architectural forum

September 1952

Mexico

Uninhibited design and new uses of old materials keynote her university, her apartments, her cities and her man-made landscape (below and p. 99)

Frank Lloyd Wright

His Florida Southern campus helps solve two typical small college problems: enrollment and fund raising (p. 120)

The hospital architect

Rosenfield expounds his four design principles (p. 128)

Sophisticated supermarket

Laid out like a department store, prototype unit triples its customer capacity (p. 136)

Building engineering

Where aluminum stands as a structural material...

How domes are designed for minimum metal or minimum labor...

Why welding was used in a record-breaking 328' frame (p. 152)

Pure design research

From abstract sculpture new forms for architecture (p. 142)
Suntile

GRAY HAUTEVILLE 734
a neutral tone of great service

Suntile Gray Hauteville is a mottled gray tone. Gray has widespread use in many different types of interiors. The mottled effect makes it even more practical. This new gray is a warm, neutral color that avoids the “faded” tints of the past. It helps to control glare and create working conditions where vision is at its best. For obvious reasons mottled gray tends to combat dirt, smudge and stains. Suntile Gray Hauteville is but one of the functional colors in the new color line developed by Faber Birren, noted color authority, and The Cambridge Tile Mfg. Co.

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HOW TO SELECT COLORS THAT ARE RIGHT for commercial, industrial and institutional interiors is discussed in our new descriptive booklet “Suntile Functional Color Recommendations.” Your Authorized Suntile Dealer will give you a free copy or you may write us direct, Dept. MB-9, The Cambridge Tile Mfg. Co., P. O. Box 71, Cincinnati 15, Ohio.

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architectural forum

SEPTEMBER 1952

NEWS

MEXICO
Its great new university is the work of 150 architects—a blending of the best in native, US and European design techniques.

FLORIDA SOUTHERN COLLEGE
Frank Lloyd Wright's colorful architecture pays some unexpected dividends: larger enrollment, easier fund raising, higher morale.

ROSENFIELD'S HOSPITALS
They result from a city planner's approach to design and a specialized experience 60 hospitals long—an analysis of the recent work of architect Isadore Rosenfield.

SOPHISTICATED SUPERMARKET
Grand Union tests a prototype food store in Elmwood, N. J., finds its department-store layout can handle three times as many customers as the typical in-line plan. Architects: Kelly & Gruzen.

EDUCATION FOR THE BUILDING INDUSTRY
Tyler Rogers looks at agricultural colleges, proposes similar institutions to speed the integration of the building industry.

PURE DESIGN RESEARCH
New forms for architecture and furniture evolve from Harry Bertoia's experiments in abstract sculpture.

TV STUDIO
A new kind of building solves some new problems for a new industry—WCAU's broadcasting studios in Philadelphia by The Austin Co., engineers and builders and George Howe and Robert Montgomery Brown, consulting architects.

BUILDING ENGINEERING
A progress report on the structural use of aluminum ... a comparison of labor-saving dome construction in the US with Britain's material-saving technique ... an analysis of how welding helped cut steel requirements 50% in the construction of frames of record length (328') for Mexico City's new auditorium.

RENT CONTROL
A detailed review of Leo Grebler's impartial book on the effects of this controversial legislation.

PRODUCT NEWS

TECHNICAL PUBLICATIONS

Cover: Mexico City's Pedregal; photo by Haskell

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VOLUME 97, VOLUME 3
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Copings, Gravel Stops and Facia

Aluminum copings, gravel stops and facia, whether employed separately or combined in an extruded design, serve a decorative as well as a functional purpose. Attractiveness, durability and freedom from destructive and disfiguring rust are a few of the advantages aluminum provides in this application. Standard copings and gravel stops, both with and without facia, are available in Reynolds Aluminum extruded shapes for most needs. Special designs can be made inexpensively, even for relatively small requirements.

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Protect the beauty of well designed buildings by specifying rustproof, rotproof, non-staining aluminum for fire escape construction. Strong, lightweight aluminum fire escapes never need painting and require practically no maintenance... save important money for the building owner especially in installations where corrosive industrial fumes are prevalent. Savings made possible by the lighter structural load and easier erection frequently offset the small added material cost. Write to Reynolds for details on these and any other architectural aluminum applications.
Founded in 1949, St. Edward High School for boys is conducted by the Brothers of Holy Cross. This new $2 million school building was dedicated April 26, 1952. It boasts the most advanced educational aids and athletic facilities.
George I. Chittenden  
Electrical Engineer  
Geo. S. Rider Co.

lighting by DAY-BRITE'S "LUVEX"

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And "LUVEX" cinched its selection by testing out on ease of installation. "LUVEX" runs, suspended on adjustable "A-J" hangers, may be laid in and lined up later—permitting trim, perfectly aligned rows at a big savings in temps, time and money. Fixtures are easy to handle, won't bend, flex or sag. Knockouts are plentiful and uniformly aligned and through wiring is simplified by self-bushed holes in ends of the chassis.

here's how... The typical St. Edward classroom is 22' x 32' with a ceiling height of 11'6". In these rooms, Mr. Chittenden used four rows of "LUVEX" running crosswise, suspended on 18" "A-J" stems. "LUVEX" is one of the very few louvered fixtures on the market with comfortable crosswise shielding.

This layout produces excellent distribution and intensity. Average maintained intensity of illumination is 40 footcandles on the desk tops and 30 footcandles on the chalkboards. Other classrooms such as the typing room, woodworking shop, band room, etc., are similarly equipped with "LUVEX" with intensities ranging from 35 to 55 footcandles, depending on the seeing task involved.

All corridors and the cafeteria are lighted by Day-Brite fluorescent glass-enclosed troffers.

here's proof... Here's another link in the ever-growing chain of evidence that "LUVEX" is the first and natural choice for school lighting. Architects and engineers everywhere are endorsing "LUVEX" by specifying it for new and remodeling school jobs. If there's a school project on your board or one coming up, it will pay you to get the full "LUVEX" story. Write today.

IN THE LIBRARY—The huge library with a shelf capacity of 10,000 volumes is a comfortable place for study beneath its installation of eighteen 12' rows of "LUVEX." Intensity averages from 45 to 50 fc.

IN THE WOODWORKING SHOP—Good lighting is a must in this well-equipped shop. 55 footcandles of "LUVEX" illumination guarantee easy vision and greater safety for boys working with the power tools.

LUVEX PRODUCT DATA:

Stainless Steel Bank Facade

Here is an unusual stainless steel grille that protects the lobby of the new Banco de la República in Barranquilla, Colombia. It is at once functional, decorative, and—over the long pull—economical.

One of the largest of its type, the grille is more than 100 feet long, with vertical and horizontal members of 2½ by ¼-inch polished stainless steel bars. It was fabricated in the United States and shipped in sections of convenient size. Assembly details and methods of fastening at lintel, base and floor beam are shown here.

The building itself is of reinforced concrete, 11 stories high, thoroughly modern and air-conditioned. In addition to grille and entrance, stainless steel was used for the vault and safe depository, and for architectural treatment of the lobby.

Today, chromium-nickel stainless steels like Armco 18-8, Type 302, are restricted by Government regulations. Yet chromium stainless steel like Armco 17, Type 430, is readily available, free from restrictions. It is suitable for most architectural applications except those in severely corrosive atmospheres.

For complete information on Armco Stainless Steel and its architectural applications write us at the address below.

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Here's a coating that covers surfaces with a tight, smooth elastic skin—bridges over cracks and scars—shuts out weather, moisture and fungus!

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Whether you're tackling a giant structure or a bedroom—a hospital, school, bakery, or public building—protect it, make it look better, keep it on the job longer. Specify this coating based on VINYLITE Brand Resins. Correctly applied to new buildings or old, its tough, impervious skin will hold maintenance costs down, for it has the unique properties of VINYLITE Brand Resins that are so useful to scores of products in defense and basic industry. For more information and a list of suppliers, write Dept. NO-14.

Data and photo on Dennis Chemical Co. and R. M. Hollingshead Corp. coatings, courtesy Surface Engineering Co., Wichita, Kansas.

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HOW TO ANTICIPATE PLANT EXPANSION

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Air view of the FORMICA COMPANY’s building. Walls of Q-Panel were detached, moved forward and used again on the addition. A Q-Panel wall has the quality of a permanent wall but with the additional advantage of being removable to provide for plant expansion.

The FORMICA COMPANY built its new Cincinnati plant with Q-Panel walls, later removed the Q- Panels from two sides and re-used them on the addition. Note, in the air view, the older section has a lighter colored roof than the newer section.

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World-Wide Building Service
a new trend in better seeing
... through better comfort-brightness balance

More comfortable seeing means better living for Americans in all walks of life. It means quicker, easier, right-the-first-time selections for millions of shoppers. It means effortless learning to America's school kids. It means a new freedom from eye fatigue to the legions of office workers across the nation.

Benjamin "Grid-Lite" provides this much wanted, much needed seeing comfort by achieving a new high in comfort-brightness balance. Translucent diffuser shields are the secret! These make possible high light levels without awareness of the fact... more footcandles on the working surface without annoying brightness.


MORE LIGHT but LESS BRIGHT
because of these
TRANSLUCENT DIFFUSER-SHEETS!

BENJAMIN SYSTEMS
Sold Exclusively Through Electrical Distributors
CONSTRUCTIVE

INLAND HI-BOND

The deep, reversed, double-helical ribs of Hi-Bond reinforcing bars provide a mechanical grip which gives maximum bond in concrete, thus permitting greater use of steel's potential strength in concrete construction. It also improves transfer of stresses, crack control and resistance to slip . . . advantages that will make possible higher design stresses and thereby lower construction costs. Hi-Bond meets standards set up by ASTM A 305.

INLAND STRUCTURAL SHAPES AND PLATES

Inland's service on structural and plates meets the most exacting requirements of today's construction and heavy equipment industries . . . in dependability of product and engineering cooperation with users. I-Beams, Angles, Channels and other standard structural sections, in a wide range of sizes, are rolled to all the standard specifications . . . also in Inland Copper-Alloy for increased resistance to atmosphere corrosion.
IDEAS

INLAND CREOSOTE OIL
For better, longer-lasting preservation of timbers and wood piling. Inland-owned-and-operated coal mines, coke ovens and tar distillation equipment assure quality control at every step in production of Inland Creosote Oil. Its low benzol insoluble content of about 0.1% (American Wood Preservers Association specifications permit 0.5%) gives clean, deep-penetrating, longer lasting preservation.

INLAND 4-WAY SAFETY PLATE
On scores of products, on new bridges, in new buildings—and for replacement, maintenance and repair—this scientifically designed steel floor plate, with its exclusive raised lug pattern, provides positive traction in every direction. Tough, durable, strong, it stands up under heavy loads and hard wear. It can be readily sheared, welded, punched, flame cut, and shaped. It has no pores, no cracks, absorbs no liquids and is easy to sweep. Comes in a wide variety of patterns and sizes. Write for Bulletin FI.

INLAND SHEET PILING
Taking the punishment of driving and pulling—being driven, pulled and re-driven as many as 15 times—Inland Sheet Piling has been used and depended on by piling contractors for more than 25 years. Made with highly efficient interlocks for water retention, it gives excellent service on single and double wall cofferdams, cellular breakwaters, jetties, docks, bulkheads and retaining walls. Rolled from a special analysis steel, with the strength, toughness and uniformity to withstand extreme and continued stresses. Available with all necessary sheet piling accessories. In Inland Copper-Alloy, at slight additional cost. And Inland sheet piling specialists with broad experience are available to help you on sheet piling problems. Write for Booklet SP2.

INLAND STEEL COMPANY
30 S. Dearborn Street, Chicago 3, Illinois
The ultra-modern new LEVER HOUSE, in New York City is beautiful throughout. It is also smoothly functional and safe from top to bottom.

In fact, it was for these three qualities… beauty, utility and safety… that LEVER HOUSE selected Weldwood Fire Doors.

These wood-faced fire doors carry the Underwriters' Label for all Class B and C openings. Should a fire break out in any of the offices, it would be isolated. Should it attempt to invade from elsewhere, Weldwood Fire Doors, with their remarkable mineral core, stand ready to give the kind of protection for which they are famous.

In addition, the Weldwood Fire Door is so dimensionally stable that when properly installed, it is guaranteed not to warp for the life of the installation.

Also, it is lighter in weight than other fire doors, which means that it opens and closes more easily.

*The Weldwood Stay-Strate Door* is available in the same wide range of beautiful hardwood faces as the Weldwood Fire Door… and offers the same advantages except that the edge banding is not fireproofed.

Like the Weldwood Fire Door, it has striking beauty... unusual light weight... exceptional stability... extraordinary durability... and is proof against rot, vermin and decay.

Send for complete information about both these Weldwood Flush Doors today.
Powers air conditioning control

Helps Insure Maximum Comfort and Efficiency in
Famous PAN AMERICAN LIFE INSURANCE CO. Building
NEW ORLEANS, LA.

In this unique louvered structure comfortable temperature and humidity conditions are assured regardless of the weather outdoors.

Employees are more efficient and alert, make fewer mistakes and turn out a better day’s work in properly air conditioned work spaces.

Prominent insurance companies from coast to coast have found the year after year accuracy of dependability of Powers equipment a very profitable investment.

When problems of temperature and humidity control arise, contact Powers’ nearest office. Our more than 60 years of experience gained in all types of prominent buildings may be helpful to you.

THE POWERS REGULATOR CO., SKOKIE, ILLINOIS
OFFICES IN OVER 50 CITIES
SEE YOUR PHONE BOOK
Coursed Ashler variation with 4” & 8” units
Horizontally stacked 8” x 16” units

Basket-weave using 8” x 16” units

Tooled horizontal joints; verticals wiped out

4” x 16” and 8” x 16” courses

Theme and Variations

Here 8” x 8” units are stacked

A very effective patterned Ashler

...with exposed WAYLITE
Partitions and Bearing Walls

The vast musical literature of the world is limited to a maximum of 13 tones in any one octave... similarly there is a very wide range of harmonious effects to be obtained with Waylite masonry walls of any thickness... a few of the different handlings are shown here... they are achieved very simply. ...Waylite masonry has adequate structural strength—superior thermal insulative qualities—and exposed Waylite interior walls need no acoustical treatment. The Waylite Co., 105 W. Madison Street, Chicago, or Box 30, Bethlehem, Pa.
Stainproof Wall Covering can save you thousands of decorating dollars!

Varlar ends the wall soil hazards that run maintenance costs sky high... because Varlar is actually STAINPROOF! Smoke, grime, grease, crayon, lipstick, ink, Mercurochrome... and countless more stains that deface other walls... simply wash off Varlar with ordinary soap and water... up to 25,000 times without injury to surface or colors! And, Varlar never fades... never streaks! More than 180 extremely smart styles, including the distinctive new Travelers' Collection... give personalized, liveable interiors that are beautiful indefinitely. Decorate with Varlar and you'll redecorate only with plain soap and water... year after year.

A 2¢ POSTCARD PASTED TO THIS COUPON WILL SHOW YOU WHAT VARLAR CAN SAVE YOU...

Send for your FREE TESTING SAMPLE of Varlar Stainproof Wall Covering

VARLAR, Dept. AF-92
Merchandise Mart, Chicago 54, Illinois

Please send FREE TESTING SAMPLE and full information on VARLAR Stainproof Wall Covering. I am particularly interested in VARLAR for:

- Homes
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ARCHITECTURAL FORUM • SEPTEMBER 1952
Office building of the new Lever Brothers plant, Los Angeles, California, reflects the trend of today's industrial design.

★ Six Westinghouse Power Centers, spotted in black, are the heart of the plant's electrical distribution system which provides reliable service under all conditions.
They matched modern plant design with modern power distribution

This 25-million-dollar Lever Brothers plant incorporates the most modern advances in design, layout and construction methods. And its system for distributing electrical power is as modern as the plant—assuring uninterrupted service under all conditions.

The secondary network system was specified in the early planning days by Bechtel Corporation—the engineers and constructors—with Westinghouse assistance. It contains six interconnected power centers that maintain service even though an electrical disturbance may fault a primary line. Secondary faults are isolated quickly. The ultimate in reliable power is assured.

Early planning has also taken full advantage of the flexibility of factory-assembled Westinghouse Power Centers. These compact, standardized units save valuable space... minimize layout problems. Their dry-type transformers permit them to be located safely anywhere in the plant. Additional units can be added easily, as loads and capacity increase.

CONSIDER THIS: A plant’s distribution system is a vital design consideration. It must be planned at the blueprint stage... treated as an integral part of the building or expansion program. Today, the power needs of a modern plant require this kind of planning—coupled with completely co-ordinated equipment.

Westinghouse offers you assistance on both of these requirements... and backs them with years of experience, gained throughout all industry. You benefit by getting more freedom in design techniques... by providing your customer with the best system economically possible for his plant.

There is one best system of distributing electrical power for every plant. Let Westinghouse help you select it on your next job. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-94955

Space problems were minimized with six of these compact Westinghouse ASL Dry-Type Network Power Centers. They are standardized, factory-assembled units... can be expanded easily as power needs grow.
Sloune Koroseal Tile Supreme is installed throughout the Western Printing and Lithographing Co. building in Racine, Wisconsin... in all corridors and attractive offices, as well as the main entrance and handsome lobby shown above.

The floor that always makes a grand entrance!

Sloune Koroseal Tile Supreme provides luxurious beauty and quiet, underfoot comfort... defies heavy traffic...
saves money through years of service and low-cost care.

A Sloune Koroseal Tile Supreme floor provides greater beauty... more service and economy than any other resilient floor made. Its all virgin-vinyl composition has unmatched color-clarity... plus unequalled toughness that assures service long after most resilient floors require repair and replacement. Grease, oil, acid, alkalies and strong soaps will not affect Koroseal Tile Supreme... the through-and-through colors won't fade or stain... and tests show that its indentation recovery is far superior to any other resilient floor.

You save money year after year on maintenance because the nonporous surface of Koroseal Tile Supreme stays beautiful with a minimum of care... dirt can't cling to it, or mar the smooth, tough surface... soap and water mopping keeps it clean and bright... even occasional waxing is optional.

Sloune Koroseal Tile Supreme comes in a beautiful range of 18 striking colors—either Marbletone or Crystal tone effect.

Send for complete details. Write Sloune-Blabon Corporation, Dept. F9, 295 Fifth Avenue, New York 16.

Sloune Koroseal* Tile Supreme

Sloune-Blabon Corporation • A Division of Alexander Smith, Inc.

Koroseal in a registered trademark of the B. F. Goodrich Company.

THE MAGAZINE OF BUILDING
Hope’s Steel Windows with “Biltin” Sub-Frames solve many problems in both design and detail in church fenestration. They offer the most satisfactory provision for the use of leaded art glass, with or without protective exterior glazing. Their layout variety provides the widest choice in sizes and design of panes and glass areas, and the most convenience in arrangement of ventilators. Their trustworthy quality assures freedom from operation and maintenance difficulty for many, many years. Each of Hope’s offices offers engineering services in connection with church windows. Write for booklet 128A.

HOPE’S WINDOWS, INC., Jamestown, N. Y.
THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE’S WINDOWS
STOCKS OF COPPER are already in better shape at wholesale outlets. Contractors can now bid on the basis of adequate supplies of copper.

COPPER IS NEWS!

New NPA ruling substantially increases amount of copper permitted for residential work—and new Anaconda production facilities will help keep copper supplies rolling.

The amount of copper now allowed per family dwelling unit virtually means that once again copper may be used for all water piping, for soil, waste and vent lines, and for all sheet metal work required for the average-sized residence. And copper will continue to be available from Anaconda’s new production facilities, such as the Greater Butte Project, the Chuquicamata development in Chile and Anaconda’s newly modernized tube and rolling mills.

Now you can assure your clients that their plumbing and sheet metal work will give lasting service. For you can specify copper knowing that its labor-saving economy will add little, if any, to the total cost of their homes.

Every home you design is a better home when you specify copper. Every client becomes a more satisfied owner as year after year his plumbing and sheet metal work requires no attention or expense due to rust deterioration. The American Brass Company, Waterbury 20, Connecticut.

Don’t forget—now you can use copper for:

- Water Supply Lines
- Soil, Waste and Vent Systems
- Radiant Panel Heating
- Exterior Flashing
- Gutters and Leaders
- Through-Wall Flashing

BUILD IT BETTER WITH Anaconda COPPER
New apartments in a typical American city use 838 Dwyer Kitchens.

All recently completed in Indianapolis, Indiana

With Dwyer Kitchens, builders of outstanding apartments win the triple triumph of conserving precious space, of providing luxury kitchen facilities for residents . . . of insuring enduring economy of operation and maintenance.

In compact units, from 4 to 6 feet wide, Dwyer Kitchens combine electric or gas range, refrigerator up to 6 cubic feet capacity with freezer compartment and push-button door, streamlined sink and range top and cupboard space.

Exclusive with Dwyer Kitchens are fronts and worktops of genuine vitreous porcelain. Never need repainting, dirt and soil wash off . . . and the gleaming whiteness lasts forever.

Write today for new illustrated brochure: "From Apartment on the Drive to Cabin in the Woods."

Dwyer Products Corporation
Dept. AF952, Michigan City, Indiana
Sanymetal "Porcena" (Vitreous Porcelain on Steel) is a material, not merely a finish. It is in every respect unlike painted enamel or lacquer finished steel because it is fused to steel at a temperature of 1350°-1550°F. This impregnates the steel with vitreous porcelain enamel to the extent that it cannot be hammered out. Sanymetal "Porcena" (Vitreous Porcelain on Steel) is incomparable with any other material commonly used for toilet compartments. It is a lifetime material that stays new.
Sanymetal uses vitreous porcelain on steel for toilet compartments not only for its enduring beauty and fadeless colors, but because of its durability, low cost maintenance, cleanliness, resistance to acids, defacement and abuse. Vitreous porcelain on steel is a product of the white heat of the enameling furnace that is as new as tomorrow—and as old as time! No other material is so ideally suited for toilet compartments because it provides the utmost in sanitation and a degree of protection against obsolescence that is otherwise unobtainable. The sure way to perpetual cleanliness and a strictly modern rest room is to install Sanymetal Vitreous Porcelain on Steel Toilet Compartments. They are suitable and practical for all types of buildings—even for rest rooms and shower rooms in industrial plants.

Vitreous porcelain on steel provides these features that cannot be duplicated by any other material suitable for toilet compartments:

It is a non-porous material with the hardness of glass and the strength of steel.

It greatly exceeds the strength and durability of other materials; often acclaimed as a lifetime material because it does not fade, stain, rust or discolor.

It reduces the cost of maintenance to an all-time low; it is impervious to moisture, odors, ordinary acids, oils and grease, and is scratch resistant.

Its flint-hard, glass smooth surface can be kept as immaculately clean as a china plate. No pores to collect dirt, harbor germs or absorb odors and moisture.

Its gleaming, colorful beauty does not depreciate; vitreous porcelain on steel is the ageless finish of fadeless colors and will not tarnish or peel.

Sanymetal “Porcena” (Vitreous Porcelain on Steel) Toilet Compartments are available in several different styles and a wide range of fadeless colors (refer to Sanymetal Catalog #9 for complete range of exact colors). Only Sanymetal offers “Porcena” (Vitreous Porcelain on Steel) Toilet Compartments. Ask the Sanymetal Representative in your vicinity to demonstrate the unusual and exclusive features of Sanymetal Vitreous Porcelain on Steel Toilet Compartments.

A FEW BUILDINGS, SELECTED FROM HUNDREDS, IN WHICH SANYMETAL PORCENA TOILET COMPARTMENTS HAVE BEEN INSTALLED:

Newark City Hall, Newark, N. J. • Virginia Polytechnic Institute, Blacksburg, Va. • Baker Hotel, Dallas, Texas • Southern Railway System, (Several Locations) • Hill School, Sandusky, Ohio • Norfolk & Western Railroad, Portsmouth, Ohio • Kroess Dept. Store, New Orleans, Louisiana • Penncylvania Railroad, (Several Locations) • Charlotte Memorial Hospital, Charlotte, N. C. • Carolina Scott Paper Co., Chester, Pa. • Y.M.C.A. Bldg., Springfield, Ill. • Pacific Telephone & Telegraph Co., Los Angeles, Calif. • Lever Bros. Co., Los Angeles, Calif. • Otis Elevator Co., New York, N. Y. • Kiplinger’s Agency Building, Washington, D. C. • Stonewall Mills Corp., Spindale, N. Carolina

THE SANYMETAL PRODUCTS COMPANY, INC.
1687 Urbana Road, Cleveland 12, Ohio
YOUR CLIENTS SHOULD KNOW ABOUT

THESE USER-OWNED TELEPHONE SYSTEMS

FOR THEIR PLANTS, OFFICES, SCHOOLS

P-A-X Business Telephone Systems
make any building more efficient

Inside telephone facilities will repay your careful attention in the planning of any building. For a properly designed inside telephone system—entirely separate from the city telephones—will make any building work better!

Hundreds of industrial, business and institutional organizations have learned this for themselves. They have stepped up work flow—tightened management control—improved customer service—with company owned P-A-X Business Telephone System.

P-A-X supplies fast, sure, automatic talking convenience, 24 hours a day. Direct economies from its use often pay for the P-A-X System within 3 to 5 years—and there are many indirect benefits as well!

You'll find the P-A-X story in Sweet's—and the address of the P-A-X representative, who can tell you more. Or just write or call:

AUTOMATIC ELECTRIC SALES CORPORATION
1033 West Van Buren Street, Chicago 7, Illinois

Offices in principal cities. Export Distributors:
INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

PAX is a system of "inside" telephones, separate from the city telephones, and owned by the user.
PAX is completely automatic and establishes all "inside" calls, within seconds, at any time.
PAX saves on city telephones and switchboard—permits marked economies in rented equipment.
PAX is manufactured by the originator of the automatic telephone.
PAX telephones and switchboards are identical in quality with your city equipment.
Walworth is proud to be aboard the S. S. United States

When the United States Lines, the Newport News Shipbuilding & Dry Dock Company, and Gibbs & Cox, Inc., naval architects, join forces to build the fastest, safest and most modern liner the world has ever seen, the selected materials and components have to be top quality. Walworth Pressure-Seal Cast Steel Gate, Globe, and Angle Valves, and Walworth Small Cast Steel Angle and Y-Globe Valves for high-pressure service are installed in the main steam lines of the S. S. United States. Brass and copper lines use large numbers of Walseal valves, fittings, strainers, and unions.

Knowing that Walworth valves and fittings are a vital part of the power arteries aboard this great ship, the proudest moment of Walworth's 110 years of manufacturing experience came when the new Queen of the Sea broke both the east and west trans-Atlantic speed records.

As we present our compliments to Commodore Manning and his crew, to the Newport News Shipbuilding & Dry Dock Company and its men, and to William F. Gibbs and his staff, we also compliment the men and women of the Walworth Company who gave of themselves to put quality into our products and this quality ship.

WALWORTH
valves • fittings • pipe wrenches
80 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD
Armstrong's Travertone was used in the attractive Bullock's Tea Room, as well as in the Employees' Dining Room.

BULLOCK'S DEPARTMENT STORE, Westwood, California

The architect for this smartly styled branch of Bullock's considered many factors in choosing the acoustical materials. Acoustical efficiency, beauty, and fire-safety were important. Another factor was the need for a material well adapted to the mechanical suspension system to be used.

The architect met all these requirements with Armstrong's Travertone. A mineral wool tile, Travertone is completely incombustible. Its beautifully fissured surface blends well with this décor. It has high acoustical efficiency. Its strength and dimensional stability assure satisfactory performance when mechanically suspended. In addition, Armstrong's Travertone is ideally suited for installation with recessed lighting and ventilating fixtures.

Your Armstrong Contractor will be glad to give you full details on the complete line of Armstrong's Acoustical Materials. For the free booklet, "How to Select an Acoustical Material," write Armstrong Cork Company, 5409 Stevens Street, Lancaster, Pennsylvania.

Ceilings and upper walls of the telephone switchboard room are sound conditioned with Armstrong's Cushiontone. Other office areas in Bullock's are also treated with this perforated wood fiber tile. Cushiontone raises efficiency and morale by absorbing irritating noise from telephones, typewriters, and other office machines.

ARMSTRONG'S ACOUSTICAL MATERIALS
Scheduled NPA relaxations, huge backlog of work, brighten construction outlook

Construction's future continued to brighten this month. A substantial relaxation of NPA controls was scheduled for April 1, and possibly Jan. 1. Materials were becoming easier to obtain. By Oct. 1, and possibly sooner, Regulation X for residential credit would be history.

As the month began, the only doubtful matter was the future of credit restrictions for nonresidential construction after homebuilding credit is freed. By mid-month, reports from Washington suggested that the Federal Reserve wanted to close its books, scrap commercial construction credit curbs at the same time Reg. X mortgage restrictions were reduced to 5% down payments.

Putnam more cautious. But Economic Stabilizer Putnam was pressing to keep at least nominal control over nonresidential building credit—probably about a 70% mortgage financing ceiling. Putnam was fearful, it was said, that there might be an avalanche of shopping center and other commercial construction started on virtually 100% financing (through such devices as purchase-lease deals and second mortgages), and that it might be impossible to put a credit check on this again once the restrictions had been discarded.

Amusement ban to end. After the Aug. 27 meeting of its Construction Industry Advisory Committee, NPA announced that effective April 1 the ban on construction of recreational buildings would be lifted, and that other types of construction would qualify for greatly increased self-certification amounts of essential materials. The committee will meet again Oct. 29 to consider the possibility of shoving the materials relaxations ahead—perhaps to Jan. 1.

Breeding optimism was an Aug. 29 statement by Henry H. Fowler, who this month was advanced to Director of Defense Mobilization. Fowler declared that steel should be back "in balance" early next year at the latest. Other NPA officials intimated that virtually all CMP regulations may be ended by June 30.

Managing director H. E. Foreman of AGC had a cheerful report on construction market prospects. A tremendous "backlog" of needed building will still remain for several years even if 1952 turns out to set another volume record, as now appears likely, Foreman told the midyear session of the AGC governing and advisory boards. In the first eight months of this year a record $18 billion in new building was put in place, Foreman estimated, thus raising the possibility that last year's $31 billion record may be surpassed.

RFC eases direct federal building loans, studies $35 million culture, trade center

For more than a year, Reconstruction Finance Corporation supposedly has been limiting its business loans to those essential to the defense buildup or a vital civilian project. In an inflationary economy, it made no sense for the government to be restricting credit through the Federal Reserve while expanding it through RFC. One result: RFC loan applications have been dropping steadily. In fiscal 1952, they were about one third the volume of the previous year. Another result became an issue last month: was RFC backsliding on its loan policy?

There was evidence it had done so enough to become a banana source of credit for nondefense construction. Said one policy-making RFC official: "There are pressures for a more liberal loan policy. Not all of them come from outside. Of course, any applicant wants the policies to fit his needs. But there are also—within the agency—people who, naturally, do not want to lose their jobs. When the volume goes down, they get worried." Even RFC Administrator Harry A. McDonald indicated that the agency has been liberalizing its policies on loans to small business. But he insisted that assurance the government will get its money back is still a criterion for every loan.

On Aug. 8, for instance, RFC approved a first mortgage loan of $8,000 to chiropractor Louis Haydon of Arnett, Okla., to construct a clinic building. RFC officials admitted that they probably would not have made this "small business" loan except for its 50% VA guaranty.

Larger business loans for nondefense building, have included such commitments as these made the week of Aug. 21: A&P Corrugated Box Corp., Lowell, Mass., $1.5 million, construction and equipment; Herbert W. Gordon, Weston, Mass., electronics equipment, $75,000, construction; William Friedman, Greenville, Miss., scrap metals processor, $100,000, construction and new equipment, and Spenard Washeteria, Anchorage, Alaska, $12,000, construction and new equipment.

Huge Florida project. One of the largest loan applications on file with RFC is for $35 million to launch an Inter American Cultural and Trade Center northeast of Miami. This would include about $5 million for dredging and filling a 1,675-acre site, $12 million for installing roads and utilities, and $14 million for buildings including an auditorium, amphitheater and administration building.
Alaska sees biggest boom from aluminum as Alcoa plans for $700 million project

Aluminum was promising Alaska an industrial future and an infinitely greater prosperity and growth than it ever obtained from gold. Announcement of Alcoa's proposed Taiya project near Skagway was described by Governor Gruening himself as the "most important event in Alaska since its purchase from Russia." He specifically cited it as "overshadowing" the discovery of gold in '98.

Provided Congress cooperates by permitting Alcoa to acquire approximately 20,000 acres of land, and provided Canada grants water-use privileges, Alcoa hopes to start a $140 million smelting plant next year; later double its capacity with an addition costing $300 million more.

There also would have to be an entire new community of approximately 20,000 population.

Planners, builders unselected. Company officials stressed that the new town is to be an attractive modern community in all respects. "We don't want a company town," said Leon E. Hickman, vice president in charge of the project. "Alcoa will make it possible for the people to buy their own homes. The town will be built for families and the American family life. There will be facilities for butchers, bakers, and all the other activities found in a normal community."

On his return from Alaska to Pittsburgh early this month, however, Hickman disclosed that its Taiya "town planner" has not yet been engaged, nor is any particular person under consideration.

Pending congressional approval for the company to buy the necessary plant and town site, he explained, precise location of the future community isn't known—not even whether it will be on a hillside or level ground. For the moment only construction plans for the initial plant to produce 200,000 tons a year have been prepared.

Company operation. Once the way is cleared, however, said Hickman, Alcoa will start giving contracts for the construction of housing and community facilities. Its Alaskan panhandle location will make it necessary for Alcoa itself to construct the entire community, he feels certain, after which the company will sell the various buildings to merchants and residents as fast as possible and on the most favorable terms it can provide.

No subsidy. The proposed Alcoa development involves no subsidies. Some factions in Congress might balk at authorizing sale of the necessary site to Alcoa, so as to prevent further growth of the nation's biggest aluminum producer. But such views seemed unlikely to prevail, particularly while the government is trying to expand aluminum production facilities for both civilian and defense uses.

The building industry would watch the Alaskan developments with more than casual interest.

Construction is already the largest single customer of the aluminum industry, using about one third of the total output, and is rapidly increasing its take with the introduction of many new construction products made of this strong, highly versatile lightweight material (see p. 152).

EL PASO BUNGALOW-SCHOOLS EASE STUDENT CRUSH

Rapid suburban growth and soaring enrollment in elementary schools posed a special problem for El Paso School superintendent Dr. Mortimer Brown because the city didn't want to abandon the pay-as-you-go basis on which it has operated for the last 15 years. Portable buildings, Quonset-type buildings and other makeshifts were considered and abandoned as expensive and impractical.

The novel solution approved by the school board can have living-room and bedroom partitions (minus several interior walls). When no longer needed as schoolrooms the school board can have living-room and bedroom partitions installed (see floor plan) and sell the structures as regular houses.

Lots cost the city about $1,250 each, and construction cost for the eight units was $79,000 excluding architect's fees. Full bathrooms, sinks, kitchen stoves and refrigerators are included so that first- and second-grade students who attend the schools, one class to a building, can be served hot lunches. Construction costs also include stone walls enclosing playgrounds between "schoolhouses," which were erected on level ground. For the moment only construction plans for the initial plant to produce 200,000 tons a year have been prepared.

Company operation. Once the way is cleared, however, said Hickman, Alcoa will start giving contracts for the construction of housing and community facilities. Its Alaskan panhandle location will make it necessary for Alcoa itself to construct the entire community, he feels certain, after which the company will sell the various buildings to merchants and residents as fast as possible and on the most favorable terms it can provide.

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NEW CONSTRUCTION ACTIVITY (expenditures in millions of dollars)

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<th>June</th>
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CONSTRUCTION EXPENDITURES for August rose 7% above last year's level, with the largest single gain in public industrial building. In contrast, private factory construction fell to 13% below a year ago, may be due to the slump in defense expansion.
AFL building trades president endorses Eisenhower to obtain Taft-Hartley relief

Highly dissatisfied with the Democratic labor record for the construction field, Richard J. Gray, president of the AFL’s Building and Construction Trades Department and building labor’s principal spokesman, last month announced his personal support of Gen. Eisenhower for President.

After the Republican candidate pledged himself to seek amendment of the Taft-Hartley Act, which has proved onerous to construction labor and management alike, Sal Maso, president of the New Jersey council of the AFL department, announced he would individually stump that state for the General.

Although he has been “a life-long Democrat,” Gray explained he feels that building labor will only be able to get off the Taft-Hartley hook under a Republican administration. Gray said “the party counts more than the man” in his opinion, and thus his backing for Eisenhower is not based solely on the General’s personal appeal or position.

Committee rule captives. His logic: “You have to look beyond the nominees themselves to see what their promises mean.

Sure, Stevenson has gone on record for some relief from the law [“scrapping it and starting all over again”], but how do we know he can deliver?”

“It will probably be a repetition of what happened in 1943. The Dixiecrats will still be in control on Capitol Hill, and the inescapable fact is that they don’t care a hoot about labor. . . . The Democratic party thinks they have us in their vest pocket and we have no place to go.”

Southern conservatives won’t actually bolt the Democratic Party, Gray believes, so as long as they hold onto their principal committee chairmanships through seniority, building labor will remain in the Congressional doghouse.

Finer outside Carolina. An outstanding example of the brush-off construction labor has been getting, said Gray, was the refusal of chairman Graham H. Barden of the House Labor Committee to hold hearings on the Senate-approved bill to exempt construction from Taft-Hartley certification election provisions. “Representative Barden comes from North Carolina and there are probably not 50 union members in his whole district,” Gray explains. “There you have it.”

In the Senate the measure rolled through without a hitch. This, says Gray, was largely due to the intervention of Republican Senator Robert A. Taft, who acted as a cosponsor of the amendment in conjunction with Fair Dealer Robert Humphrey of Minnesota. The seeming paradox of such political opposites getting together on a labor hill resulted from the joint demand of both management and labor for relief.

Background for dissatisfaction. Behind their virtually unanimous request for revisions in the Taft-Hartley Act lies what construction men consider a plague of ridiculous regulations:

> Both sides have maintained from the start that it is utterly unrealistic to attempt to apply the union representation provisions of the act to construction, where men are constantly moving around from job to job. Nevertheless NLRB has adopted the unbudging policy that as long as the law is on the books it will not grant any administrative exemptions.

> This uncompromising attitude by the enforcement agency has posed a problem that is by no means academic. Local chapters of the AGC and the unions representing their workers are constantly being hauled up for violations of the law. Usually the charge is brought by members of the machinists union. Because the International Association of Machinists does not belong to the Building Trades Department (though it is affiliated with the AFL) it is seldom a party to area-wide collective bargaining with contractor groups.

> Most recent example of the consequent feuding is the George D. Auchter Co. case from Jacksonville, Fla. now before the NLRB on appeal. Basis of the dispute is denial of work to a member of the machinists union. Acting on precedents established by the Board, the trial examiner has recommended that the northern Florida AGC chapter and the Carpenters District Council of Jacksonville be cited for discrimination. The penalty proposed is that the defendants jointly and individually be required to reimburse the applicant for wages lost during the period he was refused employment.

Change for better. Gray was sure building labor would receive more sympathetic treatment under a Republican Congress. Not only was Taft willing to let bygones be bygones,” he declared, but in the House Representative Samuel K. McConnell, Jr., ranking Republican on the Labor Committee, had the makings of an unbiased chairman.

As the AFL leader saw it, McConnell being from an eastern Pennsylvania district where “workers are people” will not adopt the “indifferent and even hostile attitude” displayed by southern conservatives.

Going beyond the elimination of Taft-Hartley kinks, Gray was even inclined to question the whole theory of injecting the federal government into labor-management relations. “Instead of having college professors of economics waving rulers at us,” he says, “maybe we would be better off if we would go back to the old days of letting hardheaded managers and practical union men sit down around a table and thresh out their own problems.”

Also a matter of growing concern to the AFL leader: the increasing number of labor sections in so many different federal agencies, such as the Defense Department, AEC, GSA.
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Senate group dubious on "joint venture" contracts; Creedon given watchdog post

When the Senate armed services subcommittee headed by Sen. Lyndon B. Johnson (D., Tex.) released its interim report on Moroccan air-base construction last month, newspaper accounts featured the Congressional group's exasperation with Lt. Gen. Lewis A. Pick, chief of Army engineers. Headlines and stories all concentrated on the annoyed suggestion that army Secretary Pace "take appropriate action" against the general for not giving the committee "full, frank and comprehensive" testimony.

At midmonth, no such action had been taken by Secretary Pace against Gen. Pick, and none was expected before the general's slated statutory retirement next month.

Main points obscured. As usual, the personality dispute diverted attention from more pertinent recommendations of the Johnson report. These were not all original or strikingly profound. But one worth noting in the heavy construction field was that the several Defense Department secretaries "carefully consider whether the so-called joint venture is a proper organization for the performance of military construction, and whether in dealing with this hybrid type of organization the interests of the government can be fully protected."

Discussing the role of Atlas Constructors in what it described as a "fiasco" in North Africa that might cost taxpayers an extra $120 million over original $300 million estimates, the committee elaborated:

"It [a 'joint venture'] is not a corporation, and at best is a partnership in name only. It is a loose and legally vague arrangement. . . . Perhaps the proper approach in a situation of this kind would be to designate one of the five companies as the prime contractor and the others as subcontractors. In this way a clear and definite primary responsibility would be established. There may be valid arguments in favor of the joint venture in projects of this size, but in our view they lose significance when weighed against the lack of firm leadership and centralized responsibility inherent in this type of hybrid setup."

Final judgment withheld. Adding that its investigation of Atlas was still incomplete, although it took note of the organization's general denials of responsibility for various undesirable conditions, the report said: "It does appear that especially in the early stages of the job the contractors were confronted with a series of difficult and somewhat frustrating situations. However, there seems to be no doubt that a considerable portion of the work is of poor quality. . . . The committee does not feel that it has sufficient evidence at this time intelligently to comment on the contractors' responsibility and does not wish to prejudge the matter." (Morrison-Knudsen Co. Inc., was "monitor" in Atlas, and the other participants were Nello L. Teer Co., Durham, N. C.; Ralph E. Mills Co., Salem, Va.; Blythe Bros., Charlotte, N. C; and Bates & Rogers Construction Corp., Chicago.)

Thus the Senators dodged away from the heart of the matter: how much waste and inefficiency was unavoidable under the "crash" conditions originally established for the program. The report itself recorded several instances of the air force ordering suspension of work at different places. A Defense Department spokesman summed up the situation in a maxim: "When you want a thing bad, you get it bad."

Meanwhile, in one attempt to prevent the recurrence of any similar incident Defense Secretary Lovett appointed Frank R. Creedon to the new position of Director of Installations for the Defense Department. In his new role the former NPA construction controls chief will be in effect a personal reporter, watchdog and special inspector responsible for keeping the Defense Secretary posted on developments in the $3-billion-a-year military construction program—and situations that call for special attention.

Creedon was awarded the Medal of Merit, the nation's highest civilian honor, for his supervision of the Oak Ridge A-bomb plant construction during the war. Later he was Federal Housing Expediter for 18 months.

500-BED ARMY HOSPITAL EXPANDS TO 1,000 BEDS WITH WING

Armed forces design hospitals for mass production; $133 million program planned

Unification of the armed forces was beginning to bring far reaching changes in designing military hospitals this month. In their new, $133 million military-hospital construction program, the army, navy and air force will use uniform basic designs drawn up with the aid of the Munitions Board, and adaptable to local site conditions by local architects.

To observers of the Pentagon's feeble progress at standardizing other structures common to all three services (like barracks and warehouses), the achievement of the Munitions Board task group for development of design requirements and construction standards for military hospitals came as a surprise.

Since its creation April 6, 1951, it had:

> Decided to design the new crop of military hospitals so they can be quickly expanded to double their original bed capacity in time of need;
> Assigned to each service the job of drawing basic plans for the size of hospital it uses most. (The navy will design an 300-bed unit on a 1,500-bed chassis. The army will design a 250-bed on a 500-bed chassis hospital and a 500 on 1,000 unit. The air force will handle all the smaller hospitals.)
> Each service called in private architects to help develop the basic plans. With money all appropriated, the first of them was unveiled last month. It was the army's design (above) by York & Sawyer of New York for a 9-story, expandable hospital to accommodate 500 patients when built without the wing at the right, or 1,000 patients if the wing is added to the basic chassis. The army said it hoped to build four next year—at Ft. Benning, Ga.; Ft. Bragg, N. C.; Ft. Knox, Ky.; and Ft. Riley, Kan.
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LUPTON METAL WINDOWS
Florida board probes waffle slab collapses; Seelye report upholds Youtz-Slick method

Last spring, an Atlas Terminals warehouse at Ojus, Fla., suffered three construction collapses while being roofed of precast waffle-block concrete by the Youtz-Slick lift-slab method. One 50' x 50' waffle slab dropped about 4' while being hoisted into place (AF, April '52, p. 47). Another crashed after being raised and anchored in position. A third collapsed while undergoing a live load test of 450,000 lbs. or 45 psf.

Out of the mishaps arose professional malpractice charges against the structure's engineer, Louis G. Farrant of Miami, who specialized in reinforced concrete construction. Last month, while Florida's State Board of Engineering Examiners mulled over the accidents at a two-day hearing but reserved decision, a private engineering report gave the Youtz-Slick method a clean bill of health, inferentially blaming local misapplication for the trouble.

Private praise. The report confirming the efficiency and safety of the lift-slab method, provided adequately designed slabs are used, came from Elwyn B. Seelye, of Seelye Stevenson Value & Knecht, New York consulting engineers. This report was prepared for the licensor of the lift-slab process, the Institute of Inventive Research, so it could advise other licensees as to the cause of the failures in this instance. Scores of other Youtz-Slick operations have been carried on elsewhere without incident. Subsequently Seelye also was retained by the owner to test and reinforce the Florida building erected under Farrant's engineering supervision.

Seelye's report pointed out that each Atlas Terminal slab was supported on four posts with a 10' cantilever slab on each side. "The collapse was in the nature of a circular shear failure at, or near, the edge of the solid cap," said this report, "and would be classed by engineers as a failure in diagonal tension."

According to this analysis the cantilever reinforcing steel and the positive steel overlapped each other by not more than about 2' without any stirrups or bent bars to hang the bottom steel from the top cantilever steel, and the line of diagonal tension indicated in the accompanying sketch had no steel whatsoever crossing its path.

In addition, the Seelye report stated, there appeared to be a weak adherence between the top of the coffee and the side walls; "so much so, that cracks between the top of the coffee and the side wall were found." These cracks, said the report, were approximately at the level of the arbitrary crack marked AA in the sketch, "and in this condition would have been particularly bad in the case of the negative moment areas."

To reinforce the existing slabs, U bolt yokes have been installed to cover all joists in the cantilever area which have a high shearing stress and in the transition areas between the negative and positive moments. These U bolts consist of 4" x 9" x 3/4" metal plates on the top of the slab and the bottom of the joists fastened together with 3/4" bolts. Since being reinforced "the building has so far safely undergone exhaustive tests which are still underway," the report declared.

Too little steel. At the Miami hearing, Jacksonville engineer John L. McCullough, who investigated the complaints for the board and preferred charges, testified that "not enough steel was used in these slabs and the bars used were not properly placed. In my judgment, the steel used was subject to about 125% overstress."

In rebuttal, Farrant submitted data in support of his design for the particular type of slab that was used. This data, he said, was obtained before construction by Presson photorellective stress analysis of mirrored models. He also offered reports from two testing laboratories and submitted a list of more than 100 projects he had worked on since he became a practicing engineer in Florida about five years ago after coming from England.

Three other charges against Farrant were also heard by the state board. Two involved alleged structural failure in four 23' cantilevered roof beams in the Hollywood, Fla., municipal bandshell, and excessive sag in a 29' precast roof beam in the George Washington Carver School in Miami.

As part of his defense Farrant attributed the failures and faults that developed to material shortages that made substitutions for steel necessary, and to factors beyond his control. Verbal instructions to the general contractor for reinforcing the Carver school beam were not carried out, he declared. A fourth charge against Farrant was dismissed after testimony that an alleged deficiency in a service station had been corrected and that the Miami Beach building department had issued a certificate of occupancy.

Engineers' Centennial told of fabulous advances that impend in construction field

Construction shared the stage in the Centennial of Engineering convention in Chicago this month. Industry leaders among the 1,000 speakers who addressed the two-week sessions either pointed with pride to the contributions construction has made to American life and business or dwelt on the fabulous advances visible for building just over the horizon in new materials and techniques.

Past developments in materials and building methods have only been a shadow of striking advances that can be expected in the next few decades, said Walter C. Voss, head of MIT's Department of Building Engineering and Construction.

Catalogue of wonders. Pointing out that the use of atomic power will create the greatest kind of revolution in heating, motive power and research, while research will bring still more advances in new materials, Voss drew the following picture of important changes to expect:

- "It may well be true that in the next 50 years we will see plastics developed to such an extent that all panels, doors, much of our hardware, trim, floor and wall coverings, and many of the applied finishes will be greatly improved and reduced in price. The development of light weight, cored units made of wood, fabric and metals will be phenomenal."

- "To predict the progress in the fields of heating and air conditioning would be a dubious task. Nevertheless, the cumbersome assemblage of pipes, fittings, ducts and apportunenies may well be replaced by radiant heated walls and floors. The exterior walls of our buildings may become massive heating or cooling ducts. Hot or cooled air will provide the heating requirements and afford comfort without the use of extensive pipe lines."

- "Our structural frames will be quite different to allow for vertical ventilating shafts at many points. The excessive weights of concrete fireproofing will be reduced by the use of fire-resistant prefabricated shields, further allowing for ducts. . . . The tremendous amortization costs of seasonably useless equipment may well be eliminated."

- "Architectural details and planning will greatly affect the activity of manufacturers who will seek to provide materials and equipment to solve such challenges. . . . As architects realize that research, engineering and manufacture can solve many vexing problems, they will be more bold and adventurous in their designs. This will stimulate still further advances. . . . Our next 100
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years of industrial activity will make our present excellent status seem provincial in retrospect.”

**Engineers in construction.** Discussing the trend of engineers into command positions in the construction industry, former AGC president Dwight W. Winkelman approvingly noted the greatly increased emphasis engineering colleges have been placing on construction courses in recent years.

Particularly pleased that technical schools are now also giving greater attention to estimating and costs in their construction courses, and that “even design engineers are being encouraged to become cost-conscious,” Winkelman happily quoted a recent remark by L. E. Griner, vice president of Illinois Institute of Technology: “Believing as we do that only economical design is good design, we also emphasize costs to a greater extent than any other college except the College of Business.”

**Bank offers loans at 1% to stimulate modernization.** Commercial modernization was given one of its most unusual boosts last month by Union National Bank & Trust Co., of Elgin, Ill. With no other strings attached the bank offered loans up to $7,500 at only 1% interest, repayable in one to three years, to any business-property owners or tenants who would use the funds “to finance store and shop-front and display-window modernization.”

In three weeks 21 loans for a total of about $80,000 were being processed. “Modernization benefits all . . . builds our city,” said a full-page newspaper advertisement announcing the bank’s offer, good until Oct. 1.

Bank officers said bookkeeping expenses would actually cause them to lose money on the loans, but a better looking city would mean more business, and more business would mean more activity in other accounts for the bank. The bank is prepared to advance a total of $125,000 to $150,000 for this purpose.

**Appraisal groups ratify plan for consolidation.** Two appraisal organizations, the Technical Valuation Society, established in 1939 with headquarters in N.Y., and the American Society of Technical Appraisers, formed the same year with its headquarters in Los Angeles, have ratified plans for consolidation as the American Society of Appraisers. Daniel J. Hennessy, president of Illinois Institute of Technology: “Believing as we do that only economical design is good design, we also emphasize costs to a greater extent than any other college except the College of Business.”

**PEOPLE: Lohman heads National Capital Planning Commission; William Frederick Lamb dies.** Reorganized and enlarged from 10 to 12 members under legislation enacted at the last session of Congress, the National Capital Planning Commission (formerly the Park and Planning Commission) had a new chairman: Dr. Joseph D. Lohman, 42, of Chicago. President Truman’s appointment of a non-Washigonian to the chairmanship caused anguish to some local groups but, as Dr. Lohman stated, future development of the Capital concerns not only citizens of the District of Columbia, but also of the whole world. The new chairman is a member of the legislative advisory committee of the Chicago Planning Commission and consultant to the AEC and TVA on housing community problems and human relations. He is best known in Washington as the staff director who prepared the 1948 report of the National Committee for the Elimination of Segregation in the Nation’s Capital.

Colorado University’s new department of architecture and architectural engineering will be headed by Thomas L. Hansen, who was chosen for his extensive background in architectural teaching, regional planning. From 1942-44 he was senior project planner for PHA in its Seattle office and, in addition to teaching at Washington State College, formerly was in charge of the architectural department at North Dakota Agricultural College.

After surviving for about a year as temporary head of the Calif. Public Works Department, Frank B. Durkee was named director of the agency last month by Gov. Earl Warren. Formerly deputy director under the late Charles H. Purcell, who retired last summer and died a short time later, Durkee was a newspaperman who studied law; he joined the department twenty-five years ago.

**NAMED:** John M. Coates, formerly counsel and vice president, as president of Masonite Corp., succeeding Eugene Holland, retired, who will continue as a consultant; R. H. Morris, formerly publisher of American Builder Magazine, as general manager of Ponderosa Pine Woodwork; Frank M. Haines, president of Standard Engineering Co., as president of the Washington Building Congress and chairman of its 15th anniversary celebration to be held Nov. 10; Andrew J. Higgins, Jr., as president of Higgins, Inc. (succeeding his father, who died Aug. 1) and Frank O. Higgins as vice president and general manager; Harold M. Sylvester, civil engineer for-

(Continued on p. 50)
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merely with the Bureau of Yards & Docks, as director of field service for the Building Research Advisory Board; Richard W. Frey, formerly construction engineer for S. S. Kress, as coordinator of construction for the Northland Shopping Center being erected for the J. L. Hudson Co.; T. J. Kinsella, formerly executive vice president, as president of the Barrett Division of Allied Chemical & Dye Corp.; John B. Veach, president of NMLA, as chairman of the newly revamped Lumber Survey Committee which reports quarterly to the Secretary of Commerce on nationwide lumber supply and demand; William Blurock, of Corona del Mar, as president of the new AIA chapter for Orange County, California; Albert R. Williams, as president of the Northern California chapter, AIA; Paul Thiry, as president of the Washington State chapter, AIA; and Rheinhold Melander, of Duluth, as president of the Minnesota Society of Architects.

DIED: Robert H. Edwards, partner of Edwards & Stoye, architects, Sayville, L. I., Aug. 14 at Sayville; Harrison Smith, 71, partner in Sanderson & Porter and design and construction superintendent for many federal ammunition plants, Aug. 21 at Greenwich, Conn.; David Crocker Trott, 79, former construction superintendent for the Treasury and FBS, Aug. 22 at Washington; Hugh J. Fraser, 54, vice president for plant operation, International Nickel Co., Aug. 22 at Montreal; Ellis Stoneson, 59, builder of Stonetown and other developments in San Francisco in association with his brother Henry, Aug. 23 at San Francisco; Frank Gifford Tallman, Jr., 57, director of the E. I. du Pont office building dept., Aug. 27 at Greenville, Del.; Mrs. Gail Sherman Corbett, sculptress, memorial designer and wife of Harvey Wiley Corbett, Aug. 27 at New York; William Frederick Lamb, 68, of Shreve, Lamb & Harmon, one of the designers of the Empire State, Bankers Trust, General Motors, the new Best & Co. and other New York buildings, as well as structures at Cornell University, the Kent School and elsewhere—also a Fellow of the AIA and former member of the Federal Commission of Fine Arts and of the Municipal Art Commission of New York—Sept. 8 at New York; Newton B. T. Roney, 69, builder of the Roney-Plaza and ten other Miami Beach hotels, Sept. 8 at Philadelphia.

John Goddard Belcher, 48, publisher of Progressive Architecture and vice presi-
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LEGAL SNARL OVER LOW BID HASTS BOSTON HOSPITAL

Starting from scratch a second time, the Massachusetts Department of Public Health last month hoped to climb out of the queerest legal tangle seen by the Bay State construction industry in many years by awarding new contracts for $11 million Chronic Disease Hospital in Boston.

After considerable foundation work had been done all construction was halted suddenly and bids nullified in April, when the State Supreme Court ruled that the contract to the John Bowen Co., of Boston, had been awarded improperly in August '51. According to the court Bowen was not the lowest bidder ($158 under an offer by the J. Slotnik Co., of Boston), Bowen had failed to include in its bid approximately $20,000 of expenses for performance bonds by subcontractors, the court found.

Subsequently the Democratic state administration hacked legislation that would have confirmed the Bowen bid despite the court nullification, but a Republican-controlled committee in the House blocked the measure.

Payment in suspense. The Bowen firm, according to Dr. William H. H. Turville, hospital superintendent, has been paid $789,000 for work performed between November and March. Its bill for work in April has not yet been paid. The state is not questioning the last bill, says Dr. Turville, but some readjustments in it in favor of the state might come about after a new contract is awarded.

At a legislative hearing, a representative of the Slotnik organization asserted that the Bowen firm had been paid more than a "fair price" for the work it had performed, and Slotnik declined to accept Bowen estimates of the value of completed work as a preliminary to taking over the contract as the actual low bidder. The Slotnik Co. referred to its attorneys a query whether the firm contemplated any further legal action to compel acceptance of its original bid with an adjustment for work already done. The attorneys said, "No."

Last month, the State advertised for bids to complete the snarled job, drew a prompt response from four firms. Bids were to be opened Sept. 12.
NEW Booklet...modern short cut to LOWER Maintenance and HIGHER Morale

Kitchens, washrooms, locker rooms and similar areas can be the brightest spots in a factory, when walls and floors are tiled. They are bright spots for management because maintenance costs are low, and janitor costs are slashed to the bone. Bright spots for workers’ morale, too, since unsightly washrooms are a major cause of labor unrest.

American-Olean’s new booklet on Industrial Installations is packed with helpful facts. Pages of color photographs show actual installations. You preview colors and make selections from accurate color plates...ready-to-use specifications are included in this convenient, file-size reference booklet.

There’s no other booklet like it. Write now for your free copy.
a new kind of office...

the TECHNIPLAN original engineered MODULAR office!

It tells how you can station more workers in the same amount of floor space . . .

. . . how you can give them better working facilities, comfort, and speed . . . to produce increased work output with fewer motions, less fatigue.

You can eliminate bottlenecks and congestion by straightening your flow of work—and keep it straight as conditions change.

And you can present a proud, modern appearing office to the eyes of all—customers, prospects, and workers alike.

G/W TECHNIPLAN office equipment, and 4000 other aids to good business, are sold and serviced by G/W dependable dealers, listed in your classified "phone book under "Office Equipment."

This new Steel TECHNIPLAN Catalog tells about the most significant advance in office operating equipment in several decades. It's yours by request on business letterhead.
SPECIFY ONE WORRY-FREE PIPE... THAT HAS ALL DESIRED QUALITIES... MEETS ALL SERVICE REQUIREMENTS... LOW FIRST COST, MINIMUM MAINTENANCE.

Make Pipe Dreams Come true...
with NATIONAL

If you have been wishing you could find one brand of pipe that would meet all service requirements, it’s high time you got better acquainted with National Steel Pipe. So many architects, engineers and contractors have found the National line the solution to so many piping problems—during more than half a century—that they have made National the largest selling pipe in the world.

That preference was earned by the uniform high quality and complete dependability that is built into U·S·S National Steel Pipe. From raw material to finished pipe, every step in its production is controlled by one responsible organization. Improved steel-making facilities, special manufacturing processes and the lifetime experience of many skilled craftsmen, combine to produce pipe whose metallic structure, strength, sound joints, superior welding, bending and threading properties, assure low cost installation and long trouble-free performance.

That is why shrewd pipe buyers—generation after generation—continue to specify National, whenever they need pipe. They know that it fits every purpose at a cost that fits every purse.

So, whenever you need pipe for any type of building, make your pipe dreams come true. Get U·S·S National Steel Pipe.

NATIONAL TUBE DIVISION, UNITED STATES STEEL COMPANY, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S NATIONAL Steel PIPE
UNITED STATES STEEL
That's the comment frequently heard about Kalistron installations. When walls, doors, columns or furniture are covered with Kalistron, they literally defy the wear and tear of "heavy duty" service. Years after installation, the Kalistron is still in excellent condition ... unmarred, unscratched, with practically no sign of wear.

Kalistron is different because its color is fused to underside of clear sheet of wear-resistant Vinylite. Since nothing can touch this under-surface, Kalistron's beauty stays fresh and new-looking.

Kalistron cannot chip, crack or peel; minimizes maintenance costs. Cleans easily with a damp cloth. In 28 standard colors: special colors matched.

SEND COUPON BELOW for sample of Kalistron and nail-file. Test Kalistron yourself ... prove its unbelievable durability.

U. S. Plywood Corp., Dept. F-7
23 West 44th St., New York 36

Please send me FREE Nail-File Test (swatch of Kalistron plus actual nail-file) and folder "Facts About Kalistron."

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ADDRESS __________________________

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In Canada: PAUL CULLET & CO., LTD., MONTREAL

Color fused to underside of transparent vinyl sheet... backed by flocking
Today, more and more schools are being built with reinforced concrete frames. Reinforced concrete requires from 60 to 65% less steel, permitting builders to stretch their steel allotments. Furthermore, reinforced concrete frames save money! In case after case, cost comparisons have proved the basic economy of reinforced concrete.

Reinforced concrete is faster to erect, too, and is inherently firesafe and durable—highly resistant to wind, shock, and quakes. On your next structure it will pay you to design for reinforced concrete!

CONCRETE REINFORCING STEEL INSTITUTE • 38 South Dearborn Street, Chicago 3, Illinois
8% to 10% of the average home cost is in the plumbing contract—much of that goes into the bathroom! Now you can reduce that percentage and still deliver adequate and attractive bathing facilities by utilizing FIAT "package" showers. FIAT shower cabinets are designed to meet every architectural requirement, and always cost substantially less than built-on-the-job showers.

You save time, cost and confusion because a FIAT shower may be installed complete by a single tradesman! The plumber quickly assembles the FIAT cabinet, and fits it to the precast Terrazzo Receptor right while he is setting the drain. Shower head and valves (included in package) are connected at the same time. Sound simple? It really is!

MORE ARCHITECTS PREFER FIAT SHOWERS because:

- all FIAT cabinets are rust-proofed—always made of bonded zinc, galvanized steel; never affected by building settlement; don't depend on mortar joints for water-tightness; Terrazzo Receptors are permanently leak-proof—eliminates lead pan and double drainage arrangements; deliver more quality for less money.

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LETTERS

CONSERVATION IN BUILDING

Sirs:

Congratulations to FORUM for focusing attention on one of the building industry's deplorably weak spots. BRAB's recommendations for conservation of materials and labor (AF, July '52) is a good job well done by a group of sincere, highly qualified men. Let us fervently hope that it will be put to practical and immediate use.

There are, unfortunately, too many bemused people in and out of government who have the notion that research is an end in itself, rather than a means to an end. When it becomes possible for the practical working builder in the field to avail himself of all of the proven research data presently buried in files over the country, that will be a great day indeed!

EARL W. SMITH, builder
El Cerrito, Calif.

Sirs:

The important features of the BRAB report are the broad principles it presents and its achievement in bringing together the technical men from the various federal agencies and thereby bringing into focus the variation in design practices, plans, and procedures followed by the several government agencies, including the army, navy and air corps. An awareness of a problem is the first step toward its solution. Already changes in procedures are being made.

As a member of BRAB, I was concerned lest the articles published about the report might place undue emphasis on the specific suggestions offered by the several panels of government technicians—a few of which are rather superficial and somewhat illogical; but Forum fortunately did not overstress those details.

If the BRAB conservation activity results in a continuation of organized collaboration of the 13 federal agencies for the purpose of effecting greater uniformity in government building practices and recognition of national building standards, we of BRAB will consider our initial efforts toward conservation in building successful and headed toward far-reaching achievements in effecting improvements and economy in building construction.

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

Sirs:

I read your review of the BRAB conservation report to DPA with great interest and congratulate you on an excellent summary. You have highlighted the recommendations which most of those who participated in the development of the report feel are most important and offer the greatest potential for improvements in design and construction.

There is one point in connection with the reports of the advisory panels which I be-

(Continued on page 60)
Westinghouse Panelboards provide modern, labor-saving control of lighting and appliance branch circuit power distribution, electrically and mechanically.

For instance, no guesswork is required to determine the connections between branch circuits and main bus on standard 3-phase, 4-wire lighting Panelboards. Each circuit and the bus to which it is connected is clearly, permanently identified. Eliminates time-consuming ringing-out of circuits. Simplifies installation, wiring or rewiring for future circuit changes.

For the quality that delivers power effectively, cuts outage time, speeds installation and maintenance, look to Westinghouse Factory Assembled Panelboards. More facts? Call your Westinghouse Distributor, or write for DB-30-930, Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania.

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

"DE-ION" BREAKER PANELBOARDS
Even ground glass doesn’t bother
WRIGHT RUBBER TILE

Bausch & Lomb had a severe problem in their plant at Rochester, New York. They needed a floor covering that would stand up under a constant bath of kerosene, oil, abrasives used to grind lenses, and the ground glass itself. It sounded like an impossible problem.

They installed promising floor coverings of different types in areas where conditions were most severe. At the same time they tested samples in their laboratory.

All tests indicated that WRIGHTFLOR was by far the best of all materials tested. Successful service on the job was final proof that WRIGHTFLOR would stand up.

Bausch & Lomb now has over 40,000 feet of WRIGHT RUBBER TILE in their plant and are replacing office floors with WRIGHT as soon as the present floors become worn.

Your floor covering requirements probably are not nearly so severe as those of Bausch & Lomb, but this performance record is proof that you can take advantage of the beauty, comfort, safety and ease of maintenance of WRIGHT RUBBER TILE in every installation.

WRIGHT MANUFACTURING COMPANY
5205 Post Oak Road • Houston 5, Texas

Letters

BELIEVE you should make clear to your readers: these reports are presented by BRAB as the recommendations of the panels and are not necessarily endorsed by BRAB. The Board certifies as to the competency of the membership of the advisory panels, but representing all branches of the construction industry as it does, it is clearly not within the competency of the Board to act upon the diversified technical recommendations of the various panels.

HARRY C. PLUMMER, director
Engineering and Technology
Structural Clay Products Institute
Washington, D. C.

Sirs:
The story on the BRAB report is very excellent. It takes a complicated subject and briefs it well.

I wonder, however, whether the “Frank” Walker mentioned on page 114 is the same person as the “Ralph” Walker indicated on page 116. The name is “Ralph.”

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

The Walkers who participated in the BRAB conferences were one and the same, and the name indeed is Ralph.—ED.

Sirs:
Your article lists BRAB’s recommended live load intensities (p. 117) in terms of psi (pounds per sq. in.). They should be psf (pounds per sq. ft.).

MARTIN J. YOHALEM, design engineer
Practor & Gamble Co.,
Cincinnati, Ohio

Psf it is.—ED.

Sirs:
Your magazine should be complimented for its forthright approach on the important subject of “Conservation in Building” (AF, July ’52). I also commend the public-spirited cooperation given BRAB by the professional men and the men from industry. While reports of this kind are difficult to prepare, the acceptance of such findings are even more difficult to put into practice. I hope that industry, the profession and, most important, the government agencies will initiate some of the suggestions in the BRAB report.

Many segments of the industry are conducting searching and productive research. I refer to private industrial, college and government laboratories as well as certain contracting and professional organizations. A tremendous amount of study on the problems of the construction industry is being carried on at all times, and I believe the sum-total

(Continued on page 66)
Avon Radiantweld has been widely accepted by the trade for its extreme ductility. This special feature enhances its easy-to-bend qualities. One-man hand bending advantages serve the ends of lower cost installation plus new economies of handling a softer, stronger, more impervious tubing.

Avon Radiantweld steel tubing is ideal for hot water circulating systems because its inherent toughness is proof against damage and rough handling. Its higher tensile strength coupled with greater ductility provides a solid wall steel tubing to match the most exacting installation requirements.

Longer coils (fewer joints) cut labor-time, eliminate soldering, costly annoyances of leaking unions. This special feature of Radiantweld serves the radiant heating field with important economies—easier handling and bending—reducing joining and soldering time—insuring leak-proof advantages that overcome time-consuming repairs when initial water tests are made. The 5/8" dia. now available in coils up to 160 ft. and the 3/8" dia. up to 225 ft.

Avon Radiantweld is made by an exclusive fusionweld process and is then annealed and pressure tested up to 2500 p.s.i. It is rated as approved under the Re-examination Service of Underwriters' Laboratories ... by the American Gas Association Laboratories ... meets the requirements of FHA Government Building Codes. Has a Government specification rust-resistant bonded coating.

Radiantweld is specified and used by an ever increasing number of architects, heating contractors and some of America's largest production builders of individual homes and housing projects. Such acceptance is your insurance of a quality product—backed by the highest performance standards—with millions of feet of Avon steel tubing in use by automobile and refrigeration builders, electrical and hydraulic machinery manufacturers, toy, radio and miscellaneous industries.

MAY WE SUPPLY YOU WITH DETAILED INFORMATION?
In design, it’s hard to say. But you can be sure that they’re going for modern comfort.

Surveys show that in the next few years, a large number of churches will be air conditioned.

Because air conditioning is one of the best investments a church can make. It increases attendance during summer months. It creates more interest in services by eliminating the distractions of discomfort, and of street noises coming through open doors and windows. And it means less cleaning and redecorating.

But for the architect, air conditioning in churches can present peculiar problems. Ducts and equipment must be concealed, equipment must be especially quiet. The system must be able to handle infrequent building capacities and sudden cooling loads. Frequently construction features, like high domes, add to the problem.

So it’s important to get the best advice on air conditioning equipment and installation. And the Carrier dealer is the man to see for both. He is backed by Carrier’s fifty years of experience in air conditioning all types of buildings. And with Carrier’s full line of matched equipment in his hands, he can build an air conditioning system around any special problem a church can offer. Call him today. He’s listed in your Classified Telephone Directory. Carrier Corporation, Syracuse, New York . . . for 50 years—the people who know air conditioning best.

Carrier

AIR CONDITIONING / REFRIGERATION / INDUSTRIAL HEATING
The new Fort Worth National Bank Building, which provides the largest office space of any single building in the city, is lighted throughout with Leader's OFFICER fixtures. According to Mr. John Stanley, building manager, the reasons for selecting the OFFICER are that the "fixtures proved to be lower in maintenance—offered a higher light output—and made a more attractive appearance and styling . . ." Thank you, Mr. Stanley! The ever-growing popularity of the OFFICER in all parts of the country shows that these units meet a widespread need for truly fine fixtures that are outstanding in efficiency, economical operation, and beautiful in appearance.

Leader's OFFICER
The OFFICER is available for 2, 3 or 4 tubes, either regular 40-watt or Slimline in 48", 72" or 96" length. Translucent plastic side panel and injection-moulded one-piece plastic louver with choice of 45° or 31° angle. Plastic will not warp or discolor OFFICER units may be used singly or mounted in continuous rows, direct to ceiling or suspended.

*Made under patent No. 2566817

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NOT A PAINT! Daracone is a clear, invisible water repellent that economically protects any type of above-grade exterior masonry against water damage. It also ends the major cause of efflorescence. Daracone does not affect the appearance or "breathing" qualities of the masonry. Fully effective on new or old buildings.
STOP LEAKS in above-grade masonry!

Now there is an easy, economical way to stop leaks in any type of exterior, above-grade masonry! DARACONE, a new, colorless, high-silicone-content water repellent, penetrates deeply into the masonry without affecting its appearance. It coats pores, fissures and cracks with an insoluble, non-oxidizing, invisible film of silicone. This effectively stops the capillary action by which water is absorbed. The pores and other voids are not clogged. It is the repelling action of silicone which keeps out water — even heavy, wind-driven rain.

DARACONE also ends the major cause of efflorescence. It protects against damage from freezing and thawing. It helps keep buildings clean, because water and suspended dirt roll off the masonry instead of being absorbed.

DARACONE can be quickly and easily applied in temperatures ranging from 100° to -15°. But remember, it will pay you to insist on DARACONE. Tests show that DARACONE is durable . . . will outlast other materials by a wide margin.

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☐ I want to test DARACONE myself. Please send literature and a small sample.
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LETTERS

of this work equals or exceeds that being done in any other single great industry.

The crux of this situation lies in the lack of use and coordination of the research by designers and builders. I have long been an exponent of utilizing our giant laboratory of construction to test our new developments and verify or revise our old conceptions as experience makes our errors of commission and omission apparent. The industry needs a central clearing house for the evaluation of experience and the profession should promptly decide upon such a plan and develop ways and means to finance and disseminate coordinated information on materials, details, equipment, planning and the economic relations imposed by the interplay of these factors. BRAB presents an excellent spot for such coordination. Until some effort is expended in the collection, coordination and analyses of our continuing construction practices, the industry will continue to "waddle" in the atmosphere of great ideas without putting them to work in an effective and economic way.

WALTER C. Voss, head
Department of Engineering & Construction
Massachusetts Institute of Technology
Cambridge, Mass.

CIRCULAR ROOMS
Sir:
We were pleased to see pictures of the free-standing circular room developed for Webb & Knapp's offices by I. M. Pei and associates in the July Forum as we have long admired the plans of the unconstructed houses designed by Frank Lloyd Wright for Ralph Jester in 1938, and for Paul Palmer in 1947, which utilize the principle of the freestanding circular rooms.

We hope the comment that Pei advanced beyond anything of the kind yet tried by the "old masters" of modern architecture did not include the "young" Mr. Wright.

RUTH AND GEORGE JAMES,
Huntsville, Ala.

MANHATTAN HOUSE
Sir:
I have read your article on Manhattan House (AF, July '52) with a great deal of interest, and you should be complimented for having done such a thorough job. The subject lends itself to a really good story, and you seized the opportunity.

Keep up the good fight for good modern architecture.

WILLIAM LESCAZE, architect
New York, N. Y.

TALKING BUILDINGS
Sir:
Granted that you publish the most significant buildings of today, you also have a sickening way of presenting them.

You will stop at nothing to pour out cellophane-wrapped words, even putting them in

(Continued on page 72)
If more steam users kept accurate records, more would own Superior Steam Generators.

In 1951 these two Superior units supplied steam for heat and process at 125 psi for a well known textile plant. Here are the results:

Steam Produced: 28,180,000 lbs.
Fuel cost (#6 oil @ 5.6c gal.) $12,188.57
Fuel-to-steam cost: $0.4325 per M lbs.
Total steam cost including labor, maintenance and depreciation: $17,227.94
Total steam cost: $0.6115 per M lbs.
(Steam cost previous equipment $1.25 per M lbs.)
Overall efficiency for 1951: 83%

Here's PROOF of Performance you can BANK on.

If you are planning new or expanded steam facilities, or if these figures indicate that your present steam costs are too high, get the complete story on Superior Steam Generators. Write today for Catalog 412.

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TIMES TOWER, TIMES SQUARE, NEW YORK 18, N.Y.
and your staff to bring your STEEL JOIST INFORMATION UP TO DATE

No, this is NOT a catalog of pretty pictures. (You can see Macomber Joist jobs ANYWHERE.)

For Example—did you know that Macomber produces steel joists from 4 feet to 44 feet—designed in accordance with the Engineering Standards of the Steel Joist Institute?

Think of it—30 different joist sizes to select the most economical load carrying member in depths from 8 inches to 22 inches.

ONE complete and informative catalog on Joists and Longspans, YOUR kind of information for basic engineering design. Just tell us how many you need.
In the history of bridge building and other heavy construction, wood has long been the choice of materials because of its strength and toughness, its workability and economy. Today you specify PENTA treated wood timbers with the assurance that this modern wood preservative will protect the good structural qualities of these timbers for longer and more durable service without sacrificing workability.

Pressure treating with PENTA provides wood with clean protection against termites and decay ... protects permanently, too, since PENTA will not leach or evaporate. Over 40 commercial treating plants located all over the country supply PENTA pressure treated wood to your specifications.

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Please send me: □ Plant wood treating specifications
□ Valuable booklet, "Pointers on Penta" □ Sources of posts and treated wood

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THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

ARCHITECTURAL FORUM • SEPTEMBER 1952
ADSCO'S piston-ring expansion joints can be serviced and packed under full-line pressure. That's why they're best. Simple and compact, they will absorb expansion caused by temperature differential in pipes carrying liquids, gases, or steam. The high-polish surfaces of these joints can never be scored, because the slips are in contact only with packing. Misalignment is prevented by both internal and external guiding. Write for Bulletin 35-15G. Remember, only ADSCO makes all types of expansion joints. We don't have to sell what you don't want to buy.
All over the nation modern building design now includes the use of Colorundum in colored concrete floors, sidewalks, roof decks, industrial and other walkways and driveways. Colorundum is used widely in exteriors or interiors...as a wear-resistant and colorful concrete topping of long life...at practically the average cost of ordinary concrete. Decorative color combinations are often employed of red, maroon, brown, green, dark green, french grey, black. Colorundum is a dry powder ready for use, composed of coloring mediums, fused aggregates, water-repellent and hardening elements. Colorundum is dusted on and floated and trowelled into the fresh concrete topping. The non-slip, non-metallic surface makes it an ideal flooring on new concrete or when replacing old concrete floors or sidewalks.
New Jersey highway bridge of wood costs the county 2/3 less...

- The 300-foot bridge over Deal Lake in Monmouth County, New Jersey was built in 1941 of treated wood for two reasons: (1) the treated timber structure costs less than a third of what a similar concrete bridge would cost, and (2) the treated lumber resists rot, rust, corrosion and termites. This bridge has now given 11 years of maintenance-free service.

Composite deck construction was chosen for durability and economy. Wolmanized lumber is a natural in composite construction where direct contact is made between the nail laminated wooden deck and the bituminous concrete roadway surface.

Wolmanized lumber is clean, odorless, paintable, non-leachings. Hundreds of millions of feet of it have been used and have given decades of satisfactory service. The ability of Wolman preservative salts to prevent decay or insect attack makes any lumber last longer in the presence of moisture and termites. There are Wolman preservative treatment plants in all parts of the country. Our representatives will be glad to discuss specific applications. For further information, write:

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Wolmanized Pressure-Treated Lumber

LETTERS

the mouths of the buildings themselves? Why, if I were Lever House (AF, June '52), I would sue you!

See what you have done—you even have me writing that way!

ENRIQUE LIMOSNER,
Berkeley, Calif.

FOR AN INDUSTRY MAGAZINE

Sirs:
I congratulate you on the excellence of FORUM. I like the policy of having the magazine slanted to the whole building industry rather than to just the professional side. Such a policy bridges a long unfilled gap between architects, promoters, realtors and builders. Keep up the good work and maybe architects—as such—won’t die on the vine.

RICHARD A. MORSE, architect
Tucson, Ariz.

YUGOSLAVIA’S “UN BUILDING”

Sirs:
Incited by publication of the UN Headquarters Group in the April FORUM, I send you a photograph of the Culture-Home-Building of Susak, which I had designed in 1936 and which was finished shortly before the breakout of World War II.

It is not so much my wish to point out the moment of certain analogies in its architectural structure, but that I would like to acquaint you with the architectural standard of my country, Yugoslavia.

(Continued on page 78)
With no other tool than a screw driver, you can easily and accurately adjust the air flow from a Kno-Draft Air Diffuser from horizontal to almost vertically downward—and do it after installation.

Think what this can mean in reducing your preliminary figuring for a job...and increasing customer satisfaction with the operation of the system. Kno-Draft Adjustable Air Diffusers are top performers under all conditions.

Yet adjustability after installation is only one of many reasons why Kno-Draft Air Diffusers are rapidly becoming the preferred units for both commercial and industrial installations.

For the complete Kno-Draft story, mail the coupon today to W. B. Connor Engineering Corporation, Danbury, Connecticut.
Karnak Asphalt-Aluminum Roof Coating as developed after extensive research by our laboratories combines carefully selected asphalts and vehicles with full leafing aluminum pigment. The result is a superior product which gives excellent protection and beautifies the structure coated. The aluminum particles leaf as the asphalt base dries, which forms a firm metallic shield that resists weather and reflects the hot sun rays.

Composition roofs are revitalized by the penetrating qualities of the asphalt which in turn is protected by this firm aluminum shield. Rustable metal sidings and roofs are protected against moisture and corrosion. One gallon covers approximately 250 to 400 square feet depending upon the type of surface area.

The quality of Karnak Asphalt-Aluminum Roof Coating is certified by the Warranty Seal which is attached to every container. This is your assurance of the manufacturer's integrity in supplying the best product for the money expended.

ASPHALT-ALUMINUM ROOF COATING FOR FARM AND INDUSTRIAL BUILDINGS

THE KARNAK SYSTEM OF MEMBRANE WATERPROOFING FOR FARM, HOME AND INDUSTRIAL CONSTRUCTION

Carefully refined and ductile asphalt is bonded to a tough interlocking cotton fabric membrane by a special saturation process.

The membrane, of open-mesh construction, supports the waterproofing asphalt material...prevents it from cracking, and insures the uniformity and proper thickness of the asphalt application. Karnak Waterproofing Fabric is available in handy rolls, individually packed in sturdy corrugated cartons for immediate use or indefinite storage. The fabric unrolls evenly, without distortion...can be applied easily, smoothly, wrinkle-free, right down to the last inch. For positive waterproofing protection on all construction, ask for the Karnak "System" of Membrane Waterproofing.
Stran-Steel framing members bring twofold savings when specified for commercial and industrial construction. There's the initial saving of time and money during construction—and the permanent saving over fire hazards. With Stran-Steel roof systems and floor joists, the destructive effects of fire can be reduced to a minimum.

Stran-Steel framing is easily adapted to modern design, has great rigidity, and is precision pre-cut for rapid assembly. The nailable feature of Stran-Steel framing allows a wide choice of collateral materials and speeds building close-in. Interior work can proceed before exterior completion, thus saving delay in sub-trade work.

Write for complete literature and specifications data on Stran-Steel framing; or see Sweet's Architectural or Builders' files.

Non-combustible Stran-Steel framing members were used for exterior walls, interior partitions, roof trusses, and floor joists in New York State Conservation Department building at Sherburne, N. Y.

Virginia Square Shopping Center in Arlington County, Va., uses Stran-Steel joists on the first and second floors and roof. Roof construction includes poured Pyrogyp deck plus built-up roofing.
DO YOU KNOW
THE THREE STEPS TO
successful installation?

The window the Architect specifies...for his reasons...must work out to advantage for the Contractor...in terms of trouble-free, economical installation. Finally, from the Owner’s standpoint, the successful window is the window that proves most practical...not only in the planning and construction stages, but through a lifetime of maintenance-free service and attractiveness!

PERFORMANCE COUNTS first

AUTO-LOK is the first and only window made that successfully meets all window requirements...in use as well as in every step of architectural planning and construction work. No other window so completely meets the "three-way" performance requisites that result in successful window installations.

IT WILL PAY YOU TO WRITE FOR THE "HOW" AND "WHY"!

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BOX 4541, DEPT. AF9, MIAMI, FLORIDA

PERFORMANCE FACTORS
of aluminum awning-type windows

Every day, more and more architects and contractors are turning toward aluminum awning-type windows. These newer, more modern windows are being specified for all types of construction, including factories, commercial buildings, apartments, hotels, schools, hospitals and homes. Over a period of years, the aluminum awning-type window has been subjected to rigid and exhaustive tests to determine its performance characteristics and operating efficiency under every known weather condition. This research has been carried on by the leading manufacturers in cooperation with leading architects.

THE "OPEN" WINDOW

One important advantage in favor of the aluminum awning-type window is that it can remain "open" to provide ventilation and fresh air circulation even when it is raining. Slanting sash is the answer. One aluminum awning-type window, the Ludman Auto-Lok, goes a step further in this respect. The bottom sash of the Auto-Lok window is designed to remain slightly open, while the upper sash are closed tight and automatically locked. This feature allows for night ventilation and limited ventilation during inclement weather.

BETTER VENTILATION...easier to clean

Because of their outward projection, the vents in aluminum awning windows provide maximum possibility of attaining 100% ventilation. While not all awning windows can be opened to nearly 90 degrees (almost straight out) the degree of their opening can be predetermined by checking the manufacturer’s specifications. In their wide-open position awning type windows can be cleaned from the inside. This very important maintenance factor cannot be underestimated. However, the basic design of the window must be checked. For, on certain of these types, where vents are pivoted on a fixed point, the top vent cannot be cleaned from the inside. The Ludman Auto-Lok window can be cleaned completely...all from the inside, top sash, too. This feature is accomplished by Ludman’s uniquely designed operating hardware, in which the hinge points of the top sash float down with the mechanism when the window is opened to provide a convenient 6" opening between the top sash and the window frame.

AIR INFILTRATION

Paradoxically, the use of aluminum awning windows has for many years been retarded because of their generally unsatisfactory performance on the score of tight closure and elimination of air infiltration. Yet, today, the tightest closing window ever made is an awning...
type window. This unit is Auto-Lok, developed by Ludman Corporation after many years of research. Its tight closing performance is made possible by its patented hardware, a self-locking device which automatically seals the window tight when closed. Auto-Lok hardware provides a closure ten times tighter than the popular cranks and extension gadgets to disengage.

**SIMPLE OPERATION**

The "one-hand" operation of aluminum awning-type windows is another feature that is very well accepted...and, in many instances, one of the important deciding factors in the selection of these windows. For example, this feature is important to hospitals, where busy nurses with a tray in one hand can still open or close the windows with their free hand...saving time and trouble. Each individual manufacturer utilizes a distinct type of operator to actuate the window operating hardware. Usually they have large gear boxes to generate the great amount of force required to actuate the torque bar window mechanism. Because of their size they extend over the face of the window sill into the room. Some have removable cranks and extension drives. A study of the operating hardware of all aluminum awning-type windows reveals the fact that Ludman, maker of the Auto-Lok Window, has the most efficient mechanism from the standpoint of easy operation and trouble-free service. The automatic, self-locking principle of the patented Auto-Lok operating device eliminates torque strain required to force the hinges in order to pull individual sash in tight against the frame. In fact, the Auto-Lok mechanism is so perfectly balanced and requires so little pressure that a child can operate the windows.

**THE IDEAL WINDOW for any installation...in any climate**

The aluminum awning-type window is practical from every standpoint. Installations all over the world, in all climatic extremes, have proven their practicability. Their attractive horizontal lines make them entirely adaptable to all types of architectural design from cottage to skyscraper. Their rapidly growing acceptance is having a marked influence on architectural designs because their clean horizontal lines fit admirably into modern architectural styles.
LETTERS

The Culture-Home-Building contains two concert halls (the larger one of which has a stage and can be used for theatrical performances), the town library, the town museum, a hotel with restaurant and café as well as different premises for lease.

ALFRED ALBIN, prof. of archit., design University of Zagreb
Zagreb, Yugoslavia

CITY PLANNER'S REBUTTAL

Sirs:
In FORUM's story on Philadelphia planning (Jun '52) you say "Unlike most city planners in the US, Edmund Bacon [architect-director of Philadelphia's Planning Commission—Ed.] knows that the city is not a chart but a plastic organism, a series of visual sensations produced by a succession of spaces and forms of different size and shape." Your sweeping generalization is not complimentary, either to the former architects and landscape architects who have become planners or to the growing numbers of professionally trained planners educated since the war who have, in most cases, been trained side by side with architects. You talk of "three-dimensional" planning without mention of the fact that planners (Bacon among them, I am sure) must consider as well the dimensions of time and motion and people, which make planning a multidimensional art.

Your statement about "same old city-planning engineers who thought of cities as flat planes without elevations at all" seems to be just rude. Come to Portland some time, and see a Planning Board in operation that does its work on three-dimensional-scale models, as well as in the dimensions of finances, population, and land use.

No single profession should delude itself into thinking that it alone can solve the problems of man's environment and relations with other men, or that its practitioners are the anointed ones who should lead all the teams. If it is our purpose to help other men, or to create beauty, then we cannot afford to be ungenerous with those who seek the same ends with different tools and skills, and whose contributions and knowledge we do not completely understand.

ROGER L. CRIGHTON, planning director
Portland, Me.

BUILDING ABROAD

Sirs:
I wish that you would pay a little more attention to what is going on in Europe and South America. You tend to present the American scene too much.

W. T. MARTIN, architect
Toronto, Canada

> Each month FORUM will present at least one outstanding building from outside the US. This month the subject is Mexico (p. 101).—Ed.

(Continued on page 84)
If you want to design interiors that will help a building to *work* better, at lower cost, specify walls of Structural Facing Tile — it gives you more for the dollar than any other single building material.

**FOR ALL THE FACTS ABOUT FACING TILE**

Glazed or unglazed, send for free booklet, "Catalog 52-C," "The Scientific Approach to Color Specification," and "Facing Tile Construction Details." Just address your request to any Institute Member or Dept. AF-9 of our Washington or New York offices.

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It is your assurance of highest quality Facing Tile. This seal is used only by members of the Facing Tile Institute. In the interest of better Facing Tile construction the following companies have contributed to the preparation of this advertisement.

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- **MAPLETON CLAY PRODUCTS CO.** Canton, Ohio
- **METROPOLITAN BRICK, INC.** Canton 2, Ohio
- **McNEES-KITTANNING CO.** Kittanning, Pennsylvania
- **NATIONAL FIREPROOFING CORP.** Pittsburgh 22, Pennsylvania
- **ROBINSON BRICK & TILE CO.** Denver 9, Colorado
- **STARK CERAMICS, INC.** Canton 1, Ohio
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**It's durable, easily maintained** — Glazed or unglazed, Facing Tile's hard-burned surface stays beautiful under the hardest usage, will never scratch, mar or fade. There's no need to budget for refinishing, no need to shut down for painting.

**It aids cleanliness** — Facing Tile stays test-tube bright with only an occasional washing or hosing down. Bacteria, dust, lint and other air-borne impurities find no foothold on this smooth finish. Paint fumes will never be a problem.

**It speeds construction** — Made in large-size modular units, Facing Tile goes up fast, reduces costly cutting and fitting. It provides a structural wall and a lasting finish in one economical step.

**It's "color-engineered"** — Facing Tile colors are scientifically developed to help you to make the walls fit the task. You can choose the right color to improve vision, aid lighting, increase production, and lift workers' morale.

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STEP by step, these photographs show how U-S-S 17 (AISI type 430) Stainless Steel insulated building panels were installed on this addition to existing steam generating facilities at Olmsted Air Force Base, Middletown, Pa.

Only 11 working days were needed to bolt more than 7,000 square feet of panels to the structural framework. And that's only one of the advantages of this type of construction.

Panels of U-S-S 17 Stainless Steel give you a building with outstanding appearance, a minimum of maintenance and exceptionally long life. These benefits, plus the lightweight and low "U" value or heat transmission factor, make Stainless-paneled buildings the best answer to today's construction problems—especially since U-S-S 17 Stainless Steel is available without CMP tickets.

Get all the facts on this type of construction by mailing the coupon at the right.
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GENERAL CONTRACTOR:

WALLS are standard Stainless Steel panels fabricated
and erected by H. H. Robertson Co., Pittsburgh, Pa.

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of U·S·S 17 (type 430) Stainless Steel

this 86½' x 46' steam generating

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Molded Design

Now available with U.L. label

HEAVY DUTY CONSTRUCTION
Stiles and rails 16 gauge; butt and lock cutout reinforcing

MOLDED DESIGN
A Richmond "first"; neat 20 gauge hollow metal molding around all glass and solid panels

MITRED AND BRAZED CORNERS
Continuous sash ready for glazing; no open mitres

HINGE RECESSES
provided for neat fit; no cutting on job

BEVELED EDGES
for snug fit in frame, and non-binding operation

METAL COVERED PANELS
3/4" sheet rock (asbestos for labeled doors) glued between 20 gauge steel sheets

MANY SIZES AND STYLES AVAILABLE
Single and double swing in almost any size up to 4'0" x 8'0"

COMPLETE "PACKAGE"
Furnished complete with frame and standard hardware for savings on job

These 8 features ...

... MAKE RICHMOND MD INDUSTRIAL TUBULAR STEEL DOORS
THE LOGICAL CHOICE FOR MANY TYPES OF BUILDINGS

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The Richmond Fireproof Door Company
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AUTOMATIC FIRE DOORS - KALAMEIN DOORS - INDUSTRIAL STEEL DOORS - UNIT STEEL FRAMES

THE MAGAZINE OF BUILDING
...To provide the foundation for the City-County Building in Detroit's new Civic Center, Raymond placed 126 Gow caissons, with diameters of 48 to 74 inches, to depths exceeding 100 feet to hardpan. The caissons were belled out on the hardpan to varying diameters. Completion of this project ahead of schedule is another example of how Raymond engineers combine knowledge and experience with specially designed equipment to provide any type foundation anywhere. We would like to serve you on your next project.

RAYMOND CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N.Y.

THE SCOPE OF RAYMOND'S ACTIVITIES


107x278, To provide the foundation for the City-County Building in Detroit's new Civic Center, Raymond placed 126 Gow caissons, with diameters of 48 to 74 inches, to depths exceeding 100 feet to hardpan. The caissons were belled out on the hardpan to varying diameters. Completion of this project ahead of schedule is another example of how Raymond engineers combine knowledge and experience with specially designed equipment to provide any type foundation anywhere. We would like to serve you on your next project.

RAYMOND CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N.Y.

ARCHITECTURAL FORUM • SEPTEMBER 1952
LETTERS

UNANSWERED QUESTION

Sirs:
The Gropius Challenge (AF, June ’52, et seq), and the reactions were very interesting . . . but none of them answered to satisfaction a question on my mind. What is the role of the architect in the world today, and what will be his role in the future? I believe that there are other students like myself who would like to have this question answered.

In my opinion there is only one man who is really capable of answering this question, and inspiring the students of today to continue on to be the architects of tomorrow. That man is Frank Lloyd Wright.

DELTON D. LUDWIG
Gardena, N. D.

WHERE CREDIT IS DUE

Sirs:
We are sorry for an incorrect architectural credit line given in our Foamglas advertisement in your June issue. Although the ad, featuring the insulation of a new stockhouse, was submitted to the Miller Brewing Co. of Milwaukee for approval, the fact that it credited the wrong architect was not discovered until after publication.

It is our sincere desire to afford full recognition to those responsible for the design of any building where our products are used. Therefore, we take this opportunity to properly credit architect Gregory G. Lefebvre and professional engineer Donald C. Wiggins of Lefebvre & Wiggins, Milwaukee, for their important roles in the Miller project.

ROBERT F. QUINN, advertising manager
Pittsburgh Corning Corp.
Pittsburgh, Pa.

MT. SINAI'S INTERIOR

Sirs:
The article on Mt. Sinai Hospital in the July issue . . . gave proper credits to everyone concerned with the execution of this project excepting my firm as interior designers and consultants on this project. If anyone should have an understanding of the important role being played by the interior designers in projects of this kind it would be your publication.

MAURICE H. MOCULESCU, president
Designs for Business, Inc.
New York, N. Y.

ERRATUM

In Forum's report on AIA's prize-winning buildings (AF, July '52, p. 158) it was erroneously stated that the Pontchartrain Beach bus-passenger shelter in New Orleans by architects Freret & Wolf had not previously been presented in the architectural press and would therefore be presented in a subsequent issue of Forum. Actually, this bus shelter had been detailed in Progressive Architecture (May '49) and will not therefore appear again in Forum.—Ed.
As evidence of the trend to Insulated Metal Walls in modern construction, the following statements are presented: 520,000 sq. ft. of Mahon Insulated Metal Walls with aluminum exterior plates were employed in the construction of three complete new industrial plants built by one manufacturer in three widely separated localities. More than 66,000 sq. ft. of the same type of wall was employed in the construction of two complete new plants for another manufacturer. In the five new plants referred to, there were seventeen separate buildings of various industrial types. The fact that additional plants were subsequently built by both of these manufacturers, employing the same identical wall construction in each case, indicates the degree of enthusiasm among architects and owners for the striking appearance of the finished buildings, as well as the time and labor-saving advantages of this type of permanent, fire-safe construction.

Mahon "Field Constructed" Insulated Metal Walls can be erected up to fifty feet in height without horizontal joints—a feature of Mahon walls which is particularly desirable in powerhouses and other buildings where high expanses of unbroken wall surface are common. For complete information and specifications, see Sweet's Files or write for Catalog No. B-53-B.

THE R. C. MAHON COMPANY
Detroit 34, Mich. • Chicago 4, Ill. • Representatives in All Principal Cities

Manufacturers of Insulated Metal Walls; Steel Deck for Roofs, Partitions and Permanent Concrete Floor Forms; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.
Here's why most control center buyers specify Westinghouse

Why this mass preference? It all boils down to matching product to need. Close co-operation with industry, exhaustive tests and constant improvement have produced this control center which matches industry's every need. Here are the product features that make Westinghouse Control Centers the MOST PREFERRED control centers:

FLEXIBILITY

Westinghouse Control Centers have complete flexibility to match the periodic movement, substitution and addition of machines—flexibility of electrical components—flexibility of structural units. All cubicle units are built to a standard 14" module—are completely interchangeable. Vertical structures are standardized and free-standing—can be moved or added at any time.

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There is no maze of mechanical obstacles on a Westinghouse Control Center. A few twists of a screw driver and your serviceman is ready to go to work. Guide rails simplify removal and insertion of cubicles. All starter units are front wired. Side baffles are removable for easier wiring. Sectional and master terminal boards speed hook-up work.

POSITIVE SAFETY

Westinghouse Control Centers protect both personnel and equipment. The Westinghouse "Magnagrip®" stab connectors and tilt-out disconnect position assure a "dead" unit for servicing. Unit door remains on structure to cover hot buses when starter unit is removed. Tested baffling prevents explosive chain reactions if faults occur. Each starter has an interrupting capacity of not less than 15,000 rms amps.

Complete details on these and other important features are contained in the Control Center Booklet B-4213. Ask for your free copy. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.
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Cut maintenance costs. Apply RUST-OLEUM directly over rusted surfaces without removing all the rust! Just wirebrush and use sharp scrapers to remove rust scale and loose particles, then apply by brush, dip, or spray. Costly sandblasting and chemical precleaning are not usually required. Specify RUST-OLEUM for every rustable metal surface. Prompt delivery from Industrial Distributors in principal cities.

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THE MAGAZINE OF BUILDING
Where floors must combine exceptional beauty with the ability to stand the wear of concentrated traffic, Armstrong’s Rubber Tile is the outstanding choice. With its lustrous smooth plate finish, clearly defined graining, and unusually rich colors, this floor is a handsome and practical background for distinctive interiors.

Entrance Lobby
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ARMSTRONG’S RUBBER TILE
ARMSTRONG CORK COMPANY • LANCASTER, PENNSYLVANIA
Chemical Engineering Building, University of Minnesota, Magney, Tusten & Setter, Architects. Roy Jones, University of Minnesota, Advisory Architect. H. M. Leighton Company, General Contractor. The Flour City Ornamental Iron Company, Ornamental Metal Subcontractor, including windows, Alcoa Aluminum used in windows, spandrels, entrance frames and trim, stairway handrails and copings.
In this laboratory, the designer, making skillful use of the many shapes, colors and textures available in aluminum, has made the window-spandrel pattern an expression of both the building’s purpose and of the three-foot, eight-inch modular unit used throughout.

As the architects state, “The clean lines of the exposed aluminum surfaces give a straightforward appearance to the entire structure, which seems appropriate in view of the function of the building. Aluminum seemed the natural choice for its lightweight construction, ease of maintenance and regional climatic considerations.”

In the planning stages of this, and nearly every other outstanding architectural use of aluminum, Alcoa sales engineers worked with the architects and engineers. They are at your service. For information on any form of aluminum, call your nearby Alcoa sales office or write:

ALUMINUM COMPANY OF AMERICA
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FIRST IN ALUMINUM

ARCHITECTURAL FORUM • SEPTEMBER 1952
So many ways to use... this abundant ability wood

West Coast Hemlock bevel and bungalow siding is durable and highly adaptable to any style of architecture. Kitchen cupboards and cabinets of wood are growing in popularity. West Coast Hemlock does much to accelerate this trend.

Weyerhaeuser 4-Square
WEST COAST HEMLOCK

How well do you know Hemlock? Not by hearsay... but by actual use... by working with it... nailing and painting it?

West Coast Hemlock is entitled to a fair evaluation on every single merit of its own, for West Coast Hemlock is a different type of wood from other Hemlocks. It is one of our leading softwoods. There are abundant stands of Hemlock. It will long continue to be one of our most available species. Hemlock is going to be with us for many generations.

Properly kiln-dried, and carefully manufactured by Weyerhaeuser, 4-Square Hemlock rates a preferred position in many specifications. It has just about everything one could want in a softwood and can be used interchangeably with other multi-purpose softwood species.

Many architects rate West Coast Hemlock excellent for framing, sheathing, siding, finish, moulding, flooring, stepping, cabinet work, paneling, ladder stock, food containers, cupboards, food lockers.

Acquaint your clients with West Coast Hemlock. Literature explaining the characteristics and uses of this abundant "ability" wood is available on request.

PROPER PROCESSING OF HEMLOCK

- Weyerhaeuser takes this abundant "ability" wood and through scientific logging, accurate sawing, controlled kiln-seasoning, precision surfacing, proper grading, careful handling and shipping, produces a wide range of 4-Square West Coast Hemlock lumber products.

Weyerhaeuser 4-Square LUMBER AND SERVICES

EXTEND YOUR USES FOR HEMLOCK... THE ABUNDANT "ABILITY" WOOD
WHY DON'T YOU CHECK THE KENTILE FLOORING CONTRACTOR. HIS INFORMATION IS ALWAYS THE VERY LATEST.

In a cafeteria like this, the Kentile Flooring Contractor would recommend SPECIAL (greaseproof) KENTILE because of its resistance to greases and oils; its colorful beauty and ease of maintenance.

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EVERYBODY knows that certain flooring materials are better than others for specific installations! But, not everybody realizes that it takes a trained and experienced Flooring Specialist to recommend the one floor that is exactly right ... the one floor that combines minimum expense with maximum wear ... eye appeal with ease and economy of maintenance. The Kentile Flooring Contractor is such a man ... qualified by years of training and experience to decide which of the countless products and materials available today are best for your needs. Be sure to call on him whenever you need his technical knowledge. No obligation, of course.

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Here's how you can give your customers smooth, evenly distributed light with carefully controlled brightness. New Corning Lens Panels with Fresnel design lenses eliminate shadow and glare—direct light where it is needed.

Light in weight and easy to handle, Corning Lens Panels are made in long lengths, making possible attractive, continuous runs with a minimum of unsightly butts and light leakage. Their light weight also keeps shipping, fixture, and installation costs low. What's more, these lens panels are non-color selective. They transmit true color from the light source, showing off merchandise or putting employees in natural surroundings where they look better and feel better.

Corning Lens Panels are available in two different types: Lightweight Flat, in the Unilens and Twinlens patterns, and Lightweight Curved. Get the facts on this highly efficient engineered lighting glassware and what it can do for you. Mail the coupon today.

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Please send me your Catalog LS-32 "Corning Glassware for Fluorescent Lighting."
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Select **TRANE** ...for all your radiation heating needs!

**CONVECTORS in 10 attractive cabinet types plus WALL-FIN**

**TRANE Convectors** — A complete line of ten basic cabinet models (floor type, wall-hung and picture window). Available in a multitude of sizes with sloping or flat tops, for free-standing or recessed installation with either hot water or steam. All are "Code Rated" and meet exacting requirements for efficiency, beauty and easy, low-cost installation.

**TRANE Wall-Fin** — Again a broad selection range of finned radiation: single or tiered heating elements, hot water or steam, handsome sloping-top cabinets or expanded metal grilles ... a neat answer to under-window or continuous runs.

This freedom of choice is another reason for TRANE's consistent leadership in expanded surface radiation ... ever since TRANE introduced the convector 27 years ago.

For the answer to your radiation heating needs, contact your nearest TRANE sales engineer or write TRANE, La Crosse, Wisconsin.
THE JOB: Hytron Radio & Electronics Co., fast-growing manufacturing division of the Columbia Broadcasting System, needed about 63,000 square feet of flooring for its new plant in Danvers, Massachusetts. The delicate business of making electron tubes calls for women workers... and women work best in attractive surroundings. So Hytron wanted an attractive floor... good-looking, sound-absorbing... and rugged enough to stand up under hard use and heavy machines.

THE SPECIFICATIONS: Higgins Bonded Hardwood Block Flooring
- 9" x 9" net face hardwood blocks—easy to install
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THE RESULT: Another Satisfied user of...

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USE THIS COUPON FOR FREE SAMPLE BLOCK AND LITERATURE

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The Magazine of Building
THE PICK OF THE PACKERS

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And all over the country, many famous restaurants—Toffenetti’s in Times Square, Silver Fox Restaurant in Washington, The Century Room, Dallas—use Worthington air conditioning machinery.

When you specify “Worthington”, you specify the air conditioning and refrigeration equipment that’s used by the “first” names in every field.

No other manufacturer makes so complete a line. A Worthington system is all Worthington-made—not just Worthington-assembled—assuring you of perfectly balanced operation and unit responsibility.

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America’s Leaders...in Many Businesses... Select WORTHINGTON

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Planned **TODAY** for electrical availability — **TOMORROW**

The Marlin-Rockwell Corporation's new building is equipped with G-E Fiberduct which permits future electrical changes. G-E Fiberduct gives the advantage of raceway coverage for today's electrical needs plus the provision to meet tomorrow's unforeseen demands for changing floor layouts or expanding electrical services. In fact, Fiberduct underfloor raceways permit complete freedom in arranging desks, benches, or machines. They make service outlets available throughout the floor area—anywhere along the duct line.

At any time during the life of the building, new outlets for power, signal, or telephone facilities can be added quickly—merely by making a small opening in the floor over the raceway, pulling the wires through, and installing the outlet. If more electrical capacity is needed, additional wire can easily be pulled through the raceways. These changes in electric service can be made quickly without disturbing the building's tenants or operations.


You can put your confidence in—

**GENERAL ELECTRIC**
MEXICO’S UNIVERSITY CITY

An interpretation of the remarkable new building group in which Mexico will play host this month to architects from all over the world in the eighth Pan American Congress of Architects.
ARCHITECTURE is ultramodern, yet it draws deeply from its own land and people, and from a history that blends two cultures

Mexico has time—mountains of it. In the rare air of her capital, a mile and a half above the sea, on the edge of the lava beds and within a fast hour's drive of the Pyramids of the Sun and Moon, she lets the visitor from the North choose what he wants to look at.

On the broad avenues he is in a booming pell-mell cosmopolis with more brand-new business buildings finished and underway than any city up North that he might have come from; the total effect is far more modern than that of New York or Chicago and any amount more zestful. Yet stepping around the corner into the dusty streets and colonnaded squares behind the Zocalo he stands four centuries from Main Street, incredulous that this should be America, not Europe.

Nonetheless by Mexican standards even European Mexico is very young.

Across from the cathedral there remains a ruined bastion of Tenochtitlan, that far older Indian city stormed and sacked by Cortez. And out on the plains are the pyramids. There are said to have been not dozens or hundreds of them but thousands—products of an energy we cannot understand. How ultramodern it all must have seemed then, how like the culmination of all history in its powerful golden splendor which so overwhelmed Cortez!

This pre-Columbian culmination could again look back, far back, at least as far as that small pyramid of Cuicuilco, recently unearthed close to the site of the new University City. Oldest known man-made structure in all the Americas, it belonged to a settlement said to have been 20,000 years old. One might reply that North America too has her prehistoric Indian mounds—but with the vast difference that the thread was broken. Mexico's secret is that the thread did not break across all the peaks and valleys of her tumultuous history. If the walls of her big new stadium, out at the university, made in three short years, are built just as the walls of the pyramid were, that is because thousands of the workmen who built the stadium were descended directly from the earlier builders.

The North American visitor who is an architect may long reflect on this continuity, this wealth of context; and it is possible that he will find nourishment in it for what is now his greatest hunger. For the day of heedless headlong modernism is past. Those who gave themselves to it have learned something invaluable and new: how to start converting the wonderful new resources of technology into new structures, new shapes and cunning ways with space; like Cortez some few among them have been valiant explorers. There is felt now the deep need to unite this unprecedented skill with more ageless wisdom: better context with the earth itself, better context with the artist's deeper sources of intuition, better context with what long ago was learned and seems to have been forgotten—lest, like Cortez, we destroy ageless values greater than ours.

It's not as if today's Mexican architects, the most thoughtful of them, were satisfied themselves with what they are doing, nor as if their work could be accepted as a revelation. Its faults are manifest but it has values in it that we might well study, perhaps less for what the Mexicans are doing at the moment than for what they are linked with.

As a study ground for North Americans, Mexico has strong advantages over Europe, even over Italy to which architectural pilgrimages are suddenly so fashionable. She is not Europe. She is not America. She is a marriage between the two, between Indian and Spaniard—native and explorer—two races that have battled one another into deep respect and lived side by side so each has learned from the other. We who have studied Europe perhaps too much and our own ground not enough can learn more here than from either force in isolation.

Mexico has the advantage over South America that she has preserved far more of her antiquity than any country except Peru.

Again, Mexico is on a great upsurge, which started with the liberation of her people, through the revolution of 1910, from colonial domination; and luckily for us some of her greatest leaders have been her artists. Passionately close to their people to the point of radicalism, they have had much to say; in saying it they have explored wonderful ways—as new as tomorrow and as old as time—of conjoining their art integrally with the great art of building.

In her latest phase, her modernist cosmopolitan one, Mexico has turned for architectural ideas almost wholly to the French leader Le Corbusier rather than to the American Wright or other leaders. In long perspective this is a detail, less important than the evident fact that today she faces another of her great dramatic struggles. Mexico, once beautifully Indian, first resisted then had to embrace the European invasion from Spain. Mexico, now beautifully Spanish and Indian, has just recently ceased to resist and started to embrace modern cosmopolitanism—modern business, modern industrialism, whose bounty she seeks to enjoy without letting its haste and thoughtlessness destroy her ancient heritage of art, her dignity in living.

Because one great building project displays this complex interplay most consciously and at its greatest concentration, Forum will focus on Mexico's new University City.
It is a complete city indeed and one of the biggest, most comprehensive single building operations of modern times. President Miguel Aleman of Mexico, knowing well the crucial need of education for an upsurging people, chose to memorialize his administration with a complete plant for 26,000 students, plus a 110,000-seat stadium for Mexico City, all planned together from the ground up and built at a cost of some 200 million pesos (about $22 million US).

It is on an unprecedented "regional" site, a wild lava bed (photos, r.) whose sublime possibilities had only just been discovered since World War II by architect-genius Luis Barragan.

It was built at record speed—Mexico's first "deadline" job—from a competition in 1947 through the beginning of actual building operations in 1950 to approximately 80% completion now in 1952. For Director-General Carlo Lazo (appointed May, 1950)* this represented major problems of diplomacy and also of logistics which his organizing genius and drive brilliantly surrounded.

The initial 1947 competition had been criticized for giving too much leverage to the "inside" group of competitors comprising 40 teachers and advanced students in the University itself; but satisfaction was general with the adopted plan, and almost every able architect in Mexico City was ultimately given important work.

The ultimate design involved close teamwork in an unprecedented way by no fewer than 140 architects and uncounted engineers, each working independently out of his own office, but all correlated by Lazo and the two architects who were over-all site planners from the beginning, Mario Pani and Enrique del Moral.

The site plan reflects all major influences that make a twentieth-century plan different from a nineteenth-century plan. (Site plan, p. 104.) Two areas free of lava rock dictated placement of the stadium and main building group on an east-west "Beaux-Arts" axis; but visually this is now as full of off-center deviations as the Acropolis, and there are important innovations in long cross-grain diagonal perspectives, combined with a sort of hooked branching deployment of individual buildings to shorten distances. But the all-embracing new "principle of order" is found in the long peripheral loops of automobile traffic arteries separating the main elements into four major building groups.

Architecturally there is a sharp division into three types: The main group of buildings represents a stylistic importation of Le Corbusier—but his style has suffered by a big sea-change. The stadium and sports facilities derive consciously from Mexico's volcanoes and her Indian pyramids; part of the science group is functionalist. The fact that attention to indigenous traditions came in later than Le Corbusier's cosmopolitanism is significant.

Integration of painting and sculpture is wholly new in some of its techniques and in its ultimate aim, even though the art is wholly devoid of modernism's unrecognizable abstractions. Realistic historical themes and heraldic symbolism (the latter, especially, full of Indian symbols) create messages that explain themselves, or can be explained, to all the people. But the greatest significance of the effort lies in the breaking down of what might be called "craft unionism" in the arts—doing away with the usual fixed permanent separate jurisdictions for architecture, painting and sculpture. In its place there is a conscious effort (in some of the buildings) to restore unity among all the visual arts, so that sculpture invades architecture instead of being attached to it and vice versa, so also with painting and landscape architecture.

In landscape architecture, too, there is a new ideal—hitherto preached systematically in modern times only by Frank Lloyd Wright—making the buildings a part of the landscape the way the pyramids were, "of it" instead of "on it." This is the easier on the "Pedregal" site of the university because the site itself is the quarry. The quality of the purple gray lava rock is suggested in the photo on the cover, taken in Luis Barragan's initial Pedregal Gardens development right across the way. In the University City the new landscape ideal is seriously carried out only in the sports section (see photo opp.) but the important thing is that it has been stated so clearly in a large public group of buildings. Not by accident the university's most successful attempt borrows a great deal from the form language of the pyramids.

UNIVERSITY CITY OF MEXICO:

MIGUEL ALEMAN, president of the Republic
CARLOS NOVOA, president
CARLOS LAZO, director-general
ALNIRA DE MORATINOS, director of relations
GUSTAVO TRAVESI, director of plans and contracts
MARIO PANI, directors for site planning
ENRIQUE DEL MORAL, director of works
LUIS BRACAMONTES, director of works
WILFREDO CASTILLO, directors of administration

* —and in 1952 given honorary membership in the AIA.

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BEFORE
At left: the miles of lava waste, called "El Pedregal de San Angel," before building.

Right: beauty and wildness of the gray lava rock enhanced by exotic vegetation.

AFTER
Below: the rock is still there—in buildings and forms sympathetic to it.
MAIN SITE PROBLEM: big distances and complex visual correlation

To begin with, the university had to be related to city traffic, is accessible by many main north-south arteries (top sketch). Biggest is the avenue called Insurgentes, main highway from Laredo, Tex., to Acapulco. It's the big freeway cutting between stadium and campus in the air view, across-page; the Olympic stadium, used by the city, too, being deliberately given this isolation. The second sketch shows the university's Pedregal holdings as a whole, suggesting future housing dropped in like globules where land is not too rocky. The first unit, for faculty, has already been imaginatively developed by architect Wasson Tucker, is here shown (for the first time) along with its community center at left bottom (4) of main plan.

First units planned were campus and stadium, dropped into largest gaps in the lava cover on a plan of subtle parallel axes developed by architects Pani and del Moral. Problem was to keep open space big yet shorten walking distances (open campus is still 1,000' long). Stroke of genius was full-length humanities building as great simple unifier (toward right in air view). Medical school in foreground was an inconvenient afterthought.

Ultimately the century asserted itself, made the dominant factor the long double-track, one-way peripheral roads (and parking lots) creating four major zones.
STADIUM OUT OF THE LAND

"We have built a volcano," said Lazo. "The earth has a builder's mind. In Mexico it is natural for it to build volcanoes; we have followed its volcano-building habits. ... This is a landscape form. The Mexican people see the volcano every day. They feel its form. So when our architects use this logical construction, it is the integration of landscape culture."

Technically, engineer Perez Palacios and his associates scooped out the tepetate (local rubble fill) into high embankments, compacted it, put seats on the inner slope and faced the outer with the local lava stone. Reinforced concrete was used only for access tunnels through the ramped embankment (see photo, r.), for press stands and lighting standards. Under Mexican conditions this cut the cost to perhaps one fourth of US costs. Chief significance is in the strict, poetic adherence of the design to fundamentals. Said Lazo, "It was the earth that taught men how to build pyramids."

* Arts & Architecture, August 1952

Monumentally designed tunnels empty 110,000 spectators in 12 min

Photos: (top & opp.) Erwin G. Lang; (below) Foto Saul Molina
Architect-engineers for the stadium:
AUGUSTO PEREZ PALACIOS
RAUL SALINAS MORO
JORGE BRAVO JIMINEZ

Seats are simple metal frames painted bright yellow. Spectators bring or rent cushions.

Wide oval shape yields good equalized sight lines. Near side (with press box) is higher.
UNIQUE STADIUM EMBANKMENT

The picture below is neither a progress shot of rough construction nor a view of rock erosion on a mountain but the present state of famed mural-ist Diego Rivera’s gigantic undertaking in a wholly fresh art medium.

It’s a deep relief built up over the wall face with masonry used like three-dimensional mosaic, to be colored brilliantly with acid paint biting deep into the stone. A hint of the result is seen above in Rivera’s previous experiment at the waterworks at Lerma (for a flat surface under water). At unprecedented scale (covering entire stadium) this will be neither “architecture” nor “sculpture” nor “painting” nor “landscape” but an amalgam not seen since Gothic.
A transitional form between the powerful earthbound forms of stadium and frontons on one hand and academic buildings on the other, the women's dressing-room building is typical of the auxiliary sports structures. It is faced with the local Pedregal lava stone, trimmed with the concrete fascia and metal rail of the roof-terrace restaurant, painted lemon yellow and orange. The other material is a special glazed brick made for the university and considered "studentproof." The pavement in front of the football stadium is again of the lava stone, represents another close link between building group and landscape.
Practice fields and courts form a vista of repeated diagonals.

**FRONTONS** echo the Pyramid. In these three-sided walled courts, set up in pairs, is played a ballgame similar to squash, product of two races and two cultures. In the design of the courts close-fisted functionalism has been forced to open its hand. Says writer Fernando Benitez, “Each fronton is a truncated pyramid, an aborted volcano. . . . The constructor of pyramids in the area of volcanoes has created, in the twentieth century, forms melodic and profoundly earthy, echoing the musical lines of the mountains of the Valley of Mexico and the horizontal esthetic of Teotihuacan. The walls surround a pavement of red delineated in white squares whose arrangement recalls a Chirico painting: they convey infinity. On this plane are united modern and archaic Mexico, conjoined in forming an everlasting landscape. The oblique walls and small entryways possess an eternal majesty in which time, subjected, appears to stand still.”

The frontons were designed by an architect of Japanese and Mexican parentage, Alberto Arai.

*Recalled in the play courts of the university are the powerful horizontals and obliques of the Court of Teotihuacan, 30 mi. from the city.*

*So closely followed is the “culture of landscape” that even the cactus screens concealing parking lots resemble fences of the villages.*

*Photos: (top) Compania Mexicana Aerofoto; (others) Saul Molina*
Paired courts have vertical playing walls. Oblique outer face gives simplest stability.

In the foreground of this view is dual speedway separating academic buildings from sports area. Note overpasses. Student housing will be built behind frontons. (See plan, p. 104.)
Irregular lava stone on footbridge is one of countless ways of texturing pavements.

Cobblestone pavement of Pedregal lava rock contrasts with elegant concrete bridge lines, delicate iron railing, glass window ranges over glazed brick parapet.

Photos: (above, right and below) Salas Portugal; (others) Saul Molina
COLONIAL SPANISH EXUBERANCE, such as that of the "Church of 48 Domes" at Cholula (right) is continued in Mexico's modern virtuosity with concrete. Glass-studded domes (above) on truncated pyramids give diffused light to science laboratories while two-way reinforcing of slab permits wide span without intervening posts. The building (seen across-page) houses tall equipment; its central space is two stories high, surrounded by a mezzanine gallery. Its two emphatic horizontal window ranges are cantilevered for a run of 270'.

An antecedent: the Royal Chapel at Cholula, with 48 domes.

Architect Santiago Greenham's overpass bridges are gracefully cumbered like a boat.
REFINED FUNCTIONALISM

"Thin as paper," the world's thinnest shell-concrete vault, in the beautifully graceful "covered wagon" of the cosmic-ray laboratory, is only 3/8" thick! Cosmic rays pass through it unobstructed. The handsome convolutions, both in the vault and the end walls, serve to stiffen the construction. Here is the opposite extreme from the mountainous stadium, in the university's vast vocabulary of forms, showing the range possible to today's architecture. Structural designer was the Spaniard Felix Candela; his architect associate was Jorge Gonzales Reyna. Determinations had to be largely empirical and bold.

Photos: Erwin G. Lang
COSMOPOLITAN IN STYLE, modeled on Le Corbusier, is this “mile-long” backbone building forming the north boundary of the campus. (Behind is a great long lava cut bounding the university against the city.) On stilts for its entire length, with only occasional glass-bounded areas at ground level, the building gains lightness that vanquishes its formidability, opens fascinating views through. Reason for the length was the desire to conjoin all schools of the humanities and their facilities and allow “come and go” in expansion or contraction. Plan shows how those schools which proved too big to fit on the main stem shot off branches.
BIGGEST OUTDOOR MURAL

—other than that on the stadium will give the library stack (116' high, 190' long, 45' wide) gorgeous color: a mosaic of millions of small stones of roughly 2" face, in ten hues of varied tone, from obsidian black to marble white through reds, yellows, green, gray—with pieces of glass cullet supplying the blue impossible in stone. The composition is heraldic and symbolic, representing Mexico's history culminating in today's outcome from "her historical past and as a result of the Indian and Spanish cultures." And at the base the terrace retaining wall of volcanic rock is carved with Indian themes, and the mosaic treatment continues in surrounding pavements.

Juan O'Gorman, the architect-artist, an important figure in Mexican architectural thinking, confesses that he and his associates Saavedra and Martines de Velasco have let their library share in the general fault of "too much international style," then asks for plastic forms expressing what is "innate and latent in the unconscious of the people"; and for an amalgam of architecture-sculpture-painting-landscape restoring the fusion that always existed in historic Mexico and that was at its best, in European history, in the Gothic Cathedral.
Administration building by Pani, del Moral and Ortega, directly below, is clad in half a dozen different kinds of stone, in rich textures and relief.

Cartoons for huge library mural show two historic phases: at left the pre-Columbian Indian age, at right Today, with crest of university. Library is seen below ready for mural. Note squares of translucent Tehali marble in upper part of the big reading-room window.
The science tower is the first major structure on the campus to be finished. The horizontal structure in the foreground, to which the tower is connected by passages, owes its wavy floor lines to its classrooms, which are amphitheatrical in shape because they serve subjects where emphasis is on visual demonstrations. Above is seen the auditorium for 550 people, with its shell-concrete four-barreled roof that does away with interior columns and admits light through the roof ends. Building is travertine clad, is on stilts, has a Chavez Morado mural across its curved front face.

Necessarily the buildings and structures shown have been a short selection; and since each had a group of architects, individual credit could only rarely be given. Perhaps the biggest salute must be given to the Ciudad Universitaria’s designers as a multitude; in bringing today’s architecture to what may well be a new turning point they have served well in showing how, at its most vigorous, this architecture can be multiform yet harmonious.
FRANK LLOYD WRIGHT: "About 15 years ago this spring, when Dr. Ludd M. Spivey, the presidential good-genius of Florida Southern College, flew north to Taliesin, he came with the express and avowed purpose of giving the US at least one example of a college wherein modern life was to have the advantages of modern science and art in actual building construction. He said he wanted me as much for my Philosophy as for my Architecture. I assured him they were inseparable.

"And ever since, owing to Dr. Spivey’s unremitting efforts, this collection of college buildings has been in a continuous state of growth. Their outdoor-garden character is intended to be an expression of Florida at its floral best.

"Study these buildings from the inside out if you would know something about the kind of building we call Organic Architecture. You can't really know very much about anything America has in a native culture worth knowing unless you so study them. Knowing what is good or bad about a building is knowing what you must know about the life you live here in our country, how you live it and why. If only the upper middle third of our country would try to understand why these buildings are the way they are, there might be some reason to hope. Behind every front you see here there might be something to discover. If there is nothing, then—no matter what you like—it's probably bad. To see all there is to see in any good organic building takes study and more cultivation than the usual college education affords. Certainly more than can be sent back home on postcards by travelers.

"Ask ‘why’ whenever you see Architecture you like or if you like what you see, and you would start along the path of a true culture. The path we call Organic Architecture is along the center-line of an indigenous culture for these states in which we live, because there can be no great life for our people without the integral culture of an Architecture of our own. I should say there is really no other kind of culture possible.

"Actual knowledge of the ‘why’ in Architecture—either old or new—is to be the true basis of our Culture now just as it has ever been and ever will be the basis of any Culture for any people. All we know about great civilizations is what we learn of them from what remains of their Architecture. Were our civilization suddenly destroyed what do you imagine subsequent civilizations would have to think of us as a civilization? They would look back upon our ruins and discover what we had done and were so busy doing. What then would they see? Nothing but the pottery of our plumbing from which they might conclude we belonged to ‘the sanitary era’—authors of the sanitary slum.

"So, as for these buildings in which a true portion of America moves, studies, works and has its being, if you would honestly try to understand these Florida Southern College buildings and would really know what they are all about (whether you like them or not), something important to our country's future as a democratic nation will transpire. Because not only do buildings last long but in these buildings here and now you may see something of your own tomorrow that is yours today. Yes—and maybe, the day after the day after that.

"Because a preceptor in education like Dr. Ludd M. Spivey took thoughtful measure of his time and flew to Taliesin, you will see in these buildings now standing at Florida Southern College the sentiment of a true educational saga along the cultural lines of an indigenous Architecture for our own country."

FRANK LLOYD WRIGHT
ABOVE, LIBRARY SEEN FROM ESPLANADE BESIDE CHAPEL; BELOW, ADMINISTRATION BUILDING ACROSS IDLE WATER DOME.
GENERAL PLAN WAS MADE IN 1936, CONSTRUCTION BEGAN IN 1938. INTERRUPTED BY WAR, GROWTH IS NOW CONTINUOUS.

All this—and practical success too!

Presidents of most small private colleges today are worrying about: 1) fund raising, 2) enrollment, 3) intellectual apathy and conformity.

But Florida Southern’s president, Dr. Ludd M. Spivey, thinks his spectacular campus is solving these problems for him.

Student enrollment has increased five-fold since completion of Wright’s first building, and student and faculty spirit has soared sky high (see Dr. Spivey’s comments on page 125). As for fund raising, it seems that money for the first Wright buildings was hard and slow to come by. But as the campus has developed so has the eagerness of benefactors, confirming an old observation: whosoever hath, to him shall be given.

The way things are rolling, Dr. Spivey now believes the campus has a good chance of being completed by 1957, certainly by 1960. Estimated cost, complete, is $10 million.

Buildings on the plot plan (opposite page) are keyed to the order of their construction. The chapel was started in 1938, completed in 1941. Next came the library, completed in 1942; three seminars, 1943; water dome, 1948; administration building, 1949; industrial arts and home economics building, 1952. Ground was broken for the science building last spring, completion scheduled for 1954. Half of the 1 1/2 miles of esplanade is finished. Art building, swimming pool and amphitheater, music building, gymnasium (not indicated on plan), and more seminars will follow in that order.
LAN IS LIKE A NET BUOYED UP BY BUILDINGS WITH THE MESH OF THE ESPLANADE ROOFS FLOATING JUST ABOVE THE EYE.
Lobby, where entering students register. Counter slants across it (not as shown in plan). Sidelights are notched directly into corners of diamond-shaped columns.

View from directors' room with offices on right, court on left, a glimpse of office gallery high above door. Court with its reflecting pool is shown overleaf.

Esplanade leads to library, ultimately also to projected theater. Retreating slant of stair risers has the psychological effect of pulling one forward and up.
LUDD M. SPIVEY, F.S.C. president, says: "When the college decided to use Mr. Wright's architecture, it didn't realize it was to benefit from a by-product of his buildings—student enrollment. This has long been a major problem with small private colleges such as ours, but the Frank Lloyd Wright architecture has made this college known all over America and much of the world. It has largely solved our enrollment problems. In the last instructional year we had students from 42 states and 21 foreign countries.

"It is also interesting that college presidents from all over the country are coming to the campus in increasing numbers to see what the Frank Lloyd Wright buildings do to and for education. "I have seen a new spirit and a new attitude in the student body and the faculty since the coming of the Frank Lloyd Wright architecture. It took a little time for the buildings to make an impact but they finally did, and one on the inside of the college finds a new stirring of minds all over our campus."
CALE IS SMALL; ONE CAN TOUCH THE ROOF SLAB. HERE IS A SENSE OF HUGE, EXCITING SPACE MADE OUT OF MAMMOTH.
ELEMENTS SCALLED DOWN TO HUMAN SIZE. HERE IN PERFORATIONS AND GROOVES IS DELIGHT TOO FOR THE SENSE OF TOUCH.
ROSENFIELD AND HIS HOSPITALS

He approaches his jobs like a city planner

"I have no ambition to create the spherical hospital, the cylindrical, spiral or diagonal hospital," says Isadore Rosenfield. "The hospital architect's contribution is apt to be in new configurations of known forms rather than in the creation of new forms. The fact that the works of the great are usually small in magnitude and few in number and generally deal with well-known human problems such as the house, the hall, the workshop, shows how consuming creation is."

Within this realistic limitation there is certainly nothing humdrum about the 66 hospitals in which Rosenfield has had a hand as architect, consultant or executive principal. In almost every one of them you will find yourself brought up short by a piece of calmly logical, out-of-the-ordinary thinking. Like their articulate creator, Rosenfield's hospitals have plenty to say, often something new, always something to the point.

Rosenfield is an outstanding exponent of:
1. The 3- or 4-story hospital vs. the tower hospital;
2. Horizontal contiguity vs. vertical;
3. Horizontal expansion vs. vertical;
4. Big nursing units (up to 70 beds) vs. small;
5. Orientation primarily to the view vs. orientation primarily to the sun.

But Rosenfield's hospitals are all different one from another, and if you try to look at them all at once you risk missing the main point: in their differences they demonstrate best the uses of an inquisitive and independent approach to social thinking. Here are a few recent outcroppings of this rich Rosenfield vein of thought:

The big San Juan, P.R. medical center incorporates a complete small rural hospital and health center as a teaching unit for doctors and nurses who will go into the hinterland. ("If rural medicine is to be practiced successfully, it must be taught.") And its site was chosen with the idea of enabling student doctors and nurses to live on the University of Puerto Rico campus; their hospital and nonhospital lives are joined (and separated) by a little bridge into the medical-center grounds. ("Young people are entitled to a happy, normal social life.") (P. 129.)

Beth-El in Brooklyn has a different relation of wards and nursing stations on each of three floors. ("There is a lot of talk about the most efficient arrangement but very little examination of the problem under controlled conditions.") (P. 133.)

Sidney Hillman Health Center† in Philadelphia shows an ingenious triple corridor outside examination rooms and doctors' offices. This was devised to eliminate herd waiting. ("We wanted the whole process to be dignified. We wanted the patients to feel they are really considered as individuals.") (P. 135.)

North Shore Hospital at Manhasset, L. I. includes group practice and community health offices and public meeting rooms. ("A hospital can be a very important cultural force.") (p. 130.)

The Children's Building of the Tuberculosis Hospital Center near San Juan includes a school with library, shop, art, science rooms.

("While children are recovering from a dreadful disease they must also have a chance for fruitful and enlightened living.")

All these were Rosenfield suggestions, not contemplated in the client's program. The chance to make such suggestions and see them adopted is the biggest reason why Rosenfield decided to be an architect. He early discovered that most good ideas float around and eventually die in a sea of talk, but an architect has the special advantage of being in there with his ideas precisely at the time action of some sort has to be taken. This heady discovery switched him in his third year at Harvard from a social ethics major and settlement-house worker into the school of architecture.

Before Rosenfield graduated (M. Arch., '22) he realized that hospitals were his dish and he has concentrated on them ever since, first as apprentice to the big hospital architects of the twenties, later as chief architect of the New York Department of Hospitals and later of the New York Department of Public Works. He opened his own office in 1946, soon afterward completed the comprehensive book on hospital design that has made him known wherever American technical writing penetrates. This work still keeps his mailbox full of exotic stamps.

"The city planner gets a problem and he has to start from scratch. The architect usually asks for a program," Rosenfield observes. Working either as consultant or architect, Rosenfield uses the city-planner approach, does his own studies right down to digging out the facts on family income in the community. His facility with this kind of research comes out of his three years' training as a social scientist. He is suspicious of all rules-of-thumb and initial assumptions. To his clients, he explains himself as "a physician to hospitals," says he cannot base diagnosis and treatment simply on what the patient reports about his ache.
Rosenfield works out his own programs; he convinced officials that San Juan Medical Center (plot plan below) should include industrial (similar to workmen's compensation) and rural units, be integrated with campus.

This 600-bed tuberculosis hospital at Río Piedras, P. R. is one unit in Rosenfield's biggest work: a long-range program of integrated hospitals for all Puerto Rico. (For more on this tuberculosis hospital, see p. 134.)

After the research, Rosenfield usually lays out a comprehensive program of rounded development that may take decades to complete. Most spectacular example is his Puerto Rican work, which began with an island-wide survey of all needed health facilities from medical schools to rural clinics. But even in a simple bed-addition job such as Beth-El he works out a rational scheme for the future first, fits the current project into it.

Sometimes Rosenfield tells clients their whole idea was wrong, sends them off to get ready for what he calls “the beautiful, significant operation.” Instead of obliging with a new home for a small Philadelphia hospital, he advised the board to consolidate with two other small hospitals in the community, thereby amounting to something. This advice is being followed. His diagnosis of a small Boston hospital convinced its board that their site was a sow’s ear, that they had better think in terms of future rebuilding instead of current addition. To make up for lost jobs similar to these, he counts on a percentage of the clients returning when they have a better grip on the future. Much of his current work involves some increment of a comprehensive he worked out some years ago.

Rosenfield’s comprehensives (or presentation preliminaries) are like nothing taught in the schools of architecture. They straddle both sides of the usual first preliminaries. 1) They are prepreliminaries in the sense that they deal with decisions the architect usually, for better or for worse, takes on the client’s say-so or leaves unexplored. 2) They are postpreliminaries in the sense that they leave absolutely no guessed-at spaces in the buildings to be tackled first.

Every unit, every floor has its interior space realistically allocated. If the building has new features or Rosenfield thinks it is time to reanalyze old ones—such as utility rooms—this is when he makes a detailed large-scale study with all equipment. If an old space grid does not work out, this is the time when he adopts a new one. Plans at this stage are freehand but the pencil lines are the only casual thing about them. Usual hospital experience is that the cube increases as the plans develop. Rosenfield’s cubes show a consistent minor decrease from first to last. He has a horror of postpreliminary jolts on cost and cubage, which he seeks to avoid by this early detail method (plus regular reports to the client on the course of the building cost index); and he is convinced that in any case only realistic studies merit preliminary discussion with planning boards, medical advisors, administrators.

Rosenfield’s entire presentation is unorthodox. Instead of submitting a luscious rendering (“too often a skin without bones”) he stacks floor plans into a stripped isometric, bones without skin. His reason: first things first, discussion of function before form. While he has a very good idea as to how the building will look, he shows no elevation studies until everyone concerned has thoroughly picked over the bones, agreed on their shape, size and articulation. What makes this method workable is Rosenfield’s elastic definition of function. In his lexicon it means not only the machinery but the emotional content of the hospital. The views from its windows, the look of the corridors, the effect on the entering patient are all deliberately built in.

In his own office, Rosenfield drops the analogy of physician, likes to think of himself as conducting an orchestra of composer-musicians. His draftsmen are all young fellows bent on hospital-design apprenticeship; he has a waiting list that sometimes runs two years. To get a line on the current directions of Rosenfield and his team, turn the page.
HORIZONTALITY

Rosenfield likes horizontality not for its own sake but because he believes it:
1. Cuts down vertical travel, thereby saves space and money in construction and time, money and aggravation in operation;
2. Makes for rational separation of elements instead of "stuffing";
3. Plays down monumentality and so avoids its pitfalls;
4. Allows easy expansion.

Rosenfield's revolt against the tower ("several stories of services topped by several stories of patient quarters, topped by still more stories of services with odds and ends stuffed here and there") dates back to 1943 when he hit on the principle of "horizontal contiguity."

This is one of those simple ideas that seems obvious—after somebody thinks of it. Briefly, what he does is split the services and the nursing units into two independent wings, then relate them horizontally. He puts medical nursing units on the first floor to keep these beds on the same level as diagnostic services (which almost all hospitals put on the ground floor because of outpatients). He puts surgical nursing and surgery on the second floor, maternity nursing and delivery on the third. Where a fourth bed floor is needed he assigns it to general nursing for cases which will not need to make much use of any special services. This system minimizes elevator travel between services and nursing units, puts a quarter or third of the patients on the ground floor, another quarter or third one flight up, cuts elevator travel by visitors at least in half.

This contiguity principle is now fairly widely accepted in hospital planning (although plenty of modern exteriors on tall, new hospitals still belie it). Now Rosenfield is thinking it through to greater flexibility and adapting it to expansion needs and the spate of ever growing community services. His North Shore hospital (above—now under construction) shows most of his latest thinking.

Outstanding feature of North Shore is its horizontal expandability. When the second nursing wing is added (see isometric) capacity will double from 182 to 364 beds. Actually the project is so thoroughly planned for this expansion that it could more accurately be called a 364-bed hospital to be built in two stages.*

Floor pantries and day rooms are sized for the full load; kitchen, laundry and boiler plant have pipes and space for the extra equipment; another pair of operating rooms will bring the second floor of the service wing to first-floor length; additional delivery-

* See News department for picture of York & Sawyer's doubling hospital designed for the army.
North Shore Hospital illustrates horizontal contiguity principle (see isometric), is built for 100% bed expansion. Vertical oak strings on south facade are to "gentle down" regimented face, distinguish nursing wing from services.

suite space is already built into the third floor. For the nonce the hospital weighs in at 592 sq. ft. per bed; expanded it will have 465. The first figure is high, the second slightly under average.

Rosenfield and the planning committee had another choice: they could have saved $70,000 temporarily by building the first two stories of both nursing wings in stage I, adding the second two stories in stage II. But meanwhile patients would have been trundled up to the service wing's third floor, stage II construction would eventually eat up the savings on stage I, vertical addition would be more disturbing to the going hospital. North Shore's nursing slab is justified economically, Rosenfield thinks, only because it will be expanded horizontally. Otherwise he would not stack 182 beds into four stories.

Note that: 1) pediatrics shares the ground floor with medical nursing; 2) general nursing occupies the fourth floor. Thereby hangs another tale of the contiguity principle. The horizontally contiguous hospital will work out right only if its statistical base is right. Any bad miscalculation on the proportion of medical beds needed, for example, means shuffling cases out of their proper units and makes the system almost as amorphous as the old tower.

Once bed proportions are correctly figured, pediatrics offers a unit handy for juggling, because it is small and because there is really no "best" place for it. For instance, in hospitals where the maternity load will be light, Rosenfield puts pediatrics and maternity on one floor. Sometimes he puts pediatrics on the fourth floor. Studies for North Shore indicated that thorough-going medical nursing would take the lightest load, thereby fixing pediatrics on the first floor. The full general nursing unit at the top of the stack takes cases not intimately tied up with any services, provides a good hedge for flexibility. With one such variation or another, Rosenfield is convinced that in the US stacking for contiguity makes sense in any large or medium general hospital with adequate site space. In general hospitals of undeveloped countries it does not, because there the surgical load is far too heavy.

Now for the problem of the swollen first floor—which has begun to plague even hospitals whose patients are all aloft with administration and outpatient departments tucked beneath them. Hospital extras are growing: North Shore has the works, even to a community auditorium. Here (and in many of his Puerto Rican buildings) Rosenfield goes wholeheartedly horizontal with administration, outpatients and the extras, builds extensive one-story structures, welcomes the chance to drop patios into his hospitals.
HORIZONTALITY (continued)

His 600-bed addition to the 800-bed tuberculosis hospital center at Rio Piedras exhibits another trick. First Rosenfield combined its 12 nursing units into three groups (male, female, surgical-obstetrical) each two stories high. He placed the first two groups in a straight line end to end, then turned forward the ends which would have touched, making a two-floor gap. Into this gap he put public spaces and administration. He modified the two short forward nursing wings into admitting wards on the ground floor, isolation on the second. The third group lies above the other two, straddling the gap.

It all works out very neatly indeed. First and second floors of the rear service wing have diagnostic and medical facilities for the first two nursing groups and for outpatients from other buildings of the center. Surgery on the third floor matches with surgical nursing. Fourth-floor obstetrics (this is the island-wide center for delivery of tubercular mothers) matches maternity nursing. This special hospital is organized somewhat like a general hospital without extras, shows one way patients in a big institution can be kept close to the ground with only modest single-story burgeoning.

BIG NURSING UNITS

Rosenfield, in a minority on this question, feels he is fighting against a sacred cow. He points out that different people and even whole nations adhere emotionally to the belief that a certain number of beds represents the apogee (in France 22, in the US 25-35, in Finland 37, etc). Rosenfield thinks some units as large as 70 beds are not only feasible but desirable. "I'm not stubborn about it," he says, "but I like to sell my ideas where I can."

The two chief arguments against big nursing units run like this: 1) the smaller the number of beds per unit, the better for the patient; 2) big units mean long corridors and tired nurses.

"Nonsense," says Rosenfield. To point No. 1 he replies that too many units spell poor supervision, which is not good for patients. Big nursing units, he points out, are assigned proportionately more nurses than small units; in themselves they do not save on numbers of nurses. But big units mean fewer units, hence fewer supervisors, chosen more selectively. Dividing a hypothetical 200-bed hospital into eight units averaging 25 beds requires eight supervisors on each shift and he believes a 200-bed hospital can hardly hope to fill eight supervisory jobs, day and night, without mediocrity. Supervisors would be better, he argues, if there were only four units, two of 70 beds each for medicine and surgery, and perhaps one at 26 for maternity and one at 34 for pediatrics.

He adds that the 25-35 bed nursing unit—far from retaining the advantages of more personal nursing—has become a stronghold of assembly-line care. The patient sees a constant procession of strangers in white, one with a thermometer, the next with medicine, the third with an enema bag; because of changing shifts and days off, the patient is lucky to see the same nurse twice.

To point No. 2 he replies that just as the effective distance between New York and London has changed, so has the effective distance of the nursing corridor, owing partly to modern intercommunication systems between nurses' station and patients' rooms, partly to more inventive organization of the unit.

To shorten the corridor further, Rosenfield has lately devised a system of partitioned wards with nurses' substations (see plan). Each ward includes nurses' cabinets and a counter for chartwork. Cabins hold materials usually kept only at the nurses' station and utility room, toilets are equipped for bed-pan washing. All this makes trips to the main station few and far between. One nurse—usually with one or two practical nurses and an orderly under her supervision—takes full care of the patients in her ward, a system known as "team nursing." This partitioned ward with station is valuable even for a hospital like Beth-El which has standard-sized (33-bed) nursing units. Its advantages:
Divided 8-bed ward at Beth-El is similar to plan below. Same scheme is sometimes used to break deeper 12-bed wards into 3-bed alcoves. Nurse's substation backs against corridor. Beth-El interiors by Designs for Business.

Different floors of Beth-El bed addition have differing ward schemes for efficiency; comparison: second floor (above) has 8-bed groups with substations (see Plan No. 1); Plan 2 shows unpartitioned 4-bed wards with substations; Plan 3 has partitioned 4-bed wards, no substations.

1. Patients are rarely left unattended;
2. Old-fashioned personal nursing (now regarded as highly progressive in hospital circles) is made easier to handle;
3. Nursing itself includes more variety and less boredom than is the case in highly specialized, assembly-line systems;
4. Economy of the large ward is coupled with the greater flexibility and amenity of the semiprivate room;
5. Removing one bed from an alcove provides that long-sought paradox, “the cheap private room.”

For the Beth-El addition, Rosenfield also reorganized the nursing services (see plan). He sees no reason other than custom for the usual array of corridor-to-window rectangles, bases his reorganization on step-saving.

Note also the split doors into patients’ rooms, a device which makes it unnecessary for a nurse to push a bed-width door every time she goes in and out. Instead of the usual 3'-6" to 3'-10" doorways, Rosenfield uses a 4' opening, equipment with a 2'6" door for ordinary use and a 1'6" panel which is opened only when a bed must be pushed through. In effect, this is a neater, uncluttered version of the swinging “barroom” doors in old hospitals.

Rosenfield's unorthodox views on the nursing unit go further than size. He is impatient with the concept of the hospital as a good hotel, believes that most of mankind is less concerned about recovering in luxury than it is about paying its bills, is convinced that a choice between fancy rooms and the best diagnostic and therapeutic facilities should always be resolved in favor of the facilities.

"It is far better to have a good hospital to go to in the hour of need, even if you have to rest in a large ward," he says, “than to sleep in a private room in a hospital that has an X-ray bottleneck or an unsafe nursery."

He believes that many hospital boards have unrealistic notions about the number of private beds their communities can support; he cites the case of a board which planned, by rule-of-thumb, to allot private rooms for one-third the beds in its new hospital; an economic survey showed that the town lacked enough well-to-do families to support one private bed. After a nursing unit has been allotted sufficient private beds for medical, emotional and economic needs, Rosenfield thinks that ideally the remaining beds should be in rooms three beds deep, or in six-bed wards. "This is the most economical arrangement," he says, "and the most difficult for people who believe in the hotel-hospital to accept.

"The very best hospital is the one that is not needed. Better to spend resources on prevention than on cures in luxury."
FOUR-PURPOSE WINDOWS

• for view
• for sunshine and breeze
• for agoraphilia
• for germicidal daylight

Before he begins his comprehensives, Rosenfield is already peopling his hospitals with appreciators of the view. He likes to imagine a tired surgeon at Rio Piedras tuberculosis hospital getting a lift from the breathtaking sight of San Juan and the distant sea beyond the surgery corridor, or a patient at North Shore drawing serenity from the green and rolling land. He orients patients’ rooms first for view (plus breeze in the tropics), second for sunshine.

His preferences for sun orientation run (in order): southeast, south, east, northeast, southwest. For the sake of the best views and breeze he will accept any orientation except north or west on the major side of the nursing wing. He controls excessive sunshine by overhangs or—in the tropics—by filling the projecting sash of windows with cement-asbestos panels instead of glass (see photo). He protects tropical balconies and terraces with column-to-column, floor-to-ceiling folding doors. (Normally such doors and opaque sash are merely adjusted for shade; they are closed only for hurricanes.) In tropical operating rooms he glazes inside the opaque sash or uses heat-absorbing double glazing with an overhang.

Whatever the latitude, Rosenfield does not favor windowless operating rooms. He cites instances of surgeons who fainted at operations during the first wartime blackouts, says many people suffer less overt manifestations of claustrophobia. believes most of us who are not claustrophobes are at least agoraphiles. In fact he does not favor windowless anything, will use a basement below grade for nothing but storage.

He stresses the germicidal value of daylight even for facilities facing north. (Direct sunshine is one of the swiftest germ killers in existence, but even light reflected from an overcast sky through double-glazed north windows is potent.) He is convinced that natural daylight is cheaper, safer and apt to reach more corners than germicidal lamps. He shudders at windowless kitchens, believes they hamper vermin control. He almost never ends a corridor with a blank wall, thinks large blocks of daylight (with sun-dappled view if possible) at corridor ends do wonders for a hospital’s tangible and intangible atmosphere.

He prefers a minimum of masonry in his facades for: 1) unlimited (controlled) daylight; 2) freedom in internal planning; 3) economy. Costs on his jobs indicate that strip windows are cheaper than conventional masonry-plus-windows provided about 50% of the windows are fixed glass.

To increase windows, decrease masonry, he uses two devices:

1. He places the column inside the building face, leaving a space between the column’s external face and the spandrel; then he runs pipes along the external face of the column rather than in masonry pockets at the sides. He protects the pipes with a thin sheet of masonry (see detail). With this construction he is apt to use an upturned spandrel beam (above instead of below the ceiling). This carries windows full from sill to ceiling.

2. Or—with columns again placed inside the face—he carries pipes horizontally at each floor under the spandrel slab (see photo and details), for the full length of a wing. The horizontal runs join vertical stacks only at the ends of the wing. This scheme does not require the thin sheet of masonry, permits continuous strip windows throughout a wing, has the added advantage of permitting exact duplicate modules.
To give New York State Veterinary College identical-width modules, Rosenfield discarded conventional window spacing, divided bay into equal parts from column center to column center.

Typical Medical Consultation Room
Size of consulting rooms determined bay at Sidney Hillman Health Center.

CONVENTIONAL SCHEME

NEW SCHEME

TAILORED MODULES

By now the economy of modular construction is commonplace. But not so much has been said about the economy of getting the right module.

Pulling services out from under and over the patients, as Rosenfield does, results in a nice by-product: the chance to discriminate between bay sizes for nursing wings and service wings. Generally Rosenfield uses a 22' bay (to get minimum 10½' rooms) for nursing wings, likes to fit kitchens and laundries into the downhill side of a slope beneath. But he finds this bay wasteful for laboratories, operating rooms and the like, saves almost 10% of length in service wings with 20' column spacing. (He has also tried 19' bays, finds them too tight.)

To restudy an old grid or determine a new one, Rosenfield begins with what he calls "a study of space for the horizontal patient and the vertical people and their tools around him." From an intimate-scale scrutiny of this sort he arrives at the larger scale dimensions of the room, then of the bay. For an example, see dimensioned plan of typical doctor's consultation room at Sidney Hillman Health Center. These were key rooms; each required space for consultation with a patient and his family, a curtained examination alcove, dressing rooms for incoming and outgoing patients. The resulting bay (1½ offices) was 21'.

Similar study of offices and laboratories for New York State Veterinary College (on which construction is to begin in the spring) reduced the client's selection of 12' x 10' room sizes to 11' x 15', saved 14% in floor space.

This Veterinary College boasts another refinement in modular construction: all offices and laboratories are in even multiples of 5'-8", a degree of regimentation that was desirable in this case. To achieve this, Rosenfield narrowed the windows next to columns, so the distance from column center to mullion would preserve the 5'-8" rhythm (see diagram). Advantages: 1) standardization savings in flooring, built-in equipment, interchangeability, maintenance; 2) spared feelings for those academicians who would have got little (9'-9") instead of big (12'-11") offices.

Rosenfield is equally disposed toward steel or flat slab reinforced concrete construction, makes his choice on the basis of comparative costs. He avoids planning for vertical expansion ("all those people tramping around over the patient") which cancels out a principal advantage of steel. He abhors random column spacing which cancels out a principal advantage of concrete. Generally concrete gets the nod for economy.

"Our quest for uniformity, repetition and strict adherence to the module alarms some people," says Rosenfield. "They cry, 'A factory!' We do not flinch before this frightful accusation. We would be proud to design hospitals and medical teaching buildings that are as clean and beautiful as some modern factories."
Grand Union's supermarket and office tower dominate a 100,000 sq. ft. shopping center in Elmwood, N. J.
SUPERMARKET

borrows department-store technique to

triple its customer capacity—a prototype

Here is the new look in supermarkets. Gone are the traditional long, high rows of shelves that block the view of the rest of the store. Gone is the assembly-line effect of formally aligned counters and shelves. Gone, too, are the knots of customers delayed on the assembly line at the meat and produce counters.

Instead, Grand Union has applied the best department-store design techniques to its newest and largest store—in an Elmwood, N. J., shopping center. Result: Except that it principally sells food, this 24,000 sq. ft. supermarket could actually be a department store.

• Sales islands are informally arranged on a loose wagon-wheel pattern.
• Impulse items—exotic foods, flowers and potted plants greet customers as they enter and leave the sales floor.
• Demand departments (meats, produce, essential canned goods and staples) are farthest from the entrances.
• Stocking the sales floor is unobtrusively done at three points with conveyors and a dumb-waiter from a lower stock area.
• Reserve stock on the sales floor is kept out of sight behind departments along the wall.
• Color defines and advertises each department. Adjacent departments have related colors so that the entire sales area has a running harmony of colors. In all, 19 colors were used in the store.
• High-intensity general lighting augments the colors. Slimline fluorescents throughout give a whopping 100 foot-candles at counter height.
• Display lighting accents special departments and special sales areas.

Successful experiment

This radical departure from accepted supermarket layout naturally raises the questions: How well does it work and does it pay off?

Grand Union believes it both works well and pays off handsomely and therefore plans to build certain future stores along the lines of this prototype. According to the owners' estimates, three times the normal number of customers can be handled with the department-store layout—and for three good reasons: 1) the plan disperses people throughout the entire area instead of bunching them in narrow constraining aisles; 2) it permits people to see and identify all departments from any part of the floor thus cutting down on the "wandering around" time lost in other stores; 3) it keeps stock carts and stock personnel off the sales floor as much as possible.

Unique slanted trays of adjustable width form racks for canned and packaged goods in a patented "Food-O-Mat" along the rear wall. Diminishing items are replaced by clerks out of sight behind the racks; all stock is pushed forward in the racks by gravity so that few empty racks ever appear. In addition the self-feeding rack system keeps all canned and packaged goods in neat alignment at all times.

LOCATION: Elmwood, N. J.
KELLY & GRUZEN, architects and engineers
MAURICE MANTEL, associate in charge
BECK, SIMON & MANTEL, structural engineers
THE FERBER CO., general contractor

Photos: Gottscho-Schliehsner

Department-store techniques used in new supermarket place impulse items near entries, put fixtures in informal islands and bring high (100 fc) intensity general lighting to bear on merchandise.
1. Large signs for “Bake Shop” and “Home Center” characterize all major-department identification.
2. Ends of informally arranged island fixtures in grocery section display items on special sale.
3. Houseware section contains items not generally found in grocery stores: pots, pans, kitchen stools, step ladders.
4. Meat counter with two-way wall mirror is serviced from rear. Wide aisle permits traffic around produce center as well.
5. At packaging stations behind meat counter, meat is received via conveyor, cut, weighed, priced and packaged.

Basement level of supermarket has conveyor system to route processed produce, canned and packaged goods to floor above. Even an empty-bottle return under checkout counters was installed to keep sales floor clear at all times.
Prepackaged fresh meat cuts can be individually selected; the supply is replenished by clerks hidden behind a two-way mirror where they cannot interfere in any way with customers' activities. A "hospitality bar" near the checkout counters offers exotic—and expensive—foods. It successfully tempts shoppers who would not otherwise look for caviar, rare foreign cheeses and the like.

A new approach to service

Canned and packaged goods enter the basement stock floor through one door at the rear of the building, meat is received at another rear entrance while produce is delivered at a third (ground floor) entrance at the front of the building. (This does not inhibit customer traffic since produce deliveries take place early in the morning before the store is open.) All goods are processed and marked then placed on the conveyor system and routed to the proper area of the sales floor above. Meats are raised to the sales floor in bulk by a dumb-waiter and there the cutting, weighing, pricing and packaging take place behind the sales counter out of sight of customers.

Suburban office headquarters

Grand Union's prototype supermarket lies under the watchful eye of high executives of the home office—located in spanning new, air-conditioned quarters above the store. Formerly located in crowded Manhattan, Grand Union was in the vanguard of those companies that have headed for the suburbs to achieve better employee relationships, reduce labor turnover and increase operational efficiency.

The dominant eight-story (24' x 80') tower (see p. 136) houses the office of the president, lounges, reception rooms and elevator lobbies with the top two floors being used for elevator and air-conditioning machine rooms. Its 24' width is spanned without columns which gives great flexibility to tower floors.

Three hundred administrative employees and department executives are housed in three-level wings sprouting from both sides of the tower. These office areas were purposely kept long and narrow to insure plenty of natural light (though recessed fluorescents can produce 30 foot-candles at desk level without the aid of any natural light). Common width of the wings is 56' with one row of columns splitting each wing down the center to produce 24' x 28' bays. What partitioning is used in the wings consists of low, freestanding panels with upper portions of glass. Lights in the strip windows are fixed with the exception of one light in each bay that opens to facilitate exterior window washing.

The entire structure (including other retail space in the shopping-center building) is designed so that another floor may be added in the future.
Prefabricated curtain walls

The one-building Elmwood shopping center strikes another blow for light, fire-protected wall construction as opposed to traditional heavy—and expensive—concrete backup construction. In the absence of restrictive codes prohibiting lightweight walls, architects Kelly & Gruzen used curtain walls of prefabricated fluted aluminum panels on all but the end and tower walls.

The prefabricated wall sections are 2' wide and come in any specified length. Sill, mullion and head details were designed with aluminum exterior finishes to harmonize with the panels. The inside portion of the panel is a 2\(\frac{1}{4}\)" thickness of spun glass insulation encased in light steel which is simply painted to provide the interior finish.

Delivered cost of the panels was $2.16 per sq. ft. Once the structural steel was in place, panels were speedily erected. Office areas, for example, were completely enclosed six weeks after steel was up.

In contrast to the metal curtain walls on front and rear elevations, end walls of the building and the tower walls are made of brick or precast stone with block backup. Floors are 2" thick concrete slabs poured on metal lath atop steel bar joints spaced 24" on center.

Insulated plywood panels 2" thick with a facing of glazed ceramic on light steel form one wall of the supermarket at street level. Inside face of the panel wall is painted. While delivered cost of these panels was high ($3.50 per sq. ft.) the architects felt it was justified for a decorative, facing material.
Education for an integrated building industry

If agricultural colleges teach every aspect of husbandry, why are there no construction colleges teaching every aspect of this still bigger industry, to train architects, engineers and builders side by side?

—by Tyler S. Rogers

Technical director of Owens-Corning Fiberglas Corp., past president of the Producers Council.

There are 178 colleges of agriculture, each teaching all the various branches of husbandry.

But the construction industry, now bigger than agriculture, still has not a single college teaching all its arts and sciences together. Instead we have architectural schools, engineering schools, even a school of homebuilding business.

But still there is a painful lack of appreciation, respect and understanding throughout the building industry between the design professions, the contractor-builder group and the manufacturers and suppliers of materials. It takes years of experience to break down almost instinctive barriers between these three interdependent factors.

Architects know architecture, builders know construction methods, manufacturers know their own and competitive materials. But very often architects do not know enough about building materials and methods to win the respect of these other groups, and very frequently builders and materials men do not understand the problems of the architect sufficiently to deserve the professional designers’ trust.

All this division works against the integration of the industry and the best interests of everyone in it.

Divided schools: a divided industry

The cause of this narrowness of interest, I believe, is rooted in our present educational system.

At least there is a striking parallel between these industry schisms and the division of our schools. Each of the arts and sciences which, together with business and finance, must be brought together to create the towns and cities and the buildings we need, is now taught as a separate thing by itself. Each study is isolated from the others by a peculiar vacuum of self-interest.

Architecture is taught by methods which tend strongly to create a sense of self-sufficiency. Executive director Edmund R. Purves, in a report to the AIA directors, once said, “The talent for criticism is so highly developed in every architect, and his conviction of personal justification is so ingrained, that he seldom concedes a solution as satisfactory that is not his own.”

Engineering is taught by wholly different methods but each branch is, in itself, so complex and requires so much concentration that in the end one type of engineer rarely has adequate comprehension of the scope and significance of the others.

Business administration is taught as science in itself, but you can, if you wish, take courses in engineering administration, building contracting, building management, and hospital, hotel or institutional management, all of which necessarily embrace a general comprehension of the related construction arts and sciences. It is noteworthy that Trinity College’s new course in the “Business of Home Building” has been inaugurated by its Department of Business Administration.

Ignorance: misunderstanding

Every architect, engineer, contractor and materials manufacturer knows that each is dependent for his success upon the success of the others, and that his growth depends on the growth of the construction industry. No one can operate alone in this field, and no group can profit largely unless the whole industry is prosperous.

And let us humbly remember that not one of us is really responsible for creating structures. Each project starts with a man who has a need, or an idea. He first gets the help of bankers, realtors and perhaps other businessmen and stockholders who decide that something should be constructed. Only then is an opportunity created for a designer to design, a builder to build, and materials men to produce and sell their wares.

Whatever people do not know or understand they usually fear or distrust.

If one man in the construction industry does not understand another with whom he must work, there is likely to develop a mistrust that automatically defeats effective cooperation.

So I feel that our basic educational approach, in which each of the arts, sciences and businesses essential to construction is taught as an isolated subject, is largely responsible for what our many critics call a backward, inefficient industry.

I don’t agree that these critics are entirely right, because the construction industry, in spite of its lack of conscious integration, performed wonders during World War II and has continued to

(Continued from page 164)
PURE DESIGN RESEARCH
transforms abstract sculpture into new forms for architecture and furniture

The intense young man peering at you through a maze of strange metallic contraptions is a 37-year-old, Italian-born painter, sculptor, designer called Harry Bertoia, who spends most of his time fastening small glittering snippets of sheet metal to pieces of wire, and then fastening these pieces of wire to other pieces of wire. When he has fastened enough of these together, he gets something that looks at first glance either like a garlanded radio pylon, or like a yard full of laundry lines on washday, or finally like a magnificent fish net spangled with strange objects dragged up from the bottom of the sea.

In actual fact—as many critics will testify—Harry Bertoia’s work is among the finest in abstract sculpture produced in the US today.

This story, however, is not primarily about Harry Bertoia’s sculpture. It is concerned with Harry Bertoia’s research into the fundamental principles that unite all the visual arts—sculpture, painting, architecture, applied design. And the story is concerned, also, with the fact that this research for a pure art has produced many discoveries directly applicable to architecture and to furniture design.
The principle is not exactly new: Michelangelo was known best as a sculptor, next as a painter, finally as a first-rate architect. Leonardo’s work in all the so-called fine arts led him to an increasingly active interest in all forms and all structures—and helped to make him one of the greatest engineers of all times. More recently, the Spanish surrealist sculptor Gaudí produced architecture whose influence upon men like Le Corbusier has been important. And even today Le Corbusier himself spends more time on painting, sculpture and even poetry than he does on architecture itself—for the research into pure form, pure space, pure color, pure rhythm, proves to have a very distinct bearing upon the design of multi­story apartment structures.

But in recent US art history Bertoia is a rare phenomenon. His counterpart in the sciences has long been a familiar sight in big corporations such as DuPont—which employs scientists to engage solely in pure research at the company’s expense, on the theory that the by-product of such pure research may well prove practically applicable.

It now turns out that the by-product of pure art may be equally practical. Just as the Duke of Milan realized that a captive Leonardo, doing painting and sculpture, might also hit upon some wonderful new gadgets equally useful in peace or war, so American architects and producers of modern furniture have found that Harry Bertoia is no esthetic recluse, but a man who can give them something they badly need. Two years ago Hans Knoll, who produces the furniture designs of a whole series of artists, architects and designers, set up Bertoia in a barn and workshop in Pennsylvania. There Bertoia pursued experiments in pure art (especially metal sculpture) in the hope that the by-product might some day prove useful in architecture and interior design, and marketable. This month much of that hope was realized: Bertoia’s wire chairs are in production, and his architectural screens and grilles have been specified—not as decoration but as integral architectural elements—in the staff restaurant of a giant US corporation, and in the cocktail lounge of architect Minoru Yamasaki’s new St. Louis airport building.

Below: Bertoia’s sketches suggest use of spangled screens as light-diffusers in modern chandeliers; pedestals contain light source; beam is directed upward to illuminate metal clusters, give them soft, emberlike glow.
The effect architecturally of Bertoia's screens, which will set up a scintillating kind of interior arbor around the activities which they enclose, hardly needs to be explained. But the new Bertoia chairs shown on these pages may at first seem to have very little in common with the abstract construction pictured next to them. Consequently got Bertoia to talk about them, answer questions about them.

To Bertoia, as this conversation revealed, the chairs and the sculpture are just about the same thing. Said he, "In the sculpture I am concerned primarily with space, form and the characteristics of metal. In the chairs many functional problems have been satisfied first—while the sculptural element is quite nonfunctional. But when you get right down to it the chairs are studies in space, form and metal, too."

Question: Did Bertoia think the chairs ought to look like sculpture?

Bertoia: "Well, I am really in sympathy with the Japanese idea of interior design—that the best furniture is no furniture at all. But if you will look at these chairs you will find that they are mostly made of air, just like the sculpture. Space passes right through them." He made an expressive gesture suggesting space passing through a chair. "Besides, we don't have the Japanese tradition in the West. We need more comfort. The human form can't be redesigned, and chairs that really fit the human form are going to look a little sculptural."

Question: What was the relationship between his abstract sculpture and his furniture design—for example, the chair pictured to the left?

Bertoia: "You'll see that the sculpture is made up of a lot of little units—pointing to a hexagonal wire frame decorated with pieces of sheet metal—and these rectangles or triangles or hexagons are added together and produce one large rectangular (or hexagonal) sculpture. The same with the chairs. This chair has a lot of little diamond shapes in its wire cage and they all add up to one very large diamond shape, and this is the shape of the whole chair. It is a really organic principle, like a cellular structure."
Question: What about his principles of support?
Bertoia: “Everything should be separated according to function. In the sculpture you have one kind of metal rod, or nails welded and braised together, and that is the horizontal support. It is very clear, there is no confusion. The sheet metal pieces act only vertically—they are held in place by the rods.

“Now in the chairs we have done the same thing. In the chairs there is a strong supporting structure made of rods. Then there is the thing that is supported—a diamond-shaped form or something like it. There is a very clear direction. I like things to be very, very clear in that respect.”

Question: Bertoia was known also as a painter. Had his painting influenced his chair design to any extent?
Bertoia: “Only indirectly. I used to make paintings on the most transparent paper I could find—paint just a shape here, leave a lot of space around it, and then another shape and another color there. Then I would stretch the paper on a frame and hang it up against the light. The colors would float in the air, some closer, some farther back. I started to get interested in all these space experiments long ago—at Cranbrook after I had been there a little while—and the floating-in-space idea is now in the chairs too.”

Question: Did Bertoia have more to say about the peculiar occupation of doing abstract sculpture on the one hand and very practical objects on the other?
Bertoia: “Everybody is a specialist now,” said he. “I am trying to take in as much of the world as I can. There are many points of contact with other people. A week ago I met a man who did research in cosmic rays. After we talked for a while we found many things in common. This sculpture, especially—” he pointed to a metal frame filled with needlelike objects—“was something we found we both had in common.

“The cosmic-ray specialist could explain it better than I,” he smiled cryptically. “But anyway we understood one another perfectly. And at any rate I try to find out as much as possible about anything I do—and sometimes the thing I think has no purpose at all, like this sculpture, turns out to be actually very useful.”

Bertoia is a very busy man. The Knoll workshop has several assistants and they are very hard at work solving practical details for architectural screens no less than furniture. At the same time, Harry Bertoia will continue his researches in pure abstract art for these have paid off handsomely and in design—as well as in the business world—nothing succeeds like success.
Main floor lobby of WCAU's new suburban station (below) is reached by ramp (above) from lower rear driveway entrance.

High windows in these public spaces are only ones in the building.
TV-RADIO CENTER uses special truss to increase studio flexibility

THE AUSTIN CO., designers, engineers and builders
GEORGE HOWE and ROBERT MONTGOMERY BROWN, consulting architects

This is the first large building completed that has been designed for large-scale radio-TV broadcasting. In its pioneering, WCAU's new TV-radio headquarters in Philadelphia has met and solved the major problems of this new building type.*

It solves the problem of operational efficiency with a one-story production wing that can broadcast or televise when the rest of the building is closed.

It solves the problem of limited operation early in the morning and late at night with a small operational block that can broadcast or televise when the rest of the building is closed.

It solves the problem of flexible space with a specially designed "Tele-Truss." Not only do the 60' spans clear the studio floor for maximum use, but, being free of diagonal members, the trusses can support platforms, permit free movement for lights and cameras high above the whole area.

It solves the problem of sound control with studio floor slabs poured on grade to reduce vibration and with studios isolated from the rest of the building by corridors.

It solves traffic problems with separate corridors for visitors and staff.

It solves critical power and air-conditioning requirements with dual systems either of which can service the entire building in an emergency.

Operational efficiency primarily concerns the production space. Heart of this area is the trio of large studios isolated by corridors. A 20' wide storage and service corridor connects the three studios along the side of the building. Thus, the horizontal movement of sets and equipment from one studio to another on the same level is done with the least possible effort. Large opposing doors on either side of the service corridor permit trucks to drive straight into the studios to load and unload.

In addition to the three main studios there is a smaller, dual-purpose studio that can handle either TV or radio productions. Three regular radio studios occupy the end of the production wing and these too are separated from the TV studios by a corridor.

A small operational block on the studio level contains master control rooms, news room, news broadcast studio, TV film projection room and record library. This unique area can operate during early morning or late evening hours while the remainder of the building is closed down.

Flexibility attained with the special Tele-Truss (a variation on the familiar Vierendeel truss) is increased with the ability of the

* For an account of CBS's solutions to much the same problems but on a bigger scale see the preview of its TV city now abuilding in Hollywood—AF, May '52, p. 101.
CONTROL ROOM

Control rooms above studio floors have slanted, light-inhibiting glass to eliminate glare from bright TV lights.

truss—and intermediate struts—to take a suspended load. Thus, battens, lights and even whole sets may be shifted to any part of the studio floor where as many as six productions may be simultaneously set up. Catwalks resting on the lower boom support additional lights and cameras to add even more flexibility to the space.

The concrete floor of the studio was carefully surfaced to eliminate all depressions. Result: Camera and sound equipment may move quickly to any part of the floor while operating. They may, in fact, move from one set to another during a normal station announcement.

Expansion of production facilities will be simple. In effect the plan is to duplicate the main studio block on the side of the building beyond the service corridor. The added wing will have a service-storage corridor adjoining the existing one. These will be made into one 10' wide corridor by removing the present side wall. Trucks will still have access from the end of the building.

Traffic control of production personnel was solved by the wide, rear corridor behind the studios. Administrative personnel and talent move from the administrative section (and dressing rooms on the ground level) along the corridor between the two main divisions of the building and so into front entrances to the studios. The visiting public is confined to the lobby and the long ramp leading to it from a rear ground-level entrance. The one studio designed specifically for audience participation opens directly from the main lobby.

Power and air-conditioning requirements in a TV building are far more critical than in most ordinary buildings. Control of light for studio areas made a windowless building almost mandatory. In fact, the entire building, with the exception of the glass-fronted lobby and ramp space, is windowless. The building obviously must depend on air conditioning and studios with their bright lamps must have a continual supply of conditioned air or they cannot operate. To reduce the possibility of complete breakdown, two 200-ton compressors were installed either one of which can carry the studio load in an emergency. Critical power requirements produced a dual system with two 13,200-volt primaries entering the building from two separate mains and going to two 1,000 kva substations. Each carries half the load and if one should fail the remaining substation could supply the building.
Tele-Truss: A variation on the Vierendeel truss specially designed for WCAM spans 60' dimension of main studios, is free of diagonal members so equipment and lights range freely on platforms high above the studio floor. Trusses are so designed that they take a substantial suspended load. Lights, battens and even whole sets can be suspended from the lower booms. This flexibility permits six separate productions to be set up on each studio floor. Catwalks through the trusses provide additional vantage points for lights and cameras.
BUILDING ENGINEERING

ALUMINUM FOR BUILDING

Key metal of the twentieth century promises to compete with steel as a basic structural material

A study of its many successful applications suggests that aluminum is now ready for employment as a standard structural material wherever its high strength/weight ratio, rapid erection and high resistance to most types of corrosion can be fully exploited. Its cost is still 2½ times as high as steel, but this gap is narrowing (see chart).

In spite of the greater initial cost, engineers have found high-strength aluminum useful in reducing dead load by as much as 65%. They have also discovered that such savings are compounded into bonuses elsewhere—in a building, lighter foundations; in a moving structure, smaller power units. The light metal has proved particularly useful in several types of structures:

1. For exposed framing in a corrosive atmosphere—witness aluminum trusses of a St. Louis locomotive house where original steel trusses were eaten away by sulphurous smoke and had to be replaced every 12 years;
2. For reducing dead load to permit corresponding increase in pay load—witness 125 tons of aluminum used in fire escapes for Baltimore apartment houses; also over 2,000 tons of high-strength aluminum used in the liner United States to effect a saving of three times that weight in steel; also the Smithfield Street Bridge, Pittsburgh, Pa., where floor steel was replaced by aluminum in 1932 to reduce dead weight by about 1 ton per ft. run, and to give a new lease on life to this 70-year-old, 720' long structure;
3. For building additional stories atop existing buildings—witness the fourth-story extension to Radcliffe Infirmary, Oxford, England; also the new penthouse atop the old Alcan plant at Etobicoke, Canada;
4. For structures that have to be transported long distances before erection—witness Vallot's climbers' refuge near the summit of Mt. Blanc, Switzerland; also over 700 prefabricated "permanent" all-aluminum houses, schools, hospitals and office-building units exported from a British aircraft factory to countries as far away as India and Australia where they were erected at prices competitive with comparable local buildings;
5. For light nonfireproofed roof trusses in single-story industrial buildings using "pin-up" frames—in such buildings one large erection bolt does the work of several smaller ones and trusses can be erected rapidly by hand assisted at most by light hoisting rigs—witness London airport hangars, England, where hinged portal frames spanning 125' were assembled on the ground and winched into position.

Basic facts

More than 8% of the earth's crust consists of aluminum but, although it is the most common metal known, only high-grade bauxite deposits are worth mining at present. US production was 759,000 tons in 1951 (42½% of world production) and is estimated to double during the next five years. Therefore the price of aluminum is likely to remain stable and might well go down, while availability of the metal will improve.

Pure aluminum is a soft, ductile metal with a strength of 11,000 psi. Medium strength or "mild" aluminum is made by adding traces of magnesium and silicon followed by heat treatment and quenching, which produces the same 40,000 psi strength of mild steel. This is the standard structural aluminum alloy and costs about 40¢ per lb, compared with 6¢ for mild steel. Its weight is only a third that of steel, but its modulus of elasticity is three times as great so that deflections must be carefully examined in designing an aluminum structure. High-strength alloys up to 85,000 psi are made by adding copper, manganese and zinc plus more complex heat treatment.

Aluminum alloys have exceptionally good resistance to corrosion in normal
structural applications. Forty years ago aluminum was used to roof a gasworks in Germany; examination in 1946 showed accumulation of coal dust, ammonia condensates, sulphur acids, but no adverse effect on the metal. This is because surface corrosion of fresh aluminum forms a protective film of aluminum oxide which bonds closely to the parent metal and prevents any further oxidation. Galvanic corrosion occurs between aluminum and other metals (except zinc), therefore dissimilar metals should not be in contact, copper nails should not be used with aluminum and steel bolts should be galvanized. Alternatively, dissimilar metals can be insulated by using impregnated felt upon zinc chromate paint. Aluminum is also liable to attack from alkalis; if it is likely to be in contact with fresh mortar or concrete the metal should be coated with a bituminous solution.

Aluminum alloys vary in their resistance to corrosion. High-strength alloys containing copper, for instance, offer poor resistance to sea water. Designers should consult with manufacturers on the optimum alloy to employ under unusually corrosive conditions.

Experienced structural engineers believe aluminum is equal to steel in fire resistance despite the lower melting point of the light metal. A fully loaded steel structure can withstand 850° F. compared with 450° F. for an aluminum structure. At temperatures above these, the metal, while it does not melt, loses strength and buckles easily. However, since the heat conductivity of aluminum is five times that of steel it could take considerably longer to heat an aluminum frame to 450° F. than a corresponding steel frame to 850° F., because of the more rapid dissipation of heat. Fire underwriters both in England and the US recognize this fact and rate

Arvida bridge in Quebec is built with box girder arch ribs braced with lattice girders. Spanning 290' with a 24' roadway this design employed only 206 tons of “mild” aluminum whereas an equivalent steel structure would have required 490 tons of mild steel. Low maintenance cost of aluminum is expected to offset higher initial costs in relatively few years.

Grasse River bridge, Massena, N. Y., used one 100' span of aluminum 10' deep. It uses 26½ tons of structural aluminum vs. 64 tons for equivalent steel spans.
Lightweight aluminum house frames can be assembled on the ground and easily manhandled into position. To be economical aluminum designs must take full advantage of prefabrication.

Aluminum fire escapes were approved for use in Baltimore, Md., apartment houses. A total of 125 tons of mild aluminum was employed.

Prefabricated aluminum school was produced in Britain. Built in prefabricated modular sections, over 700 similar schools, hospitals and houses have been exported as far as India and Australia at prices competitive with local buildings.

Frameless aluminum utility buildings built in Nebraska exploit the rigidity of corrugated sections, corrugations being 4" apart and 7 1/2" deep. Cost of a 52' x 100' x 15' building is $8,710 f.o.b. in 18-gauge aluminum, comparing favorably with $7,141 f.o.b. cost of 18-gauge steel building in view of lower transportation and erection costs.
Modulus of elasticity of mild aluminum is only one third that of mild steel. Therefore a mild aluminum beam will deflect three times as much as an identical steel section for the same loading. Very often deflection is more important than stresses in the metal. To reduce the deflection of the aluminum beam to that of the steel beam, the depth of web must be 1.8 times as great. Alternatively thicker flanges may be employed or continuous design used in place of simple design (deflection of a simply supported aluminum beam is five times that of the same beam when the ends are fixed).

Proper design of an aluminum beam can save almost 50% in weight of material, giving no more deflection than an equivalent steel member. For tension members the weight saving of mild aluminum vs. steel is 66%; for struts 50%. Weight of an aluminum frame or truss is therefore between a third and a half that of an equivalent steel frame.

Weight of aluminum required can often be still further reduced by using the more efficient shapes and thinner sections permissible (there is no need to allow extra thickness for possible corrosion as is the practice in steel design).

Expansion of aluminum is twice that of steel, which makes it difficult to marry the two metals within the same structure. This problem was encountered in building the liner United States (AF, July '52, p. 119); the solution was to lay aluminum deck plates during the sunny part of the day so they would be fully expanded.

**Aluminum’s best use**

Optimum use of aluminum is achieved when both structural components and non-structural ones can be integrated into a single space frame. This was done in frameless utility buildings manufactured in Nebraska where rigidity is provided by using corrugated aluminum sheet in the walls and sloping roofs, the corrugations being 4’ apart and 7 1/2” deep. Another interesting example is the clerestory roof trusses spanning 42’ in a factory at Cambridge, England.

Being more ductile and so much lighter than steel, mild aluminum can be cut and connection holes drilled much more quickly. Against this advantage must be set the fact that US fabricators are not experienced in handling this new material and their contract bids will be higher.

Welding or flame cutting of heat-treated alloys is not advisable because of possible loss in strength. Sheet aluminum can easily be cut with a wood saw. Holes are drilled twice as quickly as in steel and connections are made with aluminum bolts or cold-driven rivets up to 3/8” diameter.
ECONOMIES IN DOME CONSTRUCTION

Two simple radial designs in US compared with complicated spherical design in Britain raise question: “Can you cut costs better in the office or on the site”?

Construction of 222" diameter steel dome at Framingham, Mass. used ribs 30" WF 108 lb. at 10° intervals with 36" WF 245 lb. ring girder.

Heavy compression hub at center of dome facilitated erecting arch ribs.

Similar steel dome spanning 123'-10" was built at Ford’s new Research and Engineering Center, Dearborn, Mich. Arch ribs are spaced on 20° intervals. Total weight: 250 tons excluding concrete plank roofing. Erection two weeks.

Buckminster Fuller’s geodesic dome with aluminum struts and plastic surfacing material cuts weight of structure to 1 lb. per sq. ft. of enclosed area.
dome Vorhees, Walker, Foley & Smith; Severud-Elstad-Krueger were the structural engineers for both.

**British design more efficient**

Though its span of 342' makes it the largest dome ever built, Britain's Dome of Discovery weighs only 322 tons (aluminum framing ribs, 82 tons; aluminum roof rafters, purlins and 12-gauge sheeting, 128 tons; steel ring girder, 112 tons). In terms of pure structural efficiency, therefore, it is four times as efficient as the best US steel dome (6.4 vs. 25 lbs. per sq. ft. covered). On the other hand the design analysis of this statically indeterminate frame with its 300-odd degrees of redundancy* would frighten all but the most persistent of engineers, and since there are hardly any identical members this lack of repetition would drive contractors' bids up to prohibitive heights.

That such a design is built in Europe but not here illustrates the difference between the two building economies. In Europe building materials are scarce and extremely high priced; our materials are relatively plentiful but our labor is expensive. Therefore in the US fine, meticulous design calling for careful, laborious erection is costly. It is far cheaper to throw in a great many more tons of steel or a great many more bags of cement.

Once the British engineers had selected the system of intersecting arches, the problem was to find a way of reducing cost and erection of the vast number of different members (as Fuller points out, in this technique the relation of weight vs. span forms

(Continued on page 172)

* Redundant structures possess more internal members than are essential for their stability; consequently their analysis involves study of deformations of the frame, usually an extremely complicated and lengthy procedure.
Mexico City's huge auditorium roof is supported by eight 260-ton two-hinged rigid frames whose tonnage was reduced 50% by welding.

Built over Mexico City's swampy subsoil, this 18,500-seat auditorium had to be "as light as human ingenuity could make it." By spanning it with welded, open-web, bi-hinged rigid frames the engineers claim to have cut steel tonnage 50% under a conventional riveted design. In all, the structural frame and roof contains 2,600 tons of steel—45 lbs. per sq. ft. of floor covered. Total weight of the building is 4,750 tons.

In plan this auditorium takes the shape of a 340'-sector radius. Roof, sidewalls and galleries are supported by eight bihinged welded steel frames radiating from behind the stage (where they are 11½' apart) to the rear of the auditorium (where they are 51½' apart). The largest two frames in the center span 328', breaking by 3' the previous record for welded arches set in 1941 by the 325' span, two-hinged welded arches of a US navy blimp hangar. This 328' span is still far short of the 377' record for riveted frames set two generations ago by the three-hinged arches of the Galerie de Machines at the 1889 Paris International Exhibition.

Each welded frame is a box truss whose sides are held 81¼' apart by two types of wind bracing: 1) Upper and lower flanges are connected in the horizontal plane by members inclined alternately in opposite directions. 2) Vertical frames are braced by two diagonals at each stanchion. The trusses are supported by rigid knee joints leading down to tapering end columns where the latticed flange of the beams becomes the web of the box frame as it nears the base. Hinges are made of 9x4" nickel steel pins fitted into a welded clevis built of 2¾" steel plate.

Opposite the stage are three tiers of balconies and behind them a gallery area, the framework of which is connected to the truss columns through hinges so that no movement is produced on the columns and yet reinforcement is provided to withstand seismic loads as required in Mexican building construction. Below this gallery are a second-floor foyer and a ground-floor restaurant.

Frames were erected in sections 79' long weighing between 10 and 16½ tons. Columns including knee sections were erected first, then the horizontal beams were skip welded in position.

Design, fabrication and erection was by Macomber de Mexico, S. A. Total cost: $20 million Mexican ($2,300,000 US).
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EDUCATION FOR BUILDING

(Continued from page 141)

out-smart its critics ever since. Nevertheless, if we could break down these barriers between the contributory arts, sciences and enterprises, and substitute a sense of interdependence and mutual understanding for the present self-dependence and mutual distrust, I am certain that the benefits would be colossal.

Integration: production and progress
Agriculture and construction are the two largest factors in US production. In some years agriculture leads, in others construction. Each is composed of many elements, widely distributed, independently owned and managed, using local resources and serving local needs, with relatively few components that operate on a national scale. But note this contrast:

For many years agriculture has been developing as a well-integrated complex of sciences and businesses.

Construction, on the contrary, has been developing through a sequence of independent advances, with only occasional periods—as during war emergencies—when it has shown the immense power and productivity it can develop through enforced integration and unity of objective.

The cause of this difference lies, I believe, in the divergent patterns of their educational approaches.

More than education: research
What I propose as a start toward improving these conditions is that some of our great universities should organize “Schools of the Construction Arts and Sciences.” (A better title might be found to embrace business administration as well, for the business of construction should have equal recognition with its arts and sciences.)

In such schools the student body would have as a common interest the immense potentials of the whole industry. The faculty, though made up of men competent in many fields of science and economics, would see and respect the part each played in advancing construction.

Such a school graduates men skilled in any of the activities that make up the construction industry, according to each student's interests and talents. It could graduate architects who were pure designers, if they wished, or architects who specialized in materials and construction methods, or men skilled in the administration of large projects. It could graduate engineers who could be the indispensable associates of architects, or the equally indispensable managers of contracting firms, or the equally necessary independent consultants.

It could graduate men trained to organize and finance great land developments and create or improve whole cities, and other men who could make needed building products and sell them soundly on their properties and appro-

(Continued on page 168)
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Thus, Honeywell Customized Temperature Control will indeed meet a wide range of temperature needs.

The University of Texas M. D. Anderson hospital for cancer research, now under construction in the Texas medical center at Houston, will be a truly outstanding addition to the country’s medical facilities.

Carefully planned in every detail, this "cancer station" will contain such features as the first cobalt "bomb" in the United States for radiation treatment, color television for remote observation of operations and a betatron laboratory.

In this new building both heating and cooling will be controlled by Honeywell Customized Temperature Control.
Notice on the floor plan that with Honeywell Customized Temperature Control each patient-room has its own individual thermostat. This means that each patient can be kept genuinely comfortable no matter what the weather outside. And it makes it possible for doctors to "prescribe" the exact temperature each patient needs to get well fast.

Plans for the Anderson hospital were developed by the following firms; MacKie & Kamrath, MIA, Architects, Houston; Schmido, Garden & Erikson, Consulting Architects, Chicago; Lockwood & Andrews, Mechanical and Site Engineers, Houston; Walter P. Moore, Structural Engineer, Houston; Farnsworth & Chambers Co., General Contractors, Houston; Archer Plumbing Co., Mechanical Contractor, Houston.

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"It's an extremely flexible method of control. And that means Honeywell Customized Temperature Control can be used to meet nearly any temperature problem—in any type of building."

Honeywell Customized Temperature Control will control these air conditioning units suspended above doorways. Heating of rooms will also be thermostatically controlled. When installed at time of construction, system duct work can easily be concealed, can be put in at lowest cost.

Color television, as shown on the operating room cross section above, will permit over 300 students to watch surgery. Extra heat from television lights will be compensated for by sensitive Honeywell thermostats. Operating rooms will also be equipped with humidity controllers, an important feature in the Honeywell Customized Temperature Control installation.

MINNEAPOLIS-HONEYWELL REGULATOR CO.
Dept. MB-9-201, Minneapolis 8, Minnesota

Gentlemen:
I'm interested in learning more about Honeywell Customized Temperature Control.

Name ________________________________
Firm Name ________________________________
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City ________________________________ Zone State ________________________________
EDUCATION FOR BUILDING

The Most Economical for 2, 3, or 4 Stories

Oildraulic Elevators are designed for low-cost installation and economical, trouble-free operation. No penthouse or heavy load-bearing shaftway structure used... powerful hydraulic jack supports car and load. New Rota-Flow power system insures smooth, quiet operation. Automatic floor leveling within 1/4" guaranteed! Car sizes, capacities and controls as required.

Rotary Lift Co., 1121 Kentucky—Memphis, Tenn.

For old universities: new opportunities

I do not propose new institutions nor diminishing in any way the importance of the present basic courses in the arts and sciences and business enterprises. These must remain untouched for there will always be need for men fully and exclusively trained in each area of knowledge.

Rather, it is my proposal that these schools of construction arts and sciences be looked upon as new fields of educational opportunity for our great universities. While they could draw in many cases upon the great talents of the existing faculty, the new courses would broaden, rather than narrow, the areas taught by these men. In fact, in most cases the same courses would be taught as they are today, except for a broader concept of the relationship between them. Each study would be taught as the part of a whole, instead of as an end in itself.

The student body would feel the difference by having common interests and objectives and a common sense of dignity and importance clearly expressed by the very name of the school and the significance of its academic awards.

The barriers of educational isolationism would disappear.

Result: benefits for all

All of you have a deep interest in the construction industry. Do you now feel that such schools are desirable? Wouldn't you like to employ their graduates? Wouldn't you like to send some of your outstanding young men back to such a school for advancement training, or go yourself? Wouldn't you feel that the component elements of the industry would give more than mere moral support to the establishment of such schools? Wouldn't the research possibilities of such institutions alone be of immense value?

In fact, if you could start your careers all over, wouldn't you like to have the advantages that study in such schools would offer?

If you agree, then I suggest you discuss this idea, in your own way, with the educators you know, and particularly with the heads of your alma mater or your own nearby universities.

Distinctive effects

Arch. Miss Edna Muir, Los Angeles, Cal.

STAIN WAX

Cabot's Stain Wax combines a beautiful penetrating stain with a wear-resistant wax... enhances the texture and design of wood panelling... produces a soft, lustrous finish in one application.

CONTEMPORARY COLORS

Cabot's Stain Wax comes in a variety of interesting blond shades—Glacier Blue, Seashore Gray, Ivory, White and Natural. Also the traditional darker shades—Maple, Mahogany, Walnut, Redwood and the new popular Vermont Pine. For unusual effects, White and Natural can be tinted with colors in oil.

Write Today for Cabot's Stain Wax Color Card and complete information.

WHY specify Wascolite Skydomes for daylighting?

EXCELLENT LIGHTING PLUS BIG SAVINGS are reasons of The Architects Collaborative, Cambridge, Mass., for specifying Skydomes in Flagg St. Elementary School, Worcester, Mass. (model shown). They say: "Not only do Skydomes give very efficient lighting but, by making a flat roof and low ceiling possible, their use effects a reduction in cubage of the structure and consequently definite economies." TAC is associated with Albert J. Roy, Worcester, on this project.

WHEN PRODUCT QUALITY DEPENDS ON DAYLIGHT, Skydomes are indispensable to many manufacturing processes. Here, Skydomes replaced a wood-and-glass penthouse at the Cold Spring Bleachery, Yardley, Pa., because they assured abundant, glarefree natural light for the critical task of shade matching during textile dyeing.

SUPERIOR ENGINEERING assures trouble-free performance from weather-proof, shatter-resistant Skydomes. Method of protecting otherwise exposed edge of acrylic plastic dome is typical: retaining frame (A) encloses plastic (B) yet allows plastic to "float" freely between neoprene gaskets (C) as it expands and contracts with temperature changes. Plastic must "float" to adapt unit for wide climatic range.

EASY FOR ARCHITECT to achieve correct daylighting with aid of Wasco Daylight Engineering Service. Just send floor plan of project and tell lighting requirements; Wasco recommends number, type, size and spacing of Skydomes to insure correct lighting for the specific task. Light distribution and illumination data included. No obligation.

Wascolite® Skydomes

Wasco Flashing Company 87 Fawcett St. Cambridge 38, Mass.
An analysis of lighting systems for today's classrooms...

CLASSROOM REQUIREMENTS

- ceilings: white to reflect maximum light
- walls: peach and green to promote comfort
- desks: light (non-gloss) to avoid glare
- layout: 3 units in 3 rows for best spacing, minimum wiring
- system: indirect incandescent for comfort and initial economy
- illumination level: 30 footcandles
The lighting standards in many of today’s classrooms can be raised, even though funds are limited. Westinghouse Concentric Ring Luminaires are inexpensive, yet provide a comfortable indirect lighting system. Metal rings completely shield silvered bowl incandescent lamps, eliminating glare and shadows.

In this way, a much improved level of illumination is practical. The absence of dirt-accumulating surfaces minimizes maintenance. Initial economies are realized with this type of lighting, and a quality lighting system results.

Westinghouse has a complete line of both fluorescent and incandescent luminaires which meet classroom lighting requirements. Practical methods of providing proper illumination levels are studied. For an analysis of these methods, write for B-4556, The ABC Plan for School Lighting, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna.
a straight-line curve so there is no point of diminishing returns as the span increases). Aluminum was chosen for structural members and roof to reduce dead load and facilitate handling ribs of maximum length. These long ribs would reduce the number of main joints and cut down chances of error in erection. They are 57' long, 2'-10" deep and weigh only 1,350 lbs.

General arrangement of the main ribs is based upon great circles so that their curvature could always be struck from the same radius, 365'. Prefabricated in eight sections per rib for assembly on the site, their great circle radius permitted adjoining sections to be butted together in the shop, and connection holes drilled and reamed using the same jig for each rib joint.

It is technically impracticable for all the ribs of a dome to be continuously of the same great circle radius, so subsidiary ribs were shaped to form smooth curves running generally with the main ribs. They were fabricated in single lengths of about 50' and drilled and fitted at the site after the main ribs were in position. Scaffolding was required only to erect the ring girder and the main ribs, after which subsidiary ribs and roofing were erected from the main ribs.

In design the main ribs were treated as two-hinged arches, each one effectively supporting 16' of roofing. Load-deflection tests on the completed dome and subsequent lengthy relaxation analysis proved this method of design to be conservative, since it neglects the effect of support from the interlocking rib system. Dead load is 4.41 psf; wind loads, determined by wind tunnel tests on a model, are a maximum 10 psf positive pressure and 16 psf negative in local areas over the roof; snow loads are 10 psf over the center of the dome. Load factor is 2½, which gives a basic allowable tensile stress in the aluminum members of 15,000 psi (0.1 proof stress of structural aluminum alloy used, 35,000 psi). In future designs the engineers believe that a load factor of 2 would be sufficient.

Entire weight of the dome is carried upon tubular steel struts, each composed of three 3" tubes, pin-jointed top and bottom so the dome can expand or contract and yet always be asymmetrically held against wind pressure.

The ring girder is a mild steel box section weighing 207 lbs. per ft. run, fabricated in 24 segments about 45' long butt welded together on the site. Main and subsidiary ribs were fabricated of seven extruded aluminum sections, made into light-lattice triangular cross-sections 2'-10" deep, which eliminated one plane of bracing as compared with a standard structural steel shape. Rafters, 7" deep and about 25' long, support purlins 23/4" deep and 63/4" wide placed on 3'-9" centers. All aluminum structural members are connected with cold-driven 5/8" rivets using special 28-ton single-blown pneumatic squeeze riveters. Lap-jointed 20-gauge roof sheeting is riveted to the purlins in such a way as to permit relative movement, allowing for a temperature difference between the sheathing and its supports of up to 40° F. This non-rigid connection facilitated the inclusion of insulating material beneath the sheathing, eliminated the need for stiffeners and decreased the possibility of buckling.

Architect was Ralph Tubbs, ARIBA; consulting engineers, Freeman, Fox & Partners.
The Hollokore Drill (cross section sketch shown above) developed by Simpson Research and Engineering, is responsible for the clean round perforations of Simpson Acoustical Tile. In the enlarged unretouched photograph reproduced above, notice the clean-cut holes...no fuzzy edges...no loose fibers to encourage unsightly bridging when repainting.

SIMPSON ACOUSTICAL TILE is keeping 32,000 square feet of office space quiet in this 4-story building. This is typical of many hundreds of expert applications of every type throughout the country—offices and factories, hospitals and schools, stores and restaurants, churches and libraries, in fact—wherever noise is a problem.

Continuing to gain favor with architects, Simpson Acoustical Tile offers extra quality, extra service, greater value in sound conditioning.

For more complete information, see Sweet's Architectural File. Contact the nearest Simpson Acoustical Contractor—he can help you with your sound-control problems.

SIMPSON LOGGING COMPANY
Sales Division, 1065 Stuart Bldg. Seattle 1, Wash.

WASHABLE FINISH
Easily cleaned with a damp soapy cloth, then rinsed with a damp cloth. New whiteness and high light reflection is quickly restored!

FINISHED BEVELS
Bevels are painted with the same washable paint, which adds so much to the smart, crisp beauty of Simpson Acoustical Tile.

HIGH SOUND ABSORPTION
Tests, backed by long use, show Simpson Acoustical Tile to be unexcelled by other perforated fiber materials of equal thickness. This high sound absorption provides greater efficiency at low cost.

THERMAL INSULATION
Millions of tiny air pockets within the wood fibers as well as between them, act as an efficient barrier against passage of heat. Simpson Acoustical Tile makes rooms more comfortable.

To keep things QUIET
Simpson Acoustical Contractors Offer a Complete Service. Call nearest one:

ALABAMA
Stokes Interiors, Inc., Mobile
ARKANSAS
National Builders' Supply, Inc., Little Rock
CALIFORNIA
Coast Insulating Products, Los Angeles
Haj E. Neiharf & Associates, San Diego
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COLORADO
Construction Specialties Co., Denver
CONNECTICUT
W. T. Roberts Construction Co., Hartford
DISTRICT OF COLUMBIA
Kane Acoustical Co., Washington
GEORGIA
Dumas and Searle, Inc., Atlanta
ILLINOIS
General Acoustics Co., Chicago
Martin R. Hurdly, Moline
INDIANA
The Baldin Co., Fort Wayne
IOWA
Kelley asbestos Products Co., Stone City and Des Moines
KANSAS
Kelley asbestos Products Co., Wichita
KENTUCKY
Atlas Plater & Supply Co., Inc., Louisville
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John Beretta Tile Co., Inc., Knoxville
The Workman Co., Inc., Nashville
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Blue Diamond Company, Dallas
Only Money Co., Ltd., Houston
Builder's Service Co., Fort Worth
UTAH
Utah Pioneer Corporation, Salt Lake City
VIRGINIA
Manos-Smith Co., Inc., Richmond
WASHINGTON
Elliot Bay Lumber Co., Seattle
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For Better Sound Conditioning
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FIBERGLAS* Roof Insulation

It's low in thermal conductance

It's long lasting... It's Economical

JOB DATA ON ANOTHER FIBERGLAS INSULATED ROOF

Building: Lincoln Electric Co. Cleveland
Design and Construction: The Austin Company Cleveland
Year of Completion: 1951
Type of Deck: Steel
Type of Built-up Roof: 4-ply tar and gravel
Insulation: Fiberglas Roof Insulation, approximately 750,000 sq. ft.

Low Thermal Conductance—When you specify the heat conductance required for roof insulation you make unmistakably clear the degree of heat protection you wish. We'll gladly certify to the low "C" values of Fiberglas Roof Insulation as shown:

<table>
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<th>Thickness</th>
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Long Lasting—Will not rot or decay, swell or shrink—fibers of glass are unharmed by possible dampness. Will not deteriorate from exposure to either the elements or normal roof traffic. Durability and low maintenance costs are assured.

Competitively Priced—For equal heat resistance its cost, installed, usually equals and in some instances runs below the comparable cost of less durable roof insulations. Light in weight, easy to cut and handle, it is rapidly installed by standard methods.

With rapid installation and conservation of fuel again gaining in importance, you can specify Fiberglas Roof Insulation with confidence. For complete information write for "The Design of Insulated Roofs" (a 36-page manual) or refer to Sweet's Files—Architectural.

Owens-Corning Fiberglas Corporation, Dept. 67-13, Toledo 1, Ohio. Branch Offices in Principal Cities.

WRITE FOR FIBERGLAS DESIGN DATA

*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of the Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

THE MAGAZINE OF BUILDING
"We saved money every time we made a change in layout of our office space during the last 12 years", says D. B. Cook, building Maintenance Supervisor for United Gas, Shreveport, Louisiana, "because our Mills Movable Walls cost so little to rearrange to meet our changing requirements, as compared to the cost of conventional masonry type walls.

"Add to this the fact that offices could be rearranged over a week-end without disturbing normal operations of our personnel. Then too, we effected real savings in maintenance, for our Mills Walls are still fresh and modern looking, have required little attention or expense to preserve their attractive appearance. An occasional washing usually does the job. They have certainly saved us time and money."

United Gas saved a great deal of time as well as money in using more than a mile of Mills Walls in its main office building. Mills Walls permit earlier occupancy of new offices because they are delivered completely pre-fabricated, can be installed in one-third to one-tenth the time required for tile and plaster walls.

No lost time, no materials wasted, no dust or debris when Mills Walls are moved.

Mills Movable Metal Walls

THE MILLS COMPANY, 980 WAYSIDE ROAD, CLEVELAND 10, OHIO
Answers to these hot questions have been coolly documented for the first time by Leo Grebler in his brief but important book on rent control.* Grebler is no partisan ax grinder, he is research professor in Urban Land Use and Housing at Columbia University, and his study into the effects of rent control is not propaganda although it is likely to be used as such; it was made under the auspices of an institution whose high purpose is "to promote social justice in all the countries of the world," the International Labor Office. (Since organized labor has been perhaps the No. 1 sponsor of rent control, it is significant that Grebler's study for ILO has little good to say for rent control.)

**Effect on the people.** The "most serious effect of rent control and one that is economically and socially indefensible" is the way it divides the population into two groups bearing disproportionate shares of the burden of inflation: a) the "haves" who own prewar homes or rent prewar apartments and are thus protected by rent control, and b) the "have nots" (mainly new families with a veteran at the head) who must pay the high postwar cost of buying a house or renting a new (uncontrolled) apartment or must double up with another family.

**Effect on their spending habits.** Housing expenditures of those protected by rent control have declined substantially in relation to their incomes. The weight of rent in the consumer-price index fell from 18.1 in 1935-39 to 12.5 in 1947—the last year when rent control was still fully effective. Meanwhile, food increased from 33.9 to 42.0 and clothing from 10.5 to 12.0. Such a change in the pattern of consumer expenditures for a large number of families once established and firmly embedded in family spending habits, is hard to change.

There is at least a presumption that the 1940-47 increase in food and clothing demand was based partly on income set free by rent control to buy other things. "To the extent that this was so," says Grebler, "repression of rent inflation led to more price inflation in other fields."

**Effect on homebuilding.** There is no evidence that rent control held postwar homebuilding below the top limit set by available resources. More homes could have been built only through additional cost and price increases—i.e., inflation—so if rent control did tend to dampen homebuilding activities it had an anti-inflationary influence in this respect.

**Effect on building for rent.** Rental housing construction has been unusually low despite its exemption from rent control. It dropped from 36% of total dwelling-unit production in 1920-24 to 17% in 1946-50. This substantial decline can at least partially be ascribed to rent control, which established an atmosphere unfavorable to investment in rental housing. (There was always the chance that rent control might some time later be extended to new units. That this fear was not groundless is shown by what happened in several communities where rents were re-recontrolled after Korea.)

---

Trend of rents, compared with trend of all items in the consumer price index for moderate-income families in large cities, has remained relatively steady—thanks to the limiting effect of rent control. Source: Bureau of Labor Statistics; revised series which, among other things, makes allowance for rents of newly constructed dwelling units for occupancy by moderate-income families.

Effect on prewar rental housing. The supply of existing rental housing has been reduced under rent control. Many owners, faced with the alternative of receiving a controlled rent or selling at an uncontrolled price, naturally preferred to sell. From 1940 to 1950 the number of single-family dwellings rented actually declined more than 1 million. Counting apartments too, the number of rented units increased only 4.6% while the numbers of owner-occupied units rose by 71%.

"It is indeed astonishing that the supply of rental housing was not reduced more sharply. In 1950 there were still more than 5 million detached single-family houses in the rental supply," according to Grebler.

Effect on waste of space. The percentage of changes indicating less intensive use of space are not so great or so uniform as one might expect. Comparative figures for 1940-50 showed that tenant-occupied units with 0.75 or less persons per room (i.e., low-intensity use) increased from 48.4% to 51.5%.

Effect of decontrol. Experience with complete rent decontrol in several cities indicates that average rent increases of only 1.5-2.0% per month may be expected during the first two years after decontrol. In these cities, the rent indices now are roughly 30 to 55% higher than in 1942. The upward movement of rents is, of course, continuing, but it appears that, after the initial impact of decontrol during the first six to 12 months, the rise in rents tends to slow down. Grebler further points out that there is no present indication that rents will double either in comparison with rents at the date of decontrol or with the prewar level of rents.

(Continued on page 184)
VENTILATION GOES TO SCHOOL

Texas Engineering Experiment Station tests show what kinds of windows and window detailing provide the best warm-weather ventilation

If schoolroom—or plant—ventilation is a problem that concerns you, here’s a report from the pages of "Architectural Forum" we know you’ll want to read.

In it, you’ll see how sun hoods, window types, and outlet wall openings effect the overall air flow pattern throughout the room . . . how with proper design, schoolrooms can be made comfortable—even in hot weather.

If you missed reading this factual and timely report, we’ll be glad to send it to you. For your free copy just fill in and mail the coupon at right.

KIMBLE GLASS COMPANY
Subsidiary of Owens-Illinois Glass Company
Toledo 1, Ohio
the name for top efficiency in coils is McQuay

...the coils with the famous Ripple-Fins

McQuay's ripple-fin surface is the product of years of research aimed at producing the ultimate in heat transfer for any weight metal. High efficiency is assured by forcing the air to follow an ever-changing direction of flow in passing through the coil. Thus the air repeatedly contacts the coil surface to give maximum contact time, maximum contact velocity, and a resultant optimum heat transfer.

The staggered tube and rippled edge features also contribute greatly to the construction ruggedness and eye appeal of the famous McQuay line.

McQuay heating (blast) coils are available in a wide variety of styles and sizes. Hot water, cold water, brine, direct expansion, and refrigerant condensing coils are available for practically every type of application. Write McQuay Inc., 1609 Broadway St., N.E., Minneapolis 13, Minn. Representatives in principal cities.
The efficiency of any steam generator is dependent upon the rate of heat transfer from fuel to useful heat. The superior advantage of the Cyclotherm Steam Generator, as proved in thousands of installations, is due to the increased transfer of heat by radiation of the flame, the characteristic of which is controlled by Cyclonic Combustion, a term applied to the patented combustion method used in Cyclotherm Steam Generators only.

It represents an improved method of effecting complete and perfect diffusion combustion of gases and liquid fuels. Use of this principle of combustion has resulted in a heretofore unattainable efficiency and economy in the production of steam with simple, compact apparatus. This compactness with high steam generating capacity makes it the logical choice for efficient heating and process steam requirements.

It is through Cyclonic Combustion and no other method that the use of only 3 square feet of heating surface is possible. This in turn offers to you the most efficient package steam generator and boiler on the market today.

REMEMBER — Full power operation from a cold start in 15 to 20 minutes. Saving up to 50% on maintenance. Great fuel operational savings. Boilers are designed for oil or gas operations from 18 thru 500 h.p., 15 to 200 lbs. operating pressure. The Cyclotherm meets all state requirements and is built in accordance with A.S.M.E. and National Board Standards and bears the label of Underwriters Laboratories, Inc. Write today for latest descriptive folder.

Robertson MANUFACTURING COMPANY
TILE DIVISION
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WALL TILE • SNOWHITE TILE

Robertson TILE IS ONE SIZE—STANDARDIZED, PRECISION MADE

Robertson Snowwhite
— the PURE WHITE tile

No off-whites to ever mar the purity of Snowwhite. When you specify and use Robertson Snowwhite, you get a really white tile... perfect in finish, size and shape, and uniformity. Write today for free samples.

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The Mengel Company is now able to offer you African Mahogany Flush Doors at prices actually less than you pay for many domestic woods!

Operating its own large logging concession and mill in the best Mahogany section of Africa, Mengel imports this King of Woods in tremendous volume. The savings of these large scale operations are passed on to you.

What's more, when you choose Mengel Mahogany Flush Doors, you're assured of finest construction, guaranteed by the world's largest manufacturer of hardwood products. Mengel Mahogany Flush Doors have been tested and proved in thousands of installations. Better doors cannot be bought!

Let us tell you about the extra quality, the extra luxury, the extra value of Mengel Flush Doors in genuine Mahogany! Mail the coupon for complete information.

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WRITE, TODAY, FOR FULL INFORMATION AND SAMPLES YOU AND YOUR CLIENTS WILL BE GLAD YOU DID

RENT CONTROL

(Continued from page 177)

Its most serious effect is unequal loading of the inflation burden*

There has been an unfortunate preoccupation in the rent control controversy with the relative gains and losses of tenants and landlords. But for economic and social analysis it is more important to study the effects of rent control on two groups of housing consumers—those protected and those not protected by rent control—"have s" and "have nots." (In the case of the US, the large number of prewar homeowners constitute a third group not affected directly by rent control.)

Economists have not been oblivious to this approach. Thus, James E. Meade analyzes the British postwar situation like this:

"The present position is grossly inequitable and grossly inefficient. Those lucky occupants who are protected by rent restriction obtain accommodation exceptionally cheaply and have no incentive to economize dwelling space by living in a smaller dwelling, leasing excess rooms to lodgers, etc. Those unlucky persons (often ex-servicemen and women attempting to set up home) who are not in this charmed circle cannot find accommodation, largely because the protected 'sitting birds' have little or no incentive to make room for them."

Rent control and inflation

Rent control may be considered a means of redistributing the burden of inflation, not only between landlords and tenants, but also between the protected tenants and other housing consumers. This view of rent control becomes increasingly important when restrictions extend over long periods during which population grows and the proportion of those enjoying the benefits of rent control declines.

The question is whether, through rent control, the "have nots" are made to bear a disproportionate share of the burden of housing inflation and whether this distribution is warranted.

It is clear that the "have nots" are prevented from bidding for rent-controlled space on equal terms with the "haves." Only those rent-controlled units released by the "haves" are available to the "have nots." Because, however rent regulation weakens the incentive of "haves" to give up rent-controlled dwelling units, the chances for the "have nots" of obtaining such units are greatly reduced, and these chances are determined in large measure by luck, favoritism and "side-payments." For the majority, or "have nots," the means of obtaining housing are purchases at uncontrolled prices, high-rental tenancy in new, high-cost projects or prolonged "doubling-up" and makeshift arrangements. To the extent that they are able to

* A condensation of the most important chapter in Grebler's book.
WITH ROOF DECKS—AS WITH ROOFING IS TOPS!

CERTAIN-TEED METRO-MIX
(POURED-IN-PLACE)
GYPSUM ROOF DECK

CERTAIN-TEED GYPSTEEL PLANK
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Entering from either of the two driveways, Statler Center guests are immediately impressed by the hospitably open character of the three spacious levels of public area, enhanced by a profusion of tropical vegetation. The Wilshire Boulevard level features an alluring garden and jewel-like pool, and an ingenious arrangement of front office, inviting shops, dining rooms and cocktail garden. Above the public areas are four widespread hotel units containing 1275 guest rooms, all combination living-bedroom. As in Hotel Statler, Washington, D.C., (and the majority of all other hotels in this famous chain) all of the 1577 flush valves in Statler Center, Los Angeles, bear the famous name Sloan. Thus the Hotels Statler Company followed its established policy of using Sloan Flush Valves for all new construction, rehabilitation and replacement—repeated evidence of preference that explains why . . .

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▸ LOW HANDLING COST. 120' to 1000' continuous coils eliminate fittings and joints in plaster and under grade—reduce labor costs and, at the same time, lessen chance of leakage.

▸ HIGH QUALITY, STRENGTH and UNIFORMITY. Every foot of GM Steel Tubing is hydrostatically tested at 2000 pounds per square inch. In addition, a section of each coil is subjected to “destructive” tests such as flaring, twisting, flattening, etc. Such tests assure you of quality and uniformity.

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Entitled "A New Approach to Radiant Heating," this profusely illustrated Rochester Products brochure tells why GM Steel Tubing is the choice of more and more progressive builders. Send today for your free copy.
obtain separate dwelling units they are made to pay the full economic cost of housing, whereas the "have nots" pay less.

In the US where home ownership and renting are about evenly divided, the inflationary forces are permitted to operate fully in half the housing supply—in the uncontrolled market for owner-occupied houses. These forces are practically shut off from the other half—the rent-controlled units. Obviously, the price pressures on half the supply are much greater than if they had been distributed over the entire supply. Yet it is this uncontrolled half (together with new and converted dwelling units) that has been available to meet the demand of most of the "have nots." In other words, the "have nots" are forced to bear the full burden of inflation in the price structure of housing, or at least a disproportionate share of it.

How many "have-nots"?
Statistics are lacking for an adequate analysis of the numbers and characteristics of the "have-nots"; but certain impressions may be obtained from population and other data. More than ten million marriages have been registered since the end of the war; in addition, several million couples married in wartime did not establish separate households. In the majority of cases, the young married couples were "have nots." During the years 1946-51, about 14 million new and existing houses were purchased for owner-occupied at uncontrolled prices. About 800,000 new rental units exempt from rent control were built and occupied. Conversion of existing dwellings, also exempt from control, must have accounted for at least 500,000 units. In other words, there are now about 15 million dwelling units whose occupants pay the full economic costs of housing on the basis of 1986-51 price levels. After various deductions the figure would be about ten million "have nots"—making the number of "have nots" paying the full postwar costs of housing equal to the number of tenants protected by rent control.

With the pressure of the "have nots" concentrated on the market for owner-occupied houses, the number of these houses increased from 11.4 million (or 41%) of all occupied nonfarm dwelling units in 1940, to 19.5 million (53%) in 1950. This phenomenal change reflects both the effects of rent control and the historical preference of US families for the purchase of single-family houses when incomes are high.

Who are they?
Who were the "have nots"? Are they perhaps more capable of paying the full economic costs than the others? All indications point to the opposite conclusion. Most of them are young families with income earners who, because of their age, have not yet reached the peak of their earning capacity. Most of the "have nots" are growing families with increasing responsibilities. A large proportion of them are veterans' families. From the point of view of equity and welfare, there is real question whether these groups should be penalized in favor of older, established households by differentiation in housing costs that is tantamount to taxing them more heavily than the "haves."

(Continued on page 192)
If you are a manufacturer of building products and are caught in the critical material squeeze and are looking for a way out...

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Those manufacturing gutters, downspouts, flashing, etc., will want a copy of the new information-packed booklet Sharon '430' for Better Roof Drainage Systems. Available from district sales offices or by writing direct.

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RANDOM PATTERN
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Completely new and unlike any other Sound Conditioning material in appearance, Acousti-Celotex RANDOM PATTERN Perforated Tile brings you an exciting new range of decorative possibilities for interiors of every type.

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... these are the new, exclusive features of Acousti-Celotex RANDOM PATTERN Perforated Tile that enable you to create striking, dramatic decorative effects impossible with any other Sound Conditioning material!

But beauty is only part of the story. Like all Acousti-Celotex Sound Conditioning Products, RANDOM PATTERN Perforated Tile has high sound-absorbing value. And it also has a remarkably durable new washable finish that keeps its smart, soft-white beauty after many washings.

ASK YOUR DISTRIBUTOR of Acousti-Celotex products to show you a sample of new Acousti-Celotex RANDOM PATTERN Perforated Tile. If you don't know where to reach him, write to The Celotex Corporation, Dept.6k-92, 120 S. LaSalle St., Chicago 3, Ill. In Canada, Dominion Sound Equipment, Ltd., Montreal, Quebec.

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THE MAGAZINE OF BUILDING
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EVERYTHING IN WIRING POINTS TO

ARCHITECTURAL FORUM • SEPTEMBER 1952
RENT CONTROL

(Continued from page 188)

The amount of this "taxation" can be illustrated by differences in rentals and in carrying charges on owner-occupied houses. According to a 1949 survey, the average monthly rent in newly constructed rental projects was about twice the average monthly rent in existing rental housing. Monthly FHA mortgage payments for single-family houses bought in recent years were $55-60, as against less than $30 for the years immediately preceding World War II—in spite of easier credit supported by the government. Thus, housing expenditures as a percentage of income would show substantial variations within each income group for "haves" and "have-nots."

The unity of the price system prevailing in a market operation is broken by rent control, and broken in such a way as to create sharp and unjustifiable inequities between different groups of consumers of about equal capacity to pay.

Can it cure market faults?

The operation of the price system in housing may produce neither a completely efficient nor a socially desirable allocation of space—the operation of the housing market is imperfect in many ways. But rent control can hardly be advocated as a cure of the basic imperfections of the market, since it superimposes its own inefficiencies in the allocation and equitable distribution of space on those of the market operation.

The merits and implications of perpetuated rent control could be evaluated more clearly if the searchlight was directed on this phase of the subject rather than on the opposition between landlords and tenants.

If the results of this approach argue for speedier decontrol, the question of profits to owners of prewar housing can perhaps be solved in more practical fashion by taxation.

NEED FOR COMPREHENSIVE RENT CONTROL STUDIES

"It is astounding that the quantity and quality of analytical materials on rent control are wholly incommensurate with the social and economic importance of the problem. Here is a burning public issue which has been kept alive over a generation in several important countries, and which has been almost a world-wide issue for ten years or more. There is an abundance of factual, empirical materials which may serve to test the validity of various assertions on the effects of rent control; yet few attempts have been made to subject these materials to scientific, dispassionate analysis. Discussion of rent control is dominated by dogmatic statements, reflecting the tenants' or landlords' point of view and by description of the maze of administrative detail. Efforts at analytic treatment are scattered and often lack comprehensiveness. The contribution of the International Labor Office to comparative analysis of rent control after the first World War are still among the best in the field but neither the ILO nor any other agency of the UN has undertaken any research similar in scope to analyze the experience during and after World War II. Such a research project is badly needed, and it is to be hoped that it will soon be forthcoming."—Leo Grebler

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Can be installed on, above, or below grade This is possible because Aristoflex is vinyl-asbestos from top to bottom with no felt backing. It is tough, durable, flexible. So, you can specify Aristoflex as a multi-purpose flooring, ideal for practically all installations.

LOW COST Standard-gauge Aristoflex is comparable in price to greaseproof asphalt tile, yet it is far superior. Thus, you can give your clients the many advantages of modern vinyl-asbestos flooring at a price that meets the requirements of even low-budget projects. Aristoflex is also available in the ½" heavy-duty thickness.

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LESS WORK for busy nurses. The awning sash adjusts quickly to any position with one-hand fingertip control.

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MEMPHIS, TENN.
Technical education is receiving a great deal of attention among architects and engineers today (see p. 149). Some architects are worried that they are required to know considerably more about building engineering on the one hand and town-planning techniques on the other and they feel that architecture as an art is likely to suffer thereby. Engineers have their problems too. Demand for engineers is still so much greater than supply that designs are often prepared using the simplest column and beam structure that can be laid out quickly with the aid of design tables. Structural engineering is thus reduced to an automatic process that could be carried on by an electronic brain, and all too many engineering schools are teaching rules rather than training judgment.

Technical training vs. education

This series of essays by Professor Cross makes a plea for creative engineers instead of glorified slide rules. His theme is that technical training and education are not synonymous, that young men should first be taught a sense of scale—an ability to distinguish whether a proposition is true or false. He points out that everybody wants general rules to avoid thinking things out; the creative engineer will question rules and facile solutions since no two problems are identical.

In particular, architects and engineers should be less restricted to two-dimensional design and there is a need for considerable research into the properties and durability of building materials.

Reflecting the current integration of engineers and architects, there is an excellent chapter on bridge architecture demonstrating that like any work of art a beautiful bridge is one that has sound proportions, produces the greatest effect with the least effort and is durable, lasting.

Professor Cross, head of the department of civil engineering at Yale University, has a long record of outstanding achievement in both structural analysis and in education. He is convinced that more development of natural resources will take place during the next 20 years than took place in the last half century. Lights in his ivory tower are liberal, individual thinking and tolerance: "Alumni are much inclined to have their educators carefully prepare some part of this long road that young men are to follow and wish to have attention concentrated on the particular part of the road that they themselves are following at the time. Thus a young graduate of 30 often thinks that he should have had more technical details in his courses. At 40 there is often the complaint that not enough attention was given to law and management, at 50 the alumnus wishes that he had studied more English or that he had read more of classical literature, at 60 he is usually grown up enough to recognize that colleges are dealing with young men of 20 and not old men of 60 and to realize that it is best to harmonize and give due attention to all stages of his career."

This stimulating, thought-provoking book will be of special interest to university lecturers and students who are having to cram more and more specialist knowledge into an already overcrowded curriculum.
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L-270 4-way directional grille for complete control of air stream.

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Thermopane insulating glass with a \( \frac{1}{2}'' \) air space also eliminates 44% more noise transference than single glass, thus making buildings on busy streets quieter to work in.

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Have you the latest Thermopane literature in your file? Send the coupon.

PHOTOGRAPHS SHOW OFFICE in the Line Material Company, Milwaukee, as designed by Maynard W. Meyer & Assoc., with a Thermopane Daylight Wall, and as it would have looked with "hole-in-the-wall" windows.
THIS IS HOW TVA ARCHITECTS designed a wall of Thermopane insulating glass at Fontana Dam. The feeling of unbroken spaciousness is achieved by running clear glass all the way to the ceiling. Any nontransparent material between the top of the glass and the ceiling would have created a visual barrier, which would have given the room a feeling of smallness, of enclosure.

ARCHITECT R. EDWIN WILSON in his small office building, in the outskirts of Charlotte, N.C., creates a feeling of spaciousness by the same device used at Fontana Dam on a grand scale. He used Thermopane insulating glass all the way up.

What a difference, if he had designed a "hole in the wall" instead of a whole wall of glass! When you wall heat in, why wall out light, sunshine and view? Thermopane provides an insulated wall you can see through.

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The latest and most extensive book on daylighting for schools is now available! "How To Get Nature-Quality Light For School Children".

This 24-page, illustrated book presents the figures from "Recommended Practice of Daylighting" in easy-to-read chart and table forms. It also presents the latest studies by Prof. R. L. Biesel Jr., of Southern Methodist University, on daylighting schools. Photographs of new schools from all regions in the U. S. show how architects have met "Recommended Practice of Daylighting".

The book also contains a great deal of reference material you will find helpful while designing schools: light transmittance chart, sunshine weather map for the school year, types of ventilating window frames, multilateral lighting sketches.

ARCHITECTURAL FORUM • SEPTEMBER 1952
Mr. Robert O. Saunders
Standard Dry Well Products, Inc.
New Eagle, Pennsylvania

Mr. Robert O. Saunders,

For several years now, we have been using your THOROSEAL, WATERPLUG, and QUICKSEAL, and thought you would be interested in the results we have obtained with them.

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We have enjoyed excellent relations with your distributor in Columbus, The Columbus Builder’s Supply Company, and found them to be helpful and courteous in every instance.

In the past we have used many types of THOROSEAL and QUICKSEAL under very adverse conditions and found your literature for these products to be strictly accurate. We have never been disappointed in your products and should be assured we would not hesitate to recommend them to others a good waterproofing and beautifying job is required.

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If you have a part in elevator planning or buying, test-ride the new Selectomatic with Synchro-Glide Landing before making any decisions. See how smooth-riding and time-saving an elevator can be. For names of Selectomatic installations in your locality, contact the nearest Westinghouse Elevator office, or write Westinghouse Electric Corporation, Elevator Division, Dept. Ft, Jersey City, N. J.

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Flexible and lightweight, the wood mesh forms are suitable for curved as well as straight concrete work.

**PRODUCT NEWS**

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- Unique lattice construction gives the forms a greater carrying capacity than plain board and thereby cuts shoring costs. (Supports for a 4" thick concrete floor can be spaced as far as 28" apart.)
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(Continued on page 214)
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Manufacturer: Delron Co., Inc., South Gate, Calif.

(Continued on page 238)
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PRODUCT NEWS

The rectangular diffuser panel is engineered to fit right into a standard acoustical pan ceiling. It is available with a tube connection for application in a duct system labed below or without, for a plenum labed above. Perforations in the pans emit conditioned air at low velocity.

OUT-OF-SIGHT AIR DIFFUSER works with ceiling plenum or duct systems.

Designed to fit into a standard metal acoustical pan, Multi-Vent's Modular air diffuser simplifies the appearance and installation of a working ceiling. Nesting behind a 1' x 2' perforated pan (with its sound-absorbent pad removed) the new unit presents the same front as the rest of the ceiling. Like the firm's other Draftless Air Diffusers, the ceiling-conformist model is engineered for low-velocity distribution, functioning by gradual pressure displacement rather than forceful air stream. No air movement more than 6" from the panel exceeds the comfort zone requirements set up by the American Society of Heating & Ventilating Engineers, the manufacturer states. Thus the diffusers may be situated wherever they best suit cooling, heating or ventilating needs; partition placement will not affect, nor will draft-sensitive personnel be affected by, the air pattern.

For use in duct systems, the panels are equipped with 3" wide tube connections made of glass-fiber reinforced neoprene. Flexible and compressible, the tubing allows a comfortable margin for juggling to keep the ceiling panels aligned—even where the ductwork above wanders from the straight and level. To keep installation simple, holes can be cut in the ducts—bottom or sides—during fabrication. Gasket sealed collars on the tubing snap into the openings; no calking is necessary.

For plenum applications, the panels are furnished with a perimeter gasket and orifice valve, minus the tubing. They are installed on suspended tee runners with the regular acoustical pans, substituting panel assemblies for insulating pads. Modular diffusers for duct-air systems cost about $12; plenum type are $9. In both kinds of discharge systems (and especially in a plenum type where the acoustical blanket is hung above the air supply) the metal pans quickly take on the temperature of the conditioned air and thereby provide radiant heating and/or cooling as well as air distribution. About 50 to 75 units are needed for a room measuring 1,000 sq. ft. Because the installation is accomplished with a minimum of fitting fuss, application costs are claimed to be lower than for any other type diffuser.

Manufacturer: The Pyle National Co., Multi-Vent Div., 1334 N. Kostner Ave., Chicago 51, III.

(Technical Publications page 222)
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CONCRETE. Manual of Standard Practice for Detailing Reinforced Concrete Structures. American Concrete Institute. 18263 W. Nichols Rd., Detroit 19, Mich. 90 pp. 8½" x 11". $3

Draftsmen and engineers can save countless hours at the board by using the concrete construction detailing methods illustrated in this new edition of the manual. Revised to include data on A-305 deformed reinforcing bars, which are permitted higher bond values by the 1951 ACI Building Code, and other changes, the book also has been re-edited for greater clarity. It is not intended as a design handbook but as a detailing manual of improved methods and standards for preparing drawings for the fabrication and placement of reinforcing steel. To illustrate the use of the standards and methods advocated by ACI, the manual presents 21 typical engineering and placing drawings for various types of structures.

CURTAIN WALLS. Armorry Building Panels. United States Plywood Corp., 55 W. 44 St., New York 36, N. Y. 12 pp. 8½" x 11"

Prepared especially for architects concerned with commercial and industrial buildings, this new booklet contains suggested design details and specifications for Armorry in curtain wall construction. These sandwich panels, which consist basically of a lightweight insulating core and two metal faces, are described as providing maintenance-free interiors and exteriors. Quickly erected, they are reported to lower costs for foundations and framing because they put less dead weight on the structure than the more conventional masonry wall materials.


This practical planning aid explains how different types of plumbing fixtures affect building and maintenance costs. It points out that time and material savings often can be realized by selecting types of sanitary facilities before the final structural details are approved. Most of the ideas presented in the booklet came to Zurn from men in the field—engineers, architects and contractors—who, obviously, have felt the need for coordination early in the design of any structure. Many photos and line drawings show details which should facilitate installation of fixtures.


High-pressure diffusers made to handle duct velocities up to 3,000 fpm are pictured and described in this bulletin. The publication maintains that, unlike conventional low-pressure systems where a slight variation in duct pressure can alter the air pattern considerably, high-pressure systems can be balanced even when wide variations in delivery are present. Air volumes are regulated from full open to completely closed positions by the diffusers' calibrated damper. High-pressure systems utilize smaller and simpler ductwork with long runs of diffusers supplied by uniform conduits (without the customary reduction for each take-off) and therefore afford sizeable space and installation savings.

(Continued on page 226)
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TECHNICAL PUBLICATIONS

STORE FIXTURES. Store Planning Kit for Spacemaster Equipment. Reflector-Hardware Corp., Western Ave., Chicago 8, Ill. 120 pp. 9'/2" x 13". $1.50

"Make the fixtures fit the merchandise," advises the manufacturer in introducing this aid to store planning. Complete details on the Spacemaster metal-display framing and hardware are covered in two catalogues contained in the kit, and an illustrated instruction booklet explains how to use the merchandising equipment templates and layout sheet to plan a coordinated store interior.

CEMENTS. Corrosion Proof Cements, Bulletin No. 5-2. Atlas Mineral Products Co., 55 Walnut St., Mertztown, Pa. 12 pp. 8'/2" x 11"

The resistance of four types of corrosion-proof cements to each of 176 different common chemicals is charted in this technical bulletin which also lists temperature ranges for the four mineral products. Estimating tables are given for three kinds of acidproof brick and cement constructions, illustrated by three-color line drawings.

AIR CONDITIONING. Westinghouse Products for Air Handling, Air Cleaning, Air Conditioning, Catalogue No. 600. Westinghouse Electric Co., Sturtevant Div., Box 2278, Pittsburgh 30, Pa. 60 pp. 8'/2" x 11"

A clever color-tab contents page and cross-indexing system makes it easy for the catalogue's user to find quickly the kind of air-handling equipment he is looking for. The book is divided into three main sections. The first one, Equipment, contains good illustrative material and specifications. The second, Application, tells how and where to use the machinery to best advantage. Of special interest to engineers is the Data chapter which rounds out the handbook.

WIRING. Type AB Circuit Breakers. Booklet B-5407. Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa., 35 pp. 8'/2" x 11"

Three photographs, all taken in 1/20th of a second, record the actual arc-quenching action of the firm's AB circuit breaker as it confines, divides and extinguishes a hot arc. Construction details, ratings and dimensions, and application information are given for each of eight types of AB breakers. A short history of the development of these breakers is included, and their operating principles are explained.

LIGHTING. Lighting for Industry. Holophane Co., Inc., 342 Madison Ave., New York 17, N. Y. 96 pp. 5" x 8"

Indoor and outdoor industrial illumination problems are analyzed in this engineering handbook which tells how to utilize the manufacturer's lighting equipment to its best advantage. Each phase of factory lighting is illustrated with technical diagrams, charts and photographs of actual installations.

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THE MAGAZINE OF BUILDING
Gorgas, Alabama, is the location of one of the largest electric generating plants and coal mines in the Southeast. In the community surrounding these developments, Alabama Power Company owns about 300 houses and additional houses are constructed as the operation expands. Lumber going into the construction is protected against termites and decay by a formulation of Monsanto Penta.

Alabama Power Company first used penta in this area eight years ago. In its construction and maintenance program, penta protects all outside lumber as well as joists, subflooring and floors. Much of the timber required is cut from the company’s forest; then sawed, seasoned and treated with penta before use.

When untreated lumber was used, replacement of some parts was necessary in one to three years. With penta protection, the company already has proved that service life of the wood is substantially increased. If only ten years of life is obtained with treatment, the company estimates it will earn 200% on its treating investment.

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For information on the use of Monsanto Penta to preserve wood, for names of suppliers of penta-treated lumber or for names of branded wood preservatives formulated with Monsanto Penta, contact the nearest Monsanto Sales Office or write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

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Flush-type plastered-in design — Base (4" and 6" heights, standard 10' lengths) is punched for nailing to wall. Has slotted plaster flange for easy grouting. Sections of base joined by flat aligning plate, requiring no punching, no screws.

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