September 1954

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The wall and doors paint a mural of color and light

The Blue Ridge Securit* Interior Glass Door is a single piece of tempered glass, patterned on both sides. It is attractive in many settings. The glass goes well with other materials, and its neutral tone harmonizes with other colors. Being tempered, the Securit Door is toughened to take hard usage.

Easy to hang. Needs no cutting, no mortising. Arrives at the job with distinctive, easily applied hardware.

The cost compares favorably with that of high-quality doors of ordinary materials—and you save on installation and maintenance costs.

Your L'O F Glass Distributor or Dealer will be glad to give you all the facts. Look for his name in phone book yellow pages, under “Glass”. Or write us direct.

**BRIEF DATA**

**Glass**—\( \frac{3}{8} \)" thick. Muralex patterned on both surfaces.

Tempered—three to five times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—

- 2'6" x 6'8"
- 2'8" x 6'8"
- 3'0" x 6'8"

Closers—when specified, the door can be shipped with a Sargent closer or prepared for use with an LCN concealed closer.

For more complete information, see the Securit Door insert in Sweet's Architectural File.

Securit Doors are part of this wall of Muralex patterned glass in the offices of Bert Mills, Inc., St. Charles, Illinois.

Architects: Burgess, Stevens & Purdy, Chicago.

Patterned glass has many uses—Blue Ridge Patterned Glass offers both function and beauty for many places in offices, homes, stores and institutions. In partitions, for example . . . to lighten a hall . . . for distinctive cupboard doors . . . for lovely built-in furniture. Choose from linear, checkered and overall designs in plain, textured or Satinol* finishes.

Libbey-Owens-Ford Glass Co., Dept. B-2094
608 Madison Avenue, Toledo 3, Ohio

Please send me your folder “Blue Ridge Securit Interior Glass Doors”.

I would also like the booklet of ideas for using Blue Ridge Patterned Glass in homes or other buildings. (Check one or both.)

Name (please print) ____________________________

Address ____________________________

City ____________________________ Zone State__________________________

* *
As office space requirements change, some companies go through the trouble and expense of remodeling . . . others move to new locations. But in ever-growing numbers, progressive companies like the Salisbury Axle Division of Dana Corp., Fort Wayne, find it far more convenient and much less costly merely to rearrange their modern Hauserman Movable Walls.

In this case, tangible cash savings of $12,508 are a direct result of making necessary rearrangements with Hauserman Movable Walls, rather than "remodeling" ordinary masonry walls. These moves were made easily and quickly, too . . . without disturbing normal office efficiency . . . without dust, dirt or confusion.

Additional savings of $1,886 represent the difference between cost of periodic soap-and-water cleaning of Hauserman's lifetime surface finish, and routine repainting of other type walls at four-year intervals. Whether your offices are large or small—doesn't this suggest an idea to you?
CONTROLLED KILN SEASONING IS ONE OF MANY REASONS WHY WEYERHAEUSER 4-SQUARE MEANS UNIFORMLY HIGH QUALITY LUMBER

The use of well-known, trade-marked materials is sound building practice—and always wins appreciative approval from home and building owners.

Builders and owners see in the Weyerhaeuser 4-Square brand name a familiar mark of quality. This confidence is the result of many years of advertising and, more important, the fine record of performance of every product bearing the Weyerhaeuser 4-Square trade mark.

One of the reasons for the widespread acceptance of Weyerhaeuser 4-Square is the fact that every piece of lumber bearing this brand has been scientifically kiln-dried. Controlled seasoning means that this lumber holds its size and shape remarkably well... has maximum strength and stiffness... takes paint and other finishes. These characteristics, plus the benefits of precision sawing and surfacing, proper grading, careful handling and shipping, mean that Weyerhaeuser 4-Square Lumber is consistently high in quality.

See this lumber, in a wide range of species, grades and sizes, at the office of your local Weyerhaeuser 4-Square Lumber Dealer.

SIDING—Weyerhaeuser 4-Square bevel and bungalow siding takes and holds paint exceptionally well because it has been scientifically kiln-dried.
BOARDS—Every board bearing this brand name has been seasoned prior to manufacture.

DIMENSION—Scientifically kiln-dried lumber contributes to sound, durable construction.

END MATCHED—This popular item eliminates waste and reduces building time—proper seasoning gives it maximum strength.

FLOORING—Controlled kiln-drying means a firm, smooth surface for superior appearance and wearability.

PANELING—Seasoned Weyerhaeuser 4-Square paneling presents a dry, smooth surface for a variety of finishes.

Weyerhaeuser Sales Company
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Vision-Vent walls installed at Clemson College

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Vision-Vent is recommended for all types of single- and multi-story buildings. Truscon engineers will be glad to study your requirements and develop design details and costs. More facts in Sweet’s; or write:

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Republic Steel
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Elevators are on duty electronically day and night

Office buildings, as well as hotels, often go social after dark. Full elevator service must be available late at night and holidays. Ordinarily, this means the added expense of keeping elevator operators on overtime duty.

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Otis operatorless elevators save up to $7,000 a car, each year in office buildings; and up to $14,000 in hotels. Ask any of our 268 offices for details.

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For poured-in-place roof decks
Fiberglas Acoustical Form board gives you two big extras at one low price!

Poured gypsum applied in conventional manner.

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Standard 32" x 48" x 1" rigid Fiberglas Form Board (equally suitable for lightweight concrete construction).

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extra #1 A fire-safe acoustical ceiling

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Triple-duty Fiberglas Acoustical Form Board gives you a permanent, dimensionally stable form board for gypsum or lightweight aggregate . . . plus a rot-proof, highly-efficient insulated roof . . . plus a fire-safe acoustical ceiling. Yet Fiberglas Acoustical Form Board and poured-in-place deck cost no more than an acoustical ceiling alone! Specify easy-to-install Fiberglas Acoustical Form Board for schools, factories, shopping centers, all similar structures . . . get two big extras at one low price! For full technical data write Owens-Corning Fiberglas Corporation, Dept. 171-1 Toledo 1, Ohio
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Cold Spring Granite Company
Cold Spring, Minnesota
How a Kewanee Reserve Plus Rated boiler stepped up production 100% cut fuel costs 50%

Anyone would find it difficult to prove to Dante V. Donati, Manchester, New Hampshire, that Kewanee Reserve Plus Rated Boilers do not pay dividends. That's because he discovered it the hard way. First, he bought an ordinary boiler for his plant at the Duracrete Block Company. He operated it one year, and then . . . but let him tell the story—

"We installed an ordinary boiler and found it to be inadequate. We then purchased a Kewanee Unit. Our production was stepped up more than 100% . . . with fuel costs cut in half. Maintenance cost is extremely low. The quality of our product has improved because of lower moisture content due to ample steam for processing."

Judging from Mr. Donati's experience it just makes sense that it's money in the bank to follow the Kewanee Reserve Plus Rating Plan in selecting a boiler. So when you choose a boiler, know these important facts:

1—Boiler rating must be based on nominal capacity, not maximum capacity;
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Choose Kewanee and cut fuel costs—lower maintenance—reduce breakdowns —get longer boiler life.
For high quality concrete work...

high quality
American Welded Wire Fabric

PREFabricated ROLLS of American Welded Wire Fabric wound on large mandrels can be unrolled continuously from beam to beam, making installation easy and assuring continuous reinforcing.

PITTSBURGH'S RENAISSANCE is symbolized by these new Gateway Buildings which are built with short-span floors reinforced with American Welded Wire Fabric.

PRE-Cast Concrete slabs and planks used in this building have exceptionally good resistance to cracking when they are reinforced with American Welded Wire Fabric.

LEVER HOUSE contains American Welded Wire Fabric Reinforcement. American Fabric often exceeds the new ASTM Specification A185-53T; it puts an extra margin of safety in your designs.

REINFORCEMENT is the backbone of your concrete structures, so it pays to specify the best wire fabric for walls, floors, roofs, and concrete ground slabs. And the very best is American Welded Wire Fabric.

American Fabric not only meets the new ASTM Specification A185-53T, it often exceeds it. We make a concerted effort all along the line, in making the steel, in drawing the wire, and in fabricating and testing the fabric, to see that American Welded Wire Fabric is the best it's possible to make.

This pays off for you, because you can use it with confidence in your designs, knowing that it will give your concrete more than the calculated strength and resistance to cracking.
They tried it...
They liked it...
They came back for more!

Joanna Vinylized WALL FABRIC
in the new Alcoa Building, Pittsburgh...
NOW—
42,500 sq. ft. more for Alcoa branch offices

The gleam and sparkle of aluminum — ALCOA aluminum — the austere beauty of marble, and the vivid color and charm of Joanna Vinylized Wall Fabric... these are the principal materials used in the magnificent interior decor of the Alcoa Building in Pittsburgh.

With this remarkable building, ALCOA further proved that aluminum is one of the finest building materials available... and, incidentally, proved that Joanna Vinylized Wall Fabric is tops for economical, durable wall decoration.

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America's Finest
INSTITUTIONAL DOORS

For use in public buildings, no door equals a Rezo for lightness, strength, service, appearance — and low cost! To be sure . . . specify Paine Rezo Institutional Doors by name!

Only a Rezo Institutional Door has all these quality features:

A. Nominal width of stile, 3"; top rail 5" bottom rail 3". If no kick plate or top door closer required, standard door may be reversed where extra heavy hardware is needed at bottom.
B. Gridwork hand assembled and mortised into stiles and rails for greater strength.
C. Matching vertical edge strips can be furnished when specified.
D. Lock area, on each side, softwood — 6" wide and 21" from either end. Varies in length in proportion to specified height of door.
E. 3" cross rail for special hardware located 41" from bottom of door to top of rail unless otherwise specified.
F. Hollow core gridwork: 2" by 2" air cells, of finely machined softwood with interlocked construction for strength and rigidity. Hand assembled for precision fitting.
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3-ply face panels regardless of specie; 1/8" thick before sanding.

Built to rigid standards of quality, workmanship and inspection — backed by over 100 years of woodworking experience! Write for details!

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by E. A. Taylor

January 1954
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*This is the emblem* of the National Bureau for Lathing and Plastering. It symbolizes high standards of job performance and responsibility.

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Plus Durability...

VINYL TILE FLOORING

What is "vinyl" tile? This new floor covering is made from synthetic resin, fillers, stabilizers and plasticizers. The resin and plasticizers are the binders and the most important ingredients—they impart durability, abrasion resistance, grease and stain resistance, flexibility, heat and light stability.

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Monsanto's role: This new development in flooring is made possible by Monsanto Opalon* vinyl resins and Santicizer* plasticizers.

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... non-slip, wet or dry!

Everybody is in a hurry in a subway. Slipping accidents can happen, and often — but here in the new Toronto subway, Norton ALUNDUM Aggregate in terrazzo has made the station floors and ramps non-slip in all kinds of weather ... And, there is a money-saving factor too, because the hardness and toughness of ALUNDUM Aggregate assures years and years of life for the terrazzo, even with heavy subway traffic.

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Beautiful SURCO terrazzo-type floors are as durable as concrete . . . yet as resilient as quality hardwood flooring. Discomfort and fatigue often caused by walking or standing for long periods on concrete or tile floors are drastically reduced when SURCO floors are installed.

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  This floor formerly of ceramic tile has been entirely resurfaced with SURCO terrazzo-type material. Applied only 3/4-inch thick, SURCO decorative flooring was used also to resurface the ground floor, linen room, and service room of the hospital. Stoves and heavy machinery remained in place during entire application.

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See Sweets' File for further information or write to:

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Because satisfactory fluorescent fixture performance depends largely on the ballast. Customer dissatisfaction will eventually cost him money and his reputation. CERTIFIED CBM BALLASTS are Tailored to the Tube to assure best lighting performance.

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That's why, today, most fluorescent fixtures for general lighting service are equipped with

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Whatever your radiation

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TO ARCHITECT:
John E. Somerville
of Green Bay, Wisconsin

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In this building the architects have handled future expansion problems with imagination. Recently, an 18' by 10' partition was moved a distance of only five feet at a cost of just 32 cents per square foot of partition. Carefully studied architectural planning made this possible. The column-free office space has a completely removale, acoustic tile ceiling resting on flanges of light troffers. Access to all mechanical and electric services above the ceiling can be gained without tools. Light fixtures and air ducts are flush with the ceiling. Windows are at regular 5 ft. intervals; between the windows are 1 ft. wide flush mullion surfaces for receiving abutting partitions without any fitting required. An infinite number of rearrangements is possible with these facilities.

Westinghouse Water Coolers have been selected to add to the efficiency of this business office. Architects know that Westinghouse gives their clients more cold water per dollar of investment.

Model WAC2...a compartment pressure-type cooler which keeps 3 1/2 pounds of ice ready for instant use. Ideal for offices...keeps 29 beverage or 40 half-pint milk bottles always ice cold.

WSB3B 3-Gallon, Bottle Cooler
WSB5B 5-Gallon, Static Air Cooled
WSB8B 8-Gallon, Static Air Cooled
WA13B 13-Gallon, Air Cooled
WA17B 17-Gallon, Air Cooled
WW14B 14-Gallon, Water Cooled
designed to compliment the variety of planning of today’s top architects, the Westinghouse Water Cooler for 1954 is better in every respect. Distinctively styled with polished metal trim and a new escutcheon, the attractive silver-grey hammered finish is capped with a sanitary stainless steel top.

with dual electric control, you now have both finger-tip and toe-tip operation on the same cooler at no extra cost. The patented Pre-Cooler and exclusive Super Sub-Cooler utilize cold water waste to pre-cool incoming drinking water and sub-cool the hot liquid refrigerant respectively.

the architect specifies Westinghouse Water Coolers to overcome problems created by varying water pressure. The Westinghouse automatic stream-height control is built right into the bubbler assembly and prevents splash and dribble by compensating for variations in the water pressure. All these features in a unit that occupies only 14” x 14” of floor space.

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SEE THE NEW PAY-WAY COMPUTER

Designed to save time in making calculations and to aid in specifying the number, type and location of water coolers for your clients. Check the yellow pages of the telephone directory for your nearest Westinghouse Water Cooler distributor . . . or drop us a line.

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WESTINGHOUSE ELECTRIC CORPORATION
Electric Appliance Division • Springfield 2, Mass.

WW206 20-Gallon, Water Cooled
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WWE14B 14-Gallon, Water Cooled Explosion-Proof
WAC2 Compartment Pressure Cooler
WAP7A 7-Gallon, Remote Cooler
WWP13 13-Gallon, Remote Cooler
WBC1 Compartment Bottle Cooler
Trinity white—the whitest white cement—is a true portland. The gleaming sparkling whiteness as mass or contrast increases the stature of good design. Use it for architectural concrete units; stucco; terrazzo; and wherever high light-reflection is indicated. Trinity white meets all Federal and ASTM specifications.
CAST ALUMINUM SPANDRELS are lightweight yet sturdy. They are easily handled, quickly anchored in place. Maintenance costs are low.

CAST ALUMINUM COLUMN COVERS which run the full height of the building are cast with recessed tracks for a traveling window cleaning platform.

THE MILE HIGH CENTER, Denver, Colorado
- ALUMINUM ERECTOR: Universal Corporation, Dallas
- ARCHITECT: Webb & Knapp, Inc., Architecture & Planning Div., I. M. Pei, Director
- ASSOCIATE ARCHITECTS: Kahn & Jacobs, New York; G. Meredith Musick, Denver
- GENERAL CONTRACTOR: George A. Fuller Company


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- Double adjusting levers, at top of plate, easily moved by the fingers. One adjusting lever controls speed of closing action. The other governs latching action when door is semi-closed!
- Famous Guarantee! Norton Door Closers are guaranteed for 2 years providing proper recommended sizes are used!

No matter what type of building is involved, look into Norton's "Inador" for interior applications! This Closer gives you the reliability, durability, low maintenance, and precision workmanship you've come to expect from Norton Liquid closer. But the "Inador" gives you beauty, too...isn't unsightly or bulky...is streamlined through its "Inador" construction to fit the needs of modern design! Yes, Norton "Inadors" can take it under severest use, and at the same time enhance the appearance of your building. Available in "Regular Arm" and "Holder Arm" models, which are distinguished by engineering "know-how" and finest materials!

Specify Norton—the name that's become the industry's standard—with confidence you've chosen something "special." Write for full information on the "Inador"—and other Norton closers—to:

NORTON
NORTON DOOR CLOSER COMPANY, DEPT. AF-94
Division of The Yale & Towne Manufacturing Company
Berrien Springs, Michigan

"Over 70 Years of Leadership in the Door Closer Industry"
BEST BUY!

TWO DEPTHS... 22" row depth for maximum seating capacity—24" row depth for greatest seating comfort.

NEW DESIGN has achieved weight reduction up to 70 pounds per row—the easiest gym seat to open and close.

SELF-SUPPORTING understructure now stronger than ever—wood parts give additional strength.

4 VERTICAL UPRIGHTS support each row—controlled weight distribution—no extra wall reinforcing required.

"FLOATING MOTION" opening and closing assured by interlocking members and multiple supports that insure true alignment and prevent binding.

"DUAL-ALIGN" cushioned roller housing are keyed together and interlocked for straight-line trackage. Non-marring rollers retract under load—vertical uprights then bear directly on floor.

Write For Catalog!

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Gold Bond Perforated Lath is attached with Gold Bond Clips to suspended channels. ¾" channels may be attached directly to bar joists for same fire rating.

Gypsolite
Base Coat Plaster
Gouging Plaster
Finish Lime
Gypsum Lath
Metal Lath
Lathing Accessories

Gold Bond Clip-Lok Systems protect buildings with fire resistant ratings of up to three hours... according to independent laboratory tests (name of laboratory upon request).

This safe, low cost ceiling was built in Remington Rand’s Pittsburgh office with Gold Bond Clip-Lok System. Ceilings like these are built rapidly and easily... and at the same time, you get built-in fire resistance, too. Gold Bond Clip-Lok ceilings, consisting of Gold Bond steel channels, gypsum lath, clips and plaster... may be attached to or suspended from bar joist construction. They don’t limit ceiling design possibilities because they’re especially flexible around fixture openings.

One of the big advantages of the Gold Bond Clip System is that every component is made by one manufacturer... assuring superior product quality and performance throughout. For further details on the Clip-Lok System, refer to page 18, in Section 11b of Sweet’s Catalog or write National Gypsum Company.

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Plastering Contractor: J. J. Morris & Son, Pittsburgh, Pennsylvania
General Contractor: Mellon & Stuart Co., Pittsburgh, Pennsylvania

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Another Famous Building looks ahead... to low Sargent maintenance...

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Sargent Door Closers, for example, are giving complete satisfaction on hundreds of thousands of installations. These products have features that insure precision closing, perfect control and dependability.

Double rack and pinion controls the movement of closing all the way... permits universal application without changing parts. Standard arms will open doors up to a full 180°.

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Hardware of Character
You get the protection of sound engineering with ANACONDA® Through-Wall Flashing
1. Positive interception of downward water flow
Pre-formed dam of special design permits positioning to within 1/4" of the face of the wall.

2. Prevents lateral movement
The 3/8" high embossed zigzag corrugations provide a positive bond with the mortar on both the top and bottom of the flashing.

3. Flat, integral, easily bent counter flashing
The counter flashing portion is furnished without corrugations. Bending does not overstress metal or form a bead at the bend.

4. Complete drainage in desired direction
The die-stamped dam and corrugations of uniform height assure complete drainage on a level bed. The smooth edge on the drain side cannot trap water. There is no danger of heaving by frost.

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Precision die-stamping assures tight nesting of dam and corrugations when overlapping adjacent lengths.

6. Flat selvage for easy joining
No problem to clinch-lock or solder to other copper work.

7. One-piece die-stamped corner flashings
Available for inside and outside corners for 8" and 12" walls. Interlock with adjoining straight lengths. Corner flashings are installed quickly and with a normal thickness of mortar joint.

8. Protection without waste
A pound of flashing (16-oz.) covers a full square foot area.

9. Wide range of sizes
Available up to 47" wide over-all, with corrugations and plain selvages of variable widths. All in standard 8 ft. lengths.


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Through-Wall Flashing
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**RUSCO PRIME WINDOWS**

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When deciding on window specifications—it’s good business to remember that only RUSCO makes a window that **DOES EVERYTHING A WINDOW SHOULD DO**—a fully prefabricated, finish-painted, ready-to-install unit made of Armco hot-dipped tubular galvanized steel.

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- **ELIMINATES HANDLING OF "EXTRAS."** Nothing to change! Nothing to store! Rusco Windows with insulating sash (optional) and Fiberglas screen completely eliminate separate storm windows and screens.

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- **MADE OF ARMCO ZINGRIP.** The special purpose steel that prevents corrosion—bonderized and finished in beautiful baked-on enamel just like a fine automobile.

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Affiliate of Reynolds Metals Co.
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- Port of New York Authority Bus Terminal, New York, N.Y.
  - Architects, Port of New York Authority Engineers
- Union Pacific Railroad Company, Seattle, Wash.
- Wichita Municipal Airport, Wichita, Kan.
  - Architects, Thomas-Hartle-Cahn Associates
- Hudson & Manhattan Railroad
- Pennsylvania Railroad
- Greyhound Bus Terminal, Kansas City, Mo.
  - Architects, Vorhees, Walker, Foley & Smith
- New York City Dept. of Marine & Aviation, Pier Shed No. 84
- New York City Dept. of Marine & Aviation, Pier Shed No. 27

**PUBLIC BUILDINGS**
- Pentagon Building, Arlington, Virginia
- Metropolitan Museum of Art, New York, N.Y.
  - Architects, Voorhees, Walker, Foley & Smith
- American National Bank, Austin, Texas
  - Architects, Kuehne, Brooks and Barr

**HOTELS**
- Statler
- Hilton

**INDUSTRIAL**
  - Architects, Albert Kahn Associated Architects & Engineers, Inc.
- Buick Motor Division, Building No. 36, Flint, Mich.
  - Architects, Albert Kahn Associated Architects & Engineers, Inc.
- Buick Motor Division, Building No. 44, Flint, Mich.
  - Architects, Albert Kahn Associated Architects & Engineers, Inc.
- General Motors Saginaw Gear Division, Saginaw, Mich.
  - Architects, Argonaut Realty Co.
- Rochester Products Division GMC, Rochester, New York
  - Architects, Argonaut Realty Co.
- Fisher Body Division GMC, Detroit, Mich.
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Write for descriptive literature and complete list of installations.

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Structural facing tile enables you to build the right environment into the schools you design—and make it last the life of the building.

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Servel equipment: 38 8-ton units—2-unit increment in basement; 5-unit increment on each of first six floors; 6-unit increment on top floor.

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MONTHLY COST OF FUEL FOR SERVEL AIR CONDITIONERS

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</tr>
</tbody>
</table>

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I want to know more about Servel Air Conditioning for use in [ ] Home [ ] Store [ ] Office [ ] Factory

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Company Name [ ]
Address [ ]
City [ ] County [ ] State [ ]
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PC Suntrol Blocks
take the dazzle
out of sunlight!

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Suntrol Blocks do not replace the present line of PC Functional Glass Blocks. But for special applications, Suntrol Blocks will reduce glare, reduce instantaneous heat gain, and give more human comfort than ever before.

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* PC Trade Mark
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They protect bathers from scalding and "shots" of hot or cold water, caused by—

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fluctuations in water supply lines

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- Precise light direction control
- Edge light to ceiling for visual comfort
- Shallow recessed lens lighting

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Congress writes new angles into US construction spending

Funds appropriated are nothing surprising, but policy shifts are. Hoover Commission to study lease-purchase

Though dollarwise it broke no records in providing funds for federal building activities, Congress in its final months gave several government construction programs a new look. Military public works, Hill-Burton aid to hospitals and federal aid to airport construction were routine. The important moves: authorization of a lease-purchase method of acquiring federal buildings; a shift back to direct construction of housing at military bases (appropriation for which was sharply cut at the last minute) and specific permission to the General Services Administration to pay brokerage fees in disposing of surplus federal real estate holdings.

Lease-purchase—the most important of the new moves—was unique enough to cause the Hoover Commission to set up a task force on federal real estate to examine the program at its next meeting. John R. Lutz, formerly of Stone & Webster, is chairman. Probably the chief question the Hoover group will consider is whether the obvious advantages of lease-purchase are sufficient to offset the fact that in the long run such a program will cost the government more than if it did the building itself. The argument in favor of the lease-purchase approach, of course, is that it avoids large federal outlays at a time when it is particularly important to hold down spending. Meantime, the House public works committee gave the green light to 29 lease-purchase deals submitted by GSA. They involve construction costs totaling $42.9 million, with yearly lease instalments coming to an aggregate $6.4 million. The latter figure exceeds the $5 million limit that may be contracted for during the first fiscal year; it was purposely upped by GSA in order to give the committees some basis for selectivity. The Senate public works committee was still mulling over the list, but had promised quick action.

Largest project on the GSA list was a new barge office building in New York to house over the list, but had promised quick construction costs totaling $42.9 million, with yearly lease instalments coming to an aggregate $6.4 million. The latter figure exceeds the $5 million limit that may be contracted for during the first fiscal year; it was purposely upped by GSA in order to give the committees some basis for selectivity. The Senate public works committee was still mulling over the list, but had promised quick action.

Military housing. Over the protests of the Wherry Act Housing Assn., which has spearheaded the fight for privately financed military housing, Congress finally decided to return to a limited public construction program. It authorized the expenditure of $175 million (about half what the Pentagon had originally requested) for 11,967 units (cut down by the Senate) at specified installations. Then in a last-minute decision, the appropriations committees actually put up only $75 million. In addition, three certificates are now needed on a job before construction can start, attesting to the practicality of the proposed project, to the fact that adequate housing is not available in the area and that suitable housing could not be built there under other provisions of the law. The Defense Dept. feels it will be lucky if it can get 5,000 units built under this arrangement with the available funds.

Both the House and Senate armed services committees, while not needing to be sold on the Wherry Act sponsors’ argument for using private enterprise to the maximum extent, felt that the act had its limitations. They noted in their reports that Wherry Act applications have fallen off considerably since an antimortgaging out amendment was added last year, also contended that Wherry Act housing ultimately costs more and that it contains the further disadvantage of being limited to use at permanent bases. The total $175 million has, of course, been authorized; it remains to be seen in what quantities the spare $100 million is parcelled out. In addition, Congress approved a new trailer purchasing plan and the use of $25 million in available foreign exchange money for construction of overseas military housing.

Brokerage fees. GSA has always had the authority to pay brokers’ fees in connection with sale of federal property, but has had difficulty making use of the privilege because of an inability to forecast in its budget the amounts it would need to cover such selling expenses. To remedy the situation, Congress put through a bill in the closing days of the session allowing GSA to use a specified portion of the proceeds from sale of buildings and other realty holdings to defray selling costs. Up to 10% of the sales price may be used for such items as advertising costs, appraisal fees and real estate commissions. The 10% figure was agreed upon at the last minute and the legislation actually reads 12%. This higher limit was left in to avoid holdup in committee, with an injunction that GSA keep the charges down to 10%.

Other appropriations: $728 million for military public works; $21 million for supplementary aid for hospital building under Hill-Burton, plus $2 million for state surveys; $75 million for the regular hospital-aid program; $22 million under the airport measure.

Meantime, Franklin G. Floete, assistant secretary of defense and top reviewer for military construction, had tapped some of the best brains in architecture and engineering for research on his hydraheaded program. His consultants: Giffels & Vallet of Detroit, for warehouse construction; Parsons, Brinkerhoff, Hall & Macdonald of New York, for a study of airfields; Keyes, Smith, Satterlee & Lethbridge of Washington for family housing.

Circular office building for downtown Hollywood

This extraordinary building by Architect Welton Becket will house headquarters for Capitol Records, Inc. in downtown Hollywood. Publicized as the first circular office building in the world, the 13-story structure bears superficial resemblance to the round “Helix” apartment building that William Zeckendorf and Ieoh Ming Pei thought up four years ago (AF, Jan. '50) but have as yet not built. Ground will be broken this month for the Capitol Records building. It will be composed of a 12-story concrete cylinder, 90' in diameter, supported on an 82' x 160' base by two circular rows of columns. Second floor (lowest in the column) has a diameter of 78' as opposed to the 90' diameter of the other circular floors.

Total floor area in the building will be close to 92,000 sq. ft. and net usable space about 78,000 sq. ft., including corridors. Core facilities —stairs, elevators, washrooms, etc.—occupy 14% of the gross floor area, considerably less than they usually occupy in ordinary straight-line planning. Cylindrical design also cuts lineal feet of perimeter wall, a fact the architects say will make for reduced cost and higher efficiency in heating and cooling. Total cost of the building has been estimated at $2 million.
Construction wages up 9c; labor gets more fringe benefits, longer contracts

Wages in construction rose by an average 9¢ an hour across the nation during the bargaining season which ended this summer. A midsummer survey of the building labor market by FORUM identified some trends which alert contractors were keeping under scrutiny to help them estimate the wants and needs of their labor next year. In a dozen major building areas, this is the way things were shaping up:

Fringe benefits—a long time coming to construction—are on the rise. Basic fringe benefits, such as health and welfare insurance plans, are becoming well established in most metropolitan centers. Big exceptions are the South and West. Vacations and pensions are pushing into contracts in many big metropolitan areas which have stable labor forces. New York is still the pacemaker in fringe benefits; many of its trades have pension plans and vacation funds. In Detroit, six trades and their employers have cooperated in setting up a joint health and welfare plan costing employers 10¢ an hour. The Detroit group plan is one of several clear-cut signs of a trend in construction fringe benefits toward enlarging groups under coverage. Union and employer leaders, thinking of administrative savings, foresee city-wide and perhaps even state-wide coverage. Another form of widening application of fringe benefits was apparent in a ten-state contract signed last month in the Midwest between the boilermakers union and representatives of 5,000 contractors, providing employer-paid hospital and surgical benefits for some 30,000 construction boilermakers. Union officials hope the plan, which took eight months to negotiate, will be applied to the rest of the nation’s boilermakers in a month or two.

Two-year contracts

as a partial satisfaction of the hunger of both contractors and workers for stability in their relations. Some contracts, important chiefly for their experimental nature, run from three to five years. For construction, adoption of long-term contracts and wage escalator clauses was unusual. Construction union leaders have driven hard for pay boosts every year in the last decade, counting for help on the boom in building since World War II and on the eagerness of most contractors to avoid strikes. Result: building construction wages are the highest of all industries in the country ($91.70 gross average weekly earnings). In 1945, construction wages were fourth highest in the country ($53.73) and in 1939 they were eighth ($30.39). Labor’s acceptance of multiyear contracts has been interpreted as recognition by unions that the postwar ascent of wages may have lost most of its force. But, as insurance against wrong guesses on the economic future, most contracts longer than one year contain cost-of-living wage-adjustment clauses or provisions for reopening pay negotiations yearly. In Chicago, an unusual three-year contract gave plumbers a 13¢ pay increase this year, assures them a 7¢ boost next June and commits them to no rise the following year. Nearly all major Boston contracts are for two years.

Blanket contracts. Wage rates for housing still are being patterned by negotiations covering all of construction. In a few cities this year, home builders revolted against bargaining jointly with other types of contractors and in many more areas builders talked about the need for negotiating separately with unions. But the revolts were unsuccessful, and the talk was mostly about “next year.” Standout example of what homebuilders want was a contract between Providence builders and carpenters setting a lower wage rate than that for carpenters in general construction. In many parts of the country, however, lower wage rates for housing workers than for other construction craftsmen are a reality, for housing is about half open shop. In addition, wages tend to be somewhat lower in suburban areas, where the bulk of housebuilding occurs. In large cities, where much housing is apartment buildings, builders usually have to pay the wages which apply to other types of structures.

Mixed employment picture. Construction employment varied by city. In most it was high—employment in spots was only 10% or less of the total work force, normal in an industry with constant movement of workers from job to job. In some areas, however, there was serious unemployment. Carpenters and bricklayers seem most vulnerable, for they have to contend not only with day-to-day fluctuations in the call for their services, but also with the constant nibbling at their jurisdictions brought about by adoption of new building materials. In two areas, Omaha and San Francisco, there was heavy unemployment in many trades.

**HOURLY BUILDING WAGE RATES, THIS YEAR COMPARED WITH LAST**

<table>
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<th></th>
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<th>Carpenters</th>
<th>Electricians</th>
<th>Laborers</th>
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* Includes fringe benefits
Cracking plaster and tile walls in Seattle building stir row over who is to blame

Three years ago, the citizens of Seattle smiled as they passed their new war memorial, the public safety building. They had answered the growing clamor for a functional monument to their war dead, and the 15-story police-and-fire headquarters was a good example of contemporary taste (AF, Aug. '52).

This year there was chagrin among Seattleites who watched plaster cracks mostly hairline but some perhaps 1/8"—appear in the walls and ceilings. They saw glazed hollow tile partition blocks pop out. The Seattle Post-Intelligencer, interested when Fred B. McCoy, city building superintendent, asked the city council for $50,000 for repairs to the memorial building, carried pictures and details of the damage. One paper called the building an "eyesore" because of the imperfections.

Whose fault? McCoy listed these problems: need for repainting throughout, and recoating roof; leaks around aluminum window sash; loose mortar joints; leaks from planting boxes, causing discoloration; loose door jambs, and inadequate oil burning system. But the cracking plaster and tile, as McCoy noted, were the "main problems." Around them swirls a controversy that has spread from Seattle to concern technical men across the US. The reason: the public safety building was plastered with gypsum-perlite. Perlite is a 13-year-old lightweight aggregate used with gypsum or Portland cement to form wall plaster. It costs more, but offers better fire and thermal insulation than sand and gravel. Perlite is a siliceous volcanic rock mined in the West and heat-treated.

It may be some time before experts can agree what caused the damage. For one thing, the cracking and sagging and warping have not stopped. For another, architect, perlite supplier and plastering contractor have been more active in avoiding than in fixing blame, so the argument over whose fault the damage is goes round like a ball in a roulette wheel.

Architect Perry B. Johanson of the firm of Naramore, Bain, Brady & Johanson, wrote the Seattle city council on May 3 indicating the fault must lie with the brand of perlite used. He wrote: "The major problem develops in the expansion of the ceiling plane. If the surrounding walls are rigid, the ceiling tends to buckle... Where the surrounding walls are nonbearing partitions such as glazed block walls in the police area, the pressure of the ceiling tends to dislodge the top block." He asserted that in other buildings in Salem and Portland, Ore., in Yakima, Belingham and Spokane where the same brand of perlite was used, "the same conditions had developed."

Slurs & scapegoats. Supplier of the perlite, Dant & Russell, of Portland, Ore., stopped making the aggregate two years ago. F. S. Burt, formerly manager of the perlite operation for Dant & Russell and now advertising manager of the firm, has been incensed over the slurs on the product, which was known as Dantore, and which was widely used in the northwest.

"The ends of too many people were going to be served if a scapegoat could be found, and apparently we're it," he fumed last month. "We are not involved in the failure of that building in any way... At the same time that perlite appeared on the building scene, architects started coming out with revolutionary new designs." Burt suggested new design or construction methods might be at fault in plaster failures in the Northwest.

Was it design? Dantore had not been approved by the Perlite Institute, Burt said, because Dant & Russell were not members. But the institute, seeing clearly on which side its wall was plastered in the controversy, investigated on its own and blamed the cracking of plaster on structural movements. In a report, R. J. O'Heir, technical director of the institute, blamed the way the runner channels and furring channels in the ceilings were put together. O'Heir said the 3/4" furring channels were tied to runner channels so they butted into partition walls which came up to the main runner channels. This tended to transmit any building movement to the partitions, causing either the partitions to fail or the ceilings to buckle and wave (see cut). He said he found evidence of structural movement in partitions and around door jambs.

R. L. Davis, secretary-treasurer of the institute, asserted there is no correlation between the Seattle troubles and the national experience with the 300 million sq. yd. of 3/4" gypsum-perlite which has gone on walls since 1948. He noted that the difficulty "seems to be pointed at one producer's perlite that is no longer available," and called attention to the institute's certification label for approved perlites.

Joe Jefferson, plastering contractor, insisted he followed specifications. It was the general contractor, Kuney Johnson, who suggested perlite be used, but this was approved by the client. Representatives of four building unions denied workmanship was to blame.

The proponents of design and the defenders of perlite have not had a clear battle field by any means. The building is a public one, and political factions are taking sides. So far, there have been no lawsuits, but odds were that the courts would be involved before long. This promised more delay and more controversy. Yet for the building industry, and especially for perlite interests, perhaps the most important thing of all was to get the question settled before second-hand reports and whispers magnify the trouble beyond its true proportions. Building Superintendent McCoy suggested one way this might be done. He asked the city for $5,000 to hire a "disinterested engineer and architect" to analyze the situation. Other Seattle buildings also face the same problem, said McCoy.
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McDonnell Bros. Inc., 3920 Lenin Road, Detroit 10, Michigan

W. E. Neal State Co., 111 Danforth Ave., B.E., Minneapolis 14, Minn.

Herbert Larcher Co., 4227 Farnsworth Blvd., St. Louis 6, Mo.

The Stoker Company, 2035 Washington St., Kansas City, Mo.

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Atkins & Co., Inc., 19 North Harrison St., East Orange, N. J.

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Kilgore Inc., 101 Park Avenue, New York 17, New York

DiClemente & Valhak, 4 E. 10th St., Rochester 7, New York

R. O. Ross Company, 415 Clement Ave., Cheshire, North Carolina

Dubrow-Orto, Associates Inc., 1426 Clay St., Cincinnati, Ohio

Link Equipment Company, 1935 Euclid Ave., Cleveland 15, Ohio

Tri-State Supply Co., 1846 West Fifth Ave., Columbus 12, Ohio

Dayton Builders Supply Company, 100 East First Street, Dayton 2, Ohio

Scovil & Sublett, 20 N.E. 27th St., Oklahoma City, Oklahoma

A. M. Masters & Son, 4 North 11th St., Philadelphia, Pa.

A. M. Masters & Son, 300 West Paseo Ave., Pen Arey, Pa.


Tennessee Structural Products Corp., 3601 Chapman Highway, Knoxville, Tenn.

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PEOPLE: Elizabeth Wood is fired as Chicago public housing executive; Tracy Augur named to city planning post at HHFA

For more than two years, there had been friction between Executive Secretary Elizabeth Wood and the four commissioners of the Chicago Housing Authority. Since race rioting began more than a year ago after Negroes were admitted to the all-white Trumbull Park public housing project, the breach has widened. Last month, the tensions erupted into a front-page quarrel and Miss Wood, boss of Chicago public housing for 17 years and a nationally prominent figure in public housing, was abruptly fired.

The explosion began building up when the board, after a study of CHA operations by a firm of consulting management experts, deposed Miss Wood without notice to herself. It named Lt. Gen. William E. Keen, 57, just retired as commander of the Fifth Army (headquarters Chicago) to the newly created top post of executive director. Salary: $20,000 (some $2,500 more than HHFA Administrator Cole is paid). Keen, who will take over Oct. 1, has a reputation as a cost-cutter (he claims he saved $1 million in his command last year).

He had also been in the middle of Negro-white integration, which is public housing’s No. 1 problem in Chicago; in the summer of 1950, he integrated the all-Negro 25th Infantry regiment into white units of the 25th division—the second in action in Korea. But Keen is also a man with no extensive experience at housing. The commissioners explained later they had planned to ask Miss Wood to stay with the public housing organization, possibly to take charge of its social work. But they never got around to discussing this with her. On Aug. 31, Miss Wood handed Chicago newsmen a statement accusing the board of paying “lip service to policies [of nonsegregation] publicly proclaimed while privately issuing instructions thwarting those policies.” She also added, referring to the commissioners: “It is personally shocking to me to find individuals who can hope to sweep the race issue under the rug by unabashed moral blackmail.” The stunned commissioners immediately fired her, with a year’s severance pay (about $14,000). Chairman John Tugard called her statement “unfounded, unwarranted and irresponsible.” The blackmail accusation, he said, was “simply malicious. . . . I think she’s held the commission in utter contempt for a long time. . . . It’s a presumption on Miss Wood’s part to feel that she is the sole person in Chicago capable of effecting integration.”

Some Chicago integration facts: CHA operates 26 projects with some 12,000 units housing 60,000 people (about 62% Negro and 38% white). In all but three of the 26 projects, there are some Negroes. As the Chicago Daily News editorialized: “One of the perils to the whole public housing program is and always has been the risk that it might evolve into an accommodation supplied exclusively, or nearly so, for Negro occupants. Taxpayers will not long support it on that basis. . . . We are sure that Miss Wood herself would consider it vital for the administrators to use some discretion in establishing priorities for the location of Negro families in new areas.”

City Planner Tracy B. Augur last month was appointed assistant director for planning assistance in HHFA’s slum clearance and redevelopment division. Augur is a lifetime city planner and an experienced thinker on atomic defense. He was in private practice until 1933, then joined TVA, first as a consultant and then as a staffer in town planning. He has been in on a number of other projects, including the Greenbelt towns and the postwar community of Oak Ridge, Tenn. In the spring of 1949 he joined the staff of the Federal Works Agency in Washington to assist in developing plans for the security of the capital; recently he was director of the urban targets division of ODM. Augur believes in urban dispersal. “Too many of our eggs are in one basket,” he said recently, “and the baskets are too big and easy to hit. . . .” At HHFA, he will be in a key spot to put his theories into practice in the rebuilding of US cities.
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BUILDING STATISTICS:

Basic forces in US economy seen as bolstering construction prospects

With more than two months of good building weather still ahead, construction men were sizing up a number of influences on their businesses. Their industry, they knew, was in good shape. The national pressures which were acting to greater or lesser degree in construction's favor—or in some instances perhaps owed their direction to the health of construction—could be itemized as follows:

Gross national product—the nation's output of goods and services—rose slightly during the second quarter of 1954, reversing a nine-month decline.

Construction employment was fairly high and building labor showed signs of easing off its pressure for higher wages in favor of fringe benefits and contract stability (see p. 38).

Personal income, up $600 million over the first quarter of 1954, was still $700 million below the second quarter of last year. But after-tax income was figured at $600 million above what it was in the first quarter of '54 and was $2.5 billion over the second quarter of '53.

Fast tax write-offs on plant and property were faster than ever, courtesy of the Congress just adjourned, a promising indication of accelerated industrial expansion for defense needs (see p. 128).

Unemployment in nonconstruction fields was still a problem, with more than two months of good building weather still ahead. A copper strike affecting 30,000 US workers stimulated some fear buying, boosted the price of copper scrap by $1 a lb. Demand for structural steel shapes still boomed, though at a slower pace, and remained the brightest spot in an otherwise gloomy steel picture.

A master plan for economic growth of the US for the next 20 years was being worked up by President Eisenhower's Council of Economic Advisers.

Unemployment in nonconstruction fields was still a problem, with the national total hovering around 3.3 million persons out of work.

Plant obsolescence, said to afflict more than half the industrial facilities of the nation, assured construction of a further market—whether or without fast tax write-offs—as long as national consumption continued high.

NEW CONSTRUCTION EXPENDITURES

(millions of dollars)

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<td>182</td>
<td>164</td>
<td>-9.9</td>
<td>1,015</td>
<td>915</td>
<td>-9.9</td>
</tr>
<tr>
<td>Public utilities</td>
<td>46</td>
<td>410</td>
<td>896</td>
<td>2,417</td>
<td>2,484</td>
<td>2.8</td>
</tr>
<tr>
<td>All other private</td>
<td>13</td>
<td>12</td>
<td>-7.7</td>
<td>71</td>
<td>61</td>
<td>-14.1</td>
</tr>
<tr>
<td><strong>PRIVATE TOTAL</strong></td>
<td>2,218</td>
<td>2,377</td>
<td>7.2</td>
<td>13,306</td>
<td>13,833</td>
<td>4.1</td>
</tr>
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</table>

PUBLIC

<table>
<thead>
<tr>
<th>Type of construction</th>
<th>July 1953</th>
<th>July 1954</th>
<th>Percent change</th>
<th>First 7 months 1953</th>
<th>First 7 months 1954</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential building</td>
<td>373</td>
<td>409</td>
<td>9.7</td>
<td>2,519</td>
<td>2,646</td>
<td>5.0</td>
</tr>
<tr>
<td>Nonresidential building</td>
<td>153</td>
<td>133</td>
<td>-13.1</td>
<td>1,067</td>
<td>972</td>
<td>-9.9</td>
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<tr>
<td>Educational</td>
<td>147</td>
<td>177</td>
<td>20.4</td>
<td>963</td>
<td>1,146</td>
<td>19.0</td>
</tr>
<tr>
<td>Hospital and institutional</td>
<td>28</td>
<td>34</td>
<td>21.4</td>
<td>238</td>
<td>260</td>
<td>-11.4</td>
</tr>
<tr>
<td>Military facilities</td>
<td>122</td>
<td>160</td>
<td>32.2</td>
<td>794</td>
<td>487</td>
<td>-38.7</td>
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<tr>
<td>Highways</td>
<td>382</td>
<td>415</td>
<td>8.6</td>
<td>1,503</td>
<td>1,765</td>
<td>17.4</td>
</tr>
<tr>
<td>Sewer and water</td>
<td>77</td>
<td>90</td>
<td>16.9</td>
<td>477</td>
<td>550</td>
<td>15.3</td>
</tr>
<tr>
<td>Conservation and development</td>
<td>77</td>
<td>69</td>
<td>-10.4</td>
<td>486</td>
<td>409</td>
<td>-16.0</td>
</tr>
<tr>
<td><strong>PUBLIC TOTAL</strong></td>
<td>1,107</td>
<td>1,136</td>
<td>2.6</td>
<td>6,271</td>
<td>6,282</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**GRAND TOTAL** | $3,325 | $3,513 | 5.7 | $19,577 | $20,135 | 2.9

*Minor components not shown, so total exceeds sum of parts. Dept.s of Commerce & Labor.
How CRANE helps you in school planning

Crane specialized washroom and laboratory fixtures for schools match the smart efficiency of modern school buildings. In fact, Crane leads in specialized styles and sizes to fit elementary and high school plans. And, of course, the wide choice of Crane prices makes it easy to fit Crane equipment into any school budget as well as any school plan.

Typical of the wide choice of Crane school fixtures are these Rhodile lavatories of rugged cast iron and durable porcelain enamel finish. High splash back is particularly important aid to cleanliness in elementary schools.

Besides a comprehensive choice of specialized school fixtures, Crane offers you the advantage of its unmatched reputation for quality—which is well known to school administrators. When you specify Crane equipment, they know you have recommended the best.

For complete information on Crane specialized school fixtures, see your Crane Architects' Catalog ... or call your nearby Crane Branch or Wholesaler.

CRANE CO.
GENERAL OFFICES: 850 SOUTH MICHIGAN AVE., CHICAGO 5
VALVES • FITTINGS • PIPE • PLUMBING AND HEATING
SIDELIGHTS

Sell public housing?

Now that Congress had more or less turned off the flow of new public housing construction, the National Association of Real Estate Boards, long one of public housing's chief foes, turned its attention to trying to rid the nation of what public housing had already been built (about 400,000 units). In NAREB's weekly news letter, Headlines, President Ronald J. Chinnock urged state realtor associations to back state and local laws to require any municipality to hold a referendum vote on liquidation of public housing "upon petition signed by 10% of the taxpayers." Instead of government ownership, Chinnock would have occupants or private investors buy and operate the properties. By such referenda, Chinnock said, the "vicious grip of the housing authority in Washington on our cities can now be broken." In passing, the NAREB leader also ticked off some of the strongest inventive aimed at public housing recently. He wrote: "Public housing is bad because it is . . . a special privilege and a political racket, . . . a new kind of 'ghetto' which herds problem families together and accentuates their difficulties, an unfair tax burden on those who save and struggle to provide their own homes."

Gunplay in Memphis

Nonunion construction workers had come into Memphis before and A F L building trades had not seriously protested. But jobs were scarcer now. So when Jones Equipment Co. of Dyersburg, Tenn. imported nonunion ironworkers for its steel subcontract on a cattle barn at the Memphis fairgrounds, A F L men protested. When some of the structure collapsed, they added a complaint that the work was shoddy. On Aug. 25, A F L ironworkers went to the scene armed with sticks and bats. They were repulsed by the nonunion workmen, who were armed with pieces of iron. Next day, the nonunion men took guns to work. When the A F L men reappeared, a gun battle ensued. Five union men were wounded, one critically. The nonunion crew, firing from behind concrete blocks, was unhurt. Police arrested 14 union men and 11 nonunion workers. The charge: "engaging in common affray." After the shooting, Mayor Frank Tobey declared it was city policy to use union labor for construction. At month's end, work on the cattle barn was resumed with union labor.

Patent suit hits Inland Steel

Hardly had Inland Steel Products Co., Milwaukee subsidiary of Inland Steel Co., readied its new Quonset-shaped shelter and storage building for a first appearance at the Wisconsin State Fair when it was accused of patent infringement. MPH Manufacturing Co., Chicago, charged that Inland had violated MPH patents on the manufacture of self-supporting arch panels which make the Inland building trussfree.

Inland says its building, marketed as the Milcor Lok-rib building, can be put up by unskilled labor with homemade scaffolding and one wrench. Panels of standard radius are bolted together in such a way that a V-rib on one edge of each panel overlaps the edge of another panel to form a triangular box rib. A clear-span, trussless structure can be built varying in widths from 24' to 48', of infinite length. Big selling points are low material cost and simplicity of construction.

Peter S. Pedersen, president of MPH, said his firm and the affiliated Wonder Building Corp. (AF, July '54) have been producing and selling buildings using this principle of self-ribbed paneling for four years. There are thousands of Wonder buildings in the US, Pedersen told Forum, used for everything from wheat storage to manufacturing. "Why, there are 219 of them in North Dakota alone," he said.

William A. Jahn, president of Inland Steel Products, said: "... To our knowledge we are not infringing on any patents. Until we see the nature of the complaint and the charges, we have no other comment." Pedersen alleges that Inland hired two of his former employees and applied their knowledge of the Wonder building to produce Inland's Lok-rib.

Contemporary design, flow of private money mark college dormitory program

Students at many American colleges accustomed to traditionally antiquated dormitories and fraternity houses will get a taste of well-designed campus housing this year. The big stimulus for a nationwide spurt of improved bed and study space is HHFA's Title IV program (passed by Congress in 1950 but kept on ice until the Korean war showed signs of ending) under which colleges may borrow up to 100% of costs of student and faculty housing.

About half of the $300-million fund for the program had been spent or committed by HHFA by early summer. By the end of July, 132 applications totaling $107 million had been approved by the agency to house 32,554 students, 260 student families and 414 faculty members. Preliminary approval had been given 69 more applications. Another $50 million has been authorized for fiscal 1954.

Free enterprise. Private lenders did not like the program much at the start. They had to stand by and watch the federal government earn interest on bonds they have by tradition steered clear of. Now, although still standoffish, the banks have begun to show some enthusiasm for these college housing ends. And HHFA has done what it can to encourage private bidding—so successfully that nearly one third of such offerings approved by HHFA...
Approximately 35,000 square-feet of Ing-Rich PORCELPANELS will be used for the prefabricated insulated panels used for enclosing buildings A, H and S of RCA's new Cherry Hill project. The exterior surfaces of the panels are corrugated as designed by the architect for appearance and texture. The interior surfaces are flat.

Ing-Rich PORCELPANELS provide lightweight, space-saving, economical, maintenance-free construction, with the widest latitude in design, color and texture. Write Architectural Division, Ingram-Richardson Manufacturing Company, for complete details.

ARCHITECT: Vincent G. Kling, Philadelphia
GENERAL CONTRACTOR: Turner Construction Company

INGRAM-RICHARDSON MANUFACTURING COMPANY
BEAVER FALLS, PENNSYLVANIA

Member: ARCHITECTURAL DIVISION, PORCELAIN ENAMEL INSTITUTE, INC.
Nearing completion at Westville, Indiana, is one of the world's largest institutions for the mentally ill. Since 1949 most of the thirty-four large buildings, plus staff residences, have been constructed at a total cost of nearly $25,000,000. The institution contains a small city within itself with provision for housing, feeding, working, and recreational facilities for 3,250 patients and 450 employed personnel. Air distribution in most of the project has been engineered with Uni-Flo equipment to assure comfort conditions for the patients and staff members. Over 2,500 pieces of Uni-Flo equipment have been specified or installed in various buildings.

Disturbed Unit houses violently insane patients. Uni-Flo Sidewall Diffusers in soffit distribute air quietly and uniformly. Each Diffuser is furnished with tamperproof screws.

Aged and Infirm Unit has dining area handling eighty patients at one time. Facilities are available for serving eight hundred patients in various units simultaneously. Uni-Flo Sidewall Diffusers are installed high on the walls.

Huge size of project is indicated by sketch. Included are dormitories, a hospital, laundry, kitchens, auditorium, greenhouses, occupational and recreational units, cold storage, warehouses, power and sewage plants, plus a separate personnel building and individual staff residences.

Spacious Auditorium has every modern facility for musical therapy treatments, plus entertainment of patients. Venturi-Flo Ceiling Diffusers (individually adjustable) provide a healthful, comfortable, draft-free atmosphere without distracting air noise.

BLAZING THE TRAIL TO BETTER AIR DISTRIBUTION

First to publish reliable data...

Performance data on air distribution equipment was meager and incomplete just twenty years ago. Pioneer work on this subject in the Barber-Colman laboratories was the basis for comprehensive engineering data, now time-proved and widely used to determine, in the layout stage, the exact requirements for any desired conditions.

Research, development, and testing facilities are fundamental requirements and the responsibility of manufacturers to assure progress in the field of air distribution. Complete information about Barber-Colman's reliable selection data is available from our nearby Field Office (consult phone directory) or by writing us.
**NEW BUILDINGS**

**Canadian municipal building**

What promises to be one of the most advanced civic buildings in North America will be started before year-end: a progressive city hall for Edmonton, Canada. Realizing that adequate space around a building does more to enhance its monumentality than all the Doric or Corinthian capitals they could muster, Architects Dewar, Stevenson & Strome are spending their city's money on careful planning and flexibility. Biggest unit is an office building which widens out at midpoint on both sides—like the head of a sledge hammer—in order to allow ample office space on both sides of the elevator blocks. The building is one of the first on the continent that wisely puts sunshades on the south face and leaves them off the north face in the knowledge that the human being does not exist who can see both sides of such a building at once. Like a number of other recent civic buildings (a social security building in Mexico, education ministry in Rio de Janeiro and some recent New York City schools) the Edmonton city hall will have a bargelike auditorium moored to it. Planned for city council meetings, it is raised on stilts to put part of the terrace pleasantly under cover. A large ground-floor consumer service section has been provided so that citizens of Edmonton (which owns four major utilities) can park and pay their bills conveniently.

**Midtown move in New York**

Eastward growth of New York's Grand Central area has been blocked for years by the Third Ave. elevated rail line. Among the first projects announced in July when the "el" was sentenced to die was a 19-story, air-conditioned office building to be built on Third Ave. between 44th and 45th Sts. To derive the best from New York's heterogeneous pattern of building codes, Architect William Lescaze came up with two buildings on one site. Covering the full site at base will be a combined parking garage, store and loft,

---

**ROMANY Tile**

Ideal for use in Corridors and other large areas of Schools, Hospitals and other Institutions.

This new enlarged shape covers more area per piece and simplifies installation. It has recently been added to the versatile ROMANY line and possesses all the high quality characteristics that have made ROMANY Tile preeminent in the building field.

The "hard as steel" glaze and rugged buff body defy wear and this 6"x9" tile is recommended for use wherever a sturdy tile is needed.

ROMANY Tile is regularly featured in Sweet's Catalog. Detailed information to meet specific requirements will be gladly furnished upon request.

**For the specification consider these outstanding features**

- **ROMANY IS:**
  - **FIRE PROOF**
  - **WEAR PROOF**
  - **FADE PROOF**
  - **ACID PROOF**

And is available in more than 30 attractive colors.

---

**United States Quarry Tile Co.**

Member, Tile Council of America and Producers' Council, Inc.

217-J Fourth St., N.E., Canton 2, Ohio
YOU CAN BUILD FOR THE AGES

...with a STEEL FOR THE AGES

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

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

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

Make it BETTER—and LONGER LASTING—with

Allegheny Metal

Warehouse stocks carried by all Ryerson steel plants
TWO STORIES WITH ELEVATORS: each of the ground-floor suites in this two-story air-conditioned Los Angeles office building will have its own patio. Its second-floor suites will be reached by a stairway and by a self-service elevator. Architect Edward H. Fickett designed the $95,994 building for the L.H.L. Corp., an insurance firm. The elevator was included, said an L.H.L. executive, because he himself had turned down second-floor offices without one.

More room for the market

A new building type may be taking form as cities begin serious thinking about replacing rickety wholesale produce centers (which yearly cost American consumers an estimated $100 million in wastage and unnecessary handling) with something better. Next month in Philadelphia construction will be begun on a $6.5-million food-handling center into which most of the city's perishable food dealers are expected to move. The project, which will include 204 units to be built in three stages, will replace Philadelphia's 170-year-old Dock St. produce market. The new center will be built on 40 acres in South Philadelphia, near railroads and piers. Its developers hope the center will be a prototype for similar centers in New York, Baltimore, Boston, Richmond and Raleigh—all cities whose produce markets have become obsolete.

Baltimore office atop garage

A 20-story, aluminum-faced office home for Commercial Credit Corp. will be built in Baltimore on the foundations—to be reinforced—of an existing parking garage. Ground-floor walls of the garage will be left standing and the new building will rise within them. Harrison & Abramovitz are architects for the air-conditioned structure, most ambitious office building Baltimore has had in a quarter century. Mechanical equipment will be housed at the top of the building so basement and first three floors can hold 300 cars.

READER SERVICE CENTER

Baltimore office atop garage

A 20-story, aluminum-faced office home for Commercial Credit Corp. will be built in Baltimore on the foundations—to be reinforced—of an existing parking garage. Ground-floor walls of the garage will be left standing and the new building will rise within them. Harrison & Abramovitz are architects for the air-conditioned structure, most ambitious office building Baltimore has had in a quarter century. Mechanical equipment will be housed at the top of the building so basement and first three floors can hold 300 cars.

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The Windows That Have Won The Women!

WHY WOMEN FAVOR PETERSON WINDOWS

Make window washing a lark. Sash (1) lifts up and out into room for quick, easy cleaning.

Save wear and tear on husbands. Non-rusting aluminum screens (2) never require painting or removal. Storms (3) stay up, too, are self-storing all-year round.

Sturdy, hollow-type aluminum framing (4) bespeaks strength, security, permanence, so important to a woman’s peace of mind.

Hi-pile water-and-wear-resistant weather stripping (5) prevents window rattle, provides the draft free comfort which women cherish.

WHETHER intuition or an innate sense of practical value is responsible, more and more women are insisting on Peterson windows for their new homes. So are firms erecting business buildings.

You will indicate clearly that you are abreast of this trend if you recommend Peterson windows for your clients. They’re designed to contribute the most in the way of appearance, comfort and convenience to new structures. The contribution they make is a lasting one—insuring highest continuing value through the years.

Thousands of Installations from Coast to Coast . . .

Peterson Windows have a proven record of satisfaction in Hotels, Motels, Churches, Schools, Dormitories, Offices, Hospitals, Clinics, and other monumental and commercial buildings.

50 STANDARD SIZES

All designs and sizes popularly specified for residential, commercial and monumental building supplied promptly. Standard windows up to 6 feet high by 10 feet wide are available. Special sizes can be obtained at only slightly higher cost.

Constructed of sturdy aluminum extrusions—635-T5 Alloy, minimum thickness .062"—engineered for maximum strength.

SEE 16a/Pc. IN SWEET’S CATALOG or WRITE FOR COMPLETE DETAILS.
NEW ADDITION TO PORTLAND'S UNIQUE MEDICAL CENTER IN THE HILLS

T-CHORD LONG SPAN STEEL JOISTS

give greater plan freedom

Wherever you must create clear, column-free areas ... from 25' to 125', or larger multiples ... you plan better, freer and for lower cost per square foot with T-Chord long span steel joists. Framing is simpler, stronger, faster ... with lighter columns and footings. Enclosed joist areas permit wide latitude for lighting, ducting, ventilating, insulating or sound-proofing. And when exposed, T-Chords afford a pleasing textural-web perspective. Our extensive engineering service may be of great value to you. Write, wire or phone us for whatever information you may wish.

See Sweet's Architectural File, Sweet's Industrial File, No. 2GHA.

ARCHITECT: WARREN S. HOLMES

HAVEN-BUSCH COMPANY

501 Front Ave., N.W. Phone 9-4173 Grand Rapids 4, Michigan

NEW BUILDINGS (continued)

Built-in dental school

Couched on the north wall of a steep canyon, the University of Oregon's dental school (cut, left) is the latest addition to Portland's spectacular medical center. The new building is an eight-story reinforced concrete structure with brick veneer. Besides being lodged in the landscape, it is connected by tunnel to the rest of the project. Cost when completed next June: $2.2 million. Lawrence, Tucker & Wellman of Portland are architects. Engineers: J. Donald Kroeker & Associates, Miles K. Cooper Rowland Rose, and George Pettingell & Grant Kelley. Donald M. Drake Co. holds the general contract.

Boost for downtown Chicago

Efforts to revitalize the downtown core of Chicago, which have produced several ambitious redevelopment plans (AF, April '54, News), have encouraged others to actual building. Shortly after the first of next year construction will begin on a straightforward stainless steel, granite and glass office building for the Harris Trust & Savings Bank, the first major building for the Loop since the Field building was built in 1932. There will be 150,000 sq. ft. of air-conditioned space. William Hartman of Skidmore, Owings & Merrill, the architects, plans to clean the fixed windows with an exterior apparatus similar to the one SOM pioneered in Lever House. Rear of the new building, which fronts on South Clark St., will back up to the Harris bank's present structure, a 20-story skyscraper-classic edifice, complete with Greek pillars. Because of cost and efficiency, said Vice President Kenneth V. Zwerner, the bank never seriously considered imitating that style.

Kaufmann & Fabry Co.
This "Kalistron" upholstery and wall covering has been on the job 5 years... and there it is, fresh and bright as new.

**Beautiful, durable, cleanable wall covering and upholstery...**

Here is a material that matches style with service. Think of the opportunities for hotels, restaurants, hospitals... for any room where heavy traffic and hard use make durability and easy maintenance just as vitally important as beauty.

It's material designed for the job—a clear sheet of Krene, with rich, brilliant colors fused to the underside. Thus, the surface takes all the wear and protects the color beneath.

It's thorough protection. Krene is always tough and flexible. It resists scratches, oil, grease, cleaners, foods, acids, alkalis, alcohol. It makes a smooth, tough surface. Dirt wipes right off.

Specify wall covering and upholstery material made of Krene. It provides a beautiful combination of richness, durability and maintenance economy.

**BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation**

This restaurant features wall covering and upholstery of "Kalistron," made of Krene by Kalistron, Inc., Division of United States Plywood Corporation, New York 17, N. Y.
now! easier installation...easier

Acoustone is the original fissured acoustical tile. Its beauty and high sound absorption provide the finest in sound control. MOTIF'D* ACOUSTONE Tile is incombustible, highly light reflective; available in a wide variety of exclusive patterns.

Sound Control is a job for experts.
For complete drafting room details and assistance in planning, contact your nearby Acoustone contractor or write United States Gypsum, 300 W. Adams St., Dept. AF3, Chicago 6.

For mechanical suspension of ACOUSTONE the E-Z-S System is installed by simply attaching painted Z-Splines to 1½" carrying channels, bar joists or wood furring or framing members. ACOUSTONE is then placed on the lower flange of the Z-Spline.

United
the greatest

THE MAGAZINE OF BUILDING
A new method of ACOUSTICAL ceiling construction

Here is one, simple ceiling system—comprised of a few parts—designed specifically for the mechanical suspension of either ACOUSTONE mineral acoustical tiles, or CORRUTONE metal acoustical panels. Now a complete ceiling can be installed by an experienced ACOUSTONE contractor, who has the full responsibility for its performance. Other outstanding advantages:

ADAPTABLEITY: Ideal for new construction and for lowering ceilings in existing buildings. Simplifies installation of lighting, air conditioning ducts, conduits, plumbing, etc.

ACCESSIBILITY: Tiles lift out readily at any point in the ceiling to provide easy maintenance of services located above the ceiling.

ECONOMY: Comprised of just a few parts. Tiles or panels go up neatly, quickly, easily.

The E-Z-S System for mechanical suspension of CORRUTONE is erected in the same manner as for ACOUSTONE. The CORRUTONE panel which holds a mineral wool pad is then placed on the lower flange of the Z-Spline.

The concealed Z-Spline System of installing ACOUSTONE by mechanical suspension is accomplished by engaging the kerfs of the tile with the lower flange of the Z-Splines, which are attached to carrying channels, bar joists or wood furring or framing members.

The mechanical suspension of Z-Board on Z-Splines is an economical method of providing a base for adhesive installation of acoustical tile. The 1½ x 2 x 8 Z-Board is placed on top of the lower flange of the Z-Spline.
Sanymetal ’Porcena’ (Vitreous Porcelain on Steel) is a material, not merely a finish. It is in every aspect unlike paint enamel or lacquer finished steel because it is fused to steel at a temperature of 1350°-1550° F. This impregnates the steel with vitreous porcelain enamel to the extent that it cannot be hammered out. Sanymetal ’Porcena’ (Vitreous Porcelain on Steel) is incomparable with any other material commonly used for toilet compartments. It is a lifetime material that stays new two ways: (1) in appearance; (2) in structure! This newness is the result of a correct combination of the desirable qualities of the hardness of glass and the natural structural strength of steel. Sanymetal was first to utilize vitreous porcelain on steel for toilet compartments. Ask the Sanymetal Representative to demonstrate the unusual and exclusive features of Sanymetal Vitreous Porcelain on Steel Toilet Compartments.

Refer to Sanymetal Catalog No. 91 for complete range of types of compartments and colors.

THE SANYMETAL PRODUCTS CO., INC.
1687 Urbana Road, Cleveland 12, Ohio

Vitreous porcelain enamel being fused to steel at a temperature of 1350°-1550° F. Baked-on paint enamel finishes would be totally destroyed by this temperature. Vitreous porcelain on steel is unlike paint enamel or lacquer finished steel in every respect.

Sanymetal Century Type Ceiling Hung Toilet Compartment of Vitreous Porcelain on Steel. There is nothing better—nothing so enduringly modern.
MINIMUM REMODELING needed to air condition this 400-room hotel. False ceiling (picture, right) hides small air ducts and high pressure units used in...

Kno-draft High Pressure System

Famous Lincoln Hotel, in Indianapolis, wanted to air condition its rooms. Separate refrigeration units for each floor had to be ruled out. So did individual window units. And space limitations prevented use of the regular sized ducts used for ordinary low-pressure air distribution.

A High Pressure System, designed by Bevington, Taggart and Fowler, consulting engineers, solved the problem. In this system, air is circulated through small ducts at better than 3,000 feet per minute and at 16 times normal pressure. In the take-offs to each room, however, specially designed Kno-Draft high pressure units assure quiet air delivery.

Another Kno-Draft advantage: the amount of air to each room can be varied from within the room by a simple wall control.

Does the foregoing spark an idea for one of your present jobs? Connor engineers will gladly help you in any way they can. As a first step, clip and mail the coupon below to Connor Engineering Corporation, Danbury, Connecticut.
You Judge the Superiority of
FERALUN®
ABRASIVE TREADS

Here is an unretouched photograph of an abrasive tread purchased on the open market of the type often offered as an equal of Feralun. (Pain is removed and acid is used to eat away the metal base so as to isolate the actual abrasive content of the tread.) Note the meager amount of abrasive and spotty distribution.

The life and non-slip effectiveness of any abrasive tread is approximately proportional to the amount of abrasive embedded in the surface. Note that the abrasive of the Feralun tread also extends over the nosing where the danger of slipping is greatest. Feralun has provided lasting safety—free from maintenance—for the past 35 years.

Feralun is available as treads, thresholds, floor plates and elevator sills. Also in Bronzalun, Alumalun and Nicalun. See Sweet's Catalog 1954—12b/Am.

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EVENTS


American Society of Planning Officials, annual meeting, Sept. 28-30, Benjamin Franklin Hotel, Philadelphia.

Institute of Traffic Engineers, annual meeting, Sept. 27-30, Hotel Muehlbach, Kansas City.


California Council of Architects and Sierra-Nevada District, American Institute of Architects, annual convention, Sept. 30-Oct. 2, Hoberg's, Lake County, Calif.

National Hardwood Lumber Assn., annual convention, Oct. 5-7, Rice Hotel, Houston.

Pacific Coast Building Officials, annual meeting, Oct. 5-8, Denver.

Architectural Woodwork Institute, annual convention, Oct. 15-16, La Salle Hotel, Chicago.

New York State Association of Architects, convention, Oct. 21-23, Lake Placid Club, Lake Placid, N.Y.


"Plastics in Building" conference conducted by the Building Research Institute, examining the structural, utility and decorative uses of plastic products, Oct. 27-28. National Academy of Sciences, Washington, D.C.

North Central States District, American Institute of Architects, regional meeting, Oct. 28-30, Kahler Hotel, Rochester, Minn.

National Motel Show, exhibition of items used in the construction, maintenance, etc. of motels, Nov. 1-3, Morrison Hotel, Chicago.

Texas Society of Architects, convention, Nov. 3-5, The Texas Hotel, Ft. Worth.

National Association of Real Estate Boards, 47th annual convention, Nov. 6-11, Cleveland.

Great Lakes District, American Institute of Architects, regional conference, Nov. 13-14, location not yet announced.

J&L Junior Beams prove economical, adaptable at Orgill Brothers $2,000,000 warehouse

Five hundred and fifty tons of J&L Junior Beam roof purlins have been specified for Orgill Brothers new $2,000,000 wholesale hardware warehouse in Memphis, Tenn. Both architect and contractor agree that Junior Beams enabled them to save money on this 14-acre project and complete the job on schedule.

Architects W. C. Jones and W. C. Jones, Jr., chose Junior Beams because their physical characteristics permitted greater economy in design, allowed more head room, better clearance and thus provided a better stabilized building. In addition Junior Beam’s light weight made for fast, easy handling during construction, as well as during hauling to the building site.

Clinton J. Wagner, Vice President of S&W Construction Company, contractors on the job, reported that “we found Junior Beams to be adaptable and economical for this type of construction. Deliveries were satisfactory and well ahead of schedule. This was a great factor in enabling us to complete the project on time.”

Additional savings were outlined by B. S. Merrill, structural engineer for the architects. He said, “we had 6500 sprinklers to install and the use of Junior Beams effected considerable savings . . . I would estimate we would have had to put in 10 to 20 percent more heads if we had used some other joist and at $20.00 a head you can see what we saved.”

Take a tip from the men who built Orgill Brothers Warehouse, Junior Beams are adaptable, rigid, shrinkproof, fire resistant, vermin-proof, and impervious to termites. Write for more information today. Our new booklet, J&L Junior Beams, shows how these modern structural are being used as floor joists and roof purlins, with loading and spacing tables for various spans.
See at right: Note adjustability of AG-45 from full open to full closed positions. See how curved blades turn simultaneously to control air volume, bringing even distribution to entire grille face at all times.
Volume Extractor and Controller

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LETTERS

ACCOLADES FOR CLARENCE S. STEIN
Forum:
That was a beautiful piece on Stein (AF July ’54, p. 168)—just, perceptive, generous; yet, as far as the professional world goes, long overdue. I’m glad that Stein has lived to read this accolade himself.

LEWIS MUMFORD
Amenia, N.Y.

Forum:
The idea that Clarence Stein should receive the gold medal of the AIA is superb. Certainly no man in the history of American city planning and the development of sound urban architecture is better qualified for this honor. His contributions to the technology of city building are so phenomenal that it is almost beyond our ability to perceive them. His persistent conjoining of sound design, technology and understanding of human requirements has enabled those of us in positions of responsibility in city planning and housing to test our decisions by standards that have become almost universally accepted as appropriate for the modern city.

Radburn, Greenbelt, Baldwin Hills and Kitimat, along with other important experiments with which Stein has been associated, have set the pace for private and public developments that will prove to have been the major turning points in the art and technology of planned human environment.

Were the AIA to honor Stein for his selfless and yet relentless pursuit of his extraordinary objective, it would be honoring itself. Certainly having handed the accolade to Sir Patrick Abercrombie for his great work in Britain, it could not do better than to present a similar one to Clarence Stein for his even greater contribution to the US and to the world. . . .

CARL FESS, chief
Planning and engineering branch, HHFA Washington, D.C.

KITIMAT AND NEW TOWNS
Forum:
The Kitimat story, in your July issue is very interesting. I wish I had the talent, time and money to concentrate on town planning, which I find to be fascinating.

R. E. POWELL, president
Aluminum Company of Canada, Ltd. Montreal

Forum:
I suggest that Kitimat is not the first completely planned town for North America and nominate as predecessors:

Kingsport, Tenn.; Longview, Wash.; Alcoa, Tenn.; Kohler, Wis.; Mariemont, Ohio. Still earlier: Savannah, Ga. And in this hemisphere: Lima, Peru; Oaxaca, Mexico.

It’s too hot to go on and who cares?

HENRY S. CHURCHILL, architect, planner
Philadelphia

continued on p. 64
Nearly 4 Miles of
MILLS MOBILE WALLS
Provide
Space Control
at UNITED AIRCRAFT

THE ability to expand, contract or adapt production facilities quickly and efficiently is of primary importance in aircraft manufacturing today. As part of its program for preserving this essential flexibility United Aircraft makes extensive use of Mills Movable Walls in its offices and plants.

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and Sam Hannaford & Sons,
Associated Architects
Cincinnati, Ohio

Cincinnati's new Main Library is a municipal achievement of national importance. No mere civic monument to be filled with its 1,300,000 books, the library is designed for the convenience of patrons and for ease of maintenance and operation, brightness, color, simplicity, economy and long life.

In the selection of material, utility alone was not enough. Each part had to contribute to the whole effect. The structure contains a wealth of traditional building materials, such as fine woods and ageless stone, together with architecture's most trusted material, stainless steel.

Interesting applications of Armco Stainless Steel include the louvers (shown in sketches) on the front of the roof-top memorial room. Here a 52-foot wide, 18-foot high window faces due west. The rare books in this room are protected from the varying angles of sunlight through the seasons by 20 giant louvers that swivel through 90 degrees. Motor driven, they are readily adjusted in unison.

Armco Stainless Steel was also used in this new library for mullions and sash, doors and frames, conveyor doors, dumb waiter and elevator doors and cabs, vacuum tube stations, hand rails, mail box doors and book return door.

For complete information on Armco Stainless Steel, write us at the address below.

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prehensile and understanding pieces on the planning of a city that I have ever seen. It should be required reading in every school that teaches city planning either on its own or conjoined with architecture, engineering or the social sciences.

It should also be required reading for every professional office which has, or hopes to have, responsibility for large-scale community developments, whether complete towns or not . . . . The real significance of what was done could easily have been lost if the article had not been expertly written.* I hope there will be reprints.

I was particularly struck with the plans for the town center . . . . At Kitimat the shopping center is also the civic center and the social center, as it should be. The market place has again become the market place, where people go not only to buy and sell but to meet their friends, take part in their government and generally ally themselves with their community.

It is not always possible—or even desirable—to make the suburban shopping center a civic center as well. But as suburban shopping centers extend in convenience and attractiveness they tend to draw the citizens' loyalties away from the civic and political center of their communities. It is not necessary (although it may be more fun) to build new towns in order to bring civic and social and commercial life together. With vision and courage the Kitimat ideas can be applied to redevelopment of old town centers. If this is not done, the old city halls may find themselves on the fringe of new communities centered in a shoppers' paradise.

TRACY B. AUGUR, planner Washington, D.C.

* The planners themselves collaboratively wrote the story; Julian Whittlesey labored mightily pulling the material together.—Ed.

Forum:
The piece on "Kitimat" in the July issue is superb!

CHARLES A. PEARSON JR.

PHILOSOPHY AND RUDOLPH

Forum:
. . . I liked Paul Rudolph's talk. Such thinking is much needed today. We seem to forget that . . . "visual delight" . . . should be the most cherished objective in our profession.

MIT thinks knowledge of what makes a city beautiful is so much needed that they are initiating a study which they call "The Perceptual Form of the City." The outline . . . ties in remarkably well with the ideals . . . suggested by Paul Rudolph.

JOHN WELLBORN ROOT
Hollabird & Root & Burgee, architects, engineers, consultants Chicago, Ill.

continued on p. 68
The handsome
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closes any door
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The Corbin "400" Door Closer stands apart from all other products of its kind. It is the most versatile — and the strongest — door closer ever made.

If you want uniform closing speed with an absolutely silent final closing, you can have it. If you want fast speed plus a slow and silent final closing, you can have it. If you want the closing speed to proceed from slow to fast, and then back to slow again, you can have it. Or if you want "kick off" at latch you can have that also.

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LETTERS continued

Forum:

In Paul Rudolph's "The Changing Philosophy of Architecture" (AF, July '54) I find little that is sustaining.

I have no quarrel with Mr. Rudolph's points against the "rue corridor," for a better spatial organization of city buildings and interspaces, and his restating the lessons of Rome, Japan and the views of Le Corbusier, Camillo Sitte and the Architectural Review in terms of the American architectural problem.

What I find singularly disturbing is the total absence of a philosophy in this talk, in the architecture around us and on the drawing boards.

The lessons which Rudolph teaches us are lessons in superficials. It matters very little (unless in the area of craftsmanship) to increase the virtuosity of handling formal problems by study of the masters, if we fail to see the main point of their work, which gives them the stature of architecture.

Le Corbusier's "play of forms under the light" continues in abundance and freshness because it is nourished by an inner energy which derives from a poetic and passionate view of life. His concepts of form are always matched by an equally imaginative concept of human life and its organization on an individual and collective basis.

Van der Rohe's every alignment of structure, every space sequence (unlike that of his imitators) and every wall face is permeated with tensions and tranquillities that come from a philosophy of life, which, lofty as well as humble, and less accessible to our day than the Mediterranean perhaps, gives an inescapable "must" to every line he draws in space.

I sense in Rudolph's approach a preponderance of the formalistic. I see nothing but a resultant chase after formal qualities in superficial scenery, in a world of appearances, which is limpid because it is without any inner fiber. I see nothing but an exhausting chase after sensation, by exploiting of the formal repertoire of masters past and present, of the primitives or noble ancient and exotic cultures, or one's own individual flair for formal invention.

"Architecture is not for children," was Mies van der Rohe's advice to students. We shall not grow beyond the child's precocious and un-understanding imitations if we will not abandon the conceits of pure performing for a much more serious view of the art of architecture!

An architecture is needed in which forms will always relate to a profoundly imaginative view of life, of man's destiny as a member of a temporal society.

The result will be an abundance of invention to go hand in hand with an abundant view of the life process and the many different facets it shows to each artist, who, freed...
New fire-retardant paint protects with "insulating blanket"

Duo-Tex is here! It's a remarkable new paint that prevents rapid spreading of fires! Laboratory tests and actual fire conditions prove that this remarkable new paint reduces damage to a minimum on interior surfaces. The Duo-Tex film expands when exposed to flames and forms a heavy char blanket.

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Duo-Tex is recommended for wood, acoustical tile, wallboard, plywood, plasterboard and metal. It is listed by Underwriters' Laboratories Inc., and meets Federal Government fire-retardant specifications SSA-118A.

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Because of these characteristics, Wright Rubber Tile is particularly appropriate in large, heavy-traffic jobs, where maintenance costs might otherwise become excessive.

Pictured above is Battelstein's fashionable River Oaks Store in Houston. Wright Rubber Tile was used in all principal sales floor areas.

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from the restrictive formalist view of what is right, what is beautiful, what is respectable, what is sensational, can find his integrity in the everlasting game, which is the search for truth.

G. M. KALLMANN, architect
New York, N.Y.

AIA CONVENTION
Forum:
Your AIA Convention report is very gratifying to those who worked for months on the convention committee. It is quite complete as to facts but more than that, it very sympathetically conveys the spirit of the convention.

I am particularly impressed by your presenting Paul Rudolph's address, "The Changing Philosophy of Architecture."

ISidor Richmond
Isidor Richmond and Carney Goldberg, architects-engineers
Boston, Mass.

Forum:
... From the opening sentence, which caught perfectly the spirit of the entire session, to the last word of Paul Rudolph's able address, your reporter has recorded in apt fashion every highlight of the annual meeting.

I was particularly pleased that you chose to report Mr. Rudolph’s address in full.

... I was amazed, impressed and delighted with his thoughtful concept, thorough coverage and forceful delivery.

Philip D. Creek, director
AIA New England District

PRESTRESSING STEEL A REVOLUTION?
Forum:
In addition to the references in your article to work under way in this country, may I mention a proposal recently prepared by us for a prestressed steel bridge with a span considerably greater than the longest girder bridges heretofore used in this country?

Prestressing (as applied to steel, concrete or any other material, for that matter) has certain advantages not mentioned in your article or in the usual literature on the subject. One of the most interesting to the designer is the fact that for once he is able to dictate to the structure what the stresses shall be, instead of seeking (as heretofore) through complex analysis to determine what nature dictates the stresses shall be for his given structural configuration and loading.

This essentially constitutes a revolution in our design philosophy, which has many interesting and obvious corollaries. Not the least important of these is that by manipulation of stresses in the cables, one can control erection stresses at will.

Prestressed steel is not without its difficulties. It is pertinent to caution that not only are the permissible stresses affected in a complex way by the deflections and the factor of...
Table of Contents
What Is A Unit Heater
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safety, but the extreme theoretical savings quoted in your article lead to reduction of the structural steel sections to about one seventh or one eighth their normal size. The attendant structural problems connected with the lateral stability and local buckling of such reduced members are not to be dismissed lightly, and require the attention of competent structural engineers.

E. H. Praeger
Praeger-Kavanagh, engineers
New York, N.Y.

Forum:

... a very excellent job in presenting a difficult and controversial subject.

E. Schechter, vice president
Stresssteel Corp.
Wilkes-Barre, Pa.

Forum:

The information concerning application of prestressing techniques to various steel structures in Europe probably will stimulate the thinking of structural steel designers in the US on future projects where its application may prove of advantage.

Engineers in the US have become familiar with prestressed concrete designs. Your article points out the interesting potentialities of prestressing steel structures. As engineers become more familiar with the application of prestressing to special and unusual steel structures, they will be more likely to apply the principle in designing conventional steel structures. They likely will develop ways of partially reversing bending moments without the use of special high-strength prestressing members.

Wider adoption of the prestressing technique in the US will, of course, generally be determined by relative cost as compared with conventional design procedures.

B. L. Wood, consulting engineer
American Iron & Steel Institute
New York, N.Y.

ALLEN DARES DESIGNS ON WOMEN

Forum:

What are we as a profession doing about women?

The way in which I came to ask myself that question is interesting although not very. I went to the AIA convention at Boston and had a lovely time except that out at Ipswich, eating the cold lobster, I was much colder than the lobster although not as red and I contracted another sinus ailment and when I got home I got hotter and thinner until finally if I had drunk a bottle of strawberry pop God forbid I would have resembled a thermometer and eventually they took 14 X-ray photographs of my head without finding anything which my enemies would have told me for nothing but finally it turns out that I have to work considerably less and drink slightly more so I am doing that and hurray for medical science.

So while I was resting up I read, in the continued on p. 74
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Take a tip from Greyhound ... specify Hubbell quality for your next job. Architects are invited to write Dept. A for further information.

LETTERS continued

July Forum, Paul Rudolph’s “The Changing Philosophy of Architecture” which I heard him deliver at Boston and it was one of the best speeches on architecture I ever heard and I couldn’t have done it better myself. In fact I couldn’t have done it myself full stop. And I agree whole-heartedly that “the architect’s prime responsibility is to give visual delight.”

This is also woman’s prime responsibility and she isn’t doing it.

We should explain this to women, preferably under an assumed name. I do not wish to quarrel with the basic design of women which if my memory serves is excellent. But what does she do with it in the line of applied ornament? Only a few weeks ago Life magazine featured the butch haircut for women, pointing out that “now a wife could look like her husband.” This is a low aspiration if I ever heard one. Suppose a wife gets her hair cut so she’ll look like her husband and then finds out that her husband didn’t marry her because she looked like him?

If, when I first met the lady who became Mrs. Allen, I had noticed that she looked like me I would have leaped into my Paige roadster (this was some time ago) and made off at top speed (58 mi. per hour with a favoring tail wind) in several directions.

This is the season when Michigan welcomes thousands of tourists and there are No Vacancies in the motels or in the slack of the stout lady visitors. Try driving up to Mackinaw City and the first thing you know you see a fat lady in toreador pants backing cautiously out of a car. One thing about these ladies: they’re honest. They won’t stoop to deceit. In fact if they know when they’re well off they won’t stoop.

I think we ought to have a seminar about this.

Unfortunately I will not be able to take part in this seminar as I have lived dangerously long enough and henceforth I am going to be the George Apley type. I am practicing rolling up an umbrella very tight and training ivy to grow up the wire of my earphone. And I am going to ask my old friend Hollis Baker to get Finn Juhl to design a contemporary cracker barrel for me to be a philosopher on.

Roger Allen
Grand Rapids, Mich.

PLANNED INDUSTRIAL DISTRICTS

Forum:
We would like 100 reprints of the article on “Planned Industrial Districts” (AF, April ’54). We have a project of this kind in mind.

This is the best article we have seen on this subject.

J. D. Beeler
Executive vice president
Evansville’s Committee of 100, Inc.
Evansville, Ind.

continued on p. 80
EXCLUSIVE STRIP-PROOF OPERATOR
UNLOCKS, OPENS, LOCKS IN ... one operation

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SOUTHERN SASH SALES & SUPPLY CO. • SHEFFIELD, ALABAMA
HERE'S HOW THE SYSTEM FITS A TYPICAL BUILDING

(1) 480Y/277-volt power system feeders are protected by secondary switching equipment. (2) Busway risers, or conduit and cable, carry the three-phase power to panelboards on each floor. From these panelboards, 277-volt line-to-neutral area fluorescent lighting circuits (4) are run to remote-control relays in the pull boxes (5), or 277-volt wall switches (6), which control power to the lamp ballasts (7). A 480/120-volt transformer (8) supplies power to the 120-volt panelboard (9) from which 120-volt floor circuits are run to accommodate 115-volt business machines. The same distribution system supplies 480-volt three-phase power to pump, air-conditioning and elevator motors (10).
Lower cost power for commercial buildings made possible by General Electric 480Y/277-volt electrical systems

Many kinds of large commercial buildings—schools, department stores, shopping centers, office buildings,—can now take advantage of the flexibility and substantial savings made possible by 480Y/277-volt electrical systems. This economical system has now been accepted for commercial and public buildings by the National Electrical Code. Pioneered by G.E., it is already in wide use in industry. Co-ordinated standard General Electric components, including the recently developed low-voltage remote-control system, make application easy.

Building owners and contractors: With higher-voltage systems you get substantial savings in initial installations. On the next page you will find figures which demonstrate these savings in dollars and cents for a typical building. Area fluorescent lighting fixtures are supplied at 277 volts, while motors can be operated at 480 volts.

STANDARD G-E COMPONENTS MAKE SYSTEM APPLICATION EASIER

UNIT SUBSTATIONS—Where 480-volt power is supplied, only the switchgear section of the substation is required.

FLOOR-CIRCUIT PANELBOARDS—From these panelboards circuits are run to accommodate business machines, etc.

480/120-VOLT TRANSFORMERS—Supply power to floor-circuit panelboard. Type M (above) available from 3/4 to 15 kva.

G-E MOTORS AND CONTROL supply more reliable drive and control for pumps, air conditioning.

RISERS & FEEDERS can be either busway, interlocked cable, or cable in conduit for distributing 480-volt power to panelboards.

CONTROL-CIRCUIT TRANSFORMER—G-E 120/24-volt transformer (right) provides 24-volt power to the remote-control relays (left) and wall switches (center).

LAMP BALLASTS—This one shown above (rated 265 volts) for use with two 40-watt rapid-start lamps, designed for use with 277-volt systems.

PANELBOARDS—Either circuit breaker or fused panelboards may be used to help protect 277-volt circuits.

TURN THE PAGE AND COUNT YOUR DOLLAR SAVINGS
Here’s how you can save up to 25% with G-E 480Y/277-volt power systems

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>Old-Style Low-Voltage System (208Y/120 volts)</th>
<th>New High-Voltage System (480Y/277 volts)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimated Installed Cost</td>
<td>Weight of Copper, lb</td>
</tr>
<tr>
<td>REMOTE CONTROL</td>
<td>$6,750</td>
<td>240</td>
</tr>
<tr>
<td>BRANCH-CIRCUIT WIRING FOR LIGHTS</td>
<td>42,450</td>
<td>1,530</td>
</tr>
<tr>
<td>FLOOR CIRCUITS (120 VOLTS)</td>
<td>28,125</td>
<td>1,080</td>
</tr>
<tr>
<td>PANELBOARDS</td>
<td>4,950</td>
<td>150</td>
</tr>
<tr>
<td>UNIT SUBSTATION</td>
<td>55,300</td>
<td>6,700</td>
</tr>
<tr>
<td>BUSWAY RISERS</td>
<td>12,400</td>
<td>5,200</td>
</tr>
<tr>
<td>AIR-CONDITIONING EQUIPMENT</td>
<td>23,370</td>
<td>5,855</td>
</tr>
<tr>
<td>ELEVATOR AND FIRE-PUMP EQUIPMENT</td>
<td>9,010</td>
<td>2,400</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$182,355</td>
<td>23,155</td>
</tr>
<tr>
<td>TOTAL PER KVA</td>
<td>$121.57</td>
<td>15.44</td>
</tr>
</tbody>
</table>

**BY COMPARING THE EQUIPMENT COSTS** of a 480Y/277-volt system with those of a conventional 208Y/120-volt arrangement for a typical building, the economies of high-voltage distribution become readily apparent. As an example, consider a five-story office building consisting of three units 160 x 75 feet each, with total load of 1500 kva. The table above compares the relative costs for this building. Note that with two exceptions, one due principally to the need for the 480/120-volt transformer for the floor circuits, the high-voltage system results in dollar savings item for item. The total saving is approximately $30 per kva. Studies of smaller and larger buildings have indicated similar savings in proportion to size.

**FIRST SAVING IS IN CIRCUITS.** Higher voltage means lighting circuits can carry a much greater kva load. The number of circuits can be halved. Conversely, if increased illumination is the goal, the same circuits used in a 208Y/120-volt system can now carry twice the load.

**FURTHER SAVINGS RESULT** from the lower cost of 440-volt motors and power equipment. Altogether, a complete 480Y/277-volt system can save as much as 25%, as shown in the chart above.

General Electric engineers specializing in power distribution, lighting, and construction materials are ready to work with your consultants or contractors in applying 480Y/277-volt power to your buildings. To arrange for this service, or for further information about the system and its equipment, contact your nearest G-E Apparatus Sales Representative early in the planning stage, or write for Bulletin GET-2307 to General Electric Company, Apparatus Sales Division, Section 665-122, Schenectady 5, New York.

Engineered Electrical Systems for Commercial Buildings

GENERAL ELECTRIC
Floor to floor height can be kept to a minimum and usable floor space to a maximum with Anemostat High Velocity Air Conditioning. • HV units, used with smaller than conventional ducts, save space, and money too. They substantially reduce pounds of sheet metal required, can be installed faster, with less labor. • HV Manual 48 contains specification data on 7 types of Anemostat High Velocity units, for all engineering and architectural requirements. Write for free copy.
AMERICAN INDUSTRY CONTINUES TO BUILD WITH LURIA

Omar Incorporated has expanded with 30 Luria Buildings since 1949

This new Omar building in Indianapolis, Ind. — the 30th Luria structure for America's fastest-growing bakers — basically is a counterpart of its twenty-nine predecessors located in Ohio, Indiana, Nebraska, Iowa, Wisconsin and Illinois. E. W. Hauser Construction Company of Indianapolis was general contractor for this newest building.

LURIA combines the DESIGN and PERMANENCE of CUSTOM-BUILT UNITS...with the SPEED and LOW COST of STANDARDIZATION

Can standardized buildings look the way you want them to? Yes—if they are Luria structural steel buildings. The flexibility and adaptability of design provided by the "Luria system of standardization" make possible almost any type of architectural treatment. And to assure you durability of structure, Luria materials and construction surpass the most stringent building code requirements. Finally, Luria Buildings deliver substantial initial savings, continuing maintenance savings. The list of companies who re-order Luria Buildings is best testimony of the advantages of Luria Standardization. Contact your Luria representative.

LURIA ENGINEERING Company
511 FIFTH AVENUE, NEW YORK 17, N. Y.
Plant: BETHLEHEM, PA.
District Offices: ATLANTA • PHILADELPHIA • BOSTON • CHICAGO • WASHINGTON, D. C.

LETTERS continued

KING OF THE LOFTS

Forum:
I note your comments on the N.Y. Coliseum (AF, June '54) and the Art News remark that it looks as if it merely faced "another shoddy loft building." This brings to my mind an idea—who designs the loft buildings? Such an article, which you only could write, would be the nadir to those in the zenith you usually describe. Why not the "King of the Lofts"? Tell us about him too!

R. P. CARLSON
Captain (CEC), USN
San Francisco, Calif.

ARTISTS ON ARCHITECTURE

Forum:
Thank you for the article on art and architecture by Aline Saarinen (AF, June '54). I found it extremely pertinent, thoughtful and timely.

So often the artist's work is not in keeping with the design and "feeling" of the building. But on the other hand there are artists of distinction and gift whose ability lies in this needed direction.

HOBSON PITTMAN, artist
State College, Pa.

Forum:
...Pedantic demagoguery is apparently besetting the field of fine arts as well as politics.
I regret to say that almost without exception the examples of contemporary art which find the favor of Mrs. Saarinen are the products of meretricious dilletantism.

What we need today are the doers, not the clever critics of the fine arts. I would far prefer to listen to or read in simple language the credo of a great contemporary artist, than to listen to the smooth, cleverly turned phrases and cliches of a dozen of these critics who appear to be intoxicated by the sophistry of their own writings.

LEO FREIDLANDER, sculptor
White Plains, N. Y.

Forum:
...I read it with great interest.
Being a painter of murals, I have had many contacts with architects and they always have been kindly and cooperative. ...

HUGO BALLIN, N.A.
Pacific Palisades, Calif.

CANTILEVER ECONOMIES

Forum:
The Statler Hotel for Dallas (AF, June '54) promises indeed to be a most interesting building in terms of structure and planning. However, your statement: "This is the first time that a two-column-per-bay cantilever floor system has been used in multi-story building in the US" is not correct.

There have probably been a number of buildings using this structural scheme; we are certain of at least one—the six-story Mid-

continued on p. 84
HARDWARE VARIATIONS UNLIMITED! Interchangeability between standard and Deluxe stock hardware is easily accomplished at the factory or job site. Kawneer also supplies special-made insert plates for the Deluxe identification hardware, in any design or monogram you want, in any color you want.

A NEW LOOK! Smartly styled beveled glass stops, welded hairline joints, offset pivots! Finest polished Alumilite finish; no weld "bloom" or weld "halo", no exposed screws! All these features make up the most attractively designed and most easily adapted entrance you have ever seen.

GREATER STRENGTH! 10% more rigid than most other aluminum doors made! New Kawneer "Deep-Weld" penetrates the metal 100% for the strongest weld ever used in door construction. Precision-made corner joints of stronger tubular construction add to that rigid strength.

USE IT EVERYWHERE! Larger stile area takes standard narrow line panic exit hardware required for school and public building use. Standard size lock cylinder allows quick, easy master keying. W-Series Door takes overhead or floor checks. And the same stock door can be installed as a right- or left-hand door.

KAWNEER W-SERIES DOOR
"a thousand doors in one!"

Now! Your design problems are simplified, and client satisfaction assured when you specify the new Kawneer W-Series Door. To meet these needs you demanded a readily available door with all the qualities of a "custom-made" product... distinctive beauty, adaptable design and rigid strength that defies rugged use. Kawneer has vastly improved manufacturing techniques over ordinary methods of metal door production to bring you these highly desirable features.

Kawneer has created the new materials and methods needed to do the job. What would be "custom" production elsewhere is now standard procedure at Kawneer in the production of the new W-Series Door. The quality of materials and workmanship is even superior to the usual Kawneer standards which have led the field of architectural metal products. Demand the newest and best—the Kawneer W-Series Door! For complete information, write Kawneer, Niles, Mich.
Toledo Edison Company reports on its use of Autopositive—

"One saving after another since 1947"

Shortly after Kodagraph Autopositive Paper was introduced, the Toledo Edison Company, Toledo, Ohio, began exploring its possibilities for engineering drawing reproduction.

Here was a revolutionary photographic intermediate paper which produced positives directly from positives—no negative step. It could be exposed in standard print-making equipment...processed in standard photographic solutions. Entire operation in ordinary room light, too. Jobs which had been difficult and costly became easy and economical—Kodagraph Autopositive Paper costs only a few cents a square foot. Some typical savings at Toledo Edison which you can duplicate are listed here.

- Old prints and intermediates reclaimed. No time lost retracing. Autopositive Paper strengthens weak line detail, cleans up backgrounds. Toledo Edison now can get intermediates which have dense photographic black lines on an evenly translucent paper base. Original quality or better!

- Opaque originals no problem. Many of Toledo Edison's forms, charts, operating maps, etc., are on opaque stock—some two-sided. Data is added to these in pencil or by typewriter. Then Autopositive reproductions are made and used to produce the direct-process prints needed for distribution. The 1954 Annual Budget, for example, was reproduced in this manner. Autopositive saves time and dollars for all departments.

- Print-making simplified. Toledo Edison runs Autopositive intermediates at uniform, practical speeds in its direct-process machine...gets sharp prints time after time. Autopositive lines do not smear, smudge, or lose density.

- Drafting shortcuts. An Autopositive print is made of a drawing which has to be altered. The obsolete detail is eradicated or scissors out, and another Autopositive is made. New design is then added, and the job is completed without redrafting.

- Photo-lasting file copies. Toledo Edison also finds that Autopositive intermediates will not turn yellow or become brittle...are ready to produce sharp, legible prints whenever needed.

Kodagaph Autopositive Paper

"THE BIG NEW PLUS" in architectural drawing reproduction

MAIL COUPON FOR FREE BOOKLET

EASTMAN KODAK COMPANY
Industrial Photographic Division, Rochester 4, N. Y.

Gentlemen: Please send me a copy of "Modern Drawing and Document Reproduction."

Name:_________________________ Position:_________________________

Company:____________________ Street:__________________________

City:___________________________ Zone:___________________________

State:_________________________

Kodak THE MAGAZINE OF BUILDING
Low installed-in-the-wall cost, speed of erection, and long life with low upkeep make concrete masonry the ideal material for today's cost-saving, one-story school designs. Best of all, it's economy plus attractive appearance.

The wide selection of concrete masonry sizes, shapes, colors, mortar joint treatments, and wall patterns offer unlimited design possibilities.

In addition, exposed concrete masonry interior walls offer a double bonus saving: (1) **sound-absorbing** concrete block walls in classrooms and activity areas often eliminate the need for additional expensive acoustical treatment; (2) modular size concrete masonry units eliminate costly cut and trim, and make possible a **decorative interior wall pattern** that needs no expensive plastering or dry wall treatment.

**Loft plan school**—one of many widely publicized trends that includes cluster, zone, and other prototype plans—uses exposed and painted concrete masonry interior walls in classrooms, multipurpose central recreation area. Concrete block afforded cost saving on interior wall finishing and acoustical treatment.

William Rowe Smith, architect; Fred W. Needham, Richard H. Johnson, associates.

**Memo:** call local NCMA member for copies of school design aids

Ideas for Wall Patterns with Concrete Masonry
(Certificate of Exceptional Merit Winner in 1954 A.I.A.—Producers' Council competition)

Design and Construction of lintels—another
1954 award winner

Concrete Masonry in School Construction

**National Concrete Masonry Association**

38 South Dearborn Street Chicago, Illinois
HOW TO OMIT TALL, UNSIGHTLY, UNNECESSARY CHIMNEYS FROM MODERN SCHOOL DESIGN

Architects find that "blending" a tall chimney into a low, modern, functional school design is an unworthy compromise. Actually such compromise is unnecessary, for there is no need today for an unsightly chimney. Wing Motorized Draft Inducers provide positive, uniform, adequate draft for boilers or furnaces... completely independent of weather conditions. In addition, they save money through higher fuel burning efficiencies. Easily installed in the flue or breeching, Wing Draft Inducers require only enough chimney to vent the exhaust gases. Write for bulletin and special information on school applications.

L. J. Wing Mfg. Co.
151 Vreeland Mills Road
Linden, New Jersey
Factories at Linden; N. J. and Montreal, Canada

Wing DRAFT INDUCERS PROVIDE POSITIVE, UNIFORM, ADEQUATE DRAFT AT ALL TIMES

In confirmation of the above, there are over 500 Wing Draft Inducer installations in schools alone, in all parts of the country, with hundreds more being specified by architects and engineers in the great school building program continues.

LETTERS continued

Wilshire medical building, designed by us and built in Los Angeles in 1950—where the double cantilever on two columns was applied to a structural steel rigid framing. The scheme used for this building proved (as I am sure the Statler scheme will) the economy of this design. The weight of structural steel for the building ran to less than 10 lb. per sq. ft. despite the demanding clearance requirements at the first floor, where the two main columns were interrupted and supported by a V-shaped truss, and despite the necessary design requirements imposed by seismic loads. The planning of the medical suites demonstrated the flexibility made possible by the elimination of columns along the wall lines.

EUGAHDO CONTINI, chief engineer
Victor Gruen Associates
Los Angeles, Calif.

Forum:
Your article on the Dallas Statler (AF, June '54) was excellent.

W. R. WALTON
Robert E. McKee General Contractor Inc.
Dallas, Tex.

LOST INDEX
Forum:
I like your magazine; it contains plenty of interesting articles and a good selection of ads. But why do you make it so difficult to find things? Why can't you put the index of contents on the first page where it belongs, rather than in the middle somewhere?

You're supplying a rational audience; let's have a rational format!

LENNART THUNSTROM
Purdue University
Lafayette, Ind.

Forum:
The contents page is always the first page of the main editorial section; the ad index is always on the last few pages of the magazine.—ED.

A NAME
Forum:
In all that Eleanor Clark article on Rome's remodeling (AF, May '54), no mention of Nervi and no name of the architect of the Rome Station!

ALFRED BENDIER, architect

The station was designed by L. Caltini, E. Montuori, M. Castellazzi, V. Fadigati, A. Pintonello, A. Vitellozzi.—ED.

REPORT FROM FORMOSA
Forum:
We are a group of young students studying architecture at the Taiwan College of Engineering.

We appreciate your magazine very much, through which we have learned a lot of new ideas and read many of the famous architect's works in addition to much of the news about architecture. We believe that your magazine continued on p. 86 continued
Four Features a Fixture-Bare Floor gives your client

...features that cannot be obtained in any other way!

- REDUCTION OF WASHROOM MAINTENANCE COST TO AN ALL-TIME LOW
- INSURANCE AGAINST UNTIMELY OBSOLESCENCE
- MAINTENANCE OF CLEANLINESS AT AN ALL-TIME HIGH
- MAJOR SAVINGS IN THE OVER-ALL COST OF BUILDING

Off-the-floor wall-type plumbing fixtures installed with a Zurn System effect many substantial savings in construction costs; permit the use of any type floor construction and any type of wall construction; permit reduction in height of ceiling; eliminate need of furring-in drainage lines; eliminate caulking to floor; simplify drainage and vent piping layout; give greater flexibility for planning washrooms—and unrestricted opportunity to exercise your imagination, skill and ingenuity in a way that will win both owner and user approval for this all important convenience facility—the washroom.

WRITE FOR FREE BOOKLET entitled, "You Can Build It and Maintain It for Less, A NEW WAY". It presents new ideas for washroom installations in new and existing buildings.

Over 700,000 wall-type plumbing fixtures installed with the Zurn System in buildings of every type from coast to coast. Your Zurn Representative has list of buildings which have washrooms with fixture-bare floors. "T.M. Reg. U.S. Pat. Off.

Please send me the booklet, "You Can Build It and Maintain It for Less, A NEW WAY".

Name and Title
Company
Street
City and State

Please attach coupon to your business letterhead. Dept. AF-622
has influenced us quite a good deal.

Recently we have established an architectural investigation agency held by several schoolmates of ours. As we feel the lack of a magazine on architecture written in Chinese on this island, we have published one through the agency—just a little bimonthly pamphlet, but better than none.

Our chief materials are selected from your magazine...

C. W. Lee, chief editor
Architecture Today
Taiwan, China

Sirs:

Having owned and operated 22 hotels in the West I can truthfully say that time and again Forum has played an integral part in our operation by keeping our ideas young and our innovations up to the minute.

Thomas E. Hull, president
Hull Hotels
Hollywood, Calif.

ARCHITECTURAL ISOLATIONISM

Sirs:

You have given much too little space to architectural development abroad. Surely one cannot be architecturally isolationist?

Eric G. Vondory
Chicago

Forum is the only magazine serving the US building industry which presents at least one foreign building per issue.—EB.

KUDOS

Forum:

My admiration for your July issue is unbounded. While certain parts of it (the Heathcote School, naturally) were of exceptional interest, it was the way the entire issue was balanced that most impressed me. I am not a Kittredge fan; although I recognize the unique nature of the project, it is still an objectionable company town and designwise hardly in advance of the Greenbelt towns. Yet even with this topic I believe you made the most of it, and I especially liked the tribute to Clarence Stein (and that nice fresh photo of him by Gretchen van Tassell).

Frederick Gutheim
Washington, D.C.

ERRATA

It was erroneously stated in the June issue of Forum that Frank Lloyd Wright's synagogue for Beth Shalom Congregation in Philadelphia would cost $175,000. The error is regretted. Cost of the building has been estimated at $750,000.

In Forum's May issue on remodeling, the Central Penn Bank building of Philadelphia was shown only by a photograph of the exterior (and a rendering of the facade before remodeling). The new interior as seen through the revised front was designed not by architects Thalheimer & Weitz alone but by these architects in association with Robert Montgomery Brown.

continued on p. 88
What material could be better for effecting an honest and reasonable transition between old forms which have stood the test of time and new forms built to endure. The timelessness of Marble is one of its many virtues. It defies old age, laughs at the elements, resists hard usage, maintains its inherent beauty while other inferior materials are deteriorating with time.

Marble endures.
And Marble is economical, as has been CONCLUSIVELY PROVED in two important bulletins: "Proof That Marble Costs Less..."; "Further Proof That Marble Costs Less...". These are available without charge. Address requests to Department FS.

*Shariwaggi: "A word from India describing the art of picturesque composition in combining new architecture with old so as to enhance both". Architectural Forum, February, 1954.
LETTERS continued

KAISER MEDICAL CENTER

Forum:

... I hope your magazine will continue to publish articles of this type, especially when they bring out buildings over which there has been much discussion and possibly some criticism.

JACQUES B. NORMAN
Hospital consultant
Greenville, S.C.

Forum:

... We have all been much interested in some of the hospital innovations in the Kaiser Foundation Medical Center. I think they are particularly adapted to a climate like Walnut Creek. I rather doubt that they would be as effective where winters are long and cold, and outside corridor entrances for visitors would not be practicable.

I also am not so convinced that a long structure is optimum for hospitals. Its length must of necessity limit the values of central services. Experiences show that too many things have to be moved horizontally, and extra personnel must be employed for that movement. Things that can be moved upward on tray bearers and dumbwaiters cut the cost of personnel.

The self-help facilities by the bedside are unusual and I would like to watch their use for a period of time before forming an opinion as to whether their usefulness would justify their original additional cost.

E. DWIGHT BARNETT, M.D.
Director, School of Public Health
Columbia University
New York, N.Y.

Forum:

The Kaiser Center presents a striking departure from stereotyped hospital design... The service corridor seems to be a practical and realistic basis for efficient patient care, but we shall have to see how it works out. The hospital fits the community and has a pleasant, noninstitutional atmosphere.

However, solving one problem creates another. For example, the glass wall has solved the problem of "looking out" and gives the patient a pleasant outdoor vista, but creates the problem of "looking in." ... The patient must either be exposed to the curiosity of all who pass or else close the drapes and be shut off from garden and sky.

To the hospital administrator, the layout appears to have some very objectionable features. Every patient being taken to the operating room must go through the main lobby. Are the bodies of patients who have died taken through the main lobby to the ambulance entrance? Is it esthetically appealing to put your baby in the top drawer and your bedpan in the bottom drawer? There is apparently no space for accounting and no space for medical records. Is the laboratory space adequate for two or three technicians and 75 to 100 laboratory examinations a day which can be expected?

Just as brilliant plans sometimes prove impractical, so fears of functional defects often prove groundless. What we shall look forward to is an objective evaluation of the hospital after a year or so of operation. And, incidentally, to a casual reader of architectural magazines, there are entirely too few articles appraising how the plan has worked in actual use.

RICHARD T. VIGUERS, Administrator
Pratt Diagnostic Clinic
New England Center Hospital
Boston, Mass.

* Hospital care is prepaid, gets accounted outside. Records are jointly kept, are stored in clinic.—ED.

NEW COUCH-CALL
NURSES' CALLING SYSTEM

Too often in designing new hospital construction, the architect is hampered in his attempts to provide proper daylighting and fresh air, by the necessity of grouping areas for easy access by nursing personnel. New Couch-Call offers a solution to this problem and by doing so allows the architect to utilize his creative and technical skills without this restriction.

Here are the design advantages offered by Couch-Call:

The nurse can handle more patients and greater nursing area for fully automatic Couch-Call provides two-way voice communication... eliminates trips to the patient's bedside in 6 out of 10 calls.

Fully automatic remote answering stations placed at the extremes of the nursing area provide for the answering of calls from any place in the area without returning to the master station. One nurse can now handle patients in different corridors.

Room stations are automatically reset and are ready for reuse immediately when a call is completed.

For complete details on Couch-Call, write for bulletin 126.

S. H. COUCH COMPANY, INC.
Private telephones for home and office... hospital signaling system... apartment house telephones and mail boxes... fire alarm systems for industrial plants and public buildings.

NORTH QUINCY 71, MASSACHUSETTS, U. S. A.
In Canada: Canadian Marconi Company, Montreal.
A new dimension... in clay tile!

New, large Mosaic 9" x 6" x ½" glazed wall tile

Finest quality tile at a cost competitive with structural materials!

Mosaic 9" x 6" x ½" Glazed Wall Tile is the ideal material for schools, hospitals, public buildings. Gives large scale character and economical smooth surfaces to large wall areas in lobbies, classrooms, laboratories, natatoriums, cafeterias, kitchens, operating rooms and corridors.

Modern 9" x 6" x ½" Glazed Wall Tile, like all Mosaic Clay Tile, gives permanent beauty, sanitation, easy maintenance, long time satisfaction. In all Mosaic Harmonitone and Bright Glaze colors, with integral edge spacers for uniform close joints.

Compare this fine, smooth Mosaic Clay Tile with common glazed structural blocks. You'll find it competitive in first cost, really economical through the years. Requires only lowest-cost substructure. No expensive special trim shapes needed for any installation. And, Mosaic 9" x 6" x ½" Glazed Wall Tile gives you a sturdy, smooth-surfaced, better-finished wall.

For helpful literature on all Mosaic Clay Tile, write Dept. 51-3, The Mosaic Tile Company, Zanesville, Ohio. Visit our showrooms and those of your Tile Contractors.
Tight weather seals around the window sash, perfect shading of the windows, and the relatively small area of glass help save as much as 10% on air-conditioning costs. Noise is greatly reduced in this office by the efficient Cushiontone ceiling.
Springmaid's controlled environment includes sound conditioning

New ideas in environmental controls make the headquarters of The Springs Cotton Mills one of the most interesting and unusual structures in the industrial field.

Windows are set at an inverted angle of 45 degrees to permit maximum daylight illumination with a minimum infiltration of the sun's infrared rays. The entire building is air conditioned, and temperature can be controlled to a ±1 degree, humidity to ±2%. Walls contain radiant heating panels to provide winter comfort.

The finishing touch to this controlled environment is ceilings of Armstrong's sound-absorbing materials that reduce noise in the office areas.

Because of its beauty and incombustibility, Travertone, a fissured mineral wool tile, was chosen for many of the executive offices. The large general office spaces called for low-cost Cushiontone, a perforated wood fiber material. In the main lobby, a metal-pan ceiling of Arrestone absorbs up to 85% of disturbing noise, ties in decoratively with the metal fixtures and furniture.


The upside-down window design provides all climate control advantages of a windowless building. In the general office areas, distracting noise is controlled by ceilings of Armstrong's Cushiontone, an easy-to-clean, white-painted acoustical tile.

Discarded machine parts from Springs' own plants have been used to make most of the furniture throughout the offices. In the main lobby, the sound-absorbing ceiling of Arrestone with a bare mill finish blends with the metal furniture and fixtures.

An elaborate control panel on the desk and a conference table that rises from the floor when needed are two of the many unusual features of Col. Elliot Springs' private office. Here, too, is a sound-muffling ceiling of Armstrong's Travertone.

ARCHITECTURAL FORUM • SEPTEMBER 1954
Prefabrication COMES OF AGE!

218 Precast, Prestressed Deck Girders, with Spans up to 63', Factory-made for Garden State Parkway Bridges

- Precasting continues its rapid spread, as today's building costs intensify the quest for sound economies. The range of concrete prefabrication is greatly widened by prestressing, which makes possible lighter members and longer spans, for buildings and bridges, with substantial savings in concrete and steel. Prestressing is really pre-testing, because a member is subjected to greater loads in fabrication than it takes in the field.

Factory-made, prestressed deck girders, 218 in number, up to 63 ft. in length, for eight bridges on New Jersey's Garden State Parkway, highlight this trend. Designed by GANNETT FLEMING CORDDRY & CARPENTER, INC., Harrisburg, Pa. and manufactured by FORMIGLI ARCHITECTURAL STONE CO., Williamstown Junction, N. J., every member is field practical, for fast erection with minimum supervision.

Cost in place invites comparison . . . inherent resistance to fire, weather, rust and rot, with no painting and little or no maintenance, mean further economies . . . marking the coming of age of concrete prefabrication.

For school and residential, commercial and industrial construction, factory-made concrete columns, span-drel beams, girders, roof slabs, provide fire-safety, structural stability and pleasing appearance of concrete, at marked cost advantage.

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A round-table discussion of one of the industry's most pointed

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Under FORUM guidance, designers and fabricators pool their

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which promises to save the industry money.

DESIGN STANDARDS AND DATA

Technical data for owners and architects on the economics of

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A review of new building materials and equipment.

FOR ARCHITECTS ONLY

Small talk on big subjects.

BOOK REVIEWS

TECHNICAL PUBLICATIONS

Cover: B.C. Electric Co., Ltd. Substation in Vancouver, B.C.

Sharp & Thompson, Berwick, Pratt, architects.
Reliable reports indicate that atomic power is on the verge of transforming the art of peaceful construction as decisively as it has transformed war.

Where war has used atomic energy to destroy materials—and life—construction will use atomic energy to transmute materials to make them serve life better. Here is the spot news.

1. The gamma rays which are a by-product of nuclear fission are being harnessed to change the molecular structure of many materials, sometimes effecting no commercially significant change, sometimes effecting a complete metamorphosis.

Despite vigorous denials the news is now beginning to leak through the screen of industrial atomic secrecy that massive doses of gamma radiation have been harnessed to make an ordinarily soft sheet of plastic stronger than the same thickness of today's structural steel and so resistant to heat that it could be used in the after-burners of jet engines; i.e., so resistant to heat that in building it could be used naked without fireproofing. It can also be made transparent, translucent or opaque at will. It is said to be so hard that it will probably have to be formed before irradiation.

This is in effect alchemy. It reaches far beyond anything heretofore done by traditional chemistry. The sober facts indicate that science has at last achieved the ancient dream of transmuting a base material into a material as different as a Damascus blade from a tobacco pouch and vastly more valuable, though nothing is added—no alloy, no combination.

2. Behind a most elaborate veil of atomic secrecy the big chemical companies are seeking other revolutionary products of gamma radiation to exploit as Du Pont exploited nylon. At least one of them has completed the design for a $60 million pilot plant to put the process on a low-cost commercial basis. Its initial production of irradiated specialities will be measured not in grams, not in pounds, but in thousands of tons.

This is alchemy on an undreamed-of scale.
Today's architects and builders can no more ignore or escape these portents of coming events than today's generals can laugh off the atomic explosion.

This story, pieced together for the first time by Forum, brings you
1. The news—what has already been accomplished and what is coming (below).
2. The engineering implications, analyzed by Engineer Paul Weidlinger (p. 98).
3. The architectural implications, studied by Forum's editorial chairman (p. 100).
4. An explanation of how comparatively small quantities of gamma radiation have modified polyethylene and other plastics, by Arthur Charlesby of the British Atomic Energy Research Establishment, condensed from Nucleonics (p. 102).

Even before the first successful atomic bomb experiments scientists knew they could alter the molecular structure of certain materials by exposing them to various quantities of gamma rays.

But they had no means of getting enough gamma rays to put the knowledge to practical use outside the laboratory—they were not even able to conduct large-scale laboratory experiments.

On the other hand, from the beginning of atomic research gamma rays have been the most troublesome and useless by-product. Until now, atomic energy plants have had to spend large sums burying the gamma ray by-products deep and safe in the ground or ocean.

The news that makes gamma rays so important for the future is that these two well-known but hitherto not-very-useful discoveries have been brought together with apparently explosive results. It came about this way:

After the war the AEC began spending billions of dollars to develop peacetime uses for atomic power.

First thoughts centered on power plants. Uranium provides a great new supply of fuel (estimated at 23 times the world's reserves of coal and oil) so a major effort was launched to find an economical way to generate electricity with atomic fuel instead of coal, oil or water power.

Before long, however, it became apparent that it would be years before atomic fuel could offer any important economy over coal and oil except in special areas. If it took two decades for Diesels with their 50% better economy to replace steam locomotives, how long would it take atomic fuel to develop a market if it could offer only a 16% saving?

To speed the revolution: a dual purpose reactor

Scientists then turned their attention to developing a so-called "dual-purpose" reactor: one that would produce both electrical energy for industry and plutonium for atomic weapons. The price the government would pay for the plutonium would be set high enough, it was anticipated, to make the operation of such power plants economically attractive.

The coal and oil interests objected, reasoning that this would amount to a government subsidy of atomic competition.

A third possibility presented itself even before these objections were fully voiced. In 1951 the Stanford Research Institute, working for AEC, announced that industry could make use of gamma rays which were then a waste product of the reactors.

At that time, some of the chemical companies—Monsanto and Dow among them—were known to be working on the problems and potentials of a dual-purpose reactor. The Stanford report spurred a new effort to develop a reactor yielding more than two products—a multiple-purpose reactor.

To use waste products: a multipurpose reactor

Briefly, here is what such a reactor would produce:

- Heat for electrical power at a price that could be made economical by the income from not one but several "by-products."
- Plutonium for military purposes or to supply fuel for additional commercial reactors.
- Isotopes that have a wide variety of industrial and medical uses, primarily in the fields of industrial automation, tracing particles, measurement of materials and general analysis.
- Alpha, beta and gamma rays and neutrons.*

Such a multipurpose reactor is not likely to perform any one function as efficiently or economically as a reactor specifically designed for that single purpose. The big

* Because of varying degrees of strength, each of these rays will do different things to materials. Alpha rays will be stopped by a piece of paper but are often effective for surface treatment. Beta rays will penetrate only a quarter inch or so and might be utilized in treating thin sheets. Gamma rays are strong enough to penetrate several inches, so presumably they could be used to alter relatively thick materials. Neutrons will knock whole molecules out, but to do so they must hit the core of a molecule—which is often a one-in-many-millions shot.
design problem is, therefore, an economic problem on how far to sacrifice the full efficiency of one function to the needs of another.

For example, the most economical way to get the massive radiation effects necessary to achieve a major change in materials should be to expose them directly to fission, and to do this without making them radioactive requires screens (perhaps of water or boron steel) that will stop the destructive neutrons but let the gamma rays pass through. All this necessitates a design change in the reactor that could be expected to reduce its efficiency for producing electricity or plutonium. Atomic scientists see no insuperable technical reason why gamma rays could not be so harnessed on a large scale. They point out only that there has never been any published word that it has been done.

Research on the multipurpose reactor has apparently moved at a satisfactory pace, for in May Dr. Phillip N. Powers, director of Monsanto's Atomic Project, said very mysteriously to a meeting of the Atomic Industrial Forum:

"Perhaps I can make our thinking most clear by mentioning what I would like to be able to report if I could. I can't. I make that clear, too. But if all were nice and simple in the world, perhaps we would be able to announce that we were about to build with private financing a nuclear reactor of some substantial size from which not one but three sources of income are to be derived. We would be selling heat to produce electricity, to be sure, and this subject is the one which has been most discussed. Second, we would be selling nuclear fuel—to whom, I don't know. Third, we would be manufacturing, through the use of the radiation or the fission products in some way, some chemicals which are of interest to the chemical industry."

How various materials have been transmuted

The alchemy of gamma radiation can alter the molecular structure of many different materials in many different ways. Furthermore, it can alter the same material in different ways depending on the strength and other characteristics of the radiation. To explore all the possibilities of this new philosopher's stone will take at least a generation.

Different as these effects are, in cases where they occur they have three tendencies in common. They tighten up the molecular structure, with these results:
1. They tend to increase strength.
2. They tend to increase the modulus of elasticity.
3. They tend to increase heat resistance.

The search for materials whose value and usefulness can be very greatly enhanced by radiation may well prove like the search for useful antibiotics, where thousands of molds have been tried and found wanting for each one that has shown therapeutic powers.

So far most of the experimenting with radiation has been done on plastics, partly because the big chemical companies heading the research are in the plastics business, partly because the long-chain plastic molecules are particularly susceptible to drastic change through irradiation.

Not much research has been done on irradiating metals, for two reasons:
1. Their simple molecular structure is little affected by gamma rays, which work best when they can cross-link the long chains of plastic polymers. Metals can be changed only by neutron bombardment.
2. After neutron bombardment, metals remain dangerously radioactive.

Experiments with neutron bombardment on carbon and
stainless steels, and nickel and nickel base alloys, are reported in the Aug. 19 issue of *The Iron Age*, which states:

"Materials generally show higher yield strength, lower percentage elongation and somewhat higher ductile-brittle transition temperatures . . . the degree of change seems tied to flux intensity and exposure temperature . . . hardness increases are more noticeable in materials which start soft . . . hardness effects are annealed when exposure temperatures are higher."

Little or nothing is known about what radiation will do to wood as a structural material (or even to plywood, whose plastic binder might easily be affected by gamma rays). Most of the radiation research on wood has focused on making it edible, first as a cattle fodder, possibly later for human consumption.

About the effect of gamma rays on plastics, quite a bit more is known and a little of it has been reported. But it is noteworthy that none of the results published so far is in any way comparable to the revolutionary changes of which news is now beginning to leak out. The effects published to date are hardly of sufficient commercial value to justify the kind of multimillion dollar investment that now seems in prospect.

For example, as far back as Aug. '53 *Nucleonics* reported some laboratory tests of the effect of gamma radiation on polyethylene, nylon, Koroseal, Buna-N, neoprene, natural rubber and Thiokol. The results: in all cases a somewhat higher modulus of elasticity, and in most cases an increase in hardness.

At Harwell (England's Oak Ridge) the plastic variously known as Lucite, Plexiglass or Perspex was irradiated and immediately released hydrogen gas bubbles which were trapped inside. The bubbles then swelled up to form a complex of gas-filled cells, thus producing a substance with possible value as insulation.

In the June '54 *Nucleonics*, Arthur Charlesby of the British Atomic Research Establishment at Harwell reported that: "silicones have been successfully cross-linked" (following exposure to gamma rays) and the substance created by irradiation "is transparent and does not flow even at fairly elevated temperatures." Many physicists believe that the irradiation of silicones should produce materials capable of withstanding particularly high temperatures, because the silicones start off with a much higher heat resistance than the carbon plastics.

Charlesby summed up the current state of knowledge concerning irradiated materials with his concluding statement that: "The amount of information obtained to date [on irradiated materials] is limited mainly by the effort devoted to the subject. Large-scale industrial use depends on the availability of suitable sources of radiation."

A suitable source of large-scale radiation is precisely what the new multiple-purpose reactors will provide for the first time.

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**How gamma rays work**

How is it done? To take the simplest example, when you expose a plastic like polyethylene to radiation you change the molecular structure by knocking out the "inside" atoms (which tend to weaken the material), so that direct cross-links can be established between the core atoms of different molecules. As these attachments are set up laterally between the chains of a polymer, it becomes more rigid and more resistant to high temperatures.

Similar cross-linking can often be accomplished by traditional chemistry. For example, vulcanizing rubber is a process for producing cross-links.

But radiation is a particularly efficient way of cross-linking many materials. A single fast neutron can produce as many as 5,000 cross-links in a piece of polyethylene a single additional bond per 2,000 atoms will greatly change the properties of the material. As the radiation dose is increased, a network of theoretically infinite extent is formed that includes a large number of the original molecules linked together into one gigantic molecule.

Another major advantage of radiation as a means of changing molecular structure is that it can be used to achieve at low temperature effects which in traditional chemistry would develop so much heat as to destroy the material in the process.

**What about costs?**

Dr. Bernard Manowitz of the Brookhaven Atomic Laboratories has figured that industry would be justified in investing as much as $21 million in a reactor that would give off enough controllable gamma rays to irradiate a ton of ethylene per hour—*provided the radiation could add 30¢ a lb. to its value*. The best information available indicates, however, that the projected cost of irradiation in multipurpose reactors capable of irradiating 18,000 lb. per hour of a 30¢-a-lb. plastic has been brought down to around 2¢ a lb. This particular plastic is one that responds easily to irradiation. If this cost estimate is correct, it means that irradiated products could be cheap enough for use in the building industry.
For the first time
materials improve greatly in both strength and elasticity

By Paul Weidlinger, ASCE, consulting engineer

Forums:
Answering your questions to me, and assuming the correctness of your data, here is my reply:

The implications of gamma radiation as disclosed in this Forum report are too shattering to contemplate quite objectively. There is no doubt that the resulting revolution in building will produce structures which may be unlike anything we have ever known.

In order to visualize the meaning of this transformation let us imagine that a piece of plywood will be transformed into a material whose working stress and elastic modulus would be six to eight times those of the untreated plywood. We would have now a sheet with the strength characteristics of steel with fire protection added but of such low weight that the resulting sheet would be something completely new and unlike anything we have used up till now.

Any speculation along these lines must assume that certain immediate technological difficulties and economic problems of the process have been solved. Then some well-informed guesses can be made by extrapolating the implications of a radiation process which brings about a basic rearrangement of the molecular structure of matter and achieves simultaneously two changes of great importance. These two changes are 1) an increase in strength, and 2) an increase in the elastic constants (i.e. modulus of elasticity and related constants). The result of such transformation for various rubbers and plastics was first published in Aug. '53.

I am told that since that time further improvements in the process have been made resulting in increases far above those indicated on these graphs.

This is the first process by which it becomes possible to get an important increase in both strength and elasticity. Even ancient technology, presumably since the Bronze Age, was able to modify and increase significantly the strength of materials, especially strength of metals, by alloying, annealing, strain hardening and other processes. But until now this increase in strength has never been accompanied by a proportional increase in the elastic modulus of the material, or even any increase at all. All the modern lightweight high-strength alloys show this great gap between strength and elasticity. For example, high-strength stainless and alloy steels may have a capacity which is four to five times as much as that of ordinary structural steel but their elastic properties and specific gravity remain essentially unchanged. High-strength aluminum can approach the strength of steel with only one third the weight, but unfortunately the elastic modulus is also only one third that of steel. The elastic modulus of magnesium and magnesium alloys is also lower in exactly the same proportion as its specific gravity to other metals.

Why full strength has rarely been used

Failure of all pre-gamma ray technology to increase the elasticity of materials along with their strength has (with rare exceptions) made nearly impossible the full utilization of the added strength characteristics. In other words: we would hope that the increased strength would permit a proportionate decrease in the amount of material used. This expectation usually remains unfulfilled, due to the high deformations resulting from the gap between high strength and low elasticity. The type of strength increase obtained at the present time is illustrated in left graph of figure at left.

As our modern structural members become thinner, lighter and slenderer due to more efficient use and higher strength, the importance in physical characteristics shifts more and more from strength to elasticity. In practical language this means that if the dimensions of a structure, say a thin shell, are reduced to approach the minimum permitted by strength requirements, then elastic instability (i.e., buckling) becomes the dominant design consideration, and this tendency to buckle must be countered either by increasing the significant dimensions once again or by providing stiffening elements to prevent or limit the appearance of buckling waves.

Against this background let us consider again the new process which gives materials a great simultaneous increase in both strength and elasticity. For the first time in history, we shall be dealing with materials whose full-strength potential can be utilized to nearly 100% of their capacity.

This would permit structures with completely smooth surfaces, freed from a cluttering of stiffening ribs, crimps or other methods of stiffening. This means that thin shell structures, stressed skin...
panels, and monocoques will be designed without the addition of the above-mentioned stiffeners.

If (as we must assume) the cost of the processing (i.e. irradiation) will be an important economic factor, new methods must be devised 1) to utilize the irradiated material to its full potentialities, or 2) to apply the irradiation process at full intensity only to the essential portions of the structure.

**Buckling must be overcome**

Using the irradiated material to its full potentialities will involve a renewed effort to create structures which are primarily in tension. The fact is that even though the elastic modulus may be increased in proportion to the strength, the further reduction of the dimensions and other geometric relations may once again make buckling the controlling factor limit in the exploitation of the full-strength potential. It may become necessary, fantastic as it sounds, to create “all-tension” structures: i.e., supporting elements in which all members act in tension. This can be done by the use of suspension and catenary systems and by specific prestressing methods (conceivably utilizing air and liquid pressure) which will impose tensile forces on members which would usually receive compressive loads in use. Emphasis may shift to tension-field girders (which are already used in air-frame design) in which an extremely thin web is permitted to buckle and act purely in tension to resist sheering forces.

Applying the irradiation process only to those portions of the structure where great strength is needed calls for design solutions both interesting and imaginative, namely, the selective transformation of certain portions of a structure. This is akin to the modification of cell structures for special purposes found in organic structures. Just as nature modifies the cells at critical parts of living things, so this new technology will bring about a selective molecular modification along stress lines.

This would mean that various types of structural components and elements will be “reinforced” by transforming the material only at appropriate locations. For example, in the familiar reinforced concrete girder the function of the reinforcing bars might be taken over by the modified molecules of the original form, or matrix, in which it was cast, which may be concrete but more likely plastic or some metal. Similarly structures subject to buckling (thin shells, stressed skin panels, etc.) will be provided with integral reinforcing ribs consisting of these modified molecules. This integral stiffening rib may appear as a small “superstrength” rib molded into the shell or other surface or ultimately it may become invisible and consist simply of strengthened portions within the thickness of the structure itself. The approximate shape of these “modified molecular lines” can be expected to run along the direction of the principal stresses in the structure, corresponding to the “geodesic lines” of Buckminster Fuller or the isostatic ribs of Nervi’s plates.

And of course another alternative is possible if we would be satisfied with the partial utilization of the greater strength: we could use structural elements of ordinary and traditional form in a somewhat reduced scale, with a correspondingly smaller gain in economy. Even this would make possible the use of some forms which heretofore have been impossible due to technological limitations. For example: we might visualize future skyscrapers supported on irradiated “superstrength” plastic imitations of cast-iron Corinthian columns—it is too gruesome to contemplate this implication any further.

With infinite faith in the potentials of modern technology and human progress we can contemplate the shape of structures and buildings to come. The step from the laboratory application to even a limited industrial use must be some time away. Nevertheless, a technological process which will bring about such a deep-going transformation of the physical properties of matter will have similar revolutionary implications. This writer only hopes that the cost of such processing will be sufficiently high for a sufficient time to bring back into focus the importance of creating and designing structures fully consistent with the physical aspects of the material. No other process introduced into the building industry can be more tempting to misuse.
In architecture, will atomic processes create a new "plastic" order?

By Douglas Haskell AIA, editorial chairman

A change as profound as atomic creation of new materials must result in a new world of architectural forms.

Given this first opportunity to speculate on the future with the support of some apparently solid evidence, we should grasp the significance as broadly as we can, assuming that obstacles will be overcome. Knowing that irradiation will make soft materials into sheets that are very hard and highly fireproof, let us assume that they will become economical and widely available.

A second "modern" order is then indicated, to which today's "modern" will be just an antecedent. Today's typical "order," as Mies van der Rohe says, is the skeleton frame (heavily fireproofed, wrapped in a curtain wall of panelized materials).

Tomorrow's structure may be typically all "skin." Its skin may be formed to become its shell and its interior columns of cellular structure. Even its "windows" may be simply transparent patches of its skin. A single continuous envelope of a thin sandwich material may yield structure and enclosure; resistance to destructive forces from outside; solidity or porosity; control of light and view; insulation for heat and sound, color and finish—all the characteristics we now impose separately.

Chemical, electronic, radionic manipulation will be the dominant process in "building," which has hitherto been dominated first by handicraft and later by mechanical joinery.

In over-all shape, buildings created by this new extension of monococque principles, already familiar in the construction of airplanes and storage tanks, may well harmonize still better with the world of ships, planes and hangars than with today's typical rectangular "frame" buildings.
Prototype buildings for the new order are already increasing rapidly in number, since coming events cast long shadows ahead of them. Some recent buildings are sketched herewith. They are by today's leading architects. Their common denominator is that they are more "plastic." Saarinen's MIT dome, Le Corbusier's Marseilles apartments, the UNESCO building of Breuer, Zehrfuss and Nervi, Harrison's church, and above all (not shown) the structures of today's best engineers could be translated with immense advantage into the new plastic mode by molecular irradiation.

Immensely increased fire resistance, immensely decreased weight are an integral part of this architectural revolution. If irradiated plastics will resist fire as promised, then our cities can drop the tons and tons of fireproofing that represent four fifths of the weight of the average tall-building wall and an even higher proportion of time, labor and investment. But this is not all. Since irradiated plastics will weigh something like one seventh as much as steel* of the same strength, floors will weigh a fraction of what they weigh today, and so will the columns or partitions that will carry them.

A corollary is structures of vastly bigger span, especially in buildings such as hangars, where the weight of the structure itself is the major factor to be handled.

Structure, light control, view control, insulation and finish, which today are all separate items requiring separate structural devices, can all be rolled into the one "structuring" procedure. Imagine a wall, for example, made of polyester plastic sandwich with a foam plastic filler. Simply cutting the filler away will leave part of it transparent to serve as "window." The uni-material wall will support itself and insulate itself, and be its own finish.

Building processes will change just as radically. Architecture and engineering and product design and construction will be cross-linked and locked together as firmly as the new atom chains. Building design will be largely a laboratory job, and building materials distribution can follow Buckminster Fuller's lead and carry the lightweight components straight to the site by helicopter.

Considering the vast implications in a statement like that, it is perhaps comforting that the prophecies are long range, that much is still hypothetical, that working out such implications will take a long time. We may need it.

* Steel itself may become a new material through neutron treatment.
Even with small doses of irradiation many materials undergo dramatic change

—a report on British experiments by Arthur Charlesby,
director of radiation investigations, Harwell Atomic Energy Research Establishment

Condensed from *Nucleonics* magazine

Many long-chain polymers can be modified considerably by exposure to high-energy ionizing radiation. A change of only one chemical bond of many hundreds can profoundly influence a material's physical properties even though the chemical structure is affected very little.

Unlike the effect of radiation on other solids (such as metals), changes once produced in plastics are as permanent as the bonds in the original material. These changes are usually accompanied by removal of the displaced atoms in the form of a gas. When radiation removes an atom from its molecule, the atom is extremely unlikely to find an equivalent position in which it can settle in the structure.

The number of bonds affected is considerably greater than the number of primary collisions with the incident high-energy particles. A fast neutron may produce 5,000 bond changes at 20 ev each. Thus, the process can often be relatively economical as far as conversion of energy to chemical change is concerned. For example, in polyethylene an additional bond per 2,000 carbon atoms will greatly change the properties of the material.

**Radiation causes molecular linking**

The individual molecules in polyethylene, polystyrene and rubber are linked together by chemical bonds whose formation is induced by radiation. The cross-linking profoundly affects melting and solubility. Density of cross-linking is directly proportionate to the radiation dose.

Radiation doses to achieve these effects in polystyrene are far greater than for polyethylene. A polystyrene molecule containing an average of about 8,000 carbon atoms in the main chain length would only need about 0.02 units to achieve the same cross-linking. The difference can be ascribed to the benzene ring in styrene, which stabilizes many organic compounds against the effects of radiation.

As in polyethylene, surface oxidation occurs when polystyrene is irradiated in the presence of air. After considerable irradiation, a brown powder is formed that contains substantial amounts of oxygen. Unlike the oxidation product on the surface of polyethylene, this material is not sticky and can be removed readily. Apart from this slight oxidation the only obvious change to irradiated polystyrene rods is a yellow coloration that increases rapidly with radiation dose.

For a small amount of radiation and cross-linking, the molecular weight distribution is altered with a corresponding change in the viscosity of the product when dissolved. For such radiation doses certain molecules become linked together in pairs, threes, etc. As the radiation dose is increased, a point is reached where a network of theoretically infinite extent is formed that includes a large number of original molecules linked together into one gigantic molecule.

Several theoretical studies have been made of the variation of gel fraction with cross-linking density—the latter being accurately proportionate to radiation dose. The relation is found to depend on the initial molecular weight distribution.

Irradiated polystyrene also has been used in connection with studies of swelling of cross-linked polymers. A cross-linked polymer will swell in compounds that are usually solvents for the uncross-linked molecules. The solvent molecules (benzene, toluene) enter the network and try to force the molecules apart. This tendency is resisted by the elastic properties of the cross-linked network. With higher degrees of radiation (and, hence, of cross-linking) the swelling is reduced.

By calibrating the swelling of a series of polymers cross-linked by irradiation it should prove possible to provide laboratory standards of cross-linking for use in industrial and research laboratories dealing with polymer behavior.

Rubber can be considered a naturally occurring polymer that, for most practical purposes, has to be vulcanized (cross-linked). This cross-linking can be achieved by exposure to ionizing radiation alone, without introducing sulfur or accelerators and without heat treatment. The process can take place in the absence of oxygen, and the degree of cross-linking is proportionate to the radiation. The efficiency of cross-linking is somewhat higher for rubber than for polyethylene. Cross-linking efficiency can be deduced both from swelling experiments and from the network's elasticity.

The property of cross-linking is not confined to long-chain polymers with carbon atoms in the main chain. Silicones have been successfully cross-linked, the amount of radiation required being smaller for the longer molecules, as is to be expected if cross-linking occurs at random. The cross-linked polymer formed is transparent and does not flow even at fairly elevated temperatures.

**Valuable commercial uses are coming**

Apart from its use in research work, the possibility of producing cross-linked, degraded or foamed material under accurately controlled conditions by a purely physical process can well have valuable commercial possibilities. These will depend on the cost of irradiation, the enhanced value of the material, and the comparative cost of the competitive chemical process (where one is available).

Since the phenomena occur equally well whatever the source of primary high-energy radiation (electrons, X-rays, gamma rays, fast neutrons, etc.), the most suitable form of radiation will depend on the cost of the source and the ability to produce radiation of useful penetrating power. High-energy electrons obtained from linear accelerators have penetrations of only a few millimeters...
and, thus, seem most suitable for thin specimens. Gamma radiation is so penetrating that fairly considerable thicknesses of material are necessary if full use is to be made of the energy available. The use of reactors appears feasible. Irradiations can be carried out in the shield, thus making use of energy otherwise wasted. However, installation of conveyor belts or similar methods of feeding specimens into reactors, and postirradiation storage in the immediate vicinity of the reactor, might raise engineering objections.

Costs seem to be reasonable

Use of high-energy radiation on a commercial scale appears promising in a number of fields. In many cases the required radiation doses run into at least several million roentgens. It is too early to make any reliable calculations of costs, but very rough estimates may be of interest as an order-of-magnitude indication.

If we assume an installed and operating cost of $1/curie a treatment needing 1 million roentgens, a source of half-life ten years, a gamma source emitting 1-Mev gamma rays, and an overall efficiency of 10%, the cost of processing will be $100/ton, or 5¢/lb.

This estimate is very rough indeed; the cost of producing, installing and operating fission-product sources is not known, nor is the efficiency with which radiation can be absorbed. However, these figures indicate that costs are not necessarily exorbitant for certain modifications in plastics.

In the cases of oils or shorter chain compounds in which several units of pile radiation are needed to produce useful changes, the costs are much higher. Two units of reactor radiation (or 10-million roentgens) would, on these bases, cost about $5 per lb. It is for this reason that the more promising commercial applications of cross-linking lie in the field of long-chain polymers. This is where small degrees of cross-linking result in marked and often desirable changes in physical properties.

Industry needs radiation

A considerable need for sources of high-energy radiation appears to be arising for a variety of industrial purposes. Design of equipment to provide such sources at an economical cost is most desirable. The modification of polymer properties is only one of the possible applications of such sources. They also could be used for sterilizing pharmaceuticals and foodstuffs.

The amount of information obtained to date is limited mainly by the effort devoted to this interesting new subject. Large-scale industrial use depends on the availability of suitable sources of radiation.

Heat resistance of polyethylene after it had received what will soon be considered minor doses of radiation is demonstrated by this comparison. Blob at left is unirradiated polyethylene; cylinder at right is same material treated with as large a dose of radiation as science could muster at time of tests. Both samples had been subjected to same amount of heat.

Optical heat distortion at 105° C. for irradiated polyethylene. Bubble formation, which indicates fracture of main and side chains, is produced when the material is heated. Main chain is the backbone of the polymer molecule, and side chains are attached to main chain. Unirradiated polymer was not heated.

Ability to change elastic properties of polyethylene through irradiation is charted above. At first there is a drop in Young's modulus until usual melting point is reached (about 115° C). Unirradiated polyethylene becomes viscous liquid at this point; irradiated polyethylene is transformed into transparent and elastic material that is amorphous in character. The five lines and percentages represent different doses of radiation.

How irradiation affects common plastics

Polymethyl methacrylate (Lucite, Plexiglas and Perspex) shows most strikingly the effects produced on the main and side chains by exposure to high-energy radiation.

After irradiations of the order of one unit at about 80° C., the polymer swells into a foam or mass of bubbles consisting mainly of hydrogen, carbon monoxide and carbon dioxide, which are the main breakdown products of the side chain. Increases in volume of the order of eight times can be produced.

If irradiation is stopped before the foaming stage is reached, and the specimen is subsequently heated, the same process of foaming takes place. The higher the radiation dose, the lower is the temperature needed to produce this effect, at least for temperatures above about 70° C.

The explanation is that radiation produces side-chain fracture at random throughout the specimen, and the resultant gases are retained in the solid until a combination of increased pressure (due to the temperature rise) and weakened polymer structure causes bubble formation. Bubbles do not occur near the surface; the gases produced there can escape.

One can envisage a possible use for this irradiated polymer for heat insulation purposes. Blocks of it could be placed around the vessel to be insulated. When heated, bubble formation would occur and insulating material would be produced in situ. The absence of bubbles in the outer layers would result in a material having a tough skin.
"A life insurance company has a work flow which is very similar to the operations of a light manufacturer. While we do not assemble radio sets or vacuum cleaners with stamping machines or lathes, we do, in a sense, assemble pieces of paper with the use of such tools as typewriters and calculating machines. We use a different type of personnel to do it . . . but the nature of the problem is the same."

This is the key statement in the programming of the new 500,000 sq. ft. home office the Connecticut General Life Insurance Co. will erect on a rolling stretch of farmland 5 mi. from the insurance mecca, Hartford. The seed of the statement came even before the programming began, when the company's president suggested to Skidmore, Owings & Merrill's designers that since the company was moving to the country, he thought the building should be kept low, so everyone could be near the ground. But the seed was a long time growing, through months of conferences, and hundreds of hours of detailed study of the real needs of an insurance company, as opposed to the auto-
from industry, plans a horizontal office building without columns and partitions

matically pompous solutions of most of the structures in Hartford. SOM's partners call this client the most thorough they have encountered: "They didn't investigate our references by mail; they got in a plane and went and looked at all the big buildings we'd ever built."

Connecticut General's new building will be basically a long, horizontal stretch of three unencumbered floors, approximately 140,000 sq. ft. per floor. There will be no interior columns, no floor-to-ceiling partitions in main clerical areas (light screens instead), no barriers to interior departmental expansion or horizontal expansion of the building itself. And most important, no employees will be stationed more than 35' from the continuous glass windows (heat and glare absorbing). To accomplish this in the big 325' x 475' rectangle of the main wing, the designers sank four large interior gardens into the rectangle. Adjoining this main bulk of clerical space will be a wing for the cafeteria, one story high, glass walled, cantilevered over a pool, and a wing for specialized departments off the production flow, four stories high.
**South facade:** heat- and glare-absorbing glass will shield sun. To right is the pagodalike cafeteria, cantilevered over pool.

**A spatial module**

**CONNECTICUT GENERAL LIFE INSURANCE CO.**
Bloomfield, Conn.

**SKIDMORE, OWINGS & MERRILL, architects**
- Partners in charge:
  - William S. Brown, coordination
  - Gordon Bunshaft, design

**Consultants:**
- **WEISKOPF & PICKWORTH,** structural engineers
- **SYSKA & HENNESSY,** mechanical engineers
- **ARTHUR W. DANA,** restaurant consultant
- **WALTER VOSS,** technical consultant

**Typical work floor** shows the screening system which divides space without closing in rooms. Bridge connects with administration building. Six cores service neighborhoods in the big floors.
makes the building fit the employees just as the structure fits the loads

Basic planning assumptions started with the decision to allot a unit of 60 sq. ft. per clerk (modified subsequently to 48 sq. ft.), with supervisors and technicians of nonofficer rank allowed two or three basic units, intermediate officers allowed four units, and ranking officers (other than the president) six units. To areas determined by these standards are added machine and file areas, conference rooms, corridors, etc. (Capacity of the structure will be 3,000 employees.)

The horizontal sweep of the big work floors will make it especially easy for the small departmental expansions and realignments that can work such havoc in a vertical office building. Circulation up and down in the six service cores will be by escalator, with elevators for freight service. An electrical conveyor system will deliver files and papers anywhere throughout the building within 16 minutes.

Spanning the main areas will be 60' girders on 12' centers, resting on exposed steel columns; the walls between columns will be fixed glass in 7" x 11" panels above sill level, and from the sill down, porcelain or glass insulated panels. The wall will be flush inside and out, with a window-sill depth equal to the column depth.

Openness and flexibility will be retained inside the building by using bright-colored acoustical screens to divide areas, instead of full partitions. All glass will be fixed. Air conditioning may use well water. The site is almost surrounded by good roads; quick dispersal of employees to these roads is the objective of the 2 mi. of highway within the site (see plot plan, p. 104). Completion is set for 1956.
Here are six stores that have all gotten off to a successful start. Yet on the surface it would be hard to find six more various approaches. Pairing them off according to similarity of problems—two showrooms, two specialty shops, two chain stores—highlights some of their differences.

The approach paradox of the two showrooms: each of these establishments—one for selling typewriters and business machines, one for selling airline transportation—employs the design device of a bold and definite exterior frame edging a glazed front. But in the case of Olivetti (opp.), the frame serves as the proscenium of a space; the picture inside the frame is the interior. In the case of Northwest Orient Airlines (p. 114) the frame is the surround of a composed facade; the interior is tantalizingly glimpsed but it retreats. Two fundamentally different ways of saying “Come on inside the frame.”

The display paradox of the two specialty shops: each of these establishments sells high fashion, fairly expensive women’s wear. Each features a salon atmosphere, fireplace and all. (Each of the businesswomen-owners chose her architect because she liked a house he had done.) But in the case of Irene Sargent’s in San Francisco, the merchandise is tucked behind the scenes; only a come-on minimum is displayed (p. 118). In the case of Cricket West in Kansas City, most walls and dividers are display racks; a maximum of merchandise is on view (p. 120). Two fundamentally different ways of saying “Our wares are lush and wonderful.”

The paradox of client-architect relationship in the two retail chains: each of these nationwide organizations has many new store plans in work at once; each uses prototype store designs, modified for site, size and experience. In the case of Grant (p. 123) the company architectural and construction department gives many design jobs to outside architects. In this instance, the architect—who controls a construction firm—was given an unusual package commission to construct the buildings as well. In the case of Rayco (p. 124) the company architectural department—which is now branching into advertising and product design for the firm—does all store designing itself. Two different approaches to the chain-management problem of combining lively architectural thinking with design consistency and specialized understanding of the chain’s operation.

From the results—from the way the clients and the customers feel about these six jobs—it is impossible to say that any one approach was better than its opposite. All six stores are striking practical successes.

What do all six have in common? First, obviously, as the plans and photographs show, whichever approach was selected, it was carried out consistently and well. Each shows the thought that went into the how of carrying out its merchandising premise.

Second, it turns out that each of these jobs happened to be blessed with a particularly happy architect-client relation. Without exception, each of the architects found himself fascinated with the client’s problem, enthusiastic about his purposes and respectful of his ideas. Without exception, each of the clients selected his architect or designer with a realization of the full importance of professional services and followed this up with respect for the architect’s thinking. Each job is a reflection of how client and architect worked together as people.

The moral of these six examples is that stores have almost as many different ways as human beings of making themselves attractive and useful, but fishing these out is a problem of professional imagination.

And to show how far selling can go, our six shops are followed by one final paradox—a “store” that is without salespeople or customers but that does a hang-up job of advertising its merchandise (p. 126).
1. For business machines, a three-dimensional walk-in poster (below and following)
2. For airline ticket sales, a cool and urbane assist from the Japanese (p. 114)
3. For a specialty shop, the old-fashioned genteel salon with a new twist (p. 118)
4. For another specialty shop, self-selection infused with elegance (p. 120)
5. For a chain-variety store, closed-up walls with a top glow (p. 123)
6. For purveying auto seat covers, a drive-through upholstery shop (p. 124)

And for selling electricity, a “store” without salespeople or customers (p. 126)
Interior is an open-ended white box, its purity twice accented: with dignity of old Roman statue, with cheerfulness of bright color spots.
Mezzanine reception area surveys sales space and entrance. Mezzanine construction is steel, inserted into very old building of wood and masonry. Basic space and construction of building was little altered.

Mezzanine corridor has simple wood shelf for literature with light box above and red panels between shelf ends and light. Store Designer Lionni also did trademark poster depicting typing figure.

1. ORDER WITH GAIETY

organizes a typewriter salesroom into one arresting picture

"Stores should be civilized places," thinks Designer Leo Lionni. "They should say something about our more lasting values."

Here something plainly lasting is the 2,000-year-old museum piece of Roman sculpture at the entry. But equally lasting, we may hope, is the highly civilized appreciation of order and gaiety, the pleasure in kinship between contemporary classic and antique classic, and the designer's and architect's obvious feeling that the continuity of the ages is a source of riches and delights rather than a ponderous burden.

Inevitably this shop will be compared with the Olivetti showroom in New York (AF, Aug. '54). The two are as dissimilar as lush midtown Fifth Ave. is from the gray old San Francisco street where this white box shines out among a hodgepodge of weary office supply stores. But the civilized Olivetti touch is unmistakable in both. Lionni comments that this company's extraordinary basic design unity results neither from an iron hand nor a belief in unity through devices, but from "a group of people who think about design in the same way: this is the highest kind of integrated design I know of."

The only overt similarity between the two stores—typewriters mounted on pedestals—was arrived at by designers of each shop independently, unbeknownst to the other. They both simply hit on a similar vocabulary for declaring a product is light and handsome.

OLIVETTI SALES CORP., San Francisco office
LEO LIONNI, designer
GIORGIO CAVAGLIERI, architect
FRANK F. EHRENTHAL, supervising architect
GINSBURG & SMITH, ventilation engineers
CHARLES O. JONES CO., general contractor
Window display emphasizes lightness and design of machines by mounting them on colored pipes.

Display flexibility is achieved by varying arrangement of standards, posters and machines.

Typewriter displays have an orderly, controlled future built in

Almost no store manager anywhere is content to leave his store as is, for any length of time. To expect him to be satisfied even with perfection is to go against nature. Designer Lionni—who is also a regular design consultant to Olivetti—has realistically provided for change but he has also realistically provided a way of keeping change under control. Inside the window 36 brass floor sockets (detail at left) are lined in rows. In the store is an array of pipe fixtures of varying lengths and colors, along with a simple code key designating each socket and each pipe. In New York Lionni makes up displays, using a model, then sends directions for duplicating them in San Francisco.

Sometime in another store, Lionni hopes to try the idea of a constructed mural, similarly changeable but controlled.

Of course nothing but a thorough-going organizational appreciation of good design will keep paper promotional stickers off windows. Fortunately the exceptional Olivetti organization has the pride and understanding to avert any such disasters.
Stair is airy construction of fir stringers reinforced with 4" x 4" angle irons, oak treads and aluminum railing. One of store's most effective, though unobtrusive, design features is axis formed by stair, shielded ceiling fluorescent light strip, and entrance.

Showcases eschew the ponderous look usually associated with business machines. Row of wall boxes is strip of colors. Floor case has 1" x 1" angle iron and T-bar frame; ¼" plywood panels hide wrapping counter, reserve shelves and supply drawers.

Offices under mezzanine are divided from sales space by counter to which customers bring machines for repair (see also photo above). Note corridor divider of plywood panels in wood uprights.
Main waiting and ticket-selling area repeats delicate black exterior frame in column facings, map screen. Black-and-white delicacy is set off by rich gold wall at rear, red wall at left and wood of ceiling baffles and counter.

Exterior is two-story chunk of big office building framed with black serpentine. Letters are stainless steel with porcelain enamel faces against serpentine slab. Pivoting upper windows have vertical wood blinds.
wafts a subtle echo of Japanese architecture into New York's Fifth Avenue
Ticket-office plan and design are a sensible and sensitive adaptation of exotic forms

Japan is no novelty as a course of contemporary architectural ideas but its influence has been most apparent in residential design. This unusual commercial example of Japanese influence is an interesting demonstration of how to employ a characteristic esthetic in a nonindigenous context without impracticalities and without any literal copying.

Although the over-all effect is deliberately suggestive of Japan, nothing here was done overtly for its exotic effect. The chosen esthetic was used simply and straightforwardly to solve immediate problems. For instance, the architects made a virtue of what were originally elephantine columns by plastering the column fronts and facing the cheeks with black lacquered wood. Too-high room proportions and the hard sources of engineered light were overcome by natural birch baffle, reminiscent of woody Japanese ceilings. To make a poster background, panels like sliding paper screens were adapted to a permanent wall. For a space divider and advertising panel, wood rounds were used in the manner of loose bamboo screening. In short, a restrained style was used with restraint.

Second floor and basement have local offices of the airline. The entire job, including furnishings, was handled by the architects. The budget was "reasonable"; even so, part was turned back.
Consulting office for passengers planning foreign travel is separated from main waiting space by screen of wood dowels with light vertical wood bracing and lacquered uprights. Map is 1/4" white plastic with plastic ribbons.

Reservation and traffic desks share basement with offices. Department's normal bustle is minimized by acoustic tile brought down to wainscote height. Round desk has double-tier Lazy Susans serving eight reservation clerks.

Ticket-counter wall of white-lacquered wood with black-lacquered dividing strips is reminiscent of Japanese shoji, or sliding screen. Black strips are movable to accommodate changed poster displays.
IRENE SARGENT DRESS SALON
LOCATION: Oakland, Calif.
MARIO GAIDANO, architect
HELEN NEWBAUER, interior planting
KARL RHODE HAMEL of BONYGES, furnishings
ELVIN C. STENDELL, general contractor

3. HOW TO MAKE THE CUSTOMERS
WANT HIDDEN MERCHANDISE

The owner of this shop set her heart on quite a trick, and she and her architect pulled it off. Her idea—which flouts current merchandising theory—was to hide the merchandise but at the same time to provide a setting that would make the customers feel like begging for a peek at the wonders for sale behind the scenes. This aim was no whim: it was an astute plan to set the shop apart from formidable department store competition. The shop is such a success that the owner is confident its returns will soon equal those of her several popular-price dress shops combined, and it has created quite a stir in Oakland merchandising circles.

Most selling goes on in the fitting rooms at the rear. The salon is for showing new models, serving tea and establishing a receptive mood. How to make a small open space look like a series of inner sanctums? Gaidano made an abrupt change from entrance area to salon and set an eye-catching louvered screen to the rear, suggesting still more to come.

The entire budget, including fee, was $25,000. The architect's thrifty use of gray textured vinyl plastic to dress up the exterior ("Henry Kaiser used it on hard-top convertibles—why not the exterior of a building?") left him almost all the money to play with inside.
4. HOW TO MAKE SELF-SELECTION ELEGANT

Exterior design included fretwork above store. Building, by Architect Edward Tanner & Assoc., has three parking decks over store.

Decorative hat display, set up for self-selection, is so popular it takes full-time clerk to handle replacements and sales. Curved case has 158' of shelving on sports-wear side.

Plan provides central stock with 24 fitting rooms around
Like the smaller shop just preceding, this store has a salon and differentiated selling areas, but being bigger, the areas here need to be more decisive. This posed a problem because the client wanted to avoid the feel of a big store and to keep the sense of coordination that had already brought her success in a smaller shop. So departments, while given variety, were kept fluid. Whether you are in the salon with its formal and dramatic curved backdrop or in the breezy squareness of the sportswear area, you still feel you are in a single, comprehensible store. The central stock room is another device for reinforcing the position of "a shop that dresses the customer in the entirety." All items are available here for serving customers in the fitting rooms.

The client's other chief aim was to display her merchandise—and a lot of it—in a setting that would enhance it. She happily reports the customers can't keep their hands off it.

Volume in the new store has jumped an average of 68% over the client's former shop; a 25% increase would have justified the expansion. Cost was $49,618, including all furnishings.
Self-selection

in dress shop

halts at the salon

Special showing room for dresses and coats has long metal-frame bench welded to wall brackets, similar to shoe department seating on preceding page.

Curved wall in special showing room is narrow oak flooring. Fireplace, which owner reports is used often, has circular hearth of bricks on end.
5. ECONOMICAL CHAIN STORE

by an architect-builder team in which the architect wears the pants

The store at right is an example of the work of an architect-builder team that is unusual because it is a package operation right-side-up.

Instead of a building contractor that throws in a design service, this is an architectural firm that handles the rest of the building job too, keeping the over-all excellence of the product topmost in a professional way.

The firm started after Architect Kline Fulmer had arrived at some personal conclusions about the architect's role. "The architect's first duty is to his client," he reasoned. "The client does not understand the conflict between architect and contractor. He wants a good job and no arguments about blame if it is not good. As for the architect, I cannot see how his basic professional standing is lowered if he assumes responsibility for building too. On the contrary, he raises himself where he belongs, as master builder."

Fulmer explained his ideas to Bowers, architectural and engineering educated president of a construction company. They agreed to associate. Fulmer reports his role has worked out as he visualized it and that clients are as relieved with the simplicity (from their point of view) as he expected. An indication of how clients like the arrangement: the firm's business has doubled in the past year.

Each Fulmer & Bowers job is handled under a single contract, usually at a lump-sum price based on preliminary plans and negotiation. The lump price typically includes architect's fee, building cost and overhead, landscaping, sitework, any fees for outside consultation. It provides the usual allowances for unknowns. Typically the contract also includes a year's performance guarantee by the architects, fixing as their responsibility any difficulties from either faulty design or construction. If the client wishes, the firm also arranges financing.

Almost all of the buildings the firm constructs are designed by Fulmer & Bowers. On the occasional jobs they have not designed, they insist on passing architectural approval, as a part of their contract to build.

The store shown here was done for W. T. Grant Co., which reports it is well pleased with cost savings. This is the second store the firm did for Grant; it has been given several others under the same package arrangement, also a national warehouse and distribution center.

The store's principal features:

- Considerable display space inside the exterior wall for a distance 7' above the floor, precluding a continuous glass facade. Amber glazing (to protect merchandise from sun) above the 7' line pulled the divided entrances together and gave the whole main facade a "glow" because ceiling lighting is visible to pedestrians.
- Elimination of the usual variety-store plywood wall facing for shelving and displays. Instead keyhole strips are applied to furring strips nailed to the wall block.
- Economy of exposed lightweight aggregate block and brightly painted exposed steel bar joists in sales area.

Incedentially, Architect Fulmer has discovered that exposed interior steel for such buildings as warehouses need not be disfigured by the usual raw orange rust-resisting paint. He asked his steel supplier for something prettier, promptly got a light turquoise paint job giving equal protection.

Exterior of chain's retail outlet is governed by need for large amounts of display wall. Continuous high glazing keeps main facade brightly lighted and busy looking from pedestrian vantage point.

W. T. GRANT CO.
LOCATION: Millville, N.J.
FULMER & BOWERS, architects
LEWIS C. BOWERS & SONS, INC.,
architect-controlled builders

Design details, like this combination awning bar and light box, are made up in construction shops controlled by architects' firm.
SIX NEW STORES

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ororable analyses go to the real estate department which—and on a second favorable report—sends out a negotiator to find an investor willing to buy a selected site and build to plan, specifications and supervision furnished by the company's 3½-year-old architectural department. The investor gets representative plans and specs to study. As soon as a lease agreement is signed, the architectural department gets to work on site and building design, and its final plans and specs become part of the lease.

How important is the design? Six blocks from the store shown here is one of the company's earliest outlets, in makeshift existing space. Although the old store offers the same service, is longer established and in a more accessible location, the new store is doing 90% of the combined business.

When should a chain's architectural unit handle design?

An operation of this scope always needs a department in charge of building work. The usual question is, should the department do the full job including design? Architect Eugene Tannen, who heads Rayco's architectural unit, has found time, amid the rush of new projects, for some hard-headed thinking on this question and on administration and growth of company architectural units. Some of his conclusions:

Justification for a unit responsible for design exists if an operation is so specialized it requires an unusual familiarity with an unusual set of problems and experience, and if company design work is more economical than outside services. The two criteria are apt to go hand in hand because familiarity is responsible for most of the working-time savings. To determine the economy, Tannen compares standard alteration and new-work design fees for an annual work load against his unit's budget. At Rayco's average building cost of $40,000 per store, and an annual departmental budget of $90,000, he conservatively figures a design break-even point of 21 stores per year. Above that point, savings mount. At 30 stores, which has been an average work load (now stepped up to 40), the company is saved an estimated annual $98,000.

Administration must rest on clear charting of job responsibility for each member of the department, and for the department itself vis-a-vis other departments. "Sooner or later this must be done, either by reasoning it out or by bitter trial and error." The company architect's responsibility must not be narrowly construed. Just as any client gets the best from his architect if he calls him in early and has him participate in initial thinking, a company also gets its worth from an architectural department only if the architect participates in management thinking touching all phases of design and construction.

Growth or contraction of a company architectural department can stray away from the realities. With everyone including the department head on salary, there is not the direct and immediate connection between income and outgo which controls the size of an independent architect's office. To prevent either being caught with too light a department for the work load or too much staff, Tannen makes an annual projection of manpower needs based, in the case of Rayco, on an experience average of 223 man-hours per store. He projects this against the expected work load and also against possible increases or cutbacks in the program. With his projection approved, he has assurance of the help he needs; management has the assurance of a payroll geared to the work.

As for the dangers of stultification, Tannen sees too many still unsolved problems for his department to take a humdrum view of its job. A few of his design aims: more integration between sign and building; more use of swiftly recognized symbols in place of lettering. Self-service devices, such as recorded "sound designs" in the showrooms, to be activated by the customer, cutting demands on salesmen. More study of color for better visibility, aesthetic effect and maintenance. Sales—waiting room on stilts, leaving the entire ground level for parking and installation.

6. DRIVE-THROUGH UPHOLSTERY SHOP

is designed to sell and install auto seat covers while customers wait

Selling and installing automobile seat covers has become so much of a business that this store is one of 115 franchised outlets established by a national chain which is only seven years old and which has expectations of establishing still another 300 stores. This is an expansion problem with a vengeance. It has two main aspects: efficient layout and attractive design of stores; and spotting stores in the right places. The photographs and plan show thinking on layout and design.

To spot stores in swift and orderly fashion, management first selects an area for study by its market research department. Favorable analyses go to the real estate department which—on a second favorable report—sends out a negotiator to find an investor willing to buy a selected site and build to plan, specifications and supervision furnished by the company's 3½-year-old architectural department. The investor gets representative plans and specs to study. As soon as a lease agreement is signed, the architectural department gets to work on site and building design, and its final plans and specs become part of the lease.

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RAYCO MFG. CO. RETAIL STORE
LOCATION: Paramus, N.J.
EUGENE TANNEN, architect
STITES CONSTRUCTION CO., general contractor

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Administration must rest on clear charting of job responsibility for each member of the department, and for the department itself vis-a-vis other departments. "Sooner or later this must be done, either by reasoning it out or by bitter trial and error." The company architect's responsibility must not be narrowly construed. Just as any client gets the best from his architect if he calls him in early and has him participate in initial thinking, a company also gets its worth from an architectural department only if the architect participates in management thinking touching all phases of design and construction.

Growth or contraction of a company architectural department can stray away from the realities. With everyone including the department head on salary, there is not the direct and immediate connection between income and outgo which controls the size of an independent architect's office. To prevent either being caught with too light a department for the work load or too much staff, Tannen makes an annual projection of manpower needs based, in the case of Rayco, on an experience average of 223 man-hours per store. He projects this against the expected work load and also against possible increases or cutbacks in the program. With his projection approved, he has assurance of the help he needs; management has the assurance of a payroll geared to the work.

As for the dangers of stultification, Tannen sees too many still unsolved problems for his department to take a humdrum view of its job. A few of his design aims: more integration between sign and building; more use of swiftly recognized symbols in place of lettering. Self-service devices, such as recorded "sound designs" in the showrooms, to be activated by the customer, cutting demands on salesmen. More study of color for better visibility, aesthetic effect and maintenance. Sales—waiting room on stilts, leaving the entire ground level for parking and installation.
Division of building into workroom and showroom is achieved by midrib storage area and is marked by changed roof slope. Architect is now working on a more open scheme so waiting customer can watch work being done on his car.

Showroom display of seat materials replaces former shadow boxes, lets customers "touch." Building has steel framing and decking, concrete slab, block walls; cost: $40,000; $13.40 per sq. ft.
SHOWCASE FOR ELECTRICITY

this substation dramatizes its innards to

The West End of Vancouver, late a district of fine old town houses turned rooming houses, is now seething with new apartment, office and commercial construction. The B. C. Electric Co., taking a proud view of electricity's role in this boom, has given the district a dramatic Main Street landmark, a district substation that looks like a Fernand Leger painting come to reality.

Although artists like Leger have long recognized and communicated the electric excitement belonging to inhuman and antiseptic appurtenances of the age of power, the people who actually provide these things have persisted in hiding them from city consumers—usually in mausoleumlike fake monuments. Out in the country, where supposedly nobody cares about appearance, the equipment is exposed to the elements where it manages to look quite stirring in spite of ugly fencing.

In this case the architects, inspired by open plants on the outskirts of town, decided the equipment deserved both city exposure and an imaginative and articulated background of color. Their first design left the front open except for safety rails and screens. When it was decided glass was a more practical protection, hues were stepped up in intensity to counteract reflections. The finest effects are seen by homecomers in the evening when the full blast of the western sun hits the front.

Steel and glass front contrasts with older monuments of residential district, does not make usual attempt at "harmonizing." Structure is reinforced concrete with concrete partitions. Cost, excluding equipment, was $580,000; $9.70 per sq. ft.

Tapered floor slabs are cantilevered 8' to extend 18' forward of the property line. Mullion details are kept as slim as possible, none over 3'' thick.

Photos (below & top, opp.): Graham Warrington
DAL GRAUER SUBSTATION
LOCATION: Vancouver
SHARP & THOMPSON, BERWICK, PRATT, architects
B. C. BINNING, color consultant
VICTOR THOMSON, structural engineering
D. W. THOMSON and R. J. CAVE, mechanical engineering
B. C. ELECTRIC CO. (owner), electrical engineering
DOMINION CONSTRUCTION CO., LTD., general contractor

*become a stunning institutional ad*

Brilliant front gives selective, impressionistic view of substation's mechanics. Stacklike objects in center carry stepped-down electricity upward to regulators.

STAIRS AND CORRIDORS at front of building create lively pattern when viewed from street (below). Building is empty of humans except for occasional maintenance.
New tax bill to benefit industry

Choice of new depreciation systems on plant and property

a major change; chief intent of bill is to boost business

"Builders must absolutely make a restudy of their operations in the light of the new law. For the last six months we have been planning new projects with two sets of laws in mind. It's particularly important in the matter of reorganizations and mergers to make sure you are not in a tax trap." Sylvanus G. Felix, authority on builders' tax problems, is one of a number of experts who have urged builders to acquaint themselves with the new tax bill. Toward that end, FORUM presents a roundup of the provisions most applicable to the industry.

The comprehensive overhaul of federal taxes signed into law last month by President Eisenhower promises interpretive headaches for the industry. The new act is the first extensive rewrite of the country's tax structure since 1876 and the number of sins and omissions it seeks to correct are legion. But if the taxpayer can penetrate the text he will discover sizable benefits for himself and his business. Building should take notice. The law's effect runs the gamut of the economy—there are new provisions for everybody from inventors to working mothers—but a very large portion of its influence bears specifically on the activity of the nation's $40 billion construction industry.

It is evident that the prime concern of the legislators who composed the 875-page act was to boost business. So-called inequalities in the individual's income tax were straightened, but such action was minor compared to provisions intended to accelerate the economy. The Senate finance committee went on record that the new rules would mean "...economic growth, increased production and a higher standard of living." Obvious aim: prosperity without inflation. Building's part in the scheme of things was equally obvious. The ponderous and beneficent momentum of construction activity must be maintained; private investment in building—the control of which is the true province of the tax legislator—must be made attractive enough to keep capital flowing.

At least five important changes in the law demand the special attention of the realty field. These have to do with new methods for depreciation of plant and property; deductions for research; the status of retained earnings; the anti-mortgaging-out provision and various regulations affecting corporations.

Flexible and faster depreciation systems should act favorably on plant productivity and building. The most dynamic shift in policy is to allow faster write-off in the early life of a facility; second, to give the taxpayer a choice of write-off methods, including a combination.

The ordinary straight-line method of depreciation—under which a property was depreciated at a static annual rate figured by dividing its purchase price by its useful life—has been joined by two other methods: the declining-balance and the sum-of-the-years-digits systems. Under the declining-balance method (see chart) a company can now write off two thirds of the cost of a new building in half its life (as opposed to 50% of the cost, under the arithmetical straight-line system). The declining-balance method uses a rate twice as high as the straight line, but is applied only to the undepreciated balance of the price. As the years go by, the owner would be applying his percentage against a declining figure and would never get back all his investment—until he disposed of the property and wrote it off. Logical way out, approved by the legislators: to permit businessmen to switch to the straight-line method at any time.

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The sum-of-the-years-digits—the third method—provides for depreciation at a
rate figured by adding up the digits in the useful life of the property (for ten years, the total would be 55) and using this figure as the denominator for the annual fractional rate. First year: 10/55; second year: 9/55, etc. A comparison of the three methods on a ten-year facility costing $20,000: first year: $3,636 under SOD; $2,000 under straight line; $4,000 under declining balance; second year: $3,273 under SOD; $2,000 under straight line; $3,200 under declining balance.

The new rulings do not apply to projects started before Jan. 1 of this year except against costs incurred on those projects since that date. Nevertheless, for the future the new choice system of write-off promises increased activity in building. Such reduction of tax load in the early life of a property could mean the difference between projects shelved and projects built. In the matter of construction machinery, it could mean that contractors would find it preferable to buy equipment and replace it annually, rather than rent. It is also notable, in regard to tax amortization on buildings, that under the new act the owner has much more say in how long the amortization period shall be. In the past he was up against a strict decision from the Internal Revenue men, who were in the habit of fixing the period as long as possible (40 years was about the average useful life of an apartment building in IRS thinking) so as to keep taxes coming in over a maximum span. Now the property owner can take the initiative in choosing a period suited to his purpose (which may be a short span in the face of technological progress) and in applying it to different periods for different parts of the building—elevators or heating plant, for example.

Depreciation on a $1 million apartment building for 40 years, as figured under the old straight-line method and under a combination of straight line and declining balance:

<table>
<thead>
<tr>
<th>Year</th>
<th>Straight-line method</th>
<th>Declining-balance method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$25,000</td>
<td>$50,000.00</td>
</tr>
<tr>
<td>2</td>
<td>25,000</td>
<td>47,500.00</td>
</tr>
<tr>
<td>3</td>
<td>25,000</td>
<td>45,125.00</td>
</tr>
<tr>
<td>4</td>
<td>25,000</td>
<td>42,868.75</td>
</tr>
<tr>
<td>5</td>
<td>25,000</td>
<td>40,725.31</td>
</tr>
<tr>
<td>6</td>
<td>25,000</td>
<td>38,699.03</td>
</tr>
<tr>
<td>7</td>
<td>25,000</td>
<td>36,754.59</td>
</tr>
<tr>
<td>8</td>
<td>25,000</td>
<td>34,916.87</td>
</tr>
<tr>
<td>9</td>
<td>25,000</td>
<td>33,171.02</td>
</tr>
<tr>
<td>10</td>
<td>25,000</td>
<td>33,512.47</td>
</tr>
<tr>
<td>11</td>
<td>25,000</td>
<td>29,936.85</td>
</tr>
<tr>
<td>12</td>
<td>25,000</td>
<td>28,440.00</td>
</tr>
<tr>
<td>13</td>
<td>25,000</td>
<td>27,018.00</td>
</tr>
<tr>
<td>14</td>
<td>25,000</td>
<td>25,667.10</td>
</tr>
<tr>
<td>15</td>
<td>25,000</td>
<td>24,383.75</td>
</tr>
<tr>
<td>16</td>
<td>25,000</td>
<td>23,164.56</td>
</tr>
<tr>
<td>17</td>
<td>25,000</td>
<td>22,006.33</td>
</tr>
<tr>
<td>18</td>
<td>25,000</td>
<td>20,906.02</td>
</tr>
<tr>
<td>19</td>
<td>25,000</td>
<td>19,860.72</td>
</tr>
<tr>
<td>20</td>
<td>25,000</td>
<td>18,867.68</td>
</tr>
<tr>
<td>21</td>
<td>25,000</td>
<td>17,924.30</td>
</tr>
</tbody>
</table>
| 22-40| 25,000               | 17,924.30*               

*In the 22nd year the declining-balance figure actually drops to $17,924.30—less than what could be gained by shifting to a straight-line write-off of $17,924.30. The latter figure is therefore used for the remainder of the term.

Moreover, the burden of proof of what is reasonable and what is not has been put on the government. The condition has also changed to read "reasonably anticipated." A company will not have to show immediate plans for use of funds, can instead simply assert that it plans air conditioning or indirect lighting and be reasonably assured that IRS is not going to contest the case.

Anti-mortgaging-out provision was written into the bill at the instigation of Sen. Harry Byrd (D, Va.). It requires that any distribution of funds resulting from a mortgage on a federally insured housing project in excess of actual construction cost is subject to ordinary income tax rates. It applies to distributions after last June 18. There is wording in the provision which states that no implication should be drawn from the prohibition to affect or influence cases now in litigation.

Coming on top of the strict anti-mortgaging-out provisions in the housing act (AF, Aug. '54, News), the Byrd amendment can be expected to force most future rental housing developments to seek conventional financing. Ironically enough, conventionally financed developments will not be barred under the act from taking mortgage profits as a capital gain.

Corporate regulations written into the bill were among the most complicated. They covered a variety of conditions, worked benefit in some instances and tightened existing practices in others. One provision of interest to builders: a reworking of the law affecting stockholders in small corporations, who frequently faced tough tax sledding in the past when one stockholder died and the others had to meet the death taxes. Liquidation was often necessary. Now provisions have been broadened to permit tax-free redemption of stock to meet the estate taxes. Small corporations will also benefit under legislation which allows them in some instances to pay taxes as partnerships. There is a new tightening of merger procedure which places on the corporation itself the onus of deciding whether its purpose in acquiring a subsidiary is or is not to collect taxes. The test: whether or not the price paid for the subsidiary is disproportionate to its value. On the other hand, a company owning 80% of another (instead of 95%, as formerly) can now file a consolidated return. For big business—and big building—the best weapon was a fine-tooth comb.
### NEW CONSTRUCTION ACTIVITY (millions of dollars)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total new construction</strong></td>
<td>$35,256</td>
<td>$36,900</td>
<td>5%</td>
<td>$38,750</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Private, total</strong></td>
<td>23,877</td>
<td>25,250</td>
<td>6</td>
<td>26,200</td>
<td>4</td>
</tr>
<tr>
<td>Residential (nonfarm)</td>
<td>11,930</td>
<td>12,700</td>
<td>6</td>
<td>13,650</td>
<td>7</td>
</tr>
<tr>
<td>New dwelling units</td>
<td>10,555</td>
<td>11,200</td>
<td>6</td>
<td>12,000</td>
<td>7</td>
</tr>
<tr>
<td>Additions and alterations</td>
<td>1,108</td>
<td>1,150</td>
<td>4</td>
<td>1,250</td>
<td>9</td>
</tr>
<tr>
<td>Nonhousekeeping</td>
<td>267</td>
<td>350</td>
<td>31</td>
<td>400</td>
<td>14</td>
</tr>
<tr>
<td>Nonresidential building</td>
<td>5,680</td>
<td>6,300</td>
<td>11</td>
<td>6,450</td>
<td>2</td>
</tr>
<tr>
<td>Industrial</td>
<td>2,229</td>
<td>2,000</td>
<td>-10</td>
<td>1,800</td>
<td>-10</td>
</tr>
<tr>
<td>Warehouses, office and loft buildings</td>
<td>739</td>
<td>1,000</td>
<td>35</td>
<td>1,150</td>
<td>15</td>
</tr>
<tr>
<td>Stores, restaurants and garages</td>
<td>1,052</td>
<td>1,300</td>
<td>24</td>
<td>1,350</td>
<td>4</td>
</tr>
<tr>
<td>Other nonresidential</td>
<td>1,660</td>
<td>2,000</td>
<td>20</td>
<td>2,150</td>
<td>8</td>
</tr>
<tr>
<td>Religious</td>
<td>472</td>
<td>560</td>
<td>19</td>
<td>600</td>
<td>7</td>
</tr>
<tr>
<td>Educational</td>
<td>426</td>
<td>565</td>
<td>33</td>
<td>600</td>
<td>6</td>
</tr>
<tr>
<td>Hospital and institutional</td>
<td>317</td>
<td>345</td>
<td>9</td>
<td>400</td>
<td>16</td>
</tr>
<tr>
<td>Social and recreational</td>
<td>163</td>
<td>230</td>
<td>41</td>
<td>250</td>
<td>9</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>282</td>
<td>300</td>
<td>6</td>
<td>300</td>
<td>0</td>
</tr>
<tr>
<td>Farm construction</td>
<td>1,731</td>
<td>1,550</td>
<td>-10</td>
<td>1,500</td>
<td>-3</td>
</tr>
<tr>
<td>Public utility</td>
<td>4,416</td>
<td>4,575</td>
<td>4</td>
<td>4,500</td>
<td>-2</td>
</tr>
<tr>
<td>All other private</td>
<td>120</td>
<td>125</td>
<td>4</td>
<td>100</td>
<td>-20</td>
</tr>
<tr>
<td><strong>Public, total</strong></td>
<td>11,379</td>
<td>11,650</td>
<td>2</td>
<td>12,550</td>
<td>8</td>
</tr>
<tr>
<td>Residential</td>
<td>556</td>
<td>350</td>
<td>-37</td>
<td>300</td>
<td>-14</td>
</tr>
<tr>
<td>Nonresidential building</td>
<td>4,352</td>
<td>4,500</td>
<td>5</td>
<td>4,600</td>
<td>0</td>
</tr>
<tr>
<td>Industrial</td>
<td>1,771</td>
<td>1,600</td>
<td>-10</td>
<td>1,450</td>
<td>-9</td>
</tr>
<tr>
<td>Educational</td>
<td>1,728</td>
<td>2,100</td>
<td>22</td>
<td>2,250</td>
<td>7</td>
</tr>
<tr>
<td>Hospital and institutional</td>
<td>353</td>
<td>340</td>
<td>-4</td>
<td>350</td>
<td>3</td>
</tr>
<tr>
<td>Other nonresidential</td>
<td>500</td>
<td>550</td>
<td>10</td>
<td>550</td>
<td>0</td>
</tr>
<tr>
<td>Military facilities</td>
<td>1,307</td>
<td>900</td>
<td>-31</td>
<td>900</td>
<td>0</td>
</tr>
<tr>
<td>Highway</td>
<td>3,165</td>
<td>3,750</td>
<td>18</td>
<td>4,700</td>
<td>25</td>
</tr>
<tr>
<td>Sewer and water</td>
<td>861</td>
<td>1,000</td>
<td>16</td>
<td>1,050</td>
<td>5</td>
</tr>
<tr>
<td>Miscellaneous public service enterprises</td>
<td>201</td>
<td>225</td>
<td>12</td>
<td>200</td>
<td>-11</td>
</tr>
<tr>
<td>Conservation and development</td>
<td>830</td>
<td>725</td>
<td>-13</td>
<td>700</td>
<td>-3</td>
</tr>
<tr>
<td>All other public</td>
<td>107</td>
<td>110</td>
<td>3</td>
<td>100</td>
<td>-9</td>
</tr>
</tbody>
</table>

**Sources:** 1953, US Departments of Commerce and Labor; 1954-55 estimated by Architectural Forum.

1. Includes hotels, motels and dormitories.
2. Includes buildings of various types (power plants, telephone exchanges, stations, maintenance shops, warehouses, etc.) as well as power, telephone and telegraph lines and other nonbuilding construction.
3. Includes mainly buildings of various types (warehouses, barracks, theaters, hangars, school, etc.) as well as airport and other nonbuilding construction.
4. Includes buildings of various types (sewage plants, pump stations, etc.) as well as nonbuilding construction.
Construction has once again confounded the prophets of gloom by setting a new record high in 1954. And there is now every reason to expect that construction volume will climb still higher in 1955.

The 1954 performance has amazed the skeptics and surprised even the optimists. Last year, in face of a general business decline, an optimist was one who felt that 1954 construction would not fall more than 4% below the 1953 volume.* Dr. Colin Clark, the British economist whose gloomy predictions attracted so much attention at the end of 1953, predicted a 40% decline in construction activity during 1954.

Instead of a decline in activity during 1954, the expenditure for new construction—now estimated by FORUM at around $37 billion—will be 5% greater than the official 1953 total. And it should be remembered that the final 1953 total itself was about 2% higher than the preliminary figure below which 1954 was supposed to fall.

What happened was that decisions already made by the time the recession became evident in 1953 involved enough advance work to assure that there could be nothing worse than a slight decline in construction in 1954. As it turned out, the character of the recession was mild enough to prevent any serious modification in previous commitments; and, as confidence in the future was maintained, the volume of new commitments increased rather than declined. Noteworthy is the fact that the outlook for the present year is now even better than it was in June, when the Commerce and Labor Departments revised their 1954 forecast upward to $36 billion.

It might well be argued that, if construction can be so vigorously sustained in a recession year, it is bound to grow in a period when the forces of economic expansion are again reasserting themselves. The conclusion is sound; and there are more reasons back of it than are contained in the statement itself. Next year is sure to be another boom year, almost certainly a year of higher construction expenditures than 1954, with a probability of reaching a total close to $39 billion.

PRIVATE CONSTRUCTION will outdo 1954 by about $1 billion.

Residential building, and predominantly the building of single-family houses, will be the bulwark of private activity, accounting for most of the increase. Elsewhere, expansion and contraction will pretty well offset each other.

Industrial building will continue to sag, although the amount of decline will be somewhat less than from 1953 to 1954.

Commercial building will be at a high level, although the rate of expansion will slacken.

Religious buildings, private school and college buildings, hospitals and institutions, social and recreational structures, as a group, will advance moderately beyond 1954.

Public utility activity (railroads, telephone, telegraph, electric power and service companies, etc.) due mainly to demands for private power capacity, will hold close to its 1954 level.

GOVERNMENT CONSTRUCTION will exceed 1954 by about $900 million.

Highway construction will be the most substantial source of expansion, adding close to $1 billion to this year's high of about $3.7 billion.

School building will be the second strongest element in the increase in public construction.

Hospital and institutional building will increase only slightly. Four categories of government construction are expected to show less activity in 1955 than in 1954: public housing, industrial (atomic energy) construction, conservation and development, and miscellaneous public service enterprises.

Other types of public nonresidential building, including administrative buildings, will at least hold level with 1954. Sewer and water facilities will probably surpass this year's high volume by almost 5%.
The reasoning behind the 1955 forecast

Five factors offset the declining rate of family formation

Skepticism about the future of construction year after year has grown up from the simple conviction that anything so good could not last indefinitely and from the more serious assumption that the decline in the rate of family formation that began after 1950 must sooner or later depress the demand for construction. But, by now there should be sufficient evidence to indicate that other influences are offsetting this bearish factor:

1. **The continued high birth rate**, and the lowering of the death rate, with the effect of sustained population growth.

2. **The continued growth in personal income**.

3. **The upward shift in average income** and the great increase in the number of families with unsatisfied wants that are coming into an income range that permits them to make their demands effective.

4. **The increasing propensity to spend**, as confidence in the future is renewed.

5. **The increased security in old age**, permitting older members of the community to maintain their independent status and to remain as active participants in the market.

These five influences make for an intensification of the demand for construction, directly in the form of houses, schools, hospitals, churches and recreational facilities, and indirectly in the form of facilities for all the industrial, commercial and public activities that a vigorous and confident economy requires.

In addition to the underlying strength of the market, the federal government has provided seven sustained and stimulative influences

1. **The Federal Reserve Board and the Treasury** have produced a generally easy money condition, and, in particular, have made little or no demands on long-term investing institutions, leaving them wholly free to serve construction and other capital requirements. At the same time, inflationary forces have been curbed—"sound money made easy," as one observer has described the official line. Those policies may be expected to be continued during 1955.

2. **The Internal Revenue Act of 1954**, through its tax reductions for individuals and business organizations, should prove to be a broad stimulative force. Numerous specific provisions will be helpful to building organizations and investors in construction, particularly the more liberal and flexible depreciation arrangements, the longer period for loss carryover, the greater ability to accumulate surplus without incurring penalty, the more liberal treatment of research and experimental expenditures, and various provisions designed to improve the tax position of small business (see p. 128).

3. **The Housing Act of 1954** will make the easy money policy more effective by liberalizing the terms on which FHA may insure mortgages, and
will encourage the development of a trade-in house market and expand the demand for residential alterations and additions. (The stimulative effects of the Housing Act will be limited to houses built for sale. The net effect of the measure on apartment construction is likely to be negative. At some point, probably not in 1955, the "urban renewal" provisions should encourage a considerable amount of both public and private construction in the older sections of cities.)

4. The expanded highway program will in the main be responsible for close to a $1 billion boost in highway expenditures during 1955.

5. The "lease-purchase" plan (AF, Aug. '54) for the construction of federal administrative buildings, post offices, etc., may contribute $20 million or more to 1955's office building volume.

6. Federal aid for hospitals and schools together in 1953 amounted to more than $160 million and will be somewhat more in 1955.

7. Appropriations for military housing, providing a $75 million expenditure for housing and military installations, will help sustain the category of military construction.

It is doubtful that there has ever been a time when the force of government has been more broadly or effectively behind an expansion of construction activity. It is aimed to stimulate private building by activating the credit system and by concentrating on the types of public construction operations that in turn facilitate the carrying forward of many kinds of private work. The depression-born idea of public construction as a counter-cyclical device to compensate for deficiencies in the private economy has been replaced by the idea of public construction as a vital force in a vigorous private economy.

Finally, the industry itself is in a strong position, ready to meet its responsibilities

1. Material supplies are ample: producers of building materials and equipment have ample capacity to supply without strain all the products that building activity can possibly demand. Shortages and necessitous substitutions are matters of history rather than current concern. The result is an industry able and eager to serve.

2. Technological advances are many and great: all through the construction industry, from design to manufacturing, a continuous technological change is taking place, creating obsolescence in the old as it provides heightened style appeal, more comfort and convenience, and greater serviceability and desirability in the new. This great movement represents industry's response to the expanded market arising from the income revolution, and is giving a powerful boost to construction demand.

3. Prices are stable: during 1954 building costs have been remarkably stable. Wage increases have been offset by moderate declines in materials prices, greater efficiency in building operations, and stiff competition among sellers. This same situation will prevail during 1955, affording a dependable base for planning and ordering.

On the basis of anything that can now be foreseen, 1954 will end with construction activity more buoyant than it was at the end of 1953, and 1955 will begin with momentum high and a prospect of carrying through to the ninth of a succession of new annual records.
This campus group at six-year-old Brandeis University in Waltham, Mass. breaks a long tradition. It may well start a new one.

The old tradition is the single university chapel, which offers the hospitality of the founding faith to congregations of other faiths. At Brandeis, a nonsectarian university founded by Jews, the host-chapel concept was questioned as soon as chapel plans began to be seriously discussed three years ago.

"It is our feeling that worship is very much a matter of mood and is not limited to the words spoken or the ceremonies performed," says Dr. Abram L. Sachar, university president. "Protestants who worship in a Catholic chapel or Jews who worship in a Christian chapel, while grateful for the hospitality, are never really at home and the mood they seek is never properly evoked."

Nevertheless, this scheme for "three religions, separately together" did not burst forth, fully clad like Minerva, from anybody's brain. It has a history which happens to illustrate unusually clearly the common problem of transferring an abstract concept into architectural form.

The first tangible idea was to provide a frankly nonsectarian chapel with revolving stage, as has been done by the armed forces.
For the first time, a chapel group for three major faiths

and on a few campuses. Architect Max Abramovitz sums up the two objections he and the university administration found: "They are gadgety in a place where gadgets do not belong. And they are watered down to the least common denominator." Since the university was specifically trying to provide for three extracurricular religious groups which were already an active and enthusiastic part of campus life, "watering down" seemed wrong.

Then came the idea of combining three separate chapels in one building—-with the phenomenon of seeing that ideas which sound perfectly reasonable in words may show themselves unsound in visual form. A model of three chapels in a row-building inescapably conveyed the idea of stores, of shopping for a religion. A model of three in a stack carried a look of hierarchy. Groupings of one alone and two together conveyed the idea of two also-rans. But when Architect Abramovitz came up with the final scheme—which includes an outdoor lectern for joint services like Thanksgiving or the Baccalaureate sermon—it was plain that abstract concept and concrete form were at last in harmony.

When construction is finished at midterm this year, the chapels will be turned over to the three student religious groups. Students and alumni are already eagerly asking if they may be married in the new chapels.

None of the three will carry an exterior designation. Instead the Catholic altar, Jewish ark and Protestant communion rail will be visible through the glazing facing the pool promenade. Differences among the three are as interesting as their similarity. Abramovitz explains: "The Catholic chapel is rounded and enclosed, to envelop the ritual of the mass and to help meet a requirement for only a low level of lighting (6 to 10 foot-candles). The Protestant chapel has a forthright trapezoidal shape, the walls focusing toward the communion table. The Jewish chapel shape curves toward the ark; in form, it lies between the two others."

All will have dark, floating, side-lighted ceilings to destroy box-like feeling, and top light (stepped down for the Catholic chapel) to highlight the sanctuaries and counter end light.

Roof framing is wood on brick piers; walls are block faced with brick inside and out—on the outside with a handsome cream-and-brown speckle. Mullions are steel protected with wood. Cost of the three, including fees and utilities, is $242,714; $30 per sq. ft.; $1.36 per cu. ft.
NEW YORK STATE VETERINARY COLLEGE,\nCORNELL UNIVERSITY
LOCATION: Ithaca, N.Y.
ISADORE & ZACHARY ROSENFIELD, architects
C. J. WHITE, state architect
OTTO J. TEEGAN, state university architect
JOHN D. DILLON, mechanical engineer
GENERAL ENGINEERING ASSOCIATES, structural engineers
W. E. O'NEIL CONSTRUCTION CO., gen. contractor
WILLIAM A. HAGAN, veterinary college dean

Overlooked in the general building boom has been a surprising increase in new schools of veterinary medicine; in the US seven of the 17 veterinary schools have been established since the war, and abroad it looks like a big decade or two ahead for such institutions because they are tied up with efforts to increase food.

Typically, veterinary schools have an opportunity that comes seldom to schools of human medicine: the chance to plan school and teaching hospital at once and as one integrated whole. Usually the opportunity is muffed because the planners stick to the old concept of these institutions—a self-contained classroom and research building convenient to a random collection of barns.

In this case full advantage has been taken of the chance to plan a truly integrated plant, and Cornell's 200-student school—long famous for its research and pioneering of new techniques—will now undoubtedly become an international pilgrimage stop for study of its physical plant. (However, thinking in some "backward" areas is already ahead of the US on the subject of integrated facilities for regular medical schools and veterinary medicine schools, to handle instruction, student work and research that overlap or duplicate.)

The most unusual feature of Cornell's new school is its hospital and clinic for large animals, which is surprisingly analogous to a hospital for humans. The diagnostic and treatment core adjoins the preclinical, basic science school building (see plot plan and rendering, opposite, and plan, overleaf). To the east of the hospital core lies the principal hospital corridor, a tanbark-surfaced, clerestory-lighted breezeway fully glazed at both ends. Across the breezeway are five sick barns, analogous to medical and surgical wards; beyond these are the feed and bedding service portions of a hospital. The dairy (maternity ward) and bull barns are for teaching animal obstetrics. Beyond the barn group are convalescence pastures. The central breezeway, which has a sprinkler system to keep down tanbark dust, serves both as a passage from wards to the hospital core and as a diagnostic runway for studying movements of injured animals.

The small-animals' hospital and clinic are contained in one building; the core adjoins the large-animals' core to make one L-shaped clinical building. It has a separate and very pleasant public entrance for persons bringing in pets for treatment.

Construction of principal buildings is reinforced concrete two-way floor system, with slag block fillers spanning from transverse bent to bent. Crosswise beams are cantilevered (see section, left) and there are no cross members between bents other than the floor system itself and the shallow spandrel beam. Masonry spandrels could have been omitted but were a state and university requirement. Wall facing of red and buff brick and column facing of white rough-sawn marble is in harmony with the white farmhouses and red barns of the local countryside.

Barns are concrete block pier construction supporting transverse steel beams with one-way concrete slab.

The contractor saved time and money by erecting the concrete structure with the aid of reusable, adjustable lattice-steel shoring (AF, Dec. '53), a shoring system relatively new in this country. Construction is scheduled for completion next year. Cost: $5,488,581 including Group I equipment and excluding architects' fee; $23.47 per sq. ft.; $1.42 per cu. ft.
a prototype veterinary school

Model and site plan show how basic science building with classrooms and labs is joined by important autopsy and receiving link to big clinical area. Small animal hospital is in foreground, large animal hospital is at the right.
Third floor houses departments which require neither presence of large animals nor quick and easy access to autopsy for study. Resident suites at end of small animal hospital serve both this unit and large animal hospital.

Second floor (shown in detail, right) has large animal hospital and all other departments needing close touch with autopsy study. Note grade entrances for animals. (Barns are not shown here; see plot plan.)

Ground floor has most preclinical units needing large animal egress. Animals are brought into auditorium at rear of stage. Poultry disease unit on this floor and mastitis unit on top floor are non-scholar state projects.

Plan closely knits veterinary school with teaching hospitals.

Planning this complex school-hospital group had to solve two main problems: 1) the need to move a lot of large animals into a lot of places at grade level, and 2) the need to get a lot of people from a lot of different departments into the autopsy suite fast, when interesting study material turns up.

The problem of animal egress required a horizontal plan which was also most suitable to the farm and campus countryside. The architects took advantage of a 28' slope from east to west to give plentiful grade entrances on two of the three floors. Animals can be walked into the auditorium, a large physiology demonstration-lecture room and laboratories on first-floor level; into all clinical portions of the second floor, including a clinical demonstration room which, like the auditorium, will be much used by farmers' groups as well as by students.

The problem of quick human egress to autopsy was solved by placing this suite on the main, second-floor level between the L-shaped clinical elements and the F-shaped basic science building, then allocating to the second-floor adjoining leg of basic science the preclinical departments most concerned. Although autopsy is a central element, note how open passages separate it from other buildings. Note also its two grade levels.
Inside Philadelphia: a new kind of new town

In a large steak-shaped stretch within the city limits of the third biggest metropolis of the US, Philadelphia, is an amazing tract of real estate: almost 3,000 acres with a lower population density than most small towns.

It is Eastwick, population 19,300, density 6.4 per acre—the target of a redevelopment program for which Henry Churchill has submitted a new kind of redevelopment plan, one that will give birth to a “new town” within the city, a well-defined living-and-working area with its own balanced residential districts and industrial base—but a community which does not cut its ties with the mother metropolis.

When completed Eastwick will have a population of 35,000 in 4,679 dwelling units. It will represent a gross investment, private and public, of close to $350 million. It will have drawn in 17½ million cu. yd. of fill to turn its swampy areas into a handsome approach into Philadelphia from the city’s sleek new airport. It will have provided important new industrial sites for the city, within the city. And it may well have changed the area from a tax drain to a gilt-edged investment returning $3 million per year.
Henry Churchill's realistic approach to Eastwick

"A neighborhood is a sociologic concept and I don't think you can plan an area in that sense." What his plan implies is the larger reality of the city into which Eastwick will fit.

The plan areas into which Churchill is slicing the parcel are defined but not independent. He is providing settings for the areas to create themselves, rather than pat solutions.

There will be four residential areas plus three industrial areas, plus parks and wild life preserve. Each living district will be surrounded by convenient arterial roads, but not penetrated by them; each will have its own schools and shopping center for daily needs; density will be midway between city and country standards; about 13.8 families per gross residential acre. Areas can be developed one by one (see diagram upper left) and probably will start with 1 in diagram.

After the city, with the help of federal aid, condemns and improves the land, it will be resold to private developers for completion of the projects. For estimated cost, and sources, of the original investment, see p. 143.

"Reading Railroad"

"Pennsylvania Railroad"

"Commercial centers"

"Civic center"

"Heavy industry zone"

"Light industry zone"

"Existing heavy industry"

"Wild park"

"Bird refuge"
Drainage and fill are big problems in the 3,000-acre site, now replete with swamps, sunflowers, open sewers and many rundown houses. Accumulation of fill already has begun, pumped from Schuylkill and Delaware River dredging operations 10 mi. away. This fill is almost entirely coal dust, dumped in the river by industrial plants upstream over the course of many years. A frosting of topsoil will be necessary over it to nurture the green environment planned for the redevelopment project.

Air view of area. Section nearest camera will be the home of the bird sanctuary. Airport is to right. Smaller area outlined approximately inside tract is shown upper right in preliminary plan for development.
Mixture of row houses, apartments and detached houses will be the solution for residential areas in the redevelopment area. Row houses will be 18' wide instead of the usual 16' in Philadelphia, accommodating two bedrooms with views front.

Twelve targets for the Eastwick planners:

1. A factory offering employment within 3/4 mi. of every dwelling unit.

2. A street pattern with only a half-dozen through-street limited-access highways; local streets with slow, safe traffic.

3. Express bus service on half the expressways, cutting the present running time of the buses from one end of the district to the other from 18 minutes to 7.

4. A park or grassy recreational area within 3/4 mi. of every house.

5. All schools located in parks, with footpaths connecting the schools in each plan sector.

6. A mixture of housing types (see scheme above): row houses, single houses, semi-detached houses and garden apartments, with a few high rise apartments variegating the skyline.


8. Offstreet parking or garage facilities for every dwelling unit, including community garage facilities to be privately built, then turned over to the Philadelphia Parking Authority; also parking bays at the block ends.

9. No rights of way less than 40' wide, with paved areas of smallest minor streets cut down to 20' widths, to be flanked by side planting strips of 10' on each side.

10. A major shopping center in the heart of the district designed primarily for access by rapid transit (but with parking facilities too). This will stand at the main bus interchange. Provision for local shopping also will be made in each plan sector, plus provision for some corner stores.

11. Variety in solutions. Three different architectural firms (see credits) are developing diverse layouts for the residential districts to avoid monotony.

12. A coordinated industrial development in the industry-zoned areas—large-scale and small industrial parks.

Land allocation

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<tr>
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<tr>
<td>Commercial</td>
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<td>Schools (public and parochial)</td>
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<td>Parks and open space</td>
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<td>Major roads and highways</td>
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Density

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<td>Future population: 12,600 families (35,360 people); 8,600 units for sale; 4,000 rental units; average density per gross residential acre</td>
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Costs

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<tr>
<td>Site improvement</td>
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<td>Demolition, relocation, appraisals, etc.</td>
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<td>Resale value of land</td>
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<td>Net project cost</td>
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Financing

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<td>Federal capital grant</td>
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<td>Local participation</td>
<td>25.</td>
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<tr>
<td>(of which $22 million will be in noncash grants in aid)</td>
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ARCHITECTURAL FORUM • SEPTEMBER 1954
A SOARING WING OF STRUTS

Space-frame hangar with 150' overhangs is built with thousands of identical steel pipes, a set of ingenious connectors and a single assembly tool—the hammer

Konrad Wachsmann, professor of advanced building research at IIT's Institute of Design was project director for this tubular steel structure.

Side view of 20'-long model represents 805' of finished structure, shows four three-story supporting towers, each designed to carry two 50' x 90' mezzanine floors of shop and office space.
Out of the Chicago Institute of Design the building world has come to expect fantastic projects which look far into the future and sometimes turn out to be intensely practical.

It was there that Mies van der Rohe designed his first American buildings.

It was there that Buckminster Fuller got his first big student following and put together his first geodesic domes.

It was CID's Architect Konrad Wachsmann and Harvard's Walter Gropius who worked out the prefabrication technique for General Panel Corp. And it was there that Wachsmann and Engineer Paul Wiedlinger in 1946 developed their flat-topped, widely cantilevered aircraft hangar made entirely out of standard tubular steel framing members held together by highly flexible connectors and adaptable to virtually any structural situation.

Wachsmann's latest tour de force, a refinement of the earlier fretwork hangar, is a promising proposal for a universal framing system. It is a winged structure based on a 10' module of 3" and 6" steel pipe held together by forged swivel connectors that are quickly locked into place by two blows of a hammer (no other tool is required to erect the entire structure). The hangar is delivered to the site in 20' x 30' frames folded for easy transportation. Each section is demountable and thus can easily be replaced.

In conventional buildings the form of the shelter is obscured by all the things that hold it up. Here, structural support is kept to a minimum. The sheltering wings of the hangar are so dominant as to produce almost a new architectural expression—the wide-span cantilever.

Although this particular hangar, developed after two years of research under government contract, has been indefinitely postponed with the cutbacks in military spending, it is probable that such extensive cantilevers will be adapted to a wide variety of buildings in the future.
This spectacular integration of engineering and architecture is the result of meticulous study into the type of standard structural module that might serve the widest number of building types. Though the universal tubular steel space frame finally selected is applied to a huge aircraft hangar, the system is designed to be equally adaptable to any other building requiring large, unobstructed floor areas.

Requirements of a universal framing system: uniform, mass-produced parts that can be prefabricated in large sections for speedy erection and yet can be easily transported; simple connections to facilitate erection by unskilled labor; flexibility; demountability; lightness; durability; low cost.

Solution: tubular steel framing members that are mutually supporting in all directions through the use of ingenious forged clip connectors. These connectors can join as many as 20 members in any desired angle at any one point and are locked with only three wedges simply hammered into place.

At the factory, five 30'-long, 6"-diameter pipes are joined with swivel connections to 10'-long, 3"-diameter pipes to form a 20' x 30' framing section that can be folded for transportation (see photo, p. 148). In erection this section, weighing 234 tons, is hoisted into position and braced by further 3" diameter pipes, 10' and 14' long, placed transversely and (continued on p. 174)

For connector details see pp. 148-149
Triangular edge frames carry structure down from 75' height of cantilever edge to 40' height of rolling doors which will surround hangar. Cladding consists of prefabricated curtain-wall panels and built-up roof deck.

**frames to simplify erection sequence**

Tension cables transmit loads to three points of structure through a tripod base piece.

Photos: Harry Callahan; Richard Nickel

Fixed upper walls above rolling doors are pierced with 30' Venetian blind arrangements where necessary to allow entry of huge tailplanes.

Four-strut base supports, are 100' apart, each set in concrete foundation slab and designed to withstand both compression and tension forces.
Prefabricated frames, spanning 20' x 30', are shop-welded with swivel connectors so the frame can be folded for easy transportation. In erection, the frame is opened up and the 6" main struts positioned.

Supplementary struts are wedged into place to bind the frame into a continuous structure.

Space-frame hangar's ingenious connectors join up to

Three sizes of pipes and 13 forgings are required for this tubular hangar structure. In all, there are 7,565 standard joints.
Typical connector looks complicated, yet is fastened by three wedges simply hammered into place. Two men can set and lock each joint in less than five minutes.

20 struts at any point and at any angle
ROUND TABLE REPORT:

How to cut the cost of steel framing

Reinforced concrete has been displacing steel framing in more and more buildings up to 20 stories tall. (In taller buildings concrete columns on the lower floors occupy too much space.) The reason is cost.

If the cost of steel construction is to come down, it will require not only improved techniques by the steel fabricator and erector, but also collaboration with the producer and erector of the materials used to fireproof the steel and enclose the building. This collaboration cannot be effective without the active interest by the architect, engineer and client.

With this thought in mind FORUM invited 19 representatives of various segments of the building industry to discuss possible ways to reduce the cost of steel framed buildings.

Two major accomplishments came out of this round table:

First: agreement on the 12 basic steps necessary to lower the cost of steel framing (right).

Second: collaboration by several panel members on the development of a spandrel truss which promises to save money (pp. 152-154).
We steps toward lower-cost steel framing

1. Some of the biggest savings would be achieved if architects would design their buildings to a relatively small number of standard bay dimensions instead of making every building a tailor-made job.

2. Conversely, the steel fabricators and erectors could speed up the general use of such standard bay dimensions if they would "substantially lower prices for steel framing in those standard dimensions below those for steel framing in special dimensions." As long as architects and their clients think the bids on their steel will be the same whether they use standard dimensions or not, few architects are likely to do much about standardizing bays.

3. Welding has made such progress that on many and perhaps most buildings it should permit savings of at least 15% on the steel structure. Some of these savings from welding will come from continuity of design; some will come from cheaper connections.

4. Low buildings can often be bolted together with ordinary bolts much cheaper than they can be riveted together, and taller buildings can often be bolted together with high tensile bolts cheaper than they can be riveted.

5. Very substantial savings on the fireproofing of the horizontal members can be achieved by fireproofing the underside of the members with a continuous ceiling of lightweight perlite or vermiculite gypsum plaster attached to the underside of the beams. This type of fireproofing has met the standard fire tests and is approved in every major code.

A major factor in the economy of this type of fireproofing lies in the very substantial reduction in the weight of the floor slab and the fireproofing itself, thereby permitting the use of lighter structural members.

6. For vertical members and some others on big jobs the most economical type of fireproofing is perlite or vermiculite gypsum plaster sprayed on with a plaster pump which can now be used in almost all parts of the country. (Notable exceptions: New York and Philadelphia.)

7. Promising field for further study is the combination of steel vertical members with concrete horizontal members or concrete slabs.

8. Further substantial economies can be achieved with the use of corrugated steel floor-forms with built-in reinforced bars.

9. To meet the increasing stiff competition from reinforced concrete, most of us consider it important that steel construction should be allowed to make use of higher working stresses. Since the steel is rolled under well-controlled shop conditions, there is no need for such a high safety factor as is now required.

10. Too few architects and engineers are taking advantage of the research being done by the steel industry to develop more efficient designs. This failure to use the research already available is not calculated to spur the steel industry to the further research that is still so necessary.

11. The increasing use of curtain wall construction suggests that careful study should be given to the development of deep spandrel trusses like those in the General Petroleum building (AF, May '49) which could do double duty as structural members and as support and reinforcing for the curtain wall backup. When all buildings had heavy masonry walls, such spandrel trusses offered no such advantage as they offer with curtain wall construction. This advantage will, if anything, increase with the present trend to deeper spandrel walls where strip windows are being reduced in height to as little as 4½'. The cost of fireproofing such spandrels is being substantially reduced by the use of sprayed-on-perlite Portland cement and gypsum plaster fireproofing. The same thickness of perlite cement plaster that is required for thermal insulation will in most cases do double duty in fireproofing steel. (See p. 152.)

At least one member of the round table is prepared to offer a flat bid of $1 a sq. ft. for a backup wall of perlite 4" thick so constructed.

12. Clients should insist on paying their structural engineers enough to make it possible for them to do a really bang-up job instead of making them design on a fee too small to cover the cost of doing their best work. Most of us believe the engineering standard for structural design in steel has lagged far behind engineering standards for structural design in concrete and has failed to take advantage of much research which would permit more economical steel framing. For example, modern design methods which effect economy through taking cognizance of continuity and frame action are less often applied to steel framing than to reinforced concrete.

The client who skimps a few thousand dollars on engineering design may pay an extra $100,000 for his frame.
The wall construction methods were worked on jointly by:

COMPANIES AND ASSOCIATIONS
Allegheny Ludlum Steel Corp.
J. B. Henry Jr.
Ceco Steel Products Co.
Frank H. Kitchell
E-Z-On Co.
Lloyd H. Hobson
Michael Flynn Manufacturing Co.
Leonard Sier
Gypsum Assn.
Lloyd Younger
Huntley Blaster Co.
Dorell P. Huntley
Marmonco Inc.
W. J. Kupre, engineer
Penn Metal Co., Inc.
William Taylor
Reynolds Metal Co.

ARCHITECTS
John Hancock Collender
Holabird & Root & Burke
Robert McLaughlin
D. Clarence Wilson

CONSULTING ENGINEER
Paul Woldinger

The new spandrel truss wall shown on succeeding pages has been responsibly priced at $2.41 per sq. ft. of wall complete compared to a conventional spandrel wall at $4.84 and up, but the truss is something other than a new engineering design pulled out of a hat.

More important even than its economy is the method of arriving at it—for this truss is an industry product. Forum sponsored it because there are now so many building parts that are “nobody’s baby”—the responsibility of no one manufacturer—they can be solved only by cooperation across the industry.

What the truss does: it unites in a short set of easy operations the functions of the spandrel beam (which holds up the floor and has to be encased in fireproofing concrete), the separate curtain-wall frame holding wall and windows, the outer facing and interior finish, the separate thermal insulation. The truss spans from column to column. It carries its own mullions (as lateral stiffening), its own metal facing. The fireproofing can be sprayed in from behind the face with a plaster pump.

Additional advantages: 1.) Weight can be up to one third less than a spandrel girder to carry the same load. 2.) Facing of metal can be lightened in gauge because the fireproofing reinforces it. 3.) Stiffness of the frame is greater because horizontal structural members cross verticals at shorter intervals—the maximum is about 4’ to 6’ instead of 12’. Resistance to earthquake or blast is similarly improved. 4.) Shop application of the metal face can reduce field labor and enclose the building as columns and trusses are placed.
INDUSTRY TRUSS NO. 1, designed by Macomber, Inc. (New York office) spans from column to column, acts 1) to support floor, 2) to support outer metal face, 3) to allow fire backup to be sprayed to inner side of face, 4) to hold lath for plaster finish. "Mullion studs" run through truss from floor to floor to take lateral loads like windbracing, are slip-jointed at top so vertical loads will not buckle them. Cost of truss is less than cost of a 14 w.f. 34 girder to carry equal load.

INDUSTRY TRUSS NO. 2, designed by Ceco Steel Products Corp. (Hillside, N.J. office). "Structural mullion" coped and field-welded to truss to take lateral loads; top connections are slip-jointed. Cost of truss is less than cost of 14 w.f. 34 girder for equal load.

How the industry truss was worked out

For many years the fire underwriters and codestes had put a road block in front of the curtain wall, preventing full realization of its intrinsic economies. Every time FORUM reported an advance it was by detour. (Detroit's Federal Reserve Bank in marble, GM's Technical Center in porcelain enamel, the Republic Bank in Dallas in aluminum, were examples all done where codes were nonexistent or interpretations especially favorable.)

FORUM wanted an economical type that would pass on a two-hour fire-test basis anywhere. This meant that any facing that could not take the test must have a backup. Hitherto the backup had been blamed by producers of facing materials for the excessive cost of two-hour curtains; conversely the producers of lightweight concrete aggregates had blamed the high cost on too heavy metal facings.

FORUM thought progress might best be made by bringing these conflicting producers together.

Other companies might have been used; other materials could have been eligible; other prices might be quoted for the same materials; but a pilot project was needed, so FORUM started it subject to these qualifications.

A spandrel truss seemed to offer the best chance because it could support the fireproofing and the face of the wall in the act of supporting the floor. As a dividend it would also carry the windows.

Preliminary designs obtained from Macomber, Inc. and Ceco Steel Products were both priced under the spandrel beam they would replace—even if the beam were not charged with its necessary fireproofing.

Then Allegheny Ludlum Corp. reported that a thinner, rigidized, stainless steel (.01") could be used provided lightweight concrete were applied directly to its inner face. Stainless steel would thus come down to 46 per sq. ft. of spandrel wall surface.

And, finally, the study began to take on speed when it was found that the lightweight backing could be sprayed on—indeed the plastering industry was actively promoting an aluminum-faced and perlite-cement backed wall produced with a McNulty plaster pump. This had already been used on a group of school buildings, in connection with a stud wall by Penn Metal Co. and panels by Reynolds Metal Co. designed to be backed by this kind of
CONVENTIONAL STRUCTURE involves two full separate frames. They cost more than one integrated wall:

Costs:  
- .58 backup
- 6.50 exterior face (cast aluminum)
- $7.08
- .96 girder
- .87 fireproofing
- $1.83
- $8.91 grand total

PROTOTYPE example of lightweight framing suited to the spraying of perlite backup to inner side of wall facing: Nashville high school, D. Clarence Wilson, architect. Contracts have been let for 18 low-cost schools by Wilson using similar lightweight steel construction.

The school wall that opened the way toward the development of the industry truss was not a truss at all but a stud wall (photo above); and its authors were ready to endorse it for multi-story use, too. This would be practical and economical with the proviso that the floor must be cantilevered. And apart from the fact that cantilevering is sometimes not desired for planning reasons, FORUM had meanwhile obtained another analysis showing that a cantilevered floor slab construction might cost more than a bar-joist supported floor used with the truss.

Accordingly the pilot design ended with a truss, or rather the two versions of spandrel truss construction whose details and advantages are presented on the preceding pages. The low cost of pumping on the backup made possible a thinner face; the metal faces made possible the use of plaster backup in place of masonry; the combination of the two with steel studs put plaster back in the competitive market.

An incidental problem is stiffening the top chord of the truss to resist bending from wind loads or compression. Mullions between every pair of windows act in FORUM’s two industry designs to transfer lateral loads to the floor slab. Another, more conventional, way would be to make the top chord of the truss a structural channel.
STEP 2. School wall redesigned for multistory cantilever construction

The same wall as (1) could be adapted to multi-story construction using either cantilevered or spandrel girder construction. As cantilever construction its cost would be:

Costs: 
- .42 framing
- .59 insulating concrete and plaster
- .73 exterior facing (aluminum)
- .05 extras

$1.79 total

STEP 3. Redesign for multistory spandrel girder construction

Substituting spandrel girders more than doubled the cost, because the girder and its fireproofing cost more than the wall and its facing:

Costs: 
- .42 framing
- .59 insulating concrete and plaster
- .73 exterior facing (aluminum)
- .05 extras

$1.79 girder

$3.62 total

Important note: cost in step 2 covers curtain wall only. Step 4 includes support for bar joist floor system which costs less than a flat slab. Therefore ultimate cost of truss and floor in step 4 is less than the wall and floor in step 2.

STEP 4. Redesign substituting truss for spandrel girder

By substitution of a truss which carries the floor load and simultaneously supplies the framework to carry the backup for the facing. The cost of wall and support for floor is cut by one third:

Costs: 
- 1.04 framing (truss)
- .73 finish

$2.41 total

Complete breakdown of steps 1 and 2 (above) showing analysis used

Cost based on a 15' x 10' panel using 2' x 2' finished aluminum panels. Figures by Huntley Blazier, June '54, East St. Louis area.
The use of 28'-0" column spacing will allow for 14', 21', 28', 32', 38' wide stores, without undue loss of space by using standard aisle and fixture sizes.

The following diagrams show fixture layouts for the various store widths.

By using the 28'-0" spacing and narrow walls between stores it is possible to have flexible areas that can be enlarged or broken up as the demand warrants.

**FIXTURES:**
1. Back fixtures.
2. Showcase.
3. Wall fixture - shelves or hanging.
4. Counter or Showcase.
5. Island fixture.
6. Free standing fixture, Table or Double Hangrack.

**NOTE:** Every other store is shown hatched.

**SUGGESTED COLUMN SPACING & FIXTURE LAYOUT FOR BUILDING TO BE SUBDIVIDED INTO SHOPS**

**DEPARTMENT STORE BAY SIZES:**
A column spacing of 28'-0" column spacing has proven to be the most economical span for Department stores. It still permits good fixture layouts and aisles even when diagonal circulation is required.

**NOTE:**
All heights subject to local codes.
S.C. = Suspended Ceiling — varies according to use (Air Conditioning, Ductwork, Pneumatic Tubes etc.)

**RECOMMENDED STORE HEIGHTS**

Daniel Schwartzman, Consulting Architect

Scales: 1/16" = 1'-0"
Plastic gaskets, and fireproof backing, help solve metal wall problems

Metal wall panels have graduated from the filling station and the hamburger stand and are now coming into general use for all types of building. New problems have come with the new wall. Answers to some of these problems are furnished by two new materials which have been developed by a leading fabricator of metal wall panels.

**Perma-Joint** is a permanent gasket-type joint sealer which eliminates the need for caulking. Caulking, the traditional material for sealing joints where there is possibility of movement, has not proved satisfactory for metal walls with their high coefficient of expansion. **Perma-Joint** is an extruded polyvinyl gasket, consisting of two oval tubes connected by a flat strip. It is applied in the factory, by means of an adhesive or by brass grommets, to all four edges of the metal panel in one continuous piece. When the panels are placed in the building, the gaskets are under constant compression and form a tight nonleaking joint. The little hole remaining at the point where four panels meet is filled on the job by a special vinyl plug made for the purpose. Price: approximately $15 per sq. ft. of wall.

**Porock** is a lightweight, fireproof material which is poured into the back of the pan-shaped metal panels while they are still in the shop. It sets up in 20 minutes and dries overnight, so that no great stock is tied up for lengthy curing periods. The porous material, made of "hydrocal, perlite and other materials," is fireproof and has a K factor of 0.75 Btu. Although no formal fire rating has been obtained as yet, the informal test illustrated is impressive. The metal face was continued on p. 200
How do you make sure that a piece of architecture stays a piece of architecture after the client has got in? How make sure it stays not only workable but nice?

We have all seen the houses, schools, stores, showrooms, even the churches and town halls, whose pleasant aspects inside and out began to be violated the moment the key was turned. We have all seen still others whose best-thought-out working provisions were uncomprehendingly neglected or misused.

Our literature talks about keeping up maintenance but never about keeping up architecture. Architecture's children are too often in the case of young Tristram Shandy. You may recall that his author didn't get him born until about p. 356, being so focused on all the delightful antecedents, the period of conception and design. Once the boy came to life the author seemed to say the hell with him, except for reporting one rather suggestive catastrophe—a mutilation of his nose. It all reminds you, somehow, of what happens to buildings.

Still more frightening was the case of Jean Paul Richter's hero Walter Vierneissel, whose story, alas, is to be found only in German.*

He was so fascinated with his own prenatal development that actual birth was all disillusionment. Later as an obstetrician he was tempted to assist other children through their mundane birth and heavenly rebirth all in one operation, skipping the intermediate trouble. Translated into building terms, this would mean skipping the ordinary useful phase and jumping from the design phase to the historical monument phase.

We, alas, can't skip that way past vulgar life and its daily problems. To be modest about this as well as real, let's talk about this showroom on p. 114 of this very issue. Here, Architects Carson & Lundin made provision for a most orderly and handsome display of travel posters; but before FORUM could even photograph the place it was necessary to put aside a whole clutter of prefabricated window display that didn't conform and was already making a hash of the architects' achievement. The airlines people, far from being malicious in the matter, were wholly glad to have their attention called—by somebody not an architect. They simply hadn't noticed.

Any architect could multiply such examples faster than chemical companies can push out styrofoam. The strangest I recall is of a school principal in Marin County who was proud of Punch of her oh-so-modern school and who kept every Venetian blind down tight, so the school might as well have been lighted with wax candles.

Since striking examples are bound to jump up in every architect's mind let me stop here with an offer of a year's subscription to FORUM for the best such disaster story—and another for the best success story where architectural values were preserved. Submissions must be in by Oct. 15 and our own judgment will be final.

By a success story I mean something like Morris Ketchum's Florshen shoe store on Fifth Ave. in New York, which is eight years old but looks as if it had come off the boards yesterday. How did you do it, Morris—are you listening?

The saddest cases are where some expert on "popular demand" decides that people won't put up with surroundings that are too good for them, and chooses up the place to make the people feel at home. Of course there is an attempt at democracy in this. But the difference is that our old-time democratic leaders like Washington and Jefferson used to think that any public addiction to slop was just a weakness and a problem for leaders to deal with, by sharing their own fortunate skill and knowledge, whereas today's politicians (among businessmen too) say "if they like slop let's give them still more of it."

Of course the problem of pace and consonance is genuine. One of our editors said of Pergutti's very beautiful Olivetti store we published last month that the grand 16'-high walnut doors owed her a little about walking in and the wonderful interior threatened to make her street clothes look a bit dowdy.

Altogether this problem of setting architecture into action and getting others to care for it (the architect being helpless) has so many facets that these words are just an invitation for you-all to take the discussion over.

Meanwhile our spies tell us of another movement afoot that might fascinate you. It's the employment of petite models (flesh, not cardboard) at home shows, automobile shows, trailer shows. A House & Home editor stumbled on the reason when trying for more impressive pictures of a builder house that was, shall we say, petite itself. His little Hillman car parked in front seemed to bring an instant improvement. Compared to the baby car the baby house looked big, and that's no doubt how they photographed it. If such movements keep on, the built-in stool will have to be part of the purchaser rather than his purchase.

**Thugg, again**

By the way, in last month's column Professor Thugg was less than wholly just, I thought, to his friend Ralph Walker. Maybe Thugg and I tend to fire too exclusively at those who will have nothing of our times, whereas Walker fires too exclusively at those who abuse them. Anyway, Walker and his colleagues are doing a bang-up job with imaginative young men on the FBO, and some of these younger men like Yamasaki have said they enjoyed the challenges he gives them. He knows the difference it seems between the quick and the hasty.

Meanwhile Thugg has been unkind to me personally as a critic. Says he: "In a recent column you let yourself for the first time into a discussion of magazine preference ratings. For crying out loud, nobody cares but you editors, and the next man who uses editorial space to tout his magazine against others is a r-t-t-n e-". Hard words, Thugg, but so be it—d-i.
When all's said and done, it's performance that counts in overhead type doors for commercial and industrial applications. And that's exactly what you can count on with Ro-Way Overhead Type Doors.

The smooth, easy, dependable performance that results from properly engineered design, exclusive features, top quality materials, rugged construction, and fine workmanship throughout.

For instance—Taper-Tite track and Seal-A-Matic hinges that snug the door against side and head jambs for weather-tight closure; specially designed, friction-reducing track and ball bearing Double-Thick tread steel rollers to assure smooth, quiet, easy-up, easy-down operation; Power-Metered springs individually balanced to the weight of each door for freer, easier door travel.

Selected west coast lumber and heavy gauge hardware.

And rugged construction to take the daily ups and downs in stride. Mortise and tenon joints both glued and steel doweled; muntins, rails and stiles precision squared for precision fit; sections rabbeted for weather-tight joints; millwork both drum and hand sanded for finest finish; hardware both Parkerized and painted for maximum rust prevention.

It all adds up to performance that backs you up, never lets you down. Specify Ro-Way—and get what you want and need.

...a few of the Northland stores

NO FINER GLASS THAN LIBBEY・OWENS・FORD
 Practically no restrictions were put upon the storefront designs of the 80-odd units in the Northland Shopping Center in Detroit. And each store was designed independently, except for coordination by the project architects. Yet, all over the Center, there is one common denominator: Large plate glass “visual fronts”, designed to put a store’s entire interior on display to pedestrians.

Of course, waviness and distortion would ruin the whole effect, so store after store at Northland was glazed with L·O·F Polished Plate Glass.

No matter what your next job may be, you’ll want the true vision, beauty and luster of L·O·F Plate Glass. For special applications, these same qualities are available in Thermopane* insulating plate glass, Heat Absorbing Plate Glass, Tuf-flex* tempered plate glass and others.

For details on any of the standard or special types of plate glass, call your nearest L·O·F Glass Distributor or Dealer. Or write Libbey·Owens·Ford Glass Co., 608 Madison Avenue, Toledo 3, Ohio.

*®
Architect-designed

This BUTLER building SELLS SERVICE

Planned by Golemon and Rolfe—well-known architects in Houston, Texas—for Best Rentals, Inc. in Houston, this Butler building began to produce more business the day the supply rental firm moved in!

New customers are attracted by the building's modern, attention-getting front. Larger, more effective equipment displays are at work in the roomy, well-lighted showroom. Deliveries are faster and customer service is improved with the convenience of the clear-span interiors. Employee efficiency stays high in the comfort and cheerfulness of the new Butler building, too! Big doors and inside docks save time and work.

At the same time, the low-initial cost and complete adaptability of Butler buildings helped Golemon and Rolfe give their client a modern, long-lived building at moderate cost. Proving the sound economy of creative architecture teamed with Butler steel buildings with steel or aluminum sheeting.

See your local Butler dealer! Ask him for a copy of the new Butler Architect's Brochure—A.I.A. file number 14i. It will tell you more about the architectural adaptability of Butler buildings. Write for name of your dealer and more facts by mail.
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Better because... There's no guesswork when a silver-brazed joint is made with a Walseal fitting. Sil-Fos alloy, which appears as a fillet at the face of a Walseal joint, comes from rings which have been factory-inserted in the end connections of Walseal fittings. The bright silver alloy fillet that you can see assures full penetration of alloy for a permanently leakproof joint.

Walseal is a registered trade mark which identifies valves and fittings manufactured by the Walworth Company. Walseal products have factory-inserted rings of silver brazing alloy in threadless ports. Walseal joints can be made only with Walseal valves and fittings.

If you're piping water, oil, steam, air, oxygen, nitrogen, helium or other industrial gases or refrigerants through brass, copper, or copper-nickel pipe, you'll want to investigate Walseal — available in complete lines of valves and fittings in four distinct pressure ranges — from 0 to 5000 psi. working pressure*. Your copy of Circular 115 will be sent on request ... see your near-by Walworth Distributor today, or write to: Walworth Company, General Offices, 60 East 42nd Street, New York 17, N. Y.

*Walseal fittings and valves are being used at sub-zero temperatures as low as —350 F.

Cutaway view of a Walseal Tee showing: factory-inserted ring of silver brazing alloy; fillet of silver brazing alloy that appears upon completion of Walseal joint; cutaway view of the completed joint showing that silver brazing alloy has flowed in both directions from the factory-inserted ring.

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valves ... pipe fittings ... pipe wrenches

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DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD
A DESIGN STANDARD LIKE THIS DEMANDS USE OF MODERN POWER

The standards being set in today's office building design call for full utilization of modern electrical power. It's an important consideration—in view of such necessities as high-speed elevators and modern lighting, the heating, ventilating and air conditioning systems.

These devices, as you know, have placed greater demands on a building's electrical system. More power must be carried. And power quality has had to be improved to minimize outages, assure well-regulated voltage.

Thus, a modern, completely adequate electrical system is extremely vital if the service devices you design-in are to operate at peak efficiency. Literally, it's an integral part of the building's foundation. It should be considered in the study stage...keyed to the services that will operate from it...built with equally modern electrical power equipment.

By so doing, you'll be bringing the power facilities up to the standards you've set for design. And you'll be providing your client with a better building—economically sound and adequately equipped to handle the many functions it must perform.


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

WHAT IS A MODERN ELECTRICAL SYSTEM? It's an integral part of basic design—not superimposed or considered after the building is under construction.

The modern system is planned around requirements for reliability, versatility and convenience. And it stresses electrical characteristics essential to building services. Therefore, system design will vary—based on the type of building involved.

The Spot Network System, left, is an example. It emphasizes "reliability"—an important requirement in large office buildings. Efficient, high-voltage power is brought close to building loads from two or more sources. An electrical fault at one source will not interrupt power to the loads being served.

FOR YOU...24-page book, covering modern electrical systems and equipment for commercial buildings. Valuable adjunct to your design planning. Write at no obligation for Cornerstone or Tombstone, B-6151, Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.
AIM:
MATCH PEAK TRAFFIC WITH PEAK POWER

High-speed elevator service—demanded when tenants must be moved quickly during heavy traffic hours—should begin at the electrical system planning stage.

The need for completely adequate power distribution makes this so. Not only do high-speed elevators require more power, but their drives are usually located in the penthouse—far removed from the power source. Thus, the electrical system must carry heavier loads greater distances. Yet, it has to hold voltage and power losses to a minimum.

A typical way: High-voltage distribution—carrying high voltage from power source in the basement close to the electrical center of load in the penthouse. This modern practice stabilizes voltage. It eliminates line losses that result from long runs of secondary lines. It assures adequate capacity for heavy electrical loads.

At the center of load, then, high voltage is stepped down to operating levels with a Westinghouse Dry-Type Power Center. It installs anywhere to feed the elevator equipment and other local loads. No need for a vault. And the dry-type transformers and air circuit breakers minimize maintenance.

WESTINGHOUSE DRY-TYPE POWER CENTER...
a compact substation that permits high voltage to be carried close to elevator and other remote loads. Comes ready to install.
AIM:

MATCH MODERN AIR CONDITIONING
WITH MODERN CONTROL

Modern air conditioning is another tenant demand completely dependent on the electrical facilities behind it. A number of motors and controls is involved in the modern air conditioning system. Thus, early steps should be taken electrically to assure continuous circulation of conditioned air—to the various building services. In many modern buildings, all control equipment is located in one spot. This brings about easier operation and simplifies maintenance.

More complete integration of the controls is possible with a Westinghouse Control Center. It centralizes motor starting and protective devices in a compact enclosure that installs easily in any convenient location. Then, operating personnel can check operation of all motors at a glance.

In addition, Westinghouse Control Centers meet future requirements. This flexibility is due to standardized design and modular construction of the units.

WESTINGHOUSE CONTROL CENTER centralizes electrical control for building air conditioning systems in a single enclosure. At right: Secondary control for wound rotor motor drives...typical of the Westinghouse complete line of air conditioning compressor motor control.

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

ARCHITECTURAL FORUM • SEPTEMBER 1954
AIM:

MATCH FIXTURES TO FUNCTIONS

Effective illumination demands this consideration: Lighting systems must be matched to functional requirements, yet blend harmoniously with building design.

This is particularly difficult in general office areas where sharp contrasts must be minimized. Thus, to keep contrast between fixture and ceiling down—to prevent specular reflection from shiny surfaces—indirect lighting is required.

When you select the fixture, you must balance the desirability for comfort—obtained with indirect lighting—with the requirement for efficiency, realized through direct lighting.

Other factors also affect the selection. Fixture design and proportion and the ultimate lighting layout must blend with interior design.

Above is an outstanding example of how these considerations have been met. A Westinghouse CD-80 Luminaire was selected. It assures both comfort and efficiency by providing direct and indirect lumination. It blends well with room proportions . . . gives quality light for detailed office work . . . maintains the same high level of balanced design that exists throughout the building.

Architecturally, complete advantage was taken of the 10' ceilings. Fixtures were suspended approximately 2'. This permitted installation of a comfortable system of continuous semi-indirect lighting. Today, it still maintains a desk-top lighting level of over 40 footcandles.
AIM: PROVIDE MAXIMUM RENTAL SPACE

The heavier electrical loads elevator, air conditioning and lighting systems place on a building's power system make selection of its component parts a vital consideration. This equipment must have adequate capacity for increased loads. Yet, it should be compact to release maximum space to your client.

Modern distribution equipment answers these requirements. Example: Westinghouse Bus Duct—a highly efficient way to distribute low-voltage power. Up to 5000 amperes, in fact, it packs more power into less space than any other method of secondary electrical distribution.

Westinghouse Bus Duct comes in standard, prefabricated sections that adapt perfectly with building plans. It can be installed in elevator shafts or wireways. When exposed, its neat appearance blends well with interior design.

The inherent flexibility of bus duct is another "plus". It provides adequate reserve capacity to handle future loads. Expensive rewiring is eliminated.

MATCH LIGHTING INSTALLATION WITH MODERN PANELBOARDS to give your clients both adequate protection and the convenience of circuit breakers. Westinghouse NPLAB-type lighting panelboard, here, features the compact Quicklag® P AB De-ion® circuit breaker. It enables you to design circuit protection into a smaller panelboard . . . and saves valuable closet space.
Specify J-M Permacoustic® tile for ceilings that provide unusual architectural beauty with maximum acoustical efficiency and fire safety.

Johns-Manville Permacoustic is exceptionally sound-absorbent, attractive and noncombustible. Its two random-textured surface finishes—textured and fissured—increase its noise-reduction qualities... provide design and decorative interest.

Made of baked rock wool fibres, Permacoustic is fireproof—meets all building code fire-safety requirements. Johns-Manville Permacoustic is easy to install on existing ceilings or slabs, or by suspension using a spline system of erection.

Send for your free copy of the new brochure about Permacoustic tile. Write Johns-Manville, Box 158, New York 16, New York. In Canada, write 199 Bay St., Toronto 1, Ontario.

INFORMATIONAL DATA ON PERMACOUSTIC

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| noise reduction coefficient | .65 | .70 |
| weight per sq. ft. | 1.3 | 1.3 |

*Also available in 3/8'' thickness
Concerning this modern emergency hospital, Mr. A. Gordon Lorimer, architect, writes, "Actual competitive bidding obtained by the New York Housing Authority (for similar construction) has repeatedly established a substantial cost differential for reinforced concrete."

He added that, "The ceilings in large parts of the hospital were left as smooth concrete, and then painted, which produced appreciable savings."

Not only does reinforced concrete cut costs but it also allows work to be started sooner, because materials are available locally. Actual erection time is less, too. On your next job... design for reinforced concrete.

"REINFORCED CONCRETE was a substantial factor in its economy"
diagonally in the upper and lower chords. The result is a completely flexible space frame truss, 8.6' high, in which the strength of the whole is greater than that of its component parts because the entire frame acts to relieve local stresses.

**Application:** This technique is used for a proposed 387' x 805' double-cantilevered aircraft hangar in which 150' overhangs extend either side of a three-story supporting structure containing 30,000 sq. ft. of useful office and shop space. Critical stresses due to dead load on the structure are kept down by high-tensile suspension bridge cables, 3" diameter and 30' o.c., spanning 250' between overhangs.

An important aspect to be considered in cantilever design is the effect of wind. Air Force specifications demand that such cantilevers be able to withstand an uplift due to wind of 20 psf. In this hangar no special provision is made against uplift; the designers state that once the roof panels are in place dead load will more than counteract wind pressures, although the factor of safety is not excessive.

Since the dies for the forgings of the three sizes of piping and 13 types of castings have already been manufactured, production of the standard parts for the hangar is expected to be reasonably economical. Moreover, replacement or extension at any point of the structure would be a simple matter. This particular design contains 7,505 standard connectors, 82,972' of 6" pipe and 283,168' of 3" pipe, about 2,600 tons of steel in all.

Structural engineers presently engaged on more conventional cantilevered hangars* are interested in the Wachsmann hangar, but have certain reservations:

1) Tubular steel members are 20% more expensive than rolled steel, 10¢ vs. 8¢ per pound, although this design may require less steel than standard structures; 2) corrosion may occur in the intricate connectors and perhaps even inside the pipes, though the tubes may be galvanized if required; 3) in northern areas excessive snow might collect in the trough between the two overhangs. All these problems, however, are teething difficulties likely to be overcome as the structure is developed.

This tubular steel structure is developed by Chicago Institute of Design Professor Konrad Wachsmann in association with Douglas Church Ryhn and Jon B. Dunnington, research assistants, and with Frank J. Kornacker & Associates, consulting engineers.

* Comparative structures framed with rolled steel members: a double-cantilevered hangar at New York International Airport has 134' overhangs with 20 psf of structural steel (AF, Jan. '54); a single-cantilevered hangar for the Tenco Aircraft Corp. at Greenville, Tex., has a 121' overhang with only 11.8 psf of steel. Erwin-Newman Construction Co. are the designers.
Another Sylvania Achievement

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A three-way functional treatment of beauty—sight—sound

1. Architecturally harmonious!
2. An efficient, comfortable light source!
3. A sound-control system!

Adaptable! Easily Installed! Economical!
You never saw a more fascinating or a more functional system of sight and sound control! It’s engineered by Sylvania to serve 3 ways!

1st ...it has the beauty and character of continuous corrugated white plastic.
2nd ...it is a source of soft, eye-pleasing over-all lighting.
3rd ...its inconspicuous V-shaped “Sono-Wedges,” lined with thick glass-fiber pads, deaden noise... reduce distracting sound to comfortable levels.

In addition, the corrugated form of the plastic permits air to circulate along the supporting channels. Thus air-conditioning also can be effectively introduced.

Flexible in Design!
Sylvania-Aire’s light weight and flexibility of design permit it to be readily and economically installed in any conference room, office or working area. Be sure to remind your electrical contractor friends about this latest Sylvania achievement. For full details write today to Dept. 4X-1209 at Sylvania.

Sylvania Electric Products Inc., 1740 Broadway, N.Y. 19, N.Y.

Look for this emblem—your guide to a Qualified Lighting Contractor.
EXTRA LONG LENGTHS (available up to 48" x 192") of California redwood and pine Novoply were used to achieve this dramatic wall treatment.

New wood-plastic Novoply gives freedom of design and a high quality appearance.

SMUDGY LITTLE HANDS will never hurt this Novoply lined school corridor.
Novoply paneling opens the way to an entirely new wall treatment concept. It's bold, imaginative, practical, yet it's priced for even a modest budget.

When funds are limited, yet you still want to avoid the dull, the done-to-death ideas, then it's time to specify Novoply. You'll like the fresh mosaic textured look of Novoply in either pine or California redwood faces.

Novoply has its practical side, too! It's the most dimensionally stable wood-plastic panel made—virtually warp-free! Novoply is made by a special bonding process which results in an exceptionally hard, ultralat surface—good both sides! Novoply scorns wear, takes almost any finish.

With Novoply, maintenance is never a problem, because once the walls are up and finished an occasional waxing or a wipe of a sponge is all that's needed to keep them looking fresh and new. Novoply can be installed with Weldwood Contact Cement. It's a natural for built-ins, too!

For further information consult with the Architect's Service Section at any of the 73 United States Plywood or U.S.-Mengel Plywoods distributing units in principal cities. Send for a free sample—you'll be amazed at Novoply's possibilities.

SPECIFICATIONS

THICKNESS: 3/8"; Sizes: 24" x 72", 24" x 96", 30" x 72", 30" x 96", 36" x 72", 36" x 96", 36" x 120", 48" x 72", 48" x 96", 48" x 120"; also cut to size for volume users from panels 6' x 12' and 4' x 16'. Available in 3/8" thickness, sizes 48" x 96" and 48" x 192". Can be made 5/16" and 11/16" to order.

IMPORTANT NOTE: Only slight extra cost for long-length Novoply panels up to 16'. Long lengths reduce number of joints, reducing installation costs.

BEAUTIFUL WELDWOOD FIRE DOORS* ARE UNCONDITIONALLY GUARANTEED FOR THE LIFE OF THE INSTALLATION

Weldwood Fire Doors have incombustible Weldrok® core, Bear Underwriters' label for class B and C openings. Available in wide choice of fine hardwood faces, in standard sizes and special sizes to order.
BOOK REVIEWS

MANUAL ON PRECAST CONCRETE CONSTRUCTION. By F. Thomas Collins. F. Thomas Collins & Associates, Box 208, San Gabriel, Calif. 102 pp. 8½" x 11". Illus. Paper-backed. $25. ($12.50 to students)

This is the first comprehensive textbook dealing exclusively with precast concrete construction. It is written, illustrated (with hundreds of valuable construction details) and produced by an experienced consulting engineer who has himself built several important precast structures and who believes that all except the smallest structures can be built most efficiently with precasting. His reasons: precasting permits better quality concrete; it requires less formwork and can therefore be more accurately constructed; it permits easier reinforcing, faster erection and closer control of critical joint details, all of which help to produce better work at less cost. Dollarwise, precast construction has boomed from $10 million in 1947 to $250 million in 1952.

Throughout his book, Engineer Collins stresses the need to consider erection methods in the initial design stages—lifting stresses, for instance, must be carefully checked to assure that members will not be damaged during erection; and erection procedures must be rapid and foolproof, for a heavy crane and crew might cost about $25 an hour. In short, the author thinks an extra $1 spent on engineering can save as much as $10 in the field.

The book is highly informative on every aspect of precasting from patents to painting. It includes reports on formwork design, erection procedures, vacuum-lifting techniques, sandwich panels, thin shell concrete, multi-story framing and prestressing. There is also an excellent chapter on costs of precast framing with several useful pro formas to help decide whether a particular project is large enough to justify the investment of time and capital in extra engineering and equipment for precast construction (see table).

Unit costs for preliminary estimating of typical warehouse structure. Using Class I. framing, all concrete, the structural shell would cost about $2.85 per sq. ft. on the West Coast, excluding mechanical and electrical services but including engineering and overheads; using Class III framing, timber roof trusses and tilt-up concrete walls, the shell would cost about $2.90 per sq. ft.

Preliminary estimating costs for precast construction

| General requirements                           | 6-10%       |
| Engineering, supervision                       | 6-10%       |
| Social security, insurance, sales tax, etc.     | 6-10%       |
| Site and subgrade preparation                  | 10-12%      |
| Ground level                                   | 10-12%      |
| Dock high                                      | 23-26%      |
| Floor slab fabrication                         | 32-36%      |
| Wall panels—                                    |            |
| With openings—                                 |            |
| stacked                                         | 9.0$-$1.10 per sq. ft. |
| no stacking                                     | 8.5$-$1.05 per sq. ft. |
| Without openings—                              |            |
| stacked                                         | 8.0$-$9.3 per sq. ft. |
| no stacking                                     | 8.4$-$8.6 per sq. ft. |
| Foundations—                                   |            |
| Concrete roof—                                 |            |
| wall                                            | $2 per lin. ft. |
| interior                                       | 4.5$ per sq. ft. |
| Wood roof—                                     |            |
| wall                                            | $1.65 per lin. ft. |
| interior                                       | 3.1 per sq. ft. |
| Roof structure—                                |            |
| Thin-shell concrete—                           |            |
| long span                                      | $1.35-$1.55 per sq. ft. |
| medium span                                    | $1.20-$1.35 per sq. ft. |
| short span                                     | $1.05-$1.20 per sq. ft. |
| Wood—no ceiling—                               |            |
| long span                                      | 85$ per sq. ft. |
| medium span                                    | 80$ per sq. ft. |
| short span                                     | 75$ per sq. ft. |

continued on p. 182
WASCOLITE SKYDOMES
Balanced Daylighting

... with low initial cost, savings in construction, no maintenance ... these are the reasons why Architect Leslie N. Boney, Wilmington, N. C., has specified Skydomes for 42 schools during the past four years.

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"In designing these schools, we call on Wasco's engineering staff to make complete daylight analyses. This service is extremely helpful.

"We are proud of these schools. They are among the state's most advanced in design."

Wascolite Skydomes are available in White Translucent or Clear Colorless acrylic plastic. They come in 3 basic shapes — square, rectangular, circular — and in a wide range of stock sizes.

CREDITS: Leslie N. Boney, Architect; M. L. Skinner, General Contractor; Isham B. Hudson, Superintendent of Schools.
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Whatever the job, consider WOOD FIRST!
MIES VAN DER ROHE. By Philip C. Johnson. Second Ed. Published by The Museum of Modern Art, New York, N.Y. Distributed by Simon & Schuster, 630 Fifth Ave., New York, N.Y. 216 pp. 7¼" x 10¼". 200 plates. $3.50 (paper). $7.50 (cloth)

This handsome monograph on Architect Mies van der Rohe, originally published in 1947 (and reviewed in Forum, Nov. '47) has been republished in an expanded second edition. Mr. Johnson has included plans, details and photographs of such recent Mies structures as the Farnsworth House, the various Chicago apartment towers, the Chicago Arts Club, a number of new I.I.T. buildings and several projects. It is perhaps unfortunate that the Farnsworth House was not shown in better photographs, but the rest of the new pages continue the high standard set in the original book.

In addition to the buildings originally shown, Mr. Johnson has included plans, details and photographs of such recent Mies structures as the Farnsworth House, the various Chicago apartment towers, the Chicago Arts Club, a number of new I.I.T. buildings and several projects. It is perhaps unfortunate that the Farnsworth House was not shown in better photographs, but the rest of the new pages continue the high standard set in the original book.


A basic legal guide to the administration of construction work, this is a clear and concise description of the fundamental methods of preparing contracts and specifications, and a useful outline of engineering and construction law.

Scope of the book remains the same as the previous editions; however, about one half of the book has been rewritten, and the total amount of material has been increased by 30%.

New materials cover engineering and construction law, case plus fixed fee contracts, construction insurance, bonding practice, contracts for architectural and engineering services and specification writing.

As in the past, emphasis is on how to write contracts and specifications, rather than what to write. The approach is that of the professional engineer, and the book includes many of the ways in which US government contracts' procedure differs from private practice.


"One hundred years of engineering progress with wood" are recorded in these 21 papers and six discussions delivered at the Centennial of Engineering Convocation in the fall of 1952. Three primary problems that are considered—timber supply, utilization and structural design.

PROCEEDINGS OF THE LIBRARY BUILDING PLANS INSTITUTE. Edited by Donald C. Davidson. ACRL monographs, c/o American Association of College and Library Assn. Reference Libraries, 50 E. Huron St., Chicago 11, III. 98 pp. 8½" x 11". $2.25

This work represents material discussed and presented at last year's workshop session where architects and librarians collaborated in the study and analysis of plans for proposed library buildings. The monograph includes an up-to-date bibliography on college and university library buildings which should make the monograph a useful reference tool for both the librarians and the architects.

JEWISH SCHOOL BUILDING MANUAL. By Isadore H. Braun. The Board of Jewish Education, 72 E. 11th St., Chicago 5, III. 32 pp. 9" x 6". Illus. Paperbound. $1

A guide for private school boards by an architect experienced in the field of Jewish school building.

continued on p. 186
SPOT LIGHTING WITH CURTIS

"VARI-SPOT"

CATALOG No. 2246
Curtis "Vari-Spot" is a shallow recessed downlight, utilizing one 100-watt inside frosted incandescent lamp. It is designed for use in residential and commercial interiors. An adjustable Alzak aluminum reflector permits the diameter of the circle of light to be controlled and changed as desired. Decorative holes in the finishing ring provide an attractive light pattern at the ceiling.

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Curtis "Punchy", is a shallow recessed adjustable downlight utilizing one PAR-38, Side Prong 150-watt projector spot or flood lamp. It is designed to provide punch lighting for counters, displays, show windows and other areas in store interiors. "Punchy" features an exclusive aluminum gimbal ring which permits adjustment of the lamp to any angle 0° to 35° from the vertical, and 0° to 360° horizontal.

"SPOTTY"

CATALOG No. 2244
Curtis "Spotty" is a shallow recessed fixed downlight utilizing either one PAR-38 or R-40 screw base 150-watt spot or flood lamp. It has wide application for accent, supplementary and general lighting. Three horizontal steel baffles, an integral part of each unit, are designed and positioned to provide an exceptionally low-brightness incandescent unit at normal viewing angles.

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PITTCOMATIC..."the nation's finest hinges operate the sturdy Herculite Doors which form the entrance to the aluminum-faced skyscraper office building of the Aluminum Company of America at Pittsburgh, Pa. The magic-like operation of the Pittcomatic is controlled by a 10-volt switch, concealed in the door handle. It is so sensitive that the instant the handle is touched, the door starts to open by hydraulic action, smoothly and silently, in either direction. A steady flow of traffic into and out of the building is thus permitted with the utmost efficiency. Each door operates independently, so that the operation of one door in a battery can be discontinued without disrupting the operation of the others. Architects: Harrison and Abramovitz, New York City; Associate Architects: Altenhof and Bown; Mitchell and Ritchey.
FOR ALL KINDS of industrial and commercial buildings, leading American architects are specifying the Pittcomatic automatic door opener. This building in South Bend, Indiana, is an interesting example. Architects: Schwartz & West, South Bend, Indiana.

BANK EXECUTIVES are "sold" on the Pittcomatic. They state that their customers like the easy response of doors having this automatic opener; that these installations have actually attracted more customers. Architect: Wyatt C. Hedrick, Dallas, Texas.

THE POWER UNIT supplies hydraulic power to the hinge under the door through \( \frac{3}{8} \)" copper lines. The power unit is activated by a 10-volt circuit in the handle which passes through the control box. Oil lines are 3000-lb. test. The action of the door in all respects can be regulated by adjustments provided in the control box and the hinge. No power can build up. It is a safe door.

IN RETAIL STORES, like this automobile showroom in Toledo, Ohio, the Pittcomatic not only brings the practical advantages of its automatic operation, but, with Herculite Doors, adds to the over-all feeling of open-vision, which is such a proven sales stimulator. Architects: Sanzenbacher, Morris & Taylor, Toledo, Ohio.

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BOOK REVIEWS continued from p. 182

MANUAL ON BOYS' CLUB BUILDING AND CONSTRUCTION. A publication of Building Service Boys' Clubs of America, 381 Fourth Ave., New York 16, N.Y. 34 pp. 9" x 6". $1

A guide for architects, engineers and builders, this manual contains information on location of the building and selection of a site, as well as on design, construction and maintenance of boys' club buildings.

CHESKIN COLOR CHARTS FOR COLOR PLANNING. By Louis Cheskin. The Macmillan Co., 60 Fifth Ave., New York 11, N.Y. 8½" x 5½". Illus. $2.50

This book presents a condensed but complete color system of 300 colors, taken from the Cheskin Color System which is composed of 4,800 different colors. Three of the 300 colors are primaries: yellow, magenta red and green-blue. The remaining 297 colors can be mixed from some combination of the three primaries, black and white. Simple instructions are given on the use of the charts and on mixing any of the 300 colors.

CHESKIN COLOR WHEEL FOR COLOR PLANNING. By Louis Cheskin. The Macmillan Co., 60 Fifth Ave., New York 11, N.Y. 11" x 11". $5

A tool for color planning, this wheel shows 12 hues, 48 tints, 60 shades and 240 tones— a total of 360 colors.

GARDENS. ("The Things We See" series, No. 7.) By Lady Allen of Hurtwood and Susan Jellicoe. Penguin Books, Baltimore, Md. 64 pp. 7" x 8½". Illus. $1.25

This inexpensive little picture book (100-odd photographs) is crammed with good ideas for outdoor planning. In house landscape, it touches lightly on everything from cheerful window boxes to lavish swimming pools, but most eye-opening for US readers are its ideas for public spaces, a field in which Europeans have long surpassed us. Here are simple, handsome settings for apartment buildings, schools and factories, corners of public parks designed for sun, chess or fountain watching, benches comfortable enough to keep people off the grass, litter baskets gay enough to attract litter. From Copenhagen there is an organized "junk playground" where children can build houses and dig caves, from Stockholm an abstract "jungle-gym" sculpture covered with climbing kids. There are restaurant gardens, roof gardens for factory and office workers, waiting gardens for railroad commuters. And there are quiet gardens for the dead that make the average cemetery look pompous and cluttered. One thing is obvious from the pictures: if any outdoor space is carefully and beautifully designed, people will enjoy it enough not to abuse it.

continued on p. 190

SPARTAN MOSETTES

An extremely versatile natural clay type tile, available in full range of attractive unglazed colors. Sizes 1x1, 2x1, 2x2, 2½" thick. Rugged, impermeable, slip resistant, with high degree of vitrification. Mounted in choice of unlimited patterns for easy and inexpensive setting, even in irregular spaces.

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BOOK REVIEWS continued


Taking a firm stand against “the destructive scientific and technological concepts of modern materialism,” Francesco Memoli, Cincinnati architect and noted esthetician, has written a lucid guide to the larger meaning of art in our society. The book combines four volumes in one: 1) Value: A Picture of Society; 2) Economics: The Principles of Social Management; 3) Vanity: A Discussion of Social Attitudes and Standards; 4) Esthetics: The Practical Means to Social Ends.


This book is the outcome of a series of special lectures at the Faculty of Arts in the University of Lucknow in India.


In addition to the main text describing the architecture of the period, there are two long appendices, one on Scottish architecture and the other on the architecture of the Thirteen Colonies.


Here for the first time in English is the complete story of the perversion of art to propaganda in twentieth-century dictatorships.

In later chapters of the book Mr. Lehmann-Haupt considers the artistic policies of the Soviet Union and how they resemble those of Nazi Germany, but the story of the book deals with the arts, whose grim efficiency in corrupting the arts makes their regime the perfect case study. He shows how all branches of the arts, from architecture to children’s art, were radically warped by them to suit their own ideological purpose.

Hellmut Lehmann-Haupt was born in Berlin, the son of a professor of Ancient History at the University of Berlin. In 1929 he came to this country where he has now spent almost his life. From 1948 to 1949 he worked with the American Military Government in Berlin as civil art administration officer and thus gained a first-hand knowledge of Nazi art.

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\end{itemize}

\textsuperscript{*}Copies of this study available on request. Write for local \textit{Flexalum} sources, free file of venetian blind information.

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LITECONTROL'S Luminous Lens Ceiling Panels bathe every surface in a flattering, even illumination...show merchandise in its best light, without ugly shadows, glare or harsh contrasts.

Note entire surface of each panel is aglow. Holophane No. 9015 Low Brightness Lenses make display light but not bright, just right for sweet selling.

Why not discover for yourself the selling magic in standard lighting fixtures that are fashioned right for good sight, good looks and easy maintenance — see your local LITECONTROL Representative.

LITECONTROL Fixtures
KEEP UPKEEP DOWN

LITECONTROL CORPORATION, 36 Pleasant Street, Watertown 72, Massachusetts

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

DESIGNER: Lippincott & Margulies.
ELECTRICAL CONTRACTOR: Rekial Electric Company.
FIXTURES: Litecontrol Luminous Lens Ceiling Panels, 45° x 48", each using 4-3 lamp 48" slimline fixtures, and 16 Holophane No. 9015 lenses in lucite frame.
WATTS PER SQUARE FOOT: 3.1.
APPROXIMATE REFLECTANCES: Wall (Wallpaper), 63%; Floor (Beige-gray terrazzo), 10%.
AVERAGE INTENSITY: 63 footcandles initially at counter height.
BRIGHTNESS: (One of center lenses).
Normal to lamps, at 30°, 1.0 candle per square inch.
at 45°, 2.0* * * * *
Parallel to lamps, at 30°, 1.0 * * * * *
at 45°, 1.9* * * * *

* * * * *
THE MAGAZINE OF BUILDING
Why so many of America's finest schools have

Fenestra Intermediate Steel Windows are selected by architects and administrators of many of the finest and best-looking schools in America. The reason is not appearance alone; because of their quality construction, Fenestra Windows do an incomparable job.

They provide more and better daylight. Fenestra Windows are engineered and precision built to be rigid and rugged without excess bulk. You get more glass area and clear-vision view per window opening.

You get better ventilation, too. Tilt-in vents bring in abundant fresh air, without drafts... shed rain outside. Other vents project-out to form weather-protective canopies over their openings.

Screening and cleaning are safely, economically done from the inside... no ladders or scaffolds... no expensive labor.

You save on maintenance. Steel-strong window members and sturdy hardware assure years of trouble-free service. And Fenestra Windows are available Super Hot-Dip Galvanized... save thousands of dollars in painting costs every few years.

Write for further information. Or call your Fenestra Representative (listed in the yellow pages of your phone book). Ask for our authoritative booklet on Better Classroom Daylighting.

heated by a blow torch to the point where it was deformed and the porcelain enamel was softened, yet the back of the panel remained cool enough to touch. Besides fireproofing and insulation, other important functions of the backing material are to give the panel rigidity, to keep the thin metal face flat at all times and to deaden impact sounds. A square foot of *Porock* 1" thick weighs 3 to 3½ lb. and costs about 50¢.

Manufacturer: Erie Enameling Co., Erie, Pa.

**FLUORESCENT FIXTURE** has large area and low brightness contrast

*Aredale* commercial luminaire is wide and shallow, approximately 36" wide and 5" deep. Models are available with four, six or eight lamps in lengths of 4', 6' and 8'. The 8' unit is designed to take the new T-12 110-w., high-output, rapid-start lamp. Fixtures may be surface mounted or suspended, singly, in rows or side to side. Individual top reflectors, or fully closed tops are available. Louvers are hinged in 4' sections for cleaning. Relamping can be done from side, without removing the louvers. Finish is high gloss white baked enamel. Price to consumer for four-lamp 96" unit is $137; six-lamp 96", $165.

Manufacturer: Lighting Products, Inc., Highland Park, Ill.

**FLUORESCENT FIXTURE** hugs ceiling, has interlocking plastic sides and bottom

Extruded polystyrene plastic sides and bottom of the *Challenger* commercial luminaire interlock to support themselves without the use of metal framing members. The only visible metal is a narrow line down the center of the fixture. Sides of ribbed diffusing plastic and bottoms of clear plastic in prismatic lens form result in maximum light intensity directly below the fixture with low brightness at oblique angles. Ballasts are housed in a ventilated central channel, permitting the over-all depth of the fixture to be reduced to less than 4½". Enamelled metal reflector tops interlock with the plastic sides to form a dust-free enclosure. Relamping is done by pushing up the plastic bottom and removing it. Fixtures may be stem-mounted if desired. Reflector tops may be omitted and metal louvers substituted for the bottom panels. No extra parts or accessories are required for continuous mounting. Contractor's net price for two-lamp 40" unit is $23.75; for four-lamp 96", $67.20.

Manufacturer: Globe Lighting Products, Inc. 2121 S. Main St., Los Angeles 7, Calif.

continued on p. 204
How to save money coming and going

Count the doors in your building. Like to save up to $100 apiece on each door you put in your next building? Compare the installed cost of Fenestra® Hollow Metal Door-Frame-Hardware Units with the cost of other hollow metal doors!

Here are three sound reasons why Fenestra Door Units can bring you such important savings:

1. They cost less to buy because you get production line economy—not custom job costs. They are mass produced on special jigs that avoid expensive time and labor.

2. They come to your job complete with pre-fitted frame, door and hardware specifically made for each other. You save time because there's no need for planning, ordering and assembling special elements.

3. You save on installation costs because these complete units need no cutting, no fitting, no mortising or tapping. Each door is installed and in use in minutes.

And you save year after year on maintenance because Fenestra Hollow Metal Doors can't warp, swell, stick or splinter. They always open easily . . . smoothly. They close quietly because inside surfaces are covered with sound-deadening material.

For strong, solid quality at low cost, check on Fenestra Doors. There's a door for every purpose in the Fenestra line: Entrance Doors, Flush or Regular Interior Doors with glass or metal panels. Doors with the Underwriters' B Label. For pictures and details, write the Detroit Steel Products Company, Department AF-9, 2296 East Grand Blvd., Detroit 11, Michigan. *®

* Your need for lower building costs encouraged us to develop a quality door unit that would save installa- tion costs—Fenestra Hollow Metal Door-Frame-Hard- ware Units . . . a great advancement in building products.
You can enjoy the benefits of the finest lighting money can buy and effect really substantial savings at the same time, simply by buying the right lighting fixture. Time and again, the better design and efficiency of Smithcraft Fluorescent Fixtures result in fewer units to produce recommended lighting levels.

Here’s an actual case history of how a Pennsylvania department store saved 10% in initial costs and 10% in operating costs... or approximately $4000 on a ten-year $40,000 expenditure.

Before re-lighting, a complete survey was made and exact lighting requirements were established. To meet these requirements, Smithcraft units and units of several nationally-known top quality manufacturers were subjected to an exhaustive comparative analysis. Here are the results:

**10% FEWER UNITS REQUIRED**

Number of units required to achieve recommended lighting levels:
- Smithcraft — 270
- 2nd Best Fixture — 297
- 3rd Best Fixture — 339

**10% LESS INSTALLATION COST**

Proportionately less labor and materials were required to install the 270 Smithcraft units than the 297 units of the nearest competitor.

**10% FEWER LAMPS**

(Initial & Replacement)

<table>
<thead>
<tr>
<th>Lamps required</th>
<th>Smithcraft</th>
<th>2nd Best Fixture</th>
<th>3rd Best Fixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td>706</td>
<td>776</td>
<td>914</td>
</tr>
</tbody>
</table>

Recommended practice is to replace lamps every 18 months—a continuing 10% savings.

**10% LESS POWER CONSUMPTION**

Required wattage:
- Smithcraft: 51.3 kilowatts
- 2nd Best Fixture: 56.3 kilowatts
- 3rd Best Fixture: 64.8 kilowatts

Whether you’re lighting a store, office, school, factory, or institution, it pays to buy lighting—not fixtures. Invest in Smithcraft—America’s Finest Fluorescent Lighting Equipment.

PHOTOGRAPH SHOWS AN INTERESTING PATTERN ARRANGEMENT OF THE SMITHCRAFT LOUVERLITE SLIMLINE IN THE PENNA. DEPT. STORE DESCRIBED ABOVE.

They'll clean up on maintenance savings here!

Here, the outside air around this laundry is full of salt water. And you can imagine what it's like inside. The air soaked with moisture. Walls and windows wet. But the Fenestra® Industrial Steel Windows in this building will never rust!

They are Fenestra Super Hot-Dip Galvanized Industrial Steel Windows. They'll save thousands of dollars in paint and labor—every few years, for the life of the building—because they never need painting. And they cost no more than regular steel windows with two inside-outside field coats of paint!

Fenestra has the only plant and equipment in America especially designed for the highly specialized job of window galvanizing. For complete details on Fenestra Super Hot-Dip Galvanized Industrial Steel Windows, call your Fenestra representative—he's listed in the phone book yellow pages—or write the Detroit Steel Products Company, Dept. AF-9, 2296 East Grand Blvd., Detroit 11, Michigan.

BEND TEST shows why Fenestra Steel Windows are called Super Hot-Dip Galvanized. When two pieces of galvanized steel are bent, then straightened, some types of galvanizing crack open, leaving the steel vulnerable. The Fenestra piece stays protected.

* Your desire for windows of strong material that would resist rust resulted in Fenestra Super Hot-Dip Galvanized Industrial Steel Windows—a great advancement in building products.
NEW PRODUCTS continued from p. 200

FLUORESCENT FIXTURE doubles as acoustical ceiling

Sono-Lume is the appropriate name of a new sound-absorbent lighting fixture. An extended double cove reflector ensures good light distribution and also functions as an acoustical material. For this purpose the metal reflector is perforated and backed with glass fiber. Each 4' length is equal in sound-reduction effect to 10 sq. ft. of acoustically treated flat ceiling. For maximum noise reduction, fixtures should be installed in continuous rows with a spacing of not more than 6' to center.

Sono-Lume costs less than separate installations of lighting and sound control. It was designed especially for use in schools, offices and stores where both noise reduction and high-level illumination are desired but the budget will not stretch to cover both installations. The new fixtures are available in 4' and 8' lengths, with all plastic shielding as illustrated, or louver shielding. Price of 4' unit is $70.22, 8' unit $134.38.

Manufacturer: Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

for a
SECURE barrier against hydrostatic head

call for

Karnak
WATERPROOFING PRODUCTS

Here's how the Karnak Membrane System is superior to ordinary methods of waterproofing, especially where there is danger of water seepage.

The Karnak long-fibre-cotton cloth, which has been saturated with specially prepared asphalt, is layered, on the job, with alternate moppings of a highly refined and very ductile asphalt. The open mesh of the fabric allows the coating to penetrate and interlock the layers. This provides a firm mechanical bond that resists abrasions, cracks, settling and maintains water resistance through the life of the structure.

Karnak Fabric is non-sticking, unrolls easily to the very end... works faster with no waste. It is packed in sturdy corrugated cartons for protected shipping and storage. Available through waterproofing contractors, or distributors or write us for information. Made by Lewis Asphalt Engineering Corp., 30 Church St., New York 7, N. Y.

© L.A.E. Corp.

OTHER KARNAK PRODUCTS
Asphalt Roof Coatings
Floor Mastic
Asphalt Paint
Aluminum Roof Coating
Wood Block Mastic
Tile Cement
Joint Filler

HEATING CONTROL SYSTEM for school doubles as fire alarm

The advantages of individual classroom thermostats are now well recognized: the teacher can adjust the temperature of the room to the varying activities of the class. Schoolmaster Control system carries this idea one step further by permitting the principal to maintain push-button supervision over temperatures in all classrooms without leaving his office. He has only to push any one of the 24 buttons on the monitoring control panel, and the temperature in that room will register on the dial in front of him. Thermostats are equipped with fusible links, and temperatures above 136° F. will sound an alarm and cause a red light to glow under the transparent button for that room on the control panel. This gives the supervisor an audible warning of the presence of fire, and immediate information as to its exact location. Fire-detecting elements may be installed in storage rooms and other places where thermostats are not required. Panel box is approximately 9" x 14½" and may be surface mounted or flush. Schoolmaster Control costs about 10% more than a standard pneumatic individual room control system, or approximately $30 per room.

Manufacturer: Minneapolis-Honeywell Regulator Co.

continued on p. 210
well known as the home
where millionaires roam...

Neiman-Marcus in DALLAS, Texas
selects wall-to-wall carpet and
Tackless Smoothedge carpet gripper

THERE'S MORE TO LAYING CARPET THAN MEETS THE EYE

Highlighting a $7,500,000 expansion program,
this fine-apparel and accessories store chose large expanses of fine velvet and chenille carpet; as always to convey the utmost in exclusive appointments!

Approximately 10,000 feet of genuine Smoothedge carpet gripper was used for the installation on concrete and tile floor. Since much careful fitting was required; the installation contractor found Smoothedge invaluable as an aid to speed and faultless results!

Here's why there's no substitute for genuine Pre-Nailed

See Sweets AIA File No. 191 or write Dept. AF 19 for samples and informative installation manual.

The Roberts Co.
1536 No. Indiana Street
Los Angeles 54, California

In Canada, Write Box 129, Weston, Ontario

*Guaranteed by Good Housekeeping*
Toplite Roof Panels give you a flexibility never before possible in architecture and planning. They enable you to bring controlled daylight right where it's needed without increasing cubage. Handle Toplite Panels the way you do lighting fixtures and artificial light. Spot panels over areas where special light is needed or install them in continuous strip, pattern, or in individual panels.

Transmits North Light
Maximum transmission of north light is a desirable quality in top-lighting because of its uniformity and freedom from glare and solar heat. Note how the prism structure of Toplite affords efficient transmission of north light.

Accepts Winter Sun
Since low winter sun is comparatively weak in relation to high summer sun as far as glare and solar heat are concerned, maximum transmission is again desirable. This photograph shows how Toplite accepts and transmits winter sunlight.

Rejects Summer Sun
Other materials which transmit north light and low winter sun also transmit high percentages of light during the hot, summer months. Toplite rejects the direct light and heat from the hot, summer sun, but transmits much of the cool, north light.
give fast, trouble-free installation... uniform quality... low job-installation cost

Factory-fabrication means uniform quality and low job-installation cost. They arrive on the job site ready to install. Panels are set on prepared curbs and anchored, ready for flashing by the roofer. Properly installed, roof can be flooded without panels leaking. And, of course, they are fireproof.

Toplite Roof Panels are completely factory-fabricated. They are shipped in individual crates marked to show correct orientation and directional positioning; for speed and ease in installation. A complete range of stock sizes is available to meet any desired panel arrangement.

NEW INFORMATION CATALOG
Want more information about this great advance in daylighting? Send for our new, free, technical catalog on Toplite. Address: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AF-9, Box 1035, Toledo 1, Ohio.
DINNER TIME...

A hideaway kitchen and a slideaway wall in 390 apartments proved an unbeatable combination for the Essex House, Indianapolis, Indiana. Not only did this arrangement save on space and construction costs, but tenants are delighted with the planning.

FOLDOOR was chosen for the job to give the best folding door appearance and performance. Its ability to stack into a minimum of 1 3/8" per foot of opening... its choice of handsome quality fabrics, equaled by no other folding door manufacturer... and its quiet, smooth folding action were other important factors that determined the selection of FOLDOOR.

Whenever you build be sure you include FOLDOOR in your plans. Whatever you build—institution, office building, church or school—there's a size and type of FOLDOOR to fit your every need and opening. Construction strength and quality are uniform in all models—you never have to guess when you specify FOLDOOR for any installation.

For further information see Sweet's Catalog or consult your nearby FOLDOOR installing distributor. There's one in every principal city.

HOLCOMB & HOKE MFG. CO., INC. • 1545 VAN BUREN ST., INDIANAPOLIS, IND.

IN CANADA: FOLDOOR of Canada, Montreal 26
Thermopane insulating glass was specified for the Wyatt Building after careful calculation by Architect A. R. Clas and Consulting Engineers Karsunky, Weller and Gooch, both of Washington, D.C.

Their decision to use Thermopane was based on the following:

The insulation provided by the Thermopane enabled them to save approximately $16,000 on the size of the original heating and air-conditioning plant.

The Thermopane (glass and installation) cost about $18,000 more than would single plate glass for the same 441 windows.

Savings in operation of the oil heating and the air-conditioning system were computed at $530 annually.

Result: Thermopane would pay for itself in four years—from then on it would return a profit.

How long since you’ve computed Thermopane's values in the light of up-to-date costs for the glass, the heating and cooling equipment, and the cost of operating them? Not to mention the extra comfort and the extra appeal to tenants. Look into it, thoroughly, before specifications are drawn up for your next building.

Thermopane does cost more. So do most up-to-date improvements. Measure its cost against return and you’ll see the wisdom of its use in many new structures like the Wyatt Building.
NEW PRODUCTS continued from p. 204

ALUMINUM FRAMING simplifies construction of corrugated plastic partitions and doors

Translucent and colorful office partitions of corrugated plastic can be easily erected, and just as easily taken down, by the use of extruded aluminum structural members designed for this purpose. Doors can be built by the same method. A complete kit for a 3' x 7' door includes stiles, rails, hinges, lock, push plate and bars. The door is shipped knocked-down and can be readily assembled by anyone who can use a screw driver and wrench. List price for the door kit is $80. Special sizes cost $17.40 extra, but sizes smaller than standard can be had by simply cutting the aluminum members to the required size with a hack saw, before assembling. A wide choice of colors and patterns is available in the several brands of corrugated plastic now on the market. The door can also be used to advantage in a conventional solid partition.


FRAMELESS CELLULAR WALL formed by interlocking metal sections

Con-Wall is an easy-to-erect system for building walls and partitions. No skill is required and no tools are used. Two simple sections of aluminum or steel interlock to form a 5"-thick wall. The parts nest for shipment and storage. For permanent construction, the interlocking sections can be tack-welded. Otherwise the wall can be easily demounted with full salvage and re-

SASH AND DOOR CONTROLS

...Better Because

Completely reversible for right or left hand doors.
Weep-holes in end blocks carry water away from door.
Hold open tension is adjustable—may be set for manual or fully automatic operation.
One piece channel fastened directly to door with thru-bolts.

SARGENT & GREENLEAF, INC., ROCHESTER 21, N. Y. • SINCE 1857

continued on p. 216
High quality stainless sheet and strip steel... for the product you make today and the product you plan for tomorrow.

McLouth Stainless Steel Corporation
Detroit, Michigan
Manufacturers of Stainless and Carbon Steels
This is the home of the Baltimore Sun and Evening Sun. Founded in 1837, the Sunpapers are credited during their 117 years of journalism with many advances in news-gathering and publishing practices.

Designed by the Baltimore architectural firm of Palmer, Fisher, Williams & Nes, the modern Sunpapers plant incorporates the most advanced facilities for publishing a newspaper. Consulting Engineers were Egli & Gompf, Inc.; Electrical Contractor, Riggs-Distler & Co., Inc.

Photograph by A. Aubrey Bodine

Under the roof of an ultra-modern newspaper plant, the famous Baltimore Sunpapers are written, edited, and set in type by the light of 3,000 Day-Brite parabolic troffers.

**DEPENDS ON DAY-BRITE LIGHTING**

- This is an out-of-the-ordinary lighting installation, one that merits your attention because it may suggest a similar treatment for your projects.

**LOW-BRIGHTNESS LIGHTING IN ALL AREAS**

- Too often, a distinction is made in lighting office space and production areas. Not in this case. The men at the Linotype machines in the composing room enjoy the same advantages of super-comfortable illumination from Day-Brite parabolic troffers that the editorial and office staffs do.

**DAY-BRITE A LEADER**

- Among fixture manufacturers, Day-Brite has been a leader in advocating increased visual comfort for industry. We believe it is sound lighting practice and a profitable investment for industry's management. We have engineered and built Day-Brite fixtures to conform with our belief.
- It is encouraging to see such a pronounced trend toward better production lighting. It is significant, too, that a great many of today's most advanced industrial installations were carried out with Day-Brite fixtures.

**LOOK AT DAY-BRITE**

- However you choose to upgrade production lighting for your own projects—with recessed troffers as in the Sunpapers plant, with pendant or surface mounted louvered fixtures, with upward-component heavy duty industrials—look at Day-Brite... feel the difference... before you specify.
- We think you'll find the "extra something" you need to make your lighting installation the finest you've ever done.

Call or write your nearest Day-Brite Representative

**FEEL THE DIFFERENCE... BEFORE YOU SPECIFY**
ZONE CONTROL of indoor climate REQUIRED...

PROVIDED economically with CHRYSLER AIRTEMP

CENTRAL STATION AIR CONDITIONING

Four 125 H.P. Chrysler Airtemp "Packaged" Liquid Chillers supply chilled water for cooling which is pumped to air handling units on each floor. Chrysler Airtemp Variable-Capacity Radial Compressors feature exclusive weight-saving, space-saving design. Perfect balance reduces noise and vibration—no special foundations required.

Professional and commercial offices of many types in the Ainsley Building in Miami made zone climate control on every floor a primary requisite in planning the year-round air conditioning. And economy of installation and operation dictated a central station system. So the air conditioning was engineered to fit! Chrysler Airtemp central station equipment supplies chilled water for cooling and warm water for heating to air handling units. Every zone on every floor has individual control.

Whether the particular requirements of a building make one system or a specially-engineered combination of air conditioning systems the most practical choice, Chrysler Airtemp has the answer. A complete line of equipment for every air conditioning need is produced in Chrysler Airtemp's windowless, air conditioned plant. And through a wholly-owned subsidiary, Airtemp Construction Corporation, architects, engineers and contractors get a complete air conditioning service. Just write to Airtemp Division, Chrysler Corporation, Dept. AF, 1600 Webster Street, Dayton 1, Ohio.

CHRYSLER AIRTEMP

HEATING • AIR CONDITIONING for HOMES, BUSINESS, INDUSTRY

AIRTEMP DIVISION, CHRYSLER CORPORATION

Dayton 1, Ohio
As a result of Bayley Visioneering you can now execute many of your choice design treatments in modern panel-wall construction, without the costliness of special window designing. With Bayley sub-frame design, which accommodates separate window units, standard Bayley Aluminum Projected Windows (with channel frames) of any standard size can be used—offering wide flexibility in the use of newer panel decorating materials, plus the desired window area for providing maximum air, light and vision.

Window units are available in a variety of ventilator arrangements. And in addition to the many other advantages of the projected type window, the maintenance-free aluminum construction complements all types of building materials. If you're not fully acquainted with this newest Bayley development look up Bayley's Aluminum Window Catalog in Sweet's—or better yet, write for a Bayley Catalog and full size drafting room details.

*Visioneering—The science of coordinating vision, air and light in modern building walls with windows of advanced design.

Bayley Visioneering Reflects 75 Years of Reliability

Copyright 1953 The William Bayley Company

THE WILLIAM BAYLEY COMPANY
Springfield, Ohio

Springfield District Office
Chicago 2 District Office
New York 17 District Office
Washington 16 District Office
GLARE-REDUCING GLASS BLOCKS contain green-tinted fibrous glass filters to cut glare and promote cool, restful interiors.

Suntrol is the trade name for a new series of double-cavity glass blocks designed to overcome high brightness problems resulting from sun and snow. They contain a pale green diffusing screen which, it is claimed, reduces glare by 35% and instantaneous heat gain by 25%. Further, the new block has a specially toughened exterior face with almost twice the impact resistance of standard blocks.

Although colorless diffusing blocks have long been available, the new tinted blocks provide a cooler light and a more relaxed atmosphere. The green diffusing screen is employed in three types of standard glass block: 1) in a light-directing wall block that throws light upward toward the ceiling; 2) in a light-diffusing wall block that directs light equally in all directions; and 3) in a styrol toplighting block that diffuses light laterally over wide floor areas.

The new block is of standard dimensions, 11¾" square and 3¾" thick. It is manufactured in two halves and the 0.020" thick fibrous glass screen is sealed across the center of the block to prevent direct light from passing through it. Weight of the block is 15 lb; estimated "U" value, 0.44. The cost is no more than standard double-cavity blocks, approximately $1.55 per block when bought by the carload from dealers.

Manufacturer: Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.

LEATHER TILES make luxurious but durable flooring, handsome walls

Although we spend most of our lives walking on leather soles, the prospect of using leather for flooring comes as something of a shock. Leather tiles, 4¼" x 4½" and 4½" x 9", are now offered for use on floors, walls or furniture tops. Piqs Kin, in spite of its synthetic sound, is genuine pigskin leather, taken from the toughest portion of the hide. The tiles are natural tan color and have slightly chamfered edges. About 1/5" thick, the tiles are very flexible and can be easily cut and fitted around corners and into coves. They can be installed over any smooth surface by means of a special adhesive furnished by the manufacturer. Pigskin tiles have been laboratory-tested for abrasion, indentation, absorption and resistance to heat, acid, alkalis, solvents and stains, and proved equal or superior on all counts to standard cork flooring. The tiles cost $1.25 per sq. ft., and the special adhesive sells for $5.91 per gal., delivered.

Manufacturer: Kiefer Tanning Co., 240 Front Ave., S. W., Grand Rapids 4, Mich.
Wolmanized LUMBER is your assurance

. . . Because only Wolmanized clean pressure-treated lumber gives you all four of these important advantages:

1 uniform treatment
Basic *Wolman salts are produced under a single exacting standard of control. And the pressure-treatment process by which Wolmanized lumber is made is the same throughout all 14 sources operating 24 pressure-treatment plants. Wherever you buy Wolmanized lumber, you can be certain of uniform undeviating standards of treatment.

2 application versatility
No matter what use you may have for treated lumber, Wolmanized lumber will serve your purposes . . . and serve them better. Deadly to rot and termites, Wolmanized lumber is clean, odorless, completely paintable, harmless to clothing and skin, and noncorrosive to metal fittings.

3 available anywhere
It is easy to specify Wolmanized lumber by name. And delivery is assured, since Wolmanized lumber is produced coast-to-coast and in Canada by 24 recognized and dependable wood-preserving plants. You are assured, too, by the fact that 47% of all clean pressure-treated lumber is Wolmanized lumber . . . nearly as much as the total output of all other sources combined. You are assured of a nationally recognized and accepted product with Wolmanized lumber.

4 proved dependability
Actual service records prove that Wolmanized pressure-treated lumber lasts years longer. Even under the most demanding conditions . . . such as "Wet Process" industries . . . Wolmanized lumber gives many times the service of untreated lumber, or lumber that has merely been dipped in preservative. For further information write: Koppers Company, Inc., Wolman Preservative Department, Pittsburgh 19, Pennsylvania.

*"Wolman" and "Wolmanized" are registered trade names of American Lumber & Treating Co.

Pressure-Treated
Wolmanized LUMBER

ARCHITECTURAL FORUM • SEPTEMBER 1954

217
reinforced plaster

cut costs 30% for column and beam fire-proofing

- less weight
- no forms
- fewer piles
- easier conduit installation
- quality finish
- saves space
Seven years ago when this building was in the preliminary design stage, we had faith in plaster fire-proofing, but only a few fire tests had been made. We knew that if we could find a simple plaster construction that would pass code ratings, we could produce this $7-million structure for about $75,000 less than we could with concrete fireproofing. This saving represents 31 cents per square foot of gross floor area resulting from the reduction of steel tonnage, piles, yardage of concrete and omission of forms. This rough plaster fireproofing, which is concealed behind finished walls and ceilings, cost about 70 cents per square foot, or about 30 cents less than the cost of column and beam forms. Many fire tests of plaster coverings have been made in recent years and we are sure that plaster will have a long and active future in the protection of steel structures.

W. H. Binford, Pace Associates, Chicago Planners-Architects-Consulting Engineers

Specify Keymesh for the finest, most economical reinforced plaster fireproofing... Architects and contractors everywhere are finding Keymesh the most economical reinforcement for all types of plastering. It's the heart of Keystone's 3 Keys to strong plaster—Keymesh, Keycorner and Keybead. These three products guard against cracking and make stronger corners, joints and junctures. Make your structures better at less cost—specify Keystone's 3 Keys. Write Keystone Steel and Wire Company for complete details.

KEystone STEEL & WIRE COMPANY
Peoria 7, Illinois
KEYMESH • KEYBEAD • KEYCORNER • KEYSTONE NAILS
KEYSTONE TIE WIRE • KEYSTONE WELDED WIRE FABRIC
KEYSTONE NON-CLIMBABLE AND ORNAMENTAL FENCE

$75,000 in construction costs was saved in this building by using reinforced plaster to fire-proof the columns and beams. The architect explains how below.
Another example of AMERICAN BRIDGE construction

Owner: University of Minnesota.
Fabricated and Erected by American Bridge.

Field connections on 2,300-ton steel framework made with high-strength bolts!

The University of Minnesota's imposing new Mayo Memorial Medical Center, in Minneapolis, is one of the largest steel frame structures erected with high-strength bolts for field connections.

2,300 tons of structural steel—all of it fabricated and erected by American Bridge—went into the framework of the building. The project consisted of an auditorium approximately 100' x 125'; an east wing six stories high, approximately 50' x 250'; a south wing six stories high, approximately 50' x 140'; and a fourteen-story tower section, approximately 50' x 250'.

The successful use of high-strength bolts on a building of this size makes a good case for the soundness of this type of construction. American Bridge crewmen can make strong, tight connections with high-strength bolts as efficiently and speedily as less skilled personnel can handle the more common methods.

Another factor favoring the use of bolted connections is the reduction of construction noise. And this advantage creates considerable goodwill when erecting in business, hospital and educational areas.

But American Bridge plays no favorites when it comes to methods of making connections. Whether specifications call for riveted, welded or bolted construction, you can depend on American Bridge to handle the job with maximum efficiency, economy and speed—anytime, anywhere!

For detailed information regarding your requirements, please contact the office nearest you.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION • GENERAL OFFICES: 535 WILLIAM PENN PLACE, PITTSBURGH, PA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE 
UNITED STATES STEEL

THE MAGAZINE OF BUILDING 220
KENTILE asphalt tile floors meet small store requirements for durability... beauty... economy

Every unit in a modern shopping center has its own special, flooring problems! But, all floors must be long lasting, attractive, economical, easy-to-clean. When you specify Kentile you answer all these needs.

Kentile costs less to buy, install and maintain. And, it is one of the toughest, most durable floors made. Years of heaviest traffic can't harm it, discolor it or destroy the crisp, clear, tile-deep colors. The wide color selection offers limitless design opportunities ... makes "custom" flooring easy and economical to achieve. Find out for yourself why Kentile is America's most-used commercial floor.

Specifications and Technical Data

INSTALLATION: Over any smooth, firm interior surface free from spring, oil, grease and foreign matter... over metal, wood, plywood, concrete, radiant heated concrete slab, concrete that is in direct contact with the earth; on or below grade.

THICKNESSES: Kentile is available in two gauges: 1/8" for residential and most commercial uses—3/16" for industrial use and where extra-heavy duty flooring is needed.

SIZES: Standard tile is 9" x 9".

SPECIAL KENTILE: Greaseproof asphalt tile for use around meat counters, in bakeries, beauty shops, in a wide range of marbleized colors—extremely resistant to fats and oils, alcohols, alkalis and most acid solutions.

Approximate Installed Prices (per sq. ft.)

<table>
<thead>
<tr>
<th></th>
<th>1/8&quot; Gauge</th>
<th>3/16&quot; Gauge</th>
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<tbody>
<tr>
<td>KENTILE: A Colors</td>
<td>20¢</td>
<td>25¢</td>
</tr>
<tr>
<td>KENTILE: B Colors</td>
<td>25¢</td>
<td>30¢</td>
</tr>
<tr>
<td>KENTILE: C Colors</td>
<td>30¢</td>
<td>40¢</td>
</tr>
<tr>
<td>KENTILE: D Colors</td>
<td>35¢</td>
<td>40¢</td>
</tr>
<tr>
<td>SPECIAL KENTILE</td>
<td>40¢</td>
<td>50¢</td>
</tr>
</tbody>
</table>

These costs are based on a minimum area of 1,000 sq. ft. over concrete underfloor. Color groupings range from Group "A," the darkest solid colors... to Group "D," the lightest marbleized colors. Special Kentile is available in Regular and Deluxe Colors.

Samples and Technical Literature available to architects, builders and designers on request. Contact the Kentile Flooring Contractor listed under FLOORS in the Classified Phone Book. Or, write the nearest Kentile, Inc. office listed below stating the samples and information desired. Be sure to request samples of ThemeTile die-cut inserts, Feature Strip and KenBase.

KENTILE ASPHALT TILE easily withstands the constant daily wear and tear of heavily-loaded hand trucks, shoppers' carts and continuous foot traffic. Spilled foods, acids and alkalis can't harm it...mild soap and water cleans it quickly and thoroughly. An occasional self-polishing, no-rub waxing keeps Kentile bright, fresh and new-looking.

Kentile is the floor your clients know and want...

BACKED BY MORE FULL-COLOR ADVERTISING THAN ANY OTHER ASPHALT TILE FLOOR

KENTILE • KENCORK • KENRUBBER • KENFLEX • KENFLOR

KENTILE, INC., 58 SECOND AVENUE, BROOKLYN 15, NEW YORK • 350 FIFTH AVENUE, NEW YORK 1, NEW YORK • 705 ARCHITECTS BUILDING, 17TH AND SANSOM STREETS, PHILADELPHIA 3, PENNSYLVANIA • 1211 NBC BUILDING, CLEVELAND 14, OHIO • 900 PEACHTREE STREET N. E., ATLANTA 5, GEORGIA • 2020 WALNUT STREET, KANSAS CITY 6, MISSOURI • 4532 S. KOLIN AVENUE, CHICAGO 32, ILLINOIS • 4501 SANTA FE AVENUE, LOS ANGELES 58, CAL.

ARCHITECTURAL FORUM • SEPTEMBER 1954
NEW PRODUCTS  continued from p. 216

CLAY PIPE for industrial waste has plastic screw-seal joint

Designed especially for handling corrosive fumes and liquids, Screw-Seal is made of extra-strength, premium grade vitrified clay pipe. On each end of the 3' lengths of pipe, a threaded plastic ring is cast in place at the factory. The ring is resilient polyvinyl chloride, called Plastisol. A separate collar, with female threads, is made of hard phenolic plastic. Screw joints are easily made, requiring only three turns by hand and one by strap-wrench. The resulting joint is under constant compression and is watertight and gas tight. It will withstand most corrosive industrial wastes, including hydrochloric and sulphuric acids in any concentration. Because of the resilient nature of the plastic seal, vibration does not affect it and pipe can be out of line as much as 6° without causing a leak. For locations where the screw-seal cannot be used, a split-flange union is provided, which is bolted together over a polyvinyl gasket. A complete line of screw-seal fittings is provided. F.O.B. prices: 4" inside diameter pipe, $1.50 per lin. ft.; 6" pipe $2.25 per ft.; 8" pipe $3 per ft.

Manufacturer: Robinson Clay Product Co., Akron 9, Ohio.

CLAY PIPE with built-in plastic joint seals by pushing together

Fifty feet of clay pipe can be laid in 15 minutes by using the new Amvit jointed pipe. Precast plastic rings are molded into the bell and spigot ends of the pipe at the factory. The ring at the bell end has a concave surface and the spigot ring has a convex surface. The pipe is joined by lubricating the joint with water and pushing the two pieces of pipe together. Since the plastic at the spigot end is slightly larger in diameter than the ring at the bell end, the completed joint is under constant compression, insuring tightness. The joint, of polyvinyl chloride, is immune to weather, underground...
The school building of today with all its many new and modern facilities is a far cry from the little red school house of a few years ago. Just consider its windows for example. Today's modern, easy-operating, weathertight aluminum windows are vastly superior in every way to the old-fashioned, hard-to-open windows that always needed painting and maintenance expenses.

Yes, today, architects as well as school authorities are concerned with more than just mere windows. They demand all the requirements of good fenestration—maximum light, controlled ventilation, weathertightness, easy operation, permanent beauty and low maintenance costs for the entire life of the building. That's why so many new schools are being built with "Windows by GENERAL BRONZE."

Whether you are planning school buildings, hospitals, apartments, commercial or monumental buildings, General Bronze, the world's largest fabricator of aluminum windows, offers you the benefit of more than 40 years' practical experience in solving your problems as they pertain to windows, spandrels, curtain walls and architectural metalwork. Our reputation for quality products, for sound engineering and design, for precision workmanship is known and accepted from coast to coast.

Because of our unequalled facilities and our vast experience, we are well qualified to serve you, especially when your requirements are complex or unusual. We will be glad to discuss your problems with you at any time. Our catalogs are filed in Sweet's.

TROY HIGH SCHOOL
Architect: Frank J. Morgan
Contractor: Wm. L. Crow Construction Co.

GENERAL BRONZE CORPORATION • GARDEN CITY, N.Y.
PERMATITE DIVISION—Custom-built Windows, Architectural Metal Work and Revolving Doors
AIRMINTITE DIVISION—Stack-size Aluminum Windows
BRACH MFG. CO. DIVISION—Multel, T. V., Radio and Electronic Equipment
STEEL WELDMENTS, INC. DIVISION—Custom fabrication in steel and iron.
Roddiscraft announces
a new wood-faced fire door
... approved by Underwriters Laboratories

Lightweight Roddiscraft B-Label Fire Doors
are available in all wood species to
match any flush doors you specify

Now architects and engineers can specify all
flush doors from one source — Roddiscraft.
With the development of the new B-Label Fire
Door, Roddiscraft now offers a complete line of
flush doors for all types of applications. For open­
ings in vertical shafts, where a fire barrier is re­
quired, specify the new B-Label Fire Door. It has
been approved by the Underwriters Laboratories
and gives a minimum of at least one-hour fire
protection.

The door is currently being produced in all
available wood species — in both standard and
specified sizes. Widths up to 3½ feet and heights
up to 7 feet meet almost all commercial, indus­
trial or institutional requirements. These include
stairway and room entrances, shaft and fire
escape openings. You’ll find wide residential ap­
lication, too. There is a growing trend in the
use of fire doors for entrances to bedrooms, base­
ments and attached garages.

Check the advantages of the new Roddiscraft
B-Label Fire Door listed here. Write for complete
specifications or call on your nearest Roddis
warehouse for details.

Only Roddiscraft B-Label
Fire Doors give you all these
quality features

• Non-combustible core of special asbestos
  compound.
• Faced on both sides with plywood veneer
  ... in all available wood species.
• Available in widths up to 3½ feet ... 
  heights up to 7 feet.
• 20% lighter than conventional solid
  core doors for lower shipping costs ... 
  easier handling.
• Warp-free, low sound transmission,
  low heat transmission.
• Completely stable core — no chance
  of rattling. Three sections are
  assembled with tight tongue-and-
  groove joint.

Roddiscraft
RODDIS PLYWOOD CORPORATION
Marshfield, Wisconsin
warehouses in principal cities

RODDIS PLYWOOD CORPORATION
Marshfield, Wisconsin
Please send me
□ Specifications of your new B-Label Door
□ Information on your complete door line

Name ...........................................................
Address .....................................................
City .......................................................... State ...................................
Rolling Steel Doors

Manually, Mechanically, or Electrically Operated

In pier storage buildings, and warehouses of world ports, rolling steel doors play an important role in providing access and protection for off-loaded and on-loading cargoes. For this particular purpose, no other type of door so fully meets today's requirements . . . because, Rolling Steel Doors occupy no usable space either inside or outside the door opening . . . their vertical roll-up action permits cargoes to be stacked within a few inches of the door curtain on either side. And, there are no overhead tracks or other obstructions to interfere with crane handling adjacent to door openings. A Mahon electrically operated, quick-opening, quick-closing Rolling Steel Door will save valuable space and valuable time in any type of opening. In addition, Mahon Rolling Steel Doors are permanent—their all-metal construction assures a lifetime of trouble-free service and maximum protection against intrusion and fire. When you select a Rolling Steel Door, check specifications carefully . . . you will find extra-value features in Mahon doors—for instance, the galvanized steel material, from which the interlocking curtain slots are rolled, 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. You will find other quality materials and design features in Mahon doors that add up to a greater over-all dollar value. See Sweet's Files for complete information including Specifications, or write for Catalog 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, Partitions, and Permanent Concrete Floor Forms.

MAHON ARCHITECTURAL FORUM • SEPTEMBER 1954

!our of Thirty Mahon Rolling Steel Doors installed in the Napoleon Avenue Wharf Shed built by the Board of Harbor Commissioners, Port of New Orleans, Louisiana.
To insure a proper bond for the adhesive, all paint must be removed. Because of the speed with which paint can be removed from large areas, the acetylene paint burner is often preferred for this type of work. However, machine sanding and chemical paint removers also do the job quickly and well.

Since adhesives will not adhere to oil- or grease-soaked floors, it is necessary that these floors be cleaned with a strong grease-cutting solution, such as tri-sodium phosphate or alkali-type cleaner. Floors should be rinsed well to remove excess chemicals which might destroy the binding qualities of the flooring adhesive.

For remodeling jobs, here's what an architect needs to know about...

**PREPARING OLD SUBFLOORS FOR RESILIENT FLOORING**

With the continuing importance of modernization projects, resilient floors offer the architect the simplest means of utilizing the previous floor construction. However, no resilient floor is better than the subfloor over which it is installed, and satisfactory results depend to a very great degree on correct preparatory work. Such resilient floors as linoleum, Linotile, plastic flooring (such as Corlon), rubber tile, cork tile, vinyl-plastic-asbestos tile (such as Excelon), and asphalt tile are readily adaptable to remodeling jobs and will give many years of service if subfloors are properly prepared.

The installation of resilient floors in an old structure usually involves the conversion of what was once a wearing floor into a subfloor. Two main conditions must be met before such a floor forms a satisfactory base for a resilient floor. First, it is necessary to have a relatively smooth-surfaced subfloor, free from serious irregularities which would mar the appearance of the finish floor. Second, since nearly all resilient floorings are applied with adhesives, the old floor must be so prepared as to provide a satisfactory bonding surface for the adhesive.

**Wood Floors.** The preparation of old wood floors for the installation of resilient flooring depends on the type of construction:

1. Single wood floors, not tongue-and-groove. These should be covered with ¾" Armstrong's Tongue-and-Groove Armstrong's Temboard Underlayment or ⅝" or heavier plywood, of DFPA Plypanel grade or better.
2. Single wood floors, tongue-and-groove. Use Armstrong's Temboard Underlayment or ¾" or heavier plywood underlayment of DFPA Plypanel grade or better.
3. Double wood floors. If boards are ¾" or more, proceed as (2), above. If less than ¾", nail loose boards and replace defective or badly worn boards with new material. Fill cracks and holes with plastic wood or snugly fitting wood pieces. Remove surface irregularities, such as cupping, by sanding.

Wood floors which are too uneven to be sanded smooth should be covered either with a mastic-type floor fill made with Armstrong's No. S-170 Flormastic, or hardboard, or ¾" or heavier plywood.

Old wood floors which have been painted or oiled present a special problem. Such treatments tend to prevent the penetration of the adhesive into the wood and deprive...
Surface defects in the old floor often damage or otherwise mar the finished resilient floor. This can be prevented by carefully renailing loose boards and sanding or planing warped areas to floor level. All badly damaged floor boards should be replaced. Sanded areas should be treated with a sealing compound.

An underlayment, consisting of four-by-four sheets of hardboard or plywood, is advised for uneven subfloor areas which cannot readily be corrected by sanding. When laid over a tongue-and-groove floor, this underlayment provides a sound, smooth, and economical base for all types of resilient flooring.

Another method of resurfacing damaged wood and concrete subfloors is the use of a cold mastic floor fill. It can be laid directly over the old floor. Wood screeds and a straightedge may be used to maintain the thickness necessary for leveling. Cold mastic fills will not adhere to subfloors treated with oil.

Concrete Floors. The problem of securing proper adhesion to concrete subfloors usually arises from dusty, chalky, or flaky concrete surfaces. This can generally be overcome by thorough sweeping with a wire brush to remove all loose particles, followed by a sealing treatment with Armstrong's Floor and Wall Size. All cracks, minor holes, and crevices should be filled with Armstrong's Crack Filler or a filler of equal quality before any resilient flooring installation is started. If concrete floors are too badly damaged to be repaired by crack fillers, the entire floor may be resurfaced with a fill made from Armstrong's Flormastic or a concrete topping. It is important that concrete topping and new concrete floors be fully cured before installing resilient floors.

Special Conditions. The above comments cover the most common conditions encountered in dealing with subfloors of wood and concrete. Other types of subfloors such as metal, terrazzo, and magnesite require special treatment which is so dependent on individual circumstances that it is not practical to lay down general recommendations. In such cases, Armstrong will be glad to give you assistance by telephone or by letter and, when the occasion demands it, will send a representative to study the subfloor condition and offer suggestions on proper methods of preparation.

ARMSTRONG CORK COMPANY makes all types of resilient floors for all types of interiors. Almost any flooring problem can be met with one or more of the floors in the Armstrong Line. As a result, we have no special bias toward any one type and can offer architects impartial recommendations on any flooring problem. Our main interest is to aid you in making a sound flooring selection.

Armstrong's sales representatives throughout the country will be glad to consult with architects and make specific recommendations for individual jobs. Your Armstrong representative has a wide variety of experience and training in resilient flooring and can also call upon Armstrong's Research and Development Center for assistance with special problems.

For helpful information on any flooring question, just call your nearest Armstrong District Office or write direct to Armstrong Cork Company, Floor Division, Lancaster, Pa.
Since 1818

STEEL WINDOWS HAVE THE STRENGTH AND RIGIDITY THAT NO OTHER WINDOW CAN MATCH

WINDOW WALLS

Over the years, as architects have incorporated more and larger glass areas in their designs, Hope's engineers have assisted by pioneering Steel Window Walls of outstanding strength, rigidity and durability. They adapt to any architectural plan, they can accommodate any desired ventilator arrangement and they complement the facade. At right are Hope's construction details used in this modern rest home.

Here's a Partial List of Hope's Steel Window Wall Installations:
1947 — Science and Pharmacy Bldgs., Drake University, Des Moines, la. Saarinen, Swanson and Saarinen, Arch'ts, Brooks-Borg, Associates . . .
1952 — Douglass Elementary School, Kansas City, Mo. Kivett and Myers, Arch'ts; Angus McCallum, Associate . . .
1954 — Senior High School, Anaconda, Mont., Fox and Ballas, Arch'ts and Eng'rs.

Write for Catalog 134AF

HOPE'S WINDOWS, INC., Jamestown, N. Y.
THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS

Don Orione Rest Home East Boston, Mass.
Coletti Bros. Architects
Mozzicato Construction Co., Contractor

Write for Catalog 134AF
Chase®
gives you **7 reasons why copper means a better home!**

- **It won’t rust and resists corrosion**—Copper’s resistance to the elements is traditional—even in areas where atmospheric conditions destroy other metals. Its performance is proved over centuries of experience.

- **It’s full weight**—Look for the die-stamped Chase Trade Mark and Weight Stamp—your assurance that Chase Copper Roofing Products have stability and permanence.

- **Seams are adequate**—Chase Copper Leaders are formed from full-width strips, to assure strong, expansion-proof seams.

- **Corrugations are deep and generous**—Chase Copper Downspouts have full-depth corrugations, ample for temperature ranges in any climate.

- **It can be soldered . . . with ease and economy**—Long-lasting, water-tight joints are assured when standard soldering techniques are applied to Chase Copper Roofing Products.

- **It’s architecturally harmonious**—Modern or traditional design both benefit from Copper’s rich appearance—a metal protected and beautified by nature itself.

- **It’s economical**—The ratio of first-cost to years of service is at a bare minimum, when Copper is used. And, the relationship of copper to overall building costs is as reasonable as it ever was in the past.

For maximum life and performance, install Chase full weight copper leaders, gutters and roofing accessories.

**Chase®**

BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION
conditions, roots, acids, alkali, oil, sewage and most industrial wastes. The joint will withstand a pressure of 30 psi and, by using an adhesive as a lubricating agent, hydrostatic pressures of 80 psi have been withstood. Since the plastic is resilient, the result is a ball and socket type of joint, which has remarkable flexibility. Pipe can be as much as 7° out of line without injury to the seal at the joint. This property can be used to make long sweep turns without special fittings. With 6° offset at each joint, a 90° turn can be made in eight 2' lengths of pipe, the turn having a radius of 9½'. Another advantage of the resilient joint is that a section can be removed from an installed line without disturbing more than the two adjacent pieces. Prices: 4" diameter, 46.5¢ per ft.; 6", 58.5¢; 8", 88¢ all F.O.B.
Manufacturer: American Vitrified Products Co., Cleveland, Ohio.

ALL-WOOL TUFTED CARPET retails for less than $10 per sq. yd.

Said to be a revolutionary development, the first all-wool tufted carpet, woven on a warp and woof of jute, results in a floor covering of a high quality at a moderate price. Called Counterpoint, the new carpet is available in 12' width in four color combinations: turquoise and beige; two shades of green and gray; gold, beige and white, beige, gray and white.
Manufacturer: A. & M. Karagheusian, Inc. 295 Fifth Ave., New York 16, N.Y.

ALUMINUM FOIL INSULATION has asbestos core

Insul-Attic is a low-cost insulation consisting of aluminum foil laminated to one or both sides of 10 lb. asbestos felt, and is therefore incombustible and immune to attack by rot or vermin. Like other aluminum foil insulations, it is an excellent vapor barrier, has low heat capacity, and is clean, light and easy to apply. The insulation is available in rolls of 100 sq. ft., 18" or 36" wide. Price in quantities of 25 M sq. ft. and over, foil one side: $20 M sq. ft.; foil both sides: $27 M.

WHITEPRINT MACHINE produces 42" wide positive prints at 30' per minute

The new compact, high-capacity Ozalid Model 800 will be in production this fall. Operation is continuous through exposure and development; no rehandling is required. Various automatic controls assure uniform printing and developing. Speed is adjustable from 8' to 30' per minute. Front or rear delivery is offered. Price: $3,250.
Manufacturer: Ozalid, Johnson City, N.Y.

NOW...for the first time in the history of the building industry—a two-hour fire-rated acoustical ceiling.

Tested and approved by Underwriters' Laboratory

FYRATE SYSTEMS

A new and highly efficient method of combining 2-hour fire protection with mechanically supported acoustical tile ceilings—another step forward in safety and economy for modern building construction.

An Important Plus: The complete assembly provides, in addition to 2-hour fire-rated protection, thermal insulation with vapor barrier, and exceptionally high acoustical properties.

Write for complete data on tests.

FYRATE, INC.
832 W. Eastman St.
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FYRATE, INC. Please send me complete information on U.L. tests of FYRATE.

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ALL-YEAR, Inc. Please send me complete information on U.L. tests of FYRATE.
...the finest structures rest on
RAYMOND FOUNDATIONS

BOK SINGING TOWER
Mountain Lake, Florida

ARCHITECT: Zantzinger, Borie & Medary, Philadelphia
CONTRACTOR: Horace Burrell & Son, Philadelphia

THE SCOPE OF RAYMOND'S ACTIVITIES—Soil Investigations... Foundation Construction... Harbor and Waterfront Improvements... Prestressed 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
CABINET HINGES permit flush front cabinets cut from single piece of plywood

Cabinets designed so that the doors completely overlap the frames and form the entire cabinet front are both economical and attractive. Economical because the entire front can be cut from a single piece of plywood and the frame, being fully concealed, does not have to be of select quality. Attractive because of the completely flush appearance and the continuity of the grain of the plywood. Hinges suitable for this type of construction have often been hard to come by. Now Stanley offers both pivot and offset loose-pin hinges designed for this purpose. Each type comes in two models, for attaching to horizontal or vertical framing members. The loose-pin hinge is also available in a third model, for hanging two doors back to back on the same partition. All fastenings are concealed when the doors are closed and the exposed portions of the hinge are inconspicuous. Hinges are made of steel in several finishes: bright zinc, bright brass, satin bronze, or primed for painting. Cost 40 to 60¢ per pair, according to finish.

A new magnetic catch for cabinet doors has also been announced. The catch fits between door and shelf, so that no part projects into the cabinet. The magnet is spring mounted in an anodized aluminum housing. The strike is steel, bright zinc plated. Cost: approximately 70¢ per set including screws. Manufacturer: The Stanley Works, New Britain, Conn.

GIANT DITCHING MACHINE will dig gorge 30' deep and 15' wide

Buckeye Model 435, now being designed, will be a mechanical monster 81' long, 15' high and 12' wide, and will weigh an estimated 65 tons. It will be used to excavate intercepting and outfall sewer trenches, water diversion aqueducts and other big ditches. At a price of $100,000, the new machine will be a bargain, according to the manufacturer, since the equipment now used for this type of work costs twice as much. Manufacturer: Gar Wood Industries, Wayne, Mich.
NEW U.S. ARTILLERY SCHOOL BUILDING at FORT BLISS
El Paso, Texas

214 Powers Room Thermostats Used here.

15 Hygrostats
228 PACKLESS Valves

Powers PACKLESS Control Valves eliminate packing maintenance, leakage of water, steam or loss of vacuum

52 Six Inch POWER-STROKE Damper Motors and many other Powers controls

Established in 1891 • THE POWERS REGULATOR COMPANY • SKOKIE, ILL. • Offices in Over 50 Cities

Designed under the supervision of the Albuquerque District of The Corps of Engineers by Carroll & Dooable and Landauer, Guerrero & Shafer, Architects-Engineers

POWERS Pneumatic System of TEMPERATURE and HUMIDITY Control

Selected for ANTI-AIRCRAFT and GUIDED MISSILES Branch of the Artillery School

TAXPAYERS will derive a big return from their investment in this huge academic building. From it will come increased strength for our defenses to hurl back and defeat aggression.

Proper temperature for maximum comfort and efficiency will be maintained in all classrooms, auditorium and administrative facilities by a Powers control system.

With over 60 years of experience, a modern complete line of controls for heating, air conditioning and industrial processes—POWERS is well qualified to help with your temperature and humidity control problems.
DURIRON cures corrosion at
University of Texas Medical Center – Galveston, Texas

In the recently completed $16,500,000 University of Texas Medical Center—including the John Sealy Hospital, the Rosa and Henry Ziegler Hospital and the Gail Borden Pre-clinical Sciences Bldg.—drain lines are of Duriron. Duriron offers high resistance to corrosives handled throughout the thickness of the pipe wall. There'll be no replacement cost for labor, new pipe or interior reconstruction during the life of the building. Duriron pipe and fittings are available from stock in principal cities. Specify, and insist on, the permanent drain line—Duriron. May we send you Duriron Catalog PF/4?

The John Sealy Hospital:
CONSULTING ARCHITECT—
Eggers & Higgins, New York, New York
ASSOCIATE ARCHITECT—
C. H. Page & Sons, Austin, Texas
MECHANICAL ENGINEER—
Zumwalt & Vinther, Dallas, Texas

Rosa and Henry Ziegler Hospital,
Gail Borden Pre-clinical Sciences Bldg.
CONSULTING ARCHITECT—
Mark Lemmon, Dallas, Texas
ASSOCIATE ARCHITECT—
Kenneth Franzheim, Houston, Texas
MECHANICAL ENGINEER—
Dale Cooper, Houston, Texas

THE DURIRON COMPANY, Inc.
Dayton, Ohio
Benjamin "Magna-Flo" Systems Excel!

that's why Overall Lighting Costs are LOWER!

Because Benjamin "Magna-Flo" Systems excel by every Quality Standard—lighting, electrical and constructional—they can provide high illumination levels at low overall lighting cost. Such cost involves more than the original price of the units. Overall lighting cost also includes the costs of installation, operation, maintenance and replacement. Add them all up and see why you're ahead with "Magna-Flo" Systems (individual unit or continuous line)—because "Magna-Flo" excels by ALL QUALITY STANDARDS!

This chart gives some of the important reasons why:

<table>
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<tr>
<th>&quot;MAGNA-FLO&quot; CUTS INSTALLATION COST</th>
<th>&quot;MAGNA-FLO&quot; CUTS MAINTENANCE COST</th>
<th>&quot;MAGNA-FLO&quot; CUTS OPERATION COST</th>
<th>&quot;MAGNA-FLO&quot; CUTS REPLACEMENT COST</th>
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<td>wide variety of knockouts facilitate wire entrances into unit.</td>
<td>Porcelain Enamel reflecting surface is easy to keep clean with soap and water.</td>
<td>made for efficient utilization of high light output T12 Slimline lamps.</td>
<td>famous Benjamin &quot;built-like-a-battleship&quot; construction of heavy gauge steel.</td>
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<td>complete line of sliding hangers.</td>
<td>exclusive &quot;Springlox&quot; lampholders make possible &quot;quick-in, quick-out&quot; lamp maintenance.</td>
<td>high power-factor ETL-approved ballasts for continuously-cool, efficient operation.</td>
<td>rigid channels and reflectors withstand toughest industrial vibration.</td>
</tr>
<tr>
<td>single, rugged channel coupling for continuous mounting.</td>
<td>Speedy, exclusive &quot;Lok-Latch&quot; reflector fasteners.</td>
<td>high reflection factor remains constant because genuine Porcelain Enameled reflector does not discolor or become dull with age.</td>
<td>96&quot; reflectors are made in two sections, kept perfectly aligned by positive alignment clips.</td>
</tr>
</tbody>
</table>


Benjamin "Magna-Flo" Systems are Sold Exclusively through Electrical Distributors.

ZURN ENGINEERED carrier systems relieve the wall of all the load! There is a Zurn adjustable wall closet fitting or carrier for every type plumbing fixture—lavatory, toilet, urinal, sink, and fountain.

SHOWN ABOVE is the new wall-type model of the famous Sanistand fixture—a urinal especially designed for women by American-Standard. Made of genuine vitreous china and available in gleaming white and a variety of colors. Fits standard toilet compartments.

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TECHNICAL PUBLICATIONS

CEILINGS

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Corebond . . . An Improved Bonding Cement for

Brick and Tile. The Cellcote Co., 4843 Ridge Rd., Cleveland, Ohio. 4 pp. 8 1/2" x 11"

CONCRETE REINFORCING
Steeltex—Backbone of Concrete, Plaster, Mortar. Pittsburgh Steel Products Co., Grand Bldg., Pittsburgh 19, Pa. 24 pp. 8 1/2" x 11"

DRAFTING EQUIPMENT
Chart-Pak Method of Prefabricated Charting of Statistical Charts, Organization Charts and Office Layouts. Chart-Pak, Inc., 100 Lincoln Ave., Stamford, Conn. 16 pp. 8 1/2" x 11"

FLOORING
For Modern Industry—Brick Floors for Safety, Service, Economy. Metropolitan Brick, Inc., Canton 2, Ohio. 14 pp. 8 1/2" x 11"

FOUNTAIN EQUIPMENT
5K Fountain Nozzles, Bul. 6A-FN. Schutte & Koerting Co., Dept. J-L, Cornwells Heights, Bucks County, Pa. 8 pp. 8 1/2" x 11"

GLASS BLOCK
P. C. Glass Blocks for Industrial, Commercial and Public Buildings. Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa. 24 pp. 8 1/2" x 11"

HEATING, VENTILATING AND AIR CONDITIONING


Calrod Electric Heaters and Heating Devices 1954, Catalogue GEC-1005E. General Electric Co., Schenectady 5, N.Y. 60 pp. 8 1/2" x 11"

Dravo Heater Case Study Reports. Dravo Corp., 1203 Dravo Bldg., Pittsburgh 22, Pa. 9 1/2" x 11 1/4"

Electrol Finest in Oil Fired Equipment since 1918. Electrol Burner Mfg. Co., Inc., 22 Union Ave., Rutherford, N.J. 8 pp. 8 1/2" x 11"

"R-Z-U" Junior, Catalogue No. JR-10-2. Fitzgibbons Boiler Co., 101 Park Ave., New York 17, N.Y. 6 pp. 8 1/2" x 11"

Ray Forced Draft Packaged Burner, Catalogue Unit "Y." Ray Oil Burner Co., 3301 San Jose Ave., San Francisco 12, Calif. 8 pp. 8 1/2" x 11"

"Spotaire" Air Conditioning System for Hotels, Motels and Apartments. Bul. No. C-4-23. Drayer-Hanson, Inc., 3301 Medford St., Los Angeles 63, Calif. 4 pp. 8 1/2" x 11"

Staynew Automatic Filters. Bul. No. 500, Collinger Corp., 11 Centre Park, Rochester 3, N.Y. 12 pp. 8 1/2" x 11"


MAINTENANCE
Multiclean Florule (for floor finishing and maintenance). Multiclean Products, Inc., 2277 Ford Pkwy., St. Paul 1, Minn. 2 pp. (slide rule). 4" x 6"

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Duraplastic air-entraining portland cement helps make a more plastic mix that aids proper placement in forms.

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

Duraplastic provides trim appearance for Pennsylvania school

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In England—Robertson Thin Ltd., Ellesmere Port, Cheshire

In Canada—Robertson-Irwin Limited, Hamilton, Ontario

World-Wide Building Service

Continued from page 240


Quick Reference Guide (to products and methods used in maintenance and construction). The Tremco Mfg. Co., 8701 Kinsman Rd., Cleveland 4, Ohio. 24 pp. 8 1/2" x 11"

Materials Handling

Link-Belt Foundry Equipment, Book 2423. Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill. 40 pp. 8 1/2" x 11"

Materials Handling Cost Cutter. Automatic Transportation Co., 101 W. 87th St., Chicago 20, Ill. 90 pp. 8 1/2" x 11"

Pipes and Coverings

Adhez-A-Kote Lagging Adhesive and Coating, Bul. 5307. General Paint Corp., 2627 Army St., San Francisco 19, Calif. 4 pp. 8 1/2" x 11"

Yardley Clear Stream Pressure Rated Plastic Pipe, Bul. 36. Yardley Plastics Co., Columbus 15, Ohio. 4 pp. 8 1/2" x 11"

Piping for Permanence. A. M. Byers Co., 1501 Clark Bldg., Pittsburgh, Pa. 32 pp. 8 1/2" x 11"

Plumbing

Leeden Plug Valve Actuators, Bul. 3020. Leeden Mfg. Co., 1600 S. San Pedro St., Los Angeles 15, Calif. 8 pp. 8 1/2" x 11"


Porcelain Enamelled Aluminum


Paints and Protective Coatings

Celite Flatting Agents and Pigment Extenders. Johns-Manville, 22 E. 40th St., New York 16, N.Y. 16 pp. 8 1/2" x 11"

Check List of Metal Protective and Paint Bonding Chemicals and Processes. American Chemical Paint Co., Ambler, Pa. 8 pp. 4" x 8 1/4"

Hi-Heat Resisting Finishes, Bul. 5311. General Paint Corp., 2627 Army St., San Francisco 19, Calif. 4 pp. 8 1/2" x 11"

Properties and Application of Complete Ironite Line of Primers for Metal Surfaces. Technical Bul. No. 5401. General Paint Corp., P.O. Box 3474, Rincon Annex, San Francisco 19, Calif. 4 pp. 8 1/2" x 11"

Protective Coatings by Celicote, Catalogue No. C-150. The Celicote Co., 4843 Ridge Rd., Cleveland, Ohio. 8 pp. 8 1/2" x 11"
Floors, like Fords, have seen change over the years

For over a half century the automobile has been a chief topic of conversation, and the improvements made over the years have been critically analyzed by every prospective purchaser.

As every architect and engineer well knows, the floor construction of office buildings has undergone a similar period of development, moving from cumbersome tile arch construction to the modern electrically available cellular steel floor. The basic chronology of floors and Fords up through Q-Floor and the Y-Block engine is shown below.

1904 The 4-cylinder, 29-horsepower forerunner of the fabulous Model T was a sensation this year. It featured two speeds forward, gas headlamps, and a handy crank for starting.

1904 This year, electricity was just finding its way into commercial buildings and was used only for lighting. Floor construction, at best, was a dead monolithic slab.

1924 Ford was now producing as many as 2,000,000 cars a year, all painted black. Wide tolerances in bearings, gears, and other interchangeable parts made every Model T owner his own repairman.

1924 The increasing use of electricity found many office buildings sadly lacking in convenience outlets for the new electrical equipment. Early attempts at "in-the-floor wiring" were adequate for that day.

1954 Today's car is designed for comfort and convenience. There is little left to do but steer. Mechanically, it is made to cope with every requirement of its owner.

1954 The finest of today's new office buildings are built with modern Q-Floor because it offers the greatest electrical and structural advantages of any floor system known.

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Architectural Forum • September 1954

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THE MAGAZINE OF BUILDING
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Donald M. Drake Co., General Contractor, describes advantages of using Cofar in construction of fourteen story University of Oregon General Hospital, Portland, Oregon: “Using Cofar—combined form and reinforcement, enabled us to keep floor construction moving ahead ‘on schedule’ immediately behind rapid bolting of framework! By reducing over-all erection time, speeding-up the placement of concrete and insuring faster occupancy of the completed structure, Cofar provides economies in the floor system which benefit the owner, the architect and the contractor!”

Cofar deep corrugated steel units (with transverse temperature wires welded across the corrugations) serve as both form and reinforcement for concrete slabs, completely eliminating the expensive and time consuming construction of wood forms and provide all the positive steel needed in the structural concrete slab.

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University of Oregon General Hospital
Architect: Laurence, Tucker & Wallman
Engineers: Cooper & Hoad

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