren Street, Indianapolis

In Canada: FOLDOOR OF CANADA, Montreal 26, Quebec Installing Distributors in All Principal Cities

ONLY FOLDOOR IS DIFFERENT AND BETTER THESE SIX WAYS

1. Easier operating 2. Neater installation 3. Better appearance 4. Greater space-saving 5. Structural durability 6. Longer life.



studies

of the effective use

of

PORCELPANELS in schools

Representative Schools Using Ing-Rich Porcelpanels

COLLEGES

Kent State University Kansas State Teachers St. Xavier (Illinois)

HIGH SCHOOLS Carlisle, Pa. Luthern (Milwaukee) Old Saybrook (Conn.) Passaic, N. J. Woodstock, Illinois Hollidaysburg, Pa. Lincoln (Gainesville, Fla.) Pontiac, Mich.

GRADE SCHOOLS Green Township, Pa. Maumee, Ohio Assumption (Fairfield, Conn.) Lakeland, Minn. Illiopolis, Illinois Cerro Gordo (Macon, Ga.) Nativity (Dubuque, Iowa) St. Brenden's (Detroit) Oliver Wendell Holmes (Dallas)

Write for Data File No. 300 on Ing-Rich Porcelpanels for Schools



Porcelain Enamel face and paint grip back Over 5,000 square feet erected by Ing-Rich on steel chairs and steel furring.

Truscon type panel with Porcelain Enameled face

This panel design features an air space between the porce-tain enameled face and the insulation.

Porcelain Enameled

This is believed the first architectural use of corru-gated porcelain enameled



At Paoli, Pa. High School, the design allows many individual panels to serve as both exterior and interior wall surfaces.



Ing-Rich Porcelpanels were used for coping and exterior walls at Freeport, Pa. High School.



For the Eastern Junior High School, Riverside, Connecticut, Ing-Rich fabricated Truscon type panels.



College in Trenton, corrugated porcelain enameled aluminum is used above and below windows.

INGRAM-RICHARDSON MANUFACTURING CO. Beaver Falls, Pennsylvania

NEWS

a Packard-Studebaker plant that was being reopened for a defense contract job after a two-year shutdown. Sixty-six UAW maintenance men-millwrights, carpenters, electricians etc .- were not enough to handle the building recommissioning work. The auto union readily agreed to Packard's request to bring in outside contractors who employ building trades members. For several weeks everything was peaceful. Then international teamster Eighth Vice President James R. Hoffa, who is also vice president of the Detroit building trades council, told the UAW that the construction and renovating job belonged entirely to the building trades. Despite the best efforts of top AFL-CIO leaders Walter Reuther and George Meany to settle or compromise the dispute, the fight grew bitter. The building trades walked off the job and established a picket line that the UAW workers ignored. The cagey Hoffa announced that other teamsters would hold up all machinery deliveries to the plant.

AFL-CIO merger to the contrary, the Detroit row now looked like a naked oldfashioned power grab by Hoffa forces with no more regard for other unions than for employers.

Many labor observers suggest that Eighth Vice President Hoffa has already taken almost complete control of the teamsters international from Beck. He is the man for construction to watch—employers and building trade unions alike.

Post Office, in need of 3,500 buildings, trims costs by planning, bargaining

More planning and smarter real estate direction, mainly shrewd use of tried and true renting principles, has been getting the Post Office better buildings, both new and old, for less money.

Main tools it has been using:

Straight leases for new (and old) buildings at competitive, nonpremium rents that are now matched against the rents hardbargaining national chain stores pay for comparable space.

A limited amount of lease-purchase construction on government-owned sites.

A new law that allows the Post Office to option sites in an area where it plans new facilities before it advertises for the new facilities. Formerly it sometimes found speculators optioning all available suitable sites so they could profiteer on whatever site the Post Office selected.

▶ Expanding use of air conditioning, which reduces absenteeism, increases employees' efficiency when they are working. Under liberalized criteria, conditioning is being approved in new or modernized post offices in any area where business or industry uses it.

Formation of the department's own mas-

ter planning section to plot much greater coordination and economy in programming construction or renting (and mail-handling) for both rapidly growing new communities and older metropolitan areas.

Big program ahead. In Washington last month Assistant Postmaster General Ormonde (Toni) Kieb reviewed the progress of the bureau of facil-

ities since it was

placed under his di-

rection in 1953, and

also gave an estimate

of the vast volume of

post office construction

that still looms ahead.

Until 1953, genial, as-

tute, 54-year-old Kieb

was a realtor special-

izing in appraisals,



KIEB

commercial leasing and financing, and was the 1946 president of the New Jersey Association of Real Estate Boards. Before closing his Newark office three years ago to become the Post Office's chief realty officer, he had never held any other government job.

Over the next five years, said Kieb, the department estimates it needs about 3,500 new buildings totalling about 23 million



POST OFFICE AND COURT HOUSE for Council Bluffs, Iowa, designed by Brooks-Borg & Robert C. Robinson, architects, was the first building approved for construction a month ago under the lease-purchase program of the Public Buildings Service, of the General Services Administration. PBS-GSA handles construction of a limited number of government-owned post offices, when they are part of federal buildings erected for some other predominant uses. sq ft. All of them would be erected by private enterprise with private capital (about \$230 million) under straight lease and lease-purchase arrangements. The entire government expense to support this program, as well as another \$550 million for new equipment and modernization of existing government-owned offices, could be met out of the increased postal rates President Eisenhower recommended to Congress last month at the request of Postmaster General Arthur E. Summerfield.

Straight leases get best building. Although the department has a lease-purchase program, and this has definite advantages in some cases, Kieb feels the Post Office usually can get its best buy in new buildings through straight long-term leases.

In a building erected for a regular longterm lease to the government, Kieb explains, the owner is free to use any materials or building methods he chooses (so long as the finished building conforms with department specifications) and thus can profit on his construction skill or "knowhow." But the owner also must maintain the structure under the Post Office's usual 20-year lease with renewal options for ten years, and four five-year periods. The Post Office can withhold the rent for unsatisfactory maintenance, and if it does not exercise its renewal option the owner will be given back the building and will need to find another tenant for it. As a result, it pays the owner to build properly and well, and the government is the indirect beneficiary. In fact, says Kieb, some of these privately owned rental structures are built better than public buildings, often have 90% usable space, compared with as little as 60% usable space in some public buildings.

Straight lease construction also costs less rent than lease-purchase construction, says Kieb, because the owner does not have to amortize the entire cost over the initial main lease period, which must be done in lease-purchase deals.

Direct public-owned construction rates only third with Kieb. He cites its lack of incentives for developing or rewarding the best, most-economical building "knowhow," its tendency to "monumental" design without sufficient regard for maximum space utilization or operating economy, and all the necessarily cumbersome, tortuous delays and headaches involved in getting any public building project through the government mill.

Rents cut 6.5¢ psf. But new public-owned construction is only an academic problem for the post office. It has not had any funds for this purpose since 1938. Except for post offices that were included as minor parts of other large federal buildings, every new building it has moved into since then has been a rented structure. Altogether the department now rents quarters for about 23,000 post offices, and negotiates or renews about 2,000 leases a year. Rents now total about \$34 million a year, up about \$5 million over a year ago because of the increase in the total volume of space it must rent. They have not risen higher because Kieb tightened up considerably on negotiating standards and reduced the average rent the department pays from 96.5ϕ psf to 90ϕ —this year hopes he may get it down to 88ϕ .

Model elevations. The largest building to date built for the post office on a straightlease basis is a huge \$9 million parcel post annex in Cleveland completed in 1954. This has a loading dock for about 150 trucks along one 1,200' side, has sidings within it for 72 railroad cars, and a garage for 300 postal trucks. Total floor area is almost 1 million sq. ft. Post office rent is only 87ϕ per sq. ft., and the owners pay full real estate taxes to the city. Many of the department's other major straight-lease facilities range from 200,000 to 300,000 sq. ft., cost an average of about \$5 million each.

For the guidance of owners building structures under 15,000 sq. ft., the department issued last year a manual on its building requirements. Last month it was also distributing its first recommended front elevations for small structures. Two of these were for flat-roof contemporary structures with large glass areas; one a modified Colonial design. Previously the department has not concerned itself much with the appearances of buildings; in small communities a contractor might even erect one without an architect. But now in addition to demanding conformance with structural specifications it also intends to insist on pleasing elevationsalthough there will be nothing mandatory on using any of those recommended by the Post Office.

Lease-purchase procedures. Architects, however, will play their full role for all of the department's new lease-purchase buildings, which have been averaging about \$320,000 each. These will be erected only on sites the government already owns. There is no separate appropriation for them; they are simply authorized for construction out of the department's regular annual rental funds. Of necessity they must be figured with sharp pencils.

To select architects for these, the field staff will visit local architects, check their work and interest, and then send recommendations to Washington. Based on these field recommendations, Washington may consult with one or more of those who were recommended and then negotiate a design contract with one. Later the leasepurchase builder-lessor will be required to assume the payment of all architectural and engineering fees, but throughout construction the architect will serve as the post office's agent, not the builder's.

Up to the present the department has signed design contracts for 22 lease-purchase structures for a total building cost of more than \$7 million. It is expected this program will be expanded this year with about another 30 buildings.

Planning; master planning. The department's construction and engineering section in Washington has a staff of 27 architects and engineers. But they do not draw any

building plans for construction. Their main function is to review plans for various projects, and to make studies to develop the best locations and main schematic characteristics for buildings that will be needed in various cities, based on estimates of the volume of different types of mail each one will have to be able to handle, and the equipment and traffic it will have to accommodate, as forecast by the department's master planning section.

At present, for instance, some 60 cities need major new "terminal" facilities. The studies for these consider different types of buildings in relation to specific building sites and their rail, plane and highway connections, as well as the most efficient interior building layouts for receiving, sorting and shipping that could be developed in each different case.

Also of marked significance was the creation in Nov. '53 of the master planning section. This has been headed by Richard P. Wakefield, formerly Principal Planner for Arlington County, Va.

One of this section's jobs is to define practical "mail services areas" and metropolitan areas with a view to putting postal operations on a more efficient metropolitan area basis, with less regard for local political boundaries. Metropolitan area post offices may be an early reality even if metropolitan area governments may be a long time in materializing—if ever.

Chicago plastering trades beat civil antitrust case

On July 31, '52, civil and criminal antitrust charges were filed against Local 5 of the Plasterers Union and the Chicago Employing Plasterers Assn., who were accused of conspiring to harass and bar out-ofstate contractors and plasterers and suppress local competition.

After a three-weeks trial on the civil complaints that ended Dec. 22, Federal Judge Sam Perry took the case under study. On Jan. 31 he dismissed all the civil counts, and further advised the government to drop its criminal charges, and likewise similar pending civil and criminal charges against the Employing Lathers Assn. and Local 74 of the Wood, Wire and Metal Lathers International Union.

In his 25-page opinion, dismissing the plastering trade civil charges, Judge Perry at one point said that defendant Byron W. Dalton, former president of Local 5 but now head of the Chicago Plastering Institute, far from engaging in a conspiracy was "rendering a public benefit." This referred to a dispute over "doubleback" plastering, applying a second coat before the first is thoroughly dry, and a charge that Dalton compelled an outside contractor to use slower, conventional methods that cost him \$137,000 more.

At month's end the federal prosecutor's office had not decided whether to appeal Judge Perry's decision. Once before the Judge held in favor of Dalton but was overruled by the Supreme Court, on the question whether interstate commerce was involved.



Record height slab-lifting started in Jacksonville

Slab-lifting for a record-height building of this type that will rise 67'-4" from the ground was started in Jacksonville last month. On hand when the first 270-ton, 46' x 68' slab was raised 16' in three hours were (1 to r in cut): J. T. Monahan Jr., building supervisor for George D. Auchter Co., the contractors; Fred A. Hubbell Jr., manager of Southeastern Lift Slab Inc., Atlanta; John Porter, president of Lift Slab Inc., San Antonio; Sister Mary Clare, administrator for St. Vincent's Hospital, for which the building, a nurses' home, is being erected, and William D. Cromartie and Ivan H. Smith, design engineer and architect partner for Reynolds, Smith & Hills of Jacksonville, the architects.

The four upper slabs for this six-story building will be lifted temporarily to the top of 40' columns, and the lower three slabs lifted into permanent position (the ground floor slab raised 3'). Then the 14 supporting columns will be extended to full height and the four top slabs raised to final positions. Porter said this lifting will cost 30ϕ psf, cheaper than a recent three-story Pennsylvania project, because the architects called in the lift-slab contractors for consultation at the beginning of design.

Other reported near-record lift-slab jobs: a 64' (basement to roof) Calgary, Alberta, building, and the five-story and solarium 62' Litchfield County Hospital in Winsted, Conn., on which lifting was scheduled to start late last month.

Eero Saarinen wins London Embassy design contest

Eero Saarinen was adjudged the winner of a restricted competition of the State Department to select the architect to design a 150,000 sq. ft. Embassy Office Building in London. An extremely close runner-up: Edward D. Stone. No competition sketches would be released, because they might have no bearing at all on the final design, yet to be developed.

The jury consisted of Deputy Under Secretary of State Lloyd Henderson; William O. Hughes, director of the Office of Foreign Buildings; Livingston Merchant, Assistant Secretary for European Affairs; Architects Pietro Belluschi, George Bain Cummings, Henry R. Shepley and Ralph T. Walker. When the special requirements of the huge, \$14 million Army Finance Center emerged from planning, reinforced concrete was selected by the Corps of Engineers, U. S. Army, as the best method of structural framing.

Reinforced concrete was found to be more economical than other structural materials . . . erection progress more rapid . . . maintenance costs were estimated to be less . . . and it proved to be the most adaptable medium for such a low, spread-out structure.

Reinforced concrete is the ideal material for structures of practically all types and shapes. It provides rugged strength that is highly resistant to wind, shock, and quakes, and is firesafe without extra treatment. Furthermore, it permits great flexibility of design, and materials and labor are readily available from local areas. On your next job, it may well pay you to *design for reinforced concrete*.

"REINFORCED CONCRETE is more economical... faster to erect... less costly to maintain"

ARMY FINANCE CENTER

Army Finance Center, U. S. Army Indianapolis, Indiana Corps of Engineers, U. S. Army Chicago District

GENERAL CONTRACTORS Sherry-Richards Construction Co., Chicago* Corbetta Construction Co., Inc., New York City James McHugh Construction Co., Chicago Wilcox Construction Co., New York City



*Construction and supervision by Sherry-Richards, sponsor of joint venture.

Compare ...



YOU'LL SAVE WITH REINFORCED CONCRETE

38 South Dearborn Street • Chicago 3, Illinois CONCRETE REINFORCING STEEL INSTITUTE



HERE'S BETTER LIGHTING AT HALF THE COST



Model 88-221X

FEATURES THAT DEFY COMPARISON

- ON-JOB POWER SOURCE Before fixtures are installed, receptacles in UNI-RACE provide power source for tools and temporary lighting.
- **NO FIXTURE STORAGE** Fixtures need not be delivered until premises are painted. The units can then be snapped into place-clean and factory fresh.

INDUSTRIAL

• VARIABLE SPACING Fixtures can be mounted in continuous rows or at intervals of 4, 8, 12 or more feet-added, removed or respaced at any time.

The Gibson ORTHO Fixture is a completely new concept in commercial and industrial lighting design. The exclusive UNI-RACE, shipped separately from the fixtures, provides straight alignment, exact fixture spacing and a fixed power source (receptacle) for each fixture. It banishes those pesky aligning problems and eliminates all electrical work on the fixture itself-just take the units as they come from the box and snap into place at any desired interval of 4' or 8' on the UNI-RACE.

All of which adds up to a 50-percent saving in labor and material-often more-unheard of flexibility to the user, and gives you a better-looking, higher-quality job.

There are many other advantages you ought to know about. Drop us a line today, we'll gladly send you complete information about the remarkable new ORTHO-77 and 88 for commercial and industrial applications.





Trinity is the *whitest* white cement judged by any standard. It is whitest in the bag . . . whitest in the mix . . . whitest in the finished job! You can see the extra whiteness with the naked eye! Trinity White is a true portland cement. It meets all Federal and ASTM specifications. Use it for architectural concrete units; stucco, terrazzo; cement paint; light-reflecting surfaces; mass or contrast; or wherever the purity of white and the purity of color tints is desirable in concrete or masonty. Trinity Division, General Portland Cement Co. ... plain or waterproofed

hindu THE WHITEST WHITE CEMENT

-nR



Spring brought the promise (or threat) that the game of musical chairs among architectural college faculties would be an extra lively one this year.

Carnegie Tech in Pittsburgh announced that **Paul Schweikher**, chairman of Yale's department of architecture since Feb., 1954, would become the head of Carnegie's department of architecture on July 1, filling the vacancy caused by the resignation of **John Knox Shear** in 1954. Yale officials had no word yet on Schweikher's successor.

At the University of North Carolina, Dean Henry L. Kamphoefner of the school of design was looking for someone capable of succeeding Eduardo Catalano as head of his department of architecture. Catalano was set to transfer to M.I.T., where he would fill the professorship left vacant a year ago when Ralph Rapson resigned to become head of Minnesota University's architecture department.

At Texas A&M, in College Station, Tex., New Orleans Architect Charles R. Colbert, was the leading prospect expected to be named head of the department of architecture, but up to month's end college officials declined to affirm or deny reports that his appointment was impending.

At Georgia Tech, Dr. Harold Bush-Brown, 67, dean of the school of architecture, must retire at the end of the current term after 31 years on the architectural faculty. Most likely successor, Paul M. Heffernan, professor of architectural design and member of the faculty since 1938.

ELECTED: Samuel Steinberg of Republic Stone Corp., New York, as president of the Building Stone Institute (which at its Miami Beach convention in January also gave a new car to its retiring secretary, Walter Drayer, for his long service to the natural building stone industry); Charles Webb, sales manager of Alabama Metal Lath Co., as president of the Metal Lath Manufacturers' Assn.; Paul N. Collin, president of Allmetal Weatherstrip Co., Chicago, as president of the Weatherstrip Research Institute; John W. James, research vice president of McDonnell & Miller, Inc., Chicago, as president of the American Society of Heating and Air-Conditioning Engineers, succeeding Minneapolis-Honeywell's John E. Haines; C. D. Haxby, vice president of Pittsburgh's Rust Engineering Co., as president of the National Constructors Assn., succeeding Stone & Webster's president, T. C. Williams; Dr. Thomas H. Chilton, of E. I. du Pont de Nemours & Co., as president of the Engineers Joint Council; Harry Waxman, as president of the Associated Builders of Greater New York, composed of apartment and housing project builders in the metropolitan New York area.

Paul Schweikher to head Carnegie Tech department; Robert B. Wolf, 41, appointed general counsel for FHA



CATALANO

Wilfred D'Aquin

"Our business calls for daring and imagination. While the rewards are often abundant and proper, there are often long, lean periods in the life of a broker when he needs help to go on." To help New York realty brokers with personal loans "without fuss and trouble" in this situation described by Realtor Lee Thompson Smith, a group of top realty leaders incorporated and subscribed the first funds last month to The Realty Foundation, a philanthropic society first conceived by William Zeckendorf and the late Nathan Wilson. With Zeckendorf as chairman and Smith as president the foundation's other officers and directors include Clinton W. Blume, president of the N.Y. Real Estate Board: Edmund F. Wagner, head of General Realty & Utilities; Robert W. Dowling, of City Investing Co.; City Planning Commission Chairman James Felt, David Tishman, Irwin S. Chanin, Louis J. Glickman, Harry B. Helmsley, S. Dudley Nostrand and almost a score of other ranking builders, owners, managers, brokers and mortgage specialists.

A young Philadelphia lawyer with an extensive background in housing was named general counsel for the FHA. He is **Robert** *Leonard L. Greif Jr.* **B. Wolf,** 41, chairman

of the Mayor's Co-

ordinated Housing Im-

provement Program

which he helped estab-

lish in 1950, and long

a member of this

city's Housing Assn.

and the Citizens Com-

mittee for City Plan-

ning. He is also a di-



WOLF

rector of Hercules Cement Co. and Botany Mills. Before taking office last month he flew to West Berlin for the Benjamin Franklin Foundation, of which he is a director. This is the joint US-German organization that is building from Architect Hugh Stubbins' plans (AF, Sept. '55) the permanent Conference Hall for the 1957 International Building Exposition in Berlin.

Dartmouth College announced that Wallace K. Harrison has been asked to design a social and creative arts center for its campus that will include a 450-seat theater, galleries, studios and arts workshops, a 900-seat auditorium and an outdoor terrace and landscaped court for exhibition and recreation purposes. An advisory committee headed by **Professor John Amsden** and **Nelson W. Aldrich** of Boston, consulting architect for the college, recommended the creation of such a center instead of a former proposal for a 3,000-seat auditorium on the same site.

Architecture's affiliation with the other arts led to presentation last month of the Alice Davis Hitchcock Medallion of the Society of Architectural Historians "for outstanding contribution to architectural history" to Columbia University's Talbot Hamlin, for his recently published Benjamin Henry Latrobe, biography of America's first professional architect. At about the same time the College Art Association of America gave its annual award for the "most distinguished work of art historical scholarship" to Henry-Russell Hitchcock for Early Victorian Architecture in Britain (Yale University Press, '54). Because of the pressure of professional work as senior partner of McKim, Mead & White, however, Architect Lawrence Grant White resigned last month as president of the National Academy of Design. The Beaux-Arts Institute appointed Giorgio Cavaglieri and Otto Teegen as secretary and treasurer, succeeding Arthur S. Douglass Jr. and Thorne Sherwood (and re-elected Alonzo W. Clard 3rd and John Gray Faron as chairman and vice chairman).

DIED: Percy S. Vermilya, 77, board chairman of New York's noted Vermilya-Brown Co. (which he joined in 1897, when it was Marc Eidlitz), builder of such structures as the Metropolitan Opera, The Cloisters, the J. P. Morgan bank and the newest National Gallery annex in Washington, Jan. 29 in New York; Louis Schleifer, 63, realty operator who specialized in buying and selling large hotels in New York and other cities and recently organized a company to build a new hotel in Israel, Jan. 17 in New York; A. Hamilton Wilson, 63, senior partner of Wilson & Denton, designer of many institutional buildings in Washington, D.C., where he had been Cosmopolitan Club president, Building Code Advisory Committee chairman and a governor of the Building Congress, Jan. 18 in Washton; Thomas J. Mooney, 64, production manager of Laclede Steel Co., Jan. 21 in St. Louis of a heart attack; Harry I. Schenck, Sr., 75, designer of many of the principal buildings and residences in Dayton, Ohio, named an FAIA in 1954, Feb. 3 in Dayton.

25



floor of today...and a million yesterdays!

SEE SWEET'S Arch. 13J-Ma. for full technical data.

WRITE

for latest official listing of MFMA-approved floor fin-ishing products and methods. Significant and eminently sound is Architect Philip Johnson's use of "the finest floor that grows" in the upper, or guest, area of this emphatically modern home. For the genial foot-friendliness of Northern Hard Maple speaks eloquent welcome to all who enter. Its bright tones return both sunshine and lamplight graciously, softly. Its tough, close grain sands easily to mirror smoothness, responds to quick, inexpensive finishing and maintenance, fights abrasion and denting, endures for generations. Regular strip or block and pattern designs, in standard, warranted MFMA grades, offer endless variety. And Northern Hard Maple costs no more than comparable grades of other hardwood species.

foot-friendly! NORTHERN HARD MAPLE

MAPLE FLOORING MANUFACTURERS ASSOCIATION Suite 564, Pure Oil Building, 35 East Wacker Drive, Chicago 1, Illinois

For better school lighting --

The Lexington in their lives

Education used to be largely a matter of hearing and reciting. Today's children, however, learn by *seeing* and *doing*. The visual techniques of modern teaching demand the very best in classroom lighting. Good lighting is essential—to protect young eyes at work, to make the learning process more efficient, to create an atmosphere of cheerful cooperation between teacher and student. This is why architects and school authorities across the country have chosen the Miller "Lexington" as the standard of quality for contemporary classroom lighting.

If you have a new school in the planning stage, let us help you with expert advice and detailed information on the lighting best fitted to your needs.



Better Lighting for a Brighter America

THE MILLER COMPANY: GENERAL OFFICES, MERIDEN, CONN. FACTORIES: UTICA, OHIO — MERIDEN, CONNECTICUT. IN CANADA: CURTIS LIGHTING OF CANADA LTD. TORONTO.

Ironhound* HARDWOOD FLOORS MEAN PROVEN QUALITY



For multi-purpose rooms Ironbound floors are healthier because they are warmer, never clammy.

Participating **Iranbound** * Installers

Akron 8, Ohio The Akron Floors Co. 177 W. Bowery St. Birmingham, Ala. E. P. Cuthrell Flooring Co. 213 First Ave., N. Boston 34, Mass. National Floors Co. 113 Brighton Ave. Canton 8, Ohio Canton Floors, Inc. Chicago 41, III.

Reeves-Ryan & Co. 2548 Clearview Avenue, N.W. 701 South Logan Detroit 38, Mich. Chas. H. Anderson Floors, Inc. Whitcomb-Bauer Flooring, Inc. 3869 Milwaukee Ave. 10301 Lyndon Ave. 10301 Lyndon Ave.

Chicago 51, Ill. Austin Flooring Co. 5510 W. Chicago Ave. Cleveland 9, Ohio The Ironbound Co. of Cleveland 1110 Brookpark Road Decatur, Ga. Matthews Flooring Co. P. O. Box 444 Denver 20, Col.

Kansas City 14, Mo. Chas. H. Anderson Floors, Inc. 7929 Wornall Road Los Angeles 6, Cal. A. B. Rice Co. 1312 Dewey Avenue Miami 42, Florida Rowell-Southern Flooring Co. 2723 N.W. 17th Avenue Minneapolis 19, Minn. Chas. H. Anderson Floors, Inc. 5940 Nicollet Ave., S. Montreal 34, Quebec Northern Flooring Co. 5415 DeLorimier Avenue

Mt. Dennis, Ontario Northern Flooring Co. 70 Brownville Avenue New York 51, N.Y. Storm Flooring, Inc. 2650 Park Ave. Philadelphia 21, Penna. Federal Hardwood Floor Co. 1503 N. Stillman St. Raleigh, N.C. R. L. Dresser P. O. Box 806 Rochester 10, N.Y. Yaeger Floor Company P. O. Box 74, Brighton Station

St. Louis, Mo. Missouri Floor Company 8866 Ladue Road San Francisco 7, Cal. Acme Floor Company 1115 - 20th Street Seattle 99, Wash. Queen City Floor Co. 310 W. Republican St. Spokane, Wash. Southern Hardwood Co. 3515 N. Haven Street

* T.M. Reg. U.S. Pat Off.

There may be an installer nearer you. For a complete list, write Ironbound Floors, Box 128, Reed City, Michigan. AUTHORIZED IRONBOUND INSTALLERS ASSURE EXPERIENCE, GUARANTEE, SERVICE

- NATURALLY BEAUTIFUL
- DENT RESISTANT
- IONGER WEARING
- MORE RESILIENT
- CLEANER

and more economical in the long run than any other type of floor. Installed only by topflight floor contractors who guarantee each floor - your assurance of quality.

Ironbound* Continuous Strip* Maple Floor in Multi-Purpose Room of Parkview Elementary School, Grand Rapids, Michigan. Architect: J. & G. Daverman, Grand Rapids.

TRENDS

BUILDING VOLUME: Huge expenditures still fail to match

spending of 1926-1929 on a per capita basis

After nine straight years of record breaking expenditures (and a 10th promised), construction outlays still fail to match those during the building boom of the '20s.

Last month two leading industry sources called attention to this anomaly; each with vastly different emphasis.

Said a Commerce and Labor Department report that almost seemed to make a virtue of the situation: "Construction activity played a leading role in the dramatic economic expansion of 1955. The dollar volume of new construction rose 12% to a record of \$42.25 billion. This represented nearly 11% of the Gross National Product. the highest ratio since the historic building boom of the 1920's (when the all-time high was 12.6% in 1927). Even when account is taken of price changes, the rate of construction activity in 1955 reflected the putting in place of more structures and facilities than in any previous year." But a sterner look at at the picture was taken



TOTAL CONSTRUCTION expenditures in January were \$2,849 million, or 1% greater than the \$2,815 million in Jan. '55. Private construction was 3% greater than a year earlier, but public construction 3% lower. Total expenditures, on a seasonally adjusted basis, were at the rate of \$41.5 billion a year.



PRIVATE INDUSTRIAL construction expenditures continued their steady rise from last April during January, reached \$228 million, or 23% greater than similar Jan. '55 outlays. For chemical plants, just one segment of this market, outlays during 1956 and 1957 will reach an estimated \$1.6 billon, according to the Manufacturing Chemists' Ass'n. in the *Building Costs* reports of E. H. Boeckh & Assoc. Said a Boeckh article, "The Story of Inflation as Told by Index Numbers," which measured the federal budget, the population, consumer credit, construction costs and expenditures and other economic data, with the average for 1926-1929 equalling 100 in every case:

"An interesting and significant fact is developed in the analysis of the construction activity of the country over the years. The per capita rate of new construction has not kept pace with the increase in economic activity, when measured on the basis of 1926-1929 dollars.

"In spite of the tremendously greater dollar value of construction volume put in place in recent years, comparing this volume against the increase in population and using constant 1926-1929 dollars as a yardstick, we find that per capita expenditures in 1955 on new construction was only 85.8% of the base period. For housing in 1950, the greatest housing vear in history, the per capita rate was only 90.7% and in 1955, 89.7%."

In volume alone, without considering the increase in population, residential construction expenditures in 1955, adjusted to 1926-1929 dollars, amounted to \$130 for every \$100 spent in the base period. The index for all construction, including nonresidential, in 1955 was 123.4 (or \$123.25), but after adjustment on a per capita base as well, was only 85.8.

EXPENDITURES BY BUILDING TYPES

	January		Percent	
	1956	1955	change	
(millions of dollars) PRIVATE BUILDING				
Residential (nonfarm)	1,078	1,122	-4	
Nonresidential*	654	543	+20	
Industrial	228	186	+23	
Commercial	249	189	+32	
Offices lofts: ware-				
houses	104	84	+24	
Stores; restaurants				
garages	145	105	+38	
Religious	58	55	+5	
Educational	41	42	-2	
Hospital; institutions	26	28	-7	
Public utilities	303	302	-	
*PRIVATE TOTAL	2,126	2,073	+3	
and the second s				
PUBLIC BUILDING				
Residential	19	22	-14	
Nonresidential	290	342	-15	
Industrial	30	90	-67	
Educational	190	182	+4	
Hospital: institutions	23	25	8	
Military	97	78	+24	
Highways	165	155	+6	
Sewer; water	79	76	+4	
*PUBLIC TOTAL	723	742	-3	
*GRAND TOTAL	2,849	2,815	+1	
+ Miner announds and all		4-4-1	da	

sum of parts.

BUILDING MONEY: Schools offered lease-purchase plan

With federal school construction assistance bills still facing the possibility of defeat if they require nonsegregation, Executive Vice President J. Louis Reynolds of Reynolds Metals announced that his company was instituting a plan to provide leasepurchase financing for new public schools.

Heading the service from Reynolds headquarters in Richmond, Va., will be Dr. Robert Chandler, on leave from the University of Virginia, where he is professor of education, and also executive secretary of the Virginia School Boards Ass'n.

According to Reynolds, his company will serve as a nonpaid "agent" for any school district, to arrange the design, construction, financing and equipping of a school building to its own particular needs and specifications. Lease-purchase arrangements could run from 30 to 40 years, he said. He also said he hoped to increase sales of his company's aluminum products through such deals, but failure to do so would not bar a district from getting financing as promptly as any other. Reynolds gave no rates, except to declare that regular payments under such financing would be about 50% less than on shorterterm, conventional bond financing, and through this service school districts could obtain free "the advantages of educational and architectural consultation far beyond the means of the 'typical school district' as to lighting, classroom design, etc."

The C.I.T. Financial Corp., which finances some construction, as well as a large volume of automobile and consumer credit business, arranged last month for a 20year, \$100 million loan from Metropolitan Life at 4%. The significance of this for construction was that it was another demonstration of the availability of loan funds, in large amounts; when mortgage funds supposedly are "unavailable" on occasion, more likely it may only be that other borrowers are obtaining them at rates and terms the lender considers just as good or better than mortgage loans at that time.

Coming into her own, the Federal National Mortgage Assn. (Fanny May) made news last month on three scores. 1) She declared her first dividends, on a monthly basis, covering January and February; 2) she floated \$100 million of debentures. to raise funds for purchasing more new home mortgages: 3) she also put into operation a new "repurchase plan" to aid homebuilders. This allows the owner of an eligible mortgage to sell it to Fanny May, for a 3% subscription to Fanny May stock, and for another 1% fee to obtain an option to repurchase the same mortgage within nine months at the same price Fanny May paid for it. In effect, Fanny May was broadening her scope and establishing a mortgage "warehousing" service, although no one in the organization would publicly admit to the term.



WHEN YOU SEE THIS KIND OF WORKMANSHIP, EXPECT TROUBLE...



Good workmanship includes filling the bed joints and head joints—wetting the brick—and backplastering the face brick.

Expect trouble when mortar is dabbed only on the corners of the brick, even when the head joint is slushed.

Because it is so workable, Brixment makes it easy for the bricklayer to use enough mortar to completely fill the joints, and still lay the brick easily and accurately to the line.

THIS IS GOOD

NORKMANSHIP

Brixment mortar has greater plasticity, higher water-retaining capacity and bonding quality, greater resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.



LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

TRENDS

BUILDING COSTS: Labor drive, and new upturn for materials

point to greater cost increases this year than occurred in 1955

Construction costs started 1956 by increasing almost 0.5% in January on the E. H. Boeckh index (r). Average wholesale building materials prices went up even higher, 0.7%, after their mild October-December sag and recovery (chart below).

With labor preparing to push for an across-the-board increase of 15ϕ to 20ϕ an hour this year (and a big organizing drive in construction, p. 17) industry observers began to anticipate a rise in costs as high as 7% or 8% by the end of the year, compared with the increase of approximately 5% that occurred in 1955.

During 1955, according to a report by the Commerce and Labor Departments, employment in contract construction increased about 4% to an average of about 2.6 million workers. Average weekly earnings of contract construction workers reached \$100 for the first time last September, when they touched their peak for the year at \$100.87 (receded to \$98.63 in October).

As the gradual uptrend in fringe benefits for building trades workers continued, the report noted, as of last July 1 more than three-fifths of all unionized construction workers in cities of more than 100,000 population were covered by union-negotiated health and welfare plans, and about one in six covered by a union-negotiated pension system—a slight rise over 1954.

Last month the New York Legislature was considering several bills by both major parties to require state public works bidders to include any area "fringe benefits" in payments subject to "prevailing wages" regulations. The only point at issue was whether these benefits should be classified by law as "an element of wages," or separate and distinct from wages, so they would not be subject to payroll taxes.

Supplementing the accompanying national average Boeckh construction cost index chart, the following table gives comparable cost indexes in individual cities for 1954 and 1955 for a single building type—brick-and-steel apartments, hotels and office buildings:

	Average		Dec.	
(1926-1929 equals 100)	1954	1955	1955	
Atlanta	226.2	231.6	237.4	
Baltimore	244.0	247.0	252.0	
Boston	258.1	267.8	272.7	
Chicago	259.4	267.6	273.6	
Cleveland	263.2	272.6	278.4	
Dallas	235.3	244.3	250.2	
Denver	.257.1	264.7	270.8	
Detroit	264.0	272.7	278.4	



CONSTRUCTION COSTS for nonresidential building rose almost 0.5% (from 268.6 to 269.9) from December to January, according to the index of E. H. Boeckh & Assoc.

Houston	239.4	247.3	254.2
Kansas City	253.8	260.4	265.9
Los Angeles	254.9	265.5	273.2
Miami	242.3	250.3	257.0
Milwaukee	245.7	251.9	257.2
New Orleans	233.2	240.1	244.8
New York	284.5	290.9	298.9
Philadelphia	258.0	264.9	270.3
Pittsburgh	258.2	264.1	270.6
St. Louis	256.8	265.7	271.8
San Francisco	259.3	269.5	276.2
Seattle	259.5	266.3	272.7
Washington, D. C	253.2	260.2	266.0

MATERIALS: Steel shortages cause switch in 26-story NY tower to reinforced concrete

First an 18-story New York Office building, in December, and then last month the 26-story Canada House there, switched to reinforced concrete because it would take 8 to 12 months for structural steel deliveries. Theodore John Young, senior partner of Eggers & Higgins, said the substitution of reinforced concrete would make it possible to have the Canada House building ready for occupancy next April, instead of late 1957.

Taking note of the increasing reports of setbacks in construction resulting from lack of steel, First Vice President N. P. Hayes of the American Institute of Steel



STRUCTURAL STEEL unfilled orders on Jan. 1 rose to 2,243,046 tons, highest since 1952, according to American Institute of Steel Construction data. Slightly more than 1 million tons of the January backlog were scheduled for fabrication by April 30. Construction told the National Conference on Public Works that talk of shortages was "exaggerated."

"The steel fabricating industry increased production about 15% during 1955," he declared, although he failed to add any reason why the institute's data showed a 5% drop in shipments of structurals during the year, declining from 3,135,525 tons in 1954 to 2,982,257 tons in 1955. "The institute's backlog now shows average delivery at eight months, only two months longer than a year ago, when there was no question of extended deliveries," said Hayes.

Structural steel fabricators will ship about 3,300,000 tons of structurals this year, a 12% gain over 1955—provided the fabricators obtain sufficient plain material from the mills against the competition of other big steel users, according to Hayes.

Referring to specific increases in structural output capacity that should help speed up deliveries, he said: "Bethlehem, for example, has announced that its annual capacity for rolling wide-flange and standard shapes will be increased by more than 800,000 tons before this summer. In addition Inland has recently started producing some of the lighter weight wideflange sections and expects to increase its output of structural shapes by 25%. United States Steel is spending some \$19 million to improve its structural facilities at Chicago and Pittsburgh."

One steel fact seemed certain, however:

more builders were placing than cancelling orders.

Contracts for structurals signed in December totalled 367,827 tons, less than 2,000 tons short of the monthly record for the year set in July, and 87% greater than Dec. 1954 contracts.

Booking for the entire year 1955, the institute reported, were 3,695,539 tons, a record for the industry and a 47% increase over 1954.



BUILDING MATERIALS PRICES jumped 0.7% in January on the BLS average wholesale prices index. Partly responsible for sending the index figure from 128.3 to 129.3 were average increases of 4% for cement and gypsum products, 3% for building wire, 2% for Douglas fir.



Along the routes of America's super highways specialists in fast and efficient food service are feeding many thousands of travelers every day.

You would expect Formica surfaces to be at home in these surroundings and they are in huge areas. Typical are the restaurants along the entire length of the New York Thruway.

When the customer turnover is great and the whole pace quickens, beautiful, colorful Formica plays a big part in the profit picture.

Thruway Restaurant at Junious Pond, N. Y. Architect: Eggers and Higgins

Formica adds to any decor to influence the size of the check. Because it wipes so clean fast it serves more people pleasantly. Because it is so very rugged in its resistance to hard use, it cuts maintenance costs to the bone.

Customers buy Formica because it is a brand name they know and trust.

We protect this faith in our product by certifying every sheet with a wash-off Formica marking. It is your protection and guarantee that you are getting genuine Beauty Bonded Formica.

The Formica Company

4631 Spring Grove Ave., Cincinnati 32, Ohio

DEMAND THIS CERTIFICATION This mark certifies genuine RUB OFF WITH LOTS OF BAR SOAP ON A DAMP CLOTH Contended for the Second Housekeeping Seeing is believing. If this wash-off identification is not on the surface, it's not FORMICA.

In Canada, Arnold Banfield & Co., Ltd., Oakville, Ontario



Engineer & Builder: The Byrum Construction Company

229,000 Sq. Ft. of Cofar on Wheeling's Wharf Municipal Parking Deck. 3³ concrete slabs, on spans of 6'9", were used on this job now under construction

Cofar[®] concrete slabs make

Money-saving Cofar combines form and reinforcing into one quick and simplified operation for floor construction

Cofar is making huge savings for designers, contractors and owners of parking decks. By combining form and reinforcing operations into one quick step, Cofar cuts out the time, material and money normally expended in old-fashioned form work.

Cofar is deep-corrugated, high-strength galvanized steel with heavy wires welded across the corrugations. The units make a tight form for wet concrete and provid the main positive reinforcement when concrete has se The transverse wires supply temperature reinforcement and interlock the concrete to the steel units.

Cofar units are welded to the main structural framin members. At once, they make a working deck for a trades. Prior to concreting, negative steel is set ov structural framing members for continuity. On Cofa spans over seven feet, one or two rows of temporar supports are needed. After concrete is placed, a fir resistant, high-strength reinforced concrete floor result




326,000 Sq. Ft. of Cofar on 6' 6" spans were used on the Parkade, Camden's new parking deck.

Architects & Engineers: Ziegler, Childs & Paulsen. Consulting Engineer: Lars I. Moe & Sons. Builder: Terminal Construction Corp.



Architects: Samborn, Steketee and Associates, J. H. V. Evans. Contractor: Geo. W. Lathrop & Sons, Inc.

62,000 Sq. Ft. of Cofar forms and reinforces the $3\frac{3}{2}$ " concrete slabs of the four floors of Toledo's new City Hall Realty Parking Deck.

parking decks pay off sooner

On-the-job photos show Cofar advantages



re-cut for immediate use. Cofar comes to our job shop-cut to length and in marked andles to reduce sorting and handling.



Immediate working deck. Cofar forms a solid, safe, sheltered working deck for all trades.



Quickly and easily placed. Cofar units are welded in seconds to steel framing members.



tractive ceiling. In parking decks, exposed Cofar may be painted r a finished ceiling.



GRANCO[®] STEEL PRODUCTS COMPANY A Subsidiary of GRANITE CITY STEEL COMPANY 6506 N. Broadway, St. Louis 15, Mo., Executive Offices: Granite City, III. DISTRICT OFFICES: St. Louis • Kansas City • Dallas • Chicago Minneapolis • Atlanta • Cincinnati Distributors in 80 principal cities



GOLD SEAL SEQUIN* INLAID LINOLEUM 1/2" GAUGE IN RICH DARK BROWN. "CONTINENTAL FURNITURE" BY STANDARD.

New, exclusive Gold Seal "Sequin" Inlaid Linoleum brings you a new kind of beauty for commercial installations. It presents a sweeping, virtually seamless expanse of wall-to-wall richness. Seven decorator-styled colors provide ample selection to match any room decor! This rugged product is highly resilient... quiet and comfortable underfoot. Its satin smooth surface seals out dirt and resists stains which means maintenance will be easy. Give your clients all these extra advantages—specify new Gold Seal "Sequin" 1/8" Inlaid Linoleum.



Abrasive Wheel Test proves "Sequin" "looks like new" through long service life! The circular "After Test" area is the result of applying the abrasive wheel to the "Sequin" sample. See how it has worn well through the linoleum-and yet the pattern is still there, as clear and sharp as ever! Compare it with the "Before Test" area. You can't tell the difference! Write to Architect' Service Department, Congoleum-Nairn In:., Kearny, N. J., for further information and samples.

SPECIFICATIONS

6-ft. wide yard goods. 1/8" gauge, burlap backed. Install over suspended wood or concrete subfloors. Available in: grey, green, dark brown, white multi, grey mix, taupe, beige. Also made in standard gauge for residential use —in 16 colors.

FOR HOME OR BUSINESS: INLAID BY THE YARD—Linoleum • Nairon* Standard • Nairontop* RESILIENT TILES—Rubber • Cork • Nairon Custom • Nairon Standard Vinylbest • Linoleum • Ranchtile® Linoleum • Asphalt ENAMEL SURFACE FLOOR AND WALL COVERINGS— Congoleum® and Congowall® RUGS AND BROADLOOM—LoomWeve*

@ 1956 CONGOLEUM-NAIRN INC., KEARNY, N. J.

FOR THE LOOK THAT'S YEARS AHEAD Gold Seal FLOORS AND WALLS



Maria Bergson · Private Office

Maria Bergson Associates Designers 551 Fifth Avenue, New York City

Conference table lighted by Rambusch Annulite® fixtures

Due to its neat appearance, pleasing proportions and complete absence of visible mounting means this has become the favorite recessed fixture among discriminating Architects and Decorators. The exceptionally high efficiency of the Rambusch Annulite makes it the choice of many engineers. There are 100 Rambusch lighting representatives in the country—one of them is near you and anxious to serve you.

RAMBUSCH DESIGNERS · MANUFACTURERS 40 WEST 13th STREET, NEW YORK 11, N. Y.

Award Winners

sponsored by: FERRO CORPORATION

conducted by: architectural FORUM

professional adviser: Harold R. Sleeper, F.A.I.A.

GRAND PRIZE-\$5,000

Community Youth Center Henry S. Brinkers 1205 West Oregon • Urbana, Illinois

ELEMENTARY SCHOOL

1st Prize-\$3,000

Horacio Caminos & Eduardo F. Catalano Route #6, Carrier 37 Raleigh, North Carolina

2nd Prize-\$1,500

Stephan M. Goldner C. Chadburne Shumard Hanford Yang 11 Merion Road Merion, Pennsylvania

3rd Prize-\$1,000

Thomas Lam Cranbrook Academy of Art Bloomfield Hills, Michigan

COMMUNITY YOUTH CENTER

1st Prize-\$3,000

L. C. Chen and C. K. Chen 141-48 85th Road Briarwood (Queens), New York

2nd Prize-\$1,500

Cecil D. Elliott, Architect George Matsumoto, Associate Architect 3032 Farrior Road Raleigh, North Carolina

3rd Prize-\$1,000

Donald Goodhue 421 Broadway Cambridge, Massachusetts

porcelain enamel design competition

HONORABLE MENTIONS - \$500

ELEMENTARY SCHOOL

H. D. Sokoloff Richard Blanchard Falk & Booth 1 ó Beale Street San Francisco, California

Wallace S. Steele 2012 South Faris Sioux Falls, South Dakota

Charles A. Metcalf Roland H. Lane Mark L. Pence 108 West 81st Street Seattle, Washington

Robert Lewis Bliss Anna Campbell Bliss Ridge Road, Christmas Lake Excelsior, Minnesota

Helmut Jacoby 65 Manor Drive Newark, New Jersey

Dean Pietro Belluschi

Cambridge, Massachusetts

School of Architecture and Planning

Massachusetts Institute of Technology 77 Massachusetts Avenue

Y. C. Wong 5040 Woodlawn Avenue Chicago, Illinois

John Michael Goduscik 1437 Hamilton Street Allentown, Pennsylvania

Victor N. Tiotuyco Cranbrook Academy of Art Bloomfield Hills, Michigan

Katz, Waisman, Blumenkranz, Stein, Weber

Associates: Patrick S. Raspante Jerome L. Strauss Joseph De Chiara William G. Harvey

551 Fifth Avenue New York, New York

COMMUNITY YOUTH CENTER

Robert C. Metcalf, Architect Tivadar Balogh, Architect 1052 Arlington Boulevard Ann Arbor, Michigan

Eduardo F. Catalano & Horacio Caminos Route #6, Carrier 37 Raleigh, North Carolina

Bruce Abrahamson 4073 Meadowbrook Manor Minneapolis, Minnesota

John W. Gallagher & Norman Hoberman 18 Wendell Street Cambridge, Massachusetts

Peter S. Staughton Cranbrook Academy of Art Bloomfield Hills, Michigan Armand P. Bartos Norman M. Klein Louis Lionni Rai Okamoto Hsio Wen Shih Fred L. Sommer 354 Fourth Avenue New York, New York

Thomas Lam Cranbrook Academy of Art Bloomfield Hills, Michigan

Bassetti and Morse, Architects 1602 Tower Building Seattle, Washington

Jordan Mertz 1420 Clay Avenue Bronx, New York

We wish to express our thanks to the more than 5,000 architects, designers and students who registered for the porcelain enamel design competition. To the 573 registrants who submitted entries we wish to commend the excellence, originality and creative thought given to all of the designs. And to those who had the most difficult task of all, the judges, we wish to offer our gratitude for the many hours they devoted to the competition.

AWARD JURY

F

Robert Posey Skidmore, Owings and Merrill 575 Madison Avenue New York, New York John Lyon Reid 1069 Market Street San Francisco, California Eero Saarinen Bloomfield Hills, Michigan

Hugh Stubbins 78 Mt. Auburn Street Cambridge, Massachusetts

Send coupon for illustrated booklet containing full information on the contest winners, their entries, and jury comments.



FERRO CORPORATION

4150 East 56th Street • Cleveland 5, Ohio

Please send me the Porcelain Enamel Design Competition Booklet.

	7	Ci i
ddress		And the second
irm		
lame		

specify for LIFE in schools everywhere



GLYNN•JOHNSON Door Control Hardware

Overhead Type Door Holders, Stops, and Shock Absorbers for ENTRANCE and CLASSROOM DOORS opening up to 110°







Floor and Wall Type Door Holders and Bumpers for ENTRANCE and CLASSROOM DOORS opening beyond 110°



Noise quieting Door Silencers and Mutes

designed to absorb shock and noise

By offering a cushioned stop for violent door openings...GJ devices greatly reduce wear, distortion, and damage to walls, reveals, jambs, hinges, door closers, and other hardware, eliminating excessive repair and maintenance bills. By holding the door open at dismissal time the unnecessary wear and abuse of continuous openings and closings are avoided.

Behind every GJ specification is a 30 year reputation for highest quality hardware. Send for condensed GJ School Hardware Catalog B/k5

4422 north ravenswood ave.

GLYNN • JOHNSON CORPORATION

.

chicago 40, ill.



This plastic building material is translucent - yet has outstanding structural strength!

Reinforced Plastic Panels were in the experimental stage only a few years ago. Today these panels are established as standard building materials for both new construction and remodeling... as versatile as the imaginative designs of architects and builders.

Molded of fibrous glass blended with polyester resins, the panels are light in weight—yet have outstanding structural strength. They resist shattering, weathering, corrosion, denting—are easy to cut and fabricate—ideal for indoor and outdoor application.

Available in attractive, built-in colors; they need no painting or finishing. Supplied in a wide range of sizes, both corrugated and flat, the panels are translucent-permit passage of a soft, diffused light.

New developments in materials and processing techniques are rapidly broadening the uses of plastics. Many of these developments are already appearing in homes and buildings across the country. Others—still in the exploratory stage—are a forecast of the future...a hint of the versatility of all plastics.

Present and future uses of plastics in building and construction are under constant study by Monsanto's Structural Plastics Engineering Group. Check with them for expert technical advice on *Plastics in Building*.

A NEW REPORT, "Plastics in Housing," has recently been published by the Department of Architecture of The Massachusetts Institute of Technology. The M. I. T. study was made possible by a Monsanto grant-in-aid. Copies are available at \$2.00 each. Address Monsanto Chemical Company, Plastics Division, Room **218**, Springfield 2, Mass.



Newest John Wanamaker Store

Cuts Cost of



Architects: WALLACE and WARNER Philadelphia, Pa.

,,,* "In-And-Out Handling



Kinnear Steel Rolling Doors

GAVING WAYS

POORWAYS

* "In-and-out handling" is involved wherever merchandise or materials must be moved through doorwaysin shipping, receiving, warehousing, processing, or production scheduling. It takes a continuous bite out of profits if door equipment isn't of highest efficiency.

That's why, along with such time-John Wanamaker store features Kin-near Steel Rolling Doors.

You see one of these doors in action above. Note that it opens and closes straight up and down. Merchandise stacked door-high or higher, only an inch or two inside or outside the door, won't hamper its operation.

The door coils compactly above the opening, out of the way and safe from damage. Wind can't slam it shut or bang it back and forth.

When closed, Kinnear Rolling Doors give all-steel protection against wind, fire, weather, theft, and vandalism.

Heavy galvanizing (1.25 ounces of pure zinc per square foot, ASTM standards) gives the rugged steel curtain extra resistance to corrosion.

In addition, a special Kinnear Paint Bond makes field-applied finishes cover better and adhere longer.

In industrial and commercial applications alike Kinnear Rolling Doors offer "more, for less, for longer".

Built any size, for old or new construction, with motor, manual, or mechanical operation. Write for information on any door need.

The **KINNEAR** Manufacturing Company

FACTORIES:

1640-60 Fields Avenue, Columbus 16, Ohio 1742 Yosemite Ave., San Francisco 24, Calif. Offices and Agents in All Principal Cities

DATES

American Concrete Pipe Assn., annual convention, Mar. 6-10, Broadmoor Hotel, Colorado Springs.

National Electrical Manufacturers Assn., midwinter meeting, Mar. 12-16, Edgewater Beach Hotel, Chicago.

National Gold Medal Exhibition, sponsored by the Architectural League of New York, Mar. 12-30, Architectural League, New York,

American Congress on Surveying and Mapping and American Society of Photogrammetry, joint annual convention, Mar. 18-24, Shoreham Hotel, Washington.

American Power Conference, sponsored by Illinois Institute of Technology, Mar. 21-23, Hotel Sherman, Chicago.

National Housing Conference, annual meeting, Apr. 9-10, Hotel Statler, Washington.

Urban Design Conference, Apr. 9-10, Graduate School of Design, Harvard University, Cambridge, Mass.

Regional Conference, South Atlantic District, AIA (guest speaker: Italian engineer Pier Luigi Nervi), Apr. 12-14, Washington Duke Hotel, Durham, N.C.

Middle Atlantic Regional Conference, AIA, Apr. 26-28, Dupont Hotel, Wilmington, Del.

Mortgage Bankers Assn. of America, Eastern mortgage conference, Apr. 30-May 1, Commodore Hotel, New York.

American Institute of Planners, annual meeting, May 7-9, Sheraton-Biltmore Hotel, Providence, R.I.

American Institute of Architects, annual convention, May 14-18, Hotel Biltmore, Los Angeles.

Mortgage Bankers Assn. of America, Western mortgage conference, May 14-15, Mark Hopkins Hotel, San Francisco.

Annual Conference, Gulf states District, AIA, Oct. 7-9, Chattanooga, Tenn.

California-Nevada-Hawaii District Regional Conference, and California Council, AIA, Oct. 10-13, Yosemite, Calif.

Western Mountain District AIA Regional Conference, Oct. 18-20, Salt Lake City, Utah.





The thermostat that was styled with modern architecture in mind

The Honeywell Round is the most popular thermostat sold today—and the first truly *new* design in years. Made in pneumatic, electric, and electronic models for accurate, economical control of heating or cooling in hospitals, apartments, offices, schools, industrial buildings, hotels, motels and homes.





Practical! Ruggedly designed, yet it's precisionbuilt for long service.

Easy to use! Setting and checking are simplified by one easy-to-read scale.

Sign of sure comfort—a thermostat on the wall

The thermostat on the wall

Outmodes annoying, ineffective manual-comfort controls

TODAY there's one sure method of providing constant comfort without tiresome, time-consuming adjustments of switches or valves on the heating or cooling unit.

Key to this one sure method is a thermostat on the wall.

Thermostatic control is automatic—all year. There's no manual on-off operation with resulting cycle of too-hot, too-cool. Provides uniform comfort both winter and summer.

Thermostatic control is sensitive. The thermostat is a precision instrument; it maintains a set temperature accurately.

Thermostatic control is convenient. Unlike switch or valve types of heating control, the thermostat is always conveniently located. Changing a setting is easy and sure.

Honeywell thermostat systems are versatile. Only Honeywell makes all three types of thermostats—pneumatic, electric, electronic. Each group offers a choice of many models.

For complete information and help in selecting thermostatic controls for your clients, call your nearest Honeywell office. For more details on the Honeywell Round, write Honeywell, Dept. MB-3-40, Minneapolis 8, Minn.



Jacksonville: Architects—Kemp, Bunch & Jackson Fixtures—Westinghouse Electric Corporation









3 Net

LIGHTWEIGHT PATTERN NO. 70 LENS PANEL COMES IN SEAMLESS, SINGLE-FIXTURE SIZES

Width, inches	Length, inches	Thickness	Weight, lbs. per sq. ft.	
any width up to 34	any length up to 100	.180 ^{<i>u</i>} ± .015 ^{<i>u</i>}	1.75	
cutting tolerance ± 1/16	cutting tolerance ± 1/32			



Note the excellent desk top illumination in t typical Prudential Insurance work area.



Chicago: Architects—Naess & Murphy Fixtures—Day-Brite Lighting Inc.



OPTICAL ACTION

In this cross-sectional diagram, you see how the prisms intercept all the light trying to pass at high "glare-zone" angles, bend it downward to useful zones. You can see how light approaching at more vertical angles is spread evenly by the prisms. The result is even illumination over the working area.

Prudential buildings use Corning Pattern No. 70 Low-Brightness Lens Panels

Regionalized exteriors give these Prudential Insurance Company of America buildings a look of "belonging" in widely separated parts of the country.

Interiors, however, have one pleasing element of resemblance: illumination. All use Corning Pattern No. 70 Low-Brightness Lens Panels. The Prudential has used nearly 30 miles of this prismatic panel to light general work areas and executive areas with soft, glare-free, shadowless illumination. Desk-top illumination is designed for 40 foot-candles maintained.

Cleaning the panels with a damp cloth will *keep* illumination high. Panels are troffer length, too. No seams to leak light or let in dust and insects.

Prisms at work

Corning Pattern No. 70 Panels are made of crystal glass with a configuration of hexagonal prisms. Prisms intercept light trying to pass at glarezone angles, bend it downward to useful zones. Light angled more vertically is spread evenly in the useful area.

You can use Corning Pattern No. 70 Low-Brightness Lens Panels wherever you want controlled surface brightness, lasting efficiency, attractive initial cost, absence of replacement due to aging, warping, surface deterioration. Wherever you use it, you can expect an enthusiastic reaction from your client.

For detailed information, see Sweet's Catalog, or write to Corning, for Bulletin L110B.



CORNING GLASS WORKS, CORNING, N.Y. 64-3 Crystal Street Corning means research in Glass

How new heating and ventilating system



Dunham VARI-AIR Unit, concealed in mixing flue behind blackboard, mixes fresh and recirculated air—silently diffuses it to classroom through overhead grille.

Dunham VARI-AIR designed to help the "hard pressed" budget... and save valuable floor space

SCHOOL construction costs can't go anywhere but down when Dunham VARI-AIR heats and ventilates classrooms. This new and simple system satisfies all health and comfort standards... does it at a cost that meets with the full approval of any school board member.

In addition to healthful and silent heating and ventilating, VARI-AIR puts school air conditioning within easy financial reach of school construction budgets...should it be desired. This optional use of VARI-AIR can be economically provided for at the time the system is installed.

Offers Numerous Advantages

Lower Costs: Dunham VARI-AIR eliminates need for in-the-room cabinet ventilators . . . provides greater savings in classroom heating construction costs. Total absence of complex controls saves both first and maintenance costs.

Minimum Temperature Variations: Dunham's centralized temperature control system holds room temperatures within prescribed limits by automatically compensating for weather change and heat loss.

Space Saver: No floor space in classroom is given over to either heating or ventilating with a Dunham VARI-AIR system.

cuts schoolroom construction costs



Dunham Finned-Pipe Radiation runs along outside walls, ander windows to eliminate chilling downdrafts, save premium classroom floor space.



Dunham Heating and Ventilating Unit pulls in outside fresh air and tempers, filters and discharges it through a tunnel or ceiling plenum to VARI-AIR Units.

How VARI-AIR Operates

Only three primary parts to the system. VARI-AIR Units are concealed in wall space, mix fresh and recirculated air and diffuse it into classrooms.

Heating and Ventilating Unit—generally one to the entire system—pulls in fresh outside air, tempers, filters and discharges it through a tunnel or ceiling plenum to the VARI-AIR Unit.

Radiation — Dunham THERMO VECTOR[®] "along-the-wall" radiation saves floor space and provides all necessary heat whether used with steam or hot water.

For complete information, contact any Dunham Representative or mail the coupon.



HEATING & COOLING EQUIPMENT RADIATION + CONTROLS + UNIT HEATERS + PUMPS + SPECIALTIES C. A. DUNHAM COMPANY + CHICAGO + TORONTO + LONDON



Dunham VARI-VAC[®] Temperature Controls provide centralized, one-man operating station for all system settings and remote control readings. This electronic "brain" enables system to save up to 40% on fuel.

C. A. DUNHAM COMPANY Dept. AF-3, 400 W. Madison Str Chicago 6, Illinois Please send VARI-AIR literature	reet e.
Name	
Company	And the second second second
Address	All and all and a state
City	_ZoneState



(FICTION)

Here are some quotes from *Native Stone*, a recent novel by Edwin Gilbert published by Doubleday & Co. in small type, 469 pages long, and described on the dust jacket as a



"big, pulsating, compassionate novel about the world of architecture . . ." and a "powerful and humanist novel." It has lots of trade talk too, some of it uncannily familiar.

A story in the Sept. '53 issue of ARCHI-TECTURAL FORUM, p. 135, described the Manufacturer's Trust Bank branch then being built on Fifth Ave. in N.Y.: "Banks used to sell security. But now . . . they are selling service. . . That is the story behind the decision of Manufacturers Trust Co. to put up a \$3 million Manhattan branch with the most impressive façade in town, one walled with no marble slabs, but with slabs of clear glass. . . . 'This is a store type of operation . . . open, departmentalized, efficient.'"

Native Stone, about the design of a bank in Connecticut, p. 134: "Vern pulled nervously at his long, thin nose. 'Their main ery is that they want to sell their services. What they're trying to say, I suppose, is that they want this to be more than a bank building, they want it to be an advertisement in effect. That's why,' Abby explained, 'we used a complete glass curtain —it's kind of like a supermarket.'"

FORUM, same issue, p. 137: "The exterior glass wall does not support anything; it is a true curtain, hanging from the cantilevers."

Native Stone, p. 134: "The exterior glass wall was a true curtain, supporting nothing, and hanging from the cantilevers."

FORUM, same issue, p. 136: "The inner safe has been dug up from its timehonored place in the basement and put on display on Fifth Ave. behind the first-floor glass wall. There its massive bristling door will be spotlit..."

Native Stone, p. 135: "'Why bury the vault in the basement—maybe it can be right here on the main floor, right in front of the glass, and the whole town can see it night or day.' Vince paused, put his pen-

PARENTHESES

cil on the board. 'They could keep it spotlighted by night.'"

FORUM, same issue, p. 136: "The big glass sheets will be heavy (1500 lb. each) and expensive, . . . each sheet, carefully crated, will have to be taken up on exterior scaffolding and walked into place."

Native Stone, p. 196: ". . . the great areas of glass in the facade—these glazed panels would weigh close to a thousand pounds and would have to be walked into place along special scaffolding."

Native Stone, p. 377: "He went upstairs to the study, picked up a copy of the ARCHITECTURAL FORUM. But presently the image of Pat Millwyn settled over the page. With unexpected violence, he hurled the magazine across the room and started out..."

Hey there, don't throw that magazine away—keep it; it might come in handy. * * *

Here's another passage, from p. 31:

"For Nina . . . had a harmony of features which to Abby was terribly compelling: her hair, lighter than his own, was not of a prosaic blondeness, but had a dark silver cast to it, and the dimples low on her cheeks flicked and shadowed when she laughed, though she never laughed too often. She had unsloping shoulders and the gentle protrusion of her breasts gave perfect balance and proportion to her body-this kind of near perfection which, to him, had the same attraction as the purity of the architecture of Mies van der Rohe (Mies, the brilliant, pioneering German architect whose main creative work in America was the new campus of Illinois Institute of Technology-the school Abby had wanted originally to attend)."



(FACT)

Another recent book, Talbot Hamlin's Benjamin Henry Latrobe, a fine biography (Oxford University Press), has much better characterizations than the novel mentioned above, although the author doesn't try nearly so hard. Hamlin has succeeded not only in sketching the first American architect, his family, friends, and enemies, but also has drawn an absorbing picture of what this country was like in its infancy. He even accomplishes the near impossible task of bringing George Washington and his family to life by quoting Latrobe's *Journals* after visits to Mount Vernon:

"Washington had something uncommonly majestic and commanding in his walk, his address, his figure, and his countenance. His face is characterized, however, more by intense and powerful thought than by quick and fiery conception. There is a mildness about its expression, and an air of reserve in his manner lowers its tone still more. He is 64, but appears some years younger, and has sufficient apparent vigor to last many years yet. He was frequently entirely silent for many minutes, during which time an awkwardness seemed to prevail in everyone present. His answers were often short and sometimes approached moroseness. He did not at any time speak with very remarkable fluency; perhaps the extreme correctness of his language, which almost seemed studied, prevented that effect. He appeared to enjoy a humorous observation, and made several himself. He



laughed heartily several times in a very good-humored manner. On the morning of my departure he treated me as if I had lived for many years in his house, with ease and attention, but I thought there was a slight air of moroseness about him as if something had vexed him."

(COMPETITION)

When you are examining the hardheaded winners in the Porcelain Enamel Design Competition later in this issue, recall—if you can—an architectural competition in which "No limitations were imposed, excepting that beauty was to be achieved."

This was the comment of Critic Irving K. Pond, FAIA, in the Feb. 1923 issue of ARCHITECTURAL FORUM. The competition was the one sponsored 25 years ago by the Chicago *Tribune*, who sought, simply, "The most beautiful building in the world," and spent \$400,000 on a competition in the search. The cream of US architectural offices were invited to compete. These were some of the results shown by Pond in his article.



Pond, like most other architects, admired Eliel Saarinen's design, which placed second. About the others, he said: ". . . Those who rose above the commonplace contented themselves with performing stunts of draftsmanship and design; with placing *continued on p. 54*



A new kind of central heating with individual room control

THE EVERETT BUILDING (shown above) is Akron's oldest office building, dating from 1870. Previously it was heated by a low pressure steam radiator system. In January, 1955, an Iron Fireman SelecTemp heating system was installed, substituting small, compact room heating units for the bulky steam radiators. Each room now receives filtered and circulated warm air, heated by steam, with a thermostat in every room.

Tenants control temperature of each office

The results, in tenant comfort and steam savings, have been spectacular. One tenant, (Mr. James F. Mumper, Consulting Heating Engineer) says: "We have experienced sub-zero temperature with high winds. Our office has been held at an ideal temperature, with almost no variation up or down. It is so comfortable one never thinks of temperature. We now consider this SelecTemp system the most marvelous and satisfactory heating installation we have ever seen, and expect to specify it in many of our own jobs."

Another tenant, a physician, found in SelecTemp heating the

ideal solution to an old problem. His examination room can be held constantly at a higher-than-average temperature, for the comfort of his patients, while his waiting room and offices remain at 72 degrees.

The Ohio Edison Company, which supplies steam to the Everett Building, made a detailed degree-day study of the building's steam consumption, covering a period of 12 heating months. This study showed a steam saving of 49.5% after the SelecTemp system was installed.

SelecTemp is new solution to old heating problems

Any experienced architect or builder can readily visualize the enormous possibilities of SelecTemp heating in such buildings as hospitals, hotels and motels, schools, office buildings, apartment houses, institutions and buildings of any type, both for new construction and modernization. It will pay you to get the facts now about this revolutionary modern development in heating. The coupon below will bring full information.



G-E Textolite[®] Marble Patterns

offer the beauty of marble...and the durability of laminated plastic



plastic counter and wall surfacing

Where surfaces must be durable . . . when beauty plus economy must be considered, you'll find General Electric Textolite marble patterns your best choice for long-wearing good looks and easy fabrication. Distinctive Textolite marble designs are so realistic looking, it's hard to tell them from the original. And they resist heat, stains and scratches . . . will stay beautiful for years! Available in pink (FANTASIA pattern) or tan (FLORIENT). General Electric Textolite marble patterns are just two of the highly styled Textolite line of over 70 patterns and colors! For more information, call your G-E Textolite distributor . . . see Sweets Catalog File <u>14A</u>, or send in the coupon on this page.



General Electric Compar Section AF 3-6 P.O. Box 5911, Clevelan	ny nd 1, Ohio
Please send me more in pattern folder with easy	formation, and the Textolite installation instructions.
Name	
Firm	
Address	
City	Zone
State	

Over 70 G-E Textolite patterns and colors!

See the complete line of G-E Textolite patterns soon—including 14 authentic-looking wood-grain designs. You'll be delighted with the variety and the beauty of G-E Textolite.



HOW DO YOU MEASURE AGE?

You cannot measure age in terms of years. The child is young; the Marble on which she stands, many millions of years old. Yet as the child advances in years and matures, the Marble retains its fresh youthfulness. In fact, with very little care, Marble will stay young forever. Remember that, when you calculate cost.



Cost—true cost—is more than initial outlay. It embraces also the cost of maintenance. If maintenance costs are high, then the material is expensive, no matter how low the initial cost. Marble costs slightly more, initially, than many other materials, but is so inexpensive to maintain that it is usually the most economical to use. There are facts and figures to prove the economy in a report: "Proof that Marble Costs Less . . ." available at no cost from the Marble Institute of America, 32 South Fifth Avenue, Mount Vernon, New York. Write today.



THE MARK OF SUCCESS



RADIANT-PLUS CEILING



This man is installing a SIMPLEX Radiant-Acoustical ceiling. When he is finished the customer will receive, from one integrated unit, heating, cooling, ventilation, humidity control, noise reduction and lighting.

The SIMPLEX system, (manufactured by the SIMPLEX Ceiling Corp., 552 W. 52nd St., N. Y. 19, N. Y.), combines the speed of response and installation economy of forced air systems with the superior comfort of radiant heating and cooling

OUTSTANDING FEATURES

- Uses 40% to 60% less air than straight air systems.
- Rapid, responsible one trade installation.
- Healthy, draft free heating, cooling and ventilation via one medium—air.
- A clean, permanent finished aluminum ceiling surface free of conventional air diffusers and dirt rings.
- Eliminates danger of "rain".
- Effective noise reduction.
- Immediate action no uncomfortable time lag on either heating or cooling cycle.

All for little more than the cost of a quality suspended ceiling alone.



send today for free booklet containing photographs, details and design data on this latest word in comfort conditioning

			-	-				
SIM 552	PLEX W. 52	CEI Stre	LIN eet,	G co N.Y.	rp. 19,	N.3	r.	-
Plea	se send	me	cat. #	R 2				
Nam								
Firm								
Stree	t							
City					State			

(PARENTHESES)

cont'd.

unrelated mortuary chapels, crypts, cathedral spires, and 'Boston stumps' upon underdeveloped office buildings! Why was the spirit of beauty so evasive all the while?"

Yet it is almost impossible today to imagine any Trib Tower but Howells and Hood's. A few years ago, on week ends in Chicago from a Wisconsin army post, we used to walk down Michigan Ave. on those wonderfully sunny windy Illinois days and gaze up at the Tribune Tower, in speculation. It always seemed so right. Was Colonel McCormick poised up there in the confectioner's battlements, ready to pour molten linotype scrap, boiling words, down on invaders? Would the newspaper have had a less adamantine attitude toward the world if the spirit of beauty had been less evasive in the early 1920's? Perhaps.

(NOMAD)



A new piece of furniture is described in a mailing piece received here recently. "The Siwa Camel Saddle. Out of the romance of the Libyan Desert ... from the ancient Oasis of Siwa ... the colorful Siwa saddle is presented to modern America by Rimini. This authentic replica of the Arabian camel saddle makes its appearance in the American home ...



"Originally designed for the true Arabian camel which has only one hump, the saddle is sturdy and comfortable despite the rolling gait of the animal underneath. Placed lengthwise on the camel, the two pommel-like posts at front and back are continued on p. 58

• LOW INSTALLED SILHOUETTE

INCONSPICUOUS APPEARANCE

Quiet Performance



For Example — This Model No. 5215B: Capacity: 18,100 CFM Free Air Total Installed Height: 43³/₄ inches

We think that when you have examined a Gallaher Air-Van you will agree that it contains every ounce of progress in power roof exhauster design that means service and performance.

The vital features are the Air-Vans corrosion resistant finish, sound structural design, shipped completely assembled, quiet operating, patented scroll design, and patented air seal-off to protect the motor. Gallaher performance ratings are based on actual, reliable physical tests by an independent laboratory.

CAPACITIES:

Direct Drive:	150-11,000 CFM
	Static Pressures to 4"
Belt Drive:	3,000 - 65,000 CFM
	Static Pressures to 4"

The GALLAHER Company 4108 Dodge St. Omaha, Nebr. Export Office: 306 Poul Bidg., Utica, New York Cable: "Keiserquip"

NOW! AIR-CONDITIONING SYSTEMS SILENCED

in the Design Stage





Noise Control Research!

with "Q-DUCT" Noise PACKAGED STANDARDIZED SILENCING

Yes, the revolutionary, new "Q-DUCT" Air Conditioning Silencing System makes it possible for you to eliminate duct noises before any ventilating system is built or installed, or in existing systems. Through the use of handy "Q-DUCT" data sheets, you can determine the right prefabricated "Q-DUCT" unit to be fitted into the system during the design stage of the installation. Standardized "Q-DUCTS" are available in 148 sizes to meet every dimension and performance requirement!

> Valuable territories available for qualified manufacturers' representatives.

INDUSTRIAL ACOUSTICS COMPANY, INC. "Specialists in Noise & Pulsation Control – Mfrs. of Engineered Acoustical Products for Industry" 341 JACKSON AVENUE, NEW YORK 54, N.Y. • Tel: CYpress 2-0180

PROVEN PERFORMANCE!

Determined from actual air-flow measurements "Q-DUCT" units measuring in length from 2 to 10 feet provide as much noise control as a conventional lined duct measuring from 30 to 100 feet long!

FREE DATA AVAILABLE!

Send coupon today for a complete set of "Q-DUCT" data sheets and catalog describing the "Q-DUCT" Silencing System!

Industrial A 341 Jackson	coustics Co., Inc. Ave., New York 54, N. Y
Please sen of the "Q-D	id catalog and full detail UCT" Silencing System.
Name	
Firm Name	
Address	



Controlled color in floor tile

In the laboratories of Kentile, Inc., precise tests electronically check the accuracy of pigment shade in every run of color, to help assure you of uniformly true color and clarity in the flooring you specify. This is only one of the many precision controls that have served to make famous Kentile, Inc. products the world's most popular line of resilient tile floorings. Other tests assure uniformity in thickness; accuracy of cut; surface smoothness; built-in durability and dimensional stability. The tile illustrated is Marigold, one of the many colors available in the KenFlex line.

KENTILE, INC. America's largest manufacturer of resilient floor tiles

KENTILE Asphalt Tile, Carnival Kentile, Corktone Kentile/KENCORK, Cork tile for Floors and Walls/KENRUBBER, Rubber Tile/KENFLEX, Vinyl Asbestos Tile, Carnival Kenflex, Corktone Kenflex/KENFLOR Vinyl Tile, also available by-the-yard. KENROYAL Vinyl Tile/SPECIAL KENTILE, Greaseproof Asphalt Tile/THEMETILE, KENSERTS, Decorative Inserts/KENCOVE, vinyl wall base/KENBASE, wall base,

AN ENGINEER'S PRODUCT

The Macomber V-BEAM carries more load per pound than any other structural member, with greater reserve strength. Lateral rigidity is appreciably increased.

HE

PERFORMANCE - proved by extensive Pittsburgh Testing Laborator tests — trans-cends all existing framing standards. If you want to extend your construction dollars through the more economical support of spans to 48 feet—the V-BEAM is your qualified framing member.

Shown above: Country Fair Shop-ping Center, Zanes-ville, Ohio. Don M. Castro and Don M. Castro, Jr., Developers. C. Melvin Frank, A.I.A, Architect.

A

TRONGER . LIGHTER

whatever you desig

V

111

or build ...

OMBEI

dellar

ough the m

conomical support o spans to 43 faoti

NACONNES INCORPORATED . CANTON . DEID

ENGINEERING . FABRICATING

Send for your V-BEAM Catalog.



ERECTING .

NO RE

HICE I

Contractors will recognize the extra value their money buys. STANDARDIZED STEEL BUILDING PRODUCTS MACOMBER INCORPORATED 1, CANTON OHIO

AND

NAILABLE STEEL JOISTS LONGSPANS BOWSTRING ROOF TRUSSES METAL DECK V.LOK STEEL FRAMING STRUCTURALS

COM

MA

Make your intercommunications recommendations with confidence



save design time

WITH THE HELP OF YOUR NEAR-BY KELLOGG INTERCOMMUNICATIONS DEALER

For that all-important recommendation of an intercommunications system get the benefit of on-the-spot advice from your Kellogg dealer. If you request it, he will make an accurate survey of your client's present and future needs and recommend the best system for him. He carries the most complete line of top-quality intercommunications systems available anywhere, including SELECT-O-PHONE, Relaymatic, and Push-Button.

He will follow through on all the details of installation and will stand ready to give prompt service afterward. In fact, Kellogg guarantees the availability of service forever.



KELLOGG SWITCHBOARD AND SUPPLY CO. A Division of International Telephone and Telegraph Corp. QUALITY COMMUNICATIONS SYSTEMS QUALITY COMPONENTS FOR INDUSTRIAL CONTROL

Kellogg Switchboard and Supply Co., Commercial Products Dept. 76-C, 79 W. Monroe Street, Chicago 3, Illinois. Gentlemen:	
Please send me the Kellogg Architectural Planning Kit.	KELLOGG
ADDRESS CITYZONESTATE	PLANNING KIT Contains complete technical data. Use this coupon or ask your Kellogg Intercommunications dealer.

(PARENTHESES)

cont'd.

used for hanging goatskins of water, and for lashing securely the nomad's food and personal belongings. . . Unquestionably, the Siwa Saddle, mellowed by milleniums of history, has earned the privilege of a new phase of its career as a comfortable and unusually beautiful piece of furniture in the American home. Rimini recommends its use as a handsome, sturdy addition to dens, sitting-rooms, libraries, rumpus rooms, fraternity houses and outdoor living areas, as well as an occasional piece for the fireside and TV-viewing."

Unquestionably, nothing could be more appropriate than for the ancient camel saddle to wind up in front of a restless modern American's TV screen, ready to hug *his* hump—with the old camel outmoded, outgrown, forgotten.

(JACK)

The following news story and photograph have been received from the US public relations representative of Venezuela, Hamilton Wright: *New Home in Caracas*:

Hamilton Wright



"CARACAS, VENEZUELA ... This is the 'House that Jack Built' in Caracas, Venezuela. And 'Jack' is none other than Monreglio Oreste, grocery store owner. He arrived in Venezuela six years ago from Italy-'dead broke.' He started a catering business, branched out into a little grocery store and then grew into a chain of stores. This house cost him between 700,000 and 800,000 Bolivars (about \$275,000). It has 13 rooms and was designed by a local Venezuelan architect. With land in Caracas reaching boom-time proportions, owner Oreste was obliged to 'go straight up-you like it-no?' It is painted a combination of white and blue.-W. McQ.

1906 SLOAN 1956

Flush Valve Leadership for 50 Years

C The achievement of Sloan leadership has been the reward for a revolutionary flush valve design of ingenious simplicity, plus never faltering application of advanced engineering skill, constant vigilance over fine workmanship, and unceasing research for improvement. C Fifty years ago, when the first Sloan Flush Valve was produced, a few others were already on the market but none had won general acceptance. Sloan's early progress was slow and steady until a basic fact became widely known and its significance clearly understood: The SLOAN ROYAL FLUSH VALVE never needs adjustment-there's nothing to adjust. (Soon the enthusiastic praise of users spread throughout the nation and then to other countries. Today there are installations in every civilized country, in every kind of building, and on ships that travel the water highways of the world. C Since the beginning of its climb to leadership Sloan has developed a complete line of dependable flush valves to meet every practical purpose and price requirement. Upon this firm foundation we proudly celebrate our 50th Anniversary.

Hush VALVES

Another Sloan achievement in greater user satisfaction is the Act-O-Matic Shower Head, which provides a refreshing conewithin-cone spray and is automatically self-cleaning each time it is used. It does not clog—does not drip—does not waste water and fuel. Its exclusive advantages are duplicating the enthusiastic praise that brought fame to Sloan Flush Valves.

SLOAN VALVE COMPANY · CHICAGO · ILLINOIS





the newest conception in locks

Created for both modern and traditional architecture, this new lock fills the requirements for low-cost installations and modern styling in today's heavy construction.

As an architect, this is a direct invitation to you to be informed of the newest creation in builders' hardware. For full details, write to The Yale & Towne Manufacturing Co., Lock & Hardware Division, White Plains, N.Y.



architectural FORUM / March 1956



from Robertson's technical library

1. Acoustical Data on Q-Deck: It has long been known that the fluted underside of steel deck provides some acoustical value, yet demand for more has led to this new low-cost method. Application details and test data are included.

2. An Analysis of Industrial Roof Construction: This valuable booklet compares all the better-known roof types (flat, monitor, bow-string, high-low bay, saw tooth) on the basis of structural steel, volume, roofing, sash area, flashing, ventilation and daylighting.

3. Design and Cost Factors of Structural Floor Wiring: This study compares Q-Floor with other conventional floor systems using underfloor duct. Based upon a typical multi-story building, the book is replete with charts and cost analyses of all structural components.

4. Daylighting Cost Analysis: This new and unusual study contains a questionnaire, which when properly filled out will reveal how quickly scientifically planned natural daylighting will pay for itself in a structure through savings in electricity. All data are substantiated. 5. New Composite Q-Floor Catalog: This newly revised catalog contains many examples of the latest Q-Floor buildings and a full exposition of Q-Floor advantages. Structural details and specifications are more complete than ever before.

6. New M-Type Q-Panel Catalog: Recent newcomer to the Robertson product family is the M-Type Q-Panel which possesses unique advantages over other types of modern curtain wall construction. The book contains 3 pages of structural details plus complete specifications.

7. New Long-Span Q-Deck Catalog: Another new Robertson product is this sturdy, yet exceptionally long-span deck. Easy to handle and erect despite its length up to 32 feet, it is especially designed for schools and supermarkets and other structures in which unbroken spans and a saving of structural steel is beneficial.

8. Ventilation Engineering Booklet: More than a ventilator catalog, this booklet not only describes products, but contains detailed tables of exhaust capacities, based upon average wind velocities, temperature differences and height above intake. Use the coupon below.

Robertson Products for modern buildings

H. H. Robertson Company

2403 Farmers Bank Building, Pittsburgh 22, Pa. In England: Robertson Thain Ltd., Ellesmere Port, Cheshire In Canada: Robertson-Irwin Ltd., Hamilton, Ontario

Offices

in Principal	Cities
SA	MAR.

N

FI

	1	2	3	4	5	6	7	8
ME		-		Contraction of the Contraction o			-	
M								•



COLD SPRING GRANITE COMPANY Cold Spring, Minnesota • Marble Falls, Texas Cost file: File 8-B-3 on cost of 12 granite entrances

Brochures: Granite in Places of Worship; Granite in the Hospital; Granite in the School

MORE Accessible Storage Space

In this spacious wardrobe the doors are of Perforall (perforated Masonite Duolux)... another example of the versatile decorative treatment available in Glide-All Sliding Door panels. Architect: Edward H. Fickett, Builder: Evan Koppe Co.



Anywhere In The House!

ith attractive Glide-All Sliding Doors you can easily and quickly build floor-to-ceiling, wall-to-wall expansive wardrobes, big closets in small rooms, narrow halls, confined entranceways and playrooms. Glide-All Doors are complete, ready to install... and they reduce construction costs in both time and material. Standard 6'8" and 8' height panels, in varied widths, are available in either solid or in Perforall (perforated). See "Sweets" or write today for details.

Glide-All Doors are available from distributors throughout the United States and Canada. For information write Plant nearest you.

GLIDE-ALL DOORS ARE A PRODUCT OF WOODALL INDUSTRIES INC. DETROIT 34, MICHIGAN CHICAGO, 3508 Oakton St., Skokie, Illinois EL MONTE, California, 801 W. Valley Blvd. FRANKLIN, Ohio, P. O. Box 290 LAUREL, Mississippi, P. O. Box 673 NEW YORK, Gien Cove Road, Mineola, N. Y. SAN FRANCISCO, 1970 Carroll Avenue **Glide-All Sliding Doors** are engineered as a "package door" for easy, fast installation with adjustment features for perfect fitting in out-ofplumb or variable openings and to assure a lifetime of trouble-free service.



ADJUSTABLE UPPER ROLLERS

Steel and molded Nylon roller assembly has full 3/4" adjustment simply made by loosening a single screw and moving shielded ratchet mount to desired height.

ADJUSTABLE LOWER GUIDES

Spring steel guides with quiet, smooth acting polyethylene sleeves are concealed inside tube frames. They also adjust within a full ¾" range. desired height.



four areas here are custom lighted by Litecontrol

Variations in height and spacing of a single LITECONTROL fixture give each of the four working areas on this warehouse floor just the right light for its needs. Intensity is low in the heavy storage area (foreground), higher over the accessories racks (background). Other work areas, each custom lighted, are the assembly line (near the rear wall) and the loading area (by the doors).

Everywhere, the illumination is evenly distributed, easy on the eyes. The fixture used — LITECONTROL 2428 — is semi-direct, throwing almost 40% of its light upward to minimize harsh contrasts. Its efficiency is an unusually high 86%.

Installation and maintenance of LITECONTROL 2428 is easy because of its simple, two-piece, all-metal construction. Its smooth, curved surfaces wipe clean in seconds and encourage convection currents that have a self-cleaning action.

High efficiency, low brightness, ease of installation and maintenance, and versatility make LITECONTROL unbeatable for industrial lighting. Whether lighting or relighting, call on your local LITE-CONTROL representative. INSTALLATION : Sun Oil Company, Dayton, Ohio AREA : Warehouse

PROJECT ENGINEER: Alex M. Engart, Engineering Dept., Marketing Division, Sun Oil Company

ELEC. CONTRACTOR: Helldoerfer-Castellini, Dayton, Ohio

FIXTURES: Litecontrol No. 2428 2-lamp slimline industrial MOUNTUNG HEIGHT: 17'-6'' and 9'-0''

INTENSITIES: Over storage racks (foreground), 15 Footcandles in service — Accessories racks (low fixtures, background), 35 Footcandles in service — Motor Oil Assembly lines (background), 25 Footcandles in service — Loading area (near doors) 15-20 Footcandles in service



LITECONTROL CORPORATION 36 PLEASANT STREET, WATERTOWN 72, MASSACHUSETTS

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



NAZARETH

Child Care Center, Boston, Mass.



Awarded the Harleston Parker Medal for outstanding design in the Greater Boston area

ermali

THE LARGEST SELLING PERLITE AGGREGATE

IN THE WORLD

INSULATING CONCRETE: A 4" thick slab of Permalite insulating concrete (1:6 mix) underlies all of the 70,000 sq. ft. concrete slab on which the entire group of buildings rests, and prevents heat loss from the radiant heating coils in the slab.

INSULATING ROOF FILL: Permalite insulating roof fill in the chapel, convent, chaplains' quarters, kitchen, auditorium and gymnasium, clinic and school helps to keep these buildings warm in winter, cool in summer.

LIGHTWEIGHT PLASTER: Lightweight Permalite-aggregate plaster was used for the base coat in all the buildings because of its easier handling, better workability and added structural and insulating values.

> Nazareth Child Care Center, administered by the Archdiocese of Boston, is open to children in need without distinction as to race, color or creed, and provides residential care from infancy through the 8th grade, schooling and a child study clinic.

> Architect: Maginnis & Walsh & Kenedy, Boston, Mass. Building Contractor: Thomas O'Connor Co., Cambridge, Mass. Plastering Contractor: William Foley & Son, Boston, Mass. Permalite Supplied by: The Whittemore Co., Roslindale, Mass.

Write for full information on the many uses of Permalite in modern construction

PERLITE DIVISION GREAT LAKES CARBON CORPORATION 612 South Flower Street Los Angeles 17, California



The Nation's Largest Securities Market Place

GH 971A

1P

BULLS and BEARS all agree on the value of air conditioned comfort



Used in this World Famous Securities Market Also in the MIDWEST and TORONTO Stock Exchanges

Efficient execution of your orders in these markets is aided by the ideal air conditions automatically controlled by Powers. No matter how the market fluctuates, air conditions always remain stable on the trading floor and in other spaces.

POWERS

AIR CONDITIONING CONTROL

For more than 60 years Powers has supplied systems of automatic temperature and humidity control for all types of prominent buildings and thousands of industrial processes. Here are some important users:

Ford Motor Co. • General Motors Corp. • Douglas Aircraft Co. Rockefeller Center • Radio City Music Hall • Madison Square Garden Many buildings at Harvard University, M.I.T., Illinois Tech Abbott Laboratories • Armour Pharmaceutical Center Aluminum Co. of America • Standard Oil Co. of New Jersey Argonne National Laboratory and other A.E.C. Buildings Radio Corp. of America • Sunbeam Corp. • Zenith Radio Corp.

Your Problems of Temperature and Humidity Control may be similar to many Powers has helped solve for the users listed above. For further information phone your nearest Powers office or write us direct.

Factory and General Offices: Skokie, Illinois

Consulting Engineer present air conditioning system: Charles S. Leopold



Mr. D. A. Kepler, Chief Engineer of the N.Y. Stock Exchange, in the photograph above, reports temperature is held within limits of approximately 1°F, plus or minus. (a94)



Offices in over 60 Cities THE POWERS REGULATOR COMPANY Established







150





Daylight Louver Panels formed from PLEXIGLAS ...for light transmission, daylight control and weather closure in one continuous surface Katherine Smith School, Houston, Texas/architech Charles H. Kiefner PLEXIGLAS Diffusers on lighting fixtures ... for high-level, unifillumination with low surface brightness San Diego Public Library/architects: Joh Hatch and Wulff





Dome Skylights formed from all-weather PLEXIGLAS ...for efficient, balanced daylighting Norman, Oklahoma, High School/architects Caudill, Rowlett, Scott & Assoc., and Perkins & Will

Plexiglas

THE ARCHITECTURAL PLASTIC

... for skylights...lighting...daylight-control glazing...signs

Here are the basic reasons why PLEXIGLAS® acrylic plastic is being used so widely in the building industry: ... PLEXIGLAS can be formed economically to almost any shape ... it is light in weight and highly resistant to breakage ... it is an outdoor plastic with time-proved resistance to weather

... PLEXIGLAS transmits and diffuses light with highest efficiency

... in transparent form, it has optical-grade clarity

Building products and custom installations based on the use of PLEXIGLAS are currently satisfying the most rigid requirements of architects and their clients. We will be glad to send you the names of sources of supply for products that incorporate PLEXIGLAS, and the names of sign companies experienced in its use.



E

Internally-lighted Signs of PLEXIGLAS ...for fresh, attractive identification with losting beauty and long-range legibility Gimbels-CheltenhamStore, Philodelphia/architects: Welton Beckett & Associates and Howell Lewis Shay



Chemicals for Industry



Representatives in principal foreign countries

Canadian Distributor: Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.

No costly maintenance problem here



In addition to its clean, trim appear-ance . . . Johns-Manville Corrugated Transite offers years of low-mainte-nance service and fire safety to Sea-board Finance Company's new Los Angeles office.

build with Johns-Manville **Corrugated Asbestos Transite**

For maintenance-free exterior walls and roofs, plus protection from fire, rot and weather

YOU SAVE MONEY on construction and maintenance when you build with Johns-Manville Corrugated Transite[®]. Corrugated Transite comes in large sheets that require a minimum of framing . . . permit fast, economical construction of industrial, commercial, institutional and agricultural buildings.

Made of asbestos and cement, Corrugated Transite is practically indestructible. It never needs paint or special treatment to preserve it . . . it's fireproof and rotproof. Corrugated

Transite is also used increasingly for interiors. The streamlined corrugations and attractive shadow lines offer interesting design possibilities.

Investigate Johns-Manville Corrugated Asbestos Transite and learn how you can build quickly and easily . . . have an attractive, longlasting, trouble-free structure regardless of size or purpose. For complete details, write Johns-Manville, Box 158, Dept. AF, New York 16, New York. In Canada write 565 Lakeshore Road East, Port Credit, Ontario.

See "MEET THE PRESS" Sundays on TV, sponsored by Johns-Manville. Consult your newspaper for time and station.





- Large sheets go up quickly
- Easy to fasten to steel
- Easy to nail to wood
- Easy to saw • Easy to drill




NOW you can know . . . for sure-when you order Mengel Doors, you'll get Mengel Doors. The 'Mengel-Man' trade-mark is your assurance.

This famous symbol, in a distinctive, harmonizing wood dowel, is now built permanently into the stile of every Mengel Flush Door. Nationally advertised and recognized in Mengel Permanized Furniture, the 'Mengel-Man' trade-mark assures unquestioned workmanship and finest materials in Mengel Flush Doors. Assurance backed by Mengel, the world's largest maker of fine hardwood products. The 'Mengel-Man' trade-mark tells you now you're getting the quality you expect . . . when you specify Mengel Flush Doors!

Look for this symbol. It leaves no room for doubt . . . or disappointment. Door Department, The Mengel Company, Louisville 1, Ky.

> Mengel Doors equal or exceed the requirements of Bureau of Standards specifications CS200-55



Harborite...from the Royal Family of Plywoods © 1956, Harbor Plywood Corporation

Sales offices and subsidiaries in...

ABERDEEN, Washington P. O. Box 940 • Phone 221 ATLANTA, Georgia 1161 Ridge Avenue, S.W. • LA 0215 CHICAGO, Illinois 1444 West Cermak Road • CA 6 CINCINNATI, Ohio 511 Baymiller Street • MA 1-27 HOUSTON, Texas 303 St. Emanuel Street • CA 7-8

miracle concrete form panels may be re-used 125 times!

This overlaid fir plywood...proved lowest cost re-use concrete form material

Harborite is ideal for heavy construction concrete work. Resin-impregnated sheets are permanently bonded to the solid wood core... providing a smooth, long-wearing, abrasion-resistant surface that's 100% waterproof. The overlaid faces will not run, bleed or discolor concrete and have a special affinity for oils and other form finishes. High re-use factor 150 re-uses are common, 125 re-uses are not unusuall assures important savings. Available in over-size panels and standard 4'x 8' size in any thickness.

Ultimate Number of Re-Uses Mirror Smooth Surfaces Less Stripping Time Reduced Finishing Costs Lower Fabrication Costs

INDIANAPOLIS, Indiana 1001 East New York Street • ME 7-3434 JACKSONVILLE, Florida 2355 Dennis Street • EL 4-8229 LOS ANGELES, California 235 South Alameda Street • MI 1854 SAN FRANCISCO, California 3095 Third Street • VA 6-2411 SEATTLE, Washington North 34th and Fremont • EV 2228 TAMPA, Florida 802 North Rome Avenue • Phone 8-1868



82

48 EF

8 E (0)

11 W

55 m

2 8 M

100

20 SI 20

E 11 UI

11 11 11 11



Just a squeeze sets the fastening stud in steel or concrete!

THAT'S HOW SIMPLE IT IS—a flex of the finger—to anchor fixtures securely with the Remington Stud Driver. Off goes the power load, the stud is anchored into steel or concrete—straight as an arrow. No predrilling or outside power source required!

You can set both $\frac{1}{4}$ " and $\frac{3}{8}$ " diameter studs with the Remington Stud Driver—up to 6 studs per minute either size. There are 40 different styles and lengths of Remington Studs to choose from. With this one tool, you can take on every stud-fastening job—light, medium and heavy-duty—and save time and

money on every one of them! Get full details by mailing coupon below.

D				
Remington,	Industrial Sales Remington Arms Bridgeport 2, Co	Division AF-3 Company, Inc.		
QUPOND	Please send me your free booklet which shows how I can speed my job and save with the Remington Stud Driver.			
	Name	Position		
STUD	Firm			
	Address			
DRIVER	City	State		

LETTERS

20TH CENTURY CAPITAL

Forum:

I congratulate you for the superb job which you have done in architectural criticism in your article about Washington (AF, Jan. '56). You have demonstrated effectively that good architectural criticism can be written in a revealing way and without unkindness.

This is just what needs to be done: Take a city and talk about architecture in such a way that its architecture becomes more than a veneer applied to the outside of buildings made in imitation of the architects' pencil strokes.

Here in your article is really a keen analysis of the life and needs of a city with the physical facilities which that city has produced, analyzed and weighed. A searchlight is turned on the efforts which the architects have made and this searchlight, while it reveals disappointment, suggests hope rather than despair.

Congratulations and keep it up.

ARTHUR C. HOLDEN

Holden, Egan & Associates, architects and planners New York, N.Y.

Forum:

As a member of the Federal City Council of the District of Columbia, I am intensely interested in the problems of the proper development of the Washington Metropolitan Area. Your Washington article certainly provides us all with a chance to do some straight-forward thinking about the future of our area. You have done our city a service in pointing out some of the ways in which the development of our city can be improved.

There is one statement in particular you made with which I heartily agree, namely, that the federal government itself is frequently the chief offender in preventing the orderly development of the city and the areas which surround it. Let me give you one current example:

Not long ago it became common knowledge that the Central Intelligence Agency was looking for a site on which to locate a new headquarters building. This building is estimated to cost \$46 million. It will be the second largest federal office building in the country—over one-half the size of the Pentagon. It will house from 10,000 to 15,000 employees. The agency started off properly enough by appointing two of its officials to a joint committee on which representatives of the National Capital Planning Commission also served.

This joint committee, after accepting the criteria laid down by the CIA, surveyed 40 possible sites of which at least three met all of CIA's qualifications. But before this joint committee had a chance to make its final recommendations, CIA Director Allen Dulles appeared before a Congressional Appropriations Committee and stated that the CIA had determined that its new location would be at Langley, Va. This site was *continued on p. 82*



Consult an engineering firm

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available. • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar. • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use. • No smoke or dust problems when coal is burned with modern equipment. • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable. General Electric's Major Appliance Division in Louisville, Ky., has five product manufacturing buildings, a warehouse and service buildings—over 4 million sq. ft. under roof. To generate all steam necessary for process work and heating requirements of this vast area, GE's power plant burns coal the modern way. Coal was chosen for two reasons. One, a careful fuel cost study disclosed that, on a straight economic basis, coal would give GE the lowest cost steam generation of all fuels. Second, availability of supply was considered and again coal won over other fuels. In addition, full mechanization of GE's power plant has facilitated all details of coal handling and ash removal while completely eliminating any possibility of air pollution.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

NATIONAL COAL ASSOCIATION Southern Building, Washington 5, D. C.

M-FLOORS.

BBB

Cross Section of Electrified Floor Constructed with Mahon M-Floor Section M2 and Energized with a Three Header Duct Electrical Distribution System. Cross Section of Electrified Foor Constructed with Mahon M-Floor Section M3 and Energized with a Three Header Dust Electrical Distribution System.

MISTS IS IS IS



.

INSULATED METAL WALLS Three exterior patterns with a "U" Factor equivalent to or better than a conventional 16⁴ Masorry Wall. Constructed up to sixty feet in height without a horizontal joint.

J.





ROLLING STEEL DOORS Standard Manually, Mechanically or Power Operated Rolling Steel Doors and Grilles. Underwriters' Labeled Automatic Rolling Steel Fire Doors and Fire Shutters.

76

Modern Electrified CEL-BEAM Floor Systems Provide Electrical Availability in Every Square Foot of Floor Surface

MAHON **M-FLOOR SECTIONS** M-FLOOR SECTION MI M-FLOOR SECTION M 2 M-FLOOR SECTION M 3 **COMBINATION DECK/CEILING UNIT** MAHON **M-DECK SECTION** MISR

> CONCRETE FLOOR FORMS Mahon Permanent Concrete Floor Forms in various types meet virtually any requirement in concrete floor slab construction over structural steel framing.

More important, Electrified M-Floors provide the Necessary Flexibility for convenient relocation or addition of Floor Service Outlets, and the unlimited Raceway Capacity to meet Future Electrical Demands for the Life of the Building.

In addition to the convenience of having all-over floor surface availability of any type of electrical circuit for power operated equipment, telephone or intercom systems, M-Floors provide the built-in raceway capacity which insures a building against electrical obsolescence in the years to come.

M-Floor construction is fast, dry, and firesafe . . . it is light weight construction which permits cumulative savings throughout the structural frame and foundation of any multiple story building. And, during construction, close follow-up of steel erection with over-all structural floors provides an excellent storage and working platform for other trades—reduces construction time materially.

When you plan new buildings, you will want to design into them all the costsaving advantages and the year-after-year convenience of modern, light weight M-Floor construction. Your clients will appreciate it, and they will appreciate it more and more each time office arrangements have to be changed and electrical and communication service outlets added or relocated to meet new demands.

COMBINATION M-DECKS and ACOUSTICAL CEILINGS

Mahon M-Deck Section M1SR is designed especially for Long Span Deck/Ceiling Combinations . . . it provides an economical roof deck and a highly efficient acoustical ceiling in one structural unit. The Section is produced with bottom metal perforated and sound absorbing material fitted inside the Cel-Beam. It may be employed with flat plate down, to produce a smooth metal surface ceiling, or with the flat plate up, for a beamed ceiling effect.

For auditoriums, schools, armories, sports arenas, or other types of buildings where roof purlins are objectionable from an appearance standpoint, these Long Span Acoustical Sections offer a simple and economical solution—they span from wall-to-wall or from truss-to-truss.

See Sweet's Architectural or Industrial Construction Files for Information including Engineering Data and Specifications, or write for Catalog M-56.

THE R. C. MAHON COMPANY • Detroit 34, Michigan sales-engineering offices in detroit New York and Chicago • REPRESENTATIVES in PRINCIPAL CITIES





... USES 65,543 FEET OF REVERE COPPER WATER TUBE for water and oxygen lines

In the hospitals being erected today oxygen lines are being built-in, the same as hot and cold water lines. And the predominant material being used for these oxygen lines is copper.

There are some very good reasons for this. First, the enduring qualities of copper have been proved for centuries. Second, copper does not rust. Third, copper tube is safe because the joints are brazed, prevent dangerous leaks. Fourth, the interior gun-barrel smoothness assures free flow of oxygen and various other gases and fluids. This same smoothness also makes it possible for oxygen lines to be kept spotlessly clean at all times.

Revere Copper Water Tube is not only safe, and longlasting, it's economical. Contractors tell us that the more they use it the more they see the many economies that can be realized. "All things considered," they say, "copper water tube costs less to install than rustable pipe."

Keep out of trouble with copper. Specify Revere Copper Tube for oxygen lines, air conditioning lines, radiant panel heating, hot and cold water lines, underground service lines, drainage and waste lines, vent stacks and processing lines.

And if you have any installation problems involving Revere Copper Water Tube, get in touch with us and we'll see to it that Revere's Technical Advisory Service gives you a helping hand.

FREE! For group showing. Instructive 16 mm motion pictures in sound and full color. "THE ABC OF RADIANT PANEL HEATING" and "THE RURAL WATER SYSTEM." Write Advertising Dept., for details.



COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801 230 Park Avenue, New York 17, N.Y.

Mills: Baltimore, Md.; Brooklyn, N. Y.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Newport, Ark.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.



TO ASSURE CLEAN, FULL-FLOWING WATER at all times the hospital is also equipped with 5 water storage tanks of Revere Herculoy, a silicon bronze alloy that does not rust and has the strength of mild steel. Hot water generators and tanks were fabricated by OLD DOMINION IRON & STEEL COMPANY, Richmond, Va.



65,543 FEET OF REVERE COPPER WATER TUBE were used in sizes ranging from $\frac{1}{2}$ " to 6" in diameter. Imagine, if you will, making this installation with ferrous pipe that requires threading.

MAIN PIPE RUNWAY showing the hot and cold water, air and oxygen lines of Revere Copper Water Tube.



INDIVIDUAL ROOM OXYGEN LINES of Revere Copper Tube with brazed joints guard against dangerous leaks.



DUR-D-WAL Is Your

BURIED Treasure 1

Phone, wire or write Dept. 2H today, for complete information on Dur-O-waL...the original steel reinforcing member de-signed to combat cracking of masonry walls. To add struc-tural soundness and to preserve the beauty in the buildings you design, specify Dur-O-waL.

Dur-O-wal lies flat in the rtar bed mortar bed . . . handles fast . . . saves time . . . provides crack control for every type of masonry wall.



Dur-O-wal Div., Cedar Rapids Block Co., CEDAR RAPIDS, IA. Dur-O-wal Prod., Inc., Box 628, SYRACUSE, N.Y. Dur-O-wal of III., 119 N. River St., AURORA, ILL. Dur-O-wal Prod. of Ala., Inc., Box 5446, BIRMINGHAM, ALA. Dur-O-wal Prod., Inc., 4500 E. Lombard St., BALTIMORE, MD Dur-O-wal Div., Frontier Mfg. Co., Box 49, PHOENIX, ARIZ. Dur-O-wal, Inc., 165 Utah St., TOLEDO, OHIO



There's a Heat-X package chiller to meet your every requirement . . . residential, commercial, institutional or industrial. All feature space saving, extra efficiency Inner-Fin construction - exclusive with Heat-X. All have completely non-ferrous water passages to guard against corrosion.

In any designated capacity, Heat-X package chillers are the most compact units made.

Request free bulletins describing the Heat-X chillers designed to meet your particular needs. And for capable engineering assistance on any package chiller problem, contact the experienced Heat-X sales engineer in your area.



'PC' Package Chiller

For broad range of air conditioning, refrigeration and industrial liquid chilling applications. Models from 2 to 75 H.P.

'PCS' Chiller with Storage Tank

For cafeterias, hospitals, schools, theaters, etc. - wherever peak load conditions occur. Stainless steel storage tank with Fiberalas insulation, Range: 2 - 10 H.P. Storage capacity: 40-150 gal.

'RPC' Residential Package Chiller

For domestic applications. Available in 2, 3 and 5 H.P. models. Hermetic Compressors. 230/1/60.

'APC' Chiller

Air cooled units available in 2, 3 and 5 H.P. models. For residential and other applications where air cooled condensing is necessary.



Bulletins containing specifications FREE on request

West Coast Factory • Riverside, California



Illustrated brochure on request.



Knoll Associates, Inc. • 575 Madison Ave., New York 22

Boston, Chicago, Dallas, Detroit, Miami, San Francisco, Washington, Toronto



TEXAS NATIONAL BANK Houston, Texas

Architect: Kenneth Franzheim Lobby finished with perlite acoustical plaster over perlite base coat. Exterior aluminum curtain walls are backed with sprayed perlite concrete.

TREMENDOUS INCREASE IN USE POINTS UP ADVANTAGES OF PERLITE

PLASTER AGGREGATE

Latest annual figures show that perlite is now the most widely used plaster aggregate in the United States. The many benefits in using perlite plaster rather than old-fashioned plaster have jumped its use 1183 per cent in the last seven years, from 9,820,000 sq. yds. in 1948 to 126,000,000 sq. yds. last year. These advantages of perlite plaster include:

LIGHT WEIGHT — perlite plaster weighs less than half as much as ordinary heavy plaster.

FIRE RETARDANT — perlite plaster gives maximum U. L. ratings with minimum weight and thickness; reduces deadload of fireproofing as much as 80%.

SUPERIOR INSULATION value up to four times better than ordinary plaster makes perlite plaster ideal for cutting heating costs and improving air conditioning control at considerable savings.



TYPICAL PERLITE PLASTER APPLICATION FAST....ECONOMICAL...DURABLE

MACHINE APPLICATION of perlite plaster speeds job completion, reduces costs. Scratch coat may be sprayed on ribbed metal lath as well as on gypsum lath; walls dry faster and have greater strength than with other lightweight aggregate plaster, making earlier occupancy possible.

CERTIFICATION — certified perlite plaster aggregate may be specified, assuring laboratory-checked quality guaranteed to meet A.S.T.M. standards.



Write for free 8-page booklets, "How to Specify and Use Featherweight Perlite Plaster" and "Fireproofing with Perlite."



LETTERS cont'd.

one which the CIA itself had withdrawn from those being considered by the joint committee. The site is in Fairfax County, Va., on the banks of the Potomac. It is one of the last wilderness areas near the National Capital.

Every planning consultant who has considered this matter, except the firm employed by the CIA to justify its own conclusions, has stated that to locate the CIA at Langley would violate every proper planning concept for the growth of Metropolitan Washington.

On Dec. 16th, the National Capital Planning Commission, to its great credit, by a very slim majority, voted to disapprove the Langley site. Whether this will effectively stop the CIA from going to Langley remains to be seen, but it is this kind of irresponsible behavior on the part of the federal government which intensifies our problems and which contributes to the conditions so ably presented in your article.

SAMUEL E. NEEL, attorney at law Washington, D.C.

Forum:

I hope you will consider resurrecting L'Enfant, along with his confreres, the architects. That gentleman would instantly grasp the fact that sound, firm, over-all planning is needed for the Washington metropolitan area as a whole, if we are to become something more than an increasingly embarrassing conglomeration.

Absence of planning can be of great short-range profit to real estate men and developers of limited vision. It has therefore been to their interest to control the politics and the "planning" in the countries. Because of this, the citizens at large are not truly informed, and even those who do understand hesitate to speak out. HELEN L. SMITH

Chevy Chase, Md.

DELINQUENTS INTO BUILDERS

Forum:

I am forwarding your editorial on "Delinquents into Builders" (AF, Nov. 55) to the Youth Guidance League of Queens, whose officers, though not dealing with delinquents, very well understand the advantages to creative outlets for young people. This League . . . has recruited teen-age youngsters who have built in part their own camping facilities at Turkey Mountain, 30 mi. north of New York, spending week ends and summers at it.

As you note in your article, the wholesomeness manifested in this type of project should be more related to everyday work and study in our large urban areas. Pratt Institute's summer design class drew up these build-it-yourself dining, sleeping, recreation and religious facilities which these Queens youngsters will build.

OLINDO GROSSI, dean School of Architecture Pratt Institute Brooklym, N. Y. continued on p. 86



John Moses Veterans Administration Hospital, Minot, North Dakota. Contractor: McGough Bros., St. Paul, Minn.

"Built-in" good looks for architectural concrete

Architectural concrete for this hospital was made with Atlas Duraplastic Air-Entraining Portland Cement. Contractor E. V. McGough found that his mixes were more workable, more cohesive and the resulting concrete was more uniform. Further, with Atlas Duraplastic Cement a better concrete surface appearance was obtained. Since Duraplastic-made concrete has been proved to have increased resistance to freezing-thawing weather, the result is concrete that's easy to place... concrete that's more durable *in* place. That's why Atlas Duraplastic Cement is preferred by architects and contractors. YET DURAPLASTIC COSTS NO MORE than regular cement requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write:

UNIVERSAL ATLAS CEMENT COMPANY

UNITED STATES STEEL (US) CORPORATION SUBSIDIARY

100 PARK AVENUE, NEW YORK 17, N. Y.

OFFICES: Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco

*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

AF-D-180-C



MAKES BETTER CONCRETE AT NO EXTRA COST

United States Steel Hour-Televised on alternate Wednesdays-See your local newspaper for time and station.



Iowa Masonic Library, Museum, and Administration Building, Cedar Rapids, Iowa. Architects: Hansen and Waggoner, A.I.A., Mason City, Iowa. General Contractor: O. F. Paulson Construction Co., Cedar Rapids, Iowa.



▲ Entrance to "The Hall of Masonry." Beyond the all-bronze doors can be seen the bronze-framed windows at the back of the Hall.

For warmth of color, -there's no substitute

Architectural Bronze outlives fads and fashions—remains a vital, dynamic building material in the hands of modern architects.

Architectural Bronze has the mellow golden color to warm the severity of stone or concrete. It is available in a wide variety of standard and special shapes which, individually or in combination, produce the special designs visualized by the architect.

Architectural Bronze lends dignity, with an air of friendliness.

Architectural Bronze remains beautiful through generations, with only occasional attention. When used outdoors, it changes, on exposure, to the rich, soft shades of weathered bronze. Even after long neglect, cleaning and polishing restore its natural color and luster. If desired,

▼ The "War Memorial Room" at the west end of the main floor.





Main Entrance of the new Iowa Masonic Library, Museum, and Administration Building.

he air of friendliness, and lasting beauty or Anaconda <mark>Architectural Bronze</mark>

e metal can be treated by the fabricator to obtain an kidized finish.

As a leader and pioneer in Extruded Metals, The Amerian Brass Company has thousands of stock tools for proucing bronze and nickel silver architectural shapes, inuding 46 threshold designs. For further information rite: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 5645

ANACONDA®

West End Foyer on the main floor illustrates use of Anaconda Architectural Bronze in public areas.







and the National Institutes of Health have a common goal: long life

Like many institutions interested in troublefree floors, the NIH in suburban Washington chose Terrazzo. All-time favorite for long-time service, Terrazzo meets the most rigorous standards of design, construction and ease of maintenance. No matter how extensive the traffic, Terrazzo stands up to it, presenting a smooth and jointless surface easy to keep spotless.

Useful for floor, baseboard, wainscot or stairway, Terrazzo's life expectancy equals or exceeds that of the building of which it becomes a permanent part. Specify marble-hard, concrete-durable Terrazzo for low annual cost, for versatility, for longevity. Free AIA Kit upon request. See our catalog in Sweet's.



ROOM 404, 711 14th ST., N.W., WASHINGTON 5, D. C.

LETTERS cont'd.

CHICAGO APARTMENTS

Forum:

My compliments on the way you handled the "Eight Chicago Apartment Projects" (AF, Nov. '55).

I like Yamasaki's remark: "I would not try to outdo Mies at Mies's game—I would try to make my apartments the very nicest to live in." That's exactly what I tried to do in my Evanston building. I didn't think you emphasized livability of the floor plan as much as you should. And is all that glass good?

Aldis pointed out: "The idea of buildings worth millions going up without tests on skin walls is ridiculous." I thoroughly agree, and I wonder why so many architects think that they must use skin walls for this type of building just because Mies has done so. I have five multistory apartment buildings built of brick which don't leak.

You state: "The Evanstonian is too large for the site or the site is too small for the building." What is the poor architect going to do when the owner, to make his investment pay out, must occupy the allowed 50% of the land inasmuch as he has an 80' zoning restriction on height? Answer: The poor architect does the best he can, as he cannot afford to turn down the job.

RALPH C. HARRIS, architect Chicago, Ill.

HYBERBOLIC PARABOLOIDS

Forum:

"A New Way to Span Space" (AF, Nov. '55) is an interesting presentation of the warped roof surface. Articles of this nature are necessary if US architects are to master the geometry of building rather than be mastered by it. The doubly curved thin shell concrete roof is expensive to form, but repetition will reduce the cost somewhat.

Successful precasting will substantially reduce the cost of this efficient structural form, so at the University of Michigan we are attempting to develop precasting techniques for the doubly curved concrete roof.



The photograph shows two equilateral hyperbolic paraboloids assembled for structural studies. The large scale model is $10' \ge 10'$ with a $\frac{34''}{4''}$ thickness. One of the units is shown loaded with a water tank.

WILLARD OBERDICK Assistant professor of architecture University of Michigan Ann Arbor, Mich.

Gymnasium Seating At Its Best!

A

Safer and stronger

ESCOPIC

dart Roomier, more comfortable

dart Maximum, clear visibility

Easiest to open and close

Better looking, more durably finished

SPECIFY the best, then INSIST on it!



R

FRED MEDART PRODUCTS CO., INC. . 3584 DEKALB ST. . ST. LOUIS 18, MO.

*Medart Telescopic Gym Seats are fully protected by U.S. Patents

Our decision was unanimous...



TATAL ARTICLE AND THE PARTY AND A STREET, AN NUMBER OF THE PARTY OF THE PART ALLER REAL PROPERTY AND A REAL THE THE REAL PROPERTY AND ADDRESS OF THE PARTY OF THE PAR STORESREEKS STORESREEKS STORESREEKS

says E. A. Hamilton



After inspecting various types of partitions, a committee headed by Mr. E. A. Hamilton selected methwal unanimously! According to Mr. Hamilton, "... met/wal movable partitions provide greater flexibility and make it possible to offer tenants functional offices that are custom designed."

"Even though our building is new," says Mr. Hamilton, "the movability of met/wal partitions, with full reuse and no waste, has already been demonstrated by changes and expansion of offices. This reduces the partition stock that we must carry, and will produce considerable savings through the years."

In this installation—as in hundreds of others—metlwals provide beauty for today . . . flexibility for tomorrow.

"metlwals provide greater flexibility more efficient use of space."





Quick installation—private, semi-private or railing height divisions, Install with a screwdriver. Write for brochure.

ASSURANCE OF EXTRA QUIET AND PRIVACY

Complete test results on sound transmission loss - made by an independent research organization - are available to you. They prove the advantages of metlwal's double-wall, double-insulated construction. Write for your copy.





CORPORATION SINCE 1878 **BOX 964, TOLEDO 1, OHIO**

IN CANADA: MARTIN-PARRY (CANADA) LTD. 82 DUNDAS STREET LONDON, ONTARIO



CHASE copper tube for soil, waste and vent lines at little or no extra cost!

Consider *installation* costs, and you'll see why a Chase quality drainage system will cost little or *no more* than an ordinary system. Actual comparisons *prove* this!

Chase 3" Copper Drainage Tube fits within standard partitions, eliminates costly furringout construction required with ordinary systems.

The inside of a Chase Drainage System is also



worth talking about – Chase Copper Tube and Solder-Joint Fittings have no internal projections to trap waste – they provide fast, even drainage and make a neater, more compact job all around.

When planning, be sure to specify the best in copper drainage tube and fittings – be sure to specify *Chase!*



e Nation's Headquarters for Brass & Co	ope
--	-----

Th

Atlant Baltin Boston Charlo

1.5	Chicago	Danver	Indianapolis	Minneapolis	Philade
810	Cincinnati	Datroit	Kansas City, Mo.	Newark	Pittsbu
1	Cleveland	Grand Rapids	Los Angeles	New Orleans	Provide
tte	Dallas	Houston	Milwaukee	New York	Roches
	St. Louis	San Francisco	Seattle	Waterbury	

EXCERPTS



Architect or autotect

Excerpts from an article by Richard Schubert in the Report, publication of the Baltimore Chapter AIA

The technical and social effects of the automation process upon architecture and construction will affect the symbols of our future architecture in many ways. Automation itself will provide a large quantity of highly specialized building parts at a lower cost. These parts possibly will be less adaptable to change and therefore more expendable. Buildings already in existence will become rapidly obsolete because of technological improvements; buildings to-be-planned will have a shorter life expectancy because of technical obsolescence. Buildings may be built for specific periods of service.

A major event which has already happened, and has helped to determine the future of building and architecture, is the increase in the postwar birth rate. This increase continues the population growth of this country which has doubled our population each 50 years. A population of 200 million people is predicted in 12 years. This, of course, means more building but, paradoxically, this building will have to be done in fewer man-hours. Today's rate of productivity will not be sufficient to meet the economic demand of a decade hence. This higher demand, coupled with the trend toward shorter working hours, will require higher productive rate per man-hour. The increased rate of productivity required in 1965 has been estimated at 40% more than the present rate. It will continue to increase and will probably be 100% more within 20 years.

Architecture cannot be isolated from the productive society; it is a major contributor and as such will have to initiate innovations of its own in order to meet the growing economic demand, similar to the innovations required of all technical, business and social phases of our organization. The glass and metal panel wall became a practical reality, instead of an architectural dream, only after all economic values were considered. The thin wall was of no interest until it was recognized that greater floor areas on highpriced land would be available for rental through its use. The trend toward decreasing construction time made possible by exterior panel walls has fulfilled a need for quicker investment turnover; this, in turn, will continue the trend toward a stabilized year-round working force. In all this, technical changes will perhaps show the greatest visible gains, principally in the assembly, fabrication and erection of materials. But concurrent with the technical innovation, it will be necessary that administrative methods by which architecture is conceived and consumed by the public will require even greater attention. To accommodate these needs, architecture may become increasingly less individualistic in expression. A single building may have many jobs and functions and may become less specific in application to a given problem, thus enabling itself to stay young longer.

Remember YOU CAN COUNT ON GIVE TOTAL

for AIR CONDITIONING EQUIPMENT of every description The Architect or Engineer specifying Air Conditioning Equipment is looking for efficient trouble-free performance —quietness and long life— AND THAT'S WHAT YOU GET when you specify CURTIS—Investigate CURTIS —you will find CURTIS Equipment enjoys an enviable reputation with people who know.

See the CURTIS catalog in Sweets Architectural File, or write for free Architects' Manual.



Architecture's reward

Excerpts from the book, The Lowells and Their Seven Worlds, by Ferris Greenslet (Houghton Mifflin Co.)

In the pursuit of fame, that last infirmity of noble minds, the food that dead men eat, architects suffer both advantages and handicaps. The products of their creative genius and business management are not hung away from the crowd, to be sought out in quiet galleries, or squeezed into corners of dusty shelves in libraries. For better or for worse, they stand out in the open air in prominent positions for all men to admire or dislike. Litera scripta manet, but it does not hit daily and nightly thousands will-nilly in the eye. The architect does not advertise. There is no Building of the Month Club to boom his work. Except for his fellow architects and a few enlightened amateurs of their art, how many admirers of a fine building can recall, even if they have ever heard, the name of its creator? When a man rebuilds a city like Sir Christopher Wren, or in brick and mortar expresses the spirit and culture of an age like Bulfinch, his name lives as long as his work stands. But in 99 out of 100 cases the architect must solace himself with the knowledge that, though his name may fade from memory, his work if sound and good will flatter the eye and color the subconscious minds of succeeding generations.

Architectural vision

Excerpts from an address by Architect Walter H. Kilham Jr., before the 1955 convention of the Wisconsin Architects Assn.

In planning Radio City Raymond Hood thought something should be done to relieve the piled-up masses of office space. To him, the man in the street ought to get something back. He suggested that with all these stories, walls baking in the sun, stiffing the streets below, maybe the sound of a little running water, the splash of a fountain might be enough to take the curse off the asphalt jungle.

Dedicated, practical, prosaic men ran the enterprise and as usual they came down on him like a ton of bricks. After about 20 minutes of sputtering, they ended up saying "a fountain—running water? Why—do you know what this means; this means recirculating 30,000 gallons of water a day."

"And how much," said Raymond Hood in a tired voice, "does it cost to recirculate 30,000 gallons of water a day?" They scratched and figured and finally came up with the answer—\$8.30 a day. The fountain went in.

A building is an experience

Excerpts from an editorial by Emily Polk in the Indian magazine Marg

A building is the experience of a concept of space. It is the idea that covers the ground and forms the plan; the actual experiencing of the idea is the building. The breadth of the concept depends on the architect's recognition of the range of experiences to be achieved; experiences of physical circumstance, of suitability, of contemporaneity and cultural continuity, experiences of space, form and color, experiences of dignity, strength, and grace. By exploring in full and expressing all of the experiences inherent in the idea, an architect can cause a mountain to *continued on p. 95*



BEAUTY . . . How much design freedom does sound conditioning permit?

For years the ceiling was the forgotten factor in interior styling. Today's growing use of acoustical materials, however, has put new emphasis on their decorative possibilities. The wide variety of noise-absorbing materials now available permits the use of sound conditioning in any interior where attractive appearance is required.

To offer a wide decorative range when specifying sound conditioning, Armstrong acoustical materials are made with a white paint finish that can be easily repainted to match any desired color plan. For further decorative freedom, these materials come in two basic designs, textured and perforated.

Textured tiles, such as Armstrong Travertone and Corkoustic, have irregularly fissured surfaces which give them the smart appearance of travertine marble. The newest Armstrong textured material, Crestone, is striated to create strong directional lines of high light and shadow. Textured materials blend equally well with both traditional and contemporary styled interiors.

Perforated materials in the Armstrong line with the conventional straight row design of holes include Cushiontone, Arrestone, and Perforated Asbestos Board. For a more modern, monolithic ceiling effect, Cushiontone, Minatone, and Arrestone are made in the new Full Random pattern of vari-sized, non-directional perforations.

You can get complete information on the entire line of Armstrong sound-conditioning products from your Armstrong Acoustical Contractor. **For the free booklet**, "Armstrong Acoustical Materials," write Armstrong Cork Company, 4203 Rooney Street, Lancaster, Pennsylvania.



A bright, cheerful schoolroom helps put children at ease, simplifies classroom discipline for the teacher. Here, a noise-muffling ceiling of Armstrong Minatone in the Full Random pattern helps create the desired non-institutional atmosphere. Wisdom Lane Elementary School, Levittown, N. Y.



A colorful design has been stenciled on the sound-absorbing Armstrong Cushiontone ceiling to make an important contribution to this church's interior beauty. Cushiontone can be washed or repainted whenever necessary without losing its acoustical efficiency. St. John Vianney Church, San Jose, Calif.



Distinctive beauty characterizes this modern board room. The handsomely fissured, white painted ceiling of Armstrong Traver-tone helps carry out the décor besides promoting the comfort-ably quiet atmosphere needed for business concentration. *Columbian Carbon Company, New York City, N. Y.*



Modern lighting blends well with this bus terminal's noise-quieting Arrestone ceiling. Armstrong Arrestone comes with a baked-on, white enamel finish, but it can be specially prepainted on order. It's also available with a bare mill finish.

Port Authority Bus Terminal, New York City, N. Y.



The decorative ceiling of Armstrong Crestone contrib-utes much to the décor of this office. Crestone's striated surface pattern offers a variety of attractive design possi-bilities. The surface striations help diffuse light evenly.



ACOUSTICAL MATERIALS

Cushiontone[®] • Travertone^{*} • Arrestone[®] • Minatone[®] Corkoustic® • Crestone* • Perforated Asbestos Board *TRADE-MARK

new freedom from distortion... looking in, looking out, looking at

For a clear and undistorted view inside or out, you need Parallel-O-Plate^{*} Glass. This staircase with its railing sharp and unwavering is a good example.

To assure maximum clarity in storefronts, display cases, windows, mirrors for *looking in, looking out* or *looking at* — be sure you get Parallel-O-Plate. It's the only *twin-ground* plate glass made in America, yet costs no more than ordinary plate glass in most localities.

Read in the column at the right why it is better glass for you. **

> El Cortez Hotel, San Diego. Architect: George R. Wheeler, San Diego

GLASS

PARALLEL.O.PLATE GLASS

Finest plate glass made in America ... only by LIBBEY. OWENS. FORD a Great Name in Glass



COMPARE the reflections of the upsidedown signs in the mirror of conventional plate glass (left) and the mirror of Parallel-O-Plate* (right).

Parallel-O-Plate Glass is more distortion-free than ordinary plate glass because its surfaces are more parallel.

This great degree of parallelism is the result of a special kind of grinding called *twin-grinding*.

The ordinary method is to cut off a section of glass, grind one side, turn it over and grind the other side.

In the *twin-grinding* process, the glass moves from the furnace through the new annealing lehr and into the *twingrinding* process where both sides are ground simultaneously in a continuous ribbon 975 feet long. It's precision made all the way.

L.O.F GLASS FOR BETTER LIVING

Out of the research and the laboratories at Libbey \cdot Owens \cdot Ford have come many of the world's greatest advancements in the use of glass. Tinted solar-heatreducing glass for air-conditioned buildings. *Thermopane** insulating glass with the exclusive metal-to-glass seal. The first successful panoramic windshields were produced by $L \cdot O \cdot F$, in co-operation with leading automobile designers. These are just a few of the reasons Libbey \cdot Owens \cdot Ford is called "a great name in glass."

For further information, call your Libbey Owens Ford Distributor or Dealer (listed under "Glass" in telephone books). Or write Dept. 8836, Libbey Owens Ford Glass Company, 608 Madison Avenue, Toledo 3, Ohio. **



rejoice, a "desert to blossom as the rose, ..." a garden to spring from embers.

EXCERPTS cont'd.

In the heroic pages of Asian music is the legend of a musician whose cosmic singing caused flowers to grow out of the ground around him as he sang. In an even more tangible unwitherable sense the architect sings of stone and space, of people living, of steel and tile, concrete, wind and color, of sun and light, of the present, the past, and of posterity.

A people can be understood by what it allows its architects to do. A people's understanding of itself is reflected through its builders. Its buildings and communities are monuments to its enlightenment or to its infirmity. Such monuments cannot be discarded, hidden or disowned, but stand for the world to see.

When a building is produced that is a work of art—and no building should be built that is not—it begins a wave of invisible repercussions. It begins immediately to heal the wounds inflicted on the sensibilities of the people by inept and callous builders; it begins to act as a catalyst to those searching for directions for mental fulfillment by presenting a focus of those directions; it shows to the people of rising generations their own inherent virtues and stands as a symbol for recognizing them in themselves, helping them to accept or reject the products of their own times.

When a building is produced that is not a work of art, but a work of vulgarityand any building that is produced by opportunism, covetousness, egotism, pomp, indifference, coyness, emasculation, or ignorance, or any combination of these is a vulgar building-it begins immediately to send out its insiduous influence to vulgarize not only the people of its day but those of endless generations to come. By the act of building it, a people immortalizes its current moral tone, since builders are sculptors who construct the image of their times. By the fact of building it, a people sets up an adulterated standard, a standard of counterfeit materials and motives which further undermines contemporary social values, and gradually achieves the false honor that mere time may bestow. Then it is studied with veneration and respectfully copied. Like a destructive growth these structures root wherever the soil has become shallow and unfertile. How can this be curbed? By building strong nourishing buildings whose roots go deep into the earth of a people, whose roots seek out the rich chemistry of tradition, and the deep waters of the moving present; buildings that bloom, and feed a people hungry to grow.

continued on p. 98

PAGING OR PUBLIC ADDRESS

ALTEC LANSING

is your best choice!

::::::

Whether you are planning a public address system for a single office or the largest auditorium, you will find Altec Lansing the best for quality and operating economy. Altec produces more than 100 sound products—microphones, amplifiers, controls, speakers and enclosures eliminating the need for "all-purpose" compromise equipment. There is a trained Altec Engineering Sound Contractor near you, ready to provide technical assistance in the design of a sound system tailored to your requirements.

Shown below are the Altec 401A speaker for low level paging and music systems and the A-1X which has the ability to reach thousands of people in the largest theatre or arena. Between these two extremes are speakers that exactly fit every possible sound requirement. For more information on Altec Lansing sound products see Sweet's Architect's File (32a/AL) or Industrial Construction File (12j/AL) or write Dept. 3-F for the Altec Engineered Sound Products catalog.



A SOUND REPUTATION SECOND TO NONE 9356 Santa Monica Blvd., Beverly Hills, Calif. 161 Sixth Avenue, New York 13, New York



In Pennsylvania—Monroeville Junior High School. Architect—Walter E. Schardt, Pittsburgh: Consulting Engineer—Leland W. Cook, Pittsburgh; Contractor—Guy Miller Company, Pittock, Pa.

New Buildings Go Up Faster At Lower Cost With <u>Steeltex</u>®

Across The Nation, Designers And Contractors Use Pittsburgh Steeltex Because It Saves Money

In Daly City, Calif. . . . down in Austin, Tex. . . . at Monroeville, Pa. . . . in Hagerstown, Md., Pittsburgh Steeltex is:

• Helping build better, stronger buildings of all kinds.

• Cutting construction costs — "five per cent," said one builder; "five cents per square foot," said another.

• Shortening building time—"we saved six weeks," said the builder in California.

Steeltex, the sturdy steel wire mesh reinforcing which carries its waterproofed form right on its back, was the choice of the men who designed and constructed the representative buildings on these pages. They agree Steeltex does a better job at lower cost.



In California—Westlake Shopping Center's J. C. Penney Company Department Store in Daly City. Architect & Engineers—Lloyd Gartner, A.I.A. and Associates of San Francisco; Contractor and Owner—Henry Doelger Builder, Inc., of Daly City.



In Texas-American National Bank of Austin, Tex. Architect-Kuehne, Brooks and Barr, of Austin; Contractor-J. M. Odom of Austin.



In Maryland—Office Building for Aircraft Division of Fairchild Engine and Airplane Corp. in Hagerstown, Md. Architect—Fordyce & Hamby, New York City; Consulting Engineer—Strobel & Salzman, New York City; Contractor—Calabro Construction Co., Inc., Linden, N. J.



DISTRICT SALES OFFICES: Atlanta • Chicago • Cleveland • Columbus • Dallas Dayton • Detroit • Houston • Los Angeles • New York • Philadelphia • Pittsburgh San Francisco • Tulsa • Warren, Ohio.



J. C. Penney Company Store in Daly City, Calif., (lower left) is a totally fireproof department store with 93,350 square feet in its basement, first floor and second floor. The architect said:

"The facility and speed with which Steeltex Floor Lath was installed and the whole operation was completed resulted in a saving of many weeks of valuable construction time."

Henry Doelger Builder, Inc., builder and owner of the Westlake Shopping Center which includes the J. C. Penney store, credits Steeltex with "about six weeks saving in time and about five per cent in cost."

Monroeville Junior High School, near Pittsburgh (upper left) used approximately 110,000 square feet on floor slabs with the contractor, Guy Miller Company, declaring:

"At a conservative estimate, $1\frac{1}{2}$ cents per square foot was saved in time and material as a result of using Steeltex instead of other methods."

The American National Bank Of Austin, Tex., (upper right) used about 7,000 square feet of Steeltex. Contractor J. M. Odom said: "On steel joist spans under 25 feet with a spacing of not over 32 inches we save approximately five cents per square foot over most other types of deck."

Fairchild Aircraft Division, Office Building, Fairchild Engine and Airplane Corp., at Hagerstown, Md., (lower right) Steeltex was used for 46,000 square feet of office space. The architect estimated "a Steeltex-supported slab over bar joists, spaced 24 inches on center, to be 40 to 45 per cent less expensive than a conventional four-inch reinforced slab using wooden forms, and over steel beams, six to eight feet on center."

Peter A. Strobel of the consulting engineering firm of Strobel and Salzman said the savings due to the use of Steeltex on the Fairchild building "are quite substantial and, according to our estimate, vary between \$.40 to \$.70 per square foot."

The Steeltex story is the same in the East, West, North or South. Designers and builders favor Steeltex because it makes better roofs and floors and speeds construction.

You, too, can benefit from Steeltex's advantages. For more details on the Steeltex story, write for the new booklet "Steeltex, Backbone of Concrete, Plaster and Mortar." Or call the nearest district sales office to learn how you can do a better job in less time when you use Steeltex.



BUSH 'BC' Blower-Condensers

Bush 'BC' Blower Condensers permit air conditioning or refrigeration systems to operate *without* condensing water . . . provide the answer to excessive water costs, limited supply, excessive impurities or disposal problems.

Available in capacities up to 20 Tons, new Bush 'BC' Blower Condensers feature *low noise level* . . . quiet operation.

Patented Inner-Fin coil construction, a Bush exclusive, makes these the most compact units on the market. Units are easy to install, have rugged all-steel cases with durable rust-resistant finish . . . are available arranged with either blower fan or propeller fan.

The BUSH line of water-savers, most complete in the industry, also includes:



'CDT' COPPER DECK COOLING TOWERS with all copper decking which cannot rust or rot. Capacities from 3 to 75 tons.

'IEC' INNER-FIN EVAPORATIVE CONDENSERS featuring patented inner-fin coils. Both units available with blower or propeller fan. Capacities from 3 to 90 tons.

'PFC' PROPELLER FAN CONDENSERS — Two basic models, 2.2 Tons and 3.3 Tons, can be combined by mounting in banks to obtain any desired tonnage.

'PS' PRESSURE STABILIZERS which automatically maintain satisfactory head pressure when air cooled condensers operate outside in low ambient temperatures.



Write direct for complete information or contact your experienced BUSH representative for valuable engineering and application assistance.



RIVERSIDE · CALIFORNIA



Classroom Lighting

Excerpts from an article in Texas Engineering Experiment Station News by Ben H. Evans, research assistant

Research studies at the Experiment Station indicate that lighting conditions in an empty classroom are different from those of a classroom with students.

The detailed results have bearing on present conceptions of necessary illumination which suggest a minimum intensity on the ordinary school task of 25 to 30 foot-candles. This is said to be the minimum illumination required for adequate lighting conditions. However, architects frequently interpret this minimum to mean that 25 to 30 foot-candles is the lowest permissible intensity for schoolrooms without students. The Station's research findings indicate that this minimum is too low.

Student occupancy of a classroom does not affect over-all intensities appreciably. This holds true when the students do not immediately obstruct the surface of the particular task and the desks are not unnecessarily close together. Students standing or seated between the task and the light source can reduce intensities as much as 40%. If the student is very close to the task, such as during ordinary writing, intensities may be reduced as much as 60%. Under normal conditions in a unilaterally lighted room where the students are seated so as to have the light coming over their left shoulder, the writing student reduces the illumination on the task an average of about 25%, considering both right- and left-handed students.

However, this depends somewhat upon other conditions, such as the type of clothing worn by the student and the reflectivity of wall and ceiling surfaces. Students wearing light colored clothing can actually increase intensities on the task.

In general, it may be said that in classrooms with light sources in several directions (multilaterally lighted classrooms) the average intensity reduction on the task due to the working student is only about 17%.

It would seem that if the minimum condition of 25 to 30 foot-candles is to be maintained on the student task the intensity on the desk in a vacant room must be in the neighborhood of 31-38 footcandles. This allows for an approximate 25% reduction on the task due to students working at their tasks, with the minimum foot-candle task illumination still maintained.





Note delicately stippled texture of Mississippi Syenite pattern glazed in Hauserman steel partitions.

Light Diffusing Mississippi Patterns Featured in Modern Movable Interior Partitions

Modern, easy-to-clean, easy-to-maintain partitions glazed with light diffusing glass solve almost any partition problem... are available with a wide variety of beautiful patterns. Glass partitions never create that "cut up" look. Offices are bright with softened, diffused, "borrowed light"...have a cheerful, open feeling. Yet privacy is protected.

Versatile, beautiful Mississippi partition glass enhances any interior . . . makes any building modern. Glass always looks new and movable partitions, that make it simple to subdivide large areas, are easily rearranged for future requirements.

> When you build or remodel, use the modern material that divides a room without undue gloom. Use movable partitions with translucent glass. Specify glass by Mississippi...available in a wide variety of patterns wherever quality glass is sold.

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS



Broadlite pattern creates pleasir straightline effect in modern interio



Write today for free literature. Address Dept. 6.

88 ANGELICA ST. NEW YORK . CHICAGO

ass SAINT LOUIS 7, MO. FULLERTON, CALIFORNIA

architectural FORUM / March 1956

USABLE

SPACE

ONE OF A SERIES how prominent architects use TECTUM

a religious center of dramatic contemporary design by Leavitt

TEAVITT ASSOCIATES achieved a unique design with the effective utilization of exposed structural materials in planning Gomley Chesed Synagogue, Portsmouth, Virginia. The hold structure places emphasis on textures, natural coloring, and functional simplicity. Multi-color panes cast a brilliant glow on the interior of the main temple, highlighting a ceiling which defies convention, leaves welded steel joists exposed.

Tectum roof tile laid on bulb-tees over the joists serves as both roof deck and finished ceiling. In other sections of the building, wood framing is used in conjunction with Tectum plank. In addition to the main temple, the building includes a chapel, library, social and recreational rooms, 16 classrooms and offices.

Tectum was selected for its 3-in-1 feature: a noncombustible roof deck which furnishes both thermal insulation and sound control. The natural off-white color of Tectum required no painting, and its light weight permitted lighter framing.

Gomley Chesed Synagogue is another example of Tectum's versatility-another reason why architects everywhere are selecting Tectum for all types of buildings. For your next building project, consult your nearest Tectum distributor or Sweet's files.





why lay a roof deck...



cover it with insulation...





Above, the main temple of Gomley Chesed Synagogue at Portsmouth, Virginia, illustrates the dramatic effect achieved through a combination of exposed steel joists and Tectum. Architect: Leavitt Associates; General Contractor: A & P Construction Company; Tectum erector: Roof Engineering Corp., all of Norfolk, Virginia. This photograph was taken before the sanctuary was completed.



Fast, easy installation of Tectum roof deck saves time and money. Furnished in 13 standard sizes and 4 thicknesses, Tectum may be fastened with



nails, clips or grout to any type of framing system. Builtup roofing is applied immediately on the Tectum without preliminary dressing or curing of the roof deck.



This actual size photograph shows the unusually arresting texture of Tectum. Available also in sidewall insulation and acoustical ceiling panels.

and add acoustical material...

when you get all 3 with the



For Plants • Commercial Buildings • Institutions • Homes Tectum Division, Peoples Research and Manufacturing Co. General offices: 304 South 6th St., Newark, Ohio Distributors in principal cities.



Installation of Ingersoll Aluminum Roof Deck at Elmhurst Car Wash, Elmhurst, III.

It took a new kind of roof deck to solve a humidity problem like this...

The Elmhurst Car Wash in Elmhurst, Ill., is geared to launder up to 1,000 autos daily. With about 40 gallons of water spray used on each car, it was apparent that inside humidity would consistently approach saturation.

This posed a difficult problem in roof deck. Not only were strength and beauty required, but also the ability to withstand punishing moisture conditions.

No painting needed

Given these requirements, the system selected was new Ingersoll Aluminum Roof Deck. And no wonder. Not only is it virtually impervious to moisture, it never requires maintenance painting or spraying.

A new engineering concept, Ingersoll Roof Deck is a system of full-floating panels that clip to galvanized steel subpurlins. Structural advantages of this unique design are increased load-bearing capacity and rapid, positive erection.

Equally dramatic are its functional benefits. Striking in appearance, Ingersoll Aluminum Roof Deck also adds distinct insulating value, definitely enhances illu-



mination. Most important of all, it resists moisture . . . without need of painting.

Also in Porcelain enamel

Ingersoll Roof Deck is also available with panels of porcelain-enameled steel. Over and above the benefits of aluminum, porcelain provides full resistance to corrosion plus the added beauty of color.

Whether in aluminum or porcelain, Ingersoll Roof Deck may well be the solution to many of your problems. Why not send today for full details. No obligation.



PUBLISHED BY TIME Inc. EDITOR-IN-CHIEF: Henry R. Luce PRESIDENT: Roy E. Larsen

architectural FORUM

the magazine of building

EDITOR: Douglas Haskell, AIA

MANAGING EDITOR: Joseph C. Hazen Jr.

ART DIRECTOR: Paul Grotz

ASSOCIATE EDITORS: Marilyn Grayboff, Jane Jacobs, Abner A. Layne, Mary Jane Lightbown, Walter McQuade, George T. Orick, Richard Saunders, Ogden Tanner, Stephen G. Thompson

ASSISTANTS: Anne Le Crenier, Dorothy Stone O'Shea, Henry Martin Ottmann, Ann Wilson

ART STAFF: Ray Komai, associate director; Martha Blake, Charlotte Winter

CONSULTANTS: John Hancock Callender, AIA, Miles L. Colean, FAIA, Robert L. Davison, Harold R. Sleeper, FAIA

GENERAL MANAGER: Charles B. Bear

ADVERTISING DIRECTOR: Herbert C. Bippart

ARCHITECTURAL FORUM is published monthly by TIME Inc., Time & Life building, 9 Rockefeller Plaza, New York 20, N.Y.

SUBSCRIPTION DATA: Sold to architects, engineers and other individuals or firms engaged in building —design, construction, finance, realty; material distribution, production or manufacture; government agencies and supervisory employees; commercial and industrial organizations with a building program and their executives; teachers and students of architecture and engineering; libraries, professional clubs, society and trade associations connected with the building industry; advertisers and publishers; US, possessions and Canada, \$5.50: elsewhere, \$10.00. Single copies, if available, \$1.

SUBSCRIPTION CORRESPONDENCE should be addressed to ARCHITECTURAL FORUM, 540 N. Michigan Ave., Chicago 11, Ill. When ordering change of address, please name the magazine and furnish an address label from a recent wrapper envelope, or state exactly how the magazine is addressed. Both the old and the new address are required. Allow four weeks for the change.

EDITORIAL CORRESPONDENCE should be addressed to ARCHITECTURAL FORUM, 9 Rockefeller Plaza, New York 20, N.Y. FORUM will not be responsible for unsolicited manuscripts or illustrations submitted, and it will not return such material unless accompanied by postage.

ADVERTISING CORRESPONDENCE should be addressed to the advertising director, ARCHITECTURAL FORUM, 9 Rockefeller Plaza, New York 20, N.Y.

TIME INC. also publishes TIME, LIFE, FORTUNE, SPORTS ILLUSTRATED and HOUSE & HOME. Chairman, Maurice T. Moore; President, Roy E. Larsen; Executive Vice President for Publishing, Howard Black; Executive Vice President and Treasurer, Charles L. Stilliman; Vice President and Secretary, D. W. Brumbaugh; Vice Presidents, Bernard Barnes, Allen Grover, Andrew Heiskell, C. D. Jackson, J. Edward King, James A. Linen, Ralph Delahaye Paine Jr., P. I. Prentice; Comptroler and Assistant Secretary, Arnold W. Carlson.





When you specify products for the buildings you design, it pays to specify those you know will upholdeven enhance-your professional standing.

Ro-Way overhead type doors, for example.

Ro-Way doors are replete with features preferred by architects to insure owner satisfaction. Features like Taper-Tite track and Seal-A-Matic hinges that guarantee weather-tight closure against side and head jambs. And ball-bearing rollers with Double-Thick treads for smooth, easy performance year after year. Write in "Ro-Way" and you write in mortise and tenon joints - waterproof glued and steel doweled. Precision-squared muntins, rails and stiles. Rabbeted sections for weather-tight joints. Drum and hand sanded millwork for finest finish. And special heavygauge hardware (Ro-Way's own) that's both Parkerized and painted after fabrication to prevent rust inside and out.

Solidly made from selected west coast lumber, these are really beautiful doors. Include Ro-Ways in all your commercial and industrial door specifications ... confident they'll live up to your reputation.

there's a Ro. Way for every Doorway!



OVERHEAD T

DOORS

FREE ARCHITECT'S MANUAL. Complete details, specifications, drawings, etc. on Ro-Way's entire line. Especially helpful in selecting just the right door. Ask for Manual 55. No obligation, of course.





MANUFACTURING COMPANY 967 HOLTON ST., GALESBURG, ILLINOIS

Nationwide sales and installation service. See your classified telephone directory for nearest Ro-Way Distributor.

Specify STEELCASE

whenever you want to make a good office . . . a little better



Two big office space problems . . . placing more workers within a given floor space and giving each worker more working top space . . . are easily and efficiently solved with all new Steelcase Convertibles.
Convertibles are standard, individual, interchangeable units which require no "special" installation. Additional units can be added, existing units regrouped at any time to meet changing job requirements. Look to Steelcase for the finest in office furniture, especially when *more than price* is a factor and whenever quality, efficiency, convenience and styling are of major importance.

1955 Steelcase installations include major offices for Caterpillar Tractor Co. • Ford Motor Company • General Mills Jewel Tea Company • Lumbermens Mutual Casualty Company



your secretary ...

To send for full color 28-page brochure on versatile, new Steelcase Convertibles, Just write Department K,

BTEELCASE INC GRAND RAPIDS, MICHIGAN Authorized dealers in principal cities throughout the country In Canada • CANADIAN STEELCASE COMPANY, LTD. • Toronto



About this month's FORUM

Competitions are a unique device the building industry uses for getting fresh young ideas from architects, including the coming generation. The latest has been sponsored by the Ferro Corp. of Cleveland, which makes "frits" used in all sorts of porcelain enameling. Schools and youth centers are the subject, also porcelain enamel details to go with them. Starting on page 118 and running for 22 pages, these designs should interest civic leaders and educators, architects and technicians.

Criticism is, by contrast, a source of ideas that has been too much neglected in architecture and building. Concerts, TV shows, plays, books, circuses and political speeches are among performances the public reads about often, from discriminating commentators. Not so buildings. Discussion gets printed about how to do criticism, and considerable criticism gets printed on general trends, or on remote buildings, or public buildings. But very little is said in a direct way about buildings here and now. If we may twist the words of the spiritual, "everbody talks 'bout criticism ain't goin' there."

FORUM believes that honest direct criticism will be welcomed and has been trying it.

This month, for example, three leading critics abroad have been invited to talk about two rounded structures at Massachusetts Institute of Technology-an auditorium and a chapel by Eero Saarinen & Associates-that US architects are avidly discussing in private. The questions raised are important to future building.

Direct architectural criticism

does get results, sometimes quickly. For example, FORUM's January issue gave voice to two critical opinions widely held in Washington, D.C.: that the proposed air museum of the Smithsonian Institution could best be moved off the Great Mall to a roomier location, and that the east front of the Capitol might best be left alone. The first of these events now seems assured, and the biggest winner will be Dr. Carmichael of the Smithsonian, for he will now have an enhanced opportunity. The second subject, that of the Capitol, has been picked up widely and many have already joined the campaign.

Daily experience is meanwhile the great reliance it has always been; and this month's reports range from the latest thinking on foundations to the open kitchen, from new offices in town and country to a bright new school planned as an addition.

History, by the way, strides once in a while into sudden sharp focus and as alive as tomorrow. Not the least entertaining-and important-yarn this month is how a Barcelona "mad man," who built fabulously tortuous churches and apartments up to his death in 1925, hit upon the structural geometry that will shape the next age in concrete.

Engineering is the topic of this month's installment of the series of "Architecture in America."

Next month FORUM will report an important Round Table on city rebuilding policies.



ARCHITECTURE IN AMERICA-PART VI

Another in a series of articles exploring where architecture stands in America and what is happening to change its future

THE ENGINEER

He has stepped up the industry's constructive powers and changed its forms, but his energies need the guidance of architects if real greatness is to result

BY JAMES MARSTON FITCH

American engineers, says a recent European visitor to our atomic and intercontinental rocket testing site in the West, are no longer content with merely "conquering Nature." Instead, he says, they are intent "on occupying the very Throne of God." We may flinch at his verdict but this reaction to our earth satellites, space medicine and fission-fusion bombs grows more familiar all the time. As a matter of fact, you need go no farther west than the bulldozing operations for the nearest supermarket or subdivision to get much the same impression. Trees are being pushed over, topsoil buried, contours altered with the calm and bloodless ferocity of a glacier. The American engineer has so enlarged the scope of man's action that he now becomes a major force of Nature. He has raised the power of man literally to geologic proportions. What he does with that power, in what directions he employs it and to what ends, thus becomes a pivotal question not only for Americans but for the whole human race.

The conquest of Nature is a very old ambition, especially in Western history. In one sense or another, it furnished the motive power of the Renaissance, with its noble concept that man did not have to exist as the blind victim of natural forces. He could, by understanding them, master them and thus remake the world to his liking. The paintings of the Renaissance, even more than its buildings and cities, reveal the kind of landscape aspired to: a system of organized vistas in which


It was the engineer, with his bridges, towers and stations, who rescued architecture from the depths to which it had

sunk by the 1870's. St. Pancras Station in London was built in 1866. It is 210' wide, 90' high. W. H. Barlow, engineer.

the colors and patterns of handsome rooms are extended right out into the garden. In short, a totally *civilized* environment. And this was the kind of conquest of nature which Leon Battista Alberti had in mind when he wrote, in 1450, that our cities should be

"healthy, wide, pleasant, various, fruitful, secure and abounding in plenty of fruits and great quantities of water."

The Nature which Alberti hoped to conquer was, in a certain sense, quite different from our own. Europe, emerging from the wars and plagues of the Middle Ages, presented wild and savage frontiers. It was filled with natural and supernatural forces hostile to man: wolves and witches, malaria and hobgoblins, bandits and demons. Its conquest, therefore, was the conquest of darkness itself. Versailles, grandest of Renaissance landscapes, is a symbol of this victory: There is no raw Nature here—the barbered vistas run right to the horizon.

Our own concept of Nature is quite different. What is left of the wilderness is no longer dark. The planes have already mapped it. Quinine, penicillin and snake serum will cope with any dangers we meet there. We can thus, within limits, think of the natural world as beautiful. We preserve the Olympic Rain Forest and the Grand Tetons, not to landscape them but keep them exactly as they were. The other side of our new attitude toward Nature is, of course, our X-ray vision of its resources. In the light of modern chemistry, every square inch, all the way down, is potentially rich.

The main instrument of this profound shift has been the prime mover and its pilot, the engineer. Every field of human activity has felt the impact of his appearance on the stage of history: and none so more than architecture. It is hard to believe that there ever was a time in America when a critic could complain, as did Montgomery Schuyler in 1892, of a "harsh divorce" between architecture and engineering. Things are far otherwise today: Omitting residential construction (of which the architect designs a relatively small proportion), he may design as much as 90% of our schools, hospitals and commercial buildings. But the engineer has major control of indutrial installations and the whole field of civil engineering which, in LeNotre's or Latrobe's day, would have been the prerogative of the architect. And until architectural principles rule again in this field, we can scarcely expect the landscape of America to be an esthetic triumph.

Qualitatively, too, American architecture is dominated by concepts from the fields of engineering and science. Standards of efficiency and economy, first accepted in plan and construction, are ultimately expressed on the esthetic plane. Thus our concepts of beauty have, in the past 50 years, been radically revised to conform to the realities of industrial society.

For this, up to date, we can be grateful. There is no



Alongside the daring innovations of men like Italy's Nervi, our own structural de-

sign seems to have leveled off to a sort of polite mediocrity.

need here to recapitulate the condition to which American architecture had slipped by 1860; nor the debt owed by the architect to the engineer for his rescue. For it was his bridges and towers, his railroad stations and exhibition halls, during the nineteenth century, which first demonstrated the great new potentials of structure. And we must admit that the architect was slow to seize the new tools offered him. Forty years after the Crystal Palace, Schuyler could still lament

"the artistic irrelevancy of the modern architect. In general, engineering is at least progressive, while architecture is at most stationary. And, indeed, it may be questioned whether, without thought of art and, as it were, in spite of himself, the engineer has not produced the most impressive as certainly he has produced the most characteristic monuments of our times."

A well-bred mediocrity

He would have no such cause for complaint today. For there has seldom been a period in history in which problems of pure structure have so prepossesed the architect. Structural logic, structural clarity, structural honesty are almost the controlling values of design. And this has, beyond any doubt, purged architecture of its irrelevancy. But it has also pronounced what the physician would call "unfortunate side effects." Obsession with structural "purity," at the expense of other and equally important problems of satisfactory function, produces less effective architecture. And, ironically, this interest in structure has led not to a rich and wide but to a very narrow range of structural forms. The cubicular skeleton of the skyscraper dominates all buildings, even those which are not multistory and need not be cubicular. This form is cultivated at the expense of all others. Structural inventiveness has leveled off, the captive of the handbook and the standard prefabricated elements. And this gives to our architecture today an increasing monotony, in which polish is substituted for imaginative variety.

Against such a background of mere proficiency, the forms of such daring innovators as Italy's Nervi, Mexico's Candela or Brazil's Niemeyer stand out in bold relief. When we ask why we see so little of this sort of thing in America—after all, we have our Severuds, Weidlingers and Salvadoris—we are told we can't afford them! Everyone knows that formwork for a parabolic shell runs higher than that for a flat slab; and that Nervi and Candela work with a ratio of labor-to-materials cost that is the reverse of ours. But it was the engineers themselves who taught us that everything is too costly until it is mass-produced; or that nothing is too expensive once it gets into serial production.

Here we are face to face with that American paradox, that vice-and-virtue, rationalization. We find, periodically, that industrialization yields not immense variety but limited choice. We protest. We are told that the new thing is too expensive, the change-over prohibitive. And yet, the next day, the log jam breaks: sound comes to the silent movies, eight cylinders to the cheapest cars, TV to radio and color to TV. Nothing good—least of all, good design—is too expensive for America for very long.

Much that is humdrum or inadequate in structural design may be due to simple laziness on the part of architect and engineer. Much more of it is directly related to the existing situation in professional fees. It takes time, and hence money, to calculate complex structure, especially in concrete: somebody has to foot the bill. Since the architect ordinarily has to pay the consulting engineer out of his already inadequate fee, there is a natural inclination to settle for routinized procedures. The solution here is obviously larger professional fees—a larger portion of the project cost to be allotted to the design process. It is ironic, to put it mildly, that architects today often find themselves being paid smaller fees than Latrobe and Mills were demanding in 1805!

Nor does it help much to cite the enormously greater percentage spent by industry on research and design for industrial products. When these costs can be prorated over millions of identical units, they become relatively unimportant. There is, unfortunately, scarcely any parallel in the production of buildings: only the operative housebuilder and the prefabricator operate in anything like a comparable fashion. A few of them have found it worthwhile to engage distinguished architects (notably, Joseph Eichler using Anshen and Allen; US Steel with Henry Hill; National Homes with Charles Goodman) but this represents a small minority of the total.

The problem of distinguished structural design is, however, infinitely more complex than mere low fees or unimaginative engineers. For the engineer has his side of the story, too. One of the most distinguished, Fred Severud, points out that

"there are many factors in the selection and development of a structural system. Owner, tenant, banker, even lately, the advertising agency, all have a finger in the pie. To meet all their often conflicting requirements is no simple task."

Too often, Severud feels, the engineer is merely called in to "figure out" a cut-and-dried scheme. This may, or may not, be the best possible structural solution but, "either way, it's not much of a challenge to a creative engineer. If he suggests an alternate, at this late stage, the architect is apt to take umbrage." Generally speaking, he thinks, the most felicitous results are achieved when the engineer enters the design process at the conceptual stage. "That is the only period, actually, at which all possible alternatives can be freely weighed and the best possible solution adopted."

But, however complex the problem or dismaying the solution, the ultimate responsibility is the architect's. Unless he knows what he wants in structure and then demands it from the engineer, he will get the lowest common denominator. And under current conditions of prosperity, this is apt to be pretty low, relative to what, today, is possible.

A creative power

The beneficent powers of the mechanical engineer have been no less essential to the development of contemporary architecture than those of his structural colleague. It is obvious to the point of triteness to say that we would have had no skyscraper without his elevators, heating plants and sanitation systems. What is much more important is that, without him, we would not have had the *concepts* which distinguish contemporary architecture and city planning from all the epochs of the past. Wittingly or unwittingly, he has made possible our current standards of urban amenity and comfort. LeCorbusier's tower-studded parks, Wright's beguiling country houses: neither is conceivable without the hidden services of the engineering specialties. Remember the cumbersome and ugly paraphernalia of nineteenthcentury domestic life: privies, ice houses, wells and cowbarns; slop jars, garbage cans, ash bins and coal scuttles; unsafe candles and inefficient lamps; red hot stoves and ice cold rooms. The new architecture could not rise until the engineer had banished them.

Circus wagons at 100 mph

But there is, alas, another side to the engineer's story. In his anxiety to save us from labor and discomfort, he has carried us to grotesque extremes. He has given us kitchen ranges with dashboards like B-47's, TVs which can be operated with electronic guns, automobiles like circus wagons, whose power and speed is 50 years ahead of the highways they roll upon. The illuminating engineer learned all about electric light decades before he paid any attention to the eye. (The foot-lambert has only in recent years replaced the foot-candle as a unit of measurement.) He gave us the cold cathode and forgot all about the sun. (The largest lighting demonstration center in the nation is windowless!) The air-conditioning engineer is apt to be much better informed about degree days than about comfort, or to know much more about air velocities than about health. He perfected the electrostatic air filter before he corrected the faulty combustion which it protects us against. The sanitary engineer perfected the w.c. in the 1870's: he has done little to it since except to lower its tanks and change its colors.

You cannot "blame" the engineers for all this, any more than you could blame an undertaker for not carrying a line of layettes. These are almost occupational hazards of the various engineering specialties. By their very nature, they show a consistent inability to cope with the whole biological man. If anyone is to put the pieces together in man's favor, it should be the architect. Yet in all honesty it must be admitted that he is in no position to call the kettle black. Too often, he has forgotten-what Vitruvius and Jefferson and the New England farmer never forgot-the decisive importance of orientation. Too often he designs arbitrary façades and then hands them over to the air-conditioning engineer to make them habitable. He uses microphones and loudspeakers, as the Greeks never could, to correct bad acoustics; artificial lighting makes up for faulty fenestration. Too often, he abdicates in favor of the engineer.

It is in this sense that the engineer has hurt, almost as much as he has helped, the architect. He has proffered so many fascinating *means* of doing things that the *needs* are often lost sight of. Just because he *is* there



When the acoustical engineer is treated like a colleague and not a crutch, good architecture as well as good acoustics can result. In London's Royal Festival Hall (left), superb acoustics are result of intimate collaboration between architects and acoustical men from the very inception of the project.

Earthquakes dictated concrete construction of this auditorium for City University of Caracas, But architect Villanueva called in acoustical specialist Robert Newman and sculptor Alexander Calder. Together they produced this eyefilling and acoustically successful solution.



Lisa Larsen-Live

at the architect's shoulder, with his wonderful panaceas, the architect can be weaker than he otherwise could be. By the very majesty of his powers, the engineer has deluded us as to what, actually, is possible and proper.

When to call the engineer

Wisdom, however, is not confined to any one sector of the building field. You are just as apt to find an airconditioning engineer as an architect who understands that the sun gives off real heat or a tree casts real shade. As a matter of fact, the more advanced engineers resent the fact that, too often, they are only called in "to pick up the pieces." They want to be consulted early in the game, not merely chronologically but ideologically as well. As Walter Fleisher Jr., chief design engineer at Rowland Tompkins & Son, puts it:

"The air-conditioning design engineer is usually placed in a strait-jacket of pre-set building plans and rigid specifications. He is not consulted on basic questions like orientation, fenestration or insulation —in fact, he's lucky if he gets adequate, uninterrupted duct space. He is thus in the position of being handed prefabricated space and told to make it habitable."

Air conditioning, Fleisher thinks, is still far from being an exact science. "It's full of all sorts of imponderables and, to protect himself, the engineer is forced to use ridiculous factors of safety." What is needed is a set of qualitative standards, *performance* specifications, as he puts it. He illustrates this point by citing such projects as the Air Force's testing laboratories, where equipment is subjected to extreme environmental conditions. "Here the engineer is asked only to *produce a specific environment*. This sort of specification details only the end result, not the means to be employed to obtain it. This method takes full advantage of the engineer's ingenuity and experience." If the same principle were applied to the conventional building, and contractors called in too*, much higher performance standards would be possible.

Like Mr. Severud, Mr. Fleisher is, in effect, asking to be consulted earlier in the game, to be used by the architect as a colleague and not merely as a crutch.

The acoustical engineer presents a somewhat different picture. Because so much of his work has been in the fields of telecommunications—where the finished product is, so to speak, salable sound—he has been forced to show more interest than his colleagues in the human being, or at least the human ear. Thus his interest will often extend beyond the decibel to an appreciation of music itself. From such a specialist, the architect has much to learn. Prof. Richard H. Bolt, of M.I.T.'s Acoustic Laboratory, says:

"Listening to music is an emotional experience. Man has not been completely automatized, and he cannot be expected to exhibit a standardized esthetic judgment. . . . Into this apparent confusion the acoustical scientist is supposed to bring some degree of predictability. Basically, his dilemma is this: science cannot be applied rationally to the engineering of acoustics without a set of standards, and yet the final judges, the audience and musicians, don't seem to subscribe to any such set. In spite of this, the answer must somehow be found in those judges. If they will not all repond alike, one can at least look for an average response."

This is a point of view not commonly associated with the engineering sciences and one which any architect

• In Forum's February story on "The Contractor", it was mistakenly asserted that Andrew J. Eken had retired. He continues fully active.-ED.

should be glad to accept. Yet here again it is clear that, to profit by it, it would have to be applied from the very start to any building demanding high acoustical performance. It is not a philosophy which can be applied, like a coat of paint, to a completed building. It is, in fact, the only way to avoid the sheer gadgetry whose efflorescence corrupts so much of American design today.

The architect as arbiter

One thing is apparent for all this: for better or worse, the engineer has entirely altered the scope of the architect's work. He has catapulted him to a higher level of responsibility. Design has become a business of manipulating, not "raw" materials like brick and 2 x 4's, but entire systems of highly specialized prefabricated elements. Supervision involves not merely masons and carpenters but whole schools of extremely literate specialists. The architect, in short, must now think in terms of environment. It is he who must specify safety, not foot-candles, as the objective of factory lighting; health, not Btu's, as the criterion of good school heating; intelligibility, and not decibels, as the measure of a good auditorium. If the architect does not, who will? The engineer cannot be expected to: he deals not with the whole client but only some specialized part of him.

Does this mean that the architect should "take over" the work of the consulting engineers? Not at all. In the first place, he couldn't: these fields are all complete scientific disciplines in themselves, with a higher incidence of M.A.'s and Ph.D.'s than architecture itself. In the second place, he shouldn't: detailed knowledge of one field would only mean loss of over-all architectural wisdom. What the architect should be, is already in fact becoming, is the arbiter of the conflicting demands of all these specialists and their systems. Each has his own set of demands and, from the nature of the problem, they will not coincide. They must therefore be resolved at the highest possible level, not merely of appearance or looks (though this is important) but of over-all behavior or performance. This implies standards, and these can only be derived from the needs of the actual users of the building. The architect, then, must arbitrate not between one machine and another but between machines and man.

By the same token, the engineer has made it impossible for the architect to limit his attention to the individual, isolated building. The sheer scale of the engineer's operations, his immense capacity for good or bad, forces the architect out of his ivory tower. For no tower is safe when Mr. LeTourneau's earth-moving equipment shows up in the neighborhood: a whole landscape can vanish in a twinkling beneath a sea of asphalt drive-ins or jet-bomber runways. The highway engineer still believes that a straight line is the shortest distance between two points. Let him drop an "interchange" in your community and it goes up, literally, in a cloud of dust. George Washington may have slept in building "B"; Bullfinch or McIntyre may have designed it. But if it happens to lie along a line connecting the engineer's point "A" to his destination "C," then "B" is not long for this world, no matter what its artistic worth or historic significance.

The engineer must be watched, in other words, not because he is dumb but because he is too smart; not because he is dishonest but because his honesty is as accurate as an IBM computer. He threatens us all with disaster.

It would be arrogant nonsense to claim that the architect should police these colleagues of his. Only the American people can, in the last analysis, tell the engineer what to do with his bulldozers, dishwashers and space frames. But the architect (along with the landscape architect, who by this time should also be sufficiently alarmed to act) does occupy a peculiarly strategic position in society. He, if anyone, can balance trees against asphalt, historic value against expediency, human wellbeing against mere efficiency. He can show the American people how our splendid technology can be used to build houses and cities worthy of our country. And he can help the engineer channelize his energies in this direction, converting his technical units of measurement into the broader scale of great architecture.

Ivory towers vanish in a twinkling before the bulldozer



Is Yesterday's Fantasy

TOMORROW'S WORKING GEOMETRY?

By JAMES JOHNSON SWEENEY

Director of the Guggenheim Museum in New York, Co-author with Jose Luis Sert, dean of the Harvard Graduate School of Design, of a forthcoming book on Gaudi, on which this article is based.





Pious Gaudi's name is known to all Catalanians even today as that of a "grande individuo."

Playful chimney pots atop Barcelona apartments (p. 116) make pure sculpture of a natural geometry which also underlies the serious structure.

> Mainly built before 1915, the unfinished west transept of the "Sacred Family" Church is still being worked on—one of the world's largest churches.

Antonio Gaudi, the Barcelona architect who died in 1926 aged 74, was in his day considered a nature-loving fantast. Now advanced engineers realize that he unlocked secrets of Nature which will yield greater efficiency and utility in tomorrow's large thin structures. An example of the way artistic intuition can lead into the development of scientific concepts.

Today the unfinished Church of the Sagrada Familia has come to stand as the symbol of modern Barcelona much as the Eiffel Tower does for modern Paris. Each is unique in character and leaves a vivid, visual recollection in the mind. The name of its architect, Antoni Gaudi, is principally known for this monumental fragment. Secondary to this, but related in their individuality, are two other works of Gaudi: the Parc Güell in Barcelona, its color fantasies in designs of broken tile and meandering benches which curb its terrace like a "pattern left on the sand by the receding tide"; and the undulant façade of the Casa Mila, with its decorative, cast-iron balconies and massive, sculptural chimneys, reproduced so frequently 'n reference to the Art Noveau movement of a half century ago. The total impression immediately derived is that Gaudi was primarily an eccentric, a fantast and a decorator in an age of ostentation and crude taste.

From an architectural viewpoint, however, there is another aspect of Gaudi's work which is only now beginning to receive the attention which it has long deserved. This is Gaudi's structural genius which underlies his decorative surface eccentricities-at times almost smothered by them, but in other instances, particularly in his latest work, making them often a necessary product. For what is remarkable about Gaudi is the capacity he shows fully in his mature work to translate natural forms into sculpture and to derive intuitively from these forms valid structures which are geometrically provable.

It is true that Gaudi began as a Gothic Revivalist, that he grew up



GAUDI'S PROPHETIC IMAGINATION

to maturity in an environment of industrialist wealth and ostentation which was Barcelona of the later nineteenth century, and he was attracted by the interests of Art Nouveau.

Yet Gaudi saw Gothic architecture as "sublime, but incomplete." "It is only a beginning," he told Marius-Ary Leblond, "stopped outright by the deplorable Renaissance. Today we must not imitate, or reproduce, but continue the gothic, at the same time rescuing it from the flamboyant." For he felt "the gothic had squandered all its ingenuity toward making impotence flourish." His first steps toward the recovery of gothic's healthy structural explorations as he saw them and toward rescuing it from the flamboyant was to do away with buttresses -"'crutches" as he called them. This led him to one of his greatest discoveries, the tilted column, designed to take the diagonal thrust. This he carried to a full scale application in the Güell Parc (1900-1914) and the Güell chapel (1898-1914).

The environment which provided a wealthy patron as well as interests in nature forms of nearby grottoes both helped to foster his intuitive capacities. The patronage of the Count Güell made it possible for him to explore possibilities of construction without too great a concern for costs. Gaudi has been described as "without doubt the most 'expensive' architect of his period" by the square yard. And Art Nouveau's interest in decorative forms derived from nature was ultimately related to Gaudi's interest in both decorative and structural forms derived from the same source.

This interest was already evident in the "tree columns" supporting the viaducts and the terraces of the Güell park. It is particularly evident in his last studies for the Güell chapel, and the Sagrada Familia where "the 'tree column' developed to its full significance." These columns do not only resemble trees. they also behave like them, with a definite purpose, transmitting separate roof loads spreading different branches in order to fulfill their structural functions better." The tilted columns of the entrance porch of the Güell chapel differ one from another in diameter, shape and material, and branch out like actual trees. Their branches support the vaulting which like the columns is varied in shape and texture. "The outside walls follow undulating lines and are inclined like the columns. All the elements of the building, columns, walls and ceilings, have warped forms-in this precise case hyperbolic paraboloids. The sections of the columns vary in relation to the loads they carry and the resistance of materials used."

The discoveries made in the Güell chapel, Gaudi later employed in working on the models for the models for the Sagrada Familia. These models, which he constantly corrected and improved, frequently began as diagramatic skeletons of string and wire "in which loads were represented by small proportionate weights." "In all his later



Upside-down models were worked out *in* suspension from workshop ceiling. The future columns and vault ribs were represented by strings hung from screw eyes in ceiling. Loads and stresses were represented by tiny sandbags hung from these strings. When thus loaded, each loop of string assumed exact curve of greatest structural efficiency.



By turning the picture other side up we can see how the lines of string formed themselves into slanted columns carrying arched ceiling ribs. This "diagram" was converted by Gaudi into the kind of finished structure seen opposite.



Güell chapel—Gothic principles carried forward



Mosaic patterns of ceramic tile (left) were worked in with richly varied textures and free sculptural forms like window hoods (above) to enhance the construction.

Stained glass windows add their highly luminous contribution. Gaudi's patterns taken by themselves anticipate modern painting, modern sculpture.





End result was a mood-filled symphony (left). Never, since Gaudi, has modern architecture been so complete in rich expression. The latest freehand works of Le Corbusier recall these predecessors. GAUDI'S PROPHETIC IMAGINATION

models, hyperboloids replaced hyperbolic paraboloids. His forms were so rigorously governed by geometric principles that by following the principles he used, it was possible to reconstruct, with the utmost precision, the models which were detroyed during the Spanish Civil War."

It was only when Gaudi, through his study of natural forms and their behavior, discovered the structural and geometric laws that govern these forms, that he was able to give real unity and sculptural quality to his buildings. Still from another point of view it was only through his intuitive sense of sculptural form that Gaudi was able to abstract the essentials from nature and to give them a man-made structural unity. Ruskin, one of the probable influences on Gaudi's ideals, together with Viollet-Le-Duc (through the volumes at Gaudi's disposal in the library of his patron the Count Güell), stated in his Edinburgh Lectures (1854): "This is a universal law. No person who is not a great sculptor and painter can be an architect. If he is not a sculptor or painter he can only be a builder." But the unique quality of Gaudi lay in the fact that he, a natural sculptor, was able to translate intuitively his sculptural forms into structural forms that could be reconstructed geometrically by following the principles he had discovered and employed.

The quotes, where not otherwise indicated, are from Jose Luis Sert.



"Casa Mila" apartment house



Ever-varied convolution. of stone-faced apartment house wall are simultaneously a play on nature, a series of sharp-edged sun-shades and balconies, and examples of t h i n, braced construction. (Note generous width of windows and continuity of columns from which wall is cantilevered.) Elegant thin arched ribs (r.) in attic of Casa Mila support the wavy roofline (seen acrosspage) in highly efficient manner. Since this photo was taken, conversion of this space into an apartment has spoiled these ribs in the opinion of many critics.

"Mansard" roof form seen on opposite page is exterior covering of same structure. At very top are glimpsed some chimney pots like those on page 112.



forecasts thin structures of "warped planes"

Small parochial school close to Segrada Familia church is forerunner of today's thin structures. Every convolution of wall and roof is both poetic and functional.



PRIZE BUILDINGS

From more than 500 entries in the \$25,000 Porcelain Enamel Design Competition a jury of top architects selects the best youth centers and elementary schools and some new uses for metal in buildings of all kinds Rarely has so much thought been put into the design of buildings for the nation's youth as was lavished on the entries in the Porcelain Enamel Design Competition, the results of which are presented on the pages that follow.

If each contestant spent three weeks on his entry (a very conservative estimate—the grand prize winner spent 300 hours on his), the 573 designs submitted represent a staggering total of 75,000 man-hours of work. Most of this effort was spent developing a new kind of building—a community youth center—and perfecting an old but ever important one—the elementary school. The rest of these man-hours were devoted to studying the use for porcelain enamel metal in these buildings.

Thanks to all this work, the industry has a new catalogue of construction details of interest to anyone who is thinking of finishing his building in metal, and communities have a reservoir of new design ideas which should help them solve the building problems generated by their bumper crop of postwar children.

THE PRELIMINARIES. The work actually began a year ago when Ferro Corp., one of the nation's leading producers of porcelain enameling materials, asked FORUM to conduct a competition on its behalf. Ferro's purpose was to stimulate design interest and widen experience in the use of porcelain enameled steel and aluminum, to improve present methods of application and to encourage exploration for new uses. While FORUM editors and Architect Harold Sleeper, the competition's professional adviser, prepared the design program, Ferro prepared a manual on porcelain enameled metal and solicited technical literature from the numerous fabricators in the industry.* These were packaged and sent to the 4,975 who expressed an interest in the competition when it was announced last September.

By the time the competition closed on Dec. 12, only 12% of these were still interested in the \$25,000 in prizes which Ferro had offered. The others either found

*Ferro itself fabricates no building materials; it makes the porcelain enamel equipment and the frit (glass granules) used by fabricators.



The judgment: in early stage (left) jurors observed entries in quick succession. The men (counter-clockwise): Professional Adviser Sleeper, Jurors Saarinen, Belluschi, Stubbins, Reid and Posey, and a FORUM editor. Below: final selection.



themselves too busy with the building boom or found the problem too tough.

As fast as drawings were received at FORUM's offices, the professional adviser and his staff unwrapped them (a job which often required a crowbar), checked them for compliance with the program requirements and classified them according to subject and degree of compliance. It is a sad commentary on designers' ability to read or to understand what they read that so many contestants violated so many rules. The most common violations included failure to conceal the authors' names, drawings at wrong scale, omission of drawings, use of pencil or diluted ink, omission of color sketch, lettering too small or too large, room areas too small or too large.

THE JURY. On Jan. 9 and 10, some of the nation's top architects assembled at FORUM's offices to judge the entries. They were Pietro Belluschi of Cambridge, Mass., dean of M.I.T.'s School of Architecture and Planning; Robert Posey of Skidmore, Owings & Merrill's New York office, project manager of the porcelain-clad Ford administration building at Dearborn, Mich.; John Lyon Reid of California, one of the best known school architects; Eero Saarinen of Bloomfield Hills, Mich., designer of the General Motors' Technical Center, another outstanding example of the use of porcelain enameled metal; Hugh Stubbins of Boston, a noted designer and candidate of the younger architects for the 1956 presidency of AIA. (Edward X. Tuttle, an architectengineer with Giffels & Vallet of Detroit, was called to Europe on business the week before the judgment and was therefore unable to serve on the jury.)

Actually two juries in one, these men elected Reid their chairman for schools and Stubbins their chairman for youth centers. Then their work began. They gave all the entries a quick once-over (photo left, above) and put aside for further study any design in which any juror expressed any interest. These were arranged in a second conference room where the jury could analyze them more leisurely and more thoughtfully (photo right).

What the jury thought about the entries in general

is reported below; what they said about each of the seven top prize designs is presented alongside the drawings on the pages that follow.

THE JURY REPORT. "Comparing the relative merits of 573 building designs is not an easy assignment under any circumstances. However, the task was made easier than anticipated by the failure of a large number of contestants to meet the mandatory requirements of the program and by the obviously low quality of many of their submissions. (In most cases the ineligible entries were also of relatively low quality.)

"The jury was disappointed to find so few distinguished and virtuous new uses of porcelain enamel metal. Too much emphasis was put on extreme uses of this versatile material, and in many cases it was used indiscriminately." The jury noted, with some alarm, tendencies to accept published structural details without question or improvement and to put the material to inappropriate uses—both of which, if encouraged, might discourage progress in this field. The jury kept these factors in mind when selecting the prize winners; it was felt that they should display sensible applications of porcelain enamel and thus encourage its development in appropriate directions.

"The program for the school was admirable in that it did not call for a great search for new educational practices but allowed the contestants to seek an architectural expression of what a school should be in terms of new materials. Although a suitable character for a school building seems to be hard to find (in actual buildings as well as in competitions), many of the premiated projects have made really significant contributitions toward the evolution of a modern schoolhouse.

"The program for the community youth center invited a greater play of interesting architectural forms and therefore encouraged a wider variety of solutions. Al-

^{*}A random sampling of competition entries reveals these suggested uses of porcelain enamel: acoustical panels, canopies, chimneys, convector fronts, copings, decorative screens, facias, fences, grilles, gravel stops, gutters, light fixtures, murals, plant boxes, porch columns, prefab classrooms, roof decks, sculpture, shingles, signs, stair risers, sunshade louvers, tile, trim, sils.-ED.

though this division of the competition attracted a smaller number of submissions, they were generally of higher quality than the school designs. In most cases, however, handling of the high stage house remained an unsolved problem in both mass and exterior finish."

THE PROGRAM. Contestants had their choice of designing a youth center or a school, or both.

The youth center had to make its theater-auditorium and its meeting room available to the community at large as well as to the youth. Other required facilities: lounge with exhibition space and snack bar, check room, multipurpose room for dances, games and other activities, staff office, first-aid room, activity rooms for pingpong, billiards and crafts and a music library.

The school had to be a one-story building to care for about 175 pupils. It was to make its recreational facilities available for public use when school was "out." The main rooms were to be a kindergarten, three primary classrooms, three secondary classrooms, a multipurpose room, a lobby for exhibits and a kitchen. Also required: principal's office, medical room and a conference and teachers' room.

THE WINNERS

	Community centers	Elementary schools
GRAND PRIZE \$5,000	HENRY S. BRINKERS Urbana, Ill.	and the second second
FIRST \$8,000	C. K. CHEN L. C. CHEN Briarwood, N.Y.	HORACIO CAMINOS EDUARDO F. CATALANO Raleigh, N.C.
SECOND \$1,500	CECIL D. ELLIOTT GEORGE MATSUMOTO Raleigh, N.C.	STEPHAN M. GOLDNER C. CHADBURNE SHUMARD HANFORD YANG Merion, Pa.
THIRD \$1,000	DONALD GOODHUE Cambridge, Mass.	THOMAS LAM Bloomfield Hills, Mich.
MENTIONS \$500	BRUCE ABRAHAMSON Minneapolis, Minn.	ROBERT LEWIS BLISS ANNA CAMPBELL BLISS Excelsior, Minn.
	ARMAND P. BARTOS NORMAN M. KLEIN LOUIS LIONNI RAI OKAMOTO HSIO WEN SHIH FRED L. SOMMER New York, N.Y.	JOHN MICHAEL GODUSCIK Allentown, Pa.
	BASSETTI & MORSE Seattle, Wash.	HELMUT JACOBY Newark, N.J.
	EDUARDO F. CATALANO HORACIO CAMINOS Raleigh, N.C.	KATZ, WAISMAN, BLU- MENKRANZ, STEIN, WEBER New York, N.Y.
	JOHN W. GALLAGHER NORMAN HOBERMAN Cambridge, Mass.	CHARLES A. METCALF ROLAND H. LANE MARK L. PENCE Seattle, Wash.
	THOMAS LAM Bloomfield Hills, Mich.	H. DAVID SOKOLOFF RICHARD BLANCHARD San Francisco, Calif.
	JORDAN MERTZ New York, N.Y.	WALLACE S. STEELE Sioux Falls, S.D.
	ROBERT C. METCALF TIVADAR BALOGH Ann Arbor, Mich.	VICTOR N. TIOTUYCO Bloomfield Hills, Mich.
	PETER S. STAUGHTON Bloomfield Hills, Mich.	Y. C. WONG Chicago III

GRAND PRIZE



HENRY S. BRINKERS

Designer's comment: "The site is oriented toward the community by combining functions related to the center with those related to the casual activities of the community. The resulting special character is somewhat similar to the character of public spaces in Europe. Portions of the site are planned as pedestrian thoroughfares offering the community more direct contact with the center. By so doing, the nature of the center increases in vigor, has greater meaning in terms of the community, broadens its scope and falls into proper perspective. The concept of the project emerged from an examination of the relationship of the automobile to the community, to the center, to the individual and the nature of the transition from the vehicle in motion to the vehicle at rest. For example, the area designated for parking is a direct extension of the street.

"The building is basically a pavilion permitting the installation or removal of doors, windows and partitions. Such a system of flexibilities is necessary and consistent with the constantly changing nature of the activities in a community center. The strongest feature of the building is in the standardization of parts and the prospect of inexpensive prefabrication within the objective of flexibility and an integrated mechanical-structural system. The use of prefabricated enameled steel wall and ceiling panels, rapidly installed or removed, furnishes a membrane that weathers well and solves the problems of insulating, acoustics, finishing, color and durability, with a minimal maintenance cost." (Assumed location: eastern Virginia.)

Jury comment: "This is a clear, elegant and architecturally satisfying scheme. As suggested by the program, the main parts of the building are thoughtfully separated—the auditorium and meeting room, which may be used by the community at large, are together in a wing by themselves with their own entry, while youth recreation, work and play facilities are appropriately grouped in the other wing. In placing the stage house within the building group, the designer has treated it as an asset to the composition rather than a liability. The open, spacious quality of the





GRAND PRIZE cont'd.



well-organized plan, particularly in the recreational area, recognizes the gregarious nature of the building's uses. The use of porcelain enamel seems to be appropriate and realistic; the flexible partitioning is carefully studied, well detailed and part of a coordinated modular system which should simplify construction.

"Outside, the building displays a pleasing arrangement of masses, good proportions and an appearance expressive of its construction and materials. It is a very pleasant building which would be a definite asset to any community."

BRINKERS, a native New Yorker, is a 24year-old graduate assistant in the Department of Architecture at the University of Illinois. He was educated at the State University of New York at Farmingdale, Cooper Union in New York City and Yale (B. Arch. '55). Currently interested in ecclesiastical architecture, he is studying the liturgical needs required by canons and rubrics and their effect on church design.



Prize-winning sheet as Brinkers composed it



FIRST PRIZE





C. K. CHEN & L. C. CHEN

Designers' comment: "Our design was conceived to express the congenial and informal atmosphere we considered most appropriate for a youth center. We have tried to integrate the center with the surrounding park and the neighboring residential areas by the use of smaller buildings. The arrangement of the individual units and of the functions within each unit was designed to bring together activities of a complementary nature and to set apart others. In addition to acting as an actual link, the covered walk gives distinctiveness to the open spaces between the buildings and is inviting for use as an outdoor meeting place or as a passageway to the activities within. The tree umbrella, acting as an integrating design element, provides a sense of shelter as well as a pleasing visual harmony with the park. By using porcelain enamel panel walls and a standard module, we tried to give the buildings a discipline and to provide a common denominator for the project. (Assumed location: southern California.)

Jury comment: "As a concept for a community center, this cluster of separate little buildings around a central court is excellent. However, the individual buildings might have taken better advantage of the court had they been opened to it so that people would walk through the grove of trees in going from building to building. Instead, the poorly defined entrances to the various elements open on the peripheral promenade, and the circulation between elements is therefore a little awkward. Although the stage block is neither well conceived nor well executed, the scale and style of the other elements are good. Their campuslike grouping and the conservative, tasteful use of porcelain enamel lends an atmosphere of youthful livableness to the building which should make it a highly enjoyable community center."

C. K. CHEN, 35, a native of Peiping, was graduated from the University of Illinois (M.A. '49), has since worked as a designer for Walter Gropius and TAC and as an instructor at M.I.T., is now associated with I. M. Pei. L. C. CHEN, 33, was also born in China, but is no relation. A Harvard graduate (M.A. '52), he has worked with Skidmore, Owings & Merrill, Daniel Schwartzman, Hare & Hatch and is now with Edward D. Stone.





SECOND PRIZE











CECIL D. ELLIOTT & GEORGE MATSUMOTO

Designers' comment: "This design was based on the incorporation of outdoor spaces in the planning of the building units. Easily reached from the parking area and from the walkways of the park, the amphitheater is set in a fenced precinct, eliminating any bothersome appearance of emptiness when it is not in use and protecting it from disturbances. The center courtyard-plaza is the heart of the building group, adaptable to the comparative formality of special events as well as to casual strolling and lounging during daily use.

Similarly, we have tried to achieve a doubling of the formal and informal use of all the spaces in the buildings." (Assumed location: North Carolina.)

Jury comment: "This is a simple, direct, well-handled building, based on an excellent plan which in many respects is similar to the grand prize winner. The court in the middle with its entrance logia offers a pleasant gathering place and separates the two main elements of the program. Although the problem of the

stage house has obviously been considered, it is not as dramatically placed as in the grand prize scheme, and although the petticoat provides a fashionable shape and texture, the solution is not convincing. The masses are well related to one another, but the symmetry and formality of the plan seem to be a little artificial. Other points criticized: the proximity of the noisy, unsightly parking lot to the main entry and the amphitheater; the overgenerous use of glass and the overenthusiastic use of porcelained panels."

ELLIOTT, a graduate of Oklahoma (B.Arch. '44) and Harvard (M.A. '48), is an architect and an assistant professor at North Carolina. He was formerly a designer for Hellmuth, Obata & Kassabaum in St. Louis. MATSUMOTO, a graduate of Washington (B.Arch. '43) and Cranbrook (M.A. '45) is an architect and an associate professor at North Carolina. He has been associated with George Fred Keck, Saarinen & Saarinen and Skidmore, Owings & Merrill.



south elevation

THIRD PRIZE





DONALD GOODHUE

Designer's comment: "I chose to give the roof the dominant expression, emphasizing the long, low building and creating a strong feeling of protection from the summer sun. This is further emphasized by the animation of the fascia with colorful abstract figures and by the progression of bright and varicolored projected column brackets, all contrasted with the subtle shades of masonry and exerior wall panels. Thus, the porcelain enamel is used for the major wall surfaces and as contrasting accents in smaller areas. Inside, porcelain enamel provides splashes of color as in the central feature of the lounge, the fireplace, in the folding chairs of the meeting room and in the acoustical reflectors of the auditorium.

The more softly colored movable sunshades of the lounge protect it from the western sun. (Assumed location: north central California.)

Jury comment: "More conventional than most, this workable plan has some very charming aspects - especially around the courtyard. Of particular interest is the exhibition lounge which serves its dual purpose very well: it will not seem to be an empty space in the absence of exhibition material. Although the plan was praised for the well-organized disposition of its various elements, it was criticized for its overcompartmentation, its somewhat tedious circulation and the location of the auditorium directly opposite the entrance. (An empty auditorium makes a depressing first impression on a visitor.) Also criticized were the rather clumsy handling of the exterior composition of the building's masses (particularly the smoke stack and the fan-shaped auditorium structure) and the flush joints of the porcelain enamel panels. (It was feared that the wall of the stage would appear wavy.)"

GOODHUE, 24, is a Harvard graduate student who will receive his M.A. in June. He has worked summers with several San Francisco area architects.

MENTIONS

BRUCE ABRAHAMSON

Designer's comment: "The perimeter corridor admits borrowed, controllable natural light into areas requiring it without problems of heat gain or loss; creates the possibility of zoning the building into its basic parts, each divisible from the other and each with its own entrance; and finally, makes possible a somewhat formal, symbolic structure which may be good from the standpoint of communal acceptance and use as a center of activity. Exterior blinds can be pulled up or let down to control the sun's heat before it enters the building. Because the exterior walls are all glass, the inner walls mean very much visually from the outside. Made of porcelain, they are not only easy to maintain, but are colorful, informal but orderly elements which act as a backdrop for the rigidly disciplined mullion and column framework of the exterior." (Location: south Illinois.)

ABRAHAMSON, 30, is a graduate of Minnesota (B. Arch.) and Harvard (M.A.). Formerly a designer with Thorshov & Cerny and Skidmore, Owings & Merrill, now an architect with Hammel & Green.





JORDAN MERTZ

"The Designer's comment: most impressive and vital feature of the design is the colored porcelain enamel stage tower which, because it can be viewed from miles away, becomes the symbol of the structure and the community. All rooms face the interior court -an ever changing view from the interior of the building. The surrounding plaza is also an integral part of the overall plan. It serves as a public seating and walking area-a public square or plaza for the community, as St. Marks is for the Venetians." (Location: Scarsdale, N.Y.)

MERTZ, 20, is a fourth-year student at Pratt Institute.

HONORABLE MENTIONS

BASSETTI & MORSE

Designers' comment: "The whole building is shaded with a canopy of porcelain enamel louvers sloping so that no sun penetrates except early morning or late evening. The stage tower is shaded with small panels of light-gauge tiles separated about ½" from each other and about 4" to 6" out from the concrete wall and unevenly faced to create a sparkling mosaic." (Location: Arizona.)

BASSETTI, 39, was trained at Washington ('42) and Harvard (M.A. '46), was a designer for Alvar Aalto and Naramore, Bain, Brady & Johanson and has been associated since 1947 with MORSE, 44, a Harvard graduate ('34 and '40), who formerly worked with Walter Bogner, Markus & Nocka, and George W. Stoddard.



PETER S. STAUGHTON

"The Designer's comment: plan is, quite deliberately, an informal arrangement and centers about the entrance portico, an open way giving access to the center for pedestrians. Maximum flexibility was considered an essential requirement because a large number of widely differing functions are bound to take place in a community center - dances, large and small; scout assemblies; games; model airplane shows; young inventors exhibits; art exhibitions. To meet these various requirements, the lounge and multipurpose room have been placed so that they may be opened up by folding doors to form one large space, or the multipurpose room may be closed off as occasion demands." (Location: Michigan.)

STAUGHTON, 26, a native of Australia and a Rome scholar in architecture, is studying civic design and planning at Cranbrook Academy of Art. He is the recipient of the 1955-56 Eliel Saarinen Memorial Scholarship.



ROBERT C. METCALF & TIVADAR BALOGH

Designers' comment: "A community youth center should not be so informal as a sand pile, nor so formal as a city hall. Yet it needs a little of both atmospheres to suit the adolescent temperament. The two-story form was used for economy and for interesting vertical space relationships." (Location: south Michigan.)

METCALF, 32, and BALOGH, 29, are graduates of the University of Michigan (B. Arch. '50 and '52) and registered architects in private practice.



JOHN W. GALLAGHER & NORMAN HOBERMAN

Designers' comment: "The most difficult architectural problem was the massing of the stage house. Maintaining a continuous roof line through which the stage house and the multipurpose room penetrated gave us a quieter and more orderly massing than any other scheme we investigated." (Location: eastern Massachusetts.)

GALLAGHER, 30, and HOBER-MAN, 27, are students at Harvard Graduate School of Design.



BARTOS, KLEIN, LIONNI, OKAMOTO, SHIH & SOMMER

Designers' comment: "An attempt was made to separate those areas used mainly by the youth from those used by the community by a central zone consisting of courtyard and activity room." (Location: North Carolina.)

THE TEAM: Armand P. Bartos, 45, M.I.T. (M.A. '36); Norman M. Klein, 34, M.I.T. (B. Arch. '49); Louis Lionni, 22, Italianborn, M.I.T.; Rai Okamoto, 28, M.I.T. (M.A. '51); Hsio Wen Shih, 25, Chinese-born, M.I.T. (B. Arch. '53); Fred L. Sommer, 29, German-born, C.C.-N.Y. (B.C.E.). All are partners or associates of Cordes, Bartos & Klein.



ELEMENTARY SCHOOL

FIRST PRIZE



HORACIO CAMINOS & EDUARDO F. CATALANO

Designers' comment: The main idea was to create, without strain, an environment where some activities can be performed by children and adults with certain efficiency and great pleasure. To achieve this the following limitations were selected:

▶ To provide an ordered sequence of spaces: 1) As focus: the collective spaces of the whole school — multipurposedining, administration and central court; 2) the subsidiary spaces of the kindergarten, primary grades, secondary grades and play grounds; and 3) the space of each classroom with its outdoor expansion.

> To get a rich variety of sensations with minimum architectural elements.

> To integrate indoor and outdoor areas.

• To be able to dominate visually the whole composition being in or out of it.

▶ To take advantage of the site —in particular, to open the school toward the adjacent park.

To provide long and short views simultaneously.

To work out a consistent system of prejudices.

(Assumed location: central North Carolina.)

Jury comment: "This is a beautiful presentation of a well-articulated plan and a notable site plan. The latter is really a diagram of what a school should be—the central functions grouped in a large block but separate identities

for the classrooms. The classrooms are particularly well planned, and their porcelain enameled steel ceilings and roofs are most imaginativealthough perhaps a little too unrestrained in their use of metal. (Even the shape of the roof suggests its metal construction - somewhat like an old stamped sheet metal ceiling.) Outdoor classrooms are closely related to inside classrooms and to each other, and the clusters of primary and intermediary classrooms are separated from each other and from the central facilities. The building entrances and corridors are ample and attractive, but there is the possibility of congestion in the corridors at the classroom entrances. Although not a requirement of the program, expansion of the school would be easy-by the addition of classroom clusters."

CAMINOS, 42, was born and educated in Argentina where he was an active architect and teacher of architecture until in 1953 he became a professor at the School of Design, North Carolina State College.

CATALANO, 38, also an Argentine architect and instructor, earned his Masters degree at the University of Pennsylvania and Harvard ('45). He is acting head and professor of architecture at North Carolina and, like Caminos, is a frequent competition winner. (The team also won an honorable mention in the youth center division of the competition.)







SECOND PRIZE

Designers' comment: The most noteworthy features of the design are these: 1) The courtyards are located to preclude the confined feeling of corridors and to provide play yards within the building. 2) The multipurpose room is placed so that it can be used independently of the school. 3) The high and low roofs are scaled to suit their purposes. 4) The form of the high roof is complementary to the design of the vertical porcelain enamel panels. 5) Use of modular porcelain enamel panels gives



STEPHAN M. GOLDNER, C. CHADBURNE SHUMARD & HANFORD YANG

maximum flexibility to the plan. The smaller panels above and below the fixed glass are operable and, when open, become sunshades. (Location: Philadelphia.)

Jury comment: "The open, airy quality and light-hearted spirit of this building is commendable, as is the simple compact plan and its situation on the plot. The design seems well suited to porcelain enamel and would be economical to build. Note the variety in the shape of the classrooms within the structural module which gives some individuality to each grade. The high folded roof over the entrance and multipurpose room is an attractive architectural handling of the spaces which require high ceilings. However, the design lacks the interest and richness of the first prize winner. Other faults: the grade grouping of classrooms seems arbitrary; toilets are not well located in relation to outdoor spaces; the building is not so well scaled to the child as the first-prize winner."

GOLDNER, 23, a draftsman with Nolen & Swinburne, is a graduate of the University of Pennsylvania ('55). SHUMARD, 28, is a designer with the same firm and also a Penn graduate ('55). YANG, 26, was born in Shanghai, trained at the University of Pennsylvania (B.A. '54). Now in the office of Architect Vincent Kling, he was formerly with Oskar Stonorov.





THIRD PRIZE

THOMAS LAM

Designer's comment: "To gain monumentality the building was designed with a minimum of external visual variablesnot more than two or three major elements-thus enhancing the site and producing a direct and simple-to-grasp silhouette-image and creating a tightly organized plan. Porcelain enamel is used to its best advantage-not as a substitute material. For example, porcelain panels were used to form complete wall planes and not merely to fill in a spandrel space:" (Location: central Illinois.)

Jury comment: "Although a bit too precious in its architectural treatment, this building would be a handsome addition to the community. The composition of its masses is quite monumental, almost classical. The plan, too, is handsome and well organized, providing good light for every classroom and numerous sheltered courts for supervised play. On the other hand, the hung roof over the center element seems to be something of a stunt; it does not fit in with the general structural system, and the diagonal bracing struts in the corridors would be the cause of many cracked skulls. Perhaps this is a better design exercise than a place for small children."

LAM, 26, was born in Hongkong. He came to the US in 1950, spent two years at Western Reserve and transferred to Yale, where he earned his B.A. last year. He is now working on his Masters at Cranbrook.

Lam also won an honorable mention in the youth center division of the competition.





HONORABLE MENTIONS

H. DAVID SOKOLOFF RICHARD BLANCHARD

Designers' comment: "The multipurpose, administration and classrooms are around a central courtyard, which can be used for assemblies and outdoor eating and as an outdoor theater for school and adult functions. Classrooms have been planned with access to court and outdoor classrooms. Four decorative porcelain enamel panels, 3'-4" x 2'-4", are combined in different arrangements to form a colorful patterned wall around the upper part of multipurpose room." (Location: central California.)

SOKOLOFF, 35, was born in London. He completed his architectural training at Yale ('47), is now chief designer for Falk & Booth. BLANCHARD, 21, also was born and educated in London and is with Falk & Booth.



CHARLES A. METCALF, ROLAND H. LANE &

MARK L. PENCE

Designers' comment: "We attempted to achieve the reticulation of structural elements characteristic of the loft plan, the clarity of organization of service elements characteristic of a core plan, and the scale of the campus plan." (Location: central California.)

METCALF, 25, is a graduate of Washington ('53), now with Architects Harmon, Pray & Detrich, LANE, 33, also a Washington graduate, is with Charles Baylon. PENCE, 29, also Washington ('51), is a partner in Pence & McCool.



Designer's comment: "Simplicity and flexibility are the basic principles of the design. Use of low partitions to enclose a multipurpose room within a big 80' x 70' hall provides flexibility for further expansion. The classroom windows are glazed with heatabsorbing glass and provide an overhang when the windows are opened in summertime. All classrooms are separated from the corridors by folding partitions which can be opened when more space is needed." (Location: Chicago.)

WoNG, 35, was born in China. Since earning his Masters at Illinois Tech ('51), he has worked for Mies Van der Rohe.

VICTOR N. TIOTUYCO

Designer's comment: "The building is divided by the center axis lobby into a classroom wing and the multipurpose section. Within the classrooms, wall spaces are used to advantage by providing additional chalkboards and tackboards for the maximum use of many children at one time." (Location: Hollywood, Fla.)

TIOTUYCO, 28, is a Philippine architect doing postgraduate work at Cranbrook Academy.

WALLACE S. STEELE

Designer's comment: "This building features simplicity of design and construction scaled to the elementary school child. An attempt was made to separate the children by age groups as much as possible, yet maintaining a simplicity of structure. Courts are used to add living interest to the occupants, visitors and the curricula." (Location: South Dakota.)

STEELE, 30, is a Minnesota graduate (B. Arch. '49). Formerly with Brooks Cavin in St. Paul, he is now a designer for Harold Spitznagel & Associates.









HONORABLE MENTIONS

JOHN MICHAEL GODUSCIK

Designer's comment: "The round classrooms are adaptable to the varied activities of young school children. The porcelain panel walls and high windows give privacy to the classroom and avoid distraction from the exterior or interior and thus give the teacher better control. Orientation is no problem because the teacher can control the intensity of the daylight from the best source (overhead). An electrically controlled sunshade can illuminate or darken the room for audiovisual aids." (Location: eastern Pennsylvania.)





GODUSCIK, 27, is a graduate of Penn State, now an architect with Heyl-Bond-Miller.

KATZ, WAISMAN, BLUMENKRANZ, STEIN, WEBER

1

Designers' comment: "In this building we tried to express the excitement of a castle, the lightness and warmth of a huge tent. The multifaceted structural system consists of many prefabricated insulated panels of porcelain enamel steel attached to each other to create a self-supporting rigidized shell. The resulting structure has a scintillating diaphanous quality, cloudlike in its mood, organic in its form. Our solution revolts against the rectangular strait-jacket that seems to be strangling architectural thinking." (Location: Long Island, N.Y.)

ARCHITECTS ASSOCIATED, winners of numerous competitions, was organized in 1944: Sidney L. Katz, 41, an N.Y.U. graduate; Taina Waisman, 55, a native Finn, also N.Y.U.; Joseph Blumenkranz, 53, Austria-born, a hospital expert; Richard G. Stein, 39, Harvardtrained; and Read Weber, 49, a former Frank Lloyd Wright associate. Associates: Patrick S. Raspante, William G. Harvey Jr., Joseph M. DeChiara and Jerome L. Strauss.



arade 6 exhibit

teachers closet

erade 5 exhibit

grade 4 exhibit

janitar_____

medical_____ boys toilet_

secretory.

feachers:

storege ...

principal's office. girls tailet

isitor's coats_

3

P

coats workeres-

ROBERT LEWIS BLISS

Designers' comment: "Use of prefab classrooms, a desire for optimum orientation, a change of indoor to outdoor scale suggested the checkerboard courtyard plan. An attempt to reconcile the 18' minimum interior height of the multipurpose room and still retain the scale desired for the total complex led to a low-pitched roof system tied to the high mass. The final form has a regional precedent in the handsome Northwestern barns." (Location: Washington State.)

ROBERT BLISS, 34, an M.I.T. graduate (B. Arch. '49), has worked in several Boston offices, taught at M.I.T. and the University of Minnesota, began his own practice in 1954. ANNA BLISS, his wife, is a 30year-old Wellesley and Harvard graduate (B. Arch. '50).





HELMUT JACOBY

comment: "The Designers' one-story school building forms a compact rectangle with a flat roof, which is interrupted by the higher and centrally located multipurpose room and two interior courts. There is a distinct separation between the educational and recreational spaces, the latter being used by the public occasionally. The multipurpose room represents the center of gravity in the building, which is apparent in scale as well as in appearance. This room is covered with a 'harmonica' roof, which consists of differently colored panels of porcelain enameled steel, used structurally." (Location: Washington, D.C.)

JACOBY, 30, was born in Germany and received his architectural training at Technical University, Stuttgart. He completed his education at Harvard and has since served as a designer for Ketchum, Gina & Sharp.





KITCHENS THE PUBLIC

Alfred Eisenstaedt-Lira



Eaters' appetite for entertainment, as well as food, is producing a major new trend in public kitchens

There are more than 20,000 roadside *pizzerias* in the US, as against a total of only 18,548 incorporated or unincorporated localities (9,827 of which are under 1,000 in population). And this comparatively recent American rage for spectacular pasta accounts for comparatively few of the horde of short-order shops, diners and other open-kitchen restaurants scattered across the country's plump belt line. Visible cooking is already a well-founded institution in public dining.

But now the open kitchen is getting classy too. More and more expensive restaurants and lavishly appointed institutional dining rooms are hitting on the design device of letting the customers watch the cooks. This is no longer called short-order cooking; its grand new identification is *exhibition cooking*.

This trend may have been motivated primarily by showmanship, but there is businessmanship behind it too, as Dean Howard B. Meek of the School of Hotel Administration at Cornell University points out: "A preparatory and cooking area open to the dining area offers many advantages in efficiency. Compare the block and a half, plus the flight of stairs, that the waiter in the old Waldorf Astoria at Fifth Ave. and 33rd had to take with the two or three steps taken by the server along an open counter. Formal dining service requires elaborate and heavy equipment to keep food hot for a long journey, but if the diner is 'brought into the kitchen' he may actually have to wait a moment for his ham and eggs to cool, so quickly have they made the transit from griddle to table.

"Moderns are continually regretting the increasingly institutional atmosphere, the automation, that goes with the expansion in scale of most of our operations, including many restauCAN SEE



Donald E. Lundberg, head of the Department of Restaurant and Hotel Management at Florida State University, points out another psychological advantage of the open kitchen: "The customer is permitted to see the food as it is prepared and, if the kitchen is clean, he gains a reassurance that can come only with visual inspection.

"Because of this trend, equipment changes are certain to result, to solve the air-conditioning problem created. Since preparation areas are continuous with the dining areas, the wild heat formed in the kitchen must be reduced. The oldstyle hoods hung over griddles and stoves are being changed. Instead of placing them 7' or 8' above the equipment, the hood is being lowered to a little over 6'. Also, the bottom of the hood is flared to create a draft and the cooking area becomes a temperature island separate from the rest of the kitchen and dining area. In some cases the hood is not hung from overhead but is placed on back of the cooking equipment and a suction fan draws off vapors and odors from the cooking equipment.

"The use of infra-red warmers, and now some ovens, also reduces wild heat since the infrared heat is generated instantaneously in the food product when the lamps are focused properly. Infra-red cookery also has the advantage of enhancing eye appeal by making food products appear more red."



OPEN KITCHENS FOR DRAMATIZATION

King Arthur, Beowulf and Long John Silver were great ones for watching their meals cooked, and the tradition of flame-cooking continues in such elegant dining establishments as Antoine's in New Orleans (bottom of page, left) and the flamboyant Pump Room in Chicago (bottom right). But it can be said that the visible commercial kitchen began in modern times with counter service. The counter of the California restaurant, above, although it is still lined with stools, serves a good-sized dining room as well. Architect Mario Gaidano, an advocate of visible cooking, calls it a stage:

"'Marin Joes' in Corte Madera, Calif., is a restaurant specializing in Italian cooking. The photo, a portion of the main dining room, shows the stage (kitchen) and the front row seats (counter stools). Here one may view the entire production: the preparation of some succulent Italian dish; the flame and fire of the charcoal pit; the efficiency and sureness of the chefs as they work, sometimes singing, sometimes arguing in their native tongues.

"All this is a setting far removed from the original conception. The hood is completely gone, being replaced by a long invisible slot under a shelf through which air is drawn at a high velocity, catching grease and fumes at their source, about 18" above the cooking surface. Cooking equipment is custom designed wherever possible to insure cleanliness by proper abutment and attachment

Jerry Cooke-Pix





enstaeat-Live



Yale Joel-LIFE



to adjacent surfaces.

"The satin-finished, flame-colored porcelain rear wall, the brick barbecue pit, the dark brown acoustical tile ceiling, the vinyl-covered mahogany counter echoes the character of the main dining room but still retains the sense of cleanliness so important in a kitchen."

The importance of equipment is basic, from the vaultlike oven of the *pizzeria* to the shrine of the Espresso House. Above, Miceli's Pizza House in Beverly Hills, Calif. Top, the San Remo Cafe on McDougal St., in New York.

One never failing technique these days to lift a restaurant or institutional kitchen into the showplace class is that of including some exposed brick or stonework. The porous masonry surfaces contrast with the sleek, hard, shiny finishes worn by most other usual kitchen surfaces, and take the curse of impersonality off the room. Below, Canlis' Charcoal Broiler Restaurant by Architects Tucker, Shields & Terry; Wimberly & Cook.

Dearborn-Massar







OPEN KITCHENS

Joe Laschober, of Welton Becket & Associates, architects and engineers (designers of the snack bar above), explains the profit possibilities in the open-kitchen operation for some clients:

"Without a doubt, open kitchens and coffee shop backcounter cooking layouts are the most spectacular money makers in the field. As in all restaurants, efficient layouts which reduce the number of employees without reducing the gross revenue are the fundamental answer to the problem. In particular, the coffee shop which has approximately 24 stools and 10 tables is skyrocketing to the top in Los Angeles and the surrounding area. With a complement of eight people at peak load, this type of operation will be able to work on a 25% labor factor (this difference of 10 to 15% all goes into the Owner's Pocket!). With a specified and limited menu, the operation basically revolves around a 6' griddle and two electric deep fat fryers, which are located on the back counter. The most important items which make this back bar cooking feasible are 1) a back shelf-type highvelocity ventilator (this keeps dining area clean and free of grease odors), 2) undercounter refrigerators with removable drawers instead of doors, 3) self-leveling dish storage wells, which operate by compressing a coil spring.

"A very important tool (really a necessity) is the freezer in which many 'ready to cook' foods are kept, namely breaded shrimp, fish filets, hamburger patties, blanched shoestring potatoes, pork cutlets, and special items such as oyster stew and soups. This freezer also can be used to store baked rolls, pies, and bulk meats for emergency use.

"Of course, any establishment of this type must be easy to keep clean. All of the equipment should be constructed of stainless steel and placed upon solid bases approximately 4" to 6" high. The counter should be set upon a "step-formed" base, and generally faced with laminated plastics. A rather new trend is to use magnesite terrazzo in place of cement terrazzo. Using this compound allows the bases to be actually constructed of


McCuttoch

FOR EFFICIENCY

wood and then covered with a minimum ³4" thick layer of aggregate. The floor and bases are ground and polished to a beautiful, sanitary smooth finish which is very easy to maintain."



In the William W. H. Henry Comprehensive High School in Dover, Del., Architects Victorine and Samuel Homsey built a cafeteria (above) with a view into a pleasant, efficient kitchen used also for home economics classes. Central wall is exposed brick.



Employees of the Electrolux Corp. in scenic Old Greenwich, Conn. have a large recreation building designed by Architects Raymond & Rado. Most popular view in the building: into the exposed kitchen in the snack bar (above).



Ralph Crane-LIFE



THE SERVICE

Somewhere in between the conventional partitioned kitchen and the open kitchen is the scheme which places an island of food out in view in the dining room, while retaining most of the actual workspace in the back room. Restaurant Management Consultant Laurence I. Graham points out that this simply moves the waiter's pick-up counter out of kitchen congestion, thus speeding service as well as providing a floor show. Raymond Loewy, with Graham consulting, did the design below some time ago for Strawbridge & Clothier, in Philadelphia.

Another well-known restaurant consultant, Fred Schmid, of Fred Schmid Associates, commented on the appeal of open kitchens or semi-open kitchens in a speech before



the Annual Conference of the Club Managers Association of America in Los Angeles last January:

"One of the most important trends in highly successful food operations is exposed activity of some sort that takes the dining area out of the formal category. Say what you will, people gravitate toward places of this type. Ideas in this category include exhibition cooking, smartly designed broiler stations, traveling carts for relishes, pastries, and desserts, mixing of dinner salads at tables, *smögasbords* and buffets, flaming desserts, etc. . .

"Plan, if possible, to cut down the distance of travel for employees. One way to accomplish this is to move points of service of food and beverage closer to dining areas. Often this can be accomplished by moving dishwashing equipment farther back or off the food service level, and getting all ware to it by the use of conveyors or subveyors.

"Speaking of dishwashing, the trend here is in several directions: First, the pre-sorting of china, glass and silverware by the waiter or bus boy before it is sent to the dishwashing department to save both labor and breakage. Second, the use of flight type dishwashing machines in combination with rinse injectors to handle all wares, including glasses, in the same machine. (Our experience in this connection has been excellent, and most of our layouts today do not include separate glass washing facilities as such, except for a very occasional brushing as glasses may begin to build up a film from hardwater deposits.) Third, the use of standard modules of glass and cup racks on dollies or in storage wells for multiple handling of clean ware. In many installations these same racks are used for soiled ware, with real benefits in labor saving and breakage.

"Another production idea worth mentioning that saves both labor and expense is one I discovered in making a study of some turnpike restaurants about a year and a half ago. I noticed that the menu in each of the restaurants on the turnpike featured a charcoal broiled steak, but in going through their kitchens I could not see any charcoal broilers. We finally discovered that the steaks were actually broiled rare over 500 miles away, and then individually wrapped and frozen and distributed to the various restaurants. As they received an order for such a steak, either medium, well, or rare, they finished it off on a griddle; and when it was served it was actually a steak that had been charcoal broiled, with all of the markings, etc., and it was done with the greatest of ease with apparent satisfaction to the patrons. . . .

"I realize there is a great difference of opinion about both the quality and the effect on food costs, but just as sure as we're here today the trend toward prepackaged, quality and portion-controlled products of this kind will continue. This suggests the inclusion of more freezer space in any new plans, at least for the present. Predictions for the future include atomic radiation of food which will not require refrigeration to keep it from spoiling."

The stainless serving unit (below), in the Museum of Modern Art restaurant in New York by Philip Johnson, is designed as a structure within the room, shining against the gray brick cafeteria wall.



George Platt Lynes-FORTUNE

Floyd McCall





THE WIDE OPEN KITCHEN

The kitchen-without-a-dining-room, ranging from chuckwagon to hotdcg cart, has not advanced far since the invention of the drive-in restaurant. The California drive-in shown (right) replaced carhops with conveyor belts, but retained the principle: bring your own roof.

Re-examination of this field might be worth architects' time. Economically what could be better than to build only a kitchen? It could also be the final act in openkitchen showmanship. To a degree, glass-sided openkitchen restaurants like this neat design by Architect Welton Becket & Associates in Los Altos, Calif., show what can be developed in this direction.

Douglas M. Simmonds



Berenice Abbott







TOMORROW'S KITCHEN

In the past, most "showboat" kitchens shown to the domestic trade by manufacturers have relied heavily for ideas on their big brothers in the industrial and commercial field. But the new dream kitchens now hallucinating the housewives have finally begun to step ahead; commercial operators may soon be getting their ideas back, with interest. Examples of this are the electronic ovens developed recently by General Electric Co. and Hotpoint. At the recent Chicago Home Furnishing Show these microwave wonders cooked pies in ten minutes, complete breakfasts of bacon, eggs, and biscuits in 45 seconds. Exhibition cooking in restaurants conceivably might utilize these mechanical fascinators as deftly as the juke-box industry uses windowed phonographs.

The General Motors "Kitchen of Tomorrow" now touring the country has a number of domestic ideas which might go just as well, or better, in commercial open kitchens. One obvious one is the transparent dome oven, for broiling, baking, or barbecuing in full view. The oven, which can be rotated for easy accessibility, is covered by a double wall glass dome (photo below).

One of the most significant advances in this "Kitchen of Tomorrow" is the ultrasonic dishwasher, using highfrequency sound waves to clean china, glassware, and other table service—and it can remove lipstick, the bane of restaurant washers (photo above).

Another development is a recipe file developed by GM in conjunction with IBM. The cook can select from a file of 1,000 recipe cards, insert the card in a wall-cabinet slot, and have the dry ingredients delivered automatically into a pot in the right order and exact amount called for by the recipe. Other stimulating predictions: cool cooking counters with concealed induction units (photo below), refrigerators accessible from outdoors for easy deliveries.



A RURAL EXECUTIVE SUITE

FOOL

Nestled in the rolling fields outside Hagerstown, Md., is a long, low building that looks at first glance like a large private home, complete with swimming pool, terraces and a TV mast. The owner, however, is neither an oil tycoon nor a movie star, but a major US corporation. Here, in a well-equipped nerve center, the dozen top executives and staff of Fairchild Engine & Airplane manage by telephone, teletype and company plane the affairs of nine separate divisions scattered all the way from Long Island to Los Angeles. A step away from their offices they can receive important visitors, take them for lunch in a patio dining room or for a swim outside. From his balcony (opposite), President Richard Boutelle

Ax-



can see Fairchild's airfield and parent plant 2 mi. away, where the famed "Flying Boxcar" was first produced and where corporate headquarters were located until expansion brought on a search for new space. Someone had suggested moving out of Hagerstown and looking for a couple of farmhouses they could push together. Starting with this idea, the architects drew up plans for more modern headquarters, carefully retained some of the Pennsylvania Dutch flavor with fieldstone and brick from three old farm buildings.



Low office wings open south to pastoral views, atop service space and garage at left, utility room and files at right. A guest house may be built on near side of pool.



Flying bridge of president's suite is cantilevered on chimney over a shallow pool. Water trickles into fire reservoir which doubles as staff swimming hole. Photos: Gottscho-Schleisner

Simple entrance is textured in native brick and stone, Broad steps here and in back look like fine stone but are plain concrete with rounded edge, slant and shadow cut.





Executives and secretaries are lined up along east wing; H-columns mark the module of their 18' offices. Reception and door to dining flank downlighted stone wall, left.

Visitors entering Fairchild's country headquarters are greeted by an evergreen patio open to the sky. To their right is the dining room, to their left a reception lounge against a many-colored fieldstone wall. There the patio may be entered through sliding glass doors (detail, opposite).



Typical office has wall-to-wall view and a thermostat to control two window-sill slots which supply conditioned air from a single high-velocity mixing box under the floor. Behind tabledesk is a special wardrobeworkdesk.

CORPORATE OFFICE BUILDING, FAIRCHILD ENGINE & AIRPLANE CORP. ARCHITECTS: Fordyce & Hamby Associates ENGINEERS: Strobel & Salzman (structural) Guy B. Panero (mechanical, electrical) GENERAL CONTRACTOR: Norman S. Earley & Son





Kitchen: eye-level cabinets at pantry end block direct view from main approach. Bosses, secretaries and visitors eat informally on two sides of patio (below). To the west of the dining room is a terrace for outdoor dining.



CEILING ST.FRAME Maa ST. FLATE EUIG WELDED TO FRAME SPRING LOADED ROLLER '4' GLASS SLIDING DOOR '4' FIXED GLASS '4' FIXED GLASS SHUTTERS FLOOR FLOOR

Section: extra track welded to stock steel sash holds outside sun shutters (omitted in final design).

OFFICE OF MERIT:

a department devoted to new ideas in finishes, fixtures and furnishings—this time meticulous efficiency looking comfortably gracious in a designer's own office

Photos: Hedrich-Blessing





Windows are masked with sliding wood-frame panels, radiators with asbestos board under cherry window shelf.

Exhibit wall, paneled in cherry plywood under 7' lighting cove, makes handsome use of freestanding lightweight enameled steel verticals holding horizontal steel channel, open side up. Exhibits rest on wood strip in channel. Wall is focal point of most client conferences, many staff meetings.





Corner office nicely combines working, social and conference areas. Unifying window treatment is particularly successful. Sliding shoji screens of black lacquered wood with translucent glass fiber panels shut out uninspiring view, diffuse natural light and sun. Carpet is brown, beige and white mixture. Furniture, all by Designer Bergson, is cherry finish or black lacquer. Upholstery colors are brick red, black, and beige; unpaneled walls, white. Flower pots are painted in bright primaries, inject note of fun without fussiness.





Lighting cove over conversation end of office also conceals air-conditioning outlets, is successful solution to common problem of too much visible engineering. Clean, uncluttered ceiling contributes greatly to serenity of room.

OWNER AND DESIGNER: Maria Bergson Associates LOCATION: New York City

≺ {}

Plan shows main office suite. Because Designer Maria Bergson makes specialty of workspace design, she decided clients had right to inspect her work spaces, finds they not only like to see behind the scenes but it is also often convenient to discuss work with them over the boards in designing department or across elevator hall in drafting and decorating departments (not shown). Office has many unobtrusive ingenuities; for instance wall storage behind receptionist forms counter and shallow storage in adjoining utility and snack room. Reception area is invitingly bright with plastic-bottom fluorescent ceiling fixture and white plastic wall covering. Desk is walnut and white rawhide; floor and one wall, walnut.



Specifications

FINISHES: Walls-wood paneling, US Plywood Corp.; plastic fabric, Gilford Leather Co.; Perforated panels, Johns Manville; cork, Armstrong Cork Co. Floors -wood parquet, Coughlin Flooring Co.; carpet, Edward Fields, Inc.; rubber tile, Goodrich Rubber Co. Plastic work surfaces-Formica Co. and General Electric Co.

FIXTURES: Lighting - fluorescent, Lightolier; wall spots and washers, Kliegl Bros.; recessed ceiling annulites, Rambusch Decorating Co. Exhibit framework-Charnin Builders, Inc. Shoji panels-Owens Corning Fiberglas Co., executed by Kerber Co. Storage partitions-executed by Ammann-Goertz Co. Glass partition-Charnin Builders, Inc. Air conditioning-General Electric Co.; ductwork, Quin & Feiner. Hardware-Yale Lock Co. Kitchenrefrigerator, Hotpoint; sink, Crane.

FURNISHINGS: Interior office's chairs-John Stuart, Inc., from Denmark. All other furniture and fixed cabinetwork designed by Maria Bergson Associates, executed by Lehigh Furniture Corp., American Bronze Co., Friedman Marble & Slate Works, Walter P. Sauer, Roswell Snider, Orsenigo Co., John Stuart, Charnin Builders, Inc. Metal files-Max Blau & Sons.

FABRICS: Upholstery-Thaibok Fabrics Ltd., Falba Fabrics, Inc., Boris Kroll Fabrics, Inc. Drapery -Arunell-Clarke. Cost: \$16,700 excluding furniture for 3,165 sq. ft.; \$5.30 per sq. ft.

Drawing board storage (above) eliminates too-deep unusable drawer space because each cabinet has two-way access, is shared by two boards.

Interior office (below) borrows light through glass partition, white drapery. Rear wall is economical but handsome 1" insulating cork.





Photos: © Ezra Stoller

Facade of clerestoried activities room with painted cement asbestos panels forms backdrop for outdoor stage.

BRIGHT, TRIM PRIMARY SCHOOL



0 25 50 100FT

This little school annex is pretty as a painted wagon. The brightness, neatness and surefooted precision that impress the eye go more than detail-deep, for the plan is equally neat and surefooted with its four classrooms around a general activities area; with its activities area leading into outdoor assembly stage and lawn; and with its detached kindergarten leading to portico and enclosed garden. In last year's American Association of School Administrators' competition, this was a top award winner.

The building is an addition to an existing elementary school across the street which had become overcrowded. The annex not only relieves pressure on the older site but gives the youngest children a less intimidating plunge into school life. Webster Groves, Mo., is noted for its fine school system, backed by an enthusiastic citizenry. In the past ten years, the voters have approved five school bond issues. The latest, for \$2.6 million covering this building and six other projects, got a 94.1% majority!

> **Entrance canopy** leads past kindergarten on right. Colors are pink brick, black steel, white, touches of primaries.









Juncture between kindergarten and main block (left rear) is hung light steel frame, roofed with bright blue corrugated plastic. It joins portico for protected play on south side of kindergarten block.

ARCHITECTS: Hellmuth, Obata & Kassabaum, Inc. STRUCTURAL ENGINEER: John P. Nix MECHANICAL & ELECTRICAL ENGINEERS: Ferris & Hamig LANDSCAPE ARCHITECTS: Layton, Layton & Rodes GENERAL CONTRACTOR: Albers Construction Co. EDUCATIONAL CONSULTANT: Leonard Steger

BRISTOL PRIMARY SCHOOL Webster Groves, Mo. A 6 classrooms. A 230 pupils including double-session kindergarten.

CONSTRUCTION! Reinforced concrete foundation. A Lightweight tubular steel frame, exposed connections welded; 10" brick cavity wall, exposed inside and out. A Interior partitions, plastered or painted masonry block. A Roof, steel bar joists supporting 2l/2'' lightweight concrete on corrugated steel decking; ceilings, acoustic plaster, 4" loose insulation above. Projected aluminum skylights. A Flooring, asphalt tile and ceramjc tile. A Heating, hot water unit ventilators in classrooms, wall-hung fin convectors elsewhere, radiant floor in kindergartens. A Fold-out tables and benches in activities room,

COST: \$181,849, not including fees; \$14.38 per sq. ft.





Classrooms are square, furniture is stackable, for flexibility. Skylights have heat vents and plastic diffusers. Windows, oriented north or south, are con-

Cloakrooms are especially nice feature, keep outdoor dirt from classrooms. Generous and economically built storage cabinets above wardrobes have bright composition board doors which slide in grooved plywood. trolled with yellow draperies economically hung from rings on brass rods, which bring cost to about that of Venetian blinds.





Exterior wall has consistently crisp panel treatment that includes brick areas. West sun on administration wing, a problem only in office and teachers' room, is successfully controlled by draperies as in classrooms.



Photos: (above & bot. left) Mac Mizuki; (below & opp. p.) © Ezra Stoller

In Cambridge, Mass., stands some new architecture

so vivid it has provoked international comment:

CRITIQUE

FORUM has already presented three factual articles on the new Kresge Auditorium and chapel at M.I.T., both before and after completion.* Here now are the reactions of three internationally respected architectural critics—Bruno Zevi, J. M. Richards and Sigfried Giedion—to this pair of designs which have caused more high-level debate in the building field than any other structures recently completed in this country.

The discussion should not be too difficult for the intelligent reader to follow, even though some of the esthetic terms may at first sound strange. (Some diagrams and photographs have been included for clarification.)

Various technical criticisms have been attracted by the unusual character of the

*AF, Jan. '53, July '55 and Jan. '56, Laurence Lowry

THREE CRITICS DISCUSS M.I.T.'S NEW

construction of these two buildings: 1) It is true that deflection in the dome-a phenomenon engineers always expect when forms are pulled away-was about twice the amount anticipated, because the shell comes to earth at only three points; this was corrected quickly by fattening vertical mullions to act as supports. 2) The plastic and cement roof application on this shell (a new process) was put on too fast in wet weather, and will be redone. The technical men at M.I.T. are not seriously disturbed. 3) As in one or two other recent great halls, the acoustical design of the Kresge Auditorium has a very short reverberation time-11/2 seconds average. This makes speakers and small musical groups, for whom it was designed, sound sharp and clear, but opinion is divided on the sound of great orchestras. Director Munch of the Boston Symphony likes it. Local music critics debate it. Actually, the "hi-fi" sound imposes new demands of precision on composers and performers. It may distort older compositions, which were intended for less scientifically "correct" auditoriums. Yet it may also evoke new kinds of composition suited to its clear precise response.

In short, the buildings, like all buildings and men, are not perfect. But significantly, the clients—a group of very demanding technical experts—seem happy with both the chapel and auditorium. The architect has inserted into the stiff curriculum of the foremost US technical school two boldly humanist symbols, and they are appreciated.

Airview shows M.I.T.'s domed auditorium in foreground, cylindrical chapel directly above



BUILDINGS

Bruno Zevi is an architect in Rome, editor of <u>L'architettura</u>, a monthly architectural magazine, professor of history of Architecture at University of Venice, and author of several important architectural books.



A tight fit of function into enclosure?



Would logic bring a dome to earth all around, not in just three places?

Photos: G. E. Kidder Smith



More appropriate: medieval informality or classic formalism?



"The mistakes of great architects are always significant"

Italian architects were puzzled when I published Eero Saarinen's Auditorium in L'architettura. Eugenio Montuori, one of the authors of the Rome Railway Station, said: "You've done it now! We were already confused between the functionalist and the organic approaches in architecture, between the Le Corbusier and the Wright trends. And here comes Saarinen preaching total irrationalism. You've published it. and the mess is complete!" The famous engineer, Pier Luigi Nervi, did not like the M.I.T. dome: "I could demonstrate," he stated, "that structural thought and common sense have been allied in all ages. Today structural ideas are invaded by extravagance, and they are deprived of all justification. [See diagram for explanation—ED.] I really wonder why you published this auditorium in your magazine."

I cannot express a definite opinion on Saarinen's design, for the simple reason that I have seen the auditorium only in photographs and drawings. Space cannot be judged in graphic form. There is, however, a "philosophy" behind Saarinen's design which can be a matter of objective discussion. To be sure, I do not happen to agree with this philosophy, but as an architectural historian I believe that the M.I.T. group is significant of today's figurative impasse, perhaps even of today's moral crisis.

Let us consider first the auditorium, then the chapel. The idea of a universally valid "form," separate from function and from technical requirements-in this case, one-eighth of a sphere, independent of acoustical arrangements and "beautiful in itself"is the old classical, or better neoclassical, idea: a myth of the Romantic Age. You select a shape and then you fit the human content, no matter what sort, into it. In this kind of architectural philosophy, geometry prevails over psychology, abstraction over reality, symbols over men. The resulting building derives its value from the idea it represents, not from what it is, nor from its social impact. Is a procedure of this kind legitimate; is it good or bad? Theoretically, it may be one thing or the other. The Parthenon is splendid in its formal abstraction, and a Medieval plaza is beautiful in its human adherence. For today's culture, however, I believe that a Medieval plaza is more significant than the Parthenon. Saarinen has chosen to dissociate form from function, construction from technological needs. He appears to embrace the philosophy of Mannerism, typical of the production that followed Michelangelo's genius, in the late sixteenth century. Mannerism did not prevent artistic creation, but was the expression of an escape from reality, of an architectural nervous breakdown, of an evasion from the rational and organic approaches to architecture. Mannerist architects were unhappy and bored, so were their clients, so was their society. They did not know what to express, and they dedicated themselves to the search for generalized forms, for shapes more astonishing than convincing. Perhaps Eero Saarinen had to arrive at a similar point: his great father's elegiac bent and his own engineering education could not go together for long. A jump was necessary. The auditorium is the sincere expression of this jump.

My opinion of the chapel is more definitely negative. Again the ideal of "timeless" forms-not of today, but of all times and places-is the old ideal. But in the chapel it is bound up with a symbolism that, I am afraid, is doomed to failure. In Italy we have a long, unfortunate experience with this kind of religious architecture-"half modern and half old," "modern with a classical flavor," "inspired by tradition, but contemporary in interpretation." None of our religious buildings conceived in this way makes sense, while some of our modern churches, totally free from traditional schemes, are not only good architecture +but excellent places for spiritual retreat. Saarinen's chapel will certainly be an interesting building; it will excite the curiosity of M.I.T. students and visitors, but will be spiritually unsuitable and culturally misleading, as are all "bright ideas." Modern religion is a problem that architects must cope with in a modern way. This chapel will not serve the purposes of religion or spiritual elevation; it will only provide an artificial escape. You are not going to feel happier when you enter it, because it is not true, spon-

continued on p. 174

TECHNOLOGY

A look at new pile, pier and foundation techniques. . . . How soil testing can prevent costly errors in foundation design. . . . Concrete dome on cantilevered arms. . . . Survey of air-conditioning problems. . . . Radiant heating for an indoor arena. . . . Sprayed-on concrete spandrels. . . . Building research



Courtesy L. B. Foster Co.

NEW TRENDS IN PILING AND PIER TECHNIQUES

Foundations are being designed more rigidly as building spans grow longer, loads more concentrated



There is a growing tendency among foundation engineers to design more rigid foundations than was formerly their practice. This is true not only of the large, heavy structures, which have always been set on deep underlying strata, but of all important new structures.

A major influence behind this trend is modern building design, which uses greater and greater spans between columns as more open areas are sought. This concentrates loads on fewer columns and forces the engineer to design deeper or more widely spread foundations or else go to piling or piers for support.

As the science of soil mechanics advances, many formerly acceptable axioms of construction have been shown to be little more than old wives' tales. Today, the lightest structure is given the benefit of soil investigation before founding. The necessity was proved when many small structures settled seriously despite their light weight. Nowadays the existence of nonsettling structures on a site is not considered conclusive exidence that additions or entirely new and independent buildings will not settle. Radical variations in soil conditions have been discovered side by side on the same site. Moreover, serious soil deformations and consequent settlement can take place because of a few tons of overload caused by an additional structure.

Here are other trends in piling and foundation technique:

▶ In Chicago, the birthplace of the "Chicago caisson," and the place where it has been a favorite foundation device, the structural steel pile is gaining favor. The new Inland Steel building will be founded on H-beam bearing piles. One reason for the decision to use steel was a test conducted by US Steel Corp., which demonstrated the high bearing capacity of such piles when driven to refusal 100' to 120' down in hardpan and bedrock.

Another technique that is gaining widespread popularity is the use of well drilling equipment adapted to cast piles and piers on suitable stable strata or rock. The technique permits high loading without danger to adjacent structures from the vibration caused by pile driving. The augering equipment used in this method is also flexible enough to be used in locations with restricted headroom or tightly circumscribed quarters.

> Somewhat removed from piling, but still within the area of foundation work, are new methods of soil stabilization and grouting. Most such methods involve grouting weak and permeable areas through lateral penetration by concrete and chemical mixtures. But one new technique for stabilizing loose sand uses



vibration-compaction to form sand piles on lish which to set a slab foundation. This method relies on a vibrator similar to that used form

which to set a slab foundation. This method relies on a vibrator similar to that used to compact concrete, but is much larger and is so arranged that water is forced into the sand at the place where it is being vibrated.

Another new technique involves the introduction of a grout into the soil as a patented auger is rotated and withdrawn from the auger hole. Though still in the development stage, these "piles" have proved very satisfactory in sand; and research is extending their use into other materials.

Theory and controversy. Those interested in the science of foundations are analyzing a new theory and arguing an old (and still unsettled) controversy.

The theory concerns the possibility that a long slender pile with light lateral support will buckle under load. (Many specifications and building codes require some form of stiffening for such a pile.) In the opinion of A. E. Cummings, research engineer of the Raymond Concrete Pile Corp., this possibility is extremely remote. Cummings has found that in any soil which would support an appreciable part of the load by friction (almost any soil with more body than quicksand) there is no reason to believe that the pile might buckle. He believes that even very soft soils can provide sufficient lateral stability to prevent buckling and that a relatively weak soil will provide lateral stability up to the crushing strength of the pile.

The controversy, which still arouses some heat among foundation engineers, is whether pile tests or pile driving formulas can best determine the bearing capacity of a pile.

For 100 years engineers have conceived and derived dynamic formulas to establish the bearing capacity of piles. Some formulas, such as the "Engineering News" formula (above) assume that pile driving is a problem in Newtonian physics and account for energy losses in terms of the inertia of the pile. Other, more complicated formulas, try to take the soil into account, too. But critics say that at best all such formulas are empirical, checks on actual loading tests of piles. In rebuttal, the users of formulas point out the difficulty of making a sufficient number of load tests to take care of the different soil strata likely to be encountered even within a restricted site.

The latest effort on the part of foundation engineers is to derive a formula based on the physical dimensions of the pile and the physical properties of the soil (both before and after driving). Such formulas are now quite complicated, but they seem to offer the best field for further advancement in foundation science. US Steel's recent test on H-beams in Chicago included a fully instrumented pile with strain gages along the entire length. The report on the test says that "... further tests of this nature may eventually lead to determination of pile length solely from soil data."

Choosing a foundation

Here is a review of foundation criteria and some case histories to show modern practice in the use of piling and piers:

The broad fundament of all foundation work is the earth itself. For 25 to 30 years, the science of soil mechanics has been making steady progress in devising a set of theoretical equations to describe the soil as an engineering material. But at present the science is still full of empirical assumption and "practical" rules of thumb for finding the shear and compressive strengths of soil. lying a point. Combining several logs gives the subsurface topography (right) of the entire site.

Soils. While it is impossible to divide soils from rocks (geologically speaking soils are a subdivision of rocks), soils are generally considered to comprise mineral grains with water, air and dissolved salts filling the voids between them. Identification of a soil as clay, silt, sand, gravel, hardpan, peat or muck depends upon the size, color, mineral content and properties of the grains. However, identifying a soil rarely gives more than a slim clue to its qualitative behavior under load or force (chart, p. 162).

Further classification of identifiable soils by means of such subjective words as "soft," "stiff," "tough" helps in determining soil characteristics, but still lacks the precision soil scientists and engineers are hoping will eventually come out of their studies.

In general, soils are divided into sands and clays. Sands have almost no cohesion, clays have both cohesion and friction. Sands do not consolidate appreciably under load, clays and silts do. Clays consolidate slowly and at variable rates. Sand and clay mixtures have characteristics of both types of soil.

Spread footings. The most common solution to a foundation problem is the spread footing—individual mats or strips of concrete to transmit the column or wall loadings to the earth. Spread footings sometimes fail because of one or a combination of several causes:

▶ Variable bearing capacity of a soil permits differential settlement of the independent mats.

Live and dead loads create eccentricities in loading.

Live load is often underestimated. (More often, by far, than the dead load.)



Courtesy L. B. Foster Co.

Building alterations often cause changes in both live and dead load.

Mat foundations. Light bearing soils or heavy structures sometimes preclude the use of spread footings. In that case the mat foundation may solve the problem. It usually consists of a slab of concrete (sometimes several feet thick) which acts as a pressure pad. When designed in this fashion the soil pressure under the pad is considered as the load, the building columns are considered as reactions.

The mat may also be designed as a series of inverted T-beams, deriving its rigidity from the construction rather than the mass of concrete. Another variation of this solution is to design the first two or three floors and basement as a Vierendeel truss resting on a concrete slab.

The most common error in mat design is not making the centers of gravity of the mat and the column loads meet at one point. This usually produces differential settlement.

Piles and piers

If the soil will not support the load on spread or mat foundations, it is necessary to reach down through the soft or unstable top strata to a more stable underlying strata of soil, or to rock. Piles proyide one means of transmitting loads to substrata. They are also used to compact some soils. Those which maintain their loads solely by means of the friction of the soil are known as friction piles; those

height (left) is done before concreting. Once filled, piles will be capped with concrete footings to form a rigid foundation secure against settlement and movement. Auger (right) is used for uncased cast-in-place piles and piers. Augers up to 40' long are available for continuous drilling. Some rigs are reduced in height to 8' to 10' for use in close quarters.



which act as short columns or posts are bearing piles. Most piles combine friction and bearing to support loads.

Piles may be classified according to material-wood, steel, steel and concrete, precast concrete, cast-in-place concrete. Or they may be classified according to the method of installation-hammer driven, bored or screwed. Cast-in-place, composite and screw piles are generally patented.

Wood piles. A plain wood pile has the lowest first cost. However, to prevent decay, it must be cut off below the permanent ground water level. (Water tables in most populated areas of the US have been going down in recent years.) Treated piles (commonly creosote impregnation under pressure) can be cut off above the water table and will resist rotting and insects

A good example of the modern use of wood piling is found in the International Arrival building at New York International Airport. Bids were taken on pressure creosoted timber piles with a minimum design load of 25 tons, and also on cylindrical or tapered steel-encased concrete piles with minimum loads of 45 tons each. The wood pile bids averaged \$187,000 less than the average of the other bids. These piles are 20' to 35' long, although single lengths of 75' may be driven when such timber lengths can be found.

Precast concrete piles are not often used in building construction; they are more frequently encountered in marine construction-docks, bulkheads, piers and overwater trestles. About the deepest such piles have been driven is 150'; the usual pile length is 40' to 75'. Load average 50. tons per pile.

Cast-in-place piles are used more often than precast piles in building construction. A variety of corrugated steel pile cases, driven with a mandrel, are available. Once driven, the case is examined for damage and then filled with concrete, reinforced if necessary. By welding sections to the casing, the pile may be lengthened as desired.

Other kinds of cast-in-place piles do not depend upon a metal casing left in the ground. The casing is driven into the ground, and then-either while or after the concrete is poured-the casing is withdrawn.

Pedestal piles are formed by pounding a "plug" of concrete to form a bulb at the base to increase the pile's bearing capacity. Uncased piles are relatively inexpensive and the lengths can be varied to meet job requirements.

A typical cased cast-in-place project was the East Jefferson Water Works, La. Some 407, 50' piles were driven 90' to 100' (using a field welded splice) to carry a design load of 40 tons. Such thin-wall castin-place piles can carry 30 to 60 tons and the average length (with splices) is about 85'.

Uncased piles may be cylindrical or

L= SAFE LOAD IN POUNDS W= WEIGHT OF FALLING PARTS IN POUNDS H=DROP IN FEET OF FALLING PARTS S=FINAL PENETRATION PER BLOW IN INCHES

Nº 1 STEAM HAMMER HAS A WEIGHT OF 5000 POUND FALLING 3 FEET. Nº 0 STEAM HAMMER HAS A WEIGHT OF 7500 POUND FALLING 315 FEET.

PILE FORMULA shows how easily bearing capacity of a pile is figured. This venerable (1888) "Engineering News" formula is still most widely used in the US.

pedestal types. One patented type of pedestal pile which depends largely upon the bearing capacity of the bulb at the end was used on US Gypsum Co.'s Stony Point plant. Some 228 piles were placed at depths of 11' to 39' to carry a load of 100 tons each. This type of pile has a working depth limit of about 60' in the right soil. Other types of uncased piles carry 40 to 60 tons.

Bored concrete piles are formed by means of drills, soil augers or jetting down a casing. The great advantage of this type of pile is that it requires no vibration or pounding which sometimes disturbs neighboring structures or sensitive soils.

Steel pipe piles, with open or closed ends, are driven in diameters up to 20". After cleaning out the earth left in an open-end tube by water jet or compressed air, the tube is filled with concrete.

Chicago's 500 Lake Shore Dr.—a modern 29-story apartment building — is founded on 558, 10-¾ " O.D., concrete filled steel pipe piles 65' to 75' long. The design load is 60 tons per pile. Similar piles have been driven to depths of 180' and carry loads up to 200 tons. Design load depends partially on steel at 9,000 lb. per sq. in. in compression and partially on concrete at about 1,000 lb. per sq. in. in compression.

Structural steel shapes have recently been used as piles by US engineers. The most popular structural shape is the H-beam. Such piles can take hard driving and, because of their slight displacement, can be driven close together. They will also penetrate dense soils and shove aside small boulders. Corrosion is not a serious problem unless the soil is quite acid.

Steel piles are being used on the new 19-story Inland Steel building in Chicago. The average depth for the 422 bearing piles will be about 85'. Tested with 240 tons of steel ingots the piles (14" w.f. 73 lb.) will be used to support 120 tons each.

Caissons and piers. The building industry uses the term caisson to refer to any concrete shaft of large cross section (manhole or larger) extending down to hardpan or bedrock to support a heavy concentrated load. Actually it is a pier; a true caisson is a marine engineering device for constructing a pier.

The well-known "Chicago caisson" (a circular pit in clay soil, which is dug by hand or machine, sheeted with vertical wood staves and braced with internal steel hoops) was used for the deepest foundation ever built in the US. This project was the Cleveland Union Terminal, which has piers going down 261' below curb level. Such piers support 40 to 60 tons per sq. ft.

Today, piers are built by a variety of well-boring methods. Typical of such a project was the foundation of the W. T. Grant store in St. Paul. Pile driving was not permitted because of fear of damage to adjacent buildings. The answer was machine drilling. There are 47 caissons, designed to carry 150 to 200 tons each. They were drilled 4' in diameter, belled out to 5' on rock, which was 45' down, then concreted. When completed, the pier method was found to be more economical than the originally planned pile driving scheme.

A variation of the machine drilled caisson is a composite pier which uses a steel shell driven to rock and cleaned out, a socket drilled into the rock, a steel core (usually an H-beam) and concrete filling. Capacities of 500 to 2,000 tons per pier, depending upon the diameter of the casing and the size of the core, can be developed.

Why buildings settle

Statistics are not available on the number of buildings which settle to a dangerous extent. But millions of dollars are paid to specialists in underpinning and foundations to repair and strengthen badly founded structures. The deficient foundations may be the result of improper design or errors in estimating the action of the soil. Serious settlement in buildings has many causes. Here is a list of the most important ones compiled by Harry T. Immerman, chief engineer of Spencer, White & Prentis, from actual cases handled by this firm:

Errors in design:

Assuming uniform distribution or pressure beneath a wall with a nonsymmetrical footing.

Assuming bearing capacities of soils from load tests on small areas.

Inadequate borings.

Inaccurate classification of soils.

Errors in spread footings or mats:

> Overloading the soil.

Assuming uniform pressure beneath a spread footing.

Building on unconsolidated fill.

Placing a foundation element eccentrically under the load it is to support.

> Undermining and slides due to adjacent excavation.

Breaking through the foundation stratum to softer underlying stratum.

Inadequate sheeting adjacent to an existing foundation to avoid underpinning.
 Vibration.

Vibration.

Providing otherwise adequate foundations but overlooking the load of the ground floor.
Slippage or lateral displacement of the strata beneath a foundation.

Errors in building on piles:

Failure to drive friction piles to proper depth.

• Overloading piles.

▶ Rotting of untreated wood piles after recession of ground water level.

Disintegration of untreated wood piles due to action of insects.

Disintegration of concrete piles due to harmful chemicals in the soil.

Relatively soft strata at point of bearing pile.

Damage to pile caused by overdriving.

Buckling of long pile caused by inadequate lateral support.

> Spacing piles too closely (less than three diameters center to center) which destroys the supporting capacity of the earth.

Lateral displacement of stratum in which piles are driven due to adjacent excavation.
Overloading of piles by added weight of adhering fill which settles and drags on the pile.

Applying full load to heaved piles.

Collapse of the thin steel of a shell pile.
Voids in concrete filling of cast-in-place pile.

Assuming the carrying capacity of a group of piles equal to the number of piles multiplied by the capacity of a single pile.

At least 11 of the reasons given above involve soil mechanics. On the following page an expert describes soil test procedure and the consequences of omitting it.

HOW TO PREVENT FOUNDATION FAILURES-by M. D. Morris,* A.S.C.E.

Too often omitted as an economy measure, soil testing can avoid costly foundation doctoring

Whether the foundations are piles, piers, footings or rails (pp. 160-163), it is only common sense to investigate the soil conditions of a site before a foundation is designed. Overdesigning will be costly in design time, specifications, form work, material engineering and labor: underdesigning may mean collapse. A soils study will reveal whether or not the foundation plan is adequate.

If a soil exploration is omitted as an "economy" measure, the sad case of a Michigan school is apt to be repeated. Its foundations were arbitrarily made 4' deep and 2'-5" wide. As the building soon began to show cracks from differential settlement, a contractor went in under the footings with a reinforced concrete slab 1'-8" deep and 7' wide, in an effort to spread the load. When the building continued to settle, specialists in underpinning were called in. They analyzed the boring log and found that, while the upper strata showed a resistance to penetration of seven and eight blows per foot, from depths of 13' to hardpan at 62', intermittent layers of soft clay and sand resisted only half a blow per foot.

The cost of inserting pretest cylinder underpinning piles to save the building ran to some \$25,000.

Soil testing. A subsurface investigation should consist of three phases: taking samples from a reasonable depth; testing of the samples; and interpreting the results for proper use in design and construction control.

Samples can be taken by hand from an open pit, or by forcing a tube into the bottom of a deep, small-diameter hole that has been drilled, lined and cleaned out. Notes are taken of the color and content of the clean-out wash water and the number of blows per foot by a standard weight in driving the sampler. These notes are shown on a boring log, which is a graphic picture of the substrata at the site (see diagram, p. 159).

Sometimes a good boring log is all that is needed. Otherwise samples may be sent, hermetically sealed, to a laboratory to be tested. Testing determines resilient and plastic deformation under sudden or gradual loads; the degree of passage of water and its resultant pressure effects; resistance to shear and lateral forces; and many other soil characteristics. One such characteristic is the acidity or alkalinity of the soil which helps decide whether to coat steel piles if the soil is acid, or not to coat the piles if the soil has a basic pH value.

It is best to make borings as close together as economically possible. Some state codes have minimum specifications. New Jersey, for example, calls for one boring per 5,000 sq. ft. of area, while New York requires one in each 2,500 sq. ft. Borings should go to bedrock, if possible, or at least several times the depth of the lowest point of the proposed structure.

Here are other examples showing the need for predesign soil testing:

A project in Westchester County, N.Y., was a 700-room brick, semifireproof apartment building with a steel frame and concrete foundation. The footings, foundation and basement walls were to be formed in one monolithic pour in spite of the irregular shape of the building and the ground.

The owner acted as his own general contractor. He took a few borings, too widely spaced to be of any value. They indicated rock and soft clay. His plan to trench out the footings with a backhoe seemed economical until, in one corner, he ran into a bed of quicksand which had to be removed in its entirety. His digging subcontract had to be extended to include excavation of a $20' \ge 25' \ge 30'$ volume of quicksand. The void had to be filled with concrete. Not only did his costs skyrocket on these two items but the three months' delay in completion cost him that much in rents.

A big American industrial firm was building a plant on a Caribbean hillside. As the shovels sidecut a hill to form a bench for construction, the hilltop slid into the cut. A system of drains, retaining walls and piling devised by consultants enabled construction to proceed in safety. In this case, all the company lost was time; but next time it will order a boringtesting-analysis program while the plant is still in the planning stage and prevent the delay, or worse.

▶ In Washington, D.C., an underpass was to be built alongside an existing structure on an embankment. Laboratory tests on samples from the site showed conclusively that the structure would slide into the excavation for the underpass if it was dug out for its full length. Armed with this information, the job went ahead in short stages—10' lengths were cut, braced, formed, and concreted progressively. This method allowed the underpass to be completed without disturbing its surroundings.

* Eastern representative, Soiltest Inc.

Soil classification

The second			
CLAY	Soft	Less than 0.60 tons/sq. ft.	
	Stiff	0.60 to 1.00 tons/sq. ft.	E FERRE
	Tough	1.00 to 2.00 tons/sq. ft.	
	Very tough	2.00 to 4.00 tons/sq. ft.	a desta descuis
	Hard	Greater than 4.00 tons/sq. ft.	Compressiv
PEAT	Very soft	Less than 0.30 tons/sq. ft.	strength
	Soft	0.30 to 0.60 tons/sq. ft.	(uncontined
	Stiff	Greater than 0.60 tons/sq. ft.	
HARDPAN		Greater than 6.0 tons/sq. ft.	A Shirth State
(dense sandy gr	avelly clayey silt)		J
SILT	Loose	Less than 80 lb./cu. ft.]
	Medium dense	80 to 95 lb./cu. ft.	
	Dense	Greater than 95 lb./cu. ft.	Density
MUCK	Loose	Less than 80 lb./cu. ft.	
(organic silt)	Medium dense	Greater than 80 lb./cu. ft.	
SAND	Loose (0-30% rel. density)	0-10 blows/ft.	1
	Medium dense (30-60%)	10-30 blows/ft.	A SAULE MARK
	Dense (60-100%)	Over 30 blows/ft.	Penetration
GRAVEL	Loose	Less than 30 blows	resistance
	Dense	Over 30 blows/ft.	
FILL	Depends on nature of the fil		1.11

In the absence of a test, the building code of the National Board of Fire Underwriters suggests this guide to the bearing capacities of soils in tons per sq. ft.: soft clay, 1; firm clay, 2; wet sand, 2; sand and clay, mixed or layers, 2; fine dry sand, 3; coarse sand, 4; gravel, 6; soft rock, 8; hardpan, 10; medium rock, 15; hard rock, 40. — ED.







1

SKELETON framework of light tubular members forms barrel vault roofs of two British industrial buildings. The framework is partially shop fabricated; partially bolted together at the site. Vermiculite concrete is screeded on expanded metal lath (left) then covered with built-up roofing. Undulating roof line (right) is formed by reinforced concrete end beams with 32' chords. Note skylights on 3' x 3' module set



SEMI-PREFABRICATED BARREL ROOF

into the roof.

Speedy erection, elimination of formwork and lightweight concrete make for cheap, vaulted roof

Shell concrete barrel roofs have been increasing in popularity both here and abroad, but certain drawbacks—slow speed of construction, elaborate formwork, poor insulation value and high costs—have prevented their use in many cases. A new British-patented system promises to overcome some of the disadvantages.

The new system is a basket frame with a grid module 3' x 3' of steel tubes or light structural sections. The cross-ribs of the frame are shaped to an approximate ellipse by following the line of a two-center curve. The longitudinal members and diagonal bracing are welded at the shop to the ribs in easily handled panels. These are then assembled at the site by welding or bolting. Bay sizes for undivided barrels can be from 20' to 40' wide and 40' to 120' long.

The barrels, which average 3 to 6 tons each, can be assembled on the ground (if sufficient space is available) and hoisted into place by a truck crane. Or they can be erected in place using light scaffolding.

Cladding and roofing. To provide both insulation and cladding, the system uses lightweight concrete without forms.

Either before or after erection of the skeleton, stiffened expanded metal lath is wired to the underside of the frame. It serves as a permanent form and as a stiffener for the concrete, although for longer spans additional wire mesh may be needed.

The concrete, made of vermiculite or some other lightweight aggregate with a dry weight of about 40 lb. per cu. ft., is laid on the roof $3\frac{1}{2}$ " to 4" thick. The surface is smooth-finished to take built-up or mopped-on roofing. The underside of the roof can be finished in cement mortar or sprayed-on lightweight plaster. In the latter case, the roof has an unusually good insulation value—less than 0.2 U.

The design of the roof also permits a variety of skylighting or clerestory lights to be installed. Skylights fitting into the $3' \times 3'$ grid can be patterned over the whole barrel. Up to 40% of the area of the barrel can be used for glazing.

Case study. This roof system has been used in over 20 buildings in Great Britain during the last three years, one typical project being the locomotive repair shop of Bowaters' Kemsley Mills (photos above).

The building is $60' \ge 450'$. The roof is formed with 14 barrel-shaped frames designed to give an undulating line with reverse curved valleys. The barrels span the 60' width of the buildings and have a chord averaging 32'. Each roof section has a reinforced concrete end beam shaped to the curve of the barrel. The roofs are carried by reinforced concrete columns at each corner of the barrel. The exterior walls are of 11" cavity brickwork.

The roof structure for this building consists of a lightweight concrete cladding on a prefabricated framework of steel tubes. Panels of framework—about 7' x 30'—were built up in a factory, carried to the site and covered with expanded metal lath. Hoisted into place, the frames were then bolted to the end beams and to each other at the valleys.

Precast curbings for skylights were placed on the roof, and vermiculite concrete was then screeded over the framework in two layers to a depth of $3\frac{1}{2}$ ". The concrete was finished smooth to take three layers of bituminous felt on the weather side; the soffit was finished with a $\frac{1}{2}$ " of cement mortar.

The 14 frames were placed in position in three weeks and the whole roof job was completed in five.

Consulting engineer was C. V. Blumfield, who holds the patents for the roof (he is applying for a US patent); the architects were Farmer & Dark.

ENGINEERING NOTES



THIN SHELL DOME

Dallas arena balances toppling of bents against spreading of dome

To balance the horizontal thrust of a thin shell dome about 204' in diameter, the reactions of 32, 84'-high rigid concrete frames are used on the main arena of Dallas' Memorial Auditorium. Each frame has a 48' cantilever. The dome has 32 stiffening rigs which rest on the cantilever arms. The arena thus has a clear space 300' in diameter.

The vertical forces from the weight of the dome acting on the cantilevers of the frames would produce a toppling effect. But this force has been balanced by the horizontal forces induced by the tendency of the dome to spread. To tie the frames at the base, and help resist outward reactions, the first floor was designed as a membrane tie.

The main arena, largest unit of the auditorium, is a circular stadium seating 10,000. The thin concrete dome $(3\frac{1}{2}"$ at crown; $5\frac{1}{2}"$ at base) has a rise of 25', with its center 90' from the floor. Provision of 32 stiffening ribs permitted the economical re-use of segmental forms and multiple pours rather than one single pour.

George L. Dahl was the architect and engineer; Ammann & Whitney were consultants; R. P. Farnsworth was general contractor.

RADIANT HEATING

12,000-seat arena is heated by radiant panel of 12,000' of water pipe

The heating system serving the new student activities building at the University of Maryland is a unique radiant heating installation. Hot water is circulated through wrought iron pipe embedded in 30" concrete treads supporting 26 rows of terraced seats. The heat is thus delivered where it is most needed—at floor level beneath each of the 12,000 fixed seats. (The arena floor can seat 4,000 more spectators.) Comfortable temperatures are thus achieved without the expensive necessity of first warming the upper reaches of the 336'-long, 241'-wide and 102'-high structure.

Piping under the straight runs of seats is in the form of simple grids. For the curved sections of the oval seating plan, a scheme had to be devised to balance the flow of water and prevent short-circuiting through the short arcs of pipe at the lower end of the wedge-shaped segments. This was done by using transitional segments of sinuous piping, which covered several rows on the short end of the segment and gradually decreased the number of passes as the piping progressed toward the long arc at the top of the segment.

As much of the piping as possible was installed in simple grid form, with feeders running under the aisles and cross members under the rows of seats.

Total piping used in this all-wroughtiron installation includes: 20,000' of $1\frac{14}{4}$ " cross pipe, 4,175' of $1\frac{1}{2}$ " to $3\frac{1}{2}$ " header pipe and 1,600' of 4" pipe for mains.

The heating system is divided into two heating zones, each with its own exchanger, circulator and control. Each exchanger provides 1,792,000 Btu's per hour; each circulator provides 162 gal. per min.

For ventilation, air is admitted at floor level through grilles in the wall below the seats of the main arena and is exhausted by eight roof fans.

The building itself is of rigid steel frame construction and has a cubical content of 7 million cu. ft.

The architects were Hall, Border & Donaldson; the engineers were H. Walton Redmile & Assoc.; the Baltimore Contractors were general contractors; William H. Singleton Co. installed the piping.



AIR CONDITIONING POLL

Building industry cross section reveals opinions of air conditioning

Noisy equipment is the one most disturbing problem in air conditioning, according to a recent poll of architects, engineers, builders and building owners.*

"Too much noise" was the leading objection by all respondents to all types of air-conditioning equipment, and "noise reduction" was the one major improvement recommended.

Other highlights from the poll:

A sharp division was made in recommending air-conditioning systems for new or old multistory buildings. For new buildings, 68% would put in central systems, but for old, 52% would install package-type systems. The choice of type of central system for a new building was similarly heavily weighted in favor of central distribution for one or more floors, 66% favoring this type. For old buildings the package unit advocates also went overboard for one large unit per floor by 62%.

According to the survey the factors in selecting a type of air-conditioning system split fairly evenly, with ease of maintenance being the most important factor. By weighing the answers to determine the relative importance of each factor, here's how the five chief factors stand: maintenance ease, 24%; price, 21%; space requirement, 20%; individual room control, 19%; ease of installation, 16%.

The respondents expected systems to last a long time. Almost half (49%) expected a package system to be troublefree for five to nine years, and 29% expected a central system to be free of major repair or replacement problems for 10 to 14 years. A pessimistic 2% expected trouble almost immediately (within one year or less) while an optimistic 3% expected a package unit system to give over 20 carefree years, and 17% expected the same from a central system.

In specifying a system, architects said they lean heavily on consulting engineers -76%. Even more architects discuss airconditioning requirements with the engineer before deciding on the type-85%. The client is also consulted on this decision

^{*}More than 1,600 FORUM subscribers have agreed to give confidential answers to significant questions about the design, manufacture, marketing or distribution of building products. The first poll of the 1,600—a cross section of the building industry by geography and profession—was concerned with air-conditioning equipment.

-71% of the architects discuss air-conditioning requirements with the owner. And the building owner agrees with this answer fairly well; only 18% said that they are not active in selecting air-conditioning equipment.

Gordon Sommers



LIGHTWEIGHT SPANDRELS

Sprayed-on lightweight concrete is used for thin spandrel wall panel

The first commercial building in Los Angeles to use lightweight concrete spandrel walls is under construction by Tishman Realty & Construction Co. The exterior skin of the 13-story structure is composed of aluminum framed glass panels and thin spandrel wall sections of vermiculite concrete.

In the construction of the 4"-thick spandrels, the lightweight material was sprayed by pneumatic machine from inside the building in layers against a paperbacked lath supported on lightweight channel frame. In addition to providing insulation properties greater than ordinary concrete, the walls will withstand a wind pressure of 30 lb. per sq. ft., and have a fire rating of four hours.

Structural framing of the building is of the two-way rigid type with welded connections between beams, girders and columns. The strong (X-X) axis of the H-columns is turned 90° in alternate rows so that there is resistance to forces from all directions. Welded connections and cantilevered girder ends saved dead load weight by permitting lighter steel sections than in conventional framing. A total of 1,150 tons of framing steel was used about 10 lb. per sq. ft.—a saving of about 3 lb. per sq. ft. over conventional.

Horizontal and vertical aluminum louvers are used to shade the building's large glass areas. Aluminum-covered outriggers at the ceiling line support the system, as well as a traveling platform for maintenance of glass and exterior surfaces.

Architect was Victor Gruen & Assoc.; Edgardo Contini was consulting engineer.

RESEARCH

A spotlight on new tests, new standards, new studies

"Generally Accepted Standards Applicable to the State Building Construction Code," the State Building Code Commission, 1740 Broadway, New York 19, N.Y.

Performance-type building codes and specification-type codes with alternate performance provisions, which constitute customary building regulations in force throughout the US, have given generally accepted engineering standards the force and effect of law.

While acceptance of these engineering standards by reference in the codes is not a new device in code drafting, the trend toward such acceptance has been marked by caution stemming primarily from legal considerations.

In enacting the State Building Code Law, the Legislature of New York State took a decisive stand. It mandated that the state code should "provide reasonably uniform standards for construction and construction materials, consonant with accepted engineering and fire-prevention practices," and that standards and requirements be formulated "in terms of performance objectives, so as to make adequate performance for the use intended the test of acceptability."

This legislative mandate compelled the compilation of such standards. The State Building Code Commission, in this pamphlet, gives recognition to the standards of 34 agencies ranging from the American Concrete Institute to Underwriters' Laboratories, with the most frequently cited being the American Society for Testing Materials, the American Standards Assn. and the National Fire Protection Assn.

The standards cover safety during construction, structural requirements, fire safety and equipment requirements—in all, 223 standards are listed.

During the month, associations reported the following research projects:

▶ The Acoustical Materials Assn., 59 E. 55th St., New York 22, N.Y., is seeking an official method through panel tests for measuring flame resistance of acoustical materials and is conducting further research on adhesives for such materials.

▶ The Western Red Cedar Lumber Assn., 4403 White-Henry-Stuart Bldg., Seattle 1, Wash., in cooperation with laboratories and educational institutions, is seeking to develop improved techniques for applying siding, and to develop a priming material which will reduce siding painting costs and improve performance.

▶ The National Warm Air Heating and Air Conditioning Assn., 640 Engineers Bldg., Cleveland 14, Ohio, will research the effects of house attic ventilation on heat gains at the University of Illinois during the summer. Available reports on the association's current projects include studies of air-cooled condensing and night-air cooling, and the performance of a year-around air-conditioning system when used for heating. Both studies are based on findings at the research residence at the university.

▶ Representatives of trade associations will be invited to share information on new building products and research in progress with members of the ALA research committee at a meeting in Washington sometime this spring.

Among standards recently published by the American Standards Assn., 70 E. 45th St., New York 17, N.Y., are the following:

Minimum Requirements for Sanitation in Places of Employment, Z4.1-1955, a revision of 1935 standard. Sponsor: Public Health Service. 50¢. Requirements for drinking water, toilet and washing facilities, and lunch rooms, etc.

> Specifications for Gypsum Plastering, A42.1-1955, a revision of 1950 standard. Sponsors: American Institute of Architects, the American Society for Testing Materials. 75¢. Preparation for plastering, materials specifications, proportioning, mixing, application and finishing of gypsum plaster.

▶ Specifications for Interior Lathing and Furring, A42.4-1955, a revision of 1950 standard. Sponsors: American Institute of Architects, the American Society for Testing Materials. 75¢. Materials specifications and installation requirements for all types of lathing and furring for interior walls and ceilings.

Standards recently approved by the American Standards Assn. include:

Specifications for Open Joist Steel Construction, A87.1-1955, a revision of 1947 standard. Sponsor: Steel Joist Institute, for all concerned

FALSE SCHOOLHOUSE ECONOMIES

Our school building program is so big that constructive endeavor should occupy all our energy. We have none to waste on false economy leads and on bickering. Common sense is needed, of the sort put forward by the secretary of the Brookline, Mass., taxpayers' association at a recent New England meeting on schools, held at Cambridge.

"Our problem is tough," was the gist of his message, "but we have had even tougher school financing problems within recent years, and we have creditably solved them."

We need not surrender all ideas of progress and excellence, for example, in favor of a universal cheapness. Humor might come to the rescue here, for this is, after all, the most prosperous era in our history, and it is a bit dour to watch a schoolboard president driving his own children in his spanking new 200-hp car to some little school hut that he has caused to be built, and to look like a shanty-town poor house.

Of course there is no money to waste, but many economy proposals lose more at the bung than they save at the spigot. Architects' fees, for example, have been the target of excited citizens' meetings weak in arithmetic. Figure this: occupancy costs are a scant 15% of the annual school budget, and half of occupancy is operation and maintenance, leaving 8% for construction. Consequently if you cut the architect's fee from, say, 6% to 5%, you have achieved a net annual saving of just 0.08%, or 8/10,-000, in the education of your children. Is that worth the battle? (Baltimore take special notice.)

Now turn it around: for the architect himself this means a

17% reduction in his gross, which makes all the difference between being able to pay his men for a first-rate job, and being unable to pay and still make a living. Moreover the community's 0.08% saving is not to be confused with just another saving on materials. A cut in planning means a cut in those *controls* which balance and rule all arrangements and result in schools whose efficiency will be only 66% over a period of 50 years and whose pleasantness will be 66% below zero. When industrialists want a deep cut in costs without loss of quality they pay experts a premium for the hard job of figuring it. For school economy, architects' fees should be raised not lowered as they achieve it.

FORUM did make a list not too long ago of 50 school economy ideas that do not confuse economy with cheapness (which in the long run is often expensive). We might now add a legitimate suggestion to contractors. Let's say a squeeze market in some areas allows a 125% increase over 1954 in certain installations such as electrical work. No one has a right to demand that the contractor bid less than the top he might get, but in the case of schools this question might be submitted to his conscience. We doubt that contractors would really want to take full advantage of a fortuitous situation that is loaded against the schools.

State officials can help the shirts-off, shoulder-to-the-wheel policy by keeping their minds balanced and their tempers sunny. A state official recently sent 30 "questions" to a school journal. He greatly weakened the constructive suggestions he had to make by casting wholesale suspicion on just about

everybody who has been trying for something better than a cheaply conventional outcome. The newer and currently successful materials, like plate glass, glass block, luminous ceilings, chalkboard other than black slate, asphalt tile flooring, were not challenged outright but were only suggestively and selectively "questioned." Architects and school consultants whose work has been shown in professional magazines for presumed excellence were tagged, without exception, as producers of "the freakish, the odd, the bizarre, the unusual"; as publicity seekers to boot; and even as low fellows whose cost figures led to "misinformation, intentional or otherwise." In a world in which too many surrender their standards to allow cheapness in plan and materials, to bow to political expediency and to retain meaningless holdovers in the planning field and in stylistic adjuncts, the effect of such onesided attack is to cut off what little we have of effort aimed at top excellence and progressive improvement.

Of course our school building problem is tough, and we cannot afford innovations that are merely showy and shallow and frivolous. But least of all can we afford a civilization that blows its wad on new private luxuries and conveniences, while it accepts shacks, prisons, or anything less than the best for its own children. In the end, the value of a community is never higher than the value it decides to set up for itself; conversely goals set a little "higher than possible" do get achieved, and they raise and strengthen the community in the achieving.

Deuglas Haskell



Isolated location

and severe

climate created

unusual design problems for ...

WINDOW ROCK

PUBLIC SCHOOL

Architect E. L. Varney, Phoenix, Arizona, specified Fenestra Metal Building Panels to simplify design, construction and maintenance.

In the center of a Navajo Indian Reservation, 1,000 miles in diameter, Window Rock is surrounded by some of North America's most desolate, yet starkly beautiful country. The site gets its name from a large rock with a natural hole in it created by thousands of years of wind erosion. Burned by the sun all summer and very cold in the winter, Window Rock created unusual problems of design and logistics for the construction of a million-dollar elementary and high school.

The materials chosen had to provide simple construction and require minimum maintenance. That's why Architect Varney specified Fenestra* long-span cellular steel building panels for the roof structure of the various units of the school and Fenestra "E" Roof Deck for the covered walkways connecting the buildings. (Photo above.)

Combining light weight with great strength, the



Your Single Source of Supply for DOORS . WINDOWS . BUILDING PANELS



Covered walkways are economical with Fenestra "E" Roof Deck for spans up to 20 feet. The 12" width co-ordinates with Fenestra Building Panels and modular construction. Simple design eliminates complicated detailing and engineering and saves structural steel. The exposed undersurface forms an attractive beamed finish ceiling.

Fenestra Building Panels were easy to transport and erect and provide for spans up to 30 feet. The 24-inch width of each panel simplified design details and modular co-ordination with other materials.

Interior areas feature Fenestra Acoustical Building Panels which provide the structural roof plus a built-in metal pan acoustical ceiling erected as one unit by one trade. (See photo left.)

While the school you are now planning may not have the location and climate problems of Window Rock, Fenestra Building Panels can save you both time and money on the structure. Easy maintenance keeps schools attractive, year after year, at minimum cost.

Ask your local Fenestra representative for complete information-he's listed in the Yellow Pages-or mail the coupon below. *Trade-Mark

tenestra	AF-2296 East Grand Boulevard	
	Detroit 11, Michigan	

Please	send me information	on	Fenestra	Building
Panels	for Schools.			
NAME				1

DDRESS	COM A MUT	CD YOUN
DDRESS		
IRM		



It's easier to teach and learn in the bright, cheerful Window Rock classrooms. Large glass areas bring the outside inside and give natural illumination. Finger-tip operation makes it easy to control ventilation. These steel-strong windows can take rough treatment and keep operating year after year without expensive maintenance. *Architect:* E. L. Varney, Phoenix, Ariz.; *Contractor:* M. M. Sundt Construction Co., Tucson, Ariz.

> This microphotograph shows how the Fenestra Hot-Dip zinc coating alloys with the steel base metal for a lifetime finish. Scratches or pinholes in the surface are *self-healing* by sacrificial action of the zinc. The steel is always protected.



ALCOA BUILDING CUTS REST ROOM CLEANING TIME!

ZURN SYSTEM teamed with AMERICAN-STANDARD off-the-floor plumbing fixtures improve sanitation ...keep years ahead in design.

To match the pioneer aluminum curtain-wall construction of the Aluminum Company of America's 30-story Alcoa Building, Pittsburgh, its 109 rest rooms had to look and *be* completely up-to-date.

Floor-Free Design Specified. Floors completely free of fixtures were specified for each rest room . . . to create a feeling of space, a fact of cleanliness. Rest room sanitation is stepped up . . . yet cleaning maintenance is cut substantially. And, because this design is based on the only real *news* in rest room plumbing fixtures, it will look as fresh and modern during years to come as it does today!

Economy Confirmed. Edward C. Collins, Alcoa Building Construction Superintendent, confirms the practicality of off-the-floor design when he states:

"There was no question but that plumbing fixtures would be installed clear off the floor. It simplifies cleaning maintenance, and we can maintain constant cleanliness and sanitation in our rest rooms."

Installed Value. Yes, in new construction everywhere, rest rooms like those in the Alcoa Building prove that the best design is the most economical in the long run . . . with *installed value* that pays off in more rentable floor space, lower cleaning costs, construction and maintenance savings, tenant approval, added years of useful life.

For More Facts on The Zurn System and American-Standard offthe-floor fixtures—write for your free copies of "You Can Build It For Less A New Way" and "Better Rest Room Guide."



THE ZURN SYSTEM®

Plumbing Division Erie, Pa., U.S.A.

OFF-THE-FLOOR FIXTURES



AMERICAN-Standard Plumbing and Heating Division Pittsburgh, Pa., U.S.A.

This advertisement is sponsored jointly by the J. A. Zurn Mfg. Co., and the American Radiator & Standard Sanitary Corporation.

Harrison & Abramovitz, Chief Architects Altenhof & Bown; Mitchell & Ritchey; Assoc. Arch. Saver, Inc., Plumbing Jaros, Baum & Bolles, Mech. Engrs.



Better, Faster Sanitation. A floor free of bowls, pedestals or drain pipes, speeds cleaning time up to 30% based on comparative time studies with oldstyle installations. More thorough sanitation too with no hard-to-reach corners or floor crevices.



Saves Material, Time, Labor. Zurn System rigidly supports off-the-floor fixtures from behind the wall ... opens up a new world of better rest room design. Cuts installation and maintenance. No furringin, floor reconstruction, unseen water seepage.



Mail coupon for new literature. Describes benefits of floorfree rest room design. There's no obligation, of course.

J. A. Zurn Mfg. Co Erie, Pa., U.S.A.	., Dept. AZ	-1
Please send me Build It For Less Rest Room Guide	free copie A New W	es of "You Can ay," and "Better
Name		PAND CONTRACTOR
Position		million Colo
Company		
Street	1	
Cta.	Terre	Cinta



the "HUMAN FLY" Machine

Absolute safety is the first consideration in engineering this service machine. And the complete success of the equipment is evidence of Economy engineers "know-how" acquired by over 50 years of designing service lifters and special materials handling machines.

This Descender has a capacity of 500 lbs. and was specially designed for window washing service on this modern building. It is electrically operated by pushbuttons on the platform for up and down and horizontal movement. This machine moves on a track and when not in use is backed out of sight by means of a turn table.

In addition to the Descender, Economy manufactures Hi-Reach Telescopers; standard throughout industry and institutions for maintenance of overhead lighting and other hard-to-reach installations.

Economy representatives give personal engineering service on your problems and make recommendations with estimates.

ECONOMY ENGINEERING CO. 4514 West Lake Street, Chicago 24, Illinois New York Office, 342 Madison Ave., New York 17, N. Y

Hi-Reach Telescoper, heights from 10 ft. to 100 ft.



Economy engineers work in cooperation with the architect and engineer in designing a Descender or Hi-Reach Telescoper to meet the requirements of each installation. Write E. W. McDonnell.

Write for the new Economy catalog.

Forty pages of installation pictures of both special and standard lifting and materials handling machines. Every plant manager and maintenance engineer should have this catalog.



what about <u>expansion</u> and <u>contraction</u> in curtain wall design?

Providing for proper expansion and contraction while keeping the building weathertight is but one of the many engineering and design problems that must be solved before any curtain wall job can be 100% satisfactory. Proper integration of the windows and wall panels is another phase of curtain wall that can best be handled by an experienced manufacturer of both architectural metalwork and windows.

While the design and fabrication of curtain walls may appear to be a simple, easy job, it's actually a highly specialized field that demands the attention of experienced specialists.

Here at General Bronze we have had more than 10 years' practical experience in this new and highly specialized field. Since our pioneering work in 1946 we have designed, fabricated and installed curtain wall systems for many outstanding buildings (United Nations Secretariat Building, the ALCOA Building, Lever House, 99 and 460 Park Avenue Buildings, the RCA Cherry Hill Offices, the Second National Bank Building, Houston, Texas, and others). We have produced curtain wall systems involving aluminum skins, grids with aluminum windows and insulating panels of colored alumilite or porcelain enamel as well as stainless steel grids with glass panels.

If you are interested in achieving all the many time-, money- and space-saving advantages that modern curtain walls offer without any of the headaches, call in the General Bronze representative today. He can supply from experience the answers to the many problems that may arise. Our catalogs are filed in Sweet's, Section 17a/Ge.

Another CURTAIN WALL by GENERAL BRONZE

Equitable Life Assurance Building Milwaukee, Wisc. Architects: Fritz von Grossmann Irwin W. Clavan, consultant Contractor: H. Schmitt & Son

GENERAL BRONZE CORPORATION . GARDEN CITY, N.Y.

PERMATITE DIVISION—Custom-built Windows, Architectural Metal Work and Revolving Doors. ALWINTITE DIVISION—Stock-size Aluminum Windows BRACH MFG. CO. DIVISION—Multel, T. V., Radio and Electronic Equipment. STEEL WELDMENTS, INC. DIVISION—Custom fabrication in steel and iron.



General Contractor: M. M. Sundt Construction Co., Tucson, Arizona. Panel Erector: Chapman-Dyer Co., Tucson, Arizona.

There's built-in quiet in Window Rock classrooms with Fenestra Acoustical Building Panels. A high-efficiency acoustical material is enclosed in the cellular panel and the perforated flat-plate area absorbs the sound. Completely prefabricated, these long-span panels are erected quickly and at low cost. A coat of paint finishes the flush ceiling, and soap and water keep it like new. Repainting will not affect acoustical efficiency and there is no hanging or "stuck on" material to be damaged or replaced. An ideal ceiling for gymnasium and corridor areas, too. Ask your Fenestra representative for complete information.





Window Rock School features Fenestra Galvanized Bonderized

Steel Windows that need no painting for ...

LOWEST

LIFETIME WINDOW

MAINTENANCE

COST

Across the plateau at Window Rock, Arizona, sweeps a continuous wind that would shorten the life of many building materials and create expensive replacement and maintenance problems. The severe climate-burning hot in summer and bitter cold in winter-requires windows that are easy to operate and completely weather-tight.

That's why Fenestra® Galvanized-Bonderized Intermediate Steel Windows were chosen for this million-dollar elementary and high school.

Hot-Dip Galvanizing is recognized as the best protective coating for steel. The zinc coating actually alloys with the steel for a lifetime finish.

Fenestra's exclusive galvanizing process is com-

pletely controlled for a smooth, uniform coating. Bonderizing after galvanizing gives added protection and an attractive silver-grey finish ready for decorative painting, if desired.

Fenestra Intermediate Projected Windows, used at Window Rock, furnish fresh air and controlled ventilation in any weather. The steel vents open with a finger touch-never stick, swell, warp or splinter.

For schools or other buildings requiring the lowest lifetime maintenance costs, specify Fenestra Galvanized-Bonderized Steel Windows that need no paint.

Call your local Fenestra representative-listed in the Yellow Pages-or mail the coupon below.

Fenestra Galvanized · Bonderized INTERMEDIATE STEEL WINDOWS

Your Single Source of Supply for DOORS . WINDOWS . BUILDING PANELS

Jenestra AF-2296 East Grand Boulevard

Detroit 11, Michigan

Please send me complete information on Fenestra Galvanized-Bonderized Steel Windows.

CITY	STATE
ADDRESS	
FIRM	
NAME	

M.I.T. CRITIQUE

cont'd.

taneous, inspired. It is the result not of metaphysical courage, but of logical failure.

This, briefly, is my frank opinion. Why then have I published the auditorium in L'architettura, and why am I going to publish the chapel when it is completed? The answer is simple. I believe, as I have often written, that Eero Saarinen is one of the outstanding architects of his generation. To my mind, the mistakes of great architects are always significant. In the worst interpretation, Saarinen's M.I.T. group pictures the crisis of a generation too immodest to follow Wright or Le Corbusier, and too tormented to be as great as they are. But I am on the side of the positive interpretation: Saarinen will emerge from the present impasse, and his pseudomystical experiment will take its place in his biography as a chapter of insecurity and search, well symbolized by the dome carried on three points and by the vague, moving lights reflected from the water around the chapel.

"We must permit an architectural idea to take charge occasionally"

Photographs are no substitute for the experience of moving around and within a building, and in the case of an auditorium the quality of the sound heard inside it must be experienced also. Not having had these experiences, I cannot try to evaluate the Kresge auditorium and chapel as works of architecture. I can only record one or two impressions and comment on some of the principles the buildings exemplify.

Each of these buildings is original, the auditorium structurally and the chapel conceptually. Originality, though not of course a necessary attribute of good architecture, is an inspiring thing, but it poses its own problems for the architect. For example, novelty of form, as displayed in the M.I.T. buildings, makes it much more difficult for the architect to establish the scale of his buildings in the spectator's eye, and it. is only some hesitation about the rightness of their scale that stops me describing Mr. Saarinen's achievement as masterly. I get the impression that the auditorium especially appears in reality rather smaller in size than the



Harry Bertoia's screen in M.I.T. chapel

J. M. Richards, one of the editors of "The Architectural Review" in London, is author of "An Introduction to Modern Architecture" and many other articles and books on architecture and art.



[&]quot;How to bring the scale of a building under control" . .?

design would lead one to expect, and would seem to demand.

Traditionally scale is linked with the spectator's familiarity with the idiom and type of structure used. Subconsciously he estimates the scale according to his knowledge of the relationship of certain elements to himself. Modern architecture, with its close involvement with structural experiment, has largely deprived itself of this memorylink as an aid to comprehension of scale. Instead, the architect has to rely on purely optical means-on the proportions of parts to the whole, on weight of detail, on texture and rhythm -to set the scale and endow his building with the quality of being inevitably its own size and no other.

The purity of structural conception shown in the M.I.T. buildings is greatly to be admired; but purity destroys scale, and how to bring the scale of a building under control without inhibiting the free and inspiring use of modern technical possibilities is one of the esthetic problems that modern architecture has yet to solve. We are supposed to be searching for a new monumentality in architecture which will enable it to create viable social symbols. This means thinking in terms of psychology as well as technology, because what is required is to recreate the spectator's sense of himself in relation to the monument.

Scale is one of the most important factors in developing that sense. But it is not the only one, and in spite of my misgivings about the scale of the M.I.T. buildings, I am convinced that here Mr. Saarinen has gone a long way towards achieving this rare quality of monumentality. That is surely the answer to the somewhat puritanical criticism which has been made that the form has been determined by engineering considerations, whereas, say the critics, auditoria should be designed from the inside outward, so that their exteriors reflect the character of their interiors as musical instruments. But unless we permit an architectural idea. such as Mr. Saarinen's structural preconception of an all-embracing roof, to take charge occasionally we shall never recreate symbolic values in architecture.

It is a question first of whether technology is to be servant or master, and then of what kind of service is to be asked of it. To place the resources of technology at his disposal is not to grant the architect a license to invent pleasing and dramatic forms into which the needs of the building must fit somehow, or we are back with the equivalent of collegiate gothic, or at best with the man who believes that *continued on p. 178*



Architect: Lorenz and Williams, Dayton, Ohio



Stainless curtain walls save 1,500 sq. ft. for

Rike's department store sales-display area

By using stainless steel curtain walls instead of masonry for its new 12-story addition, Rike-Kumler Company, Dayton, Ohio department store, is gaining an extra 1500 sq. ft. of sales-making floor area.

Located in downtown Dayton, the store is making every foot of space count. The thin curtain walls (only 41/2 inches thick compared with conventional 12-inch-plus walls) save about 8 inches of usable space along each wall. They give the store the equivalent of part of an additional floor.

Fast, easy erection of the stainless steel panels is giving the department store an added dividend, too. Rike's expect to serve customers in the new building about 3 months sooner than would have been possible with masonry construction.

Besides saving time and space, stainless curtain walls give the building an attractive tone of modern simplicity which reflects the store's position of progressive leadership in the community.

Write us for complete information on this space-saving use of Armco Stainless Steel for curtain walls. And ask for data on other architectural applications of Armco Stainless.







946 CURTIS STREET, MIDDLETOWN, OHIO



SHEFFIELD STEEL DIVISION . ARMCO DRAINAGE & METAL PRODUCTS, INC. . THE ARMCO INTERNATIONAL CORPORATION





BEVERAGE: A battery of Walworth Bronze Lubricated Plug Valves installed in the blending department of a distillery.



PAINT: Eighteen Walworth Lubricated Plug Valves in a common manifold installation in the varnish division of a midwestern paint and varnish works.

CEMENT: Lubricating a Walworth Lubricated Plug Valve in a West Coast cement plant.

serving almost any industry you can name ... WALWORTH LUBRICATED PLUG VALVES



FOOD: Walworth Lubricated Plug Valves are included in the piping arrangement in this large midwestern bakery.



PUBLIC UTILITY: Straight-way and three-way Walworth Lubricated Plug Valves installed in a modern West Coast sewage disposal plant.

At one time Walworth Lubricated Plug Valves were considered a "specialty item". Here are some of the features that have led to their employment in a wide range of industries as high quality 'all-purpose' valves:

(1) There are no threaded stems or complicated seating mechanisms. (2) Because the plug is always seated in the body, solid matter, which might be in the line contents, cannot wedge between the seating surfaces and prevent a tight closure. (3) The position of the wrench handle, or the marking on the plug shank, or the stop collar, clearly indicate the position of the plug. The operator can see from a considerable distance whether the valve is open or closed. (4) Quick opening and closing of the valve is assured by only a quarter turn of the plug. (5) Lubricant can be renewed while the valve is in service.

Walworth manufactures complete lines of Lubricated Plug Valves in a variety of types and materials for working pressures up to 5000 psi and for vacuum services. Sizes range from $\frac{1}{2}$ to 30 inches.

See your Walworth Distributor or write to Walworth for complete information.



DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

here's why **GrateLite**^{*} is great!

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.

Send for free booklet "The GrateLite Story" Also "Glare Factors" and "Visual Comfort Indexes".

	No. of	Total	Foot-Can	fles	EFF.	Brightness At 30° Brightness A		tess At 45"	
Item No.==	8' Lamps & M. A.	Lamp Wig.	With Gratelites	Less Lyrs.	With+ Without	E.L.ª	C. P.† Per Sq. In.	E.L*	C. P.t Per Sq. 1
1	8 @ 200	480W	28	36	78%	50	8.11	50	8.11
2	16 @ 200	800W	58	75	17%	100	0.22	110	0.24
3	24 @ 200	1286W	85	108	79%	130	8.29	148	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	8.55
6	16 @ 200 24 @ 430	2600W	188	230	82%	290	0.64	325	8.72
1	24 @ 200 24 @ 430	3000W	210	260	81%	320	0.71	350	18.77
8	48 @ 438	3600W	240	310	11%	380	0.84	528	1.15
9	8 @ 200 48 @ 430	4000W	265	340	78%	418	8.91	578	1.25
10	16 @ 200 48 @ 430	4480W	285	360	79%	478	1.84	620	1.37
11	24 @ 200 48 @ 430	4800W	300	390	11%	500	1.11	650	1,48

Foot-Candles, Efficiencies, Brightness Readings

It's all in the sight-saving cubes-and only GrateLite has them!

EDWIN F. GUTH CO. . ST. LOUIS 3, MO

Leaders in Lighting since 1902

For Lifetime Wear

... and colorful beauty, too !



America's most luxurious flooring, Amtico Rubber Flooring is the quality leader that gives your customers lifetime economy, rich beauty, cushioned comfort and fire-resistance. All-vinyl . . . with beautiful colors going through-and-through, Amtico Vinyl Flooring is the most complete line and offers unlimited design possibilities . . . takes hardest wear for years.



Also makers of Amtico Plastex Rubber Flooring

World's Largest Producer of Rubber and Vinyl Floorings

AMERICAN BILTRITE
RUBBER COMPANY
TRENTON 2, N. J.
New York Office: 461 Fourth Avenue In Canada—American Biltrite Rubber Co. (Canada) Ltd., Sherbrooke, Quebec
ee SWEET'S FILE, Architectural, for specifications and installation data, or mail coupon below:
MTICO, Dept. AF-2, Trenton 2, N. J. entlemen:
ease send me Free complete set of Samples and detailed information about Amtico Floorings.
ame
rm
ddress,
ity
(Please attach coupon to your business card or letterhead)

M.I.T. critique cont'd.

the purpose of modern technology is to get the architect out of difficulties caused by his failure to come to terms with it in the first place. Mr. Saarinen's mastery is of a more positive kind. He has used technology to convey an architectural idea.

This brings me to the only other comment I want to make. Each of these buildings, the auditorium and the chapel, is founded on one simple idea, but the two ideas are totally different in kind. The auditorium exploits the new industrial technology to create its architectural effect; the chapel uses accepted means, not in themselves spectacular, to create something preconceived simply as form. Both ideas are valid; but it interests me to see them employed as simultaneously and so convincingly as part of the same project.

"The secret boldness that dwells within our times"

> Dr. Sigfried Giedion, Swiss-born, is author of "Space, Time and Architecture," "Mechanization Takes Command," and Walter Gropius, "Work and Teamwork."

I could never agree to discuss in painting: Mondrian versus Kandinsky or Miro versus Mondrian. Their great differences are just different threads in the intricate pattern of contemporary art. There is neither right nor wrong: The organic conception (i.e. Miro) meets with the geometric horizontalvertical conception (i.e. Mondrian).

Dome versus rectangle? Rectangle versus dome? This I cannot answer with a simple yes or no, just as I could not discuss the Painter Kandinsky versus the Painter Mondrian. Both in their own way expressed what is inherent in our period. For Mondrian or for Architect Mies Van der Rohe any deviation from the horizontal or vertical shape spoils the artistic purity, and from their point of view they have every right to believe this. This is one way to conceive buildings, but it is not the only one.

Since Davioud in 1878 designed a parabolic ceiling for the Paris Trocadero, architects have been trying to find a solution to the problem of vaulted interior space in our period. This solution for which architecture everywhere is craving is not yet found, but we are on the way to it. Each civilization -since interior space was first shaped -has found a solution to the problem of vaulting big spaces that has Continued on p. 182


SILENTLY

bring office rail or half partition gates and lavatory stall doors to a gentle close





write for complete details THE OSCAR C. RIXSOND COMPANY 9100 west belmont ave. • franklin park, ill.

Iterororol.

C,



Reynowall

Aluminum Movable Partition Systems

Here's the newest concept in economical metal partitions...strong, rigid, beautiful Reynowall! This system provides complete flexibility to meet any present plan and all future modifications. Simplicity of design assures fast installation and easy relocation. Cornice and ceiling-high partitions can be quickly cut down to lower height. Glazed railing units can be modified to low railing heights. All cutting can be done on the job. You plan with six unit types, from 42¹/₂" railing height to 9'2¹/₄" solid or glazed partition. Each type is designed to use modules 36", 42" and 48" wide. Six standard baked-on colors, hammer-embossed or leather-grain finish. For complete data on Reynowall write to.... **Reynolds Metals Company**, 2021 S. Ninth St., Louisville 1, Ky.



Reynowall movable partitions add dignity and beauty to these modern offices of the well-known contractor firm: Morrison-Knudsen Company, Inc., in San Francisco.

> Framing members are strong, fluted aluminum extrusions. Panels are rigid, tray-like assemblies of embossed aluminum bonded to resin-impregnated kraft honeycomb cores. Maximum overall partition thickness, 2"— saves floor space. Provision for electrical wiring facilities within the partition members.



you specify

fidence with when you choose



Plan for AIRTEMP Air Conditioning-it's virtually trouble-free!

No "bugs" to be worked out-you're sure of perfect performance always because every AIRTEMP job is backed by 21 years of advanced engineering by Chrysler. Whether your needs are large or small, the complete AIRTEMP line will meet your every requirement.

In determining the one best system for any building, in planning the layout and in the actual installation . . . you can count on expert guidance from top engineers of Airtemp Construction Corporation. And to guarantee your installations during the years to come, the nation-wide network of AIRTEMP personnel provides dependable service in every major community.

As the years go by, your clients will have tangible evidence of your wisdom in specifying AIRTEMP. They will appreciate particularly the low operating costs that result from modern, efficient design.

For full information on how AIRTEMP can meet all of your air conditioning needs, write: Airtemp Construction Corp., Dayton 1, Ohio.

AIRTEMP BUILDS AIR CONDITIONING TO FIT EVERY REQUIREMENT

>IN AIR CONDITIONING THE FORWARD LOOK

A FEW AIRTEMP DREAMS THAT BECAME REALITIES!



Magnolia Building Dallas, Texas. Air conditioned in 1938. Architects and Engineers: Lang & Weichel.

Union Pacific Building Omaha, Nebr. Architect: Davis Hunt, Chicago; Engineers: Ritter & Mott, Chicago; Contractors: James Stewart & Co.





AIR CONDITIONING . HEATING FOR HOMES, BUSINESS, INDUSTRY



WASCO PRODUCTS, INC.

Cambridge 38, Massachusetts WASCO CHEMICAL (CANADA), LTD. • TORONTO, ONTARIO

M.I.T. critique cont'd.



met its particular emotional needs. The area that lies above normal utilitarian requirements, the space that floats above our heads beyond the reach of our hands, is where the fullest freedom has been granted to the imagination of the architect.

In 1931 Naum Gabo made a scheme for the Palace of the Soviets in which the ceiling and floor were curved like a mussel shell. In 1947 F. L. Wright prepared designs for a clubhouse in Hollywood on the same principles as this Russian sculptor. In the same year Le Corbusier prepared a scheme for the great assembly hall of the United Nations in which floor and ceiling flowed together in one curve. Catalano made a house with a roof like a billowing sail, intended as a prototype for larger buildings. Stubbins is now constructing the American congress hall in Berlin with a wing-shaped roof as its outstanding feature.

This summer, on June 22, I stood at Ronchamp when the church of Le Corbusier was dedicated (AF, Sept. 55). The archbishop spoke of the forward-curving bows of the roof as containing within its form both the old and the new—the arch and the airplane. We are on the way. This work that brings to expression the secret boldness that dwells within our times had not to wait to find recognition.

C Esra Stoller



Dome versus rectangle? As the Poet and Painter Kurt Schwitters once said: "What an artist spits is art."



predict and deliver air patterns like this...





Precision distribution of conditioned air from sidewall grilles is no problem when you specify Uni-Flo. Uni-Flo Grilles are true sidewall diffusers, designed to give adjustable air pattern and rapid diffusion without air stream drop or excessive air motion. Laboratory-tested, field-proved performance data permit the engineer to create required conditions without guessing. Variety of types available. For complete details, call your nearby Barber-Colman Field Office, or write . . .

Barber-Colman Company

DEPT. C, 1135 ROCK STREET, ROCKFORD, ILLINOIS, U. S. A. Field Offices in principal cities



Specify right from this new Nicholson "tell all" bulletin!

Contains complete specifications, illustrations, and engineering drawings on facilities, construction, styles, layouts, and hardware. Send for a copy today!



... Nicholson's complete line of toilet compartments are stocked in standard styles and sizes for fast "from stock" delivery.

You can specify better-built compartments—Nicholson compartments—and have them shipped *right away!* No hold-up. No waiting. No delay in completion of important building contracts.

Latest production facilities, housed in a modern 67,000 square-foot plant, are busy building up a standard-size stock of three distinctive styles. From ultra-modern to rugged utility designs, you can get the toilet compartments you need *in a hurry*.

For serviceability and service, specify Nicholson.

Nicholson Toilet Compartments are immediately available in the following types . . . in standard colors:

Type A—floor braced Type AR—overhead braced Type B—flush type



14 DREGON STREET, WILKES-BARRE, PA. . SALES AND ENGINEERING OFFICES IN 58 PRINCIPAL CITIES

ANOTHER

CUPPLES

ALUMINUM CURTAIN WALL FOR MANHATTAN

URIS BROTHERS OFFICE BUILDING 485 Lexington Avenue, New York, N. Y.

Uris Brothers, Inc., Owner and Contractor Emery Roth & Sons, Architects

Enclosed in approximately 200,000 square feet of Cupples Curtain Wall, this 30-story structure follows the trend of contemporary office building design in the New York area.

.....

.....

Cupples Series 700 heavy projected windows, integrally bead glazed and welded, assure rigidity and tightness and provide easy inside cleaning. Spandrels and windows are supported by tubular extruded mullions with contrasting alumilite finish. A special extruded aluminum flashing insures water-tightness at all expansion joints.

> A pace-setter in the engineering and fabrication of aluminum curtain walls, Cupples also is one of the nation's largest manufacturers of commercial and residential aluminum windows, doors, Alumi-Coustic grid systems for suspended ceilings and special ornamental products. Cupples' high standards of design and manufacture always meet or exceed the most rigid requirements without premium costs. Our catalogs are filed in Sweet's.

.....



PRODUCTS CORPORATION 2659 SOUTH HANLEY ROAD ST. LOUIS 17, MISSOURI



A twist of a screwdriver—locks brackets at any location into strong, metal Vizusell uprights ..., gives exclusive fractional adjustment for completely functional bracketing. Recessed edges of uprights accept 1/4" or 1/6" panels.



ADDRESS	and the state of the second second

BOOKS

WHAT ARE OUR SCHOOL BUILDING

NEEDS? A guide to planning. National Citizens Commission for the Public Schools. 2 W. 45th St., New York 36, N.Y. 9" x 534". 74 pp. paper bound. No cost

Just as there is no such living, breathing creature as "the average man," so is there no such real entity as "the typical school district." The great value of this booklet is that it disposes of the generalities—the national problem—in a foreword and thereafter concentrates on the local district and its problems. Its purpose is to help school officials and board members figure out just what their own peculiar combination of facilities, needs, means and aims is, and then to help them plan wisely.

This is quite an assignment and the booklet's anonymous authors have worked out a usable device for putting and keeping local planners on the track. In a quick outline that serves simultaneously as table of contents, index and first lesson in planning, the necessary explorations are di-vided into "Determining the need," "Evaluating alternatives," "Planning a building," "Financing the plan," and "Obtaining approval." Each of these categories is further broken into three or four steps, and for each of these the reader is referred to several pages of background discussion and to a checklist of the questions that must be gone into. Some of the checklist questions are so broadly phrased as to be of little help or meaning ("How can we start on the right foot?") but, in general, the lists are sensible and down-to-earth. The background information is clear without being oversimplified. It includes brief accounts of solutions tried in many varying districts, and should prove provocative as well as informative.

Much of the booklet's information is derived from case studies, cost and financing studies and round-table discussions which were first published in FORUM.

DESIGN OF HEATING AND VENTILAT-

ING SYSTEMS. By F. W. Hutchinson. Published by The Industrial Press, 93 Worth St., New York 13, N.Y. 320 pp. 6" x 9". Illus. \$7

This book uses 96 working charts (plus explanatory text and examples) to solve complex formulas in design. It emphasizes problems requiring engineering knowledge rather than those elements which are either selected or designed on an empirical basis. Considerable space is given to panel heating, solar heating and air distribution design. It also includes data for systems which utilize partial solar heating through the use of large windows. The data for this section are based on research by the author.

ANALYSIS OF SYMMETRIC CYLIN-DRICAL SHELLS. By John McNamee, Ph.D. Published by Department of Scientific continued on p. 190

design by mc Philben



A Recessed Weathertight Downlight

Good-looking, extra shallow, rugged . . . engineered for severe weather and corrosive conditions

Entrances, canopies, lobbies, vestibules, corridors, shower rooms...this extra shallow recessed downlight meets all your requirements...where appearance is important and non-corrosiveness vital.

FACE PLATE ... of cast satin aluminum ... is anodized for extra weather protection ... features the new Sealume gasket to insure weather-tight operation within the lighting unit ... simultaneously eliminates ceiling dust streaks and light leaks visible from without.

HOUSING... of 16 gauge galvanized... can either be used as a concrete pouring form ... or mounted in recesses already provided by using wood forms. For plaster-type ceilings, use plaster frame. Attach hinged face plate and tighten screws so Sealume gasket is compressed tight against the ceiling.

IT'S AVAILABLE with round or square diffusers providing either symmetrical or asymmetrical light distribution from 60 Watts to 300 Watts...extra shallow... with corresponding depths from 2½" to 6¾". Protective guards, if desired. For full data on this series, write for the "43" line.

1339 Willoughby Avenue, Brooklyn 37, N. Y.





See Bayley's catalogs in Sweet's . . . aluminum windows 17a/Bay; and steel windows 17a/Ba; or ask us for individual reference-file copies. Write for special file on Bayley Curtain Wall Ideas, Designs and Details.

The WILLIAM BAYLEY Co. Springfield, Ohio Agents in All Principal Cities District Sales Offices: Springfield • Chicago 2 • New York 17 • Washington 16



CLAY PIPE Unanimous Choice of Consulting Engineers for *NEW \$30 MILLION HOSPITAL PROJECT*

VITRIFIED CLAY PIPE was specified for both sanitary and storm sewers in all ten of the new hospitals constructed by the UMW Memorial Hospital Association. Master specifications were written by three separate consulting engineering firms, and all three specified Clay Pipe.

There are dozens of reasons why Clay Pipe is specified for the overwhelming majority of big, carefully planned construction projects. They can be summarized in just two words: *dependable permanence*. Where public health is involved, sewers must serve dependably and last indefinitely. And Vitrified Clay Pipe is the only pipe that never wears out. It is completely unaffected by chemical action or the ravages of time. No other pipe material can match its record of lasting performance in the ground. That's why men in the construction industry agree ... it pays to install Clay Pipe the first time.







Minneapolis regional headquarters building Prudential Insurance Co. of America



Architects and Engineers: MAGNEY-TUSLER & SETTER Electrical contractors: Electric Repair & Construction Co. Distributor: Graybar Electric Co., Inc. If working can ever be considered a pleasure, it must be enjoyable for employees at Prudential's new regional headquarters in Minneapolis. Everything . . . beginning with selection of a building site at the edge of a city park . . . everything has been thought of to make the employee's working day pleasant. Contributing much to employee comfort is high-level, lowbrightness, shadow-free lighting . . , by Garcy.

The Prudential is Garcy Lighting throughout. Acres of offices are lighted by more than five thousand Garcy 4-foot troffers, equipped with low-brightness lenses. Many other manufacturers make troffers, but few are equipped to handle complete lighting contracts for a building of the Prudential's size and scope.

Investigate Garcy fixtures . . . engineered for highest efficiency . . . precisely manufactured for fast installation in any kind of ceiling . . . designed for quick, easy cleaning and relamping.



Garden City Plating & Mfg. Co., 1736 N. Ashland Ave., Chicago 22, III. In Canada: Garcy Co. of Canada, Ltd., 191 Niagara St., Toronto

BOOKS cont'd.

and Industrial Research, Building Research Station, London, England. American Agents: British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. 85 pp. 71/2" x 10". Illus. \$2.25

An account of the theory of thin cylindrical shells for those who are approaching the subject for the first time. The application of the theory to the stress-analysis of reinforced concrete structures is illustrated by detailed numerical examples. The text is based on lectures originally given at Liverpool University.

BOOKS RECEIVED

ENJOYING MODERN ART. By Sarah Newmeyer. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. 216 pp. $6!/4'' \times 9!/2''$. Illus. \$4.95

CONSTRUCTIONAL STEEL WORK. By Oscar Faber. Published in England for Philosophical Library, Inc., 15 E. 40th St., New York 16, N.Y. 368 pp. 51/2" x 83/4". Illus, \$10

TRENDS IN SCHOOL PLANNING. Edited by Jon S. Peters. Published by School Planning Laboratory, School of Education, Stanford University, Stanford, Calif. 120 pp. 11" x 834". Illus. Paper-back. \$4 (25 or more, \$3.50)

MODERN BUILDING ENCYCLOPAEDIA. Edited by N. W. Kay. Published in England for Philosophical Library, Inc., 15 E. 40th St., New York 16, N.Y. 768 pp. 6" x 9". Illus. \$15

FIVE FUNDAMENTALS OF MODULAR DRAFTING. By William Demarest. Published by Modular Measure, American Institute of Architects, 1735 New York Ave., N.W., Washington 6, D.C. 16 pp. 81/2" x 11". Illus. No charge

PLANNING A LIBRARY BUILDING. Edited by Hoyt R. Galvin. Proceedings of the Institute sponsored by the American Library Assn. Buildings Committee at St. Paul, Minn. Published by the American Library Assn., Chicago, III. 80 pp. 81/2" x 11". Illus. \$3

REGION BUILDING. Community Development Lessons from the Tennessee Valley. By James Dahir. Published by Harper & Brothers, 49 E. 33rd St., New York 16, N.Y. 208 pp. 51/2" x 81/4". Illus. \$3.75

BUILDINGS OF TOMORROW. Guide for Planning Settlements and Community Buildings. By Fern M. Colborn. Published by William Morrow and Co., Inc., 425 Fourth Ave., New York 16, N.Y. 159 pp. 51/2" x 81/4". Illus. \$3.50

HOW TO ESTIMATE FOR THE BUILDING TRADES. Enlarged edition. By Townsend, Dalzell & McKinney. Published by American Technical Society, 848 E. 58th St., Chicago 37, III. 699 pp. 51/2" x 81/4". Illus. \$6.75

Wherever people give a building a beating

outside

or

inside



That's the place to use STAINLESS STEEL

"INFO" for Architects and Builders

- 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.

Write for Details Address Dept. B-75 You *have* to design for maximum attractiveness in those areas of buildings which have most traffic—such as building fronts, marquees, entrances, lobby details, railings, etc. Yet those same places are exactly the locations where you need maximum utility, too.

What's the *best* material to use? Just remember that stainless steel—and *only* stainless steel—gives you the nearest-toperfect combination of satiny beauty and rugged toughness. No other material is as good-looking and at the same time as strong, hard-surfaced and resistant to rust or discoloration. No other material requires as little maintenance, cleans as easily and lasts as long.

In short, whether you're considering AL Stainless Steel for just the "hard-wear" spots or for an entire curtain-wall design, keep this fact in mind: no other material costs as little over the long pull as stainless steel.

Let us give you any information or technical assistance you may require. Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.



LUXURY plus UTILITY for every type of installation

For unparalleled luxury, combined with utility and durability, no rubber tile flooring comes up to the standards set by Wright. In fact, many Wright floors installed over thirty years ago are as beautiful and serviceable today as they were then.

Oldest and most progressive name in its field, Wright Rubber Tile has exceptional uniformity of color, dimensions and physical characteristics. Its restful resilience...sound-softening effect... deep richness of color and pattern...ease and economy of maintenance...above all its superior resistance to wear and abrasion, make it ideal for virtually every type of installation.

... All in all, a perfect luxury-plus-utility flooring that you can select with confidence.

WRIGHT MANUFACTURING COMPANY Division of Mastic Tile Corporation of America Houston, Texas





FOR OFFICES



FOR SCHOOLS

WRIGHT MANUFAG Div. of Mastic Tile Dept. W6-3 P.O. Bo Please send me in WRIGHT Rubber	CTURING COMPAN Corporation of Amo x 986, Newburgh, formation and fre Tile Vinyl 1	IY erica N.Y. e samples of Tile □	
Name			
City	Zone	, State	
F			Rubber Floor Tile

-

FOR UNLIMITED COLOR FLEXIBILITY IN MODERN CONSTRUCTION...

Specify PORCELAIN ENAMELED Aluminum

DU PONT Porcelain Enamel for aluminum brings a whole new spectrum of durable color to modern architectural design.

This weather- and corrosion-resistant new finish for aluminum curtain walls, spandrels, siding and tile is available in a virtually unlimited range of color and surface gloss. It's lightfast and resists abrasion, thermal shock, impact and flexing. Porcelain enameled aluminum can eliminate costly prefabrication, too. Sheets of enameled aluminum can be drilled, sawed, sheared and punched on the job without undue exposure of the metal or progressive spalling.

Du Pont technical men will gladly work with you in exploring new applications for porcelain enameled aluminum. For performance specifications, they can put you in touch with experienced enamelers. Just mail the coupon for complete details.



Du Pont PORCELAIN ENAMEL for aluminum Send for our new bulletin and illustrated folder on porcelain enamel for aluminum

E. I. du Pont de Nema	ours & Co. (Inc.)
Electrochemicals Depa	artment, Wilmington 98, Delaware
Please send me Te folder on Porcelai	chnical Bulletin CP 4-454 and illustrated n Enamel for Aluminum.
Have your technica	al representative call with further details.
Name	Position
Firm	
Address	
City	State

PRODUCTS







A needle is inserted in the flat Tube-in-Strip (1) to spread the preformed slits (2). Air or hydraulic pressure, depending on the metal and its thickness, is used to inflate the tubes freely (3) to full rounds (4).



PLATE GLASS produced in any color

Designers with a penchant for glassskinned buildings and owners who pay for the air conditioning have in recent years searched for pigmented glazing that would give more protection against the sun's rays than clear plate. Many admit the efficiency but are unhappy with the blue-green cast thrown on cityscapes by the glare and heat reducing glazing on the market, and have asked glass manufacturers to produce tinted neutral tones that modify the sun's energy and brilliance and yet become indiscernible from inside a building. Two years ago, Pittsburgh Plate devised Dusklite, two layers of clear glass sandwiched around a gray plastic film, and late last year Houze Glass of Merion, Pa., announced Lo-Tran, a darkish gray glass to serve as a vision strip on glass blocked classroom walls. The first has the strength and cost disadvantages of a laminate and the second, produced by the drawing process, is limited in width to 110" and thickness to 7/32" and does reveal some distortion. This month Franklin Glass, with a rich history of Belgian glassmaking behind it, reports it has the producton facilities for turning out 7 million sq. ft. of plate glass a year in any color specified by the architect for a reasonable size project. Using the old Bicheroux pot process and round grinding table, Franklin can work colors up in considerably smaller batches than necessitated by the continuous 24-hour-a-day tank methods employed by the major US glass producers. At present Franklin has eight stock colors including five neutrals, a pale pink, and a pale yellow green. The latter has the highest ratio of visible light transmittance to heat resistance but the grays are surprisingly effective in keeping out solar rays and range from 31.3 infra-red transmission for the cool blue gray to 64.7 for the rose-brown. Custom shades will be made up for orders of 10,000 sq. ft.

Over-all size limitations of Franklin's glass are almost as staggering as its coloration potential. The plant can turn out single lights of polished plate $150' \ge 268'$ in thickness up to $\frac{34''}{}$. (The 22' $\ge 10' \ge \frac{14''}{}$ plate for Manufacturers Trust building in New York City was produced by Franklin.) Prices are expected to be about \$1.10 to \$1.39 per sq. ft. for $\frac{14''}{}$ depending on the color and quantity.

Manufacturer: Franklin Glass Corp., 128 W. 31 St., New York, N.Y.

CONTINUOUS TUBING milled into solid sheets of nonferrous metals

In the sedate surroundings of the New York Yale Club Revere Copper and Brass last month gave a tabletop demonstration of a quietly sensational development in metals fabrication. Unbottling some nitrogen, Revere engineers blew four tubes in one whoosh through the 18' length of a single strip of .009-ga. copper to create a monolithic panel of tubing. Costing only 12¢ more per lb. than milled strip of equivalent gauge, the *continued on p. 196*

Another Adlake aluminum window installation



IBM Chicago West Regional Office Building, River Forest, III. Architects-Engineers: Camburas & Theodore General Contractors: Sherman Olson, Inc. Equipped with Adlake Reversible Windows



Minimum air infiltration

- Finger-tip control
- No painting or maintenance
- No warp, rot, rattle, stick or swell
- Guaranteed non-metallic weatherstripping (patented serrated guides on double hung windows)

The Adams & Westlake Company ELKHART, INDIANA • Chicago • New York • Established 1857





here it is . . .

the first air conditioner to give you complete freedom of design!

REALLY FITS FLUSH INSIDE AND OUT!



Here's a completely new idea in air conditioning—a built-in wall unit that costs so little, fits your plans so easily it makes air conditioning practicable in any kind of building. Look at the basic dimensions of this Lewyt built-in wall air conditioner: $15'' \times 145\%'' \times 327_{16}''$. No standard unit made is so compact, so easy to fit into a wall with no overhang inside or out.

There are no networks of ducts and pipes, no cumbersome central plant to make room for. The Lewyt is a complete, self-contained unit-for one room or every room.

Costs average less than window units, less than half as much as central systems for the same cooling efficiency. For figures and complete details write: Lewyt Air Conditioner Corp., Brooklyn 20, N. Y. **LEWYT** BUILT-IN WALL AIR CONDITIONER



new Tube-in-Strip can be produced in brass, aluminum and stainless steel as well as copper in a variety of sizes and in combination of different sizes in strips of any lengths. The materal is shipped flat in coils and handled like ordinary strip. It is inflated on the job using air pressure for thin walled sections and hydraulic for heavy. The tubing can be brazed, soldered and welded, and will take return bends in parallels. The integral webbing between each channel strengthens the strip so that less-expensive lighter gauge materials can be used for many piping jobs and such structural applications as curtain walls and interior partitions. The webbing also serves as an excellent conductor where the tubing is to be used for panel heating and cooling. Width of Tube-in Strip is limited only by the capacity of the rolling mills-currently about 16" for copper, 4' for aluminum. Aimed presently at heat exchange, refrigeration and chemical processing fields, the one-piece tube sheets may soon affect the design of building mechanics and, in turn, building design itself.

Preparation for the tube forming starts at the mill in the molten metal stage when resist rods of a compressed powder are inserted in the casting billet. As the block goes through the rolling treatment, the friable rods are flattened out leaving continuous slits in the sheet. When inflated freely, these spaces shape up into full rounds with wall thicknesses half the gauge of the sheet they splice. Full and half hexagonal, oval, even square tubes can be formed by setting profile dies on top and bottom of the metal strip before inflating. Tube spacing can be as close as 1/4" and inside diameters run from about 3/16" to 5%". A suggested use of the Tube-in-Strip produced with one side flat is as a hot water radiant baseboard. Other applications apparently are limited only by the imagination of the engineers and designers who work with the material.

Manufacturer: Revere Copper and Brass, Inc., 230 Park Ave., New York 17, N.Y.

ALUMINUM DECK clips on roof structure

A strong and economical metal decking, Alumadek is notable for its light weight and easy clip-on application. Suggested for use in the mushrooming one-story plant field, where lightweight steel truss construction holds the edge on concrete, the new continued on p. 206

MANUFACTURER OF PRECISION EQUIPMENT SINCE 1888.

THOUSANDS **OF SCHOOL ROOMS** have **SIMPSON** DUND CONDITIONING

Simpson Hollokore-drilled Acoustical Tile is the standard of quality in the sound-conditioning field. This superior tile, with its clean, efficient perforations . . plus superior installation by Simpson Certified Acoustical Contractors ... gives architects, general con-tractors and school boards bonus benefits at lowest possible cost. Specify Hollokore-drilled Acoustical Tile by Simpson, creators of Forestone, the world's first fissured woodfiber acoustical tile.



ACOUSTICAL TILE (REGULAR OR SCATTER-DRILLED)

For complete information call the Simpson Certified Acoustical Contractor nearest you ... or write

Simpson Logging Company, 1010 White Building Seattle, Washington

STICAL CONTRACT Available only through these Simpson Certified Acoustical Contractors

HOME ECONOMICS ROOM, CATHERINE BLAINE JUNIOR HIGH

ALABAMA: BIRMINGHAM—Badham Insulation Co., Inc.; MOBILE—Stokes Inc. ARIZONA: PHOENIX—Fiberglas Engineering & Supply; TUCSON—Hall Insulation & Tile Co. CALIFORNIA: LOS ANGELES and SAN DIEGO—Coast Insulating Products; SAN FRANCISCO and FRESNO— Cramer Acoustics; SAN FRANCISCO and FRESNO— Cramer Acoustics; DENVER — Construction Special-tiles Co. CONNECTICUT: HARTFORD AND BRIDGEPORT —Wilson Construction Company. FLORIDA: CORAL GABLES, FORT LAUDERDALE and WEST PALM BEACH— Ray-Hof Agencies, Inc. (Div. of Giffen Industries Inc.); MIAMI—L. F. Popell Co. GEORGIA: ATLANTA—Anning-Johnson Co. IDAHO: BOISE—Fiberglas Engineering & Supply. ILLINOIS: CHICAGO—General Acoustics Co.; SPRINGFIELD, DECATUR and CHAMPAIGN—George S. Grimmett & Co. INDIANA: FORT WAYNE—The Baldus Co., Inc.; INDIANA: FORT WAYNE—The Baldus Co., Inc.; INDIANA: FORT WAYNE—The Baldus Co., Inc.; SHREVEPORT — Acoustical Engineering Co. MARYLAND: BALTIMORE — Lloyd E. Mitcheil, Inc.

a ICI) SON CERTI

mpson

MASSACHUSETTS: BRIGHTON—Acoustical Contractors, Inc. MICHIGAN: DETROIT, FLINT and GRAND RAPIDS— Detroit Fiberglas Insulation Division. MINNESOTA: DULUITH—Flament-Hampshire Co., MINNEAPOLIS—Dale Tile Company. MISSISSIPPI: JACKSON—Stokes, Inc. MISSOURI: ST. LOUIS—Hamilton Company, Inc. MON-TANA: BILLINGS—Kerr & Co. NEBRASKA: OMAHA— Kelley Asbestos Products Co. NEW JERSEY: FAIR VIEW—Kane Acoustical Co.; KENILWORTH—Connor & Co., Inc. NEW MEXICO: ALBUQUEMCUE—Fiberglas Engineering & Supply. NEW YORK: ALBANY—Davis Acoustical Corp.; BUFFALO, JAMESTOWN—Davis-Fetch & Co., Inc.; ROCHESTER—Rochester Davis-Fetch Corp.; LYNBROOK, L. 1.—Robert J. Harder, Inc.; NEW YORK-James A. Phillips, Inc.; STONY POINT—The Cronin Acoustical Co. NORTH CAROLINA: CHARLOTTE—Bost Building Equipment Co.; GREENSBORO—The Bonitz Insulation Co. OHIO: CINCINNATI—R. B. Brunemann and Sons, Inc.; Cincinnati Floor Co.; COLUMBUS— Gatterdam Plastering Co., Reithmiller Acoustic Co., Marold C. Parker & Co., Inc.; TULSA—Midwest Marble

& Tile Co. OREGON: PORTLAND—Emert & Zednik Co., Johnson Acoustical & Supply Co.; EUGENE—Commer-cial Tile Co.; SALEM—R. L. Elfstrom Co. PENNSYL-VANIA: PHILADELPHIA—Selby, Battersby & Company; PITTSBURGH—Standard Floor Co. SOUTH CAROLINA: COLUMBIA—General Insulation & Acoustics, Inc. TEN-NESSEE: MEMPHIS—Alexander Marbie & Tile Co.; NASHVILLE—Nelson Baird Co., Inc. TEXAS: CORPUS CHRISTI—Raymond Rambo Materials Company; DALLAS —Blue Diamond Company; EL PASO—Houser Resilient Floor Company; FORT WORTH—Builder's Service Co.; HOUSTON—General Supply Co., Inc.; LUBBOCK—J. E. Delehanty; SAN ANTONIO—Rufus A. Walker Co. UTAH: SALT LAKE CITY—Utah Pioneer Corporation. VIRGINIA: NORFOLK and RICHMOND — Manson-Smith Co., Inc. SPOKANE—Fiberglas Engineering & Supply. WASH-INGTON, D. C.: ARLINGTON—A. W. Lee, Inc. WISCON-SIN: APPLETON and MILWAKEE—Building Service, Inc. CANADA: VANCOUVER, B. C. and VICTORIA, B. C. —F. Drexel Company, Ltd.; EDMONTON, ALBERTA— Hancock Lumber Limited.

The Wakefield Sigma I is a true multifunction ceiling integrating the plane of light with various mechanical room components. It offers

> four foot or five foot modules uniform illumination levels integrated acoustical baffles integrated air diffusers integrated sprinkler heads integrated movable partitions

MAR WY

OFFICE

Our Architects' Development Department is prepared to modify Sigma I to conform to the individual architect's concepts. The Wakefield Company, Vermilion, Ohio Wakefield Lighting Limited, London, Ont.









SNAP-ON WEATHERSTRIP (Y-579)-Measures .07" inside opening with a .214" leg height. Heavy pile fabric is secured under beaded edges. Available in aluminum or stainless steel core.



Illustrated are some of our many Standard Line DrafTite weatherstrip sections available for any metal window or door sealing problem.

The Best-Vent Double Hung Windows in this substantial, popular-priced home are sealed from wind, dust and rain with DrafTite Y-579.

An increasing number of architects are specifying metal windows sealed with wool pile. DrafTite is nationally recognized as the leader in this field. It is used by the millions of feet, and for years proved better than any other seal for similar purposes.

Test results show that DrafTite is two and a quarter times more wind resistant than the sealing standards that industry specifies. DrafTite is a silent seal that insures an even seal throughout the life of the window. For complete client satisfaction, you'll find there's nothing better than metal windows sealed with Draf Tite.

ORIG *Trademark rd Product PMENT

BUILDING PRODUCTS DIVISION, P. O. BOX 678, LEXINGTON, KY.

Send for our Standard Line Channel and Weatherstrip Catalog



G.E. BUILDS THEM

solid

Heavy gauge steel cabinet. Dependable, trouble-free performance.

smart

Modern styling, functional louvres, long-lasting, soft gray finish blends with any interior.

sure

Steady flow of refreshing, cool water, even on peak-demand days. Exclusive curved full-width foot pedal for easy water control. Anti-splash basin avoids splattering.

and saving!

Take up to 30% less floor space for extra flexibility in placement. G-E engineering cuts water and electricity bills. Operating cost only pennies a day.



for offices, stores, institutions and factories

Front panel snaps off to reveal 5 reasons for dependability:

- 1 Vapor sealed upper compartment is completely insulated-reduces operating cost.
- 3 Adjustable Dial has 8 settings for control of water temperature.
- voir guarantees ample supply on peak demand days. 4 Direct Rod to bubbler control assures steady

2 Extra-large stainless

steel cold water*reser-

water temperature. stream of water. 5 Time-proven Compressor is hermetically sealed, lubricated for life, spring mounted for minimum vibration. • G-E Water Coolers are available in 8 different models with capacities ranging from 2.85 to 21.5 gallons per hour. The standard G-E 5-year protection plan backs up the famous G-E quality built into each model. Call your local G-E Water Cooler dealer or write to General Electric Company, Commercial and Industrial Air Conditioning Department, 5 Lawrence Street, Bloomfield, New Jersey.



Give offices beauty plus overnight movability with Weldwood real wood partitions

Only Weldwood Movable Partitions give you:

Choice of fine wood veneers. Rich birch, walnut and Korina[®] Weldwood Movable Partitions are regular stock items. Magnificent mahogany, maple, oak and many other woods are always available on special order. New office layouts overnight. Weldwood Movable Partitions lock together like a solid wall; yet they can be easily dismantled and set up in a new location at any time. With Weldwood's exclusive metal key con-



BEAUTIFUL KORINA partitions in reception room at Westinghouse help create a pleasant working atmosphere for employees, keep maintenance at a minimum. Weldwood Stay-Strate® Doors match partitions.

struction, office layouts can be changed in a matter of hours.

Quiet installation. Partitions go up without clatter or din. Employees carry on usual duties without noise, without loss of efficiency.

Fire resistance and sound reduction, too. Only Weldwood Partition Panels have cores of incombustible Weldrok[®]—the exclusive mineral material that's fireproof and sound deadening. Noises *between* offices are cut much more effectively by the Weldrok core than by standard $2 \ge 4$ stud partitions with lath and plaster. And the wood surface of the panels quiets noises *within* an office much more effectively than standard metal partitions.

Save as much as 50% in installation costs because Weldwood Movable Partitions are so easy to install. With its simple parts, regular maintenance crews can set up or change the partitions (responsible installation service is also available).

Low maintenance clients like. Weldwood panels need only an occasional waxing to keep them beautifully bright and new; periodic redecorating costs are eliminated.

Send coupon for specifications and installation data or visit any of the 87 United States Plywood branches in principal cities. In Canada: Weldwood Plywood, Ltd.



6 EASY STEPS INSTALL WELDWOOD MOVABLE PARTITIONS-SCALE MODEL SHOWS HOW:



STEP 1—The base plate is installed on the floor, and door frame section is put in place. **STEP 2**—The first partition panel is installed. Panels are light in weight—about $\frac{2}{3}$ the weight of standard steel parts—they're easy to handle and move.



STEP 3—Leveling bolts on panel are adjustable to compensate for uneven floors. Notice the metal channel on the side of the panel. In that channel—and in one on the side of the door frame special metal connectors will be placed. These connectors make partitions rigid yet allow fast dismantling and re-erection.



STEP 4—Metal connectors fit into the channels—interlocking partition members firmly together. The panel is now securely anchored to the door frame, A handsome hardwood postcap is about to be snapped on. Wood parts match partition in grain and color,





DIRECTOR'S OFFICE at Westinghouse Research Laboratories, Pittsburgh, Penna., shows how Korina Weldwood Movable Partitions add dignity and warmth to a modern décor. Building Archts.: Voorhees, Walker, Smith & Smith; Distrib.: Marquard Sash & Door Mfg. Co.



STEP 6—Micarta® base and pre-milled hardwood cornice slide into place to complete the installation. Model partition is cut away to let you see the exclusive Weldrok mineral core. The addition of a matching Weldwood Mineral Core Door completes the installation.



A product of

UNITED STATES PLYWOOD CORPORATION

Weldwood—The Best Known Name in Plywood

Weldwood Building, 55 West 44th Str	reet, New York 36, N. Y.
SEND ME your latest booklet showing to of Weldwood Movable Partitions (Doors ().	the advantages and specifications) and Weldwood Mineral Core AF3-56
NAME	
COMPANY	
ADDRESS	
CITY	STATE



GRADUATE SCHOOL OF PUBLIC HEALTH, University of Pittsburgh, Pittsburgh, Pa. Eggers and Higgins, Architects Weiskopf and Pickworth, Structural Engineers Mellon-Stuart Company, General Contractor

17

INTE TA

100

New-Design Steel Joists speeded erection of this handsome 8-story building

USS AMBRIDGE Steel Joists for floor and roof supports contributed materially to the speedy erection of the University of Pittsburgh's new Graduate School of Public Health building.

This modern 8-story structure is 64'-1" wide x 297'-8" long, with two wings, one 26'-5" x 60'-0", and one 36'-4" x 70'-0". The total weight of structural steel, including 122 tons of new-design steel joists, is 1,141 tons, all of which was fabricated and erected by American Bridge.

USS AMBRIDGE standard Steel Joists provide rigid, economical and lightweight construction suitable for any type of floor, roof and ceiling. The underslung and open web design provides for maximum head room and allows passage of pipes, ducts and conduits in any direction.

In floor construction, the ease and simplicity of handling this new-design steel joist reduces installation time to a minimum and permits other trades to begin their work promptly. And, for roof construction, AMBRIDGE Steel Joists cut the time required to put your structure under cover.

AMBRIDGE Steel Joists-standard and longspan – are fabricated and assembled on a modern production line basis to assure you a *better* product in *faster* time, thus enabling you to build an economical structure without interruption of your schedule. Your joists are ready when you are ready for them.

ASK FOR FREE BOOKLET: For detailed information about the time-and-money-saving advantages of using USS AMBRIDGE Steel Joists on your next job, get in touch with our nearest Contracting Office, or write direct to Pittsburgh, for a free copy of our new 36-page catalog. Contains complete design information. It is the only complete steel joists catalog with design information for spans up to 120 feet. Ask for your copy today or see our catalog in Sweet's Files.



INTERESTING MOTION PICTURES AVAILABLE—"Building for the Nations" and "The Suspension Bridge," two entertaining and educational films, are now available without charge to business, fraternal and civic organizations, churches, schools and colleges. Write to Pittsburgh office for bookings. AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA. Centracting Offices in: AMBRIDGE • ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • ELMIRA • GARY HOUSTON • LOS ANGELES • MEMPHIS • MINNEAPOLIS • NEW YORK • ORANGE • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ROANOKE • ST. LOUIS • SAN FRANCISCO • TRENTON UNITED STATES STEEL EXPORT COMPANY, NEW YORK





ROTARY OIL BURNER

for economical heavy oils

Why PETRO is known for DEPENDABILITY

Petro engineers are not gadget minded. They like oil burners that are sturdy and steady because that is what users like, with no hairline adjustments required for good operating efficiency.

Take oil handling, for instance. Viscosity of heavy oil isn't nearly the bugaboo it's supposed to be. Everyone knows that heavy oils can be as sticky as January molasses, or as thin as hot syrup. But that is only half the story. The other half is that at operating temperature viscosity is a negligible factor. From 160° on up it changes hardly at all. (See chart.)

So the solution is simple. It's easy to keep the oil above the critical temperature, and not expensive either. The Petro burner has a simple valve that will not pass the oil to the nozzle before it reaches a predetermined temperature. If the oil is below operating temperature it is recirculated through the heater. On a cold start this requires about seven minutes. On restarts there is practically no time lag.

Proper heating of the oil has these advantages

1. Oil can be *accurately* metered; 2. Oil is subject to finer atomization. (It separates into much smaller particles for better aeration and cleaner burning); 3. Warm oil ignites quickly and easily; 4. Petro *never* has a slug of cold oil in the feed line to the burner, which is the main cause of smoky starts.

From all of this you would expect low fuel and maintenance costs and on this point thousands of Petro owners will bear us out.

PETRO will see you through - you can bank on it

CAPACITIES FROM 8 TO 200 GALLONS PER HOUR



Jetrai

3214 West 106th Street, Cleveland 11, Ohio. (In Canada: 2231 Bloor St. W., Toronto, Ont.)

Please send me literature and specification sheets on money-saving Petro commercial and industrial burners.

Name______ Company_____ Address City______State_____









HAWS Series 2300, Model No. 2350 (Pat, applied for)



Enamel finish, specify HAWS Series 2000.

Write today for illustrated Detail Sheets on 2000, 2200 and 2300 Series!



deck system consists of corrugated panels of high strength aluminum alloy which are fastened to carefully aligned zinc-plated steel subpurlins. Patented self-expanding Speed Lok clips, spaced every third corrugation on the sheets, lock into the channel of the subpurlins below, but flex to allow for the aluminum's expansion and contraction. The subpurlins are produced in lengths to span up to three 8' purlin spaces and each panel, lapped a full corrugation on each side for efficient weather seal, covers 12' x 251/2". Compared with poured gypsum deck, Alumadek's lightness should, according to the manufacturer, afford substantial savings in steel framing and permit increased spans. Eliminating field painting, the deck itself needs little maintenance and provides good light and heat reflection. Erected costs for Alumadek including subpurlins, sheets and clips run about \$40 to \$42 per square.

Manufacturer: Metal Decking Corp., Indianapolis, Ind.



CURTAIN WALL PANEL assembled on job

Developed especially for sprawling plants and commercial buildings, Detroit Steel's king-size FA panels combine the insulation and appearance of light-gauge curtain wall with the advantages of field fabrication. Made in lengths up to 31', the panels are shipped to the site in separate parts and are assembled into their sandwich form as the components are put in place. First a flat plate with attached Z bar is welded or bonded to the structural supports. A horizontal channel is then fastened to the Zbars with metal saddle clips and rivets. Batts of glass fiber 1½" thick are forced between the bars and channels to keep the insulation snugly in place during assembly. To prevent metal-to-metal thermal conduction, a felt strip is pasted over the horizontal girt. An exterior fluted sheet of 16-ga. aluminum or 18-ga. galvanized steel is positioned and fastened with bolts or rivets. The final panel measures 2' wide 31/4 " deep and is said to provide the insulation value of 16" of masonry.

When panels are erected with bolts the FA curtain wall can be quickly disassembled and put together at another site. Costs run about \$1.75 to \$2.25 per sq. ft. in place. *Manufacturer:* Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.

For the architect, builder, or buyer who would "like to air condition" but hesitates because of

expense . . . check

Modine

COOL, HEAT, VENTILATE

.

Whether you're planning to build or remodel, Modine AIRditioners are designed for year 'round heating, ventilating and air conditioning. Individual controls keep room occupants comfortable, satisfied . . . save owners money on fuel costs. Ultra-quiet, resiliently suspended motors and fans (1050 rpm) meet the most exacting noise-level requirements.

ELIMINATE EXPENSIVE DUCT WORK

Modine AIRditioners combine the best of central and unit type systems. They heat with hot water from a central boiler, cool with cold water from a central chiller. Same piping — water supply and return plus drain — is used for both. Operation of fan ventilates rooms during intermediate seasons.

IN STYLES AND SIZE FOR EVERY NEED Sleek, modern lines add dignity and decor to any design motif . . , enhance livability of hotel, motel, office, apartment or home. Four distinct types to choose from — ceiling, overhead, concealed and console models — all styled by Jean Otis Reinecke.



NEW, FREE BULLETIN DETAILS ADVANTAGES Ask the Modine representative listed in your classified phone book for Bulletin No. 755. Or write — MODINE MFG. CO., 1507 DeKoven Ave., Racine, Wis.



inners *

/ / /

Ulberilino.

Modine **S*** TRADEMARK

New Pitto NO.84 Awring Hood

This new hood gives complete protection to the awning and awning fixtures. The outer face, modern and unusual in design, creates a smart and pleasing accent at the head of the opening. It is beautifully finished like all Pittco mouldings. For complete details, see your Pittco Store Front Metal Representative.

PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS · FIBER GLASS PITTSBURGH PLATE GLASS COMPANY IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED











EE-

00







no limit on IDEAS

... when you plan with the versatile Herman Nelson Console Heater in mind!

Let yourself go on ideas for that next console heater installation. Herman Nelson gives you a heater arrangement to match it! Place the unit free-standing, semi-recessed or fully recessed on the floor. Use it as a room divider. Hang it from the wall. Suspend it from the ceiling. Just look at SOME of the possibilities sketched here. You plan it—and the Herman Nelson Console Heater MATCHES it.

Achieve a new smartness of design and functional beauty to please the most exacting client. It's easy—with the heater made for multi-arrangements anywhere. Choice of color, too. Get ALL the facts today on this beautiful console unit heater for steam or hot water system.











Operatorless Elevator Test by Betty Furness and Friend Proves: Westinghouse Traffic Sentinel Holds Doors Open Until Entrance is Clear

Now, Traffic Sentinel, the electronic door control, overcomes the last tenant objection to operatorless elevators. Gone once and for all is any fear of doors starting to close before they should. (Young man in elevator entrance confidently balances blocks —doors held open until doorway is clear.)

PASSENGERS NOT RUSHED

In Westinghouse Operatorless Selectomatic systems, people farthest from any arriving elevator have ample time to walk to that car. BUT, once through the entrance, Traffic Sentinel closes the doors quickly behind them—speeding overall service.

BIG SAVINGS

Traffic Sentinel is an important addition to Operatorless Selectomatic, the Westinghouse elevator system that cuts operating costs up to \$7000* per car per year in heavy traffic buildings—gives fast, efficient tenantpleasing service 24 hours a day. *includes wages, insurance, training, uniforms (and other costs of attendant operation).

OPERATES WITH 1 PERSON OR 15

With Traffic Sentinel, the lighter the traffic, the shorter the door-open time. During *heavier* traffic, the doors remain open long enough to permit unhurried loading or unloading of the car... all under conditions that impart a complete new sense of security and *freedom from annoy-ance* to all passengers.

NO PREMATURE CLOSINGS— ALL UNNECESSARY DOOR-OPEN TIME ELIMINATED

Traffic Sentinel operates more efficiently than a trained attendant, "sensing" passenger movement and controlling doors accordingly. This precise adjustment to traffic flow does away with all unnecessary dooropen time—speeds elevator service throughout the building.

MORE ABOUT TRAFFIC SENTINEL?

Call our nearest office if you are thinking of new building construction or modernization. More detailed information available on request.

Westinghouse Elevators

PRODUCTS cont'd.



AIR RAM TOOL drives bolts to preset tension

Noting that high tensile bolting with its two man crews took one-fourth of last year's structural steel work away from the riveting quartets, Ingersoll-Rand is paying its respects to the upcoming building method with an ingenious *Torque Control Impactool*. Engineered to speed up and assure precise nut running, the new air powered 5340T. *Impactool* should also ac-



•General Telephone Office Bldg., San Angelo, Tex. Architects: Pace Associates, Chicago Plumbing Contractors: Bollinger & Sames, San Angelo



Here is a bold and unique conception in modern design that fairly echoes the spirit of telephone progress. And, in keeping with such advanced achitectural planning, Halsey Taylor fountains and coolers were specified for this structure.

> SHE OUR CATALOGIN SWEET'S

The Halsey W. Taylor Co., Warren, O.

Illustrated are some modernly-styled fountains and coolers in the Halsey Taylor line. Write for catalog.

HALSEY TAYLOR

Fountains and Coolers

celerate acceptance of the bolting technique itself. Unlike riveting operations which demand highly skilled and practiced labor, accurate bolt setting with Impactool takes no special training. The tool's design incorporates a torsion bar with a jig and calibrated collar which can be set in seconds to the required tension. This preset torque remains constant for any nut running operation until the adjustment is changed, and release of the trigger automatically resets the tool to the same torque for the next nut. Follow-up tests for proper tension can be eliminated. (On test readings of 100 high-strength bolts where tension was set for 510 ft.-lb., the torque proved consistently accurate; tension var-



ied only $2\frac{1}{2}$ % either way on more than half the nuts and at most $7\frac{1}{2}$ %.)

I-R engineers explain the torque control action by comparing it to a pogo stick which goes bouncing along evenly on soft ground but will suddenly ping high when striking a hard surface. The Impactool operates at normal power and speed while the nut is being run to required tension but when the nut-running resistance equals the stress preset on the torsion bar, the impact mechanism rebounds instantly, tripping a cushioned shut-off valve to prevent over-torque. The tool operates in either direction, always at full power, and needs no pressure regulators. The model 5340Tis shipped from the factory with torque set at 320 lb. and has 14 calibrated adjustments up to 550 ft.-lb.-tensions adequate for running the 34" and 36" highstrength bolts generally used in heavy construction. It is 2' long, weighs 311/2 lb. and sells for \$575. A smaller 101/2" Impactool, the 5040T, weighs 6 lb., and has an adjustable torque range up to 90 ft.-lb. It is geared to shop work and assembly line fabrication, and is priced at \$265.

Manufacturer: Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.

TOPS FOR YOUR BUILDING TOPS

BILCO ROOF SCUTTLE

- PERMANENT
- WEATHERTIGHT
- ECONOMICAL



Bilco scuttles give your clients the very finest access to the roof. Fully insulated with extruded neoprene gaskets—"floating" cover action with convenient one hand release for safety — completely assembled for fast installation — plus many other quality features, make Bilco the tops in roof scuttles. Available in a variety of sizes and metals for every requirement at a cost of little, if any, more than "job made" scuttles.

1

Other Bilco Doors, too, help you to plan better buildings. Bilco heavy plate access doors, the new type T door that matches the floor, the basement door for homes and other structures — all with built-in springs for easy operation.

SEE OUR CATALOG IN SWEETS OR WRITE FOR CATALOG A.I.A. FILE 12P THE BILCO COMPANY DEPT. 146A NEW HAVEN, CONN.

only the best is stamped



oldest and largest manufacturers of doors for special services

Corinthian or "Californian"

architects look to usAIRco for efficient and

economical air conditioning

for banks ...

Problems of air conditioning were vastly different in these two usAIRco air conditioned banks. The PRUDENTIA'S SAVING 5 BANK older Prudential building required the installation of a ductless system, without business interruption. The newly-constructed California bank required the newest and finest system available. Both chose usAIRco . . . backed by 30 years of engineering and manufacturing experience.



Architect Kenneth B. Norton selected 17 usAlRco Modu-aire units, recessed and concealed in the outer walls of the main floor and mezzanine for this Brooklyn, N.Y. bank. Small copper tubing carries hot or cold water to coil-blower units. Engineer: Frank C. Reynolds. Installation: J. M. Fink Co., Inc.

Architects Kellingsworth, Brady & Smith used one 25 h. p. central station RK to cool the Burbank Community Bank accommodating 75 persons. The usAlRco RK contains compressor, evaporative condensor and blower sections all in one cabinet, factory balanced and tested. Engineer: Thompson Engineering Co. Contractor: Air Comfort, Inc.

For descriptive literature, write R. R. McLain UNITED STATES AIR CONDITIONING CORPORATION MINNEAPOLIS 14, MINNESOTA . Export: 13 E. 40th Street, New York 16, N.Y.


Every Home Cottage or Mansion Deserves the Permanent Protection of CAST IRON

SOIL PIPE

and Fittings



"Can't you figure out some way to cut down the cost?"

Architects or contractors are often asked that question, after final plans are drawn. Usually the home builder wants plans trimmed "where it won't show."

But recognizing their responsibility to clients, reliable architects and contractors refuse to cut down on essentials that are vital to the permanent protection of a home and its enjoyment by the owner.

They know, for instance, that it never pays to compromise on quality in plumbing drainage, which once buried in the ground or house is



there to stay. That's why they specify permanent Cast Iron Pipe even where investment in the home is a very modest one.

Permanent Cast Iron Pipe costs a little more, but its first cost is *final*. It will last forever, never need root reaming or break down under heavy truck loads or ground settlement. Through the years it will perform its function —smoothly and without care or trouble.

When Cast Iron Pipe is specified — inside and out — there will never be any come-backs or complaints.

Our Company does not manufacture Cast Iron Pipe, but supplies many of the nation's leading foundries with quality pig iron from which pipe is made.

WOODWARD, ALABAMA



A FAVORITE IN SCHOOL LOCKERS is this single-tier standard louvre locker—the most popular in Republic's big line. Its height and roominess provide plenty of space for garments without wrinkling. And once locked, special door construction prevents prying, assures full-time protection for possessions. Available with choice of locking systems. Lockers can stand free or be recessed as above.

DAY LIGHT YOUR CLASSROOMS with handsome Truscon® Intermediate Classroom Windows. Designed for superior light and ventilation, these popular windows are ruggedly built from specially rolled sections to provide weathertight protection, attractive appearance. Truscon makes many types of Steel Windows—all currently being specified for school construction. Send coupon for more information.

MAKE FLOORS LIGHT AND FIRE-RESISTANT wi Truscon "O-T"[®] Steel Joists. This low-cost-pe foot construction provides strength and safetyreduces time and labor required for erectia And it saves materials in supporting framewo and foundations. Send coupon for literature d scribing complete line of Truscon Steel Buildir Products.



For your new school...or addition WHICH LOCKER SYSTEM DO YOU PREFER?

Republic Steel Lockers offer three locking systems

Combination . . . padlock . . . or key operted . . . Republic's got 'em all—including key-Control.

And you can have your choice of these proective systems in any one of many types and izes of standard steel lockers for every coneivable storage requirement.

Through more than 65 years, Republic's erger[®] Division, the world's biggest manfacturer of lockers, has completed more nstallations than any other maker. Here is experience you can always depend on when you want the best in lockers.

Berger offers school administrators and architects a complete planning and installation service, too. A service which supplies technical planning and engineering assistance, then assumes full responsibility for proper installation—right down to the final bolt. Get all the facts from your Berger representative, or send coupon for booklet giving details, specifications and prices.

5			

SIUS East 4oth :	treet, cleveland 27, Onio	
Please send more	Information on:	al Windows
	Truscon "O-T" Steel Joists	ar windows
Name		<u> </u>
Company		
Address		
City	Zone State	



TELESCOPING BOOM deftly delivers full loads in tight spots

In the hands of a good crane man the 60 Pitman Hydra-Lift is a dextrous giant. An operator can position the fully loaded crane, outfitted with a new hydraulic telescopic boom, outside a window, extend its boom 17' to 27' through the window, set the load down, retract the boom and swing it clear. Having a 6,400 lb. capacity the Model 60 takes up only 40" of space behind a truck cab. It can be installed on any truck 2 tons or bigger. Another hydraulic device on the 60 allows the operator to set the outriggers from inside or outside the cab by pushing two levers without shifting his position. The new model's full boom topping capacity makes it possible to raise or lower the heaviest load directly with the boom instead of positioning the boom first and lifting the load with the loadline. Kinds of materials the Hydra-Lift handles run from pipe, timber, stone and heavy equipment to structural steel, precast concrete, bar joists and trusses. Shipped as a package, the Model 60 sells for about \$3,990 completely installed on customer's truck. To keep maintenance low, seamless steel tubing instead of hose is used to carry the hydraulic fluid. Manufacturer: Pitman Mfg. Co., 300 W. 79 Terrace, Kansas City, Mo.

DIAMOND BIT TILE DRILL keeps cool with tap water

Designed to cut holes clean, cool and fast in glazed tile, brick, granite, marble, the 3,200 rpm Hanmole electric hand drill is equipped with a self-sharpening diamond bit and an integral water injection coupling instead of the usual swivel attachment. Water, supplied to the compact masonry tool from a faucet or pressure tank, is forced down the center of the drill bit to keep it cool while working dense materials. The Model A-1 Hanmole, taking bits up to 1", costs \$160 FOB Washington D. C., and the A-2 with 134" capacity is \$198. Both operate on 110-v. power. Diamond drill bits and adapters start at about \$23.40 for a $^{1\!\!4}$ " hole size up to \$57.55 for the 1¾". For outdoor jobs, an accessory 3¼gal. pressure tank with water capacity for 30 minutes of drilling is available at \$12. Manufacturer: Molco Drilling Machines, Inc., 1,100 20 St., N.W., Washington 6, D.C. continued on p. 224



Giant Snow Melting System for Staten Island Ferry Building features "snowless" stairway



Snow melting coils in place on stairway forms ... and freshly concreted stairway. Handrails to be installed later.



U

E D

Reconstruction of the Manhattan Terminal of the Staten Island Ferry, operated by New York City's Dept. of Marine and Aviation, includes an extensive snow melting system. The long curving ramp, which starts at street level and expands into a semicircular walkway on the second level, is completely fitted with snowmelting coils, as are the walkways.

A unique feature of the installation is that an open stairway from the street to the top of the ramp has also been equipped with snow-melting coils—one length of 1" pipe in the tread of each step.

Approximately 14 tons of 1" NATIONAL Steel Pipe were used in the grids, and about 5 tons of sizes up to 3" were employed as headers, connecting pipes, etc. Architects, engineers, and contractors have been specifying USS NATIONAL Steel Pipe for over 60 years as the "standard" choice for conventional plumbing and heating systems.

The inherent characteristics of NATIONAL Pipe are well knownsmooth, uniform bending; sound, strong welding properties, and extralong service life-characteristics that make NATIONAL Pipe ideal for such applications as snow melting and radiant heating, and give it the reputation for dependability that it enjoys. Such a well-deserved reputation inspires confidence-a nationwide confidence that has made USS NATIONAL Pipe the largest selling pipe in the world. Write for free descriptive literature.

NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA. COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS UNITED STATES STEEL EXPORT COMPANY, NEW YORK



THERMOPANE® BUILDS BETTER CUSTOMER



Ohio Citizens Trust Company, Maumee, Ohio. Architect: Peterson, Hoffman & Associates, Toledo.





LIBBEY. OWENS. FORD ... a Great Name in Glas

RELATIONS FOR BANKS

Bankers know that modern buildings, with all their facilities for easier banking, attract more people... and more people mean more profits. That's why banks are using Daylight Walls of *Thermopane* insulating glass. They give a sense of spaciousness . . . keep lobbies warmer in winter, cooler in summer and quieter all year 'round. Customers like banks like this.

Business managers of banks are enthusiastic, too. They find that *Thermopane* reduces heating and air-conditioning equipment needs as well as unit operating costs.

There is also creative satisfaction. *Thermopane's* combined transparency and insulation inspire wide latitude in designs which are impressive as well as practical.



Leader Federal Savings & Loan Assn., Memphis, Tenn. Architect: Walk C. Jones, Jr., Memphis.



Much technical information is available to help the architect and engineer design for the most effective and most economical use of *Thermopane* insulating glass. It is all in our *Thermopane* Manual which will be sent on request. (See coupon below.)

The following brief data are excerpts from the manual:

ADVANTAGES OF THERMOPANE

1. Savings in fuel

0

.

.

.

.

.

.

-

.

0

-

.

.

0

0

.

.

0

0

0

0

0

- 2. Increased usable room space
- 3. Reduction of condensation
- 4. Reduced air-conditioning initial equipment needs and operating costs
- 5. Quieter interiors

INSULATING EFFICIENCY

Thermopane with $\frac{1}{4}''$ air space -U = .65

- Thermopane with $\frac{1}{2}''$ air space -U = .58
- -as compared with 1.15 for single glass.

KINDS OF GLASS

Thermopane is made with plate glass for maximum clarity, or with sheet glass when economy is main consideration. Units $\frac{1}{2}''$ thick have $\frac{1}{4}''$ air space, units 1" thick have $\frac{1}{2}''$ air space. Thermopane can also be made with Heat Absorbing Glass, Tuf-flex* tempered plate glass, or several types of Blue Ridge Patterned Glass.

STANDARD SIZES

More than 90 standard sizes are made to permit economy in use with most popular types of sash. The *Thermopane* Manual provides a list of sash types and standard sizes for them.

OTHER DATA IN THERMOPANE MANUAL

Heat Loss Data Warm Side Surface Temperatures **Condensation Points** Sound Insulation Light and Solar Radiation Transmittance Reduction of Cooling Load Strength of Thermopane Wind Load Weight Per Sq. Ft. **Glazing Instructions** Framing Details Suggested Specifications Thermopane is sold by local L·O·F Glass Distributors and Dealers, listed under "Glass" in yellow pages of phone books.

Libbey-Owens-F	ord Glass Co., Dept. 5136		
608 Madison Ave., Toledo 3, Ohio			
Please send me a copy of the Thermopane Manual.			
Maria			
	(Please Print)		
Street	A STREAM OF THE REAL PROPERTY		

3325 WILSHIRE BUILDING, Los Angeles, California OWNER AND BUILDER: Tishman Realty and Construction Co., Inc. New York and Los Angeles ARCHITECT: Victor Gruen, A.I.A., Los Angeles, New York and Detroit



serving the architect, and owner-builder with metal wall engineering and production quality

This new 13-story office building will be completely air-conditioned. To admit maximum natural light without the discomfort of glare and direct sunlight, the building has been designed with projecting horizontal sunshades on the south and north elevation, and vertical louvers on the east and west elevation. The complete aluminum wall framing and vertical louvers will be Kawneer engineered and produced, saving the architect and builder months of time and giving them the assurance of client satisfaction. Special Kawneer weather-tightness plus expansion and contraction features will be included.

Have you a metal wall problem? Why not delegate the whole responsibility to Kawneer. Five plants in the United States and Canada, a complete engineering staff, and 50 years of experience in architectural metals are waiting to serve you.

Write for folder describing Kawneer services and metal wall jobs.





ARCHITECTURAL PRODUCTS DIVISION



Give your clients the beauty and maintenance-free advantages of genuine hpi HARDWOOD PLYWOOD!

As an accent wall or attractively paneled room ... in flush doors or as a completely design-flexible material in the construction of room separators or built-ins ... Hardwood Plywood is decorative, practical, economical!

The exceptional strength and dimensional stability of Hardwood Plywood assures dependable construction, lasting beauty. Because of its cross layers, Hardwood Plywood is highly resistant to impact—will not split—can be cut, bent, applied and finished—easily, quickly. Time and labor savings are considerable, and your clients will appreciate the money saved by ending yearly upkeep and maintenance.

Choose from Birch, Cherry, Gum, Mahogany, Maple, Oak, Walnut and other Hardwood Plywoods to achieve distinctive grain effects and tones—even without the use of stains. Stock panels are available in every area, and special sequence-matched panels may be had from most mills on special order.

	FREE-Send	coupon today for this book.	ik.
			HARDWOOD PLYWOOD INSTITUTE, Dept. 13-C
and the second			600 S. Michigan Ave., Chicago 5, Illinois
	The sector of th		Gentlemen: Please send, free of charge, new revised b
UNED DALLACE HOLE	Your Guaran	ntee of Highest Standards	A Treasury of Hardwood Plywood.
The H	The HPI trade ma	ark on Hardwood Plywood identifies	ies Commercial Standards CS35
A DEPARTMENT OF	control program— uniform grading.	your assurance of consistent quality,	TY, NAME
		COOR INCOLUTE	ADDRESS
HARDW	OOD PLYW	VOOD INSTITUTE	
600 S. Michiga	an Ave.	Chicago 5, Illinois	S CITYZONESTATE

PRODUCTS cont'd.

SAWABLE CONCRETE precast in light, insulating roof tile

One man can place these 3' x 18" Zonatile roofing slabs over any standard structural members, subpurlins or rail sections. Weighing 101/2 lb. per sq. ft., the 3"-thick precast blocks of vermiculite concrete have an insulating U value of .22. They are anchored to joists or purlins 3' o.c. with special clips (supplied with the tile) and are butted together and grouted to form a plane



Continuing responsibility for Laundry Dept. Installations

FROM AMERICAN'S 29 DIRECT OFFICES



- of laundry equipment from one manufacturer—your as-surance of continuing, undivided responsibility, after installation.
- The benefit of 87 years experience in helping architects plan all kinds of laundry department jobs.
- Direct representative service anywhere in the U.S. and Canada, from 29 strategically located sales offices.

Here's Where We Are!

SUBSIDIARIES

THE CANADIAN LAUNDRY MACHINERY CO., LTD.-

FACTORIES

Rochester 2, N.Y. 70 Glide St. Genesee 0092 Toronto 3, Canada 47-93 Sterling Rd.

Lloydbrook 1169

Ross & Section Aves. Redwood 1-5500 Kenilworth, N.J. Monroe & 7th St

Crawford 6-1800

New Orleans, La. Queen & Crescent Bidg. Canal 3238

New York 16, N.Y. 40 E. 34th St.

Lexington 2-5930

Omaha 2. Neb.

Cincinnati 12, Ohio

London, England Cascade Centre, Alperton, Wembley, Middlesex Wembley 3393

DIRECT SALES & SERVICE OFFICES

Atlanta, Ga. 1331 Spring St Elgin 4396 Boston 16, Mass.

27 Trinity Place Kenmore 6-2540 Buffalo 2. N.Y.

443 Delaware Ave. Cleveland 8565 Charlotte 2, N.C.

204 Latta Arcade Edison 3-1840 Chicago 1, III. 35 E. Wacker Dr.

Franklin 2-4460 Cleveland 3, Ohio 4900 Euclid Ave Henderson 1-3762

Dallas 2, Texas 1118 Jackson St. Prospect 5956

Detroit 26, Mich. 600 Woodward Ave. Woodward 1-8290

Los Angeles 33, Calif. 1442 E. Fourth St. Angeles 6181

Milwaukee 3 Wis 161 West Wiscons Broadway 2-0108

Minneapolis 1, Minn. 425 Hennepin Ave. Geneva 1200

Montreal 28, Quebec, Can. 2330 West Hill Ave. Walnut 0427

14th & Farnum Sts. Harney 8600 Philadelphia, Pa. 18 Summit Grove Ave. Bryn Mawr, Pa. Lawrence 5-5215 Pittsburgh 6, Pa.

Center & Highland Aves. Emerson 1-2821 Rochester 2, N.Y 70 Glide St. Genesee 0092

San Francisco 3. Calif. 1600 Bryant St Underhill 1-7831

Seattle 99, Wash. 105ElliottAve W at Denny Way Garfield 0553

Paul Brown Bldg Chestnut 1-1165

1635 Connecticut Ave., N.W. Hudson 3-6525

Tulsa, Okla



ARCHITECTS

Write for your copy of America's ARCHITECT'S REFERENCE GUIDE showing our complete laundry equipment line

The American Laundry Machinery Co., nerican Cincinnati 12, Ohio

World's Largest, Most Complete Line of Laundry and Dry Cleaning Equipment



surface for built-up roofing. They may be used on high pitch as well as flat construction. Completely inorganic, Zonatile is not affected by heavy rains or by hot or freezing weather. Neither will it burn or rot. Reinforced with galvanized wire mesh, the short span decking can support a load of 50 lb. per sq. ft. with a safety factor of 4. The tile's swirled machine-cut texture on the underside can be left unpainted and un-



plastered. Another of Zonatile's attractive features is its price: about 35¢ per sq. ft., FOB any of the firm's six factories. Manufacturer: Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.

WOOD SLAT PARTITIONS coil up in compact box

Operated by a simple key switch control, Acme's type J wood rolling partitions are practical and attractive room dividers for large areas in school cafeterias, gymnasiums and churches. Like the manufacturer's hand crank type K doors, the automatic tambours of select vertical grain hardwood slide sideways, coiling in and out of boxes that are usually small enough to set flush with the wall line. Opening and shutting in a straight line, the flat wood slat units have no folds to catch clothing or fingers, and for further protection the meeting style is made of sponge and sheet rubber.

Both the electric and hand operated partitions can be mounted neatly along the side of a supporting truss-instead of below the truss line as are most folding types. continued on p. 230

The "ABC's" of Milcor Steel Roof Decks

New "A" Section The standard of the industry for closed-rib decks. Now 24 in. wide.

New "B" Section Wide rib distributes metal for greater structural efficiency — gives higher section properties per pound of steel.



New "C" Section Carries normal roof loads over spans up to 20 feet! Offers freedom of design.

Now! A <u>third</u> type of Milcor Steel Roof Deck

Milcor Type C Roof Deck Provides Great Strength for Long Spans

New Milcor Type C Roof Deck carries normal roof loads over spans up to 20 feet — requires fewer structural supports and permits greater architectural freedom. Its strength comes from its $4\frac{1}{2}$ -inch depth and from its efficient design.

Type C Deck is made 12 inches wide so that two men can handle and place it without special equipment. It is available in 12- to 18-gauge steel — painted with a baked-on enamel primer or TI-CO galvanized.

Interlocking side joints can be mechanically fastened together so that concentrated loads are distributed over two or more panels. Joints may be caulked in factory or field to eliminate the cost of a built-up vapor seal and to increase fire safety.

Now the Milcor family of steel roof decks offer you a wide choice of styles and gauges to meet every job condition efficiently and economically. For additional help in making the best selection, call on your Milcor Sales Engineer. Catalog No. 620-6 available upon request.





MILCOR CELLUDECK is made by welding together sections of "B" and "G" roof deck and flat plates into various combinations, providing cellular deck plates of exceptional strength to carry normal roof loads over great spans. Ask for Catalog No. 270.



DEPT. C, 4031 WEST BURNHAM STREET • MILWAUKEE I, WISCONSIN OFFICES IN: BALTIMORE • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • BALLAS • DETROIT KANSAS CITY • LOS ANGELES • MILWAUKEE • MINNEAPOLIS • NEW YORK AND ST. LOUIS.



Never before such easy maintenance! Exceeds wear requirements of leading hotels!

CANDALON FOAM-CUSHON CARPETING is a new and ideal answer to every contract carpeting requirement, whether in hotels, stores, motels, theaters, homes, offices, or anywhere.

The surface is 100% nylon stock-dyed and woven on Jacquard looms. The foam cushion-permanently resilientis extremely dense and it is permanently bonded together with the nylon surface.

The result is an altogether new kind of carpeting with a combination of advantages never possible before—and especially at this low price!

■ Tests prove it outwears any woven or tufted carpet near its price! Actual use-test in New York department store elevators showed no signs of wear after 7 weeks' hard wear by 60,000 persons. (Equivalent to about 10 years of wear in the average home.) Laboratory tests show only slight signs of wear after 170,000 abrasions—exceeding minimum wear requirements of leading hotels by more than 20%.

• Far easier maintenance! The 100% nylon face resists soiling and stains-cleans and dries as easily as only nylon can.

And because of the flat, bulk-free pile, there is nothing to catch dirt. Absolutely will not lint—will not crush—vacuums easily with suction or brush-type. Absolutely mothproof and immune to carpet beetles. Non-allergenic.

■ No separate lining needed! With CANDALON FOAM-CUSHON CARPETING, you save the cost of underpadding.

Permanently resilient! Because you get built-in foam padding, you can be sure it will keep that yielding feeling, indefinitely.

For further details and the name of your nearest contractor, phone or write: Contract Department: COLLINS & AIKMAN, 210 Madison Ave., N. Y. 16, N. Y. MU 9-3900.



· Candalon-@

For cushing all-in-one!

ALL THIS AND A LOW PRICE TOO!



Amazing Scissor Test proves super-strength of special 100% Bulk-Free Nylon Surface!

Take the point of a scissors—scrape it across CANDALON FOAM-CUSHON CARPETING. Do it <u>hard</u>—again and again. It has <u>no</u> effect! Yet notice that, in spite of this super-strength, the nylon face is remarkably bulk-free. A loop weave of 100% nylon makes this bulk-free pile outwear other piles that are twice as thick—and carpets that cost twice as much! Choice of four patterns, reading from top to bottom: Patio, Chevron, Challenger, Criss Cross. These four patterns are each available in the following eight colors: Sandalwood Tan, Spruce Green, Hunter Green, Turquoise, Cathedral Red, Old Gold, Gray and Beige.



Made exclusively by Collins & Aikman, America's Largest Weavers of Fine Pile Fabrics

IMPORTANT NEWS ABOUT THE NEW GRADE NAMES*

FOR WEST COAST LUMBER

EFFECTIVE MARCH 15 1956

Orders placed under Rule #14 may be graded and stamped under that rule *for a limited period* after March 15. This is to accommodate stocks in the process of manufacture or on hand at yards or mills.

All specifications for structures to be built after March 15, 1956, should be under the new rule, Rule #15.

If you have not received your free copy of Rule #15, write to West Coast Lumbermen's Association, 1410 S. W. Morrison, Portland 5, Oregon.

*Applies to Boards, Dimension and Timbers

DOUGLAS FIR • WEST COAST HEMLOCK WESTERN RED CEDAR • SITKA SPRUCE

ONSTRUC

See how All-Air High Velocity units

lower the roof

This photograph shows the high velocity ducts installed *through* the open web joists. Note how the Anemostat sound attenuation unit is also placed *inside* the open web joist area. As a result, the architects and engineers were able to save *nearly two feet in a one-story building*... also make comparable savings in construction costs.

Completed interior with the Anemostat High Velocity units installed in the ceiling.



The National Bank of Detroit, which is equipped with an Anemostat All-Air High Velocity distribution system.





- · Architect: W. ROY AKITT
- Engineer: F. A. SANDO
- Mechanical Contractor: JOHN M. CAMPBELL, INC.
- Ventilating Contractor: AUTOTHERM CORP.

• 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, New York.

Facts about All-Air HV units

- · Can be used with smaller than conventional ducts.
- Can be installed through open web joists (as shown here) and in many other space-saving applications.
- · Can be installed faster and with less cost.
- Require no coils, thus eliminate clogging and odors.
- Round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.



PRODUCTS cont'd.







Said to be effective sound barriers because of the natural acoustic properties of the hardwood, the side-coiling dividers impose no more than a 3 lb. per sq. ft. dead load on the supporting truss or overhead support. Installed costs range from about \$5 to \$6 per sq. ft. depending on the architectural conditions and types of control and mounting selected.

Manufacturer: Acme Central Metal Products Co., Inc., Oakland, Calif.

HONEYCOMB PANEL PARTITION needs no floor track

Schieber-Haws has incorporated the familiar merits of stress skin honeycomb panels in a rugged bantamweight folding partition. Each section of the new space divider is sheathed with embossed aluminum pressure-bonded to a one-piece fiber honeycomb core. Because the light, strong construction needs no additional cross bracing or internal supports the partition weighs only about 2½ lb. per sq. ft.—twothirds less than most folding units. The





panels are supported on 13-ga. tracks on four-wheel roller bearing hangers and require no floor tracks or guides. They can be electrically operated, in which case an emergency release is provided as insurance against power failure. When extended, the sections interlock and seal against rubber bumpers, and the hydraulic mechanism compresses a rubber seal 1" downward against the floor, cutting off noise and drafts and making the partition as rigid as an integral wall. Concealed Soss hinges minimize the gaps between folded panels and prevent injuries from protruding butt hinges. Hangers are available for mounting the Schieber-Haws partitions against the wall or recessing them in the ceiling.

Manufacturer: Robert Haws Co., Detroit 39, Mich. Distributor: Schieber Sales Co., Detroit 39, Mich.



Clients with tight budget

-- DESIGN ON A BASIC BUTLER BUILDING



The buildings above are just a few examples of what architects are doing these days, using Butler metal buildings as the basic structure. Where building

capital is limited, Butler buildings give you important opportunities to cut cost corners.

Your engineering costs are minimized. Butler metal buildings are pre-engineered to meet building codes.

Use non-load bearing walls and partitions. The rigid frame structure supports all live and dead loads.

Conserve cover costs. The fire-safe Butler metal roof system is both permanent and economical. In sidewall areas

not calling for architectural effect, specify Butler metal panelling for lowest cost protection.

Construction time and cost is radically reduced on all Butler components. Every part is precision fabricated to fit its mates exactly, which makes construction a fast assembly job. Butler buildings are easily and economically insulated, and when insulated, provide a highly efficient thermal barrier.

Your reputation is safeguarded. Butler buildings are widely accepted for commercial and industrial construction because they are designed and manufactured as permanent structures in plants with the engineering and machinery resources to do the job right. And because Butler is the largest manufacturer of metal buildings, far more standard sizes are available.



Why not investigate the cost advantages of designing on a Butler basic building. Ask your local Butler Builder to drop in and talk it over . . . you'll find his name in the Yellow Pages . . . or write direct to the Butler office nearest you.

BUTLER MANUFACTURING COMPANY

7336 East 13th Street, Kansas City 26, Missouri 936A Sixth Avenue, S.E., Minneapolis 14, Minnesota 1036 Avenue W, Ensley, Birmingham 8, Alabama Dept. 36A, Richmond, California

Manufacturers of Oil Equipment + Steel Buildings + Farm Equipment + Dry Cleaners Equipment + Outdoor Advertising Equipment + Special Products Factories at Kansas City, Missouri + Galesburg, Illinois + Richmond, California + Birmingham, Alabama + Houston, Texas + Burlington, Ontario, Canada + Minneapolis, Minnesota



See how the Nylon insert goes all the way around the latch bolt! Projects slightly above the metal to absorb all the latching punishment.

Now...the <u>Perfect</u> <u>Latch</u> <u>Bolt</u> with a **MOLDED NYLON INSERT!**

Gives quieter, easier operation! Shows no sign of wear even after a million closings! Yet it sells for no extra cost!

The new Sargent Latch Bolt... with its truly amazing Nylon insert... is a further improvement for the world's finest lock. The Sargent Integralock.

This Nylon insert greatly reduces friction of the latch bolt on strike areas... and on lock front areas, too.

It enables a door to be closed with 35% less force than a solid metal latch bolt. This reduced closing resistance permits the slowest adjustment of door closers. It makes door closing noiseless. Desirable in all buildings. Especially appreciated in hospitals. It shows no appreciable wear after *one million* test cycles. Its smooth, self-lubricating surface prevents marring of strike plate. An important appearance feature.

This solid latch bolt with its Nylon insert has no small, complicated parts to break.

Yet with all these advantages, Sargent brings you this Nylon insert at *no extra cost!* Ask your Sargent salesman to show you the Sargent Integralock...with its sensational new Nylon insert.. today. Or write Sargent direct, Dept. 8-C.







These customers will drive in ...

when you have snow melting!

"Not just a convenience but a *distinct competitive advantage!*" . . . that's what merchants are saying about snow and ice removal systems for super markets, shopping centers, service stations, department stores and other commercial establishments selling to the public.

Clean, bare driveways, parking areas and sidewalks (contrasted with snowy, slushy street approaches and *uncleared* competitors' places) become a strong *invitation* for shoppers to "turn in"... to do business where they are so obviously wanted. That's not just theory, but *fact*, proved statistically by progressive businesses where steel pipe snow melting systems are at work.

Yes, steel pipe is the first choice for these installations. The known economy of steel pipe makes investment in a snow melting system economically practical. And in service, steel pipe has a performance record proved in more than 60 years in hot water and steam heating applications. Add to this the advantages of formability and weldability for coil fabrication and you know why steel pipe is the most widely used pipe in the world . . . for snow melting, heating, plumbing, fire sprinkler systems, power, steam and air transmission.

Send for the free 32 page booklet "Steel Pipe Snow Melting and Ice Removal Systems." Committee on STEEL PIPE RESEARCH AMERICAN IRON AND STEEL INSTITUTE 350 FIFTH AVENUE, NEW YORK 1, N.Y.

APPENDENT CONTRACTOR

111111111111111111111



UPER

MA

R

K

The entrance beautifully combines Stainless Steel, porcelain-enamel, glass and stone.



....they're colorfulthey're durablethey go up fast

Curtain walls of Porcelain-enameled and Stainless Steel



The interlocked steel curtain wall panels are assembled to the building with steel anchors, bolted at top and bottom of the spandrel beam. Eyes were bulging in Minneapolis at the speed with which the new Lutheran Brotherhood Building began to rise from the street. As the *curtain wall* was applied, it became obvious that this would be one of the outstanding office buildings in Minneapolis for a long time to come.

The finished building is like a shimmering, blue-green gem, spiced with a delicate checkerboard of Stainless Steel mullions. The USS Stainless Steel will offer service equal to the projected life of the building. And in addition to long service, the porcelain-enamel, on its base of USS Vitrenamel sheets, provides the strong, deep color that distinguishes this structure. Maintenance cost will obviously be low.

The curtain wall preassembled units are very simple. Unit frames are 4' x 14', made from USS type 302 Stainless Steel. The bottom of each frame contains a distinctive bluegreen insulated porcelain-enameled steel panel. The top section is fixed double glass. Prototype frames were subjected to a rigid pressure chamber water test to prove their water-resistant qualities.

By using curtain wall panels fabricated from these two steels, you can exert the greatest control in design, color styling and building costs. For more information, write to United States Steel Corporation, Room 5195, 525 William Penn Place, Pittsburgh 30, Pa.





More than 44,000 square feet of porcelain-enameled and Stainless Steel curtain walls on the Lutheran Brotherhood Building were erected in seven weeks. Architects: Perkins & Will, Chicago. General Contractors: Kraus-Anderson, Inc., Minneapolis. Curtain wall: Fabricated by Flour City Ornamental Iron Co., Minneapolis. Porcelain-enameled panels: Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

T

USS STEELS FOR ARCHITECTURAL DESIGN

T

T

USS STAINLESS STEEL

I T

USS VITRENAMEL



1. This is the story of an ordinary man ... worked from 9:00 to 5:00 ... raised hamsters in his spare time ... steered clear of doctors.



2. Oliver did twenty push-ups every morning . . . took long bracing walks in the fresh air . . . made sparing use of condiments and stimulants.



3. Then one day while he was shaving, he noticed a small lump. An icy hand reached out and clutched at his heart ... This was it — CANCER!



4. Overnight Oliver became a changed man. He gave his hamsters to a neighbor, bought a small harp and a booklet entitled "Harp-playing for Beginners."



5. Instead of taking long bracing walks, he tottered into his lawyer's office, cut two nephews out of his will and hastily added a couple of codicils.



6. His lawyer, a man of real intuition, knew that where there's a will there's a way, and firmly bullied Dancer into seeing a doctor.



7. A complete checkup showed he was in perfect health, except for a minor tone deafness that would preclude much skill with the harp.



8. Dancer was sooverjoyed he promptly went home and made out a very large check to the American Cancer Society, and that's what you should do, too.



9. (MAIL TO: CANCER, c/o your town's Postmaster.) Help others and help yourself. Fight Cancer with a checkup and a Check.



One of the most amazing products to come out of the jet age, Hexcel aluminum and glass-fabric honeycomb combines lightness with strength to give the F-100 Super Sabre maximum speed, maximum striking power. The secret is sandwich construction. When "sandwiched" between two sheets of lightweight metal, Hexcel honeycomb core produces a structural material with the highest strength-toweight ratio ever developed!

In aircraft construction, in spandrel panels for the building industry, and now in louverall lighting—Hexcel aluminum honeycomb is finding new uses every day! If you think it could solve an engineering or design problem of yours, wire or write to

HEXCEL PRODUCTS, INC., 951 61st St., Oakland 8, Calif.

CEILING UNLIMITED!

Unlimited life—plus life-long economy of operation—are just a few of the advantages of an all-aluminum HONEYLITE ceiling. Made of HEXCEL aluminum honeycomb, this revolutionary new illuminated ceiling will never crack from heat or discolor with age. As functional as it is beautiful, HONEYLITE's thousands of ¼-inch hexagonal cells diffuse light evenly into every corner of the room with less than 15% loss in light "put-through." This means fewer lighting units and lower installation and operating costs.

HONEYLITE panels are available in standard sizes for easy installation in standard T-bar suspension systems. Easily removable, relamping and maintenance work is reduced to a minimum. Specify HONEYLITE in your next installation—for these additional reasons you'll be glad if you do:



- ★ 45° and/or 60° light cut-off provides effective shielding
- ★ Non-flammable and UL approved
- Weighs only two ounces per square foot
- Free circulation of air prolongs life of light units
- Provides lowest surface brightness obtainable
- ★ Has noise reduction coefficient of .46
- Non-static and dust resistant
- May be cleaned with ordinary vacuum brush attachment



NATIONAL HOUSING CENTER, WASHINGTON, D. C.

HONEYLITE (shown at right actual size) installation is simple, inexpensive. For full ceilings, aluminum T-bars are used to suspend HONEYLITE panels below lighting units. HONEYLITE is also ideal for use in troffers and lighting fixtures.



HONEYLITE Light-diffusing acoustical aluminum honeycomb

AUBINOE EDWARDS AND BERRY & L

A development of HEXCEL PRODUCTS INC. Producers of HEXCEL aluminum honeycomb – the wonder material

Announcing Worthington's



SMALLER SIZED UNITS are shipped completely assembled for horizontal or vertical arrangement shown above.

HORIZONTAL CONSTRUCTION of new Worthington air handling units allow them to be suspended from platform or ceiling (with hanger lugs.) Here is a large sized unit with damper section. Standard unit consists of fan section, fans, V-belt, drive (with variable pitch pulley), bypass and damper section, direct expansion or chilled water coils, and base section.



ADJUSTABLE MOTOR BASE, exclusive with Worthington, offers a $3\frac{1}{2}$ " variation in center distance. Adjusted with a single screw a locking bolt secures base in proper position. This feature assure positive adjustment, enables you to keep belt tension correct. Bel turns on an adjustable pitch pulley which permits variation of fan speed and air quantity.

complete new line of flexible air conditioning units

Compact units_from 1½ to 106 tons_are easy to install—have many exclusive features

Here's a new line of unusually compact air conditioning units for commercial and industrial use in conjunction with central system air conditioning.

Designed by Worthington for easy installation, the standard unit consists of a base section, fan section and coil section. A bypass and damper section can be bolted directly to the coil face at the factory if desired, adding no height to the unit.

Units are extremely flexible. The fan section may be mounted with front, top or rear discharge. You can adjust speed for desired capacity and static pressures. Adjustable motor base offers $3\frac{1}{2}$ " variation in center distance for positive adjustment of belt tension. The motor mounts on the front, top, back or either end. Accessories are interchangeable between horizontal and vertical units.

Engineered by Worthington for long, trouble-free life, all sections are constructed of rugged fabricated steel, Bonderized and coated with a corrosion resistant enamel. Dynamically balanced, forward curved fans give maximum efficiency, quiet operation. (Fan shaft rides on lubricated-for-life bearings.)

For more facts on this new line of air conditioning

equipment, write Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.6.75 FO, Harrison, N. J.

These features add up to flexibility

- Exclusive adjustable motor base assures simple, positive adjustment of belt tension.
- Motor mounts on front, back or either end of unit.
- Fan discharge can be front, top or rear, as you prefer.
- Accessories interchangeable between the horizontal and vertical units.

And look at these extras!

- Up to 19,000 CFM! You get more capacity from compact units.
- Easy installation. Choose either horizontal or vertical units.
- Up to 81 different coil combinations.
- Lubricated-for-life fan shaft ball bearings.
- Accessibility! Entire fan section can be easily removed.
 Removable panels and casings simplify inspection, oiling
 and adjustment.
 A.6.75



CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME



ADJUSTABLE DISCHARGE. Fan section may be mounted with top discharge as shown above. Or discharge may be directed to front or rear of the unit. See diagrams.

PRODUCTS cont'd.

SKYLIGHT BARS adapt to architect's designs, climate extremes

Detailed to resist the severest US weather conditions, *Super Steel's skylights* are built of stock extruded aluminum components to dimensions and arrangements specified by the architect. The trim skylights are available with single and double layers of wire glass, heat absorbing glass, light diffusing glass or insulating double glazing. The









Super's rafter bars may be installed at any angle—even full vertical for puttyless glazing. A minimum pitch of 15° is recommended for drainage of condensate to the integral gutters on the bottom of the raf-





ter bars from where in can be carried out through weep holes in the curb. To insure absolute weather tightness against snow drifts and dust, aluminum extrusions are used for curb bars instead of conventional flashing. Costs of the *Super Steel skylights* run about \$2 per sq. ft. for a single pitch to \$3.25 for a ridge unit. Ventilating accessories are extra.

Manufacturer: Super Steel Products Co., 1244 N. 4th St., Milwaukee 12, Wis. continued on p. 248



Swartwout Roof Ventilators Solve Three Important Problems

Stage Ventilation: All stages must have ventilators that automatically open in case of fire. The economy, efficiency and low overall height of the Swartwout Airmover make this unit ideal for such applications. For normal ventilation, dampers are controlled manually. To meet the fire hazard requirement, a counterweight released by an approved type of 160° fusible link opens all dampers wide when fire occurs. Heat and smoke pass rapidly through the Airmover. This arrangement meets requirements of the National Board of Fire Underwriters.

Duct Exhaust: The Swartwout Airlift utilizes low fan tip speeds and backwardly curved blades in a highly efficient centrifugal type fan, achieving the desired low-noise-level operation for duct exhaust on public buildings. Wide range of sizes and capacities.

Duct Terminal Venting: Swartwout-Dexter Heat Valve provides a weather proof vent over duct termini of forced air systems. Available in standard 10 ft. sections, ten throat sizes. Special shorter sections can be supplied.

Write for new catalog sections giving complete details of these products.



3 ways Aklo[®] glass gives you



1. REDUCES SUN HEAT. Rooms are cooler with daylight filtered through this blue-green glass because $\frac{1}{4}$ " Aklo Glass shuts out as much as 44% of the sun's radiant heat energy.



2. REDUCES SUN GLARE. Frosted Aklo Glass diffuses incoming daylight, thus diminishing "hot" spots of light. This is important when working on highly reflective materials close to windows.



3. SCREENS SKY BRIGHTNESS. Architect Guido A. Binda of Battle Creek, Michigan, used windows to the ceiling for maximum daylight, yet screened out a good portion of sky brightness with Frosted *Aklo* Glass.



window Design Freedom

Do your daylighting requirements or architectural treatment call for large ribbons of windows . . . floor-to-ceiling fenestration? Meet these requirements and still keep the problems of sun heat and sun glare under control . . . with Blue Ridge <u>Frosted</u> Aklo Glass.

Growing use of *Aklo* in buildings of all types is good evidence of its performance. But see for yourself. Ask your L·O·F Distributor for a Blue Ridge radiometer dem-

onstration which shows how much <u>Frosted</u> Aklo Glass reduces glare and sun heat. Aklo



Glass is readily available from your L·O·F Glass Distributor or Dealer, listed under "Glass" in your phone book yellow pages. Or write to Libbey Owens Ford Glass Co., 608 Madison Ave., Toledo 3, Ohio.



made by Blue Ridge Glass Corp.



sold by Libbey-Owens-Ford Glass Distributors



Bristol School, Webster Groves, Missouri, where Ceco-Sterling Aluminum Projected Windows were used. Architects: Hellmuth, Obata & Kassabaum, Contractor: Albers Construction Company.

Windows of quiet beauty complement an award-winning

Ceco-Sterling Aluminum Projected Windows with Tubular Vertical Mullions Achieve Narrow Sight-Lines...Afford Maximum Daylighting... Reduce Maintenance Costs

It's a combination of many things—some aesthetic —some functional—that determines the winner of a top award in a national school competition. So it was with the Bristol School, Webster Groves, Missouri, which received an award of merit from the American Association of School Administrators. The aim of architects Hellmuth, Obata & Kassabaum was to create an attractive environment centered around the physical and psychological needs of young children. Much thought was given the site and building position. Good illumination came in for careful study, and here Ceco-Sterling Aluminum Projected Windows were used for maximum daylighting. Ceco engineers worked closely with the architects in developing a tubular vertical mullion to achieve an extra narrow sight-line. The clean, neutral tones of aluminum windows combined pleasingly with gay colored panels in the entrance. All in all, the windows complemented the architectural concept. Since aluminum never needs painting, maintenance savings were assured. So—on your next project, consider Ceco's broad line of windows. They offer the variety and craftsmanship to meet your window requirements.



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



school ...



The neutral tone of Ceco-Sterling Aluminum Windows blends with panels of red, blue and yellow to provide a striking entrance for the Bristol School.



Mullions, being only $1\%^*$ wide instead of the usual $2\%^*$, do not compete with the sight-lines established by the building's 10-foot module design.



Ceco-Sterling Aluminum Projected Windows are especially suitable for schools. Ventilators have two point contact, assuring tightest weatherseal. Handsome hardware is designed in keeping with modern, functional thinking.



BEFORE modernization, the ceiling of this shoe store was dingy, cluttered by pipes, fixtures, etc.

by thermotank

ESPECIALLY conducive to shopping is a pleasantly lighted store . . . bathed in soft, uniform brilliance, free of shadows, glare and high spots.

Such profitable results are obtained easily and economically with a Lumenated Ceiling by Thermotank.

Here is today's most versatile illuminated ceiling, ideal for new construction as well as remodeling. In a new building, it is unnecessary to finish the space above the ceiling apart from painting it white. When install in a mainting it white. When installed in an existing building, there is no need to repair cracks or minor defects in the old ceiling or to lower sprinkler heads. The Lumenated Ceiling carries Underwriters' Laboratories' label.

No nuts or bolts are used in assembly. The entire Lumenated Ceiling, including framework and corrugated vinyl plastic, weighs less than 1/4 pound per square foot. Thermotank, Inc., Detroit 5, Mich.



AFTER the dramatic transformation by a LUMENATED CEILING, unsightly wiring, pipes and fittings are concealed; light is uniformly diffused over the entire store.

If there is no representative near you, contact your local Westinghouse Electric Supply Company. See Sweet's 1956 file or write for booklet LC-5.

JOHN J. FANNON & COMPANY 1469 ALGONQUIN AVE. . DETROIT 15, MICHIGAN

FREE! 1956 EDITION **RLM** Standard Specifications for Industrial Lighting Units



Send for this newest edition of the RLM Book - referred to by thousands of architects, consulting engineers, industrial executives, etc. as an indispensable aid in the specification of quality industrial lighting units. This new, 1956, 40-page edition incorporates latest revisions in RLM specifications ... valuable new coefficient of utilization tables and light distribution curves for the newest units... other helpful lighting data, in-

cluding new data on 25%-30% upward light units.

Everyone who buys, sells or speci-fies industrial lighting equipment is invited to send for a free copy of the 1956 RLM Specifications Book. Write: RLM Standards Institute, 326 W. Madison Street, Suite 830, Chicago 6, Illinois.



Heavy oil heats for 30% less

saves fuel dollars for thousands of institutions, schools, hospitals, churches, apartments, hotels



There is only one Rust-Oleum... it is as distinctive as your own fingerprint.



See Sweets for complete catalog, or write for information. Prompt delivery from industrial distributor stocks.

Rust-Oleum is available in practically all colors, including aluminum and white

NEW DESIGI MORE FLEXIBILITY FEWER PART

VMP Royal Flush MOBILWALLS now offer snap



FLUSH PANELS of the RF line make styling clean and restfulsimplify both design and maintenance. Installation is made in a few

hours by trained local crews. Wherever installed, VMP MOBI make a major contribution to efficiency and attractiveness.

A new design of movable, metal office partitions— VMP's greatly improved RF ROYAL FLUSH MOBILWALLS —gives architects the opportunity to build-in dignity and simplicity, and to gain many added functional features. New-style RF partitioning blends and *interlocks* perfectly with previous VMP installations, presents no special detailing or erection problem.

The high-style RF line has flush-surfaced, nonrecessed panels; 3" thickness with new increased

rigidity and stability; extensive provisions for installation and wiring. Made in both all-steel steel-and-glass combinations, RF MOBILWALLS ca matched to the client's color and texture selec Like all VMP MOBILWALLS, RF metal surfaces are oughly cleaned and treated for superior resistan corrosion, then primed, and color coated with t enamel. They keep looking new—for years. Stud details, then talk to your VMP representative!



P-ON MOLDINGS AT CORNICE are truly aligned to keep dges firm and even. They are modern, flush, and provide a hanger for pictures. The cornice thus formed is adaptable to receive ral board or steel top filler. You are assured that the installation be attractive and uniform, and the architect's work simplified.



EXTREMELY RIGID CONSTRUCTION—New RF MOBILWALLS are factory assembled and functionally formed with vertical edge members extending from floor attachment to rigid cornice construction. Link plates provide a four-point field assembly for panel unit edges. No strength is sacrificed by slotting for clips or linkage members.

rnices, improved wiring facilities, telescopic glazing



Y ACCESSIBILITY OF WIRING is an added benefit when use RF partitions. Wiring can be laid continuously through the and posts. Additional wiring facilities are available in the cornice, rail, transom rail... even through the panel itself. Wiring is sible without tools. No exposed wiring—no dirt or delay.



NEW VMP TELESCOPIC GLAZING speeds insertion of glass. No extra parts to fumble with or lose—you just insert glass, then putty ! *Telescopic* action of new VMP glazing channels hold member firmly in place. Both faces of unit are identical; exposed screw heads are eliminated. ALL VMP MOBILWALLS WILL HAVE THIS EXCLUSIVE FEATURE !

New VMP Partitioning Helps for Architects!



Virginia Metal Products, Inc	c., Dept. AF-3, Orange, Virginia
Have nearest VMP partitionin	g specialist see me.
Send folder "Simplified Of Studies and VMP MOBILWAL	ffice-Area Planning with Ratio-Delay LS" with manual.
Send VMP descriptive literature:	
MOBILWALLS in Hospitals	VMP MOBIL-LAB-WALLS
MOBILWALLS in Schools	VMP MOBIL-FIRE-WALLS
New VMP MOBILWALL Jrs.	VMP Conveyor Systems
	VMP Library Shelving
NAME	TITLE
FIRM	
ADDRESS	
CITY	ZONESTATE



• The "COMMERCIAL-INDUSTRIAL"—features extra strength, rugged durability and easy operation for every type of non-residential building.

MORRISON DORE STEEL SECTIONAL OVERHEAD DOORS

RESIDENTIAL ... COMMERCIAL ... INDUSTRIAL

CLEAN, MODERN FUNCTIONAL LINES that blend smoothly with all types of architecture are 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 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 precise mass production ... Morrison Roly-Doors are competitively priced.

OVER 1000 STANDARD SIZES ready for immediate delivery provide a Morrison Roly-Door for every overhead door requirement. **PROMPT DELIVERY AND EXPERT INSTALLATION SERVICE** by Morrison Roly-Door Distributors and Dealer-Installers located in all principal cities.



• The "IMPERIAL"—specially designed and built for the finest custom residential installations.



In Canada: Overhead Door Suppliers, 1330 Bloor St., W., Toronto 4, Ont.



DUMB WAITERS BOOK LIFTS RECORD CARRIERS



Since 1888 designers and builders of electrical and hand operated dumb waiters for hotels, restaurants, clubs, banks, libraries, warehouses, factories, institutions.

COMPLETE DATA IN SWEET'S CATALOG OR WRITE

D. A. MATOT, Inc. 1535 W. ALTGELD STREET · CHICAGO 14, ILLINOIS



No margin for error between your idea and the painter's brush, when you specify famous-for-quality colors from Martin-Senour's Custom Color Directory. Actuallypainted 3" x 5" color chips scientifically arranged according to hue, chroma and value—in one handy case. Just one of Martin-Senour's many imagination-jogging color tools, available through the nearest Martin-Senour office. Price upon request. And at the same time, ask for your free copy of "A Guide to Better Paint Specifications."





New York: 9 East 56th Street; Chicago: 2500 South Senour Avenue; Los Angeles: 315 West 9th Street; Dallas: 4121 Commerce Street; Export Division: 560 Broad Street, Newark, New Jersey.



versatile

economical



Junior Beams, produced exclusively by J&L, can help you cut building costs in schools, apartment buildings, warehouses and other light occupancy structures.

The lightest hot rolled structural steel section available, Junior Beams speed erection because they can be easily raised and positioned with minimum manpower and material handling equipment.

Junior Beams may be adapted to a wide range of architectural design. They can be framed-in, used as a continuous member, or cantilevered beyond supporting walls. They are not only suitable for floor and roof construction but can be used for numerous other applications such as shipbuilding, truck and trailer frames and grandstands.

For complete information on the uses of J&L Junior Beams, write Jones & Laughlin Steel Corporation, 466 Gateway Center, Pittsburgh 30, Pa.



STEEL CORPORATION - Pittsburgh






new refrigerating machine cools with steam for big building air conditioning ... for process cooling in industry ...

From Carrier-first name in air conditioning-now comes a new absorption refrigerating machine.

IT COOLS WITH STEAM!

Cools with steam—and CUTS COSTS! Low-cost steam is the energy source. Electricity is needed only for small pumps and controls.

Cools with steam—and OPERATES AUTOMATI-CALLY! You push a single button in the morning and electronic controls take over. Push the button at night and the system shuts down. As simple as that! All day long the machine follows the rise and fall of the^gload without need for a highly trained operator.

Cools with steam-and SAVES SPACE! The Carrier Absorption Refrigeration Machine is so light you can locate it wherever you have space to spare. On the roof. In the basement. Anywhere in between. Installs easily. No heavy foundation needed.

Cools with steam-and FOLLOWS FLUCTUATING LOAD! Meets minute-to-minute needs from full load to zero capacity. And it can't be damaged by overloads.

Cools with steam – and IT'S SAFE! Water is the refrigerant. A simple salt is the absorbent. Nothing could be safer.

Cools with steam – and it GIVES YOU CARRIER DEPENDABILITY! Designed to give reliable, troublefree service. Around the clock. Around the seasons.

Find out about *all* the advantages of exclusive Carrier Automatic Absorption Refrigeration. For your copy of the 36-page Carrier booklet that answers all the questions you could ask, call the nearest Carrier office. Or write Carrier Corporation, Syracuse, New York.



air conditioning refrigeration industrial heating

abrentian Repr

PRODUCTS cont'd

STEEL DOORS fold open full width of closet

Hinged in pairs, Amwel's steel closet doors batswing open for complete access to the storage space. Easily installed with a screw driver, the sturdy folding units of 24-ga. cold-rolled steel involve no fuss with hanging hardware; the doors glide smoothly and quietly on nylon pivot bear-







Turns, joints and laps spirally wound with Protektinsul Tape, brushed with Vinyl Sealer.

> PROTEKTINSUL, new thermal insulation pipe and duct covering finish, is a .012" thick, prefabricated, poly-vinyl chloride outer finish that effectively protects insulation against weather, abrasion, chemicals, and mildew. Prefabricated to exact size, PROTEKTINSUL zips on and locks in place, requiring no cutting, fitting, sewing or painting in the field.

> Never before a pipe and duct covering finish to give this combination of protection and beauty so important to institutions, hospitals, schools, where cleanliness is such an essential factor. Available in standard colors, or color combinations, for identification.

Method of applying Zipper to covering.





Distributed by:

OWENS-CORNING FIBERGLAS CORP. MUNDET CORK CORPORATION JOHNS-MANVILLE INTERNATIONAL CORP. EHRET MAGNESIA MANUFACTURING COMPANY

ROTEKTINSU

ings and guides. Each panel is reinforced with metal stiffeners and is sound deadened. Fabricated in standard 6'-8" and 8' heights and 3', 4' and 5' widths, the doors are packaged knockdown complete with predrilled track an screws. They come with flat baked-on gray prime coat and the 6'-8" units also may be ordered with simulated birch finish. The 3'-wide doors project only 5" into the room when open and the 5' pair, about 9". List prices range from \$31 to \$35.50 according to size and finish, with discounts on quantities. Manufacturer: Building Products Div.,

American Welding & Mfg. Co., Warren, Ohio

TECHNICAL PUBLICATIONS

CEILINGS

The Lumenated Ceiling by Thermotank. John J. Fannon Sales Co., 1469 Algonquin Ave., Detroit 15, Mich. 8 pp.

Wall-hung Aluminum Acoustical Ceilings Designed Exclusively for Corridors. Simplex Ceiling Corp., 552 W. 52nd St., New York 19, N.Y. 4 pp.

FLOORING

Architect's Specification Guide for Resilient Tile Floors. Kentile, Inc., 58 Second Ave., Brooklyn 15, N.Y. 16 pp.

GLASS

Thermopane Manual, including Technical Data Sheets. Libbey-Owens-Ford Glass Co., Toledo 3, Ohio, 28 pp.

HEATING AND AIR CONDITIONING Air Conditioning Time Controls. Bul. 511. Tork Clock Co., Inc., Mt. Vernon, N.Y. 2 pp.

Amervent Cooling, Heating, Ventilating and Air Conditioning. A low-cost method of air conditioning schoolrooms. Herman Nelson Unit Ventilator Products, American Air Filter Co., Inc., Louisville 8, Ky. 12 pp.

Berko Electric Radiant Glass Heat Panels. Berko Electric Mfg. Corp., 212-40 Jamaica Ave., Queens Village 28, N.Y. 8 pp.

Packaged Cooling and Heating Equipment. Worthington, Harrison, N.J. 12 pp.

15 to Color Cleaver Brook

sizes

CB SERIES — The ultimate in compact, quiet-running boilers. Sizes: 15 to 150 hp.

the broadest line of cost-saving "packaged" boilers – for hundreds of applications

> LR SERIES — Standard of the industry for hot water or steam service, for heating or processing. Sizes: 200 to 600 hp.

T_{HE} two installations above are representative of Cleaver-Brooks' broad range of standard models. The wide choice makes planning and selection of a boiler for your specific needs large or small — a simple, time-saving procedure.

Your nearby Cleaver-Brooks representative, with years of specialized boiler experience, can be of real service to you. Working with you and your engineers, he can help you to find ready answers to questions of size, loads, present and future steam or hot water needs, space and equipment arrangement. Where local conditions dictate, oil, gas or combination oil/gas firing can be selected for greatest savings. And once installation is com-



Keep in mind, too, the many fuel and maintenance-saving advantages of four-pass design with forced draft . . . the standard equipment electronic combustion controls which assure continuous, safe operation.

Cleaver-Brooks boiler owners enjoy all these advantages and share in the combined application engineering experience of more than 19,000 individual boiler installations. Put this experience to work for you. Cleaver-Brooks Company, Dept. C,336 E. Keefe Ave., Milwaukee 12, Wis., U.S.A., Cable Address: CEEBEEWEST — all codes.



See the classified pages of your phone directory for name of nearest representative. Send us your name to receive regular issues of the new Cleaver-Brooks Bulletin, or write for newest literature.



TWENTY-FIVE YEARS OF LEADERSHIP BY THE ORIGINATORS OF THE SELF-CONTAINED BOILER



Manufacturers of ELECTRICAL SIGNALING, TIME AND COMMUNICATION SYSTEMS FOR HOSPITALS, SCHOOLS, HOUSING, INDUSTRY AND SHIPS



Dr. Finnigan Registers "In"Again



The hospital's main artery of communication is its telephone system. Upon it depends the continuous flow of ordinary and emergency calls for staff members and visiting physicians. The usefulness of the telephone system, in turn, depends considerably on the telephone operator's knowing at all times what doctors and staff members are in the hospital. This is best accomplished by an Auth Doctors "In and Out" (Staff Register) System.

These systems usually consist of one or more entrance registers, and an office register for the telephone operator. As Dr. Finnigan registers in again he throws the switch alongside his name on the entrance register. This illuminates his name on all registers while he is in the hospital. When he leaves, he reverses the switch, darkening his name. An optional "Call-Back" feature alerts the doctor as he registers in or out, notifying him that the operator has a special message for him.

These systems...together with Nurses' Call, Doctors' Paging, and other fine hospital signaling systems... are built by the people of Auth, who for many years have been finding new ways to make working and living in hospitals easier.

Auth Electric Company, Inc. LONG ISLAND CITY 1, NEW YORK



Architect-designed to fill a long-felt need SPIROLL is a new drafting accessory that literally takes the stretch out of drafting. Easily attached to the front edge of any drawing board it enables the draftsman to work on any section of the drawing while seated or while standing in the most natural position. By sliding the drawing down into SPIROLL the bottom section of the sheet is coiled safely out of the way, then the top section can be worked on easily. SPIROLL saves draftsmen's time, keeps drawings free from elbow smudges and torn edges. The result is less eyestrain, fewer backaches and faster, more accurate drawings.



Non-corrosive sheet steel, gray enamel finish.

DRAWING MAY BE MOVED IN DR OUT	42"
	48"
AVILL	54"
A Stream Sonto	60"
	15.95

Note: actual lengths \$9.25 ppd. are 11/2" less than nominal lengths shown. 12.00 ppd. 13.50 ppd.

Consult your drafting supply dealer or order direct. Spiroll Products Company I Concord Road Dept, A South Sudbury, Massachusetts

Adequate, flexible food refrigeration facilities for **RESTAURANTS, HOTELS,** nospitals, schools, cafeterias, food stores, institutions

Big, new, complete Tyler line of refrigerators and freezers meets every food service requirement



than 25

more 1

for

refrigeration

food

commercial

"Advanced Design

Leader in

- ★ Upright Freezers, stainless and enamel
- * Slide-Door Refrigerators, stainless and enamel
- * Sectional Storage Freezers
- Sectional Walk-In Coolers and Freezers
 Beverage Coolers,
- stainless and enamel
- * Beverage Dispensers

Food store planning assistance also available to Architects without charge or obligation.

14 Tyler Upright Freezers match and line up with 14 Tyler Reach-In Refrigerators!

NOW IN

23c

Ty

Write Tyler for complete data:

The BIG name in commercial food refrigeration TYLER REFRIGERATION CORPORATION, Niles, Mich.

In Canada-write Tyler Refrigerators, 128 Avenue Road, Toronto, Ont. SWEETS CATALOG

an exclusive line of acoustical control systems ELOF HANSSON, INC.

for perfect sound control in business and industry



Experienced acoustical know-how of our Distributor-Contractors is at your service for dependable engineering.

See AIA File No. 4-L and No. 39-B Sweet's Catalog Index No. 2e/Ha and No. 11a/Ha



History has proven that yesterday's dreams are today's problems and tomorrow's improved living.

MACK MOLDING Technicians offer their "personalized collaboration" to Architects—Consulting Engineers—Construction Men—or any professional men with problems to solve or ideas to develop.

Despite the impressive record of MOLDED PLASTICS in industry, MACK MOLDING COMPANY would be the last to imply that PLASTICS can improve any product or solve any problem. However, we do stress the availability of our "collaborationists" (engineers) to pass upon the desirability of using MOLDED PLASTICS in solving your problem, and to make constructive recommendations.

You possibly have a potential money maker for yourself and we hope to gain correspondingly higher production for MACK MOLDING PLASTICS components.

Yes, we at MACK MOLDING have been "collaborating" with people such as yourself since 1920 and believe we are qualified to render a service to you.

American style MACK MOLDING COMPANY

125 Main Street, Wayne, N. J.



THE MAIN ENTRANCE of Assumption High School. The architects were Paul J. Saunders and Eugene S. Johnson. The engineer was John P. Nix. The general contractor was Wm H. and Nelson Cunliff Co.



TWO STORY ACADEMIC UNIT, connected to the one story unit to which a second floor may be added in the future.

New High School designed with

ENTRANCE to the gymnasium unit. The small doorway to the right leads into a classroom area.

THE STRUCTURAL FRAME-WORK during erection. The more than 348 tons of USS Structural Steel, used in the building, were fabricated by The Mississippi Valley Structural Steel Co., St. Louis, Missouri.





future expansion in mind

The Assumption High School of East St. Louis, Illinois, was built to accommodate 650 students with provisions for expanding horizontally and vertically to provide facilities for an eventual one thousand students.

The school consists of three units: an academic unit containing classrooms; a gymnasium unit including gymnasium, cafeteria, shops, and laboratories; and a Brother's House, independent of the other buildings, which contains living quarters for 24 Brothers. The academic unit has provisions for expansion to the east. In addition, a second floor can be added to the present one story portion. The Gymnasium Unit is designed so that there is sufficient physical education, shop, laboratory, and cafeteria space for additional students if classroom facilities are increased.

Structural Steel was used exclusively in the framing of this new school because of its versatility, its tremendous load bearing capacity, and its economy of use-qualities that make it ideal for all types of school construction. Small wonder that today's architects and engineers are specifying Structural Steel frameworks for more and more schools. churches, and small buildings. Just look at these advantages:

1. Structural Steel is the strongest, yet most economical of load bearing materials.

2. Structural Steel will withstand more abuse than other structural materials, effectively resisting torsion, tension, compression, and shear. 3. Once enclosed in buildings, it lasts indefinitely-requiring no maintenance.

4. Structural Steel may be riveted, bolted or welded ... can be erected in any weather in which men can work. 5. Steel members are fabricated in-

doors; therefore, weather can have no effect on the quality of workmanship.

STATES

UNITED STATES STEEL CORPORATION, PITTSBURGH . COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. . UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS UNITED STATES STEEL EXPORT COMPANY, NEW YORK



USS STRUCTURAL STEEL

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.

UNITED

United States Steel Corporation 525 William Penn Place, Room 5092 Pittsburgh 30, Pennsylvania

STEEL

Please s	end me m	y free	copy of	HOT	
ROLLED	CARBON	STEEL	SHAPES	AND	PLATES

NAME	• •	•••	•	• •	•	•	•	•	•	•	•	• •	•	•	•	•	•		• •	•	•		 •	•	
COMPANY	(The state of the s			 			 	Contraction of the local division of the loc
ADDRESS												 		· · · ·											and the second

CITY STATE.....

hapes

Plates

UNITED STATES STEEL

SEND FOR THIS

FREE BOOK NOW

IMPORTANT NEWS FOR ARCHITECTS & BUILDERS



PERFECT MATCHING WOOD PANELS In sizes up to 4 by 12 Feet !! ... AS QUICK AS A WINK!

... AT A BIG SAVINGS!

YOU GET FIVE BIG ADVANTAGES WHEN YOU SPECIFY "FINELINE"

1 You add unusual beauty to the architectural job, whether it be a hotel, public building, bank, institution or a home.

This is because "FINELINE" is a wood veneer, produced under an exclusive new process developed by Williamson . . . a veneer of perfect grain and without flaws.

2 You save lots of time! Even where the job calls for perfectly matching panels, there is absolutely no time needed for searching them out! "FINELINE" panels are made to match, perfectly!

3 You save money! Matching panels of "FINELINE" can be obtained at plywood warehouses for less than comparable species in unmatched, standard plywood!

4 "FINELINE" is versatile! It offers unequalled beauty in a variety of species in standard $4' \times 8'$ panels, in $4' \times 10'$ panels and, in some species, even in the $4' \times 12'$ size! It will add extra beauty to any type building, any type room.

5 Laboratory tests of "FINELINE" have proved its durability and finish for all types of installation.

Already, "FINELINE" has added unusual beauty to many outstanding architectural jobs. Ask your plywood warehouse about "FINELINE" . . . or write to either of the firms below for sample kits.

Available in PENCIL STRIPE WALNUT, NATURAL BIRCH, MAHOGANY, COMB GRAIN OAK



BANISH WASHROOM TROUBLES!

Excerpt from article in Modern Sanitation Magazine.

Most people have tried to wash their hands in standard wash basins equipped with separate hot and cold water faucets controlled by spring shut-offs, and have been annoyed by the difficulty of the operation. If the person has normal sensibilities, he dislikes stopping the basin and running water in on the soil residues of previous users; so, the hot water usually being too hot to use untempered, he turns on the cold faucet and holds it open with one hand while wetting the other, then reverses hands, then applies soap.



Duo washfountains

A touch of the foot on the foot-pedal supplies tempered water instantly from the sprayhead—there are no faucets (regular or spring type) to touch—no chance of spreading infection or *wasting water*. And the bowl is selfflushing to prevent collection of used water.

One Bradley Duo serves one or two persons at one time-piping connections are reduced by 50 per centmaximum sanitation assured. Widely used in office employee washrooms, schools, mills, institutions, public buildings... Write today for Bulletin K-958...

BRADLEY WASHFOUNTAIN CO., 2235 W. Michigan St., Milwaukee 1, Wisconsin.





DOR-O-MATIC Division of Republic Industries, Inc.

4440 North Knox Avenue • Chicago 30, Illinois IN CANADA: Dor-O-Matic of Canada, 550 Hopewell Ave., Toronto 10, Ont.

EXPORT REPRESENTATIVES: Consultants International, 11 West 42nd St., New York 36, N.Y.



Waldorf-Astoria floor maintenance figures show carpet cuts cost 78.5%

Cost figures prove that carpet can save your clients as much as 78.5% on maintenance costs.

Figures for all types of traffic areas, from light to very heavy, in the Waldorf-Astoria, a Hilton Hotel, show that it costs \$189 per year to maintain 1000 square feet of carpeted floor space.

To maintain an equivalent area of non-carpeted floor space, this figure jumps to \$880 a year. Carpet averages a savings of \$691 a year per 1000 square feet.

This vast difference in costs exists because carpet is so much easier to clean. Soil stays loose in the pile – routine vacuuming can easily remove it. Less labor and equipment are needed. Just one operation – no scrubbing, no waxing, no buff-

ing. Dirt doesn't grind in and there's no gloss to wear off.

Carpet looks better longer, too. It's amazing durability is due to the resiliency that makes it yield with pressure, spring back when pressure is released. Carpet looks soft — wears hard. In addition, carpet reduces noise and provides slip-proof footing. It is your best choice for a more relaxed, more efficient, more beautiful floor covering specification.

Cut your clients' floor maintenance costs with carpet. Send for your file copy of "Cutting Costs With Carpet." Write Dept. A2, Carpet Institute, Inc., 350 Fifth Avenue, New York 1, N. Y.

Specify carpet designed and made for the American way of life by these American manufacturers

Artloom • Beattie • Bigelow • Cabin Crafts-Needletuft • Downs • Firth • Gulistan • Hardwick & Magee • Hightstown • Holmes Karastan • Lees • Magee • Masland • Mohawk • Nye-Wait • Philadelphia Carpet • Roxbury • Sanford • Alexander Smith CARPET INSTITUTE, INC., 350 Fifth Avenue, New York 1, N.Y.

PRODUCTS cont'd.

PUMPS

Self-priming Centrifugal Pumps. Bul. No. GT-155. Bell & Gossett Co., Morton Grove, III. 4 pp.

ROOFS

Glued Laminated Wood and Solid Timber Arches, Beams, Trusses. Rilco Laminated Products, Inc., 2591 First National Bank Bldg., St. Paul, Minn. 24 pp.

Rilco Deck-Roof, Insulation and Ceiling in One Application. Rilco Laminated Products, Inc., 2591 First National Bank Bldg., St. Paul 1. Minn. 4 pp.

Tectum Engineered Roof Deck. Tectum Div., the Alliance Mfg. Co., 105 S. Sixth St., Newark, Ohio. 12 pp.

SKYLIGHTS

Marcolite Aluminum and Fiber Glass Panel Skylights. The Marco Co., 45 Greenwood Ave., E. Orange, N.J. 8 pp.

SODA FOUNTAIN EQUIPMENT Bobtail Soda Dispensing Units. United-

American Soda Fountain Div., Lewis-Shepard, Dept. R-7, Watertown, Mass. 4 pp.

STRUCTURE

COFAR Product Manual, Granco Steel Products Co., 6506 N. Broadway, St. Louis 15, Mo.

TIMBER

YOU ONLY GET

WHAT YOU

"Hey, wait a

minute

You know the ending - "pay for."

But does it apply to all piping ma-

terial? Take, for instance, an installa-

tion of low-first-cost pipe. When it

fails, it's a mistake to shrug and comment, "You only get what you pay for." A mistake because you're

not through paying for it! You have

to add the high cost of repairs and

ing this problem in hundreds of cor-

rosive services. Users get more than

they pay for in economical, trouble-

free service. Write for our booklet,

True Piping Economy. A. M. Byers

Co., Clark Building, Pittsburgh 22,

Available in Canada and

throughout the world.

(d !))

Byers Wrought Iron pipe is solv-

replacement.

Pennsylvania.

Pressure Treated Timber Foundation Piles. American Wood Preservers Institute, 111 W. Washington St., Chicago 2, III.

VERTICAL TRANSPORTATION

Freight Elevator Hoistway Doors and Vertical Lifting Car Gates. Otis Elevator Co., 260 11th Ave., New York, N.Y. 12 pp.

VIBRATION CONTROL

Finnflex Vibration Hangers. No. VH-55. T. R. Finn & Co., 200 Central Ave., Hawthorne, N.J. 4 pp.

Isolant Machinery Isolation, Cat. IS-55, T. R. Finn & Co., Inc., 200 Central Ave., Hawthorne, N.J. 4 pp.

WALL AND CEILING FINISHES Marlite Plastic-finished Wall and Ceiling Paneling, including price list. Marsh Wall Products, Inc., Dover, Ohio. 16 pp.

WINDOWS AND DOORS Bayley Window Ideas. The William Bayley Co., Springfield, Ohio. A kit.

Tuf-flex Doors. Libbey-Owens-Ford Glass Co., 608 Madison Ave., Toledo 3, Ohio. 12 pp.

WIRING

Electrical Wiring Devices. Leviton Mfg. Co., 236 Greenpoint Ave., Brooklyn 22, N.Y. 134 pp.

National Electric Wireways. Cat. No. 445. National Electric Products Corp., Pittsburgh 22, Pa. 20 pp.



FOLDING DOORS

... ARE

... MORE

BEAUTIFUL

... WHEN THEY'RE MADE OF



No other covering material offers such outstanding quality and features at such low cost! Produced in dozens of patterns and leather effects in a wide range of decorator colors... the perfect folding door material!

We'll send you sources!

THE GENERAL TIRE & RUBBER CO. TEXTILEATHER Division, Toledo 3, Ohio Send me the names of folding door makers who use TOLEX supported vinyl coverings: Name

Address





FOAMGLAS-porcelain panels give FORD durable curtain walls with constant U-value



Since FOAMGLAS is impervious to moisture, insulating value remains unchanged under all weather conditions. Ford can count on a constant U-factor of 0.15 for the finished panels. What's more, FOAMGLAS is completely inorganic, dimensionally stable and will not deteriorate in service. It's fireproof, too, for extra building safety.



With a compressive strength of over 7 tons per sq. ft., FOAMGLAS withstood all laminating pressures required to make each panel a sound structural unit. Its light yet rigid structure helped strengthen the finished units while weight was held to just 7½ lbs. per sq. ft.



Architects: Skidmore, Owings & Merrill, A. I. A., New York, N. Y. Consulting Engineers: Jaros, Baum & Bolles, Inc., New York, N. Y. General Contractor: Bryant & Detwiler Co., Detroit, Mich. Panel Manufacturer: Ingram-Richardson Mfg. Co., Beaver Falls, Pa. As up-to-the-minute as the Ford family of fine cars . . , the Ford Motor Company's new \$30,000,000 Central Staff Office Building at Dearborn, Michigan, demonstrates the functional simplicity of design possible with curtain wall construction. An integral feature of the 6,616 prefabricated porcelain enamel curtain-wall panels is the 2" insulating core of FOAMGLAS to provide vital structural and thermal benefits.



Each panel unit was inserted in a preformed rabbet in the building's aluminum grid frame. An aluminum stop moulding was then screwed into the frame and topped with a cover moulding. Panels were installed at the rate of 4 per hour for a final erected cost of only \$4.25 per sq. ft.

Ford also took full advantage of the outstanding insulating performance of FOAMGLAS by using it to insulate all roof areas and exterior columns in the new building. Whatever your own insulating problems, it will pay you to send today for detailed literature on the use of cellular, stay-dry FOAMGLAS... the strong inorganic insulation for panels, roofs, ceilings, walls, floors, piping or equipment. Write us, specifying your insulating problems. Address:

Pittsburgh Corning Corporation

Dept. D-36, One Gateway Center Pittsburgh 22, Pennsylvania In Canada: 57 Bloor St. W., Toronto, Ontario



Architects: Curtis & Davis, New Orleans Contractor: Lionel F. Favret Co., Inc., New Orleans

When a designer uses concrete as his major structural material, he also looks for something that will repair imperfections and protect its appearance. A SURCOAT treatment is the answer.

The new Pan-American Motel in New Orleans, Louisiana is SURCOATED inside and out. All patching and repairing of cracked, broken or deformed concrete was done with SURCO. Exterior concrete or cement block surfaces were weatherproofed with SURCO before they were painted. SURCO plaster was applied to all ceilings, directly over rough concrete. No grinding, honing, spackling, metal lathing or adhesive emulsions were necessary.

The SURCOAT treatment provides more than skindeep beauty; it makes a clean, economical, waterproof finish which has exceptional durability.

SURFACE COATINGS, INC. 110 Pear Street, S.E., ATLANTA 15, GEORGIA

See Sweets Architectural File for further information on SURCO





Let's get one thing straight!

FORUM has the largest circulation in its field

Here are the facts.

Latest available figures published by the Audit Bureau of Circulations show the following paid circulation averages for the first six months of 1955:



FORUM's circulation leadership isn't new; it has led the architectural magazines in circulation ever since 1935.

Twenty years of continuous leadership is no accident



Editorial Offices: 9 Rockefeller Plaza New York 20, N. Y. Subscription Offices: 40 N. Michigan Avenue Chicago 11, Illinois



Seaporclad Porcelain . . . colorful, laminated-insulated panels . . . will cover entire exterior of the \$4,000,000 *Marriott's Motor Hotel*, facing the Pentagon Bldg., Alexandria, Va. These panels were selected for sound-resisting and insulating values . . . and will eliminate the noise of planes constantly flying over this area. The architects: Joseph G. Morgan and Edwin Weihe, Washington, D. C.



Member: Porcelain Enamel Institute . A.F. of L. Metal Fabricating & Enameling Plant

Write for cotolog #63 Seaporcel Metals, Inc., 2800 Borden Avenue, Long Island City 1, N, Y.

PRACTICAL **SOLUTION** to Multiple-use of gymnasiums, halls, classrooms BENCHES **SET-IN-WALL OR AGAINST-WALL INSTALLATION** Versatile, Safe, Mobile units that can be used attached or detached from cabinet. Tops of Linoleum, Resilyte or Formica plastics. Tubular steel legs. Table tops 13' 10'' x 30''. Benches 13' 10'' x 12''. Also made Write with one or two tables only or two tables and four benches. Illustrated Specifications. MAN TURING COM BAND AND CHORAL STANDS, SEATING RISERS MFRS. of MITCHELL FOLD-O-LEG

STAINED GLASS IN ARCHITECTURE christopher SCACTON stained glass designer michael SAVOIA architectural designer April 16-May 16 Architectural League New York City

exhibition

A NEW LOOK AT

The Modern Decorative Flair ... GENUINE LEATHER TILES equally suitable for FLOORS and WALLS, in Durable, Natural PIGSKIN





ARCHITECTS EERO SAARINEN & ASSOCIATES of Bloomfield Hills, Michigan, have achieved impressive originality in designing the Irwin Union Bank and Trust Company building in Columbus, Indiana. Adding importantly to the beauty, advanced architectural planning, and practical advantages of this structure is Pittsburgh's Twindow[®]. These window units, with insulation *built in*—were utilized for all exterior glazing.

Unique Bank Building

in Columbus, Indiana,

makes telling use of

PITTSBURGH GLASS



SHOWN HERE ARE the drive-up tellers' windows, glazed with Pittsburgh's Multiplate[®]. This laminated heavy plate glass is bullet-resisting—a feature which makes it ideal for applications of this kind.

THE ENTRANCE to the bank building is highlighted by the full use of Pittsburgh Glass. The floor-to-ceiling glass panels give this outstanding structure an open, airy atmosphere which is appreciated by the depositors and bank personnel alike.



Design it better with



Your Sweet's Architectural File contains detailed information on all Pittsburgh Plate Glass Company products . . . Sections 7a, 13e, 16a, 16d, 21.

PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS · FIBER GLASS PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



Advertisers	index
Auvertisers	IIIGCA
Adams & Westlake Co	Ferro Corporatio
(Chrysler Corp.)	Agency-Fuller Flynn Mfg. Co.,
Allegheny Ludlum Steel Corp	Formica Co., Th
Alter Lansing Corp	rigency 1 erry
Agency—International Advertisers American Air Filter Co	
Agency—Zimmer-McClaskey Advertising American Biltrite Rubber Co.	Gallaher Comp
(Amtico Flooring Div.)	Garden City Plat Agency-Crutt
American Brass Co	General Binding Agency-Irving
(United States Steel Corp.)	Agency-Wildn
American Cancer Society	Agency-Bento General Electric
Americaa Laundry Machinery Co	Agency—Ruth General Tire & 1
Agency-Michel-Cather, Inc. Architectural Forum	Agency-D'Arc Gibson Manufact
Armeo Steel Corp	Glynn-Johnson C Agency-Edwin
Armstrong Cork Company	Goodyear Tire & Agency-Kudn
Agency—The Salzman Co.	Governair Corpor Agency-J. Ste
	Graneo Steel Pro Agency—Garda
Barber-Colman Company	(Perlite Divisio
Bayley Co., William	Grinnell Compan Agency—Horto
Bileo Company, The	Guth Company, Agency—H. G.
Agency—Fuller & Smith & Ross, Inc. Bradles Washformatic Co.	
Agency-Kirkgasser-Drew Advertising Bridgeport Brass Company	
Agency-Hazard Advertising Co. Bush Mfg. Co	Hansson, Inc., Agency-Ben
Agency-William Schaller Co., Inc. Butler Manufacturing Co	Agency-Milto
Agency—Auerey, Finaly, Marley & Hoagson Byers Company, A. M	Agency—Willi Haws Drinking
	Agency-Pacifi Heat-X, Inc.
C arpet Institute, Inc	Hexcel Products
C Agency-Morey, Humm & Johnstone, Inc. Carrier Corp	Advertising Holeomb & Hoke
Agency—N. W. Ayer & Son, Inc. Ceco Steel Products Corp	Agency-Keeli
Celotex Corp., The	
Chase Brass & Copper Co	Industrial Acou
Chrysler Corp. (Airtemp Div.)	Agency—Rin Ingram-Richards
Agency-Grant Advertising, Inc. Cleaver-Brooks Co	Agency-Down Inland Steel Pro
Cold Spring Granite Co	Iron Fireman M
Collins & Aikman Corp	Agency-Josef
Columbus Coated Fabries Corp. 15 Agency-Mumm, Mullay & Nichols, Inc.	
Agency—Smith, Taylor & Jenkins, Inc. Concrete Reinforcing Steel Institute	T.L. M. III.
Agency—The Fensholt Advertising Agency Congoleum-Nairn, Inc	Johns-Manville Agency-J.
Agency—Dancer-Fitzgerald-Sample, Inc. Cookson Company, The	Agency—K. E. Jones & Laughli
Agency—Ine McCarty Co. Corning Glass Works	Agency-Ketch
Cupples Products Corporation	
Curtis Mfg. Co	Townson Co
	Keasber and Ma
Darling Co., L. A	Agency—Gear Kellogg Switchb
Detroit Steel Products Co 170, 171, 172, 173 Agency-Fuller & Smith & Percenter	Agency—Fens Kentile, Inc
Dor-O-Matie Div. (Republic Industries, Inc.)	Kiefer Tannerie Agency-Ben
Agency-Merrill, McEnroe & Associates, Inc. Dunham Co., C. A	Kinnear Mfg. Co Agency-Whee
Agency—The Buchen Company Du Pont de Nemours & Co., E. I	Knoll Associates Agency—The
Dur-O-Wal Agency-Ambro Advertising Agency 80	- PARTER ALLER A
E conomy Engineering Co	Lewyt Air Con Agency—H
Eljer Division	Agency-Full

(The Murray Corporation of America). Cover III Agency—Ross Roy, Inc.

G Agency-Holland Advertising Agency
Garden City Plating & Mfg. Co
Agency-Cruttenden & Eger Associates
General Binding Corp
Agency-Irving J. Rosenbloom Adv. Agency
General Bronze Corp169
Agency-Wildrick & Miller, Inc.
General Electric Co 51
Agency-Benton & Bowles, Inc.
General Electric Co
Agency-Ruthrauff & Ryan, Inc.
General Tire & Rubber Co
Agency-D'Arcy Advertising Co.
Gibson Manufacturing Co 23
Agency-Lowe & Stevens
Glynn-Johnson Corp 40
Agency-Edwin E. Geiger
Goodyear Tire & Rubber Co., The 3
Agency-Kudner Agency, Inc.
Governair Corporation 48
Agency-J. Stewart Bell Advertising
Granco Steel Products Co
Agency—Gardner Advertising Co.
Great Lakes Carbon Corp.
(Perlite Division) 00
Agency-Darwin H. Clark Co.
Grinnell Company, Inc 2
Agency-Horton-Noyes Co.
Guth Company, The Edwin F
Agency-H. George Bloch Advertising Co.

Hansson, Inc., Elof	251
Harbor Plywood Co	73
Agency-Milton Weinberg Advertising Co.	
Hardwood Plywood Institute	223
Agency-William Hart Adler, Inc.	
Haws Drinking Faucet Co	206
Agency-Pacific Advertising Staff	
Heat-X, Inc	80
Agency-William Schaller Co., Inc.	
Hexcel Products Co	233
Agency-Charles P. Johnson Company,	
Advertising	
Holcomb & Hoke Mfg. Co., Inc	18
Agency-Keeling & Co., Inc.	

ndustrial Acoustics Co	55
Agency—Ritter, Sanford & Price, Inc. ngram-Richardson Mfg. Co	19
Agency-Downing Industrial Advertising, Inc.	25

 The
 222

 uller & Smith & Ross, Inc.
 222

 attison Company.
 6

 re-Marston
 58

 sholt Advertising Agency, Inc.
 56

 trauff & Ryan, Inc.
 59

 Dcan Advertising Agency
 42

Agency-Wolfe-Jickling-Conkey, Inc.	
Luria Engineering Co	 14
Agency-Emil Mogul Company, Inc.	

Maas & Waldstein Co 11
Agency—Lewis Advertising Agency
Mack Molding Company
Agency-George Homer Martin Associates
Macomber, Inc. 57
Agamen Direct
Weben Compare The D.C. 77 - 7
manon Company, Inc. R. C
Agency—Anderson Incorporated
Maple Flooring Manufacturing Assn 26
Agency—The Cramer-Krasselt Co.
Marble Institute of America, Inc
Agency-Moore & Combany, Inc.
Martin-Parry Corn. 88
Aganen Claston Pacing Inc
Martin Commentation, Inc.
martin Senour Company, Inc
Agency-Macharland, Aveyard & Co.
Mastic Tile Corporation of America
(Wright Mfg. Co. Division) Cover II
Agency-S. R. Leon Company, Inc.
Matot, Inc., D. A
Agency-Arthur R. MacDonald, Inc.
McPhilhen Mfg. Co., Inc. 196
Anonen Reval & deCumman Inc
Medant Declarte Inc. Fred
Andre Charles III Dates Advanta
Agency-Charles W. Bolan Advertising
Mengel Lo., Inc
Agency-Doe-Anderson Advertising Agency
Miller Company, The 27
Agency-Graceman Advertising, Inc.
Minneapolis-Honeywell Regulator Co
Anenev-Foote Come & Relding
Miraele Adhesives Cornoration 248
Annen Conton Inc
Minimized Clark
mississippi Glass Co
Agency—Kalph Smith Advertising Agency
Mitchell Mfg. Co
Agency-Irving G. Rahn Advertising Agency
Modine Mfg. Co
Agency-Klau-Van Pietersom-Dunlab Assoc
Monsanto Chemical Co. 41
Ageney-Needham Louis & Brothy Inc
Manifest Starl Bachata Las
Active Steel Froducts, Inc

Perlite Division (Great Lakes Carbon

Agency-Darwin H. Clark Co.
Perlite Institute
Agency-Asher, Godfrey & Franklin, Inc.
Petro
Agency-Joseph R. Gerber Co.
Pittsburgh Corning Corporation
Agency-Ketchum, MacLeod & Grove, Inc.
Pittsburgh Plate Glass Co
Agency-Batten, Barton, Durstine & Osborn, Inc.
Pittsburgh Steel Products Co
Agency-Bond & Starr, Inc.
Powers Regulator Co 67
Agency-Symonds, MacKensie & Co.
Rambusch Decorating Co 37
Agency-Koeding & Arnold, Inc.
Reflectal Corp
Agency-Kobertson, Buckley & Gotsch, Inc.
Remington Arms Co., Inc.
Agency-Batten, Barton, Durstine & Osborn, Inc.
Republic Industries, Inc.
(Dor-O-Malle Div.)
Agency-Merrin, McEnroe & Associates, Inc.
Againer Maldaum & Forwardth Inc.
Agency-Melarum of Pewsmin, Inc.
Agaman St Canage & Konge Inc
Remolds Metals Co. 190
Agenen-Buchanan & Combany Inc
Risson Company, Oscar C 170
Anone-Edenin F. Geiner
RIM Standards Institute Inc. 940
Agency-Van Auken Ragland & Stevens
Robbins Flooring Co.
ALTERNATION AND ALTERNATION AN

owe Mfg. Co		•••		 	10	3
Agency—Kogers & Smith ast-Oleum Corporation				 	24	1
Agency-O'Grady-Andersen-Gray,	1	Inc.				

R

Gargent & Co
Agency-Marschalk & Pratt Co., Inc.,
Division of McCann-Erickson, Inc.
Seadron Christopher
Agency-Direct
Seaporcel Metals, Inc
Agency-The Rockmore Combany
Sadawish Mashing Works 969
Agence. The House of I Hawden Tonies
File Terrer Distates
Selectemp Livision
(Iron Fireman Mig. Co.)
Agency-Joseph K. Gerber Co.
Simplex Ceiling Corp 54
Agency-Brucker & Ross, Inc.
Simpson Logging Company
Agency-Merchandising Factors, Inc.
Sloan Valve Company 59
Agency-Reincke, Meyer & Finn, Inc.
Spiroll Products Co
Agency-Donald W Gardner Advertising, Inc.
Standard Products Co., The
Anoney Fullor & Smith & Rose Inc
Steelesse Inc. 104
Agency Wasten Arras & Asconistas
Surface Continue Inc. 950
Agente Allen MaDer & Dealer Tes
Agency-Auen, Mchae & Bealer, Inc.
Swartwout Company, The
Agency—Carr Laggett Advertising, Inc.

- Taylor Co., The Halsey W.
 212

 Agency—The Advertising Agency of
 3

 William Cohen
 3

 Tectum Division of the Peoples Research &
 3

 Manufacturing Co.
 1000, 101

 Agency—The Griswold-Eshleman Co.
 1000, 101

 Agency—The Griswold-Eshleman Co.
 100

 Manufacturing Co.
 240

 Agency—Wolfe-Jichling-Conkey, Inc.
 10

 Maneated Celling Division)
 240

 Agency—Arthur E. Smith
 10

 Trane Company, The.
 56A, B, C, D, E, F, G, H

 Agency—Compbell-Mithun, Inc.
 230

 Agency—Che Henry P. Boynton Advertising
 Agency.

 Agency.
 6

 Trane Company, The Menry P. Boynton Advertising
 Agency.

 Magency.
 7

 General Portland Cement Co.)
 24

 Agency—Harris & Bond, Inc.
 251

 Tyler Refrigeration Corporation
 251

 Agency—Jones & Taylor and Associates
 251

Virginia Metal Products Corp......242, 243 Agency—Geare-Marston

Wakefield Company, The198, 199Agency-Blaco Advertising AgencyNameWalworth Company, The176Agency-G. M. Basford Co.182Agency-Henry A. Loudon Advertising, Inc.288Agency-Henry A. Loudon Advertising, Inc.228Agency-MacWillins, Cole & Weber228Mestinghouse Electric Corp.210, 211Agency-MacWillins, Cole & Weber254Agency-MacWillins, Cole & Weber254Agency-Schnell & Associates64Woodal Industries, Inc.64Agency-Schnell & Associates30Woodad Industries, Inc.215Agency-Krate-Basch Associates, Inc.215Modeward Iron Co.215Agency-Faulter & Smith Associates, Inc.215Worthington Corporation234, 235Agency-Startow Advertising Agency234, 235Agency-Schweit Tile Corporation of
Agency-Schweit Tile Corporation of
Agency-S. R. Leon Company, Inc.

Yale & Towne Mfg. Co.60, 61 Agency-Ruthrauff & Ryan, Inc.



THE COOKSON COMPANY 1527 CORTLAND AVENUE SAN FRANCISCO 10, CALIFORNIA



Take advantage of Bridgeport's aluminum extrusions within these general limits: LENGTH-Max.-Heat-Treatable Alloys 40 ft. WEIGHT PER FT.-Max.-50 lbs. Min.-.250 lb. MAX. CIRCUMSCRIBING CIRCLE-16 in. in diameter

Bridgeport

the key to simple, flexible architectural design...

BRIDGEPORT ALUMINUM EXTRUSIONS

At Bridgeport you can choose from a wide variety of standard shapes or have special extrusions engineered to meet all your architectural requirements. These precision-made extrusions are ideally suited to many kinds of installations: store fronts, curtain wall systems, interior partitions and scores of other applications where appearance, ease of erection and low maintenance are important. Bridgeport can furnish extrusions with excellent surface finish in all alloys and tempers, and in sections as heavy as fifty pounds to the running foot.

Take advantage of Bridgeport's experience and fully integrated production facilities to serve all your architectural extrusion requirements. Call the nearest Bridgeport Sales Office for complete information.

For the very newest in BRIDGEPORT ALUMINUM EXTRUSIONS, DIE AND HAND FORGINGS Bridgeport Brass Company, Aluminum Division, Bridgeport 2, Connecticut Offices in Principal Cities



As you consider the needs of the nation's schools



Available in cast iron, formed steel, and vitreous china. Your Eljer representative is thoroughly familiar with school plumbing needs. See him, consult Sweet's Architectural file, or write: Eljer Division of The Murray Corporation of America, Three Gateway Center, Pittsburgh 22, Pa. -remember that Eljer offers a complete selection of plumbing fixtures and brass goods specifically designed for school use. Look to Eljer for the matchless styling and proved utility you demand.



THE ONLY NAME YOU NEED TO KNOW IN PLUMBING FIXTURES

another outstanding "HEAT PUMP" INSTALLATION

with

JOHNSON CONTROL

In one of the first applications of its kind, a complete heat pump system is combined with radiant panel heating and cooling as well as central fan air conditioning

000

By any standard, Albuquerque's new Simms Building* is an outstanding example of distinctive design and high functional efficiency. Equally impressive are the building's mechanical facilities, which include a reverse cycle "heat pump" combined with a radiant panel heating and cooling system and six central fan systems for heating, cooling and ventilation.

The successful operation of this modern air conditioning installation requires a control system capable of solving a constantly varying array of intricate control problems. For example, the control system must compensate automatically for the effects of solar heat gain and, even when outdoor temperatures are below 20° F, provide for simultaneous heating and cooling in different sections of the building.

The control system must regulate the operation of the radiant panel system and the central fan units to produce uniformly ideal temperatures throughout the entire building.

And it must operate the "heat pump" in perfect coordination with the demands of the radiant panels and the fan systems. Completely automatic changeover between the heating, cooling and intermediate cycles of operation is essential. Refrigeration capacity, at less than design load, must be limited to minimize operating costs. Admission and discharge of well water must be accurately controlled.

A specially engineered system of Johnson Control solves all of these and countless other control problems successfully, providing the Simms Building with uninterrupted comfort and virtually waste-free heating and cooling performance.

The superior comfort and economy features of Johnson Control can be applied to any building, regardless of its type or size. Whether your particular temperature regulation problems demand this kind of intricate control system or a very simple arrangement of thermostats and valves or dampers, look to Johnson for the best solution. A nearby Johnson engineer will gladly make recommendations without obligation. Johnson Service Company, Milwaukee 1, Wisconsin. Direct Branch Offices in Principal Cities.

*Simms Building, Albuquerque, N. M. Flatow & Moore, architects; Bridgers & Paxton, mechanical engineers; all of Albuquerque.

JOHNSON CONTROL