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ladelphia—it leads the US in redevelopment (p. 118). . . . What's next in window walls (p. 168) pelin structure brought down to earth (below and p. 140)



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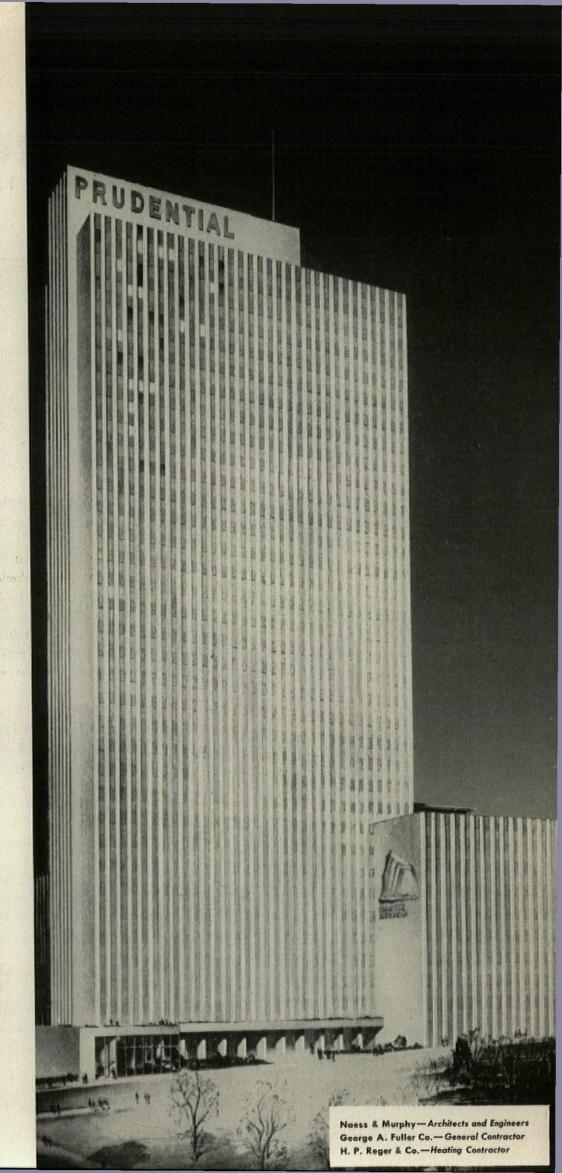
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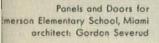
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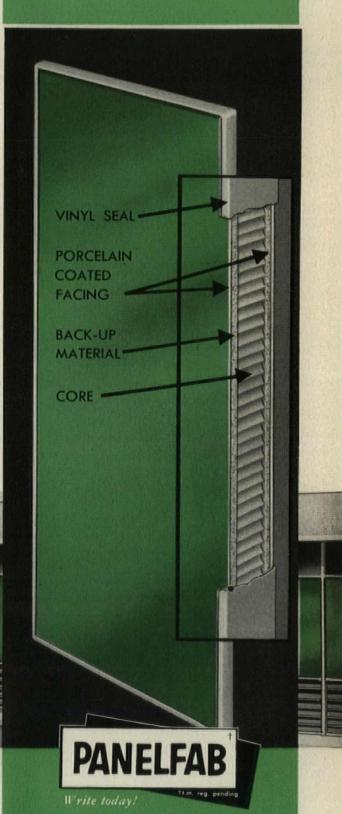
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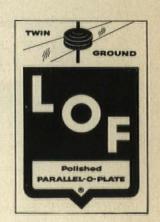
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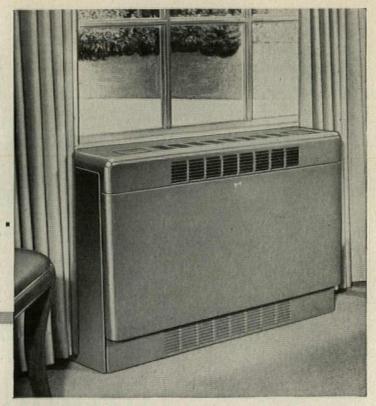
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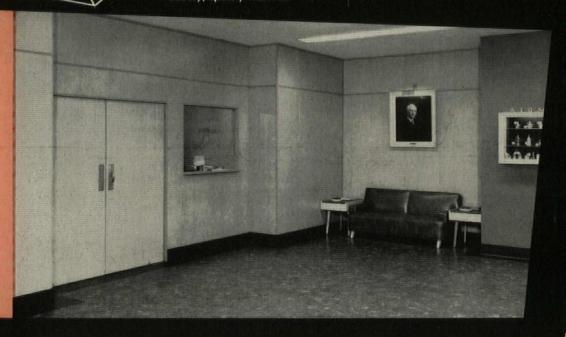
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Washington report: new public housing row brewing; FHA 'cost' appraisals voted

True to form, this year's Housing Act amendments were only going to get through Congress after a bout with a cyclone battle. The Senate made this a certainty last month when it passed a Democratic bill that ignominiously scrapped the President's proposals for only 35,000 public housing units a year for the next two years in favor of 135,000 units a year for four years, plus another 10,000 a year for individuals or couples over 65. In addition the Senate bill knocked out most special restrictions on federal public housing projects enacted in recent years-not only the tenants' antisubversive oath requirement, but also the rule that cities must have comprehensive "workable programs" for urban renewal and conservation before qualifying for any new projects.

On similar urgings from two opposing camps, the Senate bill changed mortgage appraisal requirements from "estimated value" to "replacement cost" on two FHA programs. Public housers (NAHRO) requested the change on Sec. 220 "urban renewal" area mortgages; realtors (NAREB) requested it for Sec. 213 co-op projects. Despite the fact "cost certification" rules would still apply to both types of projects, this Senate action suggested that Congress was still unaware of the role "replacement cost" valuations played in making the postwar Sec. 608 program the kind of success the 1954 housing probes vociferously condemned.

The House was still to act, would undoubtedly pass a Republican bill with curtailed public housing allowances, after which the two measures would be compromised in conference—most likely a heated one.

Public chapel ruckus. In contrast to the political partisanship that fed the public housing debate, artistic partisanship fueled a dispute over plans for the nation's newest public chapel.

In mid-May, when the Air Force twitched the veils off models for its Air Academy high in the Rockies near Colorado Springs, veterans of many an architectural debut were certain the design was due for trouble. Those who liked the crisp, crystal Skidmore, Owings & Merrill design wondered if it would survive the unimaginative ("It looks like a cigarette factory!") criticism of politicos as well as more brilliant lambasting of some heavyweight architects like Frank Lloyd Wright.

But the Air Force had showed strategic wisdom, unexpected in such a brash, young service. The chapel, which looked as "un-Godly" to some of today's downshouters as the first Gothic church must have looked to Romanesque partisans, seemed to draw most of the criticism.

Last month the chapel went the way of all spearheads. The elaborate Colorado Springs presentation proceedings seemed to have served their purpose. Washington Air Force brass dropped the tentative plan for the pleated temple, and most of the criticism went with it. Then an Air Force spokesman said, "It simply was put in there to avoid having a blank in that very important space." In fact, all but two of the buildings in the model complex were solely expressions of S-O-M's general concept of the project. The chapel design was sacrificed, but the over-all project style was established. Final design approval, said the Air Force, is not scheduled until November 1956.



Dallas tower will have 36th-floor flying bridge

Preliminary plans for the main \$20 million, 40-story headquarters building of Southland Life Insurance Co. in its Southland Center project in the heart of downtown Dallas include a cantilevered window wall for the full length of the 36th floor to give members of an exclusive business executives club a super view of the city below. There will also be a helicopter platform and public observation deck on the roof.

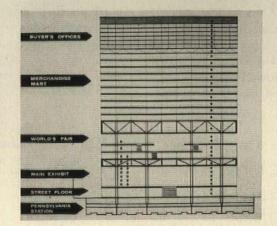
As designed by Welton Becket & Associates of Los Angeles, with Mark Lemmon of Dallas as consulting architect, this glass, aluminum, marble and granite tower to be started early next year will have 400,000 sq. ft. of office space, 225,000 sq. ft. of underground parking space and extensive ground-floor arcades serving 175,000 sq. ft. of lower-floor shops, stores and restaurants. Eventually, the center will include two more 25- and 20-story buildings.

Zeckendorf promoting world's most massive building

If everything worked out perfectly, the world's largest and costliest building might be under construction in a year over New York City's Pennsylvania Station.

Webb & Knapp President William Zeckendorf would be the developer. The building would be a \$100 million Palace of Progress housing a "permanent world's fair," wholesaling center and buyers' headquarters. The massive structure would have about 7 million sq. ft. of floor area, compared with about 6.6 million in the Pentagon.

As a starter, Zeckendorf was given a oneyear option by the railroad for the air rights over the station from the ground up, a hunting license that would allow him to negotiate with prospective tenants. He paid nothing for the option. Nor was the railroad "giving away" anything: if he exercised the option he would have to pay \$30 million for these rights, compared with an assessment on the terminal for \$28.8 million. The railroad would use about \$13 million to modernize its station below ground level—end up with virtually a new terminal, \$17 million in pocket, and a huge new building overhead that would surely boost its rail traffic. Mighty building job. Confident that he could promote the proposed palace into reality, Zeckendorf was spending considerable money on preliminary studies for what would be one of the most intricate building construction jobs ever undertaken. Added to Webb & Knapp's design team as associates of Architect I. M. Pei: Architect Lester C. Tichy, who has worked on many modern rail terminal design projects; Paul Weidlinger, for



the structural engineering, and Robert Heller & Associates, Cleveland industrial engineers. Heller (who is also making studies for enlarging the White House west wing executive offices—AF, May '54) would develop a building program and construction schedule so station modernization and erection of the immense new building could take place without disrupting train service, and with minimum public inconvenience.

The building site is 455' x 800'. As the accompanying preliminary cross-section indicates, unusual engineering would be required for the extra-high-ceilinged main exhibit hall (about 80' high) and world's fair sections. On this drawing, the largest truss, above the world's fair section, would be about 40' deep, probably the biggest ever used, said Pei, except perhaps for some bridge trusses.

There would be offstreet loading, but no offstreet parking accommodations.

Zeckendorf also was nursing proposals for two other "world's largest" buildings in New York: an office tower over Grand Central Terminal, and a parcel post and commercial building over Pennsy tracks one block farther behind Penn Station. Workmen of the Johnson Insulation Co., Detroit, installing Super-Fine on heating ducts at the People's Outfitting Company's new store. The soft-textured blankets were quickly and easily wrapped around the large ducts and secured with light-gauge wire.



In big, new department store duct job-

L·O·F Super·Fine cuts heat loss reduces installation cost

In specifying duct insulation for the new People's Outfitting Company store, in Lincoln Park, Michigan, highly efficient insulation and low-cost installation were basic considerations.

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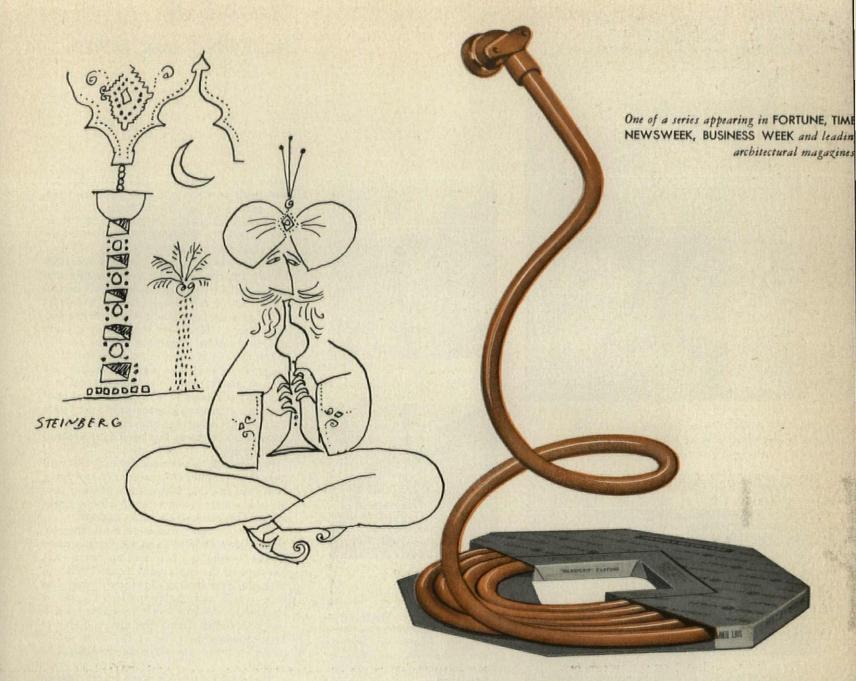
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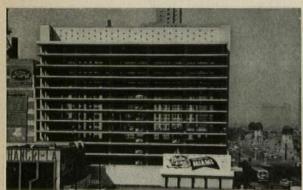
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RENEWING OUR CITIES:



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CHICAGO IS READY with parking garages, like one below, expected to be filled daily with cars whisked downtown along new expressways.





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NEIGHBORHOODS in varving stages of decay, above, cover about one-third of Chicago, Heavy white lines on map are expressways, completed or abuilding. Major projects are: 1) Chicago Land Clearance Commission housing projects; 2) Northwestern Medical Center; 3) West Side Medical Center: 4) Lake Meadows housing (New York Life); 5) truck terminal areas; 6) Illinois Institute of Technology; 7) Michael Reese Hospital; 8) Hyde Park-Kenmore urban renewal area. Little dots are public housing projects. Question marks represent grandiose plans for \$400-million Ft. Dearborn civic center and North Clark-La-Salle St. housing and shopping center project. Lake Calumet, bottom of map, may some day be center of vast deep-water port and industrial plexus, served by St. Lawrence Seaway.

FT. DEARBORN MODEL, one of a series, being inspected by, I to r, Earl Kribben (bending), Marshall Field v.p., Promoter Arthur Rubloff, Mayor Richard Daley and Architects Nat Owings and Fred W. Kraft.

Dean Palmer, manager, looked through the wire wall of Chicago's new birdcage parking garage at the empty stalls inside. He twanged a stainless steel guard wire. "Business is bad," he admitted. "We've never been full since we opened."

Palmer's troubles are shared by operators of five other municipally built garages and scores of little parking men in the old central core of the city. Chicago today, in the midst of its greatest industrial boom, with car registrations up 50% over those of five years ago, is overbuilt in parking structures.

But this is the result of good, not bad planning. It is evidence that Chicagoans are earnest about rebuilding their central city and are well advanced in doing it. "Wait until Congress expressway opens next year," said Palmer, his eyes lighting up. "They'll be shoving cars at us so fast we'll have to stand them on end."

Chicago will be prepared for cars that will pour from 73 miles of expressways now being built. An original \$50 million parking program is almost completed and a second program of the same size is about to start.

Except for one north-south route, the new expressways-two of them will have a rapid transit system in their median lanes-will converge on the city's aging Loop. The Loop, with its surrounding downtown core, has been a sick and failing patient for years, plagued by obsolete factories, traffic congestion and slums. Today the area appears to by responding to some of the most potent urban medicine city planners have dared to concoct.

There have been big ideas in the past to renew downtown Chicago, but they have had a way of not outliving the fanfare with which they were introduced. Examples: a big civic center, proposed in 1949, to replace eight downtown business blocks, a 1953 plan for a civic center just across the Chicago River from the 1949 site, numerous proposals for a mammoth convention hall, latest of which would be four miles from the Loop and its hotels. Most recent civic center plan is Ft. Dearborn, a dazzling cluster of city, county, state and federal buildings around which would go housing and cultural units. Last month the plan received permissive legislation from the Illinois state assembly. Many of the city's influential businessmen are behind the \$400 million center, which would tickle the imagination of Chicago's great



Chicago mixes potent urban medicine

Separate attacks on decay by schools, city government and swarms of civic gadflies show city means business

planner, Daniel Burnham, who advised his city 50 years ago to "make no small plans."

But, if Chicago's grandiose schemes have not been effected, plenty of piecemeal work has been done. The central core has absorbed the biggest share of a program of capital improvements costing, over the past 10 years, more than a billion dollars. Under this program Chicago has cleared 1,316 acres of buildings, most of them slums; built 11,000 public housing units, 75 new schools, eight hospitals and a flock of parks. The program has included building a subway, modernizing antiquated surface and elevated transit lines, building a lake-front airport as well as giant O'Hare Field, parking garages for 10,000 cars, and a big bite at the expressway program. Another set of public works costing \$1.8 billion is on the planning boards.

Suburban magnesium. Paralleling this public program has been a private industrial boom unmatched elsewhere: Chicago's steel production has overhauled Pittsburgh's; her industrial output has increased fourfold since 1939, and just since World War II \$1.7 billion has been spent on industrial construction. Towering new apartment buildings have been erected along the shore of Lake Michigan; 47,000 new dwelling units were added in Chicago and its suburbs last year alone. State St. merchants have spent \$70 million enlarging and modernizing stores.

Chicago's industrial growth has occurred in an area stretching 50 miles along the lake shore and running inland almost as far. The city's public improvement program has been aimed basically at holding this growth as close as possible to the center of the city. Many civic leaders have been worrying about the city's declining strength relative to her suburbs. Suburban population (2,199,000) has grown 17.3% in the last five years, while the city's population (3,789,000) has increased but 4.6%.

But there is evidence that efforts to slow the suburbanward movement have been effective: for the past three years more new industrial plants have been located in the city than in the suburbs. Last year's score: Chicago, 114; suburbs, 92.

Slums are Chicago's big weakness. They house her mass labor supply inadequately, and they frighten her skilled and executive labor groups to the suburbs. Slums are both an economic and a social problem, intensified by Negroes moving North during and after the war. Chicago's nonwhite population rose 80% from 1940 to 1950, now numbers nearly 700,000. Whites, increasingly aware of the blight that follows crowding people 10 or 12 to a room, fled to the suburbs, and as they moved out more Negroes occupied the vacuum.

In 1947 a committee of bankers, merchandisers and educators looking for a way to clear slums without putting the whole burden on the city or federal governments,

worked out the idea of write-downs on slum property scheduled for clearance. This turned out to be the basis for the federal urban redevelopment program of 1949 (Title I). The state legislature granted the Chicago Land Clearance Commission the then revolutionary power to condemn slum land and sell it at a loss to private redevelopers. Chicago floated a \$30 million bond issue to build a kitty, and Marshall Field & Co. lent a vice president, Milton Mumford, to get the program rolling.

Mumford turned his attention first to the expressway program and set up a public rental agency to relocate families living in the rights-of-way. By 1950 the office was relocating 3,500 families a year, by 1953, 4,250. By the time the land clearance commission was ready to attack big redevelopment areas, the relocation system was ready to handle its share of the job.

First big project, Lake Meadows, was carved out of 101 dismal slum acres on the South Side. Slowed by seven suits carried successively to the US Supreme Court, the 1,600 family project is nearly half finished, has cost public agencies and its developer, New York Life Insurance Co., \$23 million so far. The final redevelopment package, Lake Meadows, an adjacent public park and a brand new school, will be an example of how cooperation between private business and government—federal down to local school board— can rub out a slum.

Lake Meadows is but one of five projects at which the land clearance commission is working today. One of these is a 52-acre tract on the West Side being redeveloped as a modern industrial district.

The frenzy spreads. While the commission was fighting legal delays and, undoubtedly, too much bureaucratic shuffling, less hampered institutions were moving faster at the work of building a new Chicago:

The Illinois Institute of Technology was located in antiquated, outgrown buildings in the heart of the slums. Instead of moving out, IIT bought up 70 acres of slums, cleared them and turned to Mies van der Rohe to design a new campus six blocks west of Lake Meadows. The project today is 80% complete, a brick and steel exhibit for the defense in the case against the American city. Michael Reese Hospital, four blocks north of Lake Meadows, laid out 80 blocks for redevelopment to carry its campus to Lake Meadows and to a big trade school being built by the board of education. Nearby, Builder Joseph Merrion is about ready to put up 226 row houses and an undecided number of apartment houses on a 27-acre tract of blighted land, only part of which must be cleared.

▶ The West Side Medical Center, astride the nearly finished Congress St. expressway and sprawling over 305 acres of erstwhile slums,

continued on p. 17



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\$35 MILLION Michael Reese redevelopment on 80 acres has 1,000-bed hospital, medical school, research center, 1,000 dwelling units.

George Kufrin



PRUDENTIAL BUILDING, biggest in years, may encourage downtown office construction.

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It's assured by Ro-Way construction—with all joints mortised and tenoned, waterproof glued and steel pinned; with sections rabbeted for weather-tight fit; with millwork both drum and hand sanded for finest finish; with all hardware Parkerized and painted after fabrication for maximum rust prevention.

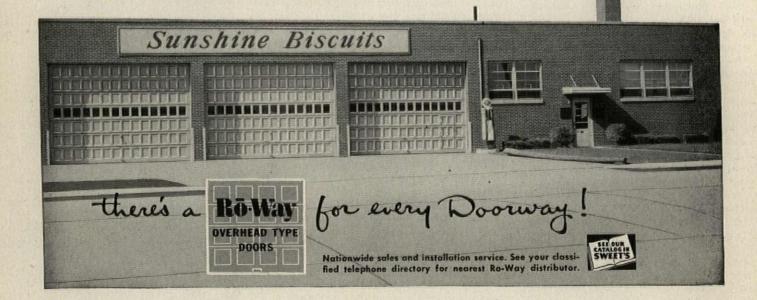
And it's there in every Ro-Way operating feature—the Taper-Tite track and Seal-A-Matic hinges that work together for easy opening and sure, weather-tight closing; the ball bearing Double-Thick tread steel rollers that glide smoothly and quietly; and the Power-Metered springs that are matched and tension-balanced to the weight of the individual door.

Built? Yes—built to last! And that means satisfied clients. If that's what you want, specify Ro-Way overhead type doors for all commercial and industrial applications.



FREE ARCHITECT'S MANUAL. Complete details, specifications, drawings, etc. of entire line of Ro-Way doors. Especially helpful in selecting just the right door. Request Manual 55—on your letter-head, please. No cost or obligation, of course.

ROWE MANUFACTURING CO., 953 Holton St., Galesburg, Illinois





about SNAP*ON

In the strikingly modern plant of the Johnson Wax Company in Racine, Wisconsin, molten wax flows through an extensive maze of piping. Steam tracers coil about the piping to keep these waxes fluid, and of course, insulation is a "must".

To insulate this piping, the Johnson Company selected lightweight G-B Snap*On, the one-piece molded pipe insulation of fine glass fibers. The fact that Snap*On is reusable was important to the company, since piping is frequently changed around to accommodate new processes. Johnson people were equally pleased with the ease of application and the snug fit of



Snap*On over steam traced lines. And Snap*On's thermal efficiency — highest of any pipe insulation on the market — was still another deciding factor.

Because it is an all-purpose pipe insulation, Snap*On, with a vapor barrier jacket, was also selected to insulate chilled water lines in the Johnson plant. Snap*On is available in a wide range of pipe sizes up to 33", in a variety of wall thicknesses and jackets. If you, too, are looking for a new and better way to insulate cold or heated piping where temperatures do not exceed 350° F, write for the full story, on Snap*On . . . today!



Thermal and acoustical glass fiber insulations • Pipe couplings and fittings • Molded glass fiber pipe insulation 258 W. 10th ST., KANSAS CITY, MO.

Servel Air Conditioning Tames Arizona Temperatures in Historic Cathedral



This air conditioning problem had special restrictions. Church officials requested: "No noise. No existing structure must be disturbed. The altar candles must not flicker."

Quite an order for the Servel dealer, Hearn Plumbing & Heating, Inc., who air-conditioned Tucson's historic San Agustin Cathedral.

Two Servel 25-ton Water Chillers solved the problem neatly. The equipment was placed behind the church in a small building that was formerly used for storage. From this small building is piped all the chilled and hot water which completely air-conditions the church with hardly a sound. Nothing is visible to disrupt the church's beauty.

These units make this spiritual haven a physical haven as well. More than 6000 square feet of space is cooled, providing air-conditioned comfort for over 1000 worshipers at a time.

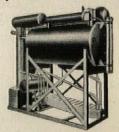
When you consider air conditioning, look to Servel. Specify Servel for maximum efficiency and minimum operating and maintenance costs. For further facts and engineering assistance, see your dealer or send coupon.

Servel

the name to watch for great advances in

AIR CONDITIONING V REFRIGERATION

Servel 25-ton Water Chiller has no moving parts. Operates without vibration and wear, even at peak loads. Carries 5-year warranty.



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Send me specifications and full information on Servel Water Chillers.

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Firm	
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City	Zone

includes six hospitals, seven medical schools, two apartment buildings. It took substance from a generation-old dream of Chicago medical men, was spearheaded by the State Medical Center District. When it is finished, the center will cover another 175 acres, include more housing.

The Chicago Housing Authority, a vital partner in the city's renewal team, has a history of scandal-free management and a feeling for forward-looking design. To its 7,258 prewar units, CHA has added or is building 12,000 more. Without a reservoir of low-cost housing, the relocation of families from slum clearance sites probably would have been impossible; CHA's projects have been strategic beachheads in the war against urban decay.

The University of Chicago watched with growing apprehension as blight crept toward its campus after the war. Behind the stately brick fronts of the Hyde Park and Woodlawn houses and apartment buildings, fly-by-night contractors were partitioning spacious old dwellings into tiny cubicles to house the overflowing Negro population. By 1951 the university, with millions invested in a modern, adequate campus, knew it had to fight back.

The weapon chosen was the South East Chicago Commission, sponsored by the university but supported primarily by the Hyde Park and Woodlawn neighborhoods. Immediate goal: to reduce the soaring crime rate which



LUXURY HOUSE by Milton Schwartz indicates acceptance of contemporary design.

PUBLIC HOUSING, so far the backbone of slum clearance, houses 11,000 families.



Fenno Jacobs-FORTUN

was making coeds afraid to walk home from classes at night and causing enrollment to sag. Ultimate objective: to restore the area to its old status as a prestige neighborhood. Julian H. Levi, tough-talking lawyer and businessman (former manager of Reynolds Pen Co.) took on the job and set up offices for the commission in a room at the Hyde

Fritz Goro—Lape

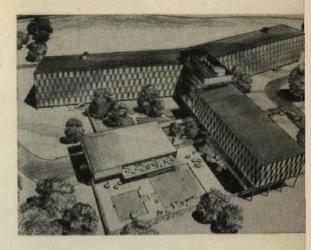
100

Park YMCA. He hired a secretary and a criminologist and went to work. With the area's crime probblems being diagnosed, and treated, the crime rate dropped. As it did, Levi turned to making Hyde Park the kind of neighborhood that

would attract people from the surburbs—not the slums. He hired a retired fire marshal to inspect buildings, report violations to city officials. When simple prosecution failed to get results, Levi asked banks and insurance companies that held notes and policies on offending buildings to act. Today the commission is moving into its final phase, rebuilding. With a planning staff headed by Architect Harry Weese, Levi has worked up a block-by-block system of demolishing pockets of blight and rebuilding with modern housing and community facilities. A \$32 million program covering 101 acres has already received a federal commitment of \$6.5 million.

Neighborhood groups that cannot be described in terms of big money or fancy charts may well turn out to be the final battle line in Chicago's war against deterioration. There are 25 of these little groups who maintain a full-time paid executive staff of one or more persons. Their areas cover, in all, one half of Chicago's 200 square miles.

While Chicago's chaotic system of railroad terminals has defied even the most ambitious plans for consolidation, the problem of inadequate air terminals seems to be well under control. O'Hare Field will be ready to take commercial flights this fall, relieving Midway Airport, where more planes are said to land and take off every day than anyplace else in the world. By next spring about one third of Midway's traffic will have moved to the



Cooperative office building for Philadelphia suburb

A group of Philadelphia publishing, printing and advertising executives had Hugh Stubbins Associates of Cambridge, Mass., design this \$4.1 million air-conditioned Graphic Arts Cooperative Center office building planned at the Pennsylvania Thrnpike's interchange in rural-suburban King of Prussia near the homes of many of the sponsors. The five- and four-story sections, served by reversible escalators, would have about 236,000 sq. ft. of floor area, and supplementary facilities would include a small club with a lounge and dining rooms, a swimming pool and dressing rooms. Turner Construction Co. has been chosen as the builder.

new, modern ten-times-bigger O'Hare Field.

Chicagoans are developing a new harbor in 2,300-acre Lake Calumet. The lake is five tortuous miles by channel from Lake Michigan. The channel is being widened to handle deep-water ships reaching the city after the St. Lawrence Seaway has been finished. Seven thousand feet of berthage is under construction in the initial phase of the port's development.

Even as they work at rebuilding their city in 1955, Chicagoans are looking ahead with awe—and some pleasure—to the even bigger problems of growth, transportation and redevelopment that are inevitable as the Midwest moves into the Seaway era.

Schwulst heads minority housing survey; Va. court blocks integrated-school funds

Last month a national Commission on Race and Housing was organized in New York with a \$100,000 grant from the Fund for the Republic to make a country-wide survey of housing problems of minority groups, particularly Negroes in large cities.

Earl B. Schwulst, president of the big Bowery Savings Bank of New York (erecting a large Harlem branch bank and apartment building), heads the commission. Other members include Charles Keller Jr., New Orleans construction firm president; Philip M. Klutznick, board chairman of Chicago's American Community Builders, Inc.; H. C. McClellan, president of Old Colony Paint and Chemical Co., Los Angeles; R. Stewart Rauch Jr., president of the Philadelphia Saving Fund Society

Fund for the Republic President Robert M. Hutchins told the new commission that housing is now the greatest racial relations problem, since the Supreme Court's school desegregation decision. In this he was in agreement with a recent declaration by the National Committee Against Discrimination in Housing charging that "certain groups" now intend to circumvent school desegregation by intensifying campaigns for segregated "racially defined neighborhoods."

If the commission needed a guide to plot its research, it could hardly do better than continued on p. 21

Sinclair Oil's New Chicago Headquarters - Completely Sound Conditioned with Acousti-Celotex Tile



Lighting and air conditioning also included in integrated* system

John W. Galbreath & Co., Inc. has gone allout for employee effi-

ciency and comfort in this outstanding new Chicago office building. Throughout the 200,000 square feet of the building, Acousti-Celotex Mineral Tile traps machine clatter and voice chatter, reduces routine noise in general and private offices and corridors. For the Sinclair Oil Company and other tenants, this means that errors will be reduced, over-time lessened, productivity increased.

Low in Cost—Easily Maintained—Acousti-Celotex Tile provides economical sound-conditioning. No special maintenance is required. Beauty and cleanliness add to the advantages of highly effective sound-absorption. Acousti-Celotex Tile can be washed *repeatedly*, painted *repeatedly* without loss of sound absorbing efficiency.

*Acousti-Celotex incombustible Perforated Mineral Tile is installed on the Celotex Acousti-Line® Metal Suspension Ceiling, where Tile, light fixtures and air diffusers become interchangeable parts of the ceiling. When a new layout is desired, units can be quickly relocated . . . economically!

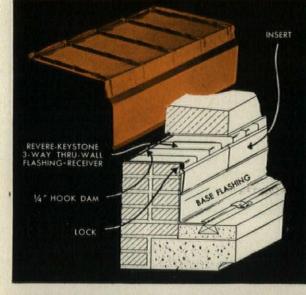


FOR FULL DETAILS on the complete line of Acousti-Celotex products, please write to The Celotex Corporation, Dept. A-75 120 S. La Salle Street, Chicago 3, Illinois.

Products for Every Sound Conditioning Problem

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

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

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

- IN TWO IN-THE-WALL FORMS.

 a) Standard 4" flat copper receiver; with 1/4" hook dam.
 - b) Combination receiver and thru-wall flashing (shown in isometric above).



SEND TODAY FOR THIS DES-CRIPTIVE FOLDER ON THE REVERE-KEYSTONE 2-PIECE CAP FLASHING FOR YOUR FILES. IT GIVES FULL CON-STRUCTION DETAILS! • Fits snugly and neatly against wall

Leaves wall free for placement of base flashing
 Can be disassembled for repairs to base flashing

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

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

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

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

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

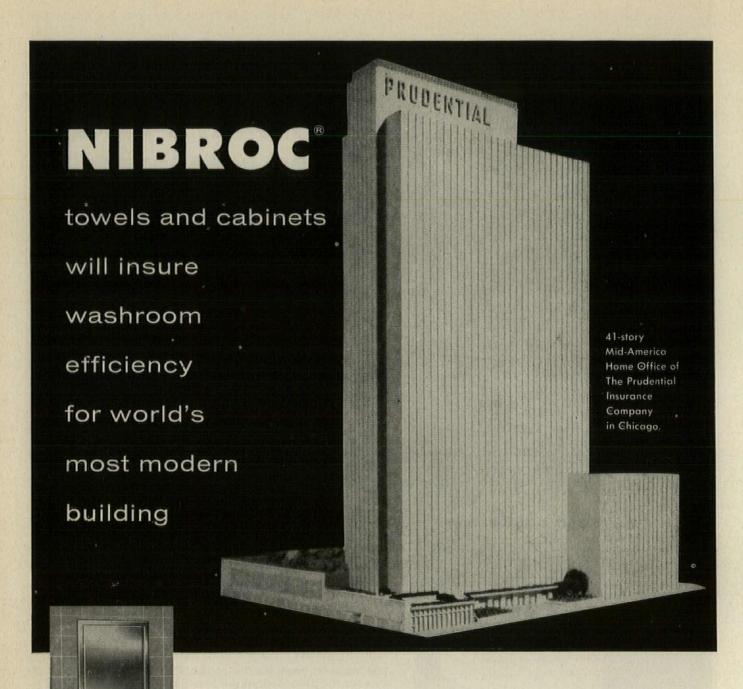
CAN BE DISASSEMBLED—Insert can be removed with a simple tool and used again, with no loss of neatness or snugness, when the built-up base flashing or roofing have to be repaired.

*Patented June 9, 1953—No. 2,641,203. Other Pats. Pend.

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THE Prudential Insurance Company of America, meticulous in its choice of quality products for its new Mid-America Home Office building in Chicago, on a competitive basis is installing Nibroc Towels and Nibroc Recessed Cabinets.

First wet strength towel—and still the finest—Nibroc Towels are super-absorbent, strong, sanitary, soft-textured. They speed up washroom traffic...stop waste because one towel dries both hands...cut maintenance costs. More and more architects specify Nibroc Cabinets because...

Nibroc multifold cabinets hold 50% more—require less servicing. Available in 3 models—wall, floor and recessed. Wall cabinets in durable white enamel (with or without mirror) and easy-to-clean chromium plate or stainless steel.

New, improved recessed dispenser with waste receptacle — loads faster, holds far more towels for washrooms with heavy traffic. Handsome 22-gauge stainless steel for long, trouble-free service. Dispenser and waste receptacle available separately for washrooms where desirable to stagger towel cabinets and receptacles.

Use the finest—Nibroc Towels and Cabinets. For name of distributor see "NIBROC" in your classified directory or write Dept. NU-7, our Boston office.



COMPANY, Berlin, New Hampshire General Sales Office: 150 Causeway Street, Boston 14, Mass. to start with a new book by lawyer, housing writer and New York State Rent Administrator Charles Abrams, Forbidden Neighbors—A Study of Prejudice in Housing. In this Abrams advances a 12-point program to improve minority housing. One of his main recommendations: curtailment of large scale urban slum clearance projects for the duration of the housing "emergency," or until better provisions are made for rehousing displaced occupants—often primarily minority groups—satisfactorily.

Abrams also lambasts former FHA policies that fostered the creation of thousands of new racially segregated neighborhoods; cites public housing projects in the North as demonstrating that integrated occupancy can work. Projects with 6% to 30% Negro occupancy are "generally the successful

ones," he says. They provide security of numbers for the minority, no affront to the sense of white majority.

The pattern that school desegregation would take in the South, and the extent of its influence on construction, would not be clear for some time. Typical of one extreme was a Virginia court ruling that a \$1 million bond issue voted for segregated public schools could not now be used to build nonsegregated schools. On the other hand Congress was being urged to provide special aid for communities facing a heavy financial burden to comply with the Supreme Court's ruling. Rep. Stewart K. Udall (D, Ariz.) introduced a bill to give \$100 to \$150 million a year in direct grants to school districts building new facilities under reorganized programs for nonsegregation.

New era of jurisdictional warfare hinges on two pending NLRB decisions

Building contractors and construction labor leaders were holding their breath last month, waiting to see how the National Labor Relations Board would rule in two key union jurisdictional cases.

At stake were the power and effectiveness of the National Joint Board for the Settlement of Jurisdiction Disputes in the Building and Construction Industry. The joint board was set up after the Taft-Hartley Act outlawed jurisdictional strikes, and for seven years has kept all but a few work-assignment disputes in the construction family (and out of NLRB). Last year, for example, the nine-man board—four union and four employer representatives and tough, forthright John T. Dunlop of Harvard, neutral chairman—dealt with 1,500 interunion disputes. More than 500 of them involved strikes; it settled virtually all of them.

The two pending key cases:

Last year an Arlington, Va., plastering contractor, A. W. Lee Co., hired three lathers to install aluminum hangers for an acoustical tile ceiling in a building under construction for Westinghouse Air Brake Co. A carpenters local union in the area claimed jurisdiction and, through its national offices, carried the case to the joint board. The carpenters won, and Lee replaced the three lathers with carpenters. But then the lathers struck and took their case to NLRB. Their charges: that the joint board's findings were not binding on the lathers because their local had no part in the proceedings (the board works directly with national offices of construction unions, will not deal with the thousands of building union locals in the US); that Lee had violated a contract with the lathers local, and that the joint board was wrong anyway for having reversed one of its own earlier rulings in a similar carpenter-vs.-lather dispute.

In the past NLRB has refrained from setting aside joint board rulings and decisions. The board has let NLRB know it would like a decision that the lathers violated an agreement to abide by joint board findings. An NLRB decision on the merits of the lathers' and carpenters' jurisdictional

claims would, the board fears, "encourage violation of the joint board agreement and gradually weaken, if not destroy, the board."

A hands-off decision by NLRB in the Lee case would give the joint board time for only a short sigh of relief, for next in line on NLRB's docket is another case bearing the seeds of building industry jurisdictional pandemonium. In Peoria, Ill., sheet metal workers and plumbers have met head on in a dispute over installation of air-conditioning equipment, a growing trouble point in the construction labor family.

Meyer Furnace Co., Peoria, assigned work on an air-conditioning project to sheet metal workers; plumbers struck the company until an injunction against them appeared imminent. Now the plumbers are seeking an NLRB decision in their favor on the grounds that Meyer was required to assign the work to plumbers under terms not only of a contract with the plumbers but also under NLRB certification a year ago of the pipe trades as bargaining agent for Meyer's employes. (Representation elections and NLRB certifications, such as the plumbers' in Peoria, are unwieldy and hence rare in construction.)

Behind the scenes. The Peoria case does not directly involve the joint board; but the connection between both of these disputes is apparent in a quick peek into the power fights among the building union leaders:

b Changes in building techniques, adoption of new materials and architectural fads effect some jurisdictional realignments in the building trades. Each union fights not only to extend its jurisdiction to new types of work but to minimize losses as materials or methods drop out of favor. These two NLRB cases currently threatening to reopen jurisdictional war in the building trades are good examples of both types of strife.

Lathers' work has been shrinking with adoption of dry-wall construction. The little (15,000-member) lathers union, fighting almost for its life, has an open ally in the plumbers union, which is working to stake jurisdictional claims to air-conditioning work, a mushrooming field.

Both the lathers and the plumbers are represented at the national level by the same lawyer, Martin O'Donoghue, a resourceful disbeliever in the joint board's approach to jurisdictional peace. Martin Durkin, plumbers' president, and Lloyd Mash-

continued on p. 25



Newport, R. I. high school adopts university-campus plan

Construction has started for one of New England's most up-to-date schools—the \$2.5 million, ten-building Rogers High School in Newport, R.I., designed by Kelly & Gruzen, New York and Boston architects-engineers. In addition to separate structures for various scholastic and vocational departments, connected by covered walks, the institution will have a circular 1,200-seat "theater-in-the-round" auditorium with a 160'

span thin-concrete dome, and a 2 500-seat gymnasium and field house (center), both to be available for community uses. Focal point for the academic area is a library (foreground), adjacent to science and business wings. The concrete and steel buildings will have large strip windows between upper and lower spandrels of porcelain enamel over a new type of prefabricated insulation core.

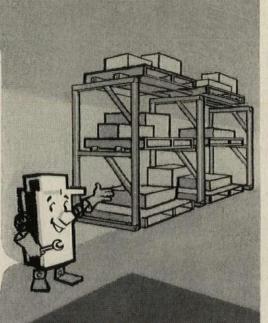
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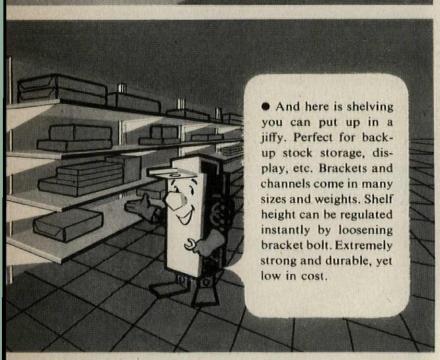


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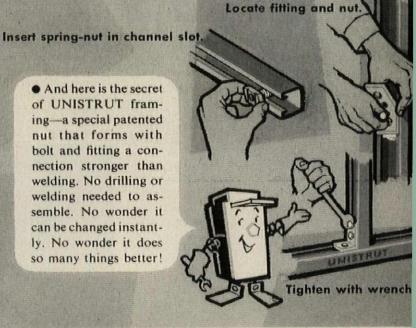
· Racks for every purpose!!! With UNISTRUT framing you let storage needs and space determine rack dimensions. Steel channels and fittings bolt together quickly. Racks may be changed or altered any time without material loss. Sturdy channels support tons, yet are not heavy or bulky.



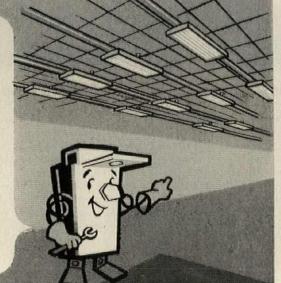




• And here is the secret of UNISTRUT framing-a special patented nut that forms with bolt and fitting a connection stronger than welding. No drilling or welding needed to assemble. No wonder it can be changed instantly. No wonder it does so many things better!



 Fluorescent fixtures never get out of alignment when you use UNISTRUT framing. Requires fewer hanger stems, and installs on any ceiling. Sturdy, continuous channel support UL approved as a surface metal raceway. Goes up quick and easy on the job from standard parts.



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nd-absorbing block walls in this room in the Sage Motel, Springville, Utah





t motels. The Milroy Motel, Catskill, New York, Architects: Slater

What special magic will attract business to a new motel? That's an important design consideration. Motel customers are first attracted by a smart, colorful, eye-catching exterior . . . such as the ones you can provide with the varied colors, textures, sizes, and wall patterns in concrete masonry. If they stop, they get their next impression on the inside. Here exposed block walls offer unique decorative possibilities, and give a warm, inviting atmosphere to your rooms. They also save on interior finishing costs, and provide a built-in "sound-conditioning." Motel owners will appreciate both the low construction cost and low upkeep of concrete masonry construction, too.

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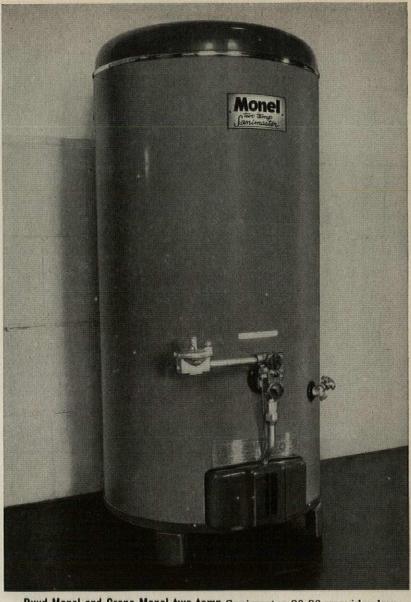
But they do get plenty of sparkling clean hot water . . . at the two temperatures they most need. And unrestricted flow of 180° sanitizing hot water for dish-and-clothes washers. 140° regular hot water at sinks, showers, faucets and lavatories. Both temperatures from the same tank, at the same time.

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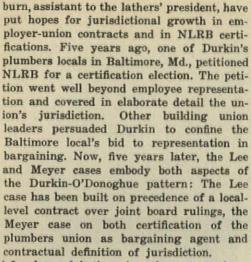
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Gordon Sommers



Leaders of both unions have teamed up more than once in the past: Durkin named Mashburn as his undersecretary during Durkin's stint as secretary of labor.

Durkin is solidly behind the lathers in their insistence that work assignment contracts between contractors and unions should supersede joint board pronouncements. At a closed peace-making session of building trades leaders recently Durkin refused to back down.

A silent ally of the lathers is the powerful plasterers union. The plasterers, like the lathers, have felt the pinch of dry-wall construction and would prefer fighting for work on the local level to sitting by and watching their jurisdiction nibbled away in a series of joint board decisions.

Many contractor and labor leaders endorse the board as the only practical way of keeping jurisdictional order in the construction industry. If the board breaks down, they predict, NLRB undoubtedly would be swamped in a sea of construction industry work-assignment disputes, a prospect that makes contractors, union leaders and NLRB members alike shudder.

Deal for Berlin Hilton signed; chain faces US antitrust suit

Conrad Hilton, the world's biggest innkeeper, last month enlarged his operations even more by consummating a deal with the west German government to build and operate a \$4.5 million luxury hotel in Berlin.

A few days before the deal was made, while Hilton was settling down for a nap in a Paris hotel room, he learned that the US Justice Dept. had brought an action against Hilton Hotels Corp. to force him to get rid of four of the nine Statler hotels his company bought last October for \$111 million. The government charge: Hilton's merger with Statler lessened competition for convention business in New York, Washington, St. Louis and Los Angeles, and tended to increase concentration in the hotel industry.

Hilton, not fazed by the suit, said he had no intention of curtailing expansion of his 23-hotel chain. But, he said, "Most of our future expansion will be outside the US."

In addition to his Berlin venture and his Cairo hotel—for which Welton Becket & Associates was setting up a 24-hand architectural substation on the Nile—Hilton seemed about to put up a \$17 million hoteloffice building on five acres in Oakland, Calif. Oakland's mayor said Henry Kaiser might lease the entire office wing of the

proposed 19-story building for his Bay Area industrial enterprises. More than a year ago Ben Swig, San Francisco hotelman and realty owner, dickered for the plot, but lost interest when Oakland's city council lagged in giving necessary approvals. The city has offered the lake-front site to Hilton for half a century for \$100 a year.

Eugene Conser appointed NAREB executive secretary

To take the helm as its executive vice president Sept. 1, succeeding retiring Herbert U. Nelson, NAREB diplomatically named a



CONSER

quiet but effective midcentury conservative: Eugene P. Conser, 51, secretary of the California Real Estate Association. Where outgoing executive Nelson once proposed NAREB participation in organizing a national balanceof-power "third party" of real estate owners,

Conser feels trade groups should avoid becoming deeply involved in politics. Says Conser: "A trade association should be operated from other than the capital city, because its primary objective should be the education and improvement in business ethics of its members. When an organization has its headquarters in Washington, it tends to become highly political in nature and becomes involved in matters that can be avoided if the offices are elsewhere."

Conser, who will spend most of his time in Chicago, rather than Washington, is not opposed to appropriate legislative action by trade groups. In California he was a registered lobbyist in Sacramento, where he gained many objectives for California realtors and was highly regarded by legislators. Reason: instead of counting on publicity or fanfare to score his points, his method was simply to make himself known as the source of dependable and authoritative information, and then to be available whenever his advice or assistance was sought.

Born in Minneapolis into a family of lawyers—his father, grandfather, and an uncle who was president pro tem of the Montana senate—Conser once served as a Montana legislature page boy. But in 1922, while in college, he moved to Los Angeles, where he took up political science and economics at UCLA. After graduation he became a financial reporter for the Los Angeles Express, later was a partner in a



PEREIRA & LUCKMAN'S BERLIN HILTON



Aluminum louvers to shade new LA office building

All four sides of this glass-aluminum 13-story office building started in Los Angeles last month by Tishman Realty & Construction Co. of New York will have built-on aluminum louvers for sun control: vertical shades on east and west sides, horizontal on north and south. This \$4 million, 203,000 sq. ft. rental area office structure designed by Architect Victor Gruen will be the fourth erected in Los Angeles by the Tishmans since the war, just a short distance along Wilshire Blvd. from their first grouped three. It will have a five-level garage for 300 cars.

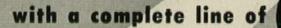
West Coast securities publication that went broke in the depression. In 1934 he became secretary-manager of the Apartment Assn. of Los Angeles County, persuaded owners to halt needless cutthroat competition. In 1937 he helped establish the California State Apartment Conference, and for a time also was executive vice president of the National Apartment Owners Assn.

His organizational and legislative successes for these groups led to his appointment as CREA secretary in 1947. When he took charge CREA had less than 8,000 members; today it has over 21,500, including over one fifth of NAREB's membership.

Columbia Art Center plan includes architecture school

At a meeting of Columbia Associates, headed by New York Realtor Peter Grimm, plans were disclosed for a \$6 million, ten-story Arts Center building at Columbia University to unite under one roof its schools and departments of architecture, music, painting and sculpture, communication arts (including TV, radio and motion pictures), archaeology and the history of art.

Helping launch the project, Wallace K. Harrison said: "Today architecture, the mother of the arts, is without housing for itself, and lacks completely those facilities for research and coordination of the arts without which progress is impossible." A prospectus for the center noted that courses in freehand drawing, sculpture and painting are supposed to give the architectural student at least some contact with the other arts. "But these," it added, "are pallid substitutes for the impact, upon all his thoughts and feeling, which would surely follow from being placed in close physical contact with faculties and students in these other fields."





devices to select from ...

OVERHEAD
DOOR HOLDERS and
shock absorbers
concealed and surface
mounted. Many styles
for exterior and
interior doors.

You can specify EXACTLY according to each individual

door control problem

According to the specific door holding, door stopping, shock absorbing, and door-noise elimination problem . . . according to the use, size, material and style of the door and door opening . . . according to the type of the building . . . yes, even according to the hardware budget . . . you can specify a GJ device that will meet most any door control problem.

DOOR HOLDERS and BUMPERS in many desirable designs.



DOOR BUMPERS

DOOR MUTES and SILENCERS

INVISIBLE LATCHES

CABINET and DOOR CATCHES



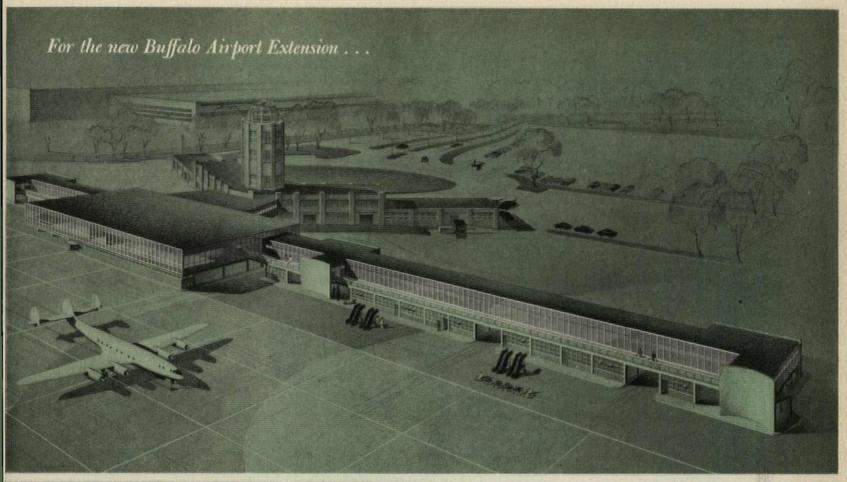
Your recommendation is backed by a 30 YEAR GJ REPUTATION for quality hardware, precisely made from the finest materials

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refer to catalog no. 54 for full description and details. **GLYNN · JOHNSON CORPORATION**

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chicago 40, illinois









Architect: Harry A. Morris, AlA, with Thomas B. Bourne Associates, Inc. Consulting Engineers, Washington, D. C. General Contractor: Frederick T. Williams Co., Buffalo

Exterior 16 gauge PORCELAIN ENAMEL French Green Exterior 16 gauge PORCELAIN ENAMEL Indian Turquoise or Swedish Red as required

Each of the porcelain enameled steel faces are laminated to the $1\frac{1}{2}$ " Insulrock insulation. Panels are sealed around top and side edges, with ventilating holes in the bottom edge. U. Factor: .235 or better. Weight: 12 lbs. per square foot.

ING-RICH PORCELPANELS

Permanently colorful Ing-Rich Porcelpanels, more than 31,000 square feet of them, were used in this significant structure. Each of the nearly 800 double faced, insulated Porcelpanels serves as both exterior and interior of the building extension.

Ing-Rich offers exceptional facilities for the design, manufacture and erection of porcelain enameled panels. The panels themselves are ideally suited to a tremendous variety of distinctive architectural treatments—involving versatility in color, size, finish and texture along with adaptability for use with other materials.

Ingram-Richardson Manufacturing Co.

BEAVER FALLS, PENNSYLVANIA

Member of Architectural Division, Porcelain Enamel Institute



May we send you a copy of this brochure designed to help architects design with Porcelpanels?

No Cost Factor Is More Important To A Spec. Writer Than The Answer To This **All Important Joist Question**



Made in sizes for all loadings - 4 to 44 ft. nailability designed in. Think of the labor hours and accessory materials you save in every square foot when you specify Macomber Nailable Steel Joists. Our Steel Joist Catalog shows four types to meet specific needs. Send for it.

THEY COST NO MORE THEY SAVE SO MUCH



STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER INCORPORATED

CANTON 1, OHIO

FABRICATING

PEOPLE

Salesman Frank Elliott heads Crane Co., attacks slump; Marshall Shaffer, hospital designer-consultant, dies

Frenk F. Elliott, 62-year-old Californian, last month became president of Crane Co., big manufacturer of plumbing fixtures and fit-



ELLIOTT

tings, replacing John L. Holloway, 47, who resigned because of ill health. Elliott, who fits the prototype of talkative, genial, sports-loving sales executives, moves up from senior vice president, capping a 33-year career that started in sales. His first big objective: to

brake the century-old company's skidding sales and profits. Last year Crane showed net earnings of \$5.8 million on sales of \$299.8 million, compared with 1953 net earnings of \$8.7 million of sales of \$315.7 and 1952 net earnings of \$9.9 million on sales of \$319.3. Competitors, notably American Standard with its broader line of plumbing fixtures and heating, air-conditioning and kitchen equipment, have been mopping up in the housing boom. There was speculation that conservative Crane would change its marketing approach under Salesman Elliott. Acceding to Elliott's first request, the Crane board filled its long-vacant chairmanship with Mark W. Lowell, executive trust officer of Continental Illinois National Bank & Trust Co.

NAMED: Roy A. Nyquist as director and Emmett E. Walters as associate director of engineering of Libbey-Owens-Ford Co.'s expanded engineering department; Robert A. Muller, senior vice president of Atlas Plywood Corp., as president of the firm; Frank R. Creedon, former director of installations for the Department of Defense, as an assistant to Charles A. Richardson, vice president in charge of Merritt-Chapman & Scott Corp.'s marine and heavy construction department.

CONGRATULATIONS: To D. B. Steinman, bridge designer, for being awarded the International Grand Prize on Invention by unanimous vote in Paris of the jury of a permanent committee representing national and international organizations of scientists and inventors; to Senator J. William Fulbright (D, Ark.), recipient of the Michael Friedsam medal in industrial arts of the Architectural League of New York for opportunities offered to scholars in the arts under the Fulbright exchange scholarship plan; to Philip C. Johnson, winner of the Grand Festival Award in the architectural division of last month's Boston Arts Festival.

RETIRED: Howard S. Cullman, 63, tobacco merchant, as chairman (for ten years) of the Port of New York Authority, to be succeeded by Donald V. Lowe, New Jersey papermaker; Cornelius F. Kelley, 80, as chairman of the Anaconda Copper Mining Co. (new name: Anaconda Co., necessitated by broadening of firm's operations into such fields as uranium and aluminum), after 54 years with the company, to be succeeded by Roy H. Glover, 64, the firm's general counsel.

Top executives of three of the nation's big construction materials producers did well last year; four of them had salaries of \$100,000 or more, exclusive of stock options and fringe benefits. Johns-Manville Corp. paid \$154,044 to L. M. Cassidy, chairman, and \$123,175 to A. R. Fisher, president; C. H. Shaver, chairman of US Gypsum, was paid \$100,000; salary of Crane Co.'s former president, J. L. Holloway, was \$114,600.

Henry Koiser, who said he passed up Florida when he was 22, because he thought it was unlikely ever to develop a tourist business, and crossed off Palm Springs and Las Vegas as "desert sand traps," was taking no chances on idly watching Hawaii boom into a superresort. He began to energize his 1954 announcement of plans to put \$110 million into new resort facilities in the islands by buying \$491,000 worth of Waikiki beachfront. This

Tomezak



KAISER

BURNS

brings his total investment in 16½ Waikiki acres to \$2.5 million. He called for bids on a 535-room hotel, 35 honeymoon cottages (each with private pool), 200 tourist-class hotel rooms (with shared pools) and 100 beach cabanas. His associate: Los Angeles Realtor-Homebuilder Fritz Burns. Their architects: Welton Becket of Los Angeles and Edwin L. Bouer of Honolulu. Kaiser said he had another \$50 million ready to build hotels, an aquarium and convention hall on an artificial island off Waikiki, if the territorial government will create one for him to rent.

OBITUARIES: Edgar Jonas Kaufmann, 69, Pittsburgh department store operator, innovator (in 1930) of spoke layout in his store, patron of Architects Frank Lloyd Wright (Bear Run House) and Richard Neutra (House in the Desert, at Palm Springs, Calif.), April 15 in Palm Springs; John M. Kitchen, 63, Canadian city planner and director of Canada's National Capital Planning Service, May 16, in Ottawa; Samuel J. Roth, 60, civil engineer and organizer in 1944 of Gregory-Roth-Schenker Corp., 13-state house and apartment building firm, president of Sutherlin Corp., New York City contracting firm, May 16, in New York; Louis H. Pink, 72, former New York State superintendent of insurance and president of three New York cooperative housing developments, May 18, in New York; Harry Royden Dowswell, 71, prominent building construction structural

authority (buildings on which he worked: Empire State building, Hunter College, Manhattan, 500 Fifth Ave., all in New York, and the R. J. Reynolds Tobacco Co. plant in Winston-Salem, N. C.) and since 1943 a partner of Shreve, Lamb & Harmon Assoc., New York, May 21, in Cleveland.

Marshall Shaffer, AIA, architectural and engineering chief of the federal Hill-Burton hospital construction program, died May 25 of a heart attack in his sleep, at his home in Wheaton, Md.

As organizer and chief of the Technical Services Branch of Public Health's hospital division, Shaffer was responsible for approv-



SHAFFER

ing design and construction of close to 2,500 locally owned hospitals and health centers built with federal aid. But he was even better known as an informal and tireless hospital-design educator, and perhaps best known as a catalyst. During the past decade, few important steps in

hospital or clinic planning, few conferences on hospital programming or design, took place without his advice or aid. The USPH program of planning aid for foreign countries also gave Shaffer's immense interest in foreign architects and architecture a chance to flower; he was tutor, host and friend to architects from dozens of countries.

Shaffer was born in Hamilton, Ohio, in 1899, was graduated as an engineer from Penn State in 1922. He spent the next three years as an engineer in Central America, then studied and practiced architecture for eight years in California, working with Myron Hunt, Metro-Goldwyn-Mayer and Neutra. In 1933 he migrated to Chicago to practice and take graduate work in social sciences at the University of Chicago. From there he moved on to New York, where he taught design at Pratt Institute and is recalled as an unorthodox, exciting teacher.

In 1941, after having served as architect in several government agencies, Shaffer joined USPH, the first architect that agency ever hired. He was told to figure out for himself how he could be useful. He farsightedly realized that a technical consultation service was going to be acutely needed for developing acceptable health facilities in defenseboom communities, and although his staff was minute he was ready when Congress authorized federal aid for health centers in mushrooming war production centers and, later, for all localities with unmet hospital or health center needs. In 1951 he was given the AIA's Kemper award for "ensuring the conduct of the hospital building program . . in harmony with the highest ethical standards." At the time of his death, he was directing the development of guide material for diagnostic and treatment centers, nursing homes and rehabilitation centers.

for news about TRENDS-p. 32

MITCHELL Lighting chosen

for the Imperial Camera Shop



HAROLD SOFFER, owner

Mr. Soffer's many years of experience as a store owner has made him well aware of the influence of proper store design on increased sales and properly directed store traffic.

"In my opinion," states Mr. Soffer, "the single most important element in a well-designed store is the lighting. Mitchell 'Polaris' fluorescent units were chosen for my store because of their modern design and their economical adaptation to pattern lighting installations. I have found that these fixtures provide a soft lighting effect with no disturbing glare upon glass showcases and displays."



MITCHELL LIGHTS ANOTHER STORE

Imperial Camera Shop Berwyn, Illinois

Architect: Nerad and Carlson, Clarendon Hills, Illinois Electrical Contractor: M. G. Electric, Cicero, Illinois Distributor: Standard Electric Supply Co., Chicago

INSTALLATION: Flush-mounted MITCHELL "Polaris" two-lamp luminaires. Twelve incandescent downlights highlighting displays and major working areas. An average of 75 footcandles is maintained.



for better store lighting, SPECIFY MITCHELL

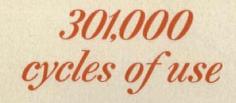
Write for complete details on MITCHELL store and other commercial lighting

MITCHELL MANUFACTURING COMPANY

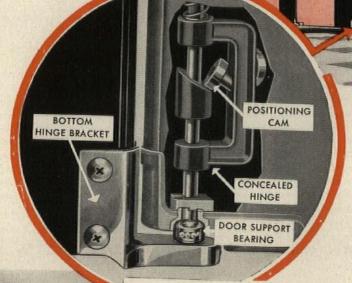
2525 Clybourn Ave., Chicago 14, III., Dept. 13-G In Canada: Mitchell Mfg. Co., Ltd., 19 Waterman Ave., Toronto No. 2 OF A SERIES

WHAT TO LOOK FOR IN QUALITY TOILET COMPARTMENT CONSTRUCTION

One of many major differences that give you your money's worth in satisfactory service!



WITHOUT NOTICEABLE WEAR



THE SANYMETAL 7700 HINGE is an adjustable controlled-action hinge which supports the door wholly on a thrust ball-bearing. The hinge is concealed within the door thickness—tamper-proof and dirt-proof. The position control is a separate spring-loaded ball-bearing roller and cam, supporting no weight. Constructed thus the door does not rise or lower as it swings. Anti-friction bearings make motion easy, and bearings are of "Oilite" and graphite types, requiring no lubrication.

LABORATORY CERTIFIED: To test the Sanymetal 7700 Hinge, an independent nationally known laboratory mounted a Sanymetal door from stock in the usual way using a Sanymetal 7700 Hinge taken from stock at random. After the test, the laboratory checked the positioning, motion and alignment of the door, then disassembled and inspected the hinge parts, and reported "all working parts in satisfactory condition."

This long-life feature is STANDARD at no extra cost on all types of Sanymetal Compartments. Many quality construction features found in all Sanymetal Toilet Compartments mean longer satisfactory service. These features result from Sanymetal's 41 years' experience manufacturing compartments. Be sure you get this quality.

A feature to look for is the Sanymetal 7700 Bottom Hinge on compartment doors. Notice that it is concealed within the normal thickness of the door, having no cumbersome exposed hinge mechanism. Thus it produces clean, architectural door lines. It is a longer lasting, easier working, more reliable hinge. In independent laboratory test this hinge, mounted in a door, was opened and closed 301,000 times. After this test the door still operated perfectly and the hinge showed no noticeable wear!

This hinge, contributing to long satisfactory service, is one of many special features standard at no extra cost on all Sanymetal Compartments. Ask your Sanymetal Representative about all these features not offered by others.

See Sweet's or send for Catalog 92, describing all Sanymetal Compartments. If you wish, we will mail other advertisements of this series on quality construction details.



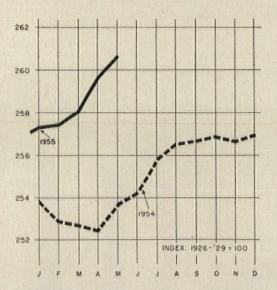
TRENDS

Building material indexes show big production gains over '54; construction outlays, costs, product prices all move upward

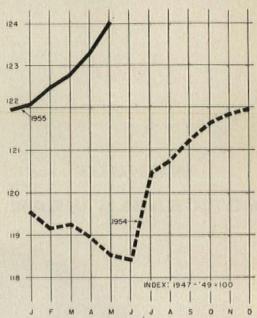
At the start of 1954 the output of the majority of construction materials was running noticeably behind the average 1947-49 production rate. As 1955 began, however, most were being turned out in quantities well above this index rate, although all but one category showed a decline from January to February. Only the output of iron and steel products was lower in the first two months of 1955 than a year earlier. This group of materials includes not only structural steel, but reinforcing bars, galvanized sheets, nails, rigid conduit, cast iron pipe.

Comparable production trends for eight main types of materials for these months are tabulated below, based on a new series of monthly "output" indexes just inaugurated by Commerce Dept.'s building materials and construction division. (The division uses the blanket term "output," although in different instances the indexes may be based on production, shipment or sales data. It also is preparing quarterly indexes covering gypsum products and plumbing fixtures.)

(1947-49 equals 100) January February 1955 1954 1955 1954 Lumber, wood products. . 117.7 102.1 116,7 107,1 Millwork 110.0 75.8 109.0 83.3 Paint, varnish, lacquer... 94.3 94.3 91.9 87.5 Portland cement 121.0 106.3 105.4 101.1 Asphalt products 71.6 58.1 79.8 79.2 Heating, plumbing equip. 115.9 80.0 114.5 83.5 Iron, steel products 104.5 109.8 102.0 113.9 Clay construction products 112.8 94.3

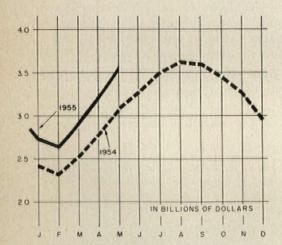


BUILDING COSTS for nonresidential structures rose 1.1 points (to 260.6) from April to May on the index compiled by E. H. Boeckh & Assoc., mainly reflecting higher wage rates in new 1955 construction labor contracts and the continued increase in material costs (see separate chart). For the two months from March to May the boost in building costs totaled 2.6 points, or 1%, and was expected to move higher. Other indexes confirmed the trend: Smith, Hinchman & Grylls' advanced from 278 to 279 from April to May; from May to June Engineering News-Record's building cost index moved up from 131.4 to 132.13 and its construction cost Index Increased from 136.9 to 137.5 (1949 equals 100).

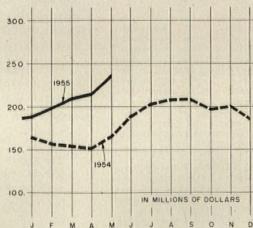


BUILDING MATERIALS prices advanced 0.6 point (to 124.0) in May on the BLS index, an 0.4% gain over April and an 0.9% advance from March to May. Among components of this index, wholesale lumber prices rose from 122.9 to 123.9; plywood from 104.8 to 105.6; prepared asphalt roofing sharply reversed its recent decline, shot up from 98.5 to 105.8. Gypsum, flat glass and prepared paint prices were unchanged; heat-equipment prices dipped almost imperceptibly from 113.6 in April to 113.5 in May.

Construction spending continues at boom rate; commercial building outlays up 31%



TOTAL CONSTRUCTION OUTLAYS in May mirrored the continuing boom, pushed expenditures for five months of the year to \$15.2 billion, a fat 15% ahead of Jan. to May '54. As a result of greater April and May spending, public construction outlays for this period came up into exact balance with last year's. Private expenditures for these five months were 21% ahead of 1954 spending, gains ranging from 3% for educational buildings to 33% for residential construction, 34% for churches. Housing starts lost a little momentum, in May (132,000) only exceeded April by 5,000.



commercial construction outlays registered a hefty 38% increase during May, compared with May '54, and for Jan. to May show a 31% gain over last year's comparable period. The greatest part of this increase is going for stores, restaurants and garages, running 42% ahead of last year (see table). To a large extent this reflects suburban growth and a large volume of outlying store and shopping center projects being launched this year. Outlays for lofts, office buildings and warehouses also have shown a consistent, substantial increase, however, running 17% ahead of last year for Jan. to May.

	First fiv			ve months	
(millions of dollars) N	lay '55	1955	1954	% ±	
PRIVATE BUILDING					
Residential (nonfarm)	1,364	6,003	4,524	+33	
Nonresidential*	593	2,806	2,385	+18	
Industrial	184	927	858	+8	
Commercial	235	1,044	797	+31	
Offices; lofts; ware-					
houses	88	421	359	+17	
Stores; restaurants;					
garages	147	623	438	+42	
Religious	59	274	205	+34	
Educational	37	199	194	+3	
Hospital; institutions	30	142	134	+6	
Miscellaneous	28	132	116	+14	
Public utilities	386	1,678	1,609	+4	
*PRIVATE TOTAL	2,490	11,093	9,150	+21	

PUBLIC BUILDING				
Residential	22	110	170	-35
Nonresidential	388	1,778	1,860	-4
Industrial	86	413	700	-41
Educational	206	956	811	+18
Hospital; institutions	32	139	142	-2
Military	90	420	371	+13
Highways	360	1,100	1,016	+8
Sewer; water	97	416	375	+11
*PUBLIC TOTAL	1,047	4,195	4,195	0

GRAND TOTAL ... 3,537 15,288 13,345 +15
* Minor components not shown, so total exceeds sum of parts.

the softer sound of royal living!



Fiberglas Sonofaced Tile in the beautiful Fleur-de-Lis Dining Room (and throughout the Fontainebleau) was "color-tailored" in two special shades.



Fiberglas Sonofaced Tile in the Main Lobby has high



Fiberglas Sonofaced Tile in the Chez Bon-Bon Coffee Shop creates a relaxing atmosphere of quiet beauty.

When New York architect Morris Lapidus specified sound-absorbing ceilings for Miami Beach's palatial Hotel Fontainebleau, he chose fire-safe Fiberglas Sonofaced* Acoustical Tile. More than 75,000 square feet of this beautifully colored ceiling tile were applied in the public areas throughout the new \$15 million resort hotel.

The color is provided by the decorative plastic film which stretches across the face of each tile and acts as a membrane to pass noise into the sound-swallowing Fiberglas insulation behind it. In eliminating the usual painting of the ceiling, the architect not only provided a fire-safe sound-absorbing ceiling but saved two weeks of valuable construction time. Tile installers (the last trade on the job) were even able to work in rooms where carpeting had already been laid!

(Incidentally, Fiberglas products solved more than one overhead problem at the Fontainebleau—Mr. Lapidus also specified efficient Fiberglas Roof Insulation!) Are you keeping posted on the growing installation of low-cost fire-safe Fiberglas ceilings? For the facts on how Fiberglas can solve your acoustic design problem, write: Owens-Corning Fiberglas Corporation, Dept. 171-G, Toledo 1, Ohio.



Fiberglas Sonofaced Tile in the impressive Grand Ballroom creates an ideal acoustical background for music and speech while hushing extraneous noise.



"Wipe-clean" Fiberglas Sonofaced Tile in the Music Room provides the answer for control of unsightly dust streaks around air diffusers.

FIBERGLAS

SOUND CONTROL PRODUCTS



Corridor of Crowell-Collier building covered with "Kalistron," made by Kalistron Division of United States Plywood Corporation, New York 36, N. Y.

This wall beauty pays off in low maintenance

It's wall covering made of Krene...with a service record of almost six years in the modern Crowell-Collier Building, New York City. Throughout the building, walls of numerous corridors, lounges and offices are finished with this luxurious, yet highly durable covering.

Service experience has been superior. According to the maintenance department "it has been a boon because it did not tear or rip if hard objects came in contact with it, or show spots from spilled soft drinks or milk." Cleaning has been easy: "Just wiped down with a dry or damp cloth"..."in less than half the time and without the use of detergents or scrubbing." And, "fingermarks do not show at all."

Krene, of course, is extra-quality material, always tough and flexible. It resists scratches, cleaners, foods, acids, alkalies and alcohol. Specify wall coverings "made of Krene" for assurance of unusual beauty at unusual in-service economy.

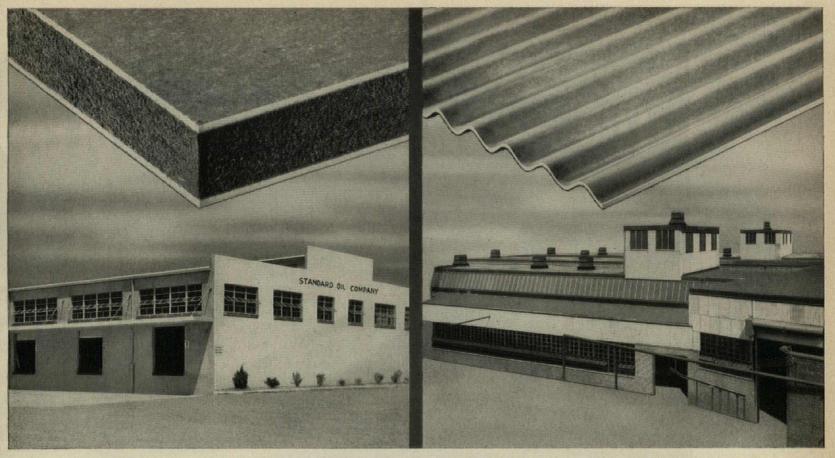
Wall covering made of Kalistron resists chemicals and other agents common to hospital service, too. This new installation is in The University of Texas, M. D. Anderson Hospital and Tumor Institute, Texas Medical Center, Houston, Texas.





BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation [1] 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC



One material — Carey Thermo-Bord structural insulation panels—does work of three at this Standard Oil Co. (Ky.) warehouse. Combines roof deck, insulation and interior ceiling finish.

Ease and speed of erecting exterior sidewalls of Careystone Corrugated helped Superior Foundry Company, Cleveland, Ohio build new 60,000 sq. ft. plant in six weeks — economically!

2 ways out of the building cost squeeze

You can help solve your clients' cost problems in new construction and modernization with Careystone Corrugated and Carey Thermo-Bord. Careystone Corrugated has numerous advantages for exterior sidewalls and roofing. It is economical in cost; easy to apply over wood or steel framing; strong and rigid. Made of asbestos and cement, it is maintenance-free ... won't burn, rust, rot, corrode. No painting or preservative treatment is ever needed.

Great savings in material and labor can be made by using Carey Thermo-Bord 4' x 12' Structural Insulating Panels for roof deck construction. Thermo-Bord combines structural deck, insulation and interior ceiling finish in one rigid unit. And its light weight means lighter-weight structural members can be used to gain *more* dollar savings. Made by bonding tough asbestos-cement board to a specially processed insulation core, Thermo-Bord is also recommended for low-cost insulated outside walls and partitions.

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Miami Beach's new \$15,000,000 Fontainebleau Hotel depends on Chase Copper Tube and Fittings for entire plumbing and air conditioning systems!

Luxury and practical utility are perfectly combined at the Fontainebleau! Everything is top quality—so Chase Copper Tube and Fittings were chosen for the plumbing and air conditioning systems!

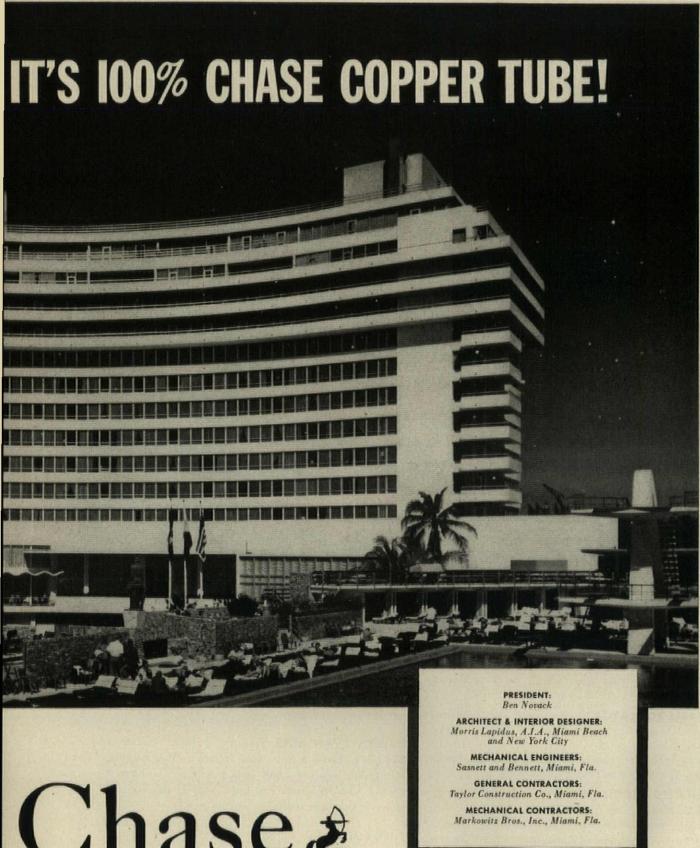
Using Chase Copper Tube and Fittings pays off in top-performing, longer-lasting systems that add extra value to any home or building. Such systems, too, cost little or no more than ones of ordinary rustable materials! That's because Chase copper tube and fittings can be installed faster—substantially reducing installation costs! Specify Chase copper tube and fittings on your next job!

Here's how the mechanical contractors sum up their reasons for using Chase materials:

"We have been using Chase Brass and Copper for many years. Chase has always" maintained the highest quality in their in-

dustry. Their quality along with their excellent service to customers is a combination that makes Chase superior."

-MARKOWITZ BROS., INC., MIAMI, FLA.



Chase

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Keep sound under control with Sprayed "LIMPET" Asbestos!

In courtroom, restaurant or office, Sprayed "Limpet" Asbestos really does a job of controlling sound. It works two ways: (1) It traps and dissipates sound waves through absorption in the millions of pores. (2) Its surface yields with sound waves reducing their intensity through diaphragmatic action.

VALUABLE INSULATOR. Fuel savings have amounted to as much as 50% when Sprayed "Limpet" Asbestos was applied on thin, single-layer roofs. Heated air can't leak out through this seamless insulation blanket. Cold air can't seep in through it.

FACILITATES DECORATING. The evenly textured, seamless blanket of Sprayed "Limpet" Asbestos forms a perfect base for decorative painting. Murals and stencil designs can be spray-painted where this material has been applied.

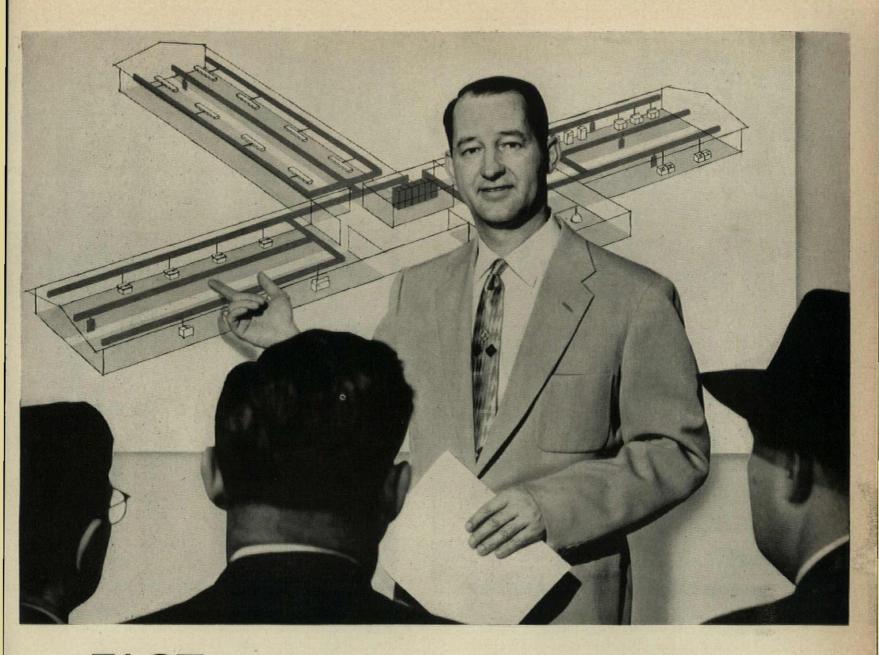
TAKES IRREGULARITIES IN STRIDE. Because it's sprayed on, you can specify it for all sorts of irregular ceilings and sidewalls. It's ideal for boiler rooms and other places where pipes, conduits, ducts, and hangers obstruct ceilings. There is no cutting or fitting required. No mechanical systems or gadgets needed for application.

OTHER ADVANTAGES. Sprayed "Limpet" Asbestos can be applied over any surface. It is light in weight, highly fire-resistant and won't attract or harbor vermin. Its efficiency has been proved in applications all over the world.

FREE FOLDER. Write today for free folder on this outstanding acoustical control material.

KEASBEY & MATTISON





FACT: FROM SCHOOLS TO SKYSCRAPERS YOUR ELECTRICAL PROBLEMS ARE OUR ASSIGNMENT



Westinghouse men like these are working with architects throughout the country on all types of building construction.

They are electrical specialists.

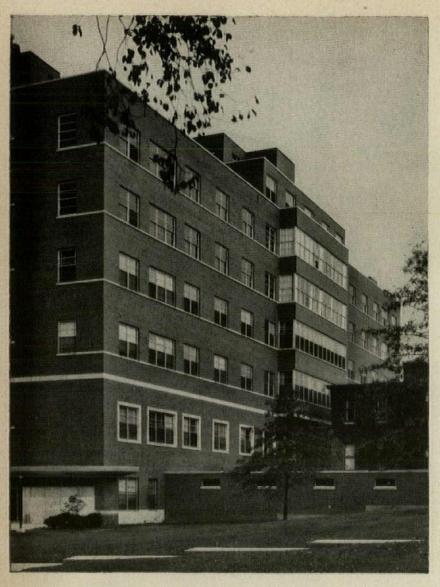
Their assignment is to help you solve electrical problems—from classroom lighting in a school to a complex electrical system for an industrial plant.

Check the examples on the next three pages.

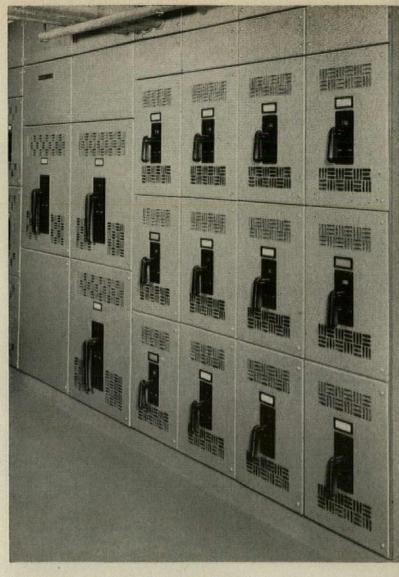
THE MAN WITH THE FACTS

He's the construction sales engineer in your nearby Westinghouse office. His assignment is to analyze your electrical problems, then quarter-back the team of specialists that help you solve them. We call him *The Man With The Facts*. Why don't you call him? DP-5010-A

You can be SURE... IF IT'S Westinghouse



Genesee Hospital, Rochester, N. Y. Architects (for new section): Waasdorp & Northrup. Consulting Engrs: Crocker, Cherne & Dickason, Associated Consulting Engineers.



Building-type switchboard is a factory-assembled unit containing modern circuit breaker protective devices. Switchboard is compact and completely safe.

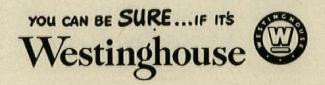
FACT: THEY ASSURED DEPENDABLE SERVICE THROUGH CIRCUIT BREAKER PROTECTION

Dependable electrical service, to insure trouble-free operation of patient services, was a paramount consideration when the Genesee Hospital extension was planned. Proper protection of valuable equipment and operating personnel was a necessity.

A Westinghouse apparatus specialist was asked for advice on an electrical system that virtually eliminates outages. The foundation is a Westinghouse building-type switchboard with circuit breaker protection for the 24 feeders. In case of a fault or overload, service is restored quickly. A flip of the breaker handle does it.

Why not have your Westinghouse specialist help you with similar problems?

DP-5010-B





Houston Water Purification Plant, Houston, Texas. Engineers: Freese, Nichols & Turner, Houston, Texas.

FACT:

THEY SIMPLIFIED PLANT OPERATIONS BY GROUPING ALL MOTOR CONTROL

A centralized motor control system was a basic objective in this new water purification plant. Over 100 motors are required.

The solution: Westinghouse control centers that group motor starting and protective devices in neat, compact enclosures. Moreover, complete flexibility of Westinghouse control centers assures easy, economical expansion—a major consideration here. Eventually, installed horsepower may more than double.

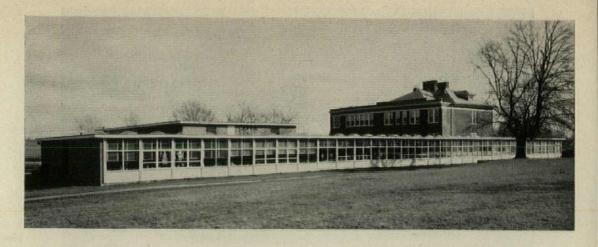
Whatever the motor control problem, your Westinghouse specialist offers you this same kind of service.

DP-5010-C-1

Control center groups, in a single enclosure, controls for 57 motors. Thus, one man, at a glance, can check over-all motor operations.



architectural FORUM / July 1955



Elm Hill School, Newington, Conn. Architects (for new extension): Carl J. Malmfeldt & Associates, Hartford, Connecticut. Consulting Engineers: Henri B. van Zelm & Associates, Hartford, Connecticut.

FACT:

THEY SOLVED SHADOW PROBLEMS CAUSED BY LOW CEILING JOISTS

Main support joists in this new classroom created a lighting problem: the possibility of shadows due to the broken ceiling surface.

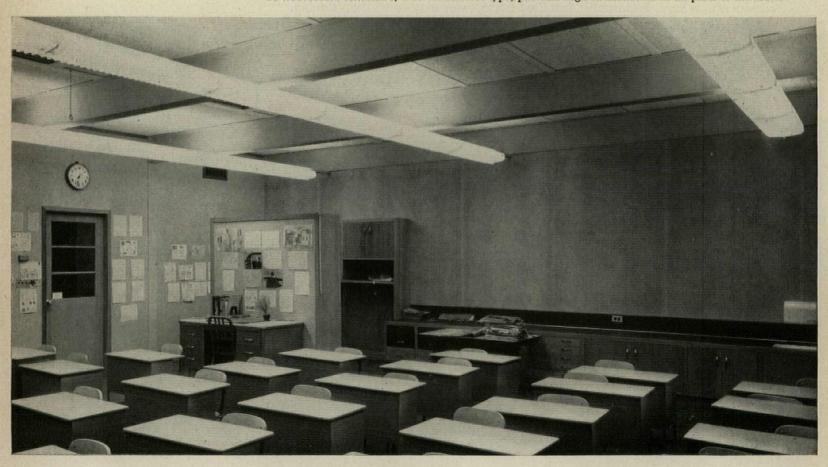
The architect and consulting engineer approved the new Westinghouse LC luminaire, mounted in continuous rows perpendicular to the ceiling joists.

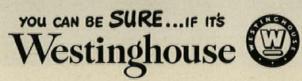
Shadow problem: solved. In fact, 50 foot-candles of shadowless, direct-indirect illumination were provided—a result you, too, can secure.

Why don't you call your Westinghouse specialist to help you solve similar problems?

DP-5010-D

LC fluorescent luminaire, a direct-indirect type, provides high illumination in all parts of the room.





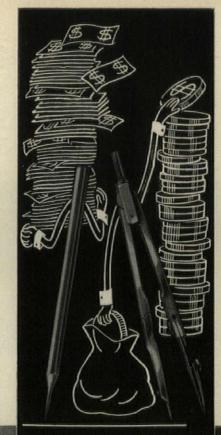
Are glass blocks "TOO EXPENSIVE"?

A panel of glass blocks does cost somewhat more than a corresponding area of single glazed wood or metal sash. And an installation costs even more when glass blocks are combined with other fenestration materials.

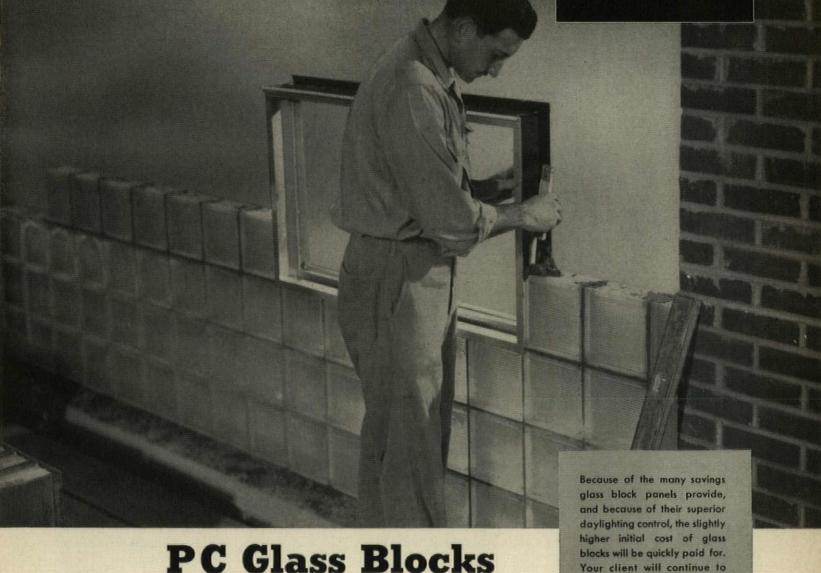
But let's look at these costs more closely. We came across a school* in which the old wood sash had been replaced with PC Glass Blocks, set above a vision strip. The installation cost about \$10,000 more than ordinary sash would have cost. But the annual savings that will be made will pay for this added investment in about three years-and the entire cost of the replacement in less than nine years. These annual savings were made by the elimination of the following: \$200-painting of sash; \$700-washing of windows; \$2,100-replacement of broken glass; and \$270replacement of worn window shades; or a total annual expenditure of \$3,270 which has now been practically eliminated since the PC Glass Blocks were installed. On top of this, there has been an estimated 10 to 15% savings on the heating bill.

Naturally, these savings apply equally in new construction. Next time you're thinking about fenestration costs, remember these figures. Check with your PC representative.

*Turner School, Wilkinsburg, Pa.



make these savings year after

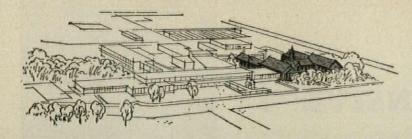


PC Glass Blocks

Pittsburgh Corning Corporation, Pittsburgh 22, Pa. · In Canada: 57 Bloor St. W., Toronto, Ontario



ALSO SKYTROL® AND FOAMGLAS®



Springfield High School,

Delaware County, Pa.

Architect: Harry G. Stewart

Acoustical Contractor: Berger Acoustical Company

Acoustical Materials: Armstrong Travertone Armstrong Arrestone



The smart appearance of the Armstrong Travertone ceiling in the home economics area helps minimize the institutional atmosphere of these classrooms. Folding doors are used to separate kitchen, apartment, and sewing areas, while the Travertone ceiling throughout keeps the sounds of the various activities under control at all times.

Traditional school building gets sound-conditioned modern wing

In adding to the twenty-year-old Springfield School in Delaware County, Pa., architect Harry G. Stewart joined a new, modern high school wing to an existing junior high of traditional design. His choice of modern design and materials for the new wing kept costs down to 95 cents a cubic foot and provided a more efficient, functional layout than that of the original building.

Many noise-centers in the new addition, including a band rehearsal room, auditorium, and cafeteria, made sound conditioning vital to the architectural plan. To quiet the distracting sounds of footsteps and voices of 1450 students, two of Armstrong's acoustical ceiling materials—Travertone* and Arrestone—were installed throughout the new wing.

In the cafeteria, classrooms, library, and lobby, Armstrong Travertone absorbs up to 80% of the sound that strikes it. Travertone, a handsomely textured, mineral

wool tile, is completely incombustible and requires only simple maintenance to stay new looking for years. Its light-reflective white paint finish can be washed or repainted whenever desired.

Metal-pan units of Armstrong Arrestone in the band room help prevent the build-up of distracting noise levels by reducing the reverberation of sound. Arrestone soaks up as much as 85% of sound and is quickly installed by conventional suspension methods. Upkeep is easy and economical, too.

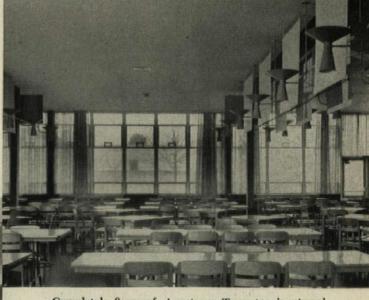
Get full details on Travertone, Arrestone, and the complete line of Armstrong sound-conditioning materials from your Armstrong Acoustical Contractor. There's one material best suited to every sound-conditioning need. For your free copy of the 1955 edition of "Armstrong Acoustical Materials," write Armstrong Cork Company, 4207 Rooney Street, Lancaster, Pennsylvania.



Easily cut and fitted to any shape, Armstrong Travertone is readily installed with lighting and ventilating fixtures. In this school lobby, the Travertone ceiling soaks up the sounds of footsteps and voices, prevents them from bouncing off the many hard surfaces and building to disturbing noise levels.

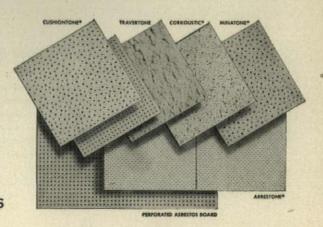
Proper acoustics in the band room are provided by acoustical ceilings of Armstrong Arrestone. The smooth, white paint surface of Arrestone's metal-pan units can be washed or repainted as often as needed. Installed by mechanical suspension, individual units of the Arrestone ceiling can be readily removed for access to concealed piping and wiring.





Completely fireproof, Armstrong Travertone's mineral wool composition adds a measure of fire-safety to the school cafeteria. The quiet promoted by the Travertone ceiling makes meals more enjoyable, too. Moderately priced, Travertone helped keep construction costs of the new wing down to 95 cents a cubic foot.

*TRADE-MARK



Armstrong ACOUSTICAL MATERIALS



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FOR OLIN MATHIESON CHEMICAL CORPORATION

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Even more important: these results have been obtained at a savings of \$9,447.

Additional savings of \$2,208—savings that will multiply regularly—represent normal repainting costs eliminated by Hauserman's exclusive lifetime finish. But why not see for yourself. Visit a nearby Hauserman installation . . . find out first hand how "extra quality" makes these long-term savings possible.



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Free Data Manual 55

New 100-page guide for architects contains complete technical details, stock sizes and specifications on all types of Hauserman Movable Interiors. If you do not already have this new data manual, send for your copy today!

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For new construction or remodeling, Modine Cabinet Units give you quick, positive and quiet distribution of heated air. With modest-priced accessories, they also provide introduction, filtering and distribution of outside air. Yes, here's the most practical way to heat or ventilate large public rooms or entryways. Some units heat with hot water, cool with chilled water. Others for steam or hot water heating only.

Choose from five models—120 to 640 Edr. Get all the facts and you'll never install unsightly radiators again. See the Modine representative listed in your classified phone book or write for Bulletin 552—Modine Mfg. Co., 1507 DeKoven Ave., Racine, Wisconsin.

ABOUT THE PHOTOS 1. Type BT unit with plenum base installed in school entryway. Duct work concealed in wall discharges heated air through wall grill. 2. Type BF unit with plenum base recessed in masonry wall of supermarket. 3. Type BT unit, ceiling-mounted in lumber company office and display room. 4. Type BF unit with plenum base installed in church.

772 odine





Thalhimers Department Store, Richmond, Virginia

Architects:

Copeland, Novak & Associates, New York, N.Y.

Engineers and Builders:

The Austin Company, New York, N.Y.

Architectural Metal Fabricator-Erectors:

The Keller Aluminum Corporation, Philadelphia, Pa.

REYNOLDS ALUMINUM SERVICE TO ARCHITECTS

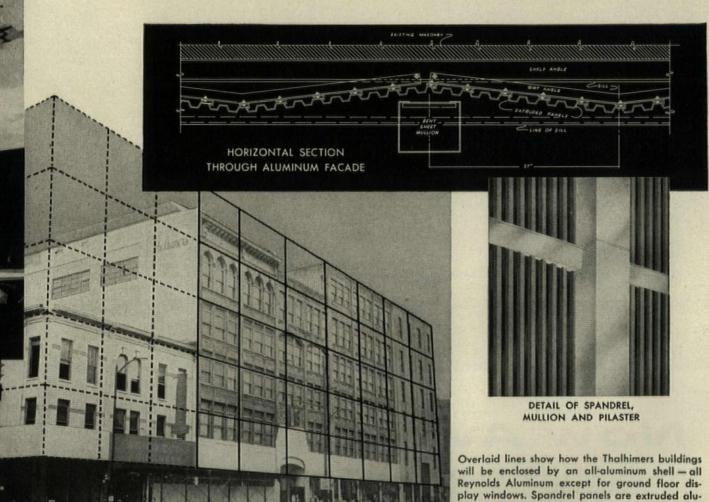
Reynolds Architect Service Representatives offer specialized assistance on aluminum design problems, standard mill product applications and commercially fabricated aluminum building products. They can help coordinate varied aluminum needs for procurement efficiency and economy. Address inquiries to Architect Service, Reynolds Metals Company, Louisville 1, Ky.

REYNOLDS

The transformation of Thalhimers is the first department store application of this interesting modernization method-distinguished by unusual architectural treatment in its extruded aluminum spandrels anodized grey.

The principle is to enclose a group of buildings, both new and old, within a complete new shell-remodeling and air-conditioning the original interior.

Aluminum is ideal for this method. It makes possible a light, strong exterior shell that is easy to erect. Its freedom from rust and resistance to corrosion minimize maintenance. Its radiant heat reflectivity can be utilized to add insulation value.



play windows. Spandrel panels are extruded aluminum, anodized grey. Horizontal mullions and pilasters are natural color aluminum formed sheet. Dotted lines indicate how the entire buildings at

the left corner will be replaced by a new structure.



Owens-Illinois super-clear Glass Block are available in 12" size (No. 470 illustrated) and 8" size.

Now Available THE INSULATING BLOCK YOU CAN SEE THROUGH in 12-inch size

Now, you can design in full vision with the insulating efficiency of an 8" brick wall. Air conditioning and heating costs will be lower, too. Glass block panels are hard to break, easy for any mason to install using ordinary tools. Owens-Illinois super-clear Glass Block No. 470 are one of the five designs in our Architectural Line. Among other designs available are random clear that permit partial vision, prismatic lightdirecting and solar selecting glass block that restrict sight completely and flood rooms with diffused daylight.

Write for the information you want to: Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

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GENERAL OFFICES · TOLEDO 1, OHIO



Design For Modern Home Entrance by The Architects Collaborative

"WHAT A WEALTH OF COLOR AND SERVICE CERAMIC TILE GIVES...INSIDE AND OUT."

For The Architects Collaborative

Architect Walter Gropius and his TAC colleagues captured the beauty and practical nature of ceramic tile in this forward looking home entrance and patio. Making the most of their material, they compel ceramic tile to contribute the maximum in design and service.

This project shows graphically the wide range of colors, surface textures and unit sizes available in ceramic tile. Note the heavy duty floor tiles on the patio . . . the matte finish glazed tiles on the exterior sidewall . . . and the small floor units surfacing the decorative

pool. They all resist water, wear and weather.

Ceramic tile surfaces can help you put your clients miles ahead on maintenance, too. Tile floors, walls and counter tops never need strenuous cleaning, waxing, painting or replacement.

When you plan your next residential, commercial or institutional project, remember you can save your client future maintenance expense. In addition, you can give the distinction of custom installations by the imaginative use of standard ceramic tiles.

The Modern Style io

tile

TILE COUNCIL OF AMERICA, Room 3401, 10 East 40th St., N.Y. 16, N.Y. or Room 933, 727 W. 7th St., Los Angeles, Calif.

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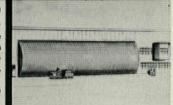
Mosaic Tile Company • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Pomona Tile Mfg. Co. • Robertson Mfg. Co.

Royal Tile Manufacturing Co. • Sparta Ceramic Co. • Summitville Tiles, Inc. • United States Ceramic Tile Co. • Winburn Tile Mfg. Co.

wherever America builds you find McKee Overdoors!

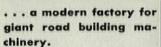
... a hanger for jets with doors that open in seconds.

When these special jet hangers were designed for a U.S. Air Force Base in Greenland, McKee was assigned the task of building the huge Overdoors. McKee met the challenge with a counterbalanced door that opens in less than 30 seconds.



. . . a \$4 million dollar railtruck freight house.

Shown here is one of the McKee installations in the \$4 million dollar rail-truck freight house built by one of the major U.S. railroads as part of its modernization program.



McKee Overdoors were used exclusively in this modern plant of one of the nation's largest builders of road machinery.



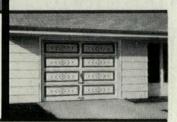
SERVICES STAND

. . . service stations for hungry horsepower.

From coast to coast you'll find McKee
Overdoors on service stations of the
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... or a garage to accent the beauty of any home.

Here's a typical McKee Residential Overdoor installation. For beauty, convenience and long life there's no equal for McKee.



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QUALITY OVERDOOR!



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TODAY!

MCKEE DOOR Company

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This powerful roof ventilator is now available with an important new safety device... the Smoke-Trip emergency damper opener developed as the result of recent fire studies. Heat from an uncontrolled blaze inside the building will melt a fusible link, releasing high-torsion springs which open the dampers. Treacherous smoke, heat and fumes which hinder fire fighters are vented to the outside air.

Fan operates independently — The Smoke-Trip device does not affect ventilating action of the Sky-Blast in normal

use. The high-efficiency airfoil propeller scoops up heat, moisture, dust and fumes and blasts them high in the air. Powered by a dependable Robbins & Myers All-Weather Motor, the Sky-Blast is ruggedly built of zinc-coated steel for long, maintenance-free service. Available in 24 sizes with certified air deliveries from 2820 to 78800 CFM.



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Follansbee Terne is the metal best suited for weathersealing because it can be flashed with other metals, can be painted immediately after installation and can be soldered easily.

If you do not have Follansbee Terne Roofing Specification and installation details, we will be glad to send them to you.

Write for information about our new pan former and seamer which make standing seam Terne roofs economical.

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Cold Rolled Strip Seamless Terne Roll Roofing Polished Blue Sheets and Coils



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DATES

Congress of the International Union of Architects, fourth annual assembly, July 8-16, The Hague. Further details available from AIA headquarters, Washington.

Plant Maintenance and Engineering Show, second western exhibition, July 12-14, Pan Pacific Auditorium, Los Angeles.

International Congress of Refrigeration, sponsored by the International Institute of Refrigeration, August 13-Sept. 15, Sorbonne, Paris. Details available from the Institute, 177 Boulevard Malesherbes, Paris.

Noise Reduction, two-week special summer program to present engineering advances in this field, sponsored by the Massachusetts Institute of Technology, August 15-26, at Cambridge, Mass. For details address Summer Session Office, room 7-103, MIT, Cambridge.

City and Regional Planning, special summer program to review administrative and technical aspects of planning, sponsored also by MIT, August 22-Sept. 2. Same address for details.

American Society of Planning Officials, annual planning conference, Sept. 25-29, Sheraton-Mt. Royal Hotel, Montreal.

Associated General Contractors of America, midyear meeting of the board of directors, Sept. 26-28, Minneapolis.

American Transit Assn., annual Meeting, Sept. 26-29, Hotel Statler, Boston.

First trade fair of the atomic industry, sponsored by the Atomic Industrial Forum, Inc., Sept. 26-30, Sheraton-Park Hotel, Washington, D.C. Exhibits will include displays of construction and fabrication techniques of atomic power plants and equipment.

National Association of Housing and Redevelopment Officials, annual meeting, Oct. 16-20, Hotel Statler, Cleveland.

National Motel Show, second annual, Oct. 24-26, Morrison Hotel, Chicago.

Institute of Traffic Engineers, annual convention, Oct. 24-27, William Penn Hotel, Pittsburgh.

Porcelain Enamel Institute, annual meeting, Oct. 26-28, The Greenbrier, White Sulphur Springs, W. Va.

American Concrete Institute, regional meeting, Oct. 28-29, Statler Hotel, Los Angeles.

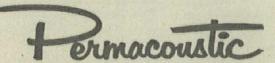
AlA district meetings: Northwest, Sept. 9-11, Glacier Park, Mont.; Sierra Nevada, Oct. 6-8, Santa Barbara, Calif.; Gulf States, Oct. 6-8, New Orleans; Central States, Oct. 13-15, St. Louis; New York, Oct. 13-15, Albany; Texas, Nov. 2-4, Houston.

This view in the Board of Directors Room of the recently completed general offices of the Brown Shoe Company, St. Louis, Mo., shows how Permacoustic provides a ceiling that is beautiful and acoustically functional.



A beautiful Solution

TO NOISE-CONTROL PROBL Johns-Manville



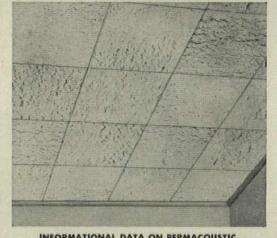
decorative acoustical tile

J-M Permacoustic® is an acoustical ceiling tile that combines maximum acoustical efficiency with unusual architectural beauty and complete fire safety.

Permacoustic is available with either a textured or fissured surface. These random-textured finishes increase its high sound-absorbing qualities, and provide design and decorative interest.

Made of baked rock wool fibres, Permacoustic is fireproof-meets all building code fire-safety requirements. It is easy to install on existing ceilings or slabs, or by suspension using a spline system of erection.

Send for your free copy of the new brochure about Permacoustic tile. Write Johns-Manville, Box 158, New York 16, New York. In Canada, write 565 Lakeshore Road East, Port Credit, Ontario.



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Thickness 3/4"*	Color: white
ACOUSTICAL EFFICIENCY Test No. A55-88	Test No. A55-87
cemented to plaster board (mounting No. 1)	mechanically mounted on special metal supports (mounting No. 7)
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	.64
	.77
	.92
.82	.99 .89
.70	.85
12	
	1.3
78 Inickness	
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WASHINGTON, D. C.



LeRoy L. Werner, Architect • Beall & LeMay, Structural Engineers Cafritz Construction Company, General Contractors

For this novel, 10-story building with parking space on each floor, architect Werner chose a reinforced concrete frame with R/C Duct Floors. In addition to the low-cost, electrical flexibility provided by R/C Duct Floors, he states that they eliminate expensive furring because piping and ductwork are readily run in spaces between the concrete joists.

R/C Duct Floors provide a complete network of underfloor electrical outlets for power, light, telephone, and intercom systems—at a new low cost!

The underfloor ducts can be run at any desired spacing. Blank risers are located every two feet along their length. Electrical outlets can be connected to any of these risers in a matter of minutes without ripping up or drilling through floors and ducts.

R/C Duct Floors consist of standard electrical distribution steel ducts set in standard reinforced concrete joist floors. No expensive fill or topping is needed. As a result, R/C Duct Floors can be constructed at a considerably lower cost than cellular steel floors.

R/C Duct Floors meet all building code requirements and are readily adapted to any type or shape of building. They are built with standard forms, and require no special engineering. Before you design your next building, investigate R/C Duct Floors.

R/C DUCT FLOORS cost 19% less than cellular steel floors*...

CELLULAR STEEL FLOORS \$3.48 per sq. ft.

R/C DUCT FLOORS \$2.79 per sq. ff.

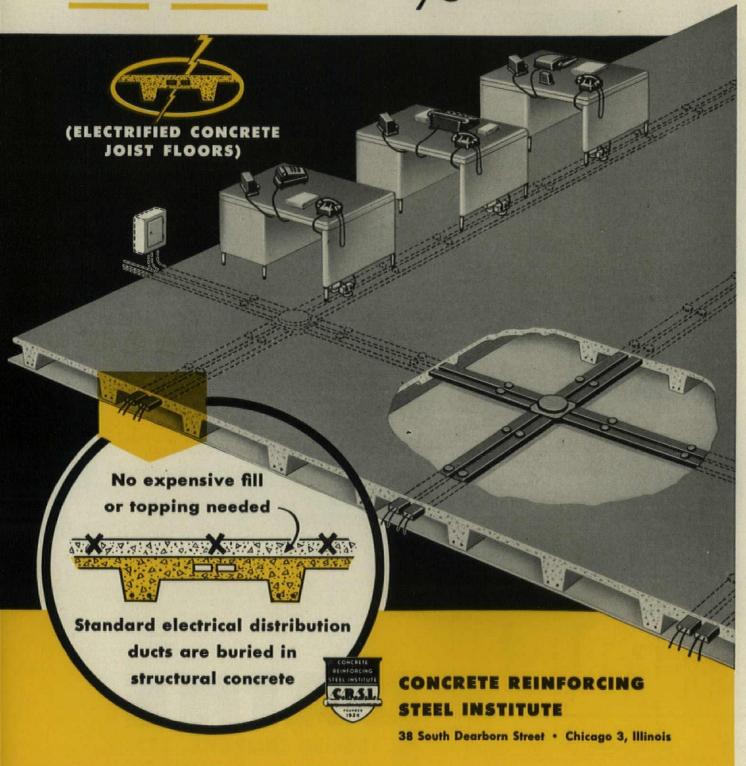
*Average costs based on current prices.

FOR FULL DETAILS SEE PAGES 10-11, IN NEW 16-PAGE BULLETIN

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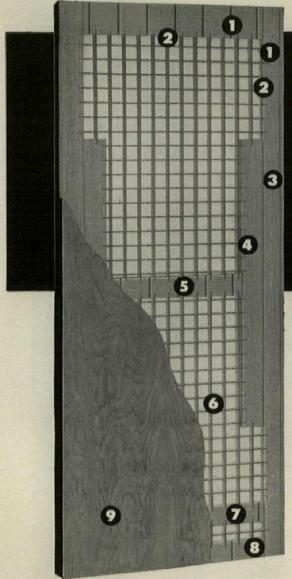


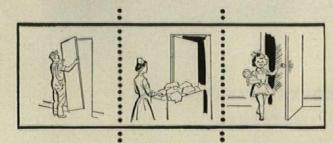
100% Electrical Flexibility at LOW COST with R/c DUCT FLOORS





for dimensional stability,
strength, light weight and
life-time service always specify . .





Light Weight — easy, one man installation

Resists Abuse — for life-time service Convenient — easy to open and close



Only REZO offers all these features:

- 1 One rail is 5" wide and can be used as either top or bottom of the door. Stiles are 3" (nom.).
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- 3 Matching vertical edge strips can be furnished and finish not less than ½" wide after trimming.
- 4 Lock area is 6¾" wide and 21" from either end and varies in length proportionate to door height.
- **5** 3" rail for special hardware is 41" from bottom of door to top of rail unless otherwise specified.
- **6** Heavy duty 2" x 2" air cell all-wood gridwork interlocked for strength and durability.
- **7** 3" rail for kick plate located 10" from bottom of door to top of rail unless otherwise specified.
- **8** Vent grooves in top and bottom rails help keep moisture content in balance prevent warpage.
- **9** Hand-matched hardwood face veneers, 3 ply, of any commercial species. Sanded to cabinetmaker's finish.

Cost? Less expensive than solid core doors — and better! For full details, see Sweet's Catalog or write:



PARENTHESES

(HONOR)

Senator J. William Fulbright, of Arkansas, was at the Architectural League an evening late in May to receive the League's Michael Friedsam medal, in honor of the Fulbright Fellowships which postwar have exchanged students and professors internationally on an unprecedented scale.

Standing up to speak informally after dinner, the awardee was a very sagacious man, a masterly combination of country lawyer and university president, with one role taking precedence, then the other. Slowspoken, wry, he rocked from side to side as he talked, with a deliberate, contained, country rhythm. He explained that in 1945, atomic fission had brought the realization to him and to a lot of other people that "some kind of new era had come upon the human race" which necessitated "some method of reconciling our efficiencies . . ." he rocked, ". . . some method other than force." He himself had been a Rhodes scholar-"the greatest thing that ever happened to me" -and this helped inspire the solution for the world's acrimony which he endorsed: "Coming to know one another intimately."

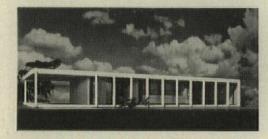


Thus the fellowships. Comparing the Fulbrights with the Rhodes, he observed that in 50 years in England, 3,000 students have had Rhodes Fellowships; just since 1948, 20,000 have participated in the Fulbright program.

The speakers of the evening at the League, including the senator, emphasized political brotherhood and international amity as the fruits of the program. But there is another more selfish cultural bonus which in time will accrue to the US, although it is one which may not lend itself to congressional discussion. In common with other private and public fellowships, the Fulbright awards have, since the war, allowed a considerable number of creative young people a gasp of air in a world full of commercial smog, a few months of creative leisure before the career battle. In a few years, the index of our culture will be higher for this. It is a rewarding version of political patronage, the kind that produced Michelangelo.

(SPEC)

At least two famous architects of a strict cast have made designs recently for speculative housebuilding. Near Elmhurst, Ill., Herbert S. Greenwald and Robert H. McCormick Jr. are putting up four houses by Mies van der Rohe on 100' x 160' lots.

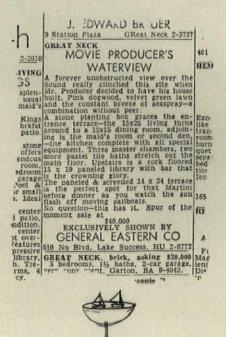


With three bedrooms, air conditioning, tinted glass (and curtains included as standard equipment), the design has a little more than 1,500 sq. ft. of enclosed living area, and is priced at \$35,000.

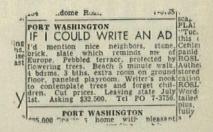
In New Canaan, Conn., a demonstration house by Philip Johnson is already finished and furnished. The developer is Robert C. Wiley, who is also business consultant to both Mies and Johnson. The house is 1,552 sq. ft. (plus basement and garage), with three bedrooms, has a 2-acre lot, and is priced at \$45,000.

(UPBEAT)

The New York Times' Sunday real estate classified ad section continues unsurpassed as escape literature. The Ladies' Home Journal cannot touch it. Here are two recent Sunday insertions, the first one the grand, sweeping, martini-swigging-before-supper-in-a-screened-and-paneled-library type, with selling price set on a sudden generous impulse:



The second a little wistful:



Yes, if he could only write in that writer's nook, and forget. . . . We know the feeling.



(MOUNTAIN)

The exalting things in life are still harder to attain than the animal. To prove this again, a sign stands near the foot of Pike's Peak in Colorado, reading TWO Miles to ZOO: THREE miles to SHRINE.

But when we went to Colorado Springs a few weeks ago to look into the new Air Force Academy plans, we found that anything at all on Pike's Peak is rather hard to attain, spiritual or animal. It is a wellguarded mountain, especially in the morning.

On the Saturday morning of our visit, there was some time to spare from the Air Force's schedule of events ("4:30 P.M. helicopter flights from Broadmoor polo field..." etc.) so in a borrowed black limousine with other members of the press we started off, five journalists in search of a mountain.

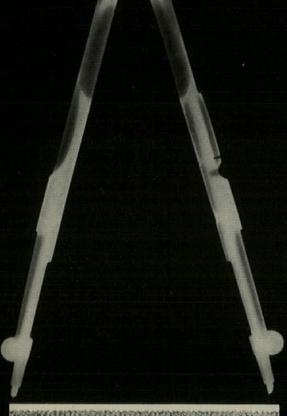
Soon rolling up the foothills, we met the first of the barriers. A closed gate told us the mountain was not open for business until an hour or so later. This was disappointing, for we had just passed through a magnificent portal telling how nice it was above.



continued on p. 60

ANNOUNCING

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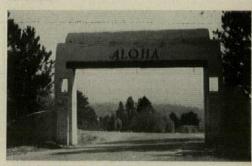
ELIAS WILF CORP. - Baltimore-Philadelphia

"Loma Loom" carpet was used by Michael Saphier Associates in their office that is featured as the "Office of Merit" elsewhere in this issue.

PARENTHESES

continued from p. 59

But we retraced our path, planning to find another road up. The arch bade a courtly farewell.



Just then the electrified chimes on the mountain whined into action to strike an hour of Rocky Mountain time. In a Gothic tower halfway up Cheyenne Mountain, these amplified chimes are an adjunct to the shrine which celebrates the late Will Rogers.

They ceased, and there was a moment like a sigh. Then from one of the passengers in the back seat of the car, in unctuous radioannouncer's tones, came: "Yes, friends, have you tried mountains lately? . . . Friends, spelled mountains, M-O-U-Nthat's T-A-I-N-S . . . "

Back at the foot of the foothills, we took another fork, and shortly passed under another interesting monument.



From the back seat: "You are now passing through the most wretched portals in the world."

Progressing farther, hearts beginning to pound in the thinning air, we reached another gate, which was closed, and had to turn back again.

From the back seat: "Say, whose mountain is this, the Swiss?"

Back at the foot we were about to give up and return to the plain, when we noticed a slender dirt road. Up, up, up. No room to turn around, but no portals either, no gates. then a modest sign announcing it was a national park. And finally, at the top, a magnificent view. As advertised, or even better.

As we descended, the chimes once again broke into electronic action over the serene

From the back seat: "Do you suppose I could get that fellow to page someone for me?"

Later in the day the site of the Air Academy was no disappointment, either

continued on p. 62

The USS Forrestal-

another example of how Walworth helps protect a 200 million dollar investment

Walworth products installed aboard the USS Forrestal include gate, globe, and lubricated plug valves and pipe fittings. They are used on high pressure air lines, fire mains, and most of the other piping systems throughout the ship.

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valves...pipe fittings...pipe wrenches 60 East 42nd Street, New York 17, N.Y. Walworth Company of Canada, Ltd., Toronto Keel laying to launching-Walworth was there.

Walworth engineers worked with designers, metallurgists and builders of the mighty flat-top right from the blueprint stage. Their efforts assured the builder — Newport News Shipbuilding and Dry Dock Company — that every Walworth Valve and Fitting installed would meet every specification right down to the finest detail.

The Forrestal — like the USS Nautilus, the first nuclear-powered submarine — is another striking example of where Walworth engineering and products were called upon to protect a multimillion dollar investment.

Walworth, backed by 113 years of practical valve experience, is skilled in every type of installation. Whatever the industry, if your problem concerns valves or fittings, it will pay you to call on Walworth! Distributors in principal cities throughout the world.



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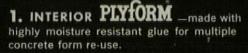
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When you specify grade-trademarked fir plywood, you're sure of material manufactured under the rigid industry quality control program and independently quality-tested by DFPA* to protect the buyer. Here are grades expressly made for form work:



2. EXTERIOR PLYFORM __made with waterproof glue for maximum form re-use.

3. OVERLAID PLYWOOD—glossy, smooth, tough resin-fiber surface fused to Exterior plywood. Gives greatest re-use plus smoothest concrete. EXT-DFPA® on panel means 100% waterproof glue.

*DFPA—Douglas Fir Plywood Association, Tacoma, Wash. is a non-profit industry organization devoted to product research, promotion and quality maintenance.



continued from p. 60

(AF, June '55). A wonderful sweep of mesa land, the 17,500 acres have very little on them in the way of civilization at present: some ranch buildings, black angus cattle and a very little cow village dominated by a building which Skidmore, Owings & Merrill perhaps should preserve for the Air Force as a tangible link with the wild blue hither.

lew tille;



(EASI)

Earlier this year a "new form of creative art offering endless possibilities" was introduced in New York by the Easi-build Pattern Co. The inventor, Donald R. Brann, calls the method plysculpture because of the effects he has achieved in cutting designs into the surface of hard plywood. An electric routing tool is used to trace patterns \%" deep. Said Mr. Brann's representatives: "If Mr. Brann has his way, all Americans will become plysculpturers overnight. . . . Absolutely no mechanical skill or artistic ability is required."

One of the examples of plysculpture shown was this pair of wall panels for a bedroom, decorated with somewhat Assyrian feeling.



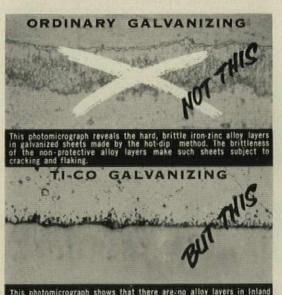
Another of the endless advantages might be, of course, the portability of plywood panels. If He and She, the popular young Mr. and Mrs. Towel, have a spat and aren't talking to each other, the Assyrians can be adjusted to reflect the situation—W. McQ.





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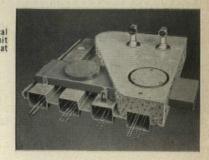
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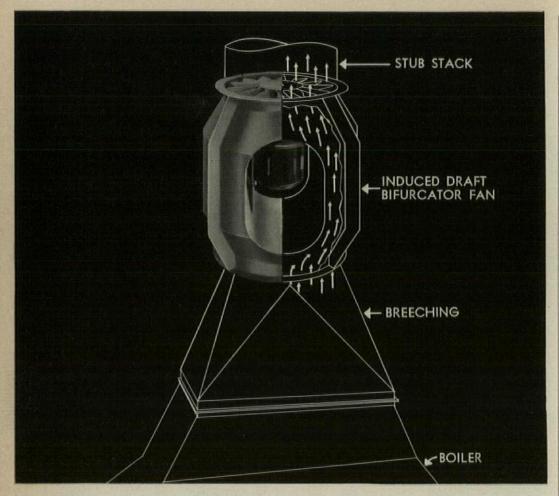
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LETTERS

HOWARD JOHNSON'S KITCHEN

Forum:

Congratulations on the presentation of the Howard Johnson Restaurant job (AF, March '55).

If owners, as well as architects, would realize the importance of operational analysis, a much finer quality of commercial work would be produced. Too often, a client approaches an architect to "enhance" the façade rather than the operation. The excellent kitchen planning job done by Architect Nims and the good judgment and acceptance by Owner Johnson once again proves a successful commercial job can only be produced if owner and architect work closely together.

Mario Gaidano, architect San Francisco, Calif.

INLAND STEEL'S OFFICES

Forum:

I commend you on your article about the new building for Inland Steel (AF, May '55).

There is an activity of the National Association of Building Owners & Managers known as the Building Planning Service, whereunder the experience of practical building managers is brought into the designing of office buildings. Those of us who serve on such assignments wish to be as up to date as possible on design and construction and there is no media for this purpose comparable with the type of articles that you are including in FORUM.

GEORGE R. BAILEY G. R. Bailey & Co., real estate Chicago, Ill.

SCHOOL FINANCE

Forum:

In your February editorial you have presented in a nutshell the basic problems involved in school construction finance.

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

REAL ESTATE INVESTMENT

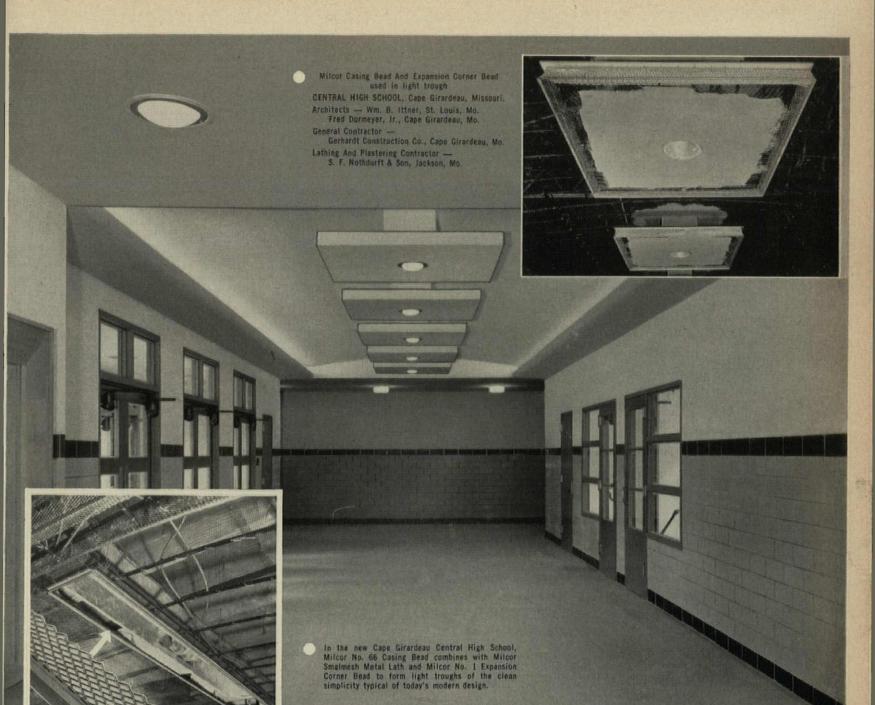
Forum

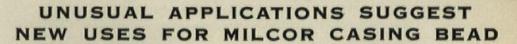
The article on real estate investment by Miles Colean (AF, April '55 et seq.) is so clear and so realistic it merits very wide distribution among the individuals who comprise the investment boards or committees that are charged with the responsibility of investing funds in mortgage loans under today's conditions, and particularly those who are interested in loans to be secured by mortgages of income or commercial properties. Miles Colean requires no introduction to those of us identified with mortgage lending practices on a national scale and his opinions and counsel are always valuable.

This article is particularly useful to us at the present time and we are going to bring it to the attention of a number of persons interested in our mortgage lending program.

James H. Magee, vice president John Hancock Mutual Life Insurance Co. Boston, Mass.

continued on p. 66





WHEN you want the beauty and simplicity of flush door and window openings, Milcor Casing Bead is always the perfect answer. That's a basic use, of course, But it's not the only one.

Architects are finding that the versatility of Milcor Casing Bead makes it an ideal material to use wherever you want a neat, strong plaster edge—along the top of a suspended light trough, for instance, or around the opening for an air-conditioning grill. Here it offers the same advantages you find in its basic uses: (1) The permanence of steel. (2) Resistance to fire and impact. (3) Neat mitres and joints that are flush with the plaster surface.

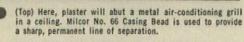
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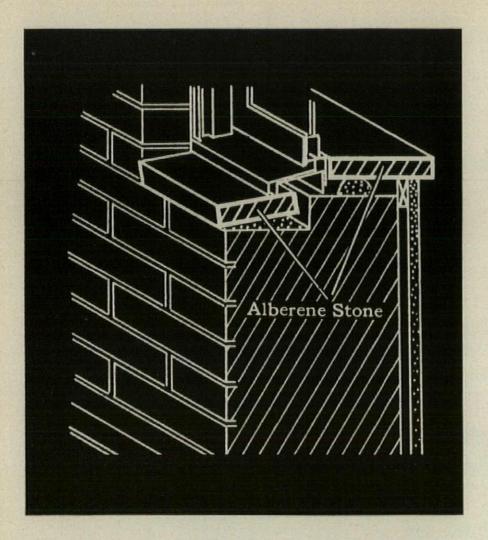
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(Bottom) Milcor Casing Bead acts as trim and grounds for plaster around this window — makes possible perfect corners, and a neat joint flush with the plaster.

*Reg. U. S. Pat. Off.

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For information and technical assistance, address: Alberene Stone Corporation, 419 Fourth Avenue, New York 16, N. Y.

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LETTERS

Continued from p. 64

Forum:

Miles Colean's summary of the subject is excellent. It pin points the relationship between sound and economic values, which are so easy to get out of hand.

JOHN G. JEWETT, vice president The Prudential Insurance Co. of America Newark, N. J.

Forum:

. . . An excellent article,

WILLIAM L. SLATON, assistant director National Assn. of Housing & Redevelopment Officials Washington, D. C.

Forum:

. . . A very sound presentation and certainly a real contribution to the subject. It no doubt will be a reference for many a man in real estate.

> F. J. C. DRESSER Arlington, Va.

ST. JOHN THE DIVINE

Forum:

Pietro Belluschi's invitation to the architects of today to complete in contemporary language the Cathedral of St. John the Divine is stimulating (AF, May '55).

I have no doubt that this is the sound and courageous approach, as I am convinced that any compromise would be only an expression of cowardness.

For the satisfaction of the people dedicated to the past, I may mention that even if Milan Cathedral was unsuccessfully completed with an eighteenth-century façade over its Gothic shell, Venice's St. Mark has pleased millions of viewers with its Gothic thirteenth-century crowning over Romanesque and Byzantine arches of three centuries before,

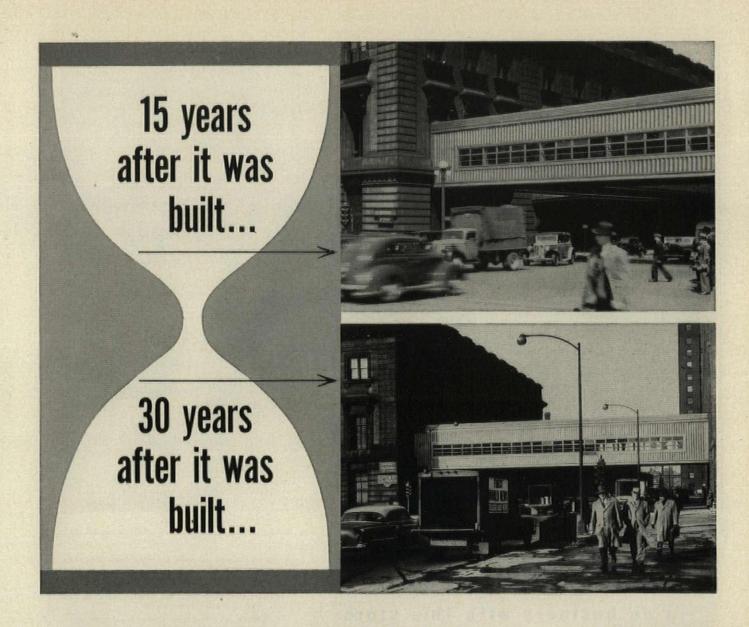
As far as I know, never before the Age of Ugliness and the Industrial Revolution have people tried to imitate the forms of the past. I do not think that to be respect but rather timidity and fear.

GIORGIO CAVAGLIERI, architect New York, N.Y.

Forum:

Mr. Belluschi's analysis of the love of church people for our traditional forms is very acute and expresses the only justifiable basis upon which we can continue to use them in our contemporary construction of churches. I appreciate his stating of the difficulty of the contemporary architect in speaking to the religious situation out of a materialistic society. However, I would like to point out that Christianity does not make a sharp distinction between the material and the spiritual, holding them as different facets of one creation, brought into being by God and never to be thought of as basically opposing each other but at most being opposite sides of the same coin. Therefore, the materialism of our day, which is an overemphasis on the material, is really a sign of the problems of the spirit as well as of the flesh. Hence, the architect who takes the

continued on p. 70



This STAINLESS "Covered Bridge" is **EVER-NEW**

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The top photograph of the AL Stainless Steel-surfaced concourse that connects the Chicago Daily News building with the North Western station was taken about 1939-40. The lower picture was made early in 1955. There's no discernible change.

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INSTALLATION: Strawbridge & Clothier Department Store, Jenkintown, Pennsylvania

ARCHITECT: Herbert Beidler, Chicago, Illinois

ELECTRICAL CONTRACTOR: Ross Electric Construction Company, Philadelphia, Pennsylvania

FIXTURE: No. 3334RS 3 lamp recessed Rapid Start troffers, with Albalite #66 glass, and special plaster frames No. 3300-31 insert type incandescent lens boxes No. 3300-41 insert type adjustable spotlites

INTENSITY: Average on counter tops, 40 footcandles in service

This department store installation at Jenkintown, Pa. is another example of how LITECONTROL standard fixtures can be successfully adapted to special conditions at appreciable savings.

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doors open by means of our Trigger catch — fingertip pressure opens them, an easy push closes them.

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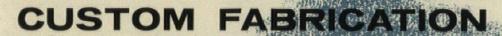


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LETTERS

Continued from p. 66

time and effort to know his Christian thought in its basic outlines should have no trouble whatsoever when guided by this knowledge in using contemporary forms that would result in the highest expression of man's dedicating his spirit and his body equally to God.

As Mr. Belluschi says, what we need is the faith to think that our society is capable of realizing its own spiritual greatness, which is there, even though overlaid by timidity and forgetfulness.

Everywhere in the world, the church and the great artists are beginning a rapprochement which is the obvious sign of the coming of another great age of religious art in the most creative sense of the term. Initial failures mean little that can be decried if they are contributions to the final success. In my mind, these failures have now reached the point where, in the last 10 or 15 years, we are seeing the emergence of the cooperation between religion and art come into the open with a maturity that allowed me to urge the bishop (and this is my sole contribution to the subject) to permit contemporary architecture to try to answer the challenge that he was willing to lay before it.

Architecture is certainly only a part of civilization, although in my mind the most expressive part of it, and just as civilization without religion has no future either on earth or in heaven, so architecture that ignores the religious challenge will be rightly forgotten as something that has decayed before it came to its final blossom. In my mind, contemporary architecture has now reached the maturity that will allow it to undertake the great challenge offered by the Cathedral of St. John the Divine.

Maybe I am wrong, maybe Mr. Belluschi is wrong, maybe FORUM is wrong; perhaps the large number of architects and architectural schools with whom I have discussed this project are wrong; but I do not think the architects of this country or the world are doing themselves justice unless they make the attempt to furnish the blossom which a successful solution of the problem of St. John the Divine might well become. If this great thing comes to pass, there is no doubt in my mind that the barricades against contemporary architecture in the minds of the leaders of the church will crash down and never be erected again. The nineteenth century and our part of the twentieth have been the only time in recorded history where the genius of the architect has failed before the challenge of religion and has had to settle on twisting or copying the past.

THE REVEREND DARBY W. BETTS, S.T.M. Canon Precentor The Cathedral Church of St. John the Divine New York, N.Y.

Pietro Belluschi's address before the New York Architectural League (AF, May '55) confronts in a broadly philosophical way the question of how shall the Cathedral of St. John the Divine be completed. Mr. Belluschi's immense qualifications as an architect do not necessarily equip him to answer the question.

continued on p. 75

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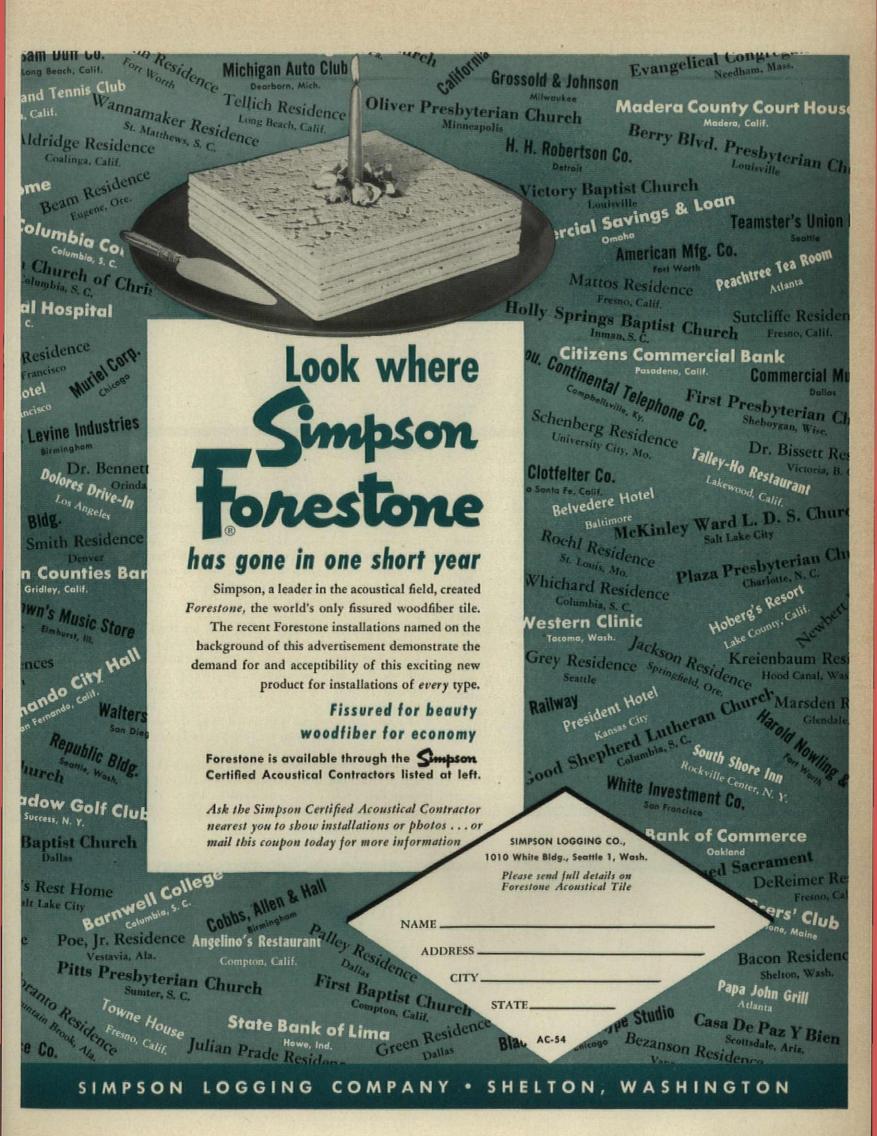


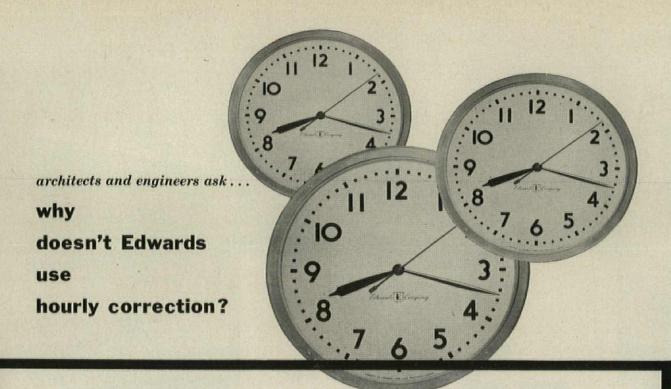
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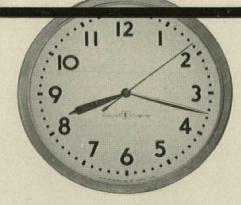
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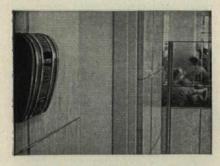
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LETTERS

Continued from p. 70

Mr. Belluschi writes: "If we believe in man's long-range perfectibility and in his power to work his own salvation, we must face problems such as this without a feeling of inferiority, but with the best which is in us."

As a Christian I do not believe—nor do I think the Episcopal Church believes—that man is perfectible in the sense I take Mr. Belluschi to mean. His next phrase, "his power to work his own salvation," suggests that man's good destiny is to lift himself higher and higher by his own hands pulling on his own bootstraps. This is flatly opposed to the Christian conviction that God gives salvation to us through Christ and continually extends His grace to enable us to overcome our self-centeredness and accept salvation.

Since St. John the Divine and all other Christian churches exist only to utter man's feeble praise of God, it would be folly to approach their design with an unconscious urge to praise not God but man.

LAWRENCE E. LAYBOURNE New York, N.Y.

Forum:

Concerning the "challenge" of Pietro Belluschi (AF, May '55):

I must agree with him. In Cram we had an architect whose esthetic was circum-scribed by "verities" not so eternal as he thought, but, as your own editorial page says, a passionate man in his beliefs. To me what would have been his masterpiece, had the story of his career had a conventional happy ending, this same St. John the Divine, is a failure: the nave is more appropriate perhaps as a hangar for dirigibles than as an inspiration to the godly in a somewhat godless city. (His small works are better, or such is my experience.) But if Cram failed at this monster of a church in New York, how much less is the chance of success today, when theoretically nobody knows what proposal will be offered for closing the gap of the crossing? All the more brilliant the victory of the architect who can bring not merely harmony but a positively grand effect from the two parts so different!

Yet Mr. Belluschi does well to question. as he seems to, whether we moderns have it in us. I feel that religion is ordinarily treated by architects as one might treat an old woman who was somewhat senile and who had wandered into a public place: with a certain pity not unmixed with hypocrisy. Their crosses, far from being old and rugged, are neat and thin and made of bronze. No person in our church need forget that he is living in the US even in the presence of God, because his churches are neat and architected to the very hilt. I myself write not as a Christian, but rather as a person who delights in accidental things that people have left their often grubby hands off of: the very garbage in the gutters, as a sign that man, licentious animal that he is, has not made everything over to his own intolerant ideal of absolute "perfection."

continued on p. 76

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LETTERS

Continued from p. 75

In an old church the shadows wander with the course of the afternoon sun. In the summer that sun, with a pagan splendidness, bakes the clay along American roadsides and makes sunflowers grow 6' tall along American roadsides. And in this Americans can share a delightful experience that citizens of all countries knew long before the Norman conquest or any other event of history. When churches came to be built among the sun-baked fields, that same summer found out the depths and hollows, threaded through the traceries, wandered among the heavy pillars, blazed through blue, red, and yellow panes to fall on floors of gray flagging; but there was no forgetting of the clay and the sunflowers out of doors, even in Romanesque churches, now supposed to be built by hypochondriacs that shunned the world. In such a church, stone was stone, the damp and cool went even to the bones, and behind the walls nature too was nature, directly before the eyes, in spite of the dry message that prompted the saints in glass and sculpture. St. Bernard sensed this and reviled the architects.

In a modern church this is something we must not lose. It is not necessary, I think, that the architect be a Christian but that he be a person to whom mysteries, all the possible mysteries that life can offer (even the humble nonsectarian mysteries of how the shadows and beams of light play along a floor together), are objects of fascination and delight, worth-while to show the rest of us. Cram became an Anglican through a certain strategically disposed midnight mass in his life, incense and all. Americans need not commit themselves so specificcally under the new crossing: but it is to be hoped that no mere ideologist will build that crossing, but rather an artist who can jar the slumbering intelligence of many.

> WALTER C. KIDNEY Philadelphia, Pa.

REDEVELOPMENT F.O.B. DETROIT

Forum:

This new approach for Detroit appears to be sound and convincing. The results this time should prove more successful and become a pace-setter for future redevelopment projects, and later a nucleus for some comprehensive renewal plans for that city. If the Citizens Redevelopment Committee achieves its goal of setting up an operating corporation with \$1 million in capital, the chances for success will be immeasurably improved. However, in my opinion, the notion of reselling later to developers who, in turn, will carry out the construction, complicates an already involved procedure. It would be better if the Citizens Committee were directly responsible to the city for carrying out the program. The Committee should also stay in control throughout the life of the project, and thus make certain it is carried out in conformance to the plan.

> IRA J. BACH, executive director Chicago Land Clearance Commission Chicago, Ill.

continued on p. 78



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LETTERS

Continued from p. 76

Forum:

The background of the promoters is significant. They should bring to this project an experience in finance and promotion which should contribute greatly to the success of the project. The over-all concept of the project is not particularly new with the exception of combining under proper control high-tower apartments with single-family dwellings.

The project contemplates the use of federal aid for a write-down of the cost of the land for re-use purposes. Apparently this re-use cost is estimated at about \$20,000 per acre. This sum seems unusually low and causes one to inquire whether the price per acre is correct. (The answer is in the following letter.—ED.) So far, we in Pittsburgh have not been able to approach that re-use value.

Using federal aid requires that there shall be no discrimination in the matter of race, creed or color. Promoters of this project apparently use the expression of an integrated project which from the article implies the integration of race without discrimination. This, of course, is required under federal restrictions. The article indicates Detroit is a tough town insofar as racial harmony is concerned. If such be the case, then it would seem that integration would be hard to secure. The project might well fail because of this problem.

The use of a nonprofit organization as a promotion agency to some extent follows the pattern that we have followed in Pittsburgh through our use of the nonprofit public authority mechanism. Detroit goes a little beyond us, however, in using a nonprofit private citizens' group as the redeveloper of the project. The theory of using the capital of the citizens' group as a revolving fund is appealing if extended over a period of years, but it does not seem to lend itself to speedy action on a large scale.

PARK H. MARTIN, executive director Allegheny Conference of Community Development Pittsburgh, Pa.

Forum

Here is some information regarding land costs in the Gratiot Area.

The city acquired 128 acres at a cost of \$6,154,055.60. Of the 128 acres there are, of course, 50 acres for sale for redevelopment purposes. Preparatory to the 1952 auction, this property was appraised and the entire 50 acres were made available at an upset price of \$926,380. This was predicated on 32¢ per sq. ft. for the garden apartments, 45¢ per sq. ft. for the high-rise building and \$1.50 for the commercial land. As you can see, the write-down price is a little less than \$20,000 per acre.

Since the 1952 and 1953 auctions there has been an amendment to a state law which permits the city to negotiate the sale, and we have no occasion to think that this land will cost much more than the above-mentioned upset price.

JAMES W. BELL, coordinator Citizens Redevelopment Committee Detroit, Mich.

marble

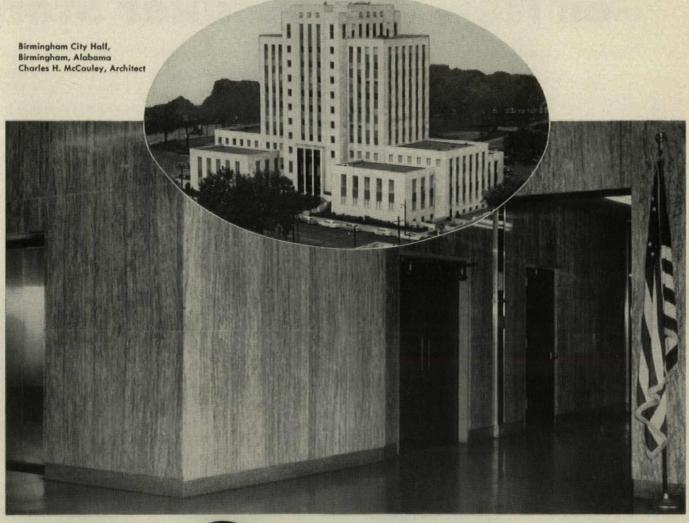
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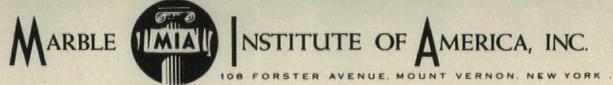
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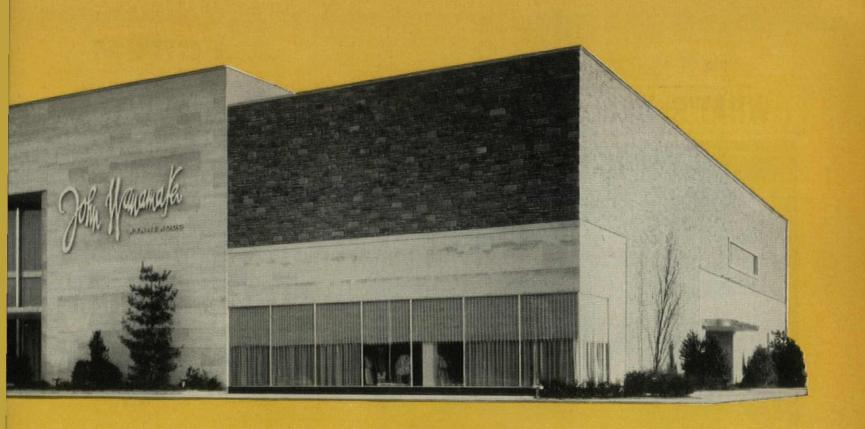
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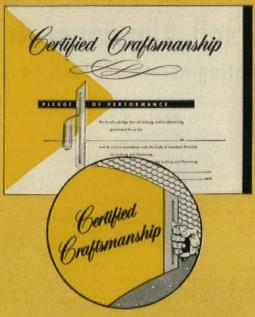
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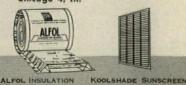
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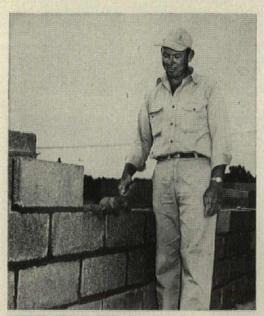
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OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

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



UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station

New buildings Designed for Permanence

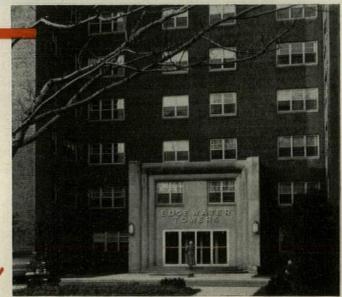
with American Welded Wire Fabric



PRETTY WAREHOUSE. Like most progressive companies, Jewel Tea Company wants its buildings, as well as its products and its salesmen, to make a good appearance in public. This new warehouse is a good example. Contributing to its long term appearance is durable concrete — reinforced with American Welded Wire Fabric. American Fabric is used to add strength and resistance to cracking in slabs, sidewalks, and curbs outside the building, and in concrete floors inside the building.

UNSEEN STRENGTH. No matter how fancy the façade, the permanence and long term cost of a building depend on the hidden quality lurking inside the structure. Concrete is an attractive, durable structural material when properly reinforced. And in this new apartment in Lakewood, Ohio, all concrete floors and slabs are strengthened and made more resistant to cracking with a tough backbone of American Welded Wire Fabric. American Fabric meets ASTM Specifications A 185-53T. Specify it for your concrete. For heavy duty construction American Welded Wire Fabric is now available in wire sizes up to and including ½" in diameter at 2", 3", 4", and 6" on centers.

YOUR CLIENTS WILL ASK "IS IT Reinforced"



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO

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* UNITED STATES STEEL EXPORT COMPANY, NEW YORK

EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS



USS AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL

SPECIAL ADVERTISING

SECTION

ON

FENESTRATION

The advertising in this special section — like *all* the advertising in FORUM — serves you twice. One, it helps to spark your thinking on better ways to build better buildings. Two, it saves you time. If you granted a fifteen minute interview to a representative from each of the advertisers in this *entire* issue of FORUM, you would get more good, new ideas than you could shake a dollar bill at — but all these interviews would take every minute of every work day for more than a week!

27 manufacturers who are making major contributions to new and effective uses of

fenestration in building, describe their products and services on the following pages.

Detroit Steel Products Co. 90, 114, 115	Pittsburgh Reflector Co 108
Economy Engineering Co 109	Plastic Products of Texas 99
Erie Enameling Co 86	Reflectal Corp. (Koolshade) 87
Fabrow Mfg., Inc 92	Republic Steel Corp102, 103
Michael Flynn Mfg. Co 98	Universal Corp 88
Gall Reversible Window Co 93	Valley Metal Products Co 105
Ludman Corp88 A, B, C, D	The Wakefield Company106, 107
Mississippi Glass Co 100	Ware Laboratories, Inc 84B
Pittsburgh Plate Glass Co94, 95	Woodco Corp 89
	Economy Engineering Co 109 Erie Enameling Co

new weatherstripped

WARE

aluminum

Combines famous Ware quality with important new features— at modest cost!

Smooth, Sturdy CENTER SILL operator

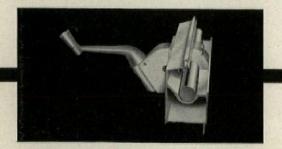
Compound operator sealed in grease—completely enclosed—affords smooth, effortless operation.

Gear ratio prevents strain or stripping and increases power. Concealed in sill at factory. No on-the-job installation!

Entire operator and power bar nylon bushed entirely self-lubricating—permanent.

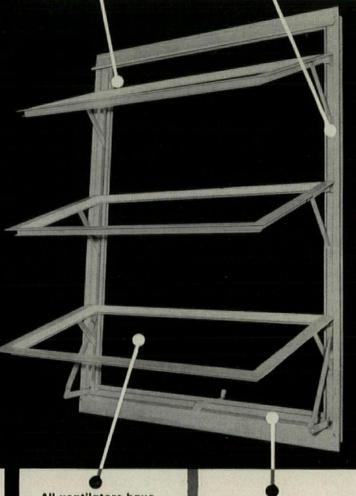
Assures **balanced** power activating **both** window jambs simultaneously—prevents torque lag which causes ventilator distortion and puts unbalanced strain on linkage.

Torsion resistant tubular sill. 3/4" solid extruded aluminum power bar.



FEATURES THAT ADD PLUS VALUE!

Weatherstripped by premium vinyl locked in extruded channel unexposed to weather. Wide overlap of weathering members. Minimum outside at jambs 5/16".



All ventilators have equal height and drop for easy cleaning.

Heavy reinforced sill.

Snap-on glazing bead available.

No special locking devices to cause distortion of ventilators and put undue strain on operator.

All windows chemically cleaned, etched and lacquered per FHA requirements. Engineered for simple, speedy installation.

Designed for a great diversity of applications.

Write today for complete details Address Dept. AF-7

Aluminum WARE Windows



Econ-O-Wall











Ware Awning Window

Projected

Casement

Ware Laboratories, Inc., 3700 N.W. 25th St., Miami, Florida



ART METAL ELIPTICONES

Dramatize School Entrance

Wm. B. Ittner, Inc., St. Louis architects and engineers, created this highly dramatic lighting effect at the main entrance to the Academic Building of the new Clayton High School, Clayton, Missouri.

Only three ART METAL Elipticone Light Multipliers, using 150 watt reflector lamps, were required to produce this striking effect. Obviously, it suggests many other applications.

We suggest you write to The ART METAL Company, Cleveland 3, Ohio, for full data on this remarkable equipment.

The above illustration is a completely unretouched photograph, showing how this unusual lighting equipment highlights the remarkable architecture of the building.

The

ART METAL

Company



Control of heat gain through windows saves \$13,300 in air conditioning

The important effect of solar heat gain through glass on air conditioning requirements is vividly illustrated in the case of the Los Angeles County Engineers Building.

When it was decided to air condition the Los Angeles County Engineers Building, the engineers sought at the same time the best method of cutting down the size cooling system required and insuring efficient operation. The building was already equipped with Venetian blinds. A number of other shading devices were tested, to determine which would most effectively reduce the sun load. Among these was KoolShade Sunscreen, a louver-type solar screen fabricated of woven bronze.

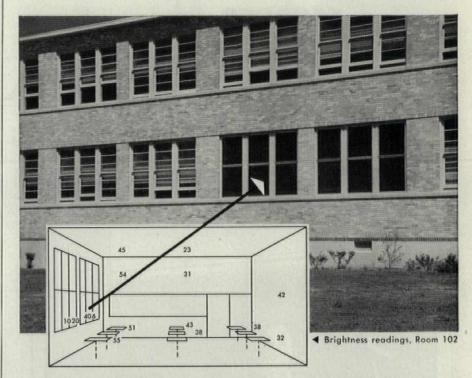


LOS ANGELES COUNTY ENGINEERS BUILDING. The KoolShade Sunscreen installed on this building reduced, by 79 percent, the solar heat gained through glass . . . cut air conditioning requirements by 72 tons.

Tests proved that solar heat transmission through the Venetian blinds-even when tightly closed-amounted to 1,102,000 BTU's. With KoolShade, only 232,000 BTU's. In refrigeration requirements, the difference amounted to 72 tons! Cost wise, this reduction in tonnage adds up to a net saving of \$13,300 over and above the cost of the KoolShade . . . and to this will be added the continued annual savings from lower operation and maintenance of the cooling equipment.

By keeping the heat and glare of the sun outside the building, KoolShade Sunscreen eliminates hot spots and excessive loads . . . provides a balanced and trouble-free air conditioning installation.

For a complete report of the Los Angeles County Engineers Building installation, write to Reflectal Corporation, a subsidiary of Borg-Warner Corp., 310 S. Michigan Ave., Suite 2853, Chicago 4, Ill., makers of KoolShade Sunscreen. And if you have a problem in the control of solar heat gain, the Reflectal Corporation will be glad, also, to put you in touch with an experienced KoolShade engineer in your vicinity.



How KoolShade gave this test Classroom 76% better lighting balance to protect young eyes from glare

Test: Employed in one of the most conclusive Brightness-ratio tests yet conducted, Rooms 102 and 103 of Dallas' Hillcrest High School are adjacent and identical. Room 103 (left) was equipped with conventional daylighting controls: glass cloth diffusers and roller shades. Room 102 was equipped only with KoolShade Sunscreen. Comparative brightness readings were taken.

Results: As expressed by the independent research engineer's report (and shown in diagram above), the KoolShaded room provided "considerably more . . . uniformity of illumination and brightness balance." For example: desk top illumination was actually 76% more even. In every part of the room, KoolShade provided brightness ratios well within maximum and minimum ranges recommended by the Illumination Engineering Society.

To educators, a test of this type points to a better method of daylight control-without supplementary de-

vices that require constant adjustment and maintenance. To the students of "Room 102" it means more: the kind of balanced lighting that protects young eyes from glare.

Only KoolShade Sunscreen offers

unsurpassed shading efficiency—keeps up to 87% of the sun's rays off windows during the hottest part of the day—100 sq. feet of KoolShade reduces air conditioning load 1 ton.



. 80% clear visibility-admits maximum

• harmony with all architecture—improves building's appearance.

• virtually no maintenance—constructed of strong preoxidized bronze strips, wired and framed together, lasts for years, withstands hard blows

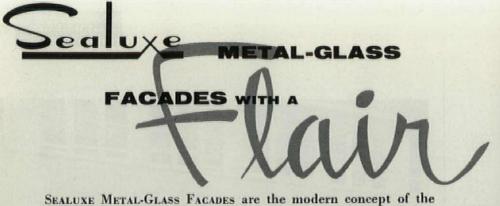
Write for free copy of full Hillcrest test

... along with complete details on KoolShade. No obligation.

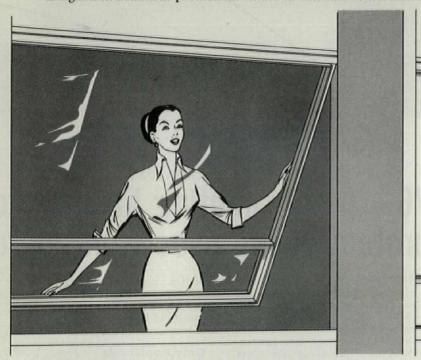




106-55



SEALUXE METAL-GLASS FACADES are the modern concept of the proper use of non-ferrous metals and glass, employing devices and accessories to not only control weather and sun but hold shadow lines. They cost no more than conventional construction. Good designing and good engineering should provide for large modules in height and width, expansion and contraction, and inside cleaning. Your metal-glass facaded buildings can now be designed in beautiful permanent colors to contrast or harmonize.



INTRODUCING the New SEALUXE Ventilating Picture Window

Model 43 A Series 300

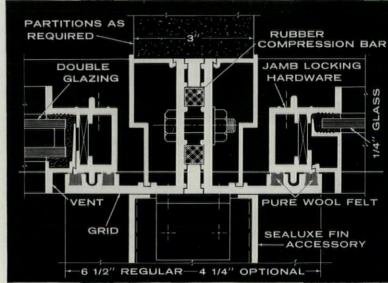
- Thin lines achieved by combining facade grid with window frame, which now becomes a part of the grid.
- Complete aluminum grid speeds fabrication and erection and assures a lighter weight building.
- Opens for inside "dry cleaning" or "wet cleaning," lowering maintenance cost.
- Opens for ventilation when desired.
- Affords a water bar around entire perimeter of window — the most important but probably the smallest device on a building.
- Eliminates caulking, exposed putty and screws.
- Equipped with special air conditioning locks — manual or mechanical operation.
- Accommodates single or double glazing with removable glazing beads. It may be table glazed. Replacements can be made by building maintenance department without disturbing occupants.
- Custom made in any size.
- . . . AVAILABLE IN ALUMINUM, BRONZE, OR STAINLESS STEEL

IMPORTANT: Universal maintains a department of design and engineering with services available to the architect without charge or obligation. Send us your preliminary drawings for study and they shall be promptly returned with suggestions for your consideration.



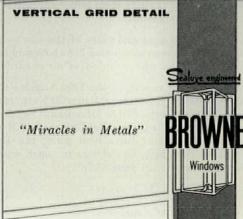
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"Starlight"









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performance and ease-of-installation. And if the point-of-view is economy we suggest that satisfaction is true economy.

Nothing to adjust . Nothing to get out of adjustment

CHECK THE WOODCO E-ZEE Loc PATENTED FEATURES:

- . EASY TO LOCK
- . SEQUENCE AIR CONTROL
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- EXTRA HEAVY SASH and FRAME
- . DOUBLE VINYL WEATHERSTRIPPING (Pat. Pend.)
- . COMPLETELY ASSEMBLED
- . . . AND DON'T FORGET, MR. ARCHITECT

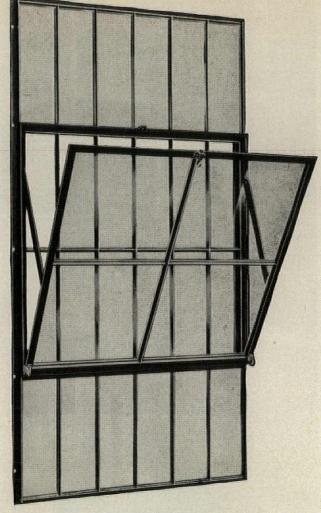
Every WOODCO E-ZEE Loc Window Unit is manufactured of Kiln Dried Ponderosa Pine, toxic treated to prevent decay, and water-repellent treated to reduce swelling and shrinking. Each unit is de-livered to the building site completely assembled for quick and economical installation.

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ROCKWELL of RANDOLPH, Inc. (Wholesale Millwork Div.), Randolph, Wisconsin E-ZEE Loc Awning Division Miami 47, Florida





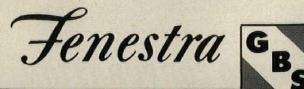
Here's a window that keeps a prowler honest!

He doesn't have much choice. For Fenestra* Security Windows provide two-way protection, from outside and inside, against entrance and against passage of material out through unprotected windows.

There are other advantages, too. Fenestra metal screens are easily attached to the inside, between ventilator and grille, safe from removal. Ventilators open in from the top, deflecting drafts, shedding rain. The building gets fresh-air ventilation 24 hours a day without exposing the interior to public view when obscure glass is used. Open-in ventilators do not protrude beyond the building line to endanger pedestrians; cars or trucks cannot damage the windows.

And Fenestra Security Windows are good looking. No separate bars outside the window. The window and grille are one unit. They are also easy to install—one contractor installs one complete unit in only one operation. They're ideal for stores, warehouses, garages, small plants and many other buildings, in first-floor walls, unprotected side and rear elevations, and near fire escapes or roofs of adjoining buildings.

For more information, call the Fenestra representative listed in classified directories of principal cities. Or write the Detroit Steel Products Co., Dept. AF-7, 2296 East Grand Boulevard, Detroit 11, Michigan.

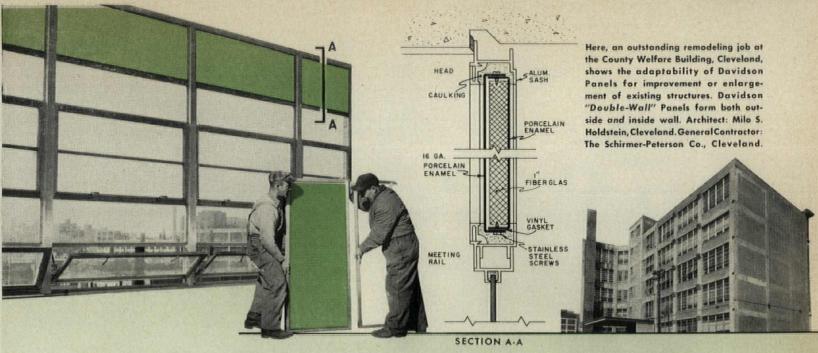


SECURITY WINDOWS

GALVANIZED-BONDERIZED-STEEL — THE STRONGEST MATERIAL, CORROSION-PROOFED FOR LIFE!

ARCHITECTURAL, RESIDENTIAL AND INDUSTRIAL WINDOWS • METAL BUILDING PANELS • ELECTRIFLOOR* • ROOF DECK • HOLLOW METAL SWING AND SLIDE DOORS







Davidson Architectural Porcelain is as flexible as your imagination. It can be used for curtain-walls, spandrels, window-walls or to accentuate structural features. It is easy to detail and offers an unlimited choice of color, shape or surface finish. As a result of long field experience and engineering development, use of Davidson Panels is practical for durable construction of any window-wall or curtain-wall. Ease of erection is

winning preference for this outstanding building material.

ARCHITECTURAL

Recently completed, Clemson College, at Clemson, South Carolina uses 26,000 square feet of Davidson Porcelain Enamel to achieve a window-wall construction that is entirely prefabricated. Davidson "Double-Wall" Panels form both inside and outside wall below windows. Architects: Lyles, Bissett, Carlisle & Wolff, Columbia, South Carolina. Contractor: Daniel Construction Company, Columbia, South Carolina.

SECTION B-B

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DAVIDSON ENAMEL PRODU 1105 East Kibby Street, Lima	
Gentlemen: Please send fact	s about the selection of Davidson "Double-
Wall" Panels available. The	type of project I have in mind is
Name	
Name	





COMPLETELY

REVERSIBLE

ALUMINUM, THERMOPANE*

WINDOWS

THAT PIVOT AND STOP AT ANY ANGLE

Now you can achieve clean, modern slimspandrel curtain or window-wall effects without incurring "sealed window" prob-

lems. Gall completely Reversible Windows-the most convenient windows ever built-pivot on vertical or horizontal axis . . . open to any angle and stops there for ventilation when required . . . or completely reverse, for easy, safe, convenient cleaning while locked on both sides, inside the building!

Gall Reversible Windows provide a new kind of facade. (Ford Research Center, Dearborn, Mich.)

TWO TYPES: DOUBLE HUNG HORIZONTAL PIVOT AND SINGLE PANE VERTICAL PIVOT

Clean, simplified framing makes installation easy; no difficult, visible hardware or fastenings. Windows may be combined in any number using a simple connecting spline. Thermopane* construction, plus automatic overlapping closure of head and jamb inserts with patented neoprene seal insures positive weather protection.

More than a window, the beauty, conven-ience and economy of Gall Reversible Windows will mark the soundness of your choice for years to come.

Wash both sides from inside while locked!

Automatically seals against weather

Designed for any type of structure

Use singly or in continuous series

Complete range of sizes: Standard and specification sizes available.



MAIL FOR DETAILS!

GALL REVERSIBLE

CANNON & AURORA RDS.

BEDFORD OHIO

* A product of Libbey . Owens . Ford Glass Company

Cannon & Aurora Rds., Bedford, Ohio Please send architectural details on Gall Reversible Windows for		
	(Types of Structures)	
Name		
Company		
Street		
City	ZoneState	



Towering Republic National Bank Building

in Dallas, Texas,

makes spectacular use of Pittsburgh Glass

THIRTY-SIX STORIES HIGH, this new bank building has an aluminum skin and is glazed with windows of Solex® Heat-Absorbing Glass. The eight-story-high rectangular structure, shown here, forms the base of the building and utilizes Solex, Solex-Twindow®, and rough Solex spandrels. Here is another important edifice, among the many hundreds throughout the country, which features Pittsburgh products, both outside and inside, for greater architectural unity, beauty, and practicality. Architects: Harrison & Abramovitz, New York, N. Y. Associate Architects: Gill & Harrell, Dallas, Texas.



THE LOBBY of this skyscraping Texas bank is enclosed with Pittsburgh Polished Plate Glass, equipped with Herculite® Tempered Plate Glass doors. Controlled separation is thus achieved, but with the maximum sharing of light among the various public and work areas.

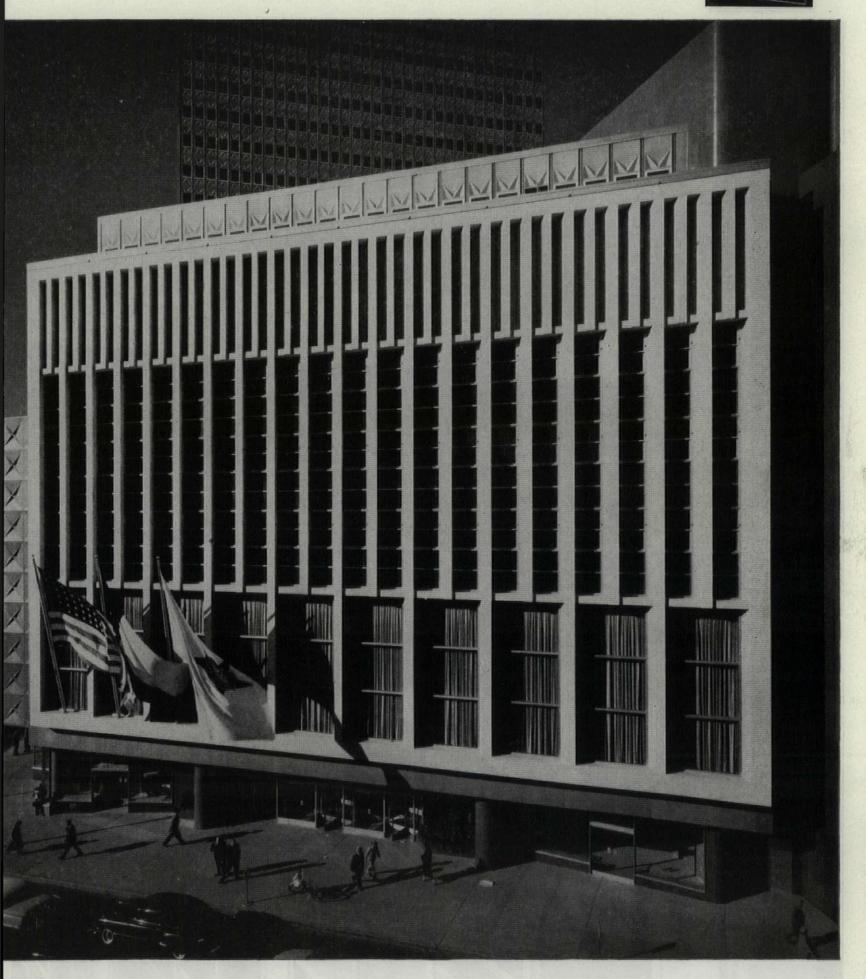
AMPLE NATURAL DAYLIGHTING is afforded the offices by 3' x 5' Solex window units. Through its solar heat- and glare-reducing properties, Solex contributes to greater comfort and less eve-strain and fatigue among the building's occupants.

Look for our exhibit on the Producers' Council Caravan when it reaches your city.

Your Sweet's Architectural File contains detailed information on all Pittsburgh Plate Glass Company products . . . Sections 6a, 15d, 20, 12e, 15a.



Design it better with Pittsburgh



Glass P



IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

SPANDRELS Type 20 sheet. Alcoa No. 1 Pattern (Coarse Bark) finished in Alcoa Architectural Blue 3020. WINDOW, MULLION AND PANEL FRAMES Extrusions of Alcoa Aluminum in Alumilite† finish. COLUMN COVERS Alcoa Aluminum Anoclad Type 20 sheet finished in Alcoa Architectural Gray 2020.



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Alcoa Architectural Colors in Multistory Curtain Wall

A leader in curtain wall design, fabrication, and erection, Cupples Products Corporation adds the beauty of color to aluminum "skin" construction of a multistory building. The spandrel panels of Alcoa® Aluminum Sheet, fabricated by Cupples for the Henry C. Beck Building in Shreveport, La., are finished in Alcoa Architectural Blue 3020.

One of a range of Alcoa Architectural Colors now available, the new finish is not paint or enamel, but an integral part of the aluminum surface. It is the result of an electrochemical process developed by Alcoa after years of experimentation and testing.

In addition to the spandrels, Alcoa Aluminum has been chosen for the column covers running the height of the building and extrusions for all windows, mullions, and panel frames.

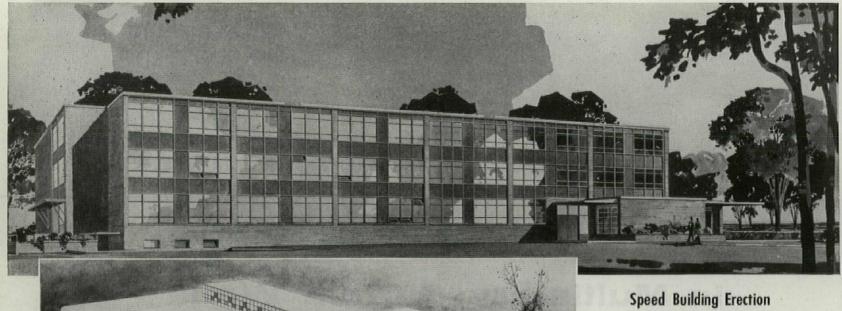
For additional information about Alcoa Architectural Aluminum, call your local Alcoa sales office. You'll find the number listed under "Aluminum" in your classified directory. Aluminum Company of America, 1887-G Alcoa Building, Mellon Square, Pittsburgh 19, Penna.

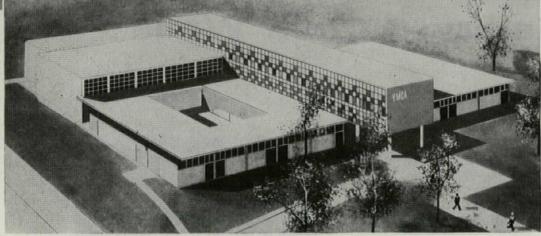
Your Guide to Aluminum Value





^{*}Trademark of Aluminum Company of America †Trade Name of Aluminum Company of America





Top illustration, MEN'S DORMITORY, SOUTHERN STATE COLLEGE, Magnolia, Ark. Architects: Wittenberg, Deloney & Davidson, Little Rock, Ark. Contractors: Peterson, Garbi & Joseph, Inc. Lupton Curtain-Wall System, Type H. Module 3'8". Fixed glass and projected in-at-top ventilators. Outside glazed.

Lower illustration, Y.M.C.A. BUILDING, CHESTER, PA. Architects and Engineers: Howell Lewis Shay & Associates, Philadelphia. Contractors: Nason & Cullen, Inc. Lupton Curtain-Wall System, Type H. Module 3'. Projected out-at-bottom ventilators. Opaque and insulated panels with porcelain enamel facing.

LUPTON

Metal Windows and Curtain-Walls

OFFICE BUILDING OF SARGENT-WEBSTER-CRENSHAW & FOLLEY, ARCHITECTS, WATERTOWN, N. Y. Contractor: Wager Bros. Lupton Curtain-Wall System, Type H. Module 5'8". Fixed glass and projected in-at-top ventilators. Outside bead glazed.

With The Lupton Simplified Curtain-Wall System

Add the time and labor savings of Add the time and labor savings of custom-made, mass-produced Lupton Curtain-Wall Systems to the buildings you design. There is nothing stereotyped about Lupton Walls. You specify the type, color, material and texture of the fixed panels, and the windows desired. Then, drawing on technical skills gained in over fifty years of manufacturing metal windows, Lupton makes and installs the finished years of manufacturing metal windows, Lupton makes and installs the finished walls. This new system has been thoroughly laboratory and field tested. It is free from problems often inherent in curtain-walls. You can be sure of quality construction and proper installation - under a single responsibility.

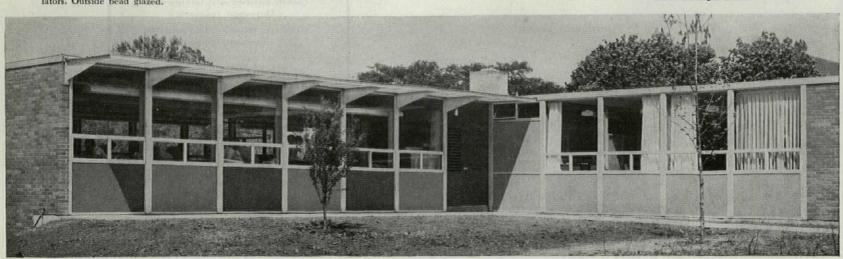
Efficient curtain-wall construction offers many advantages toward speed in erection, savings in labor, and variety in design. It is the fastest way to enclose a building — and in Lupton Simplified Curtain-Walls, you get all these advantages, plus the assurance of a tried and proven system.

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Answer to
Better
Lighting
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NATURALITE Dome Skylights and Ceiling Domes are the easy, efficient method of providing maximum natural light at minimum cost.

In thousands of installations throughout America NATURALITE units are giving better lighting with greater beauty, and making possible sizable savings in electric power bills, too.

You can specify NATURALITE with confidence because:

- NATURALITE domes are made of Plexiglas,* the time-tested acrylic plastic proved best by years of rugged service in military and civilian aircraft.
- NATURALITE Dome Skylight flashing frames are of strong, durable extruded aluminum. Condensation gutter and drainage system are built into flashing frame. Flashing frames of copper, stainless steel or galvanized steel are also available.
- NATURALITE Dome Skylights are shipped complete, ready for installation.
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NATURALITE Dome Skylights and Ceiling Domes are the natural, the practical solution for the increasing emphasis on lighting in modern school design..the demand for better light at lower cost in commercial and industrial buildings..and the trend toward natural lighting in modern homes.

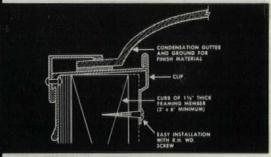
View your next building design in a new light — NATURALITE! See Sweet's 1955 Architectural Guide, or write direct for complete technical data book.

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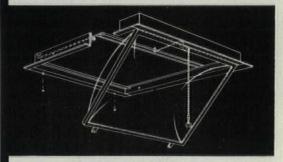
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BURGLAR RESISTANT DOME SKYLIGHTS

Made Only by NATURALITE

RIVETED construction of Naturalite's Burglar Resistant dome skylights makes it impossible to disassemble the unit with ordinary hand tools. For wood or concrete curbs. Here's extra safety only NATURALITE gives you.



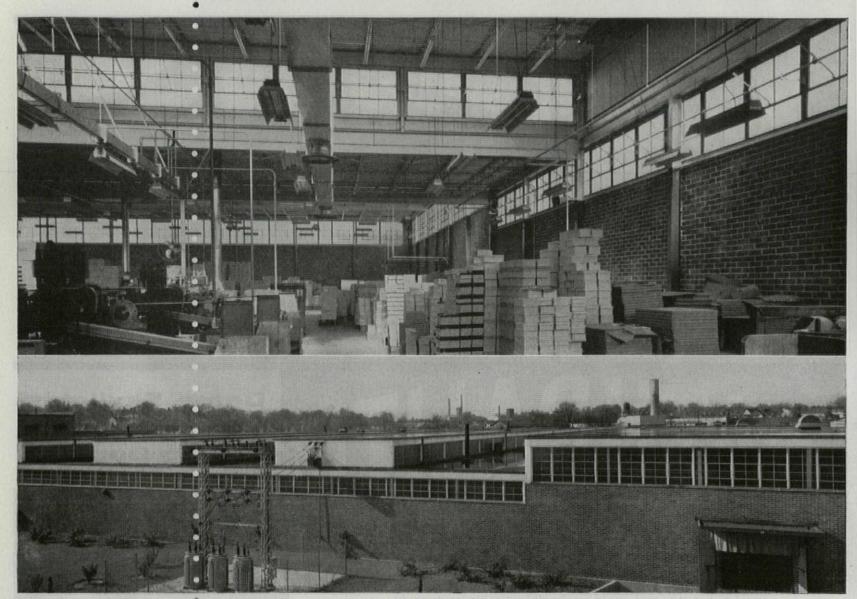
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Combination Ceiling Dome and Darkening Shade

Made only by NATURALITE, this combination ceiling dome and darkening shade installs as one unit.. is self-aligning.. cuts installation time in half.



COOLITE GLASS BRINGS COMFORT BY THE ACRE



Moscowitz, Willner & Millkey, Architect. J. A. Jones, Contractor.

Montag's New Paper Plant Keeps Bright and Comfortable Under 24,000 Sq. Ft. of Coolite

Montag, maker of fine stationery and school supplies for 65 years, recently occupied its new plant.

The Montag building covers 280,000 square feet and was designed to be the most modern stationery and school supply plant in the world. Conceived as an ideal plant for people and machines, it provides finest lighting, heating, humidity conditions and employee working and recreational facilities.

To achieve these aims, it is copiously daylighted with over 24,000 square feet of Coolite Glass by Mississippi. Coolite not only provides high levels of comfortable illumination, diffusing harsh sunlight for visual comfort . . . it absorbs much of the unwanted and uncomfortable solar heat rays, helps keep the vast interior cooler on brightest days.

Employees feel better, see better, work better under Coolite . . . for Coolite filters out unwanted harsh qualities of "raw sunlight" . . . permits extensive use of glass for low cost daylighting without undue heat.

In new construction or modernization, specify translucent light diffusing glass by Mississippi. Manufactured in a wide variety of patterns and surface finishes to help you solve any daylighting problem. See your nearby distributor of quality glass.



88 ANGELICA ST.

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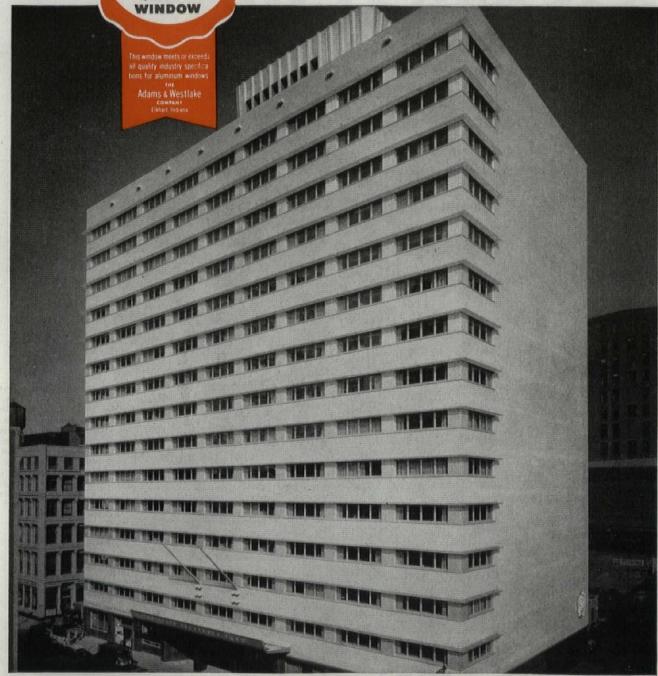
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Another Adlake aluminum window installation



Home Office Building, State Insurance Fund, New York, N.Y. Architects: Lorimer Rich Associates. General Contractor: Cauldwell-Wingate Company.

➤ Minimum air infiltration

> Finger-tip control

> No painting or maintenance

> No warp, rot, rattle, stick or swell

Guaranteed non-metallic weatherstripping

(patented serrated guides on double hung windows)

the Adams & Westlake company ELKHART, INDIANA · New York · Chicago

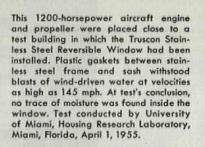
Equipped with Adlake Series 1000 Reversible Window



Established 1857



HURRICANE TESTS PROVE...



TRUSCON STEEL DIVISION
REPUBLIC STEEL CORPORATION
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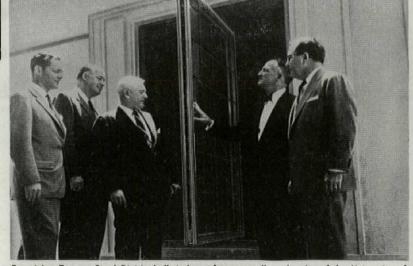


Please send me complete data and specifications describing the Stainless Steel Reversible Window.

Name_____Title____

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Examining Truscon Steel Division's "window of tomorrow" at the site of the University of Miami's Hurricane Test are (left to right) Arvin B. Shaw, III, Harrison & Abramovitz; M. Herschel Parsons, Turner Construction Company; John J. Healy, Harrison & Abramovitz; John W. Galbreath, head of the Galbreath Corporation, Co-owner of the Socony Mobil Building; and C. B. McGehee, Truscon General Manager of Sales.



RUSCON Stainless Steel Reversible Window ositively leakproof in 145 m.p.h. gusts

Not one drop of moisture seeped through Truscon's new inless steel reversible window exposed to hurricane gusts wind and water!

n tests conducted by the University of Miami Housing Rerch Bureau, a 100 mph. blast of wind and water was hurled ectly at the window from close range. Hurricane gust veloces ran as high as 145 mph. The thirty-gallon-per-minute uge of water was equivalent to a normal 4-inch rainfall, leakage.

This ordeal confirmed results of previous tests given by tsburgh Testing Laboratories in which air infiltration was gligible and there was no water leakage.

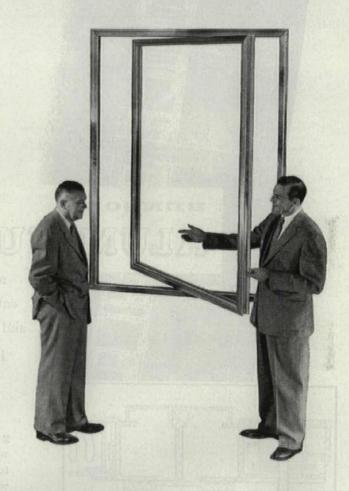
Consider the importance of performance like this in view the shifting nature of hurricane danger zones. The records the three violent hurricanes which swept New York City t year prompted the United States Weather Bureau to warn at the metropolitan area no longer can be considered mune.

Of even greater interest to building owners and tenants is ease with which this free-swinging, fully reversible windown be washed from *inside* to cut cleaning costs by 50%. Both es offer equal weathering characteristics.

In the new window's initial application—in the monumental cony Mobil building—engineers estimate that its tight seal, itch prevents leakage of heated or cooled air, will provide nual savings of \$3.54 per opening as compared with contional frames and sash. More savings!

such positive air and watertight seal is provided by a unique uble gasketing of polyvinyl chloride with a combination of and squeegee weathering section. Gaskets are precisely ed between the stainless steel vent and frame, completely the opening.

n addition, this new Truscon Window is manufactured from public ENDURO Stainless Steel, AISI Type 302. ENDURO ers almost complete immunity to weather effects. It resists



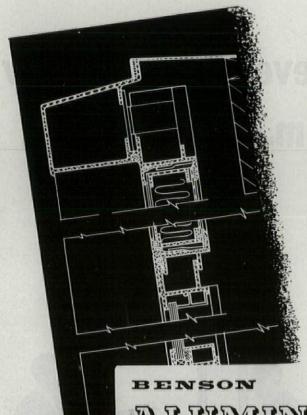
rust and corrosion. It is easy to clean with soap and water, will require no costly steam cleaning, never needs painting. It offers tremendous strength in thin sections that trim bulk and save weight. It keeps its good looks for life. You can't wear ENDURO out.

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Ventilators are of tubular construction 1-13/16 deep with two point weather stripping. Series "T-500" windows are manufactured in standard and custom sizes-Write for catalog . . . Department AF-75.

ERIES T-500

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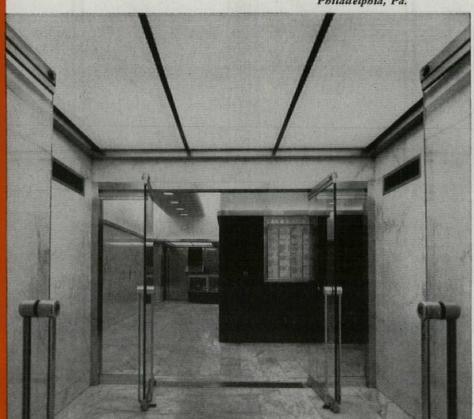
A Subsidiary of Mueller Brass Co., Port Huron, Michigan





Blue Cross Office Building Philadelphia, Pa.

ceilings that radiate light



PITTSBURGH

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This Descender has a capacity of 500 lbs. and was specially designed for window washing service on this five story modern building. It is electrically operated by pushbuttons on the platform for up and down and horizontal movement. When not in use it is moved back out of sight by means of a turn table.

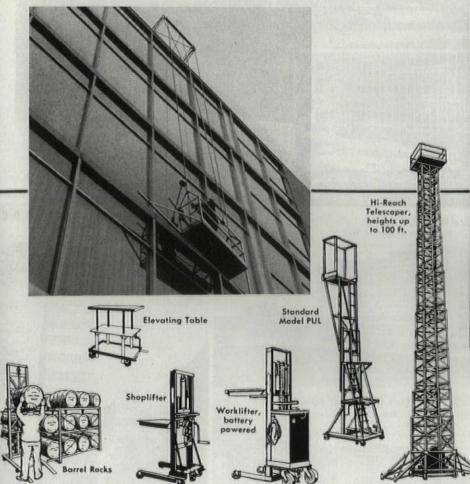
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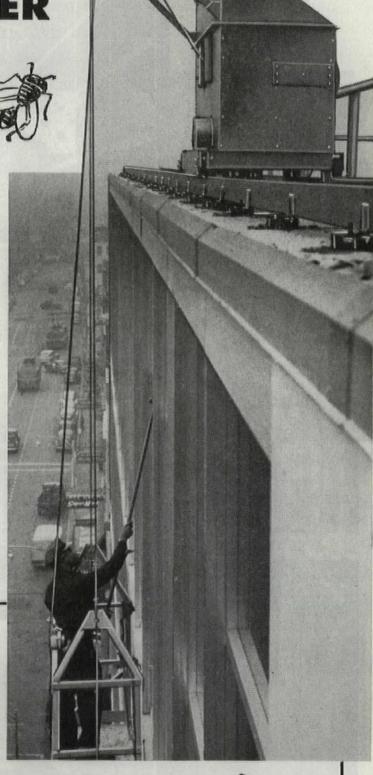
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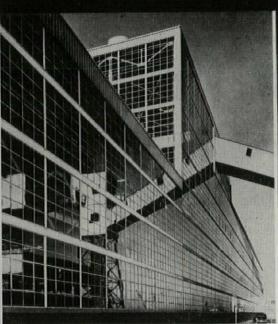
Get the benefit of BAYLEY'S 30 YEARS in CURTAIN WALL designing





















Left: Libbey Owens Ford, Toledo, Ohio Engrs. & Bldrs.—A. Bentley & Son Above: Music Hall, Houston, Texa Archts.—Lloyd & Morgan Bldr.—Fisher Construction Co.

Left: Atlantic National Bank, West Palm Beach, Fla. Archt.-S. L. Shepherd Bldr.-Arnold Construction Co.

> Below: Yellow Cab Co., Cleveland, Ohio Archts.—Weinberg & Teare Bidrs.—Paugh & Brown



Left: Carnegie Institute of Technology, Pittsburgh, Pa. Archts.—Mitchell & Ritchey Bldr.—George H. Chilli

Below: Shapiro Bldg., Washington, D. C. Designed & built by owner



KEEP PACE WITH MODERN TRENDS

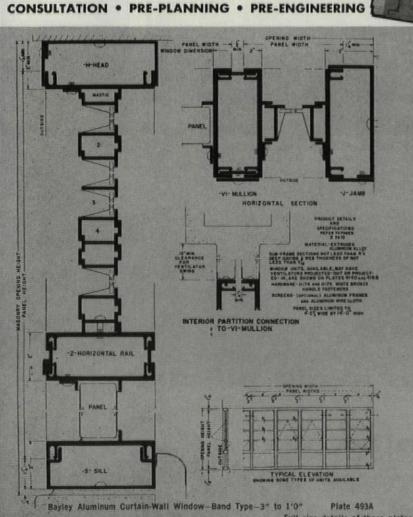


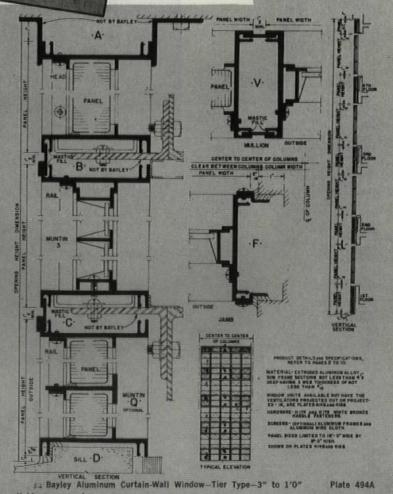
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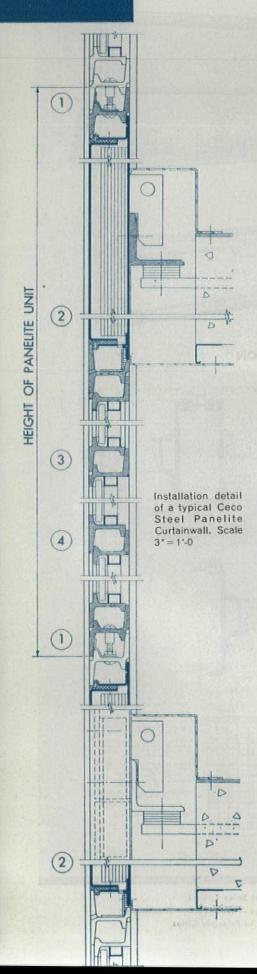
See Bayley's catalogs in Sweet's . . . aluminum windows 16a/Bay; and steel windows 16b/Ba; or ask us for individual reference-file copies. Write for special file on Bayley Curtain Wall Ideas, Designs and Details.

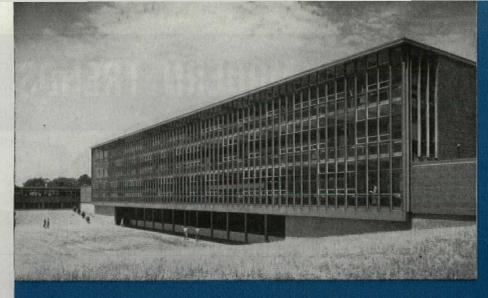
· INSTALLATION



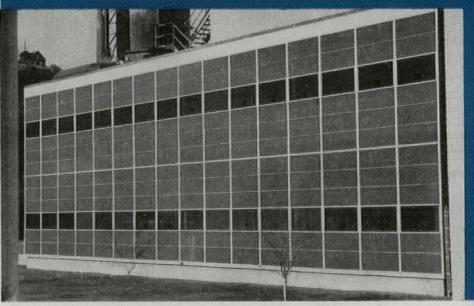


CECO STEEL





Here is another application of curtainwall treatment. Ceco Window Engineers co-operated with architects Perkins & Will in working out an unusual multion treatment.



Curtainwall construction was used at Lever Brothers Research Center, Edgewater, N.J. Here again Ceco Window Engineers worked closely with architects Skidmore, Owings & Merrill in achieving proverbial "window skin" of simple modern beauty.

How to avoid pitfalls in curtainwall window construction



Ceco Window Engineers offer consultation service . . . before design . . . on Panelite Engineering Principles

Never have architects had it so good with texture, pattern and color than in the field of curtainwall construction. Here truly is an architectural form that allows great freedom of design.

But there are practical principles to consider, too. Your nearest Ceco Window Engineer can help you avoid annoying construction headaches, field corrections and overspending. So call him in before the job is planned. Together, you and he can examine window basics-so the installation will flow smoothly and surely to completion. For instancehow is the "skin" to be tied to the skeleton? How are insulating panels to be installed? What about weathertightness? Window-washing? Condensation? You can be sure all construction problems are covered. Ceco understands each architect has his own design ideas-each job is a separate problem. But there are practical ways, based on Ceco Panelite principles, of carrying out your ideas economically and promptly.

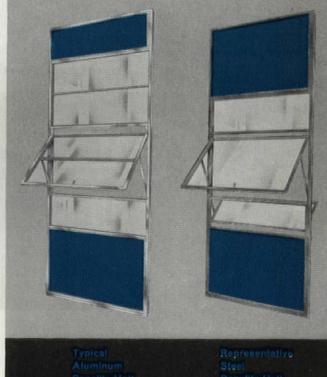
The Ceco Panelite System of Curtainwall construction provides flexibility in panel arrangement, ventilating areas, fixed glass areas, and color for exterior walls. Erection is fast and simple . . . the skin is light and thin . . . square foot floor area costs are reduced because the entire building is lightened . . . usable floor area is increased. So call on Ceco for Panelite service, including bidding information, shop drawings, installation details, insulating panels, windows and erection.

CECO STEEL PRODUCTS CORPORATION

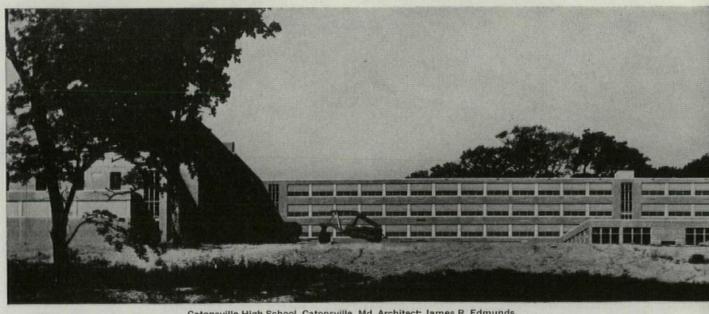
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This typical Ceco Panelite application shows only one of the many effects architects can obtain with Ceco Panelite Curtainwall service. There is simple beauty here, accented by color plus pleasing sight lines which result in a modern open effect.



IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

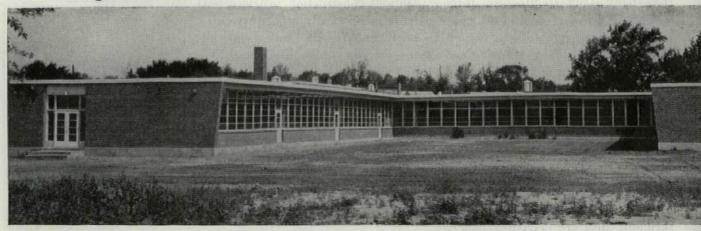


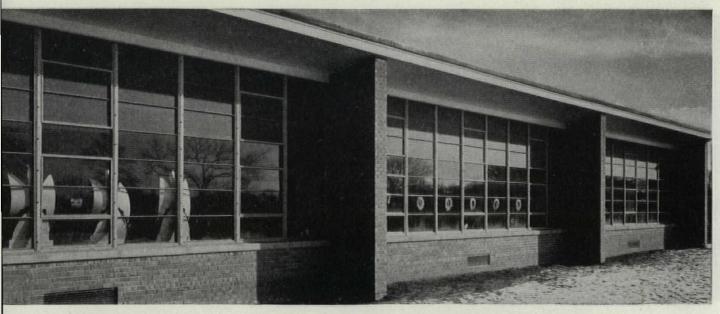
Catonsville High School, Catonsville, Md. Architect: James R. Edmunds
Jr., Baltimore, Md. Contractor: Costanza Construction Co., Baltimore

These deluxe windows give you a lifetime finish that never needs painting...plus the strength of steel!

Pennsylvania

Darby Elementary School, Darby, Pa. Architect: Horace W. Castor, Philadelphia. Contractor: Sidney Elkman, Philadelphia.





Michigan Fairview Elementary School, Lansing, Michigan. Architect: O. J. Munson, Lansing. Contractor: Granger Brothers, Lansing.

RESULT—the lowest lifetime maintenance costs of any windows on the market!

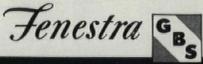
Fenestra* Galvanized-Bonderized Steel Windows are made of solid bar steel sections, for the strongest possible window construction. Steel is noncombustible, and is the most fire-resistant material for windows . . . hardware never pulls off . . . steel offers ideal putty adhesion . . . no glass breakage resulting from expansion and contraction,

And all these wonderful qualities of steel are permanently preserved by an exclusive *double* protective coating. Super Hot-Dip Galvanizing alloys a thick zinc coating with the steel. This is done in Fenestra's own special plant—the only one of its kind in the world. Then a process called Bonderizing adds a nonmetallic coating over the zinc. The result is a handsome silvery-looking finish that protects the windows for life, without painting! And the cost of this modern, durable finish is as little as the cost of two insideoutside field coats of paint. Imagine the year-after-year savings in painting costs alone!





For complete information, contact your local Fenestra representative. He's listed in the yellow pages of your phone book. Or write for our free booklet on Fenestra Super Hot-Dip Galvanizing and Bonderizing. Detroit Steel Products Co., Dept. AF-7, 2296 East Grand Blvd., Detroit 11, Mich.



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— Quinois Monroe Avenue School, Peoria Heights, III. Architect: Lankton & Ziegele, Peoria. Contractor: Mehlenbeck Bros., Peoria.





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Aklo Glass absorbs sun heat as the light passes through—reradiating much of it back outdoors. Aklo Glass in 1/4" thickness shuts out as much as 44% of the sun's radiant energy, and it looks cooler, too.

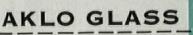
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architectural FORUM

the magazine of building

Men behind the blueprints

in this month's FORUM







CLIENT: Whitelaw Reid, 42-year-old chairman of the board of the New York Herald Tribune, is also president of the newspaper's Fresh Air Fund, which in 78 years has given over 800,000 city children free vacations in summer homes and camps. When the Fund received a \$325,000 gift to build two new camps, Reid felt it could make a real contribution to the camping field by developing something better than the usual boxy camp buildings and tents. Working with Architect Edward Barnes, who had designed Reid's own modern house in suburban New York, and Planner Julian Salomon, consultant to the Girl Scouts, Reid suggested the basic wigwam form that Barnes expressed so freshly in Camp Bliss' family of buildings (p. 134).

BUILDER: Matthew H. McCloskey is not only the biggest builder in Philadelphia but one of the most important men behind the city's booming redevelopment, in which he plays the part of owner and promoter, as well as contractor. Success of the whole Penn Center project (p. 118) hinged on his purchase of a big piece of Pennsylvania Railroad property on which he is now building an 18-story office building (partly for rent to the railroad), an underground bus terminal and a three-story garage. As part of the same deal, McCloskey bought the railroad's suburban station (for lease-back) and its office tower building, which he is reconditioning for rental to others. Also in Penn Center, he is erecting a 1,000-room hotel for Sheraton Corp. and a 500-unit apartment for his own account.

ARCHITECT: Hugh Stubbins Jr., best known as a designer of small houses, has often distinguished himself in other fields-notably in the design of war housing, public housing and schools. He is also one of the designers of the new quiescent Boston Center. His accent betrays his Alabaman background and his mental attitude has been aptly described as the Southern version of a thoughtful, reticent Yankee. (He lives in Massachusetts.) However, Stubbins dropped some of this reticence in developing his beautifully free design for the US legation for Tangier (p. 156). Says he of the design: "We wanted a building that would look as though it was happy in Tangier, but that could still express the US-a building that would not frighten anyone away."

PHILADELPHIA'S REDEVELOPMENT

A PROGRESS REPORT

Once upon a time the general problem of the City Chaotic looked so simple.

Boulevards and civic monuments were going to create the City Beautiful. After that proved insufficient, regional plans were to create the City Sensible. These proved unadoptable and now we are struggling, sometimes it seems at the expense of everything else, to improvise the City Traversible.

And still the deserts of the city have grown and still they are growing, the awful endless blocks, the endless miles of drabness and chaos. A good way to see the problem of the city is to take a bus or streetcar ride, a long ride, through a city you do not know. For in this objective frame of mind, you may stop thinking about the ugliness long enough to think of the work that went into this mess. As a sheer manifestation of energy it is awesome. It says as much about the power and doggedness of life as the leaves of the forest say in spring. Hundreds of thousands of people with hundreds of thousands of plans and purposes built the city and only they will rebuild the city. All else can only be oases in the desert.

Philadelphia is a city, perhaps the only US city thus far, that has looked at this appalling fact and begun to deal with it.

In Philadelphia, a redevelopment area is not a tract slated only—or necessarily primarily—for spectacular replacements. In short, it is not simply to be an oasis. Most certified areas include a great deal of acreage that never will have a magic wand waved suddenly over it. Some of Philadelphia's redevelopment money is to be spent thinly and very, very shrewdly in interstices of these areas to bring out the good that already exists there or play up potentialities. The geographical scope of Philadelphia's certified tracts is shown on p. 121.

The Philadelphia approach also means a busybody concern with what private developers will be up to next: a jump ahead. To keep the desert from spreading interminably, plans and persuasion for thinly settled outer reaches have already been marshaled. Downtown, Penn Center (p. 122) is an example of this approach. By the time the Pennsy decided to remove its tracks and old Broad

St. Station, the planning commission was ready with a suggested scheme (AF, June '52) and through thick and thin it has never let the essentials of the scheme get lost. It has not been easy, but the gain to the city—and the developers—is incalculable.

Whether a new oasis is public or private, Philadelphia's planners look at it not simply as an improvement, but as a catalyst. (For an example, see p. 124.)

Little good can happen to people or to buildings when a sense of neighborhood is missing. Philadelphia's inexpensive devices toward the enormous gain of restoring the neighborhood to the desert may be its greatest contribution to city planning (pp. 126-7). As part of this aim, the city's public housers are not rearing alien institutions unrelated to the surrounding murk, nor are they using public housing as social and economic wall-building to dam off portions of the city. Instead, the projects are being sunk into their neighborhoods, to help rehabilitate, not eviscerate, them.

In this atmosphere of hope for the city, the initiative of private citizens seems to be thriving in the little and in the large. The new food distribution center (p. 125) will not only be a huge improvement in its own right and serve as a two-way catalyst (removing blight from several parts of the city, instituting improvement in another), but it is an unprecedented display of public-spirited, private rebuilding.

What is happening in Philadelphia is of such scope and involves so many people there is no neat and easy explanation for what started it or why. Physical rejuvenation of the city seems to be related to a booming hinterland, dissatisfaction with long do-nothing, a surge of municipal reform and citizen activity, the jolt of the war years.

There is something else you cannot help seeing as you walk about the city or listen to its planners, its architects and its businessmen. Philadelphia's abrupt embrace of the new, after long years of apathy, has by some miracle not meant the usual rejection of whatever is old. When a city can carry on a love affair with its old and its new at once, it has terrific vitality.

The impact of the individual

It remakes
Philadelphia streets . . .



Above is a block of Iseminger St., seven minutes' walk from City Hall; these houses are now being bought up privately for rehabilitation. Below is the next block of Iseminger St., also once a slum, and below that is the back yard of some of its houses. Downtown Philadelphia has dozens upon dozens of reborn blocks. This is an immensely healthy development, worth far more than the street widening and highway bisection which-in ignorance or in ruthlessness - help thwart such upgrading in many cities. For next to a holocaust, the worst fate that can befall a city and all those involved with it is the heart disease of an economic or racial ghetto.





It rejuvenates Philadelphia thinking

Here is Philadelphia Architect Louis I. Kahn, talking about order within the city:

"The order of our city must be the ordering of movement. But movement implies stopping—the objective of movement. The major idea of the center of the city should be places for stopping. Clearings are readable places, orienting places; around them real estate thrives.

"There are degrees of movement too in a city—continuous and staccato. But today zoning does not take in the most important third of the land: the streets. Design of the street is no further advanced than in the day of the horse.

"The street is an architectural problem, as well as a planning problem. With appropriations for streets must come garages which are extensions of the street, part of the street. They are the docks of the traffic rivers. Design of the street and its docks, ramps and levels, distinctions among flowing, staccato and stopping streets would give rise to an architecture of movement just as expressive as Carcassonne's architecture of defense. Within that order buildings could take on any form without destroying the order and readability of the city."

Philadelphia is a long way from becoming Kahn's city of movement, but the seeds of this thinking are germinating and a few of their tender sprouts can even be seen in the pages that follow.

Here is Harry A. Batten, chairman of the board of N.W. Ayer & Son, and a leader in the food distribution center project, talking about the high-powered Greater Philadelphia Movement:

"Benjamin Franklin was a printer who became a diplomat and Alexander Hamilton a bookkeeper who became a statesman. Men of practical affairs who learned how to make their abilities effective on a higher stage had a lot to do with building this country. A good deal of it happened right here in Philadelphia.

"One of the biggest jobs right now for men who have this drive is the job of rebuilding our cities, and that idea has caught hold in Philadelphia. It has nothing to do with the usual city boosting. These are not a bunch of narrow fellows putting on pep talks or out to make a quick buck or protect the status quo. They are educated men who care deeply about the city. For instance, I would say our brilliant crop of younger bankers is giving outstanding leadership. They have everything you don't expect a banker to have unless you are a daughter of a banker."

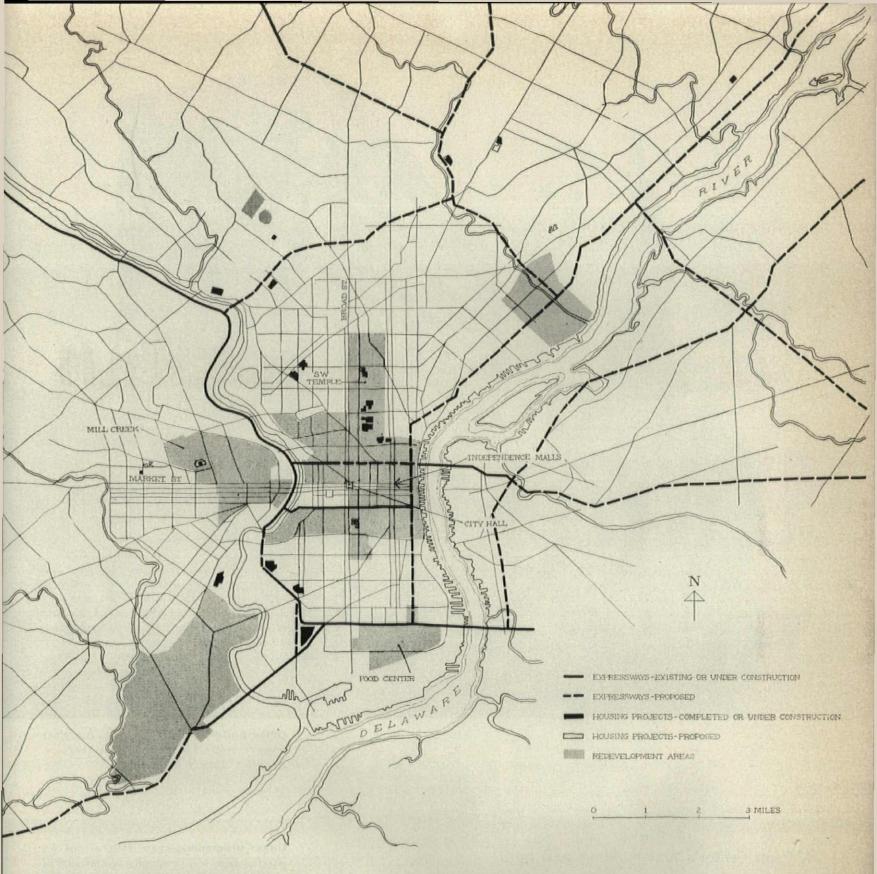
Here is Executive Director Edmund Bacon of the city planning commission, talking about the impetus to planning:

"The first efforts for revitalized planning in Philadelphia came not from the government, but from a small group of young citizens. Finally a group of about 60 organizations petitioned the city council to establish a planning program. From the first moment the commission sat in formal session it was aware that it occupied its place because of the work of citizens' groups. The organizations which worked on the ordinance became a formal Citizens' Council on City Planning, which has since grown to 200 civic organization members. The interaction of this group and independent citizens' groups, supporting or criticizing, have given much of the strength to the planning program.

"The efficiency and order which the planner desires is less important than the preservation of individual democratic liberties and, where the two are in conflict, the demands of the democratic process must prevail."

The scope and quality of Philadelphia's redevelopment are outlined in the samples of its program which follow:

- 1. Breadth of improvement in being, in planning and in study (opposite)
- 2. Penn Center (p. 122)
- 3. Independence malls (p. 124)
- 4. Food distribution center (p. 125)
- 5. Mill Creek redevelopment area (p. 126)
- 6. Southwest Temple redevelopment area (p. 127)



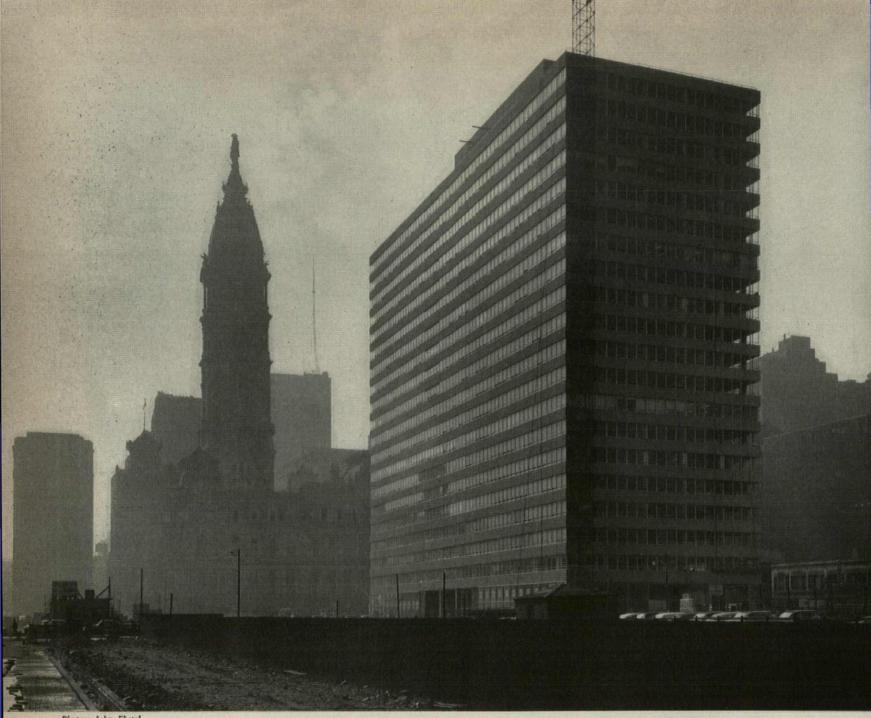
1. Ten thousand acres of change

When Philadelphians talk about a program to transform their city, they mean just that, as a glance at the map shows. Philadelphia, first city to take advantage of the redevelopment law, has now certified a total of 10,524 acres (11 sq. mi.) for redevelopment in 18 major planning tracts. Fourteen of the tracts, with about half the total acreage, form almost one continuous swatch covering the midcity and pushing out to north and west. The midcity "hole" is the well-kept Rittenhouse Square area and part of the main business district. There is no intention that the bulldozers can, or should if they

could, run loose through these great tracts; rehabilitation and catalyst improvements are a very important part of the program.

Expressways (connecting on east and west with the New Jersey and Pennsylvania turnpikes) will have two cross-city extensions; the long-term plan is to line these with parking. Mass surface transit is to connect these extensions with the center of town, thus keeping the city from strangling in its traffic.

Public housing projects, which formerly averaged about 630 units to a project, average about 270 in work under construction or recently completed. In the future many projects will be only 20 to 100 units, with even smaller groups of only a few houses in nearby blocks. Idea: to clear out pockets and edges of blight in larger stable areas, to give leadership in areas with good rehabilitation potential, and to avoid total clearance projects so costly that extremely high densities must result. Philadelphia housers prefer putting only small families in elevator buildings, aim at placing three-to five-bedroom families in two- and three-story row houses with individual yards. This means about one third of units high-rise.



Photos: John Ebstel

Office building is freestanding, has clear lobby from street to promenade on other side. Architect: Emery Roth & Sons.

2. Penn Center's first building goes up

This is Philadelphia's first new office building in more than twenty years. Long after the ephemeral advantage of being the most-upto-date is gone, this building and its future twin will have something that sets them apart: their wonderful seats on the Penn Center promenade.

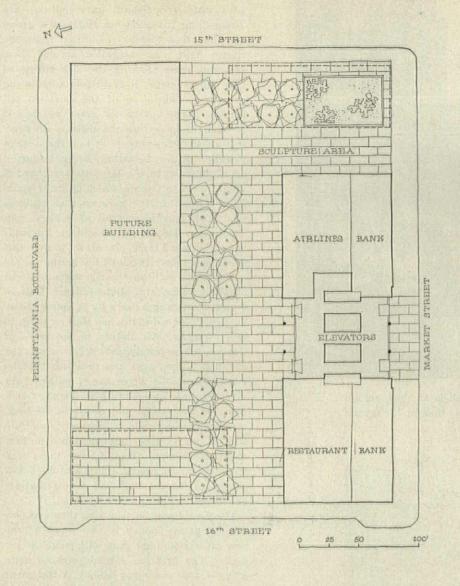
Arrangements are now being worked out with Philadelphia's museums for sculpture pieces on loan, and everyone concerned seems agreed not to do the thing timidly.

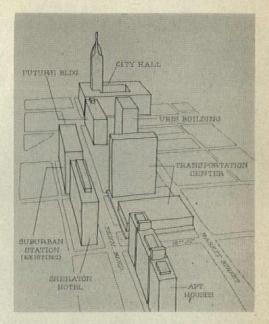
Uris Brothers, owners of the building, have an unusual deal with Pennsylvania Railroad, owners of the land, who have agreed not to permit a competing structure until whatever Uris has is 85% rented. But no matter how fast the first building rents, Uris has until next summer to get first crack at the second office site. Uris leases back to the railroad the underground portions of its structure.

What the general Penn Center plans still lack, and badly need, is some sort of enterprise not strictly workaday. The promenade is a help, but once the office workers are gone, it will sleep. The missing ingredient is something out of the ordinary happening, if only the splash of water, but better yet some focus of entertainment or sport.

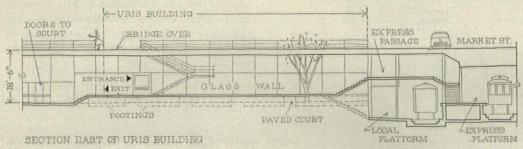
Under promenade space will be used for parking now, will eventually become part of underground shopping center.



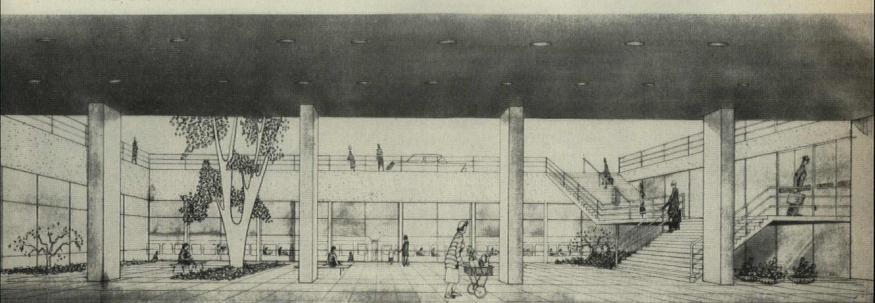


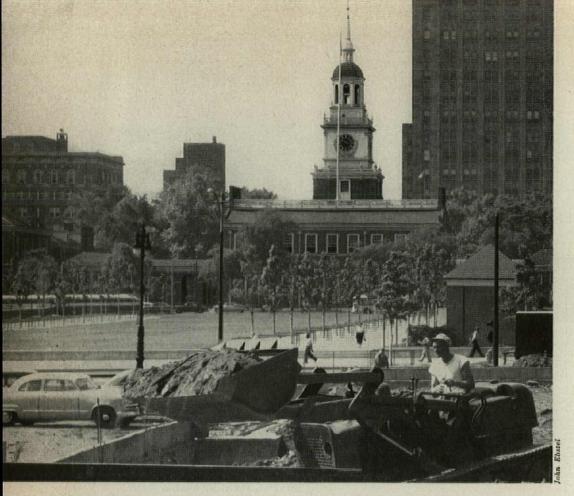


Perspective looking east shows center. Underground, railroad, bus and subway stations will link with underground shopping mall. Sheraton Hotel by Boston Architects Perry, Shaw & Hepburn, Kehoe & Dean, is now under construction. Builder Joseph McCloskey's transportation center (office tower, underground bus terminal, 1,600-car parking garage) and apartment house, both designed by Philadelphia Architect Vincent G. Kling, are now in advanced planning. Use of blocks to east and west of Uris site is still indefinite.

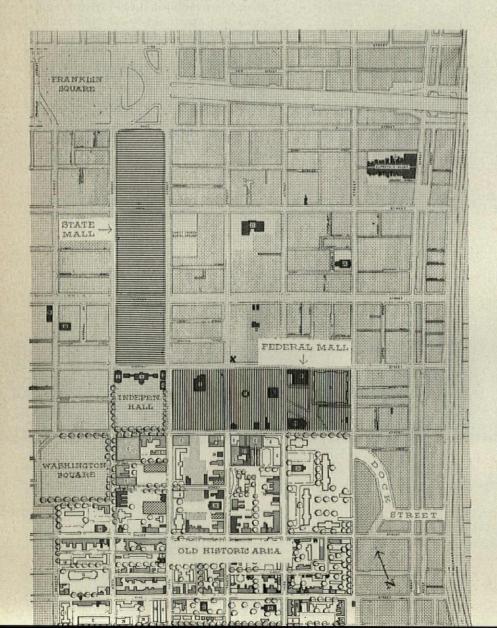


Sunken gardens are eventually to tie in with subway. Court below at 15th St. will be formed by removing knock-out slab. Scheme by Martin, Stewart & Noble.





State mall: first block of 1,950' mall to Independence Hall is finished, second started. Philadelphia City Planning Commission, Harbeson, Hough, Livingston & Larson, consultants; federal mall by Planning Commission.



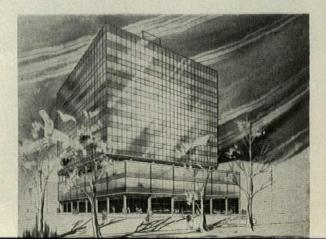
3. History with a future

The new Independence malls (being done with state and federal participation) are disengaging Independence Hall and a group of other fine historic buildings from the clutter that has congealed around them over the years. Among the side effects of this improvement: it is already stimulating private rehabilitation of the rundown but fundamentally lovely old areas nearby; it is building back into the district its prestige as an office center; it ties the district visually to the Delaware River bridge, a main entrance to the city; it is a counterweight to Penn Center, which by itself would likely accelerate the movement of business westward, leaving a trail of more blight. These side effects were no accident; the malls were conceived and placed to propel this whole seedy district out of the gloom.

The state mall has been criticized as out of scale, embalming Independence Hall in its grand distances like a fly in amber. However, mall or no mall, the Hall is a fly in amber-whole, stimulating to the sense of wonder, but infinitely, infinitely remote. The quaintsy lamps, urns and pedestals that irritate the mall's edges are a pathetic try at concealing the joints between then-andnow, but the design that counts is the long, tree-lined vista which acknowledges the Hall is an exhibit that most people first view at 35 mph. Happily for those who stop, the existing park behind and the building-dotted federal mall lend a congenial urban scale.

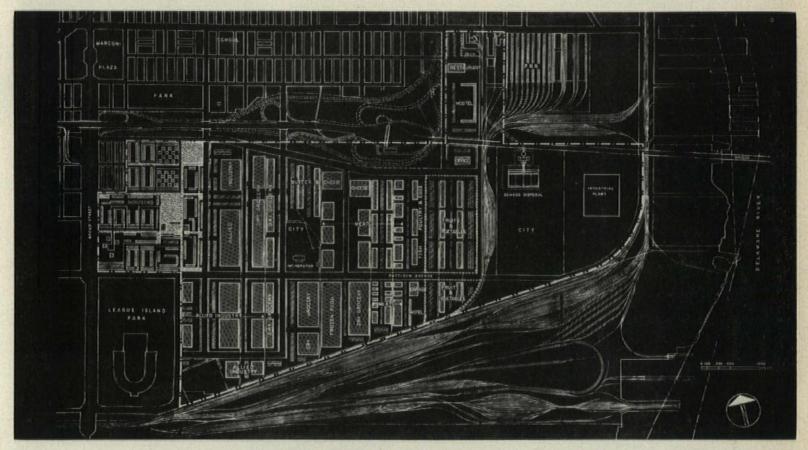
The problem of harmonizing then-and-now without going phoney is also posed by the new office buildings that will focus on the malls. The first has already created quite a hassle (see rendering below). A statement adopted by the Philadelphia AIA sensibly recommends candid contemporary design, tallness with rigid adherence to setback on the mall side, sensitive study of the neighbors and plentiful planting.

Office building by Architect Charles Colbert has mall-side setback and notch. Original elevation, rising nine stories sheer, was submitted just before city ordinance on mall setbacks took effect; art commission turned it down. On map along federal mall, X shows location of building, now under construction. Low spandrels will be gray granite, upper ones aluminum.



Present centers for food wholesaling facilities in Philadelphia are just as inefficient, makeshift and socially deplorable as in most great cities. Scene (at right) is near new Independence malls, in the Dock St. area, a primary blight source.





Food distribution center, undertaken under redevelopment law, integrates all requirements of modern food wholesaling. Consulting architects: the late George Howe, and Robert Montgomery Brown; technical consultants, US Department of Agriculture and Penn State's College of Agriculture. Big rail terminal already exists, has never been used to capacity except once a year during prohibition, when the grape harvest came in and south Philadelphia made grappa.

4. "Finest food distribution center in the world"

That is what Department of Agriculture's marketing experts call this 400-acre, \$35 million project which is to start building within six months and will serve not only the city and a 90-mi. radius but will likely make Philadelphia the major food distributing point on the middle Atlantic Coast.

It will unify and vastly enlarge wholesale facilities now scattered in half a dozen places-most of them crowded, dirty, festering sources of blight and bottlenecking, put them at a transportation hub (see map), provide enough parking and loading so the city's 5,000 independent retailers can shop speedily, competitively and oftener, so suppliers can function in an eight-hour day and so working conditions will attract highgrade labor. Motel, hostel, eating places, 23 acres of planted area, go with it.

Because of what it will do for the old market districts, what it will do for its site (burning dumps and squatters' shacks) and what it will do for the city's economy, this is Philadelphia's most important single improvement.

Why should a step like this be so rare? For one thing, slum markets are like slum housing; there are big profits in them for some people, at the expense of all people. It takes ability to overcome a kicking, scratching opposition, ability to line up wholesalers' support, ability to think big and to finance big.

How Philadelphia got this project is as remarkable as the project itself. It is the baby of the Greater Philadelphia Movement, a small, very high-powered group of nongovernmental Philadelphia leaders, mostly

businessmen and bankers (see p. 120). These men applied themselves to study and action on food wholesaling with the fervor their business ancestors applied to building the railroads or cornering wheat. But observe a startling difference in motives: these new tycoons expect their nonprofit corporation, the Greater Philadelphia Food Distribution Center, to lower distributing costs for the consumer and at the same time pay for itself. And when capital costs are paid off, the whole development will be conveyed to the ownership of the city of Philadelphia which will then pocket the profits. In the meantime, the city should receive about \$1 million a year in property tax and the school district \$800,000. The sponsor's share seems to be the bang they get out of doing something big, and satisfaction in helping the city.

5. How to put the neighborhood back into the city

Mill Creek redevelopment area is a chunk of typical city desert. Building coverage runs as high as 74%, dwelling density as high as 50 units per acre. Nothing gives the whole amorphous mass backbone; block after block is more of the dreary same.

The city planning commission's Mill Creek redevelopment plan, with Louis I. Kahn as consulting architect, contains some wonderfully clever and practical devices for jacking up the district, almost by its own bootstraps.

As Kahn studied the area, he noticed that a good proportion of its few institutions—churches, school, a playground—occurred along one street, although the fact was hardly noticeable, they were so underplayed.

The plan reinforces these institutions with a few additional, and gives them a new kind of Main St., primarily for pedestrians, closed off to vehicles where it runs through new housing, widened and side-planted in other places, joining subsidiary spurs (dark area across lower center in area plan below). "It brings out, instead of burying, the things built by unselfish effort," says Kahn.

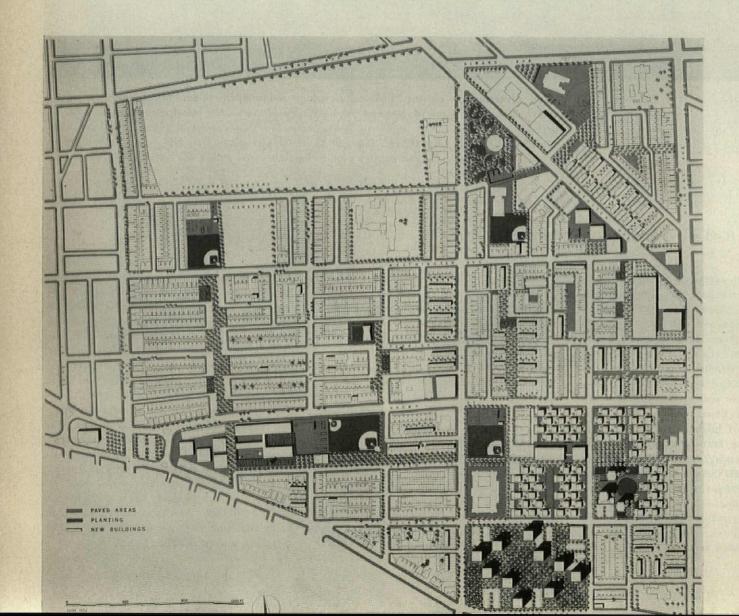
Looking at the old housing, he concluded the worst thing about it was the gridiron streets "which were not nearly so bad in the more peaceful days of the horse when these houses were built." Where cross-streets were sufficiently wide, he has turned the gridiron into loops by inserting a trail of little connected parks and decorative pavings. (See swaths north of greenway.) Within the street loops, he has added parking across from the parks. Both this device and the new greenway or pedestrian main street have been approved, are to be tried.

New housing, mostly in the southeast corner, combines public low cost and private middle-income projects. Tall buildings are ingeniously sited so they do not confront each other. Circles, some containing sand, some grass, some paving, are the basic landscaping unit and path-determiners. "It puts the shortcuts into the paths in the first place."

Mill Creek's new housing, particularly its mixture of high, low and differing-income projects and its tall-building siting, have already influenced planning in other cities, notably in Detroit (AF, March '55).



High-rise building in public housing project is one of three nearing completion, along with surrounding two- and three-story buildings. Balconies double as windbracing for structural concrete T's. Louis I. Kahn, Louis E. McAllister and Kenneth Day, associated architects.



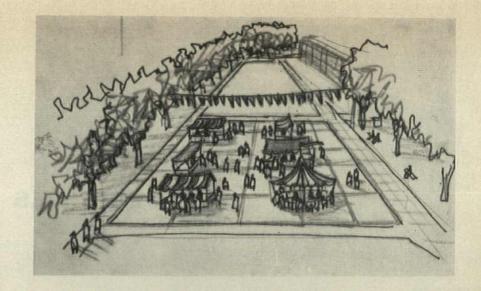
6. . . . and unify new buildings

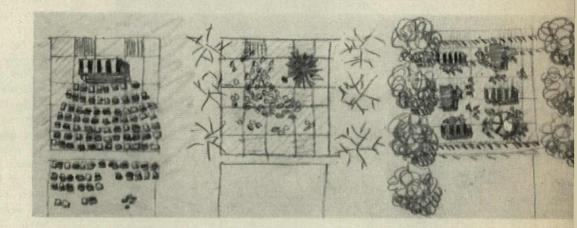
Out of the greenway device as a neighborhood unifier for Mill Creek, the city planning commission has evolved a new basic principle for its area planning: the greenway as a unifier of new projects, as a unifier of time, as a unifier of scale.

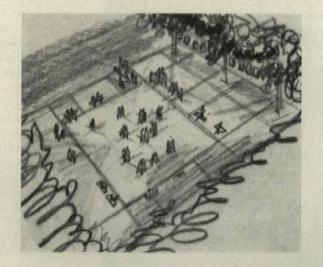
This greenway is conceived as a strong, clear system of grove-shaded walk, patterned and textured pavements, little open squares and vistas. The vistas focus mainly on the older significant institutions and the landmarks of the neighborhood, creating a sense of depth in time. Commonly these institutions are visually overpowered and lost behind new construction.

Curiously, the problem of unifying a variety of new projects by different architects is an even more difficult problem than reconciling old and new. It takes defter coordination than most humans are capable of to steer between disharmony and monotony. Nor is giving a large area over to one architect usually satisfactory; without the variety of differing minds and viewpoints, urban scale and texture are sacrificed.

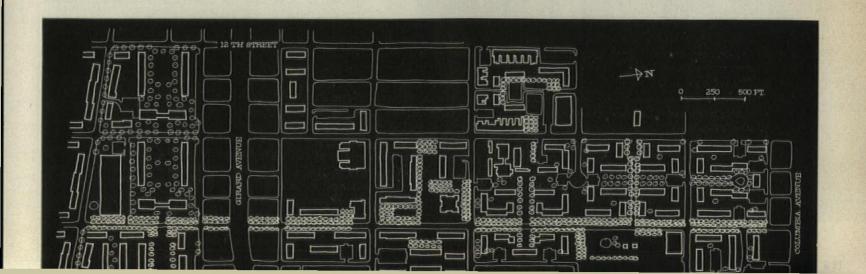
Planning Director Ed Bacon thinks that the new greenway device will go far toward solving this problem by making most of the problem disappear. The orderly system of outdoor spaces, related to siting of tall, low or bulky structures, will relieve building design from the job of imposing most of the large-scale order. He thinks the variety resulting from greater design freedom will in itself be a vast gain to area planning.







Sketches by planning commission show gala uses to which little greenway squares could be put. These doings are all set in the commission's southwest Temple redevelopment area, shown in plan (below). The dancing at left is occurring in the oblong clearing within the grove at about the center of the area. The other scenes are all of the open spaces related to the tall and massive building near the area center and to the row house at its rear.



MIT DEDICATES NEW AUDITORIUM



Even before the new auditorium at Massachusetts Institute of Technology was dedicated May 16, the huge spinnaker of shell concrete had been drawing heavy comment pro and con. The intensity of reaction verifies the obvious visual importance of this structure (previewed in FORUM, Jan. '53).

This is the first of the large shell structures of a sophisticated architectural character to be completed in the US; spanning 155', its 1,500 tons rest on three buttresses with no interior vertical supports. It sits on a grassed terrace, across Massachusetts Ave. from the main MIT building, also topped with a dome. This terrace (not paved as originally planned) will act as a sort of front yard for MIT's Massachusetts Ave. side when the avenue gets suppressed at some future date and derelict stores and apartments now standing on the avenue are razed, revealing the dome and the cylindrical brick chapel, still under construction. Both are by Architect Eero Saarinen & Associates.

At its thinnest the concrete shell is only 3½" thick (8" including roof cladding); nearer the edge the shell thickens to 20". Inside is a large auditorium, corrected acoustically with hung "clouds" of reflecting and absorbing materials. Below this is a smaller auditorium.

The shell shape is one eighth of a sphere. Interior partitions are separated from the surface of the dome by as much as 4", this space between being filled by rubber gaskets; steel window frames also are joined to the dome by slip joints to permit some movement. This flexibility is necessary because of the varying rates of expansion and contraction in different parts of the dome, depending on weather and sun position.

As an important event, perhaps even a pivotal one, in US architecture today the MIT dome deserves thorough study. It is a deliberate reach for shape, beyond the definition of function. Agreeing with the architects and the university that present photographs, however dramatic, do not really tell the story of this structure and its chapel companion, FORUM will defer publication until it is possible to present a thoroughly rounded report later in the year.

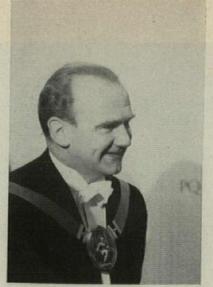
Glass walls of auditorium building (left) are arched and curved, reflecting in daylight, revealing at night. Note electric lights hung from arch.

Lobby of three-cornered building (right) displays model of concrete shell structure in foreground. Brick paving of building's pedestal is continued inside as lobby floor.



EXCERPTS

Opinion and comment
on the building industry
from the rostrum
and the press



Sam Lambert

Problems of modernists

Excerpts from a recent address by the new president of London's Architectural Assn., Peter Shepheard

It always astonishes me to think how many architects in the past hundred years, on getting some hapless client into their clutches, have managed to sell him a miniature Palazzo Strozzi, or the top half of a château of the Loire, when all the poor man wanted was a bank or a pub. We laugh at that, of course-although it's not so funny if you live or work in one of them. But let's keep a laugh or two up our sleeve for our contemporary scene, and some pity for the client of today who may be landed with something much less solid but little less inconvenient, in the form of an abstract design of welded steel and glass, or a block of flats raised on stilts, not because they fit the case, as they often do, but because the architect was so sensitive about his building that he couldn't bear the thought of it touching the ground-buildings, in other words, in which some of the technical discoveries of the modern movement are used not as basic elements solving problems for which they were invented but as an embellishment, a symbol of newness and nonexistent daring, just as the banker's columns were symbols of age and nonexistent stability. The old fancy dress did much damage to architecture and to the reputation of architects; we must not allow a new fancy dress to make modern architecture look as silly also.

Everything depends on the architect reestablishing his reputation as a practical man, with practical solutions to offer to contemporary problems. Every time you build a flat, you condemn some family to live in it, some child to grow up in it; that view is what you put there; you rationed their space, their sunshine, their privacy. Often too nowadays your buildings are commissioned by a mass-client—flats or schools, for example, built by a local authority but inhabited or used by people who have little or no contact with the architect; so that it is not their own choice which condemns them to be housed by you but the luck of the

draw. One should never forget that the users of the building are the real clients.

The biggest dangers to the modern movement, which has for years been coming nearer and nearer to the rediscovery of the basic principles of architecture, are formalisms of one sort or another, which ask us to force our buildings into this shape or that, instead of growing, as conceptions of the mind's eye, into shapes of their own. Formalistic conceptions are to the architect what sentimentalism is to the writer. Pritchett defines a sentimentalist as one who has the idea of the feeling before the feeling; a formalist is one who has the idea of the building before the building. It seems to me to be all one whether this preconceived idea is Florentine or Georgian, or a glass-walled slab; if it prevents the building from fulfilling any one of its functions, it prevents architecture from happening.

If the architectural schools fall down at all, it is not on practical training but on too vague teaching of theory. Perhaps there is something in our schools which encourages too much the desire to do something new, as opposed to better, than before. This may be a personal feeling of mine based on the idea that modern architecture has now arrived at a point where it is more important to refine and humanize than to innovate. A good deal of crudity, of lack of careful detailing, mars many good modern buildings; almost, one gets the impression that some architects consider it slightly sissy to fret too much about the profile of a sill or the thickness of a window bar, or the exact size of the beams and columns, drips and eaves on which the whole tautness and scale of the building depends. What modern architecture now needs can only be provided by a patient study of the effects of light on textures and forms. Even a brutal building needs to be detailed.

I think it is important to impress on a student at an early age the central difficulty of architecture, which is the long haul to the finish. The first broad conception is vital to the result, but so is the last fraction of an inch on every window. Any of us can spend an hour or two with paper and pencil to create some passable ideas; but how rare is the temperament of the true architect, which through the whole process of drawings and quantities and contracting and subcontracting always keeps that calm excitement which ensures that the same feeling informs the execution of every smallest detail. No other artist has to keep his fires banked for so long a period; and far more of us fail in this direction than in any other single respect.

Opinions expressed in these excerpts are not necessarily those of the FORUM's editors

Little red schoolhouse

Excerpts from an editorial by Ian C. MacCallum in the monthly report of Baltimore's AIA Chapter

There is not an architect among us who would refuse a commission to do one of those lovely big emporiums of learning so dear to the educationists. Most of us, when we have designed one of them and can sit back and take the plaudits for doing so, feel secure in the contemporary cliché that we architects have again anticipated the needs of society somewhat ahead of those needs. The others of us feel equally secure in the older cliché that we, as architects, have again reflected and interpreted the mores of our society.

None of us who do schools seems to have considered it possible that, if the current rage for creating large and centralized schools proves to be an error (as the taxpayer is beginning to suspect), the architect may be damned along with the schoolmen for blissfully furthering that error.

It could be that a return to the fundamentals of the little red schoolhouse is the proper answer to the problems of school building. The error may well lie in the expensive palace with its ubiquitous school bus (a nuisance on the highways), with its teacher difficulty, with its detachment from the home unit and its growing differences in character therefrom, with its swollen tax bills, with the questionable standard of learning found in its end products, with an as-yet unvoiced question of whether juvenile delinquency can best be combated in overgrown student bodies.

The medical profession is seriously discussing a return to the country doctor who would, of course, drive six or eight cylinders and not a buggy and who would have advantage of full technical training with full recourse to medical centers and to a rash of clinics-but who would again be a family doctor. Is there an idea here for both architect and school administrator?

Perhaps we should, as architects, wonder a little at whether the kind of buildings we

Ward Foto



are building as schools are really the solution to the school question. It seems odd that so many small new factories look more like schools than the schools themselves do. Perhaps we could be of more help than we now are to the superintendent who never quite gets a budget large enough to build the fanatic educationist's cake.

This product of an earlier era respectfully submits that a lot of one-story, basically frame schools shorn of auditoria, gymnasia, cafeterias and other "adjunct facilities" may be worth talking about. Placed within a few miles of each other, with their buses cut off, their teachers housed close to the nearest public transportation route to town but close enough physically to their pupils' mothers as to again be a team with them, such schools might be brought down in scale and material to a point at which the difference between school and home would not be so shocking.

Perhaps we, architects, would not make as much in fees-but, I wonder.

Village Photo Studio

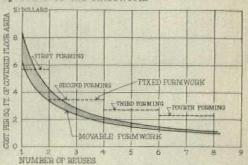


Shell concrete costs

Excerpts from an address by Ed Cohen of Ammann & Whitney, consulting engineers, before the 1955 annual convention of the Michigan AIA

Shell concrete structures have demonstrated their economy time and time again, both by comparative estimates against other materials and types of construction and by actual alternate bid proposals. Concrete, the material usually used in shell construction, is essentially a cheap material to buy and handle. The greatest parts of the cost are involved in the formwork and in the equipment needed to handle the concrete from the point of supply to the point of use. This distribution of cost is opposite to that for wood and steel construction, where the delivered material costs are high and the erection costs are low. To take advantage

of both the low material cost and low placement cost of concrete, it is necessary to reduce form and equipment cost. Formwork costs can be reduced by roof shapes permitting the use of small sectors of formwork which can be used a number of times. Decreasing the size of each pour not only reduces the initial formwork cost, but also permits greater reuse of this form. Equipment unit costs can also be reduced by scheduling the operations to keep the equipment in continuous use. This graph indicates the rather obvious advantage gained by reuse of the falsework.



Major shell structures composed of single units such as domes, hyperbolic-parabloids and connoids, which must be formed in their entirety, lose the economies gained by reuse. However, even for these shapes the surfaces of revolution can often be broken into sectors which can be poured separately and the total costs consequently greatly reduced. For example let us compare the estimates for a full prestressed dome and a modified ribbed dome for the new Dallas auditorium (the latter was built). The cost of the modified dome was \$2.90 per sq. ft., whereas the full prestressed dome would have cost about \$6.20 per sq. ft. Since the cost of materials was about \$1.90 in both cases, the difference, \$3.30 per sq. ft., was due entirely to the lower average cost of formwork resulting from the eight reuses for the dome and 16 reuses for the cantilever frames.

Cylindrical short barrel arch shell construction becomes very inexpensive when poured one or two bays at a time in buildings of reasonable length.

In general, depending on size and span, present-day prices for shells may be expected to run from \$5 to \$8 psf where the formwork can be used only once to \$2 to \$3 where the formwork can be used six or more times.

Where formwork can be reused several times, shell construction can provide long, clear spans at a very nominal cost and the span can increase greatly without adding materially to the total cost of the building.

continued on p. 188

FRANK LLOYD WRIGHT

designs a small commercial installation: a showroom in New York for sport cars

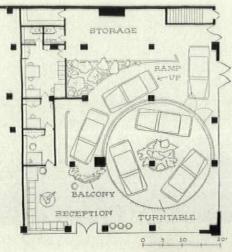


Photos: @ Ezra Staller

Turntable parades cars around brightly lighted island

The architect accomplished two things in this showroom for Porsche and BMW cars: first, he colored it warmly (see opp. p.) and gave it surfaces which contrast and complement the steely shine of the beautifully detailed, but unrelenting industrial products. (The Porsche was designed in a wind tunnel, not a style room.)

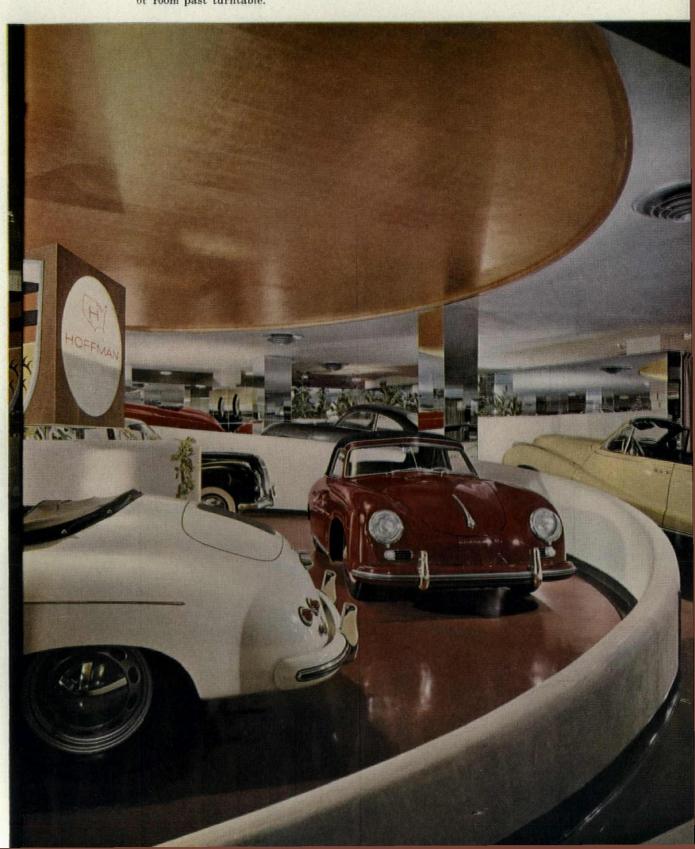
Second, he made the cars move. You cannot walk among these cars easily. First you stand and watch them go by you on a large turntable, each presenting itself for brief inspection. (The customers' instinct is not to venture up onstage unless invited by a salesman.) Then you mount a steep ramp where the cars are arranged in line, to be seen again one by one. Emphasizing circulation for cars, not people, the room appropriately has the atmosphere of a garage, congested but flattering to the cars.



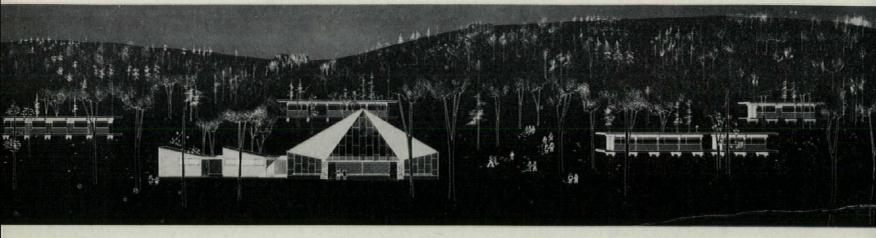


Ramp view down. Manufacturers of autos and architect share some theories about structure: the Porsche is not built on rigid steel bar frame, as most cars are, but is continuously stressed membrane structure somewhat like Wright's original Guggenheim Museum design.

Ramp continues dynamic effect, rising steeply to rear of room past turntable.



INFIRMARY CAMP STAFF



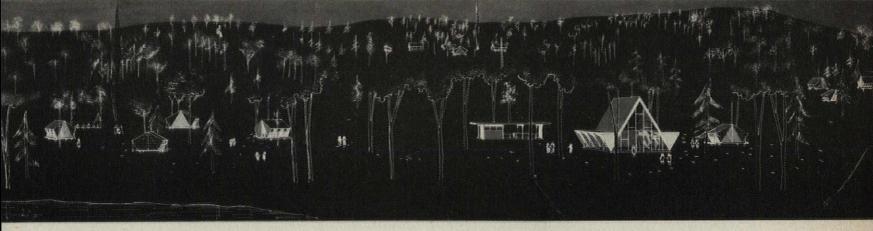
SERVICE STAFF

DINING HALL

DIRECTOR'S HOUSE AND OFFICE

ARCHITECTURE





CAMPSTEAD WITH COOKING SHELTER

VILLAGE HALL

GOES CAMPING

Gay tentlike buildings are widely dispersed in little villages among the trees

CAMP BLISS, FISHKIll, N. Y.
HERALD TRIBUNE FRESH AIR FUND
DONORS:

William Sharpe, MD (land); Little
Mothers Aid Association of New York, will
of Anita Bliss (sitework and buildings)
ARCHITECT: Edward Larrabee Barnes
CAMP PLANNER: Julian H. Salomon
ENGINEERS: Farkas & Barron (structural)
John J. Baffa (water and sewage)
CONTRACTOR: E. W. Howell Co.

Like many children swallowed up by our cities, the tenement kids of New York have never lived in the woods. To them, woods can be a wonderful, but often scary, place.

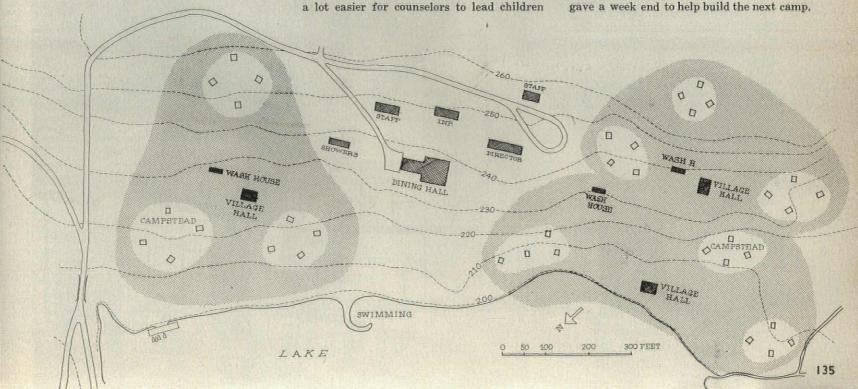
The great achievement of this camp, built for poor city girls by a voluntary fund, is that it makes the wilderness appealing. Its program of intimate groups, like the Girl Scout camps, is well in advance of most camp practice. Its architecture is even further ahead, and might well be studied by any camp or park department.

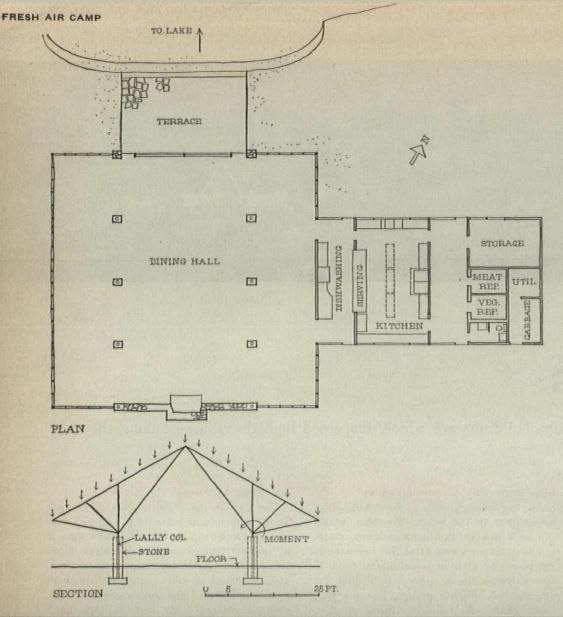
There are no barracks, no quaint log cabins or fancy stone buildings that shut out the view and breeze. There are none of the city's walls and ceilings, streets and street lights. Instead, there is a family of friendly wigwams scattered along a lake. This imaginative minimum of building suggests that camping is fun, which makes it

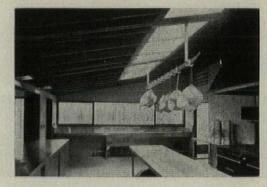
toward broader social objectives.

The layout, by Veteran Camp Planner Julian Salomon, is actually a series of concentric circles (plan below). Basic unit is a "family" tent of only four children. Four tents, including one for counselors (deliberately kept out of kids' tents) are clustered as a "campstead," and three campsteads are grouped around their own "village hall" and wash house. Three such villages, and three more behind them in a new camp, focus on community buildings. At the center, like a village church, the dining hall rises up and opens toward the lake.

Architect Ed Barnes took a vacation himself (from designing modern houses), got out into the woods and made them look like fun with a handful of fresh primitive shapes. Also caught up in the spirit was a small battalion of Naval Reserve Seabees, who gave a week end to help build the next camp.





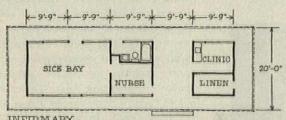


Kitchen wing, divided into four zones, has good circulation, toplight, cross-breeze.

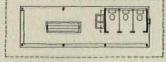
Dining hall, seating 144 in family tables of eight, is broken into 14' square bays by interior columns against which handy serving tables are placed. Ingenious tilted Atrusses free the tall space of tie rods and clutter, come together with a fine knifesharp edge, leave a glass gable end that gives a glimpse of trees up high as well as all around. Side-wall screens are staggered in plan for easy construction and demountability. Pipe columns in the stone piers take uplift and lateral pressures from the wind. Common lumber, exposed throughout the camp, is stained a coffee color that blends with the forest, covers checks and knots. Total cost of roof came to \$6,787.



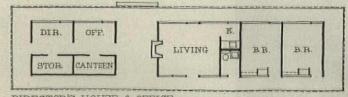




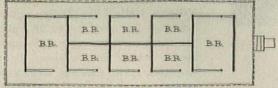
INFIRMARY



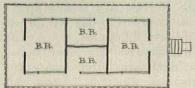
WASH HOUSE



DIRECTOR'S HOUSE & OFFICE



SERVICE STAFF



CAMP STAFF

Service buildings, contrasting with the children's wigwam shapes, borrow the coolness and adult practicality of a Japanese house. Infirmary (above) and others shown in plans (left) are multiples of a 9'-9" x 12'-10" bay, using standard lumberyard lengths. Post-and-beam construction and verandas instead of dark inside halls leave plans flexible for rearrangement. Roof overhangs shelter big windows, divided into screens with canvas weather curtains behind, smaller glass sections for all-weather light and view.



Wash house and toilets for each village are combined in a simple structure. Below: central shower house and bathrooms.

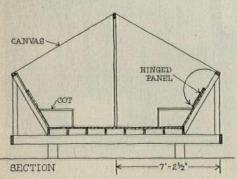


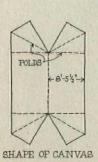




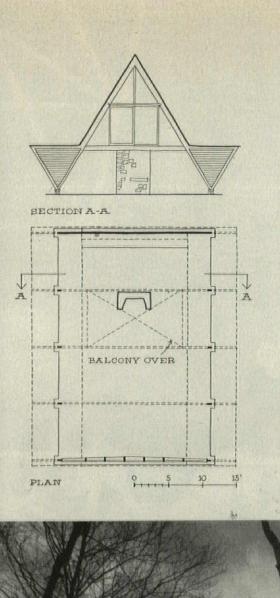
Campsteads consist of four tents grouped in a wide, informal circle. Children live four to a tent, near an identical fourth tent occupied by two counselors and a trainee who camp with the children during their two-week vacations. A canvas strung over a pole nearby forms a cook shelter where the group prepares breakfast and some of its other meals, planned together and purchased from the camp's "trading post." The standard sleeping tent developed by Barnes is an ingenious frame requiring only a cheap tarpaulin, not an expensive tent, to cover (see pattern, below). Pipe-frame cots attached to the sides are removable for winter. Hinged red and blue plywood side panels can be left down (as back rests) or closed up (as cozy shelter). Children's heads are well in under the roof overhang and at least 10' apart, making for better sleep and less chance of spreading colds. The canvas is up out of harm's way, can be closed tight over the tent's ends. In any quantity, complete tent units can be built with union labor for about \$400 each.







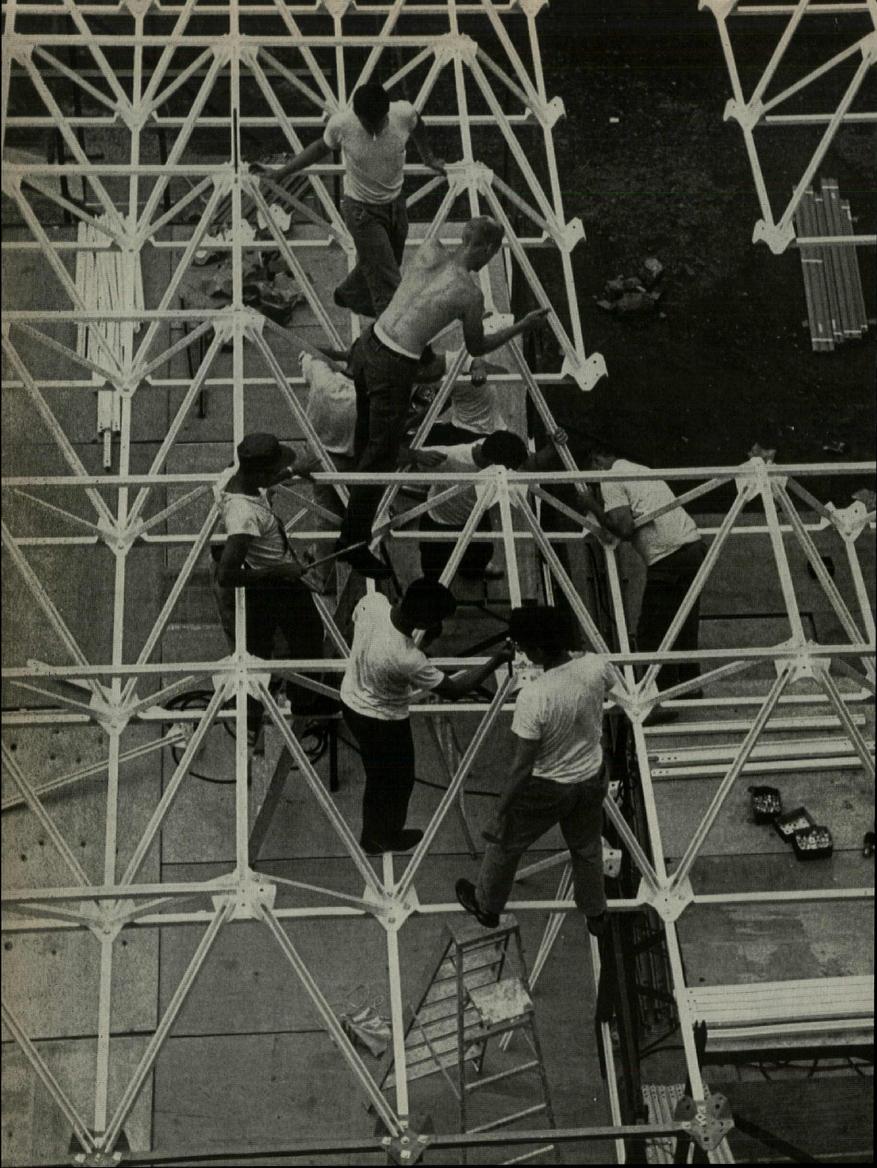
Village halls, like Indian council tents, are used for meetings by 36 children from the three surrounding campsteads. Big airy rooms, which can be closed by roll-down canvases, invite dancing, singing and storytelling around the fire. Concrete floors are well suited to special activities and games, can be swept out or washed down. Back of the fireplace is a smaller area for crafts, and above is a storage loft for tent canvases and cots. Village hall at top of page (opposite) opens sideways toward the lake; version at right turns a full gable end of glass in the same direction. To some children, this profile might look like a paper soldier's hat.

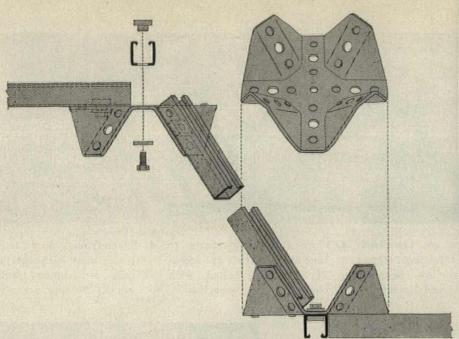














DEMOUNTABLE SPACE FRAME

At the University of Michigan, the law professors bring their students over to the College of Architecture and Design to look at the new "research building" and ponder its implications. While it has all the durability that goes with permanence, it can be taken apart and all its parts reused, leaving behind no more than would fill a child's cart. Moreover, it floats on the ground like a raft. No foundation is dug. Is it real estate? Being insecured to the ground and reusable, can it be financed with a chattel mortgage? Is there a future ahead for some school builder, for instance, who will erect, service (and possibly finance), expand, contract and move such structures?

The demountable space frame is the newest development in the Unistrut structural system, and is an outgrowth of a prototype school (AF, Nov. '51) which, like this building, was designed under the direction of C. Theodore Larson, professor of architecture at Michigan.* In the early school, the steel roof members were welded into trusses, which froze width and reduced salvage value.

The most ingenious thing about the new space frame (apart from the basic idea of demountability) is the connecting plate (pictured above) and specifically the inverted lugs on the connecting plate. The "simple" device of turning one lug in, one out, permits diagonal members to attach on either the inside or outside plate face, or two

parallel members to attach when extra strength is needed.

The frame can sustain imposed loads of 60 lb. psf on a column spacing of 41'. Larson thinks the column spacing can be extended to as much as 54'. Incidentally, during the testing, a hitherto theoretical property of space frames was empirically confirmed; no one part will give until after every member has reached its elastic limit.

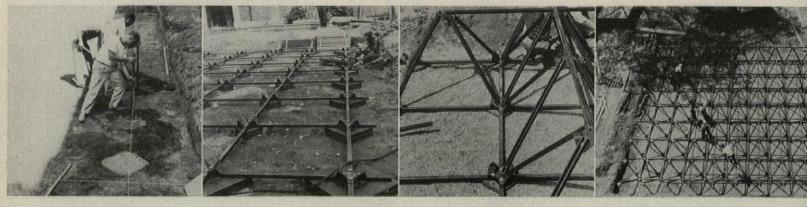
The research building sits on one space frame, is roofed with another. The footings merely rest on the ground (like the old Cape Cod cottages which were also braced frame construction). The roof is supported by the front and rear walls and the outdoor columns.

This building is an example of a highly important general trend: construction as one part of the production line process. For instance, Larson says he and his colleagues were mistaken in specifying special wall members to carry especially thin curtain components (i.e. glass or sash); savings in steel were more than offset by the added cost of nonuniformity. "Any saving in materials must be balanced against the way it affects manufacturing, distribution, warehousing or just finding the part on the job."

The building and the lessons it taught (see especially p. 146) are a vivid demonstration of the value of building research in the field as handmaiden to product research in the factory. And as for Manufacturer Atwood's intelligence in choosing bright architectural minds to work on his product instead of entrusting it wholly to the usual production men, the pictures say all that need be said except perhaps this: Larson and his associates avoided like the plague any device that would tend to freeze the architect's design freedom in using the components.

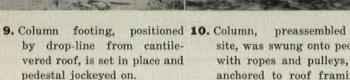
^{*}Other Michigan faculty involved: Francesco Della Sala and Charles Pearman, space-frame concept, suggested by Dean Wells I. Bennett; Floyd N. Calhoon, heating; Hampstead S. Bull and Walter A. Hedrich, lighting; Lindsey M. Hobbs, plastic panels; Walter B. Sanders, architectural consultant; Richard H. Blackwell, ceiling lighting; Richard M. Hamme, acoustics; Robert O. Geetz, soil mechanics; Paul H. Coy and Leo M. Legatski, space-frame testing. Research-sponsored and framing materials contributed by Charles Attwood, Unistrut inventor and manufacturer, and, incidentally, an architect in his own right.

FRAMING THE BUILDING, STEP BY STEP



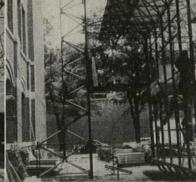
- 1. Ground is leveled and tamped to "float" precast concrete footings. (For improved method, see p. 147).
- 2. Lower struts are assembled 3. Floor framework starts to 4. Space-frame floor directly on footings. Once started, structure becomes self-aligning; and leveling.
 - take shape. Struts are speedilv, securely bolted with electric impact wrenches.
- plete; most horizontal diagonals to support asbestos cement flooring are also in.



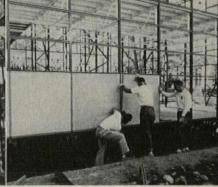




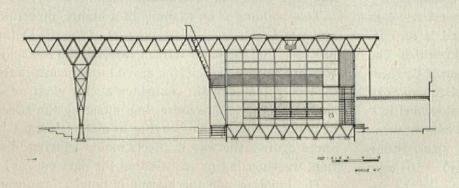
site, was swung onto pedestal with ropes and pulleys, then anchored to roof framing.

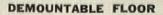


on 11. Hoist, built from space-12. Insulated wall panels are frame members, equipped with motor and platform, carries cement panels to roof.



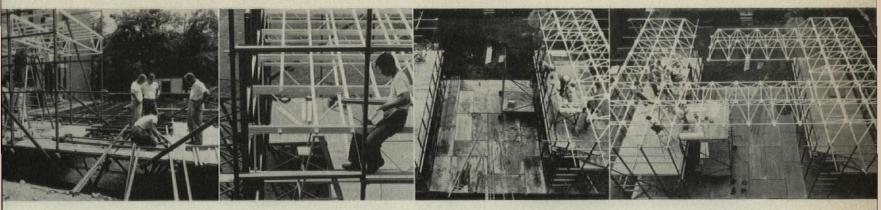
secured with snap-in battens. Rigid space-frame forces wall studs into alignment.



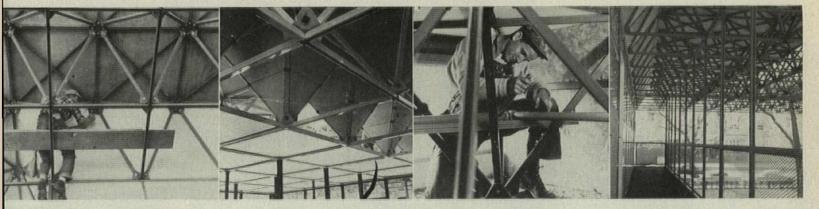




Sub and finish flooring are both installed as panels. Asphalt-felt (automobile body sound deadener) goes over bottom asbestos cement panel. Finish tiling is cemented to thin upper asbestos cement panel, screwed down at corners.

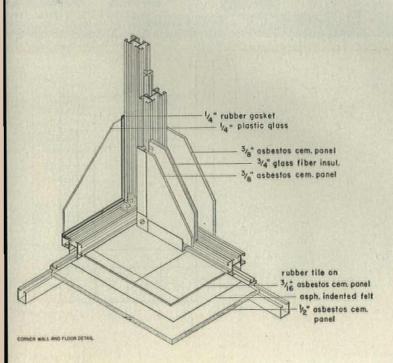


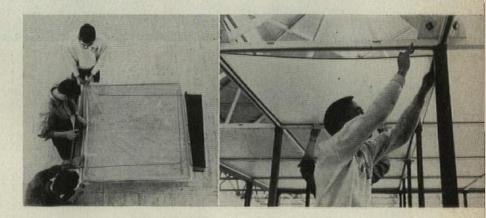
- 5. Horizontal wall braces are attached before studs go up; studs fasten to floor frame. Temporary floor is plywood.
- wall studs, form mezzzanine. Members are factor; -painted white for light reflection.
- 6. Bolted trusses, attached to 7. Roof framework is started 8. Space-frame projection from above mezzanines. Spaceframe plate connectors attach to tops of wall studs.
- north mezzanine is joined to south, and second projection is on its way.



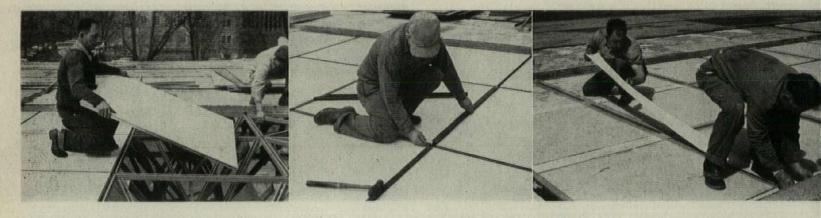
- 13. Triangular polyester glass- 14. To form acoustic resonator 15. Plumber, crouching in floor 16. Completed structure, as seen fiber cornice panels, made by architectural students, are set into cornice.
 - units, glass-fiber panels are hung in space-frame. Plastic ceiling is well along.
- framing, is connecting plastic water pipe to hose bibb. Frame has insulated skirt.
- from mezzanine-height exterior bridge of grating, suspended from roof frame.

THROW-AWAY CEILING





Luminous ceiling is thin shower-curtain vinyl film. At 3¢ a sq. ft. it can be thrown away instead of cleaned. Colors and patterns can be freely used because you can change ceilings as you change hats. Film is stretched over frame, held taut with side and corner rods that slip into frame, and excess film is then trimmed off. Frame simply rests on space-frame connector plates. White film was used throughout. It does not look flimsy or "temporary." After a winter's service it has pleasant appearance of flawless, translucent solidity.

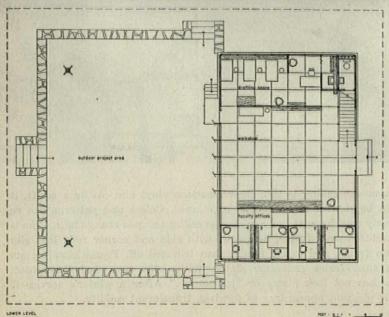


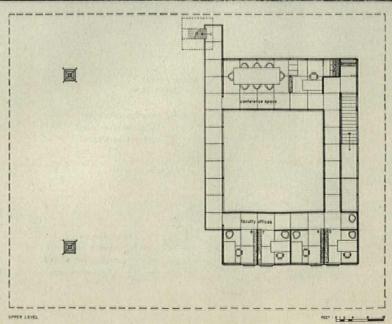
DEMOUNTABLE ROOFING

Plyplastic panels, originally developed as refrigerator-truck insulation, are installed in two versions: translucent and opaque. Panel has foam plastic core laminated to resin-treated grass cloth surfaces, weighs

only 1 lb. per sq. ft., needs nothing but edge support, can be walked on, lets in plenty of light but diffuses it and stops a maximum of infrared rays. Cost is expected to be about \$1 per sq. ft. installed.

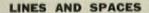








Joints were closed with metal batten, adhesive and plastic cloth. Joint seems to be good where ironed but adhesive is messy, gathers soot during preliminary drying, so better methods are being developed.



Photographs of the interior, recording primarily the incisive strokes of steel, give only a sort of short-hand account. They cannot at all prepare you for the building's astonishing and exhilarating incarnation of architectural space. On the spot, the mind's eye transforms the steel strokes into a satisfying background awareness of orderly structure. The big impression is the delight of space, very handsome space, made tangible.

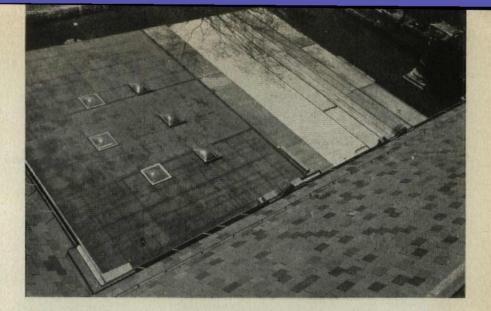
The people in the photograph at right may be taking all this in. On the other hand, they may be listening to the heater, which is hung in the ceiling.

Like everything else in the building, this heater—a nonexperimental gas burner with fans—had a research job assigned it. Its task was to help in a study of exactly how sound travels through the structure. The heater and fan unit was mounted raw, and everybody put up with an unnerving 12 db until the sound-wave dissectors were finished with their work. Then the unit was put on rubber mounts, which cut out all structure-borne noise and vibration, leaving 6 db of air-borne sound. This will now be reduced, but not too low; the occupants agree that a slight masking of conversation and paper-rattling is all to the good.

The object about which the people at the right are clustered is a space-frame table, which also serves as a demonstration of how the building—including floor and roof—is put together. Except in the case of the plyplastic roofing described above, panels of asbestos cement are used for roof sheathing. They are too heavy to support a 49" square of themselves, requiring crossed supporting members beneath them.

The big central space of the building is where indoor research projects take form; the even larger projecting roof shelters outdoor work.

When officials of the local building trades unions were sounded out about their attitude toward the nonunion student labor that was to go into the framing and sheathing, their reaction was "Architects ought to learn to work with their hands!"



ROOF STRIPES. Experimental nature of roofing can be seen from variegation—seven kinds of surfacings; hidden are three kinds of insulation. Building weighs 80 tons, of which 17 would be lopped off if plastic panels described at left were used over whole roof. Entire building would then weigh about same as single Corinthian column in photo's upper right corner.



. . . AND TOMORROW: A SPACE-FRAME SCHOOL

MONROE SCHOOL ADDITION
LOCATION: Wayne, Mich.
DESIGNER: Sun Chien Hsiao
ARCHITECT: Charles W. Attwood

In August construction of the school shown at the right will begin. In September it will be ready for the new school year.

Should the school board ever decide to move it, it can be demounted in a few weeks and rebuilt just as quickly, with reuse of all materials except roofing.

Construction follows the university research building, with one big improvement and one adaptation.

The improvement: footings have jackscrew fittings, so they need be placed only on "reasonably level" instead of painstakingly leveled ground. Adjustment will take about two hours, against a week of ground preparation for the university building. Also, not so many footings will be used (see diagram).

The adaptation: because this is a low building, the original roof-frame profile—which looks splendid on the two-story university building—would have looked top-heavy. Instead, an extra-long edge strut slims down the cornice. Walls carry vertically to the top of the space frame instead of to the bottom, for the same reason. The space-frame portion of the wall will admit light into the ceiling plenum.

The school will use nothing that is still experimental, so roof sheathing will be of bonded wood-fiber panels with built-up roofing, rather than the demountable plyplastic being tried at the university. The plyplastic will be used in walls, however.

Cost: Manufacturer-Architect Attwood promised this building would cost no more than the lowest-cost conventionally built school in the district—about \$13 per sq. ft. This is a high-cost area, where most new schools have been running close to twice that. Attwood is delivering amenities far beyond the other \$13 school—luminous ceilings, built-in equipment and teaching aids and a heated playroom. And he thinks he is going to make a reasonable return for himself.

Aside from virtues of speedy erection, demountability, putative economy and easy maintenance, this school is a beautifully designed classroom-cluster. Notice especially the ingenious single core and the swinging storage doors.

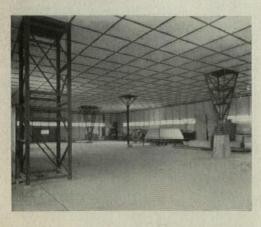
It has the official blessing of the State Department of Public Instruction, and—with one change—of the Fire Marshal. At his behest, the furnace will go into the penthouse as a safety measure in case of gas explosion. Released space will be for storage.

TODAY: SPACE-FRAME FACTORY . . .



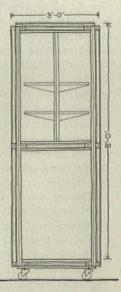
This is what became of the first test frame, built on the Unistrut factory site at Wayne, Mich., by university researchers. After they finished load-testing the frame with containers of water, the structure was expanded and is now one of the Unistrut factory buildings. Note the variety of columns in the interior photo (below).

Michigan's researchers think the structural system is also a natural for recreation buildings, one- or two-story shops, offices. They are especially enthusiastic about its possibilities for supermarkets, and envision the space-frame proliferating out as a parking umbrella. To Architect Jose Sert, an interested visitor, another idea immediately suggested itself: air-shipped space-frame components for underindustrialized countries where the roof span is the big problem in building.

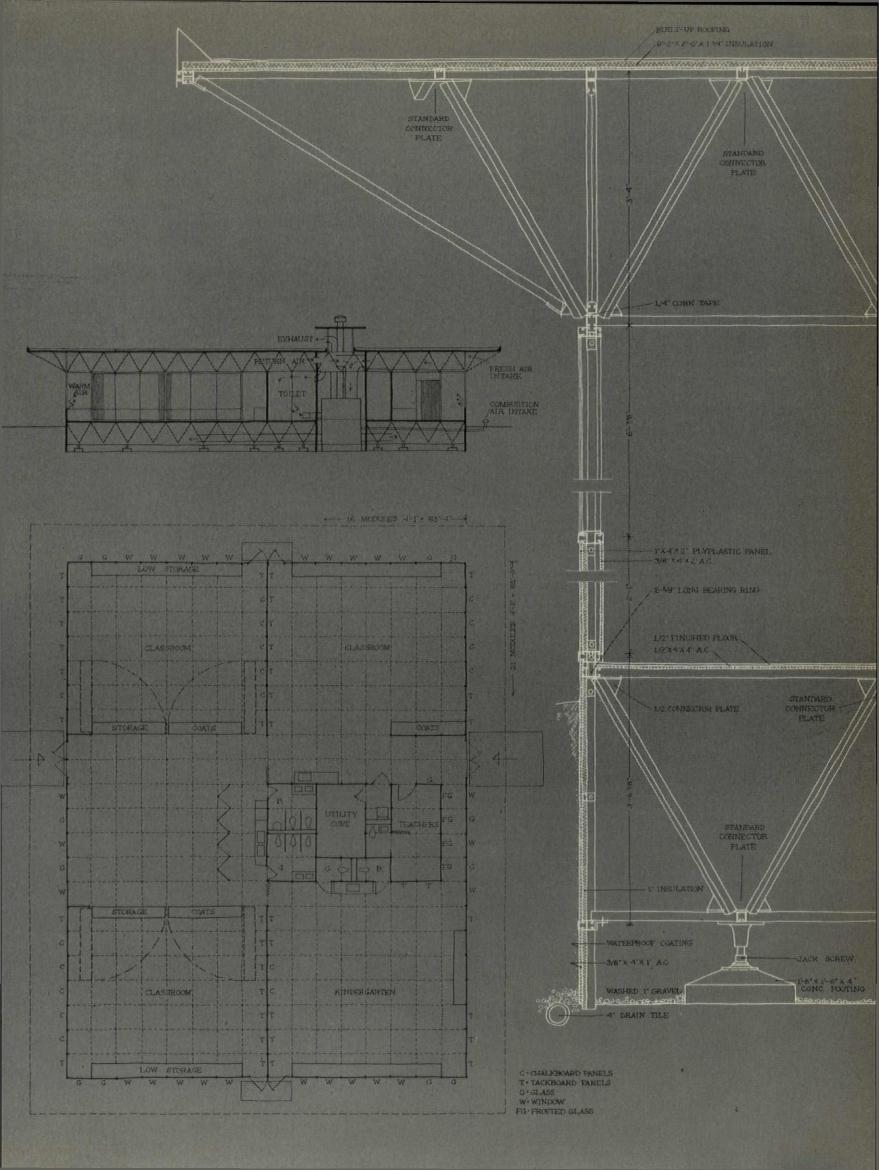


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FOOTING DIAGRAM



SWINGING CABINET





An earlier example of good service architecture is the Welfare building at Great Lakes Naval Training Center: a pleasant and spacious series of lounges where trainees can read, write letters and entertain visitors. Photo (above) shows the long, 18'-high glass wall of the lounges opening east toward a wooded ravine view. Below is the main entrance on the west, showing smaller ribbon windows, secondstory offices at the left. With an earlier recreation building nearby, it was designed in 1942 by Skidmore, Owings & Merrill, architects of the center's new buildings.



Photos: Hedrich-Blessing

A striking addition to the Great Lakes campus is this elegant box of blue-green glass and slim steel sash, housing the new gunners' school. At right is main entrance for personnel; at left the tall loading door for one of the two gun decks.

THE NAVY'S

Sadly, the general run of buildings put up by our armed forces are not so smart as they might be either in function or appearance, due largely to regimented thinking by those in charge of building programs.

Here, in contrast, is the story of how the Navy and two teams of independent architects worked along fresh lines that led to buildings far above the military average. The Chicago office of Skidmore, Owings & Merrill pinned down and organized an elusive, many-faceted program for



NEW ARCHITECTURE

Great Lakes trainees by patiently interviewing the many officers involved, and then devising a remarkable book of charts and checklists to show all concerned exactly what was needed and how to provide for it. This painstakingly accurate device made it a lot easier to get the widespread agreement and action necessary to produce really useful buildings. With much the same basic, step-by-step approach, Weed-Russell-Johnson Associates helped the Navy on a very fresh plan for a Sonar school in Key West (p.

154), showing the Navy, through five successive sets of space-organization charts, how the new joint thinking was working out. Both firms, rather than dishing up ready-cooked ideas, helped the Navy explore the many technical complexities to the bottom, and by orderly presentations convinced their employers that the new solutions were not only sounder, but cheaper than expected. The result: three new shipshape schools for sailors, and a welcome trend in the services toward imagination and quality.



GUNNERS MATES SCHOOL, Naval Training Center, Great Lakes, Ill.

IN CHARGE: District Construction Office, Ninth Naval District

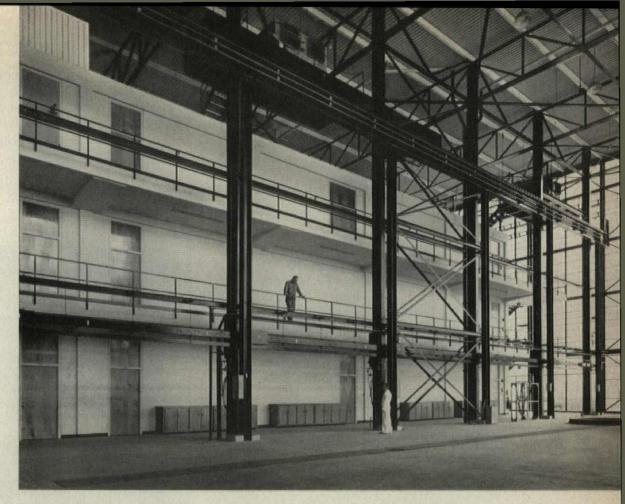
ARCHITECTS: Skidmore, Owings & Merrill CONTRACTOR: Engineering Construction Co.

FOR THE NAVY'S GUNS, A LOFT AROUND CLASSROOMS

To train its gunners, the Navy needs both classrooms and larger "laboratory" space in which various types of large, heavy weapons can be moved around by cranes, operated, taken apart and put together for practice in cleaning and repair. The structure pictured here is actually a building within a building: a core of classrooms looking out into a lofty, well-lighted shell.



Awning sash at two levels opens up, and blowers atop the roof pull fresh air through the building, helping to counter a heavy sun load. Translucent heat-absorbing glass is frosted inside to diffuse light, maintain security, blank out distractions.



COST BREAKDOWN

 General work
 \$815,679

 Electrical
 312,000

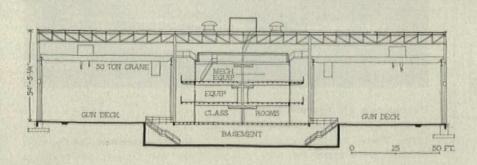
 Plumbing
 45,217

 Heating and ventilating
 184,792

 Sitework
 122,029

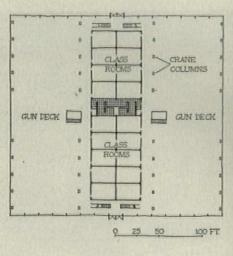
\$1,479,717

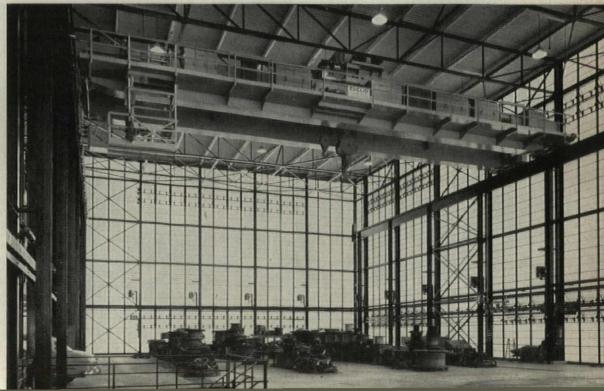
(Original contract bids)



Concrete core of classrooms and small equipment spaces is independent of shell, artificially lighted and air conditioned. Balconies serve as halls, convenient observation platforms for demonstrations.

Glass shell is supported by steel columns on which unit heaters are mounted, 50-ton crane by another set of columns carrying rails. Stair and loading well in foreground lead to storage basement. Navy preferred photos taken before weapons were in.





FIRE CONTROL TECHNICIANS, OPTICALMEN AND INSTRUMENTMEN SCHOOL,

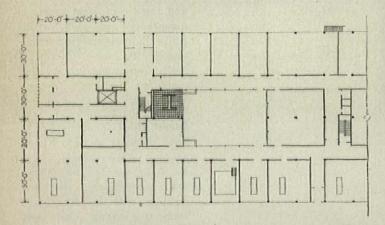
Naval Training Center, Great Lakes, Ill.

IN CHARGE: District Construction Office, Ninth Naval District

ARCHITECTS: Skidmore, Owings & Merrill CONTRACTOR: William E. Schweitzer & Co.

FOR THE NAVY'S EYES, A GLASS PENTHOUSE

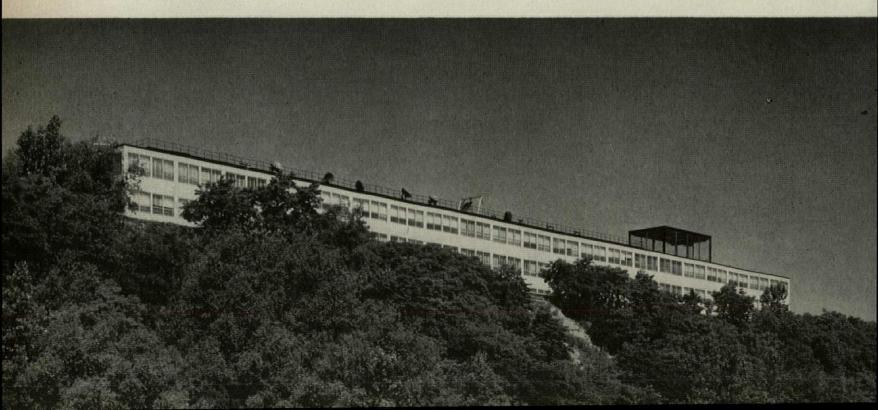
To guide its sea-borne weapons, the Navy needs a whole shipload of optical and electronic gadgets, and the men to operate and repair them. The building in which these men are trained must be well-lighted for precision work, mechanically ventilated against dust and excessive temperatures. Further, it must be flexible to meet curricula that change with new developments: as shown in the typical plan of half a floor (below) partitions are flexible on a skeleton of reinforced concrete.





Periscopes are assembled on ground floor, hoisted through three floors to this cleanly detailed observatory for testing. Tops of scopes are guided through slots into collars.

Radar antennae line the roof, can be trained on boats in Lake Michigan from classrooms below. At right is "glass hat" for periscope training.





Clean lines of concrete frame are expressed on exterior, filled with brick panels, precast concrete mullions, aluminum window sash.

Laboratories have flush-lighted acoustical ceilings, ample natural light for work on gunsights, range-finders, computers, directors, other fire control instruments and systems.

COST BREAKDOWN

General work	\$1,400,080
Plumbing	78,378
Electrical	368,650
Air conditioning	12,000
Ventilation	58,000
Heating	131,000
Elevators	13,300
Sitework	135,092
	eg 40c E00

(Original contract bids)



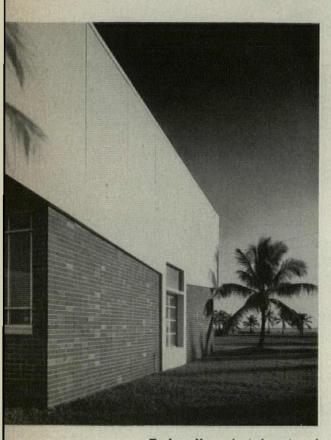
US FLEET SONAR SCHOOL, Key West, Fla.

IN CHARGE: District Construction Office, Sixth Naval District

ARCHITECTS: Weed-Russell-Johnson Associates

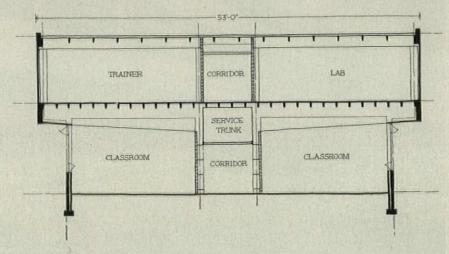
ENGINEERS: Rader Engineering Co. CONTRACTOR: Fred Howland, Inc.

FOR THE NAVY'S EARS, TUNNELS WIRED FOR SOUND



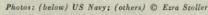
End walls, oriented east and west, express section shown at right. Upper floor, windowless for equipment training, is sheathed in 7'-6" x 15' hung panels of precast concrete.

Underwater warfare is a listening game, played with electronic ears and brains that can track down a submarine from ships, aircraft or other "killer" subs. In this school, built specifically to teach Sonar (Sound Navigation and Ranging), the architects reversed first concepts by placing training equipment on the second floor, away from dampness, hurricane floods and prying eyes, and isolating special utilities in a central trunk which can be serviced by "uncleared" maintenance men.

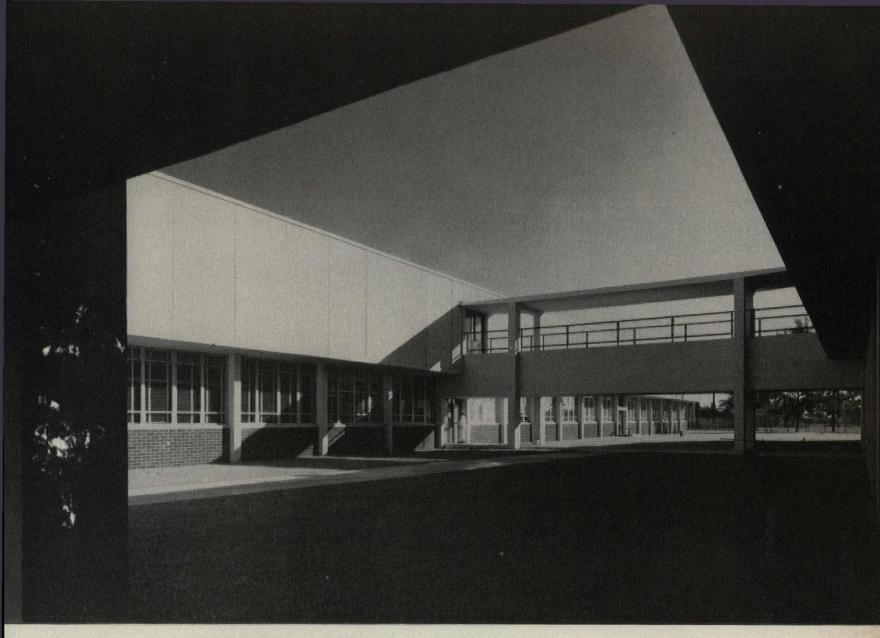


Service trunk carries special electrical supply and intercom systems, fixed air-conditioning ducts to classrooms. Cool-air plenum at top allows equipment spaces more flexibility.

Finger plan (below) is divided into administration and officers' classrooms, sonar trainers, equipment labs and library. Staggering gives buildings separate approaches.



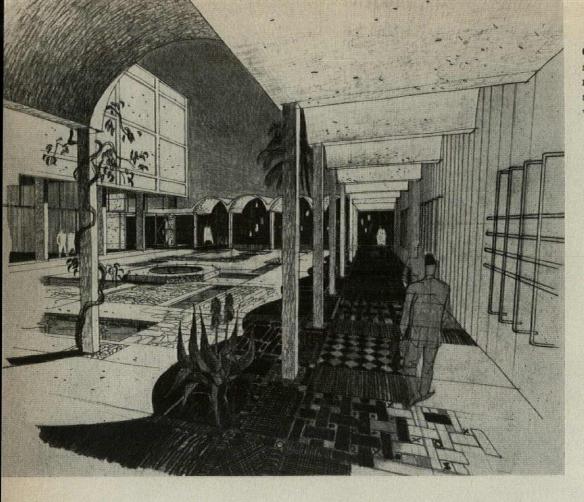




Gallery-bridges link buildings at ground, service and upper levels, forming small interior courts. Service trunk acts as floor for foot-bridge, canopy for ground-floor walk.

Overhang shields shallow, daylighted classrooms from rain and summer sun. At left is a tactical games theater. School was built for unusually low cost of \$12.45 per sq. ft.





Court with pools bordered by shaded walks lies in core of new US foreign building. Construction is scheduled to begin within several weeks.

ARCHITECTS:

Hugh Stubbins Associates
CONSULTING ENGINEERS:
Fred S. Dubin Associates

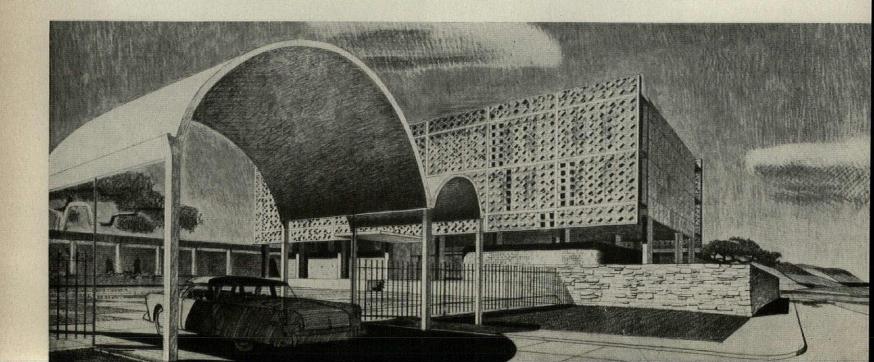
US LEGATION FOR TANGIER

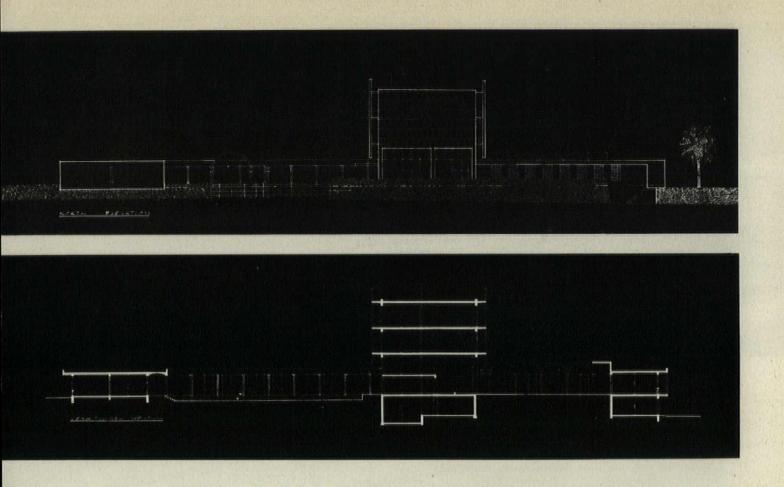
Third in a series on the US State Department overseas Because the State Department program calls specifically for going along with local building customs, this structure will be inturned from the street in the North African tradition, with circulation around interior courts. It will also wear two immediately apparent items of local architectural equipment: screen walls against the glare (and marauders) and vaulted roofs.

In application these ideas are no more local than the massing of the legation, how-

ever. The runs of thin shell vaulted roofs are not groined, and so differ from the Moorish character of the old inhabitant buildings in Tangier. The screening is to be in a strongly individual pattern too (see p. 158).

The building will be white with most of the added color (probably blues) concentrated in the mosaic floor of the consular court, which shares the first floor central block with the reception lobby and the con-

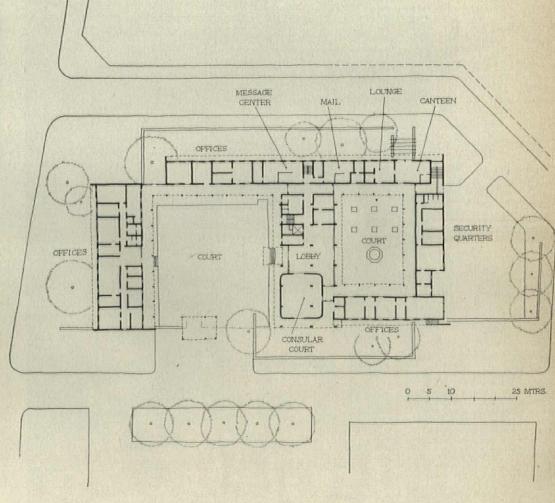




sul's office, Other wings: Voice of America and US Information Service; legation administrative offices; marine barracks; economic advisor and library.

On the upper floors of the central block are quarters for the legation minister and his staff, raised deliberately to obtain some remoteness from everyday business, plus a sense of security and dominance over the complex. The open planning of the wings uses Tangier's breeze for air conditioning.

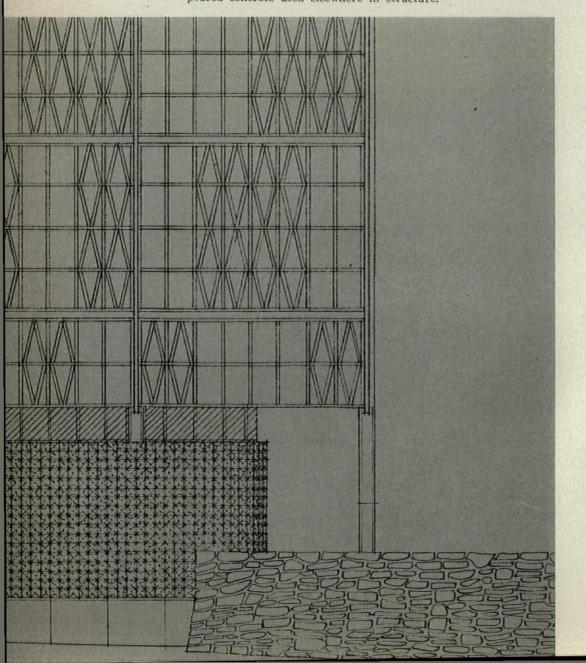
Plan opens one court partially to view from street, but shields inner court entirely. Outdoor receptions and other official entertaining may be held in this part of legation.





Inner court opens building for through air circulation in all parts

Glare screen will be concrete cast in units 1'-6" \times 2'-6". Lower wall is same small scale local stone used in wall of old part of city. Stone will be in conscious contrast to smoothness of marble and poured concrete used elsewhere in structure.





IN JAPAN: TWO TRIUMPHS OF SPACE

Kenzo Tange, 42, practices in Tokyo, and also is a professor at Tokyo University. Schooled there himself, he organized the Tange Institute of Planning and Design in 1948. He is chief architect in city planning of the cities of Maebashi, Isezaki, Kure and Hiroshima, for which he has also designed the Hiroshima Peace Hall and Peace Park now under construction.

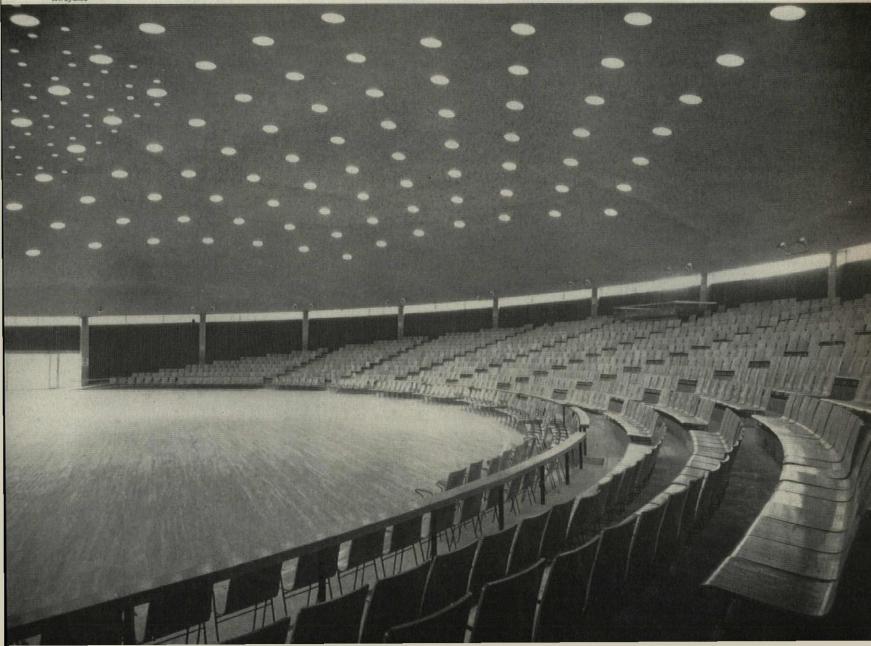
Great spans encourage great architecture, but never guarantee it. In two long-span structures shown on these pages, however, Japanese Architect Kenzo Tange demonstrates twice what an architect must bring to a long span.

The two buildings are a convention hall in Matsuyama, Ehime (below and next 2 pp.), and a large printing plant in Namazu, Shizuoka (pp. 162 to 165). The first is of thin-shell concrete-a smooth compressive building-and the second, steel frame-an angular tensile structure. Each building adds up to more than the sum of its technical ideas as an enclosure of space.

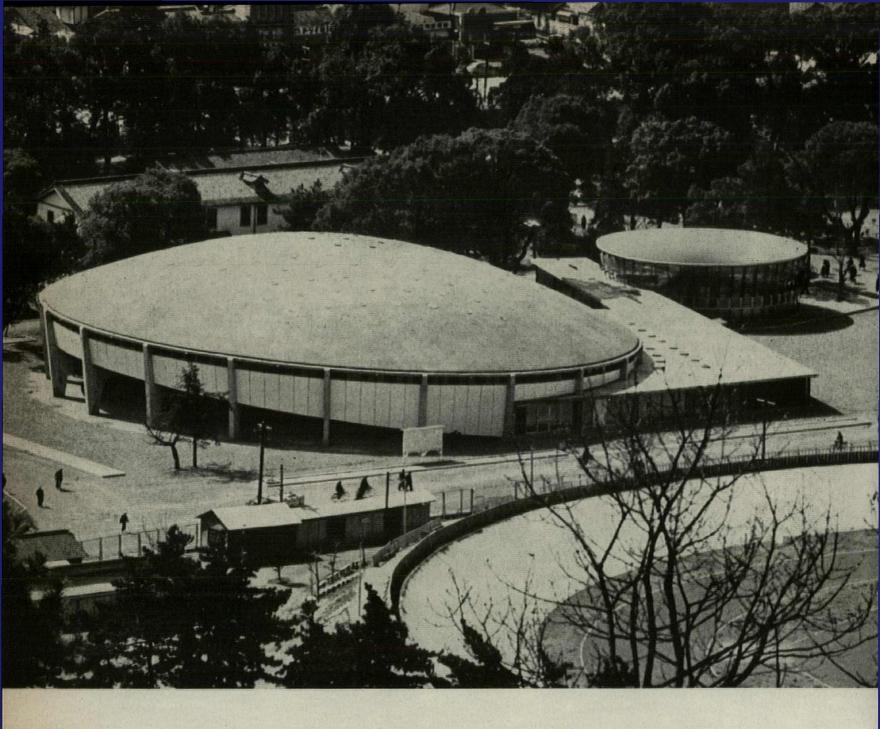
Kenzo Tange's design is so polished and mild, so finished, that it seems easy; everything is in key, with no little or big paradoxes visible to compel attention to the design. This absence of the unexpected is a frequent element in most modern Japanese architecture; it sometimes has become glibness.

But Tange's proportions are basic and seem alive. Five years ago American architects began to discover the Italian architectengineer, Pier Luigi Nervi, and used his buildings to nudge themselves out of their old thinking orbits. Tange may be the next one to do the nudging.

Concrete dome over convention hall is pierced for light



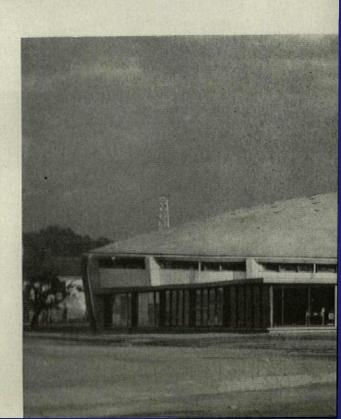
Hirayama



TWO JAPANESE BUILDINGS

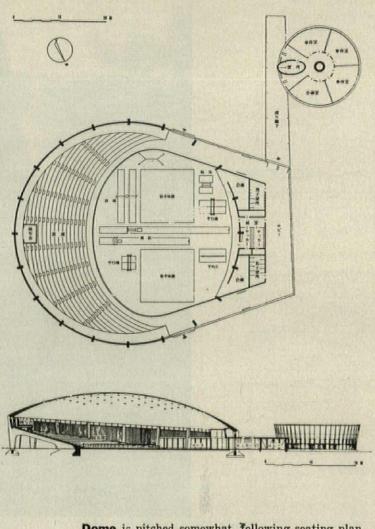
1. CONVENTION HALL

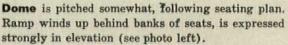
Planned originally as a gymnasium, this 165'-diameter shell concrete dome has a seating capacity of 1,400 with an additional 2,000 in movable chairs. The shape first contemplated by the architect was really a shell, with roof and grandstand opening clamlike, which would have been better acoustically. The expense of irregular form work brought him to the regular dome as a compromise solution; to correct the poor acoustics, reflectors, sound resonators and absorbers will be suspended from the ceiling. The first large shell construction in Japan, the building was tested exhaustively in scale form for earthquake resistance. To allow for spread of concrete dome after formwork was removed, dome was set on rollers atop of columns, then after the spread had occurred, the connections were welded.



MATSUYAMA, EHIME ARCHITECT: Kenzo Tange

STRUCTURAL ENGINEER: Yoshikatsu Tsuboi

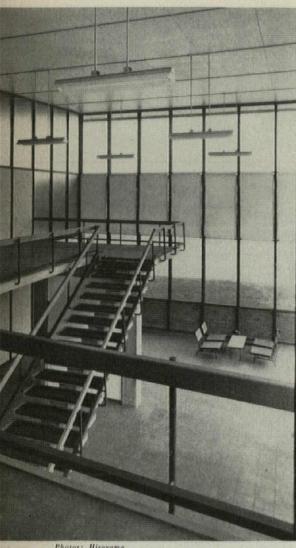




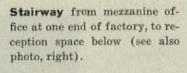
Supplementary building for display and office purposes also has shell concrete roof, cantilevered from central stem like an inverted cone. Hollow, it drains centrally.

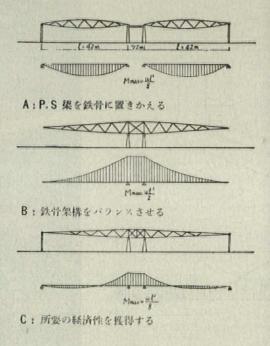






Photos: Hirayama







2. PRINTING PLANT

NUMAZU, SHIZUOCKA ARCHITECTS: Kenzo Tange, Takashi Asada STRUCTURAL ENGINEER: Fugaku Yokayama AIR CONDITIONING ENGINEER: Kengi Kawaii A great wing stretching out over a space 400' x 280', this roof is supported by a double line of posts along its spine; the long lateral spans, almost complete cantilevers, reach out 140' from center line to side curtain walls. Supporting this big roof is a series of tapered steel trusses, which are emphasized in the end elevations. (Stress diagrams above show this scheme and several others proposed for bridging the space, which has to be columnless because of the long multicolor rotary presses to be installed.)

The corridor between the central columns is used for central circulation of men and tools and for ductwork of the air-conditioning system (another essential for the printing plant). Central air supply runs down this corridor and then ducts out to the suspended diffusers (section, right). The return duct is the basement of the central corridor and exhaust air is run under-

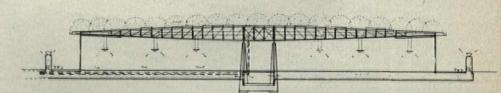




Corner of plant. In plan the building measures 280' across, 400' long. Elevation above is the south view.

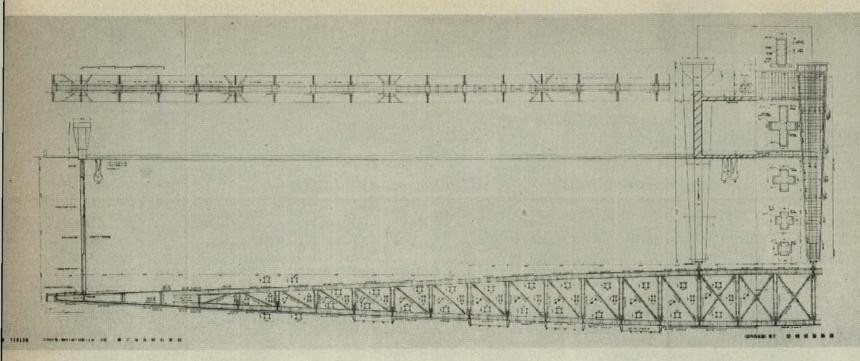
ground to be blown out of sculptural looking cylinders standing some distance from the factory walls. A mezzanine floor at the front end of the building houses offices and control points.

Outstanding among the younger architects of Japan, and already accepted as one of the top modern practitioners, Tange is also an authority on ancient buildings, such as the Katsura Palace, Ise Shrine, and Kyoto Imperial Palace.



Air conditioning is assisted by sprays up on roof of the factory. Inside, diffusers are suspended "elephant trunks."



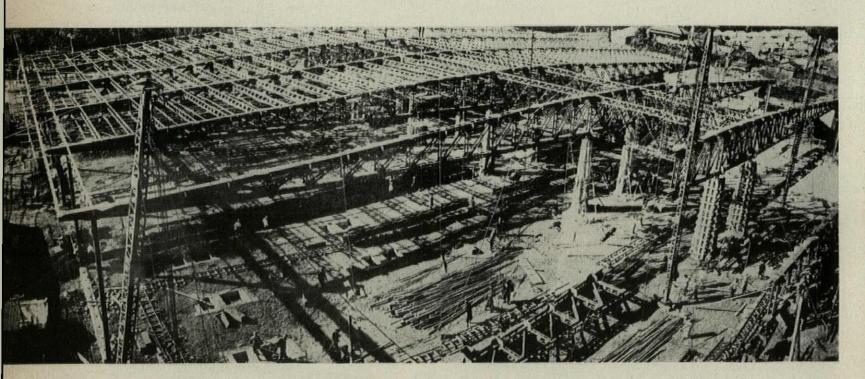


Japanese Architect Ryuichi Hamaguchi, editorial consultant to Kokusai-Kentiku, Japanese architectural magazine, said about Architect Tange recently: "As a student, Tange greatly admired Corbusier first and secondly Gropius. One of my most vivid memories at college was seeing Tange poring over the collected work of Corbusier. When he didn't show up for classes his friends always knew he could be found at a certain coffee shop where, for hours on end, Tange would sit and listen to classical

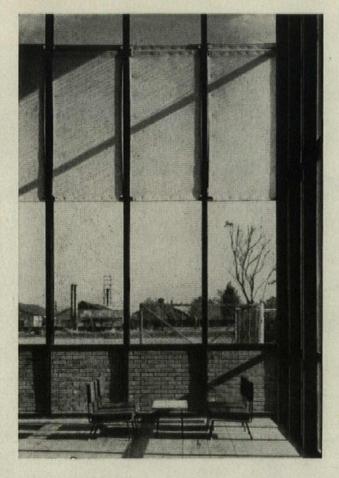
records, sketch pad in hand, struggling for the inspiration for the first plan of a new building—his great genius for the original concept of a plan being the point which at once set him apart from his colleagues, and took the greatest percentage of his time...

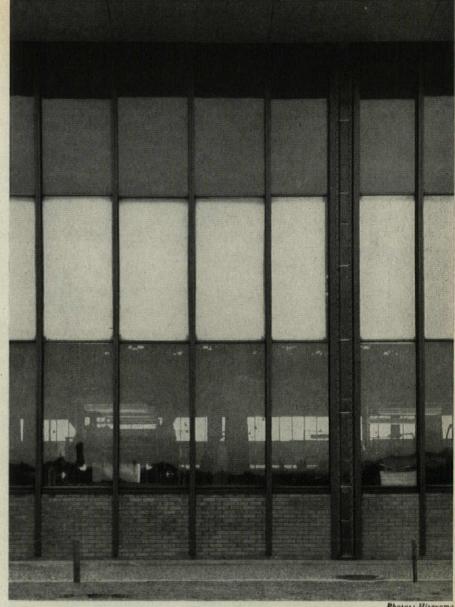
"Recently . . . it seems as if Tange were intellectually attempting to re-evaluate the traditions of Japan. He holds within him the two extremes of a traditionalist in spirit and an international modernist in form, which results in daring experiments."

Steel wing is box framed and sits on columns designed like beams against earthquake tremors.



Progress photo shows placing of steel. Total of 12 of great wings spaced 40' apart, support roof. Not complete cantilevers, vast horizontal steel frames do bear on exterior walls, but to minor degree compared with loading on pairs of central columns. Typical wall details. Bays are defined on long façades (right) by combined expansion joints and drains. Below, lobby interior.





Photos: Hirayama

Roof view. Platoons of skylights line up under view to Mount Fuji.



OFFICE OF MERIT: a regular department devoted to new ideas in finishes, fixtures and furnishings—this month, the offices of a firm which specializes in office design



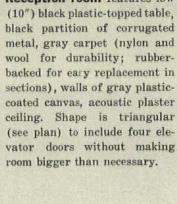
Photos: J. Alex Langley

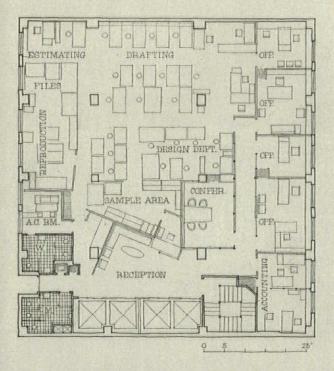


Executive corridor is formed by glass partition set in black wood frame on one side (above) and on other (left) by partition of gray and white panels of plastic-coated plywood set between 2' x 4' walnut posts. Flexible displays are carried by brass brackets. Brass and amber glass lighting fixtures of special design are swivel aimed at display. Carpet is gray. Ceiling is striated acoustic tile.



Reception room features low





Specifications

FINISHES: Floors-asphalt tile, Kentile Inc., carpet, Shelton Looms. Walls-canvas-backed vinyl, Joanna Mills; Fiberglas reinforced vinyl, Dexoleum Corp. Wood paneling-maple, US Plywood Corp. and Superior Cabinet Co.; teak, Korngold Bros.; cork, Congoleum-Nairn, Inc.; perforated metal, Hendrick Mfg. Co. Ceilingacoustic tile Stri-a-tile, Owens-Corning.

FIXTURES: Metal partitions-Aetnawall, E.J. Boyle Div., Aetna Steel Products Corp. and Zourite, Kawneer Co. Glass screen-Misco, Mississippi Wire Glass Co. Chalkboard-Armorply, US Plywood Co. Window light diffusion panels-Synskyn, Polyplastex, United. Blinds-Avalon Venetian Blind Co. Lighting-Lightolier. Switches-Arrow-Hart-Hegeman Electric Co. Public address system-Teletalk, Modern Sound Co. Drinking fountain-Nash-Kelvinator Corp.

FURNISHINGS: Desks and chairs-J.G. Furniture Co., Jens Risom Design Inc., Herman Miller Furniture Co., Edward Roffman Assoc.

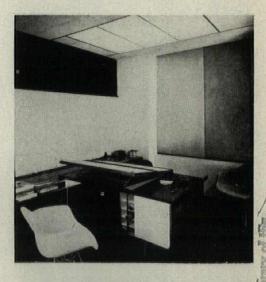
FABRICS: Isabell Scott Design Inc., and Creative Looms.

Conference room has walnut table cantilevered 6'-6" out from thick partition finished in white painted perforated metal. Far wall of maple hides coat closet, sample storage, liquor cabinet, pull-out bar. Partition at right is in sand-colored cork tack board. Carpet is spice colored; chairs are black.

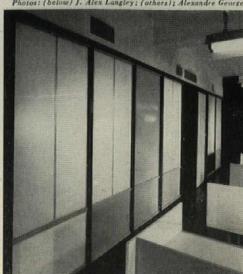


Flexible partitions on floor below have insert panels of translucent glass and steel. Steel panels are painted gray, sand, white and bright red and are set in black-painted steel trim. Other materials can be substituted: clear glass, solid and perforated pressed wood, plywood, cork, plastic and wire mesh. Designed by Michael Saphier Associates, partitions are commercially available.

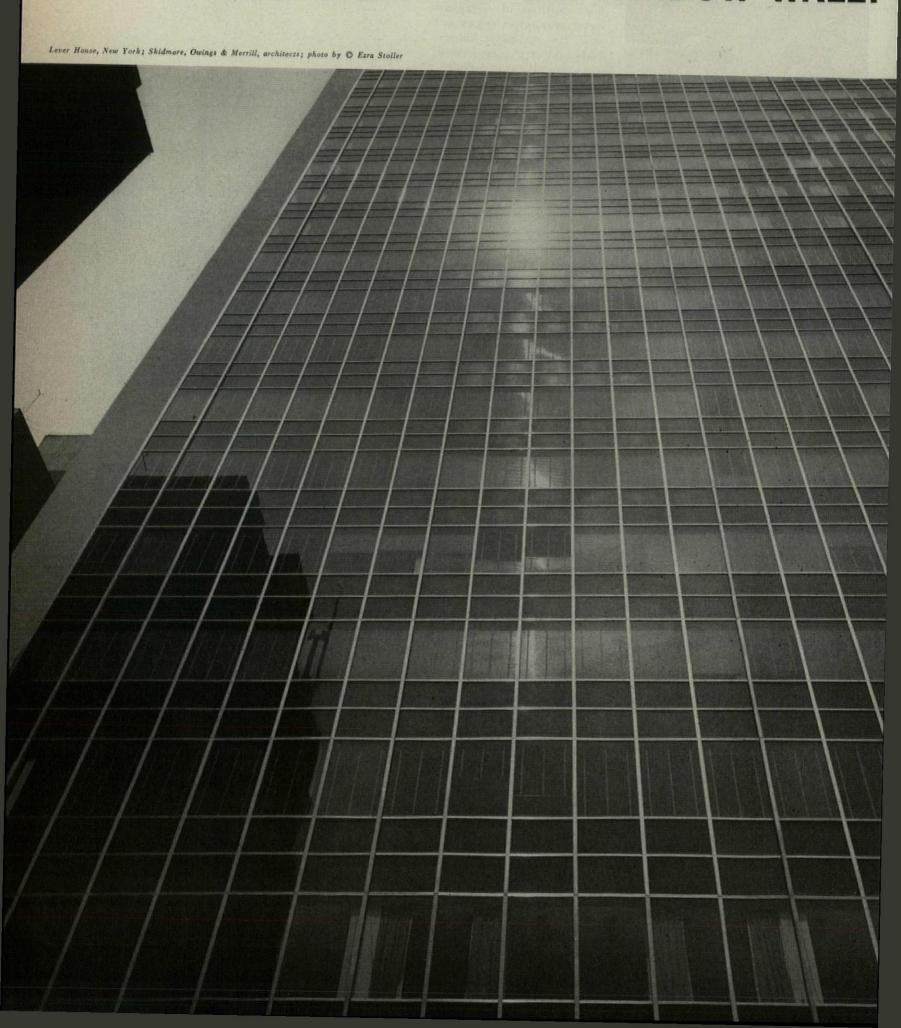




Photos: (below) J. Alex Langley: (others); Alexandre Georges



WHAT NEXT FOR THE WINDOW WALL?



An analysis of the impact of air conditioning on the design of large buildings—
and particularly, their fenestration—B

-By Henry Wright

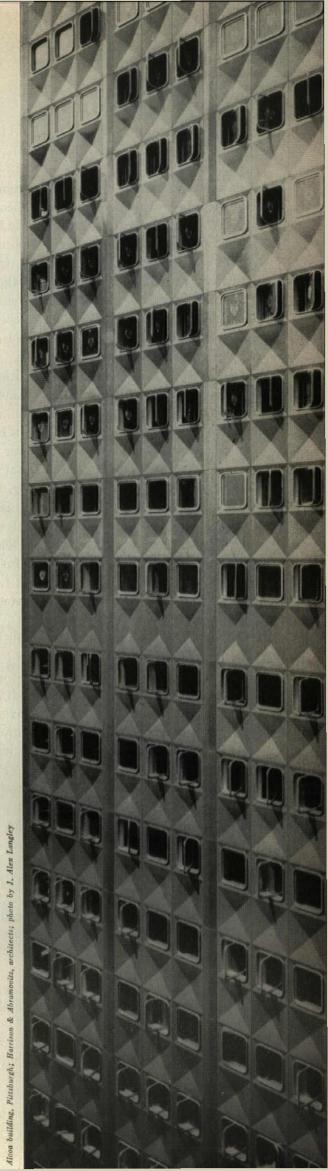
For every 100 sq. ft. of unshaded, unfavorably oriented glass used in a tall building in most parts of the US, an additional ton of air conditioning must be provided at a cost of \$300 to \$800.

This arithmetic is producing some hard new thinking about office building walls, and even the shape of such buildings. The architectural results which have begun to emerge do not decisively shatter the glass wall—the proud and lucent sheath of the steel frame. They do show that the kind of design demanded by today's level of building technology must be the expression of some fairly complex mathematics rather than merely of an esthetic credo.

The equation which must be written and solved to produce a sound modern office building design is extraordinarily intricate. In one respect, however, the new factor added by air conditioning is very simple. If every square foot of offending, unprotected glass adds about \$5 of air conditioning equipment to the first cost of the building, the architect is in a position to spend a considerable fraction of this on special glass, shading devices and other means for reducing air-conditioning load, since if such measures are effective they may reduce the *first cost* of the building besides returning a dividend in reduced *operating costs* that is pure gravy. And by the same token he must be prepared to defend every foot of glass he does use, since glass anywhere on a building—except perhaps its north-facing side—in the era of air-conditioned rental space has become a factor of real economic importance.

While here and there the effects of such economics are beginning to be evident, it is spectacularly clear that the recent boom in air-conditioned office space developed without their having been taken into account. Lightweight, rapidly erected wall structures have emerged which are an important advance in construction technique, but the fenestration which has accompanied such developments in most instances has been designed as though air conditioning did not exist. This may be because the variables represented in the mathematics of today's building are many, and in each must be summed measures that lie at the very frontiers of the knowledge available to each of the specialized building technologies. No architect can, of course, be the master of so much technology, but in the case of wall design, as in other parts of the building, it is his job, as FORUM has pointed out many times before, to make sure that the specialists are at least introduced to one another.

Moreover, it is becoming more and more clear that in the area of seemingly "pure" architectural considerations decisions are likely to be made that may cost the owners of a building hundreds of thousands of dollars additional air-conditioning expense. Thus a "slab" type building, oriented east and west, may cost a good deal more to cool than a squarish tower, whereas the same building shape facing due south and located in the southern part of the country may cost a good deal less. When it is realized that most of the office buildings of the booming twenties got along quite nicely with about 25% of their wall area in glass, whereas most recent examples



BUILDING SHAPE AND ORIENTATION

have at least twice this much if not more, it is obvious that at the very least the effect of this tendency on the air-conditioning "load" must be reviewed.

Solar heat gain need not be a very large component of the total air-conditioning load to be expensive. The total load, of course, is a combination of the heat given off by lighting, by people, of the need for ventilation and of whatever outdoor heat penetrates the building. In sealed air-conditioned buildings none of these components can be released to the outdoors—all of them must be removed through a closed system. Each component has increased in recent years, but the increase in the load from modern lighting has, of course, been strikingly heavy. Electric lighting has been developed to a degree that provides visual conditions superior in many respects to daylight, and this technological development has been paced by the increased psychological readiness of office and industrial worker to accept electric lighting. The solar load is important because, piled on top of all the others, it becomes the critical factor—the one that requires the provision of extra air-cooling capacity to meet peaks that will shift during the day through all the peripheral zones of the building, but perhaps last not more than an hour or two in each. The solar load is not only critical in air-conditioning expense, it is also the most easily controllable component of total load. Not much can be done to reduce the heat load of modern, high-intensity lighting (although some ingenious solutions for draining it off to the outdoors have been developed by Engineer Charles Leopold and others). Nothing at all can be done to reduce the heat radiated from people or the need to replace air heavily laden with tobacco smoke. It is, therefore, sensible to deal with the component of total load that can be readily affected by architectural solutions.

Windows are the chief means by which solar heat enters the building interior. The sun heat soaks through the wall, of course, but the wall load is likely to be spread fairly evenly over the 24-hour period and thus is not critical in determining the air-conditioning peak. The most obvious solution is to reduce window sizes or go back to the familiar pier and window scheme—with masonry lightened to a curtain wall by the new techniques of thin wall prefabrication. This approach has been used for such new buildings as the Socony Mobil building in New York and the Alcoa building in Pittsburgh. But this solution is not the only one. Many other design elements are subject to adroit architectural manipulation. There are, in fact, four major architectural means of controlling and reducing air-conditioning loads in large buildings:

- 1. Through **Building SHAPE AND ORIENTATION**. A wide, shallow building may cost less to cool than a square one, if it is faced in the right direction (p. 170).
- 2. Through the use of **SMALLER WINDOWS** in critical places. This does not necessarily mean less glass over all, or reduced outlook (p. 172).
- 3. Through the use of **SPECIAL GLASS**, which can reduce heat gain as surely as reduction of the glass area (p. 174).
- 4. Through **shading devices** of various kinds to keep sun heat from entering the building or to bounce it out again once it enters (p. 176).

The sun, as every schoolboy knows, is the source of all the energy of our world. Like an everlasting H-bomb, the sun fuses hydrogen to helium, releasing 472,000 billion-billion hp. into space. Only one two-billionth of this radiant energy reaches the earth, but so far this has been enough to support life despite the fact that a good deal is wasted. After penetrating the earth's atmosphere, it still falls on a beach umbrella with an intensity of more than a horse-power per square yard.

Architects have been striving to harness some of this energy for several decades in planning the orientation and fenestration of the low, modern house. Unfortunately, almost none of the principles used to relate a house to winter and summer streams of radiant solar energy apply to tall, air-conditioned buildings.

In residential architecture, it is an axiom that the glass wall should face south. Liberal use of glass has been based on the principle that a glass wall facing south admits enough sun heat in winter to more than make up for its heat loss at night. The wall can be easily protected by overhangs or other external sun-shielding devices against the high-altitude summer sun. There are other simple rules: 1) walls facing east may also contain a good deal of glass-summertime sun enters here at the cool time of day; 2) walls facing north should have small windows to minimize winter heat loss-little beneficial sunshine enters from this side; 3) walls facing west should preferably have no windows at allto keep out the hot, nearly horizontal sunshine late in the day.

These simple rules have worked well for houses, where the use of interior space can be flexibly related to the closed and open walls and where wintertime heating has been a more important consideration than summertime cooling. But tall office buildings do not always fit the rules: they cannot as easily be protected by overhangs



Compass rose shows maximum solar heat in Btu per sq. ft. per hour, falling on walls facing in all directions at latitudes of New Orleans, New York, and Huron, S.D., on Aug. 1. Heat is lowest on walls facing due north and due south.

Calculations by John Everetts Jr., consulting engineer.

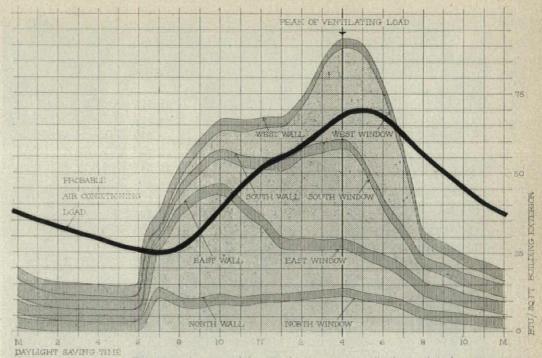
nor can the use of interior space so readily be adjusted to appropriate wall treatments. Even more important: in many sealed office buildings solar heat gain can be almost as much of a problem in winter as in summer, and necessitate refrigeration cooling at both times of year.

Nevertheless, the familiar slab-shaped building faced north and south (which in effect has two window walls rather than four) does offer important advantages under the right conditions. In New Orleans (as the chart on page 170 shows) the maximum solar heat gain averaged for walls facing north and south is only 35 Btu per sq. ft., whereas the average for walls facing the four points of the compass is 1151/2 Btu per sq. ft., or more than three times as great. This advantage applies, however, only to walls facing almost precisely north and south: if the axis is rotated only 221/2° the average rises to 471/2, and if it is rotated 45°, to northeast and southwest, it goes up to 139- or more than that for a square tower facing the points of the compass.

Moreover, these figures are for Aug. 1, the standard air-conditioning "design day." In more northerly latitudes, where the advantage of the slab design is less to begin with, it is liable to be lost altogether as the heat load on the south wall builds up toward the end of the cooling season, and becomes a positive liability in wintertime, necessitating cooling of one side of a building while the other is being heated.

A number of other factors turn the rules upside down for office buildings. When the UN Secretariat was planned with glass walls facing east and west, critics of the design argued that facing them north and south would make much more sense from a heating and air-conditioning standpoint. Engineers Syska & Hennessy, retained to study the matter, showed that the difference in the peak air-conditioning load for the building as planned and for the same design rotated 90° would be quite small (AF, Nov. '50). And it is likely that the building as built has been freed from problems of wintertime overheating by its "violation" of the rules of orientation.

For New York buildings, however, the Syska & Hennessy study does not decisively dispute the value of a north-south "slab." The glass walls of the UN building actually face E-SE and W-NW according to the compass. New York City's street pattern is skewed to an off-compass orientation to follow the direction of Manhattan Island. Tall buildings facing on most streets have, therefore, an orientation that tends to equalize the differences between the sides. For a building with four window walls, such "diagonal" orientation offers advantages worth study in cities where the street pattern follows the compass. For buildings of the slab type, on the other hand, there would be an advantage in building on the axis of the compass rather than that of the street system, even on Manhattan.



Pile up of external heat gain (except ventilation gain) for square tower with windows occupying 50% of wall area, oriented in accordance with Manhattan Island street pattern. Peak air-conditioning load for continuously operated system is 70 Btu per hour per sq. ft. of external surface. "Slab" tower facing east and west would have two peaks; slab facing south, single peak around 1 P.M.

Solar heat gain does not build up slowly over a period of time like heat convected from the outer air; it is transmitted instantaneously by glass. Peak gains build up sharply and shift continuously as the sun enters different parts of a building. But heat load, as felt by an air-conditioning system, is dampened by the ability of the interior structure to absorb and store heata factor which may delay the peak by an hour or more and reduce its amplitude considerably, especially in a continuously airconditioned space. The importance of this in office-building air conditioning is that it considerably mitigates the adverse effects of a west wall. Most offices are empty of people at about 5:30 P.M. daylight saving time. The peak solar gain, for a west-facing wall at 40° north latitude on Aug. 1, comes at 4 P.M. sun time, or 5 P.M. DST (for New York City "west" it is even later). Since the effect of this peak is not felt by the air-conditioning system until about 6 P.M.—at which time such buildings are almost empty, the lights turned off and ventilation no longer necessary-this load is often noncritical. In the operation of the UN Secretariat, for example, it has been found that the actual peak load on the air-conditioning system comes about 11 A.M., and is due primarily to solar heat entering the E-SE window wall.

The fact that the building interior affects heating and cooling carries the control problem well inside the building shell. Hitherto all discussion has been centered in the shell only. A heavy interior structure may thus have almost the same effect of spreading out the heat load as heavy exterior walls, provided the sun which enters the building falls on the floors and

walls, rather than on relatively lightweight materials which heat up quickly and give the heat back to the room air. Thus, even furnishings and carpeting are actually part of a building's heating and cooling system—a fact which explains why the housewife frequently rolls up the rugs in the summer.

Protective orientation is not only considerably more elusive for office buildings than for houses, it also varies markedly with geography. Summertime solar radiation (on vertical walls) is higher in Alaska than in any other part of the US; it is lowest in the southern tip of Texas. In New Orleans, a south wall receives 77% less solar heat, at the maximum, than a wall facing east or west. In New York, the difference is 51%, in Minneapolis, 39%. Somewhere between the latitude of New York and the latitude of Minneapolis a point is reached where a building with four window walls, and a four-zone air-conditioning system, has a lower peak load than a slab-type building facing due north and south with a two-zone system, for the same floor area. And if the building is "off compass," this point is reached farther south.

In all parts of the country, the best way to face large glass areas in a tall, airconditioned building is undoubtedly north. Because of the year-round heating effect of lights and people, wintertime heat loss is not a major factor for the office building. Summer heat gain, on the other hand, is important and expensive, and is at an absolute minimum at any point between N-NW and N-NE—less than 13% of its east or west intensity. The worst direction for large windows to face is between S-SW and SW, where the peak solar load coincides with peak outdoor temperatures.

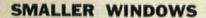


Photos: Harold Corsini

How high should a window-head be? There are more than 1,000 windows clearly visible on south walls of these two new buildings in Pittsburgh's "Golden Triangle." Cleaning crews lower Venetian blinds to about eye level every night and close them. By afternoon of next day, of first 1,000 windows from left to right:

- 918 have blinds undisturbed
- 29 have blinds lowered and opened
- 16 have blinds lowered and closed
- 15 have blinds raised at the top
- 15 have blinds opened, height unchanged
- 7 have blinds raised somewhat

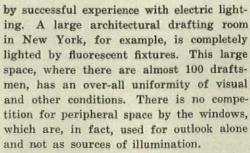
Only 2.2% have clear vision above eye level, 6.6% vision through open blinds,



Since the invention of movable sash, the window has had three functions: light, ventilation and outlook. Today electric lighting and air conditioning in office buildings have largely eliminated the first two of these, but the hangover of conventional use has so far blurred a direct approach to the third.

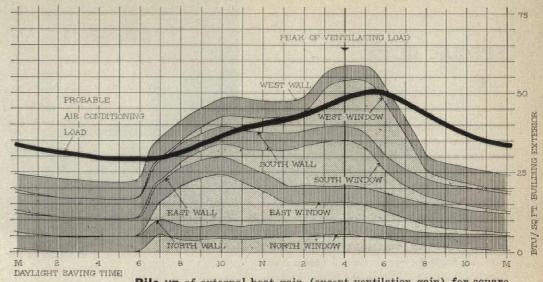
Modern, high-intensity lighting has freed office planning from rigid relationships to peripheral window space. Modern lighting is more evenly distributed and more regular than daylighting; it can be extended through large, continuous areas which simplify lines of communication and reduce space required for circulation.

While some still insist that daylighting is necessary for certain office tasks requiring a high degree of visual concentration, even this demand is rapidly being altered



The ventilating function of the window has been replaced by the controlled air movement of summer cooling and winter heating systems. In fact, many windows are being designed nowadays as fixed sash or sash locked shut and opened only for cleaning purposes. Elsewhere, it is a wellnigh universal office rule to keep windows shut so as not to throw the air-conditioning system off balance.





Pile up of external heat gain (except ventilation gain) for square tower with windows occupying 25 % of wall area, oriented to Manhattan's street system. Reduction in peak air-conditioning load (see p. 171) is due mostly to smaller west and south windows.

With these two functions removed, the sole remaining function of the window is outlook. It is obvious that the window should be restudied from the point of view of how much outlook we need and want.

How much of our conventionally sized windows do we really use? According to the photograph of the Gateway office building project in Pittsburgh (left), the answer is less than half. The striking uniformity of the drawn Venetian blinds reflects a fairly general practice. The problem of sky glare becomes acute in tall buildings; office workers also find it uncomfortable to work in direct sunlight. Thus the tendency is to close the blinds to shut out glare and sun, and to rely more and more on electric light. Even in the smaller "TV windows" used by Harrison & Abramovitz in the Alcoa building (photo, p. 169) workers usually lower the blinds to cover the top third of the window.

All this suggests that there is a good deal of useless glass in the office building wall. In partitioned areas, spaced windows at eyebrow height might be a comfortable solution, with ample wall space on the backs of the piers for location of partitions, bookshelves and other furniture. In open areas, now being favored more and more by large organizations, a continuous ribbon strip but of reduced height would provide a more general outlook. In reception areas, restaurant areas and other special purpose areas large windows might be used for decorative reasons.

Fenestration, tailored to rent scales and to the requirements of tenants, is a design element on which the architect and the rental agent had better come to grips. Because more and more office buildings are being built entirely or primarily for the occupancy of a single large tenant, there is little justification for continuing the uniform fenestration that is now standard practice. Like any other building type, office buildings can be tailored to the require-

ments of specific interior functions, while equipped with the flexibility necessary for future changes. This means that the architect can locate large windows where they will be most easily protected from solar heat and use the space behind them accordingly. There is no reason why fenestration differentials cannot be reflected in differential rent scales. There is an old American precedent for a glass tax: it was responsible for the small size for windows in colonial architecture. Modern air conditioning has restored the glass tax, but it is presently a hidden one-being paid by whomever owns and operates the air-conditioning system.

While air conditioning means that the amount of glass you use will cost you money, some office buildings are still being designed with the maximum—a 100% glass wall. Obviously, continuous ribbon windows of conventional height cut this maximum to 50%, while the pier and window scheme cuts it down to 25%. Eye-level windows would reduce glass area to 12½%, while a continuous strip of reduced height desirable for open interior space would bring the glass fraction back up to 25%.

Each one of these glass fractions might be well worth its cost in air conditioning in certain parts of the building. But it is no longer possible to plan fenestration as if the cost of air conditioning did not exist. It is the architect's responsibility to plan his wall treatment for maximum economy in the cooling load-the considerations discussed here are not within the province of the air-conditioning engineer. An architect aware of the extent to which alternative wall treatments and alternative orientations can affect the cooling load will be able to present various schemes for detailed airconditioning studies. The results of these studies can then be properly weighted by the many other demands of an office building plan, and a final architectural solution determined.





Chrysler building annex, has solar load pattern similar to that shown above, modified by rectangular shape. White brick walls help reduce air-conditioning peak load and operating cost to what is probably record low for a postwar Manhattan office building.

Socony building, across 42nd St. from the Chrysler Annex, also reverts to "pier and window" fenestration. Light-colored, stainless-steel walls will reflect heat; complex shape creates control problems.



SPECIAL GLASS

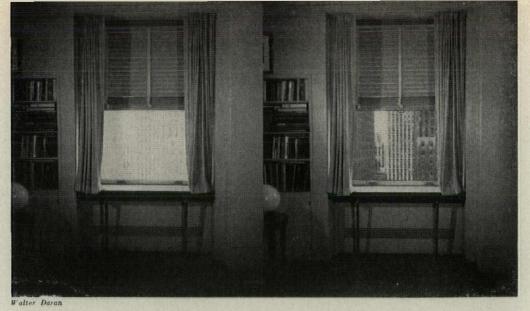
An open window, in addition to letting air in or out of a building, also admits every bit of radiation from the outside and allows radiation of all kinds to escape.. A glazed window, on the other hand, is a very special sort of filter. It excludes shortwave radiation-ultra violet-and prevents the escape of long wave infrared or radiant heat. To the radiation from a steam radiator, or anything cooler than a steam radiator, ordinary glass is as opaque as an iron plate. It absorbs such energy, becoming warmer in the process, just as a sheet of iron absorbs it. But unlike iron, it is transparent to radiation in the form of light and the "near infrared."

This one-way filter action, known as the "greenhouse effect," turns a glazed box into a heat trap. Lay a sheet of glass on an open cigar box containing a thermometer and put the box in sunshine. The temperature inside will begin to go up immediately-rising to 125°, 150°, sometimes to 175° or more. It will rise, in fact, until the entire box becomes warm enough to increase the convective heat loss of its surfaces-including the surface of the glassto the point where it just equals in quantity the solar energy that is getting in Slide the glass cover to one side, and the temperature will fall. Cover the box again, so that no air can escape, and it will rise.

An air-conditioned building is necessarily such a closed box. Enormous quantities of heat-energy coming in through the windows which might otherwise readily be disposed of by ventilation must be pumped through the air-conditioning machinery—an expensive, laborious process.

Even before air conditioning, the large windows used in industrial buildings were frequently painted blue on sunny exposures to keep out some of the sun heat while still admitting some light. This practice may or may not have anything to do with the development of heat-intercepting glass, but the principle is exactly the same. Bluish-green coloring in glass improves the selectivity of glass as a filter; a good deal of heat energy is absorbed without too much effect on light transmission. Thus, the pale bluish-green glass often used in air-conditioned buildings transmits only about 40% of the total solar energy striking the windows, but admits almost 75% of the light.

Efforts to evaluate the effect of such glass on air-conditioning load are complicated by the fact that a good deal of the heat absorbed in the glass may find its way to the inside of the building by convection. Also, heat normally enters from the outside in this way wholly apart from the effects of



Sun glasses for office buildings? Photos show effect of "darkening glass" on view from Rockefeller Center office. Glass transmits only 12½% of light, makes scene outside three tones darker, adjusting its brightness to that of interior lighting.

solar radiation—the windows of a building that is being cooled admit heat from the outside just as they lose heat to the outside in wintertime. Almost five years ago, however, the American Society of Heating & Air Conditioning Engineers (then the A.S.H.V.E.) completed an elaborate and thorough investigation of heat gain with all types of glazing materials which has made it possible to make such an evaluation in terms of the comparative total heat gain for an air-conditioned space with various glazing materials.

One thing this study revealed was that the atmosphere itself, in industrialized areas, is a pretty good heat interceptor. Another was that the plate glass usually used in city buildings adds to this effect. Thus at 3 P.M., when a west-facing window in an air-conditioned house in Bronxville, N.Y., is admitting 186 Btu per sq. ft. per hour, a plate-glass window in a Manhattan office building, also air conditioned, lets in only 115 Btu per sq. ft. in the same period, or 38% less. This is by way of showing, among other things, that unless all factors are known, such comparisons can be pretty meaningless.

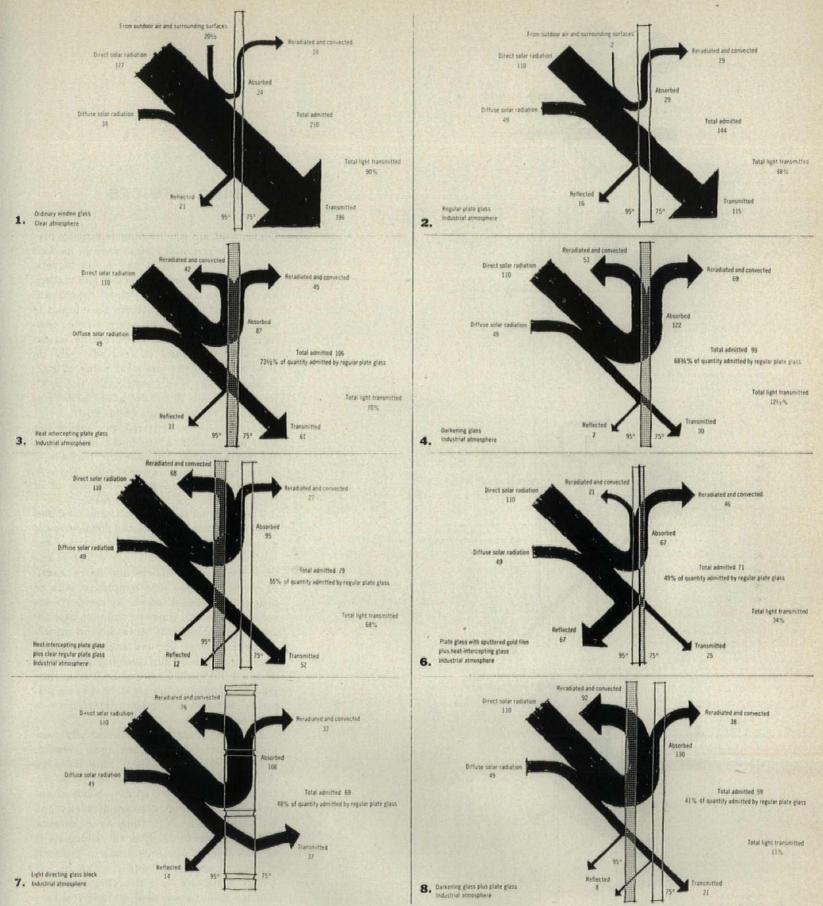
Under exactly the same circumstances as those just cited for the office building, a square foot of heat intercepting plate glass would admit only 61 Btu, or 54 Btu less than regular plate. Assuming that the window in question contributes to the peak airconditioning load of a large building, with a projected air-conditioning cost of \$500 per ton, substitution of heat intercepting glass would result in a saving in air-conditioning cost amounting to \$2.25 per square foot of glass—certainly sufficient to pay the premium for the special glass.

This kind of calculation opens the door to special window treatments of all types, including outside shading devices of various kinds (p. 176). There is, for example, a special plate glass with a transparent coating of evaporated gold—a very thin coating; so thin, in fact, that it can probably be more than paid for by air-conditioning

savings. This glass looks like a gold mirror on the outside and is pale bluish green from within. It has the remarkable property of "bouncing off" solar heat by reflection, rather than absorbing it, and thus prevents much of it from entering the building in any form. While it is not yet being marketed on a regular basis, and is yet to be subjected to definitive tests from a heatgain standpoint, indications are that it is as capable of "paying for itself" in reduced cost of air-conditioning equipment than the ordinary heat intercepting variety.

With the function of office building windows reduced simply to a means of outlook, darkening glass is another possible contender in the save-by-spending derby. Intended primarily to reduce the contrast between outdoor and indoor brightness, and thus prevent glare, darkening glass does not select the longer-wave, near-infrared radiation for absorption, like heat-intercepting glass, or attempt to let through as much light as possible while stopping as much heat as it can. It functions by absorbing a great deal of solar radiation of all wave lengths, but lets through such a small part of the total (only about 121/2%) that the heat gain through the glass is necessarily much reduced, along with the "light gain."

Double glazing also results in reduced heat gain, but rarely produces savings in the first cost of air-conditioning equipment sufficient to make up for the cost of the added layer of glass. Its economic justification is found in lower winter and summer operating expense. Sticking to the 3 P.M., "industrial atmosphere" condition used in previous examples-the greatest saving due to double glazing is with two layers of regular plate glass, which admit 25 Btu. per sq. ft. less than a single layer. This is a saving less than half that realized by changing to a single layer of heat intercepting glass. When an extra layer of plate is added to a layer of heat intercepting glass, the additional saving is only 9 Btu. per sq. ft., or only one sixth of the amount saved by the heat-intercepting glass alone.

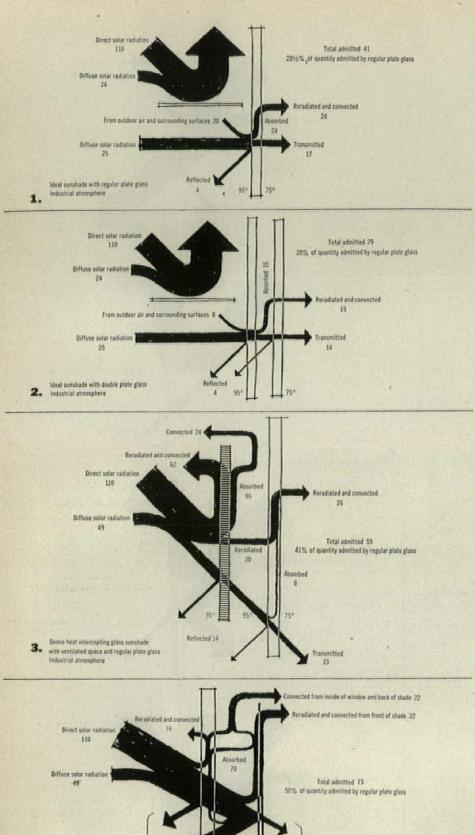


Light with less heat. Some complicated physics are involved in effort to admit light (or, at least, maintain outlook) and shut out sun heat, especially when air on one side of glass "filter" is cooled. Heat flow diagrams above are all based on west-facing glass at 3 P.M. on standard "design day" of Aug. 1, at 40° north latitude. All figures are in degrees or in Btu per sq. ft. of vertical west surface per hour. With exception of first diagram, all show heat gain for city's

"industrial atmosphere." 1. Instantaneous heat gain through ordinary glass is 210 Btu per sq. ft. per hour; direct solar heat transmission, over 88%. 2. Regular plate glass absorbs considerable radiation, helps to cut total heat gain to 144 Btu/hr. 3. Heatintercepting plate glass (light color) transmits less than 40% of sun heat, cuts total heat gain by more than 25%. 4. Darkening glass, while nonselective, cuts heat gain over 30%, reduces transmitted light to one eighth

of original value. **5.** Double glazing, with outer sheet heat intercepting plate glass, reduces total heat gain 45% because of insulating air space. **6.** Gold coating on regular plate glass, plus protective heat intercepting layer, reflects 42% of energy, cuts heat gain 50%. **7.** Directional glass block admit only 48% as much heat as regular plate glass, bend light against ceiling. **8.** Double glass, outer pane darkening glass, cuts heats transmission 59%.

architectural FORIM / July 1055



Reflected 70 Regular plate glass
plus white, translucent shade

Blocking the sun. Stopping sun's rays dead in their tracks does not mean complete elimination of heat gain through windows, but it is good start. Assumed conditions are like those used on preceding page. 1. Ideal shading, like that of overwindow "hood" which does not trap air or reflect heat into building, reduces gain 70%. 2. Shading plus double glass,

if similarly "perfect," can reduce heat gain 80% due to insulating effect of double glass. 3. External shade made of dark heat intercepting glass, with freely ventilated air space, can cut heat gain about 59%. 4. Inside shade or blind, fully drawn and closed, can reduce heat gain about 50% if truly white on side facing glass.

SHADING DEVICES

Commercial air conditioning is already producing the beginnings of a boom in outdoor shading devices. Wood and metal louvers, vertical and horizontal, movable and stationary, concrete and metal "fins," "eyebrows" and grids of various patterns have begun to decorate the façades of many smaller commercial buildings and a few of the larger. The word "decorate" is used advisedly: in some instances the practical value of such treatments has been questionable, but in almost every case they have added a welcome element to contemporary architecture.

To date, use of external sun shades has been mostly confined to lower buildings in the southern part of the US because of maintenance and icing problems. There is every reason, however, for extension of at least the principle to other areas.

The creed of this new school of architectural decoration is simple and fundamentally sound. Its tenets: 1) the place to stop sun heat is outside the building, where it can pass into the atmosphere and do no harm; 2) the way to stop it is completely, with an opaque obstruction which at most reflects sunlight into the room but admits daylight from other angles; 3) since the sun attacks different sides of the building from various angles, the means for stopping it must be disposed in various ways, and frequently must be adjustable to provide maximum protection along with minimum interference to light and outlook.

All three tenets can be successfully questioned in some respect, but such questions are matters of degree only. They leave unchallenged the fact that shading devices can frequently be provided on the outside of airconditioned buildings that are decorative, effective and need add nothing to the original cost while returning, like all reductions in air-conditioning load, dividends in the form of reduced operating costs.

This being the case, it is not surprising that the manufacturers of such devices have begun to compete for a share of the building dollar which might otherwise go to the manufacturers of air-conditioning equipment. They are willing to divide with the building owner: in the typical example cited for sales purposes the reduced cost of air conditioning is invariably several thousands of dollars more than the cost of the shading device, this difference being, of course, money ahead so far as the owner is concerned.

The trouble with such computations, with



H. H. Baskerville Jr.

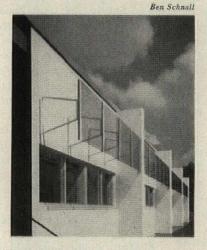
Louvered overhang has vertical drop along outer edge to increase shading. This type of protection works best on south-facing walls.

respect to new buildings, is that they depend at least in part on the presence of large areas of unfavorably orientated glass. The more such glass there is, the more the owner "saves," by this kind of logic. The conscientious designer must approach the problem somewhat differently. He must strive, first of all, to eliminate or minimize glass areas which increase the peak air-conditioning load-thus reducing both types of expenditure-and then discover whether, given a sound design, added shading devices will be self-liquidating. If the savings are less spectacular, the owner need be no more unhappy than if his wife passes up a chance to "save" \$30 by buying at half price a hat worth \$60.

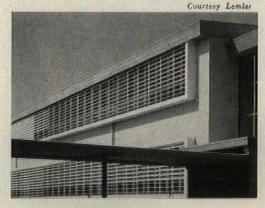
The same thing applies, of course, to the use of special glass, as discussed on the previous pages. Such savings are possible only because the glass is where it is in the first place; if its presence is not thoroughly justified by practical or esthetic considerations, what the special glass or shading device actually accomplishes is to reduce waste, not save money. Nor can such savings be placed end-to-end. In almost every case the choice is between special glass and shading, not a matter of one plus the other, unless one or the other is actually cost-free. Thus every such device must prove its claim to economy in terms of a specific design for a specific building before it can be employed with confidence that the expenditure is justified.

The reverse is also true: the architect of an air-conditioned building who provides windows and fails to provide a means for excluding sun heat when such a means will reduce its total cost is wasting money just as surely as if he had spent it heedlessly. Many large buildings are being built today in which the peak air-conditioning load might be considerably reduced simply by recessing the glass, or by creation of a simple grid pattern of "fins" and "eyebrows" capable of reducing the area of exposed glass at the hour when the load on the air-conditioning apparatus is at a maximum but not necessarily able to exclude sun heat entirely.

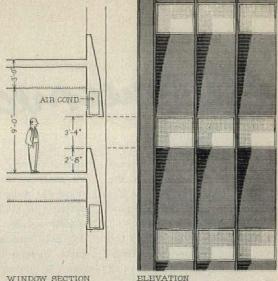
The solution of this problem requires ingenuity and a good design sense. To the talented architect, it will be a welcome new element in a design problem heretofore limited to the treatment of flat window and wall spaces. Variation of fenestration and varied shading may produce some important new contributions to the Vertical Style.



Glass shade, made of heat intercepting glass, has air space behind to release absorbed heat to outside. See diagram on opposite page for resulting heat flow. Architect: Marcel Breuer.



Horizontal louvers, by same manufacturer, work best on south walls. Angle of vanes is also adjustable. Architects: Austin, Field & Fry.



WINDOW SECTION

Shelf-shading wall, for tall buildings in northern climates, would provide shade for about three-quarters of glass area at critical hour of 3 P.M. Sloping spandrel makes room for air conditioner above window. Designer: Henry Wright.



Vertical metal louvers, available in a number of widths and designs, are now made on West Coast. Fins are adjustable to various angles, provide best protection on east and west sides of building. Architect: Richard J. Neutra.

Shading-type insect screens, installed on the windows of public office building in Los Angeles, saved more than \$13,000 on cost of air conditioning plus screens, as compared to air conditioning alone, and reduce operating costs accordingly.



for all concerned

A number of prominent citizens have struggled lately with the problem of taste raised by unfamiliar things, in this case new styles in building.

A Virginia senator, facing the model of the proposed Air Academy chapel, went into such a huff that the Air Force promptly and in embarrassment withdrew the design. It was the cherished project of the very capable Team Captain Walter Netsch in the office of Architects Skidmore, Owings & Merrill. It looked in model rather like an innocent child's game with folded paper, but to a senator brought up largely on Early American antiquities it was a shock and an outrage.

A bishop in New York, facing the many new buildings that now go up smooth-faced, deplored the absence of applied decoration in the design of our day, and went so far as to equate this with a lack of courtesy in manners.

A banker in Akron, facing pictures of Manufacturer's Trust in New York and other unprecedented new banks, decided to do his bit too in the overall picture of banking progress and emerged with the remarkable googie design shown on this page.

Smart newspapermen, on getting the report that John D. Rockefeller Jr. wanted to have a new Protestant office building "harmonize" with Gothic church architecture nearby, jumped to the conclusion that the office building must also be faced in "Gothic." A taste that would allow a contemporary answer and still harmonize was something these very bright people could not imagine. It was too unfamiliar.

Meanwhile a dozen large business organizations, some of them

internationally famous, continue to entrust taste control over their far-flung branch building activity to staff employees who sometimes do, and more often do not, command very good taste. In some instances the outcome is adolescent and strange in view of the power of the organization.

AN EXPLANATION

In every one of these typical instances people otherwise well-educated were fumbling with the unfamiliar. And the unfamiliar in the arts scares most people about as much as it thrills the devotees.

The senator, brought up in a state which is probably America's most backward one in modern architecture, surely found no preparation for his shock in Colonial Williamsburg and no security from it in the great old work of Jefferson. How could he know that the Air Academy's zigzag wall planes were not "crazy" at all? How could he know that they represent a forward-looking and interesting treatment of masonry of our day just as Gothic architecture represented advancement in its own time? Had he known all this, his taste might still have rejected this specific design, but his bearing would at the very least have been more moderate and intelligent.

Again, the bishop must have been unaware of a newer canon of taste, acknowledged by the most subtle and scholarly critics in his own church. This taste says that it is the building itself, the building in its entirety, which must be the "ornament." The greatest honor of the building lies not in added decorations but in the total impact of its composed shape, its proportions, its color, its textures, its finishes, and above all its scale and its progressions of space. Compared to these noble things the presence or absence of attached decoration or allegory is a minor matter, a matter largely of sentiment, not art. Under such learning the bishop might then in his own taste still prefer buildings bedecked with ornament, but he could no longer talk about lack of courtesy in all "unornamented" buildings. He would have to realize that an "unornamented" building can still be very ornamental.

He would have to distinguish between buildings conceived insensitively, which are indeed discourteous, and the sensitive buildings toward which any discourtesy on the premises has not been by the architects.

Again, the banker in our story, were he to receive more architectural education, would get past his first primitive notion that modern architecture, being strange to him, must also be eccentric. He would find that modern architecture seeks good sense, and only the bad examples are silly, no matter how many people think that the first move in "going modern" is just to cast aside inhibitions.

FREEDOM OF TASTE

America and indeed the whole modern world has been somewhat spoiled by "freedom of taste" being turned into a dogma instead of a necessary convenience. Individual taste in a democratic society has to be given scope, no matter how untutored it may be. This is distinctly not because anyone's taste is as good as anyone else's but only because no way has been found of guaranteeing who among the minority of original people is a genius and who is merely an eccentric.

So in order to preserve the genius both must be protected. Yet the taste of the vast majority of us is not very good until it has been cultivated and developed somehow. Few are able to blow off opinions from the top of their heads on art or architecture unfamiliar to them, and say anything of value. Most of us need repeated exposure to the best examples of the new kind; we need experience and training.

The whole apparatus of preference polls used by mass marketing blurs this need of training for us. Such spot polls determine not what is good but what is popular. For example they establish in what numbers the stupid Mrs. Jones and her friends like garish surroundings and in what numbers the bright Mrs. Smith and her friends like something better. To credit polls with more than this is to give them too much.

Architecture is a serious art and all society is its captive audience. Consequently the client in architecture, the man who builds, has an obligation to train his taste as well as he can. He must make himself familiar with the purpose and thinking within unfamiliar forms that many now "throw" him. He may indulge his "popular" untrained taste to heart's content in musicals and movies but in building he has an obligation to be informed on the rudiments of esthetics no less than on costs and methods.

The term "informed taste" is really quite profound, for it suggests that those who have allowed themselves to absorb knowledge and emotional experience are formed inwardly as others are not. Such people being human may still be morally no better than the next man; they may occasionally cheat or steal; but they will leave behind them a more pleasant city.

Is this diaper architecture?



Douglas Haskell



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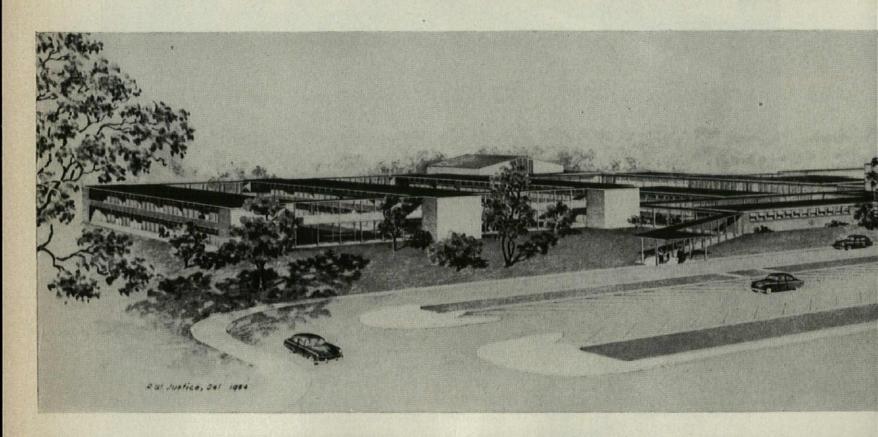
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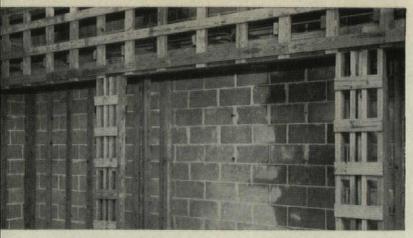




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IN THE AUDITORIUM: Carpenters at work on construction of Auditorium, where all sub-flooring is Wolmanized lumber.

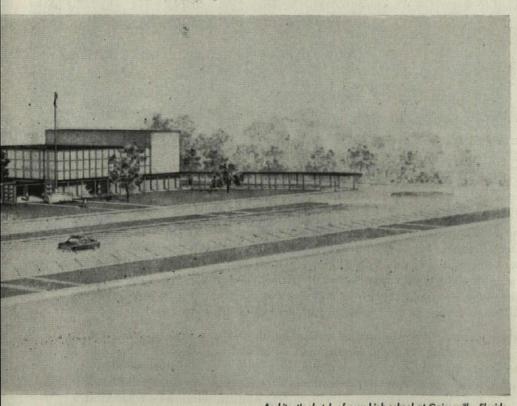


IN SPECIALTY ROOMS: Wolmanized lumber is used in the intricate construction put up for storage space in the Corrective Gym Room.



IN DRESSING ROOMS: Architectural Inspector checking an effective use of Wolmanized lumber in framing for a three-way mirror.

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Architect's sketch of new high school at Gainesville, Florida.

Architects: Goin and Moore, Gainesville, Florida, General Contractor: Kenneth H. Smith, Daytona Beach, Florida. Lumber Sub-Contractor: J. K. Shirah, Daytona Beach, Florida.



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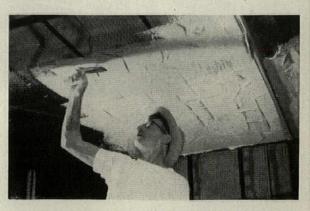


Truscon 96-foot Clerespan Steel Joists erected in Oblates of St. Francis De Sales High School, Inc., Toledo, Ohio. Bentz and Bankemper, architects; Henry J. Spieker Company, contractor.

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design provides a 96-foot clear span

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A new Truscon catalog giving interesting facts, dimensions and loading tables for Clerespan Steel Joists up to 96 feet in length was mailed in May to our list of architects. If you did not receive your copy, kindly ask for it by sending in the attached coupon.

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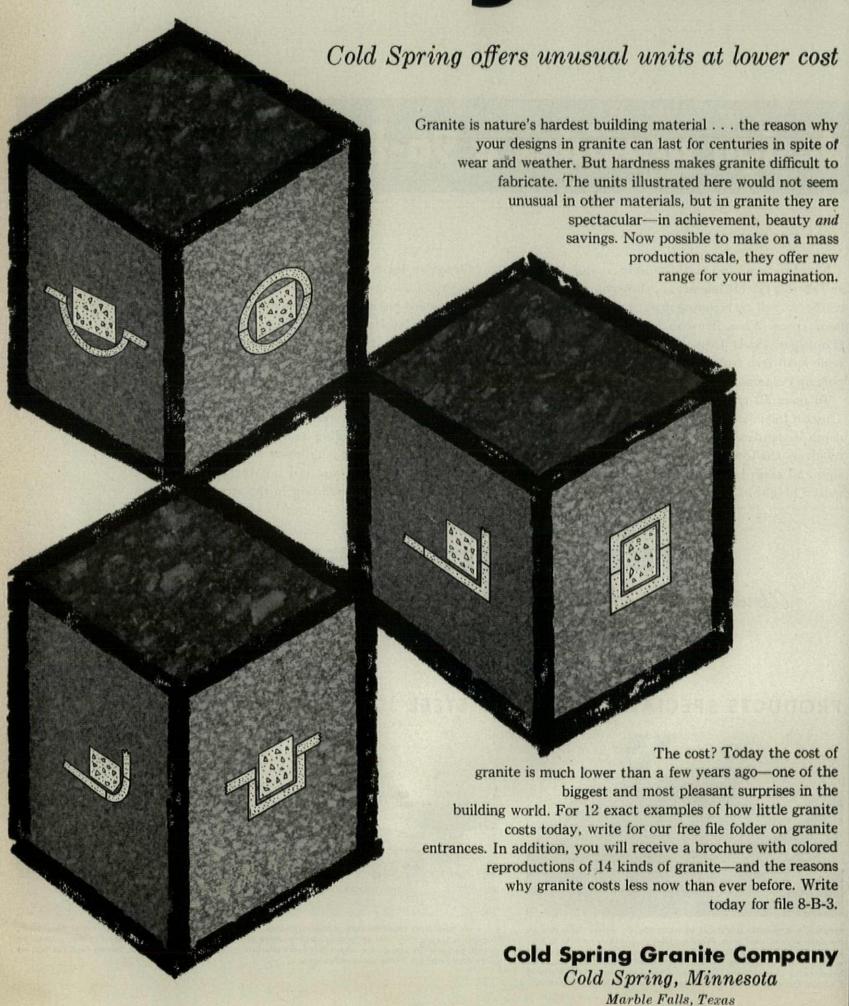


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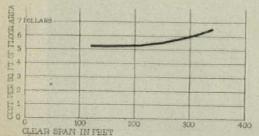
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UNARCO ROYAL-AIRE a distinctive AIR CONDITIONER

EXCERPTS

Continued from p. 131



Shell cost for cylindrically vaulted hangar goes up only about 25% with 180% increase in clear span. The graph (left) indicates the approximate increase in cost with span for cylindrically vaulted hangar shells. It might be pointed out that this modest increase in cost with span is caused largely by the effect of the arch reactions on the relatively high supporting buttresses and the foundations.

Shell construction can also be used for small building roofs and canopies. In this application shells require only a few inches of skin thickness and relatively minor convolutions in shape. However, unless the

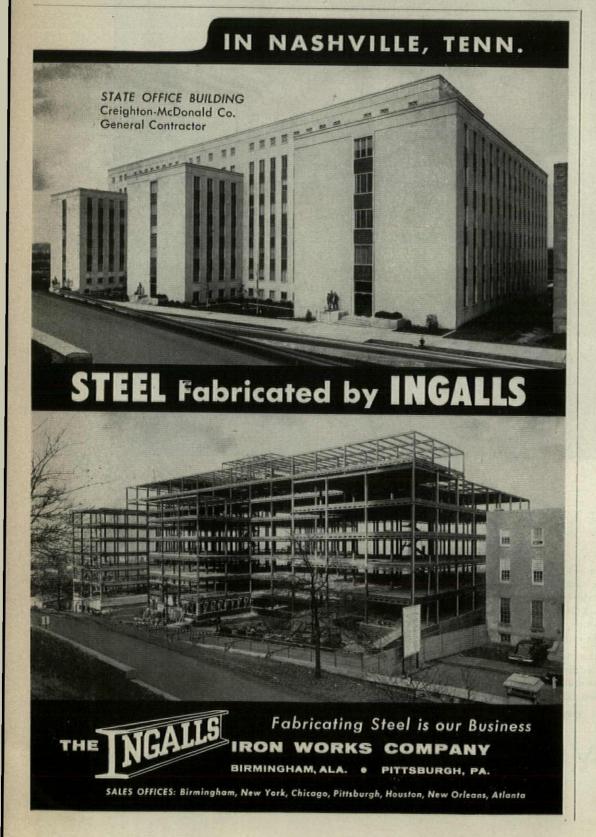
special architectural effects desired are particularly suited to such forms, similar results can be achieved at equal or lower cost by use of flat plates, hipped plates or other more conventional construction. Concrete materials are so cheap that on short spans added thickness can be provided for the cost of molding special surfaces and handling drainage and associated problems. For small structures in which the stresses are obviously far less than the inherent strength of a shell of minimum thickness, design costs will be about the same as for conventional construction. However, in the case of unusual shells large enough to require reasonably accurate analyses to determine strength requirements, the engineering work necessary to provide a safe and economical structure is more difficult and time consuming than for many other types of construction. This condition is necessarily reflected in the engineering design costs and subsequently in the architectural design costs. While the structural design cost may not actually increase in proportion to the construction cost of structure, it may increase with respect to the total project.

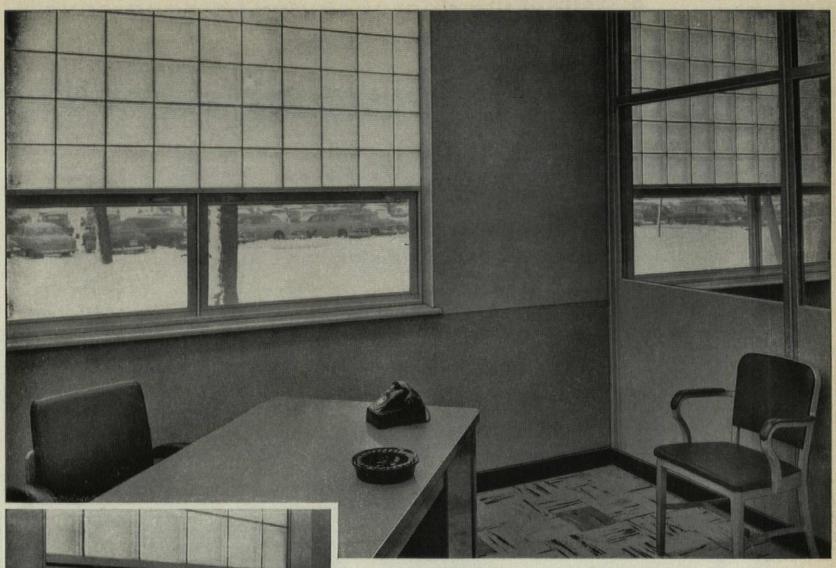
The exact point with respect to the size of project at which shell design costs can be absorbed in normal design fees will vary with the complexity of the solution. For simple shells and straightforward framing, shell design may not be more expensive than conventional designs regardless of the size of the project. This is particularly true of hipped plate designs. As in other types of construction, if the structure is highly integrated and composed of a number of complicated parts, the design costs will be accordingly higher. For unusual projects it will usually be advisable to consult with engineers familiar with shell design before fixing the design budget.

However, there are many situations, particularly on projects of intermediate size, where shell construction can provide the specific solution sought by the architect. In this case the owner should be willing to accept added design costs, either to obtain a unique solution to his problem or to obtain lower over-all construction costs or both. It seems reasonable that if the owner is willing to accept costs that might be inherent in a certain veneer, a certain panel or a certain flashing, he should be equally willing to pay the modest added design costs necessary to achieve similar or more important effects.

While this added design cost is important in relation to design fees, it is insignificant compared to total construction costs. As the owner stands to gain as much from the added design work as he would by any activity by the contractor, it is in his interest to give favorable consideration to the added fee required to supply a better plan from which the contractor will work.

continued on p. 192





A special-design application in a midwestern plant office. Upper wall is Consoweld 10 in Dusty Green Echo. Wainscoting is Gray Holiday, with Twin-Trim moulding. Movable partitions are faced with Consoweld wood grain in Harvest Brown Birch. Baseboard is a 3/8" thick strip of Consoweld, available on special order. Desk top is Consoweld Gray Echo. Wall materials are applied directly over cement block.

How **Consoweld** can be used for specially designed interiors

Consoweld is a melamine-surfaced plastic laminate available in 46 patterns, color-tuned by Color Research Institute of America.

Exceptionally fine effects can be achieved with planned applications of Consoweld to walls, desks, tables, and counter tops. Consoweld comes in two thicknesses—the standard Consoweld 6—1-16", for shop-fabricated tops; and Consoweld 10—1-10"—for on-the-job application. It may be applied directly over cement blocks, gypsum lath, or sheathing-grade plywood. Consoweld Twin-Trim matched mouldings provide large areas of unbroken color. Get complete details and data file folder—mail the coupon or write.

Window detail: the sill is post-formed of Consoweld Dusty Rose Irish Linen, made to order for this application.

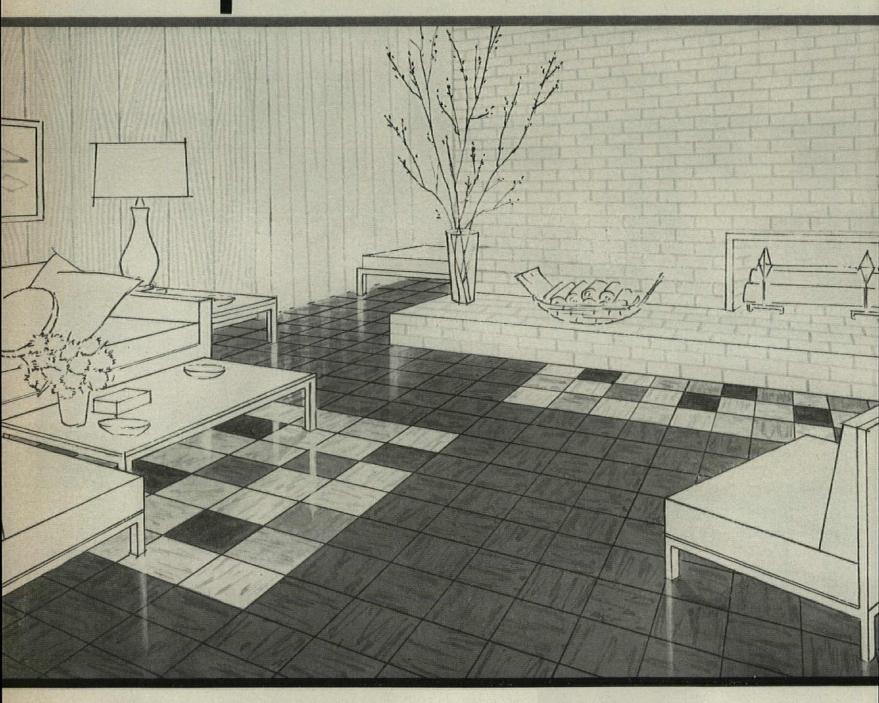
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Preview by Monsanto

Vinyl tile demonstrates its decorative versatility on a living room floor



The contribution that vinyl tile can make to take-it-easy living is well-known. Its colorful beauty, its matchless durability, its minimum maintenance requirements have been proved on millions of kitchen and bathroom floors.

These same qualities are now broadening the use of vinyl tile in other areas. In the sketch reproduced above it creates an interesting Afghan pattern in a living room. Its original decorative possibilities are endless.

No other flooring material stands up so well under traffic. Vinyl tile is practically immune to abrasion, grease, acid, bleaches, alkali and harsh cleansers. The smooth, non-porous surface cleans with a light damp-mopping. Colors are wearproof because they extend the full depth of the tile.

Installation can be made over plywood or smooth concrete slab subflooring.

Vinyl tile made with Monsanto Opalon vinyl resin and Monsanto plasticizers is carried by most flooring contractors in scores of rich colors and patterns. Standard tiles are 9" x 9". Also available in 6" x 6" and 12" x 12" sizes. There are grades to meet all needs—vinyl-asbestos combination, felt or composition-backed vinyl, and 100% vinyl.

The finest tile for any floor is vinyl tile ... and quality vinyl products are made of Monsanto (Spalon vinyl resin.

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Designed for easy installation, low maintenance cost. Electrical controls housed in one easily accessible box. 24-volt control circuits cut installation cost, eliminate hazards of high voltage. All models easily adaptable to time-saving electronic control.

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EXCERPTS

Continued from p. 188

Revolution in doors

Excerpts from an article in Collier's by Murray Teigh Bloom

All over the world today a 76-year-old American invention is getting the pushing around it deserves. In all, 20,000 revolving doors whoosh endlessly, pleasing children and building owners alike. Since Theophilus Van Kannel obtained his first revolvingdoor patent in 1888 (nine years after he invented the door) his "always-open, alwaysclosed" devices have whirled in all kinds of

Van Kannel's doors admit black-faced miners to an Illinois coal-mine bathhouse. They admit gourmets to the Café de la Paix in Paris and quick-lunchers to the New York Automats. Atomic scientists at Hanford use the doors to go in and out of restricted areas, and there are four revolving

doors in the atomic-war home for our high brass, an emergency pentagon built into the side of Rock Raven Mountain, near Thur-

A few architects scorn the doors as oldfashioned and unesthetic, but Frank Lloyd Wright used them in the beautiful Johnson Wax building in Racine, Wis., and the earthquakeproof Imperial Hotel in Tokyo. (The hotel doors turn just as easily after earthquakes as before.)

There are 18,000 revolving doors in use in the US and 2,000 in other countries, according to the International Steel Co., the world's leading manufacturer. Most bigcity post offices also have the whirling doors. When the Boston Post Office was completed in 1933 without revolving doors, the oversight became audible as drafts roared through the building. Moreover, the pressures generated by the drafts made it difficult to open swinging doors. (Revolving doors were installed in 1934.)

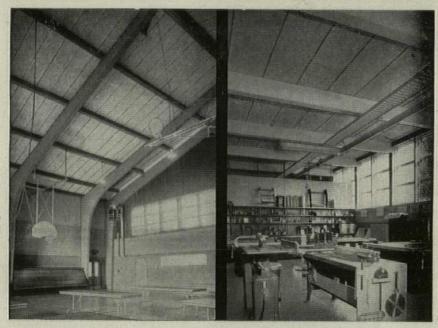
Heating engineers liken skyscrapers to huge fireplaces. Every time an outside door is opened, stack draft is created by the difference between inside and outside temperatures. Stack draft is no joke. It once pressured a divan right through a show window in a Midwest department store. When stack draft is strong, you have to exert up to 100 lb. pressure to open an ordinary door. A revolving door usually requires no more than a pound of pressure to move, but when the weather strips are still stiff and new, it might take up to 10 lb.

Some people fear the door will whirl them around so fast they will not be able to get out. However, by law, most doors are geared so they can't turn faster than a comfortable 15 times per minute and in many places the maximum is only 12 revolutions per minute. Pushing harder against a geared door does not make it go any faster. In fact, the newer doors slow down proportionately when pushed hard. And the very latest doors are motorized.

The all-time revolving-door traffic record is held by one of the Field building doors on LaSalle St. in Chicago. It was once clocked letting out 3,720 home-bound people an hour, or 62 per minute. (The door was an old one which turned faster than 15 rpm).

The biggest revolving door in history never got off the drawing board. It was to have been a 40' affair for the Chrysler Tank Arsenal in Macomb County, Mich. The door was designed so that newly built tanks could roll out of the building every few minutes without admitting great drafts. With World War II's end, the order was canceled.

The present air-conditioning era will be the golden age for the revolving door. An ordinary swing door pours out 2,600 cu. ft. of expensively cooled air per opening; a revolving door's rubber and felt weather strips reluctantly permit 181/2 cu. ft. to sneak out.



Junior High School, ne, New Hampshire Composite Porex Architect: J. A. Britton Gen. Contractor: MacMillan Co.

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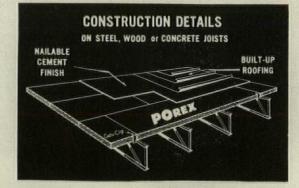
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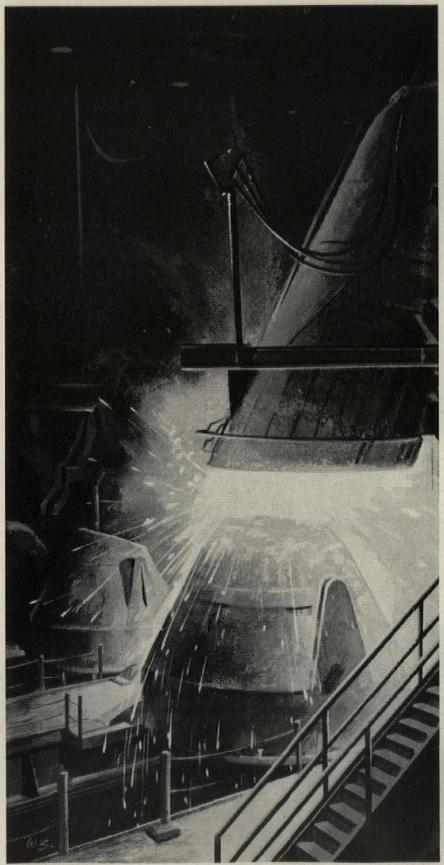


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Plain	3"	1/4"	10	-	90	50	_	_
Composite	3"	1/4"	14	_	_	_	100	60

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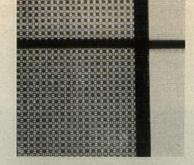
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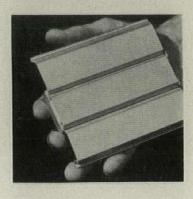
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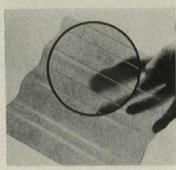


Trackless transit for sliding walls, p. 222

PRODUCTS



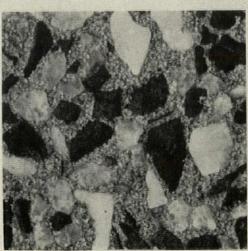
Rolltop counter door of aluminum slats, p. 222



Transparent rods reinforce plastic, p. 234

Clip-on concrete walls precast with colorful aggregate skin





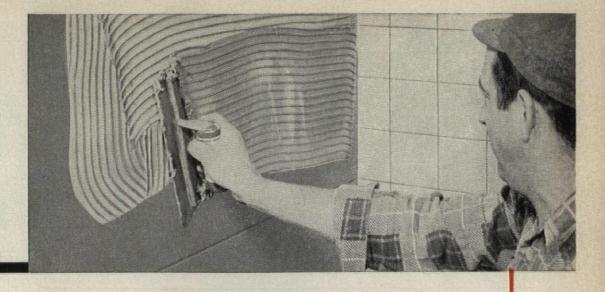
Rough terrazzo cast into prefab concrete panel is suitable dressing for monolithic stone building medium.

In the past few years, in many parts of the world, concrete has been taking on a new complexion. Stone fragments, bits of colored glass, even chunks of marble are being imbedded—by hand (see Kobe Consulate, AF, May '55) and by machine—in poured and precast masonry, dramatizing but not hiding concrete's character as bound aggregate.

Marietta Concrete Corp., one of the firms sensing current architectural interest in texture and color permanence, is now making its concrete wall panels available in a wide selection of exposed stone facings as well as the standard smooth and broomed finishes. Aggregates used-quartz, granite, vitreous enamels-are imbedded in white or colored cement matrix, and the finish can be varied from natural coarseness to an elegant high polish. All Marietta's modular size panels, solid and insulated types, can be ordered with aggregate surface, and will cost about \$2.50 to \$3.00 per sq. ft. completely installed. Like the original Marietta units, the panels have cast-in metal inserts that bolt directly to the building frame, and tongued-and-grooved joints with mechanical seal and caulking for complete water tightness. First project to wear the new curtains: Signode Steel Strapping Co. in Glenview, Ill. by Skidmore, Owings & Merrill. Manufacturer: Marietta Concrete Corp., Marietta, Ohio.

continued on p. 196





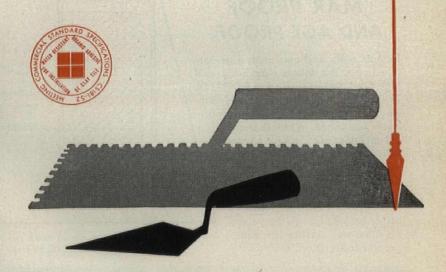
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Now—the fast, modern, money-saving way—you can offer the luxury of clay tile to every customer... commercial and residential, even in lowest-budget homes or remodeling jobs. Specify and use CTA 11. Cut costs just as effectively with CTA 12—3M's companion adhesive for ceramic tile floors. For quick details, write 3M, Dept. 187, 417 Piquette Avenue, Detroit 2, Mich.





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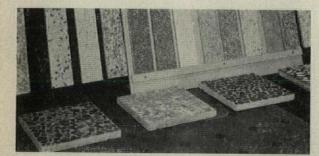
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PRODUCTS

Continued from p. 194

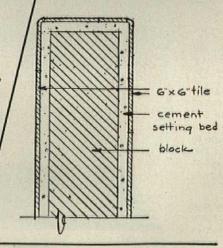






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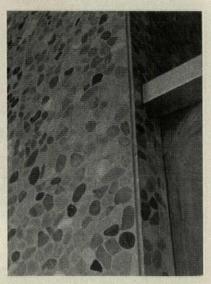
UNITED STATES CERAMIC TILE COMPANY

Member: Tile Council of America and Producers' Council, Inc. 217-J FOURTH ST., N.E., CANTON 2, OHIO

ITALIAN WALL TILE has marble spheroids pressed into face

Pieces of beautiful Italian marble, egg-shaped and polished to bring out unusual grain markings, are machine vibrated and pressed into Fulget Mosaic tile. As happens with many Mediterranean construction styles and materials, the first interest evidenced here in the exotic precast units showed up in California, where such contemporary architects as Welton Becket, Paul Laszlo, and Wagner and McAllister have specified the Italian import on several jobs for large outdoor wall surfaces and for indoor facings and floors. Fulget tiles, selling for \$2 to \$3 at port of entry, come in three types:

Fulget wall tiles, 4¾" x 9½", are supplied in 20 different marbles, natural or polished, and in mother-of-pearl or glass aggregate. These small units are set similarly to cer-



amic tile but with tight, groutless joints. They have been approved by the Pacific Coast Building Officials for installation as adherent veneer on cement backing.

Rizzada Bas Relief wall units, measuring 8" x 16", are formed with eight kinds of marble chunks projecting from the surface, and are deeply incised to reveal the spheroid shapes.

The largest Fulget wall and floor tile, 16" x 16", comes in three sizes of aggregate in 15 colored marbles polished flush with the surface. These units are applied to walls with ties and anchors. Fulget tiles already have proved their weatherability in climates ranging from Egypt to the Alps.

Importer: Fred M. Dean, 10401 Wilshire Blvd., Los Angeles 24, Calif.

continued on p. 200



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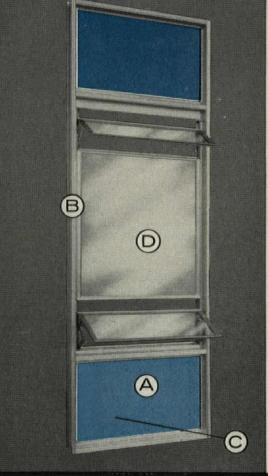
- **Want color?** Texlite's wide selection of lifetime porcelain enamel colors offers almost unlimited design possibilities.
- Want an insulating panel? Texlite has four standard insulating panels from which to choose. Or Texlite will modify one of its standard panels to your specifications.
- Want light weight combined with strength? You get both in Texlite's precision engineered aluminum framing extrusions.
- Want interesting fenestration? Texlite's integrated wall framing system lets you use the window type of your choice.
- Want low-cost, fast erection? Texlite's integrated wall framing units are delivered to the job site *complete*, require no additional assembly or make-ready, no expensive steel sub-framing.

Designed, Engineered and Fabricated in Texlite's Own Plant,

There Is <u>Undivided Responsibility</u> for Quality,

Specifications and Dimensional Accuracy

INTEGRATED WALL SYSTEM



Texlite's Integrated Wall Framing Units Go Up Fast Because

- No caulking is required.
- New, interlocking design of mullions eliminates bolting between adjacent framing units.
- 3. Structural design of mullions eliminates need for intermediate attachments to building frame, and steel sub-framing.
- 4. Simple, three-way, adjustable attachment compensates for job tolerances.
- 5. Factory erection crew not necessary. Factory supervisor available upon request.
- 6. All units delivered to job site complete, ready for erection.
 - Porcelain enamel insulating panel
 - (B) Interlocking mullion
 - Weathertight core ventilating provisions *
 - Window of your choice, or fixed glass installed directly in framing unit.

*Pat. Pend.



In our 76th year of progress



For additional information on Texlite's new Integrated Wall System, write directly to:

Atlanta

ARCHITECTURAL PRODUCTS DIVISION 3305 Manor Way Dallas, Texas

OFFICES IN

New York

Chicago Los Angeles Denver

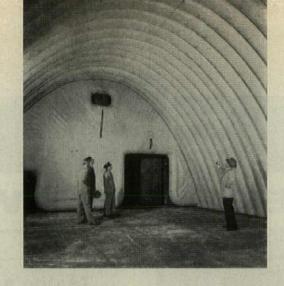
Tulsa

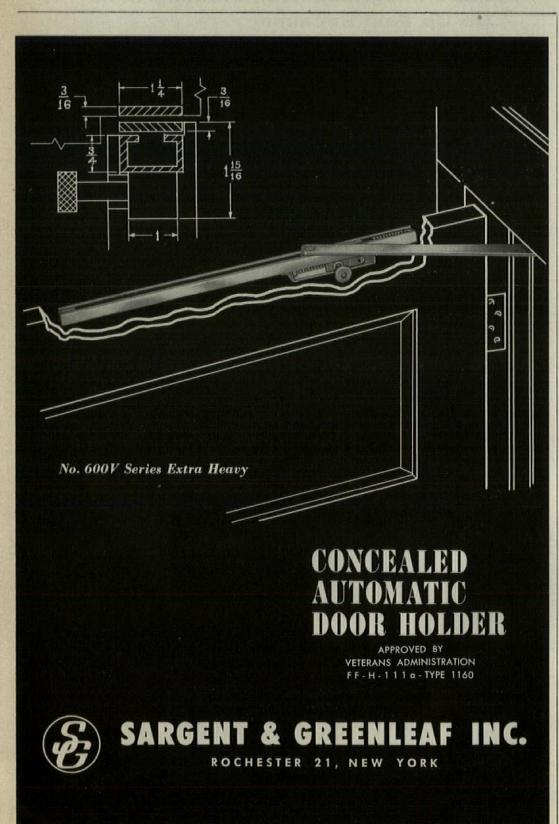
Houston

PRODUCTS

Continued from p. 196



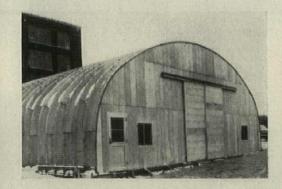




INFLATABLE SHELTER stands up under 24-ton snow load

Big arched balloons make up B. F. Goodrich's unusual ground shelter fabricated for the Air Force. Withstanding 80 mph winds, the nylon-reinforced rubber building remains erect under snow loads up to 24 tons; each of the 24 18"-diameter columns can support 2,000 lb. Easily transported and erected, air-filled forms similar to this military arctic shelter should be practical as temporary construction for field personnel or materials. The 7,500-lb. (deflated) structure can be carried in a single truck. With its arches inflated at 2 psi, it shapes up as a 16'-6"high-vaulted enclosure housing 30 men and radar equipment. Excellent insulation is created by the dead air space in the columns and in the double-layer end walls, as evidenced by the shelter's use in subzero temperatures. A mattress foundation is created by 24 32'-long tubes placed side by side on the earth or snow, Compensating for bumps or rocks below, the air cushion creates a level surface on top for a sectioned plywood floor. A vinyl coated tarpaulin is laced on as weatherproofing, and guy wires keep the whole building from taking off.

Manufacturer: B. F. Goodrich, Akron, Ohio



TRUSSLESS STEEL PREFAB straightens up sides for better storage space

While the wonder of Wonder arched buildings (AF, July '54) continues to be their small price on space—about \$2.00 per sq. ft. in place—the new straight-wall models afford more useable cubage than earlier half-rounds. No engineering concessions were made on the knock-downs' ruggedness or simple, foundationless erection. Withstanding winds up to 125 mph, the 48'-wide industrial warehouse pictured was put up with simple fasteners by two workmen in a

continued on p. 204



Design fundamentals of the

ALL-AIR HIGH VELOCITY distribution system

By F. J. KURTH

Vice President of Engineering

Anemostat Corporation of America

A national survey reveals that today, more than ever, engineers are studying, learning and using high velocity-high temperature differential air distribution. Here is a brief discussion of the advantages of the all-air high velocity system over conventional and mixed cycle (air and water) systems.

- 1. No Coils—No Clogging—No Odor—There are no coils in the all-air high velocity units. Damp coils collect lint and emit dank odors, and the coils must be cleaned periodically.
- 2. No Individual Fans Filters or Electric Motors The all-air units operate entirely with air which is processed in the main equipment rooms. The 100% induction units utilize the kinetic energy of the high velocity air to mix primary air with the room air.
- 3. No Conflict of Trades The all-air units are installed by the sheet metal trades only.
- 4. More Effective Use of Outside Air in Spring and Fall—More primary air is delivered to the all-air units than to induction coil units. This allows the engineers to operate in the Spring and Fall on outside air and thereby save refrigeration.

All-air high velocity units offer scientific air diffusion. Each high velocity unit is provided with an aspirating or high induction type air diffuser which is scientifically designed to diffuse air without drafts. Each unit can be pressure balanced by an easy-to-operate balancing device and a calibrated orifice. In fact, the Anemostat all-air high velocity system can be balanced more accurately than other systems and in less than half the time required to balance a low velocity system.



High velocity units require practically no maintenance after installation. They have valves of the non-corrosive, die-cast, "rocket-socket" type, which are patented by the Anemostat Corporation of America. All units can be adapted for the following variations:

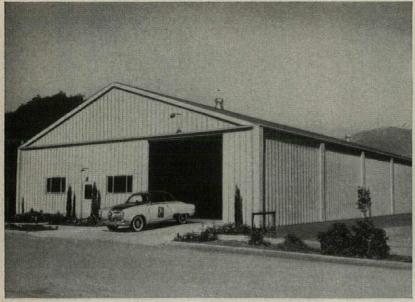
- 1. Single duct for zone control or individual thermostatic or manual remote control.
- 2. Dual duct for thermostatic control or any other type of control.
- Single or dual duct units with the diffuser fastened to the unit, or remote from the attenuating unit.
- 4. Under-the-window, sidewall or ceiling type installations.
- 5. Can be provided with standard aspirating diffusers or 100% induction type diffusers.
- Induction type units handle temperature differentials up to 33° below ambient.

Selection Manual Contains Data on High Velocity Units

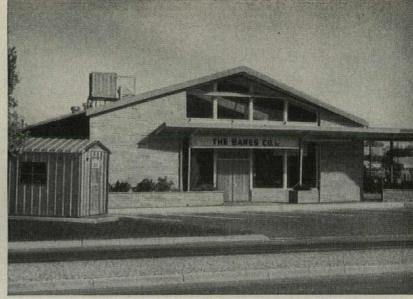
New Selection Manual 50 gives extensive selection and application data on high velocity all-air distribution systems. Write on your business letterhead for

Selection Manual 50 to the Anemostat Corporation of America, 10 E. 39 Street, New York 16, New York.

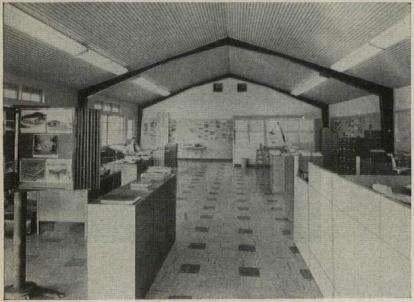




Bottling plant, Santa Barbara, Calif.



Building and industrial equipment, Albuquerque, N. M.



Architect and builder's office, Paso Robles, Calif.



Hardware store, Lafayette, Calif.

You don't need a big budget to provide good looks... with BUTLER steel buildings

Don't be discouraged if your clients seem to have expensive tastes but limited capital. You can provide the kind of good-looking, surprisingly low-cost buildings they want—with Butler steel buildings.

Pre-engineering and mass production methods keep initial costs low. Precision-punched and -formed parts and bolted construction permit fast, low-cost erection. Rust and corrosion-resistant steel and aluminum panels assure long years of maintenance-free service.

Both outside and inside, Butler steel buildings lend themselves to handsome, economical modification. Rigid-frame construction supports all weight, permitting use of large areas of glass without weakening building. Spacious, clearspan interiors permit pleasant, convenient room arrangements.



Send for a free copy of the Butler Architect's Brochure—A.I.A. file number 14i. It will tell you more about the architectural adaptability of Butler buildings.

For prompt reply, address office nearest you:





7336 East 13th Street, Kansas City 26, Missouri 936A Sixth Avenue S.E., Minneapolis 14, Minnesota 1036 Avenue W, Ensley, Birmingham 8, Alabama Dept. 36A, Richmond, California

Manufacturers of Oil Equipment • Steel Buildings • Farm Equipment • Dry Cleaners Equipment • Special Products
Factories located at Kansas City, Mo. • Galesburg, Ill. • Richmond, Calif. • Birmingham, Ala. • Houston, Texas • Minneapolis, Minn.

Those who really know say:





give best results!

• No one knows better the value of CERTIFIED CBM BALLASTS than the manufacturers of fluorescent tubes. For the satisfactory performance of their lamps is vitally dependent on the ballasts that operate them. They know CERTIFIED CBM BALLASTS are Tailored to the Tube.

CHAMPION says:

"Fluorescent lamps are designed to operate at specific electrical values. The use of auxiliary equipment that has been proven to meet these agreed upon standards will assure the user maximum value for his lighting dollar with a minimum of operational failures. Certified Ballasts are inexpensive insurance."

GENERAL ELECTRIC says:

"The life and light output ratings of fluorescent lamps are based on their use with ballasts providing proper operating characteristics. Ballasts that do not provide proper electrical values may substantially reduce either lamp life or light output, or both. Ballasts certified as built to the specifications adopted by the Certified Ballast Manufacturers (CBM) do provide values that meet or exceed minimum requirements. This certification assures the lamp user, without individual testing, that lamps will operate at values close to their ratings."

SYLVANIA says:

"The light and life ratings of fluorescent lamps are based on three hour burning cycles under specified conditions and with ballasts meeting American Standards Association specifications. Ballasts marked with the CBM emblem and certified by Electrical Testing Laboratories, Inc., meet ASA specifications."

WESTINGHOUSE says:

"Use ballasts that are tested and Certified by Electrical Testing Laboratories or ones that are otherwise known to meet the specifications of the lamp manufacturer. These will give best results with Westinghouse fluorescent lamps."

> That's why CERTIFIED CBM BALLASTS merit the slogan—Tailored to the Tube.

> Certified CBM Ballasts are built to assure quiet operation and long trouble-free life.



ERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO



PRODUCTS

Continued from p. 200

few hours. Its basic components are 2'-wide curved sections of finely corrugated 18-ga. steel (galvanized for moisture and chemical resistance) and steel nuts and bolts. Structures in the new group range from 30' to 50' in width, 12' to 18' in height. None needs any columns, beams or other support. Each stands on its own ribs, taking full advantage of the strength inherent in the arch and keeping the interior completely clear to

facilitate materials handling. Mechanical stacking is made easier by the Wonder's newly straightened side walls. The manufacturer reports that total costs of the steel units run ½ less than conventional masonry or frame. Fireproof, Wonder buildings have already been code approved in most areas across the country.

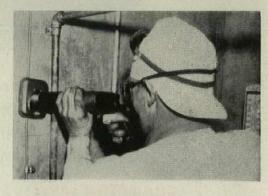
Manufacturer: Wonder Building Corp., 30 N. LaSalle St., Chicago, Ill.



Rough-in Detail of Model No. 2450

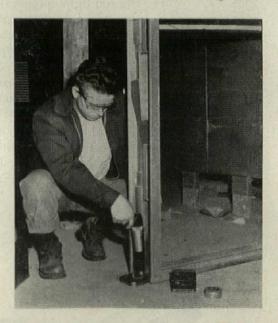
Write today for illustrated Detail Sheet on complete line of HAWS Deck-Type Drinking Fountains





STUD SHOOTER drives 56 different pins into wood, concrete or steel

Weighing 6 lb. and measuring 13", the .25-caliber powder-powered Creary Drive-It 330 is a useful tool in many phases of building. It will take 56 different sizes and types of pins and can be adapted to .38-caliber drive, making it suitable for various electrical, plumbing, heating and plastering jobs in steel as well as wood construction. Stripping down into three sections for cleaning in the



field, the tool's design features a snap-open breech, automatic cartridge ejector, and molded grips. Although two-handed use is recommended, when cornered or in a tight spot the 330 can be shot with one hand. It sells for \$115 complete with portable case and accessories,

Manufacturer: Powder Power Tool Corp., 7527 S.W. Macadman Ave., Portland, Ore.

continued on p. 208

Monel protection. Tower sheathing, flashings, parapets, bulkheads, drainage system and skylight frames of Regina Pacis Votive Church and adjoining parochial school are all fabricated of .021" Monel Economy Roofing Sheet. Corrosion resisting and long lasting, Monel weathers uniformly where exposed. Architect: Anthony J. DePace, 151 W. 46th St., New York 36, N. Y. Sheet metal contractor: John Schneider Roofing Contractors, Inc., 1056 Cypress Ave., Brooklyn 27, N. Y.



Its architect specified Monel because . . .

a beautiful church deserves roofing that lasts for years!

In all of Brooklyn, New York—which is famous for them—there are few churches more beautiful than Regina Pacis Votive—Our Lady of Peace.

Done in the Italian baroque style and laid out like a cathedral, the church is actually much larger than it appears in the picture. Thirty thousand pounds of Monel® Economy Roofing Sheet were used on the structure and its attached parochial school.

Monel was specified because Monsignor Angelo R. Cioffi, under whose auspices the buildings were erected, wanted permanence as well as beauty.

And architect Anthony J. DePace, with sheet metal contractor John Schneider's help, saw to it that Msgr. Cioffi got both!

Are you writing "Monel Roofing Sheet" into your specifications? It's a service many of your clients will thank you for in the years ahead.

Why? Simply because Monel will serve them long and dependably. It is stronger and tougher than structural steel. It resists corrosion . . . wear . . . abrasion. Does not streak facades and stands extremes of heat and cold.

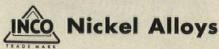
What's more, this sturdy nickel alloy presents no fabrication or installation problems. Monel Roofing Sheet used for metal work on Regina Pacis Votive Church was readily cut, formed, seamed and soldered.

Our booklet, "One Metal Roof," contains full information on various roofing problems, and on the metal properties needed to solve them. Also includes data and service records on Monel Roofing Sheet, and many building photographs. Write for a copy.

The International Nickel Company, Inc. 67 Wall Street New York 5, N. Y.

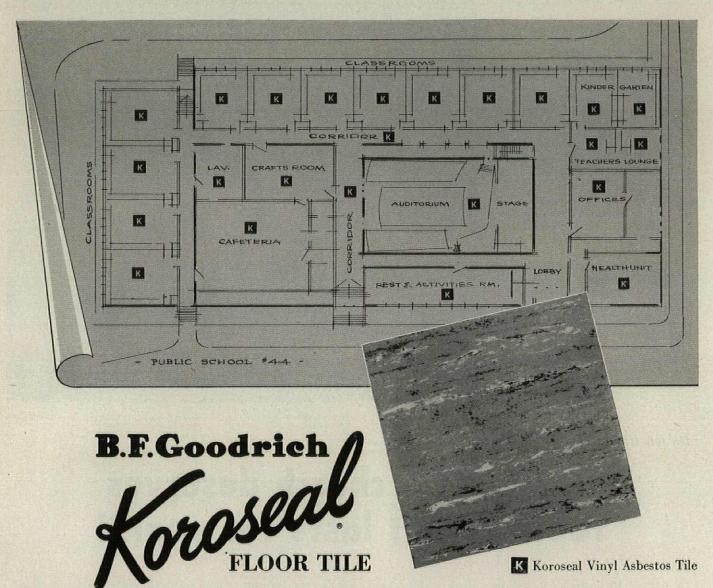


When illuminated at night, the bell tower of Regina Pacis Votive can be seen 15 miles at sea.



Monel Roofing ... "for the life of the building"

Build satisfaction into your school floor plans!



Basically, the client looks to the architect to deliver only one thing — satisfaction. In floors, that means serviceability, good appearance and low maintenance. This explains why more and more architects are specifying B. F. Goodrich Koroseal Floor Tile for school installations. They know that B. F. Goodrich Koroseal Floor Tile alone offers these important features:

"BUILT-IN LUSTRE" — NEEDS NO EXTRA SURFACE FINISHES — Minimum care — stays bright with just an occasional washing and light buffing.

DEFIES DESTRUCTION — Super-resistant to oils, fats, greases . . . even cleaning fluids and alkalies.

ANTI-SLIP SURFACE - Safe to walk on, always.

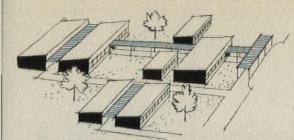
MAXIMUM WEAR — Same material from top to bottom — no coating, no lamination.

Available in 1/8" and 80 gage thicknesses and in 18 colors.

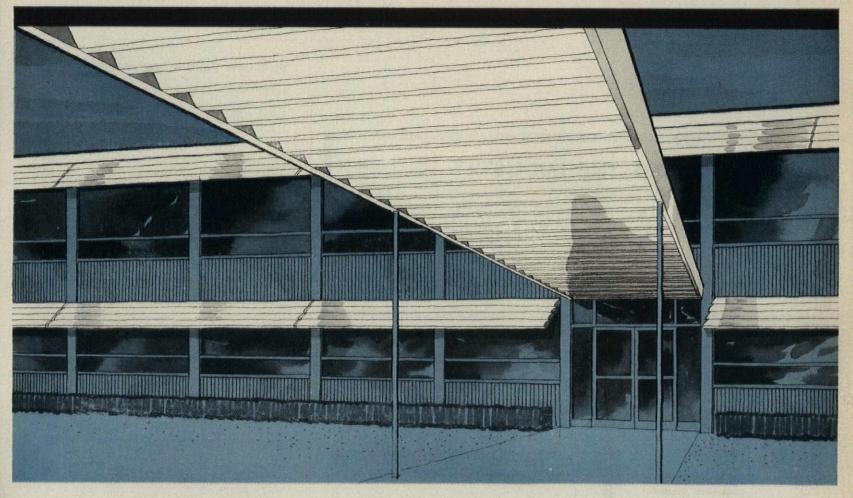
For B. F. Goodrich aids for architects, write to Department AF7, B. F. Goodrich Co., Flooring Division, Watertown 72, Massachusetts.



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NOW – low-cost walk, window and entrance weather protection



KAWNEER all-aluminum prefabricated



entrance protection



walk protection



window protection



overhang addition



ARCHITECTURAL PRODUCTS
DIVISION

School design can be simplified with Kawneer's Sun-Control and weather protection products. You have great flexibility with the prefabricated sections enabling you to cover almost every glass opening and passageway to design specifications. The advantages far exceed the relatively low cost. Both products are made of heavy-gauge alumilited aluminum which means long, maintenance-free life. The reflective surface assures cool areas. The unique shapes such as the "W" of the canopy sections provide and encourage ventilation, yet protect from rain and snow. The quick and easy erection means a faster completion date and fewer labor hours. Fill out the coupon below to learn more about Kawneer Sun-Control and Weather Protection products, and how they can be adapted to your school plans.

Kawneer Company, Niles, Michigan Gentlemen:

Please send me further information on the Canopy and K-Louver.

_Have your representative contact me.

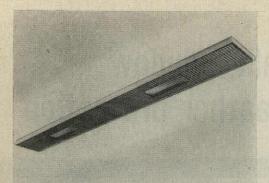
Name____

School or Firm_

Street_

City_

one State



PRODUCTS

Continued from p. 204

ALZAK REFLECTOR BALLAST ALZAK REFLECTORS BALLAST RECESSED TOP FLATE

NEW GIANT OF THE INDUSTRY Caldwell 14754128

HEAVY DUTY SPIRAL SASH BALANCE

Pretensioned at factory. Easy to adjust on the job.

Locking piece holds spring out of tube during installation.

Seamless, rustproof

Durable, oil tempered high carbon spring.

Bracket arm is separately attached to speed installation.

Cadmium plated spiral torque rod with graduated twist.

SPECIFICALLY DESIGNED FOR
INSTITUTIONAL AND COMMERCIAL
SASH WEIGHING UP TO 70 LBS.

CHECK THESE BIG ADVANTAGES

- 1. Requires no head or side room, no mortising of frame
- 2. 25% less wood is removed in routing.
- Specially designed for quick and easy installation.
- Tension can be adjusted after balance is installed.
- 5. Allows modern window appearance through narrow trim.
- Assures smooth, effortless window operation throughout travel of the sash.
- 7. Guaranteed for LIFE of the building.

WRITE TODAY FOR COMPLETE INFORMATION!

Caldwell

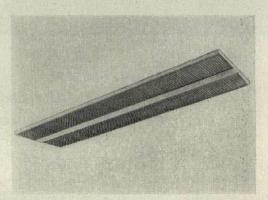
Specify Spirex spiral spring sash balances for up to 30 lb. sash.

Caldwell clock spring sash balances available for up to 105 lb. sash.

CALDWELL MANUFACTURING CO., 69 Commercial St., Rochester 14, N. Y.

SHALLOW FLUORESCENT hugs ceiling

Considerable analysis of construction economics as well as product design went into LPI Ultra Thin fluorescent luminaires. Measuring only 2%" from top to bottom, the fixtures make good sense in low-ceilinged offices and in remodeled structures where recessing fixtures is difficult. Even in many new buildings planned for rent the LPI's may be far more practical than flush-to-ceiling troffers. Consulting Engineer E. D. Tillson, in a cost and design study for the manufacturer, found furred ceilings not only run about 80¢ to 90¢ more per sq. ft. in labor and material, but consume 1 cu. ft. of space (average cost \$1.10) for every square foot of floor area. In two ten-story buildings having 50' x 100' floors, total cost difference between one with furred ceilings and one without, Tillson figures at an astronomical \$95,000. Of course only a portion of the extra cubage would be taken up by recessed lights, but Lighting Products, Inc. felt there was a definite need for unobtrusive fixtures which could be surface mounted directly on low ceilings, and so developed the Ultra-Thins. Key to the luminaire's shallowness and minimum framing



is the placement of the ballast in the center of the fixture (instead of at one end) where it is treated as a decorative element. Twoand four-lamp Ultra-Thin units are made in both 49" and 97" models at prices ranging from \$54.20 to \$152.75. Each is squared off so it can be butted on all sides for grouping in various patterns or amassed for partial or full luminous ceiling. Although Ultra-Thin's lamps are closer to its face than those in most troffers, its brightness from ordinary viewing angles is not appreciably more than deeper units. However, the new fixtures are available with Corning No. 70 low-brightness lens as well as the plastic grid illustrated above.

Manufacturer: Lighting Products, Inc., Highland Park, Ill.

continued on p. 212



OIL STORAGE WAREHOUSE of Carter Oil Co., Tulsa, Oklahoma.

To beat high maintenance costs.

You virtually eliminate costly building maintenance with Kaiser Aluminum Industrial Roofing because it's rust-proof-needs no painting or other expensive upkeep.

Even when exposed to most highly corrosive fumes and gases, Kaiser Aluminum Industrial Roofing requires no special protective measures.

Not only does Kaiser Aluminum Industrial Roofing provide greater protection and lower maintenance . . . it also assures immediate savings. Its light weight reduces transportation and handling costs. And it often requires lighter, less expensive supporting structures.

Whatever you're building-figure first in

Kaiser Aluminum Industrial Roofing-for better value at lower cost! For A.I.A. File and complete information, contact any Kaiser Aluminum sales office listed in your telephone directory. Or write Kaiser Aluminum & Chemical Sales, Inc. General Sales Office, Palmolive Bldg., Chicago 11, Ill.; Executive Office, Kaiser Bldg., Oakland 12, Calif.

think of Kaiser Aluminum

Industrial Roofing and Siding

LOW COST - Provides a combination of advantages not available in other materials at any price.

LIGHT WEIGHT - Reduces transportation costs. So easy to handle that construction is faster, lower in cost. Often permits the use of lighter, less

STRONG-The increased depth (1/8") of the corrugations of Kaiser Aluminum sheet provides greater load carrying capacities over the longer spans of modern industrial construction.

CORROSION RESISTANCE-High resistance to most industrial fumes. Can't streak with red rust. Maintains attractive appearance indefinitely.

LOW MAINTENANCE-Never needs painting. Resists heavy winds and hail. COOLER, BRIGHTER INTERIORS—By reflecting hot sun rays, aluminum keeps interiors as much as 15° cooler. Aluminum's high reflectivity in-

209 architectural FORUM / July 1955

When your
clients
need
Air
Conditioning—



Here's air conditioning "custom-tailored" to an 1890 business office. Today Airtemp can give you specialized assistance to solve your clients air conditioning needs.

AIRTEMP is "on call" to serve you!



Big Bear Supermarket, Detroit, Michigan. Engineers: Jentzen-Miller Co. Air conditioned in 1953. (All 26 Big Bear Supermarkets in Detroit area are air conditioned by Chrysler Airtemp!)



National Office Supply Company, Waukegan, Illinois. Air conditioned in 1954. Contractor: Stiles Brothers, Incorporated.



You get these extra helps in planning your commercial and industrial air conditioning

The System to Meet Your Need

Airtemp has a complete range of modern air conditioning equipment. Both conventional and specially-engineered types are precision-built, available for a room or a building.

Individual Engineering Guidance

We offer special engineering assistance. This service is available through Airtemp Construction Corporation, subsidiary of Chrysler Corporation—pioneer in commercial and industrial air conditioning.

Chrysler Leadership

You can specify with confidence, Your clients trust Chrysler's high engineering standards.

Continuing Local Service

Airtemp's nationwide network of personnel and facilities will serve your clients' needs through the years.

Low Cost Due to Peak Efficiency

Both installation and operating costs are low, resulting from Airtemp's high standards of efficiency and economy.

For Full Details on complete air conditioning service for your clients, write to: Airtemp Division, Chrysler Corporation, Dept. AF-7-55, Dayton 1, Ohio

AIR CONDITIONING AND HEATING FOR HOMES, BUSINESS, INDUSTRY

PROFIT NOW FROM CONVENIENT, NEW

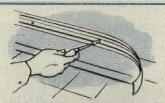
BULLDOG Electrostrip



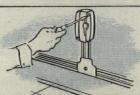
It provides movable outlets... eliminates outlet planning!

Here's the most advanced, most convenient electric outlet system ever devised-BullDog Electrostrip[®]. Receptacle plugs lock into the strip at any spot along its length—make it every inch an outlet. Electrostrip is neat, attractive . . . can be mounted easily on any surface . . . and is ideal both for new construction and for modernization.

SAVES INSTALLATION TIME, TOO!



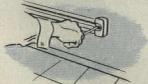
Electrostrip is installed easily and quickly . . . anywhere. Packaged in convenient roll form, it can be cut to any desired length.



For modernization, the feed-in device can be connected to exist-ing wall outlets. No replaster-ing or "wire-fishing" is necessary.



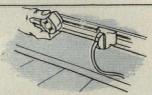
Although rugged, it can be formed by hand to bend around corners and obstructions. Its ivory color blends with any color scheme.



End caps halt runs of Electrostrip wherever desired. Absolutely safe, the strip is rated at 20 amps, 125 volts. It is listed by Underwriters'.



The feed-in device can be used as either an end or a center feed. Electrostrip is perfect for homes, hotels, offices, stores, institutions.



Fused or nonfused plugs lock into the strip anywhere along its length . . . eliminate extension cords and over-loaded outlets.

Sold only to electrical contractors through BullDog distributors. See yours, or write BullDog Electric Products Company, Detroit 32, Michigan.

> IF IT'S NEW . . . IF IT'S DIFFERENT . . . IF IT'S BETTER . . . IT'S



ELECTRIC PRODUCTS COMPANY A Division of I-T-E Circuit Breaker Company

Export Division: 13 East 40th Street, New York 16, New York. In Canada: BullDog Electric Products Company (Canada), Ltd., 80 Clayson Road, Toronto 15, Ontario.

@BEPCO

PRODUCTS

Continued from p. 208





ADOLPHUS TOWER BUILDING DALLAS, TEXAS ARCHITECT Wyatt C. Hedrick 1001 DH 8 Balanced Doors in the entrances to Adolphus Tower Bldg. doors The Door that lets TRAFFIC through QUICKLY Plison ELLISON BRONZE CO. Jamestown, New York representatives in 73 principal cities in the United States and Canada

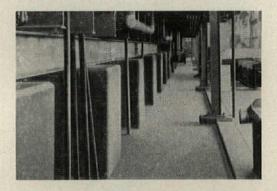
the BALANCED DOOR



HARDWOOD STRIP FLOOR laid in mastic bed over concrete

Interiors served by Holt End-to-End hardwood flooring range from schools and stores to factories. Fabricated for mastic installation on concrete slab, the hard wearing floor is made of close-fiber, kiln-dried lumber that is carefully graded and machined. The 1' strips are grooved on ends to take the metal splines supplied with the flooring. For classrooms and light commercial applications, the manufacturer recommends the 25/32"-thick, flat-grain maple, beech, birch, or Wisconsin oak which come in widths of 14, 1½, 2 and 2¼". Thicker strips of flatgrain maple are also available for heavy duty. Each 1' length of edge-grain maple, recommended for gymnasium floors and industrial jobs, is grooved on the sides for receiving mastic as well as on the ends for the metal splines. Face width runs 11/4" to 134", and thickness from 33/32" to 3". Atthe-mill price of End-to-End is approximately 50¢ per sq. ft. To give the hardwood extra resiliency, Holt suggests putting a 1/2" asphalt impregnated corkboard underneath. (For new cork underlay development by Continental Can Co., see p. 216.) The firm also suggests cork for expansion voids; an allowance of 1/32" to 1/16" should be made for each foot of End-to-End flooring.

Manufacturer: Holt Hardwood Co., Oconto, Wis.



TOUGH TOPPING for concrete resists attack from acids and alkali

Proof against powerful solvents and acids, Coro-Crete is a protective membrane for floors in chemical and metal-working plants. It is comprised of aggregate filler, thermosetting resin and hardening agent which are mixed on the job and applied directly over new or old concrete. It handles like conventional cement topping and can be troweled on in single or multiple layers of '4" to %". The bond formed is reported to be stronger than the concrete itself. Unlike cement, it cures to a dense, impermeable, nondusting membrane in only a few hours, and so is highly practical in repair and

continued on p. 216



The Fontainebleau,
Miami Beach, Florida.
Regarded as the
largest and finest
luxury resort hotel
in America,
this magnificent
\$15,000,000 hotel
is the most outstanding construction
project in Florida
in the last 10 years.

bags of PERMALITE used in the fabulous FONTAINEBLEAU HOTEL

In this magnificent hotel, with its 14 stories and 565 guest rooms, plaster made with Permalite perlite aggregate was used both for fireproofing structural steel and for base coat plaster.



MORRIS LAPIDUS, AIA Architect



Read what
John W. Thomson,
plastering contractor
on the Fontainebleau,
says about
PERMALITE:

"Permalite, with its uniform gradation of aggregate size, when used with gypsum in the base coat plaster, has many outstanding advantages. The lightness in weight, excellent workability, low moisture absorption, and low suction ratio are a few that I feel contribute to an increase in production and a better plastering job. If you try Permalite on your next plastering job, I am sure you will be as well pleased with its performance as I have been in the past."

Architect • Morris Lapidus, A.I.A., Miami Beach & New York
General Contractor • Taylor Construction Co., Miami, Florida
Plastering Contractor • John W. Thomson & Son, Inc., Miami, Florida
PERMALITE Processed by • Airlite Processing Corp. of Fla., Vero Beach, Florida

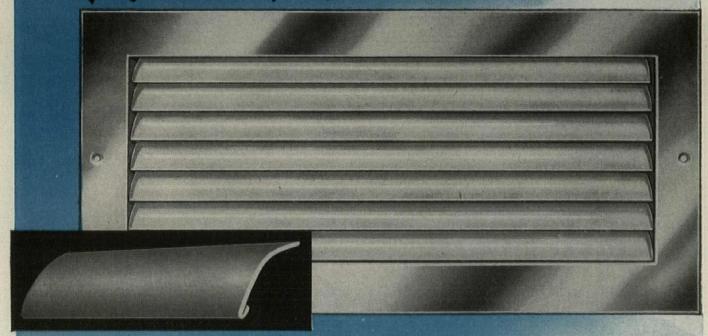
PERMALITE Supplied by • Sentell Supply Co., Miami, Florida

For complete information about the many advantages of Permalite perlite aggregate for better plaster and concrete, write to:



PERLITE DIVISION, GREAT LAKES CARBON CORP. 612 SO. FLOWER ST., LOS ANGELES 17, CALIF.

Return Air Grille



CURVED HEMMED FINS GIVE 80% FREE AREA

designed by

Large free area means the Titus Return Air Grilles HANDLE MORE AIR PER SQUARE INCH. Makes it possible for a smaller

grille to give superior performance...at

lowest cost...and correct performance faults of other parts of an air conditioning or heating system...at the same time.

NEW BEAUTY

Matches design of supply grilles Curved outline of fins add beauty... at the same time make it easy for maintenance personnel to keep grilles clean.

ONE-PIECE ASSEMBLY . . FOR ANY SIZE OPENING

This eliminates expensive labor of handling oldfashioned grilles that are made in sections. Cuts costs of fitting, butting and screwing together these sections. Brings labor and grille costs to a minimum.

MORE STRENGTH PER SQUARE INCH

The curved hemmed fin design adds rigidity and durability to resist lower wall abuse. There is no see-thru due to the special positioning of the fins.

TITUS

WRITE FOR FREE CATALOG TODAY

TITUS MANUFACTURING CORP. WATERLOO, IOWA

Gentlemen: I wish to improve the heating and air conditioning performance of my forced air systems... at the same time lower my grille costs. Please send me the new illustrated brachure on Titus Return Air Grilles.



Name

Company

Address

City

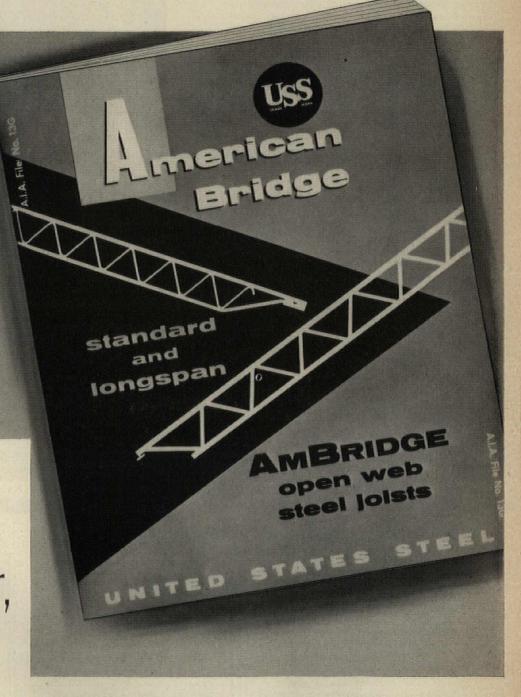
State

If you design or build

LIGHT OCCUPANCY STRUCTURES

This FREE Booklet

points the way to faster, simpler, better, more profitable construction!



Ask our nearest office for a free copy of this helpful booklet. Or write direct to Pittsburgh.

It's the only complete steel joist catalog with design information for spans up to 120 feet which you can use to improve your construction methods . . . and make more profit out of future jobs.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE - ATLANTA - BALTIMORE - BIRMINGHAM - BOSTON - CHICAGO - CINCINNATI - CLEVELAND - DALLAS - DENVER - DETROIT - ELMIRA - GARY

MEMPHIS - MINNEAPOLIS - NEW YORK - PHILADELPHIA - PITTSBURGH - PORTLAND, ORE. - ROANOKE - ST. LOUIS - SAN FRANCISCO - TRENTON

UNITED STATES STEEL EXPORT COMPANY NEW YORK

AMBRIDGE STEEL JOISTS

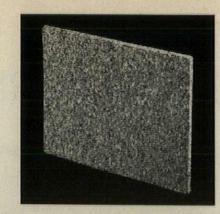
UNITED STATES STOFEL

PRODUCTS

Continued from p. 212

maintenance in existing factories. Laboratory tests show that *Coro-Crete's* abrasion resistance and strength are two to four times greater than concrete. The corrosion proof material is sold on a complete job basis—labor, materials and job-supervision included—at prices ranging from \$1.40 to \$1.75 per sq. ft.

Manufacturer: Ceilcote Co., Inc., 5843 Ridge Rd., Cleveland 9, Ohio





Eliminate These Costly Glazing Problems

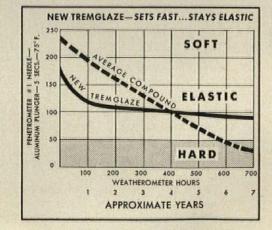
Modern metal sash, with deep rabbets, large glass areas, insulated glass, and ventilating type windows have created new problems in glazing. Now modern technology, through the development of Tremthol, a balanced blend of synthetic ingredients, makes possible new Tremglaze—the first glazing compound to combine a fast setting quality with long elastic life. In two or three weeks, new Tremglaze sets as firmly as typical mastic glazing compounds do in 1-1/2 years—then provides years of lasting protection. For safety—specify Tremglaze for all metal windows.

* Tremglaze—the first name in Mastic Glazing Compounds.

The last word in safe specification for: aluminum, stainless steel, and galvanized-bonderized windows.

You should know the complete story of revolutionary new Tremglaze. Send today for the "Tremglaze Brochure".





SETS FAST. No wrinkling • No sagging • No cracking • No bleeding • No weeping

STAYS ELASTIC. Bonds securely • Sets through its entire body • Reduces window breakage • Needs no painting • Weather-tight

LASTING PROTECTION. Long lasting weatherproof seal • Prevents moisture infiltration • Reduces corrosion • Neat—attractive appearance

THE TREMCO MANUFACTURING CO., Cleveland 4, Ohio - THE TREMCO MFG. CO. (Canada) LTD., Leaside, Toronto, Ont.

THIN CORK SHEET is bouncy cushion for hardwood floors

Boasting the compression recovery of most ½" composition underlays for hardwood, and the resiliency of a subfloor over sleepers, ¼"Cork-Tex is the impressive product continental Can Co. has chosen for making its debut into the construction industry. Actually, the giant packaging firm's Bond Crown and Cork Div. has been turning out millions of tiny cork discs each year for bottletops. When a slug of vinyl proved more satisfactory, Continental did extensive research on the cork's properties to determine its best application as a building material. They found its excellent resilience, flexibility and high tensile strength made it a fine underlay



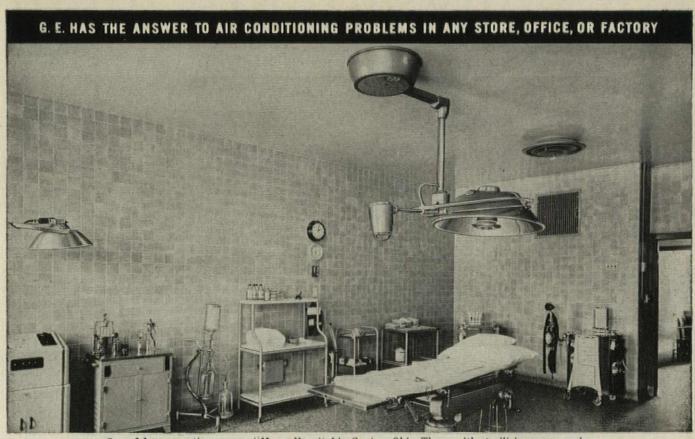
for hardwood floors wherever noise transmission and shock impact have to be reduced -in offices, apartments, gymnasiums, hotels. Half as thick as most underlays, it is said to keep its springiness for the life of the floor itself. Cork-Tex costs about 22¢ to 25¢ per sq. ft. laid on grade complete with waterproofing membrane. (Polyethelyne film is one that Continental found worked very well.) Standard sheets of Cork-Tex are 1' x 3' but special sizes will be made on order. Although the underlay has been tested and is now being sold primarily for use under hardwood, preliminary experiments with Cork-Tex under vinyl tile indicate it will bolster a weak point of this colorful and durable finished floor by making it less susceptible to indentations from heavy furni-

Manufacturer: Continental Can Co., Bond Crown & Cork Div., Wilmington, Del.

LUMINOUS LIGHTING FIXTURE has one-piece plastic shield

Capitalizing on high temperature polystyrene's easy formability and diffusive qualities, Sylvania has vacuum molded the housing as well as louver shields of the plastic for its Scott line fixtures. Not only is the glow of the lit fixture pleasingly appropriate, it also gives the Scott series an extremely high efficiency of 89.8%. Besides the shield and cover plate, the only other major component is the white enameled channel of 18-ga. steel. Both 4' and 8' two-lamp units are available with rapid and instant start ballasts. Each fixture is 154" wide, 5¾" deep and is hinged to permit the shield to swing down from either side or be removed entirely for cleaning. For special

continued on p. 222

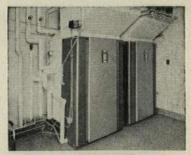


One of four operating rooms at Mercy Hospital in Canton, Ohio. These, with sterilizing room, make up five zones that are "comfort serviced" all year 'round by two 5 ton G-E Packaged Air Conditioners.

HOSPITAL AIR CONDITIONS OPERATING ROOMS... SAVES ON EQUIPMENT, DUCTWORK, SPACE

Heat-gain and heat-loss studies showed that 16 tons of air conditioning were required for the four operating rooms, one sterilizing room of Mercy Hospital in Canton, Ohio. But Niagara Heating Co., local G-E contractors, found a way to give the effect of this tonnage with only two 5 ton G-E units—saved the cost of six tons by feeding water from the Hospital's own well to a precondi-

tioning coil and then to the G-E units. Duct runs were minimized by locating G-E units in doctors' rest area, handy to operating rooms. Space requirement: only 34 square feet. Larger equipment would have entailed roof installation and much higher costs. Write for data to: General Electric Co., Commercial and Industrial Air Conditioning Dept., 5 Lawrence Street, Bloomfield, N. J.



Simple, space-saving installation. Compact size of G-E units permitted their location in the lounge of the doctors' rest area—no space wasted—no long duct runs.

Safety and sanitation are of paramount importance in installations of this type. It is recommended that the services of a consulting engineer generally be employed in this kind of application.

G-E PACKAGED AIR CONDITIONERS OFFER MORE:

- · Low installation, low operating costs.
- Gives the architect maximum design freedom. Units can be used in space or concealed, with or without ducts.
- Streamlined cabinet styling. Adds to decor of any interior.
- 3, 5, 71/2, 10 and 15 ton units can be used singly or in multiple to meet air conditioning needs of any building.
- · Easily directed airflow for no-draft, no-waste air circulation.
- Muggy Weather Control removes excess moisture in any weather without over-chilling or clammy cooling.
- Built and factory assembled by General Electric. 5-year warranty covers entire sealed cooling system.

Packaged AIR CONDITIONERS

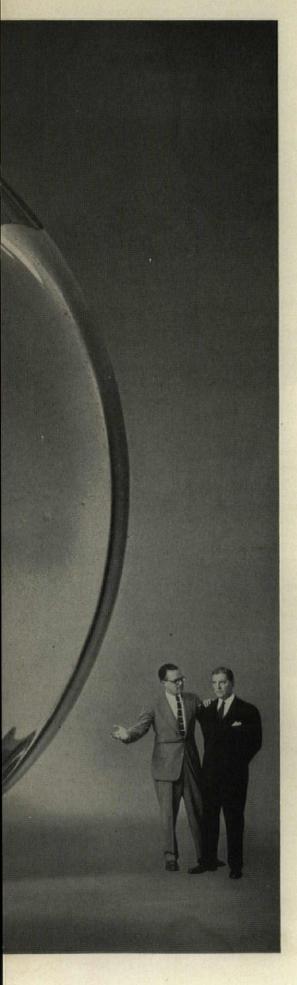
Progress Is Our Most Important Product



Help your clients avoid



"fish bowl" distractions!



Actual test shows work output increased 27% after installation of VMP MOBILWALLS

Plan your client's office with vmp's metal, movable partitioning, and he'll get permanentlow-cost protection against old-fashioned "fish bowl" conditions. MOBILWALLS cut down noise, sharply reduce delays and errors. With the privacy they afford, routines run smoother, and work-stopping distractions are virtually eliminated. MOBILWALLS are ideal for every office—large or small. If you're designing a new office for your client—or revamping an old one—be sure to find out the many benefits that MOBILWALLS add to your plans.

We can show you the efficiency gains that this partitioning makes possible—how much it cuts down on costly delays. We'll demonstrate with Ratio-Delay Studies—accurate reports that rate office efficiency; they measure work output, delays, corrections, and lost motion. They show what has been done, let you picture what can be done in your client's plans.

Here's what happened in a large insurance company after MOBILWALLS were installed:

- · Office productivity increased 27%
- Delays and lost motion were cut 48%
- Time spent paying attention to distractions, and correcting errors, was reduced 38%
- The VMP MOBILWALL installation helped in adding as much to work output as could have been added by a 27% increase in employees and payroll expense.

Free folder. Get complete details by writing to Department AF7 for vmp's informative folder... detailed data on Ratio-Delay, comparisons of partitioning materials normally used, and other valuable facts.



MODERN STYLING . . . SPEEDY INSTALLATION!

VMP MOBILWALLS are smartly designed—ideal for office or factory. They fit perfectly, are expertly finished. Colors are restful and permanent. Surfaces never chip, warp, or crack—they wash clean easily. Skilled, dependable crews take but a few hours to install

these partitions. Working out of nearby warehouses, they save time and money. And clients have the satisfaction of knowing MOBILWALLS are readily adaptable to future floor plan changes—they are easily and quickly moved.



Subsidiary of Chesapeake Industries, Inc.

Sure... you can cut firing costs by burning heavy fuel oil...

but you've got to control the oil feed



does this superlatively well 'without complicated gadgets

The so-called viscosity problem with heavy oils is overrated. This is so because the viscosity of *all* fuel oils approaches a common point as the temperature is raised, and the temperature at which viscosity becomes a negligible factor is well within a practical operating range.

The Petro thermal viscosity control system is simply this: an electric valve controlled by the oil temperature refuses to admit oil to the atomizing cup until the oil has reached a desirable burning temperature. This temperature is arrived at by circulating the oil through heaters when necessary. This accomplishes four important results:

- 1. Viscosity control permits accurate metering of oil.
- 2. Oil is thin enough for extremely fine atomization.
- 3. Hot oil ignites easily.
- Petro never has a slug of cold oil in the feed line to foul up a cold start.

That is why the Petro burner can fire the economical heavy oils without a fearsome array of fancy trimmings. It is fool proof, gadget free, and completely dependable—all good reasons why Petro is the largest selling industrial oil burner in America.

PESE DI CONTROLLO DE LA CONTRO

OVER 50 YEARS OF LEADERSHIP IN AUTOMATIC HEATING AND POWER EQUIPMENT

A reservoir of warm oil is

maintained. In the use of this thermal viscosity system, all of the heated oil which is not required for immediate firing is returned to the storage tank. Thus a constant pool of warm oil is ready for any changes in firing needs. The amount of oil being returned is easily regulated by the owner of the burner, to suit his individual needs.

No manual attention is required

The entire operation is automatic. There are no involved mechanical controls requiring adjustment or maintenance.

Saves labor costs—saves fuel costs

Why don't you find out how much Petro industrial oil burners can save for you? They are quickly adaptable to nearly every existing boiler. Send in the coupon below for full information.

SEND FOR FREE LITERATURE

DETAIL

PETRO, 3213 West 106th Street Cleveland 11, Ohio. In Canada: 2231 Bloor Street West, Toronto, Ontario.

Please send me literature and specification sheets on money-saving Petro commercial and industrial burners.

Name

Company

Address

City

_State__

IN GRACIOUS GOOD TASTE

Surco Terrazzo-Type Floors

Here Surco terrazzo-type flooring perfectly complements the paneled walls and modern furniture . . . warmly welcomes clients and visitors.

While most of our floors are waxed, this one has remained unwaxed since it was put down six months ago, yet it still keeps its glossy finish. Maintenance is so easy.

Surco terrazzo was applied 1/4 - 3/8" thick after the concrete slab was cured and in this particular installation no expansion joints were used.

For beautiful, economical floors with resilience comparable to quality hardwood flooring, use Surco terrazzo-type material.

See Sweets Architectural Files for further information on Surco products for home and industry.





SURFACE COATINGS, INC.

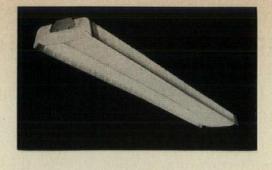
110 Pear Street, S.E. • Atlanta, Georgia

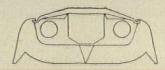
PRODUCTS

Continued from p. 216

color effects, the plastic shield is available in tints of green or coral. Scotts are designed for surface or pendant mounting and can be installed in continuous rows. (Recommended spacing between individual units or continuous rows should not exceed 1.2 times the ceiling height.) List price of the 4' Scott is \$36.35.

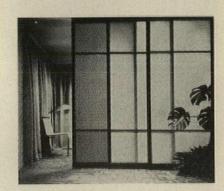
Manufacturer: Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N.Y.

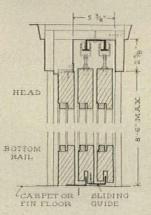




SLIDING WALLS take bottom tracks along as they glide over floor or carpet

Carlton sectional gliding partitions developed by Carl Dumbolton are an indoor offshoot of the manufacturer's well-known Arcadia Sliding Doors. Attractive and utilitarian as wall screens for apartments, restaurants, doctors' offices and hospital wards, the wood framed panels also make a flexible backdrop for store displays. The choice of stock panel inserts includes three patterns of perforated





metals and three of translucent plastics. Almost any material can be specified on a custom basis, however. The aluminum track on top has adjustable nylon rollers for easy, troublefree operation. A simple, patented arrangement of metal L guides attached strategically to panel bottoms permits installation and smooth mobility of the Carlton units over finished floor or even carpeting without cutting or damage. Twelve different groups of fixed and sliding units are produced in standard heights up to 8'-6". Regular finishes are light or dark mahogany and ebony. Prices for complete screens range from \$2.50 to \$4.00 per sq. ft., depending on size and type of insert.

Manufacturer: Carlton Products, 344 Palisade St., Pasadena 3, Calif.

FLAT SLAT ALUMINUM DOORS roll down to close counters

Conscientiously detailed, the Cookson rolling door of extruded aluminum is a comely closure for cafeteria counter, hotel laundry chute, apartment house dumb-waiter, or ticket window. Compact, with tension wheel and all mechanism enclosed for trim integration with interior design, the units are engineered to each job's specific dimensional

continued on p. 228

More and More... PROPER DENSITY of SOILS UNDER FOOTINGS . . GROUND FLOORS . . IN BACKFILLS, ETC.

. . . as progressive architects discover how quickly and inexpensively desired soil stabilization in any job, large or small, can be achieved with

BEING SPECIFIED

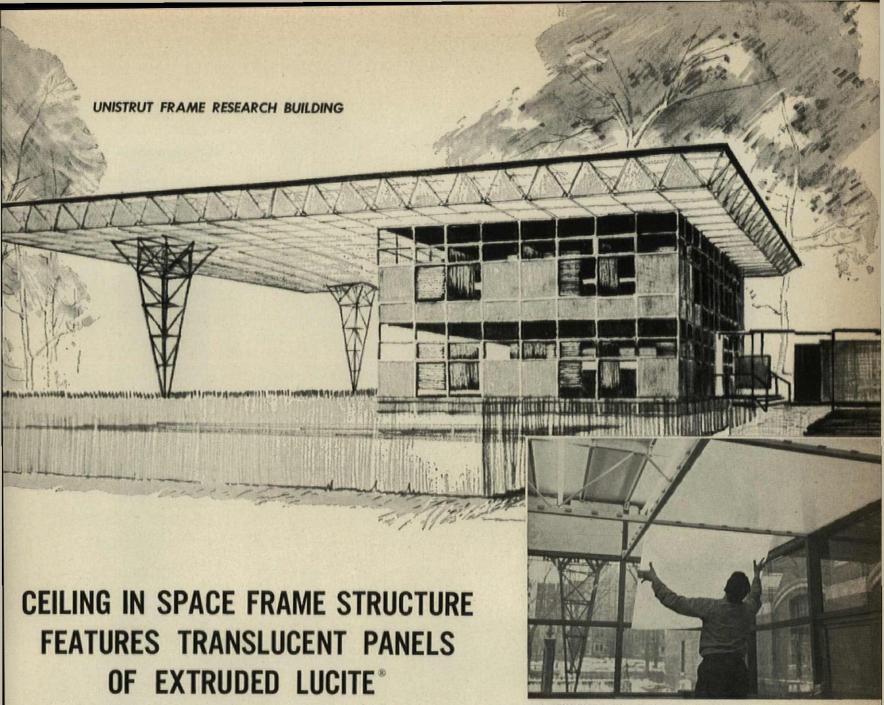
YIBRATORY

COMPACTORS

The manually guided, self-propelling JACKSON VIBRATORY COMPACTOR is widely and very successfully used for consolidating granular soils, such as gravel, sand or

crushed rock in concrete floor sub-bases, under footings, close to abutments, in trenches, bridge approaches and many other applications. Meets or exceeds specified densities as determined by Proctor and other methods . . . at the rate of 1800 to 2000 sq. ft. per hour using a single JACKSON COMPACTOR, and where twin units are employed (operated by one man) production is practically doubled. In very large projects, including the consolidation of granular soil sub-bases for parking lots, ramps, drives, large fills, and macadam highway construction, the JACKSON MULTIPLE VIBRATORY COMPACTOR, tractor-mounted and having a working width of 13', 3", has been proved by far the most advantageous means of achieving desired densities.





Two-story research laboratory at Ann Arbor embodies new concept in design

A STUDENT in the College of Architecture and Design installing a 4'x 4' translucent panel of "Lucite" acrylic resin. The experimental laboratory consists of an enclosed area, 33 by 49 feet beneath a 70- by 90-foot roof. The drafting area on the lower level of the enclosed area uses a ceiling of Du Pont "Lucite" acrylic resin for transmitting optimum light without glare.

"Durable, flexible, expandable, demountable and reusable." That's one professor's description of the new research laboratory at the University of Michigan. The Unistrut Space Frame System introduces a third dimension of reinforcement—diagonal struts to distribute stress in three directions. As a result, supporting columns are needed only at widely spaced intervals and interior walls carry none of the roof load.

The walls, ceiling, and roof utilize many 4'x 4' translucent and transparent panels. For example, on the lower level under the north mezzanine the ceiling is constructed of Du Pont "Lucite" acrylic resin. These modular units of "Lucite" were extruded by Gering Products, Inc., of Kenilworth, New Jersey. They transmit all wave lengths of visible light, are glare-free. Panels of "Lucite" are exceptionally strong and can withstand direct and prolonged exposure to sunlight and weathering without discoloring or crazing.

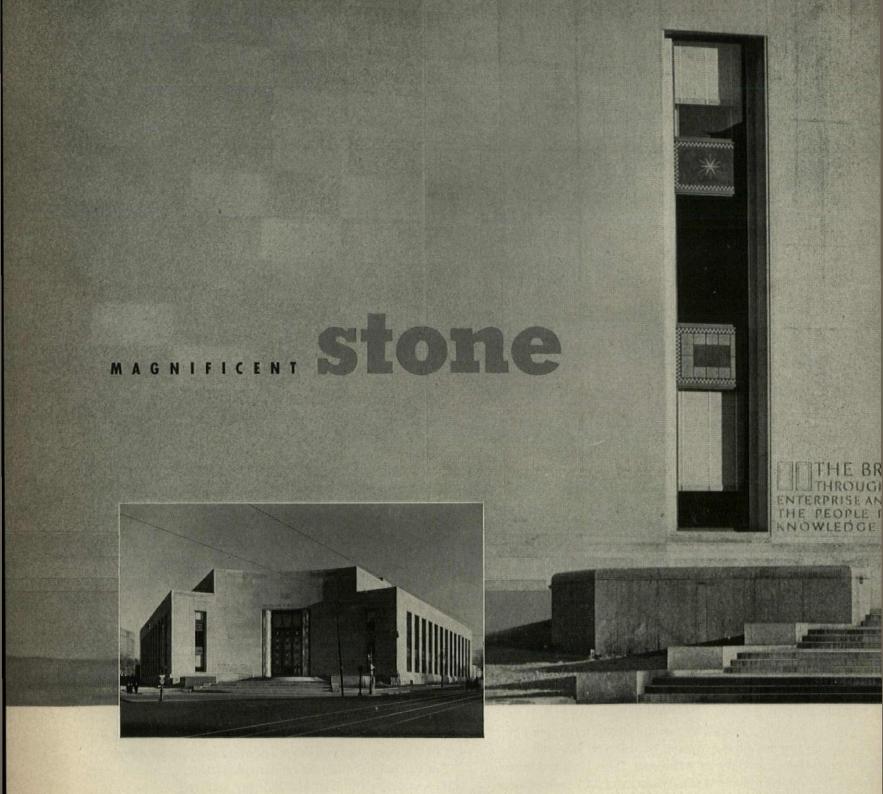
"Lucite" permits unusual decorative effects. It comes in a wide variety of transparent and translucent colors. Extruded "Lucite" can be fabricated into troffer-type panels and corrugated shapes to meet any custom design specifications.

For further information on extruded "Lucite" acrylic resin—its properties and uses as a lighting material—write to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 297, Du Pont Building, Wilmington 98, Delaware. In Canada: Du Pont Company of Canada Limited, P. O. Box 660, Montreal, Quebec.

Good Lighting Is Good Business



BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY



IT GROWS IN BEAUTY WITH THE YEARS!

There are many practical reasons for using STONE besides its inherent beauty. And every architect or builder realizes these advantages, even if the pressure of circumstance makes him momentarily consider some inferior material. STONE is permanent, and will not need to be replaced. It grows in beauty with the years, gaining in physical luster even as the building becomes part of the emotional background of a community.



DETAILS FROM THE BROOKLYN PUBLIC LIBRARY, BROOKLYN, NEW YORK . ALFRED M. GITHENS AND FRANCIS KEALLY, ARCHITECTS . PHOTO: GOTTSCHO-SCHLEISNER PHOTOGRAPH

STONE is economical from first cost to last. And the last cost is the important one, for what profit newness if it must soon be replaced — at great loss. And finally STONE is flexible, adaptable to every whimsey of form, allowing the architect to design a building in addition to erecting it.

The Building STONE Institute has a wealth of valuable material and information available for architect, builder or building owner. Contact your nearest member or write the Building STONE Institute, 2115 Martindale Avenue, Indianapolis, Indiana.

FORMERLY INTERNATIONAL CUT STONE CONTRACTORS' & QUARRYMEN'S ASSOCIATION, INC.





Simplified Open Expanse design

contributes to cleanliness ... builds lasting good will

What keeps a rest room like this looking so new and spic and span over the years while other rest rooms become obsolete? Good planning. Planning for improved sanitation. Planning for attractive decor. Planning for lowest maintenance. Planning for construction economies.

You achieve all 4 of these desirable points when you use open expanse de-

points when you use open expanse design. And the key to this is a fixture-free floor.

The pleasing effect of uncluttered spaciousness in this rest room was obtained by using American-Standard wall-type plumbing fixtures installed with and supported by Zurn System

behind-the-wall carrier fittings. This combination of superbly designed fixtures, and rigid supporting fittings especially engineered to relieve the wall of all the load, gives you an "age-proof" installation that insures against the untimely obsolescence of your rooms.

If you would like to know more about the advantages of American-Standard wall-type plumbing fixtures and the Zurn System, we would be pleased to send you two interesting booklets which contain up-to-date information on these essential products. Just ask for the American-Standard Better Rest Room Guide" and the Zurn booklet, "You Can Build It For Less A New Way."

American Radiator & Standard Sanitary Corporation, Pittsburgh, Pa. J. A. Zurn Mfg. Co. (Plumbing Division), Erie, Pennsylvania

American-Standard off-the-floor fixtures installed with and supported by the system® give you these important benefitsinsured sanitation r simplified maintenance ✓ modern appearance



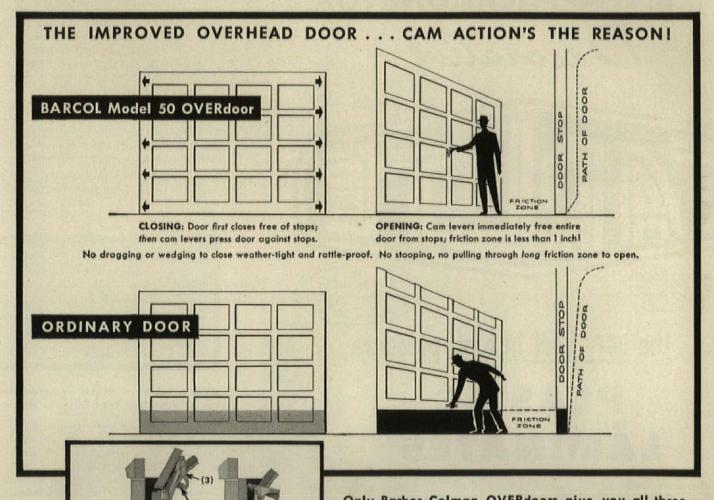
close tighter, yet open easier!

Barcol CAM ACTION OVERdoors close tighter

because door rolls easily down with 3/8" clearance and then is pushed forward by cam levers and held firmly and evenly against door stops. No wedging . . . no dragging . . . no scraping.

Barcol CAM ACTION OVERdoors open easier,

at a turn of the latch handle, because extra Cam Springs at bottom pull entire door 3/8" back from stops—overhead springs then lift friction-free door upward. Friction zone (see below) is reduced to a minimum, allowing wood to swell in damp weather without sticking, binding, or wedging.



Only Barber-Colman OVERdoors give you all three—

CAM ACTION releases immediately for easy opening even when door swells—yet closes weather-tight and rattle-proof even when door shrinks.

WEATHER-KING PANELS—guaranteed for life not to weathercheck, split, crack, or delaminate.

INDIVIDUALIZED DESIGN—new Doornaments make standard doors into custom designs at only fractional extra cost. For free design service, call your Barber-Colman distributor (under "Doors" in phone book). or write:

Barber-Colman Company

Dept. U57, Rockford, Illinois

WARDROBEdoors • Automatic Controls • Industrial Instruments
Air Distribution Products • Aircraft Controls • Small Motors • Molded
Products • Metal Cutting Tools • Machine Tools • Textile Machinery

SEE HOW CAM ACTION WORKS!

(1) Uniform %" clearance assures all-weather friction-free opening and closing. Stop (2) engages cam lever (3) linked to other cam levers (4) pushing all door sections simultaneously against stop strips.

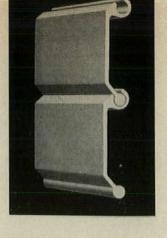
DOOR

CLOSING

PRODUCTS

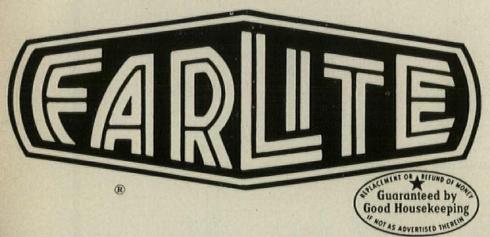
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SO MANY APPLICATIONS FOR

Decorative

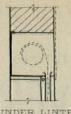


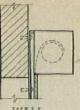
... the very best in high pressure

PLASTIC LAMINATES

It's good planning ... a sound investment ... to take advantage of Farlite's many superior functional features for fabricating table tops . . . counter, desk, sink, bar, and soda fountain tops . . . partitions and paneling . . . decorative interior treatments . . . a host of other applications. Its glass-smooth, non-porous surface is sanitary, easy to clean, permanently beautiful . . . resists heat and burning cigarettes . . . is not affected by alcohol, grease, fruit acids, mild cleaning solutions . . . will not chip or fade. Available in a wide range of more than 50 Farlite colors and patterns, including beautiful wood grains, in 1/16" thick sheets as well as complete warp-resistant tops and panels 13/16" and 1-1/4" thick . . . can also be made to your specifications. Write for descriptive folder and name of nearest distributor . . .

PLASTICS DIVISION FARLEY & LOETSCHER MFG. CO. DUBUQUE, IOWA



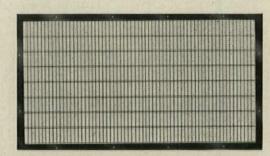


UNDER LINTEL

MOUNTED

and operation requirements. They are shipped fully assembled for quick installation on the face of a wall or under a lintel. Push-up doors are available in widths up to 12' and larger sizes come with a removable crank. All are counterbalanced and equipped with ball bearings. Extruded for perfect alignment, the slats are 1-5/16" wide, .048" thick, and %" deep at the crown. Guides, too, are fabricated of extrusions. Both slats and all other exposed parts are buffed and aluminited to minimize maintenance. An accessory plastic astragal footpiece protects countertops of wood or fine masonry. F.O.B. average prices, depending on size and individual requirements, average \$172 for a 3' x 4' unit, \$184 for a 6' x 4', \$204 for an 8' x 4' and \$301 for a 12' x 4'. Labor charges should be nominal since doors are delivered to exact opening specifications with all necessary fasteners.

Manufacturer: The Cookson Co., 1525 Cortland Ave., San Francisco, Calif.



GYMNASIUM GRILLE engineered to resist athletes' foot but not air flow

Titus' 200 Series grille is specifically built to take the abuse of bouncing baseballs and the hard jars and kicks of competitive sportsmen. Because athletes who bump onto the smooth surfaced face can damage neither themselves nor it, the grille has been approved by many schools for safe gymnasium use. A tight, rigid grid is formed by the smooth-edged face blades %" o.c. and pairs of vertical supports of 14-ga, flat wire steel spaced 6" o.c. There are no mullions or butted construction to get knocked out of whack. Wide borders of 16-ga. steel are provided for easy mounting. The 200 series comes in sizes up to 18 sq. ft. Prices to schools and institutions for the Model G1, grille face only, run from \$14.50 for an 18" x 14" up to \$223.45 for a 6' x 3'. Model G2, with attached volume controller, is priced according to job requirements. Its solid section louver blades are extruded in an aerodynamic contour, and are individually adjustable.

Manufacturer: Titus Manufacturing Corp., Waterloo, Iowa.

continued on p. 234



WHAT HAPPENS NEXT?

If management has been wise, a fire tragedy will be stopped before it starts...if not, in 20 minutes extensive destruction and total loss could readily be the result.

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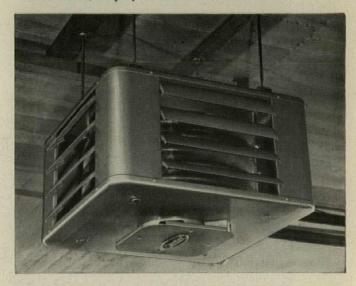
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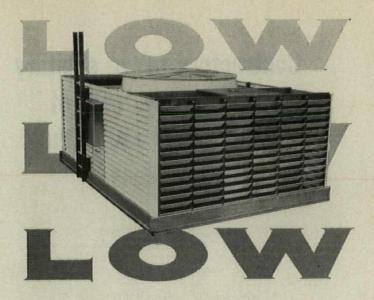


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The Marley Double-Flow Aquatower, the unit that brought the low silhouette tower to the air conditioning and refrigeration industry, has been completely redesigned . . . to accentuate its compatability to architecture, to boost its already excellent performance.

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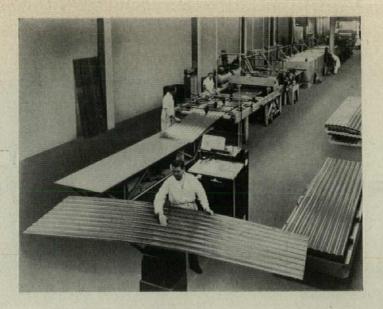
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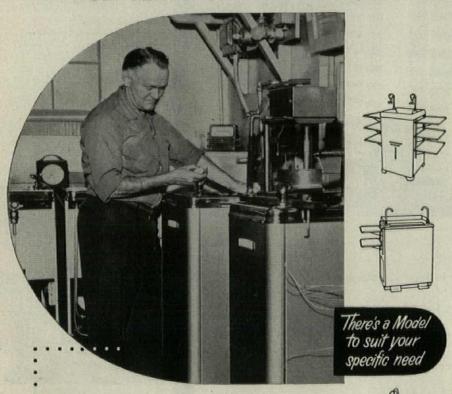


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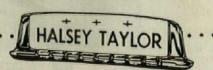
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PRODUCTS

Continued from p. 228



PLASTIC PANEL of glass fibers is rereinforced with nylon

To increase the rigidity and impact resistance of polyester panels for glazing, partition and side-wall applications, Filon Plastics Corp. (formerly Plexolite Corp.) distributes continuous strands of nylon through the translucent sheeting. Barely visible in the new Filon panel, these strong parallel threads substantially better the strength of the plastic laminate so that the 8-oz. psf material can support a 200-lb. load on a 4' span. The new sheeting is produced in 20 standard colors in widths up to 42" and in lengths to order (difficulty of handling is the only limitation). It is stocked in several corrugations and flat form in 6- and 8-oz, weights. Smooth or crinkled finish may be specified for one or both faces. Shiplap, V-crimped and square rib sheet can be obtained as well as special configurations of the architects' own design.

Electronically controlled, Filon's fabrication process, which feeds the tiny nylon rods through the resin-impregnated glass fibers, assures uniform panel thickness and color.

Manufacturer: Filon Plastics Corp., 2051 E. Maple Ave., El Sequndo, Calif.

TECHNICAL PUBLICATIONS

ADHESIVES

Adhesives and Coatings for Insulation. Minnesota Mining & Mfg. Co., Dept. Z5-45, 411 Piquette Ave., Detroit 2 Mich. 4 pp.

AIR PURIFICATION

Nonoxivent Exhaust Eliminating Equipment, Kent-Moore Organization, Inc., 5-105 General Motors Bldg., Detroit 2, Mich. 4 pp.

Nonoxivent Underfloor Exhaust Eliminating Systems. Kent-Moore Organization, Inc., 5-105 General Motors Bldg., Detroit 2, Mich. 12 pp.

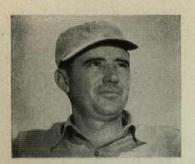
The Promise of Ozone. Melco Sales, Inc., 305 Fifth Ave. S., Minneapolis 15, Minn. 16 pp.

ALUMINUM

Alcoa Aluminum in Architecture. Aluminum Co. of America, 754 Alcoa Bldg., Pittsburgh 19, Pa.

continued on p. 240





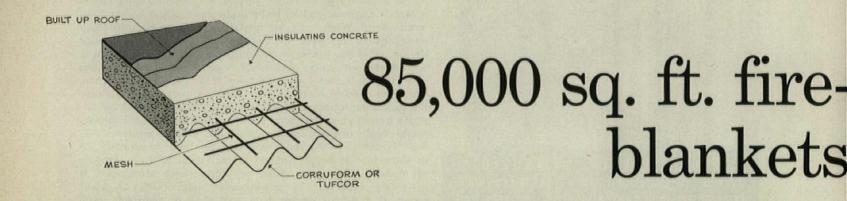
Job Superintendent

W. C. BOWEN says, "Roofing time was really important and Tufcor kept work moving ahead smoothly. Pre-sizing made it easy for two-man crews to place 7—8,000 sq. ft. a day, and pouring was fast, too—28,000 sq. ft. in one day. Tufcor gave us a strong roof and a safe working platform."



Contractor's Representative

WARREN O. LAMB says, "Speed and economy are two big advantages of Tufcor. Roofing proceeded on schedule and we saved the cost of shoring, too. That meant savings in time and labor costs."



Nashville architects and builders provide fire protection for owners and tenants, thousands of dollars in insurance savings.

An 85,000 sq. ft. roof of Granco Tufcor and Corruform with light-weight insulating concrete greatly increases the fire safety of the new Green Hills Village Center, a two-story multi-shop facility which will serve over 5,000 Tennessee families in the suburban area about 6 miles southwest of Nashville.

Because of its fire-resistant qualities, the Tufcor-based roof serves as a positive check against the spread of fire via the roof should it break out in any one of the center's several stores.

The speedily-constructed Tufcor roof follows closely the design of Granco's Tufcor roof which performed so sensationally well in an ASTM E119-50 fire test in 1954. In that 45 minute test, at temperatures up to 1720° (F.), the Tufcor

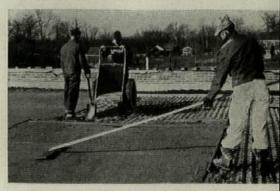
roof didn't burn, didn't feed the flames, and didn't fall. After the test, the roof was still able to carry the full design live load.

Warren O. Lamb, Vice President of W. C. Holt and Sons, general contractors on the Green Hills job, says, "Tufcor is a great time and money saving way to build a fire-safe roof. All you do is open a bundle of Tufcor sheets, place and secure them to the steel framework, and immediately trades have a rigid working platform!"

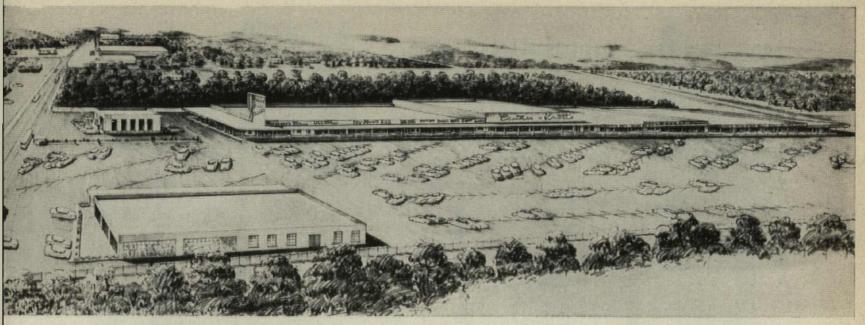
Tough temper, corrugated steel Tufcor makes fire-safe roof construction simple, fast and economical. For information, estimates or costs on your building plan, contact home or district office, attention Dept. F-4.



Handles Easily, Places Fast. Tufcor arrives pre-cut to building size. Measuring and cutting is eliminated. Two or three men can place up to 10,000 sq. ft. a day.



Permanent, Fire-Resistant Roof Deck is formed by cast-in-place slab. A strong bond forms between galvanized steel sheet and lightweight concrete fill giving high-strength rigidity to finished deck.



Green Hills Village Center, Nashville, Tennessee • Owners: William C. Weaver, Jr., & W. H. Criswell
Architects and Engineers: Hart, Freeland & Roberts, Nashville, Tennessee • General Contractor: W. F. Holt & Sons, Nashville, Tennessee

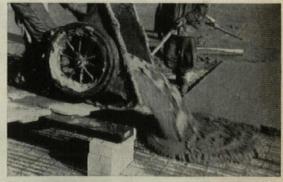
safe Tufcor roof new shopping center



Steel Sheets Are Quickly Clipped to the steel framing. Welding is equally fast. Positive attachment of tough-temper sheets adds rigidity to roof framework.



An Immediate Safe Working Deck is obtained as soon as Tufcor is attached, Light mesh is added for shrinkage control of the lightweight insulating concrete.



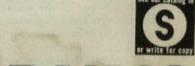
Insulating Concrete Placed on Tufcor is fast operation. On an average roof construction, this material weighs less than 6 pounds per square foot.



Perfect Base for Built-Up Roof. Deck offers two excellent advantages—a good firm base on which to apply the roof and an inorganic, permanent base for long life of the built-up roof.



Neat Plaster Ceiling over Fire-Safe Tutcor. Any normal ceiling treatment is easily applied to Tufcor. Its attractive galvanized surface is sometimes left unfinished when light reflection is wanted.



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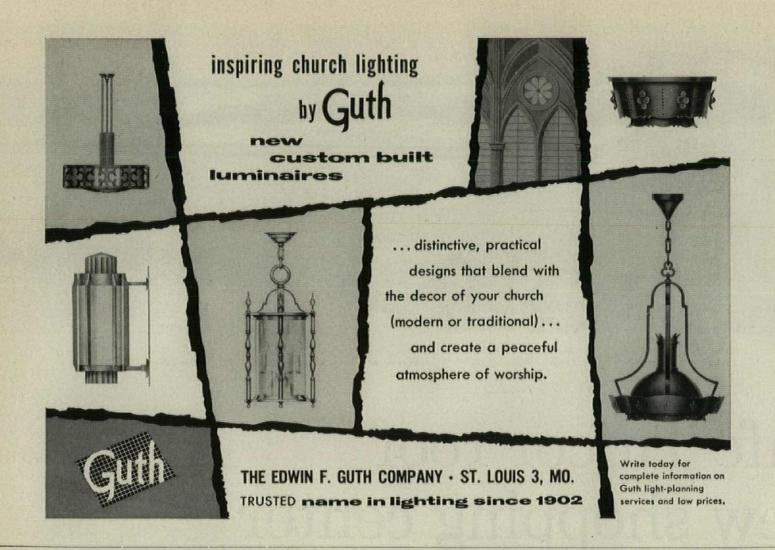
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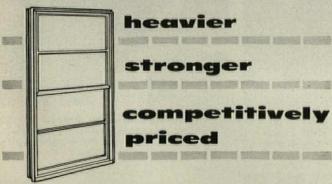
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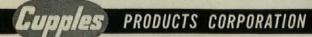






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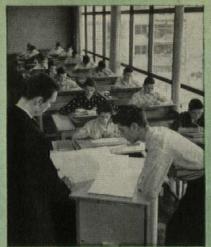


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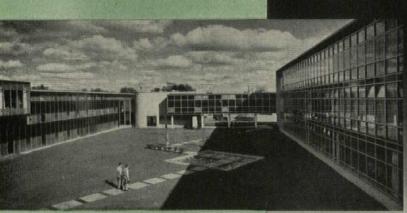
RLM Standards Institute, Suite 830, 326 W. Madison St., Chicago 6, Ill.



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Architects: Belli & Belli • Engineers: W-B Engineering Co. • Contractors: W. T. Mahoney & Sons, Inc.; Phg., L. J. Keefe Co.





Quadrangle with reflecting pool. Faculty building left facing south has blue porcelain enamel panels, clear glass and blue green fibre glass drapes. Chapel, in center, with plastic sky domes is connected by stained glass cloister to school building right. North exposure of the school has clear glass and gold colored fibre glass drapes.

Dramatic 70 ft. high cross at main

entrance is stainless steel. Drapes behind clear glass windows are blue green fibre glass. Yellow terra cotta panels have religious insignia in black. Colors thruout the buildings including the gym are attractive.





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Continued from p. 234

DISPLAY FIXTURES

Modulart Retail Store Equipment, Weber Showcase & Fixture Co., Inc., 5700 Avalon Blvd., Los Angeles 54, Calif. 66 pp.

Modulart Hardware. Weber Showcase & Fixture Co., Inc., 5700 Avalon Blvd., Los Angeles 54, Calif. 30 pp.

DRAFTING ROOM EQUIPMENT

Layout Tapes for Industrial Planning, Labelon

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Lifetime Steel Drafting Room Furniture, Drawing, Tracing and X-Ray Equipment. Stacor Equipment Co., 768-778 E. New York Ave., Brooklyn 3, N.Y. 22 pp.

ELECTRICAL EQUIPMENT

I-T-E Speedfax Catalogue, I-T-E Circuit Breaker Co., 1924 Hamilton St., Philadelphia 30, Pa. 60 pp. Lighting and Distribution Panelboards. Bul. 501. Continental Electric Equipment Co., Box 1055, Cincinnati 1, Ohio. 24 pp.

Packaged Luxtrol Light Control Equipment. Bul. L155P. The Superior Electric Co., Bristol, Conn. 12 pp.

Sola Cold Cathode Ballasts. Sola Electric Co., 4633 W. 16th St., Chicago 50, III. 4 pp.

FLOORING

Carbo-Tread. Bul. M-1219C. Maintenance Inc., Wooster, Ohio. 4 pp.

Flooring. Scott Paper Co., Chester, Pa. 12 pp.

FURNITURE

School Furniture. School and College Furniture, Inc., Bedford, Ohio. 4 pp.

System of Table Seating for Schools. Institutions and Industry. Sico Mfg. Co., Inc., 6045 Pillsbury Ave. S., Minneapolis 19, Minn. 8 pp.

GRANITE

Granite Veneer. H. E. Fletcher Co., W. Chelmsford 2, Mass. 8 pp.

GRATING

Steel Grating and Treads. Bul. No. 2486. Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 38, Pa. 14 pp.

HARDWARE

Hardware for Labeled Fire Doors, National Builders' Hardware Assn., 515 Madison Ave., New York 22, N.Y. 8 pp.

New Lock Designs and Installation Tools, Booklets 625 and 626. Schlage Lock Co., 2201 Bayshore Blvd., San Francisco, Calif. 6 and 4 pp.

HEATING AND AIR CONDITIONING

Absorption Refrigerating Machines. Carrier Corp., Syracuse, N.Y. 36 pp.

Automatic Gas Horizontal Furnace. Bul. B-55-P. Reznor Mfg. Co., Mercer, Pa. 4 pp.

Axial Mushroom Power Exhausters. Bul. CAM-102. Chicago Blower Corp., 9869 Pacific Ave., Franklin Park, III.

Fireye Integrated Control Systems. Bul. CC-31. Combustion Control Div., Electronics Corp. of America, 718 Beacon St., Boston 15, Mass. 12 pp.

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The Newest Development in Multiroom Cooling. Airtemp Construction Corp., Dayton, Ohio. 4 pp.

Preferred Utilities for Electric Heating of Heavy Fuel Oils. Preferred Utilities Mfg. Corp., 1860 Broadway, New York 23, N.Y. 8 pp.

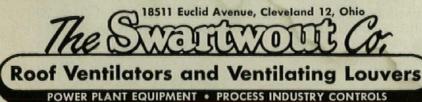
Pritchard Lo Line Cooling Towers. J. F. Pritchcontinued on p. 244



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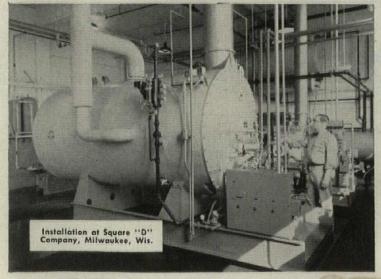












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Continued from p. 240

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Reznor Unit Heater. Bul. B-55-US. Reznor Mfg. Co., Mercer, Pa. 4 pp.

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What Standard Do You Demand? Institute of Boiler and Radiator Manufacturers, 608 Fifth Ave., New York 20, N.Y.

Wheelco Series 400 Capacitrols. Bul. No. 9. Wheelco Instruments Division, Barber-Colman Co., Rockford, III. 16 pp.

INSULATION

85% Magnesia Insulation Manual. 2nd ed. The Magnesia Insulation Mfrs. Assn., 1317 F St., N.W., Washington 4, D.C. 74 pp.

KITCHEN EQUIPMENT

Finest Food Serving Equipment for Hospitals. Southern Equipment Co., 5017 S. 38th St., St. Louis 16, Mo. 32 pp.

Stainless Steel Sinks and Drainboards. Cat. No. 4. Zeigler-Harris & Co., 2900 N. San Francisco Rd., Burbank, Calif. 36 pp.

LIGHTING

Architectural Lighting with Plexiglas for Large Area Illumination. Rohm & Haas Co., Washington Sq., Philadelphia 5, Pa. 8 pp.

Domelights for Evenly Distributed, Glareless Lighting, Century Lighting, Inc., 521 W. 43rd St., New York 36, N.Y. 4 pp.

Lighting for Industry. Holophane Co., Inc., 342 Madison Ave., New York 17, N.Y. 112 pp.

Luminous Ceilings Made with Bakelite Rigid Vinyl Sheets. Bakelite Co., 300 Madison Ave., New York 17, N.Y. 16 pp.

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Service Station Lighting, Bul. 2677, Crouse-Hinds Co., Wolf & Seventh North Sts., Syracuse, N.Y. 14 pp.

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PARTITIONS

Module "T." Dyna-Graphic Displays Inc., 422 Withers St., Brooklyn 22, N.Y. 4 pp.

A New Way of Life in the Office. Arnot-Jamestown Div., Aetna Steel Products Corp., 730 Fifth Ave., New York, N.Y. 3 pp. fold-out.

PLUMBING

Frost Closure of Roof Vents in Plumbing Systems. Government Printing Office, Washington 25, D.C. 32 pp. 25e

PORCELAIN ENAMEL

Lifetime Color. The Erie Enameling Co., Erie, Pa. 4 pp.

PROTECTIVE COATINGS

Steel Structures Painting Manual. Vol. 2. Systems and Specifications. Steel Structures Painting Council, 4400 Fifth Ave., Pittsburgh 13, Pa. 250 pp.

Maintenance Finishes—Painting Specifications and Product Guide. The Glidden Co., 11001 Madison Ave., Cleveland 2, Ohio. 28. This booklet for distribution to architects, managers, superintendents and others who have important and serious painting problems.

continued on p. 248



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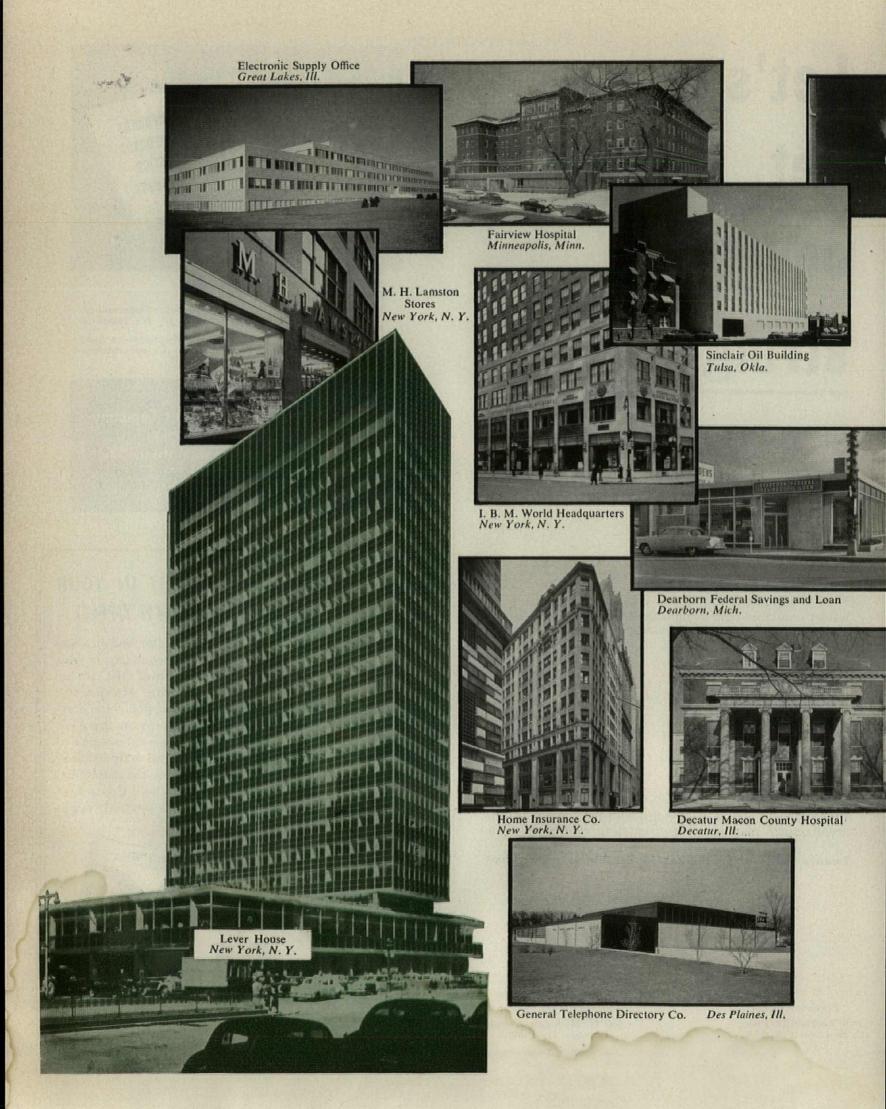






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Unit Deck for Roofs, Decks, Floors and Ceilings, Unit Structures, Inc., Peshtigo Wis. 8 pp.

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Aluminum and Fiber Glass Panel Skylight. Marco Co., 45 Greenwood Ave., E. Orange, N.J. 8 pp.

Design Data-Laubert Skylight. Laubert Lighting Inc., 205 E. 43rd St., New York 17, N.Y. 16 pp.

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Two new dual-purpose daylighting products-Wascolite Hatchway and Airdome. Wasco Flashing Co., 87 Fawcett St., Cambridge 38, Mass. 4 pp.

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The World's Finest Sound Reproduction Systems. ProPlane Sound Systems, Inc., 1101 Western Ave., Pittsburgh 33, Pa. 4 pp.

STAINLESS STEEL

Why, How and Where Architects Specify Stainless Steel. Armco Steel Corp., Middletown, Ohio. 3 pp. fold-out.

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Vibration, Shock and Noise Control, Bul. K4A. Korfund Co., Inc., 48-08G 32nd Pl., Long Island City 1, N.Y. 4 pp.

WALL AND FLOOR FINISH

Carlyle Quarry Tile. The Mosaic Tile Co., Zanesville, Ohio, 8 pp.

WATERPROOFING

Wurdack's Manual and Registered Crystal Applicators Textbook on Above-grade Invisible Exterior Masonry Waterproofing. Wurdack Chemical Co., 4977 Fyler Ave., St. Louis 9, Mo. 16 pp.

WELDING

Air Reduction Publication List announcing safety literature, basic product data, technica! reprints from journals, textbooks, motion pictures and slide films. Air Reduction Sales Co., 60 E. 42nd St., New York, N.Y. 16 pp.

WELDING, BRAZING AND SOLDERING

The Joining of Crucible Rezistal Stainless Steels. Crucible Steel Company of America, Box 88, Pittsburgh 30, Pa. 24 pp.

WINDOWS AND DOORS

Magic Door Catalogue. The Stanley Works. New Britain, Conn. 16 pp.

Ro-Way Extension Spring Doors for Industrial and Commercial Buildings. Rowe Mfg. Co., Galesburg, III. 8 pp.

Ro-Way Doors Manual No. 55. Rowe Mfg. Co., Galesburg, III. 88 pp.

Steel Windows for Schools, Hospitals, Offices, Institutional and Public Buildings. Detroit Steel Products Co., 3111 Griffin St., Detroit 11, Mich. 40 pp.

Thermopane Standard Sizes, Libby-Owens-Ford Glass Co., Toledo 3, Ohio. 4 pp.

WIRE AND CABLE

Silicone Rubber Wire and Cable. Pub. 19-594. General Electric Co., Bridgeport 2, Conn. 12 pp.

Welded Wire Fabric for Building Construction-Design Manual. Wire Reinforcement Institute, Dept. 50, 1049 National Press Building, Washington 4, D.C. 44 pp.







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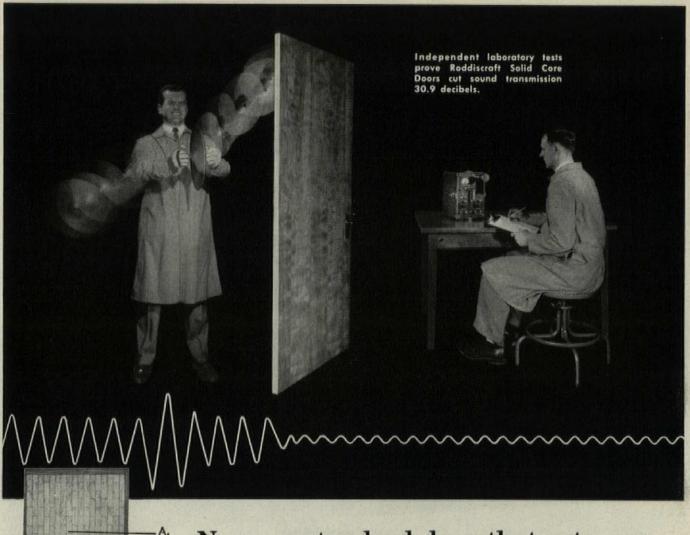
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The temple, assembly wing, and school are tightly arranged around an enclosed garden. The deep columns together with the overhang of roof slab form a system of sunbreaks.

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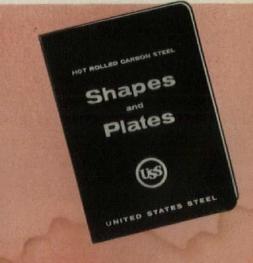
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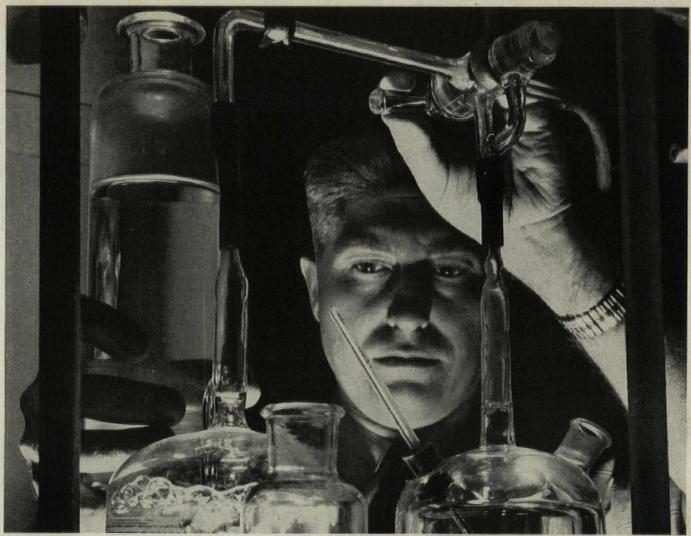
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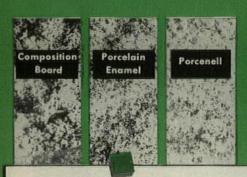
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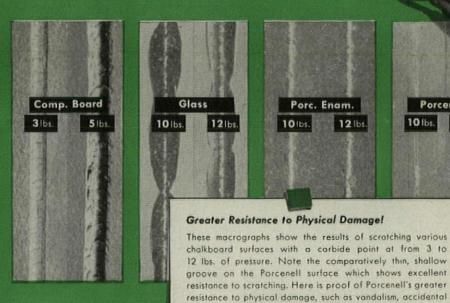
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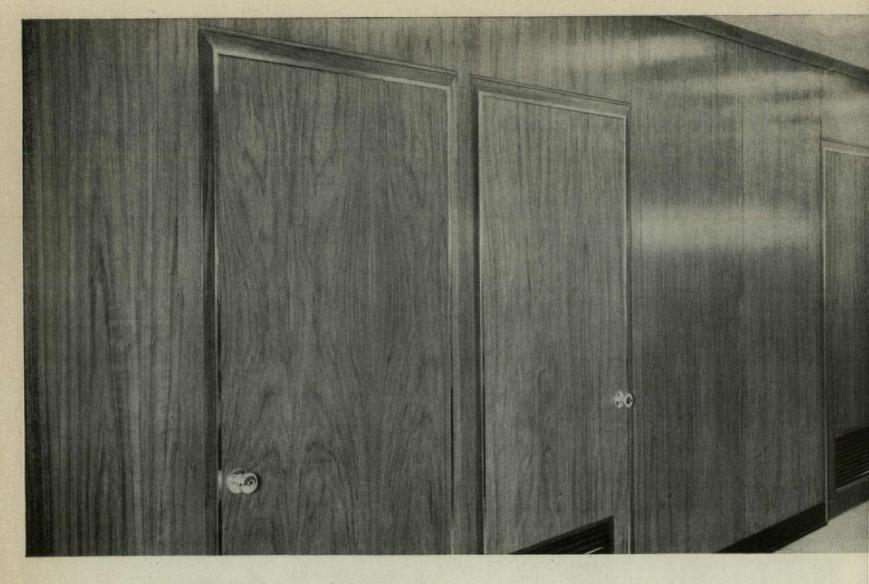




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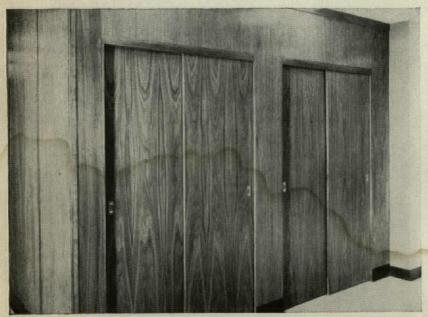
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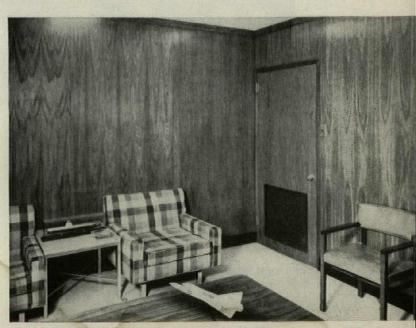


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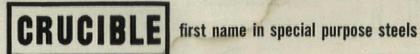
- the Chrysler Building, with its spire of stainless steel
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Agency-Michel-Cather, Inc. Areadia Metal Products
Agency-Stiller-Rouse Advertising
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Armstrong Cork Company
Art Metal Company, The 85
Agency-Foster & Davies, Inc.
Associated Mfrs. of Lathing & Plastering Materials
Agency-Reincke, Meyer & Finn, Inc.
Bakelite Company
(Div. Union Carbide & Carbon Corp.) 34
Agency-J. M. Mathes, Inc. Barber-Colman Company
Agency-Howard H. Monk & Associates, Inc.
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Benjamin Electric Mfg. Co
Agency-Van Auken, Ragland & Stevens
Benson Manufacturing Co
Agency-Phillips-Keick-Paraon Havernsing
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Bituminous Coal Institute
Agency-Vansant, Dugdale & Co.
Blue Ridge Glass Corporation

Agency-Hugo Wagenseil & Associates
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Du Pont De Nemours & Co., I. E
Duriron Company
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Eljer Co
Ellison Bronze Co
Erie Enameling Co
Agency—Waker & Downing, Industrial Div.
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Farley & Loetscher Mfg. Co
Agency-William Jenkins Advertising, Inc.
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Gall Reversible Window Co
General Binding Corp
Agency—Robertson, Buckley of Gotsch, Inc.
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Agency-Ruthrauff & Ryan, Inc.
General Gas Light Co
Glynn-Johnson Corp
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Agency-Henry A. Loudon, Advertising, Inc.
Granco Steel Products Co
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Agency—Darwin H. Clark Co.
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Gustin-Bacon Mfg. Co
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Harvey Aluminum
Hauserman Company, E. F
Haws Drinking Faucet Co
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Ingram-Richardson Mfg. Co
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Vimble Class Co
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Koppers Company

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Mahon Company, The R. C
Agency-Anderson Incorporated Marble Institute of America, Inc
Agency-Moore & Company, Inc.
Marley Co., The
Martin-Parry Corporation
Mastic Tile Corporation of America Cover II Agency-S. R. Leon Company, Inc.
McKee Door Company 52
Agency—Connor Associates, Inc. McLouth Steel Corporation
Agency—Denman & Baker, Inc. Mengel Co., The
Agency—Doe-Anderson Advertising Agency Mills Company, The
Agency—Meermans, Inc. Minnesota Mining & Mfg. Co
Agency-MacManus, John & Adams, Inc.
Agency-Ralph Smith Advertising Agency
Mitchell Mfg. Co
Modine Mfg. Co
Monsanto Chemical Co
National Concrete Masonry Assoc 23
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Overhead Door Corporation
Owens-Corning Fiberglas Corp
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Agency-Western Advertising Agency, Inc.
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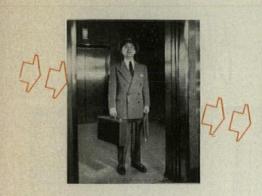
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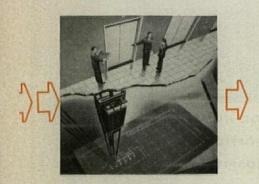
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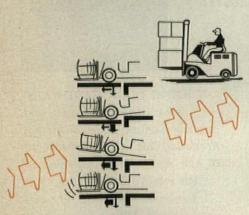


Elkhart 1, Indiana











more "street level" sales areas

Continuously moving Otis Escalators act as attractive invitations to travel UP and DOWN to all floors without effort, waiting or crowding. They make all sales areas as accessible as the coveted street level locations. As a result all sales areas, on all floors, do a better selling job — because merchandise that can be seen can be sold!

Otis Escalators are really inclined sales aisles. Their safe riding speed permits shoppers to retain that enthusiastic attitude so important to impulse buying. Shoppers locate sales items faster; see bargains they might otherwise have missed; make more impulse purchases — because they are continuously exposed to a panoramic view of dramatically displayed merchandise on all floors!

surprise for the "forgotten man".

Otis AUTOTRONIC® elevators handle the 5 o'clock *let's-go-home* rush with an electronically versatile Down-Peak program—which pays especial attention to the once "forgotten man."

If a waiting DOWN passenger is left at a lower floor a minute or more, because of extraordinarily intensive DOWN traffic from the upper floors, the system responds by automatically stopping the next empty UP car at this passenger's floor and giving him individual DOWN service—so that he, too, can catch his regular train home!

improves elevator service by 25%

If you modernize an existing bank of car switch elevators to completely automatic AUTOTRONIC operatorless elevators this is what happens: The magic of electronic group supervision greatly reduces passenger waiting time. And automatic car operation reduces travel time. The result is 25% better service. In some instances this has actually reduced the number of elevators in the original group.

Further, completely automatic AUTOTRONIC elevators end all concern about elevator operators. Each car has an "automatic elevator operator" on duty every minute of the day and night. Every "operator" is fully trained, with instantaneous reflexes that never tire or slow down. And every "automatic" operator saves up to \$7,000 a car, each year—making the modernization self-liquidating!

what are the extra stresses?

Freight elevators need extra ruggedness of design to stand up under industrial power truck loading "punishment". The arrows in the diagrams at the left show how impact stresses vary when the elevator platform is level, below or above the landing. They also show the effects of a fast braking stop. These and the stresses of off-balance loading, and extra static loading are at work, not singly, but simultaneously and in endless combinations—as described in detail in Otis Heavy Duty Freight Elevators booklet B-705.

delivering the promise

Otis construction skill delivers the promise that forms the basis of every Otis contract—the world's finest elevatoring! Elevator construction skill calls for men with an unusual combination of skills—those of a rigger, iron worker, machinist, electrician, carpenter, and sheet metal worker plus long Otis training in studying elevator parts, assemblies, functions, construction procedures, final testing and adjusting.

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East Brady Borough Elementary School

of modern sanitation for these new Pennsylvania schools

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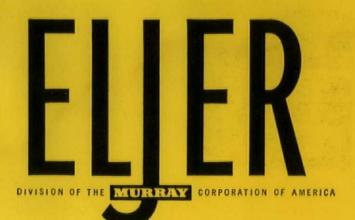
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