MAGAZINE OF BUILDING

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architectural forum

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PROPERTY	WATER BASE PAINTS	OIL BASE PAINTS	HYDROCIDE COLORCOAT	
Water Resistance	Porous, absorbs water	Can be wetted	Silicone imparts positive re pellency.	
Number of Coats	2 or 3 required	2 or 3 required	Primes, seals and finishes al- most all surfaces in 1 appli- cation.	
Elasticity	Brittle, subject to cracking	Tends to shrink and crack on exposure to temperature ex- tremes	Elastic and resists cracking due to base reinforced with long fibred asbestos and spe- cific plasticizing agents.	
Durability	Powders; vulnerable to ef- fects of freeze-thaw cycles	Variable, depending on se- verity of exposure	Heavy body and composition give long-term durability. Color pigments have maxi- mum resistance to fading.	
Breathing	Porous, but is also absorbent	Continuous film prevents breathing	Allows for vapor transmis- sion while preserving water repellency.	
Surface Preparation	Requires mechanical prepa- ration and must be wet down. Cannot be applied over a surface previously painted, or over waterproofed surfaces	Does not bridge cracks; re- painting and extensive sur- face repair required. Difficult to hide dark-colored surfaces	Can be applied over oil base or water base coatings. Bridges hairline cracks and seals pores. Covers stains; maximum hiding power; minimum of surface prepa- ration.	
Bond	Mechanical adhesion	Adheres by polarity	Double-bonds by combinin adhesion by polarity wit mechanical adhesion.	
Curing	Wet curing required	None	None	
Application Must be shaded from dire rays of sun in summer, p tected from freezing in w ter. Has to be weighed a mixed on the job		Ready to use but cannot be built up to any appreciable thickness in one coat	Easily applied with brush or spray. Gives a multiple coat thickness in one application.	
Chemical Resistance	Vulnerable to attack by fumes and vapors	Average	High degree of resistance t chemical fumes and vapor	

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WITH WIDE ANGLE LENS FOR WIDE DISTRIBUTION OF LIGHT RAYS

Gymnasium of South Jr. High School, Kalamazoo, Mich. Louis Kingscott, Architect; A. A. Holcomb, Engineer. After one year, measured intensity was 54 to 55 foot candles at floor as predicted by Kirlin Catalog 55, pp 16. Used were 108 Kirlin twin No. 1212-2, 300 W (6.1 watts/sq. ft.) at approx. 10' centers on 25' ceiling.

Delivers Greater Lighting Efficiency

due to Alzak glass-surfaced aluminum reflectors and KIRLIN prism lens.

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Mirawal's colored, porcelain-on-steel facing panels-insulated

Steelbilt's horizontal sliding windows built integrally with complete wall frames

In less than 1000 man hours of job-site labor, 80 three-story curtain wall units (11'-11/2" x 27'-103%") were installed-ready for finish-at the Colorado A & M Dormitories.

With an estimated 60 cents of every construction dollar going into labor on this type of project-the resulting economy is significant.

This attractive, light weight wall system was designed by James M. Hunter, AIA, in collaboration with Steelbilt engineers. All components of each complete unit are pre-assembled and pre-tested at the factoryincluding Steelbilt's top roller-hung, horizontal sliding windows. Take-up allowances are provided at each joint to expedite faultless installation. Units arrive at job-site knocked down into only four parts.

Mirawal porcelain-on-steel panels lend beauty to the wall design. Their color has exceptional depth and lustre. They install quickly with Steelbilt's patented, rocker type glazing bead. Panels have been backed with 2" of glass wool and 4" of pumice block and plaster to achieve a "K" factor of about .07

Exterior Mirawal has a lifetime vitreous porcelain surface fused to #32 gauge sheet steel. This is inseparably laminated to Masonite Panelwood, which in turn is laminated with #28 gauge galvannealed steel, as a seal against moisture penetration.

A diversity of wall systems can be designed with Steelbilt sections and Mirawal panels. Sales engineers are available for consultation.

For catalogs and more detailed information write to:



architect general contractor Steelbilt dealer & erector

Colorado A & M Dormitories (model) Fort Collins, Colorado James M. Hunter, AIA Mead & Mount Construction Co. **K. C. Construction Supply**





Mirawal & Mirawaltile Division

Steelbilt, Inc.



• The Columbia Broadcasting System's clean-lined "Television City" in Hollywood, California is the core of an anticipated 25-acre, 24-studio expansion of the network's West Coast TV production facilities. Plans for future enlargement of the building specify that the present walls be easily demountable. Consequently, most of the exterior is composed of large, plain, movable steel panels and glass walls.

The sleek lines of the structure manifest the ideas of efficiency and flexibility upon which the design was based. With such key words as a guide to design, it is a foregone conclusion that the most efficient and dependable pipe and tubing should be chosen for the building's plumbing and heating systems. NATIONAL Steel Pipe got the nod.

For over 60 years NATIONAL has been the accepted standard pipe for conventional hot water and steam heating systems, fire control, and plumbing lines. And today, it is the first choice, too, for modern radiant heating and snow melting installations. Regardless of the application, architects know from long experience that they can put their complete confidence in the uniform, dependable performance of NATIONAL Pipe.

Take a tip from the old timers. When you plan your next installation, plan on using the best-known pipe in the world—U·S·S NATIONAL Steel Pipe.





This brand name on lumber also offers you

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MONOCORD ROUND TOP RAFTERS

These popular rafters are designed for 2' spacing, with 1" decking nailed directly to the rafters. No special raising equipment is needed, even for the heavier models designed for 2" decking and spacing to 8'. Available in spans from 28' to 62'-11".



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These arches are designed for economical construction of low-cost farm or industrial buildings. Pre-cut segments are bolted together with Teco split-ring connectors. Standard Segmentals come in spans from 30' to 50'—buttressed arches in spans from 50' to 100'.

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Monocord trusses are ideal for heavy construction of many kinds. The Bowstring type shown here is generally the most economical Monocord—available with flat top modifications, or valley build-up for tandem installations. Spans from 30' to 120'.



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"PREFABRICATION IS EASIER, TOO, SAVES TIME AND LABOR ON THE JOB"

... Bay the Bagley Boys' OF ROBERTSON, MO.

Directly above you see Mr. Eble, Chief Design Engineer (left) and Mr. R. Bagley conferring on a radiant panel heating job. Says Mr. Bagley, "Because of the superiority of radiant panel heating we recommend it every chance we get. We must give copper the credit for putting radiant panel heating on a competitive basis with inferior methods of heating, because of its many outstanding features. As it has been pointed out many times that: There is not another metal or alloy that has *all* the desirable construction characteristics of copper.' Why shouldn't we prefer it?"

At top right, Mr. R. W. Hardy holds a preformed radiant panel heat-ing coil assisted by Mr. Harry Smith who has a prefabricated distri-bution manifold in his hand. Says Mr. Smith, "One answer to keeping radiant panel heating costs down is prefabrication. That's why we prefer Revere Copper Water Tube: It is ideally suited to preforming and the techniques used to install radiant panel heating."

It's good advice the "Bagley Boys" offer. Next time be sure to specify Revere Copper Water Tube for radiant panel heating, hot and cold water lines, underground service lines, air conditioning and processing lines, waste stack and vent lines. There is a Revere Distributor near you who carries a full supply of Revere Copper Water Tube in various sizes and tempers. And if you have technical problems, he will put you in touch with Revere's Technical Advisory Service,



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Rustable pipe eventually clogs as shown in drawing at top right. Non-rustable Revere Copper Water Tube suffers

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EASY TO BEND Saves Time Revere Copper Water Tube is easy to bend. Soft temper can be bent by hand to meet installation conditions.

SOLDER OR **COMPRESSION FITTINGS** Need Less Work Room

... Save Metal No worry about wrench room

when you use Revere Copper Water Tube with solder fittings. Compression fittings can also be used. No threading is necessary with either type fitting. Wall thickness of tube used can thus be less than for threaded pipe.



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Facing Tile has been time-tested in every major category of building-public, institutional, commercial, industrial...

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Radio-Isotope Laboratory, Lebanon Hospital, New York, N. Y. . Architect: Charles B. Meyers Associates

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better Facing Tile construction the companies listed above have contributed to the preparation of this advertisement.

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How Honeywell Customized Temperature Control helps provide

The kind of "Indoor Weather" your clients need

Customized Temperature Control installation at Corning Glass Center is a good example.

A^T THE Corning Glass Center in Corning, New York, you'll find a museum, offices, display rooms-and production areas where Steuben glassware is made.

Such a variety of functions under one roof calls for scientific temperature control—if the "indoor weather" is to be comfortable throughout the building.

Today the best way to provide proper "indoor weather" --whether a building houses one function or many-is through the use of *Honeywell Customized Temperature Control*.

The key word here is "customized". It means that whatever your clients' control requirements, a Honeywell Customized Temperature Control installation *designed to fit the needs of the building and its occupants is your answer*. This applies not only to heating and cooling, ventilating and humidity control—but to industrial control as well.

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

The story, in brief form, of the Honeywell Customized Temperature Control installation in the Corning Glass Center is told by the floor plan and picture captions you see here.

They tell how specific occupancy, use and exposure problems were met.

The *techniques* used, applied to your particular problems, can help you give your clients the "indoor weather" they've always wanted.

Interior garden of Corning Glass Center Architects: Harrison & Abramovitz and Abbe, New York, N. Y. Mechanical Consulting Engineers: Jaros, Baum & Bolles, New York, N. Y. Air Conditioning Consult



This panorama of the Corning Glass Center shows the temperature control problems involved. Huge glass window areas face four directions. Whether it is sunny or cloudy makes a big difference to the heating and cooling system. But Honeywell Customized Temperature Control, using electronic and pneumatic thermostats and humidistats, keeps the building comfortable all the time.



Interior heating and cooling factors are important, too. Take the auditorium above, for instance. With a large crowd you have one heating problem. With a small group, quite another. But the four Honeywell thermostats located here handle either situation easily.



The internal heating problem in the display room above is somewhat similar to that of the auditorium. But when it is crowded (requiring little heat) the auditorium might need considerable heat. Yet with enough thermostats, strategically placed, both areas are comfortable – with Honeywell Customized Temperature Control.



For comfortable, even temperature in new or existing buildings-of any size-specify Honeywell Customized Temperature Control

Whether it's a factory, motel, hospital—any building of any size—new or existing, Honeywell Customized Temperature Control can help meet your clients' heating, ventilating, air conditioning and industrial control problems. You can give your clients more comfort and efficiency. And they'll save fuel, too.

For full facts on Honeywell Customized Temperature Control, call your local Honeywell office. Or mail the coupon today.

James M. Brown, III, director of the Corning Glass Center, says:

"Today our Glass Center is one of the most comfortable buildings in the country. Important in helping make possible this comfort is our Honeywell Customized Temperature Control installation."

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HOW GLASS BLOCK SOLVES THERMAL— MAINTENANCE— DAYLIGHTING— PROBLEMS

Approximately 125,000 Owens-Illinois Light-Directing Glass Block are in the new buildings at International Paper Company's huge Moss Point, Mississippi, plant.



Glass block are laid up with regular masonry material. They are inexpensive to maintain . . , hard to break . . . can't rust or rot. Glass block are impervious to corrosive effects of chemicals.

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Owens-Illinois Light-Directing Glass Block permit the use of entire glass areas for the transmission of an abundance of cheerful, quality daylight into the farthest corners of plant or office. Daylight is controlled so efficiently that buildings virtually "turn with the sun" to make maximum use of free daylight from early morning to late afternoon.

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OWENS-ILLINOIS GLASS BLOCK AN () PRODUCT



Air Distribution



New \$4,500,000 home of Parker Pen Co., Janesville, Wis.

Architect: John J. Flad and Associates, Madison, Wis. Mechanical Engineers: Beling Engineering Consultants, Moline, III. Air Conditioning Contractor: Hyland, Hall & Company, Madison, Wis. General Contractor: T. S. Willis, Janesville, Wis.



Venturi-Flo Diffusers in the ceiling, Uni-Flo Return Grilles in the sidewalls provide fresh, conditioned air in the cafeteria.



Office staff keeps alert and efficient, works the year 'round in a comfortable, draft-free atmosphere made possible by the soundly engineered air distribution system. While planning to invest many thousands of dollars in heating and cooling equipment, the makers of famous Parker "51" Pens agreed it would be folly to buy less than the best air distribution devices for their new 212,500 square foot plant in Janesville, Wisconsin. So, accepting the recommendations of the architect, engineer, and contractor, specifications were written for Barber-Colman diffusers and grilles, complete with latest accessories for most efficient air handling.

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The New York City Board of Transportation occupies this attractive new office building in downtown Brooklyn. The main section is thirteen stories high. The low wing has six stories, and the high wing sixteen. Architects: William E. Haugaard (deceased) and Andrew J. Thomas.



Monel is readily fabricated by commonly used methods, and requires no special installation techniques.



Monel spandrel and through-wall flashings not only protect the lateral steel framework from rust, but serve to seal the building from water seepage. Monel is also used for the reglets into which the flashings are inserted. Sheet metal work: Wolkow-Braker Roofing Corp., Brooklyn 18, N.Y.



Monel is easy to cut, bend and form. It can be soldered, brazed and welded.

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MORE than 40,000 pounds of Monel Roofing Sheet went into the spandrels, reglets and through-wall flashings of the Board of Transportation Building.

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With Monel on the job, water seepage is no problem. And here's why this is true.

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... "for the life of the building"



Sherwin-Williams Paints selected for new EDGEWATER TOWERS!

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> Fridy, Gauker, Truscott and Fridy, Philadelphia, Pa. —Arsociate Architects Byrne Organization, Inc., Washington, D. C. —Builders The Wm. Downie Co. —Painting Contractor

Sherwin-Williams

ARCHITECTURAL SERVICE DIVISION . CLEVELAND 1, OHIO











One of Three Modern Air Conditioned Operating Rooms pneumatically controlled by Powers Thermostats and Hygrostats. Photo above shows modern Thoracic type operating table. X-Ray Room and Research Lab, (at right) and other spaces thruout this modern nine story building also are Powers controlled.



POWERS THERMOSTATIC WATER MIXERS Insure utmost Comfort and Safety in shower boths for doctors and

in shower baths for doctors and nurses adjoining the operating rooms. Sitz baths and showers located throughout the building for patients also are equipped with Powers Thermostatic Water Mixers.



POWERS Thermostatic Water Mixer complies fully with Veterans Hospital safety requirements in Federal Specifications WW-P541a.

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Throughout This Modern TB Sanitarium



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Here is one of the nation's most colorful modern TB Sanitariums. It is equipped with the latest medical research facilities for carrying on the fight to eradicate tuberculosis.

No other firm but Powers can supply the great diversity of temperature controls now required in modern hospitals for heating, air conditioning, blood banks, hydrotherapy, shower baths, dishwashers, laundry dryers

and all types of water heaters. Only a few of our complete line of controls used in the above building are shown.

Experience gained by Powers in this and many other important buildings should be valuable when you need help in selecting temperature control. Why not call in Powers on your next job?

THE POWERS REGULATOR COMPANY SKOKIE, ILL. • OFFICES IN OVER 50 CITIES IN U.S.A., CANADA, AND MEXICO SEE YOUR PHONE BOOK OVER 60 YEARS OF AUTOMATIC TEMPERATURE CONTROL (b49)



INTEGRATED DESIGN, CONSTRUCTION and PERFORMANCE

ART METAL has achieved, in this unit, a rare and original combination of incandescent lighting properties. It was designed for wide application, constructed for ease of installation, and provides exceptional efficiency coupled with visual comfort. Complete data on four sizes, 120, 150, 200 and 300 watts, is on page 47 of ART METAL catalog. We suggest you write for a copy.





Manufacturers of Engineered Incandescent Lighting



As never before...

Today your clients are aware of the disastrous and far-reaching effects of a major industrial fire. More and more this new attitude toward firesafety is placing the burden of responsibility on you.

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

Fortunately, the particular type of information and assistance you need is within easy reach. An expert C-O-TWO Fire Protection Engineer is ready and willing



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Among these is the ultimate in modern roofing – Wheeling Tri-Rib Steel Roof Deck, made of longer lasting Cop-R-Loy steel, the light-gauge steel roof deck that speeds construction, saves valuable structural steel and reduces maintenance costs. Tri-Rib Steel Roof Deck is only one of the many dependable Wheeling products specified and used by leading architects, engineers, designers and builders.

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New G-E Ballast for 96T12 Lamps QUIETER, SMALLER, LIGHTER

The new G-E ballast for 96T12 lamps has been redesigned so that it is now shorter, lighter and *quieter*. Yes, *quieter*. Now for the first time General Electric offers you a ballast for 96T12 lamps that has a "D" sound rating. This lower noise level makes operation possible in a variety of new applications. Fixtures equipped with this new G-E ballast are now suitable for schools, hospitals, libraries and many other installations where noise is a problem.

The new ballast is only $11\frac{3}{4}$ inches long. The shorter length— $3\frac{1}{8}$ inches less than the old design—means reduced handling and storage problems for you.

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By redesigning, this ballast has been changed from

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For further information on sound rating and G-E ballasts send the coupon below to General Electric Company, Schenectady 5, N. Y.

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Just for the want of a little **ULTRALITE Duct Liner...**

... customers lost their patience, the store manager nearly lost his mind—and the people who installed the air conditioning system nearly lost the good will of the store.

100

Here's what happened: The store's "specs" did not call for duct liner. The sheet metal contractor called this oversight to the store's attention and recommended Ultralite glass fiber Duct Liner. But the store felt that the additional cost, while small, was not necessary.

Came the Grand Opening of the modernized store —with the results pictured above. Of course, the contractor received an urgent call-back. He quickly solved the noise problem with Ultralite Duct Liner A happy ending—except that it cost the store several times as much as if they had originally lined the ducts with Ultralite!

Moral: Urge every customer not to be pennywise and pound foolish about duct liner. See that Ultralite Duct Liner is in all your air conditoning specs. From a cost standpoint, Ultralite is just a small portion of the total cost—but it can make all the difference between an enthusiastic customer and a disgruntled one. That's why many contractors put Ultralite Duct Liner in every job—even those where duct liner is not specified.

Ultralite is the only insulation made of long-strong glass fibers. Easy to install, pleasant to handle. Ultralite Duct Insulation (for thermal protection) and Ultralite Duct Liner are stocked locally in 72 cities. Your nearby distributor is listed in the Yellow Pages under "Gustin-Bacon" or "Ultralite."







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

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Housing these new research and development industries puts a burden on the architect in solving their highly , specialized needs.

One burden you can be free from, however, is the specification of the right roof. All isotopes aside, the real problem of roofing a flush deck building, like the one above, is usually in such details as how to avoid eave drippage. You'll find the answer to that and other problems, such as the utilization of valuable roof areas for recreation, play, parking, water-cooled roofs, or roof gardens, in Ruberoid's Built-Up Roofing Specification Book. Architects rely on it for complete roof "specs" for smooth-surfaced asbestos, coal tar pitch with gravel or slag surfacing, or gravel-and-slag surfaced Ruberoid Special Bitumen. It also contains practical working details for a wide variety of flashing and eave construction. Write for your free copy to The Ruberoid Co., 500 Fifth Avenue, New York 36, N. Y,

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North Carolina State Fair Arena, Raleigh, N. C. William Henley Deitrick, Inc., Architect Wm. Muirhead Construction Co., General Contractor Matthew Nowicki, Arch. Consultant Senerud-Elstad-Krueger, Engr. Consultants



• It's a livestock judging pavilion. And, it represents a high degree of creative imagination. Twin intersecting conic sections sweep majestically, supporting a wide panorama of Truscon Steel Donovan Windows.

Unusual? Yes. But, this building illustrates the extreme *versatility* of Truscon Windows. It shows how well they combine with architectural imagination to inspire original and functional structures.

Donovan Awning Windows by Truscon offer unique lighting and ventilation advantages. The awning principle permits ventilation control in inclement weather. Ventilators operate in unison, either by mechanical or manual control. The design completely eliminates all unsightly connecting arms, screws and racks. Substantial jamb and sill sections (4.2 lbs. per lineal foot) provide adequate strength for satisfactory control of a large ventilating area in a single unit.

No other type of window so conveniently provides inconspicuous, yet adequate, large-area ventilator control. In no other window design is it possible to safely construct projected ventilators in widths up to 6 feet, or to couple as many as 16 large vents on one concealed operator. Where required, it is possible to construct a clear opening up to thirty-six feet in height with 100% ventilation, and with all vents mechanically controlled from the floor.

Let your imagination soar. Capture sun and sky, free from the limitations of conventional window usage. See details on all Truscon Metal Windows in Sweet's; or write Truscon for latest details and specifications.



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NO OTHER TYPE of decorative resilient flooring meets the performance standards of flooring made of BAKELITE Vinyl Resins. This fact is due to the inherent properties of the resins . . . qualities that are imparted to the flooring itself.

BAKELITE Vinyl Resins are exceedingly tough. They bond thoroughly to form a complete non-porous surface for flooring. Dirt doesn't penetrate this impervious barrier. It resists abrasion, scratching and dents. Thus, flooring made of BAKELITE Vinyl Resins is naturally easy to clean. Dirt accumulates only on the surface. It is easily wiped away. Acids, alkalies and most other chemicals, soap, oils, greases are all resisted. Penetration of stains is prevented. BAKELITE Vinyl Beeins are colordese

BAKELITE Vinyl Resins are colorless. Their transparency adds lustre and brilliance to the flooring colors. Color stability is excellent. Therefore, the beauty does not dull over the years. It stays clear and bright.

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Customers are attracted to this store. Zourite's good looks say, "Smart people, good service, good values inside."

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- Worn out paint job
 Plain cement block Old common brick facing facing
- Old style windows
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INSULATING STRUCTURAL BUILDING PANELS FOR ARCHITECTURAL BEAUTY

SEAPORCLAD

Architect & Engineer: Welton Becket, F.A.I.A. and Associates, Los Angeles General Contractor: C. L. Peck, Los Angeles

Where Wilshire Boulevard begins—in downtown Los Angeles—stands the new, nine-story home of *Standard Federal Sav*ings and Loan Association.

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

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

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



SEAPORCLAD* Insulated porcelain panels (flat-as-glass) are of sandwich construction combining the use of various cores laminated under high pressure to skins of diversified metals. It is available in the widest range of textures and colors to harmonize with practically every type of structural material and architectural mood. SEAPORCLAD is permanent and of lasting, indestructible beauty.





Easily cut and fitted to the curved ceiling of this office area, Travertone is an important element of the bank's décor. Besides adding beauty, it absorbs noise and helps promote comfortable quiet.



FIRST NATIONAL BANK, Temple, Texas



The employees' recreation room is efficiently and economically sound conditioned with Cushiontone. Cushiontone's white paint finish can be washed or repainted without loss of acoustical efficiency.

Architect: Wyatt C. Hedrick

Associate Architect: Lee R. Buttrill

General Contractor: Robert E. McKee General Contractor, Inc. Acoustical Contractor: United Tile Company, Inc.

Every detail of Temple's First National Bank has been planned to combine modern efficiency with dignified beauty. In banking and vault areas, offices and corridors, there is a comfortable yet businesslike atmosphere.

Much of this feeling is due to the architect's choice of materials. The ceilings, for example, are of Armstrong's Travertone and Cushiontone . . . attractive materials that absorb distracting sound.

Travertone is a fissured mineral wool tile. Chosen primarily for its distinctive beauty, Travertone promotes undisturbed quiet for the bank's private offices, directors' room, and vault area. Travertone's incombustible composition was also an important factor in its selection.

The employees' dining area, recreation room, and several corridors are sound conditioned with ceilings of Cushiontone. A perforated wood fiber tile, Cushiontone is surprisingly low in cost, high in sound-absorbing efficiency.

Get complete details on Travertone, Cushiontone, and Armstrong's other acoustical materials from your Armstrong Acoustical Contractor. For the free booklet, "How to Select an Acoustical Material," write Armstrong Cork Company, 4204 Rooney Street, Lancaster, Pennsylvania.

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Recessed lighting and air-conditioning fixtures are readily installed with a Travertone ceiling. In the vault area, Travertone prevents the sounds of business machines from

building up to disturbing levels.

ARMSTRONG'S ACOUSTICAL MATERIALS

NEWS

Industry neophyte puts new zip in old building firm

Merritt-Chapman & Scott, after 14 months with Lou Wolfson as president, finds its net up 134%

It is fairly certain that if Louis Elwood Wolfson, the Florida entrepreneur who started putting profits into Merritt-Chapman & Scott Corp. in 1951, had not dislocated his shoulder at the University of Georgia he would have ended up playing professional football. As it turned out, sport's loss was nearly everybody's gain. (Objection from the citizens of Washington, D.C., who cannot abide Wolfson's trolley car bonanza, the Capital Transit Co. of this, more later.) Certainly Merritt-Chapman & Scott, 94-year-old construction firm that has built everything from lighthouses to veterans hospitals, has received a shot in the arm since Wolfson came north. Its net earnings last year hit a record \$3.4 million, up 134% from 1952. Gross revenues reached a peacetime high of \$104.6 million—among the largest in the industry (see p. 46).

It is not difficult to presuppose some connection between the company's new lease on life and the 42-year-old Wolfson's activity as president and chairman of the board. To determine exactly how he does it, why, or how long he will go on doing it, takes a little longer.

Wolfson's principal enterprises, in addition to MC/S, are Capital Transit and New York Shipbuilding Corp. His annual income is in the neighborhood of half a million dollars. Assets of companies in which he is now an officer amount to over \$200 million. The job of managing this moderate empire did not sneak up on Wolfson. He trained for it by quitting the University of Georgia in his junior year (1931) and running a flying wedge into Florida industry for 15 years. He has been involved (in some instances, still is) in vending machines, oil wells, steel mills, shipyards, movie houses and scrap metal, and the greatest of these (for a starter) was scrap metal.

What price education? Wolfson quit the university because his shoulder injury had made football impossible. Somehow college was not the same without it. "I was the worst cluck you ever saw in school," he admitted recently. He was known at this stage of his career for his athletic ability (he had gone to college on a football scholarship), a ready availability to teammates in search of small loans, a disinterest in profanity and a certain earnestness about life in general, perhaps based on the fact that he was one of eight children and his father was having tough sledding in the junk business.*

Wolfson's first brilliant idea was to go to his father and tell him to quit the business. He is alleged to have said: "Get out of scrap and into the new metals business and I would like to go in with you." Harold Hirsch of Atlanta, general counsel to the Coca-Cola Co. and a fanatical Georgia football fan, lent him \$5,000. He raised another \$5,000 on his family's life insurance policies. M. Wolfson &

LIFE: William Sumits

WOLFSON

Co. became the Florida Pipe & Supply Co., Inc., dealers in pipe and plumbing supplies, and showed sales of \$100,000 the first year. Wolfson adopted his 18-hour work day at this time (one of the few requisites for being a millionaire endorsed by everybody) and has never dropped it. Something—his muscular efforts in dungarees, perhaps an innate business sense long kept dormant on the gridiron, certainly a war-caused demand for the kind of goods he was selling—raised the company's sales to \$8 million by 1944. It was liquidated in 1948 for a profit of \$2.5 million.

One touch of Midas. There are not many other sure-fire methods for making money that laymen (nonmillionaires) can swallow, but there are some general ones that at least some of the people seem to make good on some of the time. One of these is to buy an undervalued property cheap, buck it up and sell it for three times its purchase price. Wolfson worked this one on the Tampa Shipbuilding Co. He and some associates bought it after the war for \$1.5 million. The company built several ships while they were in charge and the largest tin mining dredge in the world. Wolfson jacked up the formula a little by selling just his share in the company, in 1948, for a fabulous \$5 million.

This was the first big money that Wolfson made. It was also part and parcel of another deal that first acquainted him with the hot breath of public suspicion. Almost simultaneously with his purchase of the Tampa company, he engineered a bid through the newly acquired company for the St. John's River Shipyard in Jacksonville. The latter was owned by the government and had been built for an estimated \$19.5 million. The Wolfson (Tampa) bid of a little under \$2 million was successful. Rumor broke out that Senator Claude Pepper (D, Fla.)-since defeated for re-election-had facilitated the transaction. Wolfson categorically denied that Pepper had had any knowledge of either transaction. A Congressional committee got interested and the case was brought before a federal grand jury in Washington. The jury found no evidence of bribery or collusion.

The big push. The shipyard turnover and sale of Florida Pipe & Supply put the nowrolling Wolfson in a position to move north and diversify. He has often said that it is a great challenge to him to get hold of a "sick" corporation and bring it up to strength. "Every company we move into," he once stated, "has a history of mismanagement." At the time he went into Merritt-Chapman, the company was doing a gross business of around \$40 million a year, had netted \$2.44 a share in 1948. It must have been news to some people that it was sick. True, from 1932 through 1936 it had shown net losses, but such lean showings were common in those years. It is probable that Wolfson, more than just wishing to breathe life into the company, wished to breathe financial fire into it. He had done business with MC/S when he was running Florida Pipe & Supply and had been watching it since, impressed with the breadth of its operations and with what he thought were chances for expansion.

Getting in was hard work. Wolfson himself has admitted that the situation was more complicated than he had first thought. "As far as Merritt was concerned," he said, "I didn't know what I was getting into. They had a pretty bad proxy situation there. . . . It was the so-called new crowd who asked me to come in with them, and I agreed to serve as a director if they got control. They said they had control, but when the smoke cleared there was this big proxy fight. I agreed to stay in it with them. The old crowd president, Mr. [Fred E.] Liford, then invited me to come in with his crowd. I refused. 'I just couldn't do it,'

^{*} Classmates in high school used to kid the Wolfson brothers about being in the scrap business, would ask them to evaluate silverware and saltshaker tops in the local drugstore. The Wolfsons always obliged. Louis, who now owns two steel mills, has improved his methods; he no longer, as one of the classmates puts it, has to make his estimates by "biting every piece of tableware in Jacksonville."

I said. I kept increasing my holdings and got the feeling pretty strong that those in were not for the best interests of the company. I offered to buy them out or have them buy me out. I didn't feel they were fit to be on the board. They didn't buy me out and we gradually moved in. Now my family, friends and I have 25 to 30% of MC/S."

Capt. Thomas A. Scott, now 77, was chairman of the board when Wolfson arrived. He is now honorary chairman. Wolfson succeeded him as chairman in the spring of 1951 and was elected president a little over a year ago. Scott, who has been in heavy construction and salvage since 1894, has mellowed since he was first taken by surprise by the capital-swinging youngster up from Jacksonville. "I can't speak highly enough of him," he said last month. "He bought the stock. It was there. Anybody could have bought it. I was sitting on the board with him and if there was a spot of crookedness I'd have known it." Scott rates Wolfson as "a good picker of men" and "an extremely able businessman . . . who expects performance and gets it."

One big team. Wolfson is inclined to talk obliquely when asked for reasons for the construction company's recent rise. "Wonderful people with ability," he offered recently. "Stockholders providing additional capital ... diversified jobs MC/S is equipped to do." The most valid of these is the last. MC/S dredges freight cars from river bottoms, puts up housing projects for atom plant workers, lays down cement foundations for post offices. Long famous for its marine work, the company in recent years has moved steadily toward a wider variety of jobs. Since 1945, of nearly \$500 million worth of major (over \$100,000) projects, some \$220 million worth has been marine or heavy construction and about \$274 million worth industrial or other construction. Diversification is fine by Wolfson. Since he has been in office, MC/S has acquired two steel mills and the Fitz Simons & Connell Dredge & Dock Co. in Chicago.

There was little rolling of heads when Wolfson took over. He brought in a few friends -Lew Schott, 32, formerly the youngest judge in the State of Florida, old chum Elkin ("Buddy") Gerbert, now a director and member of the executive committee-but most of the higher-ups and departmental bosses are the same. President Ralph DeSimone, with MC/S since 1916, was put in charge of planning overseas projects. He has since gone into business for himself, remains a consultant to the company. There was a move toward getting the place organized for greater efficiency. The New York headquarters moved up from eight floors in the old Whitehall Building on the Battery to one floor on Madison Ave. Wolfson closed up the company's historic base in New London, Conn., figured to save \$150,000 a year by keeping it open just as a regional office. He plumped for more overseas jobs and got them. Staffers were pleased by the fact that he turned back a \$60,000 bonus voted him by the directors last year, suggested it be distributed to employees; stockholders by the extra 50¢ dividend and 25% stock dividend

declared last year. "He's a pusher," said one employee. "An optimistic thinker," said another, "not old-fashioned." The jobs, fortunately, were piling up ahead.

Pots of surplus. Through the years a rumor has been built up around Wolfson that he is a man who gets into a company, takes his haul, and gets out. This would seem to be in conflict with his great championship of the shareholder ("dividends to stockholders deserve top priority in claims on net earnings . . .") but actually is not. Wolfson has said that he would liquidate a company anytime if he could no longer take care of the stockholders any other way and if they would benefit from the liquidation. His great generosity with dividends-rivaling his generosity with Cadillacs to old friends-is in part responsible for the latest altercation at Capital Transit. Last month, the company was battling with the Public Utilities Commission over whether CTC could be restrained from paying a quarterly dividend of \$384,000 and redeeming \$3.9 million in bonds. PUC's arguments centered on whether CTC had that kind of money to spare. The public's attitude toward the transit company is compounded of reaction to fare hikes, the general messiness of the city's traffic problem and repeated tirades from CTC's President J. A. B. ("B" for "Broadus") Broadwater to the effect that he and the whole company are admittedly in business for profit.

Wolfson said recently that he would never have gone into Capital Transit if he had foreseen the developments. Talk of his moving out has been substantiated only by the fact that he has moved his home—his wife and four children—from Washington back to Miami Beach. How long he will stay with Merritt-Chapman & Scott is as hard to pin down. The company has had 12 presidents in 32 years. Wolfson has been president one year. As a matter of fact, sophisticated employees at MC/S see nothing strange in the idea that their chief might relinquish the post whenever—as they put it—he feels it is time for a new investment.

The grinding wheel. Money has been a driving force with Wolfson for 20 years. He makes no bones about it. He has said that he wanted it for his family, for his friends and to bring the name of Wolfson prestige. His father was born in Posvol, Russia, became a citizen of the US and never tired of impressing upon his five sons and three daughters that their best efforts should be directed to the new land.^{*}

In the old days at Georgia the footballers used to rib Wolfson and his friend, Freddie Miller, about their resemblance to proverbial big-time athletes, stars on the field and dunces in the classroom. One night Wolfson is alleged to have confided to Miller in the privacy of their room; "Those guys think they're pretty smart, but let me tell you, one of these days I'm going to have lots of money and make them eat those words."

Wolfson has come a long way since then. He wears made-to-order clothes, has a Cadillac, keeps a suite at an uptown New York hotel. Comparatively speaking, a small-town boy who fell in with the right people and was never afraid to work. He still thinks in sports terms, cloaks his philosophy of life in a modesty that approaches naïvete. "A person in business has the opportunity to be a real champion," he has said. "I'm not a champion yet, but I hope to be one of these days. I've already found out that money isn't the only criterion of the successful businessman."

* Louis tried twice to get into the Navy during the war, was turned down because of the bad shoulder and a kidney ailment. His brothers served.

Congress wrangles over public housing and maneuvers grow so tricky they backfire

The annual Congressional fight over public housing began according to form. The House appropriations committee—long Congress' sternest foe of subsidized shelter—voted to kill public housing as soon as the 35,000 units now under contract in PHA's pipeline have been built. Into the independent offices appropriation bill, the committee wrote these starts limits: 20,000 units in the fiscal year beginning July 1; 15,000 more in fiscal 1956. The committee voted— "that this be the end of the program."

In the rules committee, antipublic housers tried to kill the program entirely by refusing to give the appropriations bill its customary waiver permitting (in effect) inclusion of substantive legislation. This let Rep. Howard W. Smith (D, Va.); a Dixiecrat who has always opposed public housing, force elimination of the starts limits entirely on a point of order. But this strategy backfired. Forgotten was last summer's ruling by the comptroller general that the 35,000 units in PHA's pipeline would (under these circumstances) go ahead anyway. As the House approved the appropriations bill, nobody was really sure what limit had been imposed.

Passing the 1954 housing bill a few days later, the House clarified its stand by voting against any public housing at all. First it rejected President Eisenhower's program of 35,-000 units a year for four years; then it rejected a two-year program.

The Senate, which had yet to act, is usually more friendly to public housing. (Last year it voted for 35,000 starts.) As usual, the issue this year apparently would have to be solved in a conference compromise. One thing was certain: the 35,000 units in the pipeline will have to be built sometime: the government has signed contracts with local authorities to subsidize rents in the resulting structures.

Boom in office building eases in some cities, spreads to new ones; the balance: caution

Construction of rental office space, said Executive Vice President Robert B. Beach of the National Assn. of Building Owners & Managers last month, has reached the "zone where you have to be careful." A lot of commercial building was going up across the nation; in some cities there was still a real shortage of space—mostly in smaller communities that had not been hit earlier by the wave of office building (AF, Jan. '53, News). But a few cities began, for the first time since the war, to show signs of falling demand. Items:

▶ In Washington, whole floors stood vacant in some new buildings although landlords had scratched around for tenants since the first of the year. One building manager predicted vacancies would climb to 3% (the US average) this summer—after running only 1 to 2% for the last ten years. (To that manager, 3% looked like "saturation.") Construction completed since the end of the war or under way will add $2\frac{1}{2}$ million sq. ft. to Washington office space. Moreover, the federal government's retrenchment drive had thrown another 568,000 sq. ft. on the market in recent months.

Atlanta's Ben Massell, having just finished and "pretty well rented" six air-conditioned office buildings with a total of 800,000 sq. ft. (rents: \$2.25 to \$3 per sq. ft.), concluded: "There's no need for additional office space in Atlanta." He predicted the proprietors of a skyscraper now going up—the 26-story Fulton National Bank building, tallest in town—will find themselves with surplus space, although the structure is already 55% rented for occupancy next April. The last time building managers checked up, in October, office vacancies were running a slim 1½%. Realty men agreed it was higher now, particularly in the last 30 days as a group of small buildings were completed.

Dallas, with one of the nation's biggest postwar office building booms, had a 3% vacancy rate a year ago. It is higher now, and most building managers expect it to rise still more. Leo Corrigan's recently completed Burt building annex is not fully occupied. The Veterans Administration, moving its regional office to Denver, will vacate 76,000 sq. ft. of space which will let other government bureaus give up rented offices. Early next fall, the 36-story Republic Bank building with 286,000 sq. ft. of space, will be finished. And next year there will be Corrigan's 30-story skyscraper next to the Adolphus Hotel. Said President V. K. Howard, of American Investors Life Insurance Co., discussing why his firm had just bought a Houston skyscraper and planned to move there: "I believe Dallas is overbuilt."

Government boomlet. Trailing behind the recent boom in commercial office building was a boomlet in government office construction. Both California and Illinois have big office structures under way (AF, Feb. '54, News). Last month the Pennsylvania General State Authority picked Architects Lacey Atherton & Davis of Harrisburg to design a \$7 million state office building. Maryland was planning an \$11 million state office building for Baltimore, designed by Architects Fisher, Nes, Campbell & Associates. Ohio was working on a survey of state office needs to see if it would be cheaper to build than to continue to rent space in private buildings. One set of figures showed the state was paying some



MIAMI'S FIRST new downtown office skyscraper since 1939, the 15-story Ainsley building, was opened last month before a crowd of 10,000. The aluminum-and-glass-sided structure cost \$3 million, or \$12.50 per sq. ft. Architect: Morris Lapidus. Owner: Herman Greenfeld. Contractor: Robert L. Turchin Inc.



PHILADELPHIA office at Independence Mall, a park being carved out of the historic part of the city where the Declaration of Independence was signed, will be \$6 million, 15-story steel and concrete stucture with curtain walls of heat- and glare-resistant glass in aluminum framing. At fifth floor: an open patio, recreation area and coffee shop. Promoter: Realtor Frank Binswanger. Architects: Charles R. Colbert of New Orleans, with Fleisher & Roth as consultants.



Recipe for \$2.50 sq. ft. office space: a suburban 'office city' near Columbus, Ohio

Now that customers and then stores have swarmed into the nation's suburbs, will a lot of businesses be willing to make the move, too? One man who is betting they will is Don Casto, big Midwest developer of shopping centers. Last month, he and his son, Don Jr., announced plans to build an \$8 to \$10 million "office city" on a 60-acre tract $5\frac{1}{2}$ mi. from the heart of Columbus.

Instead of putting up a skyscraper, the Castos' plans, developed by C. Melvin Frank, AIA, called for 45 one- and two-story office buildings, a hotel and recreation center, with "ample parking space." Casto insisted he could build and rent space on his site for as little as \$2.50 a sq. ft, (compared with downtown office rentals ranging from \$3 to \$4) because of cheaper land and, therefore, cheaper parking. "And we can beat \$2.50 in some cases if a company wants only a building shell," he said.

As Casto sees it: "There's a need for this type of development in lots of cities because many firms don't need to be in the center of a city." For instance, he says, companies that need office space complemented by sample rooms, display, storage or even light manufacturing should be able to consolidate operations by moving to the suburbs. Casto is counting on the fact that his acreage lies close by a feeder road to Columbus' proposed inner and outer belt freeway system to keep his "office city" from being overtaken some day by the traffic congestion it now seeks to escape. After the Village of Whitehall rezones the tract from residential to business (no opposition in sight), and Columbus eases its freeze on new hookups to city utilities, Casto expects to start five years of construction.

"FREES RENTAL SPACE"... among advantages cited on first "packaged" air conditioned office building in New York



dual circuit central station RK's cool each floor independently . . . provide 285 tons of refrigeration capacity

To increase rental space in the multi-story rental office building now under construction at Queens Plaza, Long Island City, architects Wechsler & Schimenti specified usAIRco's selfcontained central station air conditioning equipment. By using these units, no cooling tower is needed on the roof, permitting construction of a penthouse for rental income.

A 30-ton dual circuit "Refrigerated Kooler-aire" (DRK) is located on each of the nine floors, a 15-ton DRK will serve the penthouse and one section of the ninth floor. Each unit will occupy an enclosed equipment room in the central service core of the structure. Each DRK has two complete refrigeration circuits, one or both of which operate automatically depending on load variation requirements . . . another important operating economy.

All the elements of a built-up system-blower section, compressor section and evaporative condenser-are contained in each unit. All component parts are factory tested and balanced, delivered in perfect order for immediate installation. Only three simple connections are necessary: to ducts, water supply and drain, and power supply. Extensive condenser water piping and refrigeration piping are unnecessary, resulting in a major building and operating economy.

Fresh air supply and exhaust air will be handled by two shafts running the entire height of the building. Under the owner's plan to lease full floors to individual tenants, metering of equipment will be possible, because each floor's air conditioning system operates independently. Each tenant will control his own equipment, automatically regulated by wall thermostats.



Hea



1. A. C. B.

\$590,000 a year to rent space in 42 buildings in Columbus alone.

Denver's burst of office building (including the 23-story Mile High Center, a 14-story Petroleum Club building and Clint Murchison's 20-story building) illustrated another facet of the 1954 demand for office space: as more and more corporations set up regional offices and as government decentralizes some of its activities, demand for new office space has concentrated in a few key regional cities. (NABOM's Bob Beach fears Denver will be overbuilt when the current spate of offices are finished—"unless the city does a lot of expanding.")

Shifting demand. As cities with the most new office construction began to taper off (notable exception: Manhattan), sizeable blocks of space were being planned in spots that had not shared in the boom earlier. In Baltimore, for instance, the Commercial Credit Co. commissioned Manhattan's Harrison & Abramowitz to design a 20-story downtown office building on the site of the St. Paul garage. In Philadelphia, Realtor Albert M. Greenfield decided to convert the Ritz-Carlton Hotel, for 41 years a favorite of social, political and entertainment luminaries, into an office building. The \$3 million job, due for completion in Sept. '55, should come in time to give Uris Bros. competition for tenants in their \$15 million Penn Center project (AF, Oct. '53). Plans for a ten-story office building of about 200,000 sq. ft., two blocks east of the Independence Mall Building (see cut), were announced in February by Laigh Cohan.

Hospital, lease-purchase bills move in Congress

Building legislation was starting to work its slow way through Congress. Last month's developments:

Without a dissenting vote, the House passed the administration's bill expanding the Hill-Burton hospital construction aid program. The measure went to the Senate where it looked like a sure bet to pass. It authorized federal grants of \$60 million a year for the next three years to help states build four kinds of facilities: hospitals for the chronically ill and impaired, diagnostic centers, nursing homes and rehabilitation centers (AF, Feb. '54, News). It also authorizes another \$2 million on a matching basis for surveys of these needs. The measure aims to help fill the need for medical facilities now in shortest supply. Under the original Hill-Burton program, emphasis was on building general hospitals-a need now 70% met, according to federal statisticians. Eisenhower has budgeted another \$62 million (\$50 million still remain) for Hill-Burton activity next fiscal year. A supplemental budget request will seek \$650,000 for the Public Health Service to develop design and construction standards for the additional facilities.

The Senate public works committee ap-

proved the lease-purchase bill permitting the Post Office Department and General Services Administration to acquire offices and warehouses on a 10 to 25-year installment plan. No opposition was in sight on the Senate floor. The measure passed the House last session. The Senate committee said it had assurances from GSA that it would not use lease-purchase to "carry out a large building program." The bill carried a proviso that no rent may exceed 15% more than the "fair market" rental for the property-as fixed by GSA. To take care of a few special situations, the committee added an amendment permitting exchange deals whereby the government could swap one structure for another better suited to its needs as part payment. GSA has in mind trading in the old 28-story Empire

SIDELIGHTS

Carrying coal to public housing

Faced with worn-out anthracite furnaces in three 13-year-old public housing projects, the Philadelphia Housing Authority asked and got HHFA permission to switch over to oil heating. Consulting engineers had found that oil heat for the 2,800 units involved would be \$111,000 a year cheaper than the present coal furnaces and \$86,000 a year cheaper than new, fully automatic coal furnaces.

Then the Anthracite Institute and Rep. Ivor D. Fenton, from the Pennsylvania hard coal country, got into the act. Fenton cited calculations by the Anthracite Institute questioning the government's cost figures. In a letter to Rep. John Taber (R, N. Y.), chairman of the appropriations committee, he demanded a "full investigation." He also contended consideration should be given to "the plight of unemployed coal miners and the possible shortage of oil in event of a war." Committee investigators actually went to Philadelphia Mar. 8, but before they could get fairly started, Fenton happily announced that the conversion had been permanently squelched after "direct action by the White House."

New institute for NAREB

NAREB accepted another realty organization into its ranks as an affiliated institute—its sixth. The newcomer, the Society of Real Estate Counselors, is composed of realtors who provide advisory and consulting services on a fee basis, either exclusively or as brokerconsultants. Ronald R. Randall of Philadelphia is president.

Tax aid for bombproofing

The Office of Defense Mobilization last month extended the fast tax write-off privilege to cover the full cost of protective construction in defense-supporting plants in any of the nation's 193 target areas. Previously, only plants in 70 "critical" target areas were eligible for Hotel in San Francisco, which was bought by RFC before the war, now houses the Bureau of Internal Revenue. GSA Boss Edmund Mansure testified: "We now have people who are willing to take that property off our hands; . . . it doesn't make a good office."

▶ As President Eisenhower had asked, the House labor committee voted tentatively to remove the Taft-Hartley Act ban on secondary boycotts in the building industry. The Senate labor committee did the same thing a few days earlier. Both general and subcontractor organizations promptly stepped up their efforts to persuade the committees to reconsider. The amendments would legalize the traditional secondary boycott activities of AFL building unions, which were held illegal by the Supreme Court in 1951.

five-year amortization (instead of the usual 20 to 25 years). ODM also dropped the requirement that at least \$25,000 must be spent on bombproofing construction to qualify. The objective: to encourage plants that cannot dissperse to add protective features like reinforced concrete over vital machinery, compartmentation, moving vital operations underground or building air-raid shelters. The new policy covers all 242 industries which have been eligible at any time since the Korean War for rapid write-off on construction, even though government expansion programs are now closed.

Gold medal winners

The Architectural League of New York announced its medal winners for 1954. Of five awards in architecture, four have appeared in FORUM. The prizewinners: Gold Medal, Lever House, New York City, Skidmore, Owings & Merrill, architects (AF, June '52); Silver Medal, Corning Glass Co. building, Corning, N.Y., Harrison & Abramovitz, architects (AF, Aug. '51); Silver Medal, Heathcote School, Scarsdale, N.Y., Perkins & Will, architects, (AF, Oct. '52); honorable mention, public housing project at St. Louis, Hellmuth, Yamasaki & Leinweber (AF, Apr. '51); honorable mention, William Foster home, Orinda, Calif., Henry Hill, architect. (For the Gold Medal winner in engineering, see p. 166).

Antitrust trial for plasterers

In a seven-to-two decision, the Supreme Court ruled that monopoly charges against plasterers and lathers unions and employer groups in the Chicago area were subject to the Sherman Antitrust Act. The decision—which did not bear on whether or not the parties were guilty —canceled a dismissal ruling by a Chicago court that lathers and plasterers were not engaged in interstate commerce and therefore were not under federal antitrust law jurisdiction (AF, Dec. '53, News). A new trial was probable.

Parker Pen Company chooses comfortable Day-Brite <u>recessed</u> lighting for office and production areas of new plant

Even in these days of advanced lighting practices, every so often an installation comes along that reaches beyond the usual and touches greatness.

The lighting in Parker Pen Company's new Arrow Park plant at Janesville, Wisconsin, is one of these. Every Parker worker, including those in production plant areas, works beneath a high level of super comfortable illumination from Day-Brite recessed troffers. Beyond a doubt, this is one of the finest industrial lighting installations in the world.



General offices, private offices and conference room are lighted by 854 runs of 8-ft. Day-Brite Low-Brightness Lens troffers recessed into a modern grid type suspended ceiling. Equipped with Holophane Controlens* to reduce glare, these fixtures furnish extremely comfortable illumination. *®HOLOPHANE CO.. INC.





The new Arrow Park plant in Janesville, Wisconsin—home of famous Parker pens. Its white Roman brick exterior encloses 212,500 square feet of floor space housing all pen and pencil manufacturing facilities of the firm. Architects: John J. Flad and Associates of Madison, Wisconsin. Consulting Engineers: Beling Engineering Consultants, Moline, Illinois. Electrical Contractor: Westphal & Co., Janesville, Wisconsin.

LOOK AT DAY-BRITE TROFFERS . . .



A partial view of the attractive Parker Pen Arrow Park plant area. Covering 200,000 square feet, this huge working space looks like anything but a factory. Twenty-four hundred 8-ft. Day-Brite glass enclosed troffers provide 55 footcandles of glare-free light for every plant operation. This is believed to be a more extensive use of recessed troffer lighting in an acoustical grid type suspended ceiling than in any other plant in the nation.

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BUILDING STATISTICS:

Annual reports reveal contractors' profits in '53; Morrison-Knudson heads the list

Most construction firms are privately owned, and take advantage of that fact to keep their profits and losses secret. From the major companies that do announce net incomes comes an incomplete—yet revealing—glimpse of what 1953 did to contractors' bank balances.

Of the 13 firms listed below, eight showed a rise in profits last year, compared with 1952. The net income of four fell. And one of the West's big contractors, Macco Corp. (not tabulated below) reported a net loss of \$490,766 compared with a profit of \$1,239,146 in 1952. Reason: a big loss on a joint-venture dam in Colorado because prospective sources of aggregate failed; saving that, said President John MacLeod (new AGC head—see p. 128), profits were about the same.

The year's most spectacular showing was Merritt-Chapman & Scott's (see p. 39). Profits soared 134% to a record \$3.4 million-not far behind construction's long-time biggest firm, Morrison-Knudson Co.

More than curiosity prompts a close look at construction profits. With sharpening competition and bidding, the industry could ponder the warning of President H. C. Turner of Turner Construction Co.: as "financially weak and less experienced contractors fall by the wayside because of unprofitable operations" in the next few years, "this could well reduce the volume of earnings to all contractors for a while."

CONTRACTING COMPANY EARNINGS

1952		19	53
Gross	Net	Gross	Net
\$17,013,853	\$1,186,264	\$17,750,517	\$1,015,394
99,941,469	4,189,204	120,067,563	4,137,528
	3,106,314		4,365,900
83,000,000		78,000,000	1,364,000ª
2,933,512 ^b	661,413	3,108,451b	682,131
585,372	28,799	846,681	185,951
6,891,366	2,454,884	6,584,243	2,498,263
80,930,097	1,496,320	104,671,369	3,494,688
229,164,000°	5,437,672	183,272,000°	5,761,420
675,743	301,171	710,391	321,721
5,053,063b	2,576,273	3,103,638b	2,403,732
	467,747		331,045
d	1,915,818	3,287,349	2,110,307
	Gross \$17,013,853 99,941,469 83,000,000 2,933,512 ^b 585,372 6,891,366 80,930,097 229,164,000 ^c 675,743 5,053,063 ^b 	Gross Net \$17,013,853 \$1,186,264 99,941,469 4,189,204 3,106,314 83,000,000 2,933,512 ^b 661,413 585,372 28,799 6,891,366 2,454,884 80,930,097 1,496,320 229,164,000 ^c 5,437,672 675,743 301,171 5,053,063 ^b 2,576,273 467,747	Gross Net Gross \$17,013,853 \$1,186,264 \$17,750,517 99,941,469 4,189,204 120,067,563 3,106,314 83,000,000 78,000,000 2,933,512 ^b 661,413 3,108,451 ^b 585,372 28,799 846,681 6,891,366 2,454,884 6,584,243 80,930,097 1,496,320 104,671,369 229,164,000 ^c 5,437,672 183,272,000 ^c 675,743 301,171 710,391 5,053,063 ^b 2,576,273 3,103,638 ^b 467,747

figures for year ended Oct. 31; gross includes \$2,704,123 of "gross profit."

NEW CONSTRUCTION ACTIVITY

(expenditures in millions of dollars)	enditures in millions of dollars) March			1st three months			
Туре	'53	'54	% change	'53	'54 9	% change	
PRIVATE							
Residential (nonfarm)	863	854	-1.0	2,437	2,450	+.5	
New dwelling units	770	765	6	2,180	2,185	+.2	
Additions & alterations	74	68	-8.1	201	199	-1.0	
Nonhousekeeping	19	21	+10.5	56	66	+17.9	
Industrial	198	172	-13.1	603	528	-12.4	
Commercial	114	156	+36.8	333	478	+43.5	
Other nonresidential	118	142	+20.3	358	426	+19.0	
Religious	33	40	+21.2	102	124	+21.6	
Educational	30	38	+26.7	93	115	+23.7	
Hospital	33	26	-21.2	100	70	-30.0	
Public utilities	320	338	+5.6	870	945	+8.6	
*TOTAL	798	773	-3.1	2,245	2,163	-3.7	
PUBLIC	basefe	Chur	A tabatat) hī e	14 18		
Residential	47	34	-27.7	142	103	-27.5	
Industrial	159	135		424	391	-7.8	
Educational	133	161	+21.1	396	472	+19.2	
Hospital	1 33	26	-21.2	100	70		
Military	111	75	-32.4	323	213	-34.1	
TOTAL	798	773	-3.1	2,245	2,163	-3.7	
GRAND TOTAL	2,527	2,538	+.4	7,175	7,283	+1.5	

* Minor components not shown, so total exceeds sum of parts. Data from Depts, of Commerce and Labor.

BUILDING COSTS



Construction costs continued downward in February, with the lumber-price drop now making itself felt (plywood dropped again last month to \$76 per M sq. ft., the break-even point for many plants). E. H. Boeckh & Associates' apartment, hotel and office buildings' index went to 253.0, an 0.4% drop from January. The commercialfactory index, at 252.8, was also 0.4% below the January figure. Both were still approximately 2% above what they were in Feb. '53.





Average wholesale building materials prices calculated by BLS edged down in February to 119.2, well under a revised figure for January of 119.6. Led by a drop in lumber prices (the drop has since gained momentum), the move broke a two-months' stalemate.

CONSTRUCTION EXPENDITURES



New construction expenditures for March, as estimated by BLS and the Commerce Dept., kept apace of last year's seasonal rise, went to \$2.54 billion for the month, a 9% rise over the \$2.31 billion in February. Total expenditures for the first quarter of 1954, at \$7.3 billion, were 1.8% over last year's first-three-months total of \$7.2 billion.

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NEWS



MODEL OF REVISED COLISEUM PROJECT WITH OFFICE TOWER



CUTAWAY VIEW SHOWS FOUR EXHIBITION FLOORS

New York's controversial Coliseum is redesigned, stirs new outcry

Drastically revised plans for his controversial Coliseum redevelopment project in Manhattan were unveiled by Robert Moses last month. The new plans by Architects Leon and Lionel Levy:

Discarded the Coliseum's much-criticized convex facade on a concave (Columbus Circle) street (AF, Dec. '52). For the interior they scrapped any idea of a big assembly hall, instead provided for a four-level exhibition hall and a series of small meeting rooms designed for trade conventions and expositions rather than auditorium gatherings.
Added a 20-story tower to provide 540,000 sq. ft. of office space (see cut). This would boost the construction cost of the project from \$20 to \$30 million.

▶ Increased the height of the two 12-story apartment buildings behind the Coliseum to 14 stories. (With start of the Coliseum and housing imminent, the project was encouraging others to rebuild nearby, Builder Ira Berne announced he would erect two 20-story middle-income apartment buildings for 260 families to rent for \$38 a room on a site one block away.)

Design brickbats. The Herald Tribune gushed over the new plans: "New York ought to be accustomed by now to surprises from Mr. Moses, but our chief builder has excelled himself here." Many an architect, however, thought the project still looked thoroughly undistinguished. Anyway, the looks of the Coliseum became the chief topic of controversy at the annual banquet of the New York AIA chapter. There, Editor Alfred Frankfurter of Art News (circ. 35,632) distributed advance proofs of an April editorial calling the project "utterly pedestrian." He praised Moses for his "dynamic qualities" that produced New York's "superb" network of parks, highways and bridges, but asserted New York City's construction chief displays "some curious and even outrageous stands on architecture-for his taste here is quaintly antiquarian-in direct and amusing contrast to (or perhaps in psychological compensation for) his modern and often avant-garde engineering concepts for communications."

Objecting vociferously to "the completely dictatorial way Moses is imposing this design upon the public without anyone getting in a word of dissent," Frankfurter called for widespread public protest and "recourse to law" to force a design change. He rapped the architectural advisory committee that approved the plans—Aymar Embury II, Eggers & Higgins and John B. Peterkin—as "a unanimous roster of conservative, eclectic architects: it is as if the President appointed an advisory committee on foreign policy composed exclusively of isolationists."

Seeing the Frankfurter editorial when he arrived as the dinner's chief speaker, Moses said: "I am not going to get mad. We are going right ahead and build the Coliseum." In his address, however, he gave an indirect answer to the attack. Public officials had no right to experiment architecturally on a big scale, he said, "must stick to established standards until, probably, better ones are found . . . must aim at what will wear well both physically and esthetically." He also, in what struck some listeners as contradictory vein, chided architects for clinging too intently to the past, told them that to survive they must "embrace engineering" and overtake the engineer "who has caught the architect swimming in placid historic waters and has run away with his clothes."

Technical headaches. The new plans, and a statement by Moses that contracts had been entered into for construction of the Coliseum and office building to be completed by Mar. and Apr., '56, also posed a series of embarrassing questions for federal and city officialdom.

For one thing, federal Title I regulations provide that major changes in a redevelopment project receiving federal subsidy cannot be made without HHFA approval. But two weeks after announcement of contracts for construction under the revised plans, HHFA said it still lacked any request from New York for permission to alter the plan.

With no application before it, HHFA would

not say what it might do if one came in. Nor would it discuss what consideration it would give a request to revise plans for any project: 1) if a more intensive (more valuable) use of a site was allowed without seeking a price readjustment from the purchasers to reduce the federal (and city) subsidy involved, or 2) without an offering of the additional use rights on a competitive basis.

'Particular abuse.' HHFA's approval of the Coliseum as a "predominantly residential" redevelopment in Jan. '52 (when it in volved a \$20 million Coliseum on the major portion of the site, and only \$6 million of housing on the smaller portion) provoked a Congressional backfire. After wringing testimony from HHFAdministrator Albert M. Cole that the 22-story Manufacturers Trust building, to be demolished for the project, was "certainly not blighted," the House appropriations committee called the whole project a "particular abuse" of the slum clearance and redevelopment act. It wrote an amendment into the pending independent offices appropriation bill to bar federal funds in the future "to finance either directly or indirectly a a coliseum or other similar project, where housing and slum clearance features are of such secondary importance."

At month's end, Moses was out of New York and his views not obtainable. One of the most obvious possibilities: redesign the Coliseum to retain the 22-story office building instead of demolishing it and putting up a new one. Other possibilities: readjust land resale prices to allow for more intense use, and thus reduce the federal and city subsidies; make the office building a taxpaying private enterprise part of the project instead of having a largely tax-exempt public agency, the Triborough Bridge Tunnel Authority, enter the office renting business in competition with private building owners.

After it considered the new plans, it was likely the Real Estate Board of New York, which approved the original Coliseum project, would object to adding a public office building on the same ground it objects to public housing. With the city's major office building development taking place on the East Side, some realtors suggested the Coliseum site was a poor location for a big office building in the first place. If the Coliseum needed extra income-producing features to be selfsupporting, said one observer, Moses apparently missed the boat by not making his extra structure a convention-type hotel that would tie in perfectly with the convention Coliseum.

Citizen advisers urge new Penn Center design study

Last September, members of the citizens' advisory committee for Philadelphia's Penn Center redevelopment called preliminary sketches by New York Architects Emery Roth & Sons for Uris Bros. "dull and unimaginative" (AF, Oct. '53, News). Last month, the committee handed Mayor Joseph S. Clark Jr. a one-page report "after mature consideration." It said: "There is urgent need for a new design approach to the project." The committee had some ideas how the mayor should do it. Among other things, it suggested: pass an ordinance to give the city art commission jurisdiction over architecture of the redeveloped center and adjacent land; give the planning commission money to hire "competent architects and engineers" to prepare a plan for the Penn Center, city hall and the Reyburn Plaza areas (including traffic and parking provisions) "after consultation with the Philadelphia AIA chapter."

HHFA scraps rule linking code drives, redevelopment

In face of opposition from the Nat'l. Assn. of Housing and Redevelopment Officials, HHFA scrapped its toughest rule tying federal handouts for urban redevelopment to city efforts to carry out rehabilitation through positive housing law enforcement campaigns. The rule made payments on both temporary loans and capital grants contingent on communities submitting evidence satisfactory to HHFA that they were continuing to enforce health, sanitation and safety codes on old housing. NAHRO had objected that this put local redevelopment authorities at the mercy of what local governments did-something they could not control -for continued federal money to carry out approved projects.

Said James W. Follin, HHFA redevelopment director: "We decided we had leaned over backward in attempting to carry out the full spirit and intent of Congress when it adopted the provisio in the [1953] appropriations bill requiring the administrator to give consideration to the extent to which localities were enforcing their local codes. In light of the objections raised, we felt that the provision was not serving a useful purpose."

Cities will now have to satisfy HHFA once per project that they are enforcing codes, but the money will continue to flow after that, even to backsliders.

PEOPLE: W. E. Reynolds to retire from Public Buildings Service; Lash fired as San Francisco redevelopment chief

W. E. (for Winchester Englebert) Reynolds, 66, colorful commissioner of the public buildings service of the General Services Administration, will retire June 30 after 21 years with the government. It seemed likely that



Reynolds was spurred into quitting by some tough cross-questioning he received from the House Appropriations Committee last month over how the government should have its buildings cleaned. Rep. John Phillips (R, Calif.) has long contended that the office cleaning work

REYNOLDS

should be bid for by outsiders, asked Reynolds to try it out. Reynolds asked for a few bids last year and decided they were higher than what the government was paying for the work. Phillips retorted that PBS had not allowed for "overhead cost" on the government-staffed jobs. Result: stalemate. (In New York last month PBS tried again, sought bids for cleaning work on six government buildings. On the face of it, the bids were up to or more than what the government was paying its cleaners; no one, however, had come up with a generally agreeable estimate of the "overhead cost.")

Reynolds will get away from it all at home in Jacksonville and carry on a consulting practice as a structural engineer. He supervised construction of hundreds of buildings while in office, warred against the monumental, ornate type of federal building. "We are the only architects who have to live with our mistakes," he said of the maintenanceminded PBS. Pet peeves: "pseudo-moderns," mausoleums and temporaries. Reynolds and President Roosevelt hatched a plan during World War II to keep the tempos from littering the Washington landscape forever. Roosevelt suggested Reynolds build them so they would collapse in exactly seven years. Reynolds said that could hardly be done, but suggested they be built in parks, near monuments, etc., so as to be constant eyesores and demand attention after the war. The scheme paid off. Last month Washington residents settled on a temporary building hiding a war memorial as their latest target for demolition.

NAMED: Architect Paul A. Wilhelm, to a one-year term as special assistant on industrial land development planning for the city of Philadelphia; Brig. Gen. E. C. Itschner, as the Army's assistant chief of engineers for civil works; Paul C. Watt, 29-year-old Lincoln (Neb.) city planner, as chief planner for the National Capital Regional Planning Council in Washington; Karl Kamrath, AIA, of Houston, as chairman of the Texas State Planning Committee; Thomas McCaffrey Jr., a past

president of SIR (1952), to the national council of consultants of the Small Business Administration; Dwight R. G. Palmer, president and chairman of the General Cable Corporation, as New Jersey highway commissioner; Paul F. Keatinge, former vice president of the Producers Council, as vice president and director of sales for the Trinity Division of General Portland Cement Co.

S. Clark Beise (rhymes with "buy see"), 55, known to his friends as a banker's banker, became president of the gargantuan Bank of America in San Francisco. The company is the largest commercial banking system in the

world, does about 40% of the banking business of its home state. At the close of last year it had 313,000 real estate loans outstanding, totalling in excess of \$1.8 billion. It made 64,892 new real estate loans in 1953 for a total \$521.5 million, and received payments of principal of BEISE



\$400 million. Beise, son of a Minnesota country doctor, worked his way up to B of A through regional jobs with the Federal Reserve. The late A. P. Giannini of B of A took him in 1936. "Doc," said Giannini, (Beise used to carry his papers around in a black valise), "I'd like to have you come into the bank. We can use a man like you and you'll find the way open clear to the top if you make good."

His political bosses finally got rid of James Lash, San Francisco's redevelopment director, on Mar. 2. The action "set the city's redevelopment program back five years," according to one official, touched off protests from Bill Young, S. F. Chronicle at least seven reputable



civic and professional organizations, directed renewed animosity toward Mayor Elmer Robinson and brought the redevelopment agency-on the technical side-to a state near impotency. The public servants who fired Lash-he had been director of the agency

LASH

since it was set up in 1948-were four out of five of its members: Paul T. O'Dowd, a private detective; Lawrence Palacios, a laundry union official; Optometrist J. J. Hayes, and Attorney Fitz-Gerald Ames. James Stratten, recreation worker, voted against the ouster. He had defended Lash at name-calling meetings earlier in the year: "I think he's done a difficult job well. And how can a man do a good job when all the time he's being threatened and ha-(continued on p. 50)

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rassed by members of this agency?"

Aside from ordinary harassment, O'Dowd's big move was to announce that Lash had withheld a memo from FHA estimating what the agency might expect from proposed sale of land cleared for its \$50 million Western Addition Redevelopment. The estimate was \$1.8 million less than what the city's real estate department had figured. Lash said it was a tentative report and subject to change. O'Dowd, after calling him a liar at a February meeting, presented his charge to agency members at a closed-door meeting and Lash was fired, 4-to-1, in 15 minutes.

Three technical staffers of the agency-the chief planner and two assistant plannersresigned in protest. Statements protesting the firing came from the Real Estate Board, the Chamber of Commerce, the Junior Chamber of Commerce, the northern California chapter of AIA, the Planning and Housing Assn., the board of supervisors (San Francisco's governing body) and the League of Women Voters. The supervisors invited the Redevelopment Agency to attend a meeting and explain. The agency refused and the supervisors were told by the city attorney that they did not have a legal right to pursue the matter further. But a county grand jury was considering the case. Mayor Robinson, meantime, who has repeatedly named friends and family to staff jobs in the agency, named Robert J. Dolan to fill Lash's place. Dolan, chief assistant clerk of the board of supervisors, is a trained lawyer but has no housing experience at all. The mayor also explained that the firing of Lash was really none of his affair. The San Francisco Chronicle disagreed. "The mayor," said an editorial, "has joined in a work of sabotage. . . ."

Slum redevelopment found a new champion in a surprising quarter. Abner "Longie" Zwillman, New Jersey underworld racket boss, told newsmen he and a group of associates are ready to put up \$250,000 for a slum clearance project in Newark, N.J. Said he: "If businessmen don't get together and do something about redeveloping Newark, the city will fall apart." Zwillman said he had no intention of running the project.

Among winners in AIA's 1953 architectural journalism contest: **Pietro Belluschi**, for "The Spirit of the New Architecture" in Architectural Record (commendation to **Eero Saarinen** for "The Six Broad Currents of Modern Architecture" in FORUM); **Bruce Barton Jr.**, for "The Keynote Is Freedom" in TIME (commendation to **Eric Larrabee** and Harrison Gill for articles in Harper's); **Ezra Stoller**, for a photograph in Architectural Record (commendation to **G. E. Kidder-Smith** for a photograph in FORUM).

DIED: Col. Gordon Strong, 84, one-time (1920 21) NABOM president, a leader of the move ment for uniform appraising and assessmen system in Cook County, Ill., president of the Chicago building management company bear ing his name, Feb. 24 in Washington, D.C.

NEWS

John Eberson, AIA, 79, Austrian-born architect of more than 500 theaters here and abroad, Mar. 5 in Stamford, Conn.; Wert H. Peace, 66, Miami's chief building inspector until his retirement a year ago, who, in his 17-year tenure, supervised nearly \$500 million in new construction, Mar. 22 in Miami; Col. Marcel S. Keene, 67, director of New York's Charles F. Noyes Co., real estate brokers, secretarytreasurer until his retirement in 1952, Mar. 26 in Falls Village, Conn.; David C. Noyes, 70, secretary of New York's Douglas L. Elliman & Co., real estate brokers, for whom he had worked since 1916, Mar. 29 in New York City.

Construction firms get set for age of atomic building

The building industry seemed to be on the threshhold of a vast new era of atomic construction for peaceful purposes. President Eisenhower had asked Congress to change the law to let private industry own and run atomic reactors. He had asked revisions of atom patent laws to make it harder for any company to grab a monopoly in nuclear power.

Last month, as the Atomic Energy Commission began a \$241-million, five-year plan to promote building of at least five types of reactors, a Congressional committee on atom energy predicted "economically competitive atomic power" in the US inside of ten years. Along that route, clearly, lay many millions of dollars of atom construction.

At least two AEC projects would be undertaken with private industry participation:

A full-scale 60,000 kw plant at Pittsburgh to be erected by Duquesne Light & Power Co., which will begin distributing the power it generates over its regular wire system in about two years. Duquesne will bear the entire cost of the generating plant and also will pay \$5 million toward the \$30 to \$40 million pressurized water reactor equipment for it being designed and developed for AEC by Westinghouse Electric under a separate contract. This will be a larger version of the type of reactor used in the submarine Nautilus. Including additional payments for the steam from the reactor Duquesne used in its turbines, AEC estimated the government would save \$30 million on construction and five years of operation by its arrangements with Duquesne, instead of erecting a government-owned plant. An experimental sodium-graphite reactor plant to be built by North American Aviation, Inc., which will put up about \$2.5 million of the estimated \$10 million cost. This is scheduled to be completed in about two years, then test-operated for another two years.

Indicative of rising building interest in atomic construction was the big attendance (more than 50 representatives of contractors and subs) at a prebidding conference held by AEC at Idaho Falls on new buildings and test-area facilities for the aircraft nuclear propulsion project at Arco. Estimates ranged from \$2.5 to \$3 million. Apparent low bidder Mar. 31: Arrington Construction Corp. of Idaho Falls, at \$2,021,200.



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NEWS

NEW BUILDINGS

Atom-resistant hospital

Billed as the nation's first atom-bomb resistant underground hospital, the \$2 million 100-bed Los Angeles Memorial Hospital to be started in June by the Southern California Osteopathic Hospital Foundation will have two of its six floors underground so they could serve as a complete hospital in themselves if a bomb demolishes the upper four. The Federal Civil Defense Administration approved the design of the underground floors, which will have 18" concrete block walls calculated to withstand a blast of 1,500 psi. . . . An \$18.7 million contract to build the \$23 million Grady Hospital in Atlanta was awarded by the Fulton-DeKalb Hospital Authority to Robert E. McKee, Inc., Dallas. Designers: Robert & Co. Associates.

Carolina gathers wool plants

Gov. James F. Byrnes announced the start of construction of South Carolina's first wool processing plant in Johnsonville, a \$3 million, totally enclosed, air-conditioned building for the Wellman Combing Co., subsidiary of Nichols & Co. Inc. of Boston. It is scheduled for completion in July from designs by Lockwood Greene Engineers, Inc. of New York and Spartanburg, S.C. Byrnes said another "multimillion" wool processing plant would be erected in the state by Amedee, Prouvest & Sons, of Roubiax, France, at a site to be announced later.

Churches take over secular sites

On a six-acre site that formerly was part of the Westmoreland golf course in Madison, Wis., a new \$300,000 Catholic churchd for Our Lady Queen of Peace parish will be started this spring (see cut). The fan-shaped building, designed by Weiler & Strang of Madison, architects and engineers, will have a 90' wedge-shaped stone tower to be topped with a 20' stainless steel or aluminum cross. White marble chips will cover the broad low-pitched roof. . . In Cleveland, St. Mary's Romanian Orthodox Church purchased a former nightclub property and planned to start a \$300,000 Byzantine-style church this summer. . . . Ground breaking ceremonies were held last



CHURCH GOES ON FORMER GOLF COURSE

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PANEL

6

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SEWAGE PLANT WITH EYE APPEAL

NEWS

NEW BUILDINGS (continued)

month for an \$875,000 building and remodeling program of the First Presbyterian Church in Dallas, Tex. including a new \$553,000 fourstory activities building designed by Bennett & Crittenden, architects.

A sewage plant with glamour

At first glance, the \$67 million Pittsburgh sewage treatment plant to be built for the Allegheny County Sanitary Authority might be mistaken for an engineering college campus, or even a modern hospital-sanitarium complex (see cut). As consulting architects for



all structural units, Celli-Flynn, architects and engineers of McKeesport, Pa., were asked to design a plant that would be interesting to the public (which will be welcome to inspect it any time). The aluminum, glass and brightly-colored glazed brick exteriors will serve a double purpose: 1) eliminate painting and maintenance problems, and 2) according to the architects, "brighten up the general area and lift the plant out of the drab monotony of the back alley realm." The plans were commended recently by the Pittsburgh city art commission. The circular building in the picture, 100' in diameter, is the intake pumping station. The large rectangular building (right) is the incinerator where residual sludge will be burned in a mixture with powdered coal. Landscaping was designed by Simonds & Simonds. Engineers for the project, including an interceptor sewer system: Boston's Metcalf & Eddy. The starting date depends on bond issues.

Frank Lloyd Wright showroom

Frank Lloyd Wright designed a 5,000 sq. ft. automobile showroom for Jaguar Cars, Ltd. and Hoffman Motor Car Co., New York distributors in a Park Ave. apartment being rebuilt as an office structure (AF, Sept. '53). Main features: a revolving platform with three cars, a ramp to provide a view from different elevations. Unveiling: about July. . . . In Kalamazoo, Mich. Allied Paper Mills planned a three-story glass block air-tight plant for the manufacture of base stock photographic paper. For extra cleanliness, all air from the outside will be filtered. . . . In Los Angeles, the C. G. Millhouse Co., contractors, was completing this month a \$171,000 clubhouse for the city's recreation and park department in Eagle Rock Playground designed by Richard J. Neutra.

New bank buildings

On Wilshire Blvd. in Beverly Hills, a \$2 million bank and office was started last month by a syndicate headed by Samuel W. Banovitz, Los Angeles, Chicago and New York office building owner. The newly-formed City National Bank of Beverly Hills will be the main tenant, and its facilities will include a twolane covered driveway for automobile-banking service. Welton Becket & Associates were architects. The building also will have 40,000 sq. ft. of air-conditioned rental office space. . . . In St Louis, the Manchester Bank started a \$500,000 expansion of its Chouteau Ave. facilities that would provide 11 drive-in tell-



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Two-level, \$1 million in-city luxury motel in New Orleans

Room service and a rooftop dining and cocktail terrace will be attractions of this air-conditioned 150-unit in-city Motel de Ville being built in New Orleans by Shelby Construction Co. Other features by Architect Charles R. Colbert and Mark P. Lowrey, associate: two- to four-room suites; private balconies, drive-in registration desk; elevators to living quarter levels.



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Composite	3"	1/4"	14	-	-	-	100	60

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NEWS

NEW BUILDINGS (continued)

ers' windows, a new main banking lobby and complete air conditioning. Officers said the largest existing drive-in banking operation they knew of was an institution in Texas with eight windows. Designing and engineering: St. Louis' Bank Building & Equipment Corp. of America.

Hospitals and health centers

New York voters in November will be asked to approve a \$350 million bond issue for building state mental hospitals under a measure adopted by the legislature and approved by Governor Dewey. . . . In Chicago, St. Joseph's Hospital was revealed last month as the purchaser last year of almost two full blocks on Lake Shore Rd, between Diversey Pkwy. and Oakdale Ave. It planned a group of multi-million dollar buildings there, but had not yet selected an architect. . . . For North Orange County and nearby sections of Los Angeles County, the Sisters of St. Joseph of Orange planned a \$2 million 100-bed hospital near Fullerton, from plans by Architect John W. Maloney of Seattle. . . . The Los Angeles county board of supervisors planned a new \$440,000 county health center at Whittier. . . . Union County, N. J. freeholders approved a \$900,000 bond issue for a staff and nurses' residence at Bonnie Burn, countyoperated TB sanatorium in Berkeley Heights.

Los Angeles auditorium pushed

Last May, a \$26 million bond issue for a **Los Angeles** convention hall and civic auditorium was approved by 62% of the city's voters, just short of the required 66%%. Last month, the city council voted to hold another referendum June 8 on a scaled-down \$19.5 million plan for a downtown auditorium costing \$7.3 million and an adjacent two-story exhibition building costing \$1.5 million (the remainder of the \$19.5 million to pay for land and other expenses).

High-rise apartments

Spring brought a crop of announcements and contracts for high-rise apartment buildings: In New York, a syndicate consisting of Jules Perlbinder, Philip Goldfein and Realtor Herbert Fischbach started two 12-story luxury buildings for 157 families on 83rd and 84th Sts., with a common entrance from 5th Ave., to cost about \$5 million; on lower Park Ave., Anthony, Joseph A. and John J. Campagna planned an 18-story luxury apartment at 36th St. designed by Architect Sylvan Bien; a syndicate headed by Builder George J. Engler and Isidor Eisenberg, textile dealer, planned a 19-story building on a 19,000 sq. ft. plot on the corner of 39th St. from plans by Architects Kahn & Jacobs in association with Philip Reznick.

▶ In Washington, Calvert-Woodley, Inc. started construction of a 135-unit, 13-story, \$2.5 million building designed by Architects Corning & Moore; on the south bank of the Potomac in Arlington, Va., a building corporation

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Miami Beach's Fontainebleau hotel will be Florida's largest

Last Dec. 29, Miami Beach issued the building permit to start the \$14 million, 14-story, 554room Fontainebleau Hotel. It will be Florida's biggest. The Taylor Construction Co. began work immediately, and Ben Novack, president of the owners' syndicate, plans to register first guests this Thanksgiving. The quarter-circle structure designed by Architect Morris Lapidus will curve around a large garden, pool and cabanas fronting 700' on the ocean (foreground).



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NEWS

NEW BUILDINGS (continued)

headed by Walter P. McFarland started Arlington Towers, to consist of a shopping center and four nine-story apartments containing 1,679 units, planned by Architects G. V. Stone and Donald H. Drayer.

Electronics industry plants

Motorola, Inc. bought a 40-acre tract in Niles, Ill. for a \$5 million building designed by Skidmore, Owings & Merrill. The company planned to transfer its administrative offices and engineering laboratories, now located in Chicago. . . . Raytheon Manufacturing Co. of Waltham, Mass. took options on about 73 acres in Wayland, some 20 miles from Boston, as a site for 1,500-worker electronics plant to be built by Cabot, Cabot & Forbes of Boston under a purchase-lease arrangement. . . . In Syracuse, N. Y. General Electric was negotiating for construction of two buildings for its heavy military electronics department. They would provide more than 100,000 sq. ft. of office and production space. . . . In the San Fernando Valley, the Telecomputing Corp., which manufactures electronic computing equipment, started a 25,000 sq. ft. \$225,-000 building designed by Pereira & Luckman, architects and engineers.

Industrial expansion plans

There was little recession in plans for industrial plant and equipment expenditures this year as surveyed by the Commerce Dep't. It estimated these would total \$27.2 billion for the year, only \$1.2 billion or 4% below 1953 outlays. Annual reports to stockholders by many large companies confirmed intentions to carry out large expansion projects. Typical company budgeting for plant building: US Steel, \$327 million; Alcoa, \$68 million; International Nickel, \$30 million; Armco Steel, \$33 million; B. F. Goodrich, \$30 million; National Biscuit, \$20 million; Texas Co., more than



New unit for medical center will cut personnel needs

City of Hope National Medical Center, a 450-bed nonsectarian hospital at Duarte (a Los Angeles suburb) providing free care for tuberculosis and cancer patients, will start this brick and concrete administration and central services building late this month. It is designed by Pereira & Luckman, Los Angeles architects-engineers. Since the medical center was established in 1912 it has spread over a 75-acre site in rambling fashion. One feature of the new 25,000 sq. ft. building will be consolidated storage and kitchen facilities for the entire institution, and dining space for the staff and all ambulatory patients. The centralization will greatly reduce the number of employees needed to cook and serve food.



JIM LOWE, PLUMBING CONTRACTOR, watches while son Ed makes last joint with circular torch on a 3" Type M Copper Tube soil line.

"I use COPPER for a better, faster job-at lower cost"

Jim Lowe is talking about copper tubes and fittings for soil, waste and vent systems. Mr. Lowe has been in the plumbing business for 52 years and is a Past President of the Connecticut State Association of Master Plumbers. Jim goes on to say, "I've always been sold on copper's *quality*. Now I'm just as sold on its *economy*. And so are my customers. My figures prove the final cost of a job is *less* in copper. Yes, material costs are slightly higher, but a big one-third saving in installation costs more than makes up for it.

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THIS 16' length of tube (foreground) points up one of ANACONDA Copper Tube's many time-saving advantages.

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Low slung California plant with glass-walled office

Robertshaw-Fulton Controls Co., manufacturers or pressure and thermostatic controls for home appliances and industrial equipment, broke ground for this 237,000 sq. ft. factory and office building for its Grayson Controls Division in Long Beach. Factory areas of the \$2.5 million steel and concrete plant will have bays 100'

square with 16' clearance. The office section with its high glass-walled entrance lobby will be completely air-conditioned. Designers were Quinton Engineers, Ltd., and the builders were Lindgren & Swinerton, Inc. of Los Angeles. Robertshaw-Fulton also planned a \$500,000 addition to its nearby Anaheim plant.



NEWS

NEW BUILDINGS (continued)

\$230 million; Standard Oil Co. (Indiana), \$500 million over two years.

Some specific items: United Chemical Co. of Dallas planned an \$18 million petrochemical plant at Timpson, Tex. to be built by the Foster-Wheeler Corp. of Houston and New York; E. I. du Pont de Nemours & Co. was planning a large neoprene rubber plant at Montague. Mich. at a cost of about \$15 million; Boeing Airplane Co. was prepared to start a \$10 million testing center at Larson Air Force Base, near Moses Lake, Wash .; National Cylinder Gas Co. announced it would build a \$3.5 million plant on Chicago's south side for manufacturing and distributing liquid oxygen: Westinghouse Electric Supply Co. bought a 164,000 sq. ft. plot in Miami and awarded a contract to Edward M. Green Construction Co. to erect a new 65,000 sq. ft. headquarters building from plans by Architect Llovd Frank Vann.

Store building plans

Store construction will get a boost from building plans major chains revealed. Safeway Stores Inc. announced plans to build about 100 stores a year across the nation, including \$91/2 million in Arizona for new retail outlets and a big distribution center and office building in Phoenix. . . . Chairman J. C. Penney said his organization would open 30 to 40 new stores this year, the largest number in 20 years, and would remodel 179 existing units. . . . F. W. Woolworth Co. was planning construction or major alteration of 71 stores this year, an increase of 25 over 1953's program; one in Honolulu will be the company's first Hawaiian unit. Woolworth plans to continue its switch to self-service designs, begun experimentally in 1952.... A \$2 million department store and office building in Hayward, Calif., to be started this month, will become the fifth and final unit in the Lucky One Stop Shopping Center there. Contractor: John J. Moore Construction Co. . . . In Seattle, Bon Marche department store announced it would begin construction on a 41/2 story, 1 million sq. ft. addition to its downtown building-in anticipation of a 1 million population growth in Seattle by 1970.

Materials, equipment plants

Luria Engineering Co. of Bethlehem, Pa. started a 40,000 sq. ft. plant near Somerville, N. J. for the New Jersey Shale Brick & Tile Corp. designed by Architectural Engineers Dwight B. Hendryx & Associates of Pittsburgh. Initial annual capacity: 15 million units of structural, acid resistant and shale face brick, and floor, quarry and ceramic glazed tile. . . . In Bayanon, Puerto Rico, a new island corporation, Gulf Steel & Wire Co. started the second and third units of a threebuilding, \$3 million plant to make wire, nails and chain. . . . Foundations for a 730,000 sq. ft. plant for Caterpillar Tractor Co. were started in Decatur, Ill. by Jansen & Schaefer of Pekin, Ill., contractors.

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EVENTS

Midwest Conference of Building Officials and Inspectors, eighth annual school for building inspectors, Apr. 12-16, Washington University, St. Louis; annual conference and business meeting, Sept. 20-22, Hotel Commodore Perry, Toledo.

American Institute of Steel Construction, annual national engineering conference, Apr. 13-14, Hotel Schroeder, Milwaukee.

Western Mountain District, American Institute of Architects, annual conference, Apr. 22-24, La Fonda Hotel, Santa Fe, N.M.

Association of State Planning and Developing Agencies, annual meeting, May 5-7, New Orleans.

Building Officials Conference of America, 39th annual conference, **May 10-13**, Bellevue Stratford Hotel, Philadelphia.

Royal Architectural Institute of Canada, 47th annual assembly, May 11-14, Mount Royal Hotel, Montreal.

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

New Jersey Chapter, American Institute of Architects, convention, June 10-12, Berkeley Carteret Hotel, Asbury Park, N.J.

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

Museum of Modern Art and the Merchandise Mart, fifth annual "Good Design" exhibition, opening June 20 at the Mart in Chicago, later to be shown in New York.

Massachusetts Institute of Technology, three-day conference on Thin Concrete Shells, including sessions on architectural design, structural design and construction techniques, June 21-23, at M.I.T. For details address Summer Session Office, Room 7-103, M.I.T., Cambridge, Mass.

Northwest District, American Institute of Architects, regional conference, Aug. 19-21, Eugene, Ore.

Pennsylvania Society of Architects, annual meeting Sept. 16-19, Great Lakes cruise on the South American, leaving from Erie, Penn.

Guif States District, American Institute of Architects, regional conference, Sept. 26-28, Marion Hotel, Little Rock, Ark.

California Council of Architects, annual convention, Sept. 30-Oct. 2, Hoberg's, Lake County, Calif.

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LETTERS

BUMPY HOSPITALS

Forum:

As you will no doubt recall in your inimitable article on the M.H.A. hospitals in the September issue, you used the expressive term, "bumpy hospitals"- by way of describing what these hospitals were not. I thought I knew what you were talking about. However, we had some difficulty explaining to readers of the article exactly what "bumpy hospitals" are.

Fortunately, that difficulty is now at an end. This picture printed in another magazine



makes words no longer necessary for an explanation of the term.

> MORELAND SMITH, architect Montgomery, Ala.

GATEWAY'S ARCHITECTURE

Forum:

At this distance Pittsburgh's Gateway development (AF, Dec. '53) indeed appears horrendous, and Philadelphia is just on the edge of having something equally bad or worse. It seems a pity to desecrate this precious area in the center of Philadelphia which probably looks better now than it ever will with the structures proposed for it.

> HAROLD SPITZNAGEL, architect Sioux Falls, S. D.

Forum:

Your editorial in the December FORUM is of great interest and timeliness. It is the first time that I have seen a clear statement on this important subject in an architectural magazine....

> José Luis Sert, dean Graduate School of Design Harvard University Cambridge, Mass.

Forum:

The defeat of architecture in these great civic projects is, I think, a symptom of a nascent social revolution-if you will permit me thus to speak as an oracle. When the arts of expression-I mean painting, sculpture, music and poetry as well as architectureare no longer understood by the people or valued by them, there exists no language which can make clear and explicit the ideals by which a nation lives. Those who are without ideals will then take over the land.

To make clear and explicit the ideals by which a nation lives was once the prescriptive continued on p. 74



ance, too. Modern houses, built for maximum efficiency, can ask no greater window efficiency than the Ualco Aluminum Awning Window with its 100% or controlled ventilation and its strip-proof cam lock operator which eliminates separate locking devices; unlocks, opens and locks in any position to over 90 degrees—with one finger-tip operation.

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Radiology Department (left). Nurses' Station, Emergency Admitting Section (above). North Shore Hospital, Manhasset, Long Island, New York Isadore Rosenfield, Architect Gerace & Castagna, Contractor

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LETTERS

task of civic architecture. I am afraid that we must admit that this task was well-done by those who had only the "stock theatrical repertory of Rome and Paris."

But we must not blame the intellectual idealism of Le Corbusier. We must blame ourselves for the way we interpret LeCorbusier.

> JOSEPH HUDNUT Colby College Waterville, Me.

Forum:

I have read with interest your editorial in relation to the Pittsburgh "triangle" but still question whether the architecture for the Boston Center is any better than the other two. It seems to be a strange combination of Le Corbusier, and some of Niemever's work in Rio, and the Festival of Britain. (The dome of the latter was probably the poorest example of a dome for a building.) It would be a Godless place because I looked and had difficulty in finding more than a few stray trees, which will be lonely and strange looking.

> RALPH WALKER, architect Voorhees, Walker, Foley & Smith New York, N.Y.

Forum:

The consideration of architecture as "window dressing" is unfortunately all too true and is pervading the entire economy of our country. The devastating result can actually change the face of our country through its leveling-down process on the smallest houses approved by the Veterans Administration Appraisal Sections to large projects such as Pittsburgh's Gateway Center.

Your magazine has been and I hope will continue to be a great force in selling to architects and to businessmen the necessity for inspiring sound architectural design and planning.

> A. B. SWANK JR. A. B. Swank Associates, architects Dallas, Tex.

ARCHITECTURAL CRITICISM

Forum:

Indications in recent issues of FORUM of the beginning of a truly critical and analytical publishing program are most encouraging to those who feel the need for a mature professional journal.

Surely there is more to be said about any building than those sugar-sweet gambits delivered with the smoothness of an ad agent rationalizing his account's product. It would be a pleasure indeed to read, in straightforward prose, why this particular building is good architecture, why that particular building is not architecture. Or is it considered unethical to criticize the works of architects? If it is, then we are involved in the only endeavor having pretense of being an art that continued on p. 80

uncorking highway bottlenecks

Highway bridge at Akron, Ohio, nearing completion. Total length, 1200 feet; total tonnage of fabricated structural steel, 5200 tons.

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Wherry Housing Development, Selfridge Air Force Base, Mt. Clemens, Michigan. Equipped with more than 5,000 Rusco Prime Windows.



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ARCHITECTURAL FORUM · APRIL 1954

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LETTERS

enjoys this immunity. Most of the buildings published by FORUM are good, some are great. Why cannot we have more "Why"?

> WILLIAM E. Cox Philadelphia, Pa.

• Unlike a painting, a sonnet, an opera, a drama or a bust of Venus, almost every piece of architecture is executed on order. Moreover, almost every piece of architecture serves a useful purpose. Criticism of architecture cannot, therefore, be as free as criticism of the other arts. Nevertheless, FORUM will continue to publish carefully considered criticism of some of our major architectural accomplishments. For example, criticism of the now famous Raleigh pavilion appears elsewhere in this issue.—Ep.

FOR ARCHITECTS ONLY

Forum:

I could easily go into superlatives about your column, "For Architects Only." I have derived a great deal of pleasure from it and from now on I shall look for it the minute I open the magazine.

> ISADORE ROSENFIELD, architect New York, N. Y.

Forum:

Just finished reading "For Architects Only." You are off to a good start. I'm all for some more on this nonobservation (AF, Feb. '54, p. 172—and that "shariwaggi" is interesting too.

> LAWRENCE DOWNS Kansas City, Mo.

PRECAST FRAMING

Forum:

Your article on multistory precast framing (AF, Jan. '54) was most timely and presented in a readily assimilated clean-cut manner. The increasingly complex demands of architectural practice make it difficult to keep fully abreast of current publications. The format of this article permits speedy comprehension of the salient principles and details. I recommend more of this type of article,

A. GORDON LORIMER, architect New York, N. Y.

Forum:

... A very interesting article. ...

In regard to prefabricated concrete for multistory buildings, there are many disadvantages and numerous details which have not yet been worked out to make them entirely satisfactory. For example, the connections shown in the article would have to be covered with approved fireproofing material before the building could be considered fireproof.

> M. J. ROACH, chief engineer Turner Construction Co. New York, N.Y.

• Another significant development in precast framing is reported elsewhere in this issue.—ED. continued on p. 86



fit modern design and building budget of Bascom Elementary School

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LETTERS

Renger-Patasch



GERMANY'S GARAGE

Forum:

The Dusseldorf garage is extremely interesting in the unique method of supporting the exterior ramps and in that the Germans apparently feel it desirable to totally enclose their structures, a feature which we have long since abandoned. From a technical standpoint, we would not go along with the leveling of ramps at each point of access at each of the floors since this makes for a very abrupt and unpleasant vertical turn when driving the ramps, as well as canceling out the desirable superelevation automatically provided when turning off a continuous grade.

> GEORGE A. DEVLIN, vice president National Garages, Inc. Detroit, Mich.

Forum:

Very enlightening. ...

The private parking industry has been doing a tremendous amount of research into the merits of various type parking structures. We have studied and analyzed the numerous automatic type parking devices, the semi-automatic type parking ramps and, of course, the tried and ordinary concrete ramp garages. The industry has improved, through modern designing, the efficiency of concrete structures by the use of long spans, cantilever sections, and the designing of much column-free area on typical urban property sizes.

We in the industry hope that FORUM will maintain the leadership in this field of new and improved design reporting, and we look forward to these intelligent, well-written and well-planned articles.

MANUEL M. SCHUBINER, president Detroit Parking Assn. Detroit, Mich.

Forum:

Judging from the pictures, it is going to be very difficult to make turns into and from the different floors from this ramp. If customers continued on p. 92



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From inside or outside, the windows are beautiful in the Lea County Community Hospital, Hobbs, N. M. Ventilating windows are of ½" L·O·F Polished Plate Glass. Fixed windows are of ¼". Nursery partitions are L·O·F Safety Plate Glass. Architect: W. L. Percire, Los Angeles.

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Note the unwavering straightness of the building lines even when viewed at an angle through L·O·F Polished Plate Glass, used throughout Edgebrook School, McHenry, Ill. Architect: Raymond Orput & Associates, Rockford, Ill.



This daylight wall in the main reading room of the Phoenix (Ariz.) Public Library is glazed with L·O·F Polished Plate Glass. Doors of the building are L·O·F *Tuf-flex* tempered plate. Architects: Albin Dow, Midland, Mich., and Lescher and Mahoney, Phoenix.

POLISHED PLATE GLASS



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LETTERS

drive this ramp, park and unpark their own cars, it seems that there will be much damage to cars and the building, trying to make the turns to and from this ramp. The railing appears too frail to be of any use other than keeping pedestrians from falling.

A great percentage of the cars in Germany are not as heavy as the ones in this country and are of a shorter wheelbase, which of course would help eliminate part of the turning problem. It would appear to us that these ramps would not withstand very much vibration from heavy traffic, and if there were two or more cars on the ramp at one time, it would work something like the old footbridges.

> E. J. CRAWFORD, manager The U-Drive-It Co. Toledo, Ohio

• Attendants, not customers, park and unpark cars in the Dusseldorf garage.—ED.

Forum:

The Dusseldorf Garage is quite intriguing. However, it is rare in our American cities to have even *one* acre of mid-city ground space to play with. We consider ourselves fortunate to have one-third of an acre.

We simply cannot allocate 373 sq. ft. per car space. We must get this down to about 275 sq. ft. Nor can we afford, in downtown areas, to use stalls 9' wide as does the Dusseldorf Garage. In addition, we have to mix in a little "double parking" for reasons of economy.

There are also some practical operating problems: In an industrial American city, the job of keeping the walls of glass clean would be no small task. The ramp grade is quite steep, $14\frac{1}{2}$ %, and does not appear to be well warped at the entrance levels. The grade could have been reduced by making a substantial reduction in the floor-to-floor heights -9'-10" is too much. The modern car is only about $5\frac{1}{2}$ high. In most of our northern cities the $14\frac{1}{2}$ % grade would create a serious problem of icing on the ramps, this could be overcome by radiant heating at added cost.

> C. T. MCGAVIN, executive director National Parking Assn. Washington, D. C.

OCTAGON REMODELING

Forum:

In the News department of your February issue you show photographs of the remodeling of the Octagon House stable into a library for the AIA and state "The remodeling cost AIA \$70,000 or \$31 per sq. ft." This certainly was "news" to me.

The total figure, not including architects' fee, was \$68,965. This covered \$54,235 for construction, \$8,004 for equipment, \$976 for some unrelated work at the administration building and \$750 for loss of rent in the AIA-owned parking lot in the rear. Also, instead of 2,200 sq. ft. the building has 3,100 continued on p. 96

4891

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LETTERS

sq. ft. From this you will see that the cost of the building was \$17 per sq. ft., or \$20 per sq. ft. if the equipment is included.

Quite a difference from \$35 per sq. ft. But, of course, all FORUM readers understand that traditional architecture is much more costly than contemporary.

> WILLIAM DEWEY FOSTER Howe, Foster & Snyder, architects Washington, D. C.

• Thanks to Reader Foster for setting the record right. The square foot figures AIA gave FORUM covered only actual working space and therefore tended to exaggerate the unit costs. Next time FORUM will refer such questions to the architect, not the client—even though in this case the client was a group of architects.—Ed.

MISPLACED MOTEL

Forum:

Congratulations on your very interesting article "The Change in Motels" in your February issue.

As public relations aide to Fort Worth's Western Hills Hotel, we were particularly pleased to see Western Hills so well depicted. However, the architect was Charles Stevens Dilbeck of Dallas, not Mr. MacCammon as indicated in your story. Carlos B. Schoeppl was consulting architect.

And we noticed that Western Hills is located "near San Antonio" in the text of the story and "near Fort Worth" in a photo caption. There is an effort underway to build a Western Hills Hotel of San Antonio but that has not yet come to pass.

> EUGENE MILLER Witherspoon & Ridings Fort Worth, Texas

MISPLACED PANEL

Forum:

In the caption of a picture of porcelain laminated to honeycomb aluminum shown on p. 150 of your December issue, you state that it is the Standard Federal Savings & Loan Association Building in Los Angeles, but actually it is the Children's Orthopedic Hospital in Seattle, Wash.

We are pleased to state that we did both these jobs.

LEONARD R. NACHMAN Seaporcel Metals, Inc. Long Island City, N. Y.

• FORUM editors, like FORUM readers, should now easily recognize the similar exteriors of these very different buildings, for, since the mixed-up caption appeared, FORUM has published both buildings in detail—in the February issue.—Ed.

MISPLACED CREDIT

• In its February presentation of the Federal Reserve Bank addition in Detroit, FORUM failed to note that the planting in the plaza in front of the building was designed by Landscape Architect Dan Kiley.—Ed.

\$10 Per Square Foot SCHOOL Uses RILCO ARCHES

modern, efficient design gains national attention

The Mirabeau B. Lamar Junior High School in Laredo, Texas, is unusual in several respects. It was built at the amazing low cost of only \$10 per square foot. It incorporated several new design features which have attracted national attention. Using one of the most economical forms of Rilco Laminated Wood Arches, the architects have achieved an unusually interesting, attractive and practical result.

Architects Caudill, Rowlett, Scott & Associates, Bryan, Texas, and A. A. Leyendecker (Associate Architect, Laredo, Texas) are to be complimented on their fresh approach to the ever-present problem . . . low-cost building for maximum efficiency and attractiveness.

The Rilco Glued Laminated Wood Arches used in the construction of the combination auditorium and gymnasium of the school helped keep costs down because of: 1) low original cost; 2) ease of erection, pre-cut and drilled for connection hardware; 3) erected with local labor and equipment.

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architectural forum

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Technical data for the design of roofs.

FOR ARCHITECTS ONLY 172 TECHNICAL PUBLICATIONS 236



Cover: Livestock Pavilion, Raleigh, N.C. Architects: William Deitrick and Matthew Nowicki. Photo: Joseph W. Molitor.





In rapid development: THE PLANNED INDUSTRIAL DISTRICT

In the big airview (to the left) of a modern city, the most important element of all is one that cannot be seen because it is missing—smoke.

And because modern industry every day sheds or consumes more of its smoke and grime, because it has gained respectability, "cleaning up behind its ears," every day respectable neighborhoods become available to it that were closed to its sooty forebear: respectable locations downtown, respectable rural locations and, above all, respectable locations like this one at the fringe of the central city.

Again, in this smokeless airview (which was taken over gas-burning Dallas), the most conspicuous feature that *can* be seen is a contrast—between the vertical office city to the rear that makes downtown and the flat-spreading industrial city of the foreground all built to a single story. This spread spells *land*—plenty of it and cheaper, pulling modern industry out of piled-up lofts into this open-fringe area.

And, finally, in the airview there is a conspicuous element of pattern, a pattern of planning obviously not accidental. Its double backbone is *transportation*: through the center of the view a fast superhighway, to the extreme right a parallel railroad with every block a branched siding. Among the rectangles of roof held within this transportation matrix, coherence is shown again in *controlled size*, for though some are quite little none is overly large; the plants are obviously small to medium.

For small plants: the benefits of bigness

What it all adds up to is a big slice of the future for American industry—an industrial district given the benefit of *planning*, the manufacturer's and ware-houser's collective equivalent for the merchant's shopping center, the developer's tract of housing. It started earlier than most of these others, with H. P. Isham's Clearing Industrial District of Chicago back in 1910; but its most rapid spread is now, since World War II. Planned districts are burgeoning in or around old Boston, near New York at Teeterboro, N.J., on Long Island, in Atlanta, Kansas City, New Orleans, Oklahoma City, Los Angeles and dozens of other places, not forgetting Toronto and Ontario, Canada. The Urban Land Institute lists over 100 of them.

In a way the growth of the planned industrial district dovetails with the move of workmen outward into new, planned residential areas but its basic significance is deeper, for it illustrates a very general principle of US business economics: how smaller units gain efficiency and power when, under competent leadership, they join together for action, without surrendering their freedom.

To gain authoritative information on how planned industrial districts are best organized, planned and designed, the editors assembled a panel of men of wide experience, who have dealt with its manifold aspects. A report of this forum begins on the next page.

Trinity Industrial District. Dallas, Tex. Area: 1,100 acres. Started 1945.

Photo: Squire Haskins



ARCHITECTS

Clarence Kivett Kansas City, Kan.

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Herbert Silverson

Douglas Wells

MANUFACTURER

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President Roosevelt Field, Inc.

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BUILDER—industrial buildings

DEVELOPERS-industrial districts

General manager Clearing Industrial Districts, Inc.

A FORUM ON THE PLANNED

INDUSTRIAL DISTRICT

The roster of the men above, who met last month to discuss the planning of industrial districts, assures authority. They represent real estate and management, planning and architecture, building and lending, railroading and trucking and rapid transit; and all have been direct participants of considerable experience.

Just what is a "planned industrial distict" as a going operation?

Says panel member Mowbray of the Urban Land Institute, it is "a suitably located tract of land subdivided and promoted for industrial use by a sponsoring managerial organization."

The gist of the operation is consequently a service, which is offered to an industry or warehousing enterprise on the basis that it is at least more convenient, at best more efficient, than individual action unaided.

FINANCING

Thomas Murray Manager Industrial loan dept. Equitable Life Assurance Co.

TRANSPORTATION

Railroads Gayle Arnold Manager Industrial Development Baltimore & Ohio Railroad Baltimore & Ohio Chicago Terminal Railroad Co.

Rapid transit E. L. Tennyson Traction commissioner Youngstown, Ohio

Trucks W. Foster Banks Motor transportation consultant

SUBURBAN: residential developer

John Mowbray President Urban Land Institute

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P. I. Prentice Editor and publisher ARCHITECTURAL FORUM

R. L. Davison Editorial staff Architectural Forum

THE MAGAZINE OF BUILDING

Nine ways the district helps the industrialist:

- 1. Selects sites.
- 2. Contacts local taxing and zoning authorities for best terms.
- Researches the availability of suitable labor, transportation of workers; highway, railroad or water accessibility; switching facilities; low freight rates; market access.
- 4. Assists in financing (if help is needed).
- 5. Plans the area to assure correct relation of the plant to highways, railroad sidings, parking, expansion.
- 6. Furnishes streets, water connections, sewers, and sometimes power though this is usually only provided for. Even restaurants, medical facilities, recreation may be profitably added.
- 7. Designs and constructs the plant (in some cases).
- 8. Assures the occupant maximum expansibility, convertability and future exchangeability of his plant.
- Protects the occupant against deterioration caused by bad neighbors either within or close to the district.

Not the least important of these services is the research, for "it is surprising," says panel member Silverson, "what an industrialist working for himself may overlook; for example, he may conclude from a raw population survey that labor is available, only to find himself in a white collar suburb."

Not necessarily is the planned district operated directly for a profit. The most typical kind, set up by a trained real estate operator, does; but there is a "subsidized" class of districts set up at cost or in rare cases at a loss by Chambers of Commerce, municipalities or railroads, to increase railroad traffic or increase the municipal tax base or increase employment.

Not necessarily is the district permanently operated by the owner. More typically, leases are gradually or immediately replaced by sales; but the difference between planned and unplanned districts is that leases are subject to covenants and sales are subject to building controls perpetuating the character.

The typical occupant is an industrialist or warehouser needing small to medium accommodations. The top limit varies with the type of district and the location, with railroad-sponsored districts averaging the largest. Panel member Silverson put the practical top limit at under half a million square feet of plant (Roosevelt Field) and the average at about 70,000; panel member Wells reported an average of 50,000 to 60,000 (Chicago Clearing) which represents an average increase of 1,000 sq. ft. per year over the past two decades.

Warehousing occupancy is on a decided increase. The latest Chicago Clearing projects are more than half devoted to it.

Not necessarily is a plant locating in a planned district the only one belonging to its owner—indeed the preference of district operators for firms with AAA credit ratings brings in many smaller units of large nationwide manufacturers—on the other hand, the independently owned plant may equal its owner's net worth, so correct setup is supremely important to him.

The strongest influence on success is correct location

A peripheral location outside city limits is characteristic, especially where transportation is paramount, but it must be within the urban distribution area. This means:

▶ Containment within central express and pickup districts where rates are lowest. (In Chicago this zone extends 18 mi, beyond the city.) A powerful district may itself cause extension of low rates.
▶ Containment within the local switching district of at least one railroad, and preferably in a terminal district so freight rates will not exceed adjoining metropolitan areas, especially in handling less-than-carload lots, which are highly important to small plants, and service may be better. In a big city where there is a terminal railroad its line may be preferable to a trunk line as a site because it will save some 24 hours on each interchange.

Situation on a good highway close enough to town so less-thantruckload quantities can be organized.

Lower land costs for today's one-story spread-out plants favor the peripheral location. Panel member Wells set 50ϕ to 60ϕ per sq. ft. as the probable *sales* price in the Chicago area that a developer would have to work back from; panel member Silverson gave \$2 as the comparable price on Long Island.

Labor must likewise be available, at distances that require no excessive travel time.

A central location may be preferable for the class of industry that may be called market- or contact-dominated. Example, a type of medium-sized plant whose salesmen have to keep running back and forth from the plant to clients' purchasing offices and would not easily be talked into moving to a suburban location.

Atop high land prices (\$1.50 or more before development) the city center usually offers difficulties of assembly short of condemnation under the federal redevelopment title; atop that, difficulties are increasingly imposed through requirements of off-street parking and loading. Several panel members noted exceptional conditions such as the flood control projects that have recently made converted sections of downtown Dallas and Kansas City eligible for industrial development.

Rural locations are still more exceptional. Instances are the Pennsylvania Salt Manufacturing Co.'s district located in west Kentucky to be close to raw materials, low-cost electric power and barge transportation, and handy to manufacturers using the product in their own processes—or three towns in southern Illinois which carved a planned district out of part of the Forest Preserve.



Employee transportation demands more study and action



GANNETT (left): "Some industries work perfectly well with a 14' ceiling height; others require 30'. There has been a trend to increase ceiling heights a little."

MOWBRAY (right): "The site of an industrial district should be within the diffusion area of a city, not only for labor but for ease of warehousing and delivery."



HOCH (left): "Industrial districts must be oriented to the entire transportation pattern rather than merely that the bus goes by the door."

KIVETT (center): "Bay dimensions and ceiling heights which give maximum flexibility in a building of 100,000 sq. ft. floor area may be quite different from what would be typical for a million square foot plant."

MURRAY (right): "Under a typical form of financing a future tenant builds the plant or warehouse the way he wants it and, upon completion, sells it to an insurance company from whom the tenant then obtains a lease." Though the planned industrial district developer must take the transportation system as he finds it, the panel acknowledges that not only are present transportation systems for personnel inadequate but their inadequacy will be aggravated by the growth of districts.

The basic contradiction lies in dependence of something like 77% of personnel, constituting a mass movement, on transportation by automobile, essentially an individual vehicle. A Chicago Clearing survey made during World War II showed that only 5,000 of 24,000 employees came by streetcar and 17,000 were using private automobiles. The density was 1.7 per car. (The highest density measured by the Army's transportation division during the war was 2.4 per car, at Baltimore. Carpools are becoming very popular and create a better density.) The cars not only clog highways but demand parking at the plant adequate for two shifts (for the change). Parking areas usually should equal one third of the plant area. Street widening, deceleration lanes or cloverleaf crossovers are needed at the critical congestion point where the district joins the main highway—unless congestion is simply to remain.

Public transportation must be rapid

Busses, declared panel member Tennyson, do not help, being able to average only 8 mph and getting stuck themselves in the traffic congestion. Nor are bus companies ready to double capacity for rush hours unless the district consents to pay the bill. Public transportation is not enough: it must be *rapid* transportation also.

Said Tennyson: "If you must build expressways to satisfy motorist pressure groups, why not add just 5% investment so that a transit line can be included which will boost the number of people carried by 400%. In Youngstown our planners have recommended development of a rapid transit line that would cost only \$150,000 per mi. to put in service. An expressway for the same area has been estimated at \$8 million per mi. The \$8 million per mi. would be paid out of taxes. The \$150,000 for rapid transit would come out of the fare box. And don't think that people will not use public transportation, provided that it is fast and comfortable. In Cleveland's wealthy Shaker Heights suburb the richest men there ride the streetcars, and the city transportation dept. makes 20¢ on the dollar. But those streetcars go 50 mi. an hour, on their own track."

The difficulty of this proposal lies in the fact that both rail and rapid transit lines usually run out radially from the city center, whereas most workers must travel cross-county (see diagram). Not much genuine relief will be had until belt lines are added.

Railroads offering commuter service have some new scheduling possibilities to explore, in the opinion of the panel, taking workers out to industrial districts for early factory openings and returning office workers inward on the same round trip. Though scheduling is not always simple, it is noted that the New Haven provides such service between the New England Industrial District and Boston, that the New York Central provides reverse commuter service for workers in White Plains and that the Long Island and Pennsylvania among others have made profitable adjustments of this kind. And rapid-transit Representative Tennyson points to the undoubted fact
that transfer arrangements between rails and rapid transit would lessen the rail's separation from other media and increase their use.

Goods transportation depends chiefly on trucks and rails

Water is no longer important except in unusual cases; truck transportation is universal, and virtually all districts also use rails. Opinions vary as to the relative advantage of having a district served by one railroad or two, since a single line may be expected to do more to promote the district but two lines may compete giving more attentive service. In ten years' experience the number of revenue cars out of Clearing's older 65th St. district has remained the same so expansion must have been taken care of by truck. A rough estimate credits trucks with 75% of traffic.



Good planning depends on many factors in balance



Roil-dominated district, such as early Clearing Industrial District (p. 114), has large plants, high densities, frequently uses more than one spur track per plant and makes relatively little provision for trucking as part of industrial process.



Balanced transportation is provided in practically all new districts. Plants in general cover less area and use both trucks and railway cars. Flow is not always from railway to truck but may be reversed or mixed.



Auto-dominated district has some industries, such as research laboratories, which could very well get along without railroad. Employees' parking is the dominant factor, although trucks and railways are necessary for some of the industries in an "Industrial Park." As to minimum size for a profitable operation the panel agrees that less than 80 acres would not be rewarding; the maximum depends on the size of the individual plants, with 150 acres the preferred top limit where plants average 50,000 sq. ft., but more land where plants are bigger.

▶ Size of lots depends of course on plant sizes, land coverage (anywhere from 30% to 60% was suggested as a maximum, the latter more typical) and distance from street to railroad siding (at least 200' and seldom over 500'). Roosevelt Field sets a three-acre minimum. Lot sizes and shapes are more easily varied where railroads come in at the diagonal.

▶ Expansion can be handled by requiring each tenant to rent a certain amount of expansion land (few tenants foresee their need) or options may be given, say for two years, on adjacent lots. Again, the whole area may be developed checkerboard fashion, leaving alternate squares vacant in the first phase; because of varying plant needs the later fill-in will, of course, be somewhat opportunistic and irregular in pattern.

Traffic goal: minimum interference at low cost

A basic problem of the district is to avoid rail and road interference. Ideally, panel members agree, the rail leads and the dead-end access streets come in from the main lines at opposite sides like interlacing fingers, avoiding crossings (middle sketch). In a diagonal scheme the rails lie in a tree pattern diagonal to the lot, and access streets are fed in from around the periphery, again interlacing without crossings.

The typical block may have rails coming in at a diagonal to the buildings (see uppermost of the three sketches). The $\frac{1}{4}$ -mi. square block served by a diagonal railroad lead with branches is particularly suitable to districts where rail traffic is to be dominant. Within this $\frac{1}{4}$ -mi. block it is possible to get an almost infinite variety of side-track layouts and shapes and sizes of lots. The actual working out of this principle is best illustrated by Chicago's Clearing Industrial District (p. 114).

An alternate is a series of blocks with railroad spurs coming in at right angles between the access roads, the way an alley runs up the middle of an ordinary city block (middle sketch).

This type of plan leads to an orderly looking community but it is neither so flexible nor so economic in its use of land in relation to the railroad as the diagonal type.



Depressed tracks and loading area bring floors of vehicles level with factory floor. It costs less usually to lay plant floor on grade and excavate tracks and trucks than to raise floor. In most districts railway leads and side tracks are de pressed throughout entire district. In early districts only truck-loading areas were below grade. Some recent districts have entire street systems about 3' below grade.



Paving width should be 28' or 32' wide. Paving 30' wide has been extensively used but is wider than needed for three vehicles, not wide enough for four. Major streets are now being laid out with 40' paving needed for four lanes if traffic is to be kept moving while cars are parking on one side of street.



Utility strip alongside railway lead and side tracks is preferred to utilities in parking area on either side of street. When usual setback from street was 15' to 25', utilities generally came in from street side, but with today's 75' to 100' setbacks it is more economical to come in from rear.



STORM SEWER

Delayed run-off of rain water minimizes flooding of site and permits smaller storm sewer sizes, lower costs. This can be done at no appreciable increase in structural cost of roof in areas where roofs are designed to carry snow load, for snow load exceeds weight of water from any one rain. With roofs covering 40% to 60% of ground area, delayed run-off lessens danger of flooding streets and trucking areas.



Corners must be designed to take trucks. If radius is too short, truck will have to use second lane to make turn. Throughout Southwest where combinations of tractor, semi-trailer and four-wheel trailer are used, it is desirable to use still longer radius.



Plenty of truck space is needed for loading, parking and maneuvering. It is better to overdesign than skimp on space as time costs more than space. Warehousing is becoming increasingly important to industrial districts. Half the Clearing District's current construction is for warehouses. Photo shows truck terminals.



Chicago Aerial Survey Co.



Interlaced, railway and auto transportation systems avoid crossings. Rail lead can be located off center to give any variation in depth of lots which may be desired by prospect.



Diagonal rail lead interlaced with roads offers greater choice of lot shapes and sizes than in system illustrated (above). Diagonal system has further advantage of requiring less space for track to become parallel to buildings. In some districts the railroad is placed off center in the block to give a choice of shallow or deep lots (see sketch). A combination of the *apparently* planless efficiency of the diagonal rail facilities with a formalized checkerboard layout may result in a principle of subdivision having the advantages of both systems.

The shift to fast trucks means streets must be tough, and there are tricks in layout

Because of increasing truck wear, district managers agree on heavier construction, increasing from the 6" concrete street of the earlier years to an 8" to 10" highway specification street, which again may soon have to be black-topped to prevent water intrusion, causing spalling.

Chicago Clearing's schedule of streets makes subsidiaries 25' wide, intermediates 30', boulevards 40'; but dissatisfaction is expressed by Manager Wells with the 30' width as being just wrong for parking (see sketch).

Loading platforms involve problems of grading, drainage

Grades are as important to an industrial district as patterns. Since it is costlier to raise buildings than to make cuts for roads or track, one trick is to depress the track, at a grade of not over .02, until it is 44" below loading platform level, bringing the freight-car floor even. Where the land slopes, even gently, cut and fill may bring the floor itself economically to loading level, eliminating the need for cuts decimating the land.

Truck docks can be reached by steeper grades but there are two problems to look out for. One is drainage (panel member Wank mentioned an instance where the roof was drained into the truck well), which is more serious since the road has not the porosity given railroad trackage by its ballast. The other is enclosure, since general agreement is that truck wells must be fully enclosed in cold-weather areas. The depth of such wells has increased from the earlier 15' open setback to 46' to accommodate today's long trailer trucks. If the cab is to be parked, outside doors must still close. Trailers must stop level.

Industrial buildings must have designed-in convertibility

Architectural standards rather than legal restrictions are responsible for the "garden-type" plant built for the American Can Co. at the New England Industrial Center.



The difference between industrial district buildings and individual plants lies in the fact that the operator of the district (like the builder of an office building for rent or of FHA-insured apartments) must look to convertibility for the turnover value of a building abandoned by its original occupant.

Three major types of buildings are developing, differing chiefly in ceiling height: standard manufacturing (12' to 14'—with 12'-6" the Clearing standard); warehousing (18' to 22', the latter adapted to four-pallet height instead of three-pallet); plants with overhead conveyors—favored also for increasing automation (18').

Bays are usually 24' or 25' wide and span 40' to 60'-Clearing has piles of 61' trusses regularly in stock, and using wood roofs and sprinklers, designs to 3.7 lb. of steel per sq. ft. of building.

Expansion is favored by the truss construction which lets end walls be nonbearing and easily pushed out without disturbing the structure. Toilets and boiler rooms must not obstruct enlargement.

Convertibility from warehousing to factory use is easy but managers of districts see no point in saddling factory tenants or purchasers with extra height and heating bills just so conversion from factory to warehouse can be held in reserve.

The degree of control over appearance varies widely from district to district. Some require masonry fronts and fresh stone trim; others leave design to individual architects serving clients; but all reserve the right to review.

Many districts have been using package operations ...

Some proprietors of planned districts, such as Roosevelt Field or Chicago Clearing, take advantage of their accumulated specialized know-how, their stocks of tested standard materials, the knowledge of skilled staff architects such as Clearing's John Cromelin and associated engineers to make a profit on construction as well as on sales or leases.

... others leave design and construction to clients

This is true of districts such as Dallas' Brook Hollow, or B&O's district outside Baltimore. But plans still have to be approved.

Meanwhile, planned districts offer a challenge to architects

Though managers on the panel who now use package methods did not agree with Architect Roland Wank's all-out challenge to the method, yet none was averse to "being shown."

Wank's outline of opportunity to the independent architect:

1. To prove that even when standardization is highly economical, *deviation* is the source of progress.

2. To demonstrate that the independent architect is more ready for sense-making experiment than one closely tied to an operation. Example: Wank himself challenged the average industrial district's virtually standardized "window wall," said his firm had obtained success with smaller window areas, sometimes glass block, sometimes monitors and again other devices.

3. To bring in ideas that come up first in other fields, the way some treatments have come in from store fronts and hospitals. In short, to demonstrate the value of "free competition in the world of ideas."

4. To insist more independently on firm execution.

5. To cast a professional eye on the collateral effects upon the community.



BANKS (left): "You can't have standard maximum truck lengths for all states. In the thickly populated east, they cannot use long vehicles but in the wide-open, western states, they use a combination unit of tractor, semitrailer and fourwheel trailer."

PRENTICE (center): "One reason why commuter rail service is so unprofitable is that all the trains run empty in one direction."

WANK (right): "Is it possible to conceive of these industrial districts 50 years hence as little islands of heaven, where the property owner has practical self-restraint and self-enforcement superior to the standard of public morality generally prevalent?"

Protective controls are based on performance standards

Since a major inducement of the industrial district is protection of the client's prestige and security against deterioration, the panel is wholly agreed that controls are needed, and it notes a trend toward basing such controls on performance standards.

Choice of tenants is an example, since districts obviously dislike tenants or owners that might create a nuisance—visually (example, unsightly yards), or in terms of noise, fire safety, odors.

Zoning is a further instrument for preventing infractions, and panel member Arnold gave the new Arundel County regulations in Maryland as an example of zoning to *performance standards:* it may not emit offensive odors, or noises beyond a specified number of decibels, etc. "You can put in a rendering plant and boil down animals as long as no one can smell them."

Physical planning standards involve such things as standard minimum setbacks (from 46', to keep unloading trailer trucks off the sidewalk, on up to perhaps 100'), side clearances, land coverages (most insist on not more than 60% but some say not over 30%), landscaping (in some cases at least 20%).

Restrictions are more readily placed in leases than in deeds

where they cannot be enforced without policing a vanished interest. The idea of passing control to a tenants' association has the drawback, says member Silverson, of hampering financing. In the end public opinion rules; and since experience has been longest in Chicago, comfort is taken in the report of continued high standards in both the Addison District (in tenants' hands since 1946) and 65th St. (since about 1920), both of which are well maintained.

Public regulations should be held to a minimum, in the opinion of managers present as well as urbanist Mowbray. Reasons: they tend to be fixed restrictions and too inflexible; they can be repealed at the next vote; they are unwieldy ("think of waiting for a council meeting every time you want to make a curb cut"); and moreover, "you can have an actual nuisance and still be legal."

That today's controlled district can be an asset even in a choice suburban area is attested by the case of the *Sunset* magazine office building, cited by panel member Mowbray, which got a special permit in a tightly zoned area. Its country-club character (even the secretaries can practice putting during lunch hour) has enhanced, not deteriorated, surrounding house values—in addition to easing the tax rate.

talb that the control microscope to be a first



WELLS (left): "Companies frequently say they are not going to expand their plant. I have never seen a plant that doesn't need expansion."

SILVERSON (center): "I would not put an industrial plant in an open area without anything else around. I know people who have, and they have had to convert the area to housing purposes."

ARNOLD (right): "If our railroad is the only railroad that serves the industrial district, we consider ourselves to be on the developer's payroll."



TENNYSON (left): "We can't afford to spend \$2,000 per family to improve highways. We must expedite public transportation."

GANNETT (right): "There are many industries that start with 50,000 sq. [t, and then want 100 acres."

Financing of districts must be

prudently undertaken

Financing an industrial district is like financing a shopping center: if leases have already been made with outstanding national organizations, then financing will not be too difficult.

Both Mr. Arnold and Mr. Wells described the land *sales* district as an easier way to start and gain experience than the *operating* district. Said Arnold: "You don't need so much money as you once did to start. What developers do is to get the land, start putting in utilities, then have the buildings put up by a contractor and partly financed by the tenant's credit."

But Mr. Silverson's warning was that "many developers don't realize after they pay for land that they will then still have to pay a great deal for site improvements, engineering and architecture. The first tenant will need some facilities, some roads will have to be put in, some railroad siding at the developer's expense (to be repaid out of freight receipts) and nine months' to a year's time may be taken up by erecting buildings. And up to that point you have no income."

Financing individual buildings within the district, however, is far easier than financing them outside. Said panel member Murray: "Our appraisers don't worry about plants in industrial districts but they do worry about plants going to the suburbs with no plan at all. We may carry a real strong company but we don't carry smaller ones out in the open." And in some cases the leaseback method is in use, where a large company will build a plant or warehouse designed by its own architects, and on completion sell the building to an insurance company, then promptly lease it back for its own use.

In DALLAS, a railroad sponsors an industrial district

Started in 1945, the Airlawn Industrial District, 4 mi. from downtown Dallas, is typical of the better type of modern, medium-size (256 acres), planned industrial development. The project was sponsored by the Missouri-Kansas-Texas Lines with the cooperation of the owner of the site. The railway laid out the rail leads and the street system. It actively promoted the finding of prospective purchasers and then arranged for financing of the plants. (It was brought out in the forum discussion that industries may benefit from the competition of two or more railroads serving a district, but the developer gets far more help in promoting the district when there is only one railroad.)

Sites sold from 10¢ to 75¢ a sq. ft. depending on the size and location, the amount of utilities in or required and the stage in the development of the district. After the streets and utilities are installed they are turned over to the city. The paving is 40' wide with a 10' utility strip on each side. There are no sidewalks. Restrictions include a 100' setback on main streets and 25' on secondary streets. Of almost equal importance in maintaining the prestige of the district is the requirement that no cars or trucks be loaded at the sides of buildings facing on any street.

Layout of streets and railroad leads violate the principle (emphasized at the forum) that streets should not cross railway tracks. If the track layout is fixed, the streets should-in theory-have come in from the east (as shown in the righthand sketch plan). It would appear, if local topography permitted, that rail leads brought in from the south corner of the property could have been kept entirely clear of streets, which could have been brought in from north, northeast and northwest as shown in sketch at right, below.



Souire Haskins





In BOSTON, a small industrial park takes advantage of ideal transportation facilities

Although it is located close to a circumferential highway and near to two main radial intercity highways, the New England District has arranged for rail transportation of employees. The 11/2-mi. extension of the tracks from the main line of the New Haven to provide freight service to the district is used for passenger service from the heart of Boston and intermediate points to the center of the district. The return trip to Boston carries the regular morning commuter traffica plan suggested by some members of the forum. Thanks to the adjacent highways, employees can drive directly to the plant from almost any location within the Boston area, without bucking in- or outbound traffic; they will be traveling cross-country. The developers used foresight (or were lucky) in getting a site near a cloverleaf connection to a main highway. Without it, employees would have difficulty getting into the far lane of the highway from the parking lots.

The main streets coming into the district from the opposite side of the area from the railroad result in at only one point interference between the two systems of transportation. The paving is 40' wide with a 5' grass strip and a 3' sidewalk on each side.

Although in some currently planned "districts" buildings may cover up to 60% of the sites with 20% reserved for parking and 20% for landscaping, restrictions in this district limit land coverage to 33%. A setback of at least 50' is required on the main street and 40' on other streets. Two thirds of this setback area must be landscaped and the balance may be used for auto parking. No on-street parking is permitted. Open storage is prohibited; so are "uses of land or buildings which would be offensive, unattractive, harmful or detrimental to industrial neighbors within the development."

As in many other districts, an effort is made to maintain a high level of landscaping and architectural conformity by requiring that "plans pertaining to construction, landscaping, signs and alterations are subject to prior approval."



Boston's industrial park differs from the typical industrial "district" in two respects. In a "park" the buildings cover less of the site (one third in this case), while in the "district" coverage is frequently two thirds of site. The other difference goes beyond restrictions, it consists of greater attention to community planning, landscaping and building design considered not solely for the individual company but in relation to adjacent plants and the overall community plan. The interdiction of all parking on the public streets (and the limiting of off-street parking facilities for passenger cars to one third of the space between the buildings and the street) will improve the general appearance of the "park."

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In CHICAGO, the pioneering Clearing District has attained the proportions of a

The stimuli: ideal railroad facilities and a package service for industry

Chicago's Clearing Industrial District was one of the first large industrial districts to be started on the perimeter of a city. Construction began in 1910 with the development of the first 40-acre tract or superblock. This was the first unit of what is now a 3-mi.-long industrial strip on the southwest limits of the city. Seven other smaller districts have since been developed in various parts of Chicago.

The district staff plans and constructs all streets, sewers and water mains, and designs and builds all plants. Streets, water and sewers are privately owned and maintained, since the original district has the same status from the standpoint of local government and taxes as farm land. The district also maintains police, street cleaning and ambulance service. Two emergency hospitals in the district offer treatment under compensation insurance and handle pre-employment and routine physical examinations for all industries. Fire protection is provided under contract by Chicago.

Original streets had 30' paving, 5' sidewalks, 10' for planting and utilities and 10' setback. Recent developments have been planned with 40' paving, 5' sidewalks, 10' parkway, 20' setback and 110' building separation. (See sketch p. opp.)

The Clearing District has made a policy of reserving vacant land between plants for sale to these plants. A two-year free option is given for purchase of this land and in most cases the companies take up the option. In cases where properties come back to the district because of the failure of a tenant, the district is often able to obtain a new tenant by offering him adjacent land on which to enlarge the old plant to suit his needs.

The district offers a "package plan" by relieving the manufacturer of the problems of site selection, financing, design, construction, employee transportation, gas and electric utilities contact with local taxing bodies, streets, sewer, water, fire protection, automatic sprinkler protection, and product and material transportation.

Through its own architectural and engineering force, the district handles the design, erection and financing of plants and warehouses. It will permit an industry to have its own architect as a consultant on its own building, but the district architect will be the architect on the job because the district is the builder. Controlling the design and erection of the buildings, the district can standardize design to a degree that makes for speed and economy in the drafting room and on the site. (Although this standardization could lead to sterile architecture, the district has been very fortunate in having, as chief architect, J. S. Cromelin, who has done very well in bringing in variations.

By standardizing building designs, the district can stockpile building elements. At times it has on hand columns and trusses for several 100,000 sq. ft. area buildings. In some cases the district has built standard plants before obtaining a tenant. At present the district has standardized on a 61' truss which with columns (in a sprinklered building with wood roof) runs the steel to 3.70 lb. per sq. ft. Plants run in size from 20,000 sq. ft. to several hundred thousand sq. ft. The average size of plant in the district is now 55,000 sq. ft. and has been increasing at the rate of about 1,000' per year for the last decade.

Plants may be bought on a down payment of 25% and balance in ten years or on a 15-year lease at 6% of total value, plus 3% for amortization.

Although setback restrictions and limitation on the materials which may be used for building walls are written into the deed, the character of the community is maintained by care in the original selection of firms permitted to buy or lease in the district and close control of the design and construction.

When all of the land has been sold—after 20 or 30 years —the streets will be turned over to the Clearing Industrial Assn., which is composed of the district plant executives. This group has virtually complete controls of all activities inside the district.

A by-product of railroading. The tract of some 4,000 acres was originally assembled to serve as a distribution center for freight cars for all the railroads serving Chicago. It was the intention to develop the land bordering the rail yards for industrial sites. The depression of 1893 and lack of interest on the part of the railroads delayed action till around 1910 when active development of the first section began. Soon after the railways of Chicago formed a belt-line railroad connecting all lines entering Chicago. A distribution or "Clearing" center adjacent to the present site of the original Clearing District was the core of this belt line distribution center.

From the start, the Clearing District has been oriented to take advantage of this very advantageous freight situation, both as regards quick service and low freight rates. Special provisions have been made to provide facilities for handling less than carload shipments as well as for catering to companies which used many sidetracks.

Trucking has now become so important that although the total freight carried by railroads has remained the same, the entire increase in freight from the district has been carried by trucking. More emphasis is now being given to truck transportation in the planning of site and facilities. Several trucking terminals are located in the district and special provisions are made for handling of less than truckloads. (It has been found that downtown department stores can make deliveries from district warehouses—14 mi. from the Loop—to customers quicker than from the Loop.)

The district, which has developed industrial sites in seven locations, has found that no one location meets the needs of all types of industry. The bigger out-of-town firms prefer the district having the better railroad service, larger labor supply and lower taxes. The one-man firms prefer to be near good suburbs with selective labor supply. Industries, such as printing plants, which require personal contact with customers, need close-in locations. Of the employees, 77% come by auto; the other 23%, by busses.

great industrial city

CLEARING INDUSTRIAL DISTRICT LOCATION: Bedford Park, Chicago, Ill. J. S. CROMELIN, architect D. P. WELLS, vice president and general manager



Three miles long, Clearing Industrial District borders the car sorting yard which serves the 13 railways entering Chicago. The district was developed in 40-acre units. In the earlier units the railroad was brought in at a 90° angle with the main line of the railroad and the district's main traffic street. In later developments the tracks were brought in at a 45° angle. This made for more efficient subdivision of the land as less space was required for sidetracks to curve to become parallel with the build. ings and property lines. The plan and air photo show the economy and limitless flexibility which the diagonal railway service permits. By placing the main roads on three sides of each 40-acre tract it is possible to service any size or shape of lot without the railroad crossing the streets.

The type and size of plant which today would normally locate in an industrial district would not require as many railroad sidings as some of those located in this district. Later developments by the same company have a much smaller proportion of the site covered by buildings and considerable greater provision for truck transportation.

Many projects now in the planning stage could learn much from studying the principles of traffic layout used in this district.







West facade is gray glazed brick framed by white painted structural steel

QUARTER-MILE-LONG PRODUCTION LINE



Office end of building faces main road

Real scale is impossible in a building this long, especially in this specific building. When you first see it, driving out North Ave. from Chicago into one of the newly industrialized suburbs, Melrose Park, you could easily pass by its "main" facade (street view left) with little more than an admiring nod for a neat, classical design in industrial materials. It looks about as big as a small optical plant, or some specialized instrument manufactory.

But what you are seeing is actually only one narrow end of an enormous, 650,000 sq. ft., \$10 million plant. Here again is the problem on virtually all big factories, whose walls just keep on going. How can they be brought into human *scale?* Obviously they cannot, but the designer here used the one available humanizing technique—rhythm. And he used it well. The endless wall is broken by a regular rhythm of exposed white steel columns set in between





LOCATION: Melrose Park, Ill. SAWYER BISCUIT CO. PLANT UNITED BISCUIT CO. OF AMERICA SKIDMORE, OWINGS & MERRILL, architects and engineers GEORGE A. FULLER CO., general contractor

FOR BISCUITS

panels of gleaming, glazed gray brick (see details, p. 121). An example of the subtlety of the architectural approach in plan: the steel columns are all oriented the same way, web and flange, in whatever wall they occur.

This diagram of structure makes for a very conscious and consistent architectural result in the factory, and all the more so because the careful treatment goes all the way around—there is no neglected "Mary Ann" back. The front office (see p. 120) is not a fancy block pushed forward; it is part of a consistent design.

What the owner likes best about the new plant is its efficiency. It took him out of a tangled-multistory structure inside Chicago and by straightening out production kinks and cutting repetitive handling of the product, reduced the unit costs of his product 50% and cut his labor factor in half. To see how, turn the page.



Truck dock beyond garage doors handles most of outgoing product of plant; on other side is railroad spur





Conveyor runs continuously through long ovens (above) baking cookies continuously. Steel structure is welded for weight reduction of long



Cookies are kept moving, even in the oven

The bank of ovens (above) is no series of stations as one might expect, but a heated production line through which the delicacies being baked keep moving. And as an example of today's direct flow it is so clearly organized that in diagram (opp. p.) it looks almost like a set of tracks between the materials receiving station (at the left) and warehousing and delivery (at right).

This drawing is somewhat deceptive, for it does not show the concurrent assembling of the packaging in the basement, below the product assembly line. In other words, like many a new factory this is another two-level plant; but its second floor is underground. Packages come up ramps to join the product assembly.

A variety of difficult heat and humidity requirements had to be housed for various stages in the birth of crackers and cookies. Under proof rooms (see plan) there are almost 4 mi. of 1/2'' radiant heating pipe. The building as a whole is not air conditioned, except for the administrative areas.



spans and for smooth, easy cleaning

Mixing tanks are fed through maze of pipes from central bulk supplies.



Plan moves production in straight-line from mixing and forming through ovens to packaging. Detour is for cookies to which icing is added. Structure changes to dustless flat slab over package warehouse.





Wall panels in administration area are ribbed insulated metal

The front office sets the key for employees' facilities

This aspect of the big plant is the glossiest, but it is characteristic of the new standard of uniform excellence that the rest of the structure is not far behind the front office in finishes. Factory workers and administrative workers, for example, have identical dining rooms. Parking is as handy to the plant employees' door on the west side as the executives' stalls are to their entrance. Also, the floors through much of the manufacturing and warehouse area are ironbound maple strip flooring, polished to ballroom finish.

Downstairs in the administration wing is housed headquarters of the local division of the corporation, Sawyer Biscuit; upstairs is the national headquarters of United Biscuit,





Birch flooring walls the dining rooms; (below) main staircase



ROADSIDE USA: the nation's longest slum begins to get architecture when



The idea prevails that design of a small industrial or transportation structure in the sticks does not matter. So we get scenes like the one above, defacing mile upon mile of highway.

The three modest structures across the page—remodeled from typical roadside hodge-podge—are not the kind that usually win architectural prizes, but they get right to the heart of the grand concept of architecture as the tidying up of environment. If US industrialists in general were to follow the example set by these roadside alterations, they might save us from the longest (and most inexcusable) slums in history.

There is nothing tricky or pretentious about the remodeling job Architect George Vernon Russell did on these field stores for Republic Supply Co. They are straight industrial sheds, of cheapest industrial construction. The point is they have style instead of no style.

The other big difference is the orderly operational thinking that went into them. It is a myth that the usual scab on the highways is a straightforward, no-nonsense solution. Typically no more thinking goes into the operational planning of these excrescences than into their looks. The orderly thinking Russell introduced has cut Republic's operating costs 15 to 25%.

President John J. Pike of Republic decided on this clean-up because of his enthusiasm for the job Russell did on the company's big new plants at San Leandro (AF, Aug. '53) and Los Angeles. "We have learned that irrespective of size, there is a real need for good design," says Pike. "Our success in rebuilding our small field stores has in many ways been more rewarding than our large jobs."

REPUBLIC SUPPLY CO. LOCATIONS: Ventura, Long Beach and Newhall, Calif. GEORGE VERNON RUSSELL, architect GUY BARTON, general contractor

an industrialist remodels his wayside supply houses

BEFORE



VENTURA store was remodeled without loss of business day or stock reduction. If building costs were only factor, old, unsound structure would have been junked. Remodeling was \$62,690; \$6.80 per sq. ft.; more than new building.



NEWHALL remodeling cost \$25,860, about same as new building. Vital factor was no shutdown. Exterior is corrugated iron; interior, pressed wood; wood frame. Other jobs are same except some exterior redwood. Old steel framing was kept, where sound.



LONG BEACH cost \$26,659; \$2.50 per sq. ft. Building had been completely depreciated and written off. Architect's fees for alterations are on hourly basis, vary from 5 to 25% of job cost. Same contractor does all alterations, "a great advantage." AFTER









LOADING DOCK at Ventura can be supervised from key corner office (see plan) which also controls warehouse and sales area. Control center was nonexistent in old plan. Buildings include living quarters because of 24-hour service to cope with oil field and other industrial emergencies. Newhall building got T-plan expansion similar to Ventura's. Long Beach, confined to narrow lot, had to keep rectangular shape, is not quite so good. On all new jobs, large or small, company calls architect in to assist on site choice.



Any highway enterprise with customers needs design for merchandising



BIG GABLE WINDOW on road daylights Ventura warehouse. Stores are wholesaleretail suppliers for heavy industry, serve oil fields chiefly, are highly competitive.



REMODELED WAREHOUSE at Long Beach invites customer browsing. Photo (at right) shows how warehouse used to look. Company president reports alterations have increased sales and "voluntary housekeeping," reduced employee turnover and operating costs. Perspective on costs: payroll is 62% of expenses, depreciation only 6%. Payroll runs up to 75% in similar firms slighting good plant.



SALESROOM at Ventura is separated from warehouse only by open display shelf for easy viewing and access. Colors are green, yellow, black.



Bid-cutting foretells shakeout in contracting

AGC convention hears predictions of increasing failures as bid prices trend toward profitless levels

Explanation: contracting industry's capacity has risen even faster than the still-booming level of construction

Stiffer competition for construction jobs—clients' meat, but contractors' poison—was a growing cloud on the horizon at the 35th annual convention of the Associated General Contractors of America in Los Angeles last month. While thoughtfully concerned about price-cutting perils, most of the 1,102 members who registered for the meeting were predominantly optimistic, their confidence bolstered by almost every speaker's prediction that this year's construction volume would be at least the second and perhaps the biggest in history.

On the cold side of the picture was an AGC preconvention survey of members' business expectations for the next six months. Observed the report:

"The capacity of the industry has expanded so greatly that competition seems bound to increase even if there is an expanding volume of construction. Contractors who expanded [during the war and postwar years] are fighting to maintain their organizations on their present scale. Their ranks are swelled by new companies that came into existence in this period and are struggling to stay alive. With more contractors doing less work during the next six months it is just simple arithmetic that there will be less work per contractor.

"Homebuilders, because of the decline in residential construction, are invading the commercial and heavy construction fields, and building contractors are also picking off heavy engineering projects. . . . The possibility that some will have to reduce the size of their organizations and others will fall by the wayside was seen in many replies."

Healthy cathartic? Commenting on the trend of bid prices toward profitless levels, H. C. Turner Jr., president of New York's big Turner Construction Co., said: "Intense competition today will result in a large increase in the number of jobs taken at a loss. A sharp increase in failures will follow."

Vice President Robert L. Gordon of the Bank of America, in the bluntest speech of the convention, cited some things contractors are doing that only make things worse. Said he: "Some of you are guilty of maintaining excessive overhead, particularly in engineering staffs, for many months while waiting for jobs to break, and then wind up taking work on bids so low as to allow no margin for error, just to provide work for deadhead personnel. A frequent situation is where you become 'equipment happy' and have to undertake unprofitable work in order to earn depreciation, or as some of you call it, 'rentals,' on equipment you have no business owning in the first place."

To lenders, said Gordon, "there is the appearance of much foolishness in the construction industry." Anticipating "a substantially increasing number of failures," he added: "This could be good for the industry even though someone would get hurt in the process. It would separate the men from the boys . . . result in stabilization through elimination of foolish and unsound competition [by] those who encourage it."

Sustained volume. Through the competitive clouds, however, shone reassuring convention forecasts of another banner construction year. Samples:

Clifford F. Hood, president of US Steel Corp.: "The brightest picture centers around the estimates of construction contract awards for the coming year. These indicate another \$34 billion expenditure, and if the estimators are off in their calculations as they were in 1953, this figure could well approach \$36 billion."

Carl F. Ochsle, deputy assistant secretary of commerce: "There are portents indicating our [Commerce Dept.] forecast for 1954 may have been too conservative. Engineering News-Record queried 435 leading architects and consulting engineers in January and found they had 27% more work on their drawing boards than last year at this time. Building permits are running far ahead of the usual slack-season level. Such widely separated areas as Philadelphia, Houston, Boston and southern California report they are building at a faster pace than 1953. Steel magazine asked 5,000 metalworking executives what they anticipate, and the consensus was that 1954 will be the metalworking industry's second best year."

Richard J. Gray, president of the AFL Building and Construction Trades Dept.: "I am inclined to forecast that building and construction in 1954 will prove to be close to, if not the best, construction year the country has ever enjoyed."

▶ Labor Secretary James P. Mitchell (whose address was delivered by sound motion picture): "There will be a substantial gain in construction of utilities, stores, schools, churches, recreational facilities and roads. In fact, most of these types are likely to reach

IN THIS MONTH'S NEWS

(see pp. 39 through 60)

Merritt-Chapman & Scott a look at a contracting firm whose profits soared 134% in a year of new management

Congress begins its annual public housing battle with a maneuver to kill the program entirely June 30

New York's controversial Coliseum redevelopment project is redesigned as Congress, in an appropriations bill, questions its legality

W. E. Reynolds, US public buildings chief, decides to retire after Congressmen attack the high cost of government janitor services

The boom in office building shows signs of tapering off in some cities, but spreads to a few new ones an all-time high in dollar volume in 1954. Office and warehouse building is expected to advance by 15%. These statistics do not offer any comfort to those who attempt to convince us that we are in the midst of a recession."

Soft spots. AGC's convention-eve survey of its own members' expectations of construction volume during the next six months showed substantial majorities, on a national basis, anticipated as much or more building and highway work. A small majority (54%) expected a decline in heavy construction. On a regional basis, however, soft spots in expected building volume appeared. In the Middle Atlantic 83%, and in the Southwest regions 60%



TOP BRASS at convention were (I to r): Managing Director H. E. Foreman, outgoing President C. P. Street, new President John MacLeod, new Vice President George C. Koss and Executive Director James D. Marshall.



OPTIMISTIC President Clifford F. Hood of US Steel Corp. (r, with outgoing AGC Chief Street) predicted "another great surge forward" for the nation in which construction will continue at high levels. Among the big producers of future business, Hood listed atom age potentials, rebuilding cities, adaptation of plants for automatic operation, schools, toll roads and new suburban cities. BUILDING DIVISION elected Frank R. Rooney of Miami (center) as chairman, succeeding Frank F. Burrows (I) of Burlingame, Calif. At right: James W. Cawdrey, Seattle, new vice chairman.



of responding contractors saw prospects of less

36

25

36

0

INCREASE NO CHANGE DECREASE

43%

36

15

35

44

17

17

26

29

34

43%

28

60

29

28

83

33

39

54

20

work. Detailed survey figures:

Far West 14%

Rocky Mountain ...

Southwest

Middle West

Middle Atlantic ..

NATIONAL—by types

South 28

New England 50

Building 35

Heavy construction 17

Highways 46

RECIONS

Photos: Rothschild; Weaver Photo Service



CHAPTER EXECUTIVES constituting the Secretaries' and Managers' Council installed A. H. Harding (center), Portland, Ore., as their new chairman, succeeding Robert Patten, managing director of the Carolinas' branch (handing Harding the gavel). Others (I to r): Curtis Bell, South Texas chapter, re-elected secretary; William C. Bowden, Pittsburgh, re-elected vice chairman for building division chapters; and W. D. Shaw, southern California chapter, elected vice chairman for highway and heavy construction. Labor problems. Labor Service Advisor E. T. Kelly reported that construction industry jurisdictional disputes dropped about 10% in 1953, the first decline in five years. Only two major jurisdictional rows loom on the horizon, he said —"the fight between the United Plumbing & Pipefitting Assn. and the sheet metal workers for control of the airconditioning field, and the coming fight over unloading that the teamsters apparently desire to take on with six or seven of the basic trades."

The convention's labor-management resolution urged holding the line against "further unwarranted increases" in wages. For engineers employed by public agencies, it adopted a separate resolution, recommended cooperation with ASCE and other engineering societies toward "salary scales commensurate with their responsibilities . . . [and] necessary to attract and maintain staffs of competent and trained personnel to administer the expanding construction programs of state and local government."

Plant outlays off only 4%; building outlook stays good

The nation's economists began predicting economic stabilization last month. The end to what FORUM's sister magazine, FORTUNE, referred to as "the most clucked-over inventory readjustment in history" was said to be just around the corner.

Treasury Undersecretary Marion Folsom forecast that the gross national product (construction accounts for 13% of it) for the first quarter of 1954 would be only 1% under what it was last year. Disposable personal income, he said, is actually higher than it was in the first quarter of 1953 because of lower taxes. Unemployment, from a look at compensation claims late in March, seemed likely to level off at around $3\frac{1}{2}$ million, substantially below the $4\frac{1}{2}$ million in the 1949-50 recession.

A report from AIA's directors called the outlook for building "generally hopeful." (FORTUNE, incidentally, has predicted 1.2 million housing starts in 1954.) AIA's report indicated a "continuing demand" for institutional and industrial building. Schools lead all other types in every region, according to the report. Three of the regions—Great Lakes, North Central, Sierra Nevada—showed an over-all increase in activity compared with last October; three others—Northwest, Texas, New England— a decrease; five— New York, Gulf States, South Atlantic, Central States and Western Mountains—no change.

Businessmen were planning another big year of spending on plant expansion. The Securities and Exchange Commission's annual survey found US industry plans capital expenditures of more than \$27 billion for plants and equipment in 1954, a decrease of only 4% from 1953's all-time record. While outlays by dur-

able goods industries would be off 7% and outlays by nondurable goods industries off 4%, SEC reported expenditures by commercial firms will be up 3%.

NEWS

Chicago devises a plan to crack the slum collar around its Loop

\$400 million, ten-year project would go across the Chicago

River and into the blight of the near North Side

Around the downtown core of nearly every American city lies a choking collar of slums. Chicago's is one of the worst. Last month, a group of blue-chip Chicago businessmen proposed a bold plan to rebuild much of it.

The Fort Dearborn project-so-called after the Indian outpost that preceded the town of Chicago-stuck up among redevelopment projects like Mount Everest among foothills. It envisaged \$400 million of demolition and construction to convert 151 acres of Chicago's near North Side from cheap hotels, rooming houses, lofts, alleys and honky-tonks into a garden city of new buildings and parks along the north bank of the Chicago River, across from the thriving Loop. If it should come to fruition-and the chances looked pretty good -it would dwarf two famous projects that helped inspire it-New York's 12-acre Rockefeller Center (cost: \$150 million) and Pittsburgh's 59-acre Golden Triangle (cost: upwards of \$50 million).

Esplanade, campus and housing. Core of the development would be Fort Dearborn Square, a government center housing local, state and federal agencies and courts now spread around the city. Around the halls of government would be 5,000 apartments, a 6,000-auto parking area beneath an enormous esplanade, a new public library, suburban railway station, a 20,000 student branch of the University of Illinois, and a \$15 million central-heating plant.

Sponsors figured the Chicago Land Clearance Commission could acquire and clear the site for about \$40 million and that it would qualify for aid under federal Title I redevelopment as well as under the Illinois Housing and Redevelopment Act of 1947. If city, state and federal funds can all be used, the federal government's share might be about \$28 million, that of the city and state, \$6 million each.

Of the 513 buildings in the main project area (bounded by the north bank of the Chicago River, Rush, Ohio and Ontario Sts.) only ten, including the huge Merchandise Mart and American Medical Assn. headquarters, are classified as in "good" condition. Of the 151 acres, 60 acres are streets and alleys, another 35 vacant land. Best of all, the area is almost a ghost town, population-wise. Census figures indicate only 4,000 to 5,000 resident and only 800 dwelling units-60% of them dilapidated or without bath or water. Experts figured only 600 families would have to be relocated over the decade it would take to complete the project. (Some Chicago projects under way will displace 10,000 families.)

Three-man push. Over the years, Chicago has seen many similar, though smaller, plans wilt from lack of interest. At least five other plans for the civic center that planners agree the city needs were currently "under consideration." But none had stirred the city very much.

The Dearborn plan was mainly the work of Architect Nathaniel A. Owings of Skidmore, Owings & Merrill, Realtor Arthur Rubloff, promoter of Michigan Ave.'s "magnificent mile" and the Evergreen Park shopping center on Chicago's southwest side, and Board Chairman Hughston M. McBain of Marshall Field & Co. Rubloff conceived the idea in 1949. Owings put the imagination of SOM to perfecting it. Then the two approached McBain, who has been worried about the Loop's shopping future, and figures it is in Marshall Field's enlightened self-interest to back sound programs to clear slums and save the Loop.

Careful start. Before committing himself to the project, McBain, with Owings and Rubloff, met with officials of Metropolitan Life Insurance Co. in New York—among them Honorary Chairman Fred Ecker Sr. and Financial Vice President Harry Hagerty. Metropolitan has declined any statement of what transpired, but the implication is clear that the financial outlook was encouraging some say \$150 million encouraging.

Before the project was laid before Mayor Kennelly and the public, the three brought in five other leading Chicago citizens to form a "sponsoring committee." Each of them carried with him the prestige of an important segment of Chicago life.

Said Owings: "There have been many proposals in the past, but never have we had such a site and such an opportunity. Esthetically, it is as exciting as Venice, St. Peter's or Rockefeller Center. We can give to this city of ours something that people travel to Europe to see. This is not a pie-in-the-sky proposal, but one on which we can move ahead with alacrity."

Fast follow-up. Alacrity was the right word for the immediate movement. Within 48 hours after the sponsors took the wraps off a 4' model of their magnificent dream (see cuts), these activities were under way toward bringing it to pass:



1. The Chicago Plan Commission was preparing a report on Fort Dearborn and lesser civic ideas before the city.

2. The Chicago Land Clearance Commission was ready to start a survey of the area to see if it qualifies as "blighted" under slum clearance laws.

3. The Civic Federation, a powerful taxpayer organization, was taking a pleased look at proposed financial aspects of the scheme.

4. A legislative commission was conducting hearings on whether to put a branch University of Illinois campus within the project.

5. The sponsoring committee was scheduled to expand into a bigger "committee on feasibility" to explore ways and means for building. A group of lawyers was examining answers to possible legal obstacles.

6. All four Chicago daily papers gave the project their editorial blessing.

Magic that stirs. In Chicago's coordinated approach lay a pointed lesson for most other US cities. It showed what can happen when a top-drawer business leader decides to push a project. In many another city, redevelopment and rehabilitation had not been thoroughly sold to top men; and it was lagging.

Chicago agreed that the Dearborn project was the grandest proposal since the mighty Burnham plan, advanced by Daniel Burnham in 1909. Over the years, most of Burnham's ideas came to be: the lakefront development, the boulevard system, North Michigan Ave. and the forest preserves around the city. His plan for a civic center never got off the ground. The Dearborn plan was indeed—in Burnham's well-remembered words—big enough to have "magic to stir men's blood."





VIEW OF MODEL (below) looks northwest at proposed project, revealing proposed circular courts building hidden by tall offices (in photomontage above). SOM Architect John Weese notes circular structure would permit pie-shaped courtrooms, with more focus on Judge and better acoustics. Architects Loebl, Schlossman & Bennett will also work on project, shown in black on the map at right.



FORT DEARBORN PROJECT would focus on \$165 million government administration center (B in schematic diagram at left), with apartments (A) ringing it at left, front and right. A new \$88 million branch of the University of Illinois would fill the remaining area (C), Just in front of the Merchandise Mart, which would be left standing. The project would pull the magnificent redevelopment of Chicago's lakefront inland along the winding Chicago River. Architect Nat Owings, who espoused a south-side civic center while he headed the Chicago Plan Commission, switched to the north-side idea because he became convinced "in my lifetime the railroads would never consolidate" their stations to make it possible. The Plan Commission, however, is proposing to make the civic center straddle the river to keep courts building closer to law offices in the Loop (background), give an extra boost to Loop realty values.



On the next few pages FORUM presents three buildings, each of which in a striking way illustrates one of the basic problems of architectural design: the Raleigh Cattle Judging Pavilion, the problem of expressing bold construction; the North Shore Hospital, the problem of making environment comfortable and pleasant; the Springfield synagogue, the problem of using artists and sculptors in connection with architecture



Photos: Fenno Jacobs



THE GREAT LIVESTOCK PAVILION COMPLETE

The tension roof of the North Carolina livestock judging pavilion has by now been suspended in place for a year, riding the 300' cables stretched between its two enormous, leaning parabolic arches. And, with the muscular gaiety of a folk legend, it has become part of North Carolina.

It has also passed its test of approval. Last year it dominated the state fair, and the pavilion was judged along with the cattle. Sample reactions of the people who used it: "Both from an architectural standpoint and as a symbol of something to shoot for in a state's progress, it is a beautiful and yet practical building, a source of pride to many people." ". . . It's design, all right. . . . It's got Raleigh and the state plenty of publicity. . . ." "It's atomic age stuff . . . certainly Raleigh is proud of it. . . ." "There's some keen thinking in that thing . . . it's wonderful!"

This popular approval, plus numerous architectural medals,

would have pleased the originating architect, Matthew Nowicki. It has pleased Architect William Deitrick, who completed and executed the design, and Engineer Fred N. Severud, who transposed Nowicki's structural instinct into fact. It is a success.

Now the time has come to judge it as a success. In a mature civilization professionals not only accept their art treasures with joy but realize it is no diminution of the achievement to examine it against the ideal of perfection. In asking for the commentary of Paul Rudolph, FORUM called on a gifted younger architectural leader of Nowicki's own generation, a teacher with critical acumen and exacting standards. The demands of conscious arrangement, finish and refinement that Rudolph sets herewith have not often been asked of a piece of engineering architecture in the US since Montgomery Schuyler set up similar standards judging the Brooklyn Bridge—a deep compliment to any structure.





A magnificent space with some confusion and inconsistency of detail

-a criticism by Paul Rudolph

It is a long journey from a series of brilliant sketches to a building realized. When seen from a great distance between the rolling hills of North Carolina. the arena is like an infinitely majestic ballerina. Closer by, Matthew Nowicki's concept is strong enough to dominate the earlier nondescript fair buildings, the artificial waterfall, the maze of power lines and poles which almost surround the building. Indeed, the affinity between the gently curving highway approach, the nearby watertank, the distant antenna and the arena is testimony that this building truly belongs to the twentieth century.

And, at the end of the long approach, when one at last is inside the great enclosure, it is truly breath-taking. The violent colors and forms of the lobbies give way to long, sensuous curves and greenish light. Here is a tent worthy of the Arabian Nights, a tent which molds a great uninterrupted space, giving fine views to all. The luxury of expansive space, the sense of protection given by the spidery web supporting the pleasant corrugated, undulating roof, the gently flowing curves of the roof and seats all combine to give a feeling of exhiliration and impending drama.

The first impression, however, does yield to a second look that conforms some earlier doubts.

The original design promised so much. It integrated a daring construction with a "conspicious space" capable of helping man forget something of his troubles. It was a demonstration that, while Mies van der Rohe's concept of "universal building" may be valid for the vast majority of our buildings, we have need for more expressiveness to emphasize our places of worship, meeting places of governing bodies, gateways to our cities, and centers of recreation. Nor was the basic design of the building mere structural exhibitionism, that popular applause-sure act to which some of our school are currently devoting all rehearsal time. It is testimony to Nowicki's good sense that he proposed this structure for a building peculiarly adapted to such an expression: one single,

great room. He also realized that very few people comprehend the clear statement of tension and compression members, but that even the most naïve understand dynamic, breath-taking spaces. This was the aim. That the aim faltered, and though the target was hit, the bull's-eye was missed, probably has many human justifications. In fact, William Deitrick and his consultants took the risk, in carrying on after Nowicki died, that all good things would be credited to him, all shortcomings to them. The compromising forces which beset them were immense, including the threat of termination of construction and a permanently short budget.

THE EXTERIOR

How too bad that budgeting necessity tied the design to obscure glare-reducing green glass walls! One would have liked





Montage of three separate photographs distorts perspective but gives general impression of "the single great room".



a view through the great enclosure, but this pleasure is denied, for the walls appear impenetrable. It is a very solid *appearing* building set directly on the grass, without a base; and since the glass walls rise directly from the ground to a height of about 83', there is nothing to which a human being can relate himself except the entrance doors. As a result, the building is without "scale."

Lack of scale pervades details: the profile of the arches, the tapering profile of the entrance canopy, and the thin, slablike profile of the freestanding ticket booths, close by, are unrelated to one another in either size or form.

One of the greatest modern problems

is making large-scale structural members sympathetic to the human being at close range. Traditional architecture solved this problem by introducing moldings, bases, capitols, ornamentation, sculpture and other elements which are not fully grasped from afar. At Raleigh there are details which show how far we all have yet to go to assure modern buildings of an equivalent.

From a distance and in most photographs the intersecting arches and abutments are satisfying. However, from close by they appear like ramps, the more so because they are carried by columns that make them look less like supports than the supported, belying their function.

The temporary steel fences to prevent passage up the abutments were obviously put there by the owner consulting nobody. But the contorted fitting of glass around the intersecting abutments attests the need for more critical study and the sheet-metal drip guiding water from the intersection of the arches to the catch basin below is at too important a point to be allowed to look so improvised: in mature traditional architecture shedding water becomes real drama.

More important is the wide, looping band of concrete that shows partway up the glass walls, mercilessly complicating them. Its present line is unhappy, somewhat like a hairdresser's ribbon limply draped rather than springing upward in the virile way suggested by the sketches shown by FORUM in its Oct. '52 pre-



view, and its lower reaches are separated from the grass by a matter of inches, leaving a pinched bit of glass underneath, out of scale with the heroic vigor of the building.

And its thickness is excessive. Whether the idea started with Nowicki or others, the band was widened to double as a chase for mechanical equipment—a wrong inspiration, for seen as part of the wall it is bound to look structural, and looking structural it is confusing and too heavy. Might it not have been far better to tuck in the duckwork apart from the structure of the wall?

THE MECHANICS

Meanwhile, the mechanical parts that are really necessities of the wall, the louvers acting as the building's nostrils, have been subdued and painted out in the vain hope that they will *not* be seen. Has not Le Corbusier shown a better way at Marseilles, turning the necessity of ventilators and exhausts into a celebration by shaping them as carefully as sculpture? It is in character for this building to exploit exposure of mechanical equipment, but it must have visual eloquence.

In fenestration, too, the patterns used have something to teach us. Like all modern architects the designers have used glass in large sheets. A smaller pattern, we see now, might have been so much better! Were the panes of glass perhaps one fifth of their present size, a kind of texture or lace would emerge, the irregularities caused by the undulating band would be less disturbing, the strident, linear quality inside would be lessened.

One confusion will be eliminated when the covered entrance walks get built.

As one approaches the building there is an uncertainty about the specta-



tors' entrances, for the eye is always drawn to the entrance under the intersecting arches. These entrances are for the livestock (occasionally dignitaries when they perform in lieu of the beasts).



THE LOBBY

It is reported that the lobby ceiling was meant to be furred and ductwork hidden. Its unanticipated exposure, in so many sizes, shapes and colors, proves rather overwhelming, especially since all is placed far too close to the human being. The complication is increased by columns which grow alternately from planting boxes and then the floor. They look like a long- and short-legged man marching down the lobby. One rushes forward, hoping that the stands will not bump his head on the way. But then the arena is reached by short bridges and the finer qualities of the building spring to life again with a view of the arena as a very pleasant surprise.

THE INTERIOR

This is a great interior, an exciting space. Its shortcomings are in refinement; there is little feeling for the difference between things that will be seen at close range and those seen at a distance. In details seen close up there is not a steady standard. For example, such elements as sockets for railings or ladders are embedded in the concrete in a delicate way but other similar elements are left on the surface. Because



only portions of the concrete were rubbed, perhaps in the contractor's enthusiasm, the remainder looks crude and unfinished. Rough concrete can be an asset as Corbu has demonstrated but one cannot start apologizing for it in favored spots!

Soon other impressions begin. That unhappy light through greenish glass makes humans look sickly, probably has the same effect on cattle, feels like seven leagues under. As one climbs the steps in search of a seat the eye is distracted by such things as struggling ductwork; keeping it orderly as it climbs up and down the ramp is apparently a tough assignment. There are other distractions, such as the failure of the seats to follow the lines of their enclosure, so from many points of view they appear to be undulating. The great difficulties with acoustics were hard to foresee but never should the two great intersecting arches, upon which the whole structure depends, have been allowed to seem simply to disappear in thin air through the glazed walls at their point of intersection, the one point where visual support is most needed!



IN CONCLUSION

It is a great testimony to the underlying vitality of the concept that it shines through despite the shortcomings in outcome that have been noted. And it is no one designer's, or group of designers', fault that modern architects as a body have not yet gathered the experience to deal sure-handedly with all elements of such unprecedented assignments. In the maturity of our architecture we must make greater demands, however. Great monuments must comply with ageless requirements of scale, proportion, clarity and expressive use of visually calculated detailing. No harm is done by such a challenge to a monument that has won some of US architecture's highest awards and established itself firmly in the hearts of the people through its basic soundness and highspirited boldness.



Design problem: a comfortable and pleasant hospital environment

NEW IDEAS IN LIGHTING AND FINISHING

Everybody planning hospitals these days aims at "uninstitutional" atmosphere. Few achieve it. But here is a 182-bed general hospital that did-on a low budget-and nine months' operating experience has shown its innovations are highly practical.

This is Interior Designer Maria Bergson's first hospital job; she took nothing for granted, from patient lavatories to corridor lighting. Her new broom swept away one "institutional" cliché after another. Behind this success was a board of trustees and an administrator just as willing as she to try new ideas-an indispensable factor.



Architectural and medical planning by Architects Isadore & Zachary Rosenfield was previewed in the Sept. '52 FORUM.

LOCATION: Manhasset, L.I. **ISADORE & ZACHARY ROSENFIELD**, architects MARIA BERGSON ASSOCIATES, interiors FARKAS & BARRON, structural engineers **TENNEY & OHMES, INC.**, mechanical engineers GERACE & CASTAGNA, INC., general contractor EDWARD E. JAMES, administrator

NORTH SHORE HOSPITAL



Lavatory and closets are integrated with doors of enameled hardboard on wood frame, replacing usual exposed sink and lockers. Perforations are attractive substitute for ventilating slots. Lavatory door (with elbow release) is double, forms privacy cubicle. Closet doors slide. Third closet in two-bed unit (above) is for visitors. Note extra storage space atop lavatory and closets.

To humanize patients' rooms—sympathetic thought for patients' feelings

This is not the kind of "humanizing" job that relies on pretty curtains. The pretty curtains are here—along with unusually handsome wall treatment—but they are the least of it. Designer Bergson attacked not merely the *look* of institutionalism; she aimed at the monster itself—at ways of reducing the regimentation, humiliations and petty annoyances of a hospital sojourn.

Here are some of the things this hospital's semi-private patients most appreciate:

privacy while toothbrushing or washing;

• the privilege of reading in the middle of the night without disturbing other occupants of the room (an achievement that required a new lighting-fixture design);

a place to keep a suitcase, closets for clothes, a guest closet;
ample space for bedside needs with no need to stack the books on top of the Kleenex box and the hand-lotion bottle.

These unusual amenities were managed in rooms of minimum size (22' bays) and on a minimum budget. The integrated lighting fixture for each bed, for instance, came to \$45, against at least \$48.50 for the usual ceiling fixture, night light and wall bracket (to say nothing of eliminating two installations). Cost of furnishings and lighting in public and patient rooms was \$138,-000; pots, pans, operating tables and the like came to \$60,000; equipping cost was thus \$1,088 per bed. Construction cost was \$2,748,000, or \$26.10 per sq. ft.; \$15,100 per bed.







Patients' room has illusory 7' "ceiling" formed by top of plastic wall covering and line between filmy ventilating net and opaque portion of cubicle curtains. This line—which is same as door headers—gives cubicles an air of being well-proportioned little rooms when curtains are drawn (see also photo, p. 135). Note uncluttered walls and ceiling track in place of usual "shower curtain" hardware.

Bedside cabinet is only 18" square, but has space for utility equipment, bath blanket, slippers; pull-out rack for robe; towel rack at rear; drawer and double-tier shelf—far more than usual 18" x 26" table. Metal frame also serves as handle for patient to swing cabinet on casters. Only a few experimental models of cabinet are in use because item could not go into production in time for hospital opening; thus there are no production cost figures. Designer drew on extensive experience in design of office furniture, points out that office problem of orderly and compact arrangement of items for easy use, worked out for simple construction, is basically similar to problem of hospital interiors. Lighting fixture screws into wall ground, has cove for nightlight and general illumination with switch at door, plus reading lamp with pendant switch. Lamp floods bed, overcomes problems of adjustment, shields source from patient and other room occupants, is bright enough for doctor's examinations.





Corridors are tiled on one side, using structural tile originally planned for wainscoting on both sides. Other side is matte finished with colored vinyl spray (45ϕ per sq. ft.). Administrator reports continuous cove lighting results "almost automatically" in impeccably clean corridors because workers can so clearly see dirt.



Nurses' station has dropped eggcrate ceiling for pleasant proportioning of niche and bright but diffused lighting. Note use made of high wall space for storage. Wood finishes make attractive break in tiled wall.

How to take the "institutional shine"

off hospital interiors

Photos: (below) Ben Schnall; (others) Julius Shulman



Residents' rooms were furnished for \$500 each. Ingenious wall unit at left is half open bookshelf, half toilet-articles compartment covered with sliding mirror. Desk with cabinet is below. Hall niche has ample clothes storage. Designer's philosophy: most people like to be orderly if it is easy enough.



Desk in nurses' station could not have pedestal drawers because three nurses (two on station side, one on corridor side) sometimes use it simultaneously for charting. Solution: storage compartments at back.





Dayrooms for patients, on each floor of nursing wing, are simply treated for casual, relaxed atmosphere. Much of hospital's cheerfulness results from ample, well-oriented glass areas Architects Rosenfield built into rooms and corridor ends.

Main lobby scrupulously eschews shine and ostentation, breaks seating into small "family size" groups with plant separations. Rugs are inexpensive matting. Upholstery throughout hospital is wool- or cottonlike woven plastic.



Elbrary of the Minneapolis School of Aut

CONGREGATION BETH EL, Springfield, Mass. PERCIVAL GOODMAN, architect IBRAM LASSAW, sculptor ADOLPH GOTTLIEB, curtain designer ROBERT MOTHERWELL, rug designer DONALD GILMAN, resident architect FRIOLLI, BLUM, YESSELMAN, structural engineers E. J. PINNEY CO., INC., general contractor

"Pillar of Fire," 28' monumental bronze, leaps from tan brick of worship hall's prow





Photos: Alexandre Georges

Design problem: integration of the arts in a synagogue

SCULPTURE AND TAPESTRY USED ARCHITECTURALLY

Integration of the arts is a hotly emotional subject. Architects argue that artists typically lack sense of architectural scale, regard any program as a limitation rather than a stimulation, are not interested in communicating. Artists reply that architects typically think of art as incidental decoration, want to subordinate it to their own work. The architects fear anarchy; the artists fear surrender. The truth is that artists and architects have simply forgotten how to work together and few in either camp understand the problems and possibilities of the other.

This synagogue is an example of true collaboration—which, as the photographs show, involves neither anarchy nor surrender.

The leader of this successful collaboration, Architect Percival Goodman (himself an artist,) follows these principles:

He works with the same artists on successive projects, so what

is learned on one project contributes to the next. The chief difficulty, he finds, is scale—and he thinks sculptors and artists learn to deal with architectural scale only by dealing with it. A forerunner project was his synagogue at Millburn, N.J. (AF, July '53) on which Artists Gottlieb and Motherwell both worked.

• He does not deal directly with the artists on business matters, thus is in the position of colleague rather than paymaster or client. Business is settled with the gallery representing them.

▶ He takes suggestions as well as gives them. (Originally he planned to honeycomb the "prow" of his building for a series of small sculptures, changed his design when Lassaw worked out the concept of "Pillar of Fire," left.) He knows that "work done in sympathy with the whole" must be reciprocal; his architecture is consciously sympathetic to the art it incorporates.

Chapel at left is surmounted by sculptural Star of David; worship hall is at right





Architect Goodman has touched the utilitarian and structural elements of this building with the loving fantasy that is more often found in cultures where art is an unselfconscious element of ordinary activity. Notice, for instance, the large ceiling ventilating duct (below), a clear expression of structure on which imagination has unabashedly played. The grille of the large side windows is based—but not in pedestrian fashion—on the Star of David. Organ screens (right) of oak studs are plainly reminiscent of the organ pipes themselves. The total effect is an appropriate—and seemingly spontaneous—symbolism.

Rich textures and bold forms for large spaces

Roof breaks into gables over side windows of worship hall

Worship hall's rear sliding wall panels have woven wool plaques cemented into recesses. Designed by Gottlieb




Altar end of worship hall is backed by screen of tan marble from Nazareth and Gottlieb's boldly striped curtain with magnificent valence



Artist's designs for curtain valence and wall plaques were executed in wool, using a new technique. Artist Gottlieb first blocked out design on monks cloth, then Craftsman Richard Miller stood behind cloth and pushed tufts of wool through, using "magic needle" hooking machine developed by Edward Fields Co. "Gottlieb used Miller as if he were his paint brush," explains a Fields executive, "saying, add a dot of red here, take out that mulberry there, let's build up the black around the star to a higher surface." Craftsman was marvelously sensitive to artist's intention. Completed tapestry was sheared flat in places, sculpted in others, left in full tufts in still others, yielding luxuriant variety and freedom of texture, further enriched by sparkle of gold and silver threads and spattering of other colors.

Tapestrylike plaques have sculpted nap







Candelabra in bronze by Lassaw

Detail of curtain valence; design uses ritualistic symbols







duct enclosure

Multipurpose social hall, between worship hall and auditorium-banquet room, can be opened to either of larger rooms, or all three can be merged into one great hall. Tall sliding wood panels are kept from flapping by floor groove, are locked in place with simple drop bolt. $w \cdot o^{-}$



wood hangers

This is open planning on grand dimensions

Pian shows that major assembly portion of church is really one huge room, divided by movable walls and opening to memorial alcove and lobby. Sliding walls open in one direction, push into storage niches. Partition tops are plastic for weight-saving. Cost, excluding fee: \$502,500; 92ϕ per cu. ft.

Memorial alcove, where candles are burned at anniversaries of dead, is lettered with words from the Kaddish, prayer of mourning. Sculptor followed architect's suggestion to cut lettering from $\frac{1}{4}$ " steel plate with welding torch. Cut edges thus have "tears" of metal.









Chapel, used mainly for joyous occasions such as weddings, has white stucco walls with dark cypress roof "floating" above clerestory windows. Focal point is rug designed by Motherwell, stretching down to floor beneath table bearing Ark. Rug was executed with same technique as curtain and plaques, but texture variety comes from length of stitches; surface is sheared uniformly.

> Photos: A. Georges and Kootz Galleries



A POCKET GUIDE

FOR BETTER PUBLIC RELATIONS

How the individual

architect can help himself

and the profession

Architects do not even have to ask their best friends — they already know that their biggest problem is poor public understanding.

They recognized this fact last year when AIA asked Ketchum, Inc., a firm of public relations experts, to study the problem and detail a solution. That solution was recently published by AIA in an encyclopedic *Public Relations Handbook for the Architect*. Comprehensive and thorough, it is a mine of valuable public relation information, but FORUM thinks that architects might like to supplement it with a smaller handy guide.

This pocket guide deals only with what the architect does as an individual and is organized to fit the architect's calendar—it says what to do when the job starts, when it is finished, what to do all the time.

In preparing this pocket summary of AIA's handbook, FORUM was assisted by John Hancock Callender, AIA, author of the New York City AIA's booklet "You Need an Architect for Your House," who added to the list a few of his own ideas and FORUM's ideas (indicated by an asterisk).

In the office every day

- 1. Think and act in terms of the public.
- 2. Do good work and take credit for it.
- Improve your performance—provide better design, better specifications, better administration, better supervision. Good public relations is good performance, publicly appreciated.
- 4. Give something extra to your clients, community and country.
- 5. Make sure that your own office and letterhead are examples of good design.
- Maintain a permanent exhibit of your work, even if space requirements limit you to only a few well-chosen examples.
- Give special attention to your letters, which can make or break your public relations:
 - write letters that are clear, informative and friendly;
 - use familiar words, action verbs, picturable terms;

avoid unnecessary words, long sentences, complicated sentence construction, technical terminology;

use letterheads that are well-designed8. Emphasize your membership in AIA and

its objectives:

• to promote the esthetic, scientific and practical efficiency of the profession;

- to advance the science and art of planning and building;
- > to insure the advancement of the living standards of our people;

to make the profession of ever increasing service to society.

In your normal business and social contacts

- *1. Show all the pride you can in your profession short of being boring.
- 2. Remember, very few people know even the facts that are plainest to you about the scope of architectural service: because so many think "the architect sells the blueprints," let your anecdotes deal with experiences in supervising construction and improving specifications; because people think "architecture is an expensive luxury" it may be smart to drop remarks, when the occasion is propitious, about ways in which people on your payroll have well-justified their pay. After all, draftsmen, specification writers and building supervisors have to be paid even before the bricklayers; because people think the profession is

• because people think the profession is an "ivory tower," find occasions to discuss building in terms of practical acumen.

3. Remind people, in a not-too-serious way, that they are born in architecture and spend most of their lives in it, that architecture includes all types of buildings.

- 4. Tell the public about the architect:
 - ▶ his professional training consists of a minimum of five years of college plus an apprenticeship of at least three years, leading to an examination and license by the state in which he practices;

▶ he occupies a position of acknowledged leadership in the construction industry, the natural coordinator of the allied arts, professions and trades;

▶ as a professional man, he advises his client on building problems; since his only remuneration is that received from his client, his advice is unprejudiced.

- 5. Tell people why they should engage an architect:
 - ▶ to insure good design and good construction, convenience and comfort resulting from careful planning, better mortgage terms, low operating and maintenance costs;

to obtain a building created to meet the special desires and needs of the owner;
to get the benefit of the architect's many years of training and experience in a specialized profession;

▶ to have the services of a professional adviser from start to finish of a building operation, to advise and assist the owner, supervise the construction, administer the finances and insure that the owner gets what he pays for.

6. Tell how they can engage an architect:

 direct selection by the owner, based on experience, reputation or recommendation;
 comparative selection by the owner from several architects invited to present evidence of their qualifications (not free sketches);

) selection by competition, according to the AIA code.

7. Tell the facts about fees:

fees vary with the architect, type of work, location, etc.;

▶ the fee is settled at an early conference and formalized by a contract or by a letter countersigned by the owner;

▶ three methods of compensating architects are in common use . . . a percentage of the final cost of the work . . . a fee for services and reimbursement for all expenses . . . a salary.

8. Build a congenial relationship with the local press, radio and TV stations:
read the newspaper regularly and be-

come familiar with its policy and style; meet the press and make friends ... offer your services as consultant on architectural articles and news ... treat a reporter like a client; be honest, prompt, fair, frank, cooperative; do not threaten him ... let him be the judge of what is news;

write letters to the editor on matters of public interest; • think before you protest on any public issue and if you must protest, then suggest also.

- *9. Encourage fellow architects to obtain deserved publicity for their work.
- *10. Make a list of your community leaders. When articles of special public interest appear in magazines, send copies to all along with your card and brief remark, such as: "This might interest you." (*Do not wait until the man is a potential client. Examples of such articles in FORUM are the School Economy Forum, the Architect-Client Forums [two of them]. All magazines are cooperative in supplying tear sheets.)

In conference with prospective clients

- Think, act and speak in terms of the client's interests; work out your own lot within the pattern of his needs and desires.
- 2. Listen to the needs of a client with an open mind; do not be dogmatic, impatient.
- When explaining a technical point, proceed from the familiar to the new.
- Do not forget the small courtesies, little acts of thoughtfulness or friendliness or appreciation.
- Show your work by means of color slides, mounted photographs, neat and handsome scrapbooks (not cluttered and dated like a family album).
- Use a "turnover chart" for presentation of an important project to large groups.
- Have available for clients printed brochures or folders, describing in general terms the architect's services in the planning and building of houses, schools, stores, or whatever building types your office most frequently encounters. Keep the text simple, nontechnical and well-illustrated.
- 8. Prepare special brochures on any particularly outstanding project. The text should emphasize good design, economy and the relation to the community.
- 9. Have on hand for clients a brochure giving specific information about your firm:
) statement of service performed by the firm;
 - services performed through consultants;
 - > personal (short biographical sketch);
 - bank affiliation;
 - > list of clients and references;
 - history of the firm;
 - civic and professional background;
 - work projects (by building type);
 - list of outstanding published work.
- Make all printed matter attractive by large, clear type, a variety of type patterns, breaks in the page, balanced column widths, simplified drawings.
- Explain to the client what an architect does. If you have a large office, show him

how it works. Explain the function of designers, draftsmen, specification writers, clerks-of-the-works, engineers, consultants.

 Meet competition by better salesmanship, better service (design, specification, supervision, administration) and better explanation of services.

On starting a new job

- *1. Get in touch at once with the client's own public relations adviser (whether he is inside or outside the client's own organization). Offer him your help. Let him know at once that there are specialists in architectural photography whom you know; that you have renderings and can have a model made for public relations purposes; that there may be interesting fresh angles you can tell him of. If your help is real he will not resent a reminder that you should be mentioned.
- *2. Urge the construction of a model. Remember that the model or renderings supplied by you are best photographed in your own office and this is your chance to insure proper credit, proper captions.
- Consider these possibilities for publicity:
 real estate section of local newspaper;
 - business section of local newspaper;
 - trade papers in owner's field;
 - > magazines in construction field;
 - owner's house organ.
- *4. Report the job, on a "preview" basis, to the industry magazine you think will best assure its being noticed by potential clients. In submitting material, note:

the editors will not consider you "forward" or "unethical" if you voluntarily call attention yourself to your own work. On the contrary you will save them labor;
but do not send every job—only those you think they might find interesting to the whole profession or industry;

▶ send snapshots *and* key plans (old blueprints will do) *and* a letter calling attention to fresh ideas, unusual features;

▶ send to one magazine only, allowing the editor about three weeks to answer, during which time you protect the priority you are offering him. If he cannot use the job send it to the next on your list. Rejections do not necessarily reflect a low opinion of the work—they may reflect previous commitments. Try again.

- Make sure that your cost estimates are accurate (unreliable cost estimates will ruin an architect's professional standing).
- *5. If market changes or the client's change orders are going to affect costs (especially if upward), advise him at once. He will appreciate your conscientiousness and advances will not hit him "in a heap." This procedure will also encourage care by the contractor in advising changes.

On the completion of the design

- Consider these channels of publicity: newspapers; wire services; popular magazines; professional magazines; industry magazines; radio; television; photo syndicates; feature syndicates; trade papers; house organs.
- *2. Call a press conference if the project is sufficiently important and especially if a model is available—invite all editors:
 have kits prepared containing a press release or fact sheet and photographs with

captions.

▶ includes these details in the fact sheet: subject, release date, location, physical characteristics, architectural characteristics, general information, architects, information about the architects.

- Write releases with real news value, not propaganda.
- Make your story interesting by appealing to health, home (wife, children, relatives), income, happiness, future, standing (community and job).
- 5. Write headlines that promise a readable story in the public interest.
- 6. Prepare press releases with these additional points in mind:

• double space and use only one side of $8\frac{1}{2}'' \ge 11''$ white paper;

include your name, address, business, phone number and date in top left corner;
state time and date for release in upper right corner;

▶ write copy to answer five questions: ... what happened? ... to whom? ... when?

... where? ... why and/or how did it happen?

• get all essential information in first paragraph, in case story is cut;

▶ include black and white plans, with lettering large enough to be legible when reduced;

binclude 8" x 10" glossy photographs or photostats of renderings or models;

> make picture captions tell the story;

> attach captions to bottom of illustrations.

When construction begins

- *1. Arrange ground-breaking or corner-stone laying ceremony, with a prominent figure in center of stage. Have photographs taken and send with press release. If sufficiently important, this can be the occasion for a press conference, as described above.
- 2. Put up a sign bearing your name and noting your AIA membership.
- *3. Make provision for "sidewalk superintendents," encourage their observation of work in progress.
- Be diligent and careful in your supervision of construction. (Sloppy supercontinued on p. 178



Center of village with civic center upper right



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ALVAR AALTO IN THE FINNISH FORESTS

"Finland is with Aalto wherever he goes. It provides him with that inner source of energy which always flows through his work. It is as Spain is for Picasso or Ireland for James Joyce. Part of the essence of presentday art is that its true representatives have their origin in a definite human environment and are not creating out of a vacuum."—S. Giedion.

M. Ehrenberg



The virtuoso of wood puts up a civic center of brick

in a small mill town north of Helsinki

In Finland architects and foresters are among the most deeply respected of people. Yet Aalto, the son of a forester and an architect of renown both within and beyond Finland's borders, did not get the commission to build this village hall for Säynätsalo by acclamation.

Although the population of the entire town is only 3,000, almost all of whom work in the local plywood mill, the town fathers discharged their responsibility of picking an architect with demanding solemnity; they held a national architectural competition for its design.

That Aalto entered and won the competition for this small building—"a dollhouse" he calls it with pleasure—is of nostalgic significance. For it was by winning open competitions in the late twenties that the young Finnish architect, who is still only 56, secured the commissions which made him internationally famous. More important, the scrupulous care and unstinted feeling Aalto put into this design for the people of an isolated town is another answer to a question frequently asked by this humanist in architecture: "Who is to look out for the little man?"

Library is foremost in view from village market square. Behind is assembly hall





Entrance from automobiles

A serious approach to a small town's architecture . . .



Entrance from walkers

Says Aalto: "Our country still occupies a modest position, and the structure of our society is modest too. It is therefore adaptable enough to let us abandon the main-street system and introduce organic planning and building methods so public buildings and places are freely arranged to appear to their best advantage.

"This is of profound importance to the town building technique, which cannot develop into a harmony, unless residential building groups, in their turn, are subordinated to the common institutions that have the same local importance for the smaller communities that big institutions have for the bigger cities.

"This type of neighborhood center has long been one of the planner's main aims but it seems to be particularly difficult to find a unit economically feasible. Perhaps the correct disposition of these modest civic buildings will gradually restore the civic center to its place of honor."





... and a fanciful truss for its hall

The exterior is enhanced by dignified expanses of brick wall but these are not allowed to grow out of proportion to the small town they serve. Wall planes are broken and shaped to scale, instead of being allowed to run vastly on for effect.

Two stair entrances, one for those arriving in automobiles, one for walkers, open into an elevated court in the center of the building group. At present the buildings include a number of apartments, which will be switched to municipal use as the municipality grows. A separate building, set off from the other group by stairways, houses the library on the upper level, shops below.

Inside, the most intriguing feature is the pair of trusses which support the sideward slanting roof of the municipal meeting hall. Each truss collects the load from three parallel lightweight beams and turns construction into a charming game.

Trusses remind town fathers in conclave in the main hall that, although they are surrounded by brick walls, their economy is supported by wood.



Model, photographed from below, shows how trusses spread their support.





From the lake, house and pierced patio wall

5

Aalto's experimental workshop is also his vacation house in the lake country

Strung out behind Aalto's summer retreat and workshop are a series of mysterious structures with simple architectural purposes. In plan (above) No. 2 is an experimental building without foundations; No. 3 is another experiment in design, a form with nonlinear colonnades; No. 4 is a freely formed brick construction; and No. 5 is an experiment with solar heating. (This is also a place in which Aalto can sit out vacation days like a Roman emperor, always in the sun, never in the wind.) Even the house itself, a simple L plan, has its experimental side. Around the unhoused sides of the courtyard are brick walls with panels of that same material arranged decoratively, held on pins for easy rearrangement or replacement. The floor of this patio is used the same way.

The house, hidden away in the lake country, is accessible only by plane. However, it is more than a private refuge; Aalto sometimes brings along his office staff for recreation.



Patio corner, rearing up over lake shore, is expression of the romantic content of this architect who first won fame as a rationalist. Again quoting Historian S. Giedion, "... Aalto possesses the gift of seeing things as freshly as though they had never been touched before. This is the kind of talent that is urgently needed today, to discover an emotional equivalent that may rescue us from drowning in the flow of technical processes that is being poured over us."



Latticed break in patio wall admits afternoon sun and permits view of lake from inside windbreak.

Open side of court (below) frames another lake view. Note pleasant texture of brick patio floor.



Valokuva Oy

A forward look at the exciting promises

made by the growing alliance

of architecture and engineering*

CONSTRUCTION OF THE FUTURE

"I believe we are on the eve of a great revolution. Hundreds of years hence people will look back on this time as the one when construction changed over from 'plane' to 'space' and saw the birth of a new architecture."

-Felix J. Samuely

Here is the future, then, as it looks today: structure will be designed in more dimensions than now; it will be called on to perform more functions simultaneously than now; it will serve a greater variety of approach in architectural design; it will have to withstand greater destructive forces than now; it will need and get many new materials coupled with new methods of construction; it will accordingly entail more difficult analysis; it will get a great deal more testing through models ahead of use; all this will call for much more ingenuity by architects and engineers before actual building is begun; and only those owners will reap the advantages who will pay engineers and architects a far greater share of the total project cost than either one gets now, or both together.

For more efficient framing: an added dimension

Consider Samuely's "revolution" and its new dimensions. What Samuely is talking about is "space-frame" construction; and the essence of a space-frame is that instead of being figured to transfer loads to vertical members in a single plane, such as post-andbeam or truss construction, it is designed to spread the loads laterally as well, so that loads are carried simultaneously on three or more supports, usually by a multiplicity of structural units. For example, a concrete shell roof for a hangar designed as a series of arches side by side would be inefficient and uneconomical. The shape of such a roof lends itself readily to the concept of available strength in the third dimension, so that wide spans can be covered with very little material.

Among "space-frames" the simplest and most familiar are those "cellular" or "box-frame" multistory structures that are much more widely used, especially on apartment buildings, in England and on the Continent, than here. Some public housing in Providence has been built under such design but has perhaps not de-

* A paper delivered by FORUM'S Editorial Chairman Douglas Haskell, before the Cleveland Engineering Society. For engineers' comments, see Letters Dept. next month.



Spiderweb of light steel members for domed auditorium in Frankfurt.





Frameless dome of aluminum panels in Texas by R. G. LeTourneau, Inc.

Demonstration sphere of struts and wires at Princeton University by R. Buckminster Fuller.

veloped full material savings because certain theoretically wasteful standardizations were considered cheaper (AF, Mar. '54).

The "boxes" are produced in these tall, slablike buildings, long and narrow, by concrete bearing walls or shear walls transverse to the building, at intervals of perhaps 22' on flat plate floors. This type of structure lends itself to easy assembly, permits precasting methods and sliding-form techniques. Architects like it for hotels and apartments with relatively small, permanent space units and open sides. Its three advantages are a cost lower than skeleton frame, decrease of sound transmission between rooms, and a perhaps greater resistance through its frequent shear walls to remote effects of bomb blast.

The box frame, in all its simplicity, is designwise the most easily graspable space-frame because the whole building is, so to speak, one big truss laterally extended, with the useful spaces held between its members (an architect's way of speaking about it). There are no auxiliary members to clutter the place.

Another example, as spectacular as the box frame is familiar and simple, is the cattle-judging pavilion at the state fair grounds at Raleigh, N.C., the concept of the late Architect Matthew Nowicki engineered by Severud-Elstad-Krueger (see p. 130). Here the roof is on cables suspended between two great, tilted compression arches which cross one another in a scissors joint close to their abutments. In the original concept the tilted arches were not to be supported on posts. They were to be held in place just the way a slanting gin pole is—entirely by cables. One set would be strung *between* the two arches (and would also support the roof); the other set would be carried down from points along the arch to anchorages in the ground. But this proved wholly uneconomical to construct, so the arches are now carried on a series of hollow steel posts.

The pavilion is immensely dramatic.

For a lighter roof: a pneumatic pillow

There is one feature of this roof that challenges further invention. Because so big a roof with a concave top surface must resist the uplift of immense suction forces and flutter caused by wind, stays are needed inside the pavilion to hold the roof *down*. This has led Engineer Paul Weidlinger in his turn to experiment with the concept of a roof shaped like a vast pillow. It would be composed of nothing but two sheets of stainless steel, one atop the other, attached at the periphery to a series of posts. Upon inflation of the entire roof the upper sheet would rise and arch upward while the lower sheet would retain its catenary curvature. The convex upper surface would minimize wind lift and the compressed air would hold the roof rigid. No stays would be needed within the interior space. The total absence of any members but tension members in the roof itself might simplify structure enough to justify a membrane of expensive stainless steel. But the concept has been challenged on grounds of economy and on many fringe problems, so responsible Engineer Weidlinger has not yet published it himself. Indeed, responsible Engineer Weidlinger is among the many who challenge the whole space-frame concept as an advance in engineering theory. Weidlinger points out that all space-enclosing structures take into account lateral bracing; that empirical experience with the stiffening effects and auxiliary structural support of such bracing permeates all present-day engineering calculations. And that the very latest manual on shell-concrete domes still finds it most convenient to translate the spreading skin-type forces into conventional calculations. Engineer Arsham Amirikian of the Navy's Bureau of Yards & Docks also says space-framing is over-emphasized.

Perhaps what remains to excite architects is the new range of more recondite engineering *expedients* to obtain fine dramatic types of vaulting even if it is demonstrated that there is no radically new *theory*. For example, in the completely frameless aluminum dome on p. 158, there is no real absence of supporting ribs but they are formed by a manipulation of the skin itself, making ribs by forming the flanges of the aluminum sheeting.

For greater spans: skin-action construction

A whole series of new structures show an approach to what is called a "skin" action, being calculated to spread the effects of a load laterally instead of carrying the load to beams, trusses or arches resting on two supports. The most familiar are the lamella vaults that span many a supermarket. The most recondite are airplane hangars and exhibition-hall roofs by specialists such as Italy's genius Engineer-Architect Luigi Nervi (AF, Nov. '53).

In all of them the small size of the framing members makes for easy handling and the cunning arrangement makes for economy, at least of weight and material. The "dome of discovery" of the Festival of Britain used 6.4 lb. per sq. ft. of weight against 25 lb. for a dome built in the US of comparable span.

In any case, the short pieces required for Buckminster Fuller's spidery domes based on a three-way grid of light tubular members could be manufactured with the required accuracy in any machine shop. (Such short pieces could be other than tubular.) CONSTRUCTION OF THE FUTURE



Space-frame of aluminum for British Dome of Discovery by Robert H. Matthew, architect; S.M.D. engineers



Lean concrete framework of Turin Exposition Hall by Pier Luigi Nervi.

Box-frame construction for London apartment by Maxwell Fry and Jane Drew.



Effective space-frames can also be made of wood, steel, aluminum or even molded plywood as well as concrete. In the case of concrete, efficiency can be increased in prestressing the members. There are, of course, some difficulties to be expected.

For greater economy: multifunctional floors

A second major aspect of future construction: it will have to be designed not only to be multidimensional but multifunctional.

Only gradually are we learning that all the designers of a building—the owner, his rental experts (where space is designed for lease), the architect, the structural engineer, the mechanical and electrical engineers, must work as a team and not as a progression of successive apologists. Too often the architect still starts with a style (traditional or modern), gives it to his draftsmen to put a plan behind the style, then gives it to the structural engineer to make it stand; then the mechanical engineer and the electrical engineer sneak services through gaps or holes where they can, and punch openings where this is not possible. Since none knows what the next man will want to do, latitude has to be given all along the line and enough overdesign supplied to provide space and to take the punishment.

The heating engineer was the first we absorbed into a closer integration when entire floors or walls became, for example, radiant panels. Cellular floor systems in both steel and concrete have the special advantage of greater ease in passing through pipes and conduit; and the future may see more integrated design such as that of Engineer Gilbert Fish who designed a library steel frame in such a way that the frame and the duct system for air conditioning were one thing (AF, Jan. and May '52).

The fact that a cellular-steel floor deck with concrete above and plaster below is multifunctional in diminishing sound transmission is something which architects do not hear mentioned even by the proprietors; yet this is so because sound must travel through four different materials with different reverberation periods—concrete, steel, air and plaster.

In the future more *conscious* attention will be paid to the multifunction of structure as a mechanism, or an integral part of a mechanism, of environmental control; we shall design new heat, light and sound conditions as well as support, or space division. (At present we achieve multifunctional characteristics largely through *auxiliary structures* such as hung ceilings.)

The single grid can care for high-class illumination, acoustic control, sprinkling, air-conditioning outlets and attachments for removable partitions. Future development will perhaps incorporate all this in the main structure without resorting to an auxiliary structure such as a hung ceiling. An objection is raised that such construction can interfere with flexibility; but Architect Louis Kahn in his Yale Art Building shows this need not be so (AF, Nov. '52). We can hide the mechanics visually without putting a continuous membrane under them.

Despite all the integration that has been accomplished with lighting, we still have far to go. It is because our design process is today a parade and not a team of designers. Architects like to handle the daylighting themselves, sometimes by torturing the structure into complicated wall and roof sections full of cleresories, skylights, monitors. Then the illuminating engineer takes over for electric lighting. In one schoolhouse which won prizes from architectural juries the illuminating enginner was scarcely able to find a reflective wall surface anywhere for his reflected light.

Some unexpected help may come when inventions made for one purpose are found useful for another.

... and a multifunctional curtain wall

When it comes to that multifunctional structural element, the curtain wall, it would be nice if we could predict quick development of a trouble-free, paper-thin, multifunctional unit. Thickness is coming down—that can be said. The one safe prediction is to expect the unexpected.

For example, who would have expected five years ago that marble would show up as a very acceptable modern curtain-wall material? Yet the Federal Reserve Bank in Detroit (AF, Feb. '54) and other buildings have demonstrated the use of thin sheets with no backup other than insulation, the total 4" thick.

The fact that the Statler chain has apparently satisfied itself of the practicality of a porcelain-enamel clad 2" curtain for multistory use in cities is encouraging. And in our thank-heavens competitive society the structural clay products industry is in excellent position to offer attractive alternatives. For some situations reinforced and prestressed masonry units might serve as multistory wall and as floors.

Curtain-wall problems again indicate that modern structure must be multifunctional, and will be increasingly so. No curtain wall however thin will be acceptable that does not join easily with the structural frame, that does not permit easy installation of air conditioning and windows, as well as take care of its own problems of weather-tightness and handling of condensation.



Multifunctional roof for Paris UNESCO auditorium by Breuer-Zehrfuss-Nervi.

Let us make passing mention that in our multiordinal age many a problem is licked by chemical means rather than static or mechanical ones.

For example, Western schools, recently built, already show how touchy structural problems, such as skylight framing and flashing, can be avoided simply by slipping translucent corrugated plastic sheets in between the corrugated roofing sheets. And the same thing is done in walls.

For better performance: design analysis and testing

But perhaps even more important to the future is the observation that future construction will be based on more complicated analysis requiring better methods. It is commonplace that Europe's structural economics are based on expensive engineering, cheap labor, good workmanship and high cost for materials. Ours has been based on plentiful material supply, expensive labor, poor workmanship—and too often on cheap engineering.

The last dozen New York office buildings are reputed to have been designed at a combined architectural and engineering cost far, far below the usual, and one good architect has mentioned doing large apartment houses for 5% of 1%.

One reason drawing can be so cheap is that structure is so conventional. By contrast the new structures we are talking about are not easy to handle on paper. It has been observed that the past 50 years would have been incapable of developing the Gothic cathedral system for the reason that ours is a paper architecture, and largely, therefore, paper engineering. It is drawn easiest in the flat, on the drawing board, by simple conventions.

Advanced, three-dimensional construction must turn more and more to the pretesting of large structures by means of mockups and models in three dimensions.

Examples are happily multiplying of model analysis. One kind is "analogous"—the "Presan" technique of photoreflective stress analysis using plastic models loaded with sand and measuring deflection by careful photography, which has led to large savings. Still other tests deal with *full-scale mockups*. It is somewhat shocking that a large US office building should have developed serious water leaks at windows because some designer on paper had simply forgotten that ASHVE had already run wind tests demanding a higher lip at the sill. Another device is *small-scale models*, such as College Station, Tex. uses on ventilating characteristics of various structural arrangements. The point is that these test not just one material or one product but complete building shapes, so that factors hitherto unforeseen are foreseen. Such



C Exra Stoller

Multifunctional ceiling for GM Technical Center in Detroit by Architect Eero Saarinen.

examples will multiply fast.

The cost of building such mockups and models is an added cost of the planning process, but it repays itself manifold through reduction of cost in execution. For one thing, contractors rightfully protect their bids on unfamiliar designs—the very designs that create progress—by higher prices to take care of contingencies. Where such a contractor has a model or mockup in three dimensions to go over, all becomes clear, and he can even pretrain his foremen for that particular building.

For better engineering: more brainwork and realistic fees

Some contend that whereas building construction draws the best architects, the construction industry cannot compete with other industries for the best engineers. This is open to challenge. We have wonderful engineers but we do not let them do their best, for a very simple reason. Too often they are asked to live on the architect's leavings in the matter of fee. Nor is this too much the architect's fault. Surveys show that our architects are not getting rich either—they average not much more than half a doctor's average yearly income.

In coming years a higher proportion of total building cost will go into preliminary analysis and evaluation—preliminary planning. It will go to the professions dealing with market analysis and design. The proportion of total costs assigned to design could profitably be doubled. This will not act to raise the owner's expenses but to lower them. A building is no longer a shell in which activities are carried on: it is a highly articulated instrument of the owner's activities. Professional owners, such as operators of hotel chains, shopping centers or office buildings, are becoming aware of this; so are hospital boards; school boards must do so soon.

To repeat, tomorrow's structure will be a more complicated problem. It will be designed to more dimensions than now; it will be called on to perform more functions simultaneously than now; it will serve a more varied architecture; it will perhaps resist greater destructive forces than now; it will need and get many new materials coupled with new methods of construction; it will accordingly entail more difficult analyses, it will get a great deal more testing through models ahead of use; all this will call for much more analysis by architects and engineers before actual building is begun; and only those owners who will pay engineers and architects a far greater share of the total project cost than either one, or both together, gets now, will benefit from the new technology in design and construction.

BUILDING ENGINEERING

- 1. Aluminum skin doubles as structure for 12,000-seat hall
- 2. Lighting plenum daylights school corridor and classrooms
- 3. Factory-precast concrete helps contractors cut building costs
- 4. Water-filled cardboard boxes form cellular concrete slabs
- 5. Splayed arch bridge wins praise of architects



1. FRAMELESS ALUMINUM HEMISPHERE SPANS 300'

Stressed skin structure erected like circus tent sets new records in lightness and cost

This 300' aluminum dome at Longview, Texas, is all skin. It contains no framing ribs whatsoever and cuts weight down to a new low of 4½ lbs. per sq. ft. of area covered.* The entire structure was designed, fabricated and erected by the R. G. Le-Tourneau Co., Inc. The idea was sparked by President R. G. LeTourneau's evangelist friend, Billy Graham, who needs more large halls for his meetings. LeTourneau's answer: a simple shell that will seat 12,000 people and can be erected for under \$3.50 excluding floor slab and utilities.

The repetitive design of this auditorium makes for easy erection (and easy dismantling, if required). It is simply composed of 1,200 large aluminum plates bolted together in increasing concentric rings around a 94' central mast. As each new ring is bolted in place on the ground, the roof is hoisted higher up the mast. No scaffolding is needed. When the last ring of plates is positioned, the hemisphere is lowered and bolted to a prepared foundation. And since the structural shell is self-supporting, the central mast can be removed, if desired.

Because the structural aluminum has a yield strength of 25,000 psi and because LeTourneau engineers used a 4-to-1 safety factor in their design, they claim their dome is extremely stable, that it will easily withstand an 80 mph gale.

Two types of aluminum plates are used, stamped to a radius of 173.2' in both directions. They are embossed with three parallel stiffening ribs flanged at both ends and drilled with holes for $3_8''$ cadmium plated steel bolts spaced about 6" o.c. The 24 plates in the top circuit are 5' x 17'-2" x $1_4''$ thick and weigh 153.47 lbs. The remaining 1,196 plates in the other 14 circuits are 7' x $12\frac{1}{2}$ ' x $\frac{1}{8}$ " thick and weigh 156.66 lbs. They are reinforced by annular steel stiffeners between rings. Fabrication of the plates took three weeks; erection, 30 days with a crew of ten men.

In this particular dome the mast has been retained to carry a cluster of incandescent lights whose 75,000-w. produce an average 10 foot-candles at floor level. At the peak of the 94' erection mast is a 23' diameter cone that is raised or lowered by a small electric motor for ventilation purposes. Heating is by ten 500,000 Btu natural gas heaters around the circumference of the hemisphere. For acoustic control 1" glass fiber battens are hung from the annular steel stiffeners between each concentric ring of aluminum plates.

Located by a busy intersection, LeTourneau's huge mushroom covers nearly as much ground as a nearby drive-in theater, and its nine double doors provide almost as easy access.

^{*} Other lightweight domes: the British Dome of Discovery, now dismantled, spanned 342', weighed 6.4 psf including its three-way aluminum frame, aluminum skin and steel tension ring (AF, Sept. '52); R. Buckminster Fuller's geodesic dome topped Ford's 93' Rotunda at Dearborn, Mich., weighed 2½ psf including a polyester glass fiber skin (AF, May '53).



Spacious interior of auditorium is 85' high, covers 70,686 sq. ft., seats 12,000, is acoustically treated with rings of suspended glass fiber battens. Lighting is from a 75,000-w. cluster mounted at top of central mast.



Curved plates, $7' \times 12/2' \times 1/8''$ thick, are formed in both directions to 173.2' radius, embossed with three parallel stiffening ribs and flanged at both ends. Weathertight connections are assured by overlapping joints.

Erection must is 94' high, 3' in diameter, made of V_2'' steel. On top is 23' diameter vent cone. Photo shows fifth of 15 concentric rings of alum-inum plates being bolted in place.



Peak structure of aluminum is assembled in two pieces around erection mast. When halves are joined, aluminum roof plates are bolted to them.



At top of most is adjustable opening for ventilation. Cable on left of mast raises or lowers ventilating cone.



At foot of mast 36" electric winch raises roof structure as construction progresses. Small winch on right controls ventilating cone.



2. SCHOOLHOUSE LIGHTING PLENUM

provides top light for double-loaded corridor, bilateral light for classrooms, cuts electric costs 30%

Today's classrooms need good lighting at low cost. Bilateral classroom lighting is good but somewhat difficult to achieve with economical double-loaded corridors (AF, Oct. '53, p. 184 *et. seq.*).

An ingenious solution at the Riverdahl Elementary School, Rockford, Ill. puts the waste space above its double-loaded corridors to work as a lighting plenum. Roofed with a 141/9' wide translucent plastic skylight this plenum passes light into classrooms through 41/2'-high glass vertical lights and into the corridor through 23/4' wide sloping glass lights set along each side of the corridor. The translucent polyester plastic panels are reinforced with glass fiber and corrugated to enable them to carry 40 psf on purlins 4' o.c. with a safety factor of two. Cost of the panel: 95¢ per sq. ft. plus another \$1.05 per sq. ft. for erection.

This method of bilateral lighting has several advantages:

Good daylight illumination — average intensity of classroom lighting is 100 footcandles on the desks along both the interior and exterior walls and 75 foot-candles on the center desks. Corridor daylighting averages 75 foot-candles. (Under an overcast sky these figures drop 30%.)

Efficient service plenum—the corridor ceiling plenum carries easily accessible service pipes, conduits, etc., which in no way interfer with the lighting. Further, the plenum doubles as an insulating air chamber to keep out both summer heat and winter cold.

Light roof structure—the corrugated plastic is only 1/16'' thick, weighs only 8 oz. per sq. ft. This permits a light roof structure of 8'' junior beams spaced 3'-6'' o.c.

Low operative costs — the system is designed to give a minimum of 50 footcandles of daylight over 60% of the school year. Thus relatively little electric light is required—only eight 150-w. lamps per classroom using only 1/3 of the electricity needed in standard classrooms having windows along one side only.

The polyester glass-fiber panels are shatter-proof, can be sawn, nailed (through undersized, predrilled holes) and are lapped in the same manner as metal or asbestos-cement panels with fasteners 8" o.c. The transmission value of the panel is 75 to 80% of that of clear glass and its "U" value for flat stock is 1.09 (somewhat lower for corrugated stock), compared with 1.13 for glass. It also has good resistance against heat and cold, and is a relatively efficient fire barrier requiring 840° before igniting and having a burning rate of 0.93" per minute.

Construction cost of the Riverdahl Elementary School (bid in 1952) was \$14.70 per sq. ft. It was designed by Raymond A. Orput & Assoc., architects and engineers.





Lighting plenum, running full length of each classroom wing, directs daylight into classrooms on either side and into corridor below. Plenum also carries utility lines and two catwalks, serves as insulating air chamber and permits more simple roof structure than many clerestory designs for double-loaded schools corridors. Vertical classroom lights are 4'-6'' high; sloping corridor lights, 2'-9'' wide.



Top lights at each side of corridor supply 75 foot-candles of borrowed light from pienum above, 50 foot-candles when sky is overcast.



Bilateral lighting of classroom provides 75 to 100 foot-candles on desks from windows (right) and plenum "clerestory" (left).





Trailer trucks deliver 1,250 sq. ft. of building per hour; columns, girders and decking, and wall panels are hoisted directly from trailers into the structure.



Precast columns are bolted to foundations, need no bracing during erection. Precast girders are bolted atop columns. This column is for smaller warehouse building shown below.

Deck slabs are hoisted in pairs, 80 sq. ft. per lift. Ends of slabs are notched to give lateral support to girders. Connections are non-continuous, simply bolted, then grouted.



3. FACTORY-PRECAST PARTS CUT

Prestressed units of high strength concrete bring framing costs



This precast prestressed building represents one of the most advanced developments of concrete construction in the US.

Many postwar buildings have been precast, but this one is part of the regular production of the single factory of Geo. Rackle & Sons Co. at Houston, Tex., which turns out 200 lin. ft. of framing members and 5,000 sq. ft. of deck slabs per day in bay sizes ranging from 20' x 40' to 22' x 70'. Further, the prestressed members are made with high quality concrete that would be quite impossible to achieve on a job sitethe "no-slump" concrete's density is reduced from the usual 150 lbs. to 110 lbs. per cu. ft. and yet its 28-day cube strength is increased to 7,000 psi. Unprestressed members weigh even less, 100 lbs. per cu. ft., and have a 28-day strength of 4,000 psi.



BUILDING COSTS

down to \$1.35 per sq. ft. including decking

Rackle's high-strength, lightweight concrete is made with lightweight expanded shale aggregate, half coarse and half fine by volume, with nine sacks of cement per cu. yd. and 5% air entraining. It is carefully vibrated after pouring.

All precast members are cast in rigid steel forms which are stripped after 24 hrs. Prestressed members are tensioned after seven days' curing using the Swiss BBR system's cold-forged, button-headed anchorages on ten $\frac{1}{4}$ ", 250,000 psi tensile wires per tensioning cable.

In a sweeping statement, Vice President George P. Rackle claims, "We can deliver and erect a fully fireproof precast-prestressed concrete building for 30-50% less than it costs to cast it in place." Here is the price list for his concrete products delivered and erected in Houston: columns, 20¢ per sq. ft. of framed buildings; prestressed girders, 50¢ per sq. ft.; decking, 65¢ per sq. ft.—total cost, \$1.35 per sq. ft. with all joints secured and grouted.

71/2

ROOF SLAB

These building parts are delivered by 32' trailers at a rate of 1,250 sq. ft. of building per hour thanks to a highly organized system which Rackle calls "continuous flow."

In 1953 Rackle & Sons produced 200,000 sq. ft. of precast concrete buildings and, according to orders on the books, they expect to produce 500,000 sq. ft. in 1954. As production grows, the company expects to lower still further the costs of precasting. Even now Rackle believes a building precast in Houston can be erected competitively anywhere within 250 miles.

The pictures on these pages represent

three Rackle buildings. Most of the pictures (like the big one above) are of 16,648 sq. ft., two-story tool building for the Austin Co., which designed and erected the building. It was completely framed in only 34 hrs. by a four-man erection crew and a two-man crane crew. Cost: \$2,50 per sq. ft. for the frame and decking.

Framing of this building is noncontinuous. Construction sequence: foundations and ground floor slab were poured first and the two-story columns bolted directly to the foundations; 40' prestressed girders were bolted into position between columns, then joined by 20' precast deck slabs hoisted into place in two 2' wide sections at a time. Walls were precast in sections $71/2' \ge 20' \ge$ 6" thick, bolted directly to the exterior columns. This structure is designed for a live load of 100 psf. It is at Freeport, Tex.-60 miles from the Rackle plant.

The second building (below, left) is a 30,000 sq. ft., single-story warehouse for Hubly & Co. in Houston designed by Hilton & Coulson, consulting engineers and built by Morris Kruger. It was completely framed in seven working days by a five-man crew of ironworkers and a two-man crane crew. Framing cost: \$2 per sq. ft. in place, including precast wall panels.

Construction sequence: footings were poured first with projecting anchoring and leveling bolts; next, the perimeter wall was built of precast pilasters 20' o.c. with 6" thick precast wall slabs between them (this wall went up at the rate of 3,500 sq. ft. per 8-hr. day); next, interior columns were bolted into position, joined with 40' prestressed girders which were topped with 20' deck slabs (this framing and roof deck went up at a rate of 10,000 sq. ft. a day.

The third building (below, right) is a 64,000 sq. ft. warehouse for the Kay Manufacturing Corp., also designed by Engineers Hilton & Coulson and built by Morris Kruger. It was erected in just over six working days by an eight-man erection crew plus a crane crew. Framing cost: \$1.15 per sq. ft., including interior columns, girders and roof decking in place. Finished building cost: \$5.50 per sq. ft., including a \$19,000 sprinkler system which in conjunction with the concrete frame, earned an exceptionally low fire insurance rate of 3¢ per \$1,000.

Design and erection of this building was similar to the Hubly building except that the perimeter wall was built of tilt-up panels cast on the job and cast-in-place pilasters (the building was designed before precast walls were available).

All electrical and mechanical equipment is suspended from the structure of the building by explosive fastening tools which rammed anchorage studs directly into the roof slabs. Carrying all lighting fixtures and wiring conduits, suspended radiant gas heaters, utility pipes and sprinkler system, these anchorages permitted speedy erection and tight, trouble-free connections.

After 16 hrs., walls of 30,000 sq. ft., one-story warehouse for Hubly Co. are taking shape. Precast slabs are secured to precast "pilasters" at rate of 3,500 sq. ft. per day.





Precast wall slabs, 6" thick, are bolted to columns. Second-floor deck is topped with 2" poured concrete. This 16,500 sq. ft. structure for Austin Co. was erected in 34 hrs.



Typical interior: all services, including radiant gas heaters and sprinkler system, are hung from explosive-driven fasteners rammed into concrete celling.



One-story frame for 64,000 sq. ft. Kay Manufacturing Corp. building consists of typical prestressed girders bolted and grouted to 12" sq., 15' high columns.

Photos: Silwedel; Bob Bailey











Test form has five of six boxes in place and is ready for placement of reinforcing steel and concrete. Wire chairs supporting boxes are early version of those detailed above.



4. CARDBOARD BOXES FORM CELLULAR CONCRETE

New technique of slab construction fills cardboad forms with water which is drained out once slab has set

If and when these watertight cardboard boxes go into production, they can be used to make lightweight cellular concrete floors and walls. The cells would be formed by the patented cardboard boxes. During the pouring operation, the boxes would be weighted by water fill to keep them from floating as the concrete is poured. This water gives useful support to the boxes; it would be drained away once the slab is cured.

Experimental slabs built in Los Angeles, Calif., show that a 12'' cellular slab designed for a 50 psf live load on columns spaced 30'each way weighs only 75 psf (after draining away the water fill). The 32'' square boxes weigh about 10 lb. empty, will cost 80ϕ to 90ϕ each, or 10ϕ per sq. ft. of slab.

Three advantages are claimed for this construction technique: 1. Economy—cost of the 12" slab is said to be under \$2 per sq. ft.; this could be cut to \$1.50 per sq. ft. by using prestressed slabs on 50' spans combined with lift-slab techniques.

2. Flexibility—the cells formed by the boxes in the slab can be joined to form air ducts for heating or cooling.

 Strength—the ribs between the cells provide the slab with two-way framing; the boxes are of varying sizes to create heavier or lighter ribs as required.

The forms are die-cut from a single sheet of cardboard, shipped flat, and field-folded into leakproof boxes. The interior stiffener forces the top and bottom of the box into a slightly domed shape, thus increasing the strength of floor diaphragms between ribs (due to this arch action mesh reinforcement may be omitted) and facilitating flow of concrete beneath the boxes.

The slabs can be formed on any suitable level surface, or even atop one another to permit the use of lift-slab or tilt-up methods. The boxes are positioned empty on wire chairs which also support the steel reinforcing laid along the ribs between boxes. Finally, the watertight boxes are filled with water through top openings. After filling, the openings in the boxes are covered and the concrete is poured.

A combined supporting and drainage tube is attached both above and below each box to facilitate drainage once the slab is set. These tubes are temporarily sealed with a removable or a slowly water-soluble substance to prevent premature escape of the water.

This hollow slab technique is patented by its inventor, Edgardo Contini, Chief Engineer, Victor Gruen Associates.

5. GOLD MEDAL BRIDGE

Space structure of welded steel and wire rope wins laurels for its

architectural beauty and economic design

This beautiful bridge is an engineering and architectural thoroughbred. Its prototype won an award in the 1951 design competition sponsored by Lincoln Arc Welding Foundation of Cleveland, and last month the completed bridge won the top award for engineering in the 56th National Gold Medal Exhibition sponsored by the Architectural League of New York. The original designer is Thomas C. Kavanagh, partner in the engineering firm of Praeger, Kavanagh & Waterbury and professor and chairman of New York University's Department of Civil Engineering. The designer of this particular bridge is Camilo Piccone, a Mexican civil engineer who adapted Kavanagh's competition design to the requirements of the Rio Blanco site near Vera Cruz.

Designed as a space structure, the 250', three-lane bridge features a pair of slender parabolic steel archribs which lean gracefully against each other and delicately support the gridded steel floor system with 30 wire rope hangers.

Proud of the bridge's low cost as well as its beauty, the designers point to these economies:

▶ Top bracing is reduced to four short horizontal box-shaped steel ties, because the two arch ribs brace each other. The welded diagonal grid of the floor beams replaces the usual bridge's elaborate lower bracing system.

▶ Under eccentric lane loading the spatial interaction of the bridge's gridded floor beams with the two longitudinal tie girders tends to reduce the axial load on these girders.

▶ Because the bridge is a self-contained space-frame, it offers no external thrusts, needs no big abutments and is therefore adaptable to many sites for which ordinary two-hinged arch bridges might not be suitable.

Altogether, the economies of the unusual welded arch and floor systems add up to a 30% reduction of steel tonnage and a 20% saving in cost compared with conventional bridge design.

Mexico's highway department has recognized this structure as something more than just another bridge; to dramatize its beauty, the basket-handle ribs have been painted orange and the horizontal tie girders, cherry red. And the public agrees with the critics: motorists who invariably stop to admire the striking architecture on their first trip across the span have created a traffic problem.





Splayed arches merge at crown for about 32', are also tied with four short braces.



Parabolic curve of arches extends 52'-6" above deck. Horizontal tie-girders are 250' long.



Freedom of form, usually available only with concrete, is achieved with welded steel

Structure consists essentially of two box-type steel arch ribs (open on underside), 30 wire rope hangers, two tie-girders, gridwork of diagonal floor beams and floor slab of reinforced concrete. Framework was prefabricated in sections, welded together atop timber falsework. In addition to usual truck loading tests, field tests included flooding roadway with 14" of water (250 metric tons). Bridge has three traffic lanes, two walks.



Tie-girder on each side of bridge is 2" deep and inclined to lie in plane of arched rib and hangers.



NEW PRODUCTS





Reinforced plastic windows transmit soft light (see p. 190)

Air diffusers fit anywhere in hung ceiling (see p. 184)

Prefab curtain wall—insulated panels, windows and frame—is adaptable to wide variety of buildings







Typical packaged wall has air space separating hard face from insulated portion of panel. Snap-on covers (see mullion details) conceal clamping mechanism; no bolt heads are visible. Renderings show typical installation for hypothetical building.



Sold as a complete package of wall panels, window units and extruded aluminum framing, this new low-cost curtain wall allows the architect a free design hand through a wide choice of face materials, insulation and glazing arrangements. To permit flexibility of application, the new wall is available with different mullion designs to meet varying loads and interior modules.

The manufacturer felt it unfeasible to provide weep holes that would meet all drainage and wind problems, and so decided the prefabricated wall could do without them. Instead, integral gutters conduct condensation to mullions (aided by pin holes at each junction) via which it makes its descent. These enclosed portions of the frame are vented to the inside of the building to maintain pressure stability.

Adjacent wall sections are adjustable vertically and horizontally for precise alignment of components. In application, first the mullions-continuous to any height-are erected from outside, then the panels. Glazing is done from inside the building. To avoid having the insulation wetted by condensation, the insulating or "soft" part of the unit is safely segregated by an air space from the "hard" face. Two of the laminates (3-ply for warp-resistance) available as the outside part of the wall are: 1) porcelain enamel, asbestos-cement board and galvanized steel, and 2) embossed aluminum, asbestos cement board and plain aluminum. Cost, based on walls 70% glass and 30% insulated panel, will run \$4 to \$5 per sq. ft. installed but unglazed.

Although this crisp curtain wall with its spare frame is doomed in all areas but those that know no code, the volume of industrial and administrative structures going up outside code areas justifies big-scale production of the prefab walls, says the manufacturer. Properly protected with fire-rated plaster, however, the wall should be respectable enough even to get into the big towns. *Manufacturer:* Michael Flynn Mfg. Co., 700 E. Godfrey Ave., Philadelphia 24, Pa.

The following pages show the various types of roof finishes available for use in small construction. For comparative purposes, many factors important in choosing a roof finish are listed. These factors include a description of the material, the minimum and maximum slopes, method

finishe of application, guaranty available, and the cost of various finish The costs per square foot are based on normal quantity of the type of roofing used in the Eastern Area. Prices may vary 30% due to con petition, size of job, and location. Prices include installation.

CORRUGATED & CRIMPED ROOFING

ROOF	FINISHES-	-PART	1

architectural forum

DESIGN STANDARDS AND DATA

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ТҮРЕ	DESCRIPTION	MAX. MIN.	WGT.	SIZE	THICK	COST SQ.FT	GUAR-	GUAR- UNDER	FASTENER	APPLICATION	EXPOSURE	COLOR & TEX TURE	U.L.R.
STEEL: OR	14" Corrugations Iron & Steel	3" in 12"	15# to 200#	25 ng 26 m. 6'-0" to 12'-0" t	. 26 to 18 ga	26 ga • 33	10 yr	55# Felt over	Nails or Clips	Nail to wood Clip to Steel	14 to 2 Corr. sidelap.	Bright - lustre 4	
I RON	14" Corr. Galvanized	op	90# to 215*		op	+6.	do	2000	do	do	o ciutap	ULCONC.	
	2å" Corr. Iron å Steel	op	75# to 200#	26#\$ 275#W. 6'-0" to	op .	op	op	ор	op	op	op	qo	
	24" Corr. Galvanized	op	90# to 215#		op	op	op	op	op	do	qo	qo	
STEEL WITH COMPOSITE	Covering 14 Corr. of bonly alprimer.	. Cement side- laps for slopes below 3"in 12"	101 to 205#/sq	1.34 33" & 1.34" W. 6'to 12' L.	24 gauge	<i>41</i> ·	al Jyr.	1	Lead Headed Nails or bolts	Nail to wood Clip to Steel	op	Mica	
COVERING	adnesive, 2 <u>k</u> Corr. asbestos, 2 <u>k</u> Corr. sealer.	op .	185 to 300#/sq.	33" Wide up to 12"L.	. 24 ga 18 ga	.81	c] 1-10 yr	•	Stainless Steel bolts or screws	Screw to wood Bolt to Steel	1± sidelap 6" endlap	Black Aluminum	•
	b) primer, b. asphalt- b.	2" in 12"	-	101 to 26" 27±".33 251#/sq 6.to 12'L.	31 24 ga 18 ga	. 75 . 87	depends	•	Lead headed nails or bolts	Nail to wood Bolt to Steel	l to 2 Corr. sidelap 6" endlap	Mica	
	mica. 2.67Corr.	r 2" in 12"		33" W. up to 12"L.	24 ga 18 ga	.87	ion	•	Stainless Steel & Nickel-Copper Screws	Screwed into Steel members	1≰ sidelap 6" to 12" end.	Black, Maroon Aluminum	1
	Felt, V-Beam Sealer, a.	2" in 12"	142 to 350#/sq	Up to 12°L.		. 75	up to 10 yrs	1	Lead, Stainless Steel	Screwed or nailed to wood.	6" endlap 1± to 2	Mica. Black	
		2"in12		29ª W.	24	. 79	depends		or Nickel- Copper Bolts or		corrugation sidelap	Maroon Aluminum	1
	c.	121 ni 121	12.7	29" W.	24 ga 18 ga	.80 .93	locat- ion		Screws	F			
	5-V crimp b-only	Cement side- laps for slopes below 4"in 12"	s 251#/sq	101 to 26" Wide 251#/sq.6"-0" to 12"-0" L	26 ga	.70	1-10 years		Lead headed nails or bolts	Nail to wood Bolt to steel	24 " exposure	Mica	
	Mansard a.	4" in 12"	129 to 225#/sq	33" Wide up to 12"L.	24 ga 20 ga	:75	op	1	Stainless Steel or Nickel-	Screw to wood Screw or bolt	l to la corr sidelap	Black Maroon	
	10	4" In 12"			24 ga 20 ga	.15 .81			Copper Screws & Bolts	1	endlap	Aluminum	
COPPER	2å"Corrugation	4" in 12	100 to 165#/sq.	27å" wide	20 ounce	1.40	10 yr		Copper or copper allov	Insulate from other metals	14 to 2 Corr. sidelap	Copper Smooth	
	Copper clad corrugated sheet	op	do	op	26 ga 18 ga	.93 1.14	op		nails or screws	do .	6" endlap	do	
	Copper bearing steel		Corrugations	suc		Same	e as gal	as galvanized i	iron				
	Copper 14 corr. molyb-	<u>e</u>	12" 10 84 to 12" 286#/sq.	5' to 12'L.	28 gà 20 gà	.50	1-10 yrs.		Copper or Copper Alloy	Can be used on open decks	14 to 2 Corr. sidelap	Copper smooth	
	iron 24 corr.	op	do	op	28 ga 16 ga	.55	do		screws	do	o" endlap	do	
ALUMINUM	Corrugations 14" & 24" 2.67"	3" in 12"	n 56#/sq.			. 60	10 yrs.	op	Aluminum nails Screws or Clips	Nail to wood Screw or rivet weld to steel	14,2,24 Corr.side 6"or 8"end.	Smooth of	
	Curved	1	do	jg"of48"W.	do	.70	15 yrs.	do		Min. radius of		embossed do	1
	5-V crimp	3" -in 12"	n 30#/sq. 41#/sq.	5 -to 12 L.	. 26 ga 24 ga	04. 64.	qo	op	qo	Over solid or near solid sheathing	2 crimp side 6"or 8" end.	Smooth or embossed	
CORRU- GATED ASBESTOS	4.2 corrugation	3"or 4" in 12"	# 375 to 2" 410%/sq.	6"to 12"-0" 42" Wide	" 15" overall thick	.80	10 yrs.	none	Lead headed Bolt or screw	Screw to Wood Bolt to Steel	1 corrugated sidelap 6" endlap	Smooth Gray	
CEMENT	Curved 21-0" min. radius 51-0" min. radius	h. radius W. h. radius L.	op	6 to 12'-0' L.,42"W.	do	1.15 to 2.75	do	op	op	do	do	do	
				PREPARED	IN CONSU	CONSUL TATION	WITH TURNER		CONSTRUCTION COMPANY				

TYPE	DESCRIPTION		SLOPE MAX. MIN.	WGT.	SIZE	THICK	COST SO.FT.	GUAR-	UNDER	FASTENER	APPLICATION	EXPOSURE	COLOR &	U.L.R
GLASS	25 Corrugations		3"or 4" in 12"	3"or 4" in 12" 630#/ sq	t 0 to 12±0"L.	3/8"	2.75	depends on loca- tion	depends on loca- None tion	Sheet Metal Cap & Bolts	Clipped to Purlins	3" endlap	≥∢	-
PLASTIC	14,2 4,2.67 8 4.2 Corrugation 5-V crimp		3"or 4" in 12"	50 to 70#/ sq.	2"to 12"L0"L. 26" to 42" Wide	.065" to .097"	1.47	None	op	Nails, Bolts or clips	Fastened to Structural Members	l or 15 Corrugation sidelap	Smooth or Rough. Many Colors	a l
PORCELA IN ENAMEL	2 ∳ Corrugations		2" in 12"	139 to 248#/sq.	27≱" W. . up to 12'L.	24 ga. 18 ga.	.88 1.00	depends on site 10 yrs		Screws	Screw to wood or steel	15 corr. sidelap	Many Colors Smooth	1
			S	STANDING	SEA	M, FL	AT S	EAM &	BAT	TEN SEAM	ROOFING			
ALUMINUM	Batten Seam		14"in 12"	60 to 92#/sq.	31å"x120" sheet	.032"	. 1. 16	15 yrs.	30 lb. Feit	Aluminum nails or screws & cleats	Sheet placed in Batten & cap is screwed over.		Smooth Mill Finish •	1
COPPER	Standing Seam Pan or Roll Method		2å"in 12"	80 or 125#/sq.	16"x72" 20"x48" 20"x96" 24"x96"	10 oz. 16 oz. 20 oz.	1.36 1:70 1.97	ę	15 15. Felt & Rosin Paper	Copper or Bronze Nails & Cleats	Sheets locked together to form Standing Seams		Smooth: Weathers Green	1
	Batten Seam Pan Method		3" in 12"	253#/sq.	20"or 24" W. 8'-0" L.	16 oz.	1.27	None	op	do	Place pans between battens and	-	op	1
			14"in 12"	op	op	20 oz.	1.48	15 yrs.	op	op		•	op	-
	Flat Seam	4" in 12"	4" in 12"	150 # /sq.	16"×18" best size	20 oz.	2.21	qo	15 lb. Feit	do	Seams, Locked & soldered		op	1
COPPER MOLYB.	Standing Seam Roll Method		2" in 12"	81 to 130#/sq.	264	24 ga.4 Lighter	. 18.	1-10 yrs.			Used only over a tight deck	24" Exp.	Smooth	-
DENUM IRON	Pressed Standing Seam			79 to 183#/sq.	25" W. 5' to 12'L.	op .	.80	qo			qo	op	op	1
COPPER	Standing Seam Roll Method		2" in 12"	81 to 130\$/sq.	. 50'- 0"L.	24 ga 4 Lighter	.87	do			op	op	op	-
STEEL	Pressed Standing Seam.		1	79 to 183#/sq.	79 to 25" W. 183#/sq. 5' to 12' L.	op	.80	qo			op:	do	op	
LEAD +6 TO 7.5% ANTIMONY	Batten and Standing seams Regular or Special batten Seams not over 24" o.c.		Varies	Approx. 300#/sq.	Average 2"-0"x4"_0" maximum; Special +1_0"x6"_0" maximum	24# = 1/24 = 3# = 3/64 = 4# = 1/16 =	R S 1.50 1.70 1.63 1.83 1.90 2.10	15 to 20 yrs.	15 lb. Feit	Cleats lead coated steel or hard copper alloy nails	Sheets joined by means of Locked Seams Laid on smooth roof surface.	1ª turnover on lap seams	Weathers to gray. Many Textures	
CKEL	Batten Seam		3"in12" 14"in12"	26 ga.= 86#/ sq.	20" .Wide or	26 ga.=	1.17.	None 15 yrs.	30 1b. Feit	Nickel-Copper Cleats & Nails	op	-	Slate gray or combina-	1
COPPER	Standing Seam		3"in12"	101#/sq.	24" Wide	25'ga."	1.75	None	15 16. Feit	, do	do	11.0	tion of gray- green & brown	
	Flat Seàm	3" in 12"		op	do	26 ga. 25 ga.	1.95 1.96	None	15 1b. Feit	do	op	-	op	-
STAINLESS STEEL			14" in 12"	227#/sq.		28 9.	2.06	20 yrs or better		Stainless Steel Nails & Screws	Lap Seamed & Soldered	-	Bright or Satin Finish	•
T I N (TERNE	Batten Seam		2" in 12"	1C = 62#/ sq.	14" 20" 24" 428 ^h Wide	1C ga.=	4 16 1X	1 yr.	Rosin sized paper	Terne cleats & roofing nails	Use Double Lock Unsoldered Seam	ll" to 19" Exp.	May be painted any	
PLATE) 80% LEAD 20% TIN	Standing Seam		qp	76%/ sq.	28" 96" 1 120" or 50±0" Long	.1 2210 .	10.1 99. 04	1 yr.	do	do	op	11" to 25" Exp.	10101	•
	Flat Seam	2" in 12"	≜" in 12"	qo	do	op	B 1.01 1.04 20 1.10 1.12	10-15 yrs.	do	op .	Single Lock Seam Soldered	124" to 264" Exp.	do	•

ROOF FINISHES-PART 2

architectural forum

DESIGN STANDARDS AND DATA

Copyright 1954 by HAROLD R. SLEEPER, F.A.I.A.

STANDING SEAM. FLAT SEAM & BATTEN SEAM RODFING (Con't)

TYPE	DESCRIPTION NAX. MIN.	MAX. M		WGT.	WGT. SIZE	THICH	SQ.FT.	GUAR-	THICK SQ.FT GUAR- UNDER-	FASTENER	APPLICATION EXPOSURE	LAP OR EXPOSURE	COLOR & U.L.R TEXTURE U.L.R	U.L.R
GALVAN- IZED IRON	Standing Seam	2	2"in 12"	88 to 130#/sq	88 to 26½" Wide 130#/sq 50±0" Long	28 ga. 24 ga.	. 78 . 84	l-l0 -yrs.	None	Galvanized Nails & Cleats	Use Double lock Seam	24" Exp.	Smooth: Metallic	
& STEEL	Pressed Standing Seam	9	6"in 12"]	79 to 183#/sq	79 to 26å" Wide 183#/sq 5"to 12"L.	28 to 22 ga.		op	op	qo		op	qo	
	Double or Triple Drain Sheets	9	6"in 12"]	92 to 106#/sq.	92 to 26±" Wide 106#/sq.6'-0" to 12'-0" L.	29 ga. to 26 ga.		op	do	Lead Seal Nails	Sheets nailed to Wood Deck	24" Exp. 6" endlap	op	1
ZINC	Batten Seam	3	3"in 12"	75 to 150#/sq.	75 to 20", 30", 36" 150*/sq. 240" W.	15 ga. to 11 ga.	36" 15 ga. 10 ga to 11 ga. 1.13		Glassy Satur-	Galvanîzed Naîls A	Laid on a Smooth un-		Weathers	'
	Standing Seam	2	2"in 12" 2	100 to 200#/sq.	100 to 20" Wide 200%/sq 7'-0" or 8'-0" L.	#10 Zinc	11 ga. 1.21 15 ga.	yrs.	ated & coated paper	Cleats	Obstructed Surface covered with sheathing paper		6.6.6.	
	Flat Seam Max. Area 200 Sq. Ft.				l4"× 20" maximum	#10 Zinc	1.33	op	op	op	do	-	•op	

ROOF FINISHES-PART 3

FIBERBOARD ROOFING

BOARD	impregnated with bituminous	12" 12"	å"in 12"	201#/sq	201#/sq 2d" x 19"	3/16" 3/16"	1.00	None	built- up roof	Plastic Compound	15# Feit over Built-up roof	Edges	Green Red	Class A
1.0	90∰ asphalt applied over fiberboard at factory		2 <u>4</u> "to 3" in 12"	360#/sq.	24"to 34"to 360#/sq.8'-0" in 12" 260#/sq.8'-0"	14"T.	•		None	Aluminum Nails	Sheets nailed & sealed with mastic	13" Exposure	Rough	None
WITH COVERING (ALL	Copper Sleeve over fiberboard Core		op	op	op	op	6	-	None	Copper Nails	op o	oʻp	Smooth: Weathers Green	qo
BOARD FACTORY	BOARD Aluminum Sleeve FACTORY over fiberboard		op	qo	op	op	1		None	Alumînum Naîls	. op	op	Smooth: Aluminum	do.
FABR1- CATED)	Aluminum Foil Plus Felt & marble chips over fiber- board core		op	op	op	op		1	None	qo	do	op	Rough: Various Colors	op

21 oz. 23 oz. -38 -38 -38 CEMENT FINISH CEMENT FINISH Flat Varies 1mm Varies 1mm -35 - 4-PIV Plat Varies 1mm -35 Plat Varies 1mm - 35 Plat Varies 1mm Plat Poured 0ored Plat Concrete - Plat Poured 0ored Any pitch 13#/sq. 6-8 Plys .02mmto .45 12 tol 2 Any pitch 13#/sq. 6-8 Plys .02mmto .45 None
Concrete None None
Fourred Goncrete G
G None
None

Ann

15

Cotton

LIGHT WGT

PREPARED IN CONSULTATION WITH TURNER CONSTRUCTION COMPANY

Many Colors

Spray on dry clean surface Mopped on firm deck

None

10 yrs. Felt

.04 3/16"to 1.00 3/8"to

pitch only **15**0#/sq. Varies for drainage 200#/sq. Varies

Neoprene latex & dehydrating powder

NEOPRENE

DESIGN STANDARDS AND DATA

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Shall we talk about romanticism and romance?

The ever ebullient Philip Johnson reported last month on a week-end discussion by a chosen few on what next in architecture. "The conclusions," said Johnson, "were not very positive. We found that each of us likes his own kind of romanticism and disapproves the other fellow's."

The word "romanticism" was jokingly offered but well chosen. for romantic explorations seem to occupy more and more of the forward lookers in design. Johnson himself has been installing decorative plaster-shell domes inside his earlier brick-box guest house; Eero Saarinen works on new thoughts about "the roof"including "domes on domes"; Lou Kahn expresses his ideas of a new "order" most strikingly in the peek-a-boo pattern of the rough-cast, Yale Art Building ceiling. The list could be extended indefinitely.

Meanwhile, there are others who stick tight like Gordon Bunshaft: "Why should we be in such a rush to abandon rectangular buildings? Why don't we build a few good ones first?"

Discussion is bound to be fierce, for contrary to popular belief romantic art (or any art) is not a mere escape from common sense, it seeks a kind of inner logic that people will recognize sooner or later, by slow degrees accepting the good and rejecting the phoney.

Meanwhile the public seems ever more ready for the romance of architecture—*any* architecture that digs into human feeling.

Friendly architecture

For example there is the feeling that village people are said to have in India today toward US architect Albert Mayer. The report on this comes from Charlie Abrams, recently returned from a UN mission of his own. Says Abrams, Mayer is the one foreign expert the Indian villagers have taken to their hearts because he alone lived among them ("which takes some doing"), listened to all, was consequently able to give sound advice which has really sparked improvement in homes, roads, soil conservation and health. The people know this architect is their friend, and through him some of them feel America is their friend.

Incidentally Abrams says grave injustice was done to Mayer by those (including, alas, FORUM) whose enthusiastic reports on the century's most comprehensive job of architecture, Punjab's new capital city of Chandighar, gave all credit to Le Corbusier, Jeanneret, Frey and Drew, who developed the magnificent architecture of the entire city. These dispatches ignored the painstaking prior work of Mayer & Whittlesey in creating the unprecedented city plan, which the later architects followed in all essentials. Forum expects to publish the two plans for comparison.

But Corbu and his associates have in their own way proved our theme about the deeper appeal of architecture. Says Abrams, Chandighar is economical but by Indian terms still costly. Yet "Punjabians need it for their pride, which was hurt deeply by the partition. And tourist traffic may easily recoup the extra cost." In other words, mankind will again show its thanks to those who enhance life with meaning and romance.

From Finland the smiling Alvar Aalto brought another yarn on the significance of this art. (He flashed through New York and Boston to show his charming bride the MIT dormitory.) He says Finlanders will "tip their hats at ten meters" to architects they recognize, and all because of a language difficulty. The Finnish language has eastern roots, won't translate readily into Western tongues, so Finnish poetry cannot be used to enhance the prestige of the country internationally, leaving the field to architecture and music. This quaint explanation doesn't tell how Finland (pop. 4.1 million) has come to supply architects Aalto, Saarinen pere et fils, composer Sibelius, all universal figures, in such rapid order.

Diplomatic architecture

Would that all US Congressmen knew what Finland knows and what Greece already knew when poets as well as athletes were sent to the Olympiads! Last year FORUM reported at length the efforts of Lee King of the Foreign Buildings Operation to let our embassies and other buildings abroad represent us as a leader in forward-looking free-spirited Western civilization. His reward was the well known treatment. He may have made tactical mistakes but this does not excuse junketeering Congressmen Bow, Coon and Preston (AF Mar. p. 45) for their incompetent architectural criticisms, praising feeble ugliness such as the embassy in Bangkok and rousing suspicion of the newer architecture because it is "international." They seem to be blithely ignorant that all architecture that is not censored has international characteristics in an age of free communication, as did indeed our vaunted US colonial, which was a local branch of international baroque. The only other country that shares our Congressmen's sullen insularity is Russia. Meanwhile the architects on the new advisory committee, Belluschi, Shepley, Walker, seem to be restoring sanity but the deeper consequence of the attack is that these architects are advisory only, and the active head of FBO is no longer an architect.

Educational architecture

More cheerful news within the USA: the AIA School Committee got convincing proof at the great Atlantic City school convention in February of the natural love of architecture of normal Americans. When word got around that the architects would talk architecture, an overflow audience of 700 schoolmen showed up, necessitating quickly improvised arrangements in larger space. John Lyon Reid sent our report. Eric Pawley of the Octagon prepared the way with a deftly worded paper on the workmanlike aspects of school planning. Reid in "undecorated" language spoke about a few design fundamentals. "Then Pawley, Cochran, Caudill, Reid, looking remarkably good on a stage set with daisies, daffodils, delphiniums, dahlias, dogwood and dogtooth violets, offered brief comment on a series of film slides projected by Alonzo Harriman." The mike was passed to whoever felt inspired to comment on the subject shown-schools by many architects in many places. The effect was spontaneous, "pleasantly chaotic," lively-says Reid, this sort of thing should obviously have been done long ago.

And finally a story from Brazil. Ben Thompson showed us a whole book of big clippings from the major papers there on the Matarazzo award recently given Walter Gropius. They don't have public relations as a separate profession, in the fine worthy way our Walter Megronigle pursues it, but they love our art.

Every normal person seems to love our art best when it stands on its own virtues, offering human understanding and brightening a bitter world. DH.



Award Winner Gropius (1) and Jurors Aalto Rogers, Reidy, Matarazo and Sert study San Paulo exhibit



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And — Lupton Architectural Projected Windows stay efficient. Their design and precision construction are the direct result of more than

ATTALITY (2)

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ΙΙΡΤ

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Aluminum curtain wall by WARE

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MAINTENANCE COSTS FOR THE

University of Arkansas Medical Center

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is fixed. From the sill to the base of the window an aluminum spandrel is installed in the window frame on the job.



ARCHITECTS: Erhart, Eichenbaum & Rauch Little Rock, Arkansas Edward D. Stone, Associate CONTRACTOR: W. R. Grimshaw Company Little Rock, Arkansas



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13/4" HEVI-DUTY ALL STEEL DOORS and FRAMES

020 50

51	A	N	D	A	R	D	0	P	E	N	N	G	S

STA	NDARD OF	PENING SIZES
width	height	frame
2'-0" 2'-2" 2'-4" 2'-6" 2'-8" 2'-10" 3'-0" 3'-2" 3'-4"	6'-8" or 7'-0"	Same except specify for wall thickness of 5" to 11¾4" and wet or dry masonry wall.

GLAZED DOOR

width	height	max. glass size	max. slat louvre unit size
2'-0" 2'-2"	6'-8" or	Width	Width
2'-4" 2'-6" 2'-8" 2'-10"	7′-0″	Door Width less 16 inches	Door Width less 16 inches
3'-0" 3'-2" 3'-4" 3'-6"		Height 48 inches	Height 64 inches

DOUBLE OPENING DOORS

STANDARD DOUBLE OPENING SIZES

width	height	frames
4'-0"	6'-8"	Same except specify
5'-0"	or	for wall thickness
6'-0"	7'-0"	of 5" to 113/4" and
7'-0"		wet or dry masonry
8'-0"		wall.

Inner Weld CONSTRUCTION MAKES THE DIFFERENCE

Here is the truest, most rigid and one of the best appearing door and frame combinations you can specify. The USF Hevi-Duty Steel Door features a triple-box construction that stiffens and holds rigid, and complete end-to-end internal welding. Every step of production is done on precision jigs and fixtures that guarantee absolute plumb and squareness—there can be no warp or sag. Since all welding is internal, no weld marks can scar exposed surfaces.

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should have this critical analysis on file. All the better-known roof types (flat, monitor, bowstring, doublepitch, high-low bay, saw tooth) are compared on the basis of weight of structural steel, volume, roofing material, area of vertical sash, flashing required, natural ventilation, and natural daylighting-both intensity and cost. The data involved was computed by an eminent professional engineer for the purpose of evaluating the true cost and comparative efficiency of each roof design. Write for your free copy of this book.

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A POCKET GUIDE FOR BETTER PUBLIC RELATIONS

continued from p. 147

vision can ruin an architect's professional 8. Suggest an architectural exhibition or lecstanding.)

When the building is ready for occupancy

- 1. Arrange to have good photographs taken, preferably by an architectural photographer. The better the photographs, the more likely that they will be used. If you are in a photograph, be sure you are doing something. A pretty girl in the picture always helps.
- *2. Invite the press to a preview of the building or to the dedication ceremony. Have kits available containing a press release or fact-sheet and photographs with captions, as described above.
- 3. Make every effort to insure that all published photographs and stories about the building include your name as architect: buse label or rubber stamp to the effect that the photograph is the property of the architect and may not be published unless he is credited as the architect;
 - copyright the photographs;

b obtain surest results by friendly personal contact with the press;

> explain the services of the architect and discuss your reasons for requesting credit for a building's design;

point out that the names of lawyers and real estate agents are mentioned freely; do not argue or threaten.

In your community

11

- 1. Seek leadership not only in the planning and building of your community, but also in the civic and social life of that community.
- 2. Join a community action group; raise a voice for community betterment.
- 3. Know and make friends with your lawmakers in Congress, state and community.
- 4. Draw attention to the leadership which architects enjoy in the construction industry and their contributions to society as a whole.
- 5. Make the public realize that the architect -as an individual and as an organized group-can be of great service to the community.
- 6. Cooperate as an individual or a group with civic bodies concerned with heighborhood and community planning,) urban redevelopment,

studies of traffic, housing, school and recreational needs,

- formulating and checking on building legislation (codes, zoning, etc.).
- 7. Analyze your community and draw up list of local "thought-leaders." Mail to this list reprints of magazine articles or speeches which help to explain the services of the architect. Attach a brief personal message and mark significant paragraphs for attention.

ture or panel discussion at a local museum, art association, women's club.

In cooperation with your AIA chapter

- Keep your Public Relations Chairman informed of your activities and of others that you know about. Let him decide what is news and how to handle it.
- 2. Offer general information on public problems and procedures - making Chapter members authorities on all community building subjects.
- Undertake projects and activities of public 3. service in order to fulfill the architects' responsibility to the community and to maintain their position as natural coordinators of the allied arts, professions and trades associated with construction. Such activities might be of the type noted in Item 6 of the previous section.
- Exhibit your work at chapter exhibitions 4 and do your part to make the show a success
- 5. Volunteer to speak or appear on panel discussions (women's clubs, chambers of commerce, churches, Rotary, etc.): buse visual aids (photographs, drawings,

models, slides, movies); be brief, specific, nontechnical;

do not be dogmatic, critical, rude;

have your speech mimeographed or printed and mail it to a select list of community leaders (as well as to the press).

Volunteer to appear on radio or television 6. programs:

b give the station an advance copy of your speech (FCC requirement);

keep sentences short and simple; avoid clichés:

> illustrate your facts; keep figures at a minimum:

converse, do not orate;

sive information, not propaganda.

- Volunteer for student counseling regarding architecture as a career.
- Volunteer for lectures within the profes-8. sion :

> to draftsmen studying for state examinations.

> to foreign students and professionals on American materials and methods,

to professionals on the subject of new materials and methods of construction.

- Call a press conference for any occasion of 9. sufficient importance (e.g. the arrival of an internationally famous architect, or the presentation of the Chapter's urban redevelopment program):
 - provide fact sheets and illustrations as described above;
 - have a public relations "host" to keep the conference friendly and rolling;
 - > avoid "off-the-record" comments the press has come for news, not an off-therecord lecture.
for these technical data books from H. H. Robertson's Q-Floor library

How to fireproof Robertson Q-Floor and Structural Steel



DESIGN & COST FACTORS

PRETREAT FLOOR

Write

This booklet is an exposition of fireproofing methods employed when Q-Floor is used in conjunction with structural steel framing in a multi-story building and must meet local building code requirements. It covers most problems likely to be encountered by the designer and contains charts of typical code requirements, fire resistance ratings, and framing and ceiling details, both basic and with all combinations of extras.

Design and cost factors

With the use of this book you will find you can readily compute the cost of all types of structural floors with integral electrical wiring systems and compare them with Q-Floor. The study is based upon a typical multi-story building and is replete with charts and cost studies of all components to enable you to accurately estimate for your own vicinity. A critical analysis of this nature should be included in every architectural and engineering library.



Concrete fill on Robertson Q-Floor

This is the first of a series of booklets giving recommended practices for sub-contractors working on Robertson Q-Floor jobs. It contains detailed specifications for formulation, placement and curing of the fill, together with well-documented treatises on the nature and reactions of concrete. You will find a section on shrinkage cracking and how to control it, well illustrated with authoritative graphs and charts.



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There's Only One Original <u>Synchro-Glide</u> Elevator Landing Control

- FASTEST FLOOR-TO-FLOOR TIME
- **SMOOTHER, SOFTER LANDINGS**
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YORKAIRE SYSTEMS of Air Conditioning are being installed in building after building, old and new, across the country.

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ECHANICAL

... Recent contracts include these famous buildings—Mile High Center, Denver; Netherland-Plaza Hotel, Cincinnati; Fulton National Bank, Atlanta; Equitable Life Assurance Society, San Francisco; Esso Standard Oil Company, Philadelphia. If you are not now enjoying this healthful comfort, perhaps you will, sooner than you think.



NCE

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COOLING

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Neatly integrated with tile and troffers in a suspended ceiling, KNO-DRAFT panel diffusers are not bound by the ducts above for placement.

NEW PRODUCTS

PANEL DIFFUSER with flexible connection goes anywhere in hung ceiling system

Thanks to its modular size and flexible connection, Connor's new air diffuser will fit into a suspended ceiling any place it is needed. The 1' x 4' pan housing the square outlet is merely rested on supporting channels flush with adjacent acoustical tile, and a flexible plastic and rubber hose attached to its neck and to overhead feeder ducts running within 10' of the diffuser. (Wire rings in the flexible





Again the experts choose Clow ... the pipe that <u>NEVER</u> needs be replaced!



ARMOUR PHARMACEUTICAL LABORATORIES, NEAR KANKAKEE, ILLINDIS. ARCHITECTS: HOLABIRD & ROOT & BURGEE. PLUMBING CONTRACTOR: M. J. CORBOY.

Clow (threaded) Cast Iron Pipe specified by architect and installed by plumbing contractor for Armour Laboratories

The beautiful, vitally important new Armour Laboratories are Clow-equipped throughout for all downspouts, vents, and waste lines 3 inches and over—and for good reason! Both architect and plumbing contractor know that Clow (threaded) Cast Iron Pipe will last the life of the buildings because of its time-proved corrosion-proof qualities. And they knew, too, that by specifying this Clow product, they would keep installation and yearly upkeep costs negligible.

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

Clow Cast Iron Pipe can



on the job, with ordinary tools of the piping trade.

WHOLESALERS OF PLUMBING AND HEATING SUPPLIES Publishers of the Clow Bulletin

tubing keep the interior diameter the same size whether the hose is stretched, compressed, or twisted.) Whenever office or plant layouts are changed, these panel diffusers can be lifted out and shifted to fit the new plans without relocating ductwork. As for engineering the air distribution, the design of the diffuser makes it virtually impossible to have an unbalanced system.' Built into the sleeve of each unit is a damper regulated by a simple turnscrew on the diffuser face. This controls the volume of air delivery but does not alter the air throw pattern. Available in 4", 5", and 6" neck sizes with capacities ranging from 75 to 175 cfm, the panel diffusers list at about \$26 per unit installed.

Manufacturer: Connor Engineering Corp., Danbury, Conn.



KNOCKDOWN DUCT FITTINGS snap together on the job

No bend, no fold, no hammer is necessary to construct trunk ducts, elbow joints or takeoffs with *Duc Pac* galvanized metal fittings. Factory formed interlocking seams make it



possible for a sheet metal man to assemble any manner of prescribed air conditioning ductwork quickly and effortlessly with these stock components. From the distributor's view, the knockdown fittings (shipped 12 to *continued on p. 190*











("E" Group) Now in "D" Color Group

Specify HAKO Asphalt Pastels in french green, tea rose, sea crest and canary when you want delicate light color decorative effects for a floor.







All are now in "C" color group

Parquetry, simulating hardwood parquet flooring in light oak, maple, walnut and natural gives hardwood floor beauty at asphalt tile economy.



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Seven colors reclassified down to "D" group

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• The Manufacturers Trust Company building at Fifth Avenue and Forty-Third Street in New York is a fine example of modern design. Architects: Skidmore, Owings & Merrill. General Contractors: George A. Fuller Company. Structural Engineers: Weiskopf & Pickworth.

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Ingalls, the nation's leading independent steel fabricator, supplied the steel for the handsome, modern Manufacturers Trust Company building in the heart of America's largest city. Thousands of commercial and industrial buildings, constructed during the past 44 years and located here and there about the country, are proof that Ingalls can meet any fabricated steel requirement, regardless of size or location. Plants in Pittsburgh, Birmingham, Pascagoula, Mississippi, and Decatur, Alabama, assure you of a service that's prompt, efficient and economical.



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FIRE-RESISTANT GOLD BOND GYPSUM ROOF DECKS!

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1 Gold Bond "Poured-In-Place" Gypsum Roof Decks give you exceptional strength, natural fire-resistance and are highly adaptable to specification requirements. Low

dead load allows lighter supporting steel structure. Other savings come from fast construction with quick-setting gypsum and low maintenance costs.

2 Versatility is a big reason for the popularity of gypsum roof deck systems. Gold Bond Formboards can be varied according to the specifications in order to achieve fire-

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3 The imbedded continuous wire mesh reinforces the contour-moulded gypsum core and effectively distributes live load. Installation is fast. Quick-setting action

allows full load capacity in less than 60 minutes. Will take any common form of roofing material...either hot, or nailed-on application.



4 Fire-resistance is poured into a Gold Bond Roof Deck System — the solid gypsum concrete core *can't* burn. You can specify this deck for any roof design—pitched, barrelled or flat. Installed only by expe-

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For complete details, call or write the Gold Bond Roof Deck Specialist at the following National Gypsum Sales Offices: Eastern Division: WALTER WIELGUS, Graybar Bldg., New York 17, N. Y. • Northern Division: LEO J. SHIELDS, Merchandise Mart, Chicago 54, III. Western Division: NEWMAN CASEY, 6119 Berkshire Lane, Dallas 5, Texas • Southern Division: W. KEMP HARRIS, JR., C&S Nat'l Bank Bldg., Atlanta 3, Ga.







Pace Associates tell why they specified LATH AND REINFORCED PLASTER FIRE-PROOFING

"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

*Job contracted Feb. 1952. Costs subject to change according to local conditions.

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.



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NEW PRODUCTS

a carton except for plenum and panning) take 1/10th the space required for preassembled fittings. Also, the packaging protects ducts during storage. List prices for a few of the 40-plus types run \$2.71 for a 14" x 8" offset starting collar to \$3.87 for a 24" x 8"; \$2.50 for a flat 90° elbow 4" x 8" to \$7.30 for a 24" x 8"; and \$2.46 for 4" x 8" trunk duct (2 piece, 3' long) to \$5.52 for 24" x 8". Manufacturer: Swett Bros., Duc Pac Div., 78 Island Pond Rd., Springfield, Mass.



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systems of control and operation including 'attendant-free operatorless service for use with any elevator design. Avail-able are gearless and geared electric and hydroelectric passenger and freight elevators, self-contained electrics and dumbwaiter equipment.

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For further information, consult MONTGOMERY ELEVATOR COMPANY, General Offices and Factory, Moline, Illinois.

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MONIGO



Shatterproof plastic that transmits glare-free daylight is used to mold these one-piece panes.



PLASTIC WINDOWS diffuse daylight, bathe in rain water

Stormproof and self-cleansing, these sturdy translucent window panes of polyester resin and glass fiber are the latest to join the procession of building products molded of reinforced plastic. Geometric planes and ribs formed directly in the sheeting break up daylight in pleasant patterns and add to the rigidity of the material. (Only 1/16" thick and weighing but 71/2 oz. per sq. ft., the panes are quite rugged: in an informal but impressive test, a 240 lb. man jumped on one without cracking or crazing it.)

For industrial and commercial buildings that require diffused light, these windows provide it for about 75¢ per sq. ft. Their real economy is in maintenance. Breakage is nil and, says the manufacturer, since the outside surfaces are convex, a good rain will do the work of a window washer. Two window types are being made: one, a square diamond pattern, comes in sizes up to 3' x 3'; and the other, a paneled rectangle, is made to fit standard casement frames. Also available is a 3' x 6' domed skylight. The windows can be used over existing glass as well as for glazing in new construction. Light coming through the facets creates interesting patterns which change as the sun moves-a phenomenon proffered by the firm as a psychological advantage to building occupants over flat translucent glazing which presents the same, timeless lighting effect all day long. Colors currently available: light and dark green, blue, and opalescent white.

Manufacturer: Molded Insulating Co., 335 E." Price St., Philadelphia, Pa.

continued on p. 196

MORE HORSES

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INDUSTRIAL OIL BURNER

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Petro follows fluctuating load demands with speed and reliability . . .

No matter how the steam demand fluctuates, Petro's modulated firing quickly and automatically meets the need. Never underfires or overfires ... and throttles down to a steady low-burning rate. But savings don't stop here. Petro industrial oil burners also are designed to use low-cost, heavy fuel oils with complete reliability. These heavy oils (Nos. 5 and 6) actually average 8% richer in heat value, yet cost less per gallon.

For economy, for performance, for troublefree service you just can't beat Petro firing. See the Petro section in Sweet's Architectural File, or write for catalog and specifications. Petro, **3013** West 106th Street, Cleveland 11, Ohio. In Canada: 2231 Bloor St. West, Toronto, Ontario.



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Rotary type. Burns low-cost heavy fuel oil with complete reliability. Capacities up to 200 gallons per hour. Combination oil-gas models also available, and complete forced draft packaged units.



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How 1,480,000

delivery men

helped make a

better door ...



Ceco offers hollow-metal doors with engineered hardware ... built to stand hard use

When Ceco engineers sought to make a better door, they went to the experts on "hard use" for ideas. They observed the wear and tear a door must take from 1,480,000 delivery men on the move . . . in a hurry . . . rushing in and out.

The result was four architect-wanted benefits, all incorporated in Ceco's new Hollow-Metal Doors:

1. Locksets that won't come loose-because doors are engineered for attaching special Yale hardware through reinforced tapped holes. 2. Hinges that hold tight-doors and frames reinforced.

3. Moldings that stay put-locked with drive-in pins.

4. Glazing beads that won't pop out—snugged with screws. Variations of hand, swing and hardware are supplied from basic stock units... high production cuts costs. Put these benefits to work in your next building. Write for catalog 1040-B.

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A half century of scientific progress in quality control has won universal respect for VIBRAPAC Block. The functional qualities of these Modern Masonry Units, plus their wide range of practical adaptability, have inspired the most advanced creative construction. Many years of research have paved the way for lightweight aggregate and perfected VIBRAPAC manufacturing processes. As a result, structural loads are reduced without sacrificing rugged, constructional security. Firesafety — stormsafety — insulation against heat and cold acoustical and soundproofing qualities — low initial cost — low upkeep. All these are added advantages. Yes, you'll be proud of the modern masonry miracles you can perform with VIBRAPAC Block.

> Ask for FREE copy of bulletin illustrating the complete line of standard modular building units available and giving technical guidance in their many structural uses. Contact your local VIBRA-PAC Block Plant or write direct to the Besser Manufacturing Company, Box 179, Alpena, Michigan, U. S. A.



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Some old-fashioned washrooms may be quaint, but very few are practical. Seems to us that washrooms ought to be as modern as the rest of a building.

It has been our concern for a long time now to help you in planning functional washrooms. For example, we offer a number of ScotTissue Towel fixtures – recessed and otherwise — that can make life a lot easier for everybody.

We've printed a full-color booklet showing what we've learned over the years about washroom design. Send for your copy on your company's letterhead today.

Write Scott Paper Company, Dept. AF-5, Chester, Pa.

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CENTRAL AIR CONDITIONER delivers heating, cooling or ventilating to eight zones at a time

A remarkably adaptable central plant air conditioner, the Flexazone is engineered for such structures as hospitals, hotels, theaters, and schools where different areas require varying degrees of cooling and heating. Not only is the new unit supplied in horizontal or vertical models with one to eight damper sections having capacities of 1,300 to 24,000 CMF, but adding to its flexibility of application, its



Fairless Works of United States Steel Corporation's plant at Morrisville, Pa., on the Delaware River, is the country's largest single steel con-struction project undertaken at one time. Waterproofing done by Lewis and McDowell, Inc., New York City.



Save money with Karnak Karnak Fabric is packed in sturdy corrugated cartons for protected shipping and storage. It is non-stick-ing, unrolls easily to the very end... "works" faster, with no waste. Rolls are available in 4", 6", 9", 12", 18", 24", 30", 36" widths...or special sizes to fit your requirements.

When permanent waterproofing was wanted on the foundation of U. S. Steel's new "Fairless Works." Karnak was chosen by the contractor. The world's most modern steel mill called for the best in all materials. That's why 750,000 yards of Karnak were used to protect against water, wherever there was a hydrostatic head.

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The secret to the extreme water resistance is the Karnak Membrane Fabric. Open Mesh Cloth, specially woven of long-fiber cotton is carefully saturated with highly refined asphalt so as to leave the mesh open. When this fabric is layered on the job with alternate moppings of liquid asphalt, it provides a tough, thoroughly waterproof membrane that resists cracks, abrasion and settling to maintain water resistance through the life of the structure.

The Karnak system is also the best for roof patching, skylight flashing, window and door flashing, throughwall and cornice flashing, as well as waterproofing against a hydrostatic head in dams, swimming pools, viaducts and tunnels... Lewis Asphalt Engineering Corp., 30 Church St., New York 7, N. Y.

Inint Filler



OTHER KARNAK PRODUCTS Asphalt Emulsions Aluminum Roof Coating Tile Cement Wood Block Mastic Asphalt Paint



three major parts-blower, coil, and damper -can be field-assembled 24 different ways depending on space available. Also, the unique damper arrangement makes it possible to add or change zones at any time in the field, and the conditioner can be obtained with either horizontal or 45° air flow to fit space limitations. In operation, incoming air is blown past the heating and/or cooling coils and discharged through the individual dampers in separate air streams of varying temperature called for by the zoned thermostatic controls. Other features claimed for Flexazone: steel panels galvanized for corrosion resistance, vinyl-coated glass fiber insulation for efficient sound absorption, automatic pressure-relief grease fittings that prevent over-lubrication of bearings. For easy service and maintenance, all damper controls are mounted on a shelf outside the unit, and large rubber-sealed access doors are located on each end. Price, not installed, for the 30-ton unit is around \$1,750.

Manufacturer: Drayer Hanson, Inc., 3301 Medford St., Los Angeles 63, Calif.



SLOTTED VANE RUNNERS for ductwork cut installation time

Eliminating punching, notching, riveting, and spotwelding, these packaged vane runners with slotted knobs reduce some of the fancy sheetmetal work usually required in installing ducts for air conditioning. No special chisels or tools are necessary: blades for the runners are cut raw from scrap, the vanes are locked in place in a few seconds with shears or a hammer, and the assembled unit quickly fitted and fastened with screws into a square elbow for a rigid, rattleproof job. The runners, made of 24 ga. galvanized steel, are shipped in 8' lengths, 20 strips to a bundle. Price to the trade: \$32 per package F.o.b. Long Island City.

Manufacturer: Elgen Mfg. Corp., 41-34 39th St., Long Island City 4, N. Y.

continued on p. 202



NEW COMFORT FOR EMPLOYEES through year-'round air conditioning is enjoyed in the Alcoa Building. Architects Harrison and Abramovitz chose a Worthington system for maximum performance. Installation by Dravo Corporation, Pittsburgh. Engineers: Jaros; Baum & Boles, New York. Assoc. Architects: Mitchell & Ritchey and Altenhof & Bown, Pittsburgh.



WORK-SPEEDING METHODS, such as this new way of crimping aluminum ceiling panels to water-circulating aluminum tubing resulted in fast completion.

New idea in air conditioning adds 1½ floors of rentable space to aluminum building

Displaying aluminum exterior walls and featuring aluminum throughout, Pittsburgh's new Alcoa Building sets a high point in advanced construction methods and materials. And it is fitting that the heating and cooling requirements are met by the first system of its kind in the country.

Crimped to perforated aluminum ceiling panels, a grid of aluminum tubing circulates hot or cool water for winter or summer. Chilled water in this panel cooling system meets half of the summer's air conditioning needs. For the balance of the cooling and for all dehumidification, primary air fans in three locations service local mixing units on each floor. Chilled water for both systems is supplied by two Worthington 625-ton centrifugal refrigerating units — each unit consisting of a compressor, condenser and water chiller. And because this new air conditioning system eliminates radiators and their extensive piping, the building's rentable area is increased by the equivalent of one and one-half floors.

For over half a century, Worthington air conditioning installations have been serving business and industry. Today, the complete Worthington line can meet any assignment, large or small. So when you think of air conditioning — think of Worthington. Get in touch with your nearest Worthington district office or write to Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.4.32, Harrison, New Jersey.



WORTHINGTON'S DESIGN for these two 625-ton centrifugal refrigerating units called for special finned aluminum tubes for condensers and coolers.



CLIMATE ENGINEERS TO INDUSTRY, BUSINESS AND THE HOME



When there's not a second to lose . . . only the

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Specify The "OVERHEAD DOOR" for any institution, any factory or shop or home, and assure your client the best in the field. By all standards, The "OVERHEAD DOOR" rates first: in design, quality, ease of operation, dependability, long life.

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Don't plan a doctor's home without including The "OVERHEAD DOOR" with Miracle Control (electronically operated) for his garage! Door opens at touch of dash button; lights come on automatically. A wonderful time-andlabor-saver for nightworking M.D.'s-very modest in cost too!

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for RIXSON

floor type closers

When selector lever is set at spindle, automatic hold-open will function.

The selector lever places the automatic hold-open in contact position so that it engages and holds the door whenever it is opened to the degree at which the boldopen is set. The door is released by a firm pull.

REFRICT F

When selector lever is away from spindle, device functions only as door closer.

When the selector lever is swung away from the spindle, the automatic hold-open is disengaged. When the lever is in this position the device functions only as a door closer.

SELECTIVE means you have a hold-open only when you need it.

The new RIXSON floor type closers with *built-in selective bold-open* gives you complete door control to suit varying conditions. They are ideal on entrance doors where heavy crowds pass through on occasions...such as dismissal time or after a show or lecture. At these times the selector lever is set for hold-open. The door is swung open and holds. The crowds will move through much faster, and wear and tear on the door and jamb will be avoided. The hold-open is also practical for use in keeping doors open in summer weather. At such times when only a normal flow of people pass through the doors, the automatic hold-open can be disengaged and the RIXSON closer will serve only to bring the door to a quiet, gentle close after each opening.

The selector lever does not hold the door open... it merely places the automatic hold-open mechanism in contact position so that it engages and holds the door, whenever it is opened to the degree at which the hold-open is set. Degree of hold-open predetermined and factory set.

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TOPS IN TOPLIGHTING



585 WASCOLITE SKYDOMES toplight the Master Operations Building of the new U.S. Army Signal Corps depot at Tobyhanna (Pa.). According to the Architects/Engineers, Gilboy & O'Malley, Philadelphia: "The size—680,000 sq. feet — and shape of this building were dictated by functional requirements. Because daylighting from exterior walls would not reach interior areas, we needed toplighting units that would provide maximum light transmission. Ease of installation was especially important in order to expedite construction Maintenance, exterior cleaning and painting, and condensation control were other factors. Wascolite Skydomes met all these requirements.''



PREFABRICATED SKYDOMES can be installed easily in a few minutes. Shatterproof dome is set between extruded aluminum frames. Built-in weepage arrangement provides complete condensation control.



LATEX COVERING protects Skydomes from scuffing or scarring in shipment and installation. Skydomes are available in Clear Colorless or White Translucent acrylic plastic, in three basic shapes and a variety of sizes.

Wasco offers architects a complete Daylight Engineering Service. Just send floor plan and elevation of project and lighting requirements. No obligation. CREDITS: Gilboy and O'Malley, Architects/Engineers; Alfred Clauss, architect partner; Merritt-Chapman & Scott Corp., contractors; Columbia Cornice Company, roofing contractor.





NEW PRODUCTS

RUGGED STORE DISPLAYS screw-driver assembled from channels, brackets

With a few twists of a screwdriver, shelf brackets and merchandise fittings are securely locked at any height along the metal channel uprights in the *Vizusell* fixture system. Three types of brackets—light, regular, and heavy duty—providing 4 to 26" support for glass or wood shelves, open and closed channels (single for wall attachment, back-to-back doubles



for islands) in lengths up to 7', and a full line of fittings for all conceivable kinds of stock (and a few that stretch the imagination) comprise the line. All come in chrome or sil-





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Using standard or slimline lamps

A VERSATILE DIRECT-INDIRECT LUMINAIRE FOR INDIVIDUAL OR END-TO-END PENDANT MOUNTING

The 2-lamp Arthur, with its direct-indirect component is designed specifically for pendant mounting. Sloping ends, plus trim, shallow lines and all white finish give the unit a particularly light and graceful appearance.

Diffusing polystyrene side panels and 35° x 35° louver shielding result in an eye-comforting brightness pattern. When lighted, the Arthur blends harmoniously into the ceiling.

Open chassis construction makes the unit easy to install; all metal parts are die formed; 8-foot units require hangers only on the ends. Side panels slip into position; hinged louver opens or removes quickly. Unit is wired complete, ready to install, less lamps.

WRITE FOR BULLETIN NA It details complete specifications and engineering data for the Arthur.



k 15% +%1

ver finish. Nicely crafted, the components are nonetheless rugged and can be used for heavyduty storage and stockroom needs. *Vizusell* flexible display equipment is adaptable to existing walls, counters and tables as well as raw construction. Once assembled, *Vizusell* set-ups can be altered easily to accommodate new or seasonal merchandise.

Manufacturer: L. A. Darling, Co., Bronson, Mich.

ALUMINUM SAFETY TREADS fit all standard stairways, old and new

Designed to meet requirements of insurance underwriters, the Stairmaster provides an easy method of repairing worn stairs as well as preserving new ones. The 9"-deep safety tread is made with a lightweight extruded aluminum alloy base and has metal ribs (said to be so tough they cannot be cut with a metal saw) firmly embedded in black abrasive antislip material. It can be applied to all types of stairs-wood, concrete, slate or marble. For renovating work, the old stair is leveled with mastic and the Stairmaster secured in place with screws. Its 11/8" nosing covers and protects the tread face. No cutting is done on the job since the units may be ordered in any length.

Manufacturer: Wooster Products, Inc., Dept. S., Wooster, Ohio.



continued on p. 208



SEE THE DIFFERENCE: These surprising before-and-after pictures show the crisp new look that can be given to masonry walls in a matter of a few hours... for a matter of a few dollars. Flush vertical joints and tooled horizontal joints give the effect shown.

Here's a NEW EXPRESSION for masonry faces

Today's architects are transforming concrete block and other masonry walls to surfaces as handsome as they are durable. With the application of a cement paint even the roughest-textured blocks take on a smooth, clean surface that will resist moisture, dirt and dust in any climate.

The paint forms a permanent bond with the wall —becomes an integral part of it. Economical cement paint is easy to apply to concrete or masonry. On a dampened surface the paint is simply brushed on first over joints—then over the entire wall.

Color selection is complete. The true white of Atlas White gives full value to the delicate tones of pigment colors.

Cement paint and stucco manufacturers recog-

nize the uniform and true whiteness of Atlas White. That's why they specify it in their superior products. Whether you use a convenient easy-to-use factoryprepared mix or job-mix your own paint, be sure it's made with Atlas White Cement.

For further information see SWEET'S Catalog, sections 4E/7a and 13C/5, or write to Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



CONCRETE BLOCK partially covered with cement paint. Note how voids are filled and the rough texture smoothed to form a bright, clean surface.

Cement paint used on job above was made by Penn Crete Products Co., Philadelphia, Pa.



UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.

A SIZE FOR EVERY OPENING!



A TYPE FOR EVERY NEED!



Curved FOLDOORS are often used to follow the architectural contours of a room. A smart installation, it folds neatly into a graceful curve and operates just as smoothly on a curved track as on a straight one.



The FOLDOOR Glide Switch allows graceful and versatile use of the door as well as out-of-the-way storage. Designed exclusively for curved track and recessedtype construction. Safety bar stops door from slipping off.



The FOLDOOR **Pivot Switch** permits door to be switched to a wall stacking position. Provides unusual flexibility of room arrangement and convenient storage of door. Safety features prevent door from leaving track.



Cloth-Textured vinyl-coated fabrics are a FolDoor exclusive! Developed to meet today's trend toward subdued colors, they combine the softness and hang of draperies with the washability and strength of plastic coverings.



FOLDOOR'S Four-Way arrangement divides a large room into four smaller ones. Use of floating post permits any combination of the four doors. A crossover switch enables space to be divided into two or three rooms rather than four.



A Three-Way FOLDOOR installation is primarily used to break a room into $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{4}$. This application allows many different divisions of a room to accommodate groups that fluctuate in size. Ideal for church, school or funeral home.

THE NEW LEADER IN



HOLCOMB & HOKE MFG. CO., INC. 1545 Van Buren Street • Indianapolis, Indiana IN CANADA: FOLDOOR of Canada, Montreal 26



Washrooms of another notable building arrara ass finished in

• Through their consistent specification of Carrara Structural Glass, leading American architects have proved it to be a preferred material for walls, stiles and partitions in the washrooms of important buildings. And the reasons behind this preference are many.

Carrara Structural Glass is outstanding for quality. Every piece is mechanically ground and polished. It permits joints that are true and even, without lippage or warpage.

The beautiful, gleaming finish of Carrara Glass is permanent. It won't check, craze, stain or fade. Its smooth, homogeneous surface is unaffected by moisture, soap, damp atmospheres and pencil marks. It won't absorb odors.

Carrara Glass is sanitary ... and easy to keep clean. It is installed in large sections with fewer joints and crevices to catch dirt and dust.

And Carrara is versatile. Available in ten glowing colors, Carrara Structural Glass lends itself perfectly to an unlimited variety of architectural applications.

For more information on this distinctive material, write Pittsburgh Plate Glass Company, Dept. 4206.



When you specify KENTILE asphalt tile you cut installation labor costs

KENTILE is cut to exacting tolerances by precision dies maintained at peak efficiency. The resultant *straight* edges and *true* corners mean faster, easier, more economical installation...far more accurate alignment. Further, Kentile seats faster...can be walked on without delay.

Every stage of manufacture is regulated by

quality-control checks and tests...to assure that only perfect tiles are shipped. Modern packaging machinery and methods cut down breakage in the carton...reduce costly on-the-job wastage. For full details, consult the Kentile Flooring Contractor. He's listed under FLOORS in your Classified Telephone Directory.



The SPECIAL KENTILE, shown here in a machine shop, resists the floor-destroying action of petroleum greases and oils...cleans quickly, easily and economically...can be installed over any floor in a minimum of time...and with a minimum of labor expense. SPECIAL KENTILE, like regular Kentile, can be installed below grade over concrete in contact with the earth.

Samples and Technical Literature available to architects, builders and designers on request. Write the Kentile, Inc. office listed below stating the samples and information desired. And, be sure to request samples of Theme-Tile die-cut inserts, colorful Feature Strip and KenBase, a cove wall base.



KENFLEX

Kentile is the floor your clients know and want... BACKED BY MORE FULL-COLOR ADVERTISING THAN ANY OTHER ASPHALT TILE FLOOR

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Specifications and Technical Data

A.I.A.23-6

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 size is 9" x 9".

SPECIAL KENTILE: Greaseproof asphalt tile for industrial use in a wide range of marbleized colors—extremely resistant to petroleum and cooking greases and oils, alcohols, alkalis and most acid solutions.

APPROXIMATE INSTALLED PRICES (per sq. ff.)

	1/8" Gauge	3/16" Gauge
KENTILE: A Colors	20¢	25¢
KENTILE: B Colors	25¢	30¢
KENTILE: C Colors	30¢	40¢
KENTILE: D Colors	35¢	40¢
SPECIAL KENTILE	40¢	50¢

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.



ABOVE—new general offices of the DORMEYER CORP., Chicago. DORMEYER CORP., Chicago. This space was formerly an old loft cluttered with beams, pipes, ducts, and sprinklers. Now all these are hidden by the Acusti-Luminus Ceiling. ARCHITECT: Victor L. Charn, Ragnar Benson, Inc., Engineers and Builders, Chicago.

INSTALLED BY LEADING FIRMS COAST TO COAST!

Here are a few of over 2800 installations in 37 states—in factories, offices, drafting rooms, critical work areas, stores, banks, schools, libraries, utilities, and public buildings:

uildings: American Airlines, Inc. American Broadcasting Co. American Cyanamid Co. Boston Edison Co. Chattanooga Power Co. CBS (Television City) Consolidated Vultee Aircraft Corp. John Deere Co. Douglas Aircraft Co., Inc. Filene's of Boston General Motors Corp. National Broadcasting Co. Republic Aviation Corp. Trans World Airlines, Inc. Union Carbide and Carbon Corp. Zellerbach Paper Company

give you low-cost control of light, sound, and air flow!

You solve three problems when you specify modern Acusti-Luminus Ceilings-

1. EVENLY DIFFUSED LIGHT! Actually superior to daylight! No shadow! No glare! This uniform diffusion is achieved by suspending lightweight corrugated sheets of Lumi-Plastic below fluorescent lights. The result is a solid "ceiling of light"-low in brightness-of any intensity la

2. EXCELLENT SOUNDPROOFING! Acoustical correction is provided by noiseabsorbing Acusti-Louvers which may be hung at intervals below the Lumi-Plastic. These fins also louver out the view of the ceiling.

3. LOW VELOCITY AIR FLOW! The plenum above the Acusti-Luminus Ceiling may serve as an air supply source for both heating and air conditioning. Provides extremely

low velocity distribution of conditioned airthrough 1/8-inch air spaces-without the use of grilles or diffusers.

Install UNDER sprinklers! Labeled by Underwriters' Laboratories for installation under sprinkler systems-with no change in fire insurance rates. In event of fire, the plastic (which does not support combustion) softens and falls to the floor so sprinklers function normally.

Does so much-costs so little! Both initial cost and maintenance costs are less than for conventional ceilings with the same illumination and sound correction.

For remodeling or new jobs! In old buildings, it hides pipes, cracks, ducts, and other eye-sores. In new construction, it offers unlimited design possibilities. For more information, mail coupon below.



NEW PRODUCTS

METAL ACOUSTICAL TILE funnels sound to blanket above

Coated with durable terne metal (tin and lead) as well as a baked-on facing, *Ternecoustic* tile are efficient noise abaters. Each of the 529 recessed perforations on every panel is actually a tiny funnel which directs sound to the insulation pad above. Round-edged, these orifices do not scrape water from sponge or cloth during cleaning, and form small dams



Perforations on this acoustical tile are miniature funnels (see diagram) that direct sound to an absorbent insulating pad above.



on the inside to prevent dirty water from backing up. Cost runs 30ϕ per sq. ft. for tile, pad, and the easily assembled *Tach-Fast* suspension system. Labor to install the complete system runs about 25ϕ to 35ϕ per sq. ft. Finished ceilings have a sound absorption of .92 at 500 cycles and a noise reduction coefficient of .90. Light reflectivity is .79. *Ternecoustic* panels can be painted countless times without imparing their acoustical rating.

Manufacturer: Tach-Fast Mfg. Co., Lonaconing, Md.

FABRIC WALL COVERINGS have sound-absorbent cushioned backings

These deceptively casual fabric swatches pack a hidden punch. Laminated to the backs of the textured cloths are layers of either foam rubber, sponge rubber or felt. Used as wall covering, the attractive fabrics double as acoustical treatment. For application, they are either tacked over wood frames in panels or adhered to the existing surface with a paste supplied by the manufacturer. The cushioned backing, besides acting as a sound absorber,



also makes it possible to use the loosely woven fabrics as tack-up bulletin boards. Prices are \$3.18 per yd. for the basketweave (36" wide) with foam rubber, \$3.02 for pettipoint (33" wide) with sponge rubber and \$2.25 for jute (36") with felt backing. '(No technical tests have been made as yet to determine the exact sound absorption value of the three materials.) Any combination of the backing and cloth may be obtained in a wide range of excellent colors.

Manufacturer: B. F. Ruskin & Co., 1410 Wood Rd., New York 62, N.Y.

PREFAB STEEL BUILDING spans 40' eave to eave

A new rigid frame steel structure planned for commercial, factory and farm uses has a full 14' clearance to the eaves and spans 40' without central columns. It comes in 20' bay lengths which may be joined in multiples end to end or side to side for structures of almost any size. Shipped knocked down, the components need no drilling, riveting or welding in the field. A patented clip and wedge device *continued on p. 218*

THE MAGAZINE OF BUILDING



"A salute to those who made it possible" 💥

St. Mary's Parish School, Hammond, Ind. Architect: Bachman & Bertram, Hammond. Contractor: Swenson-Carlson Bldrs., Inc., East Chicago, Ind.

Noise disappears inside this ceiling!

There are no acoustical gimmicks stuck on this ceiling. Nothing that has to be applied to its surface by expensive tradesmen. Nothing that can come loose and fall down. Here the ceiling itself is the silencer. It is formed of remarkable acousticalstructural, long-span Fenestra* Building Panels.

This single compact package is beautifully finished structural ceiling, non-combustible acoustical treatment and acts as a joist system support for finished roofing. And, if your building has a second story, your Fenestra ceiling forms a strong, solid subfloor for rooms above. You can see the econ-

Your need for a maintenance-free, non-combustible, builtin acoustical treatment encouraged us to develop Fenestra Structural-Acoustical Building Panels—a great advance-ment in building products.

omy of using versatile Fenestra Building Panels. Fenestra Acoustical Panel is a strong metal box beam (or beams) with a strong, structural top surface, a flat, perforated bottom surface and glass fiber insulation in the space between. These panels are made exclusively by Fenestra (Detroit Steel Prod-

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best-known producers of metal building products. For full details call your Fenestra Representative listed in the phone book yellow pages, or write, Detroit Steel Products Company, Dept. AF-4, 2296 E. Grand Blvd., Detroit 11, Michigan. *Trademark

ucts Company)-one of America's largest and



New Acoustical Structural

D" Panels. Width 24" Depth 11/2" to 71/2".

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"Paid for itself in just two jobs." Reports like this keep coming in from sheetmetal men about the Remington Stud Driver. They're setting up to 5 studs a minute in concrete and steel with this amazing powder-actuated tool. Savings run as high as 80%, compared to conventional fastening methods!

Economy like this gives the contractor a definite advantage. He can bid lower, be more competitive. And he can tackle almost any fastening job. Completely self-powered, the Stud Driver requires no outside source of power—no troublesome wires or cables. Its light weight and compact size bring every job within easy reach.

It will pay you to get all the facts about the Remington Stud Driver. It's been test-proved to be the world's speediest fastening system and can help you get the job—do the job—faster and easier than ever before. Just send in the coupon for complete information.

QUESTIONS YOU ARE ASKING

QUESTION:

What caliber cartridge powers the Stud Driver?

ANSWER:

Six 32-caliber power loads are available. Colored heel caps make it easy to select the best power load for each job.



These free-standing J-M Movable Walls permit maximum use of space. They create efficient offices that can quickly and easily be rearranged to suit the needs of changing space requirements.

For the busy office that needs a change of space

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

YOU can rearrange your present space or have new space partitioned off quickly and economically with Johns-Manville Asbestos Movable Walls. Made of asbestos, they resist fire, rot and wear.

These flush-type, attractive panels have a clean, smooth surface that's hard to mar, easy to maintain . . . and extra strong to withstand shock and abuse. Also, they are light in weight, easy to install and relocate. The "dry wall" method of erection assures little or no interruption to regular routine.

Johns-Manville Asbestos Movable Walls may be used as ceilinghigh or free-standing partitions. The complete wall, including doors, glazing and hardware, is installed by Johns-Manville's own construction men under the strict supervision of trained J-M engineers . . . responsibility is undivided.

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



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BEAUTY – The stainless steel outer shell provides attractive appearance.

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STRENGTH - The carbon steel insert supplies the "backbone."

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Using stainless steel lock seam tubing for the outer shell and inserting open seam carbon steel tubing provides the special advantages of solid metals at considerably less cost.

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CLEAN, SIMPLE STYLING-NO FRILLS-NO PROJECTING PARTS

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> 50 STANDARD SIZES: All designs and sizes popularly specified for residential, commercial and monumental buildings supplied promptly. Standard windows up to six-foot height are available. Write for information on special sizes.

 PETERSON SETS THE PACE in the trend to aluminum windows. Peterson styling, advanced engineering and horizontal-slide operation are, without equal. Thousands of installations coast to coast.

Write for Literature and Name of Nearest Dealer

Inquiries From Interested Dealers Are Invited




Diesel engine shed, St. Louis Southwestern R.R. Co., Pine Bluff, Ark. Roof and sides of "Century" Asbestos Corrugated. Erection Contractor: Mound City Erection Co., St. Louis, Mo.

This new diesel engine shed will serve the Cotton Belt Railway for many, many years —through all kinds of weather with little or no maintenance ever required. Such service is to be expected of "Century" asbestos corrugated !

This lifetime roofing and siding is made from asbestos fiber and portland cement, and so combines the advantages of both materials. It is strong, dense, and tough; will not burn, rot, or corrode; is maintenance-free, and *never* needs protective paint. It is easy to handle, cut, and erect, too.

Best of all, "Century" asbestos corrugated is one of the most economical materials you can use—low in application cost, low in maintenance expense!

Wherever durability, maintenance-free service, and economy are important factors, recommend "Century" asbestos corrugated. For detailed information, consult Sweet's Architectural File, or write directly to us.



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How <u>CRANE</u> helps you plan kitchens



The focal point of most any kitchen is the sink. And this Crane Sunnyday sink is as beautiful as it is practical. Comes in eight colors. One of many new Crane sinks covering a wide price range.

Crane offers you the most modern fixtures for both kitchens and bathrooms. In fact, the wide choice of Crane styles, sizes, colors, and prices gives you equipment to match the needs of any plan...any budget. And, of course, the fact that most people prefer Crane means that, whenever you specify it, your clients will appreciate your giving them the best!



Here you see the beveled "control panel" of a Crane Sunnyday sink. It reflects the built-in quality and distinctive styling of all Crane kitchen equipment. And, as you know, Crane offers one of the most complete selections of kitchen equipment in the business.

From colored sinks to gleaming cabinets... from ranges to dishwashers... from ventilating fans to garbage disposers, Crane gives you matched kitchen equipment to solve any planning problem. For further information, see your Crane Architects' Catalog...or call your nearby Crane Branch or Crane Wholesaler.



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LOWEST COST ... Resolite skylights and sidewall lights are installed at half the cost of conventional glazing. Resolite nests with all standard corrugations; requires no framing or flashing. It rests on the same members and can This modern plant was daylighted with be installed in conjunction with any a continuous strip of Resolite along the corrugated material. Sidewall lights in walls. Notice the Reso-lite-vents* non-corrugated construction need no sash, angle girts give full support. Resolite can be sawed, nailed, bolted and installed with ordinary tools by any workman ... no special skills or training needed.

Flat sheets for sash are factory-cut to size. They are installed like glass.

proof, structurally rugged, inert to usual industrial fumes, Resolite has unlimited life without protective treatment or maintenance. There are no rusting sash or broken panes to replace.

BETTER LIGHT . . . Buildings daylighted with Resolite are filled with bright, evenly distributed sunlight ... diffused light that prevents glare. Resolite daylighting floods the auditori-Resolite gives workers greater visual um-gymnasium of this contemporary comfort, cuts artificial lighting costs. school with diffused light.





MAINTENANCE FREE . . . Shatter- Resolite panels add beauty and utility to the partitions in this new bank building.



FULL LINE OF ACCESSORIES . . . Resolite distributors stock a complete line of accessories - including moldings, closure strips, mastic and fasteners - for easy, trouble-free installations. Pre-cut and pre-drilled metal moldings of all types are available on order. *Reso-lite-vents, packaged Resolite vented units designed for easy installation with sheeting or continuous Resolite sidewalls, are available in many sizes.

Resolite's translucency, beauty and shatterproof safety make it ideal for all types of partitions and decorative facings. In fact, wherever a combination of light, strength and beauty is desired Resolite is the answer. So send in the coupon below for complete Resolite information and samples.

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Please send me, without obligation, complete Resolite information and samples. I am particularly interested in Resolite for: Industrial Daylighting Dertitioning

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A HIGHER STANDARD BEAUTY and QUALITY





SCHACHT FULITE Available in stainless steel or bronze.

> see our catalog in ARCHITECTURAL FILE or write for copy

TWINSTILE **Stainless Steel** GLASS DOORS

No wonder TWINSTILE sets the pace in beauty and quality-for in TWINSTILE, beauty and quality are one. Fully welded of heavy gauge stainless steel only, TWIN-STILE beauty and quality go through and through.

Available with or without concealed Panic Bolt. Panic Bolt is part of the door and is stainless steel throughout.



SCHACHT ASSOCIATES, Inc. 1175 EAST 156th STREET NEW YORK 59, N. Y.



NEW PRODUCTS



No center supports are necessary in this factory cut rigid-frame building. In 960 manhours, a 40' x 120' structure can be assembled. Clips are used to attach rigid insulation board.

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PERMANENT CAST IRON SEWER AND WASTE LINES

Home buyers are becoming more particular. They now are looking for such hidden values as the unseen pipe lines used for waste and sewage from a plumbing system. The magic word here is "Cast Iron Soil Pipe," because more and more people know that cast iron remains in perfect working order as long as the structure stands.

For the contractor, cast iron soil pipe for house sewers is easy to use. No tricky trenching required. Lay in loam, sand, gravel or any kind of soil, 1 ft. deep or ten. No need to "sculpture" a trench to fit the pipe. Cast Iron Soil Pipe is mechanically strong, joints tight, walls non-absorbent. No clogging and damage by tree roots seeking moisture. Cast Iron is the only pipe approved by ALL building codes.

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Woodward Iron Company does not manufacture pipe, but we supply leading Cast Iron Pipe foundries with high grade foundry pig iron from which pipe is made.

WOODWARD IRON COMPANY WOODWARD, ALABAMA for attaching the metal siding not only speeds erection but also eliminates the need for any weather-tempting holes being punched through the sheets. Where an insulated structure is required, a special lap-over clip is available for fastening rigid 2" hardboard insulation to roof or side walls. The clip allows for the supplementary insulation—and protection



against vapor—of an air space between outside sheeting and inside board. Box corrugations on the galvanized 24 ga. steel siding are 4" o.c. and 1" deep. Pairs of doors 20' wide and 14' high can be placed in any of the side bays or in either end of the structure. Access doors 3' x 7' are also available as well as stock windows. Skylighting can be provided with plastic sheeting formed to match the convolutions of the metal. Price F.o.b. plant for a 40' x 120' structure is around \$7,392—or 11¢ per cu. ft. (figured to the 14' eaves only). It would take about 960 man-hours to assemble the building on the site—or 160 hours per 20' hay.

Manufacturer: United Steel Fabricators, Inc., Wooster, Ohio.

STEEL GARAGE DOORS assembled of sagproof sections adjust snug against uneven floors

Made of roll-formed steel panels, the new line of sectional overhead *Roly Doors* open up and roll safely out of the way, completely





inside the building. They cannot get out of line. Each section, ribbed horizontally for rigidity, is welded and additional bracing at key points prevents sagging or buckling. Yet, *continued on p. 224* shipping doors openfolding walls stop heat loss Extensive heat loss through wide-open shipping room doors with resultant worker discomfort and reduced efficiency was a costly problem at this Indiana plant. Separating shipping area from working area with Modernfold doors solved the problem neatly...raised worker efficiency and cut "loss" time by maintaining temperatures when shipping room doors were open. The Modernfold wall folds back, extending the work area and allowing an unrestricted material flow line when loading is completed.





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For heavy-duty use-anywhere-specify extra-durable Modernfold doors. Only Modernfold gives you:

★ Sturdy *centerline design*—same number, same type of balanced pantograph hinges, both top and bottom —for maximum strength.

★ Two—not just one—vertical steel rods to each hinge section for maximum rigidity.

★ Trolleys at hinge intersection along the centerline—for smoother, torque-free operation.

Get full details from your Modernfold distributor (under "doors" in city classified directories) or write New Castle Products, Inc., P. O. Box 902, New Castle, Indiana.

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HIGH SCORES... on factory and on-job tests guarantee greatest return from boiler investment

When test pilots give the familiar "O.K." — that's the sign of proven performance. It's the same with boilers in the Cleaver-Brooks plant. Only after accurate, thorough inspection and testing under actual operating conditions do boilers get the final "O.K." from experienced test engineers. That's why you get guaranteed 80% efficiency from your Cleaver-Brooks boiler when firing with oil.

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So, when you buy a boiler, insist on factory tests as well as field service tests by qualified engineers.

There is no better way of insuring yourself of the very best value money can buy and the greatest return from your boiler

Available for oil, gas and combination oil/gas firing. investment. Look to Cleaver-Brooks, the leader in the "Packaged" Boiler field for two decades. Write today for latest Catalog AD-100.

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BOILERS - STEAM OR HOT WATER - FOR HEATING AND PROCESSING IN SIZES FROM 15 TO 500 HP, 15 TO 250 PSI

Another distinguished building air conditioned by the Carrier Conduit Weathermaster System



The City National Bank Building, Houston

What comfort has Houston in common with cities like New York, Washington and Dallas? The Conduit Weathermaster* System serves their finest buildings. This air conditioning, perfected by years of unmatched experience, permits the occupants of each room to dial their own climate. Operation is quiet; there are no moving parts within the room. Maintenance is simplified; all operating equipment is centralized. And installation requires a minimum of space. Carrier Corporation, Syracuse, New York.

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Build Type I Buildings at Moderate Cost with Precast Concrete Structural Units

Substantial reduction in construction costs of Type I buildings can be made by using a combination of concrete tilt-up walls and precast concrete structural members.

This fact was demonstrated in a 65 x 120 ft. two-story office building erected for the Mutual Credit Bureau of Los Angeles.

Four types of precast concrete units were used: (1) two-storyhigh interior columns, (2) girders to carry second floor and roof joists, (3) floor and roof joists, (4) exterior wall panels.

The total erection time for the precast units was only seven working days. The precast walls first were tilted into position and braced. Next the precast interior columns were set up and the girders hoisted into position. Then the precast concrete joists for the second floor and roof were placed. Finally, concrete for the second floor and roof was cast on metal forms.

Structures designed to utilize precast concrete units can be built fast and at moderate cost. Like all concrete structures they offer low maintenance cost, long life and *low-annual-cost* service. In addition, they can be designed for great resistance to such destructive forces as storms, quakes, decay, fire and blast.

For additional information write today for illustrated literature. It is free but distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. 4-7, 33 West Grand Avenue, Chicago 10, Illinois A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work Large photo, completed building. Above: Placing a roof girder. Below: Placing a precast floor joist. Alec Arany, engineer; John K. Minasian, consulting structural engineer; J. A. McNeil Company, Inc., contractor, all of Los Angeles.





You can avoid the cost of a tall stack by specifying an Induced Draft Bifurcator Fan for boiler draft. The Induced Draft Bifurcator Fan costs much less than a tall stack and provides controlled boiler draft in any weather. Eliminating a tall unsightly stack also helps preserve the design of a modern building.

INDUCED DRAFT BIFURCATOR FAN is an axial-flow fan in a divided housing. Flue gases are by-passed (bifurcated) around motor chamber so that motor stays cool, clean and accessible. The Induced Draft Bifurcator can be installed at any angle, like a flanged section of breeching. It can be mounted indoors or on roof. For highpressure boilers delivering up to 60,000 pounds of steam per hour and for lowpressure boilers rated up to 190,000 EDR. Ask your DeBothezat representative, listed in phone book, or send coupon for illustrated catalog.

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NEW PRODUCTS

the Roly Door adjusts itself to an uneven floor for a weathertight closure by means of Sshaped seals at all section joints and its resilient rubber astragal. The unit's inclined tracks and beveled metal stops wedge the door tight to its frame when closed. Little maintenance is necessary. Moving parts are equipped with ball bearings. All metal surfaces are protected with zinc phosphate beneath a baked-on red oxide primer. These two coatings make an excellent base for the finish paint and should eliminate flaking or peeling. If any panel is damaged severely, it can be taken out and replaced. Roly Doors come in seven widths from 8' to 16' and 16 heights from 6'6" to 14'. Prices, not installed, are \$100 to \$600 F.o.b. Buffalo.

Manujacturer: Morrison Steel Products, Inc., 601 Amherst St., Buffalo 7, N.Y.

SILICONE RUBBER handles like putty

RTV Silastic, a calking compound that comes in a can, develops all the favorable character. istics of extruded or molded silicone rubber after 24 hours exposure to room temperature. The material is shipped and stored as two components, each containing a catalyst. When mixed in equal parts, the two react chemically to create a heatless vulcanizing system, setting Silastic in about 4 hours, curing it in 24, and developing optimum properties of temperature stability, water repellency, and chemical resistance in 4 to 7 days. No heat pressure is necessary to cure sections up to 1/8" thick, although 50 psi pressure may be applied to cure 1" thick sections. Curing time is cut considerably by applying heat after the rubber is set. Cost of RTV (room-temperature-vulcanizing) Silastic is half that of pre-



formed silicone rubber. For window glazing its cost has been calculated at 9¢ per lin. ft. compared to 1¢ for ordinary putty. Labor runs about 8¢ for each knife-applied material, however, bringing the cost of *Silastic* down to twice that of conventional calking. *RTV's* serviceable life should easily offset the initial cost. Other construction uses suggested by the self-vulcanizing silicone: cloth-coating dope, sealing around plumbing fixtures and encapsulating compound for electric assemblies. To date, stock is available in orangetan, white, and black.

Manufacturer: Dow Corning Corp., Midland, Mich. continued on p. 230



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Fir plywood formed concrete is smooth, fin-free. Requires less rubbing. Ceilings can be painted direct after a minimum of finishing eliminating plastering.

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Fir Plywood Industry Product

Bouglas Fir Plywood Assn., Tacoma, Wn.



Low-cost, blue-green window walls increase job comfort

The problem of this building's designer was to prevent lower construction cost from interfering with quality, The factory window walls of Blue Ridge *Aklo** Glass typify the result.

Inexpensive to build, these translucent blue-green walls reduce summer heat while they bring in light. With Aklo Glass $\frac{1}{8}''$ thick, as much as 37% of the sun's heat can be shut out. With $\frac{1}{4}'' Aklo$, the reduction is as high as 44%. That's why Aklo is so widely used on south and west exposures especially.

Frosted Aklo Glass subdues distracting, irritating glare, too. It softens and diffuses direct sunlight and sky brightness, dazzling reflections from ice, snow and other bright surroundings.

With *Aklo*, workers can produce more because working conditions are better. A building has more usable floor space, too, because *Aklo* Glass makes it more comfortable close to windows.

See Aklo's Benefits in Heat-In-Motion Test!



The Heat-In-Motion test gives you quick, conclusive understanding of the benefits that *Aklo* users enjoy. See it right at your desk. Your

L·O·F Distributor or Dealer will be glad to give you this radiometer demonstration. He's listed in phone book yellow pages in many cities. Or write directly to Patterned & Wire Glass Sales, Libbey Owens Ford Glass Co., B-2844 Nicholas Bldg., Toledo 3, Ohio.

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Individually-controlled unit filters and circulates air all year 'round in central plant, multi-room installations

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The Remotaire is adaptable to the one system that's most efficient, most economical for the job— Wall Aperture System, Interior Ventilation System, Well Water System, Split-coil System, Motel System, Residential System, Modernization System.

For further information on the Remotaire see Sweet's Architectural File or contact your nearest American-Standard sales office for descriptive literature—Form 417.





THE REMOTAIRE IS VERSATILE. An example of a Modernization System is the Park Sheraton Hotel of New York. The above rendering shows how simple the Remotaire piping is. Picture below illustrates our attractive Remotaire unit in a Park Sheraton Hotel room.



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Contractor: James Stewart Company PyroFILL Contractor: Macatee Inc., Dallas Property Ownership: Trammill Crow, Trinity Industrial District

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WHERE USED, BY WHOM

A few examples. Others gladly sent on request, including applications and names of architects, contractors, builders.

Midway Gardens Apts., Chicago, Ill.: ARCHTS.: Holibaird, Root & Burgee & Associates; GENL. CONTR.: S. N. Nielsen Co.; PLSTG. CONTR.: McNuity Bros. Co-Holiywood-Knickerbocker Hotel, Holiywood, Cal: ARCHT.: W. D. Peugh and Associates, W. B. Glynn and A. J. Lauket; GENL. CONTR.: Walter Olerich; PLSTG. CONTR.: L. B. Paulsen. National Institute of Health Clinical Center.

National Institute of Health Clinical Center, Bethesda, Md.: GENL. CONTR.: John McShain; PLSTG. CONTR.: James Kane and Company. Lansdawne Racetrack, Vancouver, B. C. PLSTG. CONTR.: Tommy Turner.

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Whenever you need to bond a plaster finish to practically any wall, ceiling or floor surface, old or new, specify Plaster-Weld. For bonding cement and concrete . . . specify Weld-Crete. Sold by leading Building Material Supply dealers. Send today for complete descriptive literature. Address Department 2.



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CORK-ON-NEOPREME SANDWICH: vibration damper for heavy machines eliminates bolting

By eliminating costly bolting of machines to floors, VPS Elasto Rib Dampers add mobility to heavy equipment and allow quick re-arrangement of production lines. An effective isolator, the sandwich pad uses the elastic and damping properties of both cork and rubber to impede noise as well as vibration. Its deep grooves spread deflection and form a nonskid surface which resists creeping of heavy machinery. Some typical application areas for VPS include: air conditioning equipment, engines, and printing presses. The material runs from \$1.20 for 2" squares (for loads up to 200 lbs.) to \$12 for 1' squares (for 8,500 lbs.). It can be supplied with a top plate. Manufacturer: The Korfund Co., Inc., 58-15 32nd Place, Long Island City 1, N.Y.



FOOD DISPOSERS cut restaurant clean-up time

Restaurants and other food-serving establishments are finding assembly-line techniques economical for food handling, fore and aft. For the cleanup end, In-Sink-Erator, long known for its residential food waste disposers, announces new high-capacity commercial grinders equipped with 1/2 h.p., 115/230 v. motors. Two of the new models, designed for installation in metal counter tops, have stainless steel hoppers, one 15", one 18". A third with a smaller stainless cone can be secured to an opening 51/8" in diameter, and a fourth, for diet kitchens, etc., is made for attachment to a sink bowl with a $3\frac{1}{2}$ to 4'' strainer opening. Prices F.o.b. Racine, range from \$240 to \$300. Placed strategically along the dirty-dish line of operations, these disposers speed up the process, freeing personnel for other work. Manufacturer: In-Sink-Erator Mfg. Co., Racine, Wisc.

Technical Publications, p. 236



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Kewanee Reserve Plus rating guarantees dependability, flexibility, higher efficiency, lower costs, longer boiler life because it means "cruising speed" operation. So when you consider boilers, remember the Big Truth "* the only safe way to specify boilers is on nominal capacity to operate at 'cruising speed'."

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HANDSOME flush door with shadowbox lites at the Tydee Dydee Service, Rockford, III. States owner L. J. Schlickman, "It works just as well as my smaller Barcol door at home!"



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TECHNICAL PUBLICATIONS

HEATING EQUIPMENT, P-K Hot Water Storage Heaters, Catalogue No. 18. The Patterson-Kelley Co. 48 pp. 81/2" × 11"

In a tasteful color-hued format this catalogue covers the P-K line of hot-water storage heaters, providing data for heating engineers and specification writers on piping arrangements and installation. The technical information on horizontal and vertical heaters of steel, copper-lined, copper-silicon, cement-lined, clad and galvanized construction, is made quite palatable by the attractiveness and logic of the presentation.

MULTIPLE STEEL WINDOWS. Architects for Your Use, ..., Fenestra Multiple Steel Window Layout Tables. Detroit Steel Products Co., 311 Griffin St., Detroit 11.

PORCELAIN ENAMEL. Architectural Porcelain Enamel. Davidson Enamel Products, Inc., Dept. AF, Lima, Ohio. 8 pp. 81/2" x 11"

LAMINATED WOOD CONSTRUCTION. Rilco Type F-75 Tied Arches with Waterproof Resorcinol Glue. Rilco Laminated Products, Inc., First National Bank Bldg., St. Paul 1, Minn. 4 pp. 81/2" x 11"

PROTECTIVE COATINGS. Stop Rust with Rust-Oleum. Rust-Oleum Corp., 2799 Oakton St., Evanston, III. 20 pp. 81/2" x 11"

LUMBER. Where to Buy the Four Fine Woods-Douglas Fir, West Coast Hemlock, Sitka Spruce, Western Red Cedar. West Coast Lumbermen's Assn., 1410 S. W. Morrison St., Portland 5, Ore. 48 pp. 81/2" x 11"

FLOORING. Maintenance of Asphalt Tile Floors in Institutional, Commercial and Industrial Buildings. Asphalt Tile Institute, 101 Park Ave., New York 17, N.Y. 4 pp. 81/2" x 11"

MASONRY ANCHORS. Bulldog Self-drilling Expansion Shells, Laboratory Test Reports, Technical Manual No. 5. J. D. Polis Manufacturing Co., 2900-20 W. 26th St., Chicago 23, III. 22 pp. 9" x 111/2"

INDUSTRIAL STORAGE AND MAINTENANCE EQUIP-MENT. Steel Shelving. Precision Equipment Co., 3702 N. Milwaukee Ave., Chicago 41, III. 24 pp. 6" x 81/2"

PARTITION CONSTRUCTION. Metal Stud Nonbearing Hollow Partitions, Technical Bul. No. 7. Metal Lath Manufacturers Assn., Engineers Bldg., Cleveland 14, Ohio. 4 pp. 81/2" x 11"

ELECTRICAL SYSTEMS. Outdoor Service Equipment, Bul. No. 2016. Heinemann Electric Co., 388 Plum St., Trenton 2, N.J. 12 pp. 81/2" x 11" continued on p. 240

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You ought to have a copy of our PUBLICATION LIST

This 8-page bulletin lists and describes all the current publications on the principal families of A-L Products: stainless and heat-resisting steels, tool and die steels, electrical steels and alloys, permanent magnet materials, and Carmet carbides. There is a handy order form for your convenience in getting the material you need: technical and fabricating data, information on applications and fields of utility, etc. Write for your copy.

ADDRESS DEPT. B-52

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It's produced in any grade, form or finish you want—from the finest wire to heavy plates, castings and forgings, including sheets, strip, bars, shapes, tubes—everything!

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Architect—Giffels & Vallet, Inc. L. Rosetti—Associated Engineer & Architect Detroit, Michigan

General Contractor— The Krieghoff Company Detroit, Michigan

1 500

... Swimming pool has unequalled versatility with Byrne Aluminum Sliding Doors!

he General George S. Patton Memorial Pool located at Patton Memorial Park in Detroit, Michigan was conceived with the thought of constant use 12 months per year.

It was desired that the pool would approximate, as nearly as possible, an outdoor pool during summer time use . . . yet be weather tight and condensation free, for operation during the winter.

The architects, working with the Byrne engineering staff, developed the idea of using large sliding doors which nest in pockets to permit wide, unobstructed openings on two sides of the pool for summer swimming freedom. Aluminum, as a building material, was selected because of its non-corrosive qualities. Two sets of doors with heating space between them were constructed and these provide weather-tight condensation-free, winter operation. Bottom wheels, rolling on tracks, and freely running head guide rollers assure smooth, easy operation.

The pool was dedicated by General Patton's widow, Mrs. George S. Patton. It has been in constant use for several years, averaging over 90,000 patrons per year.



Unique in its field, it is felt that this new conception of an outdoor, indoor swimming pool will serve as a model for similar installations throughout the country.

> For information regarding Byrne doors and facilities you may consult Sweet's Catalog or write direct for our brochure.



TECHNICAL PUBLICATIONS continued

ELEVATORS. An Explanation of Ot's Autotronic Elevatoring with or without Attendant. Otis Elevator Co., 260 11th Ave., New York 1, N.Y. 14 pp. 81/2" x 11"

RESTAURANT EQUIPMENT. Magic Chef Commercial Gas Cooking Equipment, bookiet N-671. Magic Chef, Inc., Commercial Sales Dept., 1641 S. Kingshighway, St. Louis 10, Miss., 8 pp. 81/2" x 11"

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