Forum forecast: another big year for building in 1956 (p. 128)...

Le Corbusier's new church (below and p. 120) . . . Architecture in America: Part I of a new series (p. 105)
Behind the blueprints

Architecture in America
Part I of a series on the men and methods that influence it

Milwaukee Air Terminal
Its lobby is decentralized and its observation gallery works two ways
Architect: John Messmer

Small office building
Atlanta builds a one-story building two stories high for the Wilby-Kincey Service Corp.; Stevens & Wilkinson, architects

LeCorbusier builds a church
Atop a hill in the Vosges, France's master of concrete design sculpts the new chapel of Notre-Dame-du-Haut

How to rebuild cities downtown (cont'd.)
Reader reaction to Forum's round table report on urban renewal

Building forecast: 1956
Next year promises a continuation of the current high level of construction—an analysis by Economist Miles L. Colean

Seven health buildings
1. Chestnut Lodge Therapy building, Rockville, Md.; Keyes, Smith, Satterlee & Lethbridge, architects
2. Presbyterian Village, Redford, Mich.; Smith, Hinman & Grylls, Inc., architects
3. State Homeopathic Hospital, Middletown, N.Y.; Ketchum, G. & Sharp and Addison Erdman, architects
4. Office for Dr. Kurt Newgard, San Francisco; Joseph Esherick, architect
5. Tanner Dental building, San Anselmo, Calif.; Henry Hill, architect; John W. Kruse, associate
6. East Dentistry-Medicine-Pharmacy building, Chicago; PACE Associates, architects
7. Mayo Diagnostic Center, Rochester, Minn.; Ellerbe & Co., architects

Excerpts
Opinion from the rostrum and the press

International conference hall
A daring and symbolic work of architecture for the State Department in West Berlin by Architect Hugh Stubbins

Fire and building design
How to keep fires in one-story buildings small and manageable and thus reduce the nation's $1 billion annual fire loss

Office of merit
The real estate management offices of Draper & Kramer, Inc. in Minneapolis by Designer Peter Fraser Jr.

For all concerned
An editorial on architecture by law
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- It was exciting news when 121 year old WAKE FOREST COLLEGE announced it would move from its namesake town in North Carolina to an entirely new campus at Winston-Salem in the same state. Next June the dream of bigger and better facilities will come true. At a cost of more than 19 million dollars, 23 new buildings will welcome faculty and students. Other structures will be added later. Principal buildings now being completed are University Center (upper right), Library (upper left), Chapel and Christian Education, Science and Research, Law, Gymnasium, 6 Dormitories, 10 Faculty Family Apartment Buildings, Power and Central Heating Plant. All buildings will be of colonial design with skillfully planned interiors and inbuilt equipment of the highest rank. All will be equipped throughout with world-famous SLOAN Flush Valves.

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Congress adjourns after voting minor building bills, ignoring school crisis

In its first session the 84th Congress did relatively little of any serious significance for the construction industry, and did not even do some of that very well.

It enacted many useful minor measures affecting building, but won no glory for its action on housing act amendments, or its inaction on two of the biggest construction proposals advanced in Washington in many years: a large scale program for US assistance for critically needed school construction, and a vastly accelerated federal-aid highway extension program.

The score on various enacted measures:

Public housing. The 1955 amendments authorized a new installment of 45,000 units during the year ending next July 31, but they scrapped the "workable" programs of the 1954 law that limited new projects to cities having HHFA approved urban renewal programs. When signing the bill President Eisenhower criticized deletion of these requirements, took occasion to note that the two-year, 70,000-unit program he proposed is still needed and could have been administered in "a more orderly and efficient manner."

Urban renewal. To spark this lagging program (a year old without a single loan), the FHA was authorized to insure Sec. 229 mortgages based on "replacement value" rather than "estimated value," but still subject to the "cost certification" requirement, which should prevent any abuses of this liberal appraisal standard that might result in new "windfall" mortgage cases. Redevelopment project rules also were changed to allow federal loans (but not grants) for industrial or other nonresidential redevelopments on open land areas. Such loans, however, would be limited to 25% of gross costs of all other Title I urban renewal projects in each area, and it was understood this clause was drawn for the special benefit of Chicago, although not referring to that city by name. Total capital grant authorizations for this program were also boosted by $500 million for the next two fiscal years.

Military housing. The Wherry Act was given several curious twists. On Defense Department certification it will now allow FHA to insure 100% mortgages; but if FHA then has any misgivings about the economic soundness of such a project it can insist that the Pentagon reinsure the deal. Commented one industry observer: "Combining as it does contract negotiation with a competitively bid contract price—the only remaining instance of this kind of legislative foolishness—this program will certainly never get off its crippled feet. Moreover, it is the most bald-faced example of the new idea of expanding government expenditures without affecting the legal debt limit that has been concocted so far. It is undoubtedly fortunate that its impracticalities will prevent its wide use.

Other FHA and HHFA changes. The FHA's $5 million per project limit on various types of rental housing mortgages was raised to $25 million, but would provide little stimulation so long as its rental housing programs remained ineffectual because of other basic shortcomings (AF, June '55). Sec. 213 cooperative project mortgages can now be based on "replacement" costs, instead of value, but are still subject to cost certification regulations.

The HHFA college housing loan fund was increased for $300 to $500 million, and was extended to authorize loans for such extra facilities as dining halls, student centers, infirmaries and cafeterias. Also expanded were HHFA loan programs for local public works planning and buildings.

Hospital construction. For the current year $111 million was appropriated to match state and local funds spent under the Hospital Survey and Construction Act. VA was given $30 million for modernizing and rehabilitating its hospitals.

Washington area buildings. After 92 years of procrastination, the 84th Congress appropriated funds to extend the east facade of the Capitol approximately 49', bring it more in line with the separate House and Senate wings. It also instructed the Capitol's architect to acquire land and prepare plans for a third new $5 million House Office Building, proceed with a second new $20 million Senate Office Building on which bids should be received this month. Also approved were a $46 million Central Intelligence Agency building to be erected in the metropolitan Washington area, a $10 million AEC headquarters building in nearby Germantown, Md., to be designed by Voorhees, Walker, Smith & Smith, a new State Department building adjacent to its present overcrowded quarters.

Bragdon named first US public works "Coordinator"

Before adjourning, Congress authorized funds for an Office of Coordinator of Public Works in the Executive Office of the President. By a separate bill allowing former Maj. Gen. John S. Bragdon to serve in a government post so long as he relinquishes his Army retirement pay, it also paved the way for President Eisenhower to name Bragdon to this new White House staff position at a salary of $16,000 annually. Before retiring from the Army in 1951 Bragdon was Deputy Chief of Engineers, later became vice president of Vermilya-

Scaffold pipes bend in NY; Coliseum collapse blame fixed

On a hot Friday afternoon last month the walkways linking curbside hoist towers to the upper 28 floors of the 46-story Socony Vacuum building in New York suddenly dropped seven inches as pipe columns bowed (see cuts). streets were cleared and buildings across flat Street from the structure were evacuated while workmen took up weight of the walkways with cables from the building. Over the weekend workers installed pipe columns beside the bent ones, extending several floors above and below the warped area. The city building department and Chesbro-Whitman Co., which leases the scaffold structure to Turner Construction Co., contractor, were looking for the cause. The bowing occurred just above where vertical pipes were reduced from 3/4" to 1/2" in diameter.

A few weeks ago New York District Attor-
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**Now Ready!**  
Here are all the facts on the beautiful new Herman Nelson Console Heater!
Building boom will feel few effects from government's credit policy changes

Although changes in credit or monetary policies sometimes can have rapid, serious consequences for construction, the government's housing and banking credit curbs last month were hardly likely to put any noticeable crimp in the continuing construction boom. Despite these new moves, FORUM's forecast for 1956 construction spending (p. 128) anticipated another 6% increase over the record-breaking $41.8 billion estimate for this year made by the Commerce and Labor Departments.

Ratifications of government new policies reflected a great deal of genuine concern about inflationary potentials in overexuberant business activity, it also was probable they included a good deal of political calculating, too.

Not a brake; a governor. The main objective, of course, was to slow up the racing economic machine a trifle. This might make it less "easy" to finance or promote some projects for awhile, but not make it all "difficult" to launch any sound venture. Not to be overlooked was the fact the government would always need a healthy, busy building industry to maintain a strong, active economy, and, as required by the Employment Act of 1946, "to promote maximum employment, production, and purchasing power."

At the slightest sign of any major drop in construction, the industry could be quite certain the government would reverse its policies, take homebuilders by the hand, even spoon-feed them, liberally aid home buyers in all income brackets again, and devise other stimulants for nonresidential big building. If any surplus construction off the top of this year's boom was pushed over into 1956, naturally the government would do its best to get it launched then, when the approach of the national elections in November would undoubtedly make all officials more alert and responsive.

No "emergency." The most significant thing about the new policies was the demonstration they gave of the ever increasing role of the federal government in the national economy—and in construction.

For real estate and homebuilding leaders who liked to lambaste public housing as socialism, but laud FHA and VA for providing government incentives to spur private enterprise projects, it might have been a shock to observe how much "government regulation" they now had to accept in the FHA and VA restrictions: it was the first time such housing credit curbs were introduced without any national "emergency" situation that could be cited as requiring their imposition.

HFF Administrator Albert M. Cole also disclosed that they were not even imposed with primary reference to homebuilding, but to the over-all national economy. He told a savings conference in Fort Collins, Colo.: "These actions were not taken because of any general overbuilding in the housing field. They were designed, along with other precautionary and preventive steps taken in the over-all credit field—such as the Federal Reserve's recent increase in discount rates—to avoid further stimulation of credit buying which at this time would contribute measurably to inflationary factors in the economy as a whole."

A month earlier Commerce Secretary Sinclair Weeks announced that vacant housing for sale or rent between April and June amounted to only 2.2% of all dwelling units in the US. This rate, he said, was "low enough to dispel recent apprehensions about overbuilding at this time . . . . indicates that a major construction problem is not overbuilding, but rather building enough of the right kinds of housing in the right places."

The new FHA and VA restrictions made no effort to be selective, however, or to favor particular locations or particular types of needed housing. They applied universally to all VA or FHA supported financing—or new housing and old housing, on single-family units and wise on apartment construction, even on the urban renewal program mortgages.

Credit, politics and timing. As for the like-lihood the new government policies included some political calculations, a Kansas City Star editorial summed up these possibilities rather pointedly:

"Credit has been the foundation of [a large portion of recent boom conditions] politically, any tightening of money or credit is not popular . . . . Aside from issues of war and peace, people have the habit of voting their pocketbooks more than any other factor. For the administration, the timing of the 1956 boom is good, politically. It wasn't planned. It just came, and a year too early. An election this fall would probably be a walkaway for Ike. But a recession or slow-down from the present pace next year could be very harmful politically. Whether the various moves to hold spending and business activity to a sound basis will be successful remains to be seen. They may have the result of stretching the present economic pace well through 1956. That is essential and smart if the GOP is to have any chance whatever of regaining Congress."

"The present credit moves can be switched the other way—the first real indications that the brakes have taken hold too hard. . . . The political pressures will all work for a sturdy industrial 1956."
St. Louis two years after start of labor cleanup: costs are up instead of down

Two years ago federal grand juries, aroused by a series of St. Louis Post-Dispatch articles, began a cleanup of racketeering in some of the area's construction unions.

The paper's stories by Reporter Carl Baldwin confirmed what many St. Louisans had known: extortion of money from out-of-area contractors by union leaders was common. The alternative to payoffs: slowdowns, strikes and artificial shortages of workers that could cause a contractor to lose his shirt. Collusion among union leaders, materials suppliers and some big local contractors was known to exist, but hard to prove. Building construction in St. Louis was almost monopolized by local contractors. This was especially evident in the letting of brick subcontracts.

Hope was that an antiracketeering drive would increase competition in St. Louis' construction industry and bring down soaring building costs.

Prosecutors' box score: 24 labor leaders have been convicted since Jan. '54, most of them bricklayers, steamfitters, laborers and operating engineers.

Now the crusade has run its course. What were conditions in the building industry in St. Louis last month? Costs were not lower, but higher than ever; union control had been passed by most of the convicted labor leaders to picked successors; out-of-town contractors still were afraid to come into the area, and collusion between suppliers, contractors and union leaders still existed, according to well-informed sources.

Here was the picture statistically:

- St. Louis construction costs, fifth highest in the nation in 1953, were third highest at midsummer, 1955.
- The rate of increase of construction wages in St. Louis apparently was sliding: it was third highest in 1952 and sixth highest in 1953, but was down to only eighth highest in the nation this summer.

Some detailed cost data. For these ratings, F 8X13 used a composite of several standard construction cost indexes. Based on just one, the Boeckh Building Cost Index, long a standby in construction, here's how St. Louis costs looked:

- In June 1954 Boeckh rated average national building costs at 254.5; in June 1955 Boeckh found the national average to be 262.5. This meant an increase of 3.2%.
- During the same year the index for St. Louis, instead of dropping as had been hoped, rose from 262.8 to 270.8, an increase of 3.4%, or 0.2 more than the increase in the national index.

REVISED FORT DEARBORN PLANS (TOP) AND PROPOSED LAKEFRONT CONVENTION HALL

From June '54 to June '55, Boeckh's average of building cost indexes for four cities comparable to St. Louis in location and building conditions—Atlanta, New Orleans, Kansas City and Memphis—rose from 232.9 to 240.2, an increase of 3.1%, compared with St. Louis' 3.4% increase.

Cynical observers in St. Louis were frank in theorizing that St. Louis contractors probably were making more money than ever. Contractors, if they had some other explanation for the cost increases, were withholding it. Some of them denied that St. Louis costs were rising at a higher rate than those in other cities.

Strongest negotiators removed. The explanation for the decline in the rate of wage increases among St. Louis' construction workers appeared to lie in the shift in union leadership. Most of the jailed union officials were top-flight negotiators. Their successors gave in this year without much fight. Result: lower wage increases.

Two Chicago civic projects move ahead several stages

Revised plans for the huge Fort Dearborn redevelopment project proposed for central Chicago were unveiled last month. Since initial disclosure a year ago (AF, April '54), the city's Land Clearance Commission, Plan Commission and Housing and Redevelopment Coordinator have endorsed this project in principle, state enabling legislation has been adopted, and this month the City Council will act on a resolution creating a new interagency city commission to expedite this redevelopment.

The revised Skidmore, Owings & Merril plans (left), which are still primarily schematic, cut the project area from 161 acres to 147 acres, contemplate total outlays of about $388 million, rather than $400 million. The main project area boundary is extended four blocks farther north (into the background in cut), but trimmed five blocks in the area just behind the Merchandise Mart (lower left) from Wells St. westward (1) to the North Branch of the Chicago River. A heliport is added, beside the Merchandise Mart, but the proposed University of Illinois campus, Hall of Justice, Hall of Records, City Courts and Public Library are omitted.

Also passing through various Chicago agencies were plans for a $34 million convention hall designed by Holabird & Root & Burgee and Ralph H. Burke, Inc., architects and engineers (see cut). A bond-issuing authority created to erect this is slated to receive about $4 million from a state pari-mutuel tax fund. Several downstate counties have gone into court to challenge this allocation, however, and in Chicago the AIA chapter, real estate board, plan commission and other groups are opposing as impractical the hall's proposed lakefront site at 23d St. An earlier candidate for the enticing state funds available for a Chicago convention hall was an immense 700' square, clear span, deep-truss, 50,000-seat structure designed by Ludwig Mies van der Rohe (AF, Dec. '58).
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When citizens of St. Louis, Mo., became concerned about inadequate street lights in 1900, Mayor Henry Ziegenhein set the tone for a half century of conservatism—and municipal obsolescence—by a classic remark: "We got a moon yet, ain't it?"

Two years ago a new generation of St. Louis citizens looked at their city and were appalled. Municipal finances were shaky, city buildings were dilapidated, public services were deteriorating for lack of funds, slums were spreading and thousands of residents were deserting the city for its suburbs.

St. Louis had the typical American city problem of the post-World War II era: central city, with its land used up, decays while suburbs boom. The automobile, which made the suburban growth possible, was choking downtown St. Louis. In the spread of urban rot was the same old financial story: St. Louis' 13.08 sq. mi. of slums (67,000 dwellings) were costing more in police, fire and health protection than they were paying in taxes.

Enviable debt position. But the St. Louis solution was hardly typical. While other US cities were abustle with rebuilding activities, St. Louis was clinging to its tradition of avoiding debt. Its per capita debt, $66.58 early this year, was the lowest among the nation's large cities. Houston's was $320 (highest in the country), New York's $279, Cincinnati's $275; all were investing heavily in new streets, parks and civic repairs.

No city is completely backward in maintaining its physical assets; St. Louis was partially offsetting slum growth by a big public housing program.

This was the situation two years ago. Then the urge to rebuild began to infect the city. The first symptoms were small. Example: a $1.5 million bond issue to finance the city's share of land acquisition.

Edward Clark—Lars

St. Louis has enormous downtown parking lot on white-elephant Jefferson Memorial site. Close-packed city (bottom) is looking to redevelopment to keep industry and residents.

Slums give way slowly to public housing (left); city hopes to upgrade decaying neighborhoods (above) with bond money. Crowded industrial area (right) may be expanded.
St. Louis off to late start

Conservative, decaying city, ringed by booming suburbs, digs deep for public works money under spur of business leaders

Mayor Raymond R. Tucker, who succeeded Darst, stumped the state, appealing to legislators to give St. Louis the right to manage its own finances. Civic Progress members, acting as individuals because their charter prohibited political activity, supported the mayor. Former Mayor Aloys P. Kaufmann, a Republican, went out stumping with Democrat Tucker. The legislature, afraid earnings taxes might become contagious in their home communities, grudgingly continued the St. Louis tax and left perpetuation of the levy up to a city referendum. The legislators were astounded last fall when the people of St. Louis, responding to a campaign led by CPI President Powell McHaney, an insurance man, voted 6 to 1 for a charter amendment permitting home rule in financial matters.

Urban Land Institute help. With its finances in order, St. Louis could make plans for a bond issue. The Urban Land Institute made a study of the downtown section, sponsored by the St. Louis Real Estate Board, the Building Owners' and Managers' Assn. and the Chamber of Commerce of Metropolitan St. Louis. CPI members paid more than $20,000 of the $25,000 cost. ULI sent in 16 experts. Their findings: the city needed expressways in a hurry, more parking space, more downtown office space. The panel blamed the city for sleeping so long, praised it for waking up.

Then CPI set out to get the recommended improvements. Banker Sidney Maestre, one of its members, headed a citizens committee which drew up a $110.6 million public works program. David R. Calhoun Jr., another CPI member, also a banker, ran the campaign to sell the program—and a $16.4 school bond issue—to the voters.

More than a third of the public works issue was allocated to traffic improvement projects, $18 million for rights-of-way for three expressways, $11.6 million for street work, $2 million for grade separations, $11 million for bridges and $2 million for paving. Ten million dollars was proposed as the city's share in future urban redevelopment projects; $4 million was allocated for neighborhood rehabilitation—parklets, trees, street improvements and other steps to preserve property values and encourage home owners to upgrade their property. And, to make the break complete with the 1900 conservation of Mayor Ziegenhein, $6 million was proposed for new street lights. Other projects: hospitals and health centers, rubbish incinerator, parks and playgrounds, voting machines, a youth guidance center, expansion of the famous St. Louis zoo, expansion of the art museum and new library branches. Science-minded St. Louisans, headed by Howard Ohlendorf, operator of a dental laboratory, worked a planetarium proposal into the bond program as the nucleus of a science center.

How to sell a bond issue. The campaign to get public acceptance of the bond issue may become a classic in municipal financing. Under Calhoun's direction, more than 1,000 St. Louisans bombarded the citizenry for four weeks from all angles. They distributed a million leaflets, 750,000 sample ballots, 500,000 automobile

continued on p. 21
How architects provide good looks, low cost, fast erection with BUTLER steel buildings

The buildings above show the striking appearance (both outside and in) that architects can achieve with Butler steel buildings. They show what you can do to provide exceptional good looks, yet keep costs exceedingly low and erection time surprisingly short.

Limitless modification of Butler steel buildings is permitted by solid rigid-frame construction, which results in tremendous strength with no dependence on sidewall support. Thus vast areas of glass are possible with no sacrifice of rigidity.

Savings up to 40 per cent of the cost of other types of construction are not uncommon in architect-designed Butler buildings. And speed of erection—often as little as four weeks with Butler steel buildings—is an important consideration for architects.

Spacious clear-span interiors and optional ceiling Lite*Panls to supplement artificial lighting—contribute to making your clients happy with their buildings.

See your Butler dealer. Ask him for a copy of the new Butler Architect's Brochure—A.I.A. file number 14i. It will tell you more about the architectural adaptability of Butler buildings. Write for the name of your nearest dealer and more information by mail.

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But not expensive—no, sir! Which is precisely why builders are actually excited about Mengel Doors in rotary-cut Gold Coast Cherry.

This newest addition to our extensive line has swept to exceptional popularity in but a few short months. Because with all its beauty, all its glamour—it is actually priced lower than many domestic hardwoods!

What's more, Mengel Doors of Gold Coast Cherry save you extra money in finishing. One finish coat on their satiny, close-textured surfaces is better than two coats on many other woods.

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World's Largest Manufacturer of Hardwood Products
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LUXURY plus UTILITY

for every type of installation

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Oldest and most progressive name in its field, Wright Rubber Tile has exceptional uniformity of color, dimensions and physical characteristics. Its restful resilience...sound-softening effect...deep richness of color and pattern...ease and economy of maintenance...above all its superior resistance to wear and abrasion, make it ideal for virtually every type of installation.

...All in all, a perfect luxury-plus-utility flooring that you can select with confidence.

WRIGHT MANUFACTURING COMPANY
Division of Mastic Tile Corporation of America
Houston, Texas
It was established a year ago to provide the city and most of the country with a single system for operating and extending sanitary and storm sewers. Last January city and county voters, in a light vote, rejected a metropolitan transit district proposal. Advocates of a unified transit setup may try again when they see results of a transit survey planned for the area. Meanwhile, St. Louis University and Washington University have been seeking funds for a joint study of the possible advantages of county-city integration.

**Civic Progress Inc. at work: no stand-ins, no red tape**

When Civic Progress, Inc., was formed in 1953 to reverse the downside of St. Louis' central core, the 20 business and industrial leaders invited to join were warned, "We don't want any third assistant vice president or spokesman representing you in this organization. We want you!"

Much of CPI's success in awakening St. Louis to its predicament and in getting its major renewal program started can be traced to that policy. Members, all top men in their businesses, are accustomed to making big decisions; together they have a way of getting things done swiftly, without red tape.

Original plan was to have a sizable membership and a professional planning staff—something like Pittsburgh's Alleghany Conference. However, St. Louisians found their small group working so well after a few meetings that they changed their minds.

Informal meetings are held once a month, unless a special session is needed. They start at 4 P.M. and last two or three hours. At first meetings were held in hotels; now members meet in the office of CPI President Powell McHaney, president of General American Life Insurance Co. Whenever a member is in the city, attendance at CPI meetings is given priority on his schedule. "No one would think of sending a stand-in," said McHaney. "Why, he wouldn't be admitted."

Big CPI accomplishments in addition to selling St. Louis' $127 million public works bond issue to the voters: getting the city's building code amended over opposition of bricklayers and brickmason contractors to permit metal panel construction, thereby enticing a shoe company to build a $6 million warehouse in the city instead of in its suburbs; rescuing the St. Louis symphony orchestra from its annual financial crisis last year and putting the orchestra on a sound financial footing.

*St. Louis Post-Dispatch*
AETNA WALL... for Olin-Mathieson

A contribution to Modern Design

For the Olin-Mathieson Chemical Corporation offices in New York, the Boyle Division designed and installed something entirely new in the partition field—flush, movable walls without bulk, which feature interchangeable panels of either steel, wood, glass or corkboard.

These newly-designed walls combine mobility and "thin-line" appearance without sacrificing any of the accepted, functional characteristics of floor-to-ceiling hollow metal partitions.

Interiors designed by Designs for Business, Inc.

AETNA STEEL PRODUCTS CORPORATION
E. J. BOYLE DIVISION
730 Fifth Avenue, New York 19, N. Y.

AETNA ALSO PRODUCES
JOHNSON-CONTROLLED HEAT PUMP
Insures Ideal Comfort, Cuts Heating and Cooling Costs

Year 'round air conditioning for the award-winning Roanoke Public Library is accomplished by an application of the reverse cycle heat pump, utilizing two 40-ton refrigeration compressors. The installation is one of the first of its kind in a library building.

Precision control of this modern air conditioning system is provided by a specially engineered system of Johnson Automatic Temperature Control. Strategically located Johnson Heating-Cooling Thermostats maintain refreshing, even temperatures throughout each of the nine zones into which the building is divided. Behind the scenes, other Johnson Thermostats, Valves and related apparatus constantly keep the system in balance with outdoor temperatures.

Whether it's the spacious main reading room, a filled-to-capacity auditorium or one of the many smaller special activity rooms, there is constant comfort to satisfy the occupants. Control is so perfect that occupants never feel the need for more or less heating or cooling.

Operation of the system is completely automatic, including all heating and cooling, defrosting and indexing of the room thermostats. Added to the comfort and convenience features of Johnson Control are equally important economy advantages. The efficient control of this heat pump installation results in virtually waste-free heating and cooling performance!

Whatever your control problem—whether it involves a new or existing building, a simple or intricate system—it can be solved best by Johnson. Why don't you take advantage of the more than 70 years' experience of the nationwide Johnson organization? An engineer from a nearby Johnson branch will gladly make recommendations without obligation. JOHNSON SERVICE COMPANY, Milwaukee 2, Wisconsin. Direct Branch Offices in Principal Cities.

*Roanoke Public Library, Roanoke, Virginia. Frantz & Addikson, architects; Roanoke; Wiley & Wilson, mechanical engineers, Lynchburg, Virginia; R. H. Lowe, air conditioning contractor, Roanoke.
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ALCASCO PRODUCTS INC.
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Monsanto launches research program for superstrength structural plastics

A year ago an exclusive FORUM report disclosed how atomic irradiation of materials may bring about a revolution in building products and methods, and in experimental tests made "an ordinarily soft sheet of plastic stronger than the same thickness of today's structural steel and so resistant to heat that it could be used in the afterburners of jet engines; i. e., so resistant to heat that in building it could be used naked without fireproofing." (AF, Sept., '54).

Last month, as they started organizing an important new structural plastics research program, two Monsanto Chemical Co. scientists discussed another process (the low pressure chemical catalyst method) which will more quickly provide a practical, economical way for developing superstrength plastics for all sorts of construction uses. The scientists: plastics division Engineering Director Allan W. Low and Michael F. X. Gigliotti, manager of the division's new structural plastics engineering research department set up last month in Springfield, Mass.

Two processes contrasted. Commenting on the success achieved in low pressure chemical catalyst processing of polyethylenes to obtain high tensile strength materials, Low noted that these have not yet been produced with resistance to continuous heat in excess of 250° F., but their tensile strengths run as high as 6,000 psi, elongation as high as 1,200%. He and other Monsanto personnel are reluctant to com-

mit themselves on just where they expect low pressure catalyst process will eventually lead, but one sure sign of their enthusiasm and optimism was their creation of Gigliotti's structural plastics research group.

Gigliotti supervised construction of Monsanto polyethylene plants in Cincinnati and Texas City, knows both construction and plastics. Comparing catalyst and gamma ray radiation processes, he points out that particular characteristics can practically be "tailored" into a product using the catalyst system, while the properties are added after the material is molded under the radiation system, and the radiation may be hard to control evenly when treating materials of varying thickness.

Shy of picking winner. Neither scientist would predict whether radiation or catalyst action would prove the best means in the end for producing maximum-strength, weight-supporting structural members—if now pending for designation as a second-class rather than a third-class city, and a first-class instead of second-class rating for its fire department. After the quake 400 commercial buildings were posted as unsafe, and 125, mostly skid-row structures, were demolished to make way for new improvements. Replacement or reconstruction has been completed for eight grade schools that were destroyed, thirteen that were damaged. Twelve new churches have been built; $3 million spent on repairs and improvements for two damaged hospitals. A new $700,000 city hall has replaced the tremor-ruined municipal headquarters; a $900,000 county courthouse replacement is in planning.

SIDELIGHTS

Incorrigible estimators?

For a new Youth House in the Bronx to accommodate 250 delinquent boys in individual rooms, engineers for the New York City Public Works Department estimated the cost should be $3,500,000, or $14,000 per delinquent including central facilities. When the bids came in the lowest set totaled $3,231,939, or $21,300 per guest. Only $3,219,000 was provided in the current capital budget for the structure, designed by Archi-

News

NEWS

Still another office tower for New York's Park Ave.

Stainless steel and glass will sheath this 41-

story $40 million headquarters tower to be

erected in 1957 for Union Carbide and Carbon

Corp. on the Park Ave. blockfront in New York

five blocks south of Lever House. Preliminary designs by Skidmore, Owings & Merrill also provide for a 13-story section on Madison Ave. frontage of the two-acre full block site.

Union Carbide, which canceled 1952 plans to move its headquarters to a suburban Westchester location, will occupy the entire 1.2 million sq. ft. of gross space in the struc-

ture, above ground floor stores. In arranging tenant space, New York General and Webb & Knapp long-term leasehold rights to the site to Union Carbide, W & K President William Zeckendorf said Union Carbide's decision to re-

main in the heart of the city marked "the end of the brief vogue for corporate rustication."
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WITHOUT BOLTS, RIVETS OR WELDING
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WEEKS TO DAYS—GETTING A BUILDING
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that a medical center, suburban insurance office, factory or warehouse
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- ENGINEERING • FABRICATING AND ERECTING -
Academy gets building funds; Wright hits American Legion

The Air Force will get $20 million to carry it through the rest of the year in starting construction of the controversial (FORUM, Aug. 1956, News) Air Academy at Colorado Springs. Congress voted to appropriate the money after Senate-House conference committee had compromised between the withholding of all funds insisted on by the House and the $79 million approved by the Senate.

Frank Lloyd Wright struck back at the American Legion when he learned through FORUM that the Legion had threatened to publicize his antimilitaristic record a year ago if he stayed in the running to design the academy. Said Wright: "I do not know why the American Legion puts me on its blackened page unless because I hate war and openly oppose it. I equally hate American Legion opposition to the exercise by others of the same rights it takes to itself. I do not want to see our sovereignty of the individual sacrificed to fear, even fear of communism—see ourselves reduced by the professional warrior to communism's level."

Richard Hawley Cutting, Cleveland architect who put together Kitty Hawk Assoc. a year ago, with Wright as designer, to go after the academy commission, last month broke a year's silence over the Legion's threat: "My only criticism of the American Legion is that it is not interested in the contributions of great people. It is interested in their records, their personal beliefs. To hurt that man [Wright] would have done immense damage to US public relations abroad."

Porcelain enamel competition offers $25,000 in prizes

To stimulate design interest and widen experience in the use of porcelain enamel steel and aluminum, to improve application methods and develop new uses, Ferro Corporation of Cleveland has announced a $25,000 porcelain enamel design competition approved by the AIA committee on competitions.

Use of porcelain enamel metal in construction has increased 25-fold since 1940, and it is now being adapted to many new exterior and interior building uses almost daily. Ferro officials point out. But so far, they add, only a limited number of designers have gained a knowledge of its advantages, and only a few of its limitless possibilities have been thoroughly investigated. One basis for competition awards will be "practical new uses of these materials and improved methods of detailing."

The competition has two divisions: one is the design of an elementary school, the other, a community youth center. Grand Prize will be $5,000. Twenty-four other awards will consist of first prizes of $3,000 in each division; second prizes: $1,500 each; third prizes: $1,000 each, and nine honorable mentions in each division: $500 each.

The competition sponsor, one of the nation's leading producers of porcelain enameled materials and equipment, has appointed FORUM to conduct the competition, which is open to architects, designers, draftsmen and students of architecture who are residents of the US or Canada. Harold R. Sleeper, FAIA, has been appointed professional adviser. The jury will consist of Architects Pietro Belluchi, dean of MIT's school of architecture and planning; John Lyon Reid of San Francisco; Eero Saarinen of Bloomfield Hills, Mich.; Hugh Stubbins of Boston, and Engineer Edward X. Tuttle of Giffels & Vallet, Inc. and L. Rossetti, associated architects and engineers, Detroit.

In San Francisco last month three co-operative flower growers' associations united to start construction of a $1 million wholesale flower distribution center on a four-acre site formerly occupied in part by a Marine Corps supply warehouse. The three separate terminal sales halls and a modern restaurant and cocktail lounge, will have their own private tree-lined streets for off-street parking, and according to Architect Mario J. Ciampi this redevelopment of a previously deteriorating industrial area should set a pattern for the rehabilitation of other blighted commercial central city districts. The new flower mart site was selected not only for its adequate land area, but also for its strategic location for the trade in relation to the freeway system and main city traffic routes.

West Coast projects planned on liberal building sites

In many western cities it is still feasible to acquire large building sites on which central city commercial structures can be erected without excessive coverage of the entire building plot.

Last month, for instance, Union Oil Co. of California announced plans for the immediate start on a $20 million headquarter complex that will occupy a five-acre site on a downtown Los Angeles hilltop just west of Harbor Freeway. Because of its hilltop location, the center's 19-story diamond-shaped home office building (see cut) will be the highest structure in the city. To the right (in cut) will be an auditorium and employees building, and other structures will be separate sales organization and chemical division buildings, and a three-level, 1,000-car garage.

Architect-Engineers: Pereira & Luckman.
Wriston tells how to be on good terms with both traditionalists and modernists; Kimball, Philadelphia museum head, dies

Some views on what a college president must know about architecture were given recently by Henry M. Wriston, president emeritus of Brown University. Wriston, who retired last month after being a college president for 30 years, has had plenty of experience buying college buildings, most of it at Brown, where his popularity with the Rockefellers drew millions for construction. Speaking at Harvard's College Administrators' Institute, he said: "What the president must not only be an expert in aesthetics; he must ... please the modernist and also the traditionalist; but he must never compromise between the two, for that is unsatisfactory to both."

"An architect really never gives you something good you do not know you want. He is almost certain to give you something you do not want unless you have a very precise knowledge of what you desire. What you want is not to be determined by inspiration, but by hard study and analysis. Only so can you bring your requirements within reach of your financing while sacrificing nothing in the functioning of the building. Thin partitions in a dormitory will save money on construction, but you will pay for them many times over in noise and consequent disciplinary problems. The perfect classroom has yet to be designed, but unless it is designed within your administration, you will be held accountable."


NAMED: John H. Stevens, architectural service worker for Libby-Owens-Ford Glass Co., as senior architect for the firm: Rev. John W. Whetstone, pastor of St. Andrews Lutheran Church, Muncy, Pa., as assistant director of the department of church architecture of the United Lutheran Church in America, to serve in the new post under Rev. Edward Frey, director; Glenn A. Hutt, 22 years with Ferro Corp., Cleveland, as vice president of the firm's new building products division; Roland Rodrock Randall, Philadelphia real estate counselor, as coordinator of Philadelphia's zoning advisory commission; L. Manning Brown, a vice president of New York Life Insurance Co., as head of its real estate and mortgage loan department, succeeding retiring Charles R. Van Anden; Louis B. Wetmore, widely experienced state and federal level planner, as head of University of Illinois' city planning and landscape architecture department, succeeding Karl B. Lehrman, retiring.


Architect Fiske Kimball, 66, who resigned last January after 30 years as director of the Philadelphia Museum of Art, died Aug. 14 in Munich, Germany. Kimball, who restored Monticello, was of the "old school." He spanned the gap from Beaux Arts to modern, a knowing and intelligent historian and critic of architecture, although in one early book he tried to pass off modern architecture as flash in the pan. He believed in refining former styles in fastidious elegance. In his early years Kimball taught art and architecture in several universities. He became head of New York University's department of art in 1923 and helped shape a department that emphasized training professional artists and cooperated with industry in developing arts in trade—a new approach at the time. He went from NYU to the Philadelphia post. His restoration activities included Robert E. Lee's home in Stratford, Va. Kimball, by no means exclusively an antiquarian, was on the advisory boards of Rockefeller Center and of the National Park Service. He was influential behind the scenes, and was an advisor to President Truman, upholding him in the White House back porch controversy.


Pilot classes established to teach stone masonry

Journeymen, students at a stonemason training course in Hartford, Conn., cluster about Architect Philip DiCorcia, in white jacket. This is one of two pilot courses—the other is in Stamford, Conn., and is for mason apprentices—to teach the fading art of stone setting.

DiCorcia told the students bricklaying is mechanical, but stone setting should be creative in order to interpret the architect's feeling. The Building Stone Institute has hopes for a pattern of nationwide classes.
75 Years of Church Specialization...

Practically every important cathedral built in the last 75 years has employed the woodworking skill of Irving & Casson — A. H. Davenport Co. A typical example is Da Vinci's "Last Supper" (below) installed in the Upper Room Chapel, Nashville, Tenn. Measuring 18¼ feet long, 8½ feet high, 12 inches deep, it is thought to be the world's largest wood carving.

"Without it our buildings would not be standing today"

"At our factories in Cambridge, Mass., a flash fire occurred last December in the paint department", relates Mr. C. A. Thurston, Treasurer, Irving & Casson — A. H. Davenport Co., furniture manufacturers and custom builders of woodworking specialties. "Had it not been for our Grinnell Sprinklers going into action immediately, I am honestly afraid to think of the consequences."

"Most of our buildings are well over 125 years old. To replace them would cost perhaps a million and a quarter dollars. That is why we installed Grinnell Sprinklers as far back as 1900. "Over the years we have had our share of fires. But on every occasion, our Grinnell Sprinkler System has been on the job and damage has been held to a few dollars. I am sure that without it our buildings would not be standing today."

Grinnell Sprinklers stop fire at its source, wherever and whenever it strikes, night or day, with automatic certainty. 77 years experience proves this. Moreover, a Grinnell Sprinkler System will often pay for itself in a few years through reductions in fire insurance premiums. Grinnell Fire Protection is an investment that pays real dividends... any way you look at it. Grinnell Company, Inc., 292 West Exchange Street, Providence, Rhode Island.
...the finest structures rest on
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ARCHITECT: Kemp, Bunch & Jackson, Architects, Jacksonville, Fla.
GENERAL CONTRACTOR: Daniel Construction Co., Inc. of Alabama, Jacksonville, Fla.

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Canada, Central and South America.
Good or bad, the trends for just about everything were sharply upward.

Observers could debate whether soaring indexes of one sort or another indicated inflationary conditions or solid, booming prosperity, whether the government's credit tightening moves (p. 12) were motivated mainly by political or by anti-inflationary considerations—or by a combination of both. But whatever their causes or effects, no one could argue with the factual reports responsible for all-time records on practically every type of construction industry index chart.

The sharpest increase in any index in July occurred on the chart for average wholesale costs for building materials as compiled by the Bureau of Labor Statistics. This soared 1.6 points, or 1.3%, the biggest hike since a 2.0-point, or 1.6% jump exactly a year earlier. This put this index 4.3% ahead of July, '54, 6% over June, '54.

Mainly responsible for the latest one-month advance, from June to July were metal door, sash and trim, up 8.3%; structural shapes, up 7.7%; plate glass, up 4.2%; structural clay products, up 3.6%; prepared asphalt roofing, up 3.8%.

Almost as spectacular was the 1% increase in nonresidential building costs from June to July on the index compiled by E. H. Boeckh & Associates. This index raced up 1.7% between May and July, was 5% above its level in April, '54.

But as building and materials costs were ballooning, so was construction activity (see chart and table), and the backlog of unfilled orders for structural steel was growing fatter.

**Building Costs** for nonresidential structures shot up from 262.4 to 265.2 from June to July on the national index compiled by E. H. Boeckh & Associates. The component for apartment, hotel and office buildings rose 2.0 points, from 262.1 to 264.1, while the component for commercial and factory buildings advanced 3.3 points, from 262.7 to 266.0.

**Building Materials** prices soared to 125.7 in July, highest ever, on the index of average wholesale prices compiled by the Bureau of Labor Statistics, after deceptively holding steady for one month at 124.1 in June.

**July construction, almost $4 billion: another record**

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<th>Type</th>
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<th>1955</th>
<th>1954</th>
<th>%±</th>
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<td><strong>PRIVATE BUILDING</strong></td>
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<td>410</td>
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**PUBLIC BUILDING**

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<th>%±</th>
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<tr>
<td>Nonresidential*</td>
<td>392</td>
<td>2,687</td>
<td>2,687</td>
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<tr>
<td>Industrial</td>
<td>62</td>
<td>959</td>
<td>959</td>
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<td>Educational</td>
<td>225</td>
<td>1,183</td>
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<tr>
<td>Hospital; institutions</td>
<td>32</td>
<td>211</td>
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<tr>
<td>Military</td>
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<td>Highways</td>
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<td>1,856</td>
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<td>1,193</td>
<td>6,476</td>
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<td><strong>GRAND TOTAL</strong></td>
<td>3,967</td>
<td>23,079</td>
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* Minor components not shown, so total records sum of parts.

**TOTAL CONSTRUCTION** expenditures in July reached a new monthly peak of nearly $4 billion, for the first seven months of the year totaled a record $23.1 billion, according to the Commerce and Labor Departments. Seasonally adjusted, July's spending rate averaged about $42 billion, in line with forecasts for expenditures for the entire year (see p. 128).

July housing starts totaled 115,000, a decline of 12,300 from June, or a seasonally adjusted rate of 1,202,000 annually, the lowest seasonally adjusted rate since July '54.
Fine buildings deserve fine lighting. That is why more and more owners of buildings, and their architects, are specifying lighting equipment with diffusers made of PLEXIGLAS®. This acrylic plastic gives them lighting at its best, because it provides:

**PERMANENCE.** Rigid, strong and durable, PLEXIGLAS is noted for resistance to discoloration and to breakage. It complements the firm, solid appearance of floor, wall and ceiling surfaces.

**QUALITY ILLUMINATION.** PLEXIGLAS provides maximum transmission and complete diffusion of light, yet has low surface brightness that is easy on the eyes.

**DECORATIVE APPEAL.** When lighting fixtures have diffusers made of PLEXIGLAS—most beautiful of all types of plastics—they are highly attractive in appearance, lighted or unlighted.

For complete satisfaction in lighting, make sure your plans include the use of PLEXIGLAS. We will be glad to send you a folder that shows many of the diffuser shapes and designs that are available. Just ask for "Architectural Lighting with PLEXIGLAS."

**For lighting at its best... PLEXIGLAS**

**ROHM & HAAS COMPANY**

Washington Square, Philadelphia 5, Pa.

Representatives in principal foreign countries

Oak Cliff Savings and Loan Building, Dallas, Texas. Lighted throughout by recessed fluorescent luminaires with diffusers of PLEXIGLAS. Architects: Prinz and Brooks.

Canadian distributor:
Crystal Glass & Plastics, Ltd., 130 Queen’s Quay at Jarvis Street, Toronto, Ontario, Canada.
SKY-BLAST Roof Ventilator now vents fires automatically!

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.

Write for Bulletin 665-A

PROPELLAIR®
SKY-BLAST VENTILATOR
ROBBINS & MYERS, INC., SPRINGFIELD, OHIO

Your local RCA Sound Distributor knows Sound Engineering!

For expert, "no obligation" planning assistance, you'll find your RCA Sound Distributor a good man to know. He can offer you advice on the latest in equipment, the newest in sound techniques—how to specify a sound system which will reflect credit on your professional reputation. His experience covers a wide range of applications including schools, plants, hospitals, institutions, hotels, stores, and auditoriums . . . Call on him for the answers to any questions involving sound.

See our catalog in Sweet's Architectural File, "Sound in Industry" contains the kind of information architects need to evaluate the advantages of sound in various applications. The coupon will bring your copy by return mail.

SOUND PRODUCTS
RADIO CORPORATION of AMERICA
ENGINEERING PRODUCTS DIVISION, CAMDEN, N. J.

In Canada: RCA VICTOR Company Limited, Montreal

Radio Corporation of America
Dept. W-269, Building 15-1, Camden, N. J.
Please send me free RCA's new booklet "Sound in Industry."

NAME
COMPANY
ADDRESS
CITY ZONE STATE

RCA's new booklet—"Sound in Industry" contains the kind of information architects need to evaluate the advantages of sound in various applications. The coupon will bring your copy by return mail.
Who's that man on your roof?

Did you specify the roofer as well as the roof, application methods and materials? The right roofer is as important as the right roof.

If he's a Ruberoid Approved Roofer you can be sure of getting the experience and "know-how" that means uniform quality of application and the avoidance of costly headaches.

You can count on your Ruberoid Approved Roofer for sound advice, too...not only because of his experience...but because Ruberoid makes every type of built-up roof in specifications to meet every need. Ruberoid Approved Roofers are not prejudiced in favor of any one type.

The Ruberoid Built-Up Roofing Specification Book is handy, useful reference for the selection of any type of roof...large or small...smooth-surfaced asbestos, coal tar pitch with gravel or slag surfacing, or gravel-and-slag surfaced Ruberoid Special Bitumen. It also contains practical working details for a wide variety of flashing and eave construction. If you don't have a copy, write for one to The Ruberoid Co., 500 Fifth Ave., New York 36, N. Y.

The RUBEROID Co.

ASPHALT AND ASBESTOS BUILDING MATERIALS
ROOM AIR DISTRIBUTION...

TITUS ELIMINATES INSTALLING
50% OF GRILLE ENGINEERING & ADJUSTMENT PROBLEMS

NEW MORE AIR CONTROL BUILT-IN
By engineering MORE AIR CONTROL per square inch into each diffuser and grille...right at the factory...Titus simplifies all phases of grille specification, selection, installation and adjustment. Eliminates any necessity for special factory schooling or instruction at the contracting, engineering or tradesman level. Any workman can install a Titus grille without unbalancing the whole expensive system.

NEW MORE SIMPLE INSTALLATION
Install grille in 2 easy steps. (1) Fasten grille in place with screws. (2) Adjust louvers for correct air patterns. Titus makes it easy, makes it simple to obtain correct air patterns...patterns that give maximum room comfort...from any air conditioning system.

NEW MORE FLEXIBILITY OF ADJUSTMENT
Most important...any miscalculations that have crept in during the installation period may be simply and easily corrected by quick adjustment of streamlined Airfoil louvers. ADJUSTING IS DONE WITHOUT REMOVING GRILLES FROM WALLS. COSTLY TIME-CONSUMING "CALL BACKS" ARE ELIMINATED.

All Titus grilles and diffusers are built under the most rigid, precision-controlled standards. They give finest air diffusing performance. Air control cannot be lost at the installation level. Titus grilles are so carefully constructed it is almost impossible to have anything but correct diffusion of air...no matter who installs or adjusts them.

SETS PERFORMANCE STANDARD FOR ENTIRE AIR CONDITIONING SYSTEM
Directs air where it is needed. Keeps uniform temperatures throughout room. Eliminates old-fashioned drafts...low level stratification. Truly controls comfort...at the room level...THE ONLY AREA WHERE THE UNIT'S ENTIRE HEATING OR COOLING PERFORMANCE IS JUDGED.

FREE CATALOGS
Get information on the complete line of Titus grilles now. Order actual samples. Look at them. Hold them in your hands. Test them. See for yourself why Titus can save you money. Can give you better air diffusion performance...in every type of building where air conditioning is used.

TITUS MANUFACTURING CORP., WATERLOO, IOWA

Gentlemen: I wish to simplify my grille installation problems and to lower my grille installation costs. Please send me complete information on the following Titus grilles.

- [ ] Supply Grilles & Registers
- [ ] Return Air Grilles
- [ ] Volume Controllers
- [ ] Frames and Accessories
- [ ] Gymnasium Grilles

Name

Address

City

State
Weldwood Fire* and Stay-Strate® Doors
offer unusual beauty, durability and
an unequalled lifetime guarantee

Beautiful Weldwood Fire and Stay-Strate Doors end forever the problems of door warping, shrinking and sagging. They keep their natural good looks and working efficiency so long and so well that United States Plywood guarantees these doors for the life of the building.

Here's why Weldwood Fire and Stay-Strate Doors are so superior:

Incombustible Weldrok® core in both doors is lightweight mineral material that's stable and extremely strong. This core is an exclusive Weldwood feature.

Fires are prevented from spreading to the other side of the door due to Weldrok's extremely low heat transmission factor. During a one-hour fire test, a Weldwood Fire Door was subjected to 1700°F: the highest temperature registered one foot from the other side of the door was only 102°F! Weldwood Fire Doors are edge-banded with fireproofed hardwood for additional protection. Fire Doors are labeled by Underwriters' Laboratories for class "B" (vertical shaft) and class "C" (room and corridor partition) openings.

Extreme durability of Weldwood Fire Door was proved by test of Underwriters' Laboratories that mechanically opened and closed the door 200,000 times. The same door was then slammed shut with great force 100,000 times. The door was unaffected and still operated perfectly!

Maximum dimensional stability. A Weldwood Stay-Strate Door in daily operation has been subjected to a relative humidity of 90-95% on one side and exposed to all the natural elements of the weather on the other; it operates as efficiently as the day it was installed over 5 years ago.

Beautiful standard thickness veneers 1/28" thick mean superior door construction, better performance, longer service. Lovely oak, natural birch, glowing walnut and blond Korina® are some of the many fine hardwood faces available.

Guaranteed for life, Weldwood Fire and Stay-Strate Doors are unconditionally guaranteed against warping, twisting or manufacturing defects for the life of the building in which they are installed. Any Weldwood Fire or Stay-Strate Door failing to meet these standards will be replaced without charge including all labor costs of hanging and refinishing involved.

Send coupon for more details or visit your lumber dealer, or any of the United States Plywood branches—87 offices in principal cities.
Beautiful unselected birch Weldwood Stay-Strate Doors are used in the University of Miami dormitory, Miami, Florida. Doors never need painting. Maintenance consists of occasional waxing.

Weldwood Doors
UNITED STATES PLYWOOD CORPORATION
World's Largest Plywood Organization

Weldwood Building
55 West 44th Street, New York 36, N. Y.

Please send me brochures that give all the details on the unusual advantages of Weldwood Fire and Stay-Strate Doors, including the unique lifetime guarantee.

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COMPANY ____________________________
ADDRESS ____________________________
CITY __________________ STATE ______

architectural FORUM / September 1955
bold pattern in ceramics GIVES AN OLD LOBBY new life

This exciting remodelling of an old office building lobby is just one example of the almost unlimited variety of decorative treatments made available to designers by Suntile Ceramics—durable ceramic tile in smaller sizes (½" x ½", 1" x 1", 1" x 2", 2" x 2").

Architect Max Alper selected this material "because of its permanence, ease of maintenance, flexibility, range and depth of color, and design possibilities."

Suntile Ceramics combine attractive satinated finishes and soft colors in both uniform and mottled shades. Used exclusively, or in combination with glazed Suntile, they offer you new design freedom plus all the practical advantages of fine ceramic tile.

Suntile Ceramics have an especially tough surface which serves equally well in walls or floors, saves maintenance costs year after year.

THE CAMBRIDGE TILE MFG. CO
P. O. Box 71, Cincinnati 15, Ohio

SPECIAL DESIGN SERVICE
Our staff of trained ceramic specialists is ready to help you with design or layout problems—and your local Suntile dealer guarantees proper installation. For full information, just write us, Dept. AF65.
Sutton Terrace (shown at top) consists of three 12-story buildings accommodating 495 families. Heat is supplied by three Titusville boilers, each rated at 42,500 sq. ft. of radiation and each fed with a WD-AH Petro burner. This installation has three 15,000 gallon, 10 ft. diameter fuel storage tanks.

ROTARY OIL BURNERS
Horizontal rotary oil burners make possible substantial fuel savings by burning the low-cost heavy fuel oils with complete dependability. Models for every industrial need. Capacities up to 600 boiler horsepower.

COMPLETE PACKAGED UNIT
A complete forced draft combustion system with all parts factory assembled and tested. Saves installation time and cost, gives top performance and fuel economy.

"Petro oil burners give us the cleanliness, dependability, and economy of operation we require," says Alan Tishman. Providing heat for 9 huge apartment developments and power for a 13-story manufacturing plant is a tremendous responsibility, but Tishman Realty and Construction Co., Inc., have found that they can rely on Petro oil burners to do the job. "The ability of our Petro oil burners to immediately respond to fluctuating heat and power demands without over-firing or under-firing is a vital factor in keeping our fuel costs low and our tenants happy," says Mr. Alan Tishman.

Oil automatically preheated for sure firing and lower fuel cost: To insure quick positive starting and steady, uniform firing, Petro oil burners automatically preheat oil to an efficient temperature before it is injected into the firebox. This Petro method of preheating oil also enables users to burn the heavy fuel oils (Nos. 5 & 6), which average 8% richer in heat value, without complicated mechanical gadgets that cause service and adjustment problems. You save worry and money with Petro oil firing.

PETRO oil burners are adaptable to any boiler room: Petro industrial oil burners are designed and built to modernize the firing of your present boilers. The flame is adjustable to any firebox, and the installation is adaptable to any boiler room layout. This means that you save substantially on initial installation costs, and save more money every day on fuel and labor costs. Mail coupon for free catalog and information.
Leading American architects and building owners are specifying quality Herculite Doors by Pittsburgh, because they add a distinctive, fresh look to any type entrance. This installation at the National Bank of Commerce, New Orleans, L.a., utilizes Herculite doors set in bronze frames, equipped with "the nation's finest automatic door opener"—the Pittcomatic (see description here). Made from Pittsburgh Polished Plate Glass, Herculite undergoes a special tempering process which makes it four times stronger than ordinary glass of the same thickness. Architect: H. T. Underwood, New Orleans, La.

With the PITTCOMATIC®
... Herculite and Tubelite Doors open at a touch!

How the Pittcomatic operates: Smooth hydraulic power is supplied by the power unit, through 3" copper lines, to the hinge under the door. In the handle—or unit—there is a 12-volt circuit which passes through the control box and activates the power unit. Adjustments provided in the control box and the hinge regulate the action of the door. The Pittcomatic is the safest automatic door opener; it is the easiest to install and maintain.

For detailed information on Pittsburgh doors, see Sweet's Architectural File... sections 15a/PI and 15d/PI, or write to Pittsburgh Plate Glass Company, Room 5286, 633 Fort Duquesne Boulevard, Pittsburgh 22, Pa.
Pittsburgh Doors offer
design flexibility...handsome appearance
...long, dependable life

Whatever your entrance requirements may be, there is a Pittsburgh Herculite or Tubelite door to meet them exactly.

When you install these doors, you are assured of the highest possible quality in materials and fabrication. They are designed to complement and enhance any architectural plan. And Pittsburgh doors are easily handled, dependable in operation, and long-lived.

TUBELITE®

These doors and frames mark a decided step forward in hollow metal entrance design, with lines that are clean and simple. Tubelite is thus adaptable to any type of construction. Another important advantage found in these doors is the unique interlocking feature of the frames. This assures maximum rigidity, making it possible to hold the true shape of the frames through long and continued use. Tubelite doors are easily and quickly glazed and installed. Feature-for-feature, they offer the highest value at the lowest possible cost. Park View Federal Savings & Loan Association, Cleveland, Ohio; Architect: Anthony S. Ciresti, Cleveland, Ohio.
New, radio-active, automatic fire guard!

C-O-TWO PRE-DETECTOR SYSTEM

Each pre-detector head protects up to 3,600 square feet of area....harmless radio-active element utilizing ionization chamber principle quickly detects all forms of fire....requires only simple two-wire circuit and insignificant wall space for controls.

This completely new and positive means of spotting fire is just what you've always needed and wanted...detects in the earliest stage, Invisible combustion gases, visible smoke, slow smoldering, as well as open flame. The C-O-TWO Pre-Detector System is simple to install, extremely economical to maintain and doesn't depend on thick smoke or heat for actuation.

As many pre-detector heads as necessary can be connected together in a single circuit and up to 16 separate circuits or spaces handled by one system. With a single circuit the pre-detector heads are connected directly to the fire indicating cabinet, while with multiple circuits the pre-detector heads are first connected to one or more space indicating cabinets capable of visually showing by number the exact location of the fire. Relays perform such functions as sounding alarms, closing fire doors, shutting down ventilation and releasing fire extinguishing systems.

The C-O-TWO Pre-Detector System has been subjected to extensive testing and carries Underwriters' Laboratories, Inc. listing, as well as Factory Mutual Laboratories approval. Proven pilot installations have been made in such diversified properties as a television station, an electric power company network analyzer room, a railroad signal tower, an airline flight training equipment room and the offices of an insurance company.

Don't take unnecessary chances any longer...the extensive fire protection experience of PYRENE-C-O-TWO over the years is at your disposal without obligation. Get complete facts about this new C-O-TWO Pre-Detector System today!

PYRENE - C-O-TWO
NEWARK 1 • NEW JERSEY

COMPLETE FIRE PROTECTION
portable fire extinguishers...built-in fire detecting and fire extinguishing systems

CARBON DIOXIDE • DRY CHEMICAL • VAPORIZING LIQUID • SODA-ACID • WATER • CHEMICAL FOAM • AIR FOAM
NEW
B.F. Goodrich
AIRPATH
Cushioned Rubber Floor Tile
quieter than other floor coverings!

Less noise above

Less shock and vibration

Less noise below

Tests made by an independent acoustical engineering laboratory — copy of report available on request.

Now you can satisfy clients' requirements for a quiet, easy-to-clean floor. Tests by leading engineers prove there is no other flooring like Airpath for acoustical efficiency.

B. F. Goodrich Airpath has an extra soft, buoyant cellular rubber cushion backing that is naturally resilient. It cushions footsteps . . . deadens their sound in both the area being used and the area below . . . absorbs shock and vibration.

B. F. Goodrich Airpath has Super-Density, too — the exclusive feature that eliminates dirt-catching surface pores, makes floors easy to clean and keep clean.

Airpath is ideal for all areas where noise control is essential: hospital corridors, nurseries, lounges, churches, theaters, libraries, and business and professional offices. Available in 10 attractive, marbled colors. Write: B. F. Goodrich Co., Flooring Division, Dept. AF9, Watertown 72, Massachusetts.

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Why is Lumber Sheathing Preferable?

One reason for the preferred position of wood sheathing is its great strength and long life. Often called “storm sheathing,” wood binds the entire structure into one firm, rigid unit, which withstands enormous wind and snow loads. This strength also makes alterations easier and safer. The strength is not lost as a result of accidental wetting.

Other advantages of genuine wood sheathing include superior nail-holding power . . . which assures a solid base to which one can securely attach exterior covering. This firm base also permits the use of a variety of exterior coverings, such as vertical siding and shingles.
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Fine homes are sheathed with lumber—because architects recognize lumber as the ideal sheathing material for sidewalls, roofs, and subfloors.

Generations of dependable service have proved the value of this fine building material. Homes and other light construction built with lumber sheathing offer the owner or purchaser the best in terms of durability, strength, and rigidity—which means true structural economy.

Sheathing

AND TRUE ECONOMY

Available in a Wide Range of Widths, Species, Grades and Patterns

A broad selection of Weyerhaeuser 4-Square Lumber items is offered for use as wall and roof sheathing and subflooring. There are species, widths, and grades to serve most building requirements.

For greater structural soundness and for true final economy in light construction, specify Weyerhaeuser 4-Square Lumber sheathing. Your Weyerhaeuser 4-Square Lumber Dealer is ready to deliver a species and type suited to your needs.

Weyerhaeuser Sales Company
ST. PAUL 1, MINNESOTA
In the face of rising building costs it is important that every possible economy be made, without sacrificing quality, or disturbing the safety factor. Securitee 1½ System, for the erection of acoustical tile, is the outstanding mechanical suspension system on the market. It fulfills each requirement with complete satisfaction and offers, in addition, the best possible base for troffer type lights.

Specify and insist on Securitee Systems.

Please send me, without obligation, your complete line of new brochures.

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Company

Address

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BUILT FOR

DURABILITY

WITH

LACLEDE STEEL REINFORCEMENT

Laclede reinforcing steels—including multi-rib round reinforcing bars, spirals, tie wire, welded wire fabric and accessories—give vital strength and permanency to this new St. Louis housing project.

Scheduled for occupancy early in 1956, the Darst Homes will provide attractive and comfortable living quarters for 1,238 families.
Several problems faced engineers planning a year-round, high velocity air conditioning system in this Morrison, Illinois, building after it was purchased by General Electric Company. The air conditioning system with all ten zone reheat coils had to be installed in a small equipment room. Ducts had to be located over existing suspended ceilings, without interfering with piping already in place. Efficient distribution at low noise level was the final objective—at a price within budget requirements. A trip to the Barber-Colman Laboratory convinced system designers that Uni-Flo Air Valves can be used at branch duct take-offs to deliver low velocity air to branches from high velocity trunk ducts. With all diffusers on each branch served by one air valve, and using a minimum of sound attenuation material, costs were reduced to meet budget figures.

Project Engineers—Booth Brothers and Company

Two-story office building in Morrison, Illinois, acquired by General Electric Company. Space and cost problems arising from year-round air conditioning of an existing building were solved with a modern high velocity air distribution system, using Uni-Flo Air Valves.

Fewer Air Valves Are Required, Reducing Costs, because one Uni-Flo High Velocity Air Valve can be installed at a low velocity branch duct take-off from a high velocity trunk duct to serve several diffusers. This is a pioneer advantage of the Uni-Flo design.

Venturi-Flo Ceiling Diffusers harmonize with modern office decor, contribute efficient distribution of the conditioned air, free from drafts and disturbing noise. Each diffuser is individually adjustable for simplified balancing of the system. Pleasing results testify to sound engineering of the system.

A Uni-Flo High Velocity Control Unit is combined with a Venturi-Flo Ceiling Diffuser and made available as a "package" ready to attach in locations where it is desirable or necessary to continue high velocity to an individual diffuser.

BLAZING THE TRAIL TO BETTER AIR DISTRIBUTION

First with comprehensive, reliable, high velocity data

When Barber-Colman introduced the Uni-Flo Air Valve, results of laboratory tests on high velocity performance were released to the air conditioning industry. That reliable data enabled system designers to proceed with a greater number of satisfactory applications. Comprehensive performance data and design information for engineers are available in bulletin F-6598. You may obtain your copy by calling our nearby Field Office, or by writing us.

Barber-Colman Company

Dept. U, 1135 Rock Street, Rockford, Illinois, U.S.A.

Field Offices in principal cities

Air Distribution Products • Automatic Controls • Small Motors Industrial Instruments • Aircraft Controls • Overdoors and Operators Moulded Products • Metal Cutting Tools • Textile Machinery
Barcol®
OVERdoors

close tighter,
yet open easier!

Barcol CAM ACTION OVERdoors close tighter because door rolls easily down with ¾" 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 ½" 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.

THE IMPROVED OVERHEAD DOOR ... CAM ACTION'S THE REASON!

BARCOL Model 50 OVERdoor

CLOSING: Door first closes free of stops; then cam levers press door against stops. Opening: Cam levers immediately free entire door from stops; friction zone is less than 1 inch!

No dragging or wedging to close weather-tight and rattle-proof. No stooping, no pulling through long friction zone to open.

ORDINARY DOOR

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 Doorments 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. US9, Rockford, Illinois

WARDROBE doors • Automatic Controls • Industrial Instruments
Air Distribution Products • Aircraft Controls • Small Motors • Molded Products • Metal Cutting Tools • Machine Tools • Textile Machinery
Johns-Manville Permacoustic tile provides a ceiling that lends textured beauty and restful quiet to the pleasant atmosphere of this automobile showroom.

**Johns-Manville**

**Permacoustic**

**decorative acoustical tile**

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

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 mineral wool fibres, Permacoustic is rated incombustible. 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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<td>.89</td>
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- Also available in 1/2" thickness

---

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The Ruud-Monel or Crane-Monel two-temp Sanimaster requires less than 1 sq. yd. One man installation. Multiple units can be added, as needed. Meets code requirements. Carries A.G.A. seal of approval for operation at 180°. A.S.M.E. relief valve is standard equipment. No electric controls. Distributed by Ruud Manufacturing Company and Crane Co. outlets only.

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Please send detailed information on Monel Sanimaster Automatic Gas Water Heaters.

☐ Literature only  ☐ Have representative call

Name _____________________________
Name of Establishment _____________________________
Street _____________________________
City __________________ State ____________
In Columbus, Ohio, the Town and Country Shopping Center houses 85 stores. Steeltex was used for cantilever floors and mezzanines. The architect was C. Melvin Frank, A.I.A., Columbus. The contractor-owner is Don M. Casto, Columbus, who has used almost 400,000 square feet of Steeltex in 13 shopping centers.

**Steeltex Is The Choice For New Shopping Centers Because It Saves Construction Time And Money**

Steadily mounting building costs are sharpening competition. That's why the men who build shopping centers—the architects, the design engineers, the contractors and the owners—choose Pittsburgh Steeltex floor lath for concrete floors and roof decks.

That's been the story ever since the first neighborhood shopping centers were built back in the 1920's. And when the first big regional shopping center, designed to serve a whole area instead of just a neighborhood, was built about 1948, Steeltex was the builder's choice.

New shopping centers are being built by dollar-conscious businessmen who demand a full measure of value for every penny they put into design, materials and construction.

Here's what they say about Pittsburgh Steeltex, the galva-

In La Grange Park, Illinois, The Village Market Shopping Center used more than 22,500 square feet of Steeltex. The architect was Mittelbusher and Tourtelot of Chicago. The contractor-owner is William Joem & Sons, La Grange Park, Illinois.

In Waco, Texas, this $320,000 Community Center used Steeltex for 35,500 square feet of roof deck. The architects were Spicer, Bush and Witt, of Waco. The contractor was McClelland Construction Co., of Waco. The owner is Community Center, Inc., Waco.
In Detroit, the $5 million Eastgate Shopping Center covers 26 acres and has parking space for 3,000 autos. Steeltex was the architect’s choice for the basement and mezzanine area. The architect was T. Rogvoy, A.I.A., Detroit, Michigan. The contractor was Walter L. Couse Co. of Detroit and the owner is the Eastgate Shopping Center, Inc., of Detroit.

In the Pittsburgh area, the $3.5 million Miracle Mile Town and Country Shopping Center has 25,000 square feet of Pittsburgh Steeltex in its floors. The architect was C. Melvin Frank, A.I.A., Columbus, Ohio. The contractor was Joseph Skilken & Company, Columbus. The owner is the Pittsburgh Miracle Mile Town and Country Shopping Center, Inc., Columbus. Don M. Casto, Developer.

nized reinforcing wire mesh which carries its own waterproof form right on its back:

- Architect: “We found Steeltex is easy to work, lighter, faster to handle and quicker to install. It takes up less storage space, holds its form on wide spans, prevents looping, eliminates dribbling and permits a wetter mixture of cement. When we must stay within a tight budget, Steeltex proves itself a quality material in its price range.”

- Design Engineer: “After using all types of forms and reinforcing, we turned to Steeltex because it combines strength, workability and light weight at a realistic price. We have cut form costs 20 per cent by switching from wood to Steeltex. We’ve found that Steeltex is 20 to 30 per cent less expensive than competitive methods of reinforcing.”

- Contractor: “With Steeltex, a contractor has everything in his favor. The number one reason is its water-holding ability. We like to see Steeltex specified because we know that all we have to do is roll it out, fasten it down and start pouring.

“Steeltex combines lath, form and support all in one package—ready for use.”

- Owner: “Our shopping centers feature fireproof, noiseless, vibration proof and vermin proof construction and we stress a low maintenance theme throughout. Steeltex fits into our plans.”

Send for your copy of “Pittsburgh Steeltex—Backbone Of Concrete, Plaster, Mortar.”

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Mississippi Wire Glass Helps Protect Buildings Against Tragic, Costly Fires

When fire utterly gutted this building, it was unable to spread to the neighboring structure because Mississippi Wire glass windows, in metal frames, efficiently prevented windblown sparks and searing heat from reaching the interior. For though cracked by heat or smashed by a blow, wire glass tends to remain in the opening . . . continues to offer utmost protection at minimum cost.

And these same properties enable Mississippi Wire Glass (Approved Fire Retardent No. 32) to help bottle up fires and prevent them from roaring into a costly tragedy like that above.

Mississippi Wire Glass has saved many lives and millions of dollars' worth of property from fiery destruction. It is recommended for installation in windows, skylights, partitions, doors and in all other vulnerable locations where fire or breakage protection with daylighting is desired.

Fence out fire. Specify Mississippi Wire Glass . . . the original wire glass upon which the Underwriter's Standard was based . . . the standard today by which all others are judged. Available in hexagonal or Misco wire mesh in types for clear vision or diffusion, wherever quality glass is sold.

Hammered Misco Wire Glass  Smooth Rough Misco Wire Glass  Polished Misco Wire

Send today for free literature. Address Dept. 6.
A new high in **HIGH VELOCITY**

The photograph above shows main banking floor of the First National Bank in Dallas. Note how straight line All-Air High Velocity units blend perfectly into the architectural design. See next page for detail.

The All-Air High Velocity system also provides draftless comfort throughout the bank as well as in the second floor executive offices (shown at left). See next page for detail.

Architect: George L. Dahl
Consulting Engineer: Landauer, Guerrero & Shafer
Contractor: C. Wallace Plumbing Co.
Main banking floor

Sketch of photograph on preceding page shows the installation of twenty-four Anemostat 36-inch HPSL-100 High Velocity units, each supplying 200 cfm. A total of 4800 cfm is delivered to the main banking floor.

These pages illustrate the use of the Anemostat All-Air High Velocity distribution system in a modern air-conditioned bank. Anemostat High Velocity units are also being used throughout the country in many other applications such as hospitals, schools, department stores, office buildings and plants. Here are some of the important architectural and engineering advantages of the Anemostat All-Air High Velocity distribution system. It can be used with smaller than conventional ducts. It can be installed faster and at less cost. It requires no coils, thus eliminates leakage, clogging and odors. Anemostat round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.

For latest data on Anemostat All-Air High Velocity units, write on your business letterhead for new Selection Manual 50.

Second floor executive offices

Diagrammatic ceiling view of offices on preceding page. This shows the installation of five Anemostat HPCM-1-100 High Velocity units, each supplying 125 cfm.
economy...appearance...extra strength...

when all three count, consider Reinforced Brick Masonry

There's no need to sacrifice beauty when you are designing walls for:

► Extra strength with no extra thickness
► More lateral force resistance

Reinforced Brick Masonry can provide brick's full range of color and texture—and yet compete with other reinforced materials on the basis of both cost and structural performance.

Basic cost and technical data on RBM will be sent to you free if you write. An authoritative complete RBM design manual is also available at a cost of only $4.75.

Structural Clay Products Institute
1520 18th Street, N. W., Washington 6, D. C.

► The beauty and variety of brick and tile are suggested here by only a few of the hundreds of types available.
On Springs Cotton Mills' 16-acre bleachery roof

FOAMGLAS insulates effectively because it stays dry

On this 16-acre roof of their Grace Bleachery, The Springs Cotton Mills has found that FOAMGLAS insulates effectively because it can't absorb moisture and lose insulating efficiency.

Installed in 1947 on the original bleachery roof, FOAMGLAS has effectively kept down condensation on the roof slab and conserved heat in the winter. Seven years later it was picked again to insulate the roof of a major addition to this bleachery, the largest in the world.

This unique cellular glass insulation has been used extensively by the Springs Mills in other ways... on 350° steam lines... in cold storage spaces... and on 20 additional acres of mill roofs including one in Lancaster, S.C. covering more looms (7,500) than any other roof in the world.

It will pay you to get the full story on the use of FOAMGLAS for buildings, cold storage space, piping, or tanks and equipment. Please write today for a sample and literature indicating your specific interest.

Pittsburgh Corning Corporation
Dept. D-95, One Gateway Center
Pittsburgh 22, Pennsylvania

In Canada: 57 Bloor St. W., Toronto, Ontario
Since the introduction of the Benjamin Porcenell Surface, it has become evident that here is a new concept in modern chalkboards. Teachers, principals, custodians, purchasing agents and architects alike want to know the full story behind the Better Visibility, Greater Damage Resistance and many other advancements in better seeing and instruction made possible by Porcenell. This new brochure is published to answer that demand.

**Now, read the story behind...**

**NEW BENJAMIN PORENELL CHALKBOARDS!**

This FREE Brochure brings you the FACTS (including laboratory test data) every architect and educator should know about this newest advancement for Better Visual Education.

Send now for your free copy of this revealing 8-page brochure—all about the lifetime chalkboard, Porcenell. Go behind the scenes to see how Porcenell was developed, after 15 years and 3/4 million dollars of research.* Watch the exacting manufacturing methods and latest processes that give Porcenell chalkboards a new high in visibility. Read and see why this remarkable surface has many times the damage resistance of ordinary boards. Study the many ways in which Porcenell makes possible better, more modern learning. See how Porcenell licks the high cost of installation. It’s all here—in eight fact-packed pages that will make fascinating reading to everyone who is interested in the Visual Welfare of Young America!

*Porcenell is a patented, vitreous process developed by Vitreco, Inc., a research organization jointly owned by Youngstown Sheet and Tube Co. and Poor and Co.

Benjamin Electric Mfg. Co., Dept. Y.Y.
Des Plaines, Illinois
Please send me a copy of your new brochure "Porcenell Chalkboards... for the Visual Welfare of Young America," I understand there is no cost or obligation.

NAME

ADDRESS

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Distributed by: Beckley-Cardy Co., 1900 N. Narragansett, Chicago 39, Ill. and Educational Equipment Inc., 2623 Woodhill Road, Cleveland 4, Ohio.
On the technical side, Pumice gives you these advantages:

Fire Resistance — Full 4-Hour Fire Retardent walls when built with Pumice blocks that conform to the standards for concrete masonry units of Underwriters Laboratories.

Strength — Up to 3500 p.s.i. in lightweight structural concrete weighing only 100 lbs. per cu. foot.

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Pumice — the modern building material that captures the mood of every style and type of structure.

It adds beauty and permanency at unusually low cost.

Find out why Pumice is the material so often specified for modern buildings, stores and homes.

The Institute
P. O. Box 2101
Santa Fe, New Mexico

DATES


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


First trade fair of the atomic industry, sponsored by the Atomic Industrial Forum, Inc., Sept. 25-30, Sheraton-Park Hotel, Washington, D.C. Exhibits will include displays of construction and fabrication techniques of atomic power plants and equipment.


American Public Works Assn., Oct. 2-5, Hotel Schroeder, Milwaukee, Wis.

Producers' Council, Inc. fall meeting and chapter presidents' conference, Oct. 2-5, Hotel Statler, Detroit.


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.


Mortgage Bankers Assn. of America, annual convention, Oct. 31-Nov. 3, Statler and Biltmore Hotels, Los Angeles.


US Savings & Loan League, annual convention, Nov. 7-11, Miami Beach.

Porcelain Enamel Design competition closes Dec. 12.
For any hardware item — from door-pulls to wall ties, escutcheon plates to finish trim — no other metal can match Crucible stainless steel for both beauty and long-term economy. For its use is well justified, not by its beauty and strength alone, but by the care, cleaning and maintenance it saves... throughout its service life.

Call your Crucible representative for reference information... or for immediate help in selecting the stainless steel designed for your specific requirements. Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 22, Pa.

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

YOU NEVER POLISH IT
Just once-over-lightly and it's as bright and clean as new... it can't rust, tarnish or stain.

YOU NEVER REPLACE IT
Can't wear out, chip or crack... in fact, the more it's used, the more attractive it gets. Needs little maintenance.

COST IS IN LINE with that of any other metal of similar appearance and strength.

BUILT AS YOU WANT IT Stainless steels are easy to work with—to bend, solder and weld... to form and machine.
Cleaver-Brooks pioneers big steam capacity in small space

This veteran 20-hp heating boiler — built by Cleaver-Brooks and installed in 1931 — is still in daily use. It is proof of the dependable service you can expect from Cleaver-Brooks' famed four-pass, self-contained boiler construction for any heating or processing need.

1955

Cleaver-Brooks is first again with the ALL "CB" boiler

- All main burner components are completely integrated for automatic operation.
- More boiler capacity in less space through elimination of extended burner assembly platform.
- Guaranteed 80% efficiency — Four pass construction. 5 sq. ft. of heating surface per bhp.
- 11 sizes — 79 models — 15 to 150 hp, (steam or hot water) for oil, gas or combination oil/gas use. Other models available through 600 hp.
- Complete (Boiler-Burner) unit approval by Underwriters Laboratories — conforms to ASME codes. Factory tested before shipment.

The "CB" is the most easily maintained package boiler on the market. Removal of only nine bolts (on the largest sizes) opens hinged doors for fast inspection, cleaning or service. This convenience has earned widespread praise of insurance firms.

Boiler users will quickly appreciate the surprisingly silent operation of the new forced-draft "CB" — with the fan mounted inside the front hinged door. Design avoids use of thin sheet metal housings and usual "chattering" and vibration.

Even greater combustion efficiency is yours with the new "CB" air-atomizing burner, with integral air compressor. All burner components are confined to the front head and the control panel is at operator eye level.


Write for copy of latest "CB" Boiler Bulletin covering your size requirements — contains specification data to help you plan.

Cleaver-Brooks

Originators of the self-contained boiler
In restoring an old Dutch castle at Dusser, toppled by time, the architects came across this handsome piece of structural framing. It needed no restoration. Note the pipe following the trunk to the right.

It needed no restoration. Note the pipe following the trunk to the right.

Gordon A. MacEachern recently reported (in the Journal of the Royal Architectural Institute of Canada) a conversation he had in Dublin, Ireland, with Michael Scott, architect of the new bus station there (AF, June '55):

"Now then," said Michael Scott, 'are the Canadians pretty good leaners?'

"'Leaners?' said we.

"'Yes, building leaners,' said he.

"Finally getting the point, we admitted that our people were fair average leaners—

"'How long do they lean at a time?' asked Scott, to which we replied that a good guess would be about ten minutes average.

"'You call that leaning? Why, any Irishman would be ashamed to take less than thirty minutes to an hour against the corner of any building with a crony.'

"This exchange took place on our way out of Mr. Scott's latest building, the contemporary and therefore controversial ten-story bus station in the heart of Dublin. On the boards, at the moment, he has the new Abbey Theatre, a building in New York and others.

"To continue—'Now then,' said he, 'let's try the corner of this building for comfort. You take that side, I'll take this one.'

"To our amazement, it made mighty comfortable leaning and even though we were of different statures our shoulders fitted perfectly.

"'Fitted into each of the corners were solid blocks of black Belgian marble into each of which had been carved a vertical water drop design, brilliantly polished, of course—decorative they are, but the basic idea, in a location that is close to the docks which means greasy coats and in a land where leaning is a fine art—well, make it easy for them and you keep the sides of the building clean plus allowing the sleeves to keep polishing the marble, in perpetuity.'

The tourist center Scott is designing for New York is on 50th St. just off ebullient Madison Ave. What he probably should put on this one is handles—for clutching desperately to reality.

The other week end out at the shore, with a sigh for a sweet summer morning being misspent, we shaved and drove into the village to pick up the Sunday newspaper, then came back, and settled down to plod through it looking for architectural plums to pull out for you. By then, everyone else in the household was lying out on the sand, prone, passive, blanked out beautifically by the sun's soft weight, dreaming of ice cold beer for lunch. Indoors, behind the stud walls that survived the hurricane last year and may again this year, a sunless lassitude began to descend. It was the weight of newsprint, five or seven pounds of it. Front page: "Discipline Weakens In Nation's Schools"; p. 3, "Guam Executives Curbed"; financial section, "Aerosole Bombs Show Big Spurt"; society, "Miss Horst Wed to an Ex-marine," "Patricia Savage Becomes Bride"; Hollywood, "Cine-Miracle!... gardens, "The Hybrid Lilacs Need to Be Pruned Now"—all spaced out with such summery general headlines as "Indians Seek Return of Lands in New Mexico," "Parley on Cypress Held Likely"... hmmm, was that beer getting cold yet?... better check... but wait a minute, what was this?

In the next column to "Parley on Cypress Held Likely" were two advertisements for a New York women's store. The top one was a photograph of a well-dressed young lady looking wistfully at an unfolded letter (Her expression said, "What does he mean? Did he write just because he thought he should?"). Underneath was printed, rather callously, "Tonic tonic... perk up your wardrobe."

But the bottom ad, by all that's holy, showed one of our readers:

There she was, one of the prettiest of the familiar photographers' models, dressed in "A sliver of skirt, a pert peplum jacket, and a removable white spun rayon dicky to wear or not as you will." She was holding a copy of the FORUM of last June. (A sliver of news, a few pert buildings, and a removable subscription blank to use or not as you will.) A fine sight. Perhaps next summer there'll be champagne on the ice for lunch.

This lady's name is Miss Dolores Hawk-ins, we found out later in the week; she is continued on p. 68
no visible latches, catches, bolts or screws

the new smithcraft troffer is

RECESSED LIGHTING AT ITS BEST

in clean, trim appearance ... and in mechanics, too!

Twelve important features of the new Smithcraft Troffer illustrate the completeness of design development that went into this new outstanding recessed lighting. Important among the twelve features for architects and engineers is the fact that they can now create absolutely clean, trim, architectural lighting effects without the disturbing blemishes caused by exposed hinges, locks, fasteners or screws. The ceiling is uncluttered ... the final lighting effect is crisp, modern and efficient.

The new line of Smithcraft Troffers is truly complete, offering troffers with or without integral trim flange, with the widest choice of shielding media and adaptable to virtually any ceiling construction.

Specify Smithcraft for superior appearance, unsurpassed lighting performance together with ease and economy of installation.

Complete details are offered on the new Smithcraft 12" wide troffers. This new Smithcraft Troffer book also gives complete information on the new Smithcraft line of 2-foot wide troffers — available with many types of shielding media and for many different types of ceiling construction.

1. No visible catches, latches, hinges, bolts or screws.
   Door frame containing glass, lens or plastic opens or closes by simple pressure upwards with the new exclusive Smithcraft Pressure-Catch. (Patents pending). To remove door-frame simply lift off without tools or loose parts.

2. In louvered units, louvers hinge from either side, close by simple pressure upwards, and are removed without tools or loose parts. (Patents #2,559,640)

3. Architecturally precise modules for exactly 12" openings — perfectly straight, trim, in-line rows, whether mounted individually or in continuous rows.

4. No light leaks.

5. Slimly-designed glass frame for better appearance and better efficiency.

6. Wide selection of shielding media, spot boxes, pattern lighting, etc., for flexibility of design.

7. Troffers are available with integral trim flange for finishing the ceiling opening, if required.

8. Adaptable to today's ceilings is virtually universal. Simple clips adapt troffer to all of today's most common ceilings; simple provision for adaptability to all others. The new Smithcraft Troffer-in-plaster frame method assures perfectly square openings.

9. From start to finish only tool required is a screwdriver.

10. No exact positioning required; maximum simple adjustability at every critical point, with the Smithcraft Yoke-Aligner Hanger (Patent #2,597,875, other patents pending)

11. Minimum number of parts and assembly on the job.

12. America's finest recessed lighting.
Wherever noise problems exist, ReynoCoustic aluminum acoustical system offers an efficient solution in attractive form...combined with minimum maintenance and ready access to utilities above the ceiling. Incombustible, high in light reflection and easily cleaned, the ReynoCoustic system also has high thermal insulation value.

In addition, this YWCA natatorium at Charleston, West Virginia, demonstrates another advantage. These rustproof aluminum panels combined with glass fiber blankets, are unaffected by moisture, a common problem in acoustical treatments. The result is ideal for swimming pools and many other applications where high humidity conditions exist.

A complete installation service is available. For name of nearest franchised acoustical applicator, call the Reynolds office listed under "Building Materials" in classified phone books of principal cities. For complete literature write to Reynolds Metals Company, Building Products Division, 2020 South Ninth Street, Louisville 1, Kentucky.

Typical installation showing method of support for ceiling members and lighting fixtures. This system provides a noise reduction up to -90—uniformly high at all frequencies.
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:

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.
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.

* Reynolds is completing an expansion program which will provide the largest aluminum anodizing facilities in the world.
City of Chicago  
Department of Public Works  
Bureau of Engineering  
Parking Facility No. 8

Consulting Architects and Engineers:  
Friedman, Alschuler & Sincere

General Contractor:  
A. L. Jackson Company, Chicago

Architectural Aluminum Fabricator:  
David Architectural Iron  
Works, Inc., Chicago

The ad above, using an architect's rendering,  
appeared in the August 5, 1954, issue of  
Engineering News Record. At the left is the  
building now completed.

ALUMINUM DOES THE JOB!

In its completed state this building shows aluminum to an even greater  
advantage than the architect's rendering first published. The Reynolds  
Aluminum Extruded Channel Railings are more massive in appearance…  
gleaming softly, along with the aluminum entrance sign and the aluminum  
edge strip and gravel stop on the roof. You can see that the structure is entirely  
of concrete and rustproof, corrosion-resistant metal…so maintenance is  
practically nil. These railings are examples of aluminum extruded to order.  
The supporting pipe, however, is a standard Reynolds Aluminum mill product.  
For regular sources of supply and for names of metal fabricators who can  
perform aluminum work to your specifications, call the nearest Reynolds  
Office listed under "Aluminum" in classified telephone directories. Or write to  
Reynolds Metals Company, General Sales Office, Louisville 1, Kentucky.

For quick reference, see catalog 5a  
Re in Sweet's Architectural File.

REYNOLDS ALUMINUM
where modern **UNDERFLOOR ELECTRICAL DISTRIBUTION** heads off high cost alterations

Milwaukee’s General Mitchell Field Airport boasts an underfloor electrical distribution system that's planned for growth and change without high cost alteration or disruption of work routine.

The Milwaukee County Architect's Office selected a cellular steel floor—a Fenestra-Nepco Header Duct installation. National Electric Header Duct provides easy access to the Fenestra cellular steel floor. The result is a combined steel raceway system that makes electrical outlets for power, light and communication easily available at *any time in any square foot of floor area.*

If you're planning for cellular steel floor construction you can get complete, efficient, electrical distribution with a National Electric Header Duct system. It's the economical way to cut your client’s operating costs by providing for the easy relocation of electrical services in the future.

*Listed By Underwriters' Laboratories, Inc.*

**National Electric Products**

PITTSBURGH, PA.
3 Plants • 10 Warehouses • 36 Sales Offices
one of the top fashion models, and one of the smartest, too, we were told. Among her accomplishments outside fashion is the proprietorship of a small stable of show and racing horses, which she maintains at Goshen, N.Y., and operates with success. Miss Hawkins is a subscriber to the magazine The Harness Horse. We're waiting now to see if her subscription blank for the Forum comes in. If so, The Austin Co. may soon have some heady new competition.

(Incentive)
The US Junior Chamber of Commerce knows how to treat its executives; this summer the Jaycee president moved into a house built for him by the organization in Tulsa, designed by Architects Leonard Lungren of Lungren, Mauer & Associates, and Joseph M. Wilkinson of Tulsa.

According to the Southern Pine Assn. (whose lumber was used), "The White House is the result of the combined efforts and imaginations of Jaycees throughout the nation, and the final product represents a distinct triumph over the usual limitations imposed by space, weather and the abilities of building materials. "The US Jaycees are the first of civic organizations to build a White House for their president..."

(AH-OOGAH)
Two conflicting attitudes on noise in the environment have been vibrating in New York State this summer. A New York City legislator suggested a legal prohibition on all automobile horn honking inside the city limit, at all hours. But on the other hand a federal judge overruled a Long Island residential community which had passed a local ordinance banning airplane flight lower than 1,000' over town. (The ordinance was unconstitutional, said the court.)

Lawful or not, these contradictory approaches both have precedent. In Paris, for example, all automobile tooting and honking was banned not long ago by the chief of police. One result: a major decrease in accidents. Less joie more viuve. Up there in the air, there are, of course, plenty of local US ordinances fending off planes; constitutional or not, there are going to be plenty more, with jets coming into commercial use.

The universal beating on our ear drums is an increasingly annoying problem, which can be solved only to a small degree architecturally. The final, lasting legal thought continued on p. 70

continued from p. 61

PARENTHESES

ALL-STEEL
FLOOR-TO-FLOOR CONVEYORS

SUPER-MARKET SHOPPING CART
CONVEYOR

Allows you to utilize the basement or upper floors.

PALLET CONVEYOR
Conveys pallets and barrels from one floor to another fast.

PACKAGED GOODS
CONVEYOR (Space Saver)
Will operate on a steep angle.

HAMPER & TRUCK
CONVEYOR
The only conveyor manufactured that conveys merchandise in hampers, trucks, boxes, crates or baskets with casters or wheels attached, from floor to floor.

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25 Washington St. Binghamton, N.Y.

YOUR STROMBERG-CARLSON
SOUND SPECIALIST WILL
TAKE THE SHIRT OFF HIS BACK TO HELP
SOLVE YOUR
COMMUNICATIONS PROBLEMS

Whether you need an elaborate telephone intercom for a new office... a modern communications system for a new school... or a rugged speaker network for a roaring factory floor, your local Stromberg-Carlson sound specialist will give you dependable advice with no cost or obligation.

He can help you plan a custom-engineered system that fits your needs exactly, selecting sound communications equipment built by America's oldest, most experienced manufacturer in the field. He'll also explain how a Stromberg-Carlson system can be leased without a penny of capital investment.

Take advantage of his service—find his name in our section of "Sweet's Architectural File." Or write us.

Stromberg-Carlson® Company
SOUND EQUIPMENT DIVISION
A DIVISION OF GENERAL DYNAMICS CORPORATION
1237 Clifford Avenue, Rochester 21, New York
Demonstration house — section shows all-copper plumbing installation.

Anaconda Copper Tubes are available in all standard wall thicknesses—Types K, L, M and the new lighter weight Type DWV, which offers additional savings in job costs.

Within the past few years, many state and local sanitary plumbing codes have been modernized to include approval of the use of copper tube and solder-type fittings. Others are in process of revision. The recently issued American Standard National Plumbing Code (ASA A40.8-1955), published by The American Society of Mechanical Engineers, lists copper tube as approved material for sanitary drainage systems.

Types M and DWV are recommended for all lines of the sanitary drainage system above ground, and Types K and L for that part of the system buried underground.

USE COPPER for sanitary drainage systems and gain these advantages:

1. Fast, tight connections easily made in even the hard-to-get-at spots!

2. Carpentry and space savings. No costly and space-consuming "build-outs" or extra-wide partitions. A 3" copper tube stack with fittings can be installed within a standard 4" partition.

3. Long lengths eliminate many joints. Anaconda copper tube is furnished in standard 20' lengths.

4. Pre-assembly saves time, reduces costs. Copper tube's light weight permits economical shop fabrication of standard sections for housing developments. Units can be easily transported to job site and installed in place without special lifting equipment.

5. Roughing-in is faster. Workmen handle 75% less weight when using copper tube. For example, a 20' length of 3" Type DWV copper tube weighs only 34 lb.

6. Salability of homes increases. Exposed lines are neat and trim. To prospective home buyers one sign of quality construction is all-copper plumbing.

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They stop fire in its tracks
You can rest assured of positive, automatic, safe fire protection at windows, doorways or other openings equipped with famous AKBAR Rolling Fire Doors.

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The Kinnear AKBAR Fire Door is available in any size. Write for complete details.

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Office and Agents in All Principal Cities

PARENTHESES
continued from p. 68

on it probably has not yet been pronounced. Haven't the authorities ruled that licensed sound trucks may be used in city streets to scream political slogans? Haven't the authorities ruled, on the other hand, that a captive audience of bus riders cannot be subjected to audible advertising? Is there a middle legal ground? (Probably not, for a policeman told us just yesterday that you can legally honk your car horn in New York today only if you're in danger—but who's to deny that taxi drivers live lives of steady danger?)

Our ears alternately are sacred, or just something to wash every morning.

(RUSTLING)

In New York the past continues to go out to sea. Take old Greeley Square as an example. During some sort of retailing convention a few months back, the city obliged the visiting supersalesmen by changing its name to Brand Names Square for a few days.

Hit-Run Driver Hurts

In the Old West, this tampering with an already established brand might be penalized by severe rope burns around the neck.

continued on p. 74
Every square foot of floor space is available for electrical outlets when you plan and build with the General Electric Q-Floor wiring system. G-E Q-Floor wiring is designed for installation in cellular steel subflooring and converts every cell into a raceway or conduit for present and future circuit requirements. There is no costly alteration, no litter, no tie-up of space no matter how often or how much your electrical requirements change.

This system provides complete electrical availability for typewriters, dictating machines, calculators, telephones, intercoms, lighting, postal machines, and other electrically operated equipment. It provides for maximum utilization of floor space both for your own use and for rental to others. G-E Q-Floor wiring is doing this in such outstanding buildings as the new Second National Bank of Houston, Texas, and the San Mateo Community Hospital in California.

For more information on General Electric Q-Floor wiring, call your G-E Construction Materials district office, or write to Section C52-94, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

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GENERAL ELECTRIC
New Rest Room Sanitation. The Sanistand, a popular urinal for women, provides outstanding sanitation and convenience in commercial, industrial and public rest rooms. Designed so that the user need not touch the fixture, it is made of genuine vitreous china for easy cleaning and long life. There's a model for every type of installation—wall hung, pedestal type, and a tank model for low water pressure areas.

Space-saving Heating-Cooling. These Horizontal Remotaire Heating-Cooling Units can be hung on the ceiling—out of the way—leaving floor and wall space free. They are easy to suspend between rooms, in closets, above false ceilings. These new room conditioners heat, cool, filter, ventilate and circulate the room air for year-round comfort. Horizontal Remotaire Units come in three models and four sizes to meet every room need. Shown top to bottom: Model H, ideal for use in a hallway; Model HB, especially suitable for closet installation; Model HR, best to use free-hanging from a ceiling.

Efficient, Low-Cost Heating. Temtrim Finned Tube Radiation is easy to install and maintain. Simple wall brackets hold it in place—up high or down low, as shown here—in single or multiple tiers. It can be used with forced hot water or two-pipe steam systems. Temtrim is made of tough pressure steel tubing and heavy steel fins. It's one of the most efficient, economical types of heating ever offered. Lengths of Temtrim can be installed with fins exposed or with any one of three attractive covers—shown top to bottom: a snap-on expanded metal grille, a flat top cover, a sloping top enclosure.
design by American-Standard

These are just a few of the many quality products made by the Plumbing and Heating Division, American Radiator & Standard Sanitary Corporation, P. O. Box 1236, Pittsburgh 30, Pa.

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Four Harvey Extrusions... top rail, bottom rail, posts, and spindles... make up this modern railing. Needing only cutting to length and drilling, the extrusions are practically finished parts as received from the mill.

To the architect and builder, the railing spells genuine quality, an item safe to recommend to their clients. To its manufacturer, the railing represents a combination of high sales volume and lower manufacturing cost. All-in-all, another example of how Harvey Quality Extrusions add up to an ideal material for your architectural products.

Send today for our latest brochure, "Aluminum Extrusions."

PARAPHESES

continued from p. 70

The good old New York City Hall has recently been undergoing what is called a thorough face-lifting and renovating. When the last of the scaffolding departs, will some great neon spectacular crouch atop the roof?

Such things are hardly permanent, of course. Common law takes over. Prohibition perishes. Greeley Square returns to being Greeley Square and Hallowed Horace rests again. Take the case of Sixth Avenue in New York. Years ago the late Fiorello LaGuardia changed its name to The Avenue of the Americas, in an attempt to lead it up from blight. There even was formed an Avenue of the Americas Association to try to parallel the very effective job the Fifth Avenue Association has done in policing its posh blocks.

Years after this change of name one of our assistant editors had occasion to telephone the Avenue of the Americas Association about a news story in which the Association figured. As she ended the conversation, the Association man on the other end of the wire asked her to send them a tear sheet of the story when it appeared.

"Sure—where shall I send it?" she asked.

"1150 Sixth Avenue," he replied.

(HOPE)

In New York there may actually be more hope for the future than just in habit and common law (pronounced Lore in New Yorkese). There is a rising grumble about eradicating all the past of New York, and not just among professionals. It is getting so the buildings people really cherish are the carved stone ones, and the cast iron fronts. Perhaps with this in mind, several New York organizations cosponsored a dinner meeting last spring, entitled "How to Build a Better Looking New York," at which planners, historians and real estate men viewed the predictable future of the city's building trends with alarm. In the fall, the same sponsoring groups—the Civic Design Committee, the Architectural League, and the Municipal Art Society—will be bringing the matter to the public in a series of large lectures.—M. McQ.
Now, all it takes to save up to 20%
on a better, longer-lasting clay tile installation
is a trowel, any plumb surface and new

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CTA 11 reduces the clay tile installation to barest basics. The contractor trowels it like butter right out of the can on plaster, metal, cement block, dry wall . . . virtually any plumb surface. He sets the tile, grouts in the usual manner . . . and the job's done. And done to stay . . . for CTA 11's grip will resist a pull of over a ton per tile! Better yet, CTA 11 flexes with settling to resist tile cracking for a lifetime. Dries for room occupancy in hours, not days.

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.
ANOTHER OTIS FIRST! The Otis TRAV-O-LATOR is a modification of the world famous reversible Otis Escalator—an Otis first that was designed to move people, not materials! It's as easy to ride as an escalator. Its moving surface is an endless platform of metal escalator treads. It is smooth gliding for safe riding; cleated for safe traction; comb toothed for safe interlocking between treads and for safe stepping from moving treads to comb plates at entrance and exit points. In addition, it has the Otis escalator balustrades and handrails. All, long proven safety features.

There's practically no limit to the length, flexibility, or use of the TRAV-O-LATOR. Ask any of our 295 offices across the United States and Canada for details.

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Let's talk "SILLS and STOOLS"

—that are both durable and attractive.

Alberene Stone—the natural silicate stone—is weatherproof. Its low absorbency prevents spalling and splitting in freezing temperatures. Its all-silicate mineral components resist chemical attack, staining and loss of surface polish. It requires no maintenance.

That's why Alberene Stone window stools have recently been shipped to many of the finest new hospitals in the country including: Providence Hospital and U. S. Soldiers' Home, Washington, D. C.; Baptist Memorial Hospital—University of Tennessee Physiology Building, Memphis, Tenn.; Coney Island Hospital, New York; and the Grady Hospital, Atlanta, Ga.

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

LETTERS

REBUILDING CITIES DOWNTOWN

This month's Letters department is devoted mainly to comment on FORUM's Round Table Report on "How to Rebuild Cities Downtown" (June '55). Other letters on this same subject appear in the magazine's main editorial section. Letters on other subjects begin on p. 90.—ED.

A new kind of transportation

I have only two thoughts to contribute.

The first one concerns the tax policy of the federal government in regard to the depreciation on buildings. There may very likely be some way of placing a premium on the actual use of those funds for physical improvements. This is of course very complicated but it is motivated on my part by the feeling that a great many businesses, particularly in the smaller and older communities, do not think of their physical assets in terms of the aesthetic needs of the community, the attractiveness of the market place or anything of the kind.

The second general area of thought that has teased my mind is that perhaps some completely new thinking is needed in terms of providing instruments for transporting people from one point to another. Based on population and auto registrations, we are losing the parking space battle at the rate of about 500 per year. I know that the private automobile owned by every person is used some very small fraction of each day on the average and represents a tremendous capital investment on part of the nation. For instance, if there are 40 million automobiles, the average value of which is $500, we have quite a piece of change tied up in that physical plant. The third interesting factor in this picture is the possible elimination of pilot error, which is the major factor in accidents. I am frank to admit that I have been doing quite a lot of dreaming about the relation of these three problems. I think perhaps somewhere therein there is available to us a better way of moving people.

RICHARD C. GRAM, manager
Chamber of Commerce
Ithaca, N. Y.

Welcome, pedestrians

There are three major parts that need attention and separation:

1. The conflict between pedestrian and vehicular movement.
2. The conflict between vehicular parking and the available space.

continued on p. 82
AMERICAN ARCHITECTURE
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Sealux Gyrating
and Semi-Gy rating
Metal Glass Facades
MODELS 61 AND 61G
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STRUCTURAL heavy type aluminum grid is integral with window and panel, eliminating perimeter frame element of window.

CAULK-FREE system offers protective weatherproofing and avoids seasonal failure of exposed joinery due to faulty materials or workmanship of caulking application.

ERECTION quickly accomplished in floor-high bay unit widths.
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Carrier absorption refrigeration
that cools water with steam

Now with AUTOMATIC STOP-and-GO

100 to 700-ton Capacity

NO OTHER REFRIGERATION MACHINE
HAS ALL THESE FEATURES:

- Cools water with steam. Low-pressure steam from idle or excess boiler capacity or from central or district mains can be used for cooling at great savings.
- Quiet operation—no major moving parts. Small circulating pumps are the only moving parts so that the machine operates without vibration and at extremely low sound level.
- No damage from overloads. Inherent nature of the absorption machine is such that it cannot be damaged from improper operation or overloading. Sudden or continuous overloads will merely cause the chilled water temperature to rise.

Complete range of load variation. The only refrigeration equipment that operates efficiently from full load down to zero capacity in a completely automatic cycle with perfectly smooth operating curve.

Flexible and economical installation. Installation is simple and economical in any part of a building. Lighter weight, vibrationless operation and compact size permit location anywhere space and steam are available, from roof to basement.

Completely safe. Machine operates under vacuum, with water as the refrigerant and a simple salt as the absorbent. Nothing could be safer.
Can you imagine starting up a big 700-ton refrigerating machine without turning any valves or throwing any switches? That's exactly what you can do with this new automatic Carrier Absorption Machine.

The simplest of all refrigerating machines is now completely automatic. All the complexities of start-up and shut-down have been made so simple that a tiny push button, a thermostat or a time clock will control the machine's operation.

Only Carrier makes large absorption refrigerating machines. They cool water with steam. They are efficient, quiet and reliable. And now—with automatic STOP and GO—they are the easiest of all machines to operate.

Eleven standard sizes: You choose the size that fits your needs. Capacities range from 100 to 700 tons of cooling.

WRITE FOR FREE 36-PAGE CATALOG

Find out all the advantages of Carrier absorption refrigeration. Colorful, illustrated booklet includes facts, figures and comments from present users. For your copy, call your nearest Carrier office. Or mail the coupon direct to Carrier Corporation, Syracuse, New York.
WHAT’S NEW in roof deck?

now... a new kind of roof deck that needs no field or maintenance painting

The new Ingersoll aluminum and porcelain enameled roof decks are designed to give a more attractive, more efficient industrial ceiling at substantially lower costs in time and money.

A system of full-floating panels, simply clips on to galvanized steel sub-purlins which are welded to the building purlins. This means fast, easy erection and permits expansion and contraction without the usual pressure or strain.

Field and maintenance painting are unnecessary with either the aluminum or the porcelain enameled decking. Both give a highly attractive ceiling that lasts for years, contributes to lighting efficiency. Aluminum deck has thermal insulation value.

The highly corrosive-resistant porcelain enameled steel decking is double coated with chemically inert porcelain enamel. It is designed for use where moisture, acids, etc., damage ordinary decks. Also excellent in dairies and other places where its gleaming look is desirable.

Accessories accommodated without cutting load-bearing members. The photo above shows how sump pans, ventilator boxes, and other accessories fit into place with no cutting of sub-purlins or panels and without special cross bracing.

Exceptional strength of these decks is shown in Pittsburgh Testing Laboratory reports. They will be promptly submitted on request.

Investigate now!

New Ingersoll Roof Deck may be exactly what your next job calls for. Learn the whole story now. Illustrated booklets are available to give you all the details.

LETTERS

Continued from p. 78

3. The conflict between the pedestrians, including released riders, and their space destination—whether shopping, business or cultural.

If momentarily these parts are accepted as the gist of the downtown problem, and if we can temporarily put aside the economics of any desirable means to reduce the conflict in and between each phase, then perhaps a greater objectivity can be applied.

A new approach to elevation of some of the traffic arteries may not be forbiddingly costly and may furnish not only a solution to part 1 but may give an optimum solution to parts 2 and 3, that is, it may provide readily accessible parking space and it may place this space close to the destination of the rider and very close to the pedestrian.

The heart of this suggestion is that a direct line of blocks from the periphery of the city, through downtown, and extending to the opposite periphery be razed and an elevated highway be provided, running either through a set of buildings to be constructed or on the roof level of these merchandising and business structures. Existing streets would be bridged.

A continuous no-crossing highway would be available to the heart of the downtown area. Passing through or above buildings, diverting exit and egress ramps could be provided to give access to either roof or sheltered parking. Elevators would serve vertical traffic needs. To the degree desired, connections to the surface streets could be constructed. A super rotunda, or traffic circle, could encompass the civic or central shopping area.

The economics of the entire project would probably be startlingly high but some substantial gain can be envisioned in combining the structural steel of the elevated highway with that of the buildings through or above which this artery would pass.

The old streets, redesigned, would remain and become the pedestrians’ shopping paradise!

Pedestrians and vehicles would be separated, parking would be available directly in the structures and the money and merchandise exchange centers would be nearly ideally located with respect to egress and exits.

Of course, there is more to it than I’ve discussed. Designers, engineers, economists, public servants, money managers, all could contribute to the solution of the separation of the conflicting elements of downtown—in order that we can meet more
Exteriors

Your exteriors can have the modern look and the beauty too, with concrete masonry. Dealers in masonry stores, shopping centers, offices are finding in concrete masonry the variety in texture and pattern and the modern appearance ideally suited to both new and remodeled buildings. Split block and other new sizes and styles are especially popular for front and trim use, with economical 8x8x16 units, for other exterior walls.

Concrete masonry offers many advantages for the interior walls, too. Exposed concrete block interior walls provide a dramatic and pleasing textured backdrop for store merchandise, a functional wall design for offices. These same walls absorb sound, making both stores and offices quieter...at the same time saving on interior finishing costs.

Versatile Concrete Masonry for stores, shopping centers, offices

Design Ideas —
Yours for the asking in the award-winning booklet, Ideas for Wall Patterns with Concrete Masonry. Ask any NCMA member for your copy.

National Concrete Masonry Association
38 South Dearborn St. Chicago 3, Illinois
THE MAIN ENTRANCE of Assumption High School. The architects were Paul J. Saunders and Eugene S. Johnson. The engineer was John P. Nix. The general contractor was Wm H. and Nelson Cuntliff Co.

TWO STORY ACADEMIC UNIT, connected to the one story unit to which a second floor may be added in the future.

New High School designed with

ENTRANCE to the gymnasium unit. The small doorway to the right leads into a classroom area.

THE STRUCTURAL FRAMEWORK during erection. The more than 348 tons of USS Structural Steel, used in the building, were fabricated by The Mississippi Valley Structural Steel Co., St. Louis, Missouri.
future expansion in mind

The Assumption High School of East St. Louis, Illinois, was built to accommodate 650 students with provisions for expanding horizontally and vertically to provide facilities for an eventual one thousand students.

The school consists of three units: an academic unit containing classrooms; a gymnasium unit including gymnasium, cafeteria, shops, and laboratories; and a Brother’s House, independent of the other buildings, which contains living quarters for 24 Brothers. The academic unit has provisions for expansion to the east. In addition, a second floor can be added to the present one story portion. The Gymnasium Unit is designed so that there is sufficient physical education, shop, laboratory, and cafeteria space for additional students if classroom facilities are increased.

Structural Steel was used exclusively in the framing of this new school because of its versatility, its tremendous load bearing capacity, and its economy of use—qualities that make it ideal for all types of school construction. Small wonder that today’s architects and engineers are specifying Structural Steel frameworks for more and more schools, churches, and small buildings. Just look at these advantages:

1. Structural Steel is the strongest, yet most economical of load bearing materials.
2. Structural Steel will withstand more abuse than other structural materials, effectively resisting torsion, tension, compression, and shear.
3. Once enclosed in buildings, it lasts indefinitely—requiring no maintenance.
4. Structural Steel may be riveted, bolted or welded... can be erected in any weather in which men can work.
5. Steel members are fabricated indoors; therefore, weather can have no effect on the quality of workmanship.

SEE The United States Steel Hour. It’s a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.
MEMO

TO: SPEC. Writers

SUBJECT: Interior Fire-Protection

Don't let the traditional stability of this field fool you. Current catalogs and supplement to A.I.A. file 29e2 show several new developments by Allenco.

Job supervisors report Allenco reliable delivery and faster-installation speed work. Also, clients are becoming more familiar with this field.

Suggest you check with local Allenco office or send for current ads.
Flood a room with daylight...

Filtered through Frosted Aklo® Glass

...finest light for good seeing

Daylight is hard to beat. Eyes were made for it. So, big window walls have become the regular practice wherever good seeing is wanted.

But two drawbacks... glare and sun heat... sometimes crop up, particularly on south and west walls. And that explains the wide use today of Frosted Aklo Glass in so many types of buildings.

It softens and diffuses transmitted daylight, reducing glare of direct sun, bright sky and dazzling reflections. Its subdued blue-green color is restful to the eyes.

Aklo Glass reduces solar heat. It absorbs sun heat as the light passes through, reradiating much of it back outdoors. Aklo Glass in ½” thickness shuts out as much as 44% of the sun’s radiant energy. Its blue-green color even makes you feel cooler.

So, there’s eye comfort and body comfort in using Aklo Glass. It pays off in better workmanship, better employee relations and reduced air-conditioning costs.

PHONE FOR THIS TEST
A call will bring a radiometer demonstration kit to your desk. It shows how Aklo Glass reduces glare and sun heat. Call your L-O-F Glass Distributor or Dealer listed under “Glass” in the yellow pages of your phone book. Or write to Libbey Owens-Ford Glass Company, 608 Madison Avenue, Toledo 3, Ohio.

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made by Blue Ridge Glass Corp.
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Chicago apartment building installs

**UNARCO**

dual-vectors to "beat the heat"

The people who live in this apartment will enjoy year-round UNARCO weather conditioning. In winter, clean, even, hot water heating; and in summer, cool, filtered and dehumidified air—ALL FROM ONE SYSTEM.

That’s because new UNARCO dual-vectors, each with its own control knob, allow you to select the exact temperature desired for each individual room. The UNARCO "hydro-pac" water chiller supplies the cooled water and your boiler provides heated water for the system.

Truly revolutionary, this new development offers the luxury and comfort of weather tailored to the needs of each member of the family. Most surprising! This combination heating and cooling is available at little more than the cost of a hot water heating system alone.

**Builders! Contractors! Architects!** The UNARCO dual-vector offers you a fine opportunity to broaden your markets by offering the finest in heating and cooling facilities available today. Write NOW for detailed information regarding cost, design and operational data! Address: Dept. 101B, HEATING & COOLING DIVISION;

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dual-vectors

provide year 'round weather conditioning
On the lake front of Chicago’s near north side, the nation’s tallest flat-slab reinforced concrete buildings are rapidly rising. They make up a $25,000,000 project of six 28 and 29-story apartment buildings—luxury "glass house" type—designed by the internationally renowned Ludwig Mies van der Rohe.

Mr. Frank J. Kornacker, structural engineer, said, "Reinforced concrete was chosen for economy reasons after a cost comparison with other structural methods. Another deciding factor was that materials were readily available."

Each year, an increasing number of buildings of all types are going to reinforced concrete construction. Reinforced concrete produces a rigid structure, highly resistant to wind, shock, and quake. Furthermore, materials and labor are readily available from local sources. On your next job, design for durability at low cost... design for reinforced concrete.

Compare...
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CONCRETE REINFORCING STEEL INSTITUTE
This Unretouched Photograph Proves the Quality of
FERALUN SAFETY TREADS

This is an unretouched photograph of a Feralun tread taken after acid treatment. (Paint is removed and acid is used to eat away the metal base so as to isolate the actual abrasive content of the tread.) Note the full and even distribution of abrasive— for greater safety, longer wear. In fact, American Abrasive has set the quality standards shown above. That's why Feralun abrasive treads cannot be equaled. Feralun has provided lasting safety — free from maintenance for the past 35 years. Available as treads, thresholds, floor plates and elevator sills. Also in Bronzalun, Alumalun and Nicalun. See Sweet's Catalog 1955—12b/Am.

LETTERS

Continued from p. 86

Grease for rusty gears

... An excellent and constructive job, full of rosette hope as becomes the utterances of forward-looking men.

I agree with all that was said and concluded. But there was some underemphasis on four things:

1. Nobody mentioned zoning much. There was plenty well said about the high subsidies being poured into expressways by irresponsible engineers and accepted as essential by an apathetic and ignorant public. But as far as "downtown" is concerned, all the vast expenditure will avail nothing as long as there is no limitation on the bulk of the traffic magnets.

2. The "Kansas City Belt" idea should not be swallowed too fast. A limited access highway is no better than a railroad or other surface obstruction. In fact a limited access highway is nothing but a disorganized railroad. Apparently nothing is remembered of the Chicago Loop.

3. Miles Colean has pointed out that "the cost to the taxpayer of absorbing the difference between acquisition price and use price is far out-running anticipation." Whose anticipation?

It is, or should be, and to a few people (including, I feel sure, Colean) it was, obvious that: 1) the existence of indiscriminate "write-down" would force a hidden "write-up" with the added obvious result that it would force excessive density of construction and population and so prove self-defeating to the "renewal" idea, physically as well as financially; and 2) that for some reason, although "reason" is hardly the word, the worst blighted an area is, the less chance an owner has of selling, the more inappropriate its uses and design, the higher the acquisition value that is attached to land. This discrepancy between "acquisition value" and "use value" is fundamentally absurd, and exists, partly at least, because of the ad valorem tax system and its tie-in with bonded debt.

4. The whole rigmarole of government in "urban renewal," both administratively and fiscally, tends to make any action so fantastically expensive as to prevent action. The conglomeration of agencies, with their procedural necessities, grown up over years, requires a complete and drastic rethinking and simplification. The rusty old gears are all ground together, and not even the grease of graft could get them going again. And when that is true, things are stuck.

HENRY S. CHURCHILL
Architect and city planner
New York, N.Y.

continued on p. 92
Modern
As Tomorrow
RIGHT DOWN
TO THE
DOOR CLOSERS!

NORTON "INADOR"
Used Throughout This Striking New Bank
To Preserve the Modern Functional Design
Without Loss of Door Closers Efficiency

The considerations which prompted selection of Norton "Inador" in the impressive structure above have won it the same distinction in hundreds of other new buildings across the country. The "Inador" is almost invisible because its extremely compact mechanism is entirely concealed in a mortise in the top rail of the door. There is nothing to distract in any way from the beauty of the door itself.

At the same time, every Norton "Inador" is a precision instrument designed and built to last longer under hard service...require less maintenance and provide the long range economies so imperative in all public buildings. If, therefore, you have any such buildings "on the boards" today, by all means look into the advantages of Norton "Inador" before door closer specifications are decided upon.

Write today for FREE Catalog on Norton's full line of concealed and surface door closers.

Check These Exclusive Norton Features:
- Rock and Pinion Construction gives uniform, positive checking at every point!
- New Aluminum Shell for lighter weight, robust wear. Proved by use on our surface closers for over 7 years!
- Special Spring—of highest-quality steel!
- Non-Gumming, Non-Freezing Hydraulic Fluid permanently lubricates every inside moving part!
- Double Adjusting Levers, easily moved by fingers, control speed of closing action and latching action!
- Regular Arm Series, as well as Holder Arm models, so suitable for hospital use!
- Famous Guarantee for 2 full years, providing proper recommended sizes are used!

NORTON DOOR CLOSER CO.
Dept. AF-95
Division of The Yale & Towne Mfg. Co.
Berrien Springs, Michigan
ACCESSO* Acoustical Suspension
has full accessibility with
no exposed metal

ACCESSO is a fully concealed system of rolled steel channels with individual tile hangers, presenting all the beauty of any size or style of tile with instant access to above-ceiling areas. Installed fast with a minimum of labor, the ACCESSO system offers these exclusive features:

ACCESSIBILITY
Full and instant access to ducts, pipes, wiring, ballast, telephone lines and other materials to be concealed. Tiles removed quickly without damage.

FLEXIBILITY
Widest latitude in use of standard tile suitable for mechanical suspension. All standard lighting fixtures, movable partitions and diffusers relocated with ease by building maintenance crews. ACCESSO components may be used with all makes of acoustical tiles; 12"x12", 12"x24" and 24"x24".

TILE BEAUTY PRESERVED
All metal parts being hidden, complete monolithic sweep of ceiling surface is maintained with perfect mechanical leveling.

ECONOMY
The ample ACCESSO parts are easily assembled with minimum labor. Tiles are installed quickly. Fixtures and utilities re-located with a bare minimum of time.

STRENGTH WITHOUT WEIGHT
ACCESSO units present great strength in design and materials. Small lighting fixtures may be supported directly on ACCESSO systems.

ACCESSO SYSTEMS are being approved wherever architects understand their full utility and advantages. Now available are brochures, detail sheets and photographs.

*Full Patents Pending

ACCESSO SYSTEMS, INC.
4615 EIGHTH AVENUE N.W.
SEATTLE 7, WASHINGTON

LETTERS

Continued from p. 90

WINDOW WALLS

FORUM:
Since the recent advent of curtain wall construction, we have been called upon many times to voice our opinion on the practical values of the various types of glass available for use in this type of construction. Our contention has been that the problem of glass selection is a many-sided one—dependent on such factors as building orientation, air conditioning requirements, type of window fenestration to be used and visibility desired. Unfortunately, we have not been so convincing as we had hoped because of the lack of authoritative literature on this subject. It was, therefore, with great satisfaction that we read the article “What Next for the Window Wall” in your July issue.

STANLEY E. ARONOFF, vice president
Southern Plate Glass Co.
Baltimore, Md.

ALLEN ON AUTOMATION

FORUM:
For some reason that escapes me, I frequently find myself sitting as a member of a panel to discuss something about which I know very little. I have tried to rationalize the reason for this; first I thought I was sitting up there at the head table with a microphone, a scratch pad and an ash tray in front of me, for decorative reasons. Perhaps, I thought, I am here because of my almost unearthly personal beauty. I abandoned this theory; in fact, my whole family abandoned it. However, it was hardly necessary for my whole family to roll on the floor and whoop in a marked manner.

Then I thought perhaps I was there to furnish the serious relief. The other members would say something witty, bright and amusing and then I would come in with a dull, stupid remark to kill off the laughs. I rejected this for reasons that I do not care to discuss as my fellow panel members might sue me.

At any rate, I was recently on a panel discussing Automation and the World of the Future. I do not understand automation, but it seems that automation is the offspring of cybernetics and cybernetics is the brain child of Professor Norbert Wiener of MIT. This makes three things I do not understand; automation, cybernetics and Professor Norbert Wiener. I am not sure about MIT, either.

However, I am against automation. In my opinion, with the onset of automation,
serving the architect, and owner-builder  

with metal wall engineering and production quality

This new 13-story office building will be completely air-conditioned. To admit maximum natural light without the discomfort of glare and direct sunlight, the building has been designed with projecting horizontal sunshades on the south and north elevation, and vertical louvers on the east and west elevation. The complete aluminum wall framing and vertical louvers will be Kawneer engineered and produced, saving the architect and builder months of time and giving them the assurance of client satisfaction. Special Kawneer weather-tightness plus expansion and contraction features will be included.

Have you a metal wall problem? Why not delegate the whole responsibility to Kawneer. Five plants in the United States and Canada, a complete engineering staff, and 50 years of experience in architectural metals are waiting to serve you.

Write for folder describing Kawneer services and metal wall jobs.
WHY HAVE A FIRE ALARM SYSTEM?

The question may seem elementary. Yet many persons don’t quite realize — till too late — the vital importance of time in any fire, large or small. Fire experts, fire chiefs say it’s the first five minutes that count in a fire. Hundreds of millions of dollars damage . . . not to mention loss of life . . . occurs yearly because fires are not detected until they’ve spread beyond control. A low cost fire alarm system can often mean the difference between a ruinous fire and one brought under control before great harm is done.

HOW YOU CAN SAVE BY CHOOSING THE RIGHT FIRE ALARM SYSTEM . . .

Many systems are on the market. Most are good. There is none — at any price — finer than an Edwards system. Edwards specializes in fire alarm systems, has provided protection to many world-famous buildings (see box below). Edwards systems are so precisely engineered, so completely modern . . . their installation is far simpler than most. So much so, in fact, your installation costs may often be reduced by up to 50%. A big saving on any job!

WHAT ENGINEERING SERVICES ARE AVAILABLE?

With Edwards, you get the services of a highly skilled engineering staff of long experience. Tops in their field. They’ll help you solve your fire alarm problems. Help you choose the right system for your particular situation . . . from a complete line of every type of system. Result: a quality system that reflects favorably on your judgment . . . that gives long, dependable, trouble-free service . . . that frees you from costly call-backs and complaints. Edwards engineers are always on call, for consultation, for advice.

These famous buildings use Edwards Fire Alarm Systems:
United Nations Building, New York City
Statler Hotel, Los Angeles, California
Patrick Air Force Base, Orlando, Florida
Eastman Kodak, Rochester, New York
Hillsdale School, San Mateo, California
Lever Building, New York City
Grant Park Underground Garage, Chicago, Ill.

NOTE:
For complete information about Edwards Fire Alarm Systems . . . both standard systems and variations-to-your-order . . . call, phone or write Edwards Company, Dept. AF-9, Norwalk, Conn. In Canada, Owen Sound, Ont.
LETTERS

Continued from p. 92

Civilization is at the crossroads. And you know how silly Civilization is; I wouldn't trust Civilization as far as I could throw Rockefeller Center. If Civilization is at the crossroads, Civilization will cross against the lights and that's all, brother. Back to rubbing two sticks together to make a fire, which, as it happens, I can easily do if one of the sticks is a match.

Automation means the push button factory. Professor Wiener says it is possible to make a machine that will reproduce itself by making an endless stream of identical machines. This is a fine thought for a man who doesn't sleep any better than I do. The first thing that will happen—no, the second thing; the first thing that will happen is that this machine will be picketed by indignant rabbits. The second thing is that somebody will invent a push button factory to make nothing but push buttons. In a few months, there will be billions and billions of push buttons around and no place to store them except in our houses. I have already explained to anybody who would hold still long enough, that the average house will eventually be so full of wire coat hangers you will hardly be able to move around in it and when the situation is complicated all up by a few million push buttons per capita, it will mean that Father, Mother and the kids will be living in the broom closet.

Obviously what is needed is a house that will be both wire-coat-hanger-proof and push-button-proof.

Otherwise along about 2361 A.D. an archaeological expedition digging in the sands around Scottsdale, Ariz., will uncover the ruins of a house of the last half of the twentieth century. The wire coat hangers will not have survived, but the push buttons will. "Professor Elmer Quooney," the expedition will report, "pointed out that this family had evidently hoarded food in fear of famine and had filled their entire dwelling, with the exception of a space about 4' square, with small round objects probably of some nutritive value. Professor Quooney took 62 of these objects, simmered them in a puree of simulated spinach broth and swallo..."
It is only within recent years that ashlar stone veneer, whether split-face or ledge, has been available across the country in a great variety of colors and forms, and at prices to compare most favorably with even the least expensive substitutes. New methods of quarrying and producing these stones are largely responsible for this. Increased use has also helped.
The increased popularity of ashlar stone veneer should not be surprising. Its beauty is the beauty of nature itself, wonderful in its variety and texture, incomparable in its versatility and permanence. Whether used as a prime building material, or as an important accent, STONE enhances good design, magnifies value, improves the appearance of any community in which it is used.

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.
HONEYLITE (shown above actual size) installation is simple, inexpensive. For full ceilings, aluminum T-bars are used to suspend HONEYLITE panels below lighting units. HONEYLITE is also ideal for use in troffer diffusers and recessed lighting fixtures.

HONEYLITE'S thousands of hexagonal, aluminum honeycomb cells do more than spread luxuriant, shadow-free light into every part of the room—they also quiet noise with an NRC of .46! This means a luminous ceiling of uninterrupted beauty—a ceiling that minimizes the need for separate acoustical installations that add to cost and detract from appearance. Before you build or re-decorate, find out more about HONEYLITE, the UL approved, all-metal ceiling that transmits light with 95% plus efficiency... permits free circulation of air around lighting units... leaves sprinkler heads unblocked for immediate operation in case of fire. Additional information upon request.

HONEYLITE LIGHT-DIFFUSING ACOUSTICAL ALUMINUM HONEYCOMB CEILINGS ARE A DEVELOPMENT OF HXCEL PRODUCTS INC.

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GREAT NEWS!

now you can specify
folding doors for every need
from one complete line
of recognized quality

Only fabric-covered door with "Multi-V" construction for lifetime ease of operation—without "air bellows." Types and sizes to solve every space problem—large or small. Motor-driven or manual, providing maximum space-saving flexibility in any design. Widest choice of colors and vinyl-fabric textures. Track always concealed—with or without cornice. See Sweet's File or your FOLDOOR distributor for details.

First in the moderate-cost field with: Truss-embossed hinges top and bottom; rigid "Multi-V" construction assures pantograph action throughout. Cornice, nylon trolley wheels, metal hardware, textured vinyl fabric. Specify for homes, institutions, hotels, apartments, schools, industrial or commercial projects. Eleven sizes: five widths, 2'-0" to 4'-0"; three heights, 6'6", 6'8½" and 8'0". See distributor or write.

Quality leader in the economy field. Approved and favored by leading home builders. Three widths, 2'8", 3'0", 4'0", and two heights, 6'6", 6'8½". Vinyl fabric in three decorator colors. See your FOLDOOR-FOL-BAK distributor.

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They're handle-free...you use a key

SMOOTH, FLUSH-TYPE ALL-STEEL INTERIOR DOORS add beauty to any modern office or school. A product of Republic's Truscon Division, these swing doors are installed in 1/2 the time usually required to hang conventional doors. They are dimensionally stable under all weather conditions—never stick or bind. Frames and hardware are included. All standard door-opening sizes are available. Ask your Truscon representative for additional information. Or mail coupon.

FOR BETTER "HOME ECONOMICS" DEPARTMENTS Republican Steel Kitchens are the choice of home economists everywhere. For beauty. For efficient planning. For work-saving convenience. Architects appreciate the flexibility of this line which permits unlimited freedom in planning custom kitchens economically from stock units. Republican Steel Kitchens are proving the pace-setter in modern kitchen design; assure you on-time delivery, uniform high quality, client satisfaction. Send coupon for details.
Here's a locker with a memory! No matter how forgetful the occupant, he gets full-time, locked protection—by simply closing the door. There is no handle, no locking routine to fuss with. A key unlocks the door... then serves as the handle for opening it. The instant the key is removed the door pre-locks—and locks automatically when shut. Papers, books, clothing and personal effects are always safe day and night behind locked tamper-proof doors.

The exclusive Key-Control locker system, developed by Republic's Berger Division, eliminates all need for handle maintenance, too. Locker fronts are clean and modern in appearance. They're flush and smooth, offer no noise-inviting projections.

Before you specify any locker system for new schools or other institutions, investigate Republic's revolutionary Key-Control. Your local Berger representative will be happy to arrange an interesting demonstration. He can also offer architects, school administrators and other officials a complete planning and installation service, including technical and engineering assistance. Furthermore, Berger assumes full responsibility for proper installation—from start to finish.

Republic's Berger Division is the world's leader in lockers. Only Berger can offer Key-Control—plus the largest selection of standard steel lockers—plus competent engineering and installation assistance. Send coupon for detailed information.

Republic Steel Corporation
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Cleveland 27, Ohio

Please send me more information on:

- Key-Control and Standard Lockers
- Metal Lath
- Interior Steel Doors
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Title
Company
Address
City Zone State

EAST-TO-FORM TRUSCON METAL LATH is readily adaptable to every kind of architectural treatment—no matter how intricate. It's lightweight, erects quickly, is fire-resistant. Big Truscon line includes more than 40 kinds of metal lath and accessories, all available for rapid delivery through building-supply dealers, backed by Truscon's dependable warehouse service. Send coupon for illustrated literature describing complete line.
Since 1940, the use of porcelain enamel metal in buildings has multiplied 25-fold and the trend is ever increasing. Whereas in 1940 this material was used mainly as an exterior wall finish for small service buildings and store fronts, today it is used as the principal wall material for important buildings of all kinds: General Motors' technical center, Clemson College's dormitories, Denver's Mile High Center, RCA's Camden offices, Ford's central staff headquarters, Dallas and Hartford's Statler Hotel and a host of others.

Porcelain enamel steel and aluminum are being adapted daily to new uses such as classroom chalk boards, exterior and interior murals, acoustical panels, interior finishes and decorative features. However, despite the rapid development of this building material, only a limited number of designers have gained a knowledge of its advantages and only a few of the material's limitless possibilities have been investigated.

**purpose:**
The primary purpose of this competition is to stimulate design interest and widen experience in the use of porcelain enamel steel and aluminum, to improve present methods of application and to encourage the exploration for new uses. It is also hoped that the designs submitted in this competition will encourage communities across the nation to build better schools and community youth centers.

**the problem:**
The competition problem consists of two divisions:

1. The design of an elementary school to consist of a kindergarten, six classrooms, a multi-purpose room and certain attendant facilities.

2. The design of a community youth center to consist of a lounge, a multi-purpose recreation room, a small theatre, a music library and certain other accessory rooms.

A contestant may enter any number of submissions in either or both divisions of the competition. However, no contestant, including the Grand Prize winner, is eligible to receive more than one prize in each division.
The Grand Prize will be awarded to the submission in either division which, in the opinion of the jury, goes furthest toward accomplishing the purposes of the competition.

**Basis of Awards:**

Awards will be made on the basis of:

1. Skill in planning and excellence of design.
2. Use of porcelain enamel steel and aluminum, including practical new uses of these materials and improved methods of detailing.
3. Clarity of presentation.

**Eligibility:** This competition is open to architects, designers, draftsmen and students of architecture who are residents of the continental United States and Canada, except the following, their employees, office associates, and families: members of the Jury, Ferro Corporation, its advertising agency, Architectural FORUM and the Professional Adviser. This competition has been approved by The American Institute of Architects. The competition closes December 12, 1955. Announcements of Awards: On or about January 16, 1956.

**Contestants** must register (coupon right) to receive the program, which will include further details of the competition. This is an announcement only; conditions governing the competition and the awards are set forth in the program.
A GREAT NEW METHOD OF AUTOMATIC FIRE-VENTING

WASCOLITE PYRODOMES

Independent laboratory tests prove the effectiveness of automatic fire-venting with WASCOLITE PYRODOMES:

1. Test fire generated 600,000 Btu per minute. 2. PYRODOMES delay heat build-up, improve visibility — give firemen greater mobility, help contain the fire. Name of laboratory, plus test data available on request.

Automatic fire-venting with WASCOLITE PYRODOMES could mean the difference between damage and disaster in your clients' buildings. When excessive heat occurs, PYRODOME's fusible link snaps, activating lifting levers which raise the dome. This allows heat, smoke and gases to escape . . . helps firemen to contain and extinguish the fire.

The WASCOLITE PYRODOME is the first prefabricated unit ever developed to provide automatic fire-venting plus the economy of overhead daylighting. Also available: WASCO PYROVENT with solid aluminum cover for venting only.


WASCO PRODUCTS, INC.
BAY STATE ROAD • CAMBRIDGE, MASS.
Inexpensive Luxury!

That is durable, economical and colorful

Wherever indoor highway floor coverings are needed that must give downright durability, use HAKO Asphalt Tile. In institutions and industry that demand economy and long wear, in commercial establishments and homes that want color and design beauty—Standard, New Pastel, or Grease Proof HAKO Asphalt Tile is accepted everywhere. The color will not wear off and the dirt will not wear in. HAKO Tile is reinforced with asbestos fibers and styrene plastic. The smooth sealed surface is permanent for the life of the floor. You can install HAKO Asphalt Tile above, on, or below grade, and over radiant heated floors. Write for suggestions on how HAKO Floor Tiles can help you.

SINCE 1903

HACHMEISTER-INC.
PITTSBURGH 30, PA.

FLOOR TILES—Vinyl, Poly-Krome in Vinyl or Asphalt, Parquetry and Cork Tile • CORONET PLASTIC WALL TILES—Majesty, Regal, Duke • ADHESIVES—for Building Products
WHO makes the RLM units I need?

With the recent revisions in RLM Standards for Industrial Lighting Units, featuring new upward-component fluorescent units, it is more important than ever that you know who makes units which conform to these newly-established and recently-revised specifications. This chart gives you the up-to-the-minute answer. It is based on the latest report of the Electrical Testing Laboratories who continually check conformance to RLM Standards. For a complete set of RLM incandescent and fluorescent specifications, as well as the addresses of RLM Manufacturers, send for a complimentary copy of the 1955 RLM Specifications Book.


HERE is your up-to-the-minute ANSWER!

These are the MANUFACTURERS who offer RLM-LABELED UNITS

### Incandescent RLM Specifications

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Note: Many manufacturers produce incandescent RLM units in more than one lamp size. The numerals refer to the number of different-size RLM units which the manufacturer offers under the specification.

** getKey Answer: **

- **ABBE Reflector Div.**
- **APPLETON Electric Co.**
- **BELLAUN Electric Mfg. Co.**
- **DAY-BRITE Lighting, Inc.**
- **EASTERN Fixture Co., Inc.**
- **ELECTRO SILV-A-KING Corp.**
- **EMDER-MONARCH Corp.**
- **FLUORESCENT Fixtures of Calif.**
- **FUEL LIGHTING Products, Inc.**
- **GLOBE Lighting Products, Inc.**
- **H.D.W. & P. Industry Co.**
- **LANDLIGHT Fixture Co.**
- **MULCH McKINLEY, CO.**
- **MULTI ELECTRIC MFG., INC.**
- **OVERBAGH & KAYSER MFG. CO.**
- **QUADRINGULAR MFG. CO.**
- **THE RUBY Lighting Corp.**
- **SUNBEAM Lighting Co.**
- **STYLVANIA Electric Products, Inc.**
- **WESTINGHOUSE Electric Corp.**
- **WHEELER Reflector Co.**
- **WORK-OUT CO.**
- **ZANE MFG. CO.**

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** Look for MANUFACTURERS NAME HERE **

** RLM STANDARDS INSTITUTE **
LOUVRON BY LIGHTOLIER

crisply styled, optically engineered, ruggedly built

A. Level top permits fixture to be fitted snugly against the ceiling across its entire width—shields views of bright side of housing.
B. 4' side panels of Polystyrene, Steel or Perfalux are self supporting. No clumsy framing is required. They snap out with fingertip pressure.
C. Center braces support side panels on 8’ fixtures, assure positive alignment.
D. Louvers are all four feet long for ease of handling and are supported by lock-spring fasteners.
E. Interlocked louvers give permanently rigid construction—are available with 35°C-25°L or 35°C-45°L shielding.
F. Steel safety chains support louvers in hinged position for relamping.
G. Heavy gauge steel housing, channel shaped, gives maximum rigidity.
H. Accessory top reflectors increase down-light.
I. Swivel jointed stems adjust to 25° from the vertical—assuring level, straight-line installation.
J. Stems may be turned after installation, to give vertical fixture adjustment.
K. Slide clamp hanger may be attached to fixtures at any point for stem mounting.
L. Flush end cap is removable, exposing wide raceway opening and holes for ¼ x 20 screws and nuts for joining in continuous runs.
M. Ballasts are removable without removing fixtures from ceiling.
N. Ballasts are High Power Factor, E. T. L. approved, for 8' or 4' Slimline or 4' Rapid Start lamps.
Louvron by Lightolier offers a new look in louvered fluorescent architectural lighting. This broad yet shallow light source was designed for contemporary offices, schools, stores and other interiors which call for truly efficient, well-shielded illumination. Louvron can be installed individually or in perfectly aligned rows of light.

Louvron features Perfalux side panels in addition to conventional steel or ribbed Polystyrene. Perfalux, an exclusive Lightolier development, combines the strength of steel with the translucence of plastic. Perfalux panels have thousands of pinpoint perforations webbed with a fine plastic film. They create thousands of tiny lenses to fully diffuse the light.

Louvron offers 14 other major design features. Each contributes to easier, more economical installation, longer lasting, trouble-free maintenance and, of course, more efficient illumination.

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Behind the blueprints

in this month's FORUM

CLIENT: Earl Roy Searles, dean and professor of pharmacy at the University of Illinois, had long dreamed of the perfect building in which to teach his specialized branch of the healing art (p. 144). Working closely with PACE Associates, Searles drew up a point-by-point program on ten single-spaced, typewritten pages, helped develop the general form of the building before a single sketch was attempted. When the architects proposed such unorthodox and seemingly extravagant features as 60' clear-span laboratories and ten escalator units, Searles explained to a skeptical, economy-minded building committee the long-term benefits these could bring about.

CONSULTANT: Dr. Wilma Donahue, chairman of the gerontology division at the University of Michigan's Institute of Human Adjustment, had a rich background for the problem of developing a special village for aged people (p. 136). She was able to supply the architects with answers to many unfamiliar questions: How many old people can help themselves physically and financially and to what extent? How many prefer individual homes, apartments, community residences? How should they handle the problem of nursing care, furnishings, bathtubs vs. showers, special safety features? With Dr. Donahue's counsel, it was decided to provide a whole village of varied facilities rather than one large institutional structure.

ARCHITECT: Charles Edouard Jeanneret, known to the world as Le Corbusier, has added another startling building to his list: a haunting little chapel in the foothills of France's Vosges mountains (p. 120). Corbu had been on big jobs: building the new capital city of Chandigarh in India's Punjab, and a second edition of his controversial Marseille apartments outside Nantes. The opportunity to build his first church proved irresistible. At first he turned down the delegation of parishioners that came to him in Paris from the little town of Ronchamp, but one day soon afterward he showed up alone on the high, hilly site, furiously making sketches. The result is more strikingly sculptural than any of his previous work.
The men and methods that influence it

Whoever works seriously on an active building program cannot rest proud unless the outcome qualifies as architecture. Only so can his satisfaction as owner or proprietor cover the whole range from the practical to the wonderful; he therefore wants to know not only what the best performance is in current architecture but how to go about getting it realized, on the ground.

Most commentators answer him quite simply that architecture is the product of architects. The finest architecture is the product of men of genius. Find one of these and the problem is supremely solved; if none is available, find a man of talent.

Other commentators answer reconditely that architecture is the product of a civilization. The best architecture is the product of a fine civilization. Said Lewis Mumford in his first pace-setting book, *Sticks and Stones*, “The mass of buildings can never be better or worse than the institutions that have shaped them.” This broad approach can be of profound value in the hands of a keen wise critic but can lead to useful action only by those who know a few hand-holds. A society as a whole is a most refractory building material.

So a third comment is now in order. Whether the ideals of architecture are those of an owner, or of a genius architect, or of a society, they can be translated into reality only through a medium. The fluid purposes of a society can be poured into a building site only through some kind of a funnel. The specific purposes of a client and his architect have to run a gauntlet. This medium, this funnel, this gauntlet, is the industry of building. The institutions that most clearly affect building are obviously those that are connected directly with building. They have to do with finding land and money, with getting together plans and permissions, with fitting designs and materials and labor, with knowing maintenance and operation. The wise citizen starting a building program today, the smart architect helping him, the competent government official or planner or community leader, must know his way through the ramifying and changing process of building.

Who does what and how does it affect the outcome?

How do you get leverage? Where are the fulcrum points?

If you want to step anywhere off the beaten trail, how can you find the ascent?

The answers will affect far more than the immediate “practical” program: they will affect the qualities of the design itself in its deepest contexts.
In short, the actual design of a building or group, in the sense in which architects use the word, can occur quite elsewhere than on the drawing board. Realistic study must acknowledge this. For example, a group of government employees can sit down in a Washington office and set up a printed manual for their local FHA loan inspectors. This single act can freeze all the important features of close to a million homes every year for several years: homes for the equivalent every year of a new city of Chicago. It could be argued that this roomful of men will have more effect on the new domestic surroundings of Americans than the whole architectural profession. The idealistic architect will not for that reason be at a complete loss, even though he will be on the outside looking in. It is now up to him to master a whole machinery of appeals and “interpretations” besides marshaling every device of educational propaganda there is to make the next set of regulations better. He must find the fulcrum points where he can get institutional leverage. Otherwise he will be doomed to exercise effective control over an ever shrinking proportion of America’s homes.

One great reason the building process becomes so much more complex and builds up a team ever bigger and more specialized is that construction itself is ever more ramifying. A few years ago the conservationist Fairfield Osborn testified that the operations of mankind had now reached a scope that made man, for the first time, another force of Nature. Certainly resources for which unaided Nature was once relied on are now achieved through great processes of construction. Natural water sites were once the great creators of our cities, water being needed for transportation and for drinking and for power. Today great chains of dams and reservoirs together with channel dredgings change the map into something not natural but artificial. Other similar networks are those that redistribute electric power (with atomic power now en route) and fuels, not to mention new kinds of traffic. As these developments go forward they affect human life in every part, including the whole pattern not only of the landscape we see but the cities and towns we live in.

The methods by which such constructions are conceived, designed, and carried through have become of utmost importance as a subject of study, for the reason that qualities of utmost importance to human life are being lost through the single-minded “efficiency” of such engineering. Disaster instead of enhancement too often overtakes large establishments on which we depend—for example the established central areas of large existing cities.

Under such circumstances, to continue to regard “architecture”—the art that insures human quality in building—as a series, just one school, office building, home or hospital after another, is to surrender the idea as a whole while hanging onto tiny fragments. But nothing can be achieved in the opposite way, either, by merely preaching some vague new form of “society.”

We can recover our human command only by finding out how to organize new ways of collaborating within the building framework that we have.

SHASTA DAM. Besides enhancing the landscape here, it produces sunny fertile irrigated valley landscape 500 mi. south. Being really architectural, this scope of effort should be organized as such.

Photo: Andreas Feininger—Luna
LABORATORY TOWER for Johnson Wax Co., Racine, Wis.; Frank Lloyd Wright, architect. The lonesome masterpiece of architecture is what we mainly rely on nowadays for poetry. Here a master shows that the forms and materials of technology can stand like a tree, blossom like a flower, glow like the moon. Yet the work he did in the drafting room was probably eclipsed entirely by time spent battling with problems of men, money, materials. Where such masterpieces occur it is virtually certain, too, that there was a remarkable client at work with the remarkable architect.

Within the framework of the building industry every single element is now changing.

The client is not what he was. The client was once a patron. The biggest undertakings were by magnificent men whom other individuals imitated. The patrons of the architect were by turns the princes of the church, the princes of state, and the merchant princes. In the US at the turn of the century the great patrons had names like Morgan and Vanderbilt and Cassatt.

The successor of this client is an institution. One great important new kind of client we can call the “corporate client.” The corporate client is an operating organization, like the Telephone Co., or Du Pont, or Metropolitan. To help this client organize himself for building action is a special study, and to serve him is a special study too.

The kind of architecture that emerges out of such a picture is somehow a different kind with a different quality, even where the tone is set by a dominant personality. The old dominant, domineering patron is rare. He too has to master his organization.

But then there is yet another client grown strong, who is not an “institutional” client at all. What he builds for is investment. What he represents is something the prince did not represent at all—that great institution known as The Market. And where a Morgan used to operate with large funds of his own, the changing investment builder of today uses relatively little capital. He is a broker, a mediator, a getter-together of others pooling their needs.

He, too, is worthy of special study, for there are members of him who are producing rotten architecture, and there are ways within his mode of operation of producing much better architecture—providing only that you understand the game. Those highbrows who refuse to make the effort are merely helping architecture to regress.

One fascinating shift being produced by The Market as a client is the shift to the ready-made. Homes, for example, of which four fifths used to be built on special contract, are now four fifths built ready-made. In a sense they are built for no individual client at all. They are built for the client en masse. And en masse he has to have some kind of an agent or broker to interpret him. That agent, in most cases, is the “homebuilder” although in some apartment cases it has been an insurance company. Yet not even the homebuilder stands alone. Other interpreters in turn serve him. There are, for example, a special tribe of women editors on “consumer publications.” To listen to some of them speak of “my public” is a remarkable experience. Many a prototype or exhibition house is designed in their busy minds.

For a first-class architect to win out with his ideals in such a game is an uphill thing, and depends at every turn on a kind of superior cunning. The names of Charles Goodman and Anshen & Allen and Quincy Jones and Fred Emmons and Carl Koch and Keyes, Satterlee & Smith may have a place in future history as pioneers only a little less revolutionary than Frank Lloyd Wright. A study of the institutions and changing methods of homebuilding is their stock in trade. Their aim is architecture.

If clients are changing, so too are America's 22,000 architects. There are at least 20 well-marked different types of these today, compared to the one blanket type of yesterday. Some are in “big business” employing up to 1,000 men, and their heads virtually commute all around the globe. Others are sturdy single-man all-around professionals still. The architects fight for their
place in a world with engineers in it, and industrial designers, and “package dealers,” and consultants and dealers in cheap stock plans. The quality of US architecture and of US life depends on what happens in these interchanges.

The builder too is different, the manufacturer is different, the lender is different in this changing world, and every one of them is worth a good long look to see how his changing modes affect quality in the outcome. So too is the city planner, and the code-maker, and the insurance underwriter, and the tax collector—especially he. Architecture is affected by the thinking in all their minds and the paper in their hands.

Once the construction industry has really organized itself to clothe its great services in allurement, perhaps it can open a window and look at other industries that have been supplanting it in public favor. The lure of the automobile is complex, but a strong part of it is surely that it gets people away from dingy areas of building. The unhappy fact is that, instead, the aftermath of the automobile are making great new areas dingy. Traffic as an overwhelming event, as a passion even, is fast destroying towns and, more than that, making a slum of the entire countryside. Miles of signs and jukebox roadside building, along with honkey-tonk, are awaiting the day when someone can restore civilization. Better yet as an answer from the side of building would be the creation of its own romance, which would stir people’s imagination with the beauty of staying in loveable settled places.

There will be occasion to come back to that. But meanwhile let us start re-examining Architecture in America by looking at today’s US architect, in next month’s issue.

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LOS ANGELES: The freeway system helps spread building out across immense countrysides. The main features of these homes are decided on through elaborate processes involving FHA bureaucrats and a homebuilder industry with its allies. To lift this vast clean dullness architecture needs new fulcrum points. Highways are clean, so far, of Roadtown clutter.

ARIZONA: Roadtown here could as well be Roadtown anywhere, innocent of all architecture and of any plan.

Photos: (below) Andreas Feininger; (top opp. p.) Jack Birns
MILWAUKEE GETS

Arriving passengers enter glass lobbies, mount escalators to second-story concourses, which lead over truck underpasses, maintenance and cargo offices. Field is shared by National Guard jets, seen in background.

Observation decks along north and south piers give visitors free view of the bustling spectacle on the field below. At left is the central pier, which leads into lounge, bar and dining room.
Separate traffic patterns speed passengers above, baggage below

Lobbies on the field: On each of the building's three fingers is a two-story glass box which reveals a welcoming little lounge and moving escalators (photos above). Here, right near the planes, are easy chairs, rest rooms, telephones, telegraph service, baggage lockers—basic conveniences an arriving passenger can get to quickly or a through passenger or delayed departure can use without fear of missing his connection or his place in line for a good seat. (As in many airports, it is a long walk to the central facilities.) The lobby of the central pier, in particular, on an axis with the main airport lobby, acts much like a two-ended telescope, giving arrivals a first framed view toward the city and departing passengers a first framed view of the airport.

Ascending the escalators, passengers find themselves in a broad gallery. On one side, generous glass walls show off the field; along the other side lighted and animated display cases explain some of the region's many products and organizations; new arrivals discover right away that Milwaukee has a lot to offer besides beer and baseball. (These show windows, rented to advertisers by a concessionaire for $600—$1,500 a year each, depending on location, net the county a minimum of $47,000 a year in additional revenue.)

Central concessions: All passengers are routed through the main crossroads where concessions are grouped for maximum business. Passengers or visitors with time to spare can relax in the main lounge (photo below), bar or dining room overlooking the field. (Too bad the decor in these areas does not measure up to the sleek excitement of a modern airport.) Concessions, centralized and limited, show a better profit than too many strung out where fewer people see them: by its first full year of operation the terminal hopes to net $60,000 on a total income of $360,000, of which $148,000 will come from concessions alone (this is three times as much as the old terminal, which year after year operated in the red.) Fumeling all passengers through a central concessions area, however, means that some have to make a long detour from ticket counter to airplane.

No wait for baggage: Down escalators to the main lobby and a few steps to the right is a single, clearly marked baggage claim counter for all six airlines now using the terminal (photo above). Here, for many a hardened air traveler, comes the best surprise of all: his bags are actually waiting there for him on the counter, and only a 60' carry to a bus or a taxi! Like the quick-moving new St. Louis and Cleveland airports (previewed in Forum, Nov. '52), Milwaukee closely follows CAA recommendations, separating passenger flow above baggage flow and further separating incoming and outgoing passengers by keeping each to the right (plan opposite). Departing passengers enter one of four doors at the opposite end of the main lobby (photo op-
Arriving planes taxi up 30-acre apron to the terminal's outstretched wings.

A FAST-MOVING AIRPORT

Not long ago the unpredictable Frank Lloyd Wright stepped off a plane at Milwaukee's new terminal, looked around, and delighted fellow Wisconsinites by pronouncing it "one of the finest airports in the country."

Although close examination reveals some clumsiness in detail and decorating, the new port does its main job well: it keeps traffic moving efficiently, gives most of its visitors an unusually pleasant time, and even makes some money in the bargain.
Wide canopies shelter the terminal's seven front doors.

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The Wilby-Kincey people, who handle operations and accounting for a group of southeastern movie theaters, are right on top of the office parking problem. Having struggled with the shortage of car space downtown, they and their architects decided to use an available parking lot, and built new headquarters atop a big concrete platform that shelters stalls for 17 cars. Employees and visitors leave their autos under cover, walk to a little glass entrance chamber (or to the service trunk) and ascend a stair well lit by plastic skylights.

To save on year-round air conditioning, large glass areas first considered were given up in favor of 10" cavity walls; the only windows are single panels at two executive offices on the south and east, and a long, narrow ribbon across accounting space at the north.

Note the refreshing way the architects handled their brick curtain wall. Unlike some modern masonry masses that float mysteriously on steel lintels almost hidden from the eye, this one rests its visual weight on a 3' beam of reinforced concrete. This wide band and the tapered piers under it form a table that gives a strong sense of support and accents the horizontality of the building. A narrower, echoing cornice finishes off the structure against the sky.
STURDY FRAME of reinforced concrete and lightweight pan slabs gives visual support to brick wall above. At left is executive office window, with gray porcelain enamel panels set in knife-edged sash of black anodized aluminum.

GLASS PARTITIONS toward accounting area help open up interior offices. Solid dividers are perforated hardboard with acoustical batts.
CORBU BUILDS A CHURCH

Ever since pagan days pilgrims have climbed the winding road to the top of Haut Lieu, a hallowed summit in the foothills of the Vosges. But the “high place,” with its wild and beautiful vistas brushed by low-scudding clouds, is also a key observation post, along the Belfort Gap invasion route. Time after time the church on Haut Lieu has been destroyed by war, to be built again by loyal parishioners from the little town of Ronchamp below.

The newest chapel of Notre-Dame-du-Haut, replacing the one knocked out by liberating French troops in 1944, is as remarkable as its lofty site. From billowing roof to deep-set slits of colored glass, it is the work of one man: the Architect-Painter Le Corbusier. To some it may seem strange that such a robust, primitive movement of shapes and textures, with some of the pulse of Africa in them, should come from a man who was once so fascinated by the forms of modern industry and transportation that he is still identified with his phrase “machine for living.” Yet the sculptor in Corbu, it seems, had been growing. In his early buildings there was an occasional smooth, bulky curve almost hidden among the rectilinear planes. Then the top and bottom of his giant Marseille apartments broke out in moving forms, and these expanded through his town plan and buildings for the Indian capital of Chandigarh. Now, in Notre-Dame-du-Haut, it is almost impossible to find a straight line or two parallel lines, and the thin, rigid planes have become fluid masonry masses. Modeling and piercing as if with clay, the old master of concrete shows how dramatically his material can perform.
LETTERS

FORUM's round table report to its 48,000 readers on "How to Rebuild Cities Downtown" (June '55) and the distribution of reprints to 50,000 more has stimulated a flood of comment. The mail has come from men who have widely varied business interests, but who also have one common interest: the rebuilding of their downtowns. A sampling of this reader comment appears below.

Additional letters on the same subject appear in the regular Letters department (p. 78).

Smaller cities, likewise

The problems of a smaller city differ only in a degree from the metropolitan centers mentioned in the report. I am referring the copy you sent me to the chairman of our City Plan Commission, as I am sure it will be most helpful to him.

EDWARD B. SCOTT, mayor
New Britain, Conn.

Downtown-saving time

The only solution for the central core is to abandon its conservatism and offer the public more than the suburban districts can furnish.

Business should change its hours to suit the public convenience. It seems absurd that retail stores, banks, etc., must work the same hours as the customers. If such establishments were to have night service, perhaps the public might again start going downtown. And such a staggering of hours would relieve the traffic situation materially. As night baseball and football have increased attendance at these sports, so night service might revitalize the central core.

W. A. BLAIN
Fort Worth, Tex.

Residential areas, too

There is no question about the essentiality of organized and planned redevelopment to the economic future of our cities, not only for the survival of downtown areas but also for the retention of large residential areas as productive elements of our economy, commerce and culture.

O. R. DOERR, vice president
Pacific Gas & Electric Co.
San Francisco, Calif.

An aspirin

There is much meat in the pages—in fact, in passing the sheets on to my colleagues (both in the bus company and in the group of businessmen who are trying to find the proper "aspirin" to relieve our Downtown Harrisburg problem), I find I have underlined something in each paragraph on all but two pages.

HARLEY L. SWIFT
President and general manager
Harrisburg Railway Co.
Harrisburg, Pa.

What happened to downtown fun?

There has been no awareness expressed of one great missing factor in today's downtown areas—excitement. Many studies among women by our agency and others have evoked the fact that many women don't think it's any fun to shop any more. By "fun" these women apparently mean the sales razz-ma-tazz that used to go on in the big department stores and other downtown retail establishments.

The fashion shows, the household fairs and bazaars, the demonstrations and other special events have been gradually lessened until they are now very sporadic.

As downtown stores have become more exhibit halls for merchandise than sales, the city atmosphere, wherein something was always going on, has given way to disinterested, impersonal trading.

In my humble opinion, if downtown merchants would get together and plan events full of the old excitement and interest, the downtown areas would be jammed with shoppers regardless of parking, transportation and other difficulties.

Such promotional programming has to be part of any downtown development plan or, in my opinion, the full results will not be achieved.

H. K. JONES
Vice president and director of research
Brooke, Smith, French & Dorrance, Inc.
Detroit, Mich.

Tax enlightenment

The fact that from an economic point of view the central business areas are the life-blood of the metropolitan city tax structure, is not too evident to the general public. If we could continuously hammer away at these facts and awaken an upsurge of demand by the citizenry themselves for making the necessary changes, there would be no problem as far as having the political heads of the city go along with that demand.

The forming of committees of leading citizens alone is not sufficient and neither is it necessary that in the background of these committees there be powerful philanthropic institutions who are willing to contribute funds for this purpose. There is sufficient leeway in the reality values of most downtown areas today that under proper planning and development the necessary financing can in most cases be taken in stride, and a city will find itself with a very handsome gain in increased ratables because of the healthy atmosphere created.

P. GUERRIERI, president
Kroog-Kearns, Inc.
Newark, N.J.
Sway-backed roof is built like an airplane wing: reinforcing struts and partitions between two skins of concrete. Photo below shows how it hovers on posts just above the rough-textured masonry wall.
Planning above politics

To secure results it takes either a strong private group or an able, highly respected town planning organization. The big problem as I see it is to secure support for and increase the strength of town planning and to do this it is generally necessary to put them above political considerations. Admittedly this is difficult, but I believe some progress is evident in this direction.

H. C. TURNER JR., president
Turner Construction Co.
New York, N.Y.

The return of the pendulum

We live in the age of specialists and there are very few great minds that grasp the universal laws. The staggering development of industrialization, transportation and communications unbalanced our life. There is a basic overemphasis of material values over spiritual values and most fields of human endeavor suffer from brilliance results of specialization without a happy synthesis.

Efforts such as the round table are most helpful in speeding up the return of the pendulum that overshot its mark to its normal cycle including a sound urban re-development.

L. L. RADO, architect
Antonius Raymond & L. L. Rado
New York, N.Y.

Modernization, too

In the rehabilitation of central areas, people apparently have completely forgotten that much can be done with what they already have—if they will just go ahead and do it.

In many cases the downtown streets are still illuminated with gas lights and little, if any, widening of thoroughfares has been done. In fact, the area today is much the same as it was 50 or 75 years ago. I can't help but wonder what would happen if the merchants were to just modernize their existing building with installation of modern show windows, good lighting, architecturally changing the exterior of the buildings and the installation of high-speed escalators. This would certainly attract customers.

HENRY A. BARNES, director of traffic
Department of Traffic Engineering
Baltimore, Md.

A new kind of taxation

As long as the rate of downtown property values continues to appreciate greater than the loss of revenue from the majority of businesses, no cooperative action will be taken. Ideally speaking, it would be desirable to revise our taxing system to permit the building structure to be taxed in a modified form, inversely proportional to the improved property's economic and aesthetic contribution to the community.

This would tend to decelerate the property values and provide a more spontaneous response from property owners to cooperate for immediate private and public improvements.

W. R. DOLPHIN
General engineers and designers
Chicago, Ill.

The need for reversability

Any program with respect to the development of city hearts predicated on flights to the suburbs must have some degree of flexibility and facility for the reversal. This recent centrifugal flight has been made possible by the high degree of individual mobility permitted by wide-scale ownership and use of automobiles. A reduction in the amount of motor fuel or substantial increase in its cost would have a very sharp effect in helping again to re-concentrate populations. This is a possibility that is almost likelihood within ten years or so.

JEFFING S. SMITH, executive vice president
Continental, Inc.
South, Wash.

Since the subject is of major importance and affects everyone of us, it is going to require a coordinator or possibly a national organization with counselors and technicians, planning officials and building congresses, etc., to translate ideas into action.

C. M. TOELEGER
Chicago, Ill.

Cut-rate transit rides

Instead of the city subsidizing the transit system, which would be very unpopular, try this: Let each establishment buy tickets (weekly passes), pay full price and let store customers who make a $10 purchase, have them at a 10% reduction.

Also have a nonprofit bus line run to various downtown shopping places and parking lots at a charge of 10¢ with receipt given. Then when a purchase is made—$5 or more—give credit of amount paid (10¢) on sale, upon surrender of receipt.

H. J. SCOTT
Avon Lake, Ohio

The round table article

... Very well done and very interestingly presented.
WALTER HOVING, president
Bonnie Teller
New York, N.Y.

... You have made a real contribution.
W. C. KEISER, vice president
The Fidelity Mutual Life Insurance Co.

... One of the most constructive projects any publication could tackle. I doubt that any of us fully realize what a toughy it is becoming.
CHESTER H. LANG, vice president
General Electric Co.
New York, N.Y.

... I found it interesting and am in general agreement.
RALPH WALKER, architect
Voorhees, Walker, Smith & Smith
New York, N.Y.

... The article was filled with wisdom and constructive objectives and should be distributed to all planning commissioners in the country.
JOHN D. GODDARD
Western Mortgage Loan Corp.
Ogden, Utah

... This is not only an excellent but a very important study.
ROBERT L. SOMMERVILLE, president
Atlanta Transit System, Inc.
Atlanta, Ga.

... Some of the most convincing arguments I have ever read.
JAMES C. HESTAND, general manager
Mineral Wells Chamber of Commerce
Mineral Wells, Tex.

... This superb article can be a magnificent propaganda tool (in the best sense of the word) as was your earlier article on parking and traffic (AF, Feb. '52).
WATTS HILL JR., vice president
Durham Bank & Trust Co.
Durham, N.C.

Conservative and critical

I am somewhat conservative and I hesitate to say that I am stirred by the big, bold concepts and dramatic presentations. These are the terms of bucksters and not of the conservative engineer.

SEYMOUR R. MANY
Allied Maintenance Corp.
New York, N.Y.
### NEW CONSTRUCTION ACTIVITY

#### (millions of dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Estimate</th>
<th>Change</th>
<th>Forecast</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>$37,577</td>
<td>$41,800</td>
<td>11%</td>
<td>$44,100</td>
<td>6%</td>
</tr>
<tr>
<td>1955</td>
<td>$25,768</td>
<td>$29,485</td>
<td>14%</td>
<td>$31,000</td>
<td>5%</td>
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<tr>
<td>1954-55</td>
<td>$63,345</td>
<td>$71,285</td>
<td>13%</td>
<td>$75,100</td>
<td>16%</td>
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<tr>
<td>1956</td>
<td>$29,485</td>
<td>$31,000</td>
<td>5%</td>
<td>$35,900</td>
<td>22%</td>
</tr>
<tr>
<td>1955-56</td>
<td>$55,250</td>
<td>$62,485</td>
<td>13%</td>
<td>$70,900</td>
<td>18%</td>
</tr>
</tbody>
</table>

**TOTAL NEW CONSTRUCTION**

**Private, total**

- Nonresidential building
  - Actual: $6,250
  - Estimate: $7,285
  - Change: 17%
  - Forecast: $8,400
  - Change: 15%
- Industrial
  - Actual: $2,030
  - Estimate: $2,210
  - Change: 8%
  - Forecast: $2,600
  - Change: 18%
- Commercial
  - Actual: $2,212
  - Estimate: $2,875
  - Change: 30%
  - Forecast: $3,300
  - Change: 15%
- Warehouses, office and loft buildings
  - Actual: $958
  - Estimate: $1,075
  - Change: 12%
  - Forecast: $1,150
  - Change: 7%
- Stores, restaurants and garages
  - Actual: $1,254
  - Estimate: $1,840
  - Change: 44%
  - Forecast: $2,150
  - Change: 19%
- Other nonresidential building
  - Actual: $2,008
  - Estimate: $2,210
  - Change: 10%
  - Forecast: $2,500
  - Change: 13%
- Religious
  - Actual: $593
  - Estimate: $750
  - Change: 26%
  - Forecast: $900
  - Change: 20%
- Educational
  - Actual: $529
  - Estimate: $500
  - Change: —5%
  - Forecast: $550
  - Change: 10%
- Hospital and institutional
  - Actual: $337
  - Estimate: $370
  - Change: 10%
  - Forecast: $400
  - Change: 8%
- Social and recreational
  - Actual: $228
  - Estimate: $265
  - Change: 16%
  - Forecast: $300
  - Change: 13%
- Miscellaneous
  - Actual: $321
  - Estimate: $325
  - Change: 1%
  - Forecast: $350
  - Change: 8%
- Residential (nonfarm)
  - Actual: $13,496
  - Estimate: $16,125
  - Change: 19%
  - Forecast: $16,400
  - Change: 2%
- New dwelling units
  - Actual: $12,070
  - Estimate: $14,600
  - Change: 21%
  - Forecast: $14,700
  - Change: 1%
- Additions and alterations
  - Actual: $1,130
  - Estimate: $1,200
  - Change: 6%
  - Forecast: $1,300
  - Change: 8%
- Nonhousekeeping
  - Actual: $296
  - Estimate: $325
  - Change: 10%
  - Forecast: $400
  - Change: 23%
- Farm construction
  - Actual: $1,560
  - Estimate: $1,400
  - Change: —10%
  - Forecast: $1,300
  - Change: —7%
- Public utility
  - Actual: $4,341
  - Estimate: $4,500
  - Change: 4%
  - Forecast: $4,700
  - Change: 4%
- All other private
  - Actual: $121
  - Estimate: $175
  - Change: 45%
  - Forecast: $200
  - Change: 14%

**Public, total**

- Nonresidential building
  - Actual: $4,641
  - Estimate: $4,490
  - Change: —3%
  - Forecast: $4,500
  - Change: 0%
- Industrial
  - Actual: $1,506
  - Estimate: $870
  - Change: —42%
  - Forecast: $600
  - Change: —31%
- Educational
  - Actual: $2,134
  - Estimate: $2,550
  - Change: 19%
  - Forecast: $2,800
  - Change: 10%
- Hospital and institutional
  - Actual: $365
  - Estimate: $310
  - Change: —15%
  - Forecast: $300
  - Change: —3%
- Other nonresidential
  - Actual: $636
  - Estimate: $760
  - Change: 19%
  - Forecast: $800
  - Change: 5%
- Residential
  - Actual: $336
  - Estimate: $250
  - Change: —26%
  - Forecast: $300
  - Change: 20%
- Military facilities
  - Actual: $1,080
  - Estimate: $1,150
  - Change: 12%
  - Forecast: $1,000
  - Change: —13%
- Highway
  - Actual: $3,750
  - Estimate: $4,200
  - Change: 12%
  - Forecast: $4,800
  - Change: 14%
- Sewer and water
  - Actual: $982
  - Estimate: $1,100
  - Change: 12%
  - Forecast: $1,300
  - Change: 18%
- Miscellaneous public service enterprises
  - Actual: $218
  - Estimate: $300
  - Change: 38%
  - Forecast: $350
  - Change: 17%
- Conservation and development
  - Actual: $704
  - Estimate: $650
  - Change: —8%
  - Forecast: $650
  - Change: 0%
- All other public
  - Actual: $148
  - Estimate: $175
  - Change: 18%
  - Forecast: $200
  - Change: 14%

**Sources:** 1951 and 1955, US Department of Commerce and Labor; 1956 estimated by Architectural Forum

* Also includes major alterations and additions.
* Includes hotels, motels and dormitories.
* Includes buildings of various types (power plants, telephone exchanges, stations, maintenance shops, warehouses, etc.) as well as power, telephone and telegraph lines and other nonbuilding construction.
* Includes mainly buildings of various types (warehouses, barracks, theaters, hangars, schools, etc.) as well as airport and other nonbuilding constructions.
* Includes buildings of various types (sewage plants, pump stations, etc.) as well as nonbuilding construction.
1956 will set another new record in building activity—$44 billion

Private nonresidential construction will pace the field with a 15% increase

Building next year will continue its upward surge, surpassing even this year's unexpectedly large volume, to make the tenth successive record-breaking year in dollar volume and the seventh in physical volume of work put in place.

Although the rate of growth in 1956 may be somewhat less than it has been this year, it will still be sufficient to boost the total over $2 billion to around $44.1 billion.

In 1956 the main advance will come from private business building, private industrial building and public works—mainly highways, schools and water and sewer facilities. Private residential building, though not quite so spectacular a feature as it has been in most previous postwar years, may still be slightly above 1955 in dollar volume, and will continue to make up well over one third of total construction.

The year 1956 probably inaugurates a trend that will be with us until we are into the sixties—a rather stable volume of housing, a gradual easing of commercial building, a mounting volume of industrial building and an expanding activity in the types of government construction that most directly serve the expansion of the private economy. These gains should more than offset any sag in residential building that may later develop before the renewed uptrend in family formation that will surely be underway within the next six or seven years.

PRIVATE CONSTRUCTION as a whole will be fairly steady in 1956, with a small—around 5%—push upward.

Industrial building's husky resurgence, after a two-year slide, was the big news in 1955. In 1956, plant expansion will continue the new uptrend at a quickened rate, as industry faces up to the capital requirements of an increasing population, an increasing standard of living, and the need to offset increasing labor costs with more efficient productive processes. Industrial building will amount to $2,600 million next year: and over the next ten years, it should steadily advance to a level about 50% higher than the 1955 estimate. Because of the constant search for new products, improvements in and new uses for old products, research facilities will figure prominently as an integral part of plant expansion.

Commercial building will have another flush year ($3,300 million), though the advance will not be so strong as during 1955. Office buildings will make up better than 90% of the category of warehouses, office and loft buildings. Rising vacancies in loft buildings in New York City, the main center of this activity, foreshadows a decline in the building of these structures. The shopping center boom will still be on, perhaps in milder form than in 1955 but still of sizable proportions. Here the prospective highway program, with its creation of new strategic points of traffic confluence, will be influential—as it also will be in the stimulation of new restaurants and service facilities. Parking garages should also get a good play.

Residential building will be close to this year's dollar volume despite somewhat fewer dwelling units—say around 1,250,000. Dollar volume will hold up because of more large units and slightly higher costs. (This estimate takes into account the tougher mortgage terms for FHA and VA loans instituted on July 30.) About 90% of the units will be in single-family houses. Private multifamily construction (five units or more) probably will account for no more than 5% of the total, or about 60,000 family units in all. Of this, perhaps half will be in elevator buildings. Apartment building, for reasons pointed out by FORUM (April, May, June '55), has little investment appeal; and there is nothing in prospect in indicate an improvement. Rental residential building therefore will be only an incidental feature of next year's building and will be concentrated in a few centers like New York, Chicago and Washington. Nonhousekeeping residential building, which includes hotels, motels and dormitories, is expected to show some increase. This is particularly true in motel building, which will continue to prosper along with the advancing highway program. Wherever a new toll road or freeway is projected, motels will not be far behind.

Religious and institutional building will be buoyant. We are in the midst of the greatest church building boom (including Sunday schools, parish houses and the like) of all time and there is no sign of abatement. About a fifth of this expenditure will be for other than churches proper. Probably a fourth to a third of the private educational building will be in the college and university category, where capacity will have to be enlarged around 30% within the next five years if we are to accommodate the demand for private higher education. Attitudes toward racial integration are likely to give a special boost to private primary and secondary schools, particularly in the South. Private hospital building will move steadily ahead (see below).

Utility construction will move along, largely under the impetus of expanding electric light and power activity. Most of this, of course, will be in the nonbuilding category. For example, probably no more than 12% of railway construction will be in terminal facilities, shops, etc., and about 5% of the expenditure for telephone, telegraph, electric and gas facilities will be for buildings.
PUBLIC CONSTRUCTION will move ahead more vigorously (up 6%) in 1956 than in 1955, under the pressure of the population increase and the demands of the private economy for supporting facilities. The shift in emphasis from federal to state and local expenditure will continue. Of the total public outlay, about 70% will come from state and local governments, with emphasis on educational, hospital, highway, and sewer and water facilities.

Public housing will get a modest boost to $300 million, reversing the downward trend of the past several years.

Industrial building at $600 million (much of it for atomic energy) will again be downward.

School building will continue to move up—to $2,800 million. However, despite the high pressure of current and future demand, the rate of increase will probably be slower than between 1954 and 1955, due to the problems created by the integration issue, mainly in southern states. It will probably be at least a year before adjustments in attitudes and financing programs can be made in sufficient degree to permit school building to advance in line with needs. About 85% of next year’s public educational building will be for primary and secondary schools, the remainder for colleges and universities. During the next several years, the proportion representing higher education may be expected to increase. Public school construction will account for about 60,000 elementary and secondary classrooms in 1955; the number will go to at least 65,000 in 1956.

Hospital and institutional building, at $300 million, should just about hold its own. Combined, private and public hospital construction will produce space for about 45,000 beds in 1955; next year the combined total should be about the same.

Military construction, despite a substantially increased housing component, will decline as a whole.

Highway building may advance to 15% above the 1955 level despite the refusal of Congress to up the amount of federal aid.

Sewer and water facilities will be a big business ($1,300 million)—even bigger than in 1955 due to an increasing emphasis on treatment and pumping facilities.

Other public construction: conservation work, mainly in connection with water supply projects, will halt a five-year downtrend. Public administrative building (referred to as “other nonresidential” in the table) will do better next year than this on both federal and other fronts.

WHY THE BUILDING BOOM CONTINUES

All the forces that have sustained building during 1955 will be present in 1956 and some of them will be present with greater vigor. For example:

International tension has lessened and the more peaceful scene will give greater confidence to private business. Despite some prospective cuts in defense expenditures if all goes well (and it is not likely to go so well as to permit drastic cuts), total expenditures of government—federal, state and local combined—mainly because of stepped-up public construction, will be greater than during 1955. Moreover, a decline in the federal portion of total government expenditures is likely to be offset by tax reductions.

Business generally will be good with the gross national product hitting around $390 billion. Employment will reach a new peak. Unemployment should again fall close to merely frictional proportions.

Taxes will be reduced again. Added to another round of wage increases, this will give a strong boost to the upgrading of income to which FORUM has called repeated attention during the past several years. The result will be both increased savings and sustained spending, both of which directly and indirectly stimulate the demand for construction.

Investment funds are growing. The volume of funds available for capital investment in both equities and mortgages will be substantially greater as a result of larger institutionalized savings (including investment trust and pension
Population of US has increased in almost straight line since 1946. For 1956 a 2.8 million increase is forecast—and a total of 168,070,000. Steady rate of increase presages continued demand for all facilities, including buildings.

Building material prices, which have changed only slightly since 1950, are likely to rise somewhat more rapidly during the rest of 1955 and in the early part of 1956. Index is expected to inch up to 127% of 1947-49 level in 1956.

Wage rates for building trades have mounted steadily since 1946, are expected to continue their rate of increase into 1956. Next year's figure should be close to 145% of 1947-49 average. (1946-54 figures from Commerce and Labor Deps.).

funds) and depreciation accruals. In addition, by the beginning of the year the effects of a more relaxed monetary policy are likely to begin to appear in the mortgage market. Money should become more readily obtainable as the year advances.

Population growth will continue at about the same rate as this year—about 2.8 million. This is larger than the population of the Boston metropolitan area—a comparison which helps measure the ultimate demands for all kinds of facilities implied in the nation's population growth.

Household formation will increase probably at a higher rate than the available statistics indicate—a figure of around 850,000 additional nonfarm households is probably a safe estimate of the actual situation.*

Prices are not out of line. While on the uptrend, prices probably will lag sufficiently behind income so as not to produce a strong deterrent to decisions to build. A leveling of prices toward midyear is a possibility after new manufacturing capacity comes into operation.

Obsolescence is being accelerated. Existing structures of all types are growing old faster than ever before due to the desire of tenants to increase their comfort and convenience and the desire of owners to reduce maintenance and operating costs, and due to the building industry's response to these desires with new and better products and methods and greater emphasis on design and styling.

Capital plant deficiencies are enormous. On the private side, we are far short of the manufacturing, transportation and distributing facilities that we shall need to provide the jobs and meet the demands for goods that will be required by the present growth of population and the future increase in households. On the public side, we have not yet met back demands for schools, roads, water, sewer and all the other facilities needed to support an urbanized economy, while we are almost wholly unprepared to accommodate the demands of the next decade. Consequently there are years of work ahead on these fronts.

On the negative side there are: a continued slow decline in federal government outlays as a whole, a stable or slightly declining situation in household formation, some possible problem in digesting the present high level of debt, and a tightness of credit during the fall and winter months of 1955 and early 1956. Difficulties may be encountered if prices rise more than is anticipated, or if severe shortages of key materials such as cement should develop, or if central banking policy too long prolongs the administering of what is currently considered to be a necessary economic sedative. Failure of public construction, like sewer and water and street extensions, to be synchronized with private demand could put a brake on residential and business building.

At worst, however, these are likely to be restraining rather than restrictive forces. They may temper the advance but they can hardly stop it, in face of an overwhelming weight on the positive side.

At this point the FORUM Forecast looks safely conservative. Construction is bound to win again in 1956.

* No statistics have been more misused than those on household formation compiled by the Bureau of Census. The Census undertakes, on a sample basis, to measure the total number of nonfarm households each year, which it can do with a tolerable margin of error, but it cautions against the use of the figures to measure net growth from year to year because of the magnification of the error when applied to the year-to-year difference. Moreover, the estimates most frequently quoted refer to total households, whereas the housing market is concerned with nonfarm households, which have a much larger annual increment than the total.
The health facility that helped patients by giving more convenience to the staff ... the structural clear span that cost a lot but saved still more and why ... the spacious clinic on a narrow lot ... 

SEVEN HEALTH BUILDINGS

Every architect has met clients whose declared purposes are wonderful but whose specific demands, point by point, will carry them off in a totally different direction.

And of all clients who exhibit this maddening discrepancy, medical men are the most maddening. They are used to having "laymen" (and to them the architect is a "layman") follow their orders faithfully and even worshipfully, without arguing. They have a wonderful fund of intimidating jargon and special knowledge. In short, they are experts not only in their professional field, but in the art of being one up on the other fellow.

Not surprisingly, the medical client often fails to get the best out of his architect or the best out of his building. A review of a great many current hospitals and medical buildings amounts to a disillusioning course in the timid, the humdrum, the inconsistent and the thoughtless. Very sad, since these qualities do not characterize the practice of medicine itself.

But every so often a medical building turns up that measures up to the thinking in the profession that will use it. Lately, special medical buildings provide more of these happy surprises than do hospitals. Behind these good buildings is always a medical or administrative client who was willing to listen to, and respect, his architect—and an architect who knows what it means to dig in and research what his client is talking about, as well as what has been done.

The seven medical buildings presented here are the results of this kind of collaboration. Perhaps the outstanding one (Chestnut Lodge center by Architects Keyes, Smith, Satterlee & Lethbridge, opp.) happens to be a mental hospital facility. This is the medical environment most difficult of all for the architectural "layman" to analyze and recreate. But it was done here, and this job should have great influence both as a specific facility and as an example of what architecture, given the chance, can do for medicine.
"When we first discussed this building, we had quite different ideas," says Dr. Dexter M. Bullard, medical director of this private mental hospital, most of whose patients are schizophrenic. "But the architects persisted in questioning what we wanted, what use would be made of the building, to the degree that finally their conception of its style and function seemed to be as valid for this kind of a building that we readily acceded to their plans."

This is the first wing of a recreational, social and occupational-therapy building group, and what the client originally had in mind was the usual therapy building, a decidedly clinical institution. Instead the wing turned out to be a community center that would not be out of place on a campus or in a fortunate town, although unobtrusively it is most carefully designed for its special function and future expansion.

The architects' unusual conception of a community center did not arise from refusal to heed the client's wishes. Quite the contrary. They heeded him in his own field. They studied his aims and methods of treatment, they zealously researched the pertinent psychiatric writings, and they concluded that their client's thinking was utterly at variance with the architectural solutions he was taking for granted.

The client wanted patients to be drawn to the building, rather than urged or invited, and not to fear it or feel trapped once they were inside. He wanted them to "choose freely" from a range of activities. He wanted it to help put them in touch again with other persons and with normal life.

To the architects this meant, foremost, a "normal" seeming building, and an inviting one. It meant obvious and easy exits, emphasized by terraces. It meant retreats and transition spaces, where patients not yet ready for activity could watch others; a refreshment counter to stimulate the highly social act of sharing food; openness to adjoining lawns and sports to lure the patient into games; a well-defined module for a reassuring sense of order.

The architects also questioned major emphasis on a gymnasium, which has been postponed to a later stage of building; they suggested that the mild Maryland
climate invited normal outdoor community sports. They made the deduction, which the client accepted, that if patients were to "choose freely" they had better be provided with choices not necessarily the same as those they would pick in normal life, but from a range that does reflect their normal culture. The patients here include a high proportion of professional and executive people, but for patients from other strata of life the same reasoning would presumably apply.

The architects also applied common sense to the confused subject of institutional vs. "homelike" architecture: "No large group facility can ever recreate the small-group scale of the family. No hospital can be a 'home.' What it can be is a community. It seems 'normal' that workshops, libraries, gymnasiums, etc. look like good community schools or centers rather than like houses . . . . The 'normal' standards must come from the normal community, not from the hospital."

The client reports the building does draw patients and has become a center to a greater degree even than anticipated. "It has also become a center of activity for out-patients, who formerly were much of the time at loose ends . . . . The patients' interests have developed to such a degree that they now manage the activities budget which they prepare and present to the budget committee of the hospital for approval. The patients' planning committee fully controls these funds."

Structure is steel columns with open-web steel joists. (Inexpensive, these do tend to complicate the overhead view.) Columns are spaced to take stock 8' exterior wall panels and stock sash, for easy changes in future. "Glazing" near the floor is translucent, colored, unbreakable plastic. Top sash is removable, leaving a screened ventilation band for summer. Construction cost, not including fees, was $32,000; $11 per sq. ft.
Exterior wall panels are removable for future changes. View above is north wall. Stone wall in foreground is patients' project. View at right from lounge looks into lobby and multipurpose room beyond.

Long-range plan includes workshop and transitional lounge link for second stage of construction, lockers and connecting corridor for third stage, gym for fourth and pool for fifth stages. Present building can be easily converted to cinema if desired. Future "transition" area is designed to give patients not venturing far from main entrance maximum view of activities.
VILLAGE FOR OLD PEOPLE

Strictly speaking, this is not a medical facility. It is primarily special housing which includes a future infirmary and nursing unit.

But the planning here does have great bearing on policy, programming and planning of hospitals for the chronically ill and on geriatrics institutions. Any one concerned with hospitals should be aware of this pace-setting, church-sponsored facility for aged of the Detroit area. Wherever its progressive program is adopted, part of the normal chronic and geriatrics load will be absorbed, to the benefit of both patients and hospitals.

The big point about this village is that it is not designed simply for the infirm, chronically ill or indigent; nor is it designed simply for the physically able or financially independent. It is for all of these. When a resident changes from one category to another, the village accommodates the change.

The village has four types of units: 1) individual homes for those able to afford and maintain them; 2) one- and two-bedroom row apartments for couples capable of independence; 3) a community residence for physically able single persons who like community living, for infirm single persons who need some daily assistance, and for couples of whom one is infirm and the other unable to assume the whole housekeeping; 4) nursing units for the chronically ill, the badly infirm and the occasionally ill.

Architects Smith, Hinchman & Grylls were in a sense their own clients on this job because Robert F. Hastings, vice president of the firm, is a director of the village and served on the original planning committee. But the photographs clearly show who the architects thought of as their clients: the residents.

Structure is brick veneer on wood frame. Safety features include grab bars, corridor handrails and cork flooring. In the community residence, half the bathrooms have tubs, half showers, to determine preferences for future planning. Construction has cost, thus far, $296,819; $17.60 per sq. ft. excluding fees.

PRESBYTERIAN VILLAGE
LOCATION: Redford Township, Mich.
ARCHITECTS AND ENGINEERS: Smith, Hinchman & Grylls, Inc.
LANDSCAPE ARCHITECT: Hrand Hampikian
GENERAL CONTRACTOR: Walter L. Couse & Co.
Row houses, indented with sun terraces, contain one- and two-bedroom units. Village was purposely sited within surrounding normal community, close to commercial district and school.

Community building has hotel-like accommodations in low one-story wings. Dining, kitchen and lounge are in wing, already completed, shown at right of rendering. These units are for residents who do not want to keep house or are unable to.
Dormitory units are four T's, each with four 12-bed sleeping rooms looking into fence-screened lawn, day room open to view, related facilities in corridor wing. Each unit has own supply dock.

Most mental hospital design founders on a paradox:
The simpler the attendants' procedures can be made, the better for the patients because the attendants will then have maximum time to devote to the patients. Yet designs in which the convenience of the staff is the guiding principle yield buildings so grim, so tightened up, so regimented, that they are bad for patients (and probably for the staff too).

In this building for 200 elderly women mental patients, the architects outmaneuvered that standard dilemma. They concentrated first and basically on what would be comfortable, pleasant and convenient for the patients. Then they refined this scheme from the viewpoint of staff convenience. It comes off well in both departments, and is notable not only as a good facility of its kind but also as a rare example of the patient-first approach.

This is what the scheme provides:
For the patients, dispersal into four dormitory and dayroom groups for 50 patients each, instead of consolidated facilities for the whole mass; single-story plan so all patients can get outside easily and often; careful organization of the surrounding outdoors; orientation to the best views; two dining rooms; one for each pair of dormitories; unobtrusive railings for circulation control instead of walls; orderly, uncon-
Central unit is built around planted patio; view at right is from visiting lounge. Corridor from serving area runs to central kitchen in existing building. Outdoor space between dormitories and central unit will have garden strips for patients (not indicated on bird's-eye rendering). Sun terraces include circular summer houses. To reinforce the group's intimate scale, off-white brick will probably be used on the central unit and the long walls of the dormitories, red brick on connecting wings and the end walls of the dormitories.

WITH A CHEERFUL AIR

fusing structure and plan; variety of view (i.e., courtyard view on the way to the dining room, the big outdoors from the dining room); plenty of sunshaded light; through ventilation.

For the staff, almost no corridor traffic of supplies; service rooms close to the areas they service; easy visibility from supervision points; strategically placed rest rooms for patients (of more moment to the staff than to the patients).

The general air of cheerfulness is noteworthy because the architects were up against reality. This type of institution is custodial in character and denies the inmates even a small corner for their personal possessions. In most cases, the patients are not susceptible to treatment and are far from visiting families and friends. Against this, new mental and physical interests are provided—indoor occupational therapy, outdoor hobbies such as gardening—and progressive methods of treatment unobtainable at home. Future developments may bring an even brighter outlook. But as long as that is the way we do things, this is a model building group for the poor old ladies and their attendants.

Structure is reinforced concrete for crawl spaces, mechanical rooms and passages below the first floor, light steel above. Roof is precast gypsum plank. Walls are colored brick with aluminum fascia and enameled steel sunshades. Estimated construction cost, including group 1 and 2 equipment, $1,170,000; $23 per sq. ft. Construction is scheduled for 1956.
AN OBSTETRICIAN'S OFFICE
WITH THE EXAMINING
SUITE RETHought

Here is a very good thing in a very small package.

For a 25'-wide urban problem lot, the architect devised an obstetrician and gynecologist's office with excellent circulation and controls, an air of spaciousness, and a most ingenious examining room-dressing room-nurse's station suite. What would normally be corridor space is put to work.

The nurse, with headquarters in the circulation atrium of this suite, is in full control of all examination traffic, and also of the patients' small children who sit on little chairs in the atrium, a much more realistic arrangement than attempting to hold them in the waiting room when their mother disappears. The nurse also has the laboratory, with its pass-through from the adjoining lavatory, almost at her elbow. The doctor reports that the suite enables him to carry out examinations more easily and rapidly than he ever thought possible.

According to the architect, "One reason we did a good job is that we did not have a whole bunch of canned ideas. The essential element in a small medical building of this kind is that it be a personal thing, designed for the doctor himself. We not only worked our way through specific physical requirements, but we also studied emotional and psychological problems and tried to get forms that would not only be reassuring, but also invigorating without seeming neurotic. Any forms that appeared to engender even the slightest sense of claustrophobia were avoided like poison."

A second floor for another physician can be added, with stairs in the entrance court. The second-floor waiting room would extend across the entire front, and the lightwell outside the principal consultation room would be retained. The present roof is drained to the interior, and the only alteration to existing construction would be removal of the parapet cap. New joists would be placed atop the level plates, making the second floor entirely free of the existing ceiling and thus simplifying soundproofing. Utilities are sized for the addition. Framing is conventional 2' x 4' studs with fir rafters. The owner will not release figures, but the architect vouches that the square-foot cost "was below the average locally for this building type."
OFFICE FOR DR. KURT WARREN NEWGARD
LOCATION: San Francisco
ARCHITECT: Joseph Esherick
INTERIOR DESIGNER: Robert K. McNie
GENERAL CONTRACTOR: Arthur W. Baum

Nurse's atrium replaces examining suite corridor, controls dressing-examining-laboratory traffic. (Doors slide.) Where sound-insulating partitions were needed, 2" x 3" studs were staggered and completely wrapped with glass-fiber insulation, eliminating direct contact of one wall surface with another.

Office for secretary is immediately opposite entrance, serves as information and checking-in point and as appointment desk for patients on their way out.

Consulting room adjoins roofless, plant-screened portion of court. Interior wall finish is plywood.
TANNER DENTAL BUILDING
LOCATION: San Anselmo, Calif.
ARCHITECT: Henry Hill;
    John W. Kruse, associate
MECHANICAL ENGINEER: H. Gilman Smith
GENERAL CONTRACTOR: B. J. Teigland
Dental waiting rooms are notorious places for brooding. In this office, designed for a doctor and his four assistants, the patient is at least diverted by the doings at the control desk, the view across the bandana-sized interior patio, and the corridor traffic. Doctor and architect were agreed that the usual closed reception room, with the patient fearing or hoping he has been forgotten, and nurses unsure exactly who is waiting at any given moment, is uncomfortable for all concerned.

For operating-room working space, Architect Henry Hill selected the circle as the ideal shape, then modified this to a more economical and practical hexagon. The angled windows give the patient a choice of two views. The best views happen to lie westward; exterior redwood blinds hung on chains down to standing eye level cut out both the setting sun and sky glare, also conceal the patient from passers-by on the main street beyond the creek.

Incidentally, most of the loan agencies consulted were opposed to the site use, assuming that the only sensible procedure was to fill in the creek and build on the main street frontage. By not doing the obvious, the client was saved considerable sitework expense and he also has easily the most interesting and eye-catching establishment in the business section of town. The site contained seven splendid oak trees, all of which were kept. One determined the interior court; another slants surreally through the staff terrace wall.

Structure is rose-colored concrete block and wood mullion framing, with panels of glass and insulated asbestos cement. Cost was $20 per sq. ft.

Entrance wall is rose-colored concrete block. Landscaping by owner uses huge oak in interior patio.

Control desk is in open area helping patients get quick orientation. Simple hinged screens behind receptionist give privacy to consulting room but allow oral communication. Control area, like operating rooms, has acoustic ceiling.

Passages are divided by prowlike angle of interior patio (might it not better have been blunted?) Framing is wood; ceilings are resawn fir stained gray-gold.
Tiny patio surrounding big oak separates operating suite from other facilities. This view is from control desk.

Operating rooms are open to corridor, but are open to view only from staff end of building. Door in background, one of few in building, is to consulting room.

Hexagonal operating rooms have birch casework, designed by architect, along two sides. Note exterior redwood blinds for sun, glare and privacy screening.
This school for a thousand students is full of things like escalators, movable metal partitions and huge clear-span work space, seldom or never seen in schools. The innovations, drawn from other building types, make good sense in their new context.

The school also illustrates the rare kind of economy that comes not from cheeseparing but from solutions that save still more than their extra cost. At first glance, the school’s quality and conveniences appear extravagant. But every one of these features was proved out in dollars and cents, to a skeptical building committee, as a money saver compared with the orthodox “economical” way of handling the same problem.

For instance, the laboratories are housed in column-free space, like modern factories, but unlike factories they are piled one atop another, necessitating the enormous clear-span girders shown in the construction photograph on p. 146. Why not use “thrifter” framing with columns?

To get the laboratory equipment into column-interrupted rooms, and allow space
Spandrel trusses eliminate beams, shelf angles and concrete forming; they are located at center of 13" thick exterior brick wall. The brickwork (English bond), is built through openings of the trusses, eliminating the problem of ice formation behind brick veneer. Attic story is inside Vierendeel trusses; the bottom cord carries attic (sixth) floor; top cord carries roof slab. Lack of diagonal truss members permits clear floor space.

The architects' analysis of vertical travel costs should be of interest to all who have the problem of tall school buildings. The ten escalator units cost approximately $250,000, the same as six 30-passenger, attendant-operated elevators; they are expected to save $25,000 in annual operation and maintenance over six elevators. And the elevators would move less than a fifth as many passengers in the few minutes allowed for class-change time. The ten escalators can move the entire student body in less than four minutes (necessary because many have to come from, or get to, other buildings within ten minutes' class change). It would take 45 22-passenger cars to do the equivalent job!

Well, why not the still greater economy of a lower walkup school, the building committee wanted to know. The excess basement and attic space for a building with the mechanical equipment of this one (mechanical costs ran 42% of total) would more than pay for the escalators, to say nothing of added land cost for doubling an urban site. This question stimulated the architects to figure how many stories an escalator-serviced school building could feasibly go; they conclude eight, surely, and in specific cases as much as twelve.

The design of the first floor auditorium was another case of apparent extravagance, with its two huge trusses, 100' long and 14' tall, to support four floors above (one floor goes within the truss). The alternative, a one-story structure carrying only a roof on lightweight trusses, would have meant duplication of foyer and some secondary space (an extra 2,500 to 3,000 sq. ft. of construction), more than canceling out the money saved on steel. The auditorium will be much used by Chicago medical groups after school hours.

One of the most ingenious features is double-service air cooling. The five large
Escalators solve problem of moving building's big student population in class-change surges, take less room than six elevators, do job of forty-five. Ceilings are metal pan.

Lobby doubles as auditorium foyer. Door frames are stainless steel, locally made to architects' design. Fixed aluminum sash (below) was designed by architects.

Lecture halls, one to a floor, have no exterior walls losing heat to outdoor air, thus require no heating of their own. (Heat the periphery and you heat all.) When occupied, no matter what time of year, the lecture halls will need cooling to carry off excess body heat generated by occupants. During summer months, when students are away, the lecture room cooling equipment will feed into an alternate set of ducts to cool staff offices. The entire building is mechanically ventilated from under-window heating units; complete cooling can be added in future.

About four fifths of students will be from the university's college of pharmacy, now jammed into the medicine-dentistry building across the street. Medical and dental colleges will share some space in this new building. Only the crosspiece of the building's T is now built. The rear wing and rear portions of the first floor, including auditorium, will come later.

Construction cost for the portion completed was $4,675,000; $26.56 per sq. ft., not including $505,000 for laboratory furniture but including fees.
THE MAYO CLINIC COMPLETED:

WITH ART AND GARDENS FOR THE WAITING PATIENT

Here the physicians have put into visible practice the medical doctrine that the whole man must be taken into account. The diagnostic center for the Mayo Clinic says in visual terms: "In this place is concern for the spirit as well as the body."

The remarkable functional workings of this center are devised to bring together physician, patient and pertinent data with the least time spent in idle or harrowing waiting (AF, Feb. '54). But forethought has gone further, to lightening the waits that remain. Each medical floor and the first floor lobby have been given a tremendous mural that dominates waiting space and is calculatedly filled with a vast amount of recognizable subject matter. The most successful murals among patients are those in which this "literary" quality of the work is combined with a strong abstract pattern. Two very diverse examples are shown on these pages.

The lobby floor, where patients wait during admission and initial appointment making, has a unique extra focal point. A 7' x 11' glass screen displays a projected national weather map in color, made up daily or oftener if necessary. Why a weather map, of all things? Patients come from far and wide, and sitting there in Minnesota they are fascinated to know that it is snowing back home in Wyoming or is cool and foggy in Jersey. Same sort of appeal as seeing the home town paper. And because many of them drive, the weather affects their practical plans. There was a more sensitive reason for the map too: Maybe people within an air-conditioned building, going from one rendezvous to another, need a reminder of the elements.
Mural beside waiting space on X-ray (third) floor has appropriate theme of “Man and the Energies” and appropriately hot, brilliant colors; artist, William Saltzman. Murals were planned for enjoyment on several levels; patients who so choose may entertain themselves with subject matter of great wealth, ranging here from steel making and locomotion to photosynthesis and experimental lightning.

Lobby, looking east down main concourse from admissions desk. Concourse lounges near main entrances look out on gardens (see plan); so do waiting areas for registration and payment.

Waiting area on each of seven consulting and examining floors has mural against elevator-bank wall. Above is one of the most popular, “Man’s Desire for Companionship,” by Franklin Boggs. At first sight, work has effect of patterned tapestry intersected by strongly incised, curving gilt lines. Closer look shows each flat segment depicts a scene, such as picnic, baby-tending, games.

Exterior combines marble end walls and crisp-lined extruded aluminum spandrels. Although building mass is enormous, effect is light and inviting. View here is toward court, showing sunshaded south wall.
Court with circular grass plot at northeast corner is shown from adjoining concourse lounge. Court pavements are Italian travertine, similar to that used in lobby interior.

Corner view (opposite) shows most formal of three gardens. Sculpture against marble north wall is 28'-high figure by Ivan Mestrovich. East face has sculpture group by William Zorach (AF, Feb. '54).

Waiting area in admissions section of lobby overlooks northwest court, featuring pool. Outsize custom brick in low garden walls has incised patterns for shadow-line texture. Lobby mural (right), by John Piper, is reflected in garden pool at night. Painting, on theme of man and nature, is 15' x 41', serves as focal point of block-long lobby.
Half a building

Excerpts from an address by Architect Victor Gruen before the Kansas City AIA chapter

Even when we have built a livable house, we have built only a half a house if the inhabitants are plagued by ugly vistas and smog. Even if we have built an outstanding office building, we have built only a half an office building if the employees suffer under the noise created by traffic outside their windows. Even if we have built a child-loving school, we have built only a half a school if the children, when entering or leaving, are endangered by speeding automobiles. Even if we have built a smoothly functioning hospital, we have built only half a hospital if the patients can't sleep because of the racket created by a nearby factory. Even if we have built a functional factory, we have built only half a factory if the workers coming and leaving are stalled for hours in traffic.

The complexity of our civilization, our technical progress, the mechanization of our life, the millions of automobiles, the smog, fumes and noise have moved in on us, stealing the fruit of half of our efforts, making our buildings half-buildings—our work half-architecture.

We may lose that half too if we don't turn around and fight back.

The time is ripe for integrated planning. Our cities are disintegrating in the middle and stretching out in all directions on the periphery. In doing so they destroy the countryside and create suburban cultural deserts. The time which we are saving, thanks to the 40-hour work week in factories, shops and offices, gets consumed in long drives and traffic jams. Places of cultural and educational enrichment become inaccessible. Our ability to communicate and cooperate with others becomes problematic. There is no space for men. There is hardly enough space for cars.

Is there no solution? Shall we—the architects and planners—sit by and watch with frustration while the fruit of our work rots away?

We have to drain that morass. We have to unscramble the melee of flesh and machines, men and automobiles. We must end the encroachment of damaging uses on our living area. We must end the feudal era of building! We must start the age of democratic architecture!

What can we as architects do?

We can lead, coordinate, plan and design as it is our function. We can exercise our influence in every individual project, small or large. We can help to widen the horizons of our clients to see the potential of large-scale and long-range planning. We must insist in every individual project on integration with its surroundings. We must closely cooperate with and influence the members of the building team—owners, builders, contractors, financing institutions, realtors. We must press for comprehensive planning in city or planning commissions, zoning commissions.

Twentieth-century architecture cannot find its fulfillment in a few sleek glass towers peeping out of the smog of the decaying city.

We don't have to cry over the loss of those clients of the past; of the Pharaohs, the kings, or even the late tycoons if we understand that the client of twentieth-century architecture is society as a whole—the people.

Shopping center planning

Excerpts from the conclusions of the Urban Land Institute's new 25-page Technical Bul. No. 24, "Shopping Habits and Travel Patterns"

From 80% to 90% of shopping is done by women. They do most of their downtown shopping around noon and visit suburban centers usually between 5 and 6 P.M. While the amount of time and money spent in a store depends upon the type of merchandise the shopper is seeking, there is a 50-50 chance that the shopper will buy something in every store visited. This tendency is strongly influenced by the fact that about one third of the buying is not planned—it is impulsive. Also, while the majority of shopping trips originate at home, the downtown worker represents an

Opinions expressed in these excerpts are not necessarily those of the Forum's editors.
important "captive market," since up to one third of the shopping in the downtown area is done by persons already there as a result of employment.

Two major factors influencing shopping habits are: wide selection of goods and the convenience of shopping facilities, particularly in point of time. The travel time to a shopping area and the range of selection available there appear to be more decisive factors than parking.

The use of distance as the only criterion for establishing the extent of a trade area is not recommended. The movement of shoppers in an urban area is largely controlled by the competitive relationships of shopping areas, since they follow Reilly's Law of Retail Gravitation. Thus, in analyzing traffic movement in an urban area, it is not enough to evaluate generating characteristics of various types of land use alone but attention must be given to the relationship that exists between the various types of competitive land uses.

There are significant differences in shopping-trip patterns for smaller cities as compared with cities having a population of over 150,000. Shoppers in cities of less than 400,000 population are largely dependent upon downtown for both convenience and shopping goods; shopping trips in the larger urban areas display a more dispersed pattern, with the central business district predominantly a shopping goods center.

The number of shopping trips (auto and transit) generated from any residential area is directly related to automobile ownership. Since transit plays a relatively small role in serving most shopping areas outside the central business district, this relationship explains how two similar shopping centers with trading areas of comparable size can generate different volumes of traffic. It also explains why one of these shopping areas may need only a one-to-one ratio of parking area to floor area, while the other needs three-to-one. This, also, raises serious doubt as to whether zoning regulations related to off-street parking are realistic if the degree of car ownership in the residential areas surrounding such centers is not taken into account.

The frequency of convenience goods trips is much greater than that of shopping goods trips. Therefore, in the planning and development of shopping goods centers, it would be desirable to consider the judicious restriction of convenience goods outlets, in order to relieve such centers of conflicting traffic volumes caused by convenience goods shopping.

Automation for building

Excerpts from an address by Engineer Edward X. Tuttle, vice president of Giffels & Vallat, Inc., L. Rossetti, associated engineers and architects, before the Centennial Symposium of Michigan State College

If better buildings for more people and at less cost are required, and they are, they can only be produced with the increasing aid of machinery. I doubt if anyone but a trailer manufacturer envisions the complete prefabrication of a dwelling, much less a larger building, and the trailer builder's market is so limited that his operations can only be loosely called mass production; not in any sense automation.

Actually, in terms of man-hours of labor, the cost of many building materials has been reduced substantially in recent years, but the added complex requirements have outrun the savings. Windows have been standardized and are factory assembled on a mass production basis as are boilers, heater units, bar joists, metal and concrete decking, cabinets and some wall and partition units to name a few. But, automation in its full sense has been applied to only a very few items, such as glass, plasterboard, linoleum, bricks and roofing.

The number of parts in a building has been steadily increasing for generations. Our reduction in effort expended upon each part has been the result of grouping these parts into units that can be mass produced and more recently of applying mechanical handling methods to their manufacture. It appears to me that the next step in the development of cheaper, better buildings is a further drastic reduction in the number of different prefabricated units required to construct a building.

Though it must necessarily come in stages, I am convinced that we will have, and perhaps even in our time, a building unit to be used for walls and floors and roofs which will contain within itself and its linkage the elements necessary for shelter, transmission of energy, waste and water and which can be erected by men in a manner not unlike that of assembling a child's building blocks.

Even before such development reaches this advanced stage, it is conceivable that units may be devised with an application sufficiently broad to permit their manufacture to pass beyond the mass production stage into that of automation. The tremendous capital investment required for automatic production makes it necessary to have and maintain a market of great size and considerable duration. Changes in design of product or speed of production cannot be made often. (Automation is not easily applicable to the manufacture of women's hats.) This standardization of design is one of the great stumbling blocks in the progress of automation. Several theories have been advanced for assuring a market for the period necessary to amortize the investment. Let me mention a few attempts in this direction.

During the past year as I have made occasional trips to New York, I have witnessed the dismantling of a 15- or 20-story office building on Park Ave. down to its frame and floor slabs, and the entire replacement of its skin and all interior facilities—I doubt if this structure was much over 25 years old. It was considered profitable to replace the old with more efficient facilities.

A not insignificant source of sales for the auto industry is that of the car rental people who furnish fleet owners with many thousands of cars and trucks on annual

continued on p. 176
How do you design a 1,000-seat congress hall that will both accommodate and express freedom of culture and freedom of speech? Architect Hugh Stubbins has given his answer in this winged structure.

The auditorium is to be a conference hall, the gift of one technically advanced country, the US, to another, Germany. It is to stand at the very center of Berlin. An enthusiastic Berlin mayor and council have assigned 11 level acres bounded by the River Spree to the north, the famed Tiergarten Park to the south. The ruined Reichstag building lies to the east directly across a street. This means that the dramatic new saddle roof will be within plain view and easy access from the Soviet sector too. It will serve for international congresses, and will also be a semidetached extension of the forthcoming 1957 Hansaviertel Building Exhibition where Western housing ideals will be shown full-scale.

This pet project of capable Mrs. Alan Dulles was put in charge of the AIA, and it therefore represents directly the architects and the building industry of the US.

The structure is most unusual but can be understood step by step.

Cambridge Architect Hugh Stubbins* took off in his design from the unique roof form of the Raleigh Cattle Judging Pavilion of the late Matthew Novicki (AF, April 1954). But Stubbins arrived both logically and visually at a very different thing. Like Novicki's pavilion this space has a saddle roof bounded by two widely tilted arches joined at their feet. (It's a little as if two people standing toe-to-toe leaned backward, holding each other up with outstretched arms and clasped hands.)

Technically the two arches act together as a "compression ring" because the roof membrane, stretched between them, pulls them tight as a drum pulls against its frame. The structural advantage of this roof is that the steel reinforcing of the roof membrane, being all in tension, is used at its greatest strength, like the cables of a bridge, with consequent economy of material.

But there is still a second trick that helps this structure's quality of soaring outward. Hitherto the few compression-ring roofs in existence have been supported under their outer edges. This one sits on an auditorium wall that is roughly ring-shaped and stands well inside the overhang. This second, inner ring simply pushes up against the tensioned membrane, like a smallish hat stand under a wide-brimmed hat. The sag of the roof, which is owing to its own weight, will therefore be deformed upward a little where this inner ring comes. The arches are 280' long and rise 60'; the roof shelter 22,500 sq. ft.

Architecturally this structure is one of easy lightness, like a wing or a sail; it is a form of endless variation; it allows a sweeping view through, and it seems to rise toward the light, admitting a maximum—all of this spelling freedom.

Planwise the main axis of the building leads from the river toward the park. On the river side a boat landing and a ramp to the upper level admits water travelers. On the opposite side is a pool (see photo of model). The lower level, under the great terrace, will house organizational activities, will include reception and exhibition areas, large and small conference rooms, library and sales space, and utility rooms. The upper-level extension terminates in a café. The building is to cost approximately $3 million.

* Consulting with an AIA committee headed by ex-President Ralph Walker, and including Howard Eichbaum, Moreland G. Smith, John Harbeson, Nathaniel Owings.

Conference hall viewed from west with old Reichstag beyond (drawing above) and from south (model left).
Ramped approach from Spree River puts administrative wing and café partly over water. Floodlighted flags supply needed vertical accent.
Compression ring atop cuplike auditorium supports its hanging roof. Arches keep rest of roof in tension, cup stabilizes structure.

Slanted arches soar to a height of about 64' while the roof membrane reaches only 48' in the center above auditorium. The arches meet at two points a few feet above upper deck and load is transferred to foundation on piers.

Conference hall seen from across Spree river
BUILDING ENGINEERING

UNVENTED CONTINUOUS ROOFS like the 700,000 sq. ft. concrete deck below cause mushrooming heat and smoke to build up to such uncontrollable conflagrations as occurred in 1953 at the 1,500,000 sq. ft. GM transmission plant at Livonia, Mich. (right).

FIRE AND BUILDING DESIGN

Part 1: SINGLE STORY

Heat vents and fire curtains check mushrooming of heat, smoke and explosive gases, keep fires small and manageable.

Last year’s fire losses reached staggering new heights: 12,550 dead and a property loss of $1,099,500,000. There were close to two million outbreaks; 700,000 in buildings. Of these, 313 “large-loss” fires (with losses over $250,000 each) caused almost 20% of the damage, some $202,360,000 and the worst in US history.

The shocking fact about these fires is that we ought to be able to give the occupants and the contents of a building the same protection against fire that we give them against structural failure. All fires start small, but get out of control unbelievably fast. This is mainly because superheated air, smoke and explosive gases become trapped against a roof, build up mushrooming heat and pressure as they are fed from a fire below, and finally explode into flash fires that cause numerous deaths through suffocation and make fire fighting highly difficult if not impossible. This has happened with catastrophic results in all kinds of buildings. Entrapped heat was a major cause of 492 dead at Boston’s Coconut Grove night club fire in 1942, of 120 dead in Atlanta’s Winecoff Hotel blaze in 1946 and of three dead and a $55 million plant loss at General Motor’s Livonia, Mich., conflagration in 1953. Yet the night club and the hotel were of “fireproof” concrete construction, while GM’s huge plant was of “noncombustible” steel framing.

Here, FORUM presents the first of a series of reports on fire and the design of buildings. This report shows what owners, architects and engineers are doing to ensure adequate fire protection for industrial plants and warehouses as a result of the new studies initiated by industrial management after the rash of large-loss industrial fires in 1952 and 1953.

The industrial fire studies gave rise to four important means of controlling the spread of fire:

1. Roof venting. By putting automatic venting hatches into roofs with a draftsman’s pencil instead of waiting for the fireman’s axe.

2. Draft stops. By subdividing extensive production floors into smaller fire areas, using noncombustible fire curtains at ceiling height wherever changing production
PLANTS AND WAREHOUSES

3. Less combustibles. By reducing the fire load of both structure and contents and adding special protection for hazardous fire areas.

4. Fire-fighting equipment. By providing adequate first aid fire-fighting equipment in realistic proportion to the value of the plant and its contents, using sprinklers, standpipes and hoses and portable extinguishing equipment. Plants outside city limits need special care to ensure that local fire-fighting protection is adequate and to provide additional plant fire trucks and water reserves wherever necessary.

The most notable single-story factory blaze is General Motor's Livonia, Mich., fire of Aug. 12, '53. Because of its size this fire has received more study and attention than any industrial blaze in US history.

Direct losses came to an estimated $55 million, but indirect losses, in loss of production, inventories, profits on completed work, relocation, rent of temporary plant accommodation, loss of skilled workers due to plant shutdown, etc., are far more serious. Reports of the National Fire Protection Assn. show that the indirect losses of industrial fires generally amount to five times the direct losses.

GM has a fire safety record considerably better than most other industrial plants. The Livonia building was only four years old, most building code and underwriter requirements had been complied with, and the fire-fighting equipment and employee training were all up-to-date. Actually, however, the Livonia fire could have occurred in any of the scores of similar plants built with continuous unvented roof construction. A rather similar fire did in fact occur in Jan. 1952 in a Ford Co. tank plant, also at Livonia, Mich.

GM's Livonia fire started at 3:50 P.M. by sparks from an oxy-acetylene cutting torch igniting a highly flammable (flash point 97.7°F.) rust-inhibiting liquid in a long drip tray. Although the blaze was immediately attacked with 20-lb. foam extinguishers and 150-lb. chemical extinguishers, by 3:55 P.M. hot gases and thick black smoke from burning oil condensate and oil-soaked floor blocks began banking against the plant's continuous flat metal roof deck. A moment later a main electrical conduit short-circuited, the lights went out, ventilating blowers stopped and dense oil smoke built down from the now unventilated flat roof, driving off the fire fighters. From that moment the fire was out...
of control. Forty-five minutes later the entire 866'-wide, 1,200'-long plant was ablaze, except for a two-story office strip along the front that was protected by a fire wall.

Although both plant and local municipal fire brigades arrived promptly, the absence of fire walls and roof vents in the plant's 34½-acre undivided fire area prevented the localization of heat and smoke and prevented the fighters from getting near the seat of the fire. Three firemen were trapped and died, 15 were injured. Fire Chief Roberts, who saw the fire at 4:05, said: "You gotta get to a fire to put it out. We never even laid a hose on this one." The fire was not extinguished until 14 hours later, when it had virtually burned itself out.

The plant was of typically good noncombustible construction. Unprotected steel framing supported an 18-ga. metal roof deck topped by an asphalt vapor barrier, noncombustible insulation and a standard built-up roof. The heat of the metal deck was enough to melt the asphalt in the vapor barrier, which dripped through the warped deck, to be ignited by the intense heat below. Only 20% of the area was protected by sprinklers, none where the fire started.

According to the National Fire Protection Assn., the main factor of the Livonia fire was "an undivided fire area of 1,502,500 sq. ft. (34.5 acres) in which absence of fire walls and roof vents denied access for fire fighting and prevented localization of heat and smoke." Other factors (listed in the order of their importance) were: lack of sprinkler protection; lack of carbon dioxide fire protection over the drip pan, although it was installed over the dip tank itself and unprotected steel construction; in particular, the thin steel deck did not offer sufficient insulation between banking heat and the built-up roof covering to prevent asphalt from melting and dripping through joints of the heat-warped deck.

**HEAT VENT FIRE TESTS** show effectiveness of vent. Left, starting at top: 1) skylight before gasoline spray fire is lit in building below; 2) vent automatically opening 1 minute, 33 seconds after lighting fire; 3) entrapped gases and smoke bubble out immediately after vent opening; and 4) five minutes later, most of the trapped gases are clear and flow of smoke is considerably reduced. Charts below show effects of venting in reducing the temperature rise in the fire area.

**AUTOMATIC HEAT VENT PLASTIC SKYLIGHT** is opened by powerful springs, held down by a fusible link that melts at 165° F.
New automatic heat vents help control spread of fire

As any experienced fireman knows, a pent-up blaze can be very serious. It may generate severe heat of 1,000 to 2,000°F, when air expands four times in volume, and may spread laterally into concealed openings behind wall and ceiling coverings. Such superheated air and gases mushrooming out from the seat of a blaze cause every combustible material they touch to burst into active flame. Not only that but incomplete combustion in a pent-up blaze often generates explosive mixtures of lethal carbon monoxide and superheated, expanded gases that cause "hot air" explosions when a sudden fresh supply of oxygen develops. At one pent-up blaze the opening of a door touched off a terrific hot-air explosion that blew a four-story building apart, killing 25 men beneath its falling walls.

For these reasons fire fighters always try to release trapped expanded gases by breaking open skylights or otherwise cutting holes in the roof above a pent-up blaze before attacking it from below. Automatic heat vents are designed to release dangerous heat, gases and smoke before they even have a chance to aggravate the fire. The vents are operated by counterweights or powerful springs, activated by fusible links for automatic opening.

The principle of heat venting has long been known. Following Chicago's Iroquois Theater fire that took 600 lives in 1905, heat vents designed for automatic opening, and covering 10% of the stage area, were made mandatory in all theaters to keep flame and smoke away from the audience.

Prewar industrial and warehouse construction contained heat vents as by-products of the roof monitor design that served both lighting and ventilation. In the rush of World War II construction, however, new efficient artificial lighting and ventilation favored a more economical continuous roof construction over huge single fire areas as big as the mammoth 1,500,000 square ft. continuous roofs at both Ford and GM's Livonia plants.

Last April, the Factory Mutual Laboratories made a number of fire tests to determine the effects of heat vents in a 2,300 sq. ft. fire area separated from the rest of a single-story building by a 5'-deep sheet metal fire curtain. Temperature rise and smoke build-up were measured for gasoline spray exposure fires using up to 5 gal. of gasoline per minute and with none, 16, and 32 sq. ft. of automatically opening heat vents in the roof (i.e. a venting ratio of 1:144 and 1:72 of the 2,300 sq. ft. area). Conclusions, shown diagrammatically in the accompanying charts (bottom opposite page):

1. Automatic heat vents effectively delay the build-up of heat, smoke and noxious gases from a burning fire. At a fuel burning rate of 2 1/2 gpm the average temperature outside the curtain area after 15 minutes rose to 365° F. with no vent, to 235° F. with a 16 sq. ft. vent and to only 155° F. with a 32 sq. ft. vent. Equipped with 165° F. fusible links the vent covers opened automatically 1 minute 33 seconds after ignition.

2. Without vents, a dense smoke blanket quickly worked down to floor level forcing evacuation of the onlookers within 5 minutes after ignition. During tests with heat vents, visibility remained good from floor level to above eye level and the building did not have to be evacuated.

3. Heat vents must be used in conjunction with fire curtains, which aid in producing the chimney effect necessary to move gases through the vent. The greater the depth of curtain, the more effective the vent. Better venting is also achieved by adding a chimney or stack above the roof.

Heat vents are not designed to be used in place of sprinkler protection but as additional safeguards. Because the build-up of heat in a fire is reduced by the vents, fewer sprinkler heads would be opened, thus water damage of building contents, a major factor in fire losses, would be reduced.

Three objections are raised to the use of automatic heat vents for protection from fire. First and most serious is the idea that any venting creates a draft which fans a blaze. In practice there is no contradiction. A draft caused by a window or a door opening is lateral, and uncontrolled, while that caused by venting is vertical and controlled by design. A lateral draft draws the blaze into new areas, offering it new fuel; a vertical draft allows the gaseous products of combustion to escape to open air without adding fuel or aggravating the fire. Applied to a single-story plant or warehouse, natural ventilation through the building would fan the mushrooming blaze and smoke into new areas, making fire fighting more difficult; in contrast, automatic venting of the fire area draws fresh air in from the surrounding plant, thus facilitating fire fighting by preventing build-up of smoke and providing incoming fresh air for the firemen.

A second objection to automatic venting is the danger that flying brands from an open vent might set light to adjoining property. For this reason stage vents in theaters are required to be at least 10' from a lot line and 20' from any door, window or wall opening on the same lot.

A third objection comes from some fire officials who feel that a fire should not be vented until fire hoses are ready to control the fire below. Chicago's new code regulation for the control of bowling alley fires requires that concealed spaces between the ceiling and the roof should be equipped with fire and explosion vents having an area of at least 2% of the concealed space, such vents to be automatically operating and connected with an automatic alarm placed in the office of the bowling alley, so that fire fighters could be summoned at once. Further, mechanical ventilating systems in bowling alleys must be equipped with rate of rise temperature activating devices to turn off ventilating fans in the event of fire. Both these provisions could be usefully applied to industrial buildings and warehouses, and, in the case of high fire load areas, the automatic vent may be directly connected to a municipal fire alarm system that would bring a fire company to the blaze within minutes.

The venting ratio required for any building type will depend on the occupancy, the fire loading and the type of construction. Standards vary greatly from the 1:10 ratio for theater stages to the 1:325 ratio used in Ford's new Mahwah, N.J., plant. Other standards for automatic venting recommended by the National Fire Protection Assn. are 1:90 for piers and wharves, which they describe as "smoke stacks lying on their sides"; and 1:165 for warehouses storing combustible fibers.
New attention to fireloading helps make a fireproof building also a fire-safe one

One of the most costly errors in building construction is the idea that a fireproof building is safe in the event of fire. "Fireproof" means that the structure can withstand temperatures approaching 2,000°F for several hours with only minor damage. But the building contents, together with any trapped occupants, will long be destroyed. In most industrial buildings and warehouses the contents are often worth far more than the building itself. In practice, "fireproof" is purely an underwriting term and safety to the occupants is only incidental in it.

Another common misinterpretation is in the term "noncombustible construction." The GM and Ford plants were of noncombustible steel-framed construction which did not contribute fuel to the fire. In spite of this the building contents, aided by the asphaltic vapor barrier in the roof (which only burns when there is a fire of over 800°F beneath it), burned well with a heat intense enough to cause the steel frame to buckle and collapse.

Industrial architects and fire protection engineers are beginning to take a more realistic approach to this problem by evaluating the fire load of a building. The fire load is the expected maximum amount of combustible materials, including structure, walls, roof, finish and anticipated contents in a single fire area. The factors considered are the quantity and calorific value of the combustible materials, the rate of burning, and how the contents are packed, whether tightly bundled, loose, or liquid. Fire load can be expressed in terms of either the weight of combustibles per square foot (the US method) or the Btu per square foot (favored in Britain). One pound of combustibles has an average calorific value of 8,000 Btu.

The US National Bureau of Standards have evaluated average fire loads by occupancy taking into account only the contents of the building, excluding the structure or finish. The fire loads range from a low of 7 psf for school classrooms, 12 psf for department stores and general offices, 30 psf for furniture factories, 36 psf for libraries and reach a variable 160 psf high for storage warehouses. The British propose three fire load classifications: low, up to 100,000 Btu per sq. ft.; moderate, 100,000 to 200,000 Btu per sq. ft.; and high, 200,000 to 400,000 Btu per sq. ft. Any fire loading above 400,000 Btu is a special hazard and is treated accordingly.

Either system forms a sound rational basis for the determination of the fire resistance and fire protection requirements of a particular building and is especially useful in determining the sprinkler or heat vent needs in industrial plants and warehouses.

Special efforts are being made by both manufacturers and fire underwriters to reduce the fire load of the finishing materials of a building, especially of the paint and fibrous insulating and acoustic panels. The critical danger of these facing materials is that they generally cover hidden cavities through which heat and flame can spread into new areas unless the cavities are protected by both vertical and horizontal fire stops.

Oil-based paints are often a fire hazard, especially when used in the 10 to 15 layers sometimes found in old plants. Water-based paints are considerably safer. Old coats of paint should be removed before repainting. Heat-retardant paints have shown a definite value in fire protection. Such paints are noncombustible and, when heated, bubble up into a ½" thick vesicular coating that gives a useful degree of insulation to a wall panel or structural member (although such insulation is hardly adequate for fireproofing structural steel).

Fibrous insulating and acoustic boards are very combustible once they are dry. This has long been recognized by fiberboard manufacturers as well as by underwriters (whose fire rating bureaus give it particular mention). The manufacturers have now developed techniques of flameproofing similar to those used to flameproof clothing and drapes; and they recommend flameproofed fiber boards for all areas where the fire hazard is critical.
EXCESSIVELY HIGH STACKING rendered the sprinkler protection inadequate in this warehouse fire.

EXCESSIVELY DENSE STORAGE of valuable kitchen appliances caused a total loss of this unsprinklered "noncombustible" building.

New protection for high hazard storage areas

"Large-loss" warehouse fires reached a new high in 1954 with 54 fires causing direct losses of $36,504,500, with eight dead and 102 injured. Of these fires 70% occurred in one-story buildings with excessive fire areas, 88% were in combustible building structures and 88% were not covered by automatic protection. All of these fires show a serious lack of appreciation of the high fire loading that is characteristic of industrial storage methods.

The improvement in warehousing efficiency, developed through the use of lift trucks that can operate in narrower aisles and that can stack pallets up to greater heights, has aggravated the fire hazard. In several cases combustibles have been stacked so high that normal sprinkler protection was inadequate to control a fire, even in fire-resistant concrete structures.

In such cases the only value of the sprinkler system is to get a low rate for the building, though not necessarily for the building's contents.

The value of warehouse contents lost in fires is now averaging three times the value of the building itself, and has reached up to $800 per sq. ft. in certain aircraft factory fires. (New automatic foam sprinkler systems are being used in aircraft plants and hangars where the gasoline fire hazard is high.)

The object of sound warehouse design is to confine a fire in the smallest area possible by the use of fire areas protected by fire walls. The Factory Insurance Assn. recommend that warehouse fire areas should not exceed 5,000 sq. ft. in an unsprinklered wood frame building and not exceed 40,000 sq. ft. in a one-story sprinklered fire-resistant building. Openings in the fire walls should be protected by automatically closing doors actuated by fusible links set at 165° F. The common practice of tying doors back with ordinary rope in place of the fusible link is bad since the rope only burns at about 400° F. The fire door must be insulating as well as noncombustible to prevent radiant heat from a blaze setting fire to combustibles in an adjoining fire area. Each fire area should be protected with adequate heat vents to exhaust heat and smoke from a blaze and reduce explosive backdrafts.

Maximum ceiling heights should be 22' for one-story and 15' for multistory construction. Modern lift trucks permit piling up to 50' high with wooden pallets that provide just the right amount of dry combustible material and vented air passages for a first-class blaze.

Sprinkler systems in storage areas need a particularly generous water supply to cope with the high fire loads encountered. To control a blaze in rubber tires stored 8' high in 1,000 sq. ft. piles, for instance, tests by the Factory Mutual Laboratories show that spray-type sprinklers need a water density of 0.26 gal. per sq. ft. The National Board of Fire Underwriters recommend that warehouse standpipes have a minimum capacity of 70 gpm at an outlet pressure of 25 psi and that an automatic sprinkler system have a minimum capacity of 500 gpm with a pressure of 15 psi at the highest sprinkler.

Absorbent materials such as paper or jute are a special hazard since they will absorb water, used in fire fighting, and expand. A roll of newsprint, for instance, absorbs one ton of water. Such materials may become soaked in a fire and may cause structural collapse of the building frame either through expansion against the building supports or through excessive weight. FIA recommends 30' clearance between stockpiles and structural supports.

Due to the high fire loads and the infrequency of careful inspections, automatic fire detection systems with first aid fire-extinguishing equipment are more important in warehouses than in any other type of building. Automatic systems using both flame-detecting and smoke-detecting equipment coupled to the building's fire alarm system are recommended for each fire area. Portable fire extinguishers should be placed every 100', with larger equipment mounted on all lift trucks. Fire losses are considerably reduced if the fire can be controlled while it is small without setting off sprinklers.
New fire codes written into GM and Ford building standards

As a result of their fire studies GM and Ford have set up entirely new standards for their post-Livonia manufacturing and assembly plants. Their main provisions:

1. Subdivision of fire areas. Because production lines change every year, fire walls are impractical in automobile factories. The solution is subdivision of fire areas by fire curtains consisting of noncombustible screens extending down at least 5' from the roof to the bottom chord of roof trusses. Each divided area contains automatic venting skylights to exhaust heat and gases in case of fire.

GM uses such draft curtains to enclose fire areas covering up to 250,000 sq. ft. for regular production areas, and not more than 10,000 sq. ft. for hazardous areas where the fire loading is high. Automatically opening roof vents are provided in the ratio 1 sq. ft. of vent for every 20 to 40 sq. ft. of floor area.

Ford uses draft curtains to enclose fire areas of 70,000 to 80,000 sq. ft. at their new San Jose and Louisville plants and of 50,000 to 60,000 sq. ft. in their new Cleveland Engine Plant No. 2. Automatic smoke and relief vents provide 1 sq. ft. of vent area to 175 to 185 sq. ft. of floor area in the southern plants, and 250 sq. ft. in the Cleveland plant. These are roof houses with collapsible side walls operated by fusible links and by pull chains for manual operation. The openings are large, varying from 7' x 21' to 7' x 25'.

2. Fire walls. Continuous floor-to-ceiling concrete block fire walls are used to separate employee facilities, escape routes and high fire-load stockpiles of foam rubber or upholstery from the main production areas. High hazard operations such as heat treatment and painting are similarly protected wherever the operation can be separated from the production line. Fire doors in these walls are self-closing with both fusible link and manual control.

3. Roof construction. After numerous fire tests of various roof constructions Ford has stayed with light-guage steel roof decking but with special modification to the vapor barrier below the roof insulation. (It was the asphalt vapor seal that contributed considerable fuel to the flames at both Livonia fires.) On Ford's San Jose and Louisville plants, both in fairly warm latitudes, the vapor seal was omitted; in the company's Cleveland plant the steel deck is covered with a 4-mil thick vapor seal of fire retardant polyvinyl chloride tipped with rigid insulation held in place by special fasteners. There has also been considerable progress made in the development of noncombustible aluminum foil vapor barriers. Standard four-ply combination roofing is used on all plants. In contrast, GM's new Fisher body plant at Livonia is roofed with precast concrete roof planks topped with the usual built-up roof.

4. Sprinklers. Both Ford and GM are specifying 100% sprinkler protection in their new plants, with extra heads and increased water supply for high-hazard areas. Both companies have also stepped up programs for sprinkler protection in their existing plants.

In developing their standards both GM and Ford obtained considerable advice from the fire rating bureaus which are set up in every state. Fire protection engineers in these offices offer free advice to architects and engineers on the fire protective rating of their building designs before construction. Typical factors that affect rates set by fire rating bureaus:

1) fire area subdivisions and heat vents;
2) automatic sprinklers and fire warning protection; 
3) availability of local full-time fire companies and water supply for fire fighting; 4) construction of fire walls and fire doors, especially at hazardous points such as furnace rooms; 5) construction of fuel oil installations; 6) excessive use of combustible acoustic or insulating boards; 7) smoke pipes or heating ducts too close to combustible materials; 8) provision of emergency power and lighting equipment, especially for escape routes and fire warning devices.


MAIN SPRINKLER PIPES with fully automatic controls supply water to the plant's 19,000 sprinkler heads covering every square foot of floor space.

SIDE-WALL HEAT VENTS along railroad bays are 90° long, 4½' high, designed to fall automatically should a fusible link give way. Pull ring at center is for manual operation.

* But Chicago's fire rating bureau, for instance, estimate that they are asked to advise on less than 5% of all new construction.
Fire protection requirements designed Ford’s 1,700,000 sq. ft. Mahwah plant

One of the first automobile assembly plants to be designed and built since the Livonia fires is the Ford Motor Co’s 800’ x 2,115’ plant at Mahwah, N.J., planned to produce over 1,000 units a day.

Built of noncombustible steel framing with 45’ x 50’ bays topped with an insulated steel roof deck, the plant is designed with highly developed fire protection specifications:

1. Heat vents and fire curtains. The plant is divided into 360’ x 200’ fire areas surrounded by sheet metal fire curtains extending from the roof down to the bottom chord of 5’ steel roof trusses. Each fire area is further protected by a 13’ x 17’ vent house set on the roof near the center of each huge fire area giving a venting ratio of 1:325. The 7’-high vent houses are built with 4V2’ sloping side walls of insulated aluminum siding designed to swing down from the top when a fusible retaining link melts (at 160°F, slightly below the 165°F release temperature of the plant’s sprinkler heads). The vents can also be operated manually from floor level.

A 90’-wide railroad bay along the east side of the plant has a clear height of 21’-3” to the trusses. Heat venting of this area is through six hinged doors set in the top of the side wall, each door being 90’ long to serve a 360’ length of the building.

2. Sprinklers and standpipe systems. The plant is 100% sprinkler protected, using 19,000 sprinkler heads, each serving 120 sq. ft. of the plant. A 12”-diameter underground fire loop serves two-way hydrants located 300’ apart throughout the main building, each fitted with two 100’ lengths of emergency fire hose. These hydrants are alongside continuous 15’-wide fire aisles, designed to permit fire trucks to come right into the plant.

3. Automatic alarm systems. Besides the automatic sprinklers and heat vents, which are connected to alarms in the plant protection office, there are manual alarm boxes mounted on columns every 200’ throughout the plant. These are connected to horns, fire gongs and lights as well as to a central alarm system in the plant protection office. Emergency lighting of escape routes is provided by automatically charging storage batteries.

4. Special hazards. The oil house and paint mix room are fitted with high density sprinklers, one head to every 60 sq. ft. The oil house is outside the main building and separated from it by a Class A fire wall extending 20’ on either side. The paint mix room is separated from the plant proper by 8” concrete fire walls with temperature actuated automatically closing fire doors and has additional protection from a two-shot carbon dioxide fire extinguishing system, one automatic, the other manual.
OFFICE OF MERIT: a regular department devoted to new ideas in finishes, fixtures and furnishings—this month, a small real estate management office designed to seem spacious

Lively pattern of varied materials combined with openness of partitions gives spacious feeling to small branch office of Chicago realty management firm. This view from reception room shows corner of waiting room at left (with back-lighted wall cabinet—detail, right), conference room and offices in background and low, two-part storage partition at right. White bambino blind conceals file cabinets. Harlequin wallpaper (in black, white, olive green and pumpkin) is on back of closet.
Waiting room is actually an extension of reception area. Colors of its furnishings echo those of harlequin wallpaper. Perforated pressed wood, finished in its natural brown, screens radiators and is used for sliding doors on wall-hung cabinet. Fluorescent fixtures are behind valance and wall cabinet.

Conference room has mirrors in two panels next to corners so adjacent walls appear to go on through (covered by drapery in this photo). Private offices (in rear) have glass fronts to increase their apparent size and lend light to conference room. Office doors, desk tops, chair backs are black. Opaque lower panel of partition is pumpkin-colored plastic laminate. Chair seats are olive green. Drapery is pumpkin and white. Floor is cork; carpet, olive green.

Specifications


Passage between conference room and reception room is "widened" by mirrored panel. Front of storage partition at left stops short of ceiling; walnut panel of wall at right stops short of floor. Horizontal planes of ceiling and floor therefore seem to sweep on through and enlarge the apparent space.
HOW ASSURE FINE PUBLIC BUILDINGS?

The many important federal buildings soon to be built should have the finest architecture. The government must have a reliable method of obtaining it. Unhappily the handling by Congress of the Air Academy architecture shows Congress has much to learn.

What happened was that Congress as “client” held up appropriations until plans were revised more to congressional liking.

Only superficially was the issue whether this piece of public architecture should use more glass or more masonry. It was basically a question of procedures by which such questions as more glass or more masonry, more architecture of this kind or more of that kind, should be handled.

Why should not Congress spell out the kind of architecture we should have, since Congress represents the people? For the reason that no art or architecture worth having, in the long history of mankind, has ever been created by a process of legislation.

In art as in science and religion, a democratic people can get the best only by delegation. We have to choose those leaders who know more than we, and give them freedom to get the job done. While it is being done they must be free to act with a high disinterestedness and relieved of ignoble pressures.

This can be done only by administrative procedures within a very broad framework of costs and objectives set by Congress.

Precisely this kind of free action had been beautifully set up in the US in both the State Department Foreign Buildings Operation and the Air Force. (Whatever other mistakes Secretary Talbott made, he was a capable administrator in this.)

In both places high administrators had managed to get their architects from among the very best on the basis of merit. And in both places the active architects had been protected, both from excessive enthusiasm of their own and from outside pressures, by authoritative consultant panels: men of their own type who could quietly advise them but not force them.

This was all working well in the case of the Air Academy. One month before the Congressional Donnybrook, the consultants had looked over the preliminary model out in Denver and faced exactly the same objective problem that Congress later tried to handle. Scared by the great amounts of glass, they warned the practicing architects, as a practical matter, against the excessive interior heat it could generate, unshaded, in the Denver climate. The practicing architects took heed in their continuing studies. (It was just because they had started so early that they were able to bring up a “new scheme” so fast to placate Congress.)

When Congress then stepped in and tried to direct architectural decisions in detail, the door was opened to a lot of political pressures on the architects, and many people did and said things they should not be proud of. They settled nothing that had not already been substantially settled in a calm professional manner.

As an example, Congressmen Fogarty, the union man, was allowed to use his office as a promoter, for he not only boasted what products Indiana might contribute but took trouble to name specific companies. Fogarty and President Tice of the Veterans of Foreign Wars were allowed to insinuate that glass was an alien and somewhat un-American material. They thus set up the new principle, which would have amazed Washington or Jefferson, that now not only people but inanimate materials must have clearance papers.

For businessmen it is ponderous that here for the first time a veterans’ organization came before the Congress and in effect wrapped the flag around one building material, while casting doubt on a competing material in the market. None of these things contributed to a good architecture, or even to free private enterprise, in a free society.

Let us hope that qualified administrators will be allowed again to find good architects and that these will then be left free. Incidentally, a good competition is a fair way of finding the best man, is it not?

MASONRY’S FUTURE

Within the last century other materials led by metals have invaded the masonry realm in fireproof building. Masonry producers have had two replies open to them. One was to seek to entrench masonry through codes and political pressures. The other was to step right out into fresh research, new invention, and vigorous competition.

In recent years it seems as if masonry has indeed awakened to the possibilities of the latter progressive method. This magazine was honored to participate through round tables helping to establish the attitudes of architects, owners and maintenance men, just as we would like to assist any improvement in building products. The new possibilities open to masonry are amazing. Already great progress has been made not only in modular design but in speedly palletized brick handling, in new faster application of mortar. The new SCR brick has given us single-wythe walls of good strength, and high glasses have given us a blaze of permanent outdoor color. Curtain walls, once associated only with “new materials,” have been built successfully and beautifully with marble, using no other backup. Granite is coming out in new forms and starting to market its “scrap” down to the saw’s screech. And renewed public interest in public architecture is leading to renewed interest in limestone. We like these signs of forward-looking development because they are in the best US tradition. Playing no favorites, FORUM cheers all competition based on merit.

Douglas Haskell
Mills Movable Walls promote permanent efficiency through Space Control of office layouts

The Cincinnati Gas and Electric Company has provided for future as well as present efficiency in the use of space throughout its new building. Space Control has been accomplished by forming the attractive interiors with Mills Movable Walls. Whenever changing space requirements make new layouts advisable, these walls can be rearranged—quickly, easily and at very low cost—without dust, debris, commotion or interruption of normal space usage. Mills Walls combine this efficient flexibility with distinctive architectural design and structural stability. They are fully insulated and soundproofed, and require no maintenance whatever except occasional washing to keep them looking always their efficient best.

Write for the new 68-page Mills Catalog or see it in Sweet's Architectural File.

Cincinnati Gas and Electric Co., Cincinnati, Ohio  Harry Hake & Harry Hake, Jr., Architects  Frank Messer & Sons, Inc., Builders

The Cincinnati Gas and Electric Company's handsome new office building utilizes nearly three miles of Mills movable walls, wall linings, column enclosures and railings—a complete Mills interior.

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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 lightweight 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, Tenn.

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-5.
Green Hills Village Center, Nashville, Tennessee • Owners: William C. Weaver, Jr., & W. H. Crisswell
Architects and Engineers: Hart, Freeland & Roberts, Nashville, Tennessee • General Contractor: W. F. Holt & Sons, Nashville, Tennessee

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STAINLESS STEEL

One of the primary advantages of Stainless Steel as a material for curtain wall construction is the saving in weight its use makes possible. Because Stainless is inherently strong and because no allowance need be made for the effect of corrosion, thin sections can be used.

Never has this advantage of Stainless Steel been better illustrated than in the addition of two floors to New York City's Bellevue Hospital. Existing foundations were limited in the amount of additional weight that could be carried. Stainless Steel panels, weighing 14 pounds per square foot compared with 130 pounds for masonry, were used. This permitted the structural steel to be far lighter, too.

The attractive appearance of Stainless Steel was another factor in its use on this hospital. The architect sought to give the addition the appearance of a totally new facility, rather than a mere expansion without aesthetic appeal. Stainless panels accomplished this, along with permanent good looks.

Erection was handled rapidly with a four-man crew installing four 30-square-foot panels an hour. The construction had more than the required 2-hour fire ratings and the panels had the insulating quality of a 12-inch masonry wall.

As the producer of USS Stainless Steel, we have worked closely with the fabricators of Stainless Steel panels for curtain wall construction. We'll be glad to send you further information and put you in touch with these fabricators. Write to United States Steel Corporation, Room 4918, 525 William Penn Place, Pittsburgh 30, Pa.

SEE The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.


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USS STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS

PIPE • TUBES • WIRE • SPECIAL SECTIONS

S-692

175
service and replacement contracts.

A large appliance manufacturer has given serious consideration to the idea that appliance functions might be sold on a long-term basis rather than the appliances themselves, permitting the manufacturer to change his designs and replace the equipment on a schedule that would assure him sufficient time of production to warrant investment in automation.

The "build and lease-back" method that has become so popular in recent years for financing new construction has a very similar purpose, and it might very well be refined to include extensive remodeling and replacement periodically.

Underlying all these schemes and trends are two principles: First, that design must be frozen for a period long enough to make automation and resulting lower costs profitable; and second, that design should be changed as often as economically possible to permit the adoption of better manufacturing techniques and the production of more efficient and useful products.

The architect is correctly reputed to be highly individualistic in his attitude toward design and one might think upon first consideration that standardized building units would be abhorrent to him. But he is more flexible than he is sometimes given credit for being by those who hear him rant about the good old days when stone masons took pride in their work and Georgian moldings could be had for 25¢ per ft. You may have noticed, however, how many of them have been fighting for places on the metal and glass band wagon in the last five years.

Architects have always found logical ways to use the materials at hand. The first fundamental criterion of good architecture has always been good planning; good circulation. (This, by the way, can also be said of manufacturing.) The plan is good only if it is in scale with the occupants and permits them to be comfortable and efficient in the activities for which the facility is designed. The resourceful architect can develop with the plan, mass and color schemes which, with the employment of materials and methods of the time, will produce a fine building and occasionally a great one.

I cannot become overly excited over the form and function of the spatially integrated organic whole that I have heard earnestly discussed at gatherings of the architectural intellectuals because I have the opinion that architecture in total is going to be, as it always has been, a rather accurate expression of the intellectual and economic development of society.
This is the new, 237-bed Rockford (Ill.) Memorial Hospital, equipped with 2,178 Thermopane units 30” x 56”. Associated Architects-Engineers: Hubbard & Hyland, Rockford; Perkins & Will, Chicago.

WILL Thermopane® SAVE THIS NEW HOSPITAL $129,520?

It will, if this hospital is in use as long as the 1883 building it replaced. Even in 20 years it will save approximately $43,200.

The architects figure that the 2,178 Thermopane insulating glass units in the windows saved $10,000 on the cost of heating equipment and will save $1,600 per year on fuel costs!

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And because of Thermopane, patients get all the pleasure of cheerful daylight and view—yet are comfortable even in the coldest weather!

For complete information on Thermopane, see your L.O.F Glass Distributor or Dealer, or write to Dept. 5195, Libbey-Owens-Ford Glass Company, Toledo 3, Ohio.

This is the new, 237-bed Rockford (Ill.) Memorial Hospital, equipped with 2,178 Thermopane units 30” x 56”. Associated Architects-Engineers: Hubbard & Hyland, Rockford; Perkins & Will, Chicago.
Wherever people give a building a beating
outside
or inside

That's the place to use STAINLESS STEEL

You have to design for maximum attractiveness in those areas of buildings which have most traffic—such as building fronts, marquees, entrances, lobby details, railings, etc. Yet those same places are exactly the locations where you need maximum utility, too.

What's the best material to use? Just remember that stainless steel—and only stainless steel—gives you the nearest-to-perfect combination of satiny beauty and rugged toughness. No other material is as strong, hard-surfaced and resistant to rust or discoloration. No other material requires as little maintenance, cleans as easily and lasts as long.

In short, whether you're considering Allegheny Metal for just the “hard-wear” spots of an entire curtain-wall design, keep this fact in mind: no other material costs as little over the long pull as stainless steel.

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Providing adequate illumination is only part of any lighting problem. Harsh contrasts can easily turn a good installation into a glaring error.

In this office, LITECONTROL uses its fixture No. 3700 with Holophane low-brightness CONTROLENS to furnish the right light — yet eliminate all glare and sharp contrasts. Seeing is relaxed and easy at every point in the room.

Extremely shallow, this smart "surface troffer" fixture is only 4½" deep. Trigger Catches open and close doors at the snap of your fingers. No screws or adjustments of any kind necessary.

On your next project, plan on having a better lighting installation, too, at standard fixture costs — call in your local LITECONTROL man.

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Makes classrooms light and cheerful,

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290 square inches of writing surface! New Samsonite Tablet Desk Chair plays multiple roles in classroom, meeting rooms, lunchroom.

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FUTURA LOMA LOOM HAS EVERY ADVANTAGE!
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EXCERPTS

Continued from p. 176

Arcades downtown

Excerpts from an article by Robert C. Weinberg and Alvin E. Gershen in the Journal of the American Institute of Planners

It is possible to develop downtown frontage so that retail store values and public street area can both be increased without any additional cost to either the private investor or the city other than that of a little time, good will and the price of careful design. The secret is the creation of covered or arcaded sidewalks by recessing pedestrian ways within the property lines without, however, requiring the city to purchase title to such land.

The most obvious method of obtaining more street room is the laying out of additional new or widened streets. But this is neither simple nor expedient in our downtown areas and involves tremendous costs in land acquisition as well as subsequent tax losses to the city. Traffic congestion usually occurs where reality values are high. The cost of acquisition will be prohibitive if added street space must be created by condemning property right at the point where the need for relief from congestion is the greatest.

It sometimes happens that the developer of a large project, involving more than one block, is willing to give the city strips along the outside of his project in return for obtaining the use of closed streets within the project. An example of this is Stuyvesant Town in New York. Yet new construction is frequently contemplated on a sizable plot fronting on a busy street that needs widening but where the size of the project does not permit setting back the entire building. The alternatives are to have the city acquire land at great cost or to allow traffic congestion to increase. This would not be necessary if the simple expedient were followed of recessing the sidewalk within the property line, under the upper stories, and widening the vehicular paving by the width of the previous sidewalk. Such recessed or arcaded sidewalks offer a number of advantages and the time to use them.

It may be argued that the arcading principle will deprive the first-floor stores of light and thus lower their value. The contrary seems to be true. Most stores are artificially illuminated regardless of whether the store front opens on an uncovered street in the conventional manner or whether the sidewalks are covered.

* For the latest such project, Chicago's Congress St., see AF, Dec., '54—'55.

continued on p. 188
WHATEVER YOUR ELECTRICAL PROBLEM, WE ARE READY TO SERVE YOU

This man is the construction sales engineer in your nearby Westinghouse office. He's an electrical specialist. His job is to help you solve electrical problems on the kind of projects you handle. In fact, from preliminary design through electrical system planning . . . from product demonstrations through operational proof . . . he and his team of Westinghouse engineers will work with you.

CHECK THE EXAMPLES ON THE FOLLOWING PAGES . . .

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SOLVES THE PROBLEM OF VARIED CLASSROOM NEEDS

Low ceiling heights . . . and a need to match seeing conditions to academic programs. These made controlled lighting a basic consideration here.

The answer: individual lighting systems—each matched to a specific, functional requirement.

In the mechanical drawing department, for example, the Westinghouse LC fluorescent luminaire was selected. A direct-indirect type, it provides high illumination in all parts of the room . . . gives a diffused, efficiently utilized light.

Further, in the manual training rooms, where good lighting is also a factor, FPC fluorescent luminaires were installed. They are designed for general area illumination and deliver a maximum light output. Their rugged construction makes them particularly suitable for this area.

Whatever the school lighting problem, the Westinghouse construction and lighting sales engineers stand ready to help you solve it.

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LC Fluorescent Luminaire, a direct-indirect type, provides the proper illumination levels required in the mechanical drawing department, and other classroom areas.

FPC Fluorescent Luminaire delivers maximum light output in the manual training areas, giving quality lighting with few shadows... resulting in better workmanship.

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ELECTRICAL EQUIPMENT, MATCHED
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Called during the planning stages, Westinghouse engineers helped select an electrical system that virtually assures continuous service. The base: two Westinghouse building-type switchboards—providing circuit breaker protection for the entire system.

In case of electrical interruptions, both switchboards permit quick restoration of service. A flip of the breaker handle does it.

Why not call your Westinghouse construction sales engineer to help you solve similar problems?
Owens-Illinois' NEW SOLAR SELECTING Glass Block cooler in hot weather

Owens-Illinois new solar selecting Glass Block No. 80-F has a lower surface temperature during hot weather. It acts like a mirror reflecting a good portion of the direct hot rays from the sun, and at the same time transmits cool light reflected from the ground.

Because of its light-selecting principles this new block has a much lower surface brightness than other glass block. Maximum surface brightness as measured at the Daylighting Laboratory is less than 1400 foot-lamberts.

Rejects hot summer sun—This diagram shows how the 80-F block reflects a major portion of the light from the sun at the critical 45° angle thus reducing brightness and solar heat transmission during hot weather.

Thermocouples applied to the face of the 80-F block during hot weather (outside temperature 90°) showed that the roomside surface temperature was 14 degrees less than a conventional type light-directing block.

A similar test using a portable pyrometer confirmed the findings of the test using thermocouples by showing the same 14 degrees lower temperature on the roomside surface of the 80-F glass block.

Uniform light transmission—Prismatic design is selective and controls the amount of light transmitted from the various sun positions, thereby providing more uniform light transmission all day long.

Transmits ground-reflected light—This diagram shows how the 80-F transmits the cool light reflected from the ground. This feature is especially important when the sun is not on the fenestration.

Complete information available

Send for the free, technical bulletin that gives the details. Just write "No. 480F" on your letterhead and mail to Kimble Glass Company, subsidiary of Owens-Illinois, Dept. AEP-9, Box 1683, Toledo 1, Ohio.
There's one way to be sure when you specify plywood for form work...

LOOK FOR THE DFPA* TRADEMARK!

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:

1. INTERIOR PLYFORM — made with highly moisture resistant glue for multiple concrete form re-use.

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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.

EXCERPTS

Continued from p. 182

With provision for attractive and well-controlled advertising and display cases within the arcades, the rental value of the store frontage could probably be increased. It may further be argued that valuable income would be lost by "sacrificing" to public use part of the land inside the building line, thus having a smaller net floor area for rental purposes. However, the total rentable floor area is reduced on the first floor only; and even then it is only the rear of the store depth that is "sacrificed." not the front, because the store is "shoved back," so to speak. Basements and all floors above the first floor would be built out to the existing building line. Moreover, instead of the city's taking title to the land necessary for a legal street widening (in which case, the owner, after receiving the sale price, permanently gives up any income from the area taken, multiplied by the number of stories above and below the street floor), it leases the rights, only, to a relatively small proportion of the first floor, only. The owner can continue to derive an income from all other floors, as well as gain the probably added value of the recessed ground floor stores created by the covered sidewalk or arcade. With increased width of the roadway that would result, traffic relief would be obtained by either new curbside parking space or an additional moving lane.

We have to solve the complex problems of downtown areas in a number of ways. No single solution can have a general application. New, distinctive and convenient shopping facilities in "prime" established retail locations that would naturally attract smart shops and smart shoppers must nowadays compete with the modern structures built for the convenience of the suburban motorist in outlying districts. Here, then, is a chance for the enterprising, imaginative investor to create sound, paying retail centers while helping relieve, almost as a side product, one of the city's greatest headaches at little cost.

Complex problems call for imaginative solutions. It is time to consider other than purely conventional approaches to both the retail shopping and the traffic problems. Where a method can be applied that benefits the private investor, the city and the general public alike, small-scale planning of individual plots on a short-term, conventional basis is no longer in order even in built-up, existing parts of a city. Long-range investment in fees and leaseholds calls for long-range thinking, planning and designing, and offers a challenge to the landowner and the city.
Colorful patterns with "Kalistron" wall covering are a feature of the Allen Road School, North Syracuse, N.Y.

Five years' service for wainscote covering has left no disfiguring marks. "Kalistron," a specially processed Krene sheeting, by Kalistron Division of U.S. Plywood Corp., N.Y. 36, N.Y.

A PLUS...in beauty, service, economy

Here is wall covering with beauty as you like it...bright and gay for colorful school walls...cheerfully restful for hospital corridor wainscoting.

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Whatever the room, wherever the building, specify wall covering and upholstery made of Krene. You will assure rich beauty, and dollar-protecting service and ease of maintenance.

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4. Central Office Building, Dept. of Employment
   Sacramento, California
   Architect: California State Dept. of Public Works, Division of Architecture
   Contractor: George A. Fuller Co.
   Header Duct: National Electric Products Corp.

5. General Telephone Co., Santa Monica, California
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- Greater strength with lighter dead weight gives unusual structural design economy.

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*Trademark*
West Coast architects Marsh, Smith & Powell found clay tile a good collaborator to work with in their design for a modern school corridor with stair well. This rendering shows how clay tile performs a permanent double service of function and design.

The important check points: low-upkeep tile floors to take generations of student traffic—glazed tile walls that keep maintenance down and good appearances up for decades—tile treads and risers which absorb footsteps unmarred for years, and ceramic mosaics on the corridor columns which offer a striking treatment that is maintenance-free.

When you approach your next school project, keep clay tile in mind. It's the ideal high traffic, low maintenance floor covering. It gives you and your clients a permanent solution for easily-cleaned, decorative walls that never need replacement. And it is flexible enough to give you unique, custom designs with standard units.

So be sure to check today's range of clay tile colors, shapes and types—the widest of any modern building material. When it is a clay tile installation, it never fades, burns, stains, scratches or needs refinishing or redecorating—all the cost is figured in at the start!

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architectural FORUM / September 1965
EXPERIENCE IN URBAN REAL ESTATE INVESTMENT. By Leo Grebler. Published by Columbia University Press, New York, N.Y. 277 pp. 6¼" x 9½". $9

The question of why equities in income-producing real estate have greater appeal as short-term speculation than as long-term investment receives a vigorously documented answer in this report of one of the research projects being carried on by Columbia University's Institute for Urban Land Use and Housing Studies.

The answer is that since the twenties, by whatever measure one may choose, the net yield on income property has shown up very poorly against that on such available alternative investments as bonds and mortgages. This answer actually is strongly weighted in a way favorable to reality investment, since the study, being confined to cases for which continuous record for at least a 20-year period were available (the average was 28 years), excludes those where experience was so bad as to end in foreclosure, as well as those where short-time owners may have been able to milk a quick return.

The first study of its kind, Dr. Grebler's work is of interest not only because of its results but also because of the methods that he has developed for obtaining and evaluating information in this area of investment, which, though comprising about one half the wealth of the nation, is virtually unexplored. The survey covers a well-diversified sample of 581 properties—office buildings, elevator and walk-up apartments, boarding houses and single-family houses for rent. All the properties are located in New York City, a fact, however, that probably would influence the results less than might be expected, because of the heavy weight that New York necessarily would have in any broader survey.

Present illusions about real estate investment stem from the predepression era, indeed a golden age, in which net income quadrupled in a 30-year period (1900 to 1929). The depression brought a drastic curtailment of earnings, and neither war nor postwar boom, through 1950, could bring net income (income after operating expense and taxes but before debt service and depreciation) within 50% of previous levels. Nonresidential properties, it may be noted, showed up better than residential. These—the best results—apply only to the oldest properties in the sample, those acquired before the late twenties. For those acquired at predepression peaks, the investment results are too pathetic for sensitive readers. Since 1950, the terminal date of the review, some further advance may have been made, but the chances are that properties that felt the full blow of depression, only to be hit while they were still down by rent control, are now being so overwhelmed by the onrush of technology that they cannot fully share in the recovery.

"There is a real question," the survey concludes, "as to whether yield differentials during the past 20 to 25 years have been large enough to attract an adequate volume of responsible, long-term equity capital into the development and operation of income-producing real estate. The importance of this question in respect to the future flow of private capital funds into this sector of the economy, and to the sound growth and management of the nation's urban resources, can hardly be exaggerated. The construction boom during the postwar period has been fed by an impressive amount of mortgage lending. In spite of the entry of some financial
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Flour City, one of the nation's oldest, largest, and most experienced architectural metal fabricators, contributed its talents and skills in the designing, engineering, production, and erection of the Republic National Bank Building, Dallas, Texas; the Mayo Clinic Diagnostic Building, Rochester, Minnesota; and many other aluminum-clad buildings. Alcoa Aluminum specified for all projects.

For complete information on Alcoa Aluminum and its building applications, from store fronts to roof copings, call your local Alcoa sales office. Or write: ALUMINUM COMPANY OF AMERICA, 1887-J Alcoa Building, Pittsburgh 19, Pennsylvania.
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There's a reason. Duraplastic-made mixes are more workable, more cohesive...place better in forms and around reinforcement. Duraplastic Cement makes concrete with greater plasticity. Result: a more uniform concrete to place.

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and other institutions into equity ownership, however, most of the new income-producing real estate in American cities seems to have been constructed, as it was in previous booms, by groups having thin equities and short-term investment motivations. It is perhaps significant that the ratio of new rental housing construction to total housebuilding activity has been much lower during the postwar years than during earlier comparable periods, and that about 80% of the new rental housing that was produced was financed with FHA-insured loans involving only nominal, if any, investment of cash funds by the sponsors."

This is a question that is being ducked by federal and local government and by mortgagees alike. It will have to be answered before real estate equity becomes attractive to equity investors. Dr. Grebler's study, by bringing the question so vividly into focus, may materially contribute to its solution.—Miles Colean.

ARCHITECTURE IN THE AGE OF REASON. By Emil Kaufmann. Published by Harvard University Press, Cambridge, Mass. 293 pp. 6¼" x 10". Illus. $10

Says Joseph Hudnut in the foreword: "This is a timely and rewarding book: timely because it brings into focus, at a moment when our architecture is submerged under an excess of dogma, the humane and searching thought of the eighteenth century, and rewarding because it clarifies with new insight the engaging art of humanism. The author has made the period lying between the Renaissance and our own day his special field. He writes with distinction and vitality.

"I do not know of any work in which one could find a more complete and illuminating account of that idea, harmonious integration, which for three hundred years haunted the minds of European architects."

THE ARCHITECTURE OF JAPAN. By Arthur Drexler. Published by The Museum of Modern Art, 11 W. 53rd St., New York, N.Y. 286 pp. 6¼" x 10¼". Illus. $6.50

Beautifully illustrated and ably written, this book deals with the relevance of traditional Japanese architecture to modern Western building, as well as the development of Japanese architecture from pit dwellings to contemporary buildings. A 25-page supplement on the Japanese house shown at the Museum of Modern Art during the summers of 1954 and 1955 is included. The three main sections are devoted to the environment and religious beliefs that have influenced Japanese art, traditional principles of structure and design, and buildings the Japanese themselves consider masterpieces. The extraordinary selection of photographs which Mr. Drexler has coordinated with his text reveals the continuing vitality of Japan's architectural heritage.

The author is Curator of the Museum of Modern Art's Department of Architecture and Design.

EXHIBITION STANDS. By Robert Gutmann and Alexander Koch. Published by Alexander Koch, Stuttgart, Germany. 248 pp. 8½" x 12". Illus.

A handsome presentation of the most exciting kind of architecture with text and captions in three colors and three languages—including English.
Here's a simple and economical solution to the problem of exposed or un-carpeted areas of drab, colorless concrete. It's called Colorundum. And the fused-color concrete floor it provides lends a dramatic and practical accent to patios, walkways, and service floors. Colorundum cuts air conditioning costs, too, because its color properties keep sunlit areas substantially cooler than ordinary concrete. Yet its cost is just a fraction of that of tile floors.

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It's the new Socony Mobil Building now being erected in New York City. When completed, it will be the world's largest metal-clad office building... a full forty-two stories of gleaming stainless steel walls and stainless steel windows.

Over the years, stainless steel has been the ideal complement to other building materials. It harmonizes beautifully with glass, brick, stone and all other materials of construction. In addition, stainless offers unique advantages of its own.

For example, the beauty of stainless steel is enduring. It stubbornly resists rust and corrosion... requires minimum maintenance in architectural applications. That's important for hard-to-service areas such as roof drainage items, flashing, parapet caps, domes, gravel stops and ornamental trim.

Stainless is invaluable in applications where strength is required but bulk is forbidden. Its high strength-to-weight ratio along with high corrosion-resistance permit you to use thinner, lighter sections in complete safety. That's one reason for the Socony Mobil walls. It's a primary consideration in such applications as curtain wall construction, marquees and sunshades, pier covers and spandrels, entrances and lobbies.

With stainless, there's no need for weekly "polish up the brightwork" expense. It stays bright and attractive for life. And, whether you specify it for beauty, strength, long life or low maintenance, you automatically get all its other "bonus" advantages. Stainless sparks design ideas. Republic will help you develop them in ENDURO Stainless Steel. The coupon will bring you design data.

New Truscon stainless steel reversible windows will provide important savings to the owners of the Socony Mobil Building. By rotating a full 360°, windows can be cleaned entirely from the inside... in half the time, at half the cost. Either side has excellent weathering properties. In addition, this window has been proved 80 times more resistant to air leakage than allowable industry standards... resulting in appreciable fuel and air conditioning savings.

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L-O-F Super-Fine reduces heat transfer, increases cooling efficiency

Architect Louis A. Redstone, and Allan G. Agree, associate architect, specified ½-pound, 1-inch L-O-F Super-Fine to insulate concealed combination heating and cooling ducts at the new Northwood Shopping Center, Royal Oak, Michigan. Low thermal conductivity, and speed and ease of application were important considerations.

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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 moldings provide large areas of unbroken color. Get complete details and data file folder—mail the coupon or write.

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Window detail: the sill is post-formed of Consoweld Dusty Rose Irish Linen, made to order for this application.

Consoweld the nation's finest plastic surfacing...
good for a colorful lifetime...
Plate glass is fired with colored ceramic on back for spandrel covers

When glass spandrels were chosen for Lever House (AF, June '52), Architects Skidmore, Owings & Merrill specified opaque coatings sprayed on the underside to get the exact dark green tone they wanted without yielding the weather and grit resistance and fresh-from-a-bath look of the exposed glass skin. A year later and three blocks west, Architect Philip Johnson decided on a translucent gray glass for part of the skin treatment on the Museum of Modern Art annex. The ceramic coating technique developed by Pittsburgh Plate for that job led to the new construction material introduced last month as a stock item: Spandrelite, a glass cladding produced in ground and pebbled textures as well as polished plate, in limitless colors. The technique for applying the ceramics is as basic as that for decorating dinnerware and, as ancient enameled glass relics attest, can be regarded as permanent. One indirect but architecturally welcome outcome of the process is that the quick shot of heat (5 to 12 min. at about 1,500° F.) necessary to fuse the vitreous

continued on p. 212

As easily mounted as glazing, colored glass spandrels are set in standard extruded framing. Members are designed so that no structural loads are transmitted to curtain facing.
DUPONT'S Backdale, Wis. Works saves $7,000 a year with new automatic combustion controls.

HUDSON MOTORS' modernized plant in Detroit saves $480,000 a year—cuts powerhouse labor 27%.

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WELDS AND LOCKING STRIPS account for the exceptional rigidity of Sonymetal doors. Arrows point to welds which join door surfaces. At you see the locking strips which exert spring action to hold surfaces tightly together. On Sonymetal Porcena doors these strips are polished stainless steel.

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This long-life feature is STANDARD at no extra cost on all types of Sonymetal Compartments.

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The new MITCHELL UNI-FLOW fluorescent troffers offer the most complete, versatile, uniform stock line of fine quality recessed units ever made. Every detail of design and construction has been precisely planned to make each MITCHELL UNI-FLOW installation a perfect job, both functionally and architecturally. The All-Steel Equipment, Inc. installation is a typical example of the superior results attained by MITCHELL UNI-FLOW Troffer Lighting.

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New Benson AIA File No. 17A, design and specification suggestions for metal wall systems.
PRODUCTS

Continued from p. 207

Disregarding color, enamel to the ¼" glass base makes it about twice as shock resistant as ¼" regular plate (but not so rugged as heat-treated glass which is cooked longer and quick-cooled). Spandrelite now is supplied in sizes up to 4' x 7' and, on order, will be made in 6' x 9' panels. To narrow down the rainbow of colors possible to a few standard tones, Pittsburgh polled architects before selecting eight opaque shades, ranging from grayed yellow and coral to coffee black. Any special color, metallic, iridescent or pattern combination of shades—even a trademark or insignia—can be fired onto the plate glass base with the vitreous material. Cost of the new facing, roughly twice that of uncolored plate glass, is said to be competitive with porcelain enamel steel and aluminum.

In conjunction with the sparkling new cladding, the firm's Pittco division is extruding special framing for mounting Spandrelite panels as well as see-through glazing in continuous mullions for buildings of any height. The Pittco members are produced in aluminum, stainless and bronze in high shine and matte finishes. Even the largest lights of the heat-strengthened Spandrelite available, 6' x 9', can withstand wind velocities of 100 mph. The sheets must be properly framed, however, as pure curtains so that no structural loads are transmitted to the glass, especially over small areas via bolts or screw heads. Expansion joints must be provided on both horizontal and vertical members at least every 21'. Cost of a complete Spandrelite curtain wall, including Pittco framing, colored glass panels and clear plate glazing, is about $8 to $10 per sq. ft., in place.

Manufacturer: Pittsburgh Plate Glass Co., Gateway Center, Pittsburgh 22, Pa.

T&G PLYWOOD SHEETS take studs and joists in stride

Making a moot point of exact location of wall studs, floor or roof joists, Vancouver's tongued and grooved plywood sheathing halves application time and cuts material cost considerably. The big wood units, available in standard widths of 2' and 4' and lengths up to 16', can be nailed up with complete disregard for relation between panel joints and framing members, yet are reported to create a wall stronger than a single solid sheet. Odd pieces cut off at ends of walls or floors can be reused elsewhere. The plywood panels have ¼"-wide three-ply tongues on the other end and/or side, depending on type of use. Panel lands (i.e., edges on each side of the groove) are two-ply; both tongue and lands are rounded to ease assembly.

To determine strength and stiffness of the edge-and-end-jointed five-ply sheathing, extensive concentrated load tests were made on panel edges and corner joints as well as centers on a group of six sheets laid across a 6' x 12' platform with 2" x 6" joists spaced 16" or 48" apart so that all three courses of panels had end joints at mid span. Results of the tests gave evidence that the ¾" sheathing is strong enough for roofing on 4" spans, provided each panel is nailed to at least two supports. Minimum strength value exceeds 1,000 lb. and there is not enough deflection and joint slip to cause damage to finish roof. The 5/8" T&G plywood proved adequate for subflooring on 16" spans—even under a nonstructural finish flooring such as resilient tile. The sheathing's minimum strength at the corner joint, 750 lb., is far greater that any load that might be applied in ordinary construction. (An 82-gal. water heater, for instance, develops three...

continued on p. 218
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an outstanding monument to the legal profession

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CITY. ZONE STATE
Fig. 1 detail illustrates a method of securing a metal coping cover to a wood plank on top of a masonry wall. The metal is fastened to the underside of the plank with copper nails spaced 12" apart on both sides of the wall. The metal coping cover is made from 8'-0" long sheets. The sheets are joined by locked and soldered seams except at every 32'-0" a 2" wide mastic-filled loose lock seam is installed.

In the Fig. 2 detail both side edges of the plank edge strips are secured by copper nails. The metal coping cover is hooked over the edge strips to form a ¾" loose lock seam as shown. The metal coping cover is made from 8'-0" long sheets and all sheets are joined by locked and soldered seams except at every 32'-0" a 2" wide mastic-filled loose lock joint is installed.

When the metal is secured to the plank as shown in Fig. 1, movement is restricted which will cause the metal coping to wave and buckle. The nails will in time become loose so the nail heads will protrude ¼" or more from the metal. The soldered cross seams may also crack because of the restriction of movement. When each sheet is firmly secured along both side edges the loose lock mastic-filled seam will not function as an expansion joint. Continuous edge strips should be attached to the side edges of the plank as shown in Fig. 2 to provide a track over which the covering can slide.

Accumulated expansion and contraction movement can then be transferred to the loose lock expansion joint.

We do not wish to presume to tell you how to design your structures or dictate their construction. For there are many satisfactory methods of installing gutters, leaders, roofs, flashing, coping covers, etc., which, of necessity, change with the design and type of construction and materials used. The purpose of this advertisement is to point out the methods of installation that have been proved by many years of use, and backed by more than a century and a half of experience in working with copper, to be the most satisfactory techniques. You will find these methods in Revere's 110 page brochure, "COPPER AND COMMON SENSE." Send for a copy today. And remember: Revere has a staff of specialists known as Technical Advisors, whose experience qualifies them to render valuable service and advice regarding the use of metals in the building field. Feel free to consult with them at all times regarding the use of Revere Copper; you incur no obligation. Revere Technical Advisors may be contacted through the Revere Office nearest you.

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

Sales Offices in Principal Cities, Distributors Everywhere
concentrated loads of about 420 lb. over an area of 2 sq. in.). For side-wall use, where little resistance to concentrated or flexural loads would be required, the ½” is adequately strong; and end-and-edge jointing of ¾” panels would be permissible on roofing over 16” spans where concentrated loads would be distributed over a larger area—such as a 4” disc. Prices on the T&G ¾” plywood range 17½¢ to 18¢ per sq. ft.

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 ...
Our pioneering efforts in the field of curtain wall construction during the past ten years have given General Bronze a wealth of practical experience in dealing with all types of buildings and with all types of materials, — experience that can help eliminate headaches for architects and contractors, and save time and money for clients.

Whether you are thinking of curtain walls in terms of stainless steel grids, colored porcelain enamel insulated panels, and aluminum windows, — such as those used in three of the RCA Cherry Hill buildings (one of which is shown above), — or panels and windows fabricated from aluminum or bronze, we offer you the benefit of our many years' experience in designing, engineering, fabricating and erection of curtain walls and windows.

As you plan new buildings, why not call in the General Bronze representative for consultation. He is anxious to be of service to you when your problems pertain to windows, spandrels, curtain walls and architectural metal work. Our catalogs are filed in Sweet's.
To sound the praises of everyone concerned with bringing this modern structure into being would merely be a repetition of the obvious ... The same is true of Day-Brite—the classic line of light.

It is enough to say that Day-Brite troffers are already installed—in lobbies, corridors, general and private offices, escalator and stair wells. Occupants are in, enjoying a high degree of visual comfort.

Architects-Engineers: Naess and Murphy, Chicago.


Electrical Contractors:
Fischbach, Moore and Morrissey, Inc.
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TO ARCHITECTS, ENGINEERS

...The Day-Brite “classic line of light” is complete and lends itself to any type of architectural design, treatment and type of construction.

Before you specify, SEE, EXAMINE and COMPARE Day-Brite with any other fixture. Look at the fixtures, not just the pictures. Your Day-Brite representative is always at your service—his specialized lighting experience will prove valuable.
Example of Day-Brite Lighting

GOING UP, GOING DOWN — the corridor path of elevator passengers is safely and decoratively illuminated by Day-Brite troffers mounted in plaster ceilings.

MILES OF FILES contain names and records of thousands of policyholders. Day-Brite troffers in ceilings supply abundant comfortable light, making seeing tasks easier.

A CLEAR PATH OF SAFETY for escalator and stair passengers is provided by these Day-Brite troffers, mounted at right angles to the line of passenger travel.

HIGH ILLUMINATION LEVELS on desk tops and adjacent work areas are uniformly distributed throughout these huge general offices.

Call your Day-Brite lighting representative

DAY-BRITE Lighting, Inc.
5471 Bulwer Ave.,
St. Louis 7, Missouri.
In Canada: Amalgamated Electric Corp., Ltd.
Toronto 6, Ontario.

MANUFACTURER OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT
PRODUCTS

Continued from p. 218

si. lance and durability. Produced in a wide range of pastel and deep tones, Dura-"Acream is said to have excellent color retention, flow and leveling characteristics. Its flexibility makes it resistant to cracking as the masonry it covers expands or contracts. Price: $7.11 a gallon.

Manufacturer: Wesco Waterpaint Co., Div. of National Gypsum Co., 742 Grayson St., Berkeley 10, Calif.

Again TREMCO Revolutionizes Glazing Compounds

NEW TREMGLAZE

The New Safe Specification for
Modern Glazing of Modern Windows

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.

TREMCO—The first name in Mastic Glazing Compounds.
The last word in safe specification for aluminum, stainless steel, and galvanized-bonded or coated windows.

You should know the complete story of revolutionary new Tremglaze. Send today for the "Tremglaze Brochure".

PLASTIC WINDOW pleated and paint ed to control sun’s ray

Quietly and confidently, Rohm and Haas Research Architect Edward Linforth churns out significant building products of Plexiglas. The first luminous ceiling of the translucent acrylic was, in fact, set up by Linforth over his own desk in the Bristol plant 12 years ago. Latest product of his experimental department is the Daylight Louver Panel, a schoolroom glazing unit that is light-selective. Vacuum formed with deep angles 45° or 20° for different elevations (and with flat flanges all around for easy installation) the plastic window works somewhat like a permanent Venetian blind or giant piece of light-directing glass block. The underside of each fin is painted with reflective acrylic lacquer to throw back unwanted glare before it can get into the classroom, thereby substantially reducing solar heat gain and air-conditioning load. Normally used with the fins horizontal, the plastic panels may be installed with the fins vertical to screen off an objectionable view. In clerestory installations for classrooms, the panels' effec-
When all's said and done, it's performance that counts in overhead type doors for commercial and industrial applications. And that's exactly what you can count on with Ro-Way Overhead Type Doors.

The smooth, easy, dependable performance that results from properly engineered design, exclusive features, top quality materials, rugged construction, and fine workmanship throughout.

For instance—Taper-Tite track and Seal-A-Matic hinges that snug the door against side and head jambs for weather-tight closure; specially designed, friction-reducing track and ball-bearing Double-Thick tread steel rollers to assure smooth, quiet, easy-up, easy-down operation; Power-Metered springs individually balanced to the weight of each door for freer, easier door travel.

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And rugged construction to take the daily ups and downs in stride. Mortise and tenon joints both glued and steel doweled; muntins, rails and stiles precision squared for precision fit; sections rabbeted for weather-tight joints; millwork both drum and hand sanded for finest finish; hardware both Parkerized and painted for maximum rust prevention.

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STEEL DOORS
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MODULAR
...fit each other...fit all building materials

Protect yourself against varying “fit” and quality by specifying USF Modular metal doors and frames that fit each other and fit all modular building materials.

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marble

can be used generously even
if your budget is restricted...

Writes Architect Louis Justement:
"There are few materials as satisfactory to the architect as marble.

"In the new United States Court House in Washington the total cost of the marble work was less than 3.5% of the cost of the building—in spite of the fact that marble walls were used in all main corridors, all elevator lobbies, portions of wall in back of bench of all courtrooms as well as many individual purposes throughout the building."

For more complete data on the basic economy of marble write:

MARBLE INSTITUTE OF AMERICA, INC.

108 FORSTER AVENUE
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Ultra-modern Sears retail store shows how you can provide

Indoor weather to satisfy your
most progressive client

Specify Honeywell Customized Temperature Control—most important comfort feature any building can have

Comfortable shopping atmosphere for customers, efficient working conditions for employees—these are of vital concern in the retail stores of Sears, Roebuck and Company's world-wide merchandising organization.

Small wonder, then, that a Honeywell Customized Temperature Control installation was specified for the new, completely air conditioned Sears store in Oklahoma City. For this is the truly modern way to ensure ideal indoor weather, no matter how varied a building's functions may be.

"Customized" is the key word here. Because it means that a Honeywell Customized Temperature Control installation is designed to fit the needs of the building and its occupants—in heating and cooling, in ventilating and humidity control.

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

The comfort story of the new Sears store is told briefly by the floor plan and picture captions. The techniques used, applied to your specific problems of occupancy, use and exposure, can help you to provide your most progressive clients with the kind of ideal indoor weather they need.
Individual temperature control is an important benefit enjoyed by occupants of Sears' executive offices. Adjustments may be made quickly to meet exact personal requirements. The result is an environment of ideal comfort that encourages maximum efficiency—an advantage made possible economically by the Honeywell Customized Temperature Control installation.

Few walls are visible in Sears' main shopping areas. Large open spaces create one temperature control problem; customers, in numbers that vary from hour to hour and day to day, create another. Both are solved by the Honeywell Customized Temperature Control installation, with its accurate thermostats that respond quickly to occupancy variations.

Thirteen zones, each precisely controlled by Honeywell thermostats, are employed in heating and cooling Sears' Oklahoma City store. Plan detail below shows ground floor thermostat locations. Strategically placed, they compensate for changing factors of occupancy and exposure so that comfort levels are held constant. Called for here was a comfort control installation as advanced as the building itself: Honeywell Customized Temperature Control.

For comfortable, more productive temperature in new or existing buildings—of any size—specify Honeywell Customized Temperature Control.

Whether it's a store, factory, hospital, bank—any building of any size, new or existing—Honeywell Customized Temperature Control can help solve your clients' problems of heating, ventilating, air conditioning and industrial control. At the same time you can give them more comfort, more efficiency, more economy.

For full details on Honeywell Customized Temperature Control, and the economical Periodic Maintenance Plan, call your local Honeywell office. Or write Honeywell, Dept. MB-9-132, Minneapolis 8, Minnesota.

Honeywell

Minneapolis

Customized Temperature Control

Deep in the heart of Texas, looming high and handsome above an imposing skyline, the new 36-story home of the Republic National Bank of Dallas is the Southwest's tallest building.

Covering more than an acre of land in the center of the thriving metropolis, this $25,000,000 building stands as another everlasting example of the strength and versatility of steel construction. 14,000 tons of structural steel went into its gigantic riveted frame—all of which was fabricated and erected by American Bridge.

One of the interesting applications of the steel frame construction is the use of huge trusses in the bank wing's top story from which the floors above the main banking room are suspended, thus freeing the expansive, two-story main banking room of interior columns.

Your architect or consulting engineer can be relied upon to specify the type of construction best suited to your project. And American Bridge has the experience, the equipment and technically skilled personnel to handle all types of steel construction with economy and dispatch—any time, anywhere. Our nearest office welcomes an opportunity to figure on your next job.

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AMERICAN BRIDGE
UNITED STATES STEEL
Do glass block panels LEAK?

We've seen glass block panels that leaked. In a driving rainstorm, the water would trickle down the wall and puddle the floor.

But it wasn't the fault of the glass blocks.

For many years, Pittsburgh Corning Corporation has maintained an educational program for masons to prove the point that glass blocks are not bricks. When laying bricks, for example, it is customary to furrow the mortar joint. But a solid bed of mortar is desirable for glass blocks (or for any thin masonry wall). Furrowing creates small voids that admit water.

Almost every case of leakage we have ever checked has shown improper installation, poor masonry work. Many masons have been installing PC Glass Blocks for 15 years without a single case of leakage.

You can be sure of watertight panels if you always employ a first class mason contractor. To be extra sure, have him check with your PC representative as to proper installation methods.

PC Glass Blocks
Pittsburgh Corning Corporation, Pittsburgh 22, Pa. • In Canada: 57 Floor St. W., Toronto, Ontario

ALSO SKYTROL® AND FOAMGLAS®

Leakage is never a problem when glass block panels are properly installed. A first class mason contractor is your best assurance of a trouble-free, leak-proof installation.
LIGHT CEILING factory wired with framing members as raceways

Hung ceilings are sometimes the cause of jurisdictional labor disputes. But Electra-Luminous has been planned as strictly a one-trade system and as such should delight not only the electrical contractor—who is the only one qualified to handle it—but the building owner who benefits from the completely packaged, prewired system by saving 100% in installation labor time. Taken at face value, the new ceiling looks just like its Luminous for-bearer with continuous strips of corrugated plastic mounted on 2" wide aluminum supports. Instead of the usual I channels, however, the extrusions are formed with ducts to carry wiring, and hollows in vertical members also are used as raceways.

SLOPING WINDOW SILL TILE

Especially in schools, there is a growing preference for sloping window sills where nothing can be collected—including dust. ROMANY 6"x9" bullnose or flat tile may be cut to perfectly connect window sill with wall surface below. Bullnose tile may be turned into the plaster or wall surface, or into the window. ROMANY A-4200 cap is of real assistance for both jambs. These units are available in all Buff Body colors.

Romany Real Clay Tiles

Self-aligning and self-spacing, Electra Luminous is assembled with one third the components of comparable systems, according to its manufacturer. The entire system, adaptable to small room or city-block-size office, is planned as an electrical package. The carrying members are fastened to or suspended from the true ceiling or slab. On the top half of each vertical raceway are sets of sockets for banks of one, two or three 8' lamps (depending on foot-candle requirements) which are mounted over each 8' track section. Ballasts are set on verticals level with the socket banks. Where ceiling space is limited, the system is furnished with the ballast placed horizontally for an overall depth of 12" to 14". The ceiling is leveled by telescoping the bottom half of each vertical raceway into the upper part, and precut spacer bars between the tracks are locked in place by the leveling wing nut to keep the ceiling rigid and perfectly aligned. The electrician who puts in Electra Luminous connects the necessary wires according to diagrams color-stenciled on the raceways. Price, about $1.50 to $2 per sq. ft. fully installed, is reported to be about 50% less than comparable ceiling lighting layouts.

Manufacturer: Luminous Ceilings, Inc., 2500 W. North Ave., Chicago 47, Ill.

continued on p. 256
Simplified Open Expanse design
— key to neater, more sanitary rest rooms

With a minimum of simple maintenance, the room above will look just as neat and clean twenty or more years from now as you see it here. Its modern appearance is virtually ageless! For the durable, easy-to-keep-clean wall-type plumbing fixtures by American-Standard will retain their smooth, spotless good looks many extra years. And the expansive fixture-free floor permits quick, easy cleaning of the room—from wall to wall.

But improved sanitation, lower maintenance, and an always up-to-date look are not the only advantages of using American-Standard wall-type plumbing fixtures. Especially when you specify that they be installed and supported on the Zurn System. This combination of superbly designed fixtures and rigid supporting fittings, which are engineered to relieve the wall of all the stress, also makes for easy, time-saving installation.

If you would like to know more about American-Standard wall-type plumbing fixtures and the Zurn System, we will be pleased to send you two booklets which contain interesting 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.”

Plumbing and Heating Division
J. A. Zurn Mfg. Co. (Plumbing Division), Erie, Pennsylvania
HAWTHORN SCHOOL,
Massapequa Park, New York

Architect:
George J. Dippel

General Contractor:
Joseph Biscoglia & Sons, Inc.

Acoustical Contractor:
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Acoustical Material:
Cushiontone Full Random

Fast installation is one of the many advantages that makes Cushiontone a natural choice when large areas must be sound conditioned economically. Cushiontone goes up easily by conventional nailing, stapling, cementing, or mechanical suspension methods.
Sound conditioning adds distinctive atmosphere to "budget" school

Although limited by a tight budget, the architect for the new Hawthorn School in Massapequa Park, N. Y., has given it both modern, functional facilities and a non-institutional atmosphere.

To keep building costs down, architect Dippel made effective use of brick veneer and frame construction. Low fire insurance rates were obtained by using fire walls to separate the school into small sections.

Noise-absorbing ceilings of Armstrong Cushiontone® give the school all the benefits of quiet at a remarkably low cost. A perforated wood fiber material, Cushiontone soaks up as much as 75% of the noise that strikes it. Its exclusive Full Random pattern of holes and extra narrow bevels practically eliminate the old-fashioned tiled ceiling effect. And the Cushiontone in the lobby has been repainted a bright yellow to add inviting warmth to the colorful school décor.

Get full information on Cushiontone and the complete line of Armstrong sound-conditioning materials from your Armstrong acoustical contractor. With a wide range of special product features to select from, you'll find one of these materials best meets the requirements of every job. For your free copy of the new 1955 edition of "Armstrong Acoustical Materials," write Armstrong Cork Company, 4209 Rooney Street, Lancaster, Pennsylvania.
No Heating Problem

Iron Fireman SelecTemp Heating adjusts automatically to heat loss or gain in each individual room or office

A thermostat in every room
When every room is a separate heating zone, a lot of problems that a conventional system can't touch are solved automatically. Each room takes care of its own heat loss or gain, no matter how much conditions may vary in different parts of a building. Occupants may have any temperature they choose simply by setting the thermostat in their own room or office. They use only the amount of heat they need. No space is overheated. Nor is there any wasteful heating of unoccupied space. Temperature can be reduced in any unused room, and restored to comfort level within a few minutes when needed.

Ideal for motels, hotels, apartment houses and hospitals. Every guest and tenant has his own idea of heating comfort, and is usually vocal about it. SelecTemp heating has eliminated a lot of headaches for building managers, besides making tenants happy.

Iron Fireman SelecTemp heating is especially valuable for hospitals, where it is often desirable to control room temperatures according to individual needs of patients.

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TELESTAT IN EVERY ROOM. Temperatures can be varied in every room to fit the “activity plan” and personal preference of the occupants.

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BOILER LOCATION. Boiler can be placed in any desired location, with proper distribution of heat to every room. Year-around domestic hot water coils available. Fuels: Gas, oil or coal.

LOW POWER COST. No electricity required to operate circulating fans. Non-electric thermostat.

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LOW FUEL COST. Temperature easily reduced in unused rooms. Overheating is eliminated.

AUTOMATICALLY BALANCED. No special adjustments of dampers, valves or orifices required to balance heating system. Each unit continuously regulates heat needed for each room. Automatically compensates for external heat sources such as fireplace or solar heat, without affecting temperatures of other rooms.

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3608 West 106th Street, Cleveland 11, Ohio.
In Canada, write to 80 Ward Street, Toronto, Ontario.
Please send literature on Iron Fireman SelecTemp heating.

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Lupton's fifty years' experience in designing and manufacturing metal windows forms the background for the successful, new Lupton Curtain-Wall System. Prefabricated modular panels — with panel color, texture and fenestration as specified by the architect — are made and installed by Lupton. The result is a faster, more efficient way to enclose a building, with direct savings in construction time and labor costs. Information is yours for the asking. Write for the "Lupton Simplified Curtain-Wall System". When it’s windows alone you want, see the complete line of Lupton steel and aluminum windows in Sweet's.

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PRODUCTS
Continued from p. 230

GRADIENT DEVICE lets level gauge
right slant for pipe or landscape

The two-piece Gradient Level Attachment
measures pitch or fall of a pipe line or
ground contour with the precision of a sur­
veyor's transit. Made of 16-ga. plated steel,
the inexpensive device ($4.95 retail) is
about as complicated to interpret as the
ordinary level it is fitted onto. Its two
pieces are clamped on both ends of any
length level in a few seconds, transforming
it to an accurate inclinometer for establish­
ing and checking slope in grading, pipe
laying and ditching operations. One turn
of the dial indicates a pitch of ½" in 10'
per foot of level. So, to figure a 1" fall
per 10' of sewer line with a 4' level, the
dial is turned eight times—each turn equat­
ing ½" fall in 10'. The level is then placed
on the drainage line and the tile adjusted
until the bubble hits the level mark. Other
applications for the Gradient Attachment:
construction of driveways and roads, in­
stallations of conveyors and laying of
steam lines.
Manufacturer: Carr Manufacturing Co.,
Ionia, Mich.

BIG RAKE grades and levels ground,
clears debris

Designed by Landscape Engineer Roland
Wurster, the Pulver Rake tractor attach­
ment can be pushed, pulled, lifted or low­
ered to level or grade or loose dirt fill at
any angle. Maintaining an accuracy within
2" even when handled by an inexpert
operator, the unusual earth-working tool
considerably reduces the cost of hand-rak­
ing of sub- or topsoil. Its 5'-6" steel comb
has 23 front fangs which cut and pulverize
offset by a second row of 50 teeth which
drag and spread such materials as crushed
stone, slag, sand, gravel or cinders. It can
be used to spread 5 cu. yd. of loose dirt
over a 75'-wide lot in a few minutes, and
so should be a practical implement for ter­
racing and finish grading of school
grounds, drives, athletic fields. Quite
maneuverable in confined areas, and use­
ful in clean-up work, the Pulver Rake will
continued on p. 242
Wherever Disaster Strikes...

The beautiful Hospital San Carlos, Bogota, Colombia, one of the finest in South America, is equipped with Kewanee Boilers.


Two No. 588, 125 lb. Kewanee Boilers installed in the Hospital San Carlos in Bogota, Colombia. They assure power expansion when needed—an important factor when the lives of patients are at stake.

HOSPITALS THE WORLD OVER DEPEND ON

WITH 50% EXTRA POWER

WHEN steam power may mean life or death to hospital patients...

WHEN emergencies demand maximum temperature, split-second sterilization of instruments...

WHEN unfailing power is needed to bring light to the delicate techniques of modern surgery...

WHEN the operating rooms of hospitals are theatres of extreme urgency...

That is when Kewanee Reserve Plus Rated Boilers become a necessity—because they have the reserve power for additional capacity requirements.

With a rating plan based on the commercial code of the Steel Boiler Institute, Kewanee Boilers certify 50% or more extra built-in power. This extra power assures the ability to treat more sufferers when epidemics or disaster strike. Modern hospitals must have the foresight to prepare for major disasters such as earthquakes, tornadoes, fires and accidents which bring masses of emergency cases to the operating rooms.

Kewanee Boilers, rated on nominal capacity with built-in reserve, can take care of expanding loads created through disaster. They offer “cruising speed” operation which means savings on fuel and repairs. Choose Kewanee and be prepared if disaster strikes.

KEWANEE-ROSS CORPORATION, Kewanee, Illinois
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You can depend on KEWANEE engineering
Wakefield Geometrics offers a plane of light which can be integrated with the mechanical equipment. This ceiling is an adaptation of Wakefield Sigma, evolved by Wakefield's Architects' Development Department to meet the architect's requirements. Wakefield welcomes the opportunity to modify Wakefield Geometrics to satisfy your need. Write for Catalog 55. Case Study Four in a Series.

The Wakefield Company, Vermilion, Ohio
Air conditioning existing buildings may be easier than you think...

It's as simple as this, with Modine Airditioners *

1. **Individual units replace radiators** in each room to be air conditioned. Hot water from your present boiler is piped to each unit for heating. Cold water from a central chiller is supplied through the same piping for summer cooling. A small motor (1/30 to 1/12 hp) operates two quiet fans in each Airditioner to provide refreshing cooled or heated air circulation. There are no expensive ducts to install. Here is low-cost, year-round comfort for new or existing office and apartment buildings, hotels or motels, hospitals or homes.

2. **Operating flexibility cuts costs.** With Modine Airditioners, room occupants control their own temperatures. Units are operated only when and where they are needed. No need to air condition an entire building to provide comfort only in occupied rooms.

3. **Types and sizes for every application.** Airditioners are offered in console (illustrated), concealed, built-in overhead and exposed ceiling models... in sizes to meet your remodeling or new construction requirements. All units are furnished with quiet, slow-speed motors (1050 rpm top speed) having built-in thermal overload protection as a standard safety feature.

Want to know more? Consult the classified section of the phone book for your Modine representative. Contact him or mail the handy coupon for illustrated booklet.

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...because Hauserman Movable Steel Interiors are INCOMBUSTIBLE

Lessons learned from actual fires confirm the results of exhaustive laboratory tests that prove Hauserman Movable Walls are extremely effective in containing the origin of fire as well as its damaging, costly smoke and fumes. Only steel and mineral wool insulation . . . totally incombustible materials . . . are used in fabricating Hauserman Walls.

Hauserman
Movable Interiors

Provide Earlier Occupancy • Fire Resistance • Sound Control • Utility Access
In Offices • Laboratories • Hospitals • Industrial Plants

Free Data Manual 55 Wins Architects’ Award
Recognized for value to architects in design and specifications work, this 100-page guide was awarded The Certificate of Exceptional Merit in 7th Annual Building Products Literature Competition co-sponsored by A.I.A. and Producers’ Council. Contains complete technical details on all types of Hauserman Movable Interiors. Send for your copy today!

When specifying interior walls and wainscot, consider these Hauserman advantages that provide superior fire safety in addition to all the other advantages of Movable Steel Interiors:

1. Subdivision of space breaks up and minimizes fire, smoke and fume areas.
2. Hauserman’s baked-on, factory-applied finish will not burn or give off fumes.
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For complete facts on Hauserman Interiors call your nearby Hauserman representative, You will find his name listed on back cover of the free Data Manual 55 offered below.

Free Data Manual 55

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City ___________________ Zone ______
State ____________________________
remove weeds, rubbles and large stones. Outfitted with an accessory plate, it does winter duty as a snow plow. The Pulver Rake can be attached in minutes to any tractor that provides a three-point hydraulic hookup. The 5'-6" model pictured (p. 236) retails at $250.


SMITHSONIAN INSTITUTION

ARTS AND INDUSTRIES BUILDING

Washington, D.C.

6 Balanced Doors in the entrances to Smithsonian Institution.

The Door that lets TRAFFIC through QUICKLY

ELLISON BRONZE CO.

Jamestown, New York

representatives in 73 principal cities in the United States and Canada

GAS HEATER throws warm blanket over cold workmen, wet masonry

Casting comforting warmth up, down or sideways through cold air, Perfection's portable Infra Rayhead radiant heater operates on any kind of gas—manufactured, natural or LP. In addition to its use on construction jobs for drying paint, lumber, plaster and keeping workmen warm, and outdoor heating applications in sports arenas and drive-ins, the units are practical for permanent installation on walls or ceiling in high-bay factories and semi-closed warehouses where central systems are either impractical or ineffective. Licensed by the manufacturer under German patents, the unique heaters have ceramic catalyst burners which reach surface temperatures of 1,600° F. and emit high concentrations of infrared rays in wave lengths reported to be the most natural physiologically. A self-contained portable Infra Rayhead with 48,000 Btu capacity, directs heat over an area 100 sq. ft., and will burn up to 150 hours on one 100-lb. gas cylinder. It sells for $152, including wheeled mounting and safety shutoff. The same unit, nonportable, is about 100. The larger unit (pictured above left) for industrial buildings can deliver 90,000 Btus. Manufacturer: Perfection Industries Inc., 7609 Piatt Ave., Cleveland, Ohio.

LATEX ALKYD PAINT needs no mixing, no undercoat

Ready to use without stirring, Luminol washable latex alkyd paint can be brushed, sprayed or roller-applied over any inside ceiling or wall surface of masonry, wood, cement asbestos, or paper. Nonporous and nonabsorbent the coating has excellent binding and sealing properties and requires no primer or undercoat. It gives off no toxic or flammable fumes, and will dry in 20 minutes to one hour, making it a practical finish for remodeling jobs. One gal., priced at $5.55, covers up to 700 sq. ft. Manufacturer: National Chemical & Mfg. Co., 3617 S. May St., Chicago 9, Ill.

continued on p. 248
Cut your clients' floor maintenance costs in half in heavy traffic areas

In busy open planning areas you can actually cut your clients' floor maintenance costs in half. This saving is enough to pay the complete cost of the carpet, within eight years, including installation charges.

Comparisons of carpeted vs. non-carpeted floors show that carpet costs actually less than half to maintain. Comparisons show an average annual saving of $194 per 1,000 square feet in heavy traffic areas.

On top of this tremendous economy, carpet is not only better looking, it stays better looking. Its deep, luxurious pile is easily vacuumed — soil doesn't get ground down to mar the surface. Carpet springs back from pressure — wears hard and looks soft.

And the fact that carpet is so much more desirable to begin with makes these advantages all the more important. On top of the luxurious appearance and dignity it gives, carpet virtually eliminates floor noise, acts as a sound blotter for other noises – produces a restful, quiet atmosphere. And carpet prevents slips and skids.

For almost any interior, carpet is your logical, most economical, most beautiful choice. On your current job, consider carpet. Ask your supplier to show you the wide variety of textures, patterns and colors. Custom designs are available in many weaves and qualities to meet your specifications.

Show your clients how to cut their floor maintenance costs. Send for "Cutting Costs With Carpet," a complete report of the research on carpeted vs. non-carpeted floors. Write Dept. A5, Carpet Institute, Inc., 350 Fifth Avenue, New York 1, N. Y.

Specify carpet designed and made for the American way of life by these American manufacturers
Artloom • Beattie • Bigelow • Downs • Firth • Gulistan • Hardwick & Magee • Hightstown • Holmes • Karastan • Leedom • Lees • Magee • Masland • Mohawk • Nye-Walt • Philadelphia Carpet • Roxbury • Sanford • Alexander Smith

Carpet Institute, Inc. 350 Fifth Avenue, New York 1, New York
Architects: for Lowell House, Dunster House, McKlnlock Hall, Vanderbilt Hall, Littauer Building, Gordon McKay Laboratory—SHEPLEY, RULFINCH, RICHARDSON & ABBOTT • for Aldrich Hall—PERRY, SHAW, HEPBURN, KEHOE & DEAN and McKIM, MEAD & WHITE, Associate Architects.

Mechanical Engineers: for Lowell House, McKlnlock Hall, Vanderbilt Hall—FRENCH & HUBBARD • for Dunster House, Littauer Building—RICHARDSON & GAY • for Aldrich Hall—HAYDEN, HARDING & BUCHANAN • for Gordon McKay Laboratory—R. G. VANDERWEIL.

Heating Contractors: for Lowell House, McKlnlock Hall—CLEGHORN CO. • for Dunster House—T. J. MURPHY & CO. • for Vanderbilt Hall—JAS. S. CASSEDY, INC. • for Littauer Building—V. J. KENNELLY CO. • for Aldrich Hall—THE MERRILL CO., INC. • for Gordon McKay Laboratory—McLEAN-COUESNS & BARTON, INC.

Oldest university in the U.S.A.

HARVARD

...another distinguished user of

1 DUNSTER HOUSE, on the Charles River
2 McKINLOCK HALL
3 VANDERBILT HALL
4 LITTAUER BUILDING
Aldrich Hall, Harvard Graduate School of Business Administration
One of the 17 unique classrooms shown at left seats 158 students; three others seat 80; and 13 accommodate 102 each. The rooms have been arranged to provide an intimate relationship between instructor and student in the give-and-take discussions by the case method generally used throughout the Harvard School of Business Administration.

Below: Gordon McKay Laboratory
Interior photo shows two-story room with important features, a high door and removable intermediate floor to permit varying uses. Research in this laboratory is conducted in mechanical engineering, electronics, electrical engineering and the properties of matter.

POWERS

Automatic Systems of Temperature Control

On the Harvard campus are to be found some of America's most beautiful buildings. A few of them which benefit from the maximum thermal comfort and fuel savings assured by POWERS control are illustrated here.

For more than half a century POWERS control has been renowned for its matchless ability to give many years of efficient economical service. Users often report 25 to 30 years of reliable control with a minimum of repairs.

Experience gained here and in thousands of other famous buildings qualifies POWERS to help you select the most economical and efficient temperature control for your buildings. When problems of temperature control arise, call our nearest office or write us direct.

The Powers Regulator Company
Skokie, Illinois | Offices in 60 cities in U.S.A., Canada and Mexico

Over 60 years of Automatic Temperature and Humidity Control
Ease of erection—up to 5 times as fast as masonry—beauty and economy, were the story behind this modern application of the ERIE U-20 Porcelain Enameded Panel set in Vampco sash frames. Both 3-story and 2-story (illustrated) frames were installed as complete units at Ursuline High School, Youngstown, Ohio.

The ERIE U-20 is a popular 1” thick sash panel offering a Porcelain Enamel face panel of any color, nested with a mechanically fastened metal backing panel enclosing fiber glass insulation. The standard U-20 Panel fits any sash frame which uses retaining stops, and modifications are available for all extruded shape sash frames.

To investigate the possibilities of the ERIE U-20 Panel in your next project, write for detail drawings of the U-20 in the sash frame of your choice.

Architect: P. Arthur D'Orazio, Youngstown, Ohio
Sash: Valley Metal Products Co.
NEW!
9/16" THICKNESS

Simpson Forestone
THE WORLD'S FIRST
FISSURED WOODFIBER
ACOUSTICAL TILE

Now costs no more than
5/8" and 3/4" perforated tile

Forestone® is economical in its original 5/8" thickness. Now the new 9/16" thickness puts it in the price range of the popular types of perforated tile. Yet in either thickness Forestone has a warm textured beauty, or even superior, to that of luxurious fissured mineral tile. It is ideal for installations where beauty and economy are important in addition to effective sound conditioning. Note its attractive appearance in this restaurant. Its flame-resistant finish is washable and paintable.

Available only through these Simpson Acoustical Contractors:

FOLDING BASKETBALL GOALS raised and lowered by electrical winch

Helping put the multiuse schoolroom theory into practice, the EZ Fold basketball goals nestle up against the ceiling when a gymnasium is to be used as an auditorium. Constructed of heavy steel tubing, the rigid, self-locking units fold up automatically at the turn of a switch. The two practice goals fold backward and the two backstop units, forward, raising up in about 40 seconds and coming down just as fast. One ½-hp motor wired to a reversing switch operates all four. The forward-folding goal's lifting cable is 10' above the basket, and cannot interfere with play when in use. Prices on the backstops (based on 16' truss spacing) including winch and cable start at $685 a unit and go up to $467, depending on beam height and type of suspension.


DEVELOPED EXCLUSIVELY FOR ROOF DECK INSULATION

FESCO BOARD

Light, Rigid, Incombustible, Permanent

Made of perlite

Hermetically Sealed

To Lock Air In,

Lock Moisture Out

FIRE-PROOF — Flame-spread factor only 20.5, smoke contribu-
tion factor 0.

STRUCTURALLY STRONG — In compression tests Fesco Board withstood 140 lbs. p.s.i., and 55 lbs. p.s.i. of transverse pressure.

INSULATION VALUE — K-factor of .285 @ 0° F and .295 to .31 at 75° F.

LIGHTWEIGHT — Fesco Board units (1' x 24' x 48' or 1' x 24' x 36') weigh only 60 lbs. per square foot.

MOISTURE RESISTANCE DATA — Tests show only .5% absorption in two-hour period, 1.4% in 24 hour period and less than .1% at 5% expansion from 0 to 100% relative humidity.

ABOVE: Photomicrograph of a granule of expanded Perlite, basic ingredient of Fesco Board, shows how expansion under 1700° F temperature hermetically seals the air cells (lighter areas) for ideal insulation and maximum moisture resistance.

Write today for samples and technical data.

F. E. SCHUNDEL & COMPANY, INC.
504 Railread Street, Joliet, Illinois

FLEXIBLE THRESHOLD hugs floor and door for air-tight seal

A predrilled anodized channel fitted with vinyl sealer strips, the Duraflex threshold effectively blocks silt, drafts, insects and rain water from coming in under a door or conditioned air from getting out. As the door—revolving, swinging or standard—is closed, the plastic ridge on top of the threshold meets it, depressing slightly to conform to any irregularities and creating a positive closure. Two more lengths of the non-

deteriorating plastic are compressed against the floor. Standard ¾" high Duraflex allows for finished floor or rug clearance up to ¾" thick; and 1-¼" High-Rug permits clearance where extra thick rugs are used. Both types are 3½" wide and come in four standard lengths from 30-¼" to 72-¾". Standard type runs $1.60 per lin. ft. and the High-Rug $1.80.

Manufacturer: Duraflex Co., 4100 N.W. 28th St., Miami 42, Fla.

continued on p. 254
dramatic of the adaptability of

CUPPLES

ALUMINUM CURTAIN WALLS

With Cupples aluminum “skin” construction, panels of aluminum, stainless steel, structural glass or any other acceptable material may be specified.

For example, in this multi-story building, horizontal and vertical mullions and double weather-stripped tubular sash are aluminum. The structural grid system on stairwells, in penthouse and in other areas, also is aluminum by Cupples. All aluminum is in alumilite finish. Spandrels are fluted porcelain in off-white or rust.

Cupples' dominance in sound, economical curtain wall design, construction and erection keeps pace with its leadership in the fabrication of aluminum windows, doors, architectural aluminum extrusions, Alumi-Countic grid systems for suspended ceilings and special ornamental products. Our catalogs are filed in Sweet's.
Like many another material, decorative laminates made with melamine resins got their start in the modern kitchen. Their usefulness as a durable, colorful surfacing for counter areas has made them a standard specification in millions of homes.

Today, the same material is demonstrating its versatility for a wide range of other applications. Sketched above is a television room in which melamine laminated plastics will panel walls and cabinets, also tables, etc.

The smooth, practically indestructible material will require a minimum of maintenance. It will sponge clean with a damp cloth. It will be resistant to scratching and chipping.

Melamine laminates are easily sawed to any size and cement permanently to any rigid surface. They do not swell or warp.

Lightweight sheets of these decorative laminated plastics are carried in scores of colors and patterns at most building supply stores. They are also available already glued to plywood or hard board.

*Monsanto supplies melamine and phenolic resins for decorative laminates sold under these trade names:

Arborite • Consoweld • Decarlite • Farlite • Fiberesin Formica • Lamin-art • Micarta • Nevamar • Panelyte Pionite • Plastilight • Railite • Richelain • Textolite

FOR ARCHITECTS: A new report, "Plastics in Housing," has recently been published by the Department of Architecture of the Massachusetts Institute of Technology. The study was made possible by a grant-in-aid from the Market Development Department of the Plastics Division of Monsanto Chemical Company. Copies are available at $2.00 each. Address Monsanto Chemical Company, Dept. A-9, Springfield 2, Mass.
Case history of CECO on-the-job performance

How Ceco-Meyer steelform construction cut floor weight 40%

CECO 1½" INTERMEDIATE WINDOWS PROVIDE BETTER DAYLIGHTING—OUTLAST ANY STRUCTURE

When Karl Keffer Associates, architects, designed the Charles Evans Junior High School in Ottumwa, Iowa, they faced exacting requirements:

The structure had to provide all instructional units, plus shops, lunch room and auditorium for a minimum of 875 students... plus a gymnasium for a seating capacity of 4,500... and this had to be done on a rigid budget.

Ceco-Meyer Steelform Construction was selected as the best way to span the 22' to 24' wide rooms... a natural choice by architects for thousands of schools. The method eliminates beams, thus allowing a flat ceiling for all rooms. Rigidity and soundproofing are provided... plus a saving of 40% in dead load over other types of reinforced concrete. Since Steelforms are quickly placed and removed, pouring of concrete is speeded, with weeks of construction time saved. Total cost of the Evans School was only $12.13 per sq. ft. When it came to windows, Ceco’s 1½" Intermediates got the call. Heavy 1½" sections assure smooth operation and long life. Maintenance is negligible. Large glass lights provide open view... controlled daylighting guards pupils' eyesight. As on thousands of projects, Ceco supplied the Reinforcing Steel on schedule... Ceco Integrated Service brought all products to Contractors Ringland-Johnson, Inc., as needed. Result... a better structure... building budget balanced. Here is another example of Ceco performing on the Architect-Contractor-Supplier team. Ceco Product Specialists help you save through product engineering. Consult Sweet's File for address.

CECO STEEL PRODUCTS CORPORATION
Offices, warehouses and fabricating plants in principal cities. General Offices: 5601 W. 26th St., Chicago 50, Ill.

architectural FORUM / September 1955

251
Roddiscraft — quality wood craftsmanship for over 60 years

Gamma ray meter reads "0" — NO RADIATION penetrates this Roddiscraft X-ray Door.

when it's closed . . . complete safety
x-rays can't penetrate this door!

RUNAWAY x-rays can be dangerous . . . but there's no chance for x-rays to escape through Roddiscraft's X-ray Doors. A continuous sheet of lead the full height and width of the door provides complete protection for people in adjoining rooms and hallways.

Attractive Roddiscraft X-ray Doors are made to look like the standard flush veneered doors used in modern hospitals, clinics, sanitariums and doctors' offices. The big difference is under the surface. An inner lead shield — with thickness specified by the buyer — assures adequate protection. Even the bolts inside the doors are lead covered. These doors are specially manufactured to fit your client's needs. Write for complete information today, or see our catalog in Sweet's Architectural File.

How Roddiscraft X-ray Doors provide more protection

A. Lead sheet — any desired thickness, bolted between two solid cores; extends to all four edges.
B. Cores — low density wood blocks bonded together under heat and pressure with urea resin glue.
C. Crossbandings — hardwood veneers glued with phenolic resin glue to both sides of core.
D. Face veneers — selected hardwoods glued with waterproof resin glue to both sides of core and belt-sanded smooth.
E. Edge strips — double thickness on top and bottom of door; side edge strips match face veneers.

Roddiscraft — one source for all your door needs

Roddis Plywood Corporation, Marshfield, Wis.
Warehouses in Principal Cities
The stainless steel, corrosion resistant seats and discs are heat treated to a hardness of 500 Brinell — hard enough to scratch glass and crush nails! The valve can be closed on sand, slag, and pipe scale without injury to the seating surfaces. "Wire drawing" is practically eliminated. All parts are accurately machined and gaged. Years of tight, positive shut-off are assured.

Available in both globe and angle types (angle type: No. 227P) in sizes 1/4" to 2", this quality valve is recommended for 350 lbs. W.S.P. at 550 F, and 1000 lbs. non-shock service on cold water, oil, gas, or air.

For full data on this long-life, economical Walworth Bronze Valve, see your local Walworth distributor, or write for Circular.

**note these 7 Great Features**

- **IDENTIFICATION DISC**: An aluminum marking plate on all Walworth No. 225P's facilitates inventory control and makes reordering quick and positive.
- **NEWLY DESIGNED HANDWHEEL**: Patented air-cooled, finger-fit handwheel affords sure grip even with greasy gloves.
- **IMPROVED PACKING**: Molded packing of lubricated asbestos reinforced with copper wire. Suitable for practically every service. Valves can be repacked under pressure when fully opened.
- **HEXAGONAL UNION BONNET CONNECTION**: Union bonnet connection eliminates any chance of distortion or leakage even though valve is repeatedly taken apart and reassembled.
- **OVERSIZE STEM**: Silicon-bronze stem assures long life and protection against wear.
- **SEATS AND DISCS**: Plug type seats and discs of stainless steel, heat treated to 500 Brinell hardness and machined simultaneously to a mirror-like finish, with accurate tapers ensures tight, positive shut-off with minimum handwheel effort.
- **EXTRA STRONG BODY**: Made of Composition M (ASTM B61) bronze. Thick walls and rugged hexes provide a high safety factor. Valves undergo hydrostatic shell test of 1,200 psi.

**Take a good look at the Walworth 500Brinell no. 225P Globe**

- the Toughest Bronze Valve Your Money Can Buy
PACKAGED AIR CONDITIONERS hang from ceiling or sit on shelf

Finding the shortage of floor space chronic in countless commercial and industrial buildings, G.E. developed a line of horizontal packaged air conditioners that could be hung from a ceiling or mounted on a shelf. The series, which includes both water-cooled and waterless models in capacities of 3, 5 and 7½ tons, should make summer comfort practical in offices, stores, restaurants, and factories that put a premium on each inch of useable floor area.

To cut sound level of the packaged units, motor, compressor and fan drive are set in resilient material, and big fan blades are used to move large air volumes quietly. On air-cooled models, return air enters through grilles at bottom and sides of the unit. On water cooled units, air comes in at rear. Side panels snap off for servicing. An automatic control is included on both types for higher moisture removal in muggy weather. Accessories include a heating coil and three-way air distributor.

Prices, about the same as floor models, range from $300 to $500 per ton of cooling, depending on particular installation requirements, and whether water-cooled or air-cooled units are selected.

Manufacturer: General Electric, Commercial and Industrial Air Conditioning Dept., Bloomfield, N.J.

LOW-PRICE DEHUMIDIFIER is unhoused but effective

Combating rust, mildew, dripping pipes and other dampness discomforts, the Dixie Air Dryer can handle an enclosed space of 10,000 cu. ft.—or a room 35' x 48' with an 8'-high ceiling. Its bargain tag, $69.50, is the simple result of selling the dehumidifier works without a jacket for installation under store counter, table top or on apartment closet shelf. The Dixie also should be quite helpful on construction jobs for speed-up drying of plaster, mortar and concrete. Measuring a compact 15'' high, 14½'' long and 10½'' wide, the air dryer consists of a ¼th hp hermetically sealed unit. It weighs 45 lb. and operates on 110 A.C. current. As air is pulled over the refrigerated coils of its compressor, moisture condenses and is caught in a receptacle or carried off through a tube. At 90° F., 95% humidity, the air dryer removes 2 gal. of water every 24 hours, yet consumes about as much electricity as a 200-w. bulb.

How to kill three duct problems

with one insulation...

Thermal, acoustical and vapor barrier problems are "dead ducks" when you use ULTRALITE*, the long glass fiber insulation. Here's why:

Due to its unique long glass fiber composition, ULTRALITE is the toughest, most resilient glass fiber insulation on the market, with a record of ten years of successful application. Because of this extra strength, it can be adhered to sheet metal and run through the brakes and shears at the same time the ducts are formed — without worry that it will tear, compress, or delaminate.

Ducts formed in this way are completely insulated units, ready to install on the job. They solve the noise problem without impairing the efficiency of the unit because ULTRALITE Duct Liner has a low air friction coefficient. The same insulation that soaks up objectionable sound also insulates the ducts against heat gain or loss. No vapor barrier is necessary; with the insulation on the inside of the duct, the duct itself becomes the vapor barrier.

Try this time-saving new method on your next job, and you'll be delighted with both cost and performance. But be sure to use ULTRALITE — the only flexible glass fiber insulation with a 10-year record of successful performance.


NOTE

Should you continue to wrap ULTRALITE around the exterior of ducts for thermal protection, be sure to line the plenum and short supply and return ducts with ULTRALITE Duct Liner. Do so even on jobs where duct liner is not specified, and you will be well repaid, for this will make all the difference between an enthusiastic and a dissatisfied customer.

ULTRALITE is stocked locally in 57 cities. Your nearby distributor is listed in the Yellow Pages under "Gustin-Bacon Insulations."

GUSTIN-BACON Manufacturing Company

Thermal and acoustical glass fiber insulations • Pipe couplings and fittings • Railroad gaskets and supplies

258 W. 10th St., Kansas City, Mo.
OVERHEAD DOOR HOLDERS

provide a cushioned stop...
that absorbs the shock of violent openings, avoids damage to glass, jamb, door, wall, hinges and other hardware and cuts down maintenance and repair costs.

hold the door open...
during heavy traffic—at school dismissal, factory or office “quitting” time or when the theatre lets out. Heavy wear and tear of continuous opening and closing of the door is avoided.

Wide choice of styles to meet varying budget and installation requirements.

GJ 100•200 concealed in top rail of door. Finest for exterior and interior doors.

GJ 90 the outstanding surface type. For exterior and interior doors.

GJ ARISTOCRAT. Most “practical” for hard usage.

GJ 80 good quality for moderate cost installations.

GJ 70 for low cost installations.

GJ 300 Series—Friction type for interior doors. Concealed or Surface.

GJ 500 Series with shock absorber. Finest for interior doors.

GLYNN-JOHNSON CORPORATION
4422 no. ravenswood ave. • chicago 40, illinois
Now—A TOTALLY NEW KIND of Built-up Roofing

Carey Fire-Chex

PERMA-TOPP ROOFING

The totally NEW Built-up roofing that combines BEAUTY with greater TOUGHNESS and FIRE SAFETY than ever before possible!

No longer are you limited in your specifications to dull, drab built-up roofing for industrial and commercial installations. With Fire-Chex Perma-Topp, the saw-tooth or domed roof can be architecturally beautiful, colorful, heat-reflective! What’s more, Perma-Topp lasts longer, provides greater protection against fire, weather and corrosive fumes.

Carey Fire-Chex Perma-Topp Roofing contains a patented formulation, developed after extensive laboratory and field testing. It stays tough, resilient, even through continuous exposure to sizzling temperatures (up to 185°F) that dry out the vital oils in ordinary roofing causing disintegration, cracking, failure. Moreover, it has the Underwriters’ Laboratories, Inc. Class B rating.

Perma-Topp’s slate granule surface provides colorful beauty— with heat reflective properties when the lighter colors are specified. It never needs resurfacing, thus coating maintenance costs are eliminated... an economy feature your clients will appreciate. Perma-Topp will not “slide,” another reason why it’s ideal for saw-tooth or dome roofs. The coupon below will bring you complete specification details on Carey Fire-Chex Perma-Topp Roofing.

If you wish, a Carey Roofing Engineer will be glad to discuss the features of Perma-Topp with any member of your staff.

ONLY CAREY FIRE-CHEX PERMA-TOPP ROOFING OFFERS ALL THESE ADVANTAGES!

- Beauty never available before
- Ability to withstand high temperatures
- Fire-Chex patented formulation
- Never needs resurfacing
- Never needs coating
- Will not slide
- Class B fire safety rating
- Three plies
- Easy to install
- Can be installed on hip and ridge roofs with less than 4° pitch

For the utmost in Fire-Safety, Fire-Chex Perma-Topp Roofing should be installed with the now famous Fire-Chex Vapor Barrier

You can count on

Carey diversified products for industry, farm and home since 1873

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Lockland, Cincinnati 15, Ohio
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CLIP AND MAIL TODAY!

Dept. AF-3

The Philip Carey Mfg., Company
Lockland, Cincinnati 15, Ohio

☐ Please send specifications and details on new FIRE-CHEX PERMA-TOPP ROOFING.
☐ Please have a Carey Industrial Sales Engineer call.

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CITY __________________________  ZONE SINGLE-STATE
Summitville Quarry Tile

Summitville Quarry Tile is unsurpassed for durability and beauty.

Famous Summitville "Reds" are better for floors and wainscoting. They are fireproof, frostproof, acid-resistant, scratchproof and fadeproof. Summitville Quarry Tiles are created for abuse and, once properly installed, are maintenance-free for life.

These are just some of the reasons why more and more architects, engineers and sanitation experts are specifying Summitville, so when you specify Quarry Tile, make sure it's Summitville! Full information is yours for the asking.

NEW DATA FILE
This beautifully bound book contains full information; sizes, colors and typical installation photos. Request on your letterhead.

Carrier knows heating

Over fifty years of leadership in air conditioning have given Carrier unmatched experience in the control of temperature—heating as well as cooling. Yes, Carrier knows heating by experience—and all this engineering skill and leadership contributes to the superiority of Carrier Unit Heaters.

CARRIER GAS-FIRED UNIT HEATERS
begin with the outstanding midget-size Model 46T50/70, shown above. Only 25 inches high and relatively light in weight, this propeller-fan type unit heater packs a hefty 50,000 to 70,000 Btu/hr. input (according to fan-motor size). It is designed for use when both space and heating requirements are important.

And for extra-long life, only the Carrier line embodies the major advantage of 16-gauge Aluminumized Steel heat exchanger. It lasts far longer than one of ordinary furnace steel of heavier gauge. The dozen or more other Carrier features are equally impressive. Six additional sizes.

Get the complete story about the full Carrier gas-fired line . . . propeller-fan and duct models ranging up to 230,000 Btu capacity. WRITE or USE COUPON for a copy of the 12-page folder on Carrier Gas-fired Unit Heaters.

Duct-type unit heaters embody all the major structural and control features of the fan-propelled model—minus fan. By-pass duct application shown here permits year-round air conditioning through the Carrier Weathermaker System. Available in seven sizes.

Carrier
carrier corporation, 335 s. geddes st., syracuse, n. y.
please send me the 12-page folder on Carrier Gas-fired Unit Heaters.

name_______________________________
firm name__________________________
address_____________________________
Hidden Quality. The real, lasting quality of a building lies hidden inside its structure. And in these new Berkshire Apartments in Lakewood, Ohio, near Cleveland, reinforced concrete structural elements are used to add permanence and reduce long-term cost. American Welded Wire Fabric is used throughout to give the concrete extra strength and resistance to cracking.

Public Appearance. Jewel Tea Company understands that buildings, even warehouses like this new one, can contribute much to the impression people form of a company. They chose attractive modern design for the building and used good-looking, durable concrete liberally. All concrete, inside and outside the building, is reinforced with American Welded Wire Fabric, which meets ASTM Specifications A 185-53T. For heavy duty construction purposes this fabric can be obtained in wire sizes up to and including $\frac{1}{2}$" in diameter.
PRODUCTS

Continued from p. 254

MERQURY FLOOD casts flattering
moonglow on landscape

Breaking the gremlin monopoly on bottled moonlight, Lightolier is now marketing a new Lytescape fixture which sheds a silver soft luminescence on plants and trees. Source of the fixture's green blue illumination is a nonmagical mercury vapor lamp. Its inobtrusive smooth bullet shape reflector has full 45° cutoff to prevent disturbing glare. Completely watertight, the all-aluminum unit is open at the back to let rain, bugs and dirt wash through, and so may be placed on a lawn, fastened to a tree or building, or even set in a hole in the ground. It retails for $66.05.

Manufacturer: Lightolier, 11 E. 36th St.,
New York, N. Y.

TECHNICAL PUBLICATIONS

ACOUSTICS


AIR PURIFICATION


CEILINGS


CEMENT


DISPLAY FIXTURES

Adjustable Metal Framing System for Use on Store Shelving, Wall Sections and Display Units. Unistrut Products Co., 1018 W. Washington Blvd., Chicago 7, Ill. 3 folders.

DRAFTING EQUIPMENT

Glider Blue Print Rack. Momar Industries, 4323 W. 32d St., Chicago 23, Ill. 4 pp.

ELECTRICAL EQUIPMENT


FURNITURE

Allan Gould Designs. Allan Gould Designs, continued on p. 266
Nicholson Metal Partitions—
built to stand up . . . built to stand out

Toilet compartments may sometimes look alike—at first glance. But just check details and you’ll see why Nicholsons’ stand out. They don’t merely meet specifications—they surpass them! The important Nicholson extras are what count.

- Full 20 gauge, 1" thick panels and doors—13/16" 16 gauge pilasters.
- Full 18 gauge drawn moulding—won’t bend or dent in shipment and installation.
- Tops in finish—zinc chromate primer over galvanized bonderized steel; two coats of synthetic baked enamel.
- Patented sanitary floor and ceiling pilaster supports.
- Cast brass, chrome over nickel, hardware. Positive, unbreakable, adjustable gravity hinge—cam an integral part of barrel. Modern design in every detail.
- Individually packed panels—carton can be used as protective cover after installation.

Specify the compartments that will still stand out—after years of rugged use. Specify Nicholson.

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New Michigan State University Library—designed by Ralph R. Corder—is one of the largest university libraries in the country. General contractor is The Christian Company, Lansing, Michigan. Architectural fabricator, Aerobot Industries, Brownsville, Texas.

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