architectural forum

December 1953

Churches
Ten top examples of new US ecclesiastical architecture, plus six of Europe’s best (p. 85 and below)

Forum design standards
Graphic details for church and chancel planning (p. 144)

Office buildings
Controversial design of Pittsburgh’s Gateway Center half conceals its important contribution to better building (p. 112)

Small buildings
Two classroom additions for typical schools...
Two hilltop stations for radio and TV broadcasts... Office building for multitenant use...
A modern showroom for classic automobiles (p. 118)

Building engineering
Heat-pump operating costs.... Flexible forms and a new kind of concrete reinforcing....
Structural aluminum for an air-conditioning penthouse (p. 136)

Rural hospital
Handsome, efficient, cheerful building wraps up all health services (p. 130)
FIRST in Beauty, LAST in Maintenance...
and ALWAYS best in year-in, year-out economy

That's the record of flooring made of BAKELITE Vinyl Resins—in schools, hospitals, restaurants, office buildings, stores, factories, homes—in buildings of every kind.

The brighter beauty of flooring by Kentile, Inc., made of BAKELITE Vinyl Resins is sealed in...permanently protected by the smooth, non-porous surface that dirt just cannot penetrate. Millions of rough steps of workmen, of energetic youngsters...will not scratch, mar, dent or even noticeably wear that surface.

Its cleanability cuts maintenance costs to the bone. Food, oil, grease, alcohol, and hundreds of other usually damaging agents do not harm flooring made of BAKELITE Vinyl Resins. Cleaning is easiest ever. Strong cleaning compounds, soaps, acid and alkali solutions are withstood. No waxing is needed to protect the tile.

No matter where, specify tile or continuous flooring made of BAKELITE Vinyl Resins. You assure permanent beauty, lowest maintenance costs, and the greatest economy for years to come. For a list of suppliers write Dept. RF-14.

BAKELITE TRADE MARK
VINYL RESINS

BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation 30 East 42nd Street, New York 17, N.Y.
In Five Years General Petroleum SAVES $74,552 with Hauserman Movable Walls

That's only part of the story!

From an efficiency standpoint, General Petroleum Corp., western affiliate of Socony-Vacuum Oil Company, Inc., has found far greater value resulting from the use of Hauserman Movable Walls in its Los Angeles offices.

Already, necessary wall rearrangements have saved $65,468 over the cost of moving ordinary walls of comparable size. Equally important, however, are the time savings involved. Using one typical move as an example, actual records show that Hauserman Walls were taken down and re-erected in only 2½ working days... the same move with ordinary walls would have required seven weeks of costly work interruption!

Add the additional savings of $9,084—the difference between washing the Hauserman lifetime surface finish and one repainting of ordinary walls and doors—and you have the complete story... tangible savings: almost $75,000... efficiency savings: impossible to measure.

Doesn't this suggest an idea to you?

WRITE FOR DATA MANUAL 53!

This 92-page guide for architects contains complete technical details, stock sizes, general instructions and specifications on all types of Hauserman Movable Interiors. Write for your FREE copy of Data Manual 53 today, The E. F. Hauserman Company, 7139 Grant Ave., Cleveland 5, Ohio.
DESERT TONES
A New Goodyear Exclusive
BRING NEW HIGH STYLING TO RUBBER FLOORING!

Never before have such lovely, subtle colors been compounded into the rich, lasting texture of rubber flooring—a boon to architects and decorators looking for that “Perfect Combination” of beauty and durability when specifying the right flooring for the job!

For Goodyear’s exclusive new Desert Tones are true background basics—lifting rubber flooring to a new level of desirable smartness.

And Goodyear’s 30-year history of success in the manufacture of the world’s finest rubber flooring leaves no doubt that its selection by you will long remain as a testimonial to your good judgment.

By all means see for yourself the warmth and vitality of these great new colors at your supplier’s—or write for samples. Goodyear, Flooring Dept. L-3310, Akron 16, Ohio.

YOU SATISFY WHEN YOU SPECIFY GOODYEAR RUBBER FLOORING!

1. Economy of Maintenance—super-density of “cured-plate finish” bars a foothold to dirt, is easier to keep clean!
2. No Artificial Finish—no artificial finish applied to natural surface; cured-plate finish lasts for life!
3. Tough Surface—in elevators and other severe service applications, Goodyear Rubber Flooring has proved it excels in wearing quality!
4. Quiet and Cushioned Comfort—has a natural resiliency and sound-deadening qualities, cuts fatigue.
6. Available in Full 36” Wide Rolls—as well as in tiles, makes it possible to create almost any desired pattern!
7. First Choice of many leading architects because 30 successful years have proved it to be as lasting as it is beautiful.
8. First Cost is Last Cost—durability, beauty, low upkeep—greater luxury for no greater long-run cost!

GOODYEAR Rubber Flooring
BY THE TILE • BY THE ROLL
Made only by Goodyear—The Greatest Name in Rubber—The Greatest Name in Rubber Flooring!
Build all these things and more with versatile UNISTRUT® METAL FRAMING

Rack conduit, cable and pipe—
Frame power load centers—
Mount switches, meters and panelboards

Those who use completely adjustable Unistrut metal framing know it's easy to handle and quick to erect—that it provides great strength without bulk—that adjustments, changes and additions are easily made at any time.

The Unistrut system cuts costs, too. You save time in engineering detailing and eliminate the need for trained erection crews—anyone can build with Unistrut channel and fittings. No drilling, no welding, no special tools or equipment—all you need is a hacksaw and a wrench to build wire and cable reel racks, fluorescent fixture supports, transformer vaults, electric motor mounts, bus duct supports and many other structures. It will pay you to try Unistrut framing on your next job.

Write for NEW Free 84-page Pocket Catalog 800

Unistrut Products Company Dept. F-12
1013 W. Washington Blvd., Chicago 7, Ill.

Please send me the new Pocket Catalog No. 800, without obligation.

Name__________________________
Company______________________
Address_______________________
City____________________Zone____State______

The World's Most Flexible All-Purpose Metal Framing
...the finest structures rest on

RAYMOND FOUNDATIONS

FORT HAMILTON VETERANS HOSPITAL
Brooklyn, N. Y.

THE SCOPE OF RAYMOND'S ACTIVITIES—Soil Investigations...
Foundation Construction ...Harbor and Waterfront Improvements...Pre-
stressed Concrete Construction...
Cement-mortar In-place Lining of Water, Oil and Gas Pipelines.

RAYMOND CONCRETE PILE CO.
140 Cedar Street • New York 6, N. Y.

Branch Offices in the Principal Cities of United States and Central and South America
The Shoppers’

a bellwether in merchandising ... a success in investment
... a milestone in architecture

This group of forty-four stores at Framingham, Mass., rose from seventy acres of countryside after five years on the drawing boards of Ketchum, Gina and Sharp, New York.

Notable in many ways—for its two-story construction, for having the largest clear-span dome in the United States, for its mall as vehicle-free space for pedestrians—the Shoppers’ World has been likened to a “Single Giant Showcase”. Full-height plate glass fronts on both decks reveal 3,000 lineal feet of merchandising display.

To provide the utmost in clarity of vision with a minimum of distortion, all glass used in the store fronts of this $8,000,000 project is ¼” Libbey-Owens-Ford Polished Plate Glass.

Libbey-Owens-Ford Glass Company, 88123 Nicholas Building, Toledo 3, Ohio.

NO FINER GLASS THAN
LIBBEY·OWENS·FORD
PLATE GLASS

SHoppers’ World was located on 6-cents-a-foot meadowland but draws on suburban areas west of Boston.
THE CENTRAL MALL, upon which all stores face, provides safe walking and resting for shoppers who find themselves in the center of an enormous L-O-F Plate Glass "showcase".

IN WINTERTIME, walkways are enclosed with storm sash to protect shoppers from cold wind, snow, slush and ice.

JORDAN MARSH, occupying the big domed building, has full-height L-O-F Plate Glass windows and Tuf-flex* Tempered Plate Glass Doors to create the greatest sense of intimacy between shoppers outside and the merchandise within.

IN SUMMERTIME, the covered walkways are pleasant promenades with the garden on one side and a continuous "Visual Front" on the other.
Can choosing the wrong floor put you "on the hook?"

Of course it can! Flooring poorly suited to the area for which it was chosen will result in a dissatisfied client or an actual loss on the job. And, because you're in business for profits, you will find it pays to call on an expert to help you... a man fully qualified to match every floor perfectly to the job it must do.

The Kentile Flooring Contractor has complete and up-to-date information on the countless flooring products available. And he's at your service whether your problem is one room in a home or thousands of square feet in a major installation. Let him offer you the benefits of his specialized knowledge whenever you're planning or executing a construction or remodeling project of any sort.

You can't afford to waste your valuable time... and you don't have to if you consider the Kentile, Inc. Flooring Contractor as a member of your staff of experts.

- Kentile Asphalt Tile
- Special (greaseproof) Kentile
- KenCork Floors and Walls
- KenRubber Tile Floors
- KenFlex Vinyl Tile

Consult the Kentile, Inc. Flooring Contractor for information on these Kentile, Inc. Floors. His name and address are listed under Floors in your Classified Directory... or write:
Contract Dept., Kentile, Inc., Brooklyn 15, N. Y.

Kentile Inc.
America's largest manufacturer of tile flooring
Rolling Steel Doors

... more desirable from ANY STANDPOINT!

For unusual openings, such as the one at the left, and normal truck openings in any type of building, there is no door that offers as many desirable features as a good quick-opening, quick-closing, power operated rolling steel door. Their vertical, roll-up action occupies no usable space either inside or outside the door opening—no overhead obstructions to interfere with crane operations. No other type of door offers these inherent advantages of space economy and compactness in operation. In addition, rolling steel doors are permanent...their all-metal construction assures you a lifetime of continuous trouble-free service, and provides maximum security against intrusion and fire. When you select a rolling steel door, it will pay you to check the specifications carefully...you will find that the galvanized steel material for the interlocking curtain slats of Mahon Rolling Steel Doors is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and, that the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. This is just one of the extra-value features of Mahon Rolling Steel Doors—you will find others. See Sweet's Files for complete information including Specifications, or write for Catalog No. G-54.

THE R. C. MAHON COMPANY
Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities
Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters, Insulated Metal Walls and Wall Panels, Steel Deck for Roofs, Paritions, and Permanent Concrete Floor Forms.
New Protection Against Roof Damage

NEW CELOTEX
Channel-Seal
TRADE MARK
ROOF INSULATION

guards against blistering and separation of felt and insulation

For an extra margin of safety against costly roof damage due to the building up of high-pressure air pockets where insulation meets felt—specify new Celotex Channel-Seal Roof Insulation!

Each piece has bevels 1/8" high by 1 3/4" wide on all bottom edges. When units are laid on the deck, these bevels form a network of broad, interconnecting channels extending over the entire roof.

"Safety Release" for Trapped Air
As higher pressures build up in some areas of the roof because of rising surface temperatures, they are relieved by air and vapor movement through the channels. This equalizes and reduces pressure—minimizes the danger of blistering or separation of felt and insulation!

Made of a low-density board of high insulating efficiency, Celotex Channel-Seal Roof Insulation comes in a range of thicknesses to meet the specific insulation requirements of each job. It is asphalt coated on both sides and all edges, for extra moisture protection in storage and on the job.

Low in Cost
Light and easy to handle, yet remarkably rigid and tough, Channel-Seal is low in both initial and applied cost. Resists damage from job handling. Quick, easy to apply. Smooth surface assures positive bond to both roof deck and roofing felt.

Moreover, it is the only roof insulation made of tougher, stronger, long Louisiana cane fibers—and protected by the patented Ferox® Process from dry rot and termite attack.

Write now for full data on Channel-Seal and other types of job-proved Celotex Roof Insulation. The Celotex Corporation, Dept. AF-123, 120 S. LaSalle St., Chicago 3, Ill.

For a Better Roof... Specify Genuine

CELOTEX
REG. U. S. PAT. OFF.
ROOF INSULATION

THE CELOTEX CORPORATION, 120 S. LA SALLE STREET • CHICAGO 3, ILLINOIS
The glorious pattern and quiet air of elegance of this wonderful Wilton by Lees offer a gracious welcome to all visitors at Pittsburgh's Carlton House! In addition to their beauty, the easy up-keep and cleaning properties of Lees Carpets are a big plus to any hotel or public building. The texture shown is Lees famous Hooksett. Just one of many top Lees qualities and custom designs that come in a wide range of colors and patterns—specially woven for long wear and hard traffic. For details write to James Lees and Sons Company, Contract Carpet Division, Bridgeport, Penna., or offices in principal cities.

JAMES LEES AND SONS COMPANY
BRIDGEPORT, PENNSYLVANIA
MAKERS OF LEES CARPETS AND RUGS
COLUMBIA-MINERVA AND BEEHIVE
HAND KNITTING YARNS

TOP: Keynote to the Town & Country Dining Room decor is a fine Lees Carpet.
CENTER: The Lees Carpet in the Cocktail Lounge repeats the beautiful motif.
RIGHT: Front elevation shows why Carlton House is among the world's finest hotels.
smart, modern, designed for narrow stile doors

Von Duprin

NC
Narrow Concealed Exit Devices

In schools, offices, public buildings . . . whenever specifications call for single or double doors with narrow hollow stiles, always specify Von Duprin Narrow Concealed Exit Devices.

Von Duprin NC Exit Devices are reversible, spring-actuated . . . vertical rods function smoothly, efficiently and unobtrusively within hollow stiles. Von Duprin quality construction, precision engineering and superior finish assure a lifetime of modern beauty and unfailing performance with practically no maintenance.

Join the trend to the lighter, more modern look with the line of exit devices proved in thousands of installations nationwide—Insist on Von Duprin, the “safe way out.”
Check these NC Features!
- all bronze
- crossbar X-Bar reinforced
- drop-forged cam and lever arms

VON DUPRIN "Exit Specialists"—factory representatives and contract hardware salesmen—are located for your convenience in key cities across the nation. Each has the engineering and hardware experience to help you plan safe, practical exits. Each has the facts about the complete line of VON DUPRIN Devices and accessories to save you time on specifications. For the name of your nearest "Exit Specialist" write directly to the factory.
RICHMOND MD DOORS
Molded Design

Now available with U.L. label

1. Heavy Duty Construction
   Stiles and rails 16 gauge; butt and lock cutout reinforcing

2. Molded Design
   A Richmond "first"; neat 20 gauge hollow metal molding around all glass and solid panels

3. Mitred and Brazed Corners
   Continuous sash ready for glazing; no open mitres

4. Hinge Recesses
   Provided for neat fit; no cutting on job

5. Beveled Edges
   For snug fit in frame, and non-binding operation

6. Metal Covered Panels
   1/4" sheet rock (asbestos for labeled doors) glued between 20 gauge steel sheets

7. Many Sizes and Styles Available
   Single and double swing in almost any size up to 4' 0" x 8' 0"

8. Complete "Package"
   Furnished complete with frame and standard hardware for savings on job

These 8 features...

... make Richmond MD Industrial Tubular Steel Doors
the logical choice for many types of buildings

PEELLE - RICHMOND
THE PEELLE COMPANY
47 STEWART AVENUE, BROOKLYN 37, N. Y.

THE RICHMOND FIREPROOF DOOR CO.
RICHMOND, INDIANA
OFFICES IN PRINCIPAL CITIES
Ing-Rich offers prefabricated units in a variety of styles, and all required sizes, for curtain wall construction. Faced with durable, lifetime porcelain enamel on steel, Ing-Rich Porcel Panels provide standardized insulated wall sections that require no painting or finishing and are readily erected. Size, type of insulating core, color, surface texture and thickness are according to your specifications. Panels are factory-made to specification, delivered to the job and erected by experienced crews.

Write for Ing-Rich Bulletin 1053, (also listed in Sweets Catalogue) describing Ing-Rich Porcel Panels for curtain wall and other exterior and interior facing. Included are typical elevation and section drawings, showing methods of attachment and other useful details.

**SEND**
for this informative booklet

---

**INGRAM-RICHARDSON MANUFACTURING COMPANY**
Beaver Falls, Pennsylvania • Established 1901
Mrs. H. K. Wallace, dietitian at the Agnes Irwin Upper School, Wynnewood, Pennsylvania, is proud of her brand new kitchen. And rightly so. This modern kitchen has everything to make it really efficient.

And two of the things she's most pleased with are the twin Ruud-Monel Sanimasters. It takes plenty of sanitizing 180° hot water to wash all the dishes for the 700 meals served here every day. And there's a constant need, too, for regular 140° hot water for sinks and general use.

Yet Sanimaster delivers both these temperatures from the same tank at the same time! The Ruud-Monel Sanimaster is the only self-contained water heater on the market that will supply both regular-hot and extra-hot water from one tank at one time.

MONEl—NATURE'S WONDER METAL

SANIMASTER's tank is made of solid MONEL—the only metal that safely holds water at such high temperatures as 180°. And it will never rust! Ruud-Monel two°C temp Sanimaster, with its exclusive long-life Monel tank, will give you sparkling clean hot water for years and years.

In addition to the Ruud-Monel two°C temp Sanimaster, Ruud offers a complete line of water heaters for domestic, commercial and industrial applications.

For specifications, data and literature, write Dept. T-3.

RUUD MANUFACTURING COMPANY
Pittsburgh 1, Pa. • General Offices • Toronto 14, Ontario
What every architect should know about PG's

(Aнаconda's PRE-FORMED Panel Grids)

PG's — "Panel Grids"

They are accurately pre-formed, compactly packaged radiant heating coils ready to be installed. PG's are supplied in one standard size and contain 50 linear feet of 3/8 in. Type L Anaconda Copper Tube. PG's weigh about 10 pounds and are packed 4 to a carton for easy handling or storing.

PG's save installation time

They do away with the time-consuming operations of forming coils on the job or in the shop. There's no more awkward "stringing-up" of coiled tubing or the extra care required in maintaining the design spacing and avoiding sags.

PG's make estimating and layouts easier

Because each PG has a rated BTU output at various spacings—4 1/2 in., 6 in., 7 1/2 in., 9 in. and 12 in., it is a simple matter, following the heat loss calculations, to determine the number of grids needed and to space and position them according to the heating requirements of each room or area.

PG's are easy to install

When a single PG is to be installed at various spacings it may be laid out on a simple wooden frame or cradle at convenient working height. Small wire nails tacked alongside the tube maintain the spacing as measured.

The frame and PG are lifted to position and held by a single prop while the straight and trim grid is quickly and securely fastened to the ceiling construction.

The grids, with one tube-end expanded, are easily soldered or brazed in series without fittings. When only part of a PG is required the remaining loops can easily be hand-straightened and used as runouts to the supply or return risers or as connecting lines to other grids.

You can adapt PG's to any room size or plan arrangement

PG's can be easily contracted or extended by hand so that the tube spacing will meet all design requirements. The spacing may be varied from 4 1/2 in. c-c to 12 in. c-c. Thus a single PG may serve ceiling areas ranging from 22 1/2 to 60 square feet to obtain uniformity of heat distribution.

Want more information about PG's?

Nationwide distribution isn't complete as yet. We are increasing production and getting PG's to Anaconda Distributors just as fast as possible. You will want to know more about this new product; so send for Publication C-6, which shows why it is easier to design and faster to install a panel system with PG's. Write today to: The American Brass Company, Waterbury, Connecticut.

Copper Tube
PRE-FORMED Panel Grids

For Radiant Panel Heating
A distinguished new St. Louis office building

Another Day-Brite lighted architectural achievement

This is the new home of the Brown Shoe Company. It stands in Clayton, Missouri, a suburb of St. Louis. The Brown Shoe Company is one of the pioneers in the movement toward decentralization of manufacturing headquarters in the St. Louis area. Company officials feel there are invaluable advantages in a less distracting, more comfortable environment for their executive, sales and office people. A $3 million investment in the building and grounds speaks for the courage of their convictions.

The building design is contemporary but in keeping with the trend of architecture in the community, there is a skillful blend of Colonial.

From the dominant entrance rotunda throughout the office space inside, there is everywhere evidence of far-sighted planning and sound specifying.

Extreme flexibility of interior design permits easy and quick rearrangement of offices, if and when needed. The whole building is air-filtered and air-conditioned. More than a mile of glass enclosed Day-Brite troffers provide one of the finest office lighting installations you've ever seen.

Ten years from now...yes, twenty years from now...the Brown Shoe Company headquarters will still rank with the best lighted office buildings in the nation. That's one of the reasons for Day-Brite's selection. There's a premium of extra years of trouble-free service that comes with Day-Brite.

Day-Brite offers that same benefit to every architect or engineer who is sincerely concerned with giving his client the very most for every lighting dollar spent.

We invite your request for more complete Day-Brite information.
The handsomely appointed Board Room is featured by an interesting lighting layout, as are all executive offices. Here, an area of recessed panels is fitted into the beamed ceiling for general illumination. Cove lighting adds luxurious richness.

In the large office areas, Day-Brite glass enclosed troffers produce excellent visual comfort for the Brown staff as well as plenty of light for close work (40 footcandles maintained). Notice the flexibility of the lighting layout, too. Bays may be partitioned from floor to ceiling without rearrangement of the fixtures.

Sample show rooms merchandise the Brown shoe line through good display and good lighting. A combination of troffer illumination and incandescent spots is used. This sample room features "Buster Brown," one of Brown Shoe's nationally famous lines.

DAY-BRITE TROFFER DATA: Trough line available in Slimline and Rapid-Start OLW Fluorescent, flange or snap-in type. Die-formed steel construction. HOT-BONDED SUPER-WHITE enamel finish, rust inhibited. Interchangeable series of shielding units includes BOXCO (®) lowered, egg-crate lowered, glass enclosed, low-brightness No. 9015-DB Controlens®, and curved 1" Controlens®. Safety fused and UL approved.

For further information, write DAY-BRITE LIGHTING, INC., 5471 Bulwer Ave., St. Louis 7, Mo. In Canada: Amalgamated Electric Corp., Ltd., Toronto 8, Ontario.
It was the "perfect fire" except for one thing

"This fire didn't happen... it was planned! Planned so shrewdly and thoroughly that the North & Judd plant might have burned to the ground that night", said Mr. Frederick L. Morrow, President, North & Judd Mfg. Co., world's largest manufacturer of buckles and fastening devices, in New Britain, Connecticut.

"It was back in the 1930's. At that time, we had leased floor space in several of our buildings adjoining the main plant.

"One evening as our night watchman was making his rounds, he opened a door on one of these floors. Suddenly, flames raced across the room toward the machines. They never made it. In seconds, heat from the blaze set off a sprinkler head which checked the flames, preventing a disastrous fire.

"Gasoline cans, we discovered, had been planted near each machine. A path of sawdust, gasoline-saturated, wound from the cans to the doorway. The door frame had been thoroughly soaked with gasoline. And two exposed wires were cleverly twisted around one of the hinges on the door so as to cause a spark the moment the door opened.

"Here was the 'perfect crime'. A building destroyed so completely by fire that no one would ever know how it happened. The scheme mis-fired only because one important detail had been overlooked — our automatic sprinkler system."

Most fires, of course, start accidentally. But no matter how they start, Grinnell Sprinklers stop fire at its source. Wherever and whenever it strikes, night or day, automatically. 75 years experience proves this.

The time to act on Grinnell Protection is now... before fire burns you out, or cripples your business. Remember — a Grinnell Sprinkler System often pays for itself in a few years through reductions in insurance premiums. So if you have fire insurance, you're probably paying for Grinnell Protection anyway... why not have it! Write for booklet on Grinnell Automatic Spray Sprinklers — new in method, spectacular in performance. Grinnell Company, Inc., 250 West Exchange Street, Providence, Rhode Island.
The eyes of Texas are on the skyline these days. Latest of the gleaming giants to rise above the plains is the new Gibraltar Life Insurance Building in Dallas. This imposing structure, air conditioned by the Carrier Conduit Weathermaster System, is eleven stories high. Eleven additional air conditioned stories can be added as Texans' demands for space go up. • Notice the vertical fins on the building exterior. These are not merely ornamental, but an innovation in architectural design that combines beauty and utility. Within the vertical fins run the primary air supply conduits and water lines for the Conduit Weathermaster System. This space-utilizing design and application technique make more usable space available. • All air supplied to the Weathermaster units, located beneath the window stools, is outside air—filtered, humidified or dehumidified, heated or cooled in the central primary equipment. Merely by turning a dial, occupants control room temperature as they like it. • Wherever new skylines are sprouting, or old buildings are being modernized, you'll find Carrier. In Dallas alone, 80% of all the multi-story buildings that are completely air conditioned, are air conditioned by Carrier. • Let us send you further information about the Carrier Conduit Weathermaster System. Write direct to: Carrier Corporation, Syracuse, New York. Consulting Engineers—Landauer, Guerrero & Shafer Architect—Thomas, Jameson & Merrill Mechanical Contractor—Farwell Company, Inc.
If you've ever yanked up a built-in cap flashing to get at the base flashing...

And then tried to make it lie flat without cracking at the bend...

Then you know why it's better to use the new

**CHASE® one-piece thru-wall FLASHING and CAP FLASHING RECEIVER!**

Because you can use cold rolled copper for cap flashing. You can insert it easily after the base flashing is in... without the use of plugs, fillers, or wedges! The receiver stays open, even under the weight of the finished wall.

Send today for specifications and details.

Chase Brass & Copper Co., Dept. AF1253
Waterbury 20, Conn.
Please send me your free folder on the new Chase One-Piece Thru-Wall Copper Flashing and Cap Flashing Receiver.

Name: ____________________________
Position: __________________________
Firm: ______________________________
Street: _____________________________
City: _______________________________
State: _____________________________
(If same as firm)
TOPS IN TOPLIGHTING

Now, you can create entirely new layouts... for buildings of every type... by specifying WASCOLITE VENTDOMES to toplight and ventilate through one roof opening.

See Sweet's Catalog, or write for new Wascolite Ventdome folder.

WASCO FLASHING COMPANY
89 Fawcett Street • Cambridge 38, Mass.
Eight rooms, that is, thanks to "Modernfold" movable walls—and to patented "Modernfold" switch tracks. One minute this church basement is a single room, perfect for large groups. The next minute "Modernfold" doors come out of the "side pocket," then roll smoothly and quietly along overhead switch tracks to form as many as eight private classrooms.

Your ideas come to life... for life with "MODERNFOLD" doors

For every room division or door closure problem, there's a simple, economical, space-saving solution. That's "Modernfold," the original folding door.

Specifying "Modernfold" doors keeps clients happy. For these steel-framed, vinyl-covered doors can't be equaled anywhere for quality of design... for quality and strength of materials.

And because this line is complete, you're sure to save time and get exactly what you want when you specify better looking, easier operating, longer lasting "Modernfold" doors.

Better Looking
Fabric covering conceals all operating mechanism. No cornice needed. Adjustable trolleys keep doors hanging flush to jamb.

Longer Lasting
Balanced hinge construction both top and bottom. Trolleys attached at hinge intersections. No sideways twist or pull possible.

Better Background
Over 100,000 "Modernfold" doors now in operation—a backlog of space engineering experience that's your guarantee of satisfaction.

YOU CAN’T GET MORE IN A FOLDING DOOR

Sold and Serviced Nationally

NEW CASTLE PRODUCTS, NEW CASTLE, INDIANA

In Canada:
Modernfold Doors, 1335 Greene Avenue, Montreal

New Castle Products
P. O. Box No. 545
New Castle, Indiana

Please send full details on "Modernfold" doors.

Name
Address
City
County
State

COPYRIGHTED NEW CASTLE PRODUCTS 1953

NEW CASTLE PRODUCTS INC.

THE MAGAZINE OF BUILDING
HEATING ONLY THOSE ROOMS WHICH ARE IN USE

JOHNSON

DUAL Temperature

CONTROL

AUTOMATICALLY

SAVES FUEL DOLLARS IN CHURCHES!

First Baptist Church, Flint, Michigan. Swanson and Associates, architects
Bloomfield Hills, Michigan; Hyde & Bobbio, mechanical engineers
Detroit; Gayette Heating Co., heating contractors, Flint.

Today's modern religious buildings often serve as centers for the activities of church clubs, and social and community organizations. Frequent use by these groups on days and at hours other than those used for religious services creates a serious heating problem, since heating the entire building when it is only partly occupied is an obvious waste of fuel.

Thrifty church planners have found the answer to this heating problem in the Johnson Dual System of Automatic Temperature Control. Johnson Dual Control makes it possible to maintain reduced economy temperatures in unoccupied rooms or areas, yet provides normal occupancy temperatures in any room or rooms which are in use. This distinctive advantage of Johnson Dual Control quickly results in fuel savings that more than pay for the cost of the system.

Assured comfort at the lowest possible fuel cost is one of the many outstanding features of the new First Baptist Church in Flint, Michigan. With Johnson Dual Control in command of the heating system, all thermostats in the building may be reset, from a central point, to maintain reduced economy temperatures throughout the entire church when it is not in general use. Yet, if one or more rooms are occupied, merely pushing a button on any of the Johnson Dual Thermostats restores the temperature of that particular room to the normal comfort level. The reduced economy temperatures prevail in all of the unoccupied rooms.

Any building, large or small, old or new, can enjoy the comfort and economy of Johnson Dual Control. Ask a Johnson engineer from a nearby Branch Office to give you the full story of how this modern, waste-free system of automatic temperature control can be applied to your buildings. There is no obligation.

JOHNSON SERVICE COMPANY, Milwaukee 2, Wisconsin. Direct Branch Offices in Principal Cities.

Known as the “narrowest little skyscraper” in the West, this modern structure appears as a sheer block of blue glass. Actually the exterior finish is of grey-blue porcelain SEAPORCLAD spandrels alternating with a series of continuous bands of wide, sealed windows.

The SEAPORCLAD panels lend architectural harmony to the whole, giving the building a functional appearance with a pleasing simplicity of design.

There are a few areas in which Seaporcel Metals, Inc., is not represented. Inquiries from interested agents are invited.

For Some Job...Somewhere... You Can Use SEAPORCEL*

Let Seaporcel’s successful applications be your guide to future planning...write for brochure #24

SEAPORCEL* Insulated porcelain panels (flat-as-glass) are of sandwich construction combining the use of various cores laminated under high pressure to skins of diversified metals. It is available in the widest range of textures and colors to harmonize with practically every type of structural material and architectural mood. SEAPORCLAD is permanent and of lasting, indestructible beauty.
COFAR* cuts concrete costs, reduces construction time by months! Here's how...

ARRIVES CUT TO FIT
Cofar "tough-temper" steel units arrive at the job site cut to fit the building frame. They are conveniently bundled for individual bays which eliminates on-the-job sorting.

EASY TO PLACE
Weighing only 2 lbs. per sq. ft., units are easily handled. Cofar placing follows directly behind structural steel erection. Units are welded in place, providing additional lateral strength to the building frame.

TRADES MOVE IN FAST
As soon as Cofar units are placed, working trades move in. Concrete floor and roof slabs become a one-stage operation. Corrugated sheets serve as a tight form, provide complete positive reinforcing at the bottom of the slab.

SAFE—STRONG—DURABLE
Cofar monolithic floors provide complete plate action for concentrated loads and horizontal forces. The smooth, corrugated underside of the units provides an attractive ceiling at no extra cost when plaster and acoustical ceilings are not required. Hot-dip galvanizing insures building life permanence.

*WHAT IS COFAR?
Cofar, a trademark of Granco Steel Products Co., is manufactured from extremely high strength cold-reduced steel. It consists of deep corrugated steel with T-wires (transverse wires) welded across the corrugations in manufacture.

Cofar units provide main reinforcement, while the T-wires provide composite temperature reinforcement, mechanical anchorage and shear transfer from the concrete to Cofar. Thus, with Cofar serving as both permanent form and reinforcing, reinforced concrete floors may be constructed without using costly and combustible wood forms.

Completely eliminates wood forms
Imagine cutting months from the construction time of new buildings...gaining additional space for occupation or rental, months ahead of schedule! That's exactly what architects and engineers are doing by specifying Cofar concrete construction.

By combining form and reinforcement in one manufactured product, Cofar completely eliminates the need for wood forms. Cofar floors are quickly placed, secured by welding, used as a working floor by trades and then covered with concrete. Result: A safe, high-strength floor.

Cofar provides all the positive steel needed in the structural concrete slab, saves weeks in building time. Moreover, Cofar design requires no special training or procedure. It can be done by any Architect-Engineer using conventional concrete formulae. Investigate the advantages of evolutionary new Cofar concrete construction today.
Today your clients are aware of the disastrous and far-reaching effects of a major industrial fire. More and more this new attitude toward firesafety is placing the burden of responsibility on you.

Industrial management has seen how a serious fire not only destroys a plant, but can also reach out to cripple, in one way or another, many related plants. Your clients need wise guidance in seeing to it that their present and future structures are fully protected from the ravages of fire.

Fortunately, the particular type of information and assistance you need is within easy reach. An expert C-O-TWO Fire Protection Engineer is ready and willing to help you with any or all industrial fire hazard problems.

There is a personal sense of responsibility inherent with C-O-TWO Fire Protection Engineers that assures fully adequate firesafety... a definite plus in your behalf. Whether it's fire detecting or fire extinguishing... portables or built-in systems... C-O-TWO means top quality backed by experienced engineering that results in operating superiority for your clients at all times.

Any qualified architect or consulting engineer working on industrial construction is welcome to utilize the benefits of our extensive fire protection engineering experience, as well as obtain a free copy of our comprehensive brochure entitled, “C-O-TWO Fire Protection Equipment (Code A/CE)” by writing on his letterhead. Get the facts today!
FOAMGLAS® roof insulation helps Maytag maintain accurate temperature and humidity control

FOAMGLAS roof insulation, installed on their Research and Development Building in 1944, has given outstanding insulating performance to The Maytag Company, Newton, Iowa. Maytag reports that insulating their roof with FOAMGLAS has proved an effective aid in controlling with constant efficiency the temperatures and humidities in their laboratories. FOAMGLAS does not absorb damaging moisture which can cut the efficiency of ordinary insulations. This has made FOAMGLAS a major factor in maintaining lower heating and air conditioning costs for Maytag during the past nine years. Maytag's experience has led them to state that they will select FOAMGLAS for their future insulation requirements.

Like Maytag, your clients will be well satisfied when you specify FOAMGLAS for the roofs, walls, floors and ceilings of their buildings. The moisture-proof sealed glass cells of FOAMGLAS assure long, constant insulating efficiency... its rigidity and high compressive strength provide excellent structural and load bearing characteristics... and FOAMGLAS is fire-proof and rot-proof. To learn how you can best use FOAMGLAS, send for our brand new booklets covering its use for normal temperature buildings, refrigerated structures, piping and equipment. Write now, indicating your specific interest, to Department D-123...

PITTSBURGH CORNING CORPORATION
One Gateway Center • Pittsburgh 22, Pa.

Within this modern Research and Development Building The Maytag Company carries out its program of translating ideas into better products to make life easier for the homemaker.

TYPICAL ROOF SECTION

3 PLY BUILT-UP ROOFING
FOAMGLAS
1 PLY 15* FELT
PRECAST CONCRETE ROOF DECK

Architect (Superintendent):
Wladimir Kiwans, Bevan and Berg, Des Moines
Engineer:
The Austin Company, Cleveland
General Contractor:
A. H. Neuhauser & Son, Company, Des Moines
Pipes:
Drake Roofing Company, Des Moines

Workmen find that the lightweight, easily handled blocks of FOAMGLAS are installed surprisingly fast. They are even able to move loaded wheelbarrows across the surface of the FOAMGLAS without damage to this strong rigid insulation.

FOAMGLAS®
the cellular glass insulation... it stays dry!

Pittsburgh Corning also makes PC glass blocks
Unsurpassed performance and comfort in incandescent lighting is achieved by this recessed Elipticone Light Multiplier.

95% of the light output is directed below 45°. Wasteful glare-zone light is converted into useful work-zone light. As a result, effective light intensities are doubled or operating costs are halved.

So complete is the shielding that, in normal viewing positions, a dramatic unawareness of the light source results.

The inverted reflecting surface is self-cleaning. Relamping is through bottom opening by hand or with lamp changer.

Full data on the unit is on page 25 of the ART METAL catalog. Write for a copy.
For sprawling industrial plant or institutional building, "modern" flat roof dwelling or towering skyscraper — nothing provides such economical, superior and long-lasting protection as a Barrett Specification® Roof.

Leading architects and builders have long preferred Barrett for roofing. They know that Barrett materials, specifications and application procedures result in the most enduring built-up roof ever devised...a roof that regularly outlives its guaranty bond. That is why so many of the important buildings constructed year after year are Barrett-roofed.

BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

205 W. Wacker Drive, Chicago 6, III.
36th St. & Grays Ferry Ave., Philadelphia 46, Pa.
1327 Erie St., Birmingham 8, Ala.
In Canada: The Barrett Company, Ltd.,
5551 St. Hubert St., Montreal.

ARCHITECTURAL FORUM • DECEMBER 1953
The shortage of nurses and doctors, and the ever increasing need for hospital facilities have made it vitally necessary to provide adequate electrical signaling systems. Auth systems save help, save time, save energy, save money — but most important of all, they promote greater efficiency. Specify AUTH for the assurance that comes from dealing with "the leader in the field."

AUTH HOSPITAL SYSTEMS INCLUDE:

- NURSES’ CALLING SYSTEMS  
  (Locking Button and Pull-cord Types)
- THE VOKALCALL SYSTEM  
  ("Whisper-control" Audio-Visual Communication between Patients and Nurse)
- ATTENDANTS’ EMERGENCY ALARM SYSTEM FOR NEURO-PsYCHIATRIC PATIENTS
- DOCTORS’ PAGING SYSTEMS  
  (Voice Paging and Silent Visual Types)
- STAFF REGISTER SYSTEMS  
  (Doctors’ In-and-Out Registers, Illuminated)
- NIGHT LIGHTS
- CLOCK SYSTEMS (CENTRALLY CONTROLLED) AND ELAPSED TIME INDICATORS
- FIRE ALARM SYSTEMS
- INTERIOR TELEPHONE SYSTEMS
- RETURN CALL ANNUNCIATOR SYSTEMS FOR NURSES’ HOMES

Auth’s thorough and long experience in this field is available to you, without obligation, if you desire technical advice or guidance in preparing specifications. Literature, too, is available — please write to the Auth Electric Company, Inc., 34-20 Forty-fifth Street, Long Island City 1, New York and mention the systems or equipment that interest you.
The World's Largest
Exclusive Manufacturer of
CERAMIC GLAZED
STRUCTURAL TILE!

For more than thirty years Arketex Ceramic Corporation, the pioneers in the field of ceramic glazed structural tile, has written its own success story in the pages of American industry. A story of growth and progress . . . of top quality products and sound management.

Of these accomplishments ARKETEX is justifiably proud:

- Completely modern plant facilities, which include eleven circular continuous kilns.
- An outstanding group of distributors, capable of assisting our customers from design to completion.
- Over 600 employees, each a specialist in the manufacture of ceramic glazed structural tile.

Our complete facilities are at your service at all times!

ARKETEX CERAMIC CORPORATION • Brazil, Indiana
a study in three types of industrial wall construction with Alcoa Aluminum

Concerned with the increasing cost of masonry construction, Duquesne Light Company, serving the greater Pittsburgh area, made studies of possible alternates. The walls of Elrama—the company's newest power station—are the result of the findings. An artful adaptation of readily available prefabricated aluminum panels to three different wall problems, they more than meet the specifications: a smart, modern appearance, low construction cost, long life with minimum maintenance.

Alcoa has worked with many architects, designers and engineers to develop aluminum applications for commercial and industrial buildings. The results of this work can be applied profitably to your next project whether it be new construction or modernization. For complete information call your local Alcoa sales office. You'll find the number listed under "Aluminum" in your classified directory. Aluminum Company of America, 1887-M Alcoa Building, Pittsburgh 19, Pennsylvania.
COAL HANDLING STRUCTURES include crusher building, containing machines which crush coal before transfer to bunkers, and transfer building. Both are sheathed with readily available Alcoa® Industrial Roofing and Siding because of its resistance to the corrosive action of coal dust and water.

BOILER ROOM WALLS are Robertson Q-panels, two feet wide, 3¼ inches thick, sixteen feet long. Glass fiber cord provides insulating value equivalent to that of 12-inch brick and hollow tile masonry wall. Panel exteriors are fluted Alcoa aluminum sheet, interiors are faced with flat Alcoa aluminum sheet.

CONTROL HOUSE and west wall of turbine room required walls that would pass four-hour fire test. Insulated precast concrete panels were used as core, Sandwich-type construction features two layers of concrete with two inches of cellular glass between. Weather facing is Alcoa aluminum sheet matching other walls in appearance.
Even at press-time, there's comfortable quiet in the offices and work areas of Baton Rouge's State Times and Morning Advocate Building. The roar of presses, the rattling of Linotypes, and the clatter of teletypes are greatly subdued. In selecting the proper material for each area of the building, three of Armstrong's acoustical materials were chosen.

In the newspaper's composing room, a ceiling of low-cost Cushiontone soaks up as much as 75% of the noise. Armstrong's Perforated Asbestos Board backed up by a glass-wool blanket was used in the press-room. In the lobby, private office, and corridors where appearance is especially important—a fissured mineral wool ceiling of Armstrong's Travertone complements the ultra-modern decor.

As this building demonstrates, no single material can solve every sound-conditioning problem. That's why Armstrong offers you a variety of acoustical materials, each with its own special features. For full details, call your local Armstrong Acoustical Contractor. And for the free booklet, "How to Select an Acoustical Material," write direct to Armstrong Cork Company, 4212 Rooney St., Lancaster, Pennsylvania.
Public housing’s future

President’s housing advisers would continue program but link it with rehabilitation, build less projects

American Municipal Assn. hears public housing branded paternalistic but continues to endorse it

With issuance of the President’s housing policy commission report, the stage was set this month for what seemed sure to be the building industry’s major debate of 1954: what to do about public housing.

The 23-man commission headed by HHF-Administrator Albert Cole left untouched the hottest potato, how many units should be started next fiscal year. The advisors left that up to Congress, which will have to make the final decision anyway. Even anti-public housers agreed that the government could not back out of building the 35,000 units in various stages of planning. So a good guess on fiscal 1954-55 starts was anything from this year’s level—20,000 starts—to the 25,000 to 35,000 starts that PHA had asked the Budget Bureau to approve.

New directions. The housing advisors recognized that the federal government would have to stay in the welfare business of subsidizing the cost of shelter for low-income families. But they suggested some major shifts in emphasis for public housing. As PHA Commissioner Charles Slusser has been urging lately, they suggested that less public housing be put up in vast institutional projects, that more of it should be single-family or duplex units that fit into residential neighborhoods and—more important—lend themselves to ultimate sale to their inhabitants. They recommended that payments to local communities in lieu of taxes be made mandatory by law for public housing.

Most significantly, they urged that public housing be permanently tied to rehabilitation and other local efforts to repair slums. The method: before any city could qualify for an allocation of public housing units, the proposed Urban Renewal Administration (beefed-up successor to HHFA’s urban redevelopment division) would have to certify that the city was making a sincere effort on its own behalf to rehabilitate slums and prevent new slums from forming. The housing committee did not propose to let the Public Housing Administration have the power to decide whether cities met the qualifications. The clear implication: it did not trust PHA staffers to make such decisions impartially.

At the American Municipal Assn. conference in New Orleans, rehabilitation received a pat on the head from the highest federal official yet to remark on the NAHB-NAREB plan to outlaw slum conditions. Presidential Assistant Sherman Adams, after visiting the pilot rehabilitation block in a rundown Negro section of the city, told the nation’s mayors it was “a wonderful project.” Said Adams: “I have been impressed, as have so many others, with the ingenious and effective approach which you in New Orleans have made in experimenting with your own problem. I was interested enough in it to go out and see it this morning. Here is a laboratory for many a community in America which is confronted with like conditions. I know that with private initiative and public cooperation, there are possibly thousands of such programs which can be both sound and successful with much the same approach.”

Public housing defended. Adams’ views contrasted strikingly with those of PHA Commissioner Charles Slusser, another speaker at the conference. Slusser, hewing to the standard line of public housing advocates, declared: “It [public housing] is the best tool we have for rehabilitating the slums of America and the people that live there . . . I think the federal government is the only body, with certain notable exceptions, that is in any position to establish sufficient credit to enable us to provide public housing.”

The angriest words over public housing came from Mayor Joseph S. Clark Jr. of Philadelphia and Mayor Norris Poulson of Los Angeles as they debated whether AMA should continue to endorse the program. Said Clark: “I have no desire to belittle the value of rehabilitation. We must make a major effort to renew existing dwellings before they become totally obsolete. Adequate zoning and health codes are also a vital part of urban renewal. But these things are not in themselves enough. They do nothing to increase the supply of modern housing . . .” Clark charged that Los Angeles’ housing program was “atavistic and irresponsible.” He insisted: “The heart of the problem is to be found in the Housing Act of 1949. We need large federal subsidies.”

Poulson retorted that public housers favor “paternalistic government.” He warned: “If the AMA takes sides in this issue, it’s the death knell of AMA. It all resolves down to what is your philosophy of government. Do you believe in the sanctity of man, or do you believe that the government is supreme? We give lip service to free enterprise. Why can’t we accomplish the same thing within the framework of private enterprise? . . . Did public housing take care of the poor? It took care of the people in the $50, $60 and $70 rent brackets.”

After hearing the two mayors, Slusser, and NAHB’s rehabilitation director, Yates Cook, who told what rehabilitation can do, but did not decry public housing, the AMA voted to maintain its support for public housing.

* Smartest advocates of rehabilitation do not argue that fixup drives alone are enough. But they think those should come first.
**BUILDING STATISTICS:**

Los Angeles construction outlays top New York's by 18%.

Where did the most building take place during the all-time record construction year ending this month? Based on Bureau of Labor Statistics reports for the first nine months, Los Angeles had the greatest volume of any city. Outlays there reached $258 million through September, a handsome 18% lead over second-place Los Angeles had the greatest volume of any city. Outlays there reached $258 to $252 million. Through Sept. '52, New York led Los Angeles, of $281 million. A year earlier, the mushrooming West place New York's $281 million. A year earlier, the mushrooming West

**BUILDING EXPENDITURES IN URBAN AREAS**

(expenditures in millions of dollars)

<table>
<thead>
<tr>
<th>City</th>
<th>1952</th>
<th>1953</th>
<th>1952</th>
<th>1953</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta</td>
<td>$27,756</td>
<td>$61,586</td>
<td>$7,053</td>
<td>$27,363</td>
</tr>
<tr>
<td>Baltimore</td>
<td>44,195</td>
<td>67,693</td>
<td>8,412</td>
<td>20,313</td>
</tr>
<tr>
<td>Chicago</td>
<td>150,918</td>
<td>160,740</td>
<td>39,893</td>
<td>53,574</td>
</tr>
<tr>
<td>Cleveland</td>
<td>43,544</td>
<td>69,857</td>
<td>14,352</td>
<td>37,478</td>
</tr>
<tr>
<td>Dallas</td>
<td>81,979</td>
<td>84,651</td>
<td>32,596</td>
<td>31,195</td>
</tr>
<tr>
<td>Denver</td>
<td>53,692</td>
<td>54,839</td>
<td>16,749</td>
<td>28,844</td>
</tr>
<tr>
<td>Detroit</td>
<td>97,205</td>
<td>134,632</td>
<td>42,729</td>
<td>68,632</td>
</tr>
<tr>
<td>Houston</td>
<td>85,273</td>
<td>97,471</td>
<td>22,309</td>
<td>33,170</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>258,560</td>
<td>331,128</td>
<td>60,917</td>
<td>101,855</td>
</tr>
<tr>
<td>Milwaukee</td>
<td>54,150</td>
<td>62,413</td>
<td>19,087</td>
<td>27,600</td>
</tr>
<tr>
<td>New Orleans</td>
<td>66,072</td>
<td>62,494</td>
<td>24,522</td>
<td>27,000</td>
</tr>
<tr>
<td>New York City</td>
<td>252,663</td>
<td>281,225</td>
<td>99,224</td>
<td>91,151</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>87,657</td>
<td>93,689</td>
<td>39,317</td>
<td>81,620</td>
</tr>
<tr>
<td>Portland</td>
<td>40,649</td>
<td>41,964</td>
<td>17,144</td>
<td>14,808</td>
</tr>
<tr>
<td>San Diego</td>
<td>70,619</td>
<td>71,924</td>
<td>13,457</td>
<td>15,461</td>
</tr>
<tr>
<td>San Francisco</td>
<td>40,991</td>
<td>36,896</td>
<td>24,348</td>
<td>16,100</td>
</tr>
<tr>
<td>Seattle</td>
<td>47,630</td>
<td>42,635</td>
<td>23,820</td>
<td>16,600</td>
</tr>
<tr>
<td>Washington, D.C.</td>
<td>45,475</td>
<td>59,750</td>
<td>12,766</td>
<td>21,705</td>
</tr>
</tbody>
</table>

**TOTAL CONSTRUCTION**

<table>
<thead>
<tr>
<th>State</th>
<th>Total</th>
<th>Nonresidential</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>$1,094</td>
<td>$328</td>
</tr>
<tr>
<td>New York</td>
<td>552</td>
<td>192</td>
</tr>
<tr>
<td>Texas</td>
<td>529</td>
<td>133</td>
</tr>
<tr>
<td>Ohio</td>
<td>503</td>
<td>137</td>
</tr>
<tr>
<td>Illinois</td>
<td>497</td>
<td>167</td>
</tr>
<tr>
<td>Michigan</td>
<td>426</td>
<td>146</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>376</td>
<td>118</td>
</tr>
<tr>
<td>Florida</td>
<td>253</td>
<td>86</td>
</tr>
<tr>
<td>New Jersey</td>
<td>257</td>
<td>78</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>239</td>
<td>77</td>
</tr>
<tr>
<td>Florida</td>
<td>239</td>
<td>77</td>
</tr>
</tbody>
</table>

**BUILDING COSTS**

Building costs for commercial and factory structures and apartment hotel and office buildings, as compiled by E. H. Bocchi & Associates, dipped a fraction from September to October. The commercial and factory index for October was 255.0, compared with 255.3 in August and 255.6 in September. The apartment-office-hotel index was 255.4, compared with 255.8 in August and 255.8 in September. Smith, Minchman & Grytle's building cost index for November was unchanged at 268.

**MATERIALS PRICES**

Materials prices charted by the Bureau of Labor Statistics fell for the fourth successive month. The November Index was 119.5, compared with 120 in October (and the 1947-49 average as 100). The drop from the July peak of 141.3 was substantial: almost 1.50%. Last month's decline was caused mainly by lower prices for Douglas fir and southern pine lumber, hardwood flooring, copper wire. Early this month Armstrong Cork Co. increased hard-surfaced floor covering prices 2 to 5%. Other producers were expected to follow suit.

Construction expenditures declined less than seasonally in November, and were almost 5% greater than during Nov. '52. Commercial construction outlays soared to an all-time monthly high of $190 million. For the first 11 months of the year, $321.1 billion had gone into new construction alone. That was almost 7% more than for the same period in 1952 in dollars, about 3% more in physical volume.
Half-merger, a new recipe for problems of city and suburbs, gets trial in Toronto

On Jan. 1, 12 suburbs will cease to be part of York County and join Toronto, Canada in a semi-merger that is being watched keenly by US city planners as a pacesetting solution to the woes of cities strangled by their suburbs.

The new political creation is called The Municipality of Metropolitan Toronto. It compromises with suburban jealousy of local autonomy by letting the 12 suburbs keep their identity, their local government and most of their civic jobholders. But it gives the metropolitan government enough tax and fiscal power to cope with area-wide problems that defied solution by voluntary cooperation.

Left to the old municipalities are police and fire departments, garbage disposal, sidewalks, public health and sanitation, distribution and sale of electricity, public libraries, financial aid to hospitals, licensing and local regulations, and the direct levy and collection of taxes.

But a new metropolitan council will take over water supply, sewage disposal, planning and construction of arterial highways, education, transit, tax assessments, metropolitan parks and green belts, and all capital outlays (through control of debentures). Subject to the authority of the metropolitan council, the 12 suburbs and Toronto proper will continue in charge of retail distribution and sale of water, local sewage connections, local streets, street cleaning, lighting and traffic control, elementary and secondary school standards, public relief and some other welfare services, local jails, magistrates' and juvenile courts, local recreational facilities, public housing and redevelopment schemes, local planning, zoning and sub-division control.

Typical test ground. Toronto strikes experts as a good testing ground for the experiment. It is already the center of Canada's most heavily populated region.* And the problems spawned by its collar of political satellites bear close resemblance to the problems of many a US city.

For 82 years after its incorporation in 1830, Toronto grew logically, reaching out from time to time to annex built-up areas which logically belonged in the metropolitan limits. But landowners complained that downtown commerce and industry were being overtaxed to provide schools and other services for the underassessed fringes. In 1912, Toronto called a halt to expansion.

While city boundaries remained static, overflow population swelled the suburbs, especially after World War II. Between 1941 and 1951, Toronto grew less than 1%. The metropolitan area gained a healthy 22%. The result, as explained recently by Frederick G. Gardiner, chairman of the new metropolitan council: "The separate municipalities were not very much concerned about what was happening to themselves or interested in the general and proper development of the whole area. Half a dozen of these local governments, in the absence of substantial industrial development, were unable, with a reasonable tax rate, to provide essentials such as water, sewage disposal and schools. Some even stopped issuing building permits."

This naturally aggravated the postwar housing shortage. Only Etobicoke, North York and Scarborough (see map) still had space left for big housing developments. But all three had a low industrial to residential assessment ratio, which made it so hard to finance new services that all three were forced to restrict homebuilding. In North York, for instance, industry and commerce accounted for only 19% of assessed valuations, leaving home owners to foot 81% of the tax bill. Says Gardiner: "Unless your industrial assessment is at least 50%, you're going to go broke slowly, or ... fast."

Volunteer unity fails. There were several attempts to free Toronto from its shackles. The Toronto and York Planning Board was set up in 1947 as a metropolitan area planning body, but without power to expropriate land or spend money. So its plan to build area-wide arterial highways ran into a wall of diverse municipal interests. After a 1949 study, the board recommended an annexation plan by which Toronto would immediately absorb eight of the surrounding municipalities and take in the others over four years. But this scheme was quickly pigeonholed in the face of opposition from every municipality except Toronto and tiny Mimico. Said one baffled planner: "You've got 13 councils, 13 reeves (mayors), 13 deputy reeves, 13 clerks, 13 treasurers and 13,000 guys afraid of losing their jobs." Says Gardiner, who was once reeve of Forest Hill: "For five years, that planning board sat there and tried to solve problems on a cooperative basis. It didn't work."

Then Toronto asked the province of Ontario for permission to annex the suburbs. The province turned the city down. But it came up with the outlines of the plan for the metropolitan council and halfway unification instead. With modifications, it was voted into effect last spring by the provincial legislature.

Something for all. So that all 12 suburbs could be represented, the metropolitan council became a 25-man body—an unwieldy number, but the best politically possible solution. Its composition: the mayor of Toronto, the two (of four) Toronto controllers with the top vote in the last election, the alderman with the top vote in each of Toronto's nine wards, plus the reeves of the 12 satellite townships, towns and villages. Thus city and suburbs are equally represented. The first $15,000-a-year chairman, Gardiner, the 25th member, was appointed by the provincial government. After Jan. 1, '55, the council will elect its own boss.

The most urgent job since the council began organizing in mid-April has been reassessment. Each of the 13 municipalities has had its own system, some based on half the actual value of property (converted to 1940 values), others at one-third or one-quarter. By March, the metropolitan council is due to draw up its first budget (probably some $40 to $50 million dollars for one year). And it will assess levies against each municipality—assessments the local governments will be compelled to meet on the basis of uniform property valuations. Local governments can collect additional taxes to finance their local activities (or provide higher standards of service than the metropolitan level). So the tax rate may vary in each of the 13.

How much will it cost? No one knows for sure yet whether taxes will rise, or if so, how much. Fear of higher taxes was a...
SURCO is your best choice of cementious flooring materials because its versatility makes it ideal for almost any flooring job. In industrial plants and textile mills where other concrete floors have failed in months, SURCO floors have an outstanding performance record.

SURCO is the only material which provides concrete, mortar and plaster with the combined qualities of adhesion, resilience, elasticity, and durability.

For Parking Decks or Loading Docks

SURCO ½ inch thick was applied over this parking garage top deck completely waterproofing it and at the same time providing the additional qualities of durability, traction, and high resistance to oil, grease, and gasoline.

SURCO Red Label mix has given this loading dock a durable yet resilient surface capable of high impact-resistance. 500 lb. steel drums dropped on this floor caused only dents and not the start of disintegration such treatment would have produced on ordinary concrete.

Write today for a copy of our descriptive folder.

SURFACE COATINGS, Inc. 110 Pear Street, S.E., Atlanta, Georgia
focus of opposition to creation of the metropolitan council. Chairman Gardiner has promised that there will be "no undue tax increases" from the metropolitan council. But some individuals and companies seem sure to face higher levies. One forecast is that the new assessment will be about $1 billion higher than the 1953 total for the area, $1.76 billion. Some experts think education costs will be the main cause if taxes go up. Taxpayers in all 13 communities will share the cost of a three-year, $15 million school construction program, although most of the schools will be built in outlying areas.*

**Ahead: annexation?** Will the new metropolitan setup lead eventually to complete amalgamation of Toronto with its satellites? Gardiner thinks if the council succeeds it may end the need for more unification. But more people seem to feel it is an icebreaker leading toward a single metropolitan government for Greater Toronto.

Says David Brown, reeve of Lassise: "We are jealous of losing our community spirit. We know that if we do, it will lead to total amalgamation, and that's what we're most afraid of." At the moment, Brown concedes, "there's not much active resentment." But he adds: "We're waiting to see the taxes."

Says Fred Gardiner: "For 40 years this area has been shackled by 13 local municipalities, all geared to local prejudices, practically all of them standing in their own way, in the way of their neighbors. . . . These Johnnies aren't going to sit in council as a government and an opposition, or with the Toronto members on one side and the suburban members on the other. They're going to sit all together, see the job that has to be done, and they'll soon forget the year of the big wind that has taken place. We're going to have . . . the best-run municipality in North America.

*A metropolitan board of education, composed of representatives of the local boards of education, will set over-all policies, guarantee a minimum level of outlays for education and control school construction, assume all existing school debarments.

**General predicts good work conditions for Spanish bases**

US contractors who get in on the big Spanish naval and air-base construction program will find working conditions "as favorable as you have been led to believe." Maj. Gen. Lee Washbourne, Air Force director of installations, gave the New York Building Congress that prediction last month as he outlined the timetable for the big job. Washbourne said a prime contractor will probably be picked by the first of the year. By late summer, "substantial actual work" should be under way, he said, "although the program will take about three years to complete in "orderly fashion." Two months ago, Pentagon spokesmen advertised the cost as $200 million. This month, Congressional sources put a price tag of $1 billion plus on the deal.

**SIDELIGHTS**

**No blame in Scarsdale collapse**

A grand jury decided that the collapse of a partially completed, four-story concrete building in Scarsdale, N.Y., last summer (AF, Aug. '53, News) was not caused by "culpable criminal negligence." The July 10 accident killed three workmen and injured ten. The jury found that at the time of the accident the building contained "certain defects in design, material and construction which may have caused or contributed to the collapse." It made two stern recommendations: building codes throughout Westchester County, many "totally inadequate," should be modernized or replaced with the New York State building code; local codes should be amended so that responsibility for supervision can be fixed, preferably on an architect-engineer supervising the construction.

**Lily ponds and built-in bars**

Herbert A. Leggett, vice president of the Valley National Bank in Phoenix and editor of its monthly bulletin, expressed himself on the metamorphosis of executives' offices rocked by modern decorators. These office centers are regularly primary as places in which to work, said Leggett, are today "designed along the lines of a botanical garden or the boudoir of Madame du Barry. Basic equipment includes a chaise longue, a built-in bar, a putting green and a lily pond. . . . A flashlight comes in handy, too, because the indirect lighting is so indirect that it is difficult to distinguish the executive from the bronze Buddha."

**New architect groups**

At AIA's Des Moines regional meeting, a newly formed National Assn. of Registered Architects was presented with its charter of incorporation—from the State of Missouri. The group's chief aim: standardization of architectural licensing laws to make it easier for young architects to work. Explained President Harold A. Casey of Springfield, Mo. (who is an AIA member): "We're first-degree Masons; AIA is the shrine," AIA's directors chartered three new chapters: Monterey Bay in California, and southeast and west Texas, raising AIA's chapter roll to 111.

**Heat pump cuts fuel bill**

A reverse-cycle heating system (heat pump) in Pietro Belluschi's 12-story, aluminum-clad Equitable Savings & Loan building in Portland, Ore. (AF, Sept. '48) is saving the organization several thousand dollars a year. J. Donald Kroeker, consulting engineer, said it costs only $773.63 a year to operate the pump, compared to $4,930 for a steam system or $3,430 for oil. (For details, see p. 136).

**Needed: a new text**

Is there no nontechnical textbook on architecture in print that is suited for undergraduate survey courses? Professors at Boston University Junior College raised that question after examining several likely volumes and finding them all wanting. So the college thought it might fill the gap by preparing such a book itself. Asked for advice, AIA approved and hailed, admitted its education committee had pointed out a need for such a test but that plans to do something about it had been shelved. AIA felt "much concerned" as to who would undertake the project for Boston University, thought quite definitely it should be a person "trained in the architectural profession."

**British take to giddy heights**

London got its first batch of skyscraper (12-story) apartment buildings last month. In view of the fact that few buildings in the city are more than seven stories high (because of formerly strict height restrictions) the new 112' structures, containing a total of 130 apartments, were described as "revolutionary." It was feared at first, in fact—according to one doff official at opening ceremonies—that families scheduled to live on the upper floors might refuse to live "at such great heights."

**Trustbusters clear the air**

The course of antitrust suits against various segments of the construction business under GOP rule took on a clearer pattern. The Supreme Court agreed this month to review a lower court decision in Illinois dismissing the government's monopoly charge against two AFL plasterers' and lathers' unions and two employer associations in Chicago.

The government had charged that Chicago plaster contractors barred out-of-state firms from the metropolitan market through a complex system of agreements with lathers. It also contended that both unions would approve only their own members as contractors, thus driving building costs artificially high as the number of lathing contractors in Chicago shrank from 100 to 36.

The judge did not rule on the issues. He held interstate commerce was not involved. But he virtually invited appeal by observing: "The Supreme Court might see this matter otherwise . . . it certainly is a matter for the Supreme Court to interpret." Review proceedings, brought through an appeal by the Justice Dept., will be in the works for the non-appeal decision. The decision will be worth the wait. In September, 89 cement companies were let off the hook as an eight-year-old case against them was dropped. Antitrust Chief Stanley Barnes felt called upon to point out that the basic purposes of the suit had long since been achieved: dissolution of the Cement Institute, an end to basing-point pricing and no more identical bids on government contracts.

In Cleveland, a consent decree was negotiated in a case against 14 building-materials supply companies. They agreed not to fix prices or use any uniform pricing system, but denied the government's case was valid.
SURPRISES EVERYWHERE
AND EFFICIENCY THROUGHOUT

• For more than 20 years surprise has followed surprise in the operations of The Springs Cotton Mills, and the designing and furnishing of its new office building was no exception. Following are some of the surprises which 15,000 people saw during opening days. The walls are suspended from the roof instead of supporting it. Each floor extends beyond the one below it. Windows are almost invisible, being set at a 45 degree angle to permit maximum light and minimum sunray heat. A conference table, topped by a section of the parquet floor, rises and joins the president’s desk when a push button is pressed. Much of the office furniture was partially made of discarded parts of mill equipment. Coupled with the innovations at Springsmaid Headquarters are building products of recognized superiority, such as Sloan Flush Valves, famous for efficiency, durability and economy. Their selection is added evidence of preference that explains why . . .

more Sloan Flush Valves
are sold than all other makes combined

Sloan Valve Company • Chicago • Illinois

Another achievement in efficiency, endurance and economy is the Sloan Act-O-Matic shower head, which is automatically self-cleaning each time it is used! No clogging. No dripping. Architects specify, and Wholesalers and Master Plumbers recommend the Act-O-Matic—the better shower head for better bathing.

Write for completely descriptive folder
Chicago redevelopment sets fast pace for other cities

- Lake Meadows project begins an in-town shopping center
- Mies designs plan for world's largest convention hall

Denver's George R. Morrison, a past president of NAREB's Institute of Real Estate Management, came away impressed from a recent visit to Chicago. Said he: Every other big city I have visited is merely talking or dabbling at rebuilding itself. Chicago really seems to be getting something done."

Chicago indeed was getting something done—more than a lot of people realized. This month, its impressive list of large downtown renewal projects grew even longer.

Its city garage program was off to an auspicious start (p. 128). As New York Life's huge Lake Meadows project progressed, work began on its large in-town shopping center (see cut). Soon officials would need to make definite decisions about two more large public projects: the city's long-deferred civic center, and a gigantic convention and exhibition hall.

Air rights. For some years, the city has procrastinated over a civic center. In 1949 the Chicago Plan Commission recommended a site, an area a little west of the Loop and extending across the Chicago River over two blocks of train sheds just north of Union Station (AF, May '49). In October, however, air rights over these two blocks (marked A on the cut at the right) were leased with a third block, south of the station, to Simon Bros., the New York builders. They expect to announce architects and engineers next month, and hope to start a $75 million group of office and machinery exposition buildings before summer.

A week after this project was announced, the West Central Assn., a private trade organization, urged the city council to put the civic center on the west side of the river, as illustrated, and to authorize an $8 million municipal office building as its first structure. The council, without much opposition, ordered a special study of this proposal.

State funds for hall. The biggest hurdle to a civic convention and exhibition hall was cleared when the legislature voted earlier this year to give Chicago $5.7 million of state parimutuel taxes for it. The problem will be where to put it and what it should look like. Last month the South Side Planning Board got the jump on competing districts with a plan for the largest auditorium and convention hall in the world designed by Architect Ludwig Mies van der Rohe (see cuts at right and on p. 45).

This proposed hall was a perfect example of Mies's devotion to structural materials used without embellishment and his concept that an architect's job is to build a shell

AGAINST THE TREND of locating new stores in the suburbs, this 17-acre shopping center was started this month in Chicago's populous south side as part of New York Life Insurance Co.'s Lake Meadows redevelopment project. The center was designed by Skidmore, Owings & Merrill, will have 100,000 sq. ft. of floor area for more than 30 stores, parking space for 1,200 cars.
MACOMBER
STANDARDIZED STEEL
BUILDING PRODUCTS
AND THE ADVANCED
ENGINEERING
OF EACH PRODUCT
HAVE MADE THE NAME
MACOMBER
a Tradition
among Architects
and Builders

How You Benefit From STANDARDIZATION

No. 1 ANY MACOMBER PRODUCT YOU SPECIFY has been accurately engineered to
the best ratio of weight to load carrying capacity.

No. 2 Since all Macomber products can be specified by a symbol, number or names—
the basic engineering has already been done. YOUR item is cataloged—ready
to be produced for a given span, load, height.

No. 3 When STANDARDIZATION replaces individual engineering of each product with
line production, you gain in delivery time, production cost and the absolute
uniformity of day in and day out quantity production of the same item.

For a bid that will win—SPECIFY MACOMBER. No name has more universal
acceptance in Engineered Construction!

ORIGINATORS OF THE
OPEN WEB STEEL JOIST

STANDARDIZED STEEL
V BAR JOISTS • LONGSPANS
STEEL TRUSSES • STEEL DECK
MACOMBER INCORPORATED
CANTON 1, OHIO
• ENGINEERING • FABRICATING AND ERECTING •
In allocating $4 million in Title I loan funds and an $858,000 capital grant to rebuild a 12-block slum of shacks and small commercial enterprises in Birmingham, Ala., HHFA noted that the formal contract would not be signed until there was assurance the redevelopment would "benefit all segments of the community and that there be no discrimination against any group because of race, creed or color." Last summer, NAACP protested that new housing included in original plans would exclude Negroes. The site now is home to 523 Negro families, 92 white ones. Result: planners eliminated all housing. The de-slummed 60 acres will be used to expand the adjoining University of Alabama Medical Center (where Negro doctors are not admitted). Because of reports that housing that barred Negroes might be restored to the plans after the federal grant was made, HHFA formally reminded the city's redevelopment agency that: all leases or conveyances of Title I redevelopment land must contain permanent covenants against racial or religious discrimination; such land can be reused only for purposes specified in the redevelopment plan; while HHFA would consider approving changes in plan, it would not approve any revision to include housing again "unless appropriate provision were made for equitable and fair provision for the housing needs of Negro families." No new policy was involved, explained Title I Boss James W. Follin. HHFA cannot legally require mixed race living; it can only prohibit discrimination. Some Birminghamers, however, thought HHFA was using the letter of the law to wink at its spirit.

Virginia became the 13th state in which the highest court has upheld the right of redevelopment land must contain permanent covenants against racial or religious discrimination; such land can be reused only for purposes specified in the redevelopment plan; while HHFA would consider approving changes in plan, it would not approve any revision to include housing again "unless appropriate provision were made for equitable and fair provision for the housing needs of Negro families." No new policy was involved, explained Title I Boss James W. Follin. HHFA cannot legally require mixed race living; it can only prohibit discrimination. Some Birminghamers, however, thought HHFA was using the letter of the law to wink at its spirit.

In Chicago, Dutch Architect Willem Dudok, on tour as a guest of AIA, echoed Dorfles' feeling about lack of city planning. "It is high time for us town planners to think not only of the expansion of towns but also of their restriction," he advised. Without referring to the theories of the man who had just introduced him, Ludwig Mies van der Rohe, Dudok went on: "Why only visible construction should be considered as honest work has never become clear to me. Along the heath, behind my house, runs an electric railway with excellent and honestly constructed portal frames of reinforced concrete. And how ugly it is! How it disfigures the landscape!" Dudok added: "I maintain that building becomes art only when it is sublimated by beautiful and harmonious space proportions, which ingeniously express the purpose and especially the cultural significance of the building." He thereupon hastened out of town to spend the Thanksgiving holidays with Frank Lloyd Wright in Arizona.

Wright made his own verbal headlines at a dinner in his honor given by the Northern California Chapter of AIA at the Mark Hopkins in San Francisco. "I am ashamed of my profession," he told 600 dinner-jacketed guests. "There are no architects any more. There are only employees. Nowadays the prizes for buildings go to corporations, not to men. The successor to Sir Christopher Wren is Lever Brothers." Wright criticized "mediocrity in high places," the domination of the machine and the crippling effects of "what is called education"—among other matters—and then announced he was 84 and getting tired. "To an old one," he said, "I've built 540 buildings in my life. I've written too many books and talked too much. But I know that unless we make of this democracy of ours what it is meant to be, unless we preserve the independence and individuality which is the key of democracy—we're sunk." The room was silent. "Well," said Wright, "make of that what you will," and sat down. The audience made enough of it to stand as one architect and applaud.

Harold D. Hauf of New Haven, former professor of architectural engineering at Yale University and onetime (1949-51) editor of Architectural Record, was appointed director of public and professional relations for AIA.

Hauf, 46, received a BS degree in architecture at the University of Michigan in 1927 and his MS from Yale in 1932. He has been on the Yale faculty for 24 years (he is now a research associate), taking leaves of absence for two terms of Navy service, in World War II and during the Korean action, for a five-month stint in 1946 as director of the technical branch of the old National Housing Agency and for his time on the Record. He is a past-president of the Connecticut chapter of AIA and author of Design of Steel Buildings.

CONGRATULATIONS: To Beaux-Arts schooled Architect Arthur Brown Jr., 79, of San Francisco, for being elected one of the 50 members of the American Academy of Arts and Letters. He takes the lifetime chair formerly occupied by Sculptor Adolph Alexander Weinman, in recognition of work which includes San Francisco's City Hall, Opera House, War Memorial and Coit Tower and the Department of Labor and Interstate Commerce Buildings in Washington, D.C.; to...
Newark's Cathedral of the Sacred Heart
One of the World's Great Cathedrals
is equipped with
WING DRAFT INDUCERS

Now moving to completion after fifty years of building, this magnificent edifice combines the architectural splendor of the past with today's utilitarian advancements. An example is the up-to-the-minute equipment that comfortably heats the spacious interior.

Handling a total load of 70,000 sq. ft. EDR are three H. B. Smith gas fired boilers. Even though a chimney was provided, consulting engineers decided that proper draft and removal of waste gases required a WING Draft Inducer for each boiler. Barometric dampers with relief gates were mounted integrally on each Draft Inducer.

The positive, dependable draft, in just the right volume, created by WING Draft Inducers assures efficient combustion at all times despite weather conditions, and without the need for tall stacks. Write for a copy of Bulletin 1-52.
Yes, in the three gleaming stainless steel towers of Pittsburgh’s new Gateway Center office building project, USF Hevi-Duty Commercial Hollow Steel Doors and Frames were used throughout the entire building core. Yes, in Pittsburgh’s new 525 Wm. Penn Place Building, USF Doors and Frames were used, too. The reasons: initial economy, clean design and workmanship, low cost installation and completely dependable durability. Why not investigate?

- Flush Design
- Famous Inner-Weld Door Construction
- 1½-Hour UL-Label
- Uni-Weld Frames

United Steel Fabricators, Inc.
Wooster, Ohio
Best seeing conditions, essential to good schooling, are provided by Miller Lexington at low overall cost. High levels of comfortable illumination. Extremely low brightness. Long-life finishes. Quickly installed. Rigid 1-piece steel louver chain-drop assembly simplifies lamping and maintenance. A sound investment. Write for details.

**DESIGN:** Functional—clean, simple lines.

**EASY 2-way lamping**—1 ladder position.

**STRENGTH:** Rigid 1-piece steel louver.

---

**THE miller COMPANY, Meriden, Connecticut**

LEADERS IN LIGHTING SINCE 1844

---

**NEWS**


---

**Investment bankers blast US college housing loans**

If anything makes a banker see red, it is socialized lending. Last month, the Investment Bankers Assn. of America saw red at HHFA's loans for college dormitories. Convening in Hollywood, Fla., the association declared, in effect, that the way the $300 million program works, it is an effort to repeal the law of supply and demand. The result, said the bankers, is an "unnecessary and costly operation [imposed] on the taxpayers."

Specific complaints:

- "In many instances" government loans for college housing have been made through HHFA "at rates less than that which the Treasury can borrow through the sales of bonds with a life anywhere nearly commensurate" with that of the 40-year college loans.

- "It is evident from . . . advertisements made for public bids on such issues that knowledge of what the agency [HHFA] is authorized to do and has done regularly in the way of rates leads the educational institutions to place conditions in their public offerings which of themselves not only discourage, but practically prohibit, any dealer or investor from bidding for the issue"—thus establishing their eligibility for government financing.

- "As a practical matter, the results of [the college housing loan law] are in effect a directive that the federal agency does the underwriting of these loans . . . and private business is eliminated."

As originally authorized in the Housing Act of 1950, schools could get dormitory loans from the US at interest 1½% above the rate on the most recent government issue with a maturity of ten years or longer, provided private financing was not available on terms comparable to the government's.

Last June, Congress changed the interest formula. For each half year, the rate is now reset to equal at least the average return on all federal bonds maturing in 15 years or more, as indicated by open market trading in each May and November, plus overhead which is added by HHFA. Currently the rate is 3.5% (0.375% of it added by HHFA). Next month it will probably drop, reflecting the rise in bond prices from May to November. Extra free ride: excluding overhead charges (which are less than FHA mortgage insurance premiums), when the government makes a 40-year loan, it charges the borrowing school only the
Both free-standing and ceiling-high J-M Movable Walls are used to create these private and semi-private offices. They may readily be dismantled and re-created in a new arrangement to meet changing space requirements.

For future changes in your present space

**Johns-Manville Asbestos Movable Walls provide offices when and where you want them**

YOU can rearrange existing offices or partition new space quickly and economically with Johns-Manville Asbestos Movable Walls.

These flush-type, asbestos panels have a clean, smooth surface that's hard to mar, easy to maintain... and extra strong to withstand shock and abuse. Also, they are light in weight, easy to install and relocate. The "dry wall" method of erection assures little or no interruption to normal business routine. Johns-Manville Asbestos Movable Walls may be used as ceiling-high or free-standing partitions. The complete wall, including doors, glazing and hardware, is installed by Johns-Manville's own construction men under the supervision of trained J-M engineers — responsibility is undivided.

For details about Johns-Manville Asbestos Movable Walls, consult your Sweet's Architectural File, or write Johns-Manville, Box 158, Dept. AF, New York 16, New York. In Canada, write 199 Bay Street, Toronto 1, Ontario.

**Johns-Manville Asbestos Movable Walls**

INSTALLED NATIONALLY BY JOHNS-MANVILLE
NEWS

average cost of 15- to 30-year money, because it has no bond issues running over 30 years, and only one issue for that long.

IBA did not urge the government loan program be ended. It recommended two key changes: eligibility should be based only on inability of the school to obtain financing at prevailing fair rates for other loans of the same type from private sources; interest and repayment terms, up to a 40-year period, should be set by HHFA.

Congress authorized $300 million in college loans. For the last three fiscal years, it has limited actual outlays to $40 million, $60 million and $50 million. Up to Nov. 30, HHFA had shoveled out $91.4 million in US money for 101 college housing projects.

New rules for measuring office space adopted in NY

For years tenants, owners, building managers, appraisers and mortgage lenders have been plagued by confusion for lack of a universal system of measuring floor areas in office buildings. Some measurements included every bit of area within the exterior walls. Others excluded corridors, lavatories, service closets. At the conservative extreme, some measurements omitted subareas too small for desk and chair.

Compounding the problem after World War II was construction of block-type structures that have air conditioning and high-intensity lighting, and, when rented to entire-floor tenants, dispense with space-consuming central corridors typical of prewar buildings. In some, toilets and service areas serving only one tenant were classified as rentable area; in others this space was not measured as rentable.

Standard sought. In 1949, the Real Estate Board of New York recognized that brokers, managers and architects alike suffered from the public confusion over the multiplicity of yardsticks. It appointed a subcommittee headed by Realtor Hanford M. Twitchell to draft rules that would command universal acceptance. The American Standards Assn. also took an interest in the problem, and in 1951 asked the New York Realtors and the National Assn. of Building Owners & Managers to help it set a national standard. The ASA in fact named four subcommittees of its committee on measuring floor areas to draft standards for measuring office, industrial, school and government buildings.

On the office subcommittee were Twitchell, Henry Lear of Philadelphia, chairman of a NABOM committee working on the problem, and, as chairman, the late N. Stanley Bortner of Baltimore. Now Bortner has been succeeded as chairman by ex-NABOM President James F. Cook.

Last month, the efforts of the New York Real Estate Board's subcommittee bore fruit. The board began wide distribution of revised rules, planned a new policy to help make them effective. Formerly the board tried to encourage members to note in
When it comes to the pipe in your plans—

Specify NATIONAL all the way!

Whether you are planning for a conventional hot water or steam heating system, for fire control and plumbing lines, or for a modern radiant heating application or a snow melting installation, remember that NATIONAL, the world’s most widely used pipe, has all the necessary qualities for complete adaptability in all these services. As a busy architect and engineer this means to you—no worries, no doubts, no uncertainties—just a simple specification of the one word “NATIONAL” relieves you of any and all further checks or investigations. It’s as easy and as simple as that.

Why? Well, “old timers” will tell you that confidence in NATIONAL to fill the bill is born of years of experience and observation, upon thousands and thousands of installations in America’s finest and costliest structures. But most important of all, it is based on the comforting knowledge of NATIONAL’s uniform, dependable, trouble-free performance, the kind that architects and engineers feel proud to pass on to their clients.

For over three quarters of a century, each new generation of architects, engineers and contractors have looked to NATIONAL with complete confidence to meet all mechanical requirements. They know that while old in name and rich in service records, it is ever new and modern to fit today’s requirements. And so, whatever type of service your plans call for, you will find both satisfaction and profit in specifying NATIONAL “all the way.”

Here’s why NATIONAL Pipe gives the most service per dollar cost:

1. It’s Uniform Throughout—National Pipe is uniform in metallic structure, ductility, strength, corrosion resistance, surface finish and diameter.

2. Threads and Cuts Easily—Absence of slag inclusions, laminations and blisters assures smooth, strong threads... clean cuts.

3. Coils and Bends Well—National Pipe has that extra strength and ductility so necessary to meet the demands of close and exacting fabrication.

4. Makes Sound Joints—Uniformity and accuracy in manufacturing have made unequalled pipe jointing records for National Pipe... whether welded or threaded.

5. It’s Scale-Free—National Scale-Free Pipe avoids damage to valve seats and clogging of small orifices.

6. It’s Spellerized—Special rolls work the bloom surface to eliminate irregularities and produce a dense, uniform surface.

7. Constantly Improved—For over 60 years, National Steel Pipe has constantly been improved to meet the most difficult requirements.

8. It’s Tested and Inspected—Each and every stage of production is carefully checked by the finest instruments... thoroughly tested by the most experienced men.

9. Controlled from Start to Finish—From the raw material to the finished product, one organization has rigid control over the manufacturing steps that produce National Steel Pipe.

10. Nationwide Acceptance—A cross section of industrial or building applications will show a predominant use of National Pipe... largest selling pipe in the world.
WHEN ROOMS REQUIRE PRIVACY...FREE FROM

NOISE!

Regardless of what other acoustical treatments you may employ to reduce noise transmission, you'll need a RIVERBANK Sound Insulating Door to complete the sound barrier. These scientifically constructed and patented doors isolate noise and prevent its passage from room to room in direct volume relation to the insulating value of the weakest acoustic area. RIVERBANK Doors are made in three laboratory certified decibel ratings to meet the full range of acoustical needs. They reduce transmission loss by 35, 40 and 43 decibels, providing as much as 70% more acoustical efficiency than a standard solid core door. Write for complete architectural specification folder on RIVERBANK Sound Insulating Doors — plus special brochure in non-technical language for clientèle use. Consult Sweet's File 1153A.

HARDWOOD SOLID CORE DOORS
In addition to RIVERBANK Sound Insulating Doors, we specialize in producing solid core flush doors, fire doors, x-ray and shielded doors for all types of public and private buildings. Most important to you — all HARDWOOD Products Corporation Doors are custom made for your job! Consult Sweets.

OFFICES IN
NEW YORK
BOSTON
CHICAGO
CLEVELAND

NEW FOLDER
Especially prepared in understandable sound-decibel language describes RIVERBANK Doors. Write for free copies.

HARDWOOD PRODUCTS CORPORATION • NEENAH • WISCONSIN

THE MAGAZINE OF BUILDING
Create in lasting color with Architectural Terra Cotta!

For new construction or modernization, Architectural Terra Cotta offers unlimited design freedom. This versatile building material is custom-made in an unlimited range of ceramic colors, in units large or small, for exteriors or interiors, plain surfaces or decorative sculpture. At an initial cost far less than you would expect, Architectural Terra Cotta enables you to create attractive buildings with walls of lasting beauty. Moreover, the original richness of the glazed surface can be retained indefinitely by simple soap-and-water washings. Today, write to Federal Seaboard for latest data.

Construction detail, data, color samples, estimates, advice on preliminary sketches, will be furnished promptly without charge on Architectural Terra Cotta and Ceramic Veneer.
"Our architectural designers were right..."
PC Glass Blocks give perfect natural lighting and they look beautiful,”

says Charlotte Partridge, Director, Layton School of Art, Milwaukee, Wis.

When talking fenestration, officials of the Layton School of Art asked for two things: 1) superb daylighting, an essential for any art project and 2) handsome appearance, because an art school building should embody the principles of good design.

PC Glass Blocks did both jobs. The architectural designers worked out a unique 24-foot cantilever that completely eliminates vertical columns in the entrance facade. Not only that, but they allowed the light to come in below the windowsills. By using the proper light-diffusing PC Glass Blocks, this below-eye-level illumination is comfortable, pleasing and highly useful.

According to Miss Partridge, “We consider our building to be a fine integration of beauty and function. Light transmitted by PC Glass Blocks is undistorted in color and is ideally distributed throughout our studios.”

The insulation qualities of the new building are splendid. There is no cold zone near the glass block panels. What’s more, Miss Partridge has found that PC Glass Blocks are very easy to maintain. They do not require as frequent cleaning, and they are so easy to clean, both inside the building and outside. A wipe with a damp cloth is all that is necessary.

With PC Glass Blocks to help you, you can promise superior daylighting and attractive appearance to your clients. PC Glass Blocks cost no more than any quality fenestration, because they eliminate the need for shades, overhangs, blinds and louvres, and they reduce maintenance, heating and air conditioning bills.

Send coupon for the complete story.

Pittsburgh Corning Corporation
PITTSBURGH, PA.

ARCHITECTURAL FORUM • DECEMBER 1953
Like a veteran trouper, Vina-Lux gives top performance when the spotlight goes on it in this busy TV station. It looks good and stays good-looking under all conditions. It takes the tough, harsh abuse of fast changing sets, heavy foot traffic and the punishing rolling loads of cameras and lights. Its lustrous beauty is kept bright with simple, quick mopping—no need for prolonged scrubbing that ties up studio time.

Vina-Lux does all this—performs brilliantly under the spotlight—because it’s a “showcase” floor. Because its vinyl-asbestos structure gives it a brilliant, satin-like surface that resists the wearing-in of dirt and grime—a built-in surface sheen that makes waxing unnecessary.

In fact, there’s nothing ordinary about Vina-Lux. This versatile flooring has extraordinary flexibility, remarkable resistance to greases, oils, and alkalis, and breath-taking beauty as well. These qualities make it America’s leading vinyl-asbestos tile.

On TV station floors . on shop, factory or home floors . on any floor, Vina-Lux will do a better job. Find out why—send today for a copy of the new Vina-Lux catalog complete with color charts and helpful data.

UVALDE ROCK ASPHALT CO.
FROST BANK BUILDING • SAN ANTONIO, TEXAS
Makers of AZROCK • AZPHLEX • VINA-LUX • DURACO
“Azrock Makes Fine Floors”
Announcing A NEW 2-PIECE CAP FLASHING

Top photo shows a typical installation of the new, Revere-Keystone 2-Piece Cap Flashing of oil-copper construction. Note the snug fit and neat appearance.

Insert is furnished in 51" lengths, for recommended overlap of 3" minimum. Width is 4" on exposed face, to allow for a minimum 3" overlap of the base flashing.

Receiver is furnished in 49" lengths (48" layup), with 1" overlap in a locking tongue dam which assures proper alignment. REVERE-KEYSTONE 2-PIECE CAP FLASHING IS AVAILABLE IN TWO IN-THE-WALL FORMS.

a) Standard 4" flat copper receiver; with 1/2" hook dam.

b) Combination receiver and thru-wall flashing (shown in isometric above).

- Fits snugly and neatly against wall
- Leaves wall free for placement of base flashing
- Can be disassembled for repairs to base flashing

THIS REVERE-KEYSTONE 2-PIECE CAP FLASHING is your answer to an enduring, fine-looking protection against leaks and seepage. That flashing with sheet copper is the most durable and practical method of weather-proofing masonry structures has been proved for centuries. However, the usual 1-piece cap flashing presents certain difficulties. The new Revere-Keystone 2-Piece Cap Flashing, developed from years of experience and service to the building field, overcomes these difficulties. Here are a few of the outstanding features of this new flashing!

FREE WALL—It provides the roofer with an unobstructed wall face for the placement of the base flashing. Receiver is laid in during construction of wall, while the insert is snapped in only after all roof and base flashing work is finished.

STRAIGHT CLEAN LINE. PERMANENT GOOD LOOKS—Factory-bent to precise dimensions. This, with the one-inch locking tongue, assures alignment of receiver slots, uniform appearance.

PERFECT WEATHER-SEAL—Factory-formed angles on the receiver and insert cause latter to hug the base flashing, weather-seal effectively. Water cannot blow up behind flashing.

VERTICAL RECEIVER SLOT ON WALL FACE—Position of vertical receiver slot on face of wall eliminates possibility of the receiver slot being crushed shut by weight of masonry.

CAN BE DISASSEMBLED—Insert can be removed with a simple tool and used again, with no loss of neatness or snugness, when the built-up base flashing or roofing have to be repaired.

REVERE COPPER AND BRASS INCORPORATED

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

SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS
Another Case of Copper

Where it Counts

Utica State Hospital
(Medical and Surgical Bldg.)
Utica, N. Y.

New York State Dept. of Mental Hygiene—Newton J. Bigelow, M.D., Commissioner

There's copper, copper, everywhere on this new hospital building. Note particularly, that copper covers the spots where trouble-free performance counts most. For copper is the metal that has proven its worth down through the centuries. As a result, when architects design structures such as this they turn to the metal they know they can trust . . . copper. There is not another single metal or alloy, old or new, that has all of the desirable construction characteristics of copper. There is not another metal or alloy that has been in use so long or has become so universally accepted.

Other valid reasons why copper is preferred for flashing and roofing are: Copper is easy to bend and form into any desired shape and thus lends itself to every type of design. Its soldering properties are unmatched. It is non-rusting. It costs less per year of service. It grows old gracefully, taking on an attractive patina with use.

Next time you write specs, remember: there is no "OR EQUAL" for copper for flashing, roofs, gutters, downspouts, valleys, etc. A Revere Distributor near you stocks Revere Sheet, Strip and Roll Copper. Particularly ask him about the money-saving advantages of Revere-Keystone Thru-Wall Flashing* and the new Revere-Keystone 2-Piece Cap Flashing.** If you have technical problems, your Revere Distributor will put you in touch with Revere's Technical Advisory Service.

*Patented  **Pat. Pend.

Revere Copper and Brass Incorporated

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


SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS
A SECTION OF THE Utica State Hospital from which can be identified in drawing below, the many vital spots where Revere Copper is used.

60,000 LBS. of 16, 20 and 32 oz. Soft and Cold Rolled Revere Plain Copper were used on this Medical and Surgical Building.

THE FLAT SEAM ROOFS over the canopies are also of non-rusting, enduring Revere Copper.
Merchandise Mart, Chicago, Illinois, the largest business building in the world—4,023,400 square feet of floor area. Built in 1928 to 1931.

Chicago's Famous Merchandise Mart Called for Karnak

**WATERPROOFING PRODUCTS**

Twenty-five years ago, the problem of protecting the foundation of the "Mart" from hydrostatic head was answered with Karnak. Even though the big Chicago River flows beside it, this Karnak job holds secure.

Why was Karnak chosen? Because it is the membrane system of waterproofing that holds tight against any water condition.

Karnak is an open mesh long-fibre cotton cloth that has been heavily impregnated with highly refined asphalt so as to leave the mesh open. It is layered, on the job, with alternate moppings of asphalt to provide a tough, resilient, waterproof membrane. The non-sticking fabric unrolls easily... to the very end. It "works" faster and with no waste... saves labor costs.

The Karnak Membrane System is best for roof patching, skylight flashing, window and door flashing, through-wall and cornice flashing, as well as waterproofing against a hydrostatic head in dams, swimming pools, viaducts and tunnels. Send coupon for complete information. Manufactured by Lewis Asphalt Engineering Corp., 30 Church Street, New York 7, N. Y.

Other Karnak Products

- Asphalt Roof Coatings
- Aluminum Roof Coating
- Asphalt Emulsions
- Tile Cement
- Wood Block Mastic
- Coupling Compounds
- Asphalt Paint
- Joint Filler

**LEWIS ASPHALT ENGINEERING CORP.**

30 Church St., New York 7, N. Y.

Please send me **FREE** information about KARNAK Membrane System of Waterproofing

NAME__________________________

ADDRESS_____________________

CITY__________________________

STATE________________________

Other items I'd like to know about________________________

---

**EVENTS**

University of Houston lectures—Mies van der Rohe, Jan. 7; Buckminster Fuller, Feb. 11; Alfred Roth, Apr. 1: Eero Saarinen, May 6.

National Constructors Assn., annual convention, Jan. 12-14, Hotel Commodore, New York City.

American Institute of Electrical Engineers, winter general meeting, Jan. 18-22, Hotel Statler, New York City.

Mason Contractors Association of America, annual convention and exposition, Jan. 24-27, Sherman Hotel, Chicago.

American Society of Heating and Ventilating Engineers, annual meeting, Jan. 25-27, Rice Hotel, Houston.

Society of Plastics Engineers, annual technical conference, Jan. 27-29, Royal York Hotel, Toronto.

Presstressed concrete conference, Jan. 28-29, University of Toronto. For details address Prof. C. F. Morrison, Civil Engineering Dept.

Society of Architectural Historians, annual meeting, Jan. 28-31, Bellevue-Stratford Hotel, Philadelphia.

Associated General Contractors, annual convention, March 1-4, Statler Hotel, Los Angeles.

Boston Institute of Contemporary Art, an architecture and design exhibition of the works of Gio Ponti and Gyorgy Kepes, March 4-4, in Boston; will be available also for general circulation.

The Peale Museum, Baltimore, “Blueprint for Tomorrow” exhibition of accepted designs for buildings soon to be erected in the Baltimore metropolitan area, including Annapolis and the area east of Silver Spring, March 7-May 2. For details regarding preliminary submissions address the Peale Museum, 225 N. Holliday St., Baltimore 2.

Air Pollution Control Assn., annual meeting, May 3-5, Chattanooga.

National Savings & Loan League, annual convention, May 9-14, Jung Hotel, New Orleans.

American Planning and Civic Assn., conference, May 18-21, Columbus.


New Jersey Chapter, American Institute of Architects, convention, June 10-12, Asbury Park.

American Institute of Architects, 86th annual convention, June 15-19, Statler Hotel, Boston.
CONVECTORS

For Use With Steam or Hot Water

Low-level for picture windows.

Coils

Heating Coils

Cooling Coils

Air Conditioning Units

Horizontal Type "YAC" Unit

Vertical Type "YAC" Unit

YOUNG

YOUNG RADIATOR COMPANY
DEPT. 604-A, RACINE, WISCONSIN

Factories at Racine, Wisconsin and Mattoon, Illinois

Sales and Engineering Offices in All Principal Cities

Heating, Cooling, and Air Conditioning Products for Homes and Industry.

Heat Transfer Products for Automotive and Industrial Applications.
Square Feet

of Door Opening in 12 Leaves

... Another Byrne "First" in Hangar Door Construction

... 26,880

... over 2½ of an acre in hangar door opening. That's what the Port of New York Authority ordered for a recently completed aircraft hangar space at New York International Airport. Here was a new problem—to build extremely wide, sliding and individually motorized hangar doors!

The solution can be noted in the picture above. Twelve steel leaves 70 feet wide and 32 feet high. Each leaf individually motorized and providing each hangar with a 140 foot opening. Finished leaves weigh over 20 tons, yet each opens at a rate of 60 feet per minute.

All hangar door openings present problems involving specialized technical skill. To assure a door that is structurally sound . . . easy and economical in operation . . . fast acting . . . dependable and weather tight . . . a competent and experienced manufacturer is the first requisite. Byrne engineers are qualified by 25 years of progressive development with doors of all kinds.

For your unusual closure problems in industrial and hangar doors of all types—turnover doors, vertical lift doors, crane entrance doors, canopy doors, sliding doors—Byrne offers unequalled solutions.

FOR INFORMATION regarding Byrne doors and facilities consult Sweet’s Catalog or write direct for our brochure.

BYRNE doors, inc.
Dept. f-2
1421 East 8 Mile Road, Ferndale, Detroit 20, Mich.

LETTERS

DESIGN STANDARDS
Forum:

Congratulations on "Design Standards and Data," which started in the October FORUM. What a pleasure it is to see a monthly effort start out on such a professional and serious basis!

JOSEPH A. McGINNIS
Architectural Specifications
New York, N.Y.

Forum:

The new department on design standards and data inaugurated in the October issue of FORUM looks very promising. . . .

The idea of supplementing Architectural Graphic Standards with such specialized items can be very useful, and we particularly like the thought that although standard accepted practices will comprise the majority of the exhibits, there will also be some innovations of detail among them, flagged as such. Good experiments in solution of details not as yet thoroughly tested over a period of time could be very useful in the further development of progressive practice.

GORDON BUSHAFT
Shidlmore, Owings & Merrill
Architects and engineers
New York, N.Y.

Forum:

The new department “Design Standards and Data,” by Harold R. Sleeper, FAIA, is an informative and useful addition to the editorial material which is so well done in FORUM. As in the past this presentation has all of the good qualities that have been inherent in Mr. Sleeper’s work. No better man could have been chosen to run this department. . . .

RALPH E. MYERS
Kivett & Myers, architects and engineers
Kansas City, Mo.

Forum:

We like the diagrammatic approach with accompanying comment and illustrations. Knowing the author after working with him the last three years on one of the National AIA committees, I feel very confident of his broad experience and project integrity.

KARL KAMRATH
Mackie & Kamrath, architects
Houston, Tex.

* For this month’s Standards see p. 144—En.

SCHOOLS
Forum:

Your October issue on schools is appreciated by the architects, devoted by school boards, argued about by administrators and, in general, is one of those wonderful issues which will become a permanent reference tool. You and your staff are to be congratulated!

J. STANLEY SHARP, architect
Ketchum, Gina & Sharp
New York, N.Y.
Forum:

... Congratulations! It is an essential contribution to the architect's contemporary design problems. I have devoted a whole week end to studying and analyzing it.

WALTER GROPIUS, architect
The Architects Collaborative
Cambridge, Mass.

Forum:

... A masterpiece. I have studied it carefully from cover to cover, and it is a veritable handbook on school building architecture for the school administrator. ...

J. FRANK FAUST, superintendent
Chambersburg Public Schools
Chambersburg, Pa.

Forum:

... A noteworthy contribution to the tremendous problem of school construction facing our country. Congratulations!

EDWARD M. TUTTLE, executive secretary
National School Boards Assn., Inc.
Chicago, Ill.

Forum:

Read it from cover to cover. It's even better than the October 1949 issue.

WALLY E. SCOTT
Caudill, Roe & Scott & Associates
Bryan, Tex.

Forum:

Your October issue has been extremely well received. . . .

IRA MCK. KOGER, president
O. P. Woodstock Co., general contractors
Jacksonville, Fla.

Forum:

Heartiest congratulations! . . . You did a superlative job of bringing order out of chaos and winnowing the wheat from the chaff. . . .

WALTER D. COCKING, editor
The School Executive
New York, N.Y.

Forum:

A fine job . . . It is very timely, for we are planning on a school clinic for the immediate tristate area. . . .

ROBERT THOMAS MARTIN, architect
Memphis, Tenn.

Forum:

... The best job on schools that has been done in many a year. I am not speaking only of the forum report, but the ideas and case histories throughout the whole issue are stimulating and thought-provoking.

Keep up the good work!

JOHN W. McLEOD, architect
McLeod & Ferrara
Washington, D.C.

Forum:

The coverage was thorough and to the point. . . . The readers of your publications are many and varied, and it seems to me you have something to say for almost anyone.

continued on p. 64
A suggestion for a future issue: it would be interesting to interview the client or user with a view to exploring the future of education in our nation. From this changing use would come a revised concept of program, and out of this program the new school of tomorrow. Having taught for nearly a quarter of a century, I am always impressed with the fact that we architects constantly are educating ourselves but not our public. Our professional panels over the nation are superb, and yet when I look around the room I rarely find the public or the clients represented. It seems to me we have now arrived at that point of maturity where a very major emphasis should be placed on this client relationship.

You are doing an excellent job in research extension, study and reporting.

WALTER T. ROLFE
Golemon & Rolfe, architects
Houston, Tex.

Forum:

A splendid documentation of the movement toward better school plants in the US.

It continues the school number of 1949 and, along with it, gives an understanding of what caused school building in the US to forge ahead to a leading position in the world.

WALTER F. BOGNER, architect
Cambridge, Mass.

Forum:

I have read the October issue with tremendous interest. Boards of education will welcome this fine issue because it gives them very practical information.

Dr. George L. White, manager
Research Service Dept.
Silver Burdett Co.
New York, N.Y.

Forum:

You have done a necessary and splendid job in your school issue, . . .

Your editorial introduction and clarification of what is involved in this sector of planning are especially grand. The young in their stage of plasticity are precious, and the architect is given a great chance and important responsibilities.

As to the ten points covered by your forum of schoolhouse experts:

1. Duplication of facilities is a weakness of our well-to-do country, which suddenly and ever so often is "scared" by shortages of funds.

2. The community significance of schools should help match and marry a general planning department of the region (with the dowry of a fine budget and a competent staff) to the board of education. Land developers will be influenced by this happy marriage.

3. I have always suggested that flexible preparedness for the unforeseen—which is really quite foreseeable in an educational evolution which has not yet jelled—seems preferable to dogmatic area assignments, however well we might study these with all current experts.
Certain-teed Gypsteel Plank was specified in this major new building at Harvard for reasons that are important to you.

Gypsteel Plank is a gypsum roof deck reinforced with steel. It is light, strong, highly flexible in application. Tongued and grooved, it assembles easily and cleanly. And because of the speed with which it can be placed, it is highly economical to use.

All important reasons for your specifying Gypsteel Plank wherever a light, strong fireproof roof deck is indicated. Write for complete technical information today.
4. Not all education has taken place under a roof—but some, most successfully, under a mango tree. Certainly, Greece, India, Guam, Puerto Rico, California are, as to training, not restricted to tight enclosure. But France, Germany, Switzerland are not either. Architecture is "thawed open" after a glacial millennium of a Nordic pattern of building.

3. The "aula" of the Scandinavian schools, in Denmark and Sweden especially, fully anticipates the use of circulation space as indoor assembly in unfavorable weather.

6. Any way to make mechanical equipment easily accessible for replacement, long before the building itself has to go, would add wonderful safety to the total investment.

7. In the essays which Oxford University Press has just printed under the title Survival through Design, I have talked about codes and school buildings, too much perhaps to keep all necessary official friendship with the authorities. Law, as codified custom, must be checked for manifold psychological encumbrances.

8. The standardized prefabs for schools had been my first idea in the "Ring Plan School" of which the Museum of Modern Art sent a model around the country in 1930. It was just as you say—"the not-too-good first notion of how to achieve economy," and "not the latest and best idea" which I have held in general or without qualification.

9. Professional know-how and personality of expression clash a little less in other countries than they seem to in ours. We must study this closely.

10. Having weighty state corporations stand back of bonds is a wonderful arrow to financing public schools. Local authorities should counsel with the expert staffs of these corporations—staffs which they are not able to keep on their own payrolls.

RICHARD J. NEUTRA, architect
Los Angeles, Calif.

Forum:
Your periodic school issues are becoming documentary records of the notable advances in school design and technique.

EDWARD H. DE WOLF
Mayo, Johnson & de Wolf, architects
Stockton, Calif.

Forum:
Your October school issue certainly showed that your staff devoted a great deal of hard work to the preparation of this excellent document. It is a splendid issue and will go a long way to help the betterment of our school plant.

All of us here were particularly impressed with your presentation of the school building forum. Without a doubt it is the most valuable material on school building cost that has ever been written. It is very encouraging to see that architects, educators and the interested laity can get together and bring such a sharp

continued on p. 70

LETTES continued
Where and When You Want It

Capable, experienced Reynolds Architect Service Representatives are available without obligation for assistance on your aluminum design problems. This nationwide service is Reynolds way of saying, "Here's help toward getting the very most from aluminum." It's proof that Reynolds is keeping pace with architects' demands on aluminum to achieve a wide variation of expression... in aluminum's many logical applications.

To gain the most from aluminum's advantages, also include standard aluminum products in your planning. Reynolds distributors, with complete stocks of architectural aluminum mill products are located across the country. Names of aluminum building products manufacturers will be furnished on request.

Reynolds Metals Company, 2528 South Third Street, Louisville 1, Kentucky.

MODERN DESIGN HAS ALUMINUM IN MIND

DESIGN FOLIO

A completely new manual on architectural aluminum with drawings for direct tracing. Please request on business letterhead.

For quick reference see catalog - in Sweet's File

SEE "Mister Peepers" Sundays, NBC-TV. Consult local listings for time and station.
make it a
One-Piece
Pipeline

with WALSEAL®

...and you can see that it's made right. When you make a WALSEAL joint the fillet of silver brazing alloy that appears at the face of the fitting is your assurance of full penetration and a permanently leak-proof joint that's vibration proof and corrosion-resistant... won't creep or pull apart under any conditions that the pipe itself can withstand.

Walseal is a registered trade-mark which identifies valves, flanges and fittings manufactured by the Walworth Company. Walseal products have factory-inserted rings of silver brazing alloy in threadless ports. Joints made with Walseal products are silver brazed and actually make the system a "one-piece pipeline."

Your copy of Circular 115 giving details on Walseal valves and fittings will be sent on request... send for it or see your nearby Walworth distributor.

WALWORTH
valves and fittings
60 EAST 42nd STREET
NEW YORK 17, N.Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD
IN 1924 the BANTA SCHOOL in Valparaiso, Indiana was equipped with POWERS Pneumatic System of TEMPERATURE CONTROL.

Miss Cheif, teacher and pupils in fourth grade inspecting Recording Thermometer chart record shown at left. Powers Type K Thermostat was set for 75° F. Note even control during school hours.

After 29 Years Charts like those shown at left.

Will the Temperature Control System you are buying today give as good regulation as this when it is 29 years old?

Again and again 25 to 50 year old POWERS pneumatic systems of temperature control pass recording thermometer tests with high marks.

Why make a major investment in a control system that has no proven record for long life, low operating and low maintenance cost? Get the most for your money. Install Powers.

Maintenance cost on this job was 11% of the installed price 29 years ago.

CHIEF ENGINEER Mr. Joseph Kutschen setting up a Recording Thermometer in one of the rooms in the Banta School, Valparaiso, Ind. Thermostats were set for 75° F.

THE POWERS REGULATOR COMPANY
SKOKIE, ILLINOIS
OFFICES IN OVER 50 CITIES IN U.S.A., CANADA, AND MEXICO • SEE YOUR PHONE BOOK

OVER 60 YEARS OF AUTOMATIC TEMPERATURE CONTROL
Flat floor model "Buffalo" PC Cabinet for installations where headspace is small. This unit provides all air conditioning functions. Flat suspended models also available.

the cabinet is the small part of your air conditioning system—

Right, "Buffalo" VPC Central Conditioning Cabinet requires minimum floor space.

Why not have the BEST?

The total cost of your air conditioning system; compressor, duct-work, building alterations and cabinet, as compared to the cost of the cabinet alone—are quite impressive. On this smallest part of your investment—on which a great deal of your satisfaction depends, why not make sure that you get the best—the cabinet which is invariably picked for the finest jobs—the "Buffalo" PC?

Sectional die-stamped factory construction insures easy handling thru standard building openings and easy installation at location. Mixed flow "Buffalo" Fans, mounted on large hollow shafts, assure quiet operation without possibility of vibration troubles. Bearings outside cabinet permit regular, easy lubrication. Aerofin coils mean the best possible heat exchange with minimum servicing, and the "Q" Factor guarantees heavy gauge construction, easy insulation, overall satisfaction.

You can undoubtedly buy cheaper cabinets, but, on our seventy-six year's reputation, you can't buy better! Be thrifty—buy the best!

—The "Q" Factor—the built-in QUALITY which provides trouble-free satisfaction and long life.

BUFFALO FORGE COMPANY
142 MORTIMER ST.
BUFFALO, NEW YORK

PUBLISHERS OF "FAN ENGINEERING" HANDBOOK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont. — Sales Representatives in all Principal Cities

VENTILATING FORCED DRAFT
AIR CLEANING COOLING
AIR TEMPERING HEATING
INDUCED DRAFT EXHAUSTING
PRESSURE BLOWING

LETTERS continued

focus on the problems of economy.

The best thing of all about your school issue is the succinct manner of presentation. I bet you are going to find out that kind of presentation, which school board members, educators as well as architects, can understand, is going to pay off in better school buildings.

You have rendered a wonderful service not only to the profession, but to the citizenry, by putting out such a splendid issue.

WILLIAM W. CAUDILL, architect
Caudill, Rowlett, Scott & Associates
Bryan, Tex.

Forum:
The caption under the photograph of the junior high school at Seattle (AF, Oct. '53, p. 176) has me listed as an engineer, and my initials are incorrect. I am a registered architect, not an engineer. However, on this particular job I did the structural engineering.

Insurance costs for this mill-frame structure were cut by adding two concrete fire walls and class "A" fire-door openings, not by putting in two concrete fire doors, as your article says.

Forum has maintained a good grade of articles and information, and has been a very useful tool for me in my profession. Please continue your publication on the same high plane as in the past and I will continue to read the magazine from cover to cover, and enjoy it as I do now.

HARRY E. BOTESCH, architect
Everett, Wash.

PLANNING IN RUSSIA
Forum:
I appreciate the review of my book, City Planning in Soviet Russia, which appeared in the September issue of FORUM.

There are several errors in the review which I would like to correct. I would hate to see my favorite architectural magazine contain even slight errors; besides, my reputation may be at stake.

First, the statement "...his book does not include details or pictures of postwar developments," may be misleading. While the book is not voluminously illustrated (too expensive for the university publishing house), it does contain numerous descriptions and references to details of Soviet postwar developments. Besides, diagrams of postwar development of such cities as Istra, Stalingrad are also included. [The book includes 19 plans and diagrams; no photographs.—Ed.]

Second, at the start of World War I, Russia's urban population was not 3½ million and by 1951 it was not 27 million. The changes that occurred at the end of the nineteenth and beginning of the twentieth centuries in the political and economic life of

continued on p. 74
How to Prevent Common Coping Troubles

... and provide all-weather protection

Penetrating rain and water seepage can cause serious damage to masonry copings. Especially in cold climates, where heaving occurs when water within the masonry freezes and expands.

If this trouble, which may dangerously weaken the parapet construction, is to be avoided, the copings should be covered. This work can be done better with copper and with assurance of long-lasting protection. Use copper of cornice temper (cold rolled) and of suitable gage. For installations of the sizes illustrated, 20-oz. copper is recommended. It is important that edge fastenings be free to slide, and that expansion joints be provided at intervals of not over 24 feet.

Do you have the FREE Anaconda file of drawings?

Each drawing shows a new or improved way to apply sheet metal. Each is printed on a separate 8½ in. x 11 in. page, handy for quick-reference filing. This entire series may be obtained absolutely FREE. Write today for Portfolio S to:
The American Brass Company
Waterbury 20, Connecticut
In Canada: Anaconda American Brass Ltd.
New Toronto, Ontario

for better sheet metal work—USE

ANAConDA®
COPPER
sightron

...trim, crisp design, fully diffused lighting

FINELY RIBBED POLYSTYRENE DIFFUSER spreads light evenly over entire fixture surface. Diffuser hinges from either side for easy relamping.

PURE WHITE SURFACES of fixture and diffuser create a built-in appearance, blend into ceiling line.

RAPID START TRANSFORMERS light lamps instantly without flicker. No starters are required.

SIGHTRON LIGHTOLIERS are available in several sizes. May be used individually or in continuous runs, suspended or surface mounted. For commercial, institutional and residential locations.

Illustrated are examples of Lightolier's wide variety of fluorescent and incandescent lighting fixtures for functional and decorative applications.

Write for free brochures of architectural lighting to Lightolier, Jersey City 5, N. J.

Lighting by LIGHTOLIER

JERSEY CITY 5, NEW JERSEY
There's no limit to design opportunities with Roddiscraft PANAWALL!

Creates interiors of striking beauty at low cost!

Usable in any combination of materials!

Roddiscraft Panawall offers unlimited decorative opportunities to architects and designers ... a chance to create interiors that win acclaim ... a chance to do an outstanding job at reasonable cost. Panawall can be used for beauty and interest on all interior walls ... on one wall of a room ... or to create a center-of-interest. Looks like costly solid wood paneling, yet costs only a fraction as much. And it requires no matching.

Panawall: The decorative material that stays beautiful!

Panawall is genuine hardwood plywood, made of random-width veneers, V-grooved at the joints. The easy-to-handle 4' x 8' x 1/4" panels are ideal for new construction or modernization. Available in Walnut, African Mahogany, American Cherry.

Get the facts on Roddiscraft Panawall now!

Find out how this new material can serve you. Ask your nearest Roddiscraft warehouse manager for details on Panawall and other Roddiscraft decorative wood walls: Craftwall, Parquetwall, Cedrela and Plyweave. He'll be glad to show you samples.
Even when temperatures are lowest and traffic heaviest, revolving doors seal out chilling air and drafts...to assure maximum comfort for your clients' customers and employees alike. Even when winter is at its snowiest and blustiest, these doors that are "always open—always closed" prevent at least 97% of the heat loss which occurs every time a swing door entrance is used.

For most users of revolving door entrances, the above facts figure up to a fat 25% saving on heating costs. And that alone is a strong reason why over 50% of all revolving door installations replace swing doors. Add the all-year advantages listed at the right—all gained ONLY with revolving doors—and you'll want the complete cost-saving story of these modern entrances. So, write now for your personal copy of the new International-Van Kannel Revolving Door Catalog. It's your guide to one of today's most profitable specifications, both for you and your clients.

---

Russia are strongly reflected in the growth of the urban population. The number of urban dwellers grew from about 3.5 million in 1851 to 15.8 million in 1897 (first Russian census), to 26.8 million in 1914. The urbanization process under the Soviet regime has progressed very rapidly; it was concomitant with the industrialization of the Soviet economy. During the intercensal period of 1926 to 1939, the urban population increased from 26.3 to 55.9 million. During and since World War II, the urban population continued to increase still further. No official statistics are available, but it may be assumed the urban population in 1950 may well have reached over 40% of the total estimated USSR population of 210 million, as against 32.8% of the total of 170 million in 1939.

Third, according to the best knowledge available, the linear-type city in the Soviet Union was not proposed by Corbusier. The principle of "La Ciudad Lineal" may be traced to its origin, the Spanish writer, D. Arturo Soria y Mata, who suggested as early as 1912 that cities be built along their main arteries of communication. A Soviet city planner, A. A. Milutin, also arrived at the linear system for cities and developed this idea further than Soria y Mata. Several of his schemes were proposed for Stalingrad, a factory town near Molotov, and one such city was built near Novosibirsk.

Fourth, the present population of Moscow is not "about 4 million." The USSR 1939 All-Union Census lists 4,137,000. In 1950 Moscow's population was already over 5 million.

Although these corrections appear minor, I would appreciate your printing them so as not to leave any stigma on the high reputation of your publication and remove any false impression on the mind of the reader as to the factual data in my work.

MAURICE FRANK PARKINS
Research associate
Institute for Research in Social Science
University of North Carolina
Chapel Hill, N.C.

---

PRIZE DRAWING
Forum:... Tuck & Eipel Consultants and the John D. Dillon organization collaborated on the drawing on p. 126 of your September issue to illustrate the air conditioning of Architect Philip Johnson's administration building in suburban Connecticut. This drawing was submitted to the Architectural League competition in New York City under joint firm names and received second in the competition. Eipel Engineering Consultants are successors to Tuck & Eipel. We were the mechanical engineers on the heating, ventilating and air-conditioning system which you stress in your article.

JOHN D. DILLON, consulting engineer
New York, N.Y.
It is just common sense that experts in any field thoroughly know their own products. So you can expect a better product in every way when you specify the Kewanee-Petro Boiler Burner Unit because you get the combined knowledge of leadership in 2 fields... boilers and burners. Here, two great companies bring together boilers and burners designed as complementary units with all parts perfectly integrated. Engineering and design have been combined for maximum efficiency and dependable production of high or low pressure steam and hot water heating using oil, gas or oil and gas combination. The Kewanee-Petro Unit is easily installed... simple to operate. The boiler, mounted on steel skids, has matched burner connections. All refractories are installed at the factory... forced draft burner eliminates necessity of a high stack... operation is completely automatic with all combustion controls mounted and pre-wired in one cabinet. Delivery from two separate factories offers important advantages. The boiler is usually wanted at the building site before the walls are up, and needing no protection from the weather, is shipped first. The burner, with control system, is delivered when wanted, after the building is roofed. It will pay you to get full information on this outstanding boiler-burner unit. Write either company, or mail the coupon.
You'll Save Thousands of Dollars with these Windows!

An average plant's painting bills come to over $3,600 every few years! You can save this money. Fenestra® Super Hot-Dip Galvanized Steel Windows are completely protected from rust! These strong, steel windows practically eliminate expensive maintenance for the life of your building and never need painting. Yet Fenestra Super Hot-Dip Galvanized Steel Windows cost remarkably little.

Fenestra is the only window manufacturer with the special plant, the electronic controls, the continuous galvanizing and bonderizing process, to Super Hot-Dip Galvanize Steel Windows.

Contact your Fenestra Representative today—he's listed in the yellow pages of phone books in principal cities. And send for your free booklet on Fenestra Super Hot-Dip Galvanized Steel Windows. Write Detroit Steel Products Company, Dept. AF-12, 2296 East Grand Blvd., Detroit 11, Michigan.

SUPER HOT-DIP GALVANIZED STEEL WINDOWS
from the only plant in America especially designed to Hot-Dip Galvanize steel windows
No costly maintenance problem here

Johns-Manville Corrugated Asbestos Transite gives this airport control tower an attractive, fireproof exterior that offers years of maintenance-free service despite exposure to extreme weather conditions.

For permanent, maintenance-free construction, plus protection from fire, rot and weather

You save money on construction and maintenance when you build with J-M Corrugated Transite®. Corrugated Transite comes in large sheets that require a minimum of framing... permit fast economical construction of maintenance-free 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, rotproof and weatherproof. Corrugated Transite is also used increasingly for smart interiors... the streamlined corrugations and attractive shadow lines that give it such unusual architectural appeal for exteriors offer unlimited interior design possibilities.

Investigate Johns-Manville Corrugated Asbestos Transite and learn how you can build quickly and easily... have an attractive, long-lasting, 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 199 Bay St., Toronto, Ontario.

Johns-Manville products}

Large sheets go up quickly
Easy to fasten to steel
Easy to nail to wood
Easy to saw
Easy to drill
DOOR DEVICES
Used in Foremost Buildings Everywhere

For over a quarter century, hardware consultants and architects have specified Glynn-Johnson door devices and specialties for efficient operation and protection of all types of doors in all types of buildings.

Glynn-Johnson Corporation
Builders' Hardware Specialties for Over 25 Years
4422 N. Ravenswood Ave.
Chicago 40, Illinois

Refer to G-J Catalog for complete line of door holders, bumpers, and specialties... for all types of doors in public and commercial buildings.
Wood County Hospital...

where Truscon "O-T" Steel Joists

Make Floors Light and Fire-Resistant

Light? Yes. The light weight of Truscon "O-T" Steel Joist construction lessens time and labor required for erection. It saves materials in supporting framework and foundations. Strong, too. Wide, specially-formed top and bottom chord members impart stiffness, and keep joists true to line. Continuous steel web member is electrically welded to the chords. Fire-resistant? Yes. Tests prove that ¾-inch of cement or gypsum ceiling plaster on metal lath protects Truscon "O-T" Open Truss Steel Joist construction against high temperatures. In fact, the majority of insurance rating bureaus recognize the merits of this construction and give it a first-class fireproof classification. Investigate this lower-cost-per-square-foot construction that assures adequate strength and safety. See Sweet's for complete specifications on Truscon "O-T" Steel Joists. Write us for literature describing the complete line of Truscon Steel Building Products.

Wood County Hospital, Bowling Green, Ohio.
Strong, Strong & Strong, Lima, Ohio, Architects.
Steinle-Wolfe, Fremont, Ohio, Contractors.

TRUSCON STEEL DIVISION
REPUBLIC STEEL CORPORATION
1102 ALBERT STREET, YOUNGSTOWN 1, OHIO

TRUSCON® a name you can build on
Here again Foldoor has played an important part in the plans of a major building project, giving the best fabric-covered folding door appearance and performance possible to obtain.

From small residential closures and partitions to this magnificent Indiana University installation, Foldoor is solving the space problems of architects everywhere.

Foldoor is the folding door immediately distinguished by its attractive cornice . . . by its new line of fabrics (from DuPont and other quality makers) that take the folding door out of the "oilcloth" appearance class . . . by its ability to stack into a minimum of 1½" per foot of opening. Construction strength and quality are uniform in all models—you never have to guess when you specify Foldoor for any size installation.

Include Foldoor in your plans. There's a size for every opening . . . there are handsome fabrics and colors to match any interior. For additional information see Sweet's Catalog or consult your nearby Foldoor distributor—there's one in every principal city.
WHAT! Modern vinyl tile flooring on, above or below grade?

YES! MATICO ARISTOFLEX IN LOW-COST STANDARD GAUGE

Because MATICO Aristoflex is vinyl-plastic throughout (no felt backing!), it is ideal for installation on concrete either on or below grade, as well as on suspended wood and concrete floors.

And how attractive its other qualities are! The smooth, non-porous surface resists acids, greases and alkalis... stays clean and fresh-looking as the day it was installed. The sparkling colors and marbleization go clear through each tile... last the life of the floor. And the 13 radiant colors offer virtually unlimited design possibilities.

Cost? In standard gauge, MATICO Aristoflex is comparable in price to greaseproof asphalt tile. It's precision-made... lays in easily, requires less handling by the mechanic, saves appreciably in labor costs.

Consider MATICO Aristoflex when next you specify tile flooring. Write today for specification data and full details.

Also available in \( \frac{1}{8} \)” thickness.

MASTIC TILE CORPORATION OF AMERICA
Dept. 6-12, P. O. Box 986
Newburgh, N. Y.

Please send me specification data, color chart, and full details on MATICO Aristoflex.

Name

Address

City Zone State
Only stucco—Portland cement stucco—offers the wide adaptability for exterior finish that is required by today's dramatic design.

With stucco, striking effects can be obtained with large, plane surfaces. It can be molded economically to any shape. It can be adapted to any color requirement.

**Meets Any Design Requirement**
It can be adapted to either modern or traditional architectural design. And, whether that design requires soft pastels, deep tones, brilliant whites or subdued grays, exacting color requirements can be met. The flexibility of stucco design is further demonstrated by the ingenuity with which architects, builders and craftsmen take advantage of the textures and contours which can be obtained economically in no other way.

In addition to its exceptional adaptability to design requirements, Portland cement stucco reinforced with Keymesh is strong, durable, fire resistant, low in cost and requires little maintenance.

**Excellent for Modernizing Work**
The Keystone System of Stucco Application with Keymesh-reinforcing can be applied successfully to any home or business structure—new or modernized—in any locality and of any design. The Keystone System provides advantages in any climate. It costs less to apply than most other types of exterior finish—costs less to maintain.

Write for your copy of the Keystone System of Stucco Application. It gives complete illustrated details.

*Keymesh, the easy-to-handle, multi-directional reinforcing lath, comes in 150' rolls, 3' and 4' wide in special wire gauges for stucco work. The open mesh design assures maximum embedment of the steel network for stronger stucco reinforcement. Write for details.*

**KEYSTONE STEEL & WIRE COMPANY**
Peoria 7, Illinois

KEYMESH • KEYBEAD • KEYCORNER • KEYSTONE NAILS
KEYSTONE WELDED WIRE FABRIC • KEYSTONE TIE WIRE
KEYSTONE NON-CLIMBABLE AND ORNAMENTAL FENCE
How to provide an economical ring system for shopping centers

To cut wiring costs in shopping centers and other multi-building systems, use high-voltage G-E Super Coronol* cables and a high-voltage distribution system. The high-voltage system will minimize power losses; and G-E cables, designed for maximum reliability, will provide dependable service with minimum installation costs.

Basically, the system: First bring in the power from the utility lines with G-E Super Coronol* cable. This cable can be run underground to a master unit substation in the basement. No conduit is needed, and overhead lines are eliminated.

At the master substation, you can supply power to load center substations, or at utilization centers to distribution panelboards—depending on the critical load pattern. A G-E V-c interlocked armor system can prove to be most economical for this use. This armored cable is flexible and needs no conduit. It can be run easily around corners and over beams to save both engineering and installation time.

Other load patterns may call for high-voltage Super Coronol cable feeders. These can be buried directly in the ground, or installed in conduit or ducts.

To supply low-voltage power to the smaller shops and other light load areas, your answer will probably be G-E Versatol* Geoprene cable feeders in conduit or ducts.

Whatever the load pattern, a planned G-E cable system will help cut wiring costs and give your client a dependable and efficient power supply. G-E engineers will be glad to help you with the planning. For more information, write Section W100-124, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

*Registered Trade-mark, General Electric Company
ELEVEN U.S. CHURCHES. Until very recently the creed of modern architecture has received only lip service in most U.S. church design. There has been substantial reason for this, the usual one, the clients. The congregation are the Medici of this age, and most of them have been very undecided about architecture; they are likely to hide on Sunday morning behind sentimental images from the past.

But today it is possible to see the beginnings of an encouraging strength in U.S. church design. There is a new affirmation and confidence in recent designs. As in the serenely welcoming facade of the Ohio church above (and on the next two pages) there is a poised expression of a real faith for our times.

SIX EUROPEAN CHURCHES, as seen by a U.S. architectural critic, are presented on p. 104.
Wide-open narthex enhances the intimate

This church is sited invitingly close to the street; from the sidewalk there is no barrier but the framing of the clear glass. Then, down the length of the church to the seclusion of the altar, space is measured in even rhythm by the welded steel frame.

The effect is calm and reasonable, but there is a contemporary splendor, too, in the high tent of space captured within the tall, peaked roof. The key to the design lies in two facts: 1) Economy was necessary, so clear glass was used instead of stained glass. 2) This visibility was also extended into the rest of the construction. Expensive finishes were not added; the high-grade construction stands revealed.
Materials are as important to the church as its lucid shape. Simple but good brick walls, pierced in some places, and 3" x 6" fir plank ceilings extend the frank character of the building, and are also good in softening reverberation. Outdoors the 70'-high cross (see p. 85) is made boldly of steel sections welded together; inside, the cross behind the altar was executed by Sculptress Laura Ziegler in steel tubing, rods and plastic inserts.

of the sanctuary
CORPUS CHRISTI ROMAN CATHOLIC CHURCH AND CONVENT
San Francisco, Calif.
MARIO J. CIAMPI, architect
JACKS & IRVINE, general contractors
ELLISON & KING, structural engineers
MARION THOMAS, mechanical engineer
CHARLES VON BERGEN, electrical engineer
ELIO BENVENUTO, sculptor
LAWRENCE HALPRIN, landscape architect

Floor plan shows clear glass screen between nave and narthex to help keep nave quiet from street noises. Mezzanine and stair (left) also calm the influence of the big glass south wall. Below, model of church complete with convent and future rectory.
Religion's old art, stained glass, newly set

The miraculous secret of stained glass for churches may not have been lost, but today it has grown terribly expensive. This is especially true for a modern church, which, like a modern house, likes to wear its glass in whole walls, not in windows poked into the walls. So something new had to be evolved to include the rich, emotionally appropriate glazing of the ancient ritual of worship into today's expressions. In this church the answer is rectangular panes of flat-hued glass in lively colors, of Piet Mondrian character, set in machine-made tracery, framed in terra-cotta colored concrete.

The entire end wall of this church beside one of the Bay City's hilly streets is an abstraction of religion, an instantly recognizable symbol of a spiritual home consistent with contemporary structure. This is not the altar end, but the narthex (in photo above, entrance is around right corner). The great glass wall is to your left as you enter. Then you turn right to go toward the altar, or left to ascend the steps (photo opposite) to the mezzanine baptistry and choir loft. But from the street, before you go in, you have been struck by the vibrant strength of the wall.

For what happens next, turn the page
On the way in,
in the narthex, you are splashed by the fluidly cast patches of light through the colored glass.

**Entrance to narthex** (above) is separated from nave by a glass screen to the left. Photo (right) looks down near side aisle past mosaic-encrusted column toward sanctuary.
On the inside, away from the great glass wall, you come into a serene space whose color is plentiful, but is applied almost austerely. The excitement relaxes somewhat; worship begins.

The church is lit from panels of egg crate over the side aisles, into which the columns disappear lightly, seeming to support the central span of acoustically treated ceiling by touch alone. Light through the crate can be daylight or electricity, depending on the hour and weather. The floating feeling of this big simple interior was created deliberately for a combination of physical repose and religious tension.

Beyond altar is curved wood reredos, with abstract pattern by A. R. Flieschmann. It contrasts with smooth Belgian black marble altar, dull red walls of nave, gray acoustical plaster ceiling, and black-green asphalt tile floor. Cost of the church: $456,000 or about $18.50 per sq. ft. Cost of glass, $9,000; of marble and tile, $12,000.
Wallace K. Harrison again reveals his defiant determination to break through the flat-faced confines of today's formulated architectural design in this preliminary for a church in Stamford, Conn.

This church was designed for a conservative Presbyterian congregation; in their daily lives they honor a great many homogenizing influences toward staid propriety at home, at business, at the country club.

But in their church they have taken an opportunity for expression which seldom is accepted by today's proper churchgoers, an opportunity to symbolize their faith not in narrow ecclesiastical cliché inherited from the past, or in equally narrow tentative attempts to make a church look as if it had been made in a factory. Stamford's religion is not factory made, nor will their church be. It will be a force.

It will use the magic of today's structural techniques. At prayer the congregation will be surrounded by an enormous, many-faceted stained-glass wall supporting a masonry vaulted roof reminiscent of the gothic groined vault. Obviously this is intended to seem to float above a wall of jewels. As enthusiastically as Harrison has embraced structural science,
However, he has been equally determined to express the antiquity of the church’s past, and its future solidity. This he does by using stone massively throughout the opaque walls of the huge shape. With the glint of today’s techniques, the church will also wear a mordant expression going back to the Druids’ stone piles.

**This church will be a diamond as big as the Ritz**

The effect of the 2"-thick vari-colored glass wall is fantastic even to imagine. A large part of this effect will be dynamic. Since the wall is faceted like a jewel, the movement of the sun will bring it to life, glinting and sparkling from one surface to the next through the course of the religious service. The faceting has another hard basis in practical reality; it will cut down reverberation from the thousands of square feet of glass.

At night the jewel will be reversed, gleaming from the inside out. Even one spot of illumination inside one lamp will be caught, repeated, colored and magnified by the intricate wall of glass. Night or day, the church will grasp the intense attention of the community.
Axis is east and west. Note that plan above changes level at end of wing toward parking space. Site is ten acres.

Tower will probably be steel and glass with a stone base on a steel and reinforced concrete frame, the same type of construction as church. Glass in tower, however, may not be stained. Tower will be about 140' high, 25' square at base.
Brick and redwood express the calm, logical

The Unitarian attitude is as firmly intellectual as it is emotional, yet around this inviting and protective hollow square of Houston real estate, the attitude has built a church so carefully of handmade brick that it has a hallowed air.

Ralph Waldo Emerson said (in a speech to divinity students in 1838): "Let me admonish you, first of all, to go alone; to refuse the good models, even those which are sacred in the imagination of men..." It was good advice for architects too. Architect Greacen followed it by including such uninhibited devices as a wall of overhead doors between the social hall and the central patio, so the whole space can be opened up, and the modest proportions of the principal room (above). This he complicated and enriched both acoustically and visually by staggered planes in ceiling and walls. Cost of church, $188,950, or about $16.60 per sq. ft.
FIRST UNITARIAN CHURCH OF HOUSTON
Houston, Tex.
THOMAS E. GREACEN II, architect
TELLEPSEN CONSTRUCTION CO., general contractors
WARD BUTTERWICK, structural engineer
DALE S. COOPER & ASSOCIATES, mechanical engineers
RUTH LONDON, landscape architect
DR. C. P. BONER, acoustical consultant

Shadows of the gate, thrown inward into patio (above), are as much a part of its design as its substance—bronze panels set in plated steel tubing (left). This is the front door for the whole group. The patio is a foyer affording a transitional change of scene, a decompression chamber from Houston’s busy streets, preparing the churchgoer for a mood of quiet worship.

In plan the greater part of the site is walled from the heavily traveled mid-town area outside. Presence of several monumental traditional churches in neighborhood led architect toward functionalism for his avowedly liberal denomination.
Complete chapel for $23,700

First need in the formation of a new Lutheran congregation in Wichita was a chapel. Not a big one, but a building which none the less would be a pleasantly inspiring symbolic home to rally around.

Lumber was the obvious material. Over lap sided walls, opened by panels of glass in simple colored patterns, the architect designed a structural system of wood frame bents which could be job-fabricated and tilted up into place. The outline of the bent became the shape of the building. Its span is 18'; its spacing down the chapel 4', then 8', then 4', etc.; the biggest member is 2" x 14". Interior finish is 1" x 6" fir.

Cost: general construction, $20,321; plumbing, $934; heating, $1,455; electrical, $987; total, $23,697, or $10 per sq. ft.
Auditorium uses rough-sawn cedar stained inexpensively with light gray creosote. Radiant-heated concrete floor is stained gray-green throughout.

CHURCH OF CHRIST, SCIENTIST, Seattle, Wash.

CHAPIN, JOHNSON & RIDLEY, architects and engineers

GUY E. McFARLAND SR., general contractor

Church on a house budget

This pleasant home for a Christian Scientist congregation is another achievement in religious economy; the contract cost was only a few dollars over $40,000, or about $12.20 per sq. ft. Says the architect: “As the church is free of ritual and tradition, direct design is possible and right.”

One of the principal aims in the design was to achieve a sense of space despite the necessarily small area. This was done by ending the church with a glass gable wall penetrated by the longitudinal glued laminated beams. Separation between auditorium and foyer is by a double-glazed wall with two sets of double doors. When the doors are open the foyer can be used for overflow, and when closed complete privacy is attained with the help of a translucent curtain over the central lower panel of glass.
Byzantine spirit in today's techniques

This wide-span structural design (clearly spanned 80' across by rigid steel frames) had to be brought into scale inside and infused with a religious spirit in a city that takes its antiquity seriously—New Orleans. These are the methods by which the great, low, well-lighted room was adjusted into today's human focus:

- By using rich materials like verde scuro marble and Italian travertine, stained glass, white oak, unglazed ceramic tile, and terrazzo with marble inserts—to define the enclosure forcefully.
- But by putting the materials together without a slavish eye on old Byzantium. Typical of the handsome result is the sanctuary (photo above) with its stained glass expressing the loadless end wall, and its textured surfaces in regular patterns.
- Finally, by using almost no stock liturgical items, ordered from a catalogue. Pews, stations, sculpture, all were scrupulously executed in a unifying spirit.
This New England church reaches a clean hand back to the past, as does the Southern church on the facing page. But this looks back for its shape more than its finish. Like San Vitale in Ravenna and San Stefano in Rome it is a “round” church. The monolithic Norwegian rose-marble altar, with a wood cross suspended over it, sits centrally, holy with light from a circular clerestory above, surrounded by the congregation. Its flanking tower, however, is a pylon, not an Italian bell tower, and its shape and character are also all its own. On the exterior are simple, honest, utilitarian lines; inside is the splendor available with 360° of natural daylighting.

This was a budget church, at $250,000. Slab-on-ground, it has a utility trench around the periphery.
Behind a rugged cross made of tamarack timber, this brick-walled church (including a brick relief "mural" in the end wall near the cross) is simple, straight-forward and strong. Its strength is wood, epitomized by the layered timber "boomerangs" which lean against each other at the peak line, holding up the roof. The brick side walls are veneer, the end walls solid and bearing. The cross was made from an original timber in the first chapel of this congregation, built 100 years ago by Protestant missionaries Samuel and Gideon Pond.

**Two churches framed with laminated arches**

**Oak Grove Presbyterian Church**

Bloomington, Minn.

HILLS, GILBERTSON & HAYES, architects

DEAN L. WITCHER, general contractor

Longview is a lumber city, and its new church expresses that fact thoroughly. Except for wood's natural complement, brick, which appears in some end walls and floors, nearly all of the structure wears the grain of western red cedar or Douglas fir. There is no attempt to overcapitalize on the folksy qualities of the material; however; the high tepee shape is almost the exact required engineering section for the arches. These are laminated timber, of course; and so is the sculpted figure of St. Stephen in the photo (below).

**St. Stephens Church**

Longview, Wash.

LANCE EDWARD GOWEN, Architect

HAROLD M. HILL, General Contractor

EVERETT DU PEN, Sculptor

Photos: (top) Photography Inc.; (below) Logan Studios
Lucid congregation, lucid design

"It is always right that a man should be able to render a reason for the faith that is within him."

This quote begins a pamphlet of instruction in the religious philosophy of this congregation. Projecting it, Architect Ellwood can unabashedly offer his design for their church as architecture with the same clear intellectual approach.

The direct modular plan, natural-colored materials (probably tilt-up concrete walls), flat roof and simplicity of decoration will be in keeping, as will the 60'-high stainless-steel cross in front. But also in the design are such wise appeals to emotion as a stained-glass mural in the auditorium behind the speaker's stand (red, yellow and blue glass set in black steel extrusions, electrically lighted from behind), and the entrance patio for social life after the services.

Auditorium seating is planned in elliptical arrangement, major axis paralleling long dimension of room, minimizing distance to extreme row of seats. Cost estimate is $10 per sq. ft.

UNITY-BY-THE-SEA
Santa Monica, Calif.

CRAIG ELLWOOD, designer
These churches represent the efforts of architects of four European countries toward a solution of one of the most difficult design problems facing modern architects.

The twentieth century has readily produced the shapes and shelters demanded by most of the facets of our civilization, but when it comes to religion we have stumbled along uncertain paths. Architects have felt uneasy before the requirements of the contemporary church, and the architectural expression of its evolving role in today's life. This is particularly true in the US.

There are, it is true, some outstanding new US churches (several of which are shown on the preceding pages) but there are probably more fine churches around Basel, Switzerland, than in the entire US. Indeed, over much of Europe there has been 30 years a continual inquiring and sympathetic search for appropriate church architecture, a search that puts to shame the warmed-over gothic which we still accept so readily.

This "revolution" in European church design began in 1922 when the Perret brothers built their famous church at Le Raincy, just east of Paris. This concrete and glass masterpiece, which so signally inaugurated a new era of church design, has never been equalled. France at that time and largely with this church sparked an interest in church building that had lain dormant since Balthazar Neumann and the Asam brothers of 200 years ago.

The lead in European church revitalization passed first to Germany, who threw herself wholeheartedly into modern architecture in all fields after World War I and produced under Domenikus Böhm and Rudolf Schwarz a number of the Continent's most distinguished churches in the 1920s and early 1930s. The Netherlands, Switzerland, Czechoslovakia and Scandinavia followed suit. (Italy, a leader in modern architecture, has not built a significant church since Guarini's Sindone Chapel of 1694 in Turin.)

The new church thinking which thus began a generation ago is now bearing prolific fruit. It is hoped that the following examples, heretofore unpublished in this country, will inspire American architects to think more freshly and profoundly, reason more clearly and construct more fittingly the many new churches needed in the US.

* Architect, former critic at Yale, architectural lecturer, author of several books on the modern architecture of foreign countries (Sweden Builds, Switzerland Builds and the forthcoming Italy Builds) and member of Commission on Architecture of the National Council of the Churches of Christ in USA. This article is completely the work of the author—photography, research, layout and writing.
The Swiss, although they initially followed behind the French and Germans in the development of the modern church, have since forged ahead of all others. The real workshop and laboratory of new religious building, both Protestant and Catholic, is today centered in this tiny country. The Swiss have not called on the collaborating artist as much as the French; they have not been so daring as, say, Niemeyer and his Belo Horizonte church in Brazil; and they have not achieved the elegant simplicity of Bryggman’s ingratiating chapel in Abo in west Finland; but they have built an impressive body of sincere and provocative churches with roots and reasoning unexcelled by any. Both Protestants and Catholics have been extremely active—and mutually sparking—in promoting modern architecture for their faiths.

One of the newest churches is All Saints in Basel by Hermann Baur, an architect who has designed many fine Catholic churches in this part of the country. The structure of the building, with its transverse barrel vaulting which appears to rest so lightly on attenuated concrete columns, is clean and elegant and gives a weightlessness to the entire interior. The clerestories effected by the open ends of the cross-vaulting give an over-all general illumination which is strongly accented at the chancel by pierced concrete grilles that extend to the ceiling. The altar has strong and well-designed reliefs around its sides and is shielded overhead by a ciborium which is delicately hung from the ceiling with almost invisible wires.

The exterior, of gray brick set in white concrete frame (typical Swiss construction), is boldly stated, but a wide, flat cornice unfortunately masks the full effect of the barrel vaulting, an effect that could have been emphasized with striking results. The handsome undulations of this thin shell roof, which play such an important role in the interior, could likewise have keyed the whole exterior. Instead, they are largely hidden by this cornice and seem to rest on the sides which are actually mere curtain walls. If the functions and forms of this vaulting were more adequately expressed by the exterior instead of being so timidly girdled and concealed, All Saints would be as striking on the outside as it is within.

**1. All Saints Church**

**BASEL; HERMANN BAUR, ARCHITECT**


2. Village Church

THAYNEN, SWITZERLAND: JOSEPH SCHÜTZ, ARCHITECT

This new Catholic church for a tiny village near the German border is an excellent example of the way the Swiss, even in a small, traditional-minded farming community, seek clean new forms for their churches. This is not a great church by any means, but considering its rural community and parishioners, and looking into its bright, sunny and religious interior, it is an achievement of which we in the US would be definitely proud. The Swiss should be too.

The exterior, fitting into the slope of a hill, takes on a rather boxlike shape of white concrete frame and gray stucco. The windows and campanile are detailed with the pierced concrete grillwork (adapted from ancient Swiss barns) found in so many Swiss churches. The bell tower, however, is certainly not among the country’s finest.

The prime rewards of the Thayngen Church are found on the inside with its really delightful interior of “one-room” intimacy. In addition to showing a skillful juxtaposition of materials—from warm brick chancel wall to white concrete framing and lightwood paneling—the interior also demonstrates the complete teamwork and interrelation of architect and artist, of building and sculpture.

The beautifully arranged and (except for the figure of Christ) well-carved Last Supper shows what even one group of strategically placed figures can do toward knitting together and bringing into focus a whole interior. There was no question here of calling in the artist to add a few embellishments after the architect had finished: architect and artist worked hand in hand from the beginning.

The floor-to-ceiling stained-glass window at the sanctuary end was skillfully contrived to throw a pattern of sun and shadow on the brick wall. It might well be argued that this part of the church should be reoriented and the large window placed on the opposite side, and the sculpture reversed so that the pleasant effect of light, sun and shadow would be enjoyed in the midafternoon hours of the usual church service instead of the late afternoon, when this photograph was taken.

It is unfortunate that the deep vertical mullions which divide the window are so thick that they appear structural, particularly because they pierce the wood ceiling and vanish who knows where instead of being lopped off at the window head. These mullions are, in addition, uselessly repeated on the wall opposite.

Nonetheless, the impression of this interior—especially of an afternoon—is delightful. Besides the points already mentioned, the use of plants, the direct-indirect lamps (identical with those in All Saints, p. 105, except suspended from the ceiling instead of from brackets) and the airy pews are worth noting.
Pattern of afternoon light adds vibrant decoration to sanctuary’s brick wall. Walls and ceiling within concrete framework are paneled in wood. Lighting fixtures are airily suspended.
There is a distinct movement on the part of some architects and clergy in Switzerland away from the longitudinal, or axial, church plan, toward a central expression with the congregation grouped more around the chancel. It is based on two arguments: 1) that the old basilica pattern with its long formal aisle for processions is no longer valid—particularly for some sects which have few processions or none at all in their liturgy; 2) that an attenuated axial plan cannot give the majority of the congregation the feeling of participating in the service that a shallow depth of pews grouped around or facing the sanctuary produces.

Among the more outstanding examples of this movement is this Neo-Apostolic Church in Geneva by one of Europe’s finest firms of architects. Werner Moser, the member most concerned with churches, studied in this country with Frank Lloyd Wright many years ago (he also recently wrote a book on Wright), and one does not need to look far to sense a certain kinship to Wright and his Unity Temple in this church.

In plan the church is basically a square set on the diagonal with altar and pulpit at one point, entrance at opposite. All four walls are glazed in the upper portion with a grid of carefully designed glare-preventing glass blocks (note detail above), with additional natural light coming from a lantern at the apex of the centrally pitched roof. A calm, unemotional room results, a room which will not excite anyone, but does provide the dignified “collective family” atmosphere sought by a sect that holds to the restraints of Calvinism.

The exterior is a handsome revelation of the interior and, like it, is distinguished by sensitive detailing. The meticulously studied parts of this church are perhaps more satisfactory than the whole, at least as regards the interior.
France, which in the early 1920s revitalized church building in Europe, soon lapsed into that curious and unfortunate mediocrity that has characterized French architecture almost ever since (with the exception, of course, of the work of the Swiss-born Corbusier). Today, however, she is at least leading the way in the integration of artist and architect in church designing, an integration that reached its ultimate in this same country in the gothic cathedrals of 700 years ago. There have been built in France since the war several highly significant churches which have employed the finest, most "progressive" artists in the country, such as Matisse, Leger, Lurçat, Rouault, Lipschitz and Braque. This new movement has realized that in religious buildings the architect, tied as he is by the very earthiness of his materials, cannot alone create the spiritual background necessary to a church, but must integrate his work with that of the painter, the sculptor, and the glass designer.

This church for a parish of laborers in a small village near Belfort and Mulhouse exemplifies both the good and bad qualities of these new French churches. For the virtues and faults of this church, with its great sparkling band of 17 windows by Leger, are the virtues and faults of the church at Assy, which employed so many of France's greatest artists, and the virtues and faults of the Matisse chapel at Vence: the artists are magnificent, the architects are not.

To be sure the interior of this church provides the simplest kind of background for the band of windows, but it is dubious to begin with whether such a constant-width strip provides the most sympathetic natural light for a church. And while the interior is thus characterized by what might be termed a lack of direction and emphasis, the exterior is patently conspicuous for its stylized mediocrity.
Businesslike dignity, rather than inspiration, keynotes this reformed church

5. Trinity Church

POPLAR (LONDON): HANDSIEDE & STARK, ARCHITECTS

The English have attacked their overwhelming job of reconstruction with considerable energy and success, and although this Congregational church in the poor and bomb-devastated East End of London is not outstanding among the other new churches in this presentation, it represents an important step in Great Britain.

The exterior of the group shows capable handling of masses, with parish house, campanile and church well disposed. The educational-social wing (right), with its thin and finely drawn roof line, is the most satisfactory unit; the bell tower, with its hesitant and meaningless aluminum cupola, the least. The design of the church itself is based on an unusual and potentially striking exposed concrete frame—a kind of twentieth-century flying buttress—from which the roof is suspended. But besides appearing rather too heavy, especially in relation to the columns which support it, this framing unfortunately is largely hidden in Pisan Romanesque fashion by nubbly screen walls at each end.

The interior is dry and formalistic with more the atmosphere of a tribunal than a House of God. Unfortunately no call was made here on the stimulating painters and sculptors who are doing so much for English art. The successes of Henry Moore's "Madonna and Child," and Graham Sutherland's "Crucifixion" at the old church of Northampton, should make collaboration of architects and artists a sine qua non for all new churches in Britain.
The new architecture of Denmark, which in some respects is the finest and most imaginative in Scandinavia, has a friendliness and ingratiating scale well displayed by this new Lutheran church, a building as informal as the English one opposite is austere.

The church in plan is virtually a square, with a simple altar and pulpit against a whitewashed brick wall whose blankness is relieved only by brick piers. The bold roof structure—built-up wood plate girders—is parallel to this back wall, creating with the lines of the pews a horizontal quality which tends to bring the rear of the church optically forward, knitting together the chancel and congregation. The ingenious structure supporting the roof has been used to the utmost to give interest and character to the interior. Another unusual feature is a large and handsome ship model, a pertinent reminder for all to remember in their prayers the number of Danes so often facing the perils of the sea.

The interior lighting is questionable in that a flood of sunshine comes from large windows in one wall only—windows which it might be said symbolically tie outside life and religion together. Being unilateral, this source naturally produces a tiring glare.

The exterior walls are of handsome red brick, laid up with typical Danish skill in a diamond pattern. The well-pitched roof is red tile, with a color accent provided by the semidetached white-painted belfry.
Le Corbusier made this prophetic sketch in 1922

now, at last . . . OFFICE TOWERS IN A PARK

This is Gateway Center, the Eken-Dowling-Equitable Life slum clearance redevelopment at the point of Pittsburgh's Golden Triangle.

Some may see in Gateway not much more than three rather undistinguished buildings. To others it is primarily a demonstration of how to build 1 million sq. ft. of high-quality office space cheaply enough to rent for under $5 a sq. ft.; or a striking example of prefabricated steel curtain walls, of inexpensive, reversible windows, of large, yet well-lit office floors.

To planners, however, Gateway is surely something more important: for here, for the first time in US city planning, the concept of office towers in a park has made good sense in economic terms. It has made sense to men who may have never heard of Le Corbusier's "Ville Radieuse." And having once made sense to these eminently practical men the concept can no longer be shrugged off as the dream of some unrealistic visionary.

That fact—the reality of these three towers in a park—overshadows almost everything else about Gateway. When that fact sinks in, then Gateway may prove to have been worth some of the disappointments, too. There are signs that the fact is sinking in, at least in some influential minds, and that some of the disappointing lessons will eventually be learned.

Gateway's disappointing buildings half conceal the four important ideas they contribute to planning and building:

1. Site planning—the major accomplishment mentioned above, plus a fine scheme of traffic separation and of parking.
2. Office planning. A bold affirmation in favor of building only prime office space within 24' of a window, at a time when most buildings are taking advantage of air conditioning and artificial lighting to put a high price on bulk space. The decision to build only prime space explains the much-debated cruciform plan (p. 115).
3. Prefabrication and metal facing. Really two techniques carried out at large scale: 1) prefabrication of the complete exterior wall (and not just the skin); and 2) the use of stainless-steel facing for the first time in major US construction.
4. Windows. The development of a big, handsome, completely reversible, single-pane window that will cut cleaning costs—and was cheaper to start with than a conventional double-hung unit.

The story on these pages describes in detail each of these four major ideas. And, on p. 117, Forum's editorial chairman frankly discusses some of the controversial issues raised by Gateway and by the manner in which it was designed.
SITE: auto traffic stays outside the Center . . .

. . . so pedestrians can walk in the park

What they did about the site: the three towers (two of them 20 stories high, the third, 24) were planned to cover only 1/5 of the six-acre site, with no parallel walls closer than 150' and no points closer than 80'. This openness is one big reason why the buildings are already 85% rented, and some expansion is expected by present tenants.

Other advantages: since lower floors have sunlight and wide, unblocked views, they do not suffer the usual stigma, bring $5 rents just like the tower floors.

Parking: besides the peripheral parking lot seen above, the Center has underground parking for 248 cars, plus an existing four-story commercial garage nearby. Peripheral roads are closely integrated with Pittsburgh's new highways.

How it worked out: says Economist Miles Callan, in his recent "Renewing our Cities": "The open parked spaces between buildings, the extensive garage facilities and the ready access to through ways [at Gateway Center] represent a conscious effort to adapt business facilities to city structure on a thoroughly functional basis." Other verdicts: landscaping—well done but stiffly traditional; relationship of buildings—a little too near-symmetrical. Project will greatly improve when almost 300 planted pin oaks and sweet gum trees shoot up to full height.

Future plans: no immediate construction is in sight, but clearing of the slum site continues.
OFFICES:

What determined the office plan: no desks are farther than 24' from a window—yet there are 13,500 net sq. ft. on each Gateway floor. Equitable determined the floor shape and size, made each wing of the cruciform just under 50' wide, 74' long. Bays are about 14' x 24' along the outside of each floor, 18' x 24' on the inside (AF, Nov. '49).

Why the cruciform plan? Architects have called it "the mark of the amateur" and generally prefer slab plans. But beautiful slabs like Lever House have only 6,000 sq. ft. per floor whereas Equitable averages 13,500. Granted Gateway's basic premise of only prime office space within 24' of the window, the cross keeps circulation distance from being impossibly long. Some comparisons: cross has 800' perimeter, slabs (with similar close-to-window space) might easily have more; cross makes longest corridor distance approximately 160', slab could make it 250'; cross has eight corner offices and eight blocked corners per floor, slab would have four corner offices and four blocked corners; cross has disadvantage of slightly less open views at re-entrant angles, slab would have disadvantage of awkward elevator planning in so narrow a building width (still assuming only 24' office depth).

every floor has 13,500 sq. ft. (net) . . . yet every desk is near a window
WALL: steel panels backed with perlite were bolted together to form complete outside walls for tall buildings

Two major contributions to curtain-wall construction: 1) the entire exterior wall (inside and out) was shop-prefabricated in panels, then hoisted up and bolted together in place. 2) The prefab panels were faced with chromium steel skin. Thus Gateway's exterior was no skin-deep job (as in case of ALCOA), but was a pioneering effort to achieve complete prefabrication—first big job of its kind.

How steel wall worked out: here are some things that Eken might do differently today: 1) use fewer flat surfaces in stainless skin (reason: Gateway's skin has "tin-canned" evenly in all flat areas, apparently because of heat expansion); 2) do not use latex-and-paper protective coating during construction—find something that comes off more easily (Gateway had lots of trouble removing manufacturer's protective coat because latex left dirt-catching film on steel even after it had been stripped off); 3) watch your horizontal joint details (Gateway's joints have no drips; any condensation running down through porous backup behind steel might cause stains under joints). But Eken feels that the chromium steel performed just as well as the nickel stainless on the Mellon-US Steel building uptown. He would use chromium steel again any day.

How the walls were prefabricated: six different, standard panels of precast concrete faced with 11½% chromium steel (nickel stainless was unavailable because of Korea). Wall panels vary from 4½" to 7½" in thickness. Concrete backup is very porous immediately behind steel skin (to permit condensation to drain off), then perlite. Panels weighed up to 6,000 lb. each.

WINDOWS: cheaper than conventional double-hungs, Gateway's reversible windows are handsome, slim-edged and big

Facts about the reversible windows: they are 6'-2" tall, 3'-10" wide—a single sheet of plate glass set into a 1½"-thick aluminum frame. They unlock, then pivot 180° about a top and bottom center point. (AF, Nov. '49.)

How they worked out: windows are best designed single item at Gateway—very good looking, well proportioned. They cost only $82 apiece—as compared with $88 for conventional double-hung! No cleaning economies as yet (because union rates are still based on "human-fly" technique)—but future economies are likely to be great. Tenants like big size of windows.

What imitators might do differently: Builder Eken prefers 4½'-high windows, but a majority of the tenants wanted tall windows—in spite of fact that blinds are always down at half-mast. (Gateway's maintenance men line up blinds every morning!) But Equitable insists that "tall windows sell space."
AN EDITORIAL

Architecture: stepchild or fashioner of cities?

The sad thing about Gateway is that its architecture is not up to the genuine poetry of its ideas; and this at the precise moment when architecture as an art is ready as it has not been for 50 years to deal with just such a problem as making the civic center the crown and focus of urban life.

Gateway had everything that could have been combined into a great romance, such as the merchants of Florence or Venice made of their cities. It had an unequaled site at the confluence of two great rivers; the wonderful idea of office towers in a park; an unusual cross-shape for view-commanding office interiors; the notion that this prow of Pittsburgh should proclaim the Steel City through its own metallic glitter, and a deep desire to do something great for the town.

Yet architecture was treated strictly as a stepchild, not allowed in the house until all decisions had been made, and then let in only through the back door.

The result is that the city-building project which could have been a crowning piece of poetry for our century has been reduced to second-rate prose. The arrangement of the towers in their park is purely mechanical; the landscaping between them makes no fresh statement about our grand new world, but is simply a weak Versaillaise; and the steel-clad structures are an equally weak modernique, lacking in proportion, texture and dignity, let alone mystery or power that would differentiate them from "up-ended diners."

Why should the building industry lag so far behind all others in recognizing that the appeal of any object lies deeper than its utility and engineering? Romance, says Architect Frank Lloyd Wright, is at the very core of life; surely American business enterprise deprived of its romance would die; our big industries parallel their engineering with styling. Yet here at Pittsburgh we had the strange though typical paradox that leading investors in the building industry, men engaged actually in a high romance, declined architecture as a tool and thought of it only as something that could be painted on.

To blame this all on Pittsburgh's pioneers as individuals would be grave injustice. History helps account for the event, and the profession of architecture shares the blame.

Fifty years ago a great generation of architects, such as Sullivan, Burnham, McKim, together with a great generation of businessmen such as J. P. Morgan and Alexander Cassatt, mutually understood the power and appeal of a "City Beautiful," even though their title was schmalz and their architecture (except for Sullivan's) a stock theatrical repertory from Rome and Paris.

Since then America has grown up—the hard way. The full impact of the Industrial Revolution gave men of affairs a world depression and two wars to handle, and it put architects through a revolution of style.

Now that men of affairs are returning to the rebuilding of cities and architectural associations debate "the city core," the old City Beautiful grandiloquence will no longer do, but neither will painted-on architecture do.

No, architecture today may have to work in a much tighter economic framework, yet it still has to be in at the beginning of the project, because the romance of our city-crown projects is in them, not on them; and the architect must be free to arrange the facts in an expressive form.

Let us hope this revelation comes to building investors quickly, for much of the poetry of the fine ideas Mr. Dowling accepted in Philadelphia's Penn Center is already being frizzed out by third-rate architecture commissioned by well-meaning but unobserving tenants of the project. And although Roger L. Stevens in Boston has used great wisdom in putting architecture in at the start, so his Back Bay Center has some form, power and mystery and could stand as a symbol of modern Boston, yet he will need support if his rental agents start yielding piece by piece, telling tenants, "Oh sure, we can change the architects' plans to make it exactly as you want it" and "pay no attention to the Board of Design—it's window-dressing."

No great achievement can be had for free, nor are beauty and use synonymous though they overlap. To men of affairs we are not saying they can have architecture without some patience and mutual accommodation. We say only that without the vision of the arts the people perish, and no painted-on gewgaws can feed their spiritual starvation.

DH.
Existing school sits squarely in middle of site's narrow frontage. New addition pays its respects by recall of materials and relationship of roof lines but makes no design compromise. It aroused no protests from conservative community.

1. Raw material: 1936 "Georgian" awkwardly sited

Products: modern wing with tact to harmonize

ELEMENTARY SCHOOL
Palisades, N.Y. ▲ Three-classroom addition. ▲ 90 students.

FEATURES

CONSTRUCTION

COST
$76,657 (excluding fees). ▲ $20 per sq. ft. ▲ $25,532 per classroom. ▲ $852 per pupil.
and excellently zoned master plan for future

Corridor's sliding doors stack behind center brick column. Cost was $1,100 against $900 for conventional glazed wall. In winter closed corridor traps south-sun heat but shades classrooms. In mild weather it is used with adjoining lawn as outdoor class space. Architects will consider overhead doors if they use similar scheme again.

Classrooms have bilateral and sky lighting. Architects chose wood framing for looks and fear of steel delays, settled on laminated wood for strength. These members are usually used at great heights; architects were dismayed at defects visible with low ceiling but found that good paint job rendered irregularities almost unnoticeable.
Old building's second floor was torn off and the first floor was retained and remodeled. (Corner is visible at far right in photograph above.) Lumber from demolished second floor was reused for framing and partition studs of new addition; old stone without interior finish was reused in end walls and thus appears in interiors of four new class­rooms. New brick is also unplastered but old interior was replastered.

2. Raw materials: condemned two-story eyesore and wit to salvage it

Product: charm, good school plan and community

HIGH SCHOOL
Hamilton, Tex. Ten classrooms (eight added, two remodeled), 267 students.

FEATURES
Selective salvage of building condemned as unsafe and con­sidered total loss. Outdoor corridors doubling as overhangs, eliminating blinds or curtains. Patio designed for outdoor parties and meetings. School library serving also as public library for general community use. Minimum classrooms for economy; no classroom night lighting for economy.

CONSTRUCTION
Slab on fill. Exterior walls, 9' brick cavity or 12” solid stone.

COSTS
$62,535 (including fee). $6.45 per sq. ft. $4,053 per classroom. $234 per pupil. Breakdown: remodeled area, $23,500, $5.47 per sq. ft. New area, $39,035, $7.22 per sq. ft. (Architect credits re­use of salvage material, job size within realm of local, small-town contractors, simplicity of details, and minimum of crafts involved.)
Library occupies large share of remodeled building. It is unusually generous because it is also public library. This does not represent saving on school itself, but does mean an appreciable saving to community as whole and is noteworthy as good example of joint-facilities planning advocated by Forum’s panel of school experts (AF, Oct. '53). Everything that could be reused (note lights) was saved.

center at $6.45 per sq. ft.

Salvaged stone frames unpretentious and very pleasant wood entrance panel. Minimum classroom size (18'-9" x 20'-6") was first studied carefully at large scale for use by 30 pupils; superintendent reports he and teachers are very happy with way small classrooms work.

Courtyard is regularly used for club meetings, parties, community affairs. Building is at southeast corner of its block; other buildings on the property are auditorium with shops and gymnasium which will continue to be used as is. There is also room for further expansion.
Two hilltop

1. TV transmitter overlooks big market

A straight line is the best distance between a TV transmitter and your set. Because the TV beam is not bent as is that of conventional radio transmission, your antenna should be able to look unblocked toward the signal tower. That is why this transmitting station for WBTV of Charlotte is set 16 miles out of town up on the craggy prominence of Spencer Mountain, surmounting the countryside. But there are other reasons for perching WBTV up there, both commercial and technical, combined by Architect Odell into a handsome architectural expression of lonely efficiency:

- When a sponsor comes to the station, the managers can show him his market in the valley through the wide window. There it is, at his feet.
- There is no interference from other electrical sources.
- The tower is away from commercial aviation routes.
- If the 562' tower had been erected in Charlotte it would have had to be 1,200' high to obtain its present clear beam, adding a half million dollars to its cost.

Wild site holds only transmitting station, which is connected by cable to studios in Charlotte.

Photos: Int., W. Molitor
broadcasting stations

2. FM studio and transmitter are topped by glass-walled lounge

FM radio, like TV, sends its signal in a direct line, so it too needs to be on high. Mario Corbett’s slim steel frame, redwood, concrete block and glass headquarters for California’s KDFC is on a level strip of land, but the land is atop Marin County’s Mt. Beacon with a 360° sweep of view and radio audience. The building looks jaunty and innocent on its hilltop but is designed to withstand 100 mph winds, which are not uncommon.

The principal architectural problem inside was circulation. The studio is the heart of the operation, dependent on library and research rooms, engineers’ workroom, transmitter and control rooms. Setting it inside the other spaces allowed circulation all around. The covered ramp (see plan), which approaches from behind the long garage, is used for delivery of records.

Up a circular stair from the lobby is a wonderful, general-purpose room with four window walls, like the control tower of an airport. Cost: $33,000, or $9.60 per sq. ft., excluding tower.
"This office building has improved our business"

“It has also greatly increased the efficiency of our organization,” says insurance company President Charles F. Baldwin. Reason: Baldwin agreed with his architect, Alfred Parker, that they ought to put up “something more than just another taxpayer,” that first-rate modern design, good construction and generous site planning would pay off in dollars and cents.

And they did pay off—handsomely: first-floor stores and second-floor offices (for Baldwin’s company and other tenants) were rented within three months after the building was up. In fact, it now turns out that the client might have been smart to build a projected third story right away (the structure was designed to support another floor in the future). Says Architect Parker: “The additional space could have been rented twice over in the first 90 days!”

So this is a success story in four parts: first is the story of a handsome building—the pictures tell that story convincingly; second is the story of efficient precasting of exterior walls and of a simple concrete frame that looks well and was economical to build; third is the story of sun control in a subtropical climate; and last is the story of generous site planning that paid off.

LOCATION: Miami, Fla.
ALFRED BROWNING PARKER, architect
NORMAN DIGNUM, structural engineer
WITTERS CONSTRUCTION CO., general contractor

Precast wall panels and coffered floor slabs

It took just 7½ hours for a crew operating one crane to erect the precast concrete panels that make up some 1,500 sq. ft. of exterior wall around the second floor. To put it more dramatically: it took only 18 seconds to get 1 sq. ft. of exterior wall into place!

The precast panels were made up in half a dozen different (but closely related) sizes—some of them as big as 9' x 11', all 6” thick. They are made of pumice concrete faced with Chattahoochee gravel, wire-brushed and cleaned after hardening. A system of light steel frames stiffens and connects adjoining panels.

Cost of panels, in place, was only $3,500, or $2.33 per sq. ft.—not a very large item in a $110,000 building, but still a fine
save time and weight

demonstration of the economies and efficiencies of precasting.

To reduce the weight of the floor and roof slabs, Parker worked out a two-way rib system that produced a good-looking ceiling pattern of 18 sq. ft. coffers, 8" deep. The actual slab on top of the ribs is only 2½" thick and the ribs are 6" wide. Total floor thickness: 10½" over a 20' x 22' bay. Coffer pans were made of 8" lumber and paperboard. Round tied columns are set back from the edge of the floors to take advantage of the reduction in positive moment due to the cantilevered overhangs. These overhangs act as sunshades for the stores, will help throw any future variation in store-front treatment in shade, thus preserve design unity.

Each floor shades the one below

One of Architect Parker's most interesting ideas in designing this building will not become apparent until the third-floor expansion has been completed: for the third floor will project 3½' to 4' beyond the second—which, in turn, now projects 5' beyond the glass storefronts of the first (see sketch). The third floor will be shaded by aluminum louvers that will form 3½'-deep eyebrows above window areas.

The Baldwin Building is completely air conditioned, of course, but these projections of floor beyond floor will substantially reduce cooling loads by shading the walls below. They will also recoup some of the floor space lost when Architect Parker decided to set back his building from the street.

Site plan sacrifices 1,700 sq. ft. for effect

One reason for the success of this little structure is its location on one of America's busiest thoroughfares: Biscayne Blvd. in Miami. Another reason is Architect Parker's unconventional handling of that kind of site: where others would (and do) jam their competing facades right up against the building line, Parker set his store fronts back—a full 17', or 1,700 sq. ft. of land—and created a quiet, friendly and dignified lawn near the corner bus stop. The setback not only attracts attention, it attracts shoppers as well, who want to get off the busy sidewalks and out of the rush. Yet, despite the generous setback, Parker was able to obtain adequate parking facilities behind the building (site plan, left).

Photos: (top & below) © Ezra Stoller
Modern setting for

Mercedes-Benz, Park Ave., builds an

For 50 years automobile dealers have held that the battle was half won if you could only "bring them in off the sidewalks." Yet, in 50 years there have been few exceptions to the stock formula for "designing" the showroom as a magnet: paint it (maybe); then get a couple of desks, a couple of rubber plants, a couple of inspirational-type posters (*Come to Banff! Visit Mexico!*).

Well, here is the latest, most elegant exception of all—

Desk area along side wall has 1'-6" lower ceiling to conceal jog in structure and to create more intimate atmosphere.

Sandwich of light: four fluorescent strips, 72' long, carry eye into showroom, "bounce" 50 foot-candles of light off white terrazzo floor. Rear wall is finished in Alabama marble; columns are clad in gunmetal gray mirrors, which tend to make them disappear. Left-hand wall is similarly mirrored (below); right-hand wall is painted gray.

LOCATION: New York City

EDWARD L. BARNES, architect-designer

CENTURY LIGHTING CO.
lighting engineering
a young architect's version of an auto showroom worthy of the auto. And is it bringing them in off the sidewalks? "Yes," says M. E. Hoffman, president of Mercedes-Benz Distributors. "I know it's attracting people in. I know it's helping tremendously to sell the cars. We're very satisfied with it. Very."

In essence, the attraction is created with bright light, a white floor and walls of mirror and marble.

Chief tool was that handy little gadget, the lightmeter. From the outset, Architect Barnes saw this remodeling job as fundamentally a problem in lighting, realized that the designer would have to work closely with the lighting engineer.

Not that there were not other problems, these stemming from the existing, unalterable structure of the

continued on p. 148
IN THIS MONTH’S NEWS

(see pp. 37 through 52)

Presidential housing advisors suggest tying public housing to rehabilitation but steer clear of how many units for next year

Toronto tries half-merger with its suburbs—an experiment being watched by US cities struggling with the same problems

Mies van der Rohe designs a coliseum for Chicago with a roof spanning 500,000 sq. ft. of clear floor

Real Estate Board of New York adopts new standard for measuring square footage of rental office space

Investment bankers complain US college dormitory loans are rigged to freeze out private lending institutions

NEWS

Garages vs. parking woes

The most energetic efforts to ease downtown traffic with more garages are publicly financed

In Baltimore, public financing strikes a snag as nine persons and six firms are indicted on fraud charges

Over most of the nation the symptoms were the same:

In Dallas, 20 stores clubbed together to urge holiday shoppers to come downtown on buses or streetcars, not in their automobiles. The stores offered return carfare to anyone who spent a dollar.

In Wilmington, two reporters from the Sunday Star ran a latter-day hare-and-tortoise race—one on foot, the other in an automobile—to prove that a pedestrian could do a ten-block stretch of downtown Market St. faster than a motorist. (They proved it.)

In Hartford, it was estimated that there were 12,000 parking spaces available for an average 40,000 autos grinding into town during business hours and that 1,000 of these “available” spaces were illegal.

The basic cause of all the horn-honing and municipal consternation was not hard to pin down. There are 53 million vehicles in use in the US, more than 2½ times what there were 30 years ago. Automobile traffic has spread vastly on the ground. The cities have built upward. Result: not enough square footage in downtown metropolitan areas (sometimes not enough in any section of the city) to park (AF’s Urban Traffic Forum, Feb. ’53).

Clear the streets. The primary aim of any public or private body now fighting the traffic-parking problem was to get automobiles off the streets. This aim took precedence over the alternative project of keeping them out of town. The latter scheme—to get the commuter or shopper to park his or her car on the fringe of the business district and take public transportation downtown—was one of the best-sounding ideas ever put on paper. In operation, its contribution toward relieving municipal congestion has been minor. Several attempts to encourage perimeter parking in Pittsburgh have been branded as “nearly futile”; it worked in Baltimore for awhile, until National City Lines moved into the transit picture and raised the rates in the parking lot; it has not worked in San Francisco, largely because the city is so highly developed that it has few fringe areas suitable for parking.

Street no stable yard. Legally, efforts to restrict parking on public thoroughfares go back to 1812, when a British court held: “No one can make a stable yard of the King’s highway.” That was the first decision that a stagecoach parked an unreasonable length of time—45 minutes—constituted a nuisance. Now, the legal effort sometimes goes as far as a complete ban on downtown parking. So far, the evidence is inconclusive whether such discipline can really ease traffic jams. Dallas’ attempts to ban parking on the city’s three main streets during daylight hours was supposed to last a test period of 90 days. Protests from merchants on the three streets were so vociferous, however, that the city council knocked under after four weeks and rescinded the whole plan. Observers’ opinion: the ban did not get a fair trial.

In Philadelphia a similar edict covering a 56-square-block midtown section has been working for a year. It is credited with having cut running time of buses and trolleys in mid-city by more than 10%; it accounted for an 11% decline in accidents and speeded traffic by 40%. Long view: merchants are complaining and the traffic situation as a whole has been tabbed “gloomy indeed.”

Is building the way out? To a lot of people struggling to solve the traffic mess, the best available answer is more downtown garages. It was a tempting way to take a crack at the problem. Garages were going up (or down under the ground) all over the nation. During the first nine months of this year some 1,500 garages were authorized. They will cost over $28 million.

Three cities making the most energetic efforts to build garages were erecting primarily public-sponsored facilities. They were:

Chicago, with an enormous $50 million program for ten new projects, including what will be the world’s largest (2,359-car) underground garage, now being dug out under Michigan Blvd. (Present largest: Los Angeles’ Pershing Sq. garage, with a capacity of 2,000.) The underground garage will be operated by the city’s Park District; the nine others (financed through revenue bond issues) will be operated directly by the city or leased to private operators. The leasing scheme was perhaps one reason that private operators in Chicago were not more vigorous in opposing the program. Another reason: general recognition that property values in the Loop will stand or fall upon a good system of transportation which, since autos were here to stay, included parking.

Pittsburgh, with two Public Parking Authority garages under its belt as of a year ago (both now operating in the black) plans two more, possibly three. Construction of the
new ones, however, hinged on litigation to determine whether such city-sponsored structures are tax-free. Not affected by the tax question is the 890-car Mellon Sq. underground garage, made possible by a $4 million grant from three Mellon foundations, to be completed in about a year. (The cost of building underground garages has so far kept private construction from the field unless some sort of aid—n land, financing or tax exemption—was forthcoming from the city.)

Baltimore, where citizens approved municipal participation in parking-facility construction five years ago by voting the Off-street Parking Commission $5 million in public funds. Since then, Baltimore has acquired 17 new garages at a cost of $5.7 million. Two more were under construction. Net gain from all 19 will be 3,012 parking spaces. The city's procedure has been to aid private off-street construction with low-interest loans. The policy apparently will continue to operate in Baltimore, in spite of a grand jury indictment last month of nine individuals (including two city officials), and six corporations involved in the operation. The defendants are accused of having defrauded the city of $180,000. Other city governments (Milwaukee and Atlanta among them) which had toyed with the idea of setting up a parking arrangement similar to Baltimore's, did not believe the current ruckus meant a collapse of the plan. (Not so the National Parking Assn., elated at eruptions in the Baltimore Plan, which it had long fought. Said Association President John Hendon of Birmingham: "The principle of government intervention in the field of parking is morally wrong and frequently leads to inefficiency, graft and corruption.")

Other developments:

San Francisco will complete its second underground garage, in St. Mary's Sq., next March. On city land, the $2.1 million project (to house 1,025 cars) will revert to the city in 33 years. The 11-year-old Union Sq. garage—the nation's first to dig underground—had barely dented the downtown parking problem. It has proved so popular that it will be paid off and turned over to the city at least 30 years sooner than had been expected.

Milwaukee has taken in $2 million from parking meter revenue and sale of all-night parking permits—cards for which motorists pay $4 a month and place in their windshields. The city's proposals to use this kitty to buy land and lease it for garages were being held up by a taxpayer's suit questioning the city's parking policies.

In Hartford, Mrs. Beatrice Auerbach, president of G. Fox & Co., engineered a smart deal for a 600-car garage. She proposed that the city lease her section of an old municipal school site. She would pay the city $6,000 a year and at the end of 20 years let the garage revert to municipal ownership. The plan was proposed in Oct. '52; ground was broken the following February; the garage opened last November.

In New York, Promoter William Zeckendorf, always a man to take the high ground, was planning a jumbo-sized vertical garage on Park Ave. Zeckendorf and his firm had spent $500,000 looking into the mechanized parking problem. Proposed cost of the garage might be $1 million. Zeckendorf's theory: "It doesn't matter whether the land is assessed at $2,000 a front foot, $10,000 a front foot or $15,000 a front foot, because the very fact of the existence of those kind of values indicates also the existence of that kind of demand for parking..."

There are more ways than one to grapple with the parking problem, but it was evidently equal that no one of them was going to do the job. It seems logical that as more space is provided for parking, more autos will be on their way downtown to squeeze into it. The job of the coordinators, mayors, planning and traffic officials, merchants and citizens' groups is to keep this ratio of number of automobiles to number of parking spaces in a workable proportion. It is, from all indications, a full time job.

SAN FRANCISCO'S SECOND subterranean garage is going under city-owned land in St. Mary's Sq. The 1,025-car space is expected to draw all-day business parkers rather than shoppers, ease only partially the need for more parking space downtown.

ARCHITECTURAL FORUM • DECEMBER 1953
This is a new kind of community medical center

It concentrates on preventive medicine, including mental health.

It brings community practice into university medical teaching and teaching-hospital quality into a rural community.

It sets a new pattern of hospital staffing, a new specialist—general practitioner relationship.

It not only cares for the sick; it is full of creative innovations for community groups and well people.
This 106-bed hospital—with a medical core any hospital thrice its size could be proud of—would be worth study simply as a fine community hospital.

But it is more than that; it is a forecast.

Nearly everybody in the US who is concerned with rural health problems and with the fate of the family doctor is excited about this hospital as a pattern for the future. NYU-Bellevue Medical School has chosen it for a new community extension of medical education. The Commonwealth and Kress funds have chosen it for studies in rural health and preventive medicine.

But the most heartening fact (and the reason the big institutions are so interested) is that this is no hothouse plant. The initiative to start it and the determination to see it through and make it work as a new kind of community medical center came straight from the people of Hunterdon County—a county of dairy and chicken farms and country-trading towns, a county at the fringe of the commuting orbit of New York.

"I doubt we could have raised even $250,000 for an ordinary hospital, badly as we needed one," says Lloyd B. Wescott, Guernsey breeder who headed the fund campaign. "We raised the incredible sum—for a county like this—of $1,600,000 because everybody understood the idea was special, something so good it would be a tragedy if we couldn't make it."

**HUNTERDON MEDICAL CENTER**

LOCATION: Flemington, N.J.

VINCENT G. KLING, architect

WILLIAM W. ESBACH, associate architect

A. ERNEST D'AMBLY, mechanical engineer

SEVERUD, ELSTAD & KRUEGER, structural engineers

NASON & CULLEN, general contractors

DONALD C. SMELZER, hospital consultant

RAY E. TRUSSELL, M.D., director

L. B. WESCOTT, president

*Ambulatory medical wing entry is at second-floor level. Stair down leads to community floor, can be glimpsed at far right of large photograph.*
MEDICAL CENTER

Surgery and delivery are cantilevered 4 ft from face.

Medical center has three major
And the best way to understand what goes on in these buildings is to “walk through” the plans.

Entering the ambulant wing (see second-floor plan), we come to a U of examining and auxiliary rooms. These are used both by the hospital’s specialists and by the general practitioners of the county when they wish to see their walking patients at the hospital (“We purposely want the specialists and general practitioners to be falling over each other”). At night the U is for mass screenings (right now 8,000 residents are getting half-hour multiphasic tests, 1,000 are getting two-hour checkups as the last two stages of a chronic disease survey). The county’s 26 municipalities are responsible in turn for keeping the U busy on weekly bloodbank nights.

Most of the specialists have their offices on the floor above. The nine specialists (including radiologist, anesthesiologist and pathologist whose offices are in their departments) are appointed by the hospital. They serve as consultants to the local general practitioners; patients’ fees to them go into a separate pooled professional fund that pays their salaries. These men and every local qualified general practitioner who wishes (32 thus far) are on the hospital staff. The medical board includes doctors from both groups. Thus Hunterdon overcomes the two medical traps into which so many rural hospitals fall: either they are medically mediocre because they lack specialists; or, if there is a specialist corps, it runs things at the expense of the voice, stature and potentialities of the family doctor.

Hunterdon’s specialists are faculty members of NYU-Bellevue; they go into New York once or twice a week to teach. At any one time two interns, two residents and four medical students are being taught at Hunterdon, with general practitioners doing a good share of the teaching. Students, at present from three different medical schools, make community rounds with the general practitioners, too.

The central medical core serves both the doctors’ and the nursing wings. Note as you “walk through” how nicely the buildings are linked horizontally. For instance, blood bank, pathology, sterile supply, surgery and surgical beds are all within 100’.

Everyone “knew” the big medical core was built with an eye to the future. But four months after the opening there is already a problem of short space. Facilities are getting more use from ambulant than from bed patients, which means that more people
in Hunterdon are being kept well or diagnosed early in their disease.

The auditorium near the community entrance is used for everything from staff lectures to a League of Women Voters rally on health legislation. When all-day seminars are held (for instance, the high school teachers’ session on adolescent emotional problems), the big lecture group is broken into classes in the medical library, staff room, convalescent lounge (on the nursing wing second floor, not shown), the cafeteria and the stage end of the auditorium—calculated from the beginning as five auxiliary classrooms. The center has now begun inviting all local organizations to hold one yearly meeting at the center (eat in the cafeteria, meet in the auditorium, wind up at the screening U) as one more way of emphasizing that this medical center is interested in well people and in keeping them well.

Hunterdon has gone all out to integrate health and hospital activities. The Public Health Assn. (TB, cancer and crippled children’s work) is quartered in the medical core portion of the community floor. There is already a dental program for children, supported by county, state and parent-teacher funds, in the center’s dental clinic. The public health and school nurses have seminars and case conferences across the hall. If and when Hunterdon gets a county health department (at present it has 26 lay boards of health), this area can become official headquarters with no structural changes.

**Never underestimate the power of a building to symbolize a purpose**

The first two specialists appointed to the center—a year before its completion last summer—were the psychiatrist and pediatrician. They moved into uninspiring temporary offices on Flemington’s main street and got to work on a mental health program (now probably this nation’s No. 1 medical problem).

It was hard sledding. Community understanding and cooperation were slow, as they likely would be anywhere.

But as soon as the two men moved into the new hospital, their work became easier. Seminars for school teachers, for ministers, for parent groups suddenly flourished. More patients in early stages of trouble began to be referred to the center. Hunterdon now has under way one of the most complete community mental-health programs in the US.

Everyone concerned credits the building itself with helping to win the cooperation and enthusiasm vital to such a program. This building, it seems, has become a tremendously powerful symbol of community achievement and pride.

And no wonder. Money and backing for a first study came from the democratic County Board of Agriculture, widest local representative body. Building money (raised without benefit of professionals) was given by every group from garden clubs to the Anti-Horse Thief Society and by more than 9,000 of the county’s 11,000-odd families. Many with no savings pledged payroll or milk-money deductions for three years; it was a commonplace to forego a new car or house repairs (“with four small children we know a medical center is more important”). There were 1,000 volunteer fund solicitors. Every soul in Hunterdon was in on the campaign strategy—and on the planning ideas and the philosophy behind them—from beginning to end. The moral of all this seems to be: the higher the sights, the more people care.
Nursing wing's cantilevered surgery-delivery block also provides a balcony for interns' rooms above. Markings on block are grooves painted dark gray. Framing is reinforced concrete with flat plate slabs; walls are warm yellow brick backed with 4" block.

Murals in pediatrics rooms were done by local artists. Pediatrics and convalescent units are on second floor of nursing wing.

Lobby of nursing wing, as viewed from snack bar. Lobby, cafeteria, dayrooms and 90% of nursing beds share southern view across open country.

Construction cost: $2,220,833 including fees and Group I equipment ($727,000 Hill-Burton contribution). Because non-nursing facilities are so highly developed, per-bed cost of $20,951 is meaningless as cost-comparison figure. Economical $19.50 per sq. ft. is truer measure.
1. Heat pump operating costs

2. New concreting techniques

3. Structural aluminum for air conditioning penthouse

4. Three wide-span framing methods

5. Brief notes on four other engineering developments

---

After five years' experience, engineers of Portland's Equitable Building report heat pump operating costs: 11.3¢ per sq. ft., or about half the annual cost of conventional heating and cooling.

---

Here is the first detailed operating report on the big five-year-old heat pump in the Equitable Savings & Loan Building in Portland, Ore. Based on a typical year of operation (1952-53), annual running costs break down this way:

- Heating costs are a slim 2.1¢ per sq. ft. of net rentable area—less than one-third the average cost of 7.7¢ per sq. ft. for conventional heating in five representative Portland buildings. (These figures include labor and maintenance charges, but exclude annual depreciation.)
- Cooling costs are only 9.2¢ a sq. ft. vs. a US average for air-conditioned office space of 16.9¢. (Portland has no comparable air-conditioned buildings.)
- Heating and cooling costs combined (11.3¢ per sq. ft.) are less than half the 27.3¢ average for all air-conditioned US office buildings. Yet, this building has much more glass and much thinner walls than most.
- Total electrical cost for heating is a mere $774 per year. By comparison, oil heat in this 12-story glass-sheathed structure would have meant an estimated fuel bill of $3,430; district steam would have cost $4,930—more than six times as much as the heat pump!

Source of these striking cost figures is a new report* by Consulting Engineer J. Donald Kroeker and his associate, Ray C. Chewning, which concludes that a year-round heat pump "can save thousands of dollars a year compared with a conventional heating-cooling system in a building as big as Equitable's."

Kroeker engineered Equitable's heat-pump system in 1948 when it was installed at a total first cost of $722,000. This was $22,000 under the lowest estimate for conventional year-round air conditioning. Details of the system, which relies on well water at two different temperatures for its heating and cooling cycles, are diagrammed above.

---

*To be presented next month at the annual meeting of the American Society of Heating & Ventilating Engineers.
Free heat. Chief reason for the heat pump’s operating economy is the fact that the inside zone of an office building needs cooling right through the winter. Even when Portland’s temperature drops to 10°F, the Equitable Building’s big heat load from people and lights demands about 120 tons of refrigeration—almost 20% of the top summer load. Significantly, this cooling requirement coincides with the need for heat in the exterior zone of each floor.

Unlike the usual air-conditioning system, the heat pump uses one refrigeration plant to supply both heating and cooling. Heat extracted from an inside zone is not wasted; it is used to handle much of the heating load in an outside zone. (Balance of the heat is generated by electricity through the heat pump’s reverse cycle.)

Engineer Kroeker has so fully exploited this “free” heat that last winter it contributed about 60% of the entire winter load. In other words, Equitable’s owners pay for only 40% of the heat they get. The heat pump supplies the rest free.

Well water. Another reason for the high efficiency of Equitable’s heat pump is that the system takes advantage of ground water of different temperatures from different wells. From one it gets 63°F-65°F water, which is relatively warm for heating, and from another it gets 57°F water, which is relatively cold for cooling. (This 57°F water is about 15% more efficient than cooling-tower water.) The wells also do double duty as sinks; after “warm” water from the heating well gives up its heat (i.e., is cooled), it drains down into the cooling well and vice versa.

Aside from the use of well water, the heat pump in its summer cycle is no different from most big air-conditioning systems; it uses the same standard compressors and other equipment. Summer operation of the heat pump is therefore nothing new; it is the winter operation that puts the heat pump to the test.

Cost comparison. Despite the fact that Equitable’s operating figures are favored by cheap Northwest power, Kroeker believes similar systems will pay off elsewhere. For example, he has calculated Equitable’s heat-pump operating record on the basis of costs in five other cities taken at random (Chicago, Minneapolis, St. Louis, Seattle and San Francisco), and he found that while their electrical rates are higher, their prices for district steam vs. cheap Portland steam are even higher. Thus in these cities, the heat pump widens its lead over district steam—a good comparison because neither the heat pump nor a district steam system requires a chimney and boiler room.

Compared with an oil-fired steam system, the heat pump comes off equally

---

**Monthly electric costs**

<table>
<thead>
<tr>
<th></th>
<th>Heating</th>
<th>Cooling</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>May ’52</td>
<td>$6</td>
<td>$522</td>
<td>$528</td>
</tr>
<tr>
<td>June</td>
<td>533</td>
<td>533</td>
<td>533</td>
</tr>
<tr>
<td>July</td>
<td>769</td>
<td>769</td>
<td>769</td>
</tr>
<tr>
<td>Aug.</td>
<td>739</td>
<td>739</td>
<td>739</td>
</tr>
<tr>
<td>Sept.</td>
<td>691</td>
<td>691</td>
<td>691</td>
</tr>
<tr>
<td>Oct.</td>
<td>2</td>
<td>571</td>
<td>573</td>
</tr>
<tr>
<td>Nov.</td>
<td>93</td>
<td>318</td>
<td>411</td>
</tr>
<tr>
<td>Dec.</td>
<td>195</td>
<td>224</td>
<td>418</td>
</tr>
<tr>
<td>Jan. ’53</td>
<td>148</td>
<td>217</td>
<td>365</td>
</tr>
<tr>
<td>Feb.</td>
<td>185</td>
<td>268</td>
<td>453</td>
</tr>
<tr>
<td>Mar.</td>
<td>92</td>
<td>374</td>
<td>466</td>
</tr>
<tr>
<td>Apr.</td>
<td>53</td>
<td>470</td>
<td>523</td>
</tr>
<tr>
<td>Total</td>
<td>$774</td>
<td>$5,702</td>
<td>$6,476</td>
</tr>
</tbody>
</table>

Per sq. ft. of rentable area $9.52 $3.35 $13.87

Power bills are based on rate of 0.33¢ per kw-hr, Portland’s lowest block, plus monthly “demand” charge of $1.10 (total equipment kilowatts in use at peak half-hour of each month). Of $6,476 total above, only $2,966 (46%) is for actual electricity used; $3,500 is demand charge for year. Thus heat-pump use depends as much on local demand rates as on electricity used.

**Total annual operating costs**

<table>
<thead>
<tr>
<th></th>
<th>Heating</th>
<th>Cooling</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating electricity</td>
<td>$774</td>
<td>$774</td>
<td>(4.67%)</td>
</tr>
<tr>
<td>Cooling</td>
<td>$5,702</td>
<td>$5,702</td>
<td>(33.9%)</td>
</tr>
<tr>
<td>Fun</td>
<td>162</td>
<td>1,962</td>
<td>2,123 (12.6%)</td>
</tr>
<tr>
<td>Operators</td>
<td>1,700</td>
<td>5,370</td>
<td>7,160 (42.5%)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>135</td>
<td>544</td>
<td>680 (4.0%)</td>
</tr>
<tr>
<td>Water treatment</td>
<td>400</td>
<td>400</td>
<td>(2.4%)</td>
</tr>
</tbody>
</table>

Total $3,261 $13,578 $16,839 (100%)

Per sq. ft. of rentable area $0.021 $0.092 $0.113

Biggest operating cost is salaries (42.5%). Half of annual pay for Equitable’s chief engineer and two assistants is charged to heat-pump operation. Table excludes amortization of first cost.

**Heat pump vs. steam and oil**

<table>
<thead>
<tr>
<th></th>
<th>Heating</th>
<th>Cooling</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat pump</td>
<td>$774 (100%)</td>
<td>$5,702</td>
<td>$6,476</td>
</tr>
<tr>
<td>District steam</td>
<td>4,930 (69%)</td>
<td>5,702</td>
<td>10,632</td>
</tr>
<tr>
<td>No. 5 fuel oil</td>
<td>3,430 (44%)</td>
<td>5,702</td>
<td>9,132</td>
</tr>
</tbody>
</table>

Estimated 1952-53 operating costs compare heat pump with steam and oil used for heating only. In summer, heat pump is like conventional air conditioning so cooling costs are considered the same regardless of heating method. Costs are based on cheap Portland steam at 85°F per 1,000 lb., oil at $2.71 per bbl. (69¢ per gal.).
As shown in the table (p. 137), if Equitable had used oil last year, it would have cost $3,430. If the electricity used by the heat pump for heating had been based on Minneapolis' power rate, highest of the five other cities, the power bill would have been only $1,963—about half the cost of oil.* Engineers Kroeker and Chewning therefore conclude "use of a similar heat pump would appear more favorable in these cities than in Portland."

**Energy vs. "demand."** Less than half—46%—of the heat pump's annual power bill goes for actual electrical energy used; 54% is the "demand" charge—a cost item based on the top amount of electricity used by all electrical devices in a building at the busiest time of the month. It helps pay the utility company for the stand-by generators needed to handle these power peaks. Although electrical energy is cheap in Portland, the demand charge is a flat $1.10 per kw—roughly competitive with rates in other cities. This condition has forced the heat-pump operating engineer to avoid adding further to the peaks.

The peaks and valleys of electrical energy consumption in an office building and, in turn, the operating costs of a heat pump, are influenced sharply by the habits of building tenants. In the Equitable Building electrical demand, exclusive of the heat pump, peaks each day at about 11 A.M., 1 P.M. and 4 P.M. The first and third peaks are due to heavy elevator traffic generated by people going out for coffee. The 1 P.M. peak is also caused by elevator traffic to and from lunch. The highest of these peaks sets the scale for the over-all monthly power bill for the entire building. To keep the heat pump from forcing these peaks (and costs) higher, its operation is avoided at such times.

**Overnight operation.** In winter Equitable's operating engineer lets the heat pump run overnight to keep the chill off the building. There is therefore no start-up "shock" between 9 and 11 A.M., which would pull peak power simultaneously with the rest of the building. Similarly, in summer the compressors are often run at night so that the building will store up cooling to help it over air-conditioning peaks the next day.

Engineer Kroeker recommends that recording demand meters be installed as part of any big heat-pump installation. These pay for themselves in the Equitable Building by helping the operating engineers stagger use of the heat pump between the peak electrical requirements of the rest of the building equipment.

* Minneapolis, however, does have cheap natural gas for heating and absorption-type cooling.

---

**Electrical "demand" charge is the key to heat-pump operating costs**

Peak electricity used during two months.

First bar shows when top power load was pulled by entire building in June—32% of it for cooling. Second bar: cooling aside, when peak power was drawn by other building equipment. Thus top of third bar is monthly demand chargeable to cooling. Similarly, second chart shows when peak January electricity was used for heating, cooling and other building equipment. Last bar shows that monthly demand chargeable to heating is difference between first and second bars—only a 14% greater electrical demand than in a comparable air-conditioned building not using a heat pump!
Light temporary joists spanning 12' between supports carry 12" concrete ceiling slab during casting to eliminate dozens of props. Prefabricated joists are assembled on ground and given upward camber by tightening turnbuckles.

2. NEW CONCRETING TECHNIQUES

Flexible formwork and high-bond reinforcing steel promise economies

The ballistics laboratory at the Aberdeen Proving Ground, Md. demonstrates two new developments in concrete construction: 1) a way to halve shoring costs with prefabricated steel joists that are light, durable and flexible enough to fit beneath any kind of cast-in-place concrete; 2) a way to save up to 30% reinforcing steel with ribbed bars that are cold-worked to 60,000 psi yield strength and twisted in a "dumbbell" section to improve mechanical bond.

Lightweight, lattice steel joists of triangular cross-section support 15,000 sq. ft. of concrete slab ceilings during casting. Conventional timber shoring would have cost 36¢ per sq. ft. (assuming no salvage); these quickly erected, adjustable joists cost only 17 1/2¢ per sq. ft. (based on only ten reuses although over 100 reuses are regularly achieved in Germany, where this system originated).

Weighing only 12 lb. per ft. run, these erector-set joists, spaced 30" o.c., will carry 175 psf on a 12' span, or 25 psf on a 24' span. They consist of 2', 3' and 4' sections plus end sections that permit from 20" to 33" of fine adjustment, thus allowing the joists to be adapted to any span. Before placing, the lower chord of each joist is tightened by turnbuckles, giving an upward camber (in effect a prestress) of up to 2".

At the ballistics laboratory, these joists support 24' ceiling slabs with the aid of only a single line of props at midspan. The 12' ceiling, extra solid against possible explosion hazards, is cast on plywood forms laid on the joists' 6"-wide top flanges.

Two men and a crane operator put up 4,600 sq. ft. of this formwork in eight hours for an erection cost of only 2¢ per sq. ft. Stripping took somewhat longer, cost 3¢ per sq. ft. The system is highly flexible and has been successfully used to cast arches and tunnels by roughly fitting joist segments to the required outline and adding timber fillers to round out the curve.

Double-twisted reinforcing steel is used in all beams and slabs of the laboratory, saving an estimated 30% steel over conventional reinforcing. This high-bond steel is made by rolling a homogeneous ribbed bar in a dumbbell section, then twisting it by a cold-working process that increases the minimum yield strength of the steel to 60,000 psi. Less reinforcing steel is required in the structure because 1) the double-twisted shape gives twice the bearing area between steel and concrete, and 2) the high strength of the cold-worked metal permits it to be used at working stresses of 30,000 psi in tension and 20,000 psi in compression (though not yet permitted by all building codes).

Detailed figures are not available on the ballistics building, but these twisted bars saved 30% in reinforcing steel at a sewage treatment plant at McGuire Air Force Base, N.J., where Whitman Requardt & Associates report that they used only 200,536 lb. of twisted bars but would have required 296,536 lb. of conventional reinforcing steel, a saving of 29 1/2%. Since the double-twisted bars average 6¢ per lb. vs. 6 1/4¢ per lb. for conventional reinforcing, the dollar saving is $2,590, or 13 1/2%.
Three-story aluminum frame goes up atop Manhattan's Continental Can Building.

Lightweight tower structure, above, weighs only 22 tons, is mounted on the old top floor steel of the 27-story building. Connections are made with high-strength aluminum bolts.

### 3. ALUMINUM STRUCTURE FOR NEW AIR-CONDITIONING SYSTEM

All-aluminum penthouse atop skyscraper carries equipment for unique reheat air-conditioning system designed to use 100% outside air.

Subway tracks beneath Manhattan's old 27-story Continental Can Building forced all the new air-conditioning equipment to go on the roof. Weight reduction was therefore very important. The two-way solution:

1. three-story all-aluminum cooling tower whose bolted structure weighs only 22 tons vs. 61 tons for an equivalent steel frame;
2. lightweight 600-ton lithium bromide steam-absorption unit whose 50-ton weight is 40% less than a regular compression or centrifugal unit and takes up 10% less space (the equipment covers 1,000 sq. ft. on the top floor plus 400 to 500 sq. ft. fan rooms on each floor).

**Lightweight cooling tower**

The aluminum cooling tower rises above the 27th floor, where the air-conditioning equipment and the aluminum structure of the tower are mounted on the existing steel of the building. All tower walls, including those of the rebuilt 27th floor, are 18-ga. aluminum panels bolted to the aluminum frame. Framing members made of 61-T6 aluminum alloy (working stress 15,000 psi) are connected with aluminum gusset plates, bolts and nuts. To eliminate galvanic corrosion, connections between aluminum and steel are made with nonconductive gaskets. Aluminum walls and framing in the cooling towers themselves are given a coal-tar coating to avoid corrosion of the aluminum by the alkali solutions passing continually through the redwood fill in the tower. Per pound of metal erected, the aluminum frame was four times the cost of an equivalent steel frame ($1.98 vs. 48¢ per lb.); however, the steel would have been three times heavier (61 vs. 22 tons), more than the building could support.

**Economical reheat air conditioning**

As well as using the first aluminum-framed structure in New York, Continental Can's air-conditioning system is the first major installation of a new type of reheat system designed to give optimum year-round temperature and humidity control with maximum use of outside air—up to 100% when the outside temperature is low enough to cool and ventilate the building without use of the cooling plant.

Each floor has a separate air-conditioning...
system, drawing its chilled water from the penthouse plant and its heat from a new high-pressure steam line from the basement, which takes care of the absorption unit and generates hot water for the heating coils on each floor (see flow diagram). Outside air (plus an automatically controlled proportion of recirculated air) is drawn into a fan room on each floor, where it is cleaned (by electrostatic and dust-stop filters), cooled by chilled water coils to 55°F. saturated (summer cooling) or passed through steam coils (winter heating).

**Positive humidity control**

Conditioned air flows into two duct systems, one supplying the wall units of the perimeter offices, the other supplying the ceiling outlets of the interior zone. Each perimeter office contains under-window conditioning units where the saturated 55°F. air is reheated by hot-water coils as required, thus lowering relative humidity. A thermostat in each unit controls the flow of hot water to maintain offices at about 78°F. dry bulb and 40% relative humidity. For the interior duct system a hot-water reheat coil, with thermostat controls and a humidifier, is set in the fan room.

Both perimeter and interior zones are connected to a forced exhaust system with outlets and ducts in the hung ceiling. Automatic dampers at main-floor outlets control the proportion of air exhausted or returned to the fan room; this can vary from 25 to 100%, depending on outside air temperature, to relieve the load on the cooling plant.

Air conditioning was carried out one floor at a time. Occupants of this floor were removed to a vacant floor during the weeks required to install ducts and equipment. Installation cost of this year-round air-conditioning system was approximately $6.50 per sq. ft. (exclusive of cooling tower and machine-room structure).

The system was conceived and designed by A. Urban Zimmerman, consulting engineer, working in close cooperation with Rogers Associates, office planners and designers. Architects York & Sawyer designed the aluminum penthouse; and the Water Cooling Equipment Co., the aluminum cooling tower.
4. WIDE-SPAN WAREHOUSE FRAMING

Prefabrkated timber — 71' span bowstring trusses carry 28 acres of flat roof

Tilt-up concrete walls and bolted trusses permitted speedy and low-cost erection of this huge P.R.R. Franchise warehouse near Washington, D.C. The first 500' x 500' unit went up in three months and the second 500' x 2,000' unit in eight months. Though cost figures are not available for this particular job, the same architects have built large warehouses of similar construction on the West Coast for $3 per sq. ft.

Built for lease to the General Services Administration, the two buildings cover nearly 1 1/4 million sq. ft., contain 545 solid timber columns (20 supports to the acre) and 773 bowstring trusses (span 71'-3"., 20' o.c.). These 2-ton trusses were prefabricated in Oregon, shipped knocked down to Virginia, where they were assembled with split-ring connectors and erected by an eight-man crew in only 30 minutes per truss. Bowstring trusses are spanned with 2" x 12" joists raised atop short columns to give a flat roof (see photos).

The warehouse also uses 14,500 lin. ft. of tilt-up concrete walls, including 7,500 lin. ft. of fire walls that divide the warehouse into 19 storerooms. Wall panels are 6" thick, 20' wide, 26' high and weigh 20 tons. Architects: Ward & Bolles; roof construction by Timber Engineering Co.

Lamella trusses — stapled slats eliminate purlins, cut 62'-span cost to $4.15 per sq. ft.

Lightweight lamella-framed roof sections, prefabricated in three-ply laminations of 1/16" oak, join 62' three-hinged timber arches in this Louisville, Ky. warehouse. The 3'-deep roof structure weighs under 1 psf, yet will support an ultimate load of 85 psf (AF, July '53). Framing costs of this 62' x 50' warehouse came to only $2.12 per sq. ft.; total construction cost, including 6" concrete foundation slab and roofing, was only $4.15 per sq. ft.

Each 8' x 8' roof section is made from 8' slabs, 3" wide, stapled together at alternate quarter points. Fully expanded and used instead of purlins between frames 8' o.c., the panel forms a 6" x 2' diamond pattern in which each slat derives lateral support from its neighbors. Thus the entire panel has the rigidity of a two-way slab, yet unfolds from an 8' x 9' package for easy transportation. Erection is simple, too. Steel keys at the end of each pair of slats fit steel slots fastened to the framing bents, developing the full rigidity of the panel.

For comparison, two finishing techniques are used: 1) corrugated sheet aluminum nailed to lamella panels cost 66¢ per sq. ft.; 2) vinyl plastic (cocoon) sprayed over 1" wire mesh, cost 74¢ per sq. ft. In both cases the warehouse is lit by translucent glass-fiber skylights. It is engineered and fabricated by Gamble Bros.

Welded steel — 50 bays framed with lightweight joists, insulated for quick food freezing

A 1,300,000 cu. ft. refrigerator with a working temperature of minus 20° is the core of a third noteworthy warehouse. It is an interesting demonstration of highly insulated construction in a building used to quick-freeze 500 tons of foodstuffs every 24 hours for the Mid-South Refrigerator Warehouse Co. in Memphis, Tenn. Construction costs: $10.40 per sq. ft., including 5,000 sq. ft. of air-conditioned offices.

The structure is framed with continuous cantilevered steel beams (welded atop columns providing 50' x 50' bays) and long bar joists 8' o.c. To minimize heat loss each column frames down into a 4'-square steel grillage carried by a mat of dense cork mounted on conventional spread footings. Walls are of tilt-up concrete, 6" thick; roof deck, of 8' x 2' precast slabs.

The huge freezer is insulated with several thicknesses of glass-fiber insulation board, erected in 2' x 4' sections 2" thick. Roof insulation is 10" thick, is topped with built-up roofing and with white marble chips to deflect sun load. Wall insulation is 8" thick with a vapor barrier on the warm side of the insulation. The interior wall surface is finished with perforated hardboard panels mounted on treated timber studs. Floor insulation is also 8" thick, with 8" hollow tile set 8' o.c. in the gravel beneath the floor slab. The danger of frost heave is reduced by blowing hot air through these tiles as necessary.

The warehouse is designed by A. Epstein & Sons, Inc., architects and engineers.
“Soundproofing” for testing laboratory

Problem: to construct a sound-insulated workroom for the testing of General Electric transformers.

Solution: a 56' x 66', 49'-high concrete framed structure with 4½' thick double walls guaranteed to smother even the noisiest noises. Wall construction layers (from outside in): 12' concrete, 2' felt, 8' concrete block, copper sheet (to keep out radio waves), an air space between 2' x 6' studs and a wooden rack carrying 28' deep fibrous glass wedges. The estimated sound-insulation value of this wall is better than 65 db. Floor and ceiling are of similar construction, except that in place of the 12' solid concrete section, there are two 6' layers of concrete separated by ½' compressed fibrous glass. A working floor is provided above the wedges by interlaced cables held in place by 400-lb. compression springs attached to the walls; thus movement of operating personnel will not affect the equipment under test, which is mounted upon rail tracks set in concrete.

The building is being erected for General Electric Co. at Pittsfield, Mass., at an estimated cost of $71 per sq. ft. fully equipped, including adjacent control rooms, vestibule and power generators.

Architects and engineers: Chas. T. Main, Inc. Acoustical consultants: Bolt, Beranek & Newman.

Fire protection for electrical hazard

Problem: to fireproof the storage basement of an office building directly over the electrified railroad tracks near Grand Central Terminal in New York City. Water sprinklers cannot be used because the water would seep down to the electrified system and disrupt rail service.

Solution: carbon dioxide stored under pressure in an enclosed bank of 14 75-lb. cylinders connected to the 10,985 sq. ft. storage areas by 2' pipes. Incipient fires cause temperature detectors in the basement ceiling to release the carbon dioxide gas which smothers the fire. A 45-second time delay, complete with warning howler, is built into the system so that anyone in the basement has time to get out before discharge of the gas.

Photo, below, shows the carbon dioxide cylinders and control boxes, with pipes above them leading to the storage areas. Installed cost of the fire-protection system came to $7,000; it was engineered by Walter Kidde & Co., Inc.

Noise reduction for air-intake louvers

Problem: to control the noise generated in supplying the vast quantity of air required by modern air conditioning. At the 24-story Lever House building in New York City seven giant blowers drive 200,000 cfm of air through 70' x 15' louvers on the second story facing 54th St. This generates considerable noise: 100 db. in the plenum chamber and an uncomfortable 75 db. at the apartments across the street.

Solution: this noise is reduced by a combination of acoustic panels and Helmholtz resonators installed in 4'-wide units in the plenum chamber. The acoustic panels consist of 8'-thick steel and glass-fiber sandwiches, with the steel facing perforated on one side to absorb up to 90% of the sound from the middle-frequency range on up. Low-frequency noise is controlled by the resonators, consisting of sheet-metal volumetric chambers in which noise vibrations of narrow frequency bands are neutralized by the mass reactance of a short column of enclosed air. These devices have successfully cut air-intake noises so that they can no longer be detected in the apartments. Costing $12,740, the installation is designed by Industrial Acoustics Co.
The following information is based on the results of an extensive survey conducted of church consultants, church architects and church building officials.

**NOTE:** See local codes for minimum aisle widths. (N.T. codes: 3'-0" min. + 1/4" each 5'-0" in length).

Rear cross aisle may be omitted if narthex (vestibule) is ample.

### AISLE WIDTHS

(For medium size church: 500 to 750 seats)

**SIDE AISLE**

- **Protestant:** good: 3'-0", min.: 2'-6"
- **Survey range:** 2'-6" to 6'-0"
- **Roman Catholic:** good: 4'-0", min.: 3'-6"
- **Survey range:** 2'-6" to 6'-0"

**CENTER AISLE**

- **Protestant:** min.: 6'-0", good: 7'-0"
- **Survey range:** 6'-0" to 8'-0"
- **Roman Catholic:** min.: 6'-0", good: 7'-0"
- **Survey range:** 6'-0" to 8'-0"

### SIDE AISLE END CLEAR OF PROJECTIONS

- **Protestant:** good: 4'-0", min.: 2'-6"
- **Survey range:** 2'-6" to 12'-0"

**PEW BACK TO FRONT RAIL**

- **Minimum seat width:**
  - Protestant: 38" min.
  - Roman Catholic: 36"
- **Survey range:** 32" to 36"

**MINIMUM SEAT WIDTH**

- **Minimum for vested choir:** 22"
- **Good:** 24"

**LENGTH OF PEWS**

- **DOUBLE ACCESS**
  - **PEW CAPACITY**
    - 8 Persons per pew: 12'-0"
    - 10 Persons per pew: 13'-6"
    - 12 Persons per pew: 15'-0"
    - 14 Persons per pew: 16'-6"
  - **SEAT WIDTH**
    - 12'-0": 13'-0"
    - 13'-6": 14'-0"
    - 15'-0": 15'-0"
    - 16'-6": 16'-0"

- **SINGLE ACCESS**
  - **PEW CAPACITY**
    - 8 Persons per pew: 13'-0"
    - 10 Persons per pew: 14'-0"
    - 12 Persons per pew: 16'-6"
    - 14 Persons per pew: 18'-0"
  - **SEAT WIDTH**
    - 13'-0": 14'-0"
    - 14'-0": 15'-0"
    - 16'-6": 17'-0"
    - 18'-0": 18'-0"

**LENGTH OF CHOIR STALLS**

- **STALL CAPACITY**
  - 4 Persons: 7'-8"
  - 6 Persons: 9'-8"
  - 8 Persons: 11'-8"
  - 10 Persons: 13'-8"
  - 12 Persons: 15'-8"
  - 14 Persons: 17'-8"

- **SEAT WIDTH**
  - 7'-8": 8'-0"
  - 9'-8": 10'-0"
  - 11'-8": 12'-0"
  - 13'-8": 14'-0"
  - 15'-8": 16'-0"
  - 17'-8": 18'-0"

**WITHOUT KNEELERS**

- **PEW CAPACITY**
  - 8 Persons per pew: 13'-0"
  - 10 Persons per pew: 14'-0"
  - 12 Persons per pew: 16'-6"
  - 14 Persons per pew: 18'-0"
- **SEAT WIDTH**
  - 13'-0": 14'-0"
  - 14'-0": 15'-0"
  - 16'-6": 18'-0"
  - 18'-0": 20'-0"

**WITH KNEELERS**

- **PEW CAPACITY**
  - 8 Persons per pew: 13'-0"
  - 10 Persons per pew: 14'-0"
  - 12 Persons per pew: 16'-6"
  - 14 Persons per pew: 18'-0"
- **SEAT WIDTH**
  - 13'-0": 14'-0"
  - 14'-0": 15'-0"
  - 16'-6": 18'-0"
  - 18'-0": 20'-0"

**LENGTH OF PEWS - COMBINATION SEATING**

- **PEW CAPACITY**
  - 8 Persons per pew: 13'-0"
  - 10 Persons per pew: 14'-0"
  - 12 Persons per pew: 16'-6"
  - 14 Persons per pew: 18'-0"
- **SEAT WIDTH**
  - 13'-0": 14'-0"
  - 14'-0": 15'-0"
  - 16'-6": 18'-0"
  - 18'-0": 20'-0"

**LENGTH OF PEWS - DOUBLE ACCESS**

- **PEW CAPACITY**
  - 8 Persons per pew: 13'-0"
  - 10 Persons per pew: 14'-0"
  - 12 Persons per pew: 16'-6"
  - 14 Persons per pew: 18'-0"
- **SEAT WIDTH**
  - 13'-0": 14'-0"
  - 14'-0": 15'-0"
  - 16'-6": 18'-0"
  - 18'-0": 20'-0"

**LENGTH OF PEWS - SINGLE ACCESS**

- **PEW CAPACITY**
  - 8 Persons per pew: 13'-0"
  - 10 Persons per pew: 14'-0"
  - 12 Persons per pew: 16'-6"
  - 14 Persons per pew: 18'-0"
- **SEAT WIDTH**
  - 13'-0": 14'-0"
  - 14'-0": 15'-0"
  - 16'-6": 18'-0"
  - 18'-0": 20'-0"

**LENGTH OF PEWS - COMBINATION SEATING**

- **PEW CAPACITY**
  - 8 Persons per pew: 13'-0"
  - 10 Persons per pew: 14'-0"
  - 12 Persons per pew: 16'-6"
  - 14 Persons per pew: 18'-0"
- **SEAT WIDTH**
  - 13'-0": 14'-0"
  - 14'-0": 15'-0"
  - 16'-6": 18'-0"
  - 18'-0": 20'-0"

**LENGTH OF CHAIR STALLS**

- **STALL CAPACITY**
  - 4 Persons: 7'-8"
  - 6 Persons: 9'-8"
  - 8 Persons: 11'-8"
  - 10 Persons: 13'-8"
  - 12 Persons: 15'-8"
  - 14 Persons: 17'-8"

- **SEAT WIDTH**
  - 7'-8": 8'-0"
  - 9'-8": 10'-0"
  - 11'-8": 12'-0"
  - 13'-8": 14'-0"
  - 15'-8": 16'-0"
  - 17'-8": 18'-0"
GENERAL NOTE: Chancels, sanctuaries and bema are shown on this and the following page as a guide to the location of their components, fittings and furniture as determined by a particular denomination or faith’s customary ritual. There are very few mandatory requirements and design latitude is wide.

Information and guidance was obtained from church consultants, church architects and church building officials. Many were consulted personally. Others contacted by letter and questionnaire.

Chancels have been indicated as symmetrical; other arrangements are usual. The chancel — as the focus of worship and the center of visual interest — cannot be planned by rule.

Present practice seeks unity in the chancel or sanctuary or bema by emphasizing the altar, ark, communion table or pulpit (depending on the denomination or faith) as the focus of worship.
**Worship Centers**

**Architectural Forum**

**Design Standards and Data**

Copyright 1953 by Harold R. Sleeper, F.A.I.A.

---

**Small Church Sanctuary (250 to 350 Seats)**

- Altar may have one step or 3 steps
- Height of pulpit floor above nave floor: Approximately 4'-0" in large church.
- Pulpit is usually a permanent fixture in large churches. Lecterns are often used in smaller churches.

**Large Church Sanctuary (800 to 1000 Seats)**

- Height of Presbytery above nave floor: Approx. 4'-0" in large church.
- 1'-2" or 1'-3" treads - uneven no. of steps

**Medium Size Church Sanctuary (500 to 600 Seats)**

- Dimensions shown are minimum.
- Organ console pit be at the left end of the sanctuary platform (as viewed by the congregation). The soloist stands at the left end of the platform and the organist will then have a view of the soloist.

**Roman Catholic Sanctuaries**

- In Christian Science churches there is no choir. It is most desirable that the organ console be at the left end of the platform. The organist may be entirely separate from the main platform to permit longer processional.

**Ark**

- In Orthodoxy, rear of Ark is oriented toward Jerusalem.
- Size of Ark, aside from its being the visual focus, is dependent on number and size of scrolls possessed by the congregation.

**Choir and Organ**

- Choir is sometimes used. Organ is not.
- Choir and organ have no traditional location - may be on or back of bema or on balcony anywhere in temple.

**Bema of Synagogue and Temple**

- Usual components of bema for temple
- Bema of Synagogue
- Bema of Temple

---

**Notes**

- Dimensions shown are minimum.
- Organ console pit be at the left end of the platform. The organist may be entirely separate from the main platform to permit longer processional.

---

In the diagram, various sections and details of church and temple designs are illustrated, including sanctuary layouts, communion rails, and special seating arrangements. The text provides guidelines and specifications for the design and layout of worship centers, emphasizing the importance of functional and aesthetic considerations in religious architecture.
FOLLOW-THROUGH
that's good for you!

...you really get it from your RO-WAY Distributor!

Your RO-WAY Distributor has the finest overhead type doors for all your jobs—commercial, industrial and residential. He's proud to bring you such outstanding RO-WAY features as: Taper-Tite tracks and Seal-A-Matic hinges; Double-Thick tread rollers; famous Power-Metered springs; the better designing, engineering and construction that give RO-WAY doors their exceptional long life of easy-up, easy-down operation.

But he has something else to offer which is just as vital to customer satisfaction. That's the extra care with which he handles every installation detail!

Call it “follow-through” or “thoroughness” or “pride in a job well done.” It's all these things and it's mighty important to you. It means you can save time by depending on your RO-WAY Distributor to help select the proper size and type of RO-WAY door for the appearance and service requirements of each installation. It means you always know your RO-WAY Distributor shares your own interest in seeing that every job is done right!

We think that's the kind of man you like to do business with. So remember—on your next job call your RO-WAY Distributor for “follow-through” that's good for you.

ROWE MANUFACTURING CO.
938 Holton St., Galesburg, Ill.

there's a Ro-Way for every Doorway!

It Pays to Call Your RO-WAY Distributor First—On Any Job!

Look in your classified telephone directory, or write for his name and address. He's an important member of a nationwide network of selected sales and installation engineers.

He has a wide choice of RO-WAY doors to show you, in both standard and special sizes and styles—for practically every commercial, industrial and residential need.
former restaurant space M-B had rented in the Universal Pictures Building. Ideally, an auto showroom ought to have a very high ceiling, no interior columns. Here the ceiling was but 12'-6" high (and it would have to be dropped 1'-0" to allow for recessed lighting). There were six interior columns of various widths, variously spaced, variously adorned by pipes or conduits; there was also an awkward 6' wall jog at the left rear corner. But taking it all in all, Barnes kept coming back to where he had started: how to put them (quite literally) in the best possible light—these swank, superb, $3,285 to $12,500 cars?

The best answer: a white floor. If a surface this size (61' x 76') could only be white—and if it could be kept clear of everything but cars, customers and salesmen—it would act as a giant light reflector rather than an insatiable light absorber. Shoot your light straight down from overhead. An enormous amount would "bounce" off such a floor; you could cut the usual dark-floor fluorescent-fixture requirements by 50%, kill all glare with louvers and baffles, and still leave a "bounce" of 50 foot-candles all over the floor—as much or more light as generally comes down from an office ceiling. What is more, the "bounced" light would keep on bouncing, floor to ceiling, ceiling to floor. One consequence: a full, soft, flattering glow washing up from underneath, down from above—a "sandwich" of light.

Only hitch in the whole thing: there had never before been an automobile showroom with a white floor.

Architect forthwith put it to client that 1) M-B wanted something more like an art gallery than a glorified gas station and that here was the solution; 2) in addition to solving the lighting problem, a white floor would permit dark walls, dark columns, backgrounds for once not at war with the cars; 3) M-B customers were not apt to be trackers of mud, stompers-out of butts; 4) traffic here would surely be less than at the average showroom; 5) clean tires do not leave tracks;* 6) savings on lighting fixtures would more than offset floor maintenance costs for a long time to come.

Yes, said the client, put in the white floor. Barnes used 1 1/2" of white terrazzo. This and the white acoustic-tiled ceiling were the "neutral" areas; for the rest, he limited himself to four "real" materials: 1) Alabama marble on the back wall; 2) plywood of koa from the South Pacific; 3) gun-metal gray paint and mirrors.

Total cost (about $200,000) includes vast expenses (met in part by the landlord) for stripping out the restaurant and for removing and sealing over a central stairway. This was not an inexpensive project, but M-B's Hoffman, for one, is convinced of the wisdom of the investment. After all, says he, M-B now has the best automobile in the best automobile showroom.

* Though it was later discovered they leave a yellowish grease stain if a car sits in one spot for any great length of time. Preventive: a small plastic patch under each wheel.
Precast, tilt-up concrete construction is giving taxpayers more permanent structures at no extra cost in the Marine Corps Artillery Training Center, Twenty-nine Palms, Calif. With more than 1.5 million sq. ft. of floor area, this is one of the biggest precast concrete construction jobs ever undertaken.

For economy the original appropriation contemplated a type of construction often used for temporary structures. However, cost studies disclosed that durable, sturdy, precast concrete buildings could be constructed for the same appropriation.

Precast, tilt-up concrete construction provided extra values for the same money because it lends itself to simplification of detail, many reuses of a few basic elements and employment of production line methods for fabrication and erection. It offers such additional advantages as fire safety, low maintenance cost, savings in construction time, use of economic materials and fabrication and construction methods equally adaptable to metropolitan centers or to relatively inaccessible areas.

These pluses apply not only to military projects but also to schools, hospitals, commercial and industrial buildings. Fast, economical, precast tilt-up concrete construction is equally adaptable to one story or multistory buildings.

For more information write for free, illustrated literature, distributed only in the U. S. and Canada.

Neptune & Gregory, Pasadena, Calif. were architects and engineers for the Twenty-nine Palms Marine Corps Artillery Training Center. A joint-venture firm, Twaits—Morrison-Knudsen—Mocco, was contractor.
BRAB Director William H. Scheick (center) briefs final panel of speakers at the recent two-day conference in Washington on porcelain enamel in the building industry. Shown left to right are Architect James J. Souder, York & Sawyer; Kiff, Coleen, Voss & Souder; Milton Male, U.S. Steel Corp.; Mr. Scheick; Paul R. Fritsch, Goodyear Tire & Rubber Co.; and W. W. Lobdell, Lobdell Realty & Construction Co.

BRAB PORCELAIN ENAMEL CONFERENCE
Architects and manufacturers stress value of durable, colorful, curtain-wall panels, applaud new combination of vitreous enamel on aluminum

In cooperation with the Porcelain Enamel Institute, the Building Research Advisory Board last month held a new kind of industry-wide conference with over 225 architects, engineers, scientists, manufacturers and contractors from all parts of the building industry. While previous BRAB meetings had concentrated upon building techniques (condensation control, building in hot climates, etc.), this two-day conference turned the research spotlight on a single building material, porcelain enamel.*

The conference's four half-day sessions covered the fundamental properties of porcelain enamel, its use in building design, its value as an engineering material and the results of practical experience with the material in building. Main conclusions:

- High initial cost of porcelain enamel (compared to masonry) is recovered in six to nine years thanks to its extreme durability and ease of cleaning.
- Porcelain-enamel wall panels should be designed as full wall systems, complete with vertical and horizontal joints, backing and

Continued on p. 182

* This is the first of a new series of BRAB conferences aimed at bridging the gap between manufacturers of specific products and the architects and engineers who use them. The object, says BRAB director, Architect William H. Scheick, is to summarize existing knowledge, discuss current trends and outline future research problems.

Porcelain laminated to honeycomb aluminum forms the 3/8"-thick, deep blue curtain wall on the Standard Federal Savings & Loan Assn. building, Los Angeles, by Architect Welton Becket & Associates. Lightweight honeycomb aluminum core is faced with 18-ga. enameled sheet iron, backed with a similar skin painted. Panels cost $2.75 per sq. ft. (excluding erection), are guaranteed ten years.

LIMESTONE
The natural building stone that enhances modern or traditional architecture

Used alone, Indiana Limestone makes any building finer. Used in combination with brick, concrete or metal, stone provides added distinction and beauty which endures.

ili Cut stone is readily fabricated to any shape, size or form. It is the one building material that combines flexible interpretation and permanence for your creative efforts.

Write for descriptive booklet

INDIANA LIMESTONE COMPANY, INC.
BEDFORD, INDIANA
Offices in Principal Cities
World's Largest Producers of Building Stone

150 THE MAGAZINE OF BUILDING
Use
ENDURO
with Glass

to Bring Sunshine in

Wherever it is desirable to bring more sunshine in, the combination of Republic ENDURO Stainless Steel and glass gives modern architecture the maximum freedom in design.

The extremely high strength-to-weight ratio of ENDURO takes the risk out of employing thinner, lighter sections to span large areas in unbroken sweep. That pleasing "wide open" look you want can generally be achieved with ENDURO without sacrificing structural strength, durability or weathertight construction.

Easy-to-fabricate ENDURO is permanently resistant to rust and corrosion. Its bright, natural lustre lasts and lasts—stays "new" looking with a minimum of maintenance. And its satiny smooth surface, providing no firm foothold for dirt or grime, is so-o-o easy to clean.

SWEET’S FILE 25¢ offers you much additional information on ENDURO Stainless Steel. Republic offers you special assistance in the use of versatile ENDURO with glass or other materials, or by itself. Just write:

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

See Sweet’s for data on Republic Pipe, Sheets and Roofing...Electrunite E.M.T....Republic Rigid Steel Conduit....Berger Lockers, Bins, Shelving and Cabinets...Truscon Steel Windows, Doors, Joists and other Building Products.
Porcelain laminated to honeycomb paper is the curtain wall at Bettinger Co.'s office building at Waltham, Mass. This 2 3/4" wall, laminated paper core faced on both sides with enameled, 18 ga. steel, weighs 6 psf, has a "U" coefficient of 0.15, a sound-insulation value of over 40 db, and has successfully passed a four-hour fire test. Cost of the wall is given as $3 per sq. ft., with another $5 per sq. ft. for erection.

ST. BARNABAS CHURCH, PHILADELPHIA, PA.
Faced with Mount Airy Sawed Bed Astilar.

When Appearance and Durability are important — use

MOUNT AIRY GRANITE

- Outstanding Dignity
- Uniform Texture
- Life-time Permanence
- Distinctive Coloring

Mount Airy Granite is a beautiful (almost white) stone, impervious to weather changes, that is ideal for base courses or the entire facade...it's your assurance of a memorial structure that will be just as beautiful in future ages as when first erected.

NORTH CAROLINA GRANITE CORPORATION
MOUNT AIRY, NORTH CAROLINA

Recent, modern engineering methods and equipment make it possible for us to produce Mount Airy Granite much more economically than in the past. Why not write us regarding specific applications of Mount Airy Granite in churches today?

The combination of porcelain enamel and aluminum is highly promising; the enamel adds rigidity and color while the nonrusting property of aluminum helps reduce spalling around freshly cut edges.

Properties of porcelain enamel

Porcelain, or vitreous, enamel is a composite material made of glass fused to metal. It is durable, hard (having good resistance to abrasion), inorganic (impervious to all but the strongest hot acids and salts), reflects light and thermal radiations, can be colored without fading and adds strength and rigidity to the base metal. Furthermore, recent tests at Oak Ridge reported at the conference show that porcelain enamel also has outstanding resistance to radioactive contamination, second only to plate glass.

The growing demand for color in building was emphasized again and again. In contrast to the gaudy colors of the diner and filling-station era, vitreous enamels can now be of any specified shade or hue (even with mottled effects where desired) and are used by leading contemporary architects.

A large multicolored mural of porcelain enamel on steel by Ceramic Artist Doris Hall won the Architectural League's Silver Medal Award for 1953.

The conference's session on porcelain enamel and building design concentrated on the economy of metal-walled buildings. It was pointed out that in order to cut weight, save space and speed erection, architects are striving for thin, lightweight building components that are large enough to be hoisted into position with a minimum of critical erection joints. Some of these curtain walls are only 1/2" thick, weigh as little as 3 psf and, when properly designed, cost little more than conventional construction. Moreover, by reducing dead load, lightweight walls can save on structural steel framing (light aluminum panels saved 3 lb. of structural steel per sq. ft. of wall area on the Alcoa Building in Pittsburgh) and its speedy erection brings a bonus to the owner through earlier rental income.

Many new curtain walls

Several speakers stressed the need for a complete wall system comprising wall panels, windows, sunshades, with all necessary connections to permit rapid erection from inside the building. Thin, nonload-bearing sandwich panels with an exterior and interior skin of porcelain enamel and a core with insulating and vapor-barrier properties have been made with a variety of materials—with honeycomb paper (an astonishingly strong, highly insulating)...
plan for

with the

powerstat

Wallbox Dimmer

• Any amount of light from darkness to full brightness
• Installed as easily as the ordinary wallswitch
• Economical, cool, silent operation
• Approved by the Underwriters' Laboratories

THE SUPERIOR ELECTRIC CO.
BRISTOL, CONNECTICUT

The modern era of home lighting is at your fingertips. Gone is the "on-off" lighting of the ordinary wallswitch. A new concept in light control, the powerstat Wallbox Dimmer, replaces the wallswitch to permit the control of light from complete darkness to full brightness. Simply turning a knob brightens or softens light silently and smoothly — selects the amount of light just right for any occasion or activity — for the reflection of every mood — the ideal brightness for every seeing task.

Here is home lighting for better living — CONTROLLED LIGHT.

Complete information about Controlled Light is available in Bulletin D653WBT. And for your customers, a simple, non-technical Bulletin D253WBC.

Write to:
THE SUPERIOR ELECTRIC CO.
12123 Demers Avenue, Bristol, Conn.

NAME ____________________________
POSITION _________________________
COMPANY _________________________
CO. ADDRESS ______________________
CITY __________ ZONE ______ STATE ________
Highway viaduct demonstrates THREE

Fir plywood solved complex form problem on Alaskan Way Viaduct. Double-decked structure .77 miles long required only 400,000 square feet of plywood.
KEY ADVANTAGES OF
FIR PLYWOOD
CONCRETE FORMS

1. TIME AND LABOR SAVINGS
On this six-lane highway viaduct along the Seattle, Washington, waterfront, standardized re-usable plywood form sections helped complete the job months ahead of schedule. Exterior-type fir plywood was used to fabricate the form panels for beams, girders and roadway.

2. ECONOMY THROUGH RE-USE
About 400,000 square feet of 5/8" fir plywood was required for the .77 mile structure. Contractors reported an average of four re-uses. About 25% of the plywood forms gave seven to eight re-uses. In some cases forms withstood 10 uses. Other forms gave additional uses after re-facing with 1/4" fir plywood.

3. SMOOTH, FIN-FREE CONCRETE
The smooth surfaces obtained with the plywood forms cut finishing to a minimum, the contractor reports. The only finishing work required was filling of tie-holes and beads, which were ground and sacked.
Job Superintendent John Rumsey, Jr. says: "Fir plywood solved a complex form problem for us and speeded work all along the line."

SPECIFY DFPA INSPECTED FIR PLYWOOD
These registered industry trademarks are your guide, guard and assurance of DFPA quality-tested fir plywood manufactured especially for concrete form work. INTERIOR PLYFORM (highly moisture resistant glue) gives multiple re-use; up to 12-15 are not unusual. For maximum re-use, specify EXTERIOR PLYFORM (100% waterproof glue). For special architectural concrete use fir plywood with "A" face veneer or one of the new overlay-faced or hardboard faced fir plywood identified by this star and link industry hallmark of quality.
For further information write Douglas Fir Plywood Association, Tacoma 2, Washington.
Multicolored porcelain enamel is used architecturally on the Fitchburg Youth Center (AF, July '51), Mass., by Architect Carl Koch and Artists Gyorgy and Julian Kepes. This building won the 1953 Gold Medal award of the Architectural League.

How You Can get Heat Insulation plus Sound Control at minimum cost!

Installing 8-foot POREX Roof Plank

Gordon E. Swift Junior High School, Waterbury, Conn.

68,000 sq. ft. of 3/8" POREX PLANK

Architect: Warren H. Ashley, Carl J. Malmfeldt

Gen. Contractor: Messerco Builders, Inc.

COMPOSITE POREX ROOF DECKS PROVIDE

★ HEAT INSULATION (U = 0.15 Btu)

★ SOUND CONTROL (Noise Red. Coef. .70)

★ NAILABILITY

For Auditoriums, Gymnasiums, Schools, Armories, and Many Other Uses

PORETE MFG. CO.
North Arlington, N. J.

Precast lightweight concrete products since 1920

PORCELAIN ENAMEL continued

lating construction that has long been successfully employed in aircraft; with glass, cane or pressed-wood fibers; with asbestos board or plywood; or with only an exterior skin of porcelain enamel and a lightweight concrete backup.

Since these panels are not in regular production, cost figures are not firm. Best estimates to date: $2 to $3 per sq. ft. for the panels plus $2 to $3 for erection. The Hartford Statler, for example, is being built with a 1 1/4" glass-fiber sandwich wall having porcelain-enamel steel on the outside and asbestos board on the inside for an estimated wall cost of $5.10 per sq. ft. in place (AF, Apr. '53). And Architect James J. Souder described a 1 1/4"-thick porcelain-enamel wall being used for a chain of hospitals in West Virginia and Kentucky (AF, Aug. '53 et seq.) that is costing under $4 per sq. ft. erected complete with glazing. Each 5' x 3' panel has a porcelain-enamel outer pane (with an air space and weep holes behind it for condensation), glass-fiber insulation, extruded vinyl gaskets at joints and an inner pan of galvanized, bonderized, painted steel. Panels are removable for inspection and replacement.

Vitreous aluminum is light and strong

Highlight of the session on porcelain enamel as an engineering material was the development of porcelainized aluminum. Although the enamels are usually fused at 1,500° F. or higher upon iron and steel, new vitreous enamels that fuse at little over 950° are used to porcelainize aluminum (melting range 935° to 1,215°). This combines the durable properties of glass with the light weight and workability of aluminum.

Main advantage is improved workability. If the porcelainized aluminum is drilled or cut, there is little corrosion of the exposed metal and the enamel does not spall back from the cut edge. The enamel adds color to aluminum, increases resistance of the metal against alkalis and gives it some insulation against fire. Strength and rigidity of the aluminum improve too. B. C. Bricker of the Du Pont de Nemours Co. reports that a 3-mil vitreous coating on 0.051" sheet aluminum makes the metal only 6% thicker, less than 10% heavier, yet gives it 60% greater flexural strength and resistance to surface denting. Cost of porcelainized aluminum is $2.50 per sq. ft. and up depending on the degree of fabrication required (using structural-grade 61-S aluminum alloy), compared with $1.40 per sq. ft. and up for regular porcelain enamel upon steel.

The 17 papers on porcelain enamel in building delivered at this conference will be published shortly by BRAB. Further information will also be available from a manual now under preparation by the Porcelain Enamel Institute on "Architectural Porcelain in the Building Industry."
the mere functional type of rest room is INCOMPLETE!

Sanymetal NORM-ANDIE Type Toilet Compartments endow a rest room environment with dignity and good taste.

Sanymetal ACADEMY Type Toilet Compartments are suitable for conservative but modern rest room environments.

Sanymetal CENTURY Type Ceiling Hung Toilet Compartments offer the utmost in sanitation and provide modern, distinctive rest room environments for schools, institutions, terminals and other public buildings.

It is obsolete before it is completed according to today's standards. To insure against untimely obsolescence consider wall-type plumbing fixtures installed with Sanymetal ceiling-hung toilet compartments.

Sanymetal offers several different types of toilet compartments. Sanymetal also offers and recommends Two Full Purpose Metal Base Materials which combine colorful attractiveness with long years of service life and effect important day-after-day savings in cleaning and maintenance costs. These Two Full Purpose Metal Base Materials—Sanymetal "Tenac" (Galvanized, Bonderized Steel), and Sanymetal "Porcena" (Vitreous Porcelain on Steel), the ageless and fadeless, rustproof material—are described herein. Sanymetal Toilet Compartments are also available in cold rolled steel.

Sanymetal Toilet Compartments and Shower Stalls embody the results of over 39 years of specialized skill and experience in making over 500,000 toilet compartment and shower stall installations. Ask the Sanymetal representative in your vicinity for information about planning suitable rest room environments that will always stay new. Refer to Sanymetal Catalog in Sweet's Architectural File for 1953 and Catalog 154 in Sweet's Industrial File for 1953.
Our Research Engineers

How We Got The Facts: Herman Nelson engineers went after the most precise information in these tests. Some of the instruments used were so new they had never been employed in any similar capacity before. The scientific instrumentation, including the use of the Directional Thermopile, uncovered hitherto unknown factors in scientific heating, ventilating and cooling. If you would like documentation of this research we invite you to call your nearest Herman Nelson office . . . or write direct to Dept. AF-12, Herman Nelson Unit Ventilator Products, American Air Filter Company, Inc., Louisville 8, Kentucky.
Go Back to Grade School!

Two winters ago, as part of our leadership in research, The George Washington Grade School, Moline, Illinois, became a Herman Nelson "laboratory school" for a searching investigation into classroom heating and ventilation. Herman Nelson engineers chose this school because it was not only representative of the design of most schools now being built, but also because its classrooms faced to the four points of the compass. Here, then, in one single building, were four widely varying heating and ventilating problems.

Tests were conducted to determine what happens to temperatures under normal occupancy conditions. Every day Herman Nelson engineers took thousands of temperature readings (up to 10,000 a day) using the most advanced and sensitive instruments.

Temperature records showed conclusively that schoolrooms need COOLING most of the day far more than they need heating—even in the coldest outside weather. Variations in the number of students per room, the movements of the sun and the velocity of the wind dictate individual heating and ventilation controls for each separate room. It was also confirmed that room air striking cold window glass is the cause of drafts which sweep across the floor creating a serious comfort problem.

Conclusions from these and earlier studies are translated into the modern design of the Herman Nelson DRAFT|STOP system which cools, heats and ventilates each room according to its needs, as well as traps cold air downdrafts which are created as a result of large window areas.

If you're looking for classroom health and comfort for your children, be sure to investigate Herman Nelson DRAFT|STOP. Write Dept. AF 12, Herman Nelson Unit Ventilator Products, American Air Filter Company, Inc., Louisville 8, Kentucky.

George Washington School; Moline, Illinois, utilizes unusual treatment of clerestory lighting through means of corrugated glass for its classrooms. DRAFT|STOP Unit Ventilators were selected by Superintendent of Schools, Alex Jardine; Architect, M. R. Beckstrom.
Pholus: courtesy "The Muirum

BOOK REVIEWS

WHAT IS MODERN INTERIOR DESIGN? By Edgar Kaufmann Jr. Published by The Museum of Modern Art; distributed by Simon & Schuster. 32 pp. 7" x 10". Illus. $1.25

Behind its retina-wrecking cover, an awesome red and pink checkerboard, this book calmly presents Edgar Kaufmann Jr.'s ideas on the evolution of room design. It has been an evolution led largely by architects, but Kaufmann does not labor that point, or any other.

He is unpedantic, undogmatic and uninsistent. Where most writing about interior design is Fey (the kind of word witchery found in the ladies' fashion magazines), Kaufmann's language is marvelously clear and persuasive, his theories strong and in order.

His essay (the book is only 32 pp. long) discusses four main traits of modern rooms: comfort, lightness, quality and harmony; then comments on the influence of the Industrial Revolution and of nature. About "the machine" he writes prophetic history:

"Modern design was born of the turmoil called the Industrial Revolution. After many thousand years of manual drudgery, machines took over man's work. The values men lived by, their dreams, their understanding of the natural world around them, all changed. A new cosmos was outlined by Isaac Newton; his universe was the Great Machine. As men once had deified the beasts they hunted, or the stars that guided them to green pastures, or the earth they plowed and reaped, now they came to have faith in the power of the machine, to believe in its effective logic.

"By the dawn of the twentieth century the first results were beginning to show, hints of new design suited to a power-plant world. The full flowering of this new expression was retarded by the First World War; then the 1920s and '30s saw a burst of vigorous design which may well be called the Machine Style. This culminated in the first victorious campaign to give modern man a background eloquent of his skills and aims, suited to his needs.

"It is ironic that the machine should have found a triumphant expression just as it had to abdicate a great position in men's minds. In the very decades of the Machine Style the end of the machine was measured by the beginning of man's control over radiant energy, a power vastly more gripping and effective...."

The slim volume, which is rounded out by what is discussed in various locales, should interest anyone, professional or not, who has ever been aware of the character of a room, or has felt sympathy for one or another kind of modern interior design. Some of the author's examples of the early seeds of much of today's interior idiom are amazing (see photos).

continued on p. 162

Pholus: courtesy "The Muirum

Study in an exhibition at Dresden, 1899, by Richard Riemerschmid. These chairs have been revived in the US recently.
Wherever floor beauty must be combined with extra durability to overcome the problem of concentrated traffic, Armstrong's Linotile® is the outstanding resilient flooring choice. Now available in the distinctive new De Luxe grain- ing, Linotile is especially durable, the most economical to maintain of all the Armstrong Floors.

Trans World Airlines Inc. Ticket Office
San Francisco, California
Ward and Bolles, Architects

ARMSTRONG'S LINOTILE
ARMSTRONG CORK COMPANY • LANCASTER, PENNSYLVANIA
MATERIALS FOR PRODUCT DEVELOPMENT, 1953.
Clapp & Poliak, Inc., 341 Madison Ave., New York, N. Y. 265 pp. 6" x 9". $7.50
This is more than a little gold mine of current information on new materials for designers and manufacturers who select and convert raw goods—metals, plastics, ceramics—into useful consumer and industrial items. It is also an eye opener for the construction industry. Although it has no specific instructions to the building engineer, it will alert him to potentials of some new aluminum alloys, high-strength steels and plastic laminates. Its general concern with high-strength-low-weight materials also should help stimulate a waste-less attitude toward structure.

Heat-treated steel
The text consists of the papers presented and discussions that took place at the Basic Materials Conference held in New York City last June. Of the 18 papers included in the book, perhaps those of most direct interest to architects and engineers will be the ones on sandwich construction, high-strength steels, molded and extruded plastics and aluminum. One thought brought out in a discussion on steel is that, although generally not considered a light alloy, when heat-treated to provide tensile properties of 260,000 to 280,000 psi, steel has a strength-to-weight ratio comparable to the strongest aluminum or titanium alloys. While the demand for high-strength steels is not widespread in the construction industry, the publication points out that one manufacturer of steel buildings finds that high-strength steel costs less than carbon steel per pound of live load carried for roof purlins and side-wall girts.

Reinforced plastics
An intelligent lay-level discussion of the broadly applied phrase "reinforced plastics" clears up some confusion in about three paragraphs. Actually, the term means any mixture of plastic resins and fibrous materials—the fibers (glass, cotton, rayon, asbestos, paper or cloth) providing strength, and the resins moldability. Main advantages noted for the glass-reinforced plastics lie in their high strength-to-weight ratio (greater than most structural materials), corrosion resistance, weatherability, excellent insulation characteristics, dimensional stability over a wide range of temperature, shock resistance, inexpensive moldability and adaptability to complex shapes. A word of warning is offered however: "Despite their many favorable characteristics, reinforced plastics should not be considered as a universal substitute for metals. Their wide applicability indicates that these new plastics will find their own uses."

Many brief but welcome charts graphically sum up the nature of the various materials.

Cabot's Modern Finishes
For Modern Design
When Semmens & Simpson, recipients of the Gold Medallists Massey Committee Architectural Award, designed this interesting church—St. Anselm's, Vancouver, B.C., Canada, they specified Cabot products throughout the building.

Exterior Shakes:
Cabot's #511 Bleaching Oil

Interior Roofing:
Cabot's #0-3 Glacier Blue Stain Wax and #0-15 Long Island Gray

Laminated Members:
Exterior—Cabot's #325 Redwood Stain
Interior—#0-6 Redwood Stain Wax

Mahogany:
Exterior—Cabot's #247 and #344 Creosote Stain
Interior—#0-15 Long Island Gray Stain Wax

Cross:
Cabot's Double White

Stonework behind altar treated with Cabot's Clear Cement Waterproofing.

We will be glad to send you Color Cards and Literature on the above products.

Samuel Cabot Inc.
1231 Oliver Bldg., Boston 9, Mass.
Dayton Town & Country—like other modern shopping centers in all parts of the country—uses many Frigidaire Conditioners, Water Coolers and Refrigeration Products.

Self-contained units in 3, 5, 7½-ton capacities are ample for many stores or small businesses. May be installed in multiple to cool larger areas. For additional information refer to Frigidaire Catalog in Sweet’s File.

LOCATION: Dayton, Ohio
C. MELVIN FRANK: Architect
CASTO DEVELOPERS: Builders

Cashing in on the latest retail trend toward one-stop shopping, Casto Developers, father and son team of Columbus, Ohio, has become one of the leaders in the broad new field of mammoth marketing areas. The Dayton Town & Country, one of Casto’s recent projects, is 1000 ft. long, covers 20 acres, has 35 operating stores and represents a total investment of around $6,000,000 including buildings, land, fixtures and equipment.

As it does in the Dayton Town & Country, Frigidaire equipment helps build store traffic in similar shopping centers throughout the country while answering tenants’ air conditioning and refrigeration needs. A prime example of this is the Frigidaire Conditioner—ideally suited to this type of operation. It requires only simple connections to water supply, drain and electricity... thus making installation and relocation easy. Four-way cool air distribution from fully adjustable grilles, plus quiet, vibration-free operation make these compact Frigidaire units perfect for use directly in the area to be conditioned, thus eliminating the need for ductwork. Operating cost is low (as little as 2c per hour, per ton of cooling) as a result of the efficient XD Meter-Miser Compressor and Multipath Cooling Unit.

For full specifications on Frigidaire Conditioners, call the Frigidaire Dealer, Distributor or Factory Branch that serves your area. Look for the name in the Yellow Pages of your phone book. Or write Frigidaire, Dayton 1, Ohio. In Canada, Toronto 13, Ontario.

FRIGIDAIRE Dependable Air Conditioning and Refrigeration Products

BUILT AND BACKED BY GENERAL MOTORS

Complete line of Air Conditioners • Reach-In Refrigerators • Compressors
Water Coolers • Ice Cube Makers • Ice Cream Cabinets • Home Appliances

suggesting that Frigidaire equipment helps build store traffic and profits with Frigidaire Conditioners, Water Coolers and Refrigeration Products.
How Honeywell Customized Temperature Control can help solve the heating problems of the nation’s churches

Specially designed Honeywell system provides superior comfort, saves fuel in Denver's new Messiah Lutheran Church.

For a good many years, churchmen have been faced with several of the most difficult of all heating control problems.

How do you regulate the heat of a church so that its main areas are not uncomfortably hot on worship days when the gathering is large? How do you make sure it won't be too cold when bad weather keeps attendance down? And during the week, how do you maintain comfort in offices and auxiliary rooms without burning a lot of costly fuel to heat the whole building?

The way these problems have been met—by Honeywell Customized Temperature Control—in the Messiah Lutheran Church in Denver may well serve as a model for the rest of the nation.

For today, with ten adjustable Honeywell thermostats controlling seven temperature control zones, (the seventh, a perimeter zone, is not shown on the floor plan), all areas of the Messiah Lutheran Church are comfortable all the time. And fuel consumption is held at an economical level.

Six thermostats control comfort in two zones of nave

The area embracing the altar, choir section, and front portion of the nave proper is included in one zone. Here one thermostat controls the radiant floor panel while two others, on either side of the altar, control the heating and ventilating system discharging at the grilles shown in the ceiling. The rear part of the nave and the chapel are controlled as a separate zone. Also in this area, two special electric thermostats regulate the temperature of the organ pipes in each organ chamber to guarantee proper tuning.

Architect: Raymond Harry Ervin, Denver
Mechanical Engineers: Marshall & Johnson, Denver
This photo of the exterior of the Messiah Lutheran Church gives a good idea of the clean architectural lines of the building, which was designed by Denver architect Raymond Harry Ervin. Also, it shows the wide variety of weather exposures of the structure. But Honeywell Customized Temperature Control as easily compensates for strong northern winds as it does for sunshine on a bright winter day.

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

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

Once equipped with Honeywell Customized Temperature Control, they'll have an ideal indoor "climate"—and save fuel besides.

And with a complete line of pneumatic, electric and electronic controls to choose from, Honeywell Customized Temperature Control offers you the greatest flexibility in design. Then, too, when it comes to performance, Honeywell-built controls assure years of trouble-free operation. And they're backed by the finest service organization in the controls industry.

For information on Honeywell Customized Temperature Control, call your local Honeywell office. There are 104 across the nation. Or mail the coupon today.

MINNEAPOLIS-HONEYWELL REGULATOR CO.
Dept. MB-12-45, Minneapolis 8, Minnesota
Gentlemen:
I'm interested in learning more about Honeywell Customized Temperature Control.
Name
Firm Name
Address
City Zone State

And this view of the upstairs nursery shows how well the younger set fares at the Messiah Lutheran Church. A separate Honeywell thermostat here can be adjusted to compensate for weather conditions and the number of children in attendance. Temperatures are usually kept warmer here—a turn of the dial on the thermostat takes care of that—so youngsters won't be exposed to drafts on the floor. Whenever this room is not in use, the thermostat is set back to help save fuel.

MINNEAPOLIS-HONEYWELL REGULATOR CO.
Dept. MB-12-45, Minneapolis 8, Minnesota
Gentlemen:
I'm interested in learning more about Honeywell Customized Temperature Control.
Name
Firm Name
Address
City Zone State

And this view of the upstairs nursery shows how well the younger set fares at the Messiah Lutheran Church. A separate Honeywell thermostat here can be adjusted to compensate for weather conditions and the number of children in attendance. Temperatures are usually kept warmer here—a turn of the dial on the thermostat takes care of that—so youngsters won't be exposed to drafts on the floor. Whenever this room is not in use, the thermostat is set back to help save fuel.

MINNEAPOLIS-HONEYWELL REGULATOR CO.
Dept. MB-12-45, Minneapolis 8, Minnesota
Gentlemen:
I'm interested in learning more about Honeywell Customized Temperature Control.
Name
Firm Name
Address
City Zone State
PACKAGED SKYLIGHT fitted with fan furnishes light and ventilation for windowless rooms

Before Ventdome's advent, the choice an architect had to make in laying out school or plant washrooms and other areas requiring daylight and ventilation was either to use valuable perimeter space or resort to complicated and costly skylights and separate air exhaust devices. Wasco's new package offers a third course: to specify low-cost prefab skylights with built-in exhaust fans for inside rooms. The Ventdome, like its Skydome cousins, consists of a molded acrylic plastic bubble atop a leakproof frame of extruded aluminum with this addition: between frame and flashing is a glass-fiber insulated aluminum collar 14½" high containing a preassembled ventilating unit. The carpenter merely sets the complete unit over a prepared opening in the roof and applies mastic and felt strips over the 3" flange (after nailing it to the roof deck). A motor-operated weather door, also insulated, shields the 8" exhaust fan and grille. Rigid conduit inside the curb provides access to the motor, which can be hooked up to an ordinary wall switch. Price for the smallest Ventdome, a 20" x 20" unit, is $70; for the 64" x 96", $400. Standard models each have one air exhaust with a capacity of 425 cfm. Where more air exhausts are needed, an additional $34 is charged per fan. The skylight itself may be ordered in either clear or translucent plastic.

Manufacturer: Wasco Flashing Co., 87 Fawcett St., Cambridge 38, Mass.

GLASS-FIBER INSULATION has weatherproof aluminum sheath

Now outdoor pipe lines can be made virtually impervious to weather with Met-L-Glass pipe insulation, a glass-fiber wool core encased in a .016" aluminum sheet jacket. It is applied at a density of 6 lb. per cu. ft., at thicknesses equal to standard pipe insulation. The aluminum sheath is available separately for recovering existing lines. Both the jacket and the combination package have self-sealing watertight clips, are easily removed and replaced. Prices for the aluminum jacket range from 22¢ to 81.85¢ per lin. ft.; for the blanket and jacket package from 45¢ to 86.60¢ per lin. ft.


continued on p. 168
Mellon-U.S. Steel Building
This truly modern office build­ing in Pittsburgh, Pennsylvania, was designed by W. K. Harri­son, M. Abramovitz, New York, N. Y., and W. Cocken, Pitts­burgh, Pennsylvania.

Washrooms of another notable building
finished in **Carrara Glass**

- Beautiful and durable Carrara Structural Glass has long been the first choice of leading architects for walls, stiles and partitions in restrooms in the country’s outstanding buildings.

  They like Carrara’s smooth, gleaming surface that is mechanically ground and polished to an unusually high degree of lustre. They appreciate its imperviousness, its ability to retain this beauty, even after many years of exposure to steam, water, acids, soaps and cleaning compounds.

  These foremost architects know that when they specify Carrara Structural Glass, they are giving their clients a wall material that is sanitary and easy to keep clean. Because Carrara is installed in large sections, there are fewer joints and crevices to catch dust and dirt. Architects also appreciate Carrara’s versatility and its ten glowing colors which make it adaptable to any number of design possibilities.

Additional material on Carrara is available from Pittsburgh Plate Glass Company, Dept. 3398, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa.
NEW PRODUCTS continued

SAW-TOOTHED CONFERENCE TABLE gives all hands clear view forward

The problem of designing a workable conference room is largely solved with Eugene Korda's amusing but utilitarian table No. 502. The 18'-3" mammoth above is 8' wide in front, tapers to 6' at the opposite end and comfortably seats 18. Everybody—except the one at the end of the table—gets a good look down front without goose-necking over shoulders or through elbow bends. Korda, who designed the succinct L-desk and partition system of Kordarooms (AF, Aug. '50), is cognizant of current conference-room presentations, many of which are made in the dark. For the custom installation pictured he provided spotlights above each 22½"-wide desk notch for note taking during film presentations. An X-pedestal arrangement below the table top provides ample knee room. Cost of the unit above is $1,600. Other models are $1,000 to $1,800.

Manufacturer: Korda Industries, 20 W. 46 St., New York 36, N.Y.

OFFICE FURNITURE: modular parts tailored of beautiful but tough materials

Elegant without having drawing-room pretensions, practical without looking clinical, the Lehigh modular furniture group should be a gracious complement to many a contemporary office layout. So sleek are the assembled components designed by G. Luss that they belie their functional engineering and stock-parts origin. Richly grained yet rugged Realwood Formica (plastic-impregnated hard-

HORN GYMS WORK
NIGHT AND DAY

NIGHT brings exhibition games, the paying crowd . . . Horn Folding Gym Seats extend, partitions fold back, to make ample room for the crowd and the game. Full chair height of seats, generous leg room, assures spectators greater comfort, enjoyment. Safe—each row automatically locks as it opens.

DAY brings practice, classes . . . Horn electrically operated partitions easily extend to divide floor space for multiple gym use. Horn seats fold against the wall to provide a smooth sloping surface, real protection for player's vital zone!

Your local Horn representative helps you plan for maximum gym use. Write today for details on Horn folding gym seats, partitions, stages!

Horn

SCHOOL EQUIPMENT DIVISION OF
THE BRUNSWICK-BALKE-COLLENDER COMPANY • 623 SOUTH WABASH AVENUE, CHICAGO 5, ILLINOIS

Notched to give everyone around it a comfortable vantage point, the plastic-topped table should be a boon in a crowded conference room.
There is utility as well as beauty in these gleaming walls of Mississippi Broadlite glass installed in The Port of New York Authority Building. This reception room glows a friendly welcome to visitors as the translucent glass partitions flood the interior with “borrowed light” from adjacent areas. The glass makes the interior appear larger, friendlier, too, yet assures complete privacy, and the high levels of illumination add to eye comfort and efficiency. In addition these modern glass walls save work. Glass never grows old or dingy...never requires redecorating...wipes shining clean with a damp cloth. Glass will not rot or sag and it is a non-combustible.

In your designs for new office interiors and in remodeling projects, consider the use of translucent, light diffusing glass—the modern material. Put your client’s walls to work. Let them enjoy all the benefits that only figured glass can provide. Specify glass by Mississippi. Available in a wide variety of patterns and surface finishes wherever quality glass is sold.

MISSISSIPPI Glass COMPANY

88 Angelica St. Saint Louis 7, Mo.
New York - Chicago - Fullerton, Calif.

World's Largest Manufacturer of Rolled, Figured and Wired Glass
Walls of Stainless in this new plant

**These views** show 30-gage sheets of Stainless Steel attached to the structural steel framework of the new plant of United States Steel Homes, Inc., near Harrisburg, Pa. Approximately 65 tons of Stainless Steel were used, and flashing and trim are Stainless Steel, too.

**Here workmen** are bolting the 20-gauge corrugated Stainless Steel sheets to the structural steel frame. Erection of Stainless Steel walls is fast and simple; it requires a minimum crew and can be carried out in any type of weather.
Steel will keep maintenance costs low of United States Steel Homes, Inc.

HERE is one of the largest industrial structures to emerge from the growing trend toward the use of Stainless Steel for exterior walls. It's the new plant of United States Steel Homes, Inc.—formerly Gunnison Homes, Inc.—located near Harrisburg, Pa.

The plant is an "L"-shaped structure with approximately 310,000 square feet of floor space. The entire exterior is covered with sheets of 26-gage corrugated Stainless Steel, used in 30" widths. Approximately 55 tons of Stainless Steel were used.

Reduction of maintenance costs was the primary reason for selection of Stainless Steel sheets. The walls will not require painting and a long, trouble-free life is anticipated. And, in addition, Stainless Steel gives the plant an attractive over-all appearance.

Stainless Steel sheets and panels offer so many advantages both in construction and through the life of the building that the cost-per-year is lower than almost any other material. They are considered outstanding developments in architectural circles today.

Panels are available uninsulated or with filler-type insulation between the exterior Stainless steel and the interior sheet of carbon steel. This makes them suitable for the widest range of building types—plants, warehouses, power plants, office buildings and many others.

If you would like more information on Stainless Steel sheet and panel construction, mail the coupon below.

United States Steel Corporation
525 William Penn Place, Room 2820-B
Pittsburgh 30, Pa.

[Box for coupon]

United States Steel produces only the Stainless Steel sheet and strip from which panels of this type are made; the panels themselves are fabricated by a number of our customers.
Design for lasting economy—

ARTIST'S SKETCH of the completed plant, United States Steel Homes, Inc. The structural steel framework and Stainless Steel sheets and panels were fabricated and erected by American Bridge. The General Contractors were Ritter Brothers, Harrisburg, Pa.

A SECTION OF the 1900-ton U-S-S Structural Steel framework showing the wide spacing of the steel columns. The framework, consisting primarily of columns and trusses, now supports 55 tons of 26-gauge corrugated Stainless Steel sheets.
The structural steel framework of the new plant of United States Steel Homes, Incorporated—formerly Gunnison Homes, Inc.—near Harrisburg, Pennsylvania, is an excellent example of planned economy in permanent construction.

To provide as much unobstructed floor space as possible for the installation of plant machinery, the steel supporting columns were placed at unusually wide intervals—75 feet in one direction, 65 feet in the other. The application of U.S.S Structural Steel—the most economical of load-carrying materials—in such a cost-cutting method of construction, heaped economy upon economy, yet produced in the end an extremely strong, durable building.

And for good reason. Structural steel is tough. It will withstand more abuse than other structural materials. It effectively resists tension, compression, torsion, and shear. Enclosed in buildings, it will last indefinitely—requiring no maintenance. Equally adaptable to riveting, welding, or bolting, structural steel can be erected in any weather in which men can work. And since steel members are fabricated indoors, weather can have no effect on the quality of workmanship.

For complete information on construction with steel, write today to the United States Steel Corporation, 525 William Penn Place, Room 2820-A, Pittsburgh 30, Pa.
The SPEEDIEST, most RELIABLE detector for automatic fire alarm systems is DETECT-A-FIRE®

1. IN MODERN COLLEGE PLANNING IT IS WISE to take the fullest possible precautions against fire — not merely to save valuable buildings and university records but basically to protect the lives of students and faculty. DETECT-A-FIRE thermostats are recommended as the speediest, most reliable detectors for automatic fire alarm systems.

2. THIS TRAGIC CLASSROOM FIRE could have been avoided had an adequate fire protection system been in operation. DETECT-A-FIRE units actuate the alarm the instant surrounding air temperature reaches a danger level. Due to an entirely new principle of operation, this unique thermostat completely protects against alarm delay and false alarms.

3. THE STAINLESS STEEL SHELL ITSELF is the sensitive, actuating element. Hermetically sealed and corrosion resistant, DETECT-A-FIRE thermostats more than pay for themselves in dependable, long-lived, trouble-free performance. With this intrinsic economy and dependability it is more than worthwhile for you to specify them. They are installed by all the leading manufacturers of alarm and release systems. Listed by ©... approved by ☑.

4. THE FREE BULLETINS above contain complete details on Fenwal DETECT-A-FIRE thermostats — the only units bringing you the benefits of Rate-Compensation Actuation, a new principle of fire detection. Fenwal engineers will gladly work with your system installer so that you will enjoy the advantages of full fire protection and long term economy. Write Fenwal Incorporated, 2512 Pleasant Street, Ashland, Mass.

DETECT-A-FIRE® Thermostats
DYNAMIC, RATE-COMPENSATION ACTUATED FIRE DETECTORS
60,000 daily passenger rides
ON 27 COMPLETELY AUTOMATIC ELEVATORS

THE PRUDENTIAL BUILDING
MID-AMERICA HOME OFFICE
Chicago

The Prudential Building traffic is both single purpose and diversified and its density will vary, depending upon the time of day, as graphed.

The 41-story Prudential Building, with its one million square feet of rentable area, will be served by 27 completely automatic elevators, arranged in 4 banks, and operated at speeds up to 1,400 feet a minute.

Prudential will occupy the lower floors for its Mid-America Home Office. The upper floors will be leased to some of the most important companies in the business world.

Otis AUTOTRONIC Elevatoring was developed to secure maximum quantity and quality of performance from a group of elevators. It varies the plan of operation to suit the changing requirements of the traffic throughout the day and night.

All operations are automatically and electronically controlled. This includes automatic programming of all cars at all times.

We'll be glad to discuss Otis AUTOTRONIC Elevatoring for any building, new or modernized, regardless of size, amount or type of traffic.

Contact any of our 266 offices. Otis Elevator Company, 260 11th Avenue, New York 1, N.Y.

*The estimated average elevator traffic is 60,000 rides each day.
black lacquer. By mixing and matching desk tops and legged pedestals (one-, two- and three-drawer bases are available as well as file and typewriter units), each member of an office staff—steno, receptionist, salesman, executive—can be outfitted with a working arrangement that best suits his job and position. Prices are moderate. Table tops range from $78.75 for the 4' x 30" up to $198.75 for the 8' x 3'. Pedestals with attached legs are $176.25 to $201.25; and separate leg brackets are $23.75. Base cabinets cost from $163.65 to $272.50 and wall units from $123.75 to $217.50. (Generous discounts are accorded the trade.) A well-planned array of special equipment, such as kneehole drawer, writing ledge, mounting angles and plates, are also obtainable.

Manufacturer: Lehigh Furniture Corp., 16 E. 53 St., New York, N.Y.

new USC Laboratories exemplify KEWAUNEE
quality · convenience · compactness

USC Medical Research Laboratory

In the new University of Southern California laboratories—as in laboratories the country over—quality, convenience and compactness of equipment are highly essential. On every count, Kewaunee unit assemblies of custom quality furniture stand out. Kewaunee casework, cabinets and laboratory furniture—in rugged oak or steel—are designed, engineered and built to meet the most exacting laboratory requirements. All units are interchangeable, permitting greatest flexibility of arrangement for both present needs and future expansion. Quantity production provides true custom quality at modest cost.

Get the facts—consult Kewaunee before you decide.

Kewaunee Laboratory Equipment catalogs are yours for the asking. Kewaunee Planning Engineers are available for personal consultation without cost or obligation.

MANUFACTURERS OF WOOD AND METAL LABORATORY EQUIPMENT

USC Organic Chemistry Laboratory

Representatives and sales offices in principal cities

Kewaunee Afg. Co.
J. A. Campbell, President
5086 S. Center St. • Adrian, Mich.

PLAYGROUND COATINGS provide cushion under jungle gyms, skidproof surface for treacherous areas indoors and outdoors

School architects will be glad to hear of Parafall, an antiskid, cushioned surface which will absorb the shock of falls from jungle bars, swings, slides, seesaws and other playground equipment. Firm enough to walk on yet pliant enough to minimize dangerous body and head injuries, Parafall comprises three different types of material, and application is similar to that for black-top. Shock-O-Mat, the bottom layer, is an alive and resilient pad of loose rubber particles which are poured directly on the existing surface, dirt, concrete or asphalt. (The springy particles are chemically processed to prevent packing.) Over this is laid Shockbrane, a resilient membrane which absorbs heavy shock loads and distributes them over large areas. Topping it all off is Parascuff-T, a tough rubbery coating which is applied with a spray gun preferably, or with a trowel. Parascuff also may be used alone on slippery areas inside as well as outside the building as an antiskid or noncorrosive protective coat.

Easily and permanently installed under all play apparatus, Parafall is gradually feathered from a thick shock-absorbent cushion down to the level of the surrounding surface. Tests have shown little or no loss of resiliency after long wear, while repairs are easily made by troweling additional Parascuff over the surface. Average price for Parafall protection ranges from 79¢ per sq. ft. for an installation of 1" depth to $1.35 per sq. ft. for 3"; for Parascuff alone, 8 to 15¢.

Manufacturer: Southern Chemicals, Inc. General of America Building, 5225 Wilshire Blvd., Los Angeles 36, Calif.

continued on p. 180
If you are the kind of architect who knows the triumph of starting the trend of things to come... who enjoys testing the limits of imagination in creating the new, then you confidently specify “Ceco or equal.”

For at Ceco, too, there is that inner feeling for the future... that compelling urge to venture ahead only after meticulously testing and proving products in the field.

We at Ceco do not aspire to be first just to be first. Instead we prefer to observe developments with studied care... to present new products when we can proudly say—“Here is a Ceco tested and improved design... the finest of its kind... a product you can specify with assurance it will perform as intended.”

Here are 4 new improved Ceco Trend Tested products...

Ceco Intermediate Windows. Exactness in design, assuring the just-right window is the “Trend Feature” here. Only Ceco offers both 1 1/4” and 1 3/4” Intermediate Windows that can be adapted to any building problem.

Ceco Standardized Hollow Metal Doors. Pin-Point Precision in matching hardware to doors is the “Trend Feature” here in the broadest line ever offered with doors and hardware made for each other and supplied by one source.

Ceco Sterling Aluminum Projected Windows. Functional simplicity is the “Trend Feature” in this newest Ceco product. Framing members have simple lines that blend with modern motifs... hardware is in keeping with functional thinking.

Ceco Sterling 3-in-1 Aluminum Window. Prime window, storm window and screen combine for versatility as a “Trend Feature” of this Ceco creation. Self-storing screens and storm windows take the work out of seasonal changing.
THE PROVED WAY TO PRODUCE THE BEST CONCRETE...

IS WITH LOW-COST WATERPROOF Sisalkraft!

Successful jobs by the thousands have proved conclusively that you get the best concrete by using Sisalkraft—2 ways—

1. Over the subfill—
   Sisalkraft assures a denser, harder, moisture-free concrete by preventing loss of cement and water into the subfill.

2. Over finished concrete—
   Sisalkraft assures absolutely the best, uniformly-cured concrete—while protecting it against debris, marring, staining.

Available in rolls 3 to 8 feet wide and blankets in any width up to 26½ feet.

Write for samples, application information, and location of nearest Sisalkraft dealer. Dept. AF-12.

Summerbell for CHURCHES

SUMMERBELL glued laminated arches and beams give the Architect the widest latitude in designing for the modern or the traditional...for the large cathedral or the small chapel. In addition to their lasting beauty, they provide structural advantages which offset substantial economies in overall costs. Write for illustrated brochure.

SUMMERBELL glued laminated arches and beams give the Architect the widest latitude in designing for the modern or the traditional...for the large cathedral or the small chapel. In addition to their lasting beauty, they provide structural advantages which offset substantial economies in overall costs. Write for illustrated brochure.

I Wish All My Work Was As Foolproof As ALLENCO for Fire Protection

Architects, engineers and contractors choose ALLENCO 3 to 2 over next leading brand. Wide selection to meet every need. Easier to specify, estimate, install.

Ready Reference in Sweet's Consulting Service from 25 offices A.I.A. file 29e2 on request

Established 1887

Summerbell ROOF STRUCTURES
423 EAST 29TH STREET • BOX 218, STATION "K" • LOS ANGELES 11

Summerbell for CHURCHES

The Sisalkraft Co.
Chicago 6, Illinois
New York 17, N.Y.
San Francisco 5, Cal.

THE SISALKRAFT CO.
Chicago 6, Illinois
New York 17, N.Y.
San Francisco 5, Cal.
Leadership means integrity, quality, superiority and progress. To maintain leadership you must protect your good name.

When Anemostat Air Diffusers are in sight the system is right. This was true yesterday, is true today and will be true tomorrow.

"No Air Conditioning System Is Better Than Its Air Distribution"
NEW PRODUCTS

REINFORCED PLASTIC has deep V corrugations to match metal siding designed for wide span

Resolite continues to find new forms for molding its polyester resins and glass fibers. In addition to the conventional curved and flat sheeting, the company makes 5-V crimped panels (AF, Dec. '52) and now V-beam. The new structural plastic is deeply corrugated to correspond to the 5.3"-pitch metal siding designed for wide purlin and girt span. Providing an economical means of top- or sidelighting a warehouse, plant or large commercial structure, the translucent sheets nest with their metal neighbors and require no special flashing, calking or framing. Installed on low-pitch roofs, the deep (1/2") dips provide good gulleys for rain runoff. Standard colors for V-beam are those found most satisfactory for daylighting: pale green, ice blue and semiclear. However, seven other colors may be obtained on order. V-beam panels are 29" wide (coverage 261/2") and come in precut lengths up to 12'. Unaffected by weather, water and most chemical fumes and selling for about $1 per sq. ft. in quantity, the shatterproof plastic is both an attractive and practical construction material.


TRANSLUCENT PLASTIC PANEL is fire resistant, self-extinguishing

Direct flame cannot burn Alsynite's new No. 200-FR plastic sheeting. Made of recently developed resins that are both self-extinguishing and color-stable, as well as weather resistant, the new structural panel is intended for such special installations as siding partitions and skylighting in critical fire areas. It is available in standard corrugations and flat sheets in soft yellow, light green and opal at a slightly higher price than the panels made with regular polyester resins.

Manufacturer: Alsynite Corp. of America, 4654 DeSoto St., San Diego, Calif.

Technical Publications, p. 184

CAST IRON PIPE
HOUSE SEWER LINE IS STILL IN PERFECT CONDITION

In the OLDEST house in Chicago, Illinois, the original 4-inch Cast Iron Soil pipe stack and the original 4-inch Cast Iron Soil pipe house sewer are still in perfect condition. The house was built in 1836. While being renovated and restored recently by Chicago Historical Society for dedication as a public memorial, plumbers discovered that its Cast Iron Soil pipe stack and sewer lines were good as new after 117 years of service.

Cast Iron Pipe is the only material approved by ALL national, state and city building codes for drainage inside and outside of buildings.

HOME BUYERS APPRECIATE DURABILITY OF CAST IRON SOIL PIPE

Cast Iron Pipe gives homeowners rugged strength, dependability, long life, economy, permanently tight but flexible joints, zero moisture absorption. Cast Iron Pipe is a service-proven product, being in use in this country for over 100 years and in Europe for over 300 years.

Woodward Iron Company does not manufacture pipe, but we supply leading Cast Iron Pipe foundries with high grade foundry pig iron from which pipe is made.

WOODWARD IRON CO.
WOODWARD, ALABAMA

AFTER 117 YEARS' SERVICE

CAST IRON PIPE
HOUSE SEWER LINE IS STILL IN PERFECT CONDITION

In the OLDEST house in Chicago, Illinois, the original 4-inch Cast Iron Soil pipe stack and the original 4-inch Cast Iron Soil pipe house sewer are still in perfect condition. The house was built in 1836. While being renovated and restored recently by Chicago Historical Society for dedication as a public memorial, plumbers discovered that its Cast Iron Soil pipe stack and sewer lines were good as new after 117 years of service.

Cast Iron Pipe is the only material approved by ALL national, state and city building codes for drainage inside and outside of buildings.

HOME BUYERS APPRECIATE DURABILITY OF CAST IRON SOIL PIPE

Cast Iron Pipe gives homeowners rugged strength, dependability, long life, economy, permanently tight but flexible joints, zero moisture absorption. Cast Iron Pipe is a service-proven product, being in use in this country for over 100 years and in Europe for over 300 years.

Woodward Iron Company does not manufacture pipe, but we supply leading Cast Iron Pipe foundries with high grade foundry pig iron from which pipe is made.
The Challenge: "PROTECT THIS BUILDING INVESTMENT!"

The Answer: "AN ADVANCED ELECTRIFIED FLOOR SYSTEM!"

Here, an advanced new floor system—Fenestra-Nepco Electrifloor... is protecting this great new multimillion-dollar building from future electrical obsolescence—electrical outlets can be installed any time... in any or every square foot of floor space... for any future change in electrical needs!

It saved 1,000 tons of structural steel! The cellular steel floors with their integral wiring system, combine such great structural strength with such light weight, that both structural steel and foundation costs were slashed.

It saved 6 months' building time! As many as 7 floors went in at the same time—as soon as a few of the cellular floor panels were laid and interlocked, that part of the floor served as material storage space and a working platform.

New Fenestra-Nepco Electrifloor was developed jointly by Fenestra® (Detroit Steel Products Company) and Nepco (National Electric Products Company)—two great names in the construction field.

If you want to protect a building investment, write to Detroit Steel Products Company, Dept. AF-12, 2296 E. Grand Blvd., Detroit 11, Michigan.

*Trademark
ALUMILINE
EXTRUDED ALUMILITE ALUMINUM PRODUCTS
Specified by Leading Architects for:
HOSPITALS • SCHOOLS • RELIGIOUS BUILDINGS • BANKS
STOREFRONTS • OFFICE BUILDINGS • INDUSTRIAL PLANTS
HOUSING PROJECTS • SHOPPING CENTERS
- Extruded Aluminum Store Front Construction
- Extruded Aluminum Factory Assembled Entrance Frames
- Narrow and Wide Stile Extruded Aluminum Doors
- Custom Built Extruded Aluminum Windows

Send for these Catalogs: "Alumiline" Store Front Construction and "Extrud-A-Line" Entrances

THE ALUMILINE CORPORATION
DUNNELL LANE
PAWTUCKET, R. I.

New Orleans: The Sazerac Bar in the Roosevelt Hotel combines Formica Realwood (K) with grey and tan linen and black Formica to achieve a decor that is not only striking but extremely practical.
Leon C. Weiss and Curtis & Davis, Architects
Huglins Cabinet Works, Formica Fabricator

To make washrooms really modern
—specify the Scott No. 943 Recessed Towel Cabinet

Here's the fixture designed to keep step with today's growing trend to recess fixtures. It's one of the many Scott fixtures available to meet the most exacting demands for modern washrooms.

For a detailed dimension and installation drawing of the No. 943 fixture or for the help of a trained Scott consultant, write Washroom Advisory Service, Dept. MB-12, Scott Paper Company, Chester, Penna.

SCOTT
Symbol of Modern Washrooms

a new face for air conditioning

Now you can have your air conditioning and beauty too! Conventional unsightly air conditioning grilles can be eliminated by specifying Hendrick Bulator...the new dural-uni, Bulator combines a Hendrick decorative grille with a customary deflecting vane grille to afford both attractive appearance and proper air throw and spread. The secret of Bulator's success is that the combination of both grilles leaves 60% open area and no appreciable loss of air throw efficiency. Vanes of the deflecting grille are adjustable - so that air can be thrown up or down, left or right.

Bulator is available in a wide range of designs and styles to best conform to your decorative motif. For further information write to Hendrick.

Hendrick MANUFACTURING COMPANY
50 DUNDALE ST., CARBONDALE, PA. • Sales Offices in Principal Cities
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Milco Open Steel Flooring • Shur-Slot Treads • Armorgards
Do you and everybody else in your organization know what causes leaky brick walls, and how they can be prevented?

Do you know about all the extensive research done by the U. S. Bureau of Standards and other organizations on this subject—the findings of the research—the recommendations that have resulted?

The two books pictured above tell the story, with profuse illustrations. Each book has received a citation of merit from the Producers’ Council and the A.I.A. Each has been approved by many foremost authorities. Each is a real “must” for anybody concerned with permanently-satisfactory masonry work.

These books are not advertisements for our product, Brixment. They are published as a service to the building trades. We urge you to mail the coupon, below, for your free copies.

Louisville Cement Company—Dept. AF-8
2nd and Walnut Streets, Louisville 2, Kentucky

Gentlemen:
Without cost or obligation, please send me a copy of each of the two books illustrated above.

Name_____________________________ 
Firm_____________________________
Street_____________________________
City_______________________________ State______
Nature is relentless!
Few materials are able to withstand her ravages ... it takes real stamina to meet her tests.

To survive these tests, Architectural Porcelain is forged in the white heat of the enameler's furnace ... here, glass is fused with steel to form a single durable building material ... combining all the natural beauty of glass with the strength of steel.

Architectural Porcelain is completely non-porous ... it will not become impregnated with soot and grime from the atmosphere ... it is weather resisting ... its color and brilliance are permanent—soap and water restores its original lustre—even after years of service.

The resistance pitted against the elements by Porcelain—and the lifetime service it delivers, will be a testimony to your judgment.

Our complete brochure is yours for the asking.

Please direct all inquiries to

Davidson ENAMEL PRODUCTS, INC.
1104 EAST KIBBY STREET, LIMA, OHIO
The toll of years rests lightly on rest rooms with fixture-bare floors.

Make Possible Fixture-Bare Floors

Over 500,000 Wall-Type Fixtures Now Installed With ZURN SYSTEMS in Buildings of Every Type From Coast to Coast. Write for list of buildings having rest rooms with fixture-bare floors.

Copyright 1953

J. A. ZURN MFG. CO., ERIE, PA., U.S.A.
PLUMBING DIVISION
Sales Offices in All Principal Cities
In Canada: Canadian Zurn Engineering Ltd., Montreal, P. Q.

WRITE FOR BOOKLET Entitled, "You Can Build It and Maintain It for Less A NEW WAY". It contains up-to-date factual information for planning modern rest rooms.

J. A. ZURN MFG. CO. • PLUMBING DIVISION • ERIE, PA., U.S.A.

I want to know more about the influence wall-type plumbing fixtures can have on the over-all cost of a building. Please send booklet entitled, "You Can Build It and Maintain It for Less A NEW WAY".

Name and Title
Company
City and State

Please attach coupon to your business letterhead Dept. A.F.
PYREX® brand Lenslites

PYREX brand LENSLITES offer a highly flexible medium for control of incandescent light sources. Variations in light distribution can be obtained simply by changing the position of the lamp and reflector relative to LENSLITE, or by using various distribution patterns in glass itself. Heat-resistant PYREX brand LENSLITES can be used with lamps up to 1000 watts without danger of heat breakage. Carefully engineered prisms assure precise light control and minimize brightness. Stippled rear surface produces smooth, even illumination.

PYREX "DOUBLE TOUGH" (tempered) LENSLITES are available in a 1 3/8" x 1 3/8" size for use in hospitals psychiatric wards, psychiatric institutions where law requires.

for unusual lighting effects

PYREX® brand Lenslites

Available both round and square in a number of sizes and in concentrating, wide, and extra-wide angle distribution patterns, PYREX brand LENSLITES may be obtained from leading fixture manufacturers. For design data send for Bulletin LS-9.

CORNING GLASS WORKS, Corning, N. Y.
Corning means research in Glass
It's time to take a closer look at...

Completely new CORBIN Cylindrical Locks

Newly improved CORBIN Door Closers

Completely new CORBIN Exit Fixtures

These new product features are important to you and your clients. Ask your nearest Corbin representative for complete details.

P. & F. CORBIN Division
The American Hardware Corporation
New Britain, Connecticut

The most modern lines in builders' hardware — backed by 104 years of experience!
TECHNICAL PUBLICATIONS continued

STRUCTURAL PIPE FITTING. Kee Klamps, Bul. B-46. Box 99, Hamilton, Ohio. 4 pp. 8½" x 11"

TOOLS. Chicago-Latrobe for More Holes per Grind, Catalogue No. 51, Chicago-Latrobe, 411 W. Ontario St., Chicago 10, Ill. 152 pp. 8½" x 11"

PHOTOGRAPHIC MURALS. RCS Studios Photographic Price List and How to Use Commercial Photography, Rapid Copy Service, Inc., 123 N. Wacker Dr., Chicago 6, Ill. 16 pp. 6" x 9"

INDUSTRIAL TESTING DEVICES. GE Measuring Equipment for Laboratory and Production Testing — Including Radiation Instruments, Bul.

TOOLING MACHINES. The Fonest in Drafting Machines — Gravity Compensated, Track Type. Civil Engineering and Detail Machines, Charles Brunning Co., Inc., 4700 Montrose Ave., Chicago 41, Ill. 18 pp. 8½" x 11"

PHOTOGRAPHIC MURALS. RCS Studios Photographic Price List and How to Use Commercial Photography, Rapid Copy Service, Inc., 123 N. Wacker Dr., Chicago 6, Ill. 16 pp. 6" x 9"

REFINISHED PLASTIC. Resolite for Plant Day-lighting, Bul. 539. Resolite Corp., Zelienople, Pa. 4 pp. 8½" x 11"

INDUSTRIAL TESTING DEVICES. GE Measuring Equipment for Laboratory and Production Testing — Including Radiation Instruments, Bul.

MASONRY WALL CONSTRUCTION. Brikset Masonry Cement, Catalogue B-5M-553. Medusa Portland Cement Co., Dept. B. 1000 Midland Bldg., Cleveland 15, Ohio. 8 pp. 8½" x 11"

MASONRY WALL CONSTRUCTION. Brikset Masonry Cement, Catalogue B-5M-553. Medusa Portland Cement Co., Dept. B. 1000 Midland Bldg., Cleveland 15, Ohio. 8 pp. 8½" x 11"

LIGHTWEIGHT CONCRETE. Perlite Concrete Roof Fill for Insulating and Light Structural Purposes. Perlite Institute, 10 E. 40th St., New York 16, N.Y. 4 pp. 8½" x 11"

FLOOR TILE. Vina-Lux Reinforced Vinyl Tile. Uvalde Rock Asphalt Co., Box 531, San Antonio 6, Tex. 4 pp. 8½" x 11"


HEATING. Ray Fully Automatic, Heavy Fuel Oil Burners. Ray Oil Burner Co., 1301 San Jose Ave., San Francisco 12, Calif. 8 pp. 8½" x 11"

HEATING. Heating Coil by Young, Catalogue 4553. Young Radiator Co., Racine, Wis. 36 pp. 8½" x 11"

COMMUNICATIONS. The Executive Direct-Line Telephone, Circular 1701. Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill. 4 pp. 8½" x 11"

STEEL STORAGE CABINETS. Exciting Adapta-tions, Form 5059. Mullines Manufacturing Corp., Warren, Ohio. 24 pp. 8½" x 11"

ALUMINUM SUSPENSION SYSTEMS. Suspended Ceiling Systems. Lok-Products Co., 5109 San Fernando Rd., West Los Angeles 39, Calif. 57 pp. 8½" x 11"

HOSPITAL HARDWARE. Yale Aluminum Hospital Hardware. Yale & Towne Manufacturing Co., Stamford, Conn. 8 pp. 8½" x 11"

SAFETY DEVICES FOR STEAM AND HOT WATER. McDonnell Condensed Catalogue and Price List, Dlv. C-54. McDonnell & Miller, Inc., 3500 N._goalind Ave., Chicago 18, Ill. 4 pp. 8½" x 11"

THE MAGAZINE OF BUILDING
IN BUILDING CONSTRUCTION...

MEN AND METHODS

MAKE THE DIFFERENCE

WHEN A BUILDER breaks ground on your job, your reputation as an architect is in his hands.

He is charged with the faithful execution of your design — on schedule and within the budget. Success in this undertaking — and pleasant relationships along the way — are as important to his future as they are to yours. His men and methods can make the difference between “just another job” and one that you and your client will be proud of.

For over 70 years the George A. Fuller Company has worked with architects in this spirit, building throughout the U. S. and in many foreign countries. Fuller’s experience covers practically every type of large-scale construction, ranging from monumental to industrial.

If you’re interested in pioneering, Fuller has a tradition of successfully carrying out new construction ideas — dating from the first steel skyscrapers to the newest types of metal and glass structures.

Fuller’s executives are always available to discuss your building problems.

INDUSTRIAL PLANTS • HOSPITALS
LABORATORIES • OFFICE BUILDINGS
SCHOOL AND COLLEGE BUILDINGS
CHURCHES • HOTELS • BANKS
ARENAS • HOUSING • THEATERS
TERMINALS • STORES AND SHOPPING CENTERS • BROADCASTING STUDIOS
MONUMENTAL BUILDINGS

GEORGE A. FULLER COMPANY
BUILDING CONSTRUCTION

Sign of Leadership in Building Construction

GEORGE A. FULLER COMPANY
NEW YORK • BOSTON • CHICAGO • PITTSBURGH • WASHINGTON • ATLANTA • LOS ANGELES

ARCHITECTURAL FORUM • DECEMBER 1953
Be Sure the Beauty You Design
Will Long Endure... Specify

**Butt Weld**

**DUR-O-WAL**

**WITH TRUSSED Design**

Dur-O-Wal is butt-welded in a single plane for neat, tight mortar joints.

NOW EVERY MASONRY WALL CAN BE REINFORCED WITH STEEL EASIER...FASTER...AT LESS COST!

Wise Planning is the key to top quality and Dur-O-Wal is the name wise architects specify for quality steel reinforcing for masonry walls. Patented Dur-O-Wal is available in a width for every standard wall thickness... electrically welded of premium quality steel (strength 100,000 p.s.i.)... unique design forms mortar lock every eight inches. Write, wire or phone for full information.

**DUR-O-WAL**
The backbone of steel for EVERY masonry wall!

Follansbee 40 lb. Coated Terne Metal is now available nationally through leading distributors.

**FOR STYLING... PERFORMANCE... TOP VALUE...**

**ROOF IT WITH FOLLANSBEE TERNES METAL**

You get all of these advantages in one roofing material when you specify Follansbee Terne Metal for your “big jobs”—

- **Top Value.** Follansbee Terne Metal is permanent, lifetime roofing.
- **Client acceptance.** Follansbee Terne Metal is always acceptable. It has been America’s favorite metal roofing for more than a century.
- **Unlimited design possibilities.** Especially adaptable to flat or low pitch roofs. Unlimited roof and trim color combinations possible.
- **Ductile, easy to install.** Expansion and contraction are never a problem with Terne!
- **Fireproof, windproof, weatherproof.** Resists electrolysis... flashes with any metal.

On your proudest jobs, be sure of maximum, trouble-free roof protection. Specify Follansbee Terne Metal Roofing—tops in beauty... performance... value.
This Seal
PLUS
This Label
ADVANCE
FLUORESCENT LAMP BALLAST

Gives you All the Plus quality you can receive in Fluorescent Lamp Ballasts!

ADVANCE
TRANSFORMER CO.

Cable Address "ADTRANS"

2950 N. WESTERN AVE., CHICAGO 18, ILLINOIS, U.S.A.
For steam demands ranging from 2,000 to 50,000 lb. per hour....

Stone & Webster Eng. Corp.
Installed for the Washington Gas Light Co.

CYCLOETHERM CYCLONIC COMBUSTION

At its new gas storage plant in Rockville, Md., Washington Gas Light Co. faced a complex steam problem. The winter load averages only 2000 lb. per hour at 15 psi with no superheat. During extremely cold weather, however, send-out loads require as high as 50,000 lb. per hour—and it must be supplied immediately.

To meet this problem efficiently, four 500 hp Cyclotherm gas-fired steam generators were installed with 17,500 lb. steam capacity per hour each. Any single unit supplies normal needs, a combination of any three meets peak loads quickly.

Ability to reach full capacity from a cold start in 15 to 20 minutes was a prime consideration. Using the patented Cyclonic Combustion principle, air enters the combustion chamber at extremely high velocity in a free spiral vortex. Fuel introduced into the entering air is slowly consumed as it travels through the combustion chamber. This highly luminous, slow burning flame—radiating heat to the fire tubes through direct radiation and by convection—results in an unusually high rate of heat transfer, rapidly building to full-rate steam capacity.

ADDITIONAL FEATURES

1. Two-pass design which reduces fuel consumption and saves up to ⅓ the space of conventional steam generators.
2. Compact, standardized package unit fully equipped with burner, appliances and controls.
3. Automatic operation which confines boiler attendance to periodic checkups.
4. Minimum refractory materials which results in reduced labor, time and cost of maintenance.

Cyclotherm Steam or Hot Water Generators are made in sizes from 18 to 500 hp. 15 to 200 psi operating pressures. Write today for full descriptive literature. Just drop a card to Cyclotherm, Dept. 22.

Oswego, N. Y.

*Reg. trade name

---

THE beauty, performance and dependability designed and built into every Raynor residential, commercial and industrial door is emblematic of the justifiable pride the entire Raynor Mfg. Co. organization takes in the Raynor door line.

Raynor features such as Patented Graduated Seal, special three-way stress construction, protecto-dipped hardware and many others, assure the perpetual continuation of the Raynor pledge for top quality door construction.

If you have not already done so — we urge you to inspect the Raynor Catalog in Sweet's File. If additional information is desired, check your telephone directory for the nearest Raynor representative or write direct.

**SEE OUR CATALOG IN SWEETS**

Raynor MANUFACTURING CO.
DIXON, ILLINOIS

Builders of a Complete Line of Wood Sectional Overhead Doors
When your structure has to be completed in record time...

Better have ALLIED fabricate and erect the structural steel

Three fabricating structural shops with identical equipment combine as a huge manufacturing unit on large tonnage jobs. On smaller tonnage jobs, each individual shop is fully adequate.

These exclusive Allied production advantages mean that fabrication schedules can be met easily, regardless of tonnage.

On location, experienced erecting crews know many short-cut methods to meet, and even beat, the most exacting erection schedules.

Send your plans and specifications to us to be estimated.

Clinton Bridge Corporation
Gage Structural Steel Corporation
Midland Structural Steel Corporation

Fabricators and erectors of structural steel for highway and railroad bridges; industrial, office, school, and government buildings; airport structures; harbor facilities.
YOU get natural fire-resistance when you specify a Gold Bond "Poured-in-Place" Gypsum Roof Deck. The core is gypsum concrete...it can't burn. The entire system is quickly installed and it lasts. Quick setting action allows full load capacity in less than 60 minutes!

The low dead load of Gold Bond "Poured-in-Place" Gypsum Roof Deck permits lighter supporting structures and reduced overall construction costs. Cuts maintenance costs, too...if later construction changes are required, decks are easily cut, nailed, or patched.

Gold Bond Gypsum Roof Decks are adaptable to any design—pitched, barrelled or flat. By varying Gold Bond formboards you can achieve fire protection, insulation, or a combination of insulation and sound-conditioning.

Gold Bond "Poured-in-Place" Gypsum Roof Decks are installed only by experienced, approved contractors. Write our Architect Service Department for detailed drawings and load tables.

You'll build or remodel better with Gold Bond®

NATIONAL GYPSUM COMPANY • BUFFALO 2, NEW YORK

Ualco's Heavy-Duty Built-In Cam Lock
Automatically Locks All Vents In Any Position

The heavy-duty built-in cam lock, attached to the torsion bar, is another functional achievement of Ualco advance engineering.

Assuring maximum operating efficiency and durability, it is "strip-proof" ... maintenance-free. Eliminating the need of a separate locking handle, it further reduces operating parts.

The torsion bar, encased in four pillow block oilite bearings in the sill, requires only "finger-tip" operation to unlock, open and lock all vents in the desired position ... to close and lock.

Such structural features continuously help to make Ualco Awning Windows the outstanding choice of building-wise planners, constructors, owners everywhere.

Aluminum Windows ... The Difference Between Dollars Wasted And Dollars Saved
• NEVER ROT • NEVER RUST • NEVER NEED PAINTING • NO UPKEEP EXPENSE OF ANY KIND

Ask About Our Engineering Planning Service
Specifically designed to assist Architects, Engineers and Contractors in making "take-offs" and solving their window problems.

Union Aluminum Company, Inc. • Southern Sash Sales & Supply Co.
Sheffield, Alabama

World's Largest Manufacturer of Aluminum Windows
Advertisers index:

Page: 193
Advance Transformer Co.

178
Allen Manufacturing Co., W. D.

31
Allied Chemical & Dye Corporation (The Barrett Division)

195
Allied Structural Steel Companies

182
Alumiline Corporation, The

34, 35
Aluminum Company of America (Alcon)

158, 159
American Air Filter Company, Inc. (Herman Nelson Div.)

17, 71
American Brass Company, The

197
American Hardware Corp., The (P. & F. Carbin Div.)

179
Annenostat Corporation of America

33
Arketex Ceramic Corporation

36, 161
Armstrong Cork Company

30
Art Metal Company, The

32
Auth Electric Company, Inc.

50
Automatic Sprinkler Corp. of America

Cover II
Bakelite Company (Inc. of Union Carbide & Carbon Corp.)

31
Barrett Division, The (Allied Chemical & Dye Corporation)

168
Brunswick-Balke-Collender Company, The

62
Byrne Doors, Inc.

70
Buffalo Forge Company

28
C.O.-Two Fire Equipment Company

162
Cabot, Samuel, Inc.

21
Carrier Corporation

177
Celotex Products Corporation

10
Celotex Corporation, The

65
Certain-teed Products Corporation

22
Chase Brass & Copper Co.

191
Cleaver-Brooks Company (Boiler Div.)

199
Columbus Coated Fabrics Corporation

187
Corbin Division, P.A.F. (The American Hardware Corp.)

186
Corning Glass Works

194
Cyclotex Corporation

184
Davidson Enamel Products, Inc.

18, 19
Day-Brite Lighting, Inc.

76, 181
Detroit Steel Products Company

154, 155
Douglas Fir Plywood Association

190
Dur-O-Wal

Cover III
Eljer Co.

53
Federal Seaboard Terra Cotta Corporation

174
Fenwal, Inc.

62
Flat Metal Manufacturing Company

190
Follansbee Steel Corp.

182
Fornica Company, The

163
Frigidaire Division (General Motors Corporation)

189
Fuller Company, George A.

84
General Electric Company

163
General Motors (Frigidaire Division)

78
Glynn-Johnson Corporation

2
Goodyear Tire & Rubber Co.

27
Granco Steel Products Co.

29
Grinnell Company, Inc.

186
Haerel, W. J. & Co.

52
Hardwood Products Corporation

1
Hauerman, E. F., Company, The

160
Haws Drinking Faucet Co.

182
Hendrick Manufacturing Company

88
Holcomb & Hoke Mfg. Co., Inc.

150
Indiana Limestone

15
Ingram-Richardson Manufacturing Company

74
International Steel Company

49, 77
Johns-Manville

25
Johnson Service Company

8
Kentile, Inc.

176
Kewanee Manufacturing Company

82, 83
Keystone Steel & Wire Company

11
Lee, James and Sons Company

60
Lewis Asphalt Engineering Co.

Page: 6, 7
Libbey-Owens-Ford Glass Company

72
Lightolier Company, Inc., The

183
Louisville Cement Company, Inc.

44
Macomber Incorporated

9, 200
Mahon, R. C., Company, The

166
Marlo Coll Co.

81
Mastic Tile Corporation of America

48
Miller Company, The

164, 165
Minneapolis-Honeywell Regulator Company

169
Mississippi Glass Company

188
Montgomery Elevator Company

196
National Gypsum Company

51
National Tube Company (U. S. Steel)

158, 159
Nelson, Herman, Division of American Air Filter Co., Inc.

24
New Castle Products

152
North Carolina Granite Corporation

148
O’Keefe’s, Inc.

175
Otis Elevator Company

Cover IV
Overhead Door Corporation

14
Peele Company, The Richmond Fireproof Door Company

75
Petro Division

29, 54, 55
Pittsburgh Corning Corporation

167
Pittsburgh Plate Glass Company

156
Porete Mfg. Co.

149
Portland Cement Association

69
Powers Regulator Co., The

5
Raymond Concrete Pile Company

194
Raynor Mfg. Co.

192
Republic Industries, Inc.

151
Republic Steel Corporation

57, 58, 59
Revere Copper and Brass Incorporated

66, 67
Reynolds Metals Company

73
Roddis Plywood Corp.

147
Rowe Manufacturing Co.

16
Rund Manufacturing Company

157
Symmet Products Co., Inc., The

199
Schaet Associates

182
Scott Paper Company

26
Seaporcel Metals, Inc.

64
Sellers Engineering Co.

178
Siaskraft Co, The

42
Slan Valve Company

192
Standard Dry Wall Products, Inc.

178
Summerbell Roof Structures

153
Superior Electric Co., The

40
Surface Coatings, Inc.

186
Tremco Manufacturing Co., The

79
Truecon Steel Company

197
Union Aluminum Company

Cover II
Union Carbide and Carbon Corporation (Bakelite Company, Division)

4
Unistrat Products Company

136
United States Air Conditioning Corp.

47
United Steel Fabricators, Inc.

130, 171, 172, 173
United States Steel Corp.

51
U. S. Steel (National Tube Company)

56
Uvalde Rock Asphalt Company

12, 13
Vonnegut Hardware Company, Von Duprin Division

68
Walworth Company

23
Wasco Flashing Company

46

66
Wrenmol Company, The

180
Woodward Iron Company

61
Young Radiator Company

185
How washable is Wall-Tex?

here's proof of real STAIN RESISTANCE!

At York Research Laboratories Wall-Tex was subjected to these "staining agents" for periods of 1, 5 and 24 hours. In each test the stains were hand scrubbed with a cloth wet with a 0.5% solution of soap flakes. York records show that even on the 24-hour tests for removal of these stains Wall-Tex was rated "Excellent." Wall-Tex keeps its fresh, new beauty for years with easy, low-cost maintenance — and the sturdy Wall-Tex cloth base controls plaster cracks.

pre-trimmed, 24 inches wide

Decorators will tell you: "Pre-trimmed Wall-Tex is the easiest of all wall coverings to hang." Straight, true edges, non-tearing fabric. Goes on faster, easier, better! Beautiful new designs, textures, colors now available. Mail the coupon.
BUILT-UP SADDLES ELIMINATED

Built-up saddles are eliminated in Steel Deck Roofs. Purlins can be set to create valleys at sump locations in the drainage area. Steel Deck can be warped to conform. No additional deck plates are required—no cutting, fitting or bending necessary.

Specified for a Greater Percentage of New Construction Every Year!

The inherent advantages of Steel Deck have gained for it a universal preference for roof construction in both industrial and commercial type buildings. Year after year it is specified for a greater percentage of new construction. There’s a reason for this... Steel Deck is the most economical and most practical, permanent, firesafe material available for roof construction today. Steel Deck’s light weight permits substantial savings in the supporting structure—total dead load, including insulation and waterproofing material, is less than any other type of permanent roof construction. And, important too, Steel Deck can be installed in any kind of weather... and it can be insulated to the exact degree to meet “U” Factor requirements in any given locality. Mahon Steel Deck is available in Galvanized Steel, Enamel Coated Galvanized Steel, or Enamel Coated Black Steel. Stiffening ribs are vertical—no angular or horizontal surfaces where troublesome dust may accumulate. In the enamel coating process, the metal is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and the protective coating of synthetic enamel is baked on at 350°F prior to roll-forming. Investigate these extra-value features of Mahon Steel Deck... See Sweet’s Files for complete information, or write for Catalog B-54-A.

THE R. C. MAHON COMPANY

Mahon Steel Deck Recess for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.
Eljer fixtures... specified for stadiums the world over!

Eljer plumbing fixtures endure the constant use of millions of spectators in the stadiums shown here, and in others all over the globe. They were specified because they are top quality.

Architects and builders select Eljer products for many reasons besides durability. The Eljer line is unmatched for beauty, style and color variety. It offers the widest choice of materials anywhere—cast iron, formed steel, vitreous china, brass goods... for all public and residential plumbing.

Next time you plan any commercial building, institution, or home, specify Eljer. You'll build complete client satisfaction for years to come. Write today for condensed catalog. Address: Eljer Co., Box 192, Ford City, Pennsylvania.
Strength

... is essential for EASY OPERATION

Large doors for industrial use must be built for strength... each section a rigid unit, these units joined securely with heavy-duty hardware. Wherever installed, whatever its size, The "OVERHEAD DOOR" is a quality door, strongly reinforced and perfectly balanced for easy operation.

NATION-WIDE Sales-Installation-Service

The strongest garage door built yields to the touch of a finger! Specify The "OVERHEAD DOOR," electrically operated, with remote control.

America's Great Name in QUALITY DOORS...

OVERHEAD DOOR CORPORATION, Hartford City, Indiana
MANUFACTURING DIVISIONS

Hillside, New Jersey
Nashua, New Hampshire
Cortland, New York
Lewistown, Pennsylvania

Oklahoma City, Oklahoma
Dallas, Texas
Glendale, California
Portland, Oregon