City architecture
Should New York City's greatest room be sacrificed for a new Grand Central Terminal? (p. 134)

Atomic power plants
What do they mean to industry—particularly the building industry? (p. 131)

Building abroad
Caracas— the buildingest city in South America (p. 152)

Urban redevelopment
Prize-winning plans in the Carson Pirie Scott competition for the 60-year remodeling of Chicago's loop (p. 122)

Building engineering
Welded steel ribs for world's largest dome . . . .
Paper honeycomb walls for downtown hotel . . . .Tapered steel framing for stronger buildings . . . .
Lighting systems for industrial buildings (p. 158)

Industrial building
In a dozen different ways GM's Technical Center is as brilliant as its color (p. 100 and below)
The wall and doors paint a mural of color and light.

Two patterned glass doors blend perfectly into this patterned glass wall. They pick up color and light—transmit them softly from either side, yet the view is obscured for privacy.

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

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

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**BRIEF DATA**

Glass—\( \frac{3}{4} \)" thick. Muralex patterned on both surfaces.

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

Reversible—can be used right or left hand.

Standard Sizes—
- 2'6" x 6'8"
- 2'8" x 6'8"
- 3'0" x 6'8"
- 3'0" x 7'0"

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

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

---

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

Architects: Burgess, Stevens & Purdy, Chicago.

Patterned glass has many uses—Blue Ridge Patterned Glass offers both function and beauty for many places in offices, homes, stores and institutions.

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This 96-page comprehensive guide for architects contains complete technical details as well as stock sizes, general instructions and specifications on all types of Hauserman Movable Interiors. Write to: The E. F. Hauserman Company, 7150 Grant Avenue, Cleveland 5, Ohio.

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*PORT OF NEW YORK AUTHORITY BUS TERMINAL, New York, N. Y.
Architects, Port of New York Authority Engineers
UNION PACIFIC RAILROAD COMPANY, Seattle, Wash.
*WICHITA MUNICIPAL AIRPORT, Wichita, Kan.
Architects, Thomas-Harris-Calvin Associates
HUDSON & MANHATTAN RAILROAD
GREYHOUND BUS TERMINAL, Kansas City, Mo.
*NEW YORK CITY DEPT. OF MARINE & AVIATION, Pier Shed No. 54
*NEW YORK CITY DEPT. OF MARINE & AVIATION, Pier Shed No. 57

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PENTAGON BUILDING, Arlington, Virginia
*METROPOLITAN MUSEUM OF ART, New York, N. Y.
Architects, Voorhees, Walker, Foley & Smith
AMERICAN NATIONAL BANK, Austin, Texas
Architects, Fueshke, Brooks and Barr

HOTELS

STATLER
*HILTON

INDUSTRIAL

FORD MOTOR COMPANY, Livonia, Mich.
Architects, Albert Kahn Associated Architects & Engineers, Inc.
*BUICK MOTOR DIVISION, Building No. 36, Flint, Mich.
Architects, Albert Kahn Associated Architects & Engineers, Inc.
*BUICK MOTOR DIVISION, Building No. 44, Flint, Mich.
Architects, Albert Kahn Associated Architects & Engineers, Inc.
*GENERAL MOTORS SAGINAW GEAR DIVISION, Saginaw, Mich.
Architects, Argonaut Realty Co.
*ROCHESTER PRODUCTS DIVISION GMC, Rochester, New York
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*FISHER BODY DIVISION GMC, Detroit, Mich.
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<table>
<thead>
<tr>
<th>Available Thickness (Inches)</th>
<th>Heat Conductance at 75°F Mean Temp. (Btu/hr./Sq. Ft./°F)*</th>
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<tbody>
<tr>
<td>1/4</td>
<td>0.50</td>
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<tr>
<td>3/8</td>
<td>0.33</td>
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<tr>
<td>1</td>
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<td>1 1/4</td>
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<td>1 1/2</td>
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<td>2</td>
<td>0.18</td>
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Above: Lowell House

1 Dunster House, on the Charles River
2 McKinlock Hall
3 Vanderbilt Hall
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Below: GORDON McKay LABORATORY

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See our insert on high-strength bolts in Sweet's Architectural File
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They tried it...
They liked it...
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Top Illustration: Administrative Office, Alcoa Building, Pittsburgh
Bottom Illustration: Corridor in Alcoa Building

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"They tried it" . . . and found Joanna Vinylized Wall Fabric is built to last for years. Its vinyl surface takes all the punishment, the scuffs and scrapes and bumps that are part of ordinary wear in a busy office. Maintenance and redecorating costs are cut to the bone. . . Joanna stays unmarred after years of wear, and dirt and soil simply wash off with soap and water.

"They liked it" . . . especially Joanna's warm, rich color and unusual textures. These offer limitless possibilities for the creation of interiors with distinct character and atmosphere. Joanna's appearance is a definite decorating asset to any building that's built for beauty.

It didn't take long for Joanna to prove its performance and economy, so ALCOA has "come back for more." Already more than 42,000 additional sq. ft. have been installed in Alcoa branch offices. We are sure that your satisfaction upon once trying Joanna will also bring you back for more. Write today for Sample Folder S-24, the same one that got ALCOA started.
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Check These Top-Quality NORTON Features:

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Seaway towns may get defense rating; building boom, planning problems seen

Civic planners and industrial leaders in cities and villages all along the Great Lakes and the upper St. Lawrence River were voicing guarded elation last month as they started calculating the enormity of the expansion sure to affect their areas as the result of the St. Lawrence Seaway project. Predictions ran all the way from the comparatively pessimistic view of some regional thinkers who foresaw only a temporary construction boom to wildly optimistic "certainty" that some cities would be tripped in population and industrial output by the seaway.

FORUM, in a spot check of several key cities along the lakes and on the river, found these early estimates of the size of the seaway-inspired construction market:

Chicago—Development of 1,750 unused acres for manufacturing and cargo movement purposes, 35,000 new production jobs and 60,000 related jobs, speed-up and amplification of present traffic, transit and redevelopment plans to handle port growth.

Detroit—A crawl with conflicting, unspecified plans, at least half of which were expected to have been washed away by election returns.

Cleveland—Biggest growth of all lake ports predicted by planners and their consultants, completely revised master plan in the making to handle growth, and assurances by dock owners and operators that they can handle ten times the current port tonnage without city dock building.

St. Lawrence area—Quickening of real estate market and increased flow of building permits, mostly for housing, in Ogdensburg and Massena, NY, in preparation for an inflow of construction workers for seaway work and the joint New York State-Canadian power project.

Not even the most astute planners and prognosticators could estimate whether growth along the lakes would fall short of the vaguely defined expectations or would exceed them.

Detroiters found their first worry was convincing Congress it should put up money to blast away some 3 mi. of rock to deepen the Livingstone channel connecting Detroit with Lake Erie. Chicago experts hastened to point out their city was no slouch at growing industrially; they hardly expected the seaway to stimulate expansion at a rate greater than Chicago's impressive postwar growth. Word from Washington was that areas where actual seaway construction is scheduled (Massena, Ogdensburg, possibly Detroit) might qualify for an ODM defense rating, the effects of which would be 1) to make more liberal mortgage terms (90% of FHA valuation instead of 80%) available for rental builders and 2) to open the way for federal aid to cities expanding their services to handle seaway-connected population growth.

NAHRO pledges aid to urban renewal, urges housing-urban affairs cabinet job

Although many advocates of the urban renewal program established under the new Housing Act hope it will eliminate the need for more federal public housing, the National Association of Housing and Redevelopment Officials pledged itself to support urban renewal last month at its annual convention in Philadelphia.

In its formal resolutions, NAHRO also registered its conviction that "we will not stem blight by talk and publicity, nor renew cities by seeking to achieve broad objectives without adequate means"—one of which, it declared, should be re-expansion of federal public housing to the rate of 135,000 new units a year originally authorized under the Housing Act of 1949.

What marked this year's NAHRO convention was an accent on the positive. The public housing officials found themselves sharing common ground with some of the more moderate elements of the National Association of Real Estate Boards, a group usually regarded as an enemy of NAHRO. The convention also:

- Recommended creation of "a cabinet-rank Department of Housing and Urban Affairs" that would be able to deal more effectively with "the fact that the problem of inadequate housing and the spread of slums and blight is today perhaps the most serious and pernicious domestic problem we face." In this, NAHRO backed an idea that has been receiving increasing support recently in homebuilding and real estate quarters.
- Accorded an enthusiastic reception to an announcement of the plans and purposes of the newly organized American Council to Improve Our Neighborhoods (p. 121) by Life Publisher Andrew Heiskell, one of ACTION'S three vice-chairmen, who was the main speaker at the annual banquet.
- Held a two-session workshop on the problems of industrial re-use of Title I urban redevelopment sites with the participation of Executive Director Carl T. Lloyd of the Society of Industrial Realtors and Robert B. Garrabrant, secretary of the industrial council of the Urban Land Institute, two NAREB affiliates that devote their main attention to real estate business and economic matters, pay scant attention to its anti-public housing politicking.

Restrictions disapproved. HHFA administrator Albert M. Cole told the session that "slum clearance alone, even though it has restored some areas to useful life, has so far been a losing fight." The new urban renewal program, he added, "is aimed at something more than clearing out slums—it is aimed at the bigger, more basic job of slumproofing our towns and cities... the erection of slumproof barriers that will wall out the spread of blight into other sections so that you and others can destroy slums once and for all, and stabilize our endangered neighborhood against this infection."

At a press conference, Cole expressed his "personal feeling" that the new Congressional requirement that further public housing can be approved only if it is intended for persons "displaced" from their homes by government action "is too limited". He thought this might cause "unnecessary restrictions" in helping some people who live in slum areas that are not being cleared but who need to be rehoused. Would he recommend repealing this provision? "I don't know."

If the US has a responsibility in slum clearance, said Cole, it would seem to follow that it has a responsibility in relocation, "one of the toughest problems in redevelopment."

But while he was not satisfied with present relocation programs, he would not suggest any steps to improve or expand the federal role in relocation until "all the existing tools" of the new urban renewal program have been tried at the local level.

Discordant note. Mayor Joseph S. Clark of Philadelphia jarred the otherwise peaceful convention with a talk touched with sarcasm and belligerency. He said he could not "share President Eisenhower's optimism" that the new Housing Act was "a major advance toward meeting America's housing needs."

He said: "The Housing Act of 1954 is in many respects a step backward from previous federal programs... The broader concept of urban renewal is a wholesome one. It cannot, however, contribute much more to the eradication of slums than the previous redevelopment approach, unless the program is greatly stepped up and additional funds made available. To the extent rehabilitation is emphasized, contrasted to slum clearance, there is danger that remedy will be patchwork, merely postpone the date of obsolescence...."

Despite Clark's views, City Housing Coordinator William L. Rafsky and other planning and housing officials were busy shaping a 27-year program for rehabilitation or renewal of every obsolete dwelling in the city—one of the most ambitious urban renewal programs anywhere in the nation. Prospective financing: federal assistance totalling $6 million a year to supplement city outlays of $3 million.

New president. First Vice President Walter B. Mills, Jr., executive director of the Greater Gadsden (Ala.) Housing Authority was elected president, succeeding Oliver C. Winston of Baltimore. Robert D. Sipprell, the Buffalo authority's executive director and former NAHRO executive director, was elected
first vice president, and Paul S. Freedman, controller of the Chicago authority, second vice president. Mills, 46, was born in Birmingham, educated as a civil engineer at Birmingham Southern College and The Citadel. He was a wholesale oil distributor when appointed chairman of the Gadsden authority in 1938. He became executive director in 1941. Known for his pleasantry and throaty Southern accent, he holds a reserve commission as a lieutenant colonel in the Marine Corps, in which he served during World War II. For relaxation he golfs (75 to 80).

Big drop in nonresidential use of lumber predicted

Design changes and competition will cause a minor revolution in the lumber business in the next 20 years. Annual production will rise by 1975, but only by 2.3 billion bd. ft. There will be 17% less wood in the average dwelling of that year and a much smaller share of lumber for construction will go into nonresidential building.

A 400-page report prepared by the Stanford Research Institute in California for the Weyerhaeuser Timber Co. of Tacoma describes a steadily growing economy in the next two decades, with a lumber industry that will not keep pace. Reason: too high production costs to meet the competition. The result, says Stanford, will be a shift in uses of lumber and growing substitution of other materials.

Bd. ft. per dollar. The report—a meaty document sure to be discussed and mulled over by building men for a long time—predicts an overall decline of about 45% between now and 1975 in bd. ft. of lumber consumed per dollar spent on nonresidential construction. The projected declines in lumber-use range from 25% in institutional building to 50% in highway construction.

The Stanford report figures total new construction in 1975 to reach $51.7 billion (as opposed to other economists’ view of $36 billion for this year—not included in the Stanford report). The increase in nonresidential construction is paced at the same growth rate as residential—approximately a 60% increase in expenditures over 1952. While lumber use in the average dwelling in 1975 will be 17% less than it is now (due to a large extent to architectural changes), its consumption in nonresidential construction by then will be about 3 billion bd. ft. less.

Forms and framing. The economists judged from a survey of 1,000 nonresidential contractors that 58% of lumber consumption in nonresidential construction goes for concrete forms; 20% for framing and trim and another 10% for scaffolding. It appears likely, they say, that because of its many possible reuses, lumber will retain a portion of the form market in future years. Its main competitors, where smooth surfaces are desired: plywood and hardboard. Lumber’s advantage in the other departments is its lower cost. If that is damaged, steel or steel and concrete will push in.

Sidelights

Investment for research

A campaign to collect $100 from every registered architect was launched last month by the American Architectural Foundation, Inc. with an assist from AIA. The purpose: to build a fund for architectural research. The foundation, which is a nonofficial adjunct of AIA, will raise the money; AIA will point out potential areas of interest to architects and its research committees will do the research; BRAB will clear the information gathered and make sure a project suggested has not been done before. The lion’s share of $1 million the foundation hopes to collect, according to Foundation President Douglas W. Orr, FAIA, will be invested. “We will be willing to look into any kind of project,” said Research Director Walter Taylor of AIA. He added that no initial project had been settled upon but that it might be something on hospital design.

For works planning: a trickle

Denied all but a token appropriation by an unsympathetic Congress, the administration’s program for stimulating the advance planning of local public works was nearly ready last month for a feeble start. The Housing Act authorized $10 million in interest free loans to municipalities for planning but Congress actually appropriated only a piddling $150,000 and stipulated further that not more than 5% of the funds could go to a single project. Tax-exempt bonds were a possibility, too, for cities to take any advantage of the fund at all.

As a result, HHFA officials have decreed preference for planning projects in the public health field such as sewer and water line extensions. Application forms were sent to HHFA’s five regional offices (Philadelphia, Atlanta, Chicago, Fort Worth and San Francisco) Oct. 20. Actual advances, which will be made from these application centers, will start trickling out after Thanksgiving.

Piggyback progress

Southern-Pacific is happy with its year-old piggyback freight experiment (transporting truck trailers on flat cars), according to President D. J. Russell. The railroad operates 4,000 of its own trucks, is moving about 100 a night an average distance of 400 mi. “Sometimes as much as 600 or 700 mi.” The New York Central, meanwhile, has shelved plans for a piggyback system. Conceived by William White, former president who left when Robert Young’s group took over last spring, the plan called for construction of terminals in at least six cities at a cost of at least $5 million. The Central’s proposed system would use side-loading of the flat cars and consequently would necessitate considerable investment in fork-lift trucks and in bringing the flat cars up flush with loading platforms (AF, Aug. ’54). Probable reason for the decision; unwillingness of the new management to lay out heavy capital until they see how things shape up the first fiscal year.

Crowd-puller on Fifth Ave.

Opening day at the Manufacturers Trust Co.’s new glass branch on Fifth Ave. (AF, Oct. ’54, News) saw 15,000 visitors jamming the halls to inspect and speculate. Vice-President Harold Miner estimated the throng at thrice the size of any day’s traffic in the bank’s old branch across the street. Principal comment: “Breathtaking.” More specialized opinion came from visiting old-guard bankers (who saw the glistening structure as “newfangled”) and from old-guard civilians, who saw Harry Bertoia’s sculptured screen and ceiling decorations as something the contractors had forgotten to finish. Some comments reported by the painstaking New York Times: “Oh, I see you didn’t get that wall finished.” “When are you going to pour the concrete over it?” “It looks like a flying bedspread.” The crowds kept coming, however, and the bank stayed open late four days to accommodate them.

Wasted words? (cont’d.)

Just how effectively manufacturers and advertisers of building materials are getting through to architects with their advertising was threshed over by some 28 architects, admen, manufacturers, editors and cataloguers at a panel session a month ago of the Hoberg’s, Calif., convention of the California Council of Architects (biggest AIA regional group). Panelists, prodded by Architect Bourne Hayne, convention co-manager, and questioned by Robert Burns, AIA council attorney, probed some big areas of concern. Their opinions: There is no shortage of authoritative testing agencies to check manufacturers’ claims. Best sources of reliable, readable, fileable data on products are regular reporting channels of architectural publications. Before taking other steps to get ads and literature pegged specifically for architects (most of it is waste-basketed, according to Los Angeles Architect Earl Heitschmidt), it might be better to let AIA Document 184, a suggestion sheet for manufacturers, gain wider acceptance. Manufacturers and admen were politely reluctant to encourage formation of an AIA editing service to help them. Nearly everyone agreed on desirability of putting AIA file numbers on literature, but there was some grumbling about sheer volume of data to be filed. Douglas Haskell, editorial chairman of Forum, suggested a simple alphabetical filing system, with simple cross-indexing. Its advantage: fits actual memory habits, is tailored to the least bright file clerk.

Philadelphia’s v. air conditioners

Philadelphia will crack down on unlicensed installation of commercial air conditioners. Licenses and Inspection Commissioner Walter S. Pytko believes that “hazardous conditions” exist in many buildings involving the city in such dangers as water shortage, structural weakening of buildings and overloaded wires.
AFTER SIX YEARS OF TOIL, FOUR APARTMENTS ON FORMER SLUM SITE IN CHICAGO

Lake Meadows rises as Negro market proves worrisome — a progress report

Lake Meadows, a controversial and beleaguered idea for massive slum redevelopment, is gradually hardening into the brick and mortar of a gleaming new community on Chicago's South Side. Last month, four 12-story apartment buildings rose above the 101 acres of cleared slum rubble; the skeleton of a fifth was two-thirds complete. On Nov. 12, New York Life Insurance Co., sponsors of the project, will swing open the doors of a $1 million drive-in shopping center (AF, Dec. '53, News) to serve the project and surrounding area.

The opening of the center will complete one phase of Lake Meadows' development, but New York Life—after a cautious pause to look around—is moving on to the next and larger phase. Working drawings for the first of four projected 20-story buildings are on the boards of Architects Skidmore, Owings & Merrill. Bids will be sought on the first two shortly after the first of the year.

Out of the slum-ghetto. When fully completed, Lake Meadows will house 2,000 families, most of them refugees from Chicago's stinking slums, in a park-like setting carved out of the rotteneast part of the old South Side. It will contain not only its own shopping facilities, but a school, church, and parks as well. It will be Chicago's holdest enterprise to provide modern housing at medium cost for the exploited dwellers of today's Negro slum-ghetto.

It has taken New York Life six years to get its idea to where it stands today, still barely 25% complete. This has been a pioneering process marred by a series of social, legal, financial, and political troubles. A total of 474 of 725 parcels had to be acquired by the Chicago Land Clearance Commission (the subsidized clearance agency) through laborious condemnation suits in Cook County's hopelessly crowded courts. On 11 occasions, the suits dragged through to the Illinois Supreme Court. Three times they reached the US Supreme Court.

Repeatedly, the problem of relocating 3,500 Negro families from the site threatened to shake the support of the Chicago city council, some of whose aldermen wondered—perhaps with reason—if relocation might not alter the political complexion of their own districts, perhaps even jeopardize their own jobs. For three months one time, planning of the site was snagged because a city county subcommittee delayed approval of a necessary street closing. Added to these delays were the endless bureaucratic processes involved in obtaining approval of local, state, and federal agencies for almost every move. Said one Chicago mortgage banker: "They should rewrite the book of Job."

Can the Negro market pay? Haunting the sponsors of Lake Meadows, besides these troubles, was the question of whether it is possible to build modern housing on such a scale for predominantly Negro occupancy (95% of Lake Meadows' families are Negro). The sponsors, working on the basis of a 4% return on their investment and long-term amortization, planned Lake Meadows to rent at $20 a room. Rising costs during the six years have boosted rents to $26 per room. This is still a whopping bargain when contrasted with the $50 a room, or higher, rent that tenants in other new elevator apartments pay in Chicago. And Otto L. Nelson, New York Life's vice president for housing, believes this is within the Chicago Negro family's ability to pay—just within. He bases his judgment upon the experience with the first four buildings at Lake Meadows. Col. William J. Reardon, manager, has no long waiting list of applicants, but his 476 apartments are 100% occupied. When the fifth building is finished sometime next summer, he confidently expects it to be filled within a month of its opening.

Nelson cites several factors which he believes have held down the number of applicants at Lake Meadows. The first is the fact that, physically, Lake Meadows still stands in the middle of the rubble of its demolition and is surrounded by the toughest, most criminal slums in Chicago. Lake Meadows' tenants must go into this slum world to shop, to schools, and to churches. Esthetically, there is nothing pleasant about a rubble heap. The first white family to move out of Lake Meadows moved out last month because of the school problem. Said the mother: "Living here in Lake Meadows with the fine Negro people we have here is one thing. Sending my child into an old school overcrowded with young toughs from the slums is something else, again."

As Lake Meadows moves towards its ultimate objective, Nelson contended, such retarding factors will disappear. With the opening of the new shopping center, one of them is already going. As more buildings are built and landscaped, the physical ugliness of Lake Meadows will be vanishing.

Vanishing trademark. Until that time is reached, New York Life plans to continue a program of cautious progress. One victim of this caution is the original plan that called for two long, slim, 23-story buildings with open galleries housing 640 families each. These dramatic structures, portrayed in advance Lake Meadows' publicity, became almost the trademark of the project. In their place, Lake Meadows will have the four 20-story buildings planned on much more conventional lines. Reasons for the switch according to Nelson:

1. Experience has indicated it would be inadequate to put as many as 640 new units on the market at one time. With smaller buildings, the impact will be more gradual.

2. Economy. Buildings with the long, thin lines and outside galleries would be more costly than conventional buildings with a center corridor. Main factor in the savings: reduced exterior wall area.

3. The thought of open galleries 23 stories in the air where children might be playing untended gave some people nightmares. To prevent accidents, a sturdy wire screen would need to extend from gallery level to gallery level, the sponsors decided. And this, in turn, would produce a problem of design to prevent a cheap appearance.

Reasonable cost. The original five buildings, designed along clean but conventional and economical lines, went up at a cost Nelson said was "all we could hope for." Other sources put it at $1.21 per cu. ft., not counting land and certain other factors. This contrasts with a similar figure of $1.29 which was the cost of a new apartment building of similar dimensions constructed about the same time in Chicago.

Experience at Lake Meadows has taught Chicago redevelopers other lessons, too. For instance, the Chicago Land Clearance Commission is now insisting that every project be reached, New York Life plans to continue a program of cautious progress. One victim of this caution is the original plan that called for two long, slim, 23-story buildings with open galleries housing 640 families each. These dramatic structures, portrayed in advance Lake Meadows' publicity, became almost the trademark of the project. In their place, Lake Meadows will have the four 20-story buildings planned on much more conventional lines. Reasons for the switch according to Nelson:

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Experience at Lake Meadows has taught Chicago redevelopers other lessons, too. For instance, the Chicago Land Clearance Commission is now insisting that every project be built in stages, with new construction keeping pace with demolition. (Acres of Lake Meadows lay fallow for more than a year.)

But there is little sentiment among Chicago redevelopers to call Lake Meadows a flop. Said one key official: "We will all be proud of Lake Meadows some day. . . . The impact of this on our urban renewal planning is more tremendous than you can imagine."
Erie's experience plus close cooperation with the architects developed porcelain enamel panels that permitted a unique wall design and technique for St. Patrick's Academy in Chicago. In this example the spandrel panels were suspended in a corrosion resistant mullion bar system and filled after erection with insulation.

Erie has developed four basic insulated panel designs with suitable attachment methods that adapt directly to most suspended wall systems. Erie is also one of the oldest producers of pane and lug porcelain enamel panels and Porock filled panels.

You can design with the knowledge that your requirements can be executed perfectly in porcelain enamel by Erie. Check with us on your next project or panel problem.
Wreckers knock the bottom out of New York skyscraper

It looks as though Contractors George A. Fuller Co. might be building this office skyscraper from the ground up, after wreckers knock the bottom and concrete from around the steel girders, the New York Sun reports.

The top-down demolition will still continue, with the company reported to be building this office skyscraper. The New York Sun reported that the company may be building the office skyscraper from the ground up.

400 code changes adopted by building officials group

More than 400 suggested revisions to the uniform building code promulgated by the Pacific Coast Building Officials Conference were approved by delegates to its convention in Denver last month. PCBOC formulates codes for 735 cities and other governmental units, mostly in western states, including 33 (smallest: Fruitport, Mich., pop. 638; biggest: Stanislaus County, Calif., pop. 137,000) that adopted the code during the past year.

This was a big year for revisions. PCBOC was anxious to include as many as possible in its upcoming edition of the code, republished every three years. The conference approved changes to permit wider use of wood framing in buildings, increased application of plywood and laminates, more opportunity to substitute metal wall panels for standard 8" masonry, extension of use of movable partitions, construction of open, multideck parking garages, and substitution of high-strength bolts for rivets in steel framing. Delegates turned down proposals to require reinforcement of all new masonry construction in earthquake zones and to prohibit lateral wood bracing for brick walls.

Aluminum, although approved by the PCBOC research committee for some construction uses, still has not gone into the code. New chapters on wood construction were expected to cut framing costs for homebuilders, and a new chapter on masonry construction was aimed at correlating requirements in earthquake zones with those in other sections of the country.

Gilbert Morris, slum-fighting superintendent of building of Los Angeles, was re-elected president.

ASCE affirms suspensions for competitive bidding

The 26-man board of directors of the American Society of Civil Engineers, meeting at the society's convention in New York last month, reaffirmed its drastic move of last August in expelling one ASCE member and suspending 13 others for taking part in competitive bidding for the engineering work on a movable bridge in South Carolina. Clearing up any doubt about where he stood in the hottest controversy the 38,000-member ASCE has known in years, William R. Glidden, assistant chief engineer of Virginia's highway department, had hardly taken office as ASCE's new president when he lambasted engineer bidding: "The sole object of competitive bidding is a low price. . . . Cheap engineering is expensive, and to employ it is stupid." C. R. McMillan, chief highway commissioner of South Carolina, who had issued the controversial calls for bids, had insisted that he was required to do so by state law.

New executive secretary of ASCE, replacing retiring William N. Carey, is W. H. Wisely, executive secretary (for 14 years) of the Federation of Sewage and Industrial Wastes Assns.

While other engineers were drooping through, or listening to, papers detailing trends in everything from the life expectancy of steam plant equipment to buckling in the electroplastic range, Jacob Feld, New York consulting engineer, set a session of the construction division agog by reading a paper on building failures and then quietly attacking an old ASCE taboo against official recognition of structures that crack, leak, sag or simply collapse. Feld suggested—and he was backed by an almost unanimous show of hands of the 60-odd engineers present—that ASCE set up some sort of committee to investigate structural "incidents" and to make public reports of their findings so that all may learn the lessons of the small insufficiencies which may separate failure from success.

FHA investigations after six months: rental housing flattened, agency shaken

Six months struggling in the Senate hearing rooms over the workings of FHA and the nation's builders had produced a deal of head­ache and confusion. In their own way, the builders were at times as puzzled as the populace. The latter had run a gauntlet of headlines confounding them with news of fake repair deals, illicit Christmas presents, sudden resignations and astonishing profits on 608s. Builders, meantime, wondered whether the investigations and hearings on FHA abuses—some of them real—would hurt a part of the economy that could help avert a slump. As the investigation prepared for its fall reopening in mid-November—and the Justice Dept. moved heavily in with civil and criminal housing sections and a call for grand juries across the nation—the important question was what the big probe had done to building.

Missing in action: rental housing. The great effect of the Senate committee's hammering at the practice of mortgaging out was to bring about 1) a clause in the new Housing Act prohibiting such practice, and 2) a cut in loan-to-value ratios for FHA apartment mortgages. FHA-insured rental housing—it accounted for more than one-third of the nation's 93,000 multifamily units last year—plummeted to a near-halt. Although under a much less drastic ruling on cost certification, the Wherry Act program had also slowed to a crawl. In addition, Sen. Harry Byrd (D, Va.) worked into the new Tax Act a ruling that the ordinary income tax rate (as opposed to the capital gains rate) should apply to distribution of funds from a mortgage exceeding the cost of a project. The tax angle, of course, had been precluded by the antimortgaging out provision in the Housing Act.

Less cut-and-dried results of the probe were harder to evaluate. In recent weeks the spotlight had focused on a few special cases; the newspapers were reacting less violently but Sen. Capehart, with Justice backing, was methodically digging for more evidence. Clyde L. Powell, former rental housing boss, had been brought before a grand jury and charged with contempt after questions and answers about what, if any, documents he took with him when he left FHA. Ian Woodner was still being questioned and three firms in which he held an interest were being sued by the Justice Dept. in connection with rental housing at Chanute Air Force Base. Testimony from 608 builders was as close-packed as ever and Title I redevelopment projects faced some examination. Possible collusion between builder and government employee was being mentioned at many sessions.

FHA Commissioner Mason, HHFA Administrator Cole and President Eisenhower have in recent months individually assured the public that the rotten apples are out of the barrel, the operation on FHA has been a success and—said the President: "The integrity of FHA has been restored." The statements seemed premature. There will be no steadying of the apple barrel (or whatever the simile) until Capehart and committee quit rocking it, either by filing a report showing the job is done or by turning their duties over to Justice. As one former top federal housing aide put it: "It's a neat gymnastic trick—kicking the thing [housing] that you're propping up."
Unsurpassed performance and comfort in incandescent lighting is achieved by this recessed Elipticone Light Multiplier.

95% of the light output is directed below 45°. Wasteful glare-zone light is converted into useful work-zone light. As a result, effective light intensities are doubled or operating costs are halved.

So complete is the shielding that, in normal viewing positions, a dramatic unawareness of the light source results.

The inverted reflecting surface is self-cleaning. Relamping is through bottom opening by hand or with lamp changer.

Full data on the unit is on page 25 of the ART METAL catalog. Write for a copy,
**BUILDING STATISTICS:**

Construction volume soars on and up but so do costs and prices

Construction activity in the third quarter of 1954 was running 7% above what it was last year. In fact, it was the most active quarter on record —$10.75 billion of new work, according to preliminary estimates from the Commerce and Labor Dept. Seasonally adjusted, the third quarter showing indicated an annual rate of $37.5 billion for new construction, up over the first half year's rate of $36.3 billion and over actual outlays last year of $35.5 billion. A year-end total of $52 billion was predicted by H. E. Foreman, managing director of the Associated General Contractors, split between $36 billion of new work and $15 billion for maintenance and repair. A big part of construction's rosy outlook continued to rest on government action: Items:

- Local airports were due for $20.5 million in federal funds, with big construction activity in the third quarter of 1954 running above what it was last year. In fact, it was the most active quarter on record.
- A White House committee was working out details of the President's $50 billion highway construction plan.
- The first 29 lease-purchase projects conceived by GSA and the Post Office Dept. were up for approval action by the Senate public works committee.

**Costs a brake?** One signpost building men should keep an eye on again begin to be a brake on building volume. BLS materials prices, for instance, crept up to a new all-time peak in September, while wholesale and consumer price indexes slipped a little. When the cost of building materials and building itself begins to get out ahead of the rest of the economy, it counts as evidence that construction is becoming a shade inflationary.

From what trickled out of closed sessions of the government's Business Advisory Council in Hot Springs, big businessmen figure prosperity in 1955 at something between 1953 (a great year) and 1954 (an adequate, but unpretentious year except for booming construction). One phrase that went the rounds: "competitive prosperity."

**NEW CONSTRUCTION EXPENDITURES**

<table>
<thead>
<tr>
<th>Type of construction</th>
<th>September 1953</th>
<th>September 1954</th>
<th>Change % 1953</th>
<th>Change % 1954</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIVATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential building</td>
<td>1,093,126</td>
<td>1,250,708</td>
<td>19</td>
<td>15</td>
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<tr>
<td>New dwelling units</td>
<td>965,1,165</td>
<td>960,840</td>
<td>21</td>
<td>19</td>
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<tr>
<td>Additions and alterations</td>
<td>103,106</td>
<td>835,649</td>
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<td></td>
</tr>
<tr>
<td>Nonresidential building</td>
<td>102,551</td>
<td>9,139,483</td>
<td></td>
<td></td>
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<tr>
<td>Industrial</td>
<td>177,560</td>
<td>1,688,507</td>
<td>-10</td>
<td>-11</td>
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<td>Commercial</td>
<td>175,207</td>
<td>1,238,599</td>
<td>18</td>
<td>29</td>
</tr>
<tr>
<td>Other nonresidential building</td>
<td>153,184</td>
<td>20,1,203,483</td>
<td>20</td>
<td>26</td>
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<tr>
<td>Religious</td>
<td>44,57</td>
<td>335,414</td>
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<tr>
<td>Educational</td>
<td>40,54</td>
<td>304,403</td>
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<tr>
<td>Social and recreational</td>
<td>15,19</td>
<td>114,160</td>
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<tr>
<td>Hospital and institutional</td>
<td>27,29</td>
<td>239,249</td>
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<tr>
<td>Miscellaneous</td>
<td>27,25</td>
<td>211,233</td>
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<tr>
<td>Farm construction</td>
<td>170,153</td>
<td>1,170,1,233</td>
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<td>-10</td>
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<td>Public utilities</td>
<td>122,428</td>
<td>1,359,339</td>
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<td>10</td>
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<tr>
<td>All other private</td>
<td>12,10</td>
<td>92,85</td>
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<td>*PRIVATE TOTAL</td>
<td>2,200,2,440</td>
<td>11,17,729</td>
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<tr>
<td>PUBLIC</td>
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<tr>
<td>Residential building</td>
<td>46,23</td>
<td>428,222</td>
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<tr>
<td>Nonresidential building</td>
<td>380,427</td>
<td>1,275,490</td>
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<tr>
<td>Industrial</td>
<td>147,127</td>
<td>1,364,1,229</td>
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<tr>
<td>Educational</td>
<td>153,192</td>
<td>1,264,1,529</td>
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<td>21</td>
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<tr>
<td>Hospital and institutional</td>
<td>26,35</td>
<td>282,270</td>
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<td>Military facilities</td>
<td>118,86</td>
<td>1,032,649</td>
<td>-27</td>
<td>-37</td>
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<td>Highways</td>
<td>429,440</td>
<td>4,256,650</td>
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<tr>
<td>Sewer and water</td>
<td>81,97</td>
<td>638,744</td>
<td>20</td>
<td>14</td>
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<tr>
<td>Conservation and development</td>
<td>73,66</td>
<td>3,543,1,414</td>
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<tr>
<td>*PUBLIC TOTAL</td>
<td>1,182,1,179</td>
<td>1,858,822</td>
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</tbody>
</table>

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

**MATERIALS PRICES**

Hitting a new all-time high, BLS index of wholesale building materials prices moved up 0.6 points to 121.4 in September, 0.6% above the Sept. '53 level. Increase in lumber and structural clay products brought about the gain, offsetting a decline in plywood.

**BUILDING COSTS**

Higher wage rates more than the recent slow increase in materials prices forced E. H. Boeckh & Associates' building cost indexes to an all-time high in September. Apartments, hotels and office buildings inches up 0.3 points to 256.2, compared to 255.9 in Sept. '53. Commercial and factory buildings rose 0.2 points to 257.0, up from 255.6 a year ago.

**BUILDING PERMIT VALUATIONS**

City | 1953 | 1954 | Change
--- | --- | --- | ---
New York | $395,348,119 | $430,304,859 | +8.8
Los Angeles | 340,874,276 | 307,384,083 | -9.8
Chicago | 171,072,400 | 170,582,460 | -0.5
Houston | 97,467,149 | 120,480,236 | +23.6
Philadelphia | 90,469,800 | 111,243,730 | +22.8
Dallas | 83,560,584 | 109,156,825 | +30.6
Detroit | 141,089,737 | 96,816,219 | -31.4
Milwaukee | 68,383,912 | 74,347,207 | +9.1
Denver | 68,105,347 | 71,554,979 | +4.4
Atlanta | 62,513,463 | 68,318,176 | +9.3
Baltimore | 81,304,176 | 83,205,368 | +2.7
Seattle | 39,348,780 | 57,118,235 | +45.1
San Diego | 62,513,463 | 71,554,979 | +17.7
New York | $395,348,119 | $430,304,859 | +8.8

Another all-time high set in September was in building permit valuations. According to data from 217 cities collected by Dun & Bradstreet, permits reached $462,007,468, up 17% over Sept. '53. The nine-month total of $4,041,761,331 was 2.2% above the same 1953 period. New York continued to lead the rest of the nation in value of permits filled; the nine-month drop in Los Angeles' permits (see table) can be attributed to a slackening off in housing; commercial construction continued at a high rate.
Church on a budget

When the growing little congregation of St. Bernard Methodist Church, near the giant Chalmette, La., plant of Kaiser Aluminum, wanted to build a church and social hall, it reversed the usual procedure of raising funds to meet the price tag on an already-designed building. The church leaders asked Architects John Dinwiddie, John Lawrence and George Saunders of Tulane University's school of architecture to design a chapel (for 200 worshippers) and social hall (for 100), kitchen and pastor's office, for close to the $30,000 the church could spend.

The solution, nearing completion last month by Contractor Richard Goodyear, of Arabi, La., is expected to cost $34,000, will enclose 3,750 sq. ft. for $9.07 a sq. ft.

To accomplish this, the architects—who practice off campus as a firm—made structure and finish synonymous: they left exposed inside brick cavity bearing walls, welded steel roof trusses and 2" x 6" roof planks. They used simple heating and ventilating equipment (fans and blower-type unit heaters hung in ceiling spaces) and cut labor costs wherever possible. Example: pea gravel tamped into concrete floor slabs to eliminate expensive troweling and to give color and texture to floors. End walls are wood, and patio walls of the chapel and social hall are glass, with random inserts of polyester plastic into which paint and metal were cast to form Christian symbols. This inexpensive substitute for stained glass resulted from experiments by the architects and John Clemmer, an artist of the Tulane faculty. There are no windows; fixed 10" strips of glass on the sides between roof beams provide light.

New York stock exchange

Steel trusses, one story high, will carry weight of 22 stories above them in an air-conditioned office building to be erected for the New York Stock Exchange next to its colonnaded landmark in New York's financial district. Demolition of the 20-story Commercial Cable building, a difficult $500,000 job, will be started next month to make room for the new 27-story
CRANE
announces new line of kitchen cabinets

New styling adds beauty and efficiency to kitchen designs

Now Crane—the foremost name in plumbing—announces a completely NEW line of kitchen wall and base cabinets.

They’re new in beauty—with new rounded contours. New in features—with silently gliding drawers on nylon wheels... with trays in some cabinets and movable shelves in others... with sizes and types to fit any purpose and plan—including "Lazy-Susan" corner cabinets.

And of course they’re gleaming white, porcelain-enamed steel for complete practicality.

And when you specify a Crane kitchen sink—as outstanding in design as Crane bathroom fixtures, and available in seven colors and white—you’re assured that your clients will be pleased for years to come.

A Crane Kitchen Specialist will be glad to help you work out the details of the specific equipment for any plan. Call your Crane Branch or Crane Wholesaler... or mail the coupon today!

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☐ Please have a Crane Kitchen Specialist call at my office.

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Firm.

Street Address

City Zone State

Valves...Fittings...Pipe...Plumbing And Heating
Close tolerances are important in the manufacture of any mass-produced product. But they are the essence of the Amarlite System, a new concept that developed the standardized aluminum entrance. Every piece of material assembled into an Amarlite Entrance is accurate, at the very least, to a few thousandths of an inch. This assures complete interchangeability of the standard components of Amarlite doors and frames. Here's the payoff to you and your client: a precision-built entrance, an economical entrance, a clean-lined, functional entrance.

This is another of the distinctive features found in the Amarlite Trimline Entrance. For full details and the 1955 Amarlite Catalog, write American Art Metals Company, 433 Bishop Street, N.W., Atlanta, Georgia.

TEMPLE EMANU-EL, FOR SOUTH'S LARGEST REFORM JEWISH CONGREGATION

structure designed by Kahn and Jacobs and Sidney Goldstone. The 75' trusses between the fifth and sixth floors will permit eventual removal of offices between the fifth and second floors to create a column-free extension of the stock exchange's trading floor from the adjoining building (right in cut). Contractor George A. Fuller Co. will rest the trusses on caissons reaching to bedrock. The $15-million building is a standard New York ziggurat.

Synagogue in Dallas

Temple Emman-El, $1.5-million synagogue in Dallas for the largest reform Jewish congregation in the South, will be a carefully studied complex of buildings that looks somewhat like a modern civic center. The main hall, containing sanctuary and auditorium, has been given rhythm by Dallas Architects Max Sandfield and Howard Meyer (with William Wurster of the University of California as consulting architect) by letting concrete columns show between brick filler panels. One feature that is not quite convincing is a sizable concrete-ribbed, formed-copper cylinder atop the sanctuary-auditorium building. Cars can be parked among 15 acres of pecan trees surrounding the church, planted in a 38' grid pattern. Bids had not been let last month; groundbreaking is scheduled for spring.

US gives Berlin modern library

Newest example of the advanced design of buildings in the western zone of Berlin—contrasted with the stripped classicism of traditional Nazi architecture still being used in the Soviet zone—is the American Memorial Library, built and stocked with $1.3 million of American money and opened last month. Public stairs and elevators have been eliminated by locating public rooms (reading rooms, auditorium, washrooms) on the ground floor. The main library floor (and its columnless reading room) have shelves, arranged around book lifts, which serve as partitions. Storage capacity is about 700,000 volumes, a start toward satisfying Berliners' reading hunger. The library is located only four blocks from the Soviet zone—where millions of books of Western civilization are said to have been purged since the Russian occupation. Early plan was to build the library from competitive designs by German architects. Because the Germans have had little experience with public library design in the past couple of decades, no plan was suitable. Four of the architects who submitted the best plans collaborated on the present design, with the help of Consulting Architect Francis Keally of Keally & Patterson, New York, and Library Consultant Charles M. Mohrhardt of the Detroit Public Library.
STUDLESS WALL RESISTS 240 ft. lbs. IMPACT*

In the test described above, the Gold Bond 2" Solid Metal Lath and Plaster Partition showed its strength and durability. In addition, these partitions offer real economy, too. They save on materials by completely eliminating wood studs or masonry partitions. They save on space because they occupy only $\frac{1}{2}$ to $\frac{3}{4}$ the floor space required by stud or masonry walls!

And each square foot of partition weighs only 18 pounds...reducing dead load by $\frac{3}{4}$ to $\frac{1}{2}$ that of masonry construction. Fast installation and lower clean-up costs add substantial savings in labor expenses. Contractors estimate savings of 50¢ per sq. yd. and more ...when they use Gold Bond 2" Studless Partitions.

Remember, too, that with gypsum sanded plaster you also get fire protection and sound insulation. Specify Gold Bond Studless Partitions—the strong wall system that saves money. Write our Architectural Service Department for Technical Bulletin No. 628-N giving full details and specifications on space-saving, weight-saving Gold Bond 2" Solid Studless Partitions.
October was the biggest month yet for hotel deals. President Ernest Henderson of the Sheraton Hotel Corp. of America opened it by taking over Chicago’s Hotel Blackstone from the Kirkeby chain in a stock swap arrangement. Before the month ended, he had also bought the $6 million Palace Hotel in San Francisco, a 1907-vintage hostelry designed in the grand European manner. This brought Sheraton’s total to 32 hotels and about 24,500 rooms. Said Henderson: “Hotel chains are just in their infancy. Hilton, Statler and Sheraton do less than 10% of the gross volume of the industry. The time is coming when chains will be of the proportionate size of General Motors and Ford.”

It was only a few weeks later when Hotelman Conrad Hilton showed what Henderson meant. Hilton Hotels bought the Statler hotel chain for more than $111 million in the biggest hotel deal of all time and one of the biggest realty deals in history.

Clay Brown named president of M&M Wood Working

After nearly a year without a president, M & M Wood Working Co. of Portland, one of the two largest plywood manufacturers in the nation, named Lumber Executive Clay Brown to fill the post. Brown, 52, is the first man not a member of the Malarkey family (Thomas, Herbert, the late James A., etc.) to head the company since it was founded in 1918. The board’s statement: “We have selected Mr. Brown with utmost care from an imposing list of candidates . . . .” Brown was a bush league infielder in his younger days, started his career in forest products with Long-Bell Lumber in Longview, Wash, and then became sales manager for M & M. He left to become vice president with Smith Wood Products, then joined US Plywood and since 1945 has been in business for himself as board chairman of Fortuna Sawmills, Inc. He helped organize the Douglas Fir Plywood Assn. and the Fir Door Institute and served several terms as a director of both groups.

Cleveland Architect Herman Field, 44, who disappeared into Central Europe looking for his brother in 1949, was reported late last month by Communist radio to have been released from a prison camp in Poland. Field, formerly with Antonin Raymond & Associates in New York, left a job he was doing on a new building for Cleveland College (AF, June, ’51) shortly after his brother, Noel, and the latter’s wife had gone to Czechoslovakia. (They are still missing.) He had by that time completed much of the research and formed the basic program for the Cleveland project. Last month, he was reported recuperating in a sanitorium in Poland.

NAMED: Ulysses F. Ribe, president of ALA’s southern California chapter, as president of the California Board of Architectural Examiners; Frederick Coolidge Crawford, board chairman of Thompson Products, Inc. of Cleveland, as industrialist of the year by NAREB’s Society of Industrial Realtors; Designer R. Buckminster Fuller, currently a visiting lecturer at Princeton, as winner of a US Marine Corps medal of merit for his experiments on lightweight structures that can be moved by helicopter (AF, March ’54, News).

San Francisco lost one of its old school architects on October 19 with the death of Lewis Parsons Hobart, 81, FAIA. St. Louis-born, Beaux Arts-trained and a resident of San Francisco for 48 years, Hobart more than left his mark on his adopted city and its environs. Grace Cathedral, the Bohemian Club, Mills continued on p. 48
A hideaway kitchen and a slideaway wall in 390 apartments proved an unbeatable combination for the Essex House, Indianapolis, Indiana. Not only did this arrangement save on space and construction costs, but tenants are delighted with the planning.

FOLDOOR was chosen for the job to give the best folding door appearance and performance. Its ability to stack into a minimum of $1\frac{3}{4}$ per foot of opening . . . its choice of handsome quality fabrics, equaled by no other folding door manufacturer . . . and its quiet, smooth folding action were other important factors that determined the selection of FOLDOOR.

Whenever you build be sure you include FOLDOOR in your plans. Whatever you build—institution, office building, church or school—there's a size and type of FOLDOOR to fit your every need and opening. Construction strength and quality are uniform in all models—you never have to guess when you specify FOLDOOR for any installation.

For further information see Sweet's Catalog or consult your nearby FOLDOOR installing distributor. There's one in every principal city.

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General Contractors:
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Window Erection Contractors:
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AMONG THE MANY ALUMINUM APPLICATIONS IN THIS BUILDING:
Reynolds Aluminum Intermediate Projected Windows (illustrated above; details on facing page).

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Yes, there is a source where architects can draw on the skills of craftsmen to create fine pattern flooring. Wood-Mosaic and Parkay have for over seventy years supplied such flooring to architect's specification for many of America's outstanding residences and public buildings.

Why compromise for the conventional when you can readily obtain fine flooring that is in keeping with the decor of your overall plans? Just select the wood or woods of your choice. Our designers and craftsmen will assemble them into handsome, luxurious pattern flooring that achieves your desired architectural effect.

Write today for information on Wood-Mosaic's complete pattern flooring service. Better yet, let our representative show you how fine floors can become an integral part of architectural design.

Monticello Pattern—a reproduction of the parquetry floor laid by Thomas Jefferson in his famous Virginia mansion. Consists of 16-inch squares—centers of which are of burr, crotch and figured American Walnut with mitred frames of striped, quartered walnut.

These planks of antique walnut with end-grain walnut plugs are but one of many types supplied which are adaptations or actual reproductions of Early English and Colonial American plan floors.
seared for 45 minutes at temperatures up to 1720° (F.)

this new industrial roof didn’t burn!
didn’t feed the flames!
didn’t fall!

Immediately below the roof in this photo, rages a high-intensity fire, producing heat equivalent to 240 residence-sized gas furnaces operating at full capacity... or more than 24 million BTU's in 45 minutes! Last year, similar fires dealt losses of at least $250,000 to each of 105 manufacturing plants! Note, however, that the roof proves to be completely incombustible and remains intact! Now, you can have this same fire protection for all of your buildings! See following pages...
Rugged fire test proves safety of Tufcor Metal Roof Deck with Cast-in-Place Insulating Slab

On June 9, 1954, more than 100 U. S. architects, engineers, contractors, roofing manufacturers and insurance men met at Granite City Steel Co., Granite City, Ill. to witness the fire test of a new steel and concrete roof. Designed to prevent the spread of fires, the roof is made of Tufcor galvanized corrugated steel sheets topped by lightweight, insulating concrete.

1. LIGHTING THE FIRE. Test structure represented one 25 ft. bay in a multi-bay structure. Roof support consisted of 10 WF21 main framing beams supporting 11.8 pound junior beams at 6' 3" spacing. To concentrate maximum heat in center bays, fire was produced by 24 gas burners located on either side of center support beam. Mica windows on side walls of heated bays aided visual observation.

2. INSIDE TEMPERATURE SKYROCKETS to about 1000° in 5 minutes ... 1300° in 10 minutes ... 1550° in 30 minutes! Although test was conducted in open sun on a blistering day, average roof-top temperature reached only 200° ... a mere 60° above the temperature a black roof will reach through solar heat, alone! Tremendous differential between inside and roof-top temperatures was maintained by just 2 1/2" of insulating fill! A life-size manikin remained on top the roof throughout the test to vividly show insulating properties of the roof. Sixteen thermocouples measured temperatures inside the structure and on top of the Tufcor, cement, and built-up roof. White haze at roof top came from vaporization of zinc coating on side sheets.
3. **CAREFULLY CONTROLLED TEST** follows ASTM specification E119-50, which requires temperature to reach 1630° in 45 minutes. Analyzing industrial fires in 1953, one national report stated "95% of losses occurred in partially combustible structures." National Fire Protection Association found "Only 3 of (major) losses occurred in fire resistant buildings."

4. **COLD STREAM OF WATER**, played on the white hot underside of the Tufcor deck, (after 45 minutes) simulates force of fire-fighting efforts. Billowing steam clouds and Pyrometer readings taken 5 minutes after flames were extinguished showed jarring suddenness of temperature drop and ability of Tufcor to absorb extremes and rapid changes in temperature.

5. **RESULT**: Close observation of structure both during and after the 45-minute test proved that flames had not spread along the underside of the roof, that the roof had neither smoked nor propagated fire! Although extreme heat had completely warped corrugated side walls, the asphalt gravel roof had not blistered or burned—was still intact. Retention of roof strength, after test, was proved by 160-lb. man who climbed atop the test structure, jumped on the roof at mid-span, posed beside 190-lb. manikin. Deck was still able to carry full design live load.

6. **LOAD TESTS** show the tremendous strength of a roof slab similar to that used in the fire test. After 3½ million cycles of repeated loading, from zero to full design live load, the slab was loaded until it finally failed at 273 psf of 8.9 x design live load! Based on 30 psf live load, the ultimate factor of safety of the Tufcor roof slab is 9.0. (See Pittsburgh Testing Laboratory Test No. 282-T-403.)

7. **SIMPLICITY AND ECONOMY** of construction are primary advantages of this Tufcor and concrete slab. All elements of cost are shown here: hot-dip galvanized steel deck, wire mesh and insulating concrete fill. Recent bids show this superior deck can be used at a cost comparable to ordinary painted metal roof deck with insulation board, or other types of slabs on bulb-tees or purlins. FOR BUILDING INSTRUCTIONS, SEE NEXT PAGE!
FIRE PROTECTION NEWS!

fire-resistant roofs are easy, economical to build

...and Granco offers three ideal deckings for cast-in-place slabs!...

Standard Corruform, Heavy-Duty Corruform, and Tufcor—all non-combustible, all stronger than ordinary steel of the same gauge! When welded to purlins, these Granco tough-temper panels form a HIGH-STRENGTH steel deck over the building, tying roof members into a single strong plate. Lightweight deck also permits designer to use maximum ECONOMY in framing since total dead load of steel sheets and concrete is less than 7 psf! Most important, Granco steel sheets are hot-dip galvanized to offer greater PERMANENCE than ordinary painted metal deck! This permanence combined with long life of concrete results in a far superior roof system. Over 10,000,000 sq. ft. of Granco roofs already in service! For more information, write for FREE Engineering Data Section SFg-546, Dept. AF-D, GRANCO STEEL PRODUCTS CO.

STEEL SHEETS ARE QUICKLY PLACED AND SECURED by welding or by clips attached to top of joist. Attachment of sheets makes roof rigid, provides working platform. Special Granco tough-temper steel takes construction abuse—adds safety factor.

CONCRETE FILL IS PLACED over welded-in-place deck and steel mesh. This insulating slab weighs only 5 lbs. psf for a 2 1/8" average depth. (Insulation value equivalent to 1" of insulating board.)

BUILT-UP ROOF IS APPLIED after slab has cured 8-10 days. Rigidity of slab gives strength, long life to roof. Built-up roof is protected from fire by the insulating layer of concrete.

ATTRACTION UNDERSIDE. The bright galvanized surface of Tufcor and Corruform gives lasting protection to steel; affords excellent light reflection when left exposed—however any normal ceiling treatment may be applied.
Since 1818
HOPE'S STEEL WINDOWS HAVE THE STRENGTH AND RIGIDITY THAT NO OTHER WINDOW CAN MATCH

Architects—Victorine and Samuel Homsey. Contractor—J. A. Bader & Co., Inc.

HOPE'S CUSTOM STEEL SASH and HOPE'S CASEMENT DOORS
...were selected by the architects for the Frederick Douglass Stubbs School, Wilmington, Del.
—cited by Delaware architects last year as the state's best building since World War II.

For further information, write for Bulletin 134-AF

HOPE'S WINDOWS, INC., Jamestown, N.Y.
THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS
Frameless Armorply Chalkboard saves up to 30% in installation costs

It doubles as visual aid board . . . needs no maintenance . . . and it's guaranteed for life.

Here's a way to slice chalkboard costs and achieve a clean, modern look at the same time. Specify Armorply Chalkboard—drawing shows cost-saving details. Best of all, you get a superior chalkboard—and here's why.

ITS SPECIAL SURFACE of porcelain-on-steel opens up exciting new fields for visual aid devices. For example, special magnets can be used to show science classes exactly how chemical and physical reactions take place step-by-step.

NO REFINISHING—EVER. Armorply Chalkboard won't shatter, break, buckle or warp under impact, stress, temperature changes or concussion.

UNIQUE LIFETIME GUARANTEE. Armorply Chalkboard is guaranteed for the life of the building in which it is installed!

EYE-EASY green color gives maximum readability. And Armorply Chalkboard's reflectance factor is ideal: a report of the Illuminating Engineering Society and the AIA recommends a factor of between 15-20%. Tests by Electrical Testing Laboratories, Inc., show Armorply's reflectance is 18.5%.

ARMORPLY CHALKBOARD has many industrial applications, too. Specify it for shipping rooms, training departments, airline and bus passenger terminals, conference and board rooms, engineering departments—wherever the finest Chalkboard is wanted.

SEND COUPON FOR FREE SAMPLE.

United States Plywood Corporation
55 W. 44th St., New York 36, N.Y.

FREE SAMPLE: Please send me a sample of Armorply Chalkboard and descriptive brochure.

Name: ____________________________
Company: _________________________
Address: __________________________
City: ___________________ State: ________

EVENTS

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

Texas Society of Architects, annual conven- tion, Nov. 3-5, the Texas Hotel, Fort Worth.

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

Structural Clay Products Institute, annual conven- tion, Nov. 6-10, Hotel del Coronado, Diego.

National Hotel Exposition, Nov. 8-12, KIttsbridge Armorey, New York, N.Y.

Third Annual Architects' Short Course on church planning, Nov. 10-12, Universi- ty of Illinois. For details address Prof. Robert Smith, Department of Architecture, Urbana.


National Building Materials Distributors Association fall meeting, Nov. 15-16, LaSalle Hotel, Chicago.

American Standards Assn., fifth national con- ference, Nov. 15-16, Hotel Roosevelt, New York, N.Y.

Florida Assn. of Architects, annual conven- tion, Nov. 18-20, La Coquille Hotel, Palm Beach.

American Municipal Assn., annual conven- tion, Nov. 28-Dec. 1, Bellevue Stratford Hotel, Phila- delphia.

American Society of Mechanical Engineers, annual convention, Nov. 28-Dec. 3, Statler Ho- tel, New York, N.Y.

First International Automation Exposition, exhi- bition on automatic machines, factories and indus- tries, Nov. 28-Dec. 3, 242nd Coast Artillery Armory, New York, N.Y.

Market Research and Design, two-day confer- ence sponsored by the University of Michigan and the Boston Institute of Contemporary Art, Dec. 9-10 at Ann Arbor. For details address Dean Wells Bennett, College of Architecture and Design, University of Michi- gan, Ann Arbor.

American Road Builders Assn., annual conven- tion, Jan. 10-13, Hotel Roosevelt, N. Orleans.

American Society of Heating and Ventilating En- gineers, annual convention, Jan. 24-27, Phila- delphia.
It's Brand New

National Electric Superduct
Super Protection Against Toughest Corrosive Conditions

WHAT IT IS
Superduct is National Electric's new heavy-duty rigid steel conduit. It has all the corrosion protection provided by the Sherardizing process of galvanizing plus a special baked-on resin synthetic base coating. The result: NE Superduct is ideally suited for installations wherever wide temperature ranges or excessive corrosion from acids, caustics or moisture is just too rough for even the best regular conduit.

WHAT IT PROVIDES

Heavy-Duty Corrosion Protection
SUPERDUCT Resists corrosive action of almost all chemicals, oils, greases, moisture and weathering conditions. Does not corrode or rust when buried in the ground.

Resistance to Temperature Change
SUPERDUCT Unsatisfied by extremes of ambient temperatures. Stands up under conditions of high temperatures and high humidity.

Smooth Working and Fishing
SUPERDUCT Has all the easier working, forming and bending properties resulting from the Sherardizing process of galvanizing. Like Sherarduct, SUPERDUCT couplings are designed to allow the conduit ends to butt within the coupling... permits solidly locked, easily fished, thoroughly grounded system.

Complete Thread Protection
Every hill and valley of Superduct threads and couplings has full protection of both zinc and special vinyl resin enamel.
Because Toplite Roof Panels insulate so efficiently, buildings are cooler in summer... warmer in winter. Air conditioning and heating costs are lowered. Troublesome condensation in winter is reduced. Illumination bills are cut. With Toplite Roof Panels you can provide selected light transmission from the ceiling without monitor, saw tooth, or clerestory arrangements. Toplite's light transmitting characteristics eliminate glare and distribute controlled daylight throughout the room no matter what the angle of the sun.

**TRANSMITS NORTH LIGHT**

Maximum transmission of north light is a desirable quality in toplighting because of its uniformity and freedom from glare and solar heat. Note how the prism structure of Toplite affords efficient transmission of north light.

**ACCEPTS WINTER SUN**

Since low winter sun is comparatively weak in relation to high summer sun as far as glare and solar heat are concerned, maximum transmission is again desirable. This photograph shows how Toplite accepts and transmits winter sunlight.

**REJECTS SUMMER SUN**

Other materials which transmit north light and low winter sun also transmit high percentages of light during the hot, summer months. Toplite rejects direct light and heat from hot, summer sun, but transmits much of the cool, north light.

Toplite Roof Panels are Factory-Fabricated

They arrive on the job site complete and ready to install. They are set on prepared curbs and anchored, ready for flashing by the roofer. Once installed, roof can be flooded without panels leaking. And, of course, they are fireproof.

**NEW INFORMATION CATALOG**

Want more information about this great advance in daylighting? Send for the free, technical catalog on Toplite. Address: Kimble Glass Company, subsidiary of Owens-Illinois, Dept. A-1, Box 1035, Toledo 1, Ohio.
You can use Toplite to bring daylight in wherever it is needed without increasing cubage. Use a Toplite Panel as you do a lighting fixture. They may be installed in continuous strip, pattern, or in individual panels. Toplite Roof Panels permit daylighting of all building areas regardless of location or distance from exterior walls.
DURIRON for corrosion resistance at M.I.T.

Duriron was the choice for the extensive waste disposal system on all the floors of M.I.T.'s new John Dorrance Laboratory because of the corrosive solutions to be handled.

Architects specify Duriron Acidproof Drain Line because they know it meets the requirements of corrosion resistance and will generally outlast the building.

Duriron is a high silicon iron which resists most corrosives, as well as erosion and abrasion throughout the entire wall thickness. It is installed by ordinary plumbing methods.

Duriron pipe and fittings are available from stock in principal cities. Duriron Catalog PF/4 gives physical characteristics and complete details.

Specify Duriron—Insist upon Duriron.
What is the right door for any particular job? Is it the best door you can buy, or the cheapest, or what?

Mengel makes three distinct types of flush doors. Each is exactly right for its purpose. Each is the best possible value in its field. All are built by the makers of world-famous Mengel Furniture, and to the same standards of quality.

This means something to you, your clients and your customers—this, and the fact that every Mengel Door is guaranteed by all the resources of this company, the world's largest manufacturer of hardwood products. All Mengel Flush Doors are described in Sweet's (Architectural and Light Construction) Catalog, are available everywhere.

Mengel Stabilized Solid-Core Doors — Exterior and Interior

Mengel Hollow-Core Deluxe Doors — Interior or Exterior

Mengel Hollow-Core Doors — Interior or Exterior

DOOR DEPARTMENT, THE MENGEL COMPANY, LOUISVILLE, KENTUCKY
There is no "or equal" for

FERALUN
ABRASIVE TREADS

Here's the proof of FERALUN superiority

Here 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.

Here is an unretouched photograph of an abrasive tread, purchased on the open market of the type often offered as an equal of Feralun, after the identical acid test. Note the meager amount of abrasive and spotty distribution.

The life and non-slip effectiveness of any abrasive tread is approximately proportional to the amount of abrasive embedded in the surface. Feralun has provided lasting safety—free from maintenance—for the past 35 years.

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

LETTERS

FOURM ABROAD

Forum:
Henry J. Kaiser and I met several of your readers in South and Central America during a recent industrial development tour. There was great interest evidenced there in the innovations in the new Kaiser Foundation Hospitals (AF, July '53 & July '54), and through your splendid coverage in text and picture word of the design of the hospitals had preceded us.

One of your distinguished readers was the mayor of Buenos Aires, Argentina—Intendente Municipal Jorge Sabate, himself an architect; and I also recall specifically a brilliant young architect-contractor at Barranquilla, Colombia, who spoke of following Forum with great interest.

We have also found widespread interest in your article in the US, of course, and inquiries keep coming.

ROBERT C. ELLIOTT
Executive assistant to Mr. Kaiser
Henry J. Kaiser Co.
Oakland, Calif.

BABY HELMETS

Forum:
I notice in the hospital story in your July issue that steel helmets shuttle between the nursery and mothers' rooms. I am sure the babies would be much more comfortable in bassinets than in bassinets!

FRANKLYN R. HAWKINS, advertising manager
Libbey-Owens-Ford Glass Co.
Toledo, Ohio

Believe it or not, our hospital editor is on maternity leave!—en.

TYPEWRITERS VS. MARBLE

Forum:
My wife was examining your article on the New York Olivetti showroom (AF, Aug '54) the other evening, expressing great admiration for the design. I agreed, and said I liked their typewriters too. Quoth my wife: "Typewriters! Of course. For a moment I thought they were selling marble."

JOHN K. SINCLAIR
Moore & Salzbury, architects
West Hartford, Conn.

THE LOW COST OF BUILDING

Forum:
The buying public commonly proclaims that building costs are too high and many of us in the industry have agreed to this philosophy. I have wondered about the accuracy of this and have done a little preliminary research covering the period from 1940.

I found that DuPont stock had gone up more than 1,000%, that automobiles were up 300%, the Saturday Evening Post up 300%, continued on p. 62
STAINLESS CURTAIN WALLS
give you the best “long pull” investment

Curtain wall panels faced with Allegheny Metal have all the advantages. They can give your building the truly modern look. They have a soft, highly attractive luster and permit wide latitude in design for individual appearance. They’re light and strong... can be used for sheathing or “face-lifting” operations on existing structures, as well as for any type or size of new commercial building or institution.

Compared to brick or masonry construction, stainless curtain walls present savings at every turn: in lighter foundations; in enlarged floor space; in fast all-weather erection; in reduced maintenance, easy cleaning and freedom from painting. And—compared to any other curtain wall facing material—stainless steel is the hardest, strongest and most resistant to smoke, fumes, weather, wear, etc. It is the one material that can best take a beating... that costs the least in the long run because it lasts the longest.

Our Engineering and Research Staffs, etc., are at your service—anywhere, any time. • Let us work with you. Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.

Make it BETTER—and LONGER LASTING
with Allegheny Metal

FOR NEW MULTI-STORY BUILDINGS

...OR SHEATHING OLD ONES

...OR SMALL INDUSTRIAL BUILDINGS

STAINLESS CURTAIN WALLS

Address Dept. B-59

Warehouse stocks carried by all Ryerson steel plants

“INFO” for Architects and Builders

1 “AL Structural Stainless Steels”—12 pages on stainless grades, properties, forms, finishes, standard "specs", uses and advantages.

2 "Stainless Steel for Storefronts and Building Entrances"—40 pages of valuable data on examples and details. AIA File No. 26D.


Write for Details

W&D 5208
IN PITTSBURGH'S GOLDEN TRIANGLE . . .

34,200 Tons of Steel Frame Construction by AMERICAN BRIDGE in 24 months!

PITTSBURGH's new buildings have been the talk of the business world. Few cities anywhere have experienced as much commercial construction in so short a time.

For example, in the famous Golden Triangle, busy hub of this hustling metropolis, American Bridge alone erected 34,200 tons of steel framework for six towering new buildings in the two year period between April 3, 1950 and March 31, 1952.

American Bridge fabricated and erected all structural steel for the 41-story building known as 525 William Penn Place; the 31-story Alcoa building; the three Gateway Center buildings (one of which is 24-stories, and two 20-stories); and the 20-story Bigelow Apartment House.

Such an accomplishment is unusual only in the fact that all buildings are located in the downtown area of a single city . . . and that all were under construction at practically the same time. The interesting point is that one company had the facilities, the skilled manpower, and the engineering know-how to handle six sizable jobs like these with such speed and efficiency without disrupting the time schedule of the numerous other construction projects which it was handling in other parts of the country.

It only goes to prove that no job is too large for American Bridge. If you would like to know more about the advantages of American Bridge fabricated and erected construction, call our nearest office.

RECENT ADDITIONS TO PITTSBURGH'S SKYLINE

<table>
<thead>
<tr>
<th>Building</th>
<th>Steel Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>525 William Penn Place</td>
<td>14,000</td>
</tr>
<tr>
<td>Alcoa Building</td>
<td>6,400</td>
</tr>
<tr>
<td>Gateway Center Buildings (3)</td>
<td>12,000</td>
</tr>
<tr>
<td>Bigelow Apartment House</td>
<td>1,800</td>
</tr>
</tbody>
</table>

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.
Contracting Offices in: AMBRIDGE • ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON
CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • ELMIRA • GARY
MEMPHIS • MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE.
ROANOKE • ST. LOUIS • SAN FRANCISCO • TRENTON
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AVAILABLE NOW! For showing in churches, schools, clubs and industries, the new sound and color motion picture—BUILDING FOR THE NATIONS — a candid, factual photographic record of the highlights of the fabrication and erection of the United Nations Secretariat Building. For free bookings, write Pittsburgh office.
Careful planning of new school buildings calls for windows that help reduce annual operating budgets, windows that save important maintenance dollars.

That's why so many school authorities and school architects are insisting on "Quality-Approved" aluminum windows for all new school buildings. They know experience has demonstrated that aluminum windows will not rust or rot—never need painting or costly repairs—that they always operate without trouble and remain beautiful for the life of the building.

"Quality-Approved" aluminum windows are available through many manufacturers (see list below) in sizes and styles (double-hung, casement, projected and awning types) to fit any design treatment. Only those that carry the "Quality-Approved" Seal have been tested by the Pittsburgh Testing Laboratory and approved for quality of materials, for construction, for strength of sections, and for minimum air infiltration.

See Sweet's Architectural Catalog (Section 117a/ALU) for latest Window Specification Book or write for free copy. Address Dept. AF-11.

Aluminum Window Manufacturers Association
74 Trinity Place, New York 6, New York

Provide ideal working weather the year 'round

New Continental Paper Company offices show why Honeywell Customized Temperature Control is becoming a "must" in all types of buildings

The people who work in the brand-new Continental Paper Company offices in Ridgefield Park, New Jersey, enjoy some of the "happiest" working weather in America—thanks to the indoor climate planning of Architect L. Freeland Fellgraff.

To provide sensitive, reliable control of the heating-cooling system, Architect Fellgraff called upon Honeywell Customized Temperature Control.

The key word here is "customized." It means that whatever your clients' control requirements, a Honeywell Customized Temperature Control installation designed to fit the needs of the building and its occupants is your answer.

With a Honeywell Customized Temperature Control installation such as the one in Continental's new offices, you have enough thermostats strategically located to compensate for exposure, use and occupancy problems. Comfort is assured because the control system is "customized" to the design of the building.

Just as we did for the Continental Paper Company, we can do the job for you and your clients. And only Honeywell can give you complete customized service. Because, besides our engineering skill, only Honeywell manufactures all three types of control—pneumatic, electric, and electronic.

The comfort problems posed by modern buildings are dramatically illustrated by the first floor lobby. Large glass areas heighten the exposure factor; radiate heat in, in summer, heat out in winter. Visitors bring in the outside weather with them. Both these factors, exposure and use, are easily compensated for by the individual Honeywell thermostat in the lobby—and comfort is assured.
Another comfort problem arises from the generous use of glass on all four sides of the building. If a cold north wind is blowing, yet the sun is shining warmly through the south windows, the comfort system could get out of balance—if it weren't for Honeywell Customized Temperature Control. Individual thermostats permit control of comfort in individual areas, according to area needs.

A separate thermostat in the staff conference room provides the individual control needed to keep the room comfortable under varying conditions. When a conference is small, more heat (or less cooling) is needed for comfort. For a large conference, less heat (or more cooling). Honeywell Customized Temperature Control takes this into account, keeps the conference room comfortable at all times.

MINNEAPOLIS-HONEYWELL REGULATOR CO.
Dept. MB 11-213, Minneapolis 8, Minnesota
Gentlemen:
I'm interested in learning more about Honeywell Customized Temperature Control.

Name
Firm Name
Address
City  Zone  State
why architects specify
Wright Rubber Tile

The modern beauty and serviceability of Wright Rubber Tile flooring make it as pleasing to the eye as it is to the pocketbook.

Because of exceptional density, Wright resists dirt, scuffing, burns, acids, alkalis, and abrasion. It has a natural gloss that will last for decades with a minimum of care. Properly installed, Wright Rubber Tile floors are entirely trouble-free, even where there is a moisture condition.

Chem-Set Cement now assures perfect on-grade installation.

Wright—America's oldest rubber tile—is still a first choice among builders everywhere. It has proven its value.

Send today for samples, together with installation details, specifications, and the name of your nearest distributor.

WRIGHT RUBBER TILE
The 100-Year Floor!

WRIGHT MANUFACTURING CO.
5203 POST OAK RD. • HOUSTON, TEXAS

LETTERS continued from p. 56

the cost of living index up about 100%,
wage up about 100% and the cost of build-
up only 60%. Only the Lifesaver is the sav-
a nickel.

I have investigated individual trades to find out what present figures are in relation to those of 1940 and have found many of them at an across-the-board average of 60%.

A few were up and others down. It is interesting to note that, although the per-
price of steel is up, better engineering design has kept the framing cost of a struc-
at about the same dollar figure as 1940.

This research was done in only a few markets and with the natural inaccuracy of one in haste and without proper facilities.

Robert L. Hoyt
Architect and planning consultant
Santa Barbara, Calif.

SPACE-FRAME HANGAR

Forum:
Wachmann's space-frame hangar (AF, Sept. '54) is a stimulating design. . . . I commend FORUM in its continued effort to provide the opportunity to everyone interested in building to become acquainted with pioneering that is being done in structural engineering design.

This hangar is a skillful execution of space frame in welded tubular construction—two modern concepts that have great potential. Structural steel design must be submitted to this type of vital thinking if it is to compete with concrete in the way outlined by your round table report in the same issue of the FORUM.

Over the entrance to our plant we have mounted in large stainless steel letters an axiom which I think applies to structural design as well as to manufacturing. It is:

The actual is limited:

The possible is immense.

Charles G. Herrbrueck
The Lincoln Electric Co.
Cleveland, Ohio.

Forum:
. . . Quite interesting. I wonder how the cost of something like this would compare with normal structures, especially when you consider the high cost of piping. It certainly is a novel idea. . . .

V. Rensselaer P. Saxe, engineer
Baltimore, Md.

STEEL FRAMING COSTS

Forum:
I have carefully read the report on the round table discussion relative to cutting the cost of steel framing (AF, Sept. '54).

Basically, all the conclusions arrived at were correct and in the right direction. However, the main stumbling block is in having the newer methods and the newer materials.
When buildings like Chicago's Prudential and Pittsburgh's Alcoa use Adlake Aluminum Windows, you can be sure their builders have satisfied themselves that there is no better window on the market!

- Minimum air infiltration
- Finger-tip control
- No painting or maintenance
- No warp, rot, rattle, stick or swell
- Wool woven-pile weather stripping and exclusive patented serrated guides

The Adams & Westlake Company
Established 1857 • ELKHART, INDIANA • Chicago • New York
Also Manufacturers of Adlake Mercury Relays and Adlake Equipment for the Transportation Industry
J. L. Hudson Co. at New Northland Center Gets Full Sound Conditioning Treatment

As part of an all-inclusive plan to make interiors as inviting and comfortable for shoppers as possible, the J. L. Hudson Company has Acousti-Celotex sound conditioning throughout its new store at NORTHLAND CENTER in Detroit, Michigan.

Functional Beauty
Throughout 350,000 square feet of ceiling area, Acousti-Celotex Random Pattern* Cane Fiber Tile in 25 different color combinations has been installed. All of the tile has a unique multi-colored paint finish which was applied before installation in order to make the ceilings an integral part of overall store design.

Customers, Personnel Benefit
Application of this sound conditioning treatment within the entire store, in all sales areas, offices, beauty salon, stock rooms, employees' lounge, kitchens... as well as in the beautiful NORTHLAND Dining Room... is intended to benefit both patrons and store staff alike. Shopping and dining may be enjoyed in an atmosphere of quiet comfort. Personnel, too, will find increased ease and efficiency working in these noise-checked areas.

Here again is evidence of the important part Acousti-Celotex sound conditioning is playing in the design of today's new buildings.

FOR FULL DETAILS on the complete line of Acousti-Celotex products, please write to The Celotex Corporation, Dept. A-114, 120 S. LaSalle Street, Chicago 3, Ill.
FOR AN OLD BUILDING

with Lighting by LITECONTROL

This superb remodeling job (in a forty-year-old building) needed custom lighting to show it at its best and provide plenty of balanced light for office work. One versatile fixture—LITECONTROL 4044—does the job perfectly, lights it just the way everyone wants it.

It's well-illuminated (84 footcandles on the second floor), but even and glare-free. And it's economical on every count.

LITECONTROL 4044 is a louvered fixture that can be used in many ways. Here, it's surface mounted on the first floor, mounted on pendants on the second. It can be hung in rows or individually, as over the door. It goes up easily, is easy to clean and relamp. Louvers swing fully open from either side from spring catches.

LITECONTROL versatility means custom lighting with standard fixtures. That means standard prices. There are twenty-seven basic fixtures that can be combined or modified to light your job the way you want. For lighting or relighting, call your LITECONTROL representative.

ARCHITECT: J. Williams Beal Sons, Boston, Mass.
ENGINEER: Lionel G. Gale, Boston, Mass.
FIXTURES: No. 4044 4-lamp 40-watt Bipin-louvered, 35°-25° shielding. Surface mounted (1st Floor), On 4" stems (2nd Floor)
CEILING HEIGHT: 11'-0" (1st Floor) — 10'-3" (2nd Floor)
SPACING: 8'-0" on Centers
INTENSITY: 70 Footcandles average in service (1st Floor). 84 Footcandles average in service (2nd Floor)

LITECONTROL Fixtures

LITECONTROL CORPORATION
38 PLEASANT STREET, WATERTOWN 72, MASSACHUSETTS

DESIGNERS, ENGINEERS AND MANUFACTURERS OF FLUORESCENT LIGHTING EQUIPMENT DISTRIBUTED ONLY THROUGH ACCREDITED WHOLESALERS
Increased use of radiant heating in modern homes and buildings has led many architects to request more information on the performance of resilient flooring materials over heated subfloors.

In order to be able to give the architect specific and unbiased recommendations for flooring installations over radiant-heated floors, the Research and Development Center of the Armstrong Cork Company has conducted a series of tests over a nine-year period. Under both experimental and on-the-job conditions, observations have been made of the effects of normal and severe floor temperatures on the hardness, composition, and indentation properties of all Armstrong Resilient Floors.

The results of these tests show that there is virtually no loss of heating efficiency through the use of resilient flooring materials. With floors of asphalt tile, vinyl-plastic-asbestos tile, linoleum, Linotile, Corlon, and rubber tile, temperature difference between the surface of concrete subfloors, commonly used in radiant heating installations, and the resilient flooring surface, is about 2.5 degrees F. With floors of cork tile, which has a thermal conductivity or "k" factor lower than the other resilient flooring materials, the difference is several degrees F. greater. None of these temperature variations, however, is great enough to result in appreciably increased fuel consumption since the time lag required to bring resilient flooring, of the thicknesses commonly used, to the operating temperature of radiant heating systems is insignificant.

No Harmful Effect. The observations of the Armstrong Research and Development Center have also shown that floor heat, within the limits commonly recommended for radiant heating, has no harmful effect on either the resilient flooring or the adhesives used in installation. Both laboratory tests and actual field experience indicate that resilient flooring materials can be chosen for radiant-heated subfloors by exactly the same standards as those where other types of heating are employed. Each type of resilient flooring material is installed over a radiant-heated subfloor with the same adhesives and in the same manner as recommended for conventional floors. It should be noted in this connection that the use of radiant heating does not change the limitation that only certain types of resilient floors may be installed over concrete slabs in direct contact with the ground.

The American Society of Heating and Ventilating Engineers has established 85°F as the maximum surface temperature for radiant-heated floors. Floor temperatures higher than this standard are considered uncomfortable underfoot. Because of their thermoplastic quality, asphalt tile and plastic asbestos tiles become slightly softer, and indent more easily, when radiant heating temperatures run above normal. The use of the recommended size of Armstrong Furniture Rest will prevent indentation in Armstrong Asphalt Tile or Excelon Tile when floor temperatures do not exceed this standard 85°F maximum.
This photograph shows the final construction stage of a radiant heating installation. The method of perimeter insulation described in the figure at left is being used. The pipe circuit is closed and tested under pressure before concrete is poured.

Section through a floor panel using Armstrong Perimeter Insulation. Note that the insulation extends around the edges of the slab in contact with all the exterior foundation walls.

Certain characteristics of radiant heating systems as recommended by the American Society of Heating and Ventilating Engineers have an important bearing on maintaining comfort during cold weather without requiring floor temperatures exceeding 85°F. These are adequate perimeter insulation for the slab, appropriate insulation of the building, and reasonably low infiltration. The pipe grid layout should give adequate coverage without excessively high water temperatures, and the spacing of pipes should be such that there is a minimum of temperature variation between the area directly above the pipes and the area above the space between them. While none of these design features is within the appropriate scope of Armstrong recommendations to architects, they have all been considered by the Armstrong Research and Development Center in evaluating its test results.

Design specifications for radiant heating systems are available from the ASHVE. When these standards are used as the basis for the design of radiant heating systems, Armstrong Resilient Floors may be specified with assurance of the same excellent performance they have demonstrated in other applications.

**Armstrong Cork Company** makes all types of resilient floors for all types of interiors. Almost any flooring problem can be met with one or more of the floors in the Armstrong Line. As a result, we have no special bias toward any one type and can offer architects impartial recommendations on almost any flooring problem. Our main interest is to aid you in making a sound flooring selection.

Armstrong sales representatives throughout the country will be glad to consult with architects and make specific recommendations for individual jobs. Your Armstrong representative has a wide variety of experience and training in resilient flooring and can also call upon the Armstrong Research and Development Center for assistance with special problems.

For helpful information on any flooring question, just call your nearest Armstrong District Office. If you have not yet received your copy of “RESILIENT FLOORS: Technical Information for Architects,” write Armstrong Cork Company, Floor Division, 1611 Rooney St., Lancaster, Pennsylvania.
The new Ozalid 800... volume whiteprints in a compact, low-cost machine

Ozalid's new 800 turns out whiteprints, up to 42 inches wide at speeds up to 30 feet per minute...in a continuous one-step operation!

It delivers the output of a much bigger machine, but takes less space—stands only 61" high, 61" wide, 42" deep. It is moderately priced, will step up print production, cut costs.

The big feedboard holds a wealth of material, is designed for the operator's efficiency and comfort. On-Off dial, speed and delivery controls are all within easy reach. Continuous one-step operation speeds processing of rolls or cut sheets...delivers prints to front or rear, as desired.

Complete uniform print development is assured by the 800's revolutionary new system. A jet type atomizer feeds ammonia into a pressure tank which vaporizes it over the entire printmaking area.

The 800 is now in full production. Ask your Ozalid distributor to demonstrate, or write for information to 155 Ozaway, Johnson City, N.Y.

OZALID—A Division of General Aniline & Film Corporation...From Research to Reality.
In Canada, Hughes Owens Company, Ltd., Montreal.

LETTERS continued from p. 62

of construction approved. We find that it
needed amendments to the labor law, the
multiple dwelling law and to the building
code, we are two or three years behind con-
ditions, not because we as architects and
engineers are not alive to the situation, bu
because the powers that be, if not loathe to
do so, certainly are lax in wishing to comply
with changing conditions.

The savings that could be obtained by
standardization of bay dimensions could be
considerable, particularly for factories and
warehouses.

It is entirely true that adequate payment
for engineering services, permitting careful
study on the part of the engineering consult-
ant, is more than justified. It is money very
well spent in the interest of the client. In
the long run, such payment is an economy,
since it results in better and more economi-
cal buildings.

RICHARD ROTH, architect
Emery Roth & Sons
New York, N.Y.

EXTROVERT SUBSTATION

Forum:
...I would recommend all substations be
designed to brighten things as the one in your
article certainly does—the B. C. Electric Co.'s
substation (AF, Sept. ’54).

J. E. CURRAN
Duquesne Light Co.
Pittsburgh, Pa.

WRIGHT OR WRONG

Forum:
That John Lloyd Wright (AF, Aug. ’54,
et seq.) has licenses in Indiana, Texas and
Nevada including a professional engineer's
license in Indiana and has failed the struc-
tural section of the architects' registration
exam in California indicates that perhaps he
should go back to school and learn how to
pass this elementary "schoolboy" test. This
also indicates that the authorities who granted
him licenses in the above states ought to
review the procedure by which such a person
is permitted to practice. . . .

In New York we have dozens of people
calling themselves "designers" most of whom
voluntarily or involuntarily left schools of
architecture before completion. In the same
category, we have some "paper architects"
who might just as well be back decorating
eclectic facades for their knowledge of con-
struction. Are these to be given legal sanc-
tion to practice architecture? . . .

Such is the deception you play defending
the likes of John Wright! Such is the anarchy
you would have! Who, pray tell, is to decide
who is competent to be an architect—the
FORUM editor, the frustrated soph bounced
out of school, or shall a basic test open to
all qualified defend public safety? You must
continued on p. 74
Visioneering* answers the call of Psychiatric Authorities

with BAYLEY WINDOWS

Look at these features:

Designed specifically for psychiatric institutional needs, this Bayley Window offers features demanded by mental hospital authorities; such as:

- Safeguards against escape
- Better daylighting
- Controlled ventilation
- Large areas of clear glass vision
- Minimizes self injury
- Working parts concealed
- Sanitary, easy to clean
- Glass washed from inside
- Reduces maintenance and interference with hospital routine
- Reduces detention appearance
- Can be fitted with inside screens and drapes.

Your requirements may call for this or an entirely different type of window. In any case you'll find Bayley qualified and cooperative in helping you solve your problem with either aluminum or steel windows. For complete information write or phone today.

*Visioneering—The science of coordinating vision, air and light in modern building walls with windows of advanced design.

See Bayley in Sweet's. Complete catalogs on aluminum windows, 16a/Bay; and steel windows, 16b/Ba. Or write Bayley for details on your specific requirements.

THE WILLIAM BAYLEY COMPANY
Springfield, Ohio

District Sales Offices: Springfield — Chicago — New York — Washington
"Hurry-up construction" at lowest cost calls for USS Structural Steel

The company: Minneapolis-Honeywell Regulator Co., Los Angeles.

The problem: Not enough space (frequently heard nowadays). Another building needed in a hurry.

The answer: A new, expandable machine shop with plenty of natural light, a shop that's economical and easy to maintain.

The structural design chosen consisted of a series of 30' x 60' bays, the roof framing of which was composed of tapered-steel girders and open-web joists. Using this economical design coupled with the use of USS Structural Steel, the builders were able to obtain 30' x 60' bays at very little more than 20' x 40' bays would have cost had some other design or material been used. Among others considered, but eliminated due to prohibitive cost, were welded north-light rigid-frame gable bents, 60' steel trusses, precast-concrete bents, and prestressed concrete beams.

U.S. Steel's Consolidated-Western Division of Los Angeles contracted to have the steel frame ready for installation of walls and roofs within 43 working days after receipt of approved blueprints. This included making shop detail drawings, shop fabrication, painting and erecting the steel frame. The frame was ready four days ahead of schedule.

Structural Steel is the most economical of load-carrying materials. Yet, it is the strongest. It will withstand more abuse than other structural materials—effectively resisting tension, torsion, compression and shearing. Enclosed in buildings, it will last indefinitely—requiring no maintenance. Equally adaptable to riveting, welding, or bolting, Structural Steel can be erected in any weather in which men can work. And since steel members are fabricated indoors, weather can have no effect on the quality of workmanship.

For further information on construction with steel, write to the United States Steel Corporation, 525 William Penn Place, Room 4498, Pittsburgh 30, Pa.

ARCHITECTS . . . ENGINEERS The Structural Steel you need is available—NOW! No waiting is necessary. Place your order and prompt delivery is assured.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STRUCTURAL STEEL

UNITED STATES STEEL
The Structural Steel framework during erection. The principal tapered-steel girders are approximately 60' long, measuring about 42" at mid-span, and having heel heights at the ends of approximately 16". The main tapered-steel girders weighed about 3000 lbs. All main building columns supporting the roof structure were 6" wide flange.

The finished building. Exterior walls are 51/2" precast-concrete panels that can be removed easily as the plant expands. The architect was Kenneth H. Neptune, Beverly Hills; General Contractor was Wohl-Calhoun, Los Angeles; and Structural Engineer was Richard R. Bradshaw, Los Angeles.
Even where profits are figured in pennies, cost-consciousness takes a back seat to improved working conditions.

The South's largest grocer spurned hard surfaces and chose flawless wall-to-wall carpet installed with genuine SMOOTHEDGE carpet gripper in their new $3,000,000 general offices.

Installed over concrete, SMOOTHEDGE holds the carpet firmly in an uninterrupted line with no ugly, dust-catching tack marks to mar the carpet's luxurious perfection!
Great New Benefits Announced In Roof Construction!

**ZONOLITE**

Concrete Roof Systems Are

**INSULATING! FIRESAFE!**

**PERMANENT! LOW IN COST!**

And Adaptable To Any Roof Deck Design!

Nowhere in the construction industry is there to be found an equal to Zonolite systems of lightweight roof construction. They are simple in design, lightweight, firesafe, insulating, speedy in erection, strong, durable, have good appearance. Yet in spite of these added benefits, they are low in cost. The systems of construction shown here are only a small portion of the combinations now made possible by the use of Zonolite vermiculite concrete. To make your next roof deck job—or any job—outstanding, we suggest you send for Zonolite's manual on roof systems.

**GET THIS FREE BOOK**

Just Published!
Here is a book you'll refer to constantly...gives details of many roof deck systems...including design data, sectional drawings, etc. Mail coupon—no obligation.

**Mail This Coupon—Today**

Zonolite Company—Dept. AF-114
135 S. La Salle St., Chicago 3, Illinois
Please send me your new booklet, giving full details of Zonolite concrete roof systems.

Name...........................................Firm Name........................
Address..............................................................
City......................................Zone.........State..............

☐ Architect ☐ Builder ☐ Other..........................

**ARCHITECTURAL FORUM • NOVEMBER 1954**
realize that many cities in Indiana, Texas, and Nevada do not have the safety factor of building department check. You must realize that the prime function of design is the sole function of the architect and that ability to design without the knowledge of the site does not necessarily make an architect a drain on the profession.

The architectural profession is in sore need of soul-searching. Our licensing exams desperately need pruning. The architects must band together to eliminate the parasitic fringe growth of hucksters and quacks who so effectively propagate against the profession their own benefit. The support given to peers of this mettle by your magazine is an affront to the serious, unesoteric practicing architect and your copy, an affront to intelligence.

Stanley R. Rosenberg, archit.
New York, N.Y.

WHERE CREDIT IS DUE

Forum:
Turner Construction Co. was chosen general contractors for the Home Office Building for the Connecticut General Life Insurance Co. shortly after the selection of our firm as architects, with the idea that the entire project would be a team effort of the owner, architect and builder. This relationship is proceeding very well and we were very sorry to note that Turner Construction Co. was not mentioned as general contractors in the article.

William S. Brown
Skidmore, Owings & Merri.
architects-engineers
New York, N.Y.

Forum, too, regrets having made this omission — ED.

Forum:
I would appreciate it if you would inform your readers that I was not the source of information for the statement in your September '54 issue that irradiated plastics had the ability to become stronger than steel and the ability to withstand the temperatures in the afterburners of jet engines. Neither was the source of your report that in large-scale operations it was proved possible to reduce the cost of irradiation to 2¢ per lb.

Bernard Manowitz
Fission Products Utilization Project
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, N.Y.

KUDOS

Forum:
The excellent handling of "Six New Stores in the September issue indicates again to me why FORUM is tops. . . .

And thanks for your thought-provoking article on a new "plastic" order.

Mario Gaidano, archit.
San Francisco, Calif.
We like the door's "electronic politeness"

Passengers quickly discover why they like the Otis Electronic Elevator Door. It's the invisible electronic zone of detection that extends in front of the leading edges of both car and hoistway doors up to shoulder height—as shown in phantom above. It inspires passenger confidence.

Whenever this electronic zone detects a person's presence in the doorway, the doors politely reverse before they can touch the passenger. But if there is no chance of passenger interference, the doors close promptly after each stop.

This zone of detection prevents unnecessary delays. If a talkative passenger lingers overlong in the doorway, a buzzer sounds and the doors slowly, firmly—but politely nudge the passenger out of the doorway so that the car can proceed on its way.

The Otis Electronic Elevator Door is the crowning achievement in the field of the operatorless elevator. Its successful development insured the ability of operatorless elevators to move great masses of people in busy buildings with the greatest degree of safety. Ask any of our 268 offices for details.

Otis Elevator Company, 260 11th Ave., New York 1, N. Y.
A BRILLIANT EXAMPLE of the use of Pittsburgh Plate Glass among present-day glass-clad buildings is the Lever House in New York City. Here, the fixed lights of the massive tower and second floor are glazed with Solex® Heat-Absorbing Plate Glass. There is no other material like glass—in its beauty, modernity, and architectural adaptability. Architects: Skidmore, Owings and Merrill, New York City.
Today's glass-clad buildings utilize Pittsburgh Plate Glass for enduring, distinctive architectural appeal.

FEATURED in this smaller glass-clad structure are 3/4" Tranquil Green Carrara® Structural Glass spandrels. Carrara Glass is noted for its colorful beauty, its homogeneous structure, imperviousness to weather and other deteriorating agents, as well as for its design flexibility. Other Pittsburgh Plate Glass Products used here include four Herculite® Tempered Plate Glass Doors and Pittsburgh Polished Plate Glass. Architects: Cull, Robinson & Green, Providence, R.I.

ROUGH SOLEX PLATE GLASS units are alternated with regular green-tint Solex sections in the General Fireproofing Company Building to produce a glass-clad building of immediate appeal. Solex is particularly recommended for southern and western exposures. It reduces heat and sun-glare, keeps interiors cooler than outside temperature, thus helping to increase efficiency and employee morale. Design and construction by The Austin Company, Cleveland, Ohio.

Your Sweet's Catalog File contains detailed information on all Pittsburgh Plate Glass Company products... Sections 7a, 13e, 15, 16b, 21.

PAINTS - GLASS - CHEMICALS - BRUSHES - PLASTICS - FIBER GLASS

PIITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED
DURAPLASTIC CONCRETE used for frame at retail-store building for Sears, Roebuck and Company.

For Workability and Easy Placement — Structural Concrete Made With DURAPLASTIC*

Whenever you design in reinforced concrete, it will pay you to consider the many advantages of concrete made with Duraplastic air-entraining portland cement. Throughout the building field, architects, builders and contractors have learned to rely on the outstanding performance of this superior cement.

Contractors report easier placement, improved surface appearance with Duraplastic-made concrete. That’s because mixes made with Duraplastic are more workable, more cohesive ... are easy to place properly in forms and around reinforcing. Less mixing water is needed for a given slump. Construction work progresses smoothly and rapidly.

Duraplastic also minimizes water gain and segregation ... gives finished concrete greater durability. Specify concrete made with Atlas Duraplastic on your next job.


YET DURAPLASTIC COSTS NO MORE! It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

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

**“Duraplastic” is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.
Center-to-Center spacing is readily adjusted to design requirements.

PG's are lightweight and easy to handle. They come packed in cartons, ready to install.

PC's are straight and true—no sags or dips—make plastering easier.

For your next radiant heating job—specify PG's

Now radiant panel heating systems are more practical than ever...in rust-free copper tube. PG's®® (Panel Grids)—a new development by The American Brass Company—are the reason why.

PG's are the only standard-size radiant panel heating grids that are factory formed...ready to install. Shipped in a figure-8 bundle, they open readily to a flat sinuous coil pattern. They do away with slow, tiresome on-the-job bending and awkward "stringing up" of coiled tubing.

PG's consist of 50 feet of 3/8" nominal (5/8" O.D. actual) Type L Anaconda Copper Tube formed to common 6" c-c spacing and are easily hand-adjustable to all c-c spacing from 6" to 18".

Try PG's on your next job! See for yourself how they make installation easier, faster—and better. For more information about this revolutionary new development in panel piping, write for Publication C-6. The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

PG's are lightweight and easy to handle. They come packed in cartons, ready to install.

PG's are straight and true—no sags or dips—make plastering easier.

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PG's are the only standard-size radiant panel heating grids that are factory formed...ready to install. Shipped in a figure-8 bundle, they open readily to a flat sinuous coil pattern. They do away with slow, tiresome on-the-job bending and awkward "stringing up" of coiled tubing.

PG's consist of 50 feet of 3/8" nominal (5/8" O.D. actual) Type L Anaconda Copper Tube and come pre-formed to common 6" c-c spacing. You can contract or extend them easily by hand to meet all desired spacing requirements within a range of 4 1/2" to 12" c-c.

PG's are lightweight and easy to handle. They come packed in cartons, ready to install.

For your next radiant heating job—specify PG's

Now radiant panel heating systems are more practical than ever...in rust-free copper tube. PG's®® (Panel Grids)—a new development by The American Brass Company—are the reason why.

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Guarded. Applied For

Anaconda Copper Tube PRE-FORMED Panel Grids for Radiant Panel Heating
For flowing lines of glareless light, tailored to the exact dimensions of corridors or utility areas... modular Sightron by Lightolier in 2 foot modules, joined tightly end to end. Injection molded, pure white, smooth polystyrene diffusers with matching white housings present a trim, crisp appearance, blend gracefully into interior design. Diffuser sends light in all directions for overall area illumination; snaps out with one hand for easy relamping and cleaning. Rapid start ballasts light lamps instantly. Available in several sizes for commercial or residential applications.

Write today for a free copy of Lightolier's complete Architectural Lighting Portfolio.

LIGHTOLIER
JERSEY CITY 5, N. J.

Preferred by architects, interior designers and illuminating engineers for 50 years.
A new dimension... in clay tile!

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

Finest quality tile at a cost competitive with structural materials!

Mosaic 9"x6"x½" Glazed Wall Tile is the ideal material for schools, hospitals, public buildings. Gives large scale character and economical smooth surfaces to large wall areas in lobbies, classrooms, laboratories, natatoriums, cafeterias, kitchens, operating rooms and corridors.

Modern 9"x6"x½" Glazed Wall Tile, like all Mosaic Clay Tile, gives permanent beauty, sanitation, easy maintenance, long time satisfaction. In all Mosaic Harmonitone and Bright Glaze colors, with integral edge spacers for uniform close joints.

Compare this fine, smooth Mosaic Clay Tile with common glazed structural blocks. You'll find it competitive in first cost, really economical through the years. Requires only lowest-cost substructure. No expensive special trim shapes needed for any installation. And, Mosaic 9"x6"x½" Glazed Wall Tile gives you a sturdy, smooth-surfaced, better-finished wall.

For helpful literature on all Mosaic Clay Tile, write Dept. 51-3, The Mosaic Tile Company, Zanesville, Ohio. Visit our showrooms and those of your Tile Contractors.

THE MOSAIC TILE COMPANY

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

Offices, Showrooms and Warehouses from Coast to Coast.

Over 4000 Tile Contractors to serve you.

OFFICES: Atlanta • Baltimore • Boston • Buffalo • Chicago • Dallas • Denver • Detroit • Fresno • Greensboro • Hartford • Indianapolis, L. I., N. Y. • Hollywood • Little Rock • Miami • Milwaukee • Minneapolis • New Orleans • New York • North Hollywood • Philadelphia • Pittsburgh • Portland • Rosemead, Cal. • Salt Lake City • San Francisco • Seattle • St. Louis • Tampa • Washington, D. C. • Zanesville
Pittsburgh's Herculite Doors (3/4" thickness) have enjoyed phenomenal acceptance in all parts of the country—ever since their introduction in 1938. They have contributed importantly to the modern architecture of some of the country's foremost public, commercial and industrial buildings. The Tempered Polished Plate Glass and the durable hardware from which they are constructed retain their original beauty after many years of operation. Their ruggedness and dependability are found in no other door. The new 1/2" Herculite Door has adequate strength for almost all entrances. It is easily handled during installation and in operation. Architect: Wyatt C. Hedrick, Dallas, Texas.
The Pittcomatic® opens Herculite and Tubelite doors automatically!

How the Pittcomatic Hinge operates:

Power unit supplies hydraulic power to the hinge under the door through 1/4" copper lines. A 10-volt circuit in the handle or mat passes through the control box and activates the power unit. The action of the door can be regulated by adjustments provided in the control box and the hinge. No power can build up. It's the safest automatic door opener; the easiest to install and maintain.

For complete information on Pittsburgh Doors, see Sweet's Catalog File... Sections 6-E and 16-H, or write to Pittsburgh Plate Glass Company, Room 4345, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa. Ask your local Pittsburgh distributor for a copy of the de luxe Store Front Detail Book.

These new tubular frames and doors mark a distinct advance in hollow metal entrance design. Their clean, simple lines make them easily adaptable to any type of construction. Their unique interlocking construction assures utmost rigidity; holds their true shape through long and continued use. Glazing is simple and quick. Their many exclusive, quality features make Tubelite the most value at the lowest possible cost. Architects: Marsh & Saxelbye, Jacksonville, Florida.
Untimely obsolescence of rest rooms usually occurs when and where it is invited...

Sanymetal NORM-ANODE Type Toilet Compartments endow a rest room environment with dignity and good taste.

Sanymetal ACADEMY Type Toilet Compartments are suitable for conservative but modern rest room environments.

Sanymetal CENTURY Type Ceiling Hung Toilet Compartments offer the utmost in sanitation and provide modern, distinctive rest room environments for schools, institutions, terminals and other public buildings.

Sanymetal CENTURY Type (Ceiling Hung) Shower Stalls of Sanymetal "Porcena" (Vitreous Porcelain on Steel) Partitions and Pilasters, as arranged for a typical club installation. Also available in Sanymetal "Tenac" (synthetic enamel baked-on over Galvanized, Bonderized* Steel).

Sanymetal offers several different types of toilet compartments. Sanymetal also offers and recommends Two Full Purpose Metal Base Materials which combine colorful attractiveness with long years of service life and effect important day-after-day savings in cleaning and maintenance costs. These Two Full Purpose Metal Base Materials—Sanymetal "Tenac" (Galvanized, Bonderized Steel), and Sanymetal "Porcena" (Vitreous Porcelain on Steel), the ageless and fadeless, rustproof material—are described herein. Sanymetal Toilet Compartments are also available in cold rolled steel.

Sanymetal Toilet Compartments and Shower Stalls embody the results of over 39 years of specialized skill and experience in making over 500,000 toilet compartment and shower stall installations. Ask the Sanymetal representative in your vicinity to demonstrate the worthiness of Sanymetal Toilet Compartments as protection against untimely obsolescence.

THE SANYMETAL PRODUCTS CO., INC.
1687 Urbana Road • Cleveland 12, Ohio
Sanymetal Toilet Compartments embody the results of specialized skill and experience in fabricating over 500,000 toilet compartments in all types of buildings. Ask the Sanymetal representative in your vicinity for information about planning suitable rest room environments that will always stay new. Refer to Sanymetal Catalog 215 in Sweet's Architectural File for 1954 and Catalog 216 in Sweet's Industrial File for 1954.

Sanymetal* TOILET COMPARTMENTS
SHOWER STALLS AND DRESSING ROOMS

**Treated with "Bonderite", a product of Parker Rust Proof Company
you get **34.4%** more light

with all-**Flexalum**® venetian blinds

ILLUMINATION NEAR WINDOW 440 F.C., CENTER 50 F.C., FAR SIDE 32 F.C.

bare window wastes light...leaves far side dark

ILLUMINATION NEAR WINDOW 170 F.C., CENTER 48 F.C., FAR SIDE 43 F.C.

Flexalum blind spreads light to far side of room

An exhaustive study by the Faber Birren Company* shows: A bare window gives extreme glare on one side of the room, insufficient light on the other. The Flexalum Blind, by reflection, spreads the high-intensity sunlight at the window throughout the room—giving more illumination with less glare. The brightness ratio, which was 14 to 1 with the bare window, is now reduced to a comfortable 4 to 1. *Copies of this study available on request.

Write for local sources and free file of venetian blinds information—AILA File #35-P-3.

*Copies of this study available on request.

A DESIGN STANDARD LIKE THIS DEMANDS USE OF MODERN POWER

The standards being set in today’s office building design call for full utilization of modern electrical power. It’s an important consideration—in view of such necessities as high-speed elevators and modern lighting, the heating, ventilating and air conditioning systems.

These devices, as you know, have placed greater demands on a building’s electrical system. More power must be carried. And power quality has had to be improved to minimize outages, assure well-regulated voltage.

Thus, a modern, completely adequate electrical system is extremely vital if the service devices you design-in are to operate at peak efficiency. Literally, it’s an integral part of the building’s foundation. It should be considered in the study stage . . . keyed to the services that will operate from it . . . built with equally modern electrical power equipment.

By so doing, you’ll be bringing the power facilities up to the standards you’ve set for design. And you’ll be providing your client with a better building—economically sound and adequately equipped to handle the many functions it must perform.


WHAT IS A MODERN ELECTRICAL SYSTEM? It’s an integral part of basic design—not superimposed or considered after the building is under construction.

The modern system is planned around requirements for reliability, versatility and convenience. And it stresses electrical characteristics essential to building services. Therefore, system design will vary—based on the type of building involved.

The Spot Network System, left, is an example. It emphasizes “reliability”—an important requirement in large office buildings. Efficient, high-voltage power is brought close to building loads from two or more sources. An electrical fault at one source will not interrupt power to the loads being served.

FOR YOU . . . 24-page book, covering modern electrical systems and equipment for commercial buildings. Valuable adjunct to your design planning. Write at no obligation for Cornerstone or Tombstone, B-6151. Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.
AIM: MATCH PEAK TRAFFIC WITH PEAK POWER

High-speed elevator service—demanded when tenants must be moved quickly during heavy traffic hours—should begin at the electrical system planning stage.

The need for completely adequate power distribution makes this so. Not only do high-speed elevators require more power, but their drives are usually located in the penthouse—far removed from the power source. Thus, the electrical system must carry heavier loads greater distances. Yet, it has to hold voltage and power losses to a minimum.

A typical way: High-voltage distribution—carrying high voltage from power source in the basement close to the electrical center of load in the penthouse. This modern practice stabilizes voltage. It eliminates line losses that result from long runs of secondary lines. It assures adequate capacity for heavy electrical loads.

At the center of load, then, high voltage is stepped down to operating levels with a Westinghouse Dry-Type Power Center. It installs anywhere to feed the elevator equipment and other local loads. No need for a vault. And the dry-type transformers and air circuit breakers minimize maintenance.

WESTINGHOUSE DRY-TYPE POWER CENTER...
a compact substation that permits high voltage to be carried close to elevator and other remote loads. Comes ready to install.
AIM:

MATCH MODERN AIR CONDITIONING WITH MODERN CONTROL

Modern air conditioning is another tenant demand completely dependent on the electrical facilities behind it.

A number of motors and controls is involved in the modern air conditioning system. Thus, early steps should be taken electrically to assure continuous circulation of conditioned air—to the various building services.

In many modern buildings, all control equipment is located in one spot. This brings about easier operation and simplifies maintenance.

More complete integration of the controls is possible with a Westinghouse Control Center. It centralizes motor starting and protective devices in a compact enclosure that installs easily in any convenient location. Then, operating personnel can check operation of all motors at a glance.

In addition, Westinghouse Control Centers meet future requirements. This flexibility is due to standardized design and modular construction of the units.
AIM:

MATCH FIXTURES TO FUNCTIONS

Effective illumination demands this consideration: Lighting systems must be matched to functional requirements, yet blend harmoniously with building design.

This is particularly difficult in general office areas where sharp contrasts must be minimized. Thus, to keep contrast between fixture and ceiling down—to prevent specular reflection from shiny surfaces—indirect lighting is required.

When you select the fixture, you must balance the desirability for comfort—obtained with indirect lighting—with the requirement for efficiency, realized through direct lighting.

Other factors also affect the selection. Fixture design and proportion and the ultimate lighting layout must blend with interior design.

Above is an outstanding example of how these considerations have been met. A Westinghouse CD-80 Luminaire was selected. It assures both comfort and efficiency by providing direct and indirect illumination. It blends well with room proportions... gives quality light for detailed office work... maintains the same high level of balanced design that exists throughout the building.

Architecturally, complete advantage was taken of the 10' ceilings. Fixtures were suspended approximately 2'. This permitted installation of a comfortable system of continuous semi-indirect lighting. Today, it still maintains a desk-top lighting level of over 40 footcandles.

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

you can be sure... if it's

Westinghouse

THE MAGAZINE OF BUILDING
AIM:

PROVIDE MAXIMUM RENTAL SPACE

The heavier electrical loads of elevators, air conditioning and lighting systems place on a building's power system make selection of its component parts a vital consideration. This equipment must have adequate capacity for increased loads. Yet, it should be compact to release maximum space to your client.

Modern distribution equipment answers these requirements. Example: Westinghouse Bus Duct—a highly efficient way to distribute low-voltage power. Up to 5000 amperes, in fact, it packs more power into less space than any other method of secondary electrical distribution.

Westinghouse Bus Duct comes in standard, prefabricated sections that adapt perfectly with building plans. It can be installed in elevator shafts or wireways. When exposed, its neat appearance blends well with interior design.

The inherent flexibility of bus duct is another "plus." It provides adequate reserve capacity to handle future loads. Expensive rewiring is eliminated.

MATCH LIGHTING INSTALLATION WITH MODERN PANELBOARDS to give your clients both adequate protection and the convenience of circuit breakers. Westinghouse NPLAB-type lighting panelboard, here, features the compact Quicklag® P AB De-ion® circuit breaker. It enables you to design circuit protection into a smaller panelboard . . . and saves valuable closet space.
BERGER'S revolutionary new handle-free Steel Locker

The key is the handle! The key unlocks the door, and serves as a handle for opening it. The door *pre-locks* when key is removed, and locks *automatically* when shut. Students cannot "forget" to provide full-time locked protection for books, clothing, equipment, and personal effects. The school administrator retains a master key.

Berger’s *exclusive* Key-Control locker system completely eliminates all need for handle maintenance. Locker fronts are flush and smooth, with no noise-inviting projections. Berger offers school administrators and architects a complete planning and installation service, too. A service which supplies technical planning and engineering assistance, then assumes full responsibility for proper installation. Berger service is complete ... right down to the tightening of the final bolt.

Look to Berger—world's leader in lockers—for (1) exclusive Key-Control; (2) the largest selection of standard steel lockers; (3) service which helps you provide the most efficient school storage system. Write:

**REPUBLIC STEEL CORPORATION**
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Congratulations to Macon, Georgia on its radiant heated Junior High School for Girls.

The little Red Schoolhouse... aint what she used to be!

Memories of the little red schoolhouse and the heart-tugging refrain "school days, school days, good old golden rule days" are fine... sentimentally. Practically, we Americans have too much concern for the health and welfare of our children to really want to return to the era of the wood stove and kerosene lamp. The hickory stick... maybe... but not the other!

We take pride in the finest school buildings in the world because we know that the education of our children is the most important thing in the world... basic to American progress. So we're not "soft," just realistic, in providing the best light, heat, sanitation and recreational facilities possible. Healthy children learn more, faster.

All over the country new schools are incorporating radiant heating because its gentle, all-permeating, sunlike warmth... without hot or cold spots, drafts, or dust laden currents... provides the most healthful school heating known. Concealed heat sources and controls resist vandalism, promote safety, save valuable floor and wall space and improve classroom appearance. Auditoriums and gymnasiums (even swimming pools!) derive particular benefit.

Steel pipe is, of course, first choice for radiant heating as it is for conventional heating... proved in more than 60 years of service in steam and hot water systems. In fact steel pipe is the most widely used pipe in the world, for heating, plumbing, snow melting, fire sprinkler systems and the transmission of power, steam and air.

Send for free 48 page color booklet "Radiant Panel Heating with Steel Pipe" and 32 page companion booklet "Steel Pipe Snow Melting and Ice Removal Systems."

Committee on STEEL PIPE RESEARCH
AMERICAN IRON AND STEEL INSTITUTE
350 FIFTH AVENUE, NEW YORK 1, N.Y.
Achieving striking architectural effects draws upon the imagination of the architect . . . adapting products to realize the design poses another problem. Architect Hugh R. Humphreys found the solution for Tulsa’s new Sinclair Building in Ceco-Sterling Aluminum Double-Hung Windows. An unusual building design was created through the use of aluminum panel spandrels . . . Ceco Aluminum Windows were a perfect complement to the spandrels and likewise met the air conditioning problem. A simple but effective tie was made between the window and air conditioner cover. Ceco engineers helped develop the economical yet positive sill anchor. Architect Humphreys gives another reason why Ceco Aluminum Double-Hung Windows were used: “Their stainless steel weatherstripping holds air infiltration to a minimum.” Ceco Aluminum Windows need no painting . . . will outlast any structure. Next time call Ceco Product Specialists to help solve your building problems.
Highlighting high fashion
Many dramatic lighting effects achieved with extruded Du Pont LUCITE® acrylic resin

Architects and lighting engineers have a free hand to design unusual lighting arrangements with Du Pont “Lucite.” Extruded “Lucite” is now available for troffer-type units and light-diffusing ceilings in flat, shaped and corrugated panels. Extruded sheeting can be shaped to satisfy the designer’s needs.

“Lucite” transmits optimum light yet eliminates glare. It has excellent impact strength and maintains its original color as required by modern indoor lighting. Clear and translucent white “Lucite” is stable in direct outdoor sunlight and resists weathering, which makes “Lucite” an ideal material for outdoor lighting fixtures and skylights. Fabrication is economical. A variety of clear, translucent and opaque colors is available.

Write to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 2911, Du Pont Building, Wilmington 98, Delaware, for further information on this beautiful, durable engineering material.
New EDISON JUNIOR HIGH SCHOOL* takes full advantage of the beauty and utility

Here is a fine, spacious, new junior high school building that sets a precedent in design and construction. For the architect has made extensive use of one of today's most beautiful and most functional building materials—Stainless Steel.

On the exterior of Edison Junior High School, insulated panels of Stainless Steel form the spandrels and the head panels. The spandrels are of 20 gage Stainless Steel, one foot wide and four feet high with six-inch face square corrugation. The head panels are one foot high. Panels are insulated with one and one-half inches of Fiberglas and attached to the structural framework with clips.

The combination of Stainless with masonry and glass block makes an extremely attractive building. But the benefit of Stainless panel construction doesn't stop there. Construction with the panels was fast and went forward in all types of weather. More complete utilization of floor space was possible through this curtain wall type construction. Maintenance on the Stainless Steel will be negligible and life will be long.

These panels are extremely efficient from a heating standpoint. They have a low rate of thermal transmission (or "U" factor).

Stainless Steel also was used in this school for sills, mullions, windows, door canopies and trim, blackboard and tackboard frames, doors and door frames, column covers and other items of interior trim.

If you have a new school in the planning stage, now is the time to think about Stainless Steel and its many benefits. And think in terms of USS Stainless Steel. For more information on Stainless Steel panel construction, mail the coupon at right. If you like, we will be pleased to have one of our representatives call.
Edison Junior High School has 18 rooms with a two-story main classroom section 60 feet by 210 feet. A 200-foot by 120-foot wing houses a 600-seat auditorium, a cafeteria, kitchen, shops and gymnasium.

CUTS Winter Concreting Costs

‘Incor’ Saves $1 per Cu. Yd. on Heating Costs and 2 Months’ Time on Hammel Houses

Frame concreting on Hammel Houses, 14 seven-story buildings, began November 16, 1953. Caye Construction Co., Inc. had a Winter job on their hands, and as they put it, there wasn't any question, the cement to use was ‘Incor’.

With ‘Incor’ 24-Hour Cement and one-day heat-protection, forms were stripped and re-used in 24-48 hours, averaging 1.3 floors a day, even at lowest outside temperatures. Heaters using propane cylinder gas provided clean, uniform heat, with minimum labor costs.

The Contractor figures ‘Incor’ saved two months’ time and cut heating costs by two-thirds, saving $1 per cu. yd. of concrete.

Concrete design called for 550 lbs. cement per cu. yd., and 3000 psi 28-day strength. Tests showed strengths uniformly close to 4000 lbs. . . . field corroboration of data summarized in graph, shown at right, above.

The saying—"Any time is ‘Incor’ time"—goes double in cold weather!


The saying—"Any time is ‘Incor’ time"—goes double in cold weather!

Hammel Houses, Rockaway Beach, N. Y.
Owner:
New York City Housing Authority
Architects: Lorimer & Rose, New York
Structural Engineers: Roberts & Schaefer, New York
General Contractor: Caye Construction Co., Inc.; Brooklyn, N. Y.

Lone Star Cement Corporation

Lone Star Cements cover the entire construction field

Lone Star Cement, with its subsidiaries, is one of the world’s largest cement producers: 18 modern mills, 136,000,000 sacks annual capacity.

THE MAGAZINE OF BUILDING
Progress report:

GM NEARS COMPLETION

Three years ago General Motors Technical Center was a glossy dab of color on the flatland that slides north from Detroit. Today it is a lustrous palette—and not completed even yet. The site is a square mile. The first three buildings (AF, Nov. '51) have grown to 20. And the horizontal scale and spacing of the buildings in this gigantic commission are so great as to demand an automobile for observation. Just as the Aeropolis was built to be contemplated by a man standing still, Venice to be enjoyed from a drifting gondola, GM Technical Center should best flash by a Buick window at 35 mph. The Technical Center site module is a speedometer.

Color, too, is used to set the pace. With the intense glowing walls—red, dark red, tangerine, orange, yellow, black, gray, dark and light blue—spaced out on the passive stage of an unresisting, uninteresting landscape, Saarinen and his associates are completing a setting for a passion play of the Industrial World. Today’s novelists write gloomily prophetic books about this world, predicting mankind’s defeat by the machine; but actually imagination is winning the day at GM. The imperative sensations received as you drive around GM have been anything but automatically produced: color, luster, sweep, moody precision, and jewel-like detail. It is a tense, triumphant group, an architectural feat which may be unique in our lifetime.
Color

Brick end walls, fired nine different intense colors, stand like billboards craft and imagination, qualities that are vital in search. The walls are brilliant as a world's fair, unprecedented in permanent architecture.

Luster

The rough bricks glisten and gloss, surpassing the familiar gleam of metal and glass walls, the bracelet that connects them. They are common bricks, glazed and fired a second time; the surfaces are used outdoors and out.
What the GM Technical Center is:

Gathered together into a coordinated research town, four of the five groups of buildings are separate staff functions of General Motors Corp.: Research Laboratories, Process Development, Engineering Staff, and Styling group. The Service Section is the housekeeping and administrative headquarters, the landlord.

Each of the four groups can be “hired” by the various operating sections of GM or by outside agencies to execute research or design. Oldsmobile may want a new transmission for 1961; Frigidaire a new refrigerant; the US Army a new secret. They can come here for these things, also for production techniques.

Begun in 1949, the Technical Center is scheduled for completion in 1955. This group shares its square-mile campus with the Fisher-Chevrolet Engineering Center, a group of less highly refined, but still impressive, design. (It has a similar water tower which is not clothed in stainless steel, but simply painted.) The Technical Center is a $100 million project; Fisher-Chevrolet will cost about half as much.

The Technical Center’s buildings all have chassis of naked, nonfireproofed structural steel from the ground up (always black where it is visible). Also characteristic throughout are aluminum trim, heat- and glare-absorbing glass, porcelain-faced panels, and the specially fired brick end walls.

But from this point the designs vary slightly according to the tenants’ needs; even the structural module goes up and down from one building to the next. Window sills in one administration building are desktop height, in another lab table height, and this is expressed on the facade. Two office buildings are clear span, but the biggest office-lab building is not clear span; it has a fixed, framed central corridor and vertical runs of oxygen, water, gas, etc., so any office can easily be transformed into a laboratory. The styling buildings will be still different. The total office and lab area is about 560,000 sq. ft.

There are two general kinds of shop spaces: one with wood floors and the services buried; the other with cast floors and the services hung overhead. Total shop, foundry and testing building area will be almost 1.3 million sq. ft. The Fisher-Chevrolet Center contains 1.33 million sq. ft.

The buildings stretch 3,000' from fuel blending structure at left (in model above) to styling section at right; a man-made lake 7' deep, 1,780' long, 560' wide, is placed like a rectangular rug in the center of a room, with four tousled islands of foliage lying on it.

**Sweep**
Inventiveness

Industrial components of the curtain wall—double glazing and porcelain enamel filler panels—were so perfect in surface they made old-fashioned window calking archaic. It would not cling. Instead, panels and glass are gripped like automobile windshields to their metal frames, with extruded neoprene gaskets (full-size section, right; wall details, p. 117). These were developed by architects and client working together.

Precision

The pure detailing and perfect finish of the glass, aluminum, steel and porcelain enamel are hypnotic in their repetition, an aesthetic extracted from the machine. The glass-walled pavilion jutting forward from office building (right) will lose some of its surface-of-the-moon quality when it is completed by interior planting—a bank of orange trees—but this facade is representative of the window walls' delicate tones and eerie effect.
A. Green court off central lake, with big trees—functions as entrance court to two administration buildings, cafeteria.

B. Reflecting pool (large lake does not reflect buildings). These pools also can be used for ice skating, other lunchtime recreation.

The architecture of interspaces

Saarinen's assignment was buildings to fit the varying programs of five clients, since each of the five groups of this GM complex operates independently. This made it necessary to keep the over-all site plan fluid almost to the time when each successive foundation went in. Also, in the original scheme there was to be a sizable administration building jutting up out of the lake to form a central focal point for the entire group, but in later programming that disappeared.

The site was kept lake coherent by encircling the building area with a loop road, then designing the outdoor spaces inside that loop as painstakingly as indoor rooms. It is practically an operation of weaving exteriors to interiors. The empty spaces that intervene among the building walls (see drawing) actually make up a kind of tapestry of their own. Its pattern is achieved through an intricate variety of devices, from paved courts to reflecting pools, always changing, yet producing a setting always consistent in spirit. Even without the soft green yarn of landscaping to bind it together, the pattern is secure.

Before he designed these GM open spaces, Architect Saarinen got up from his drafting board to make a special tour of Europe's great Renaissance squares and spaces. But it is evident that he also brought to the vast concept of the central water plaza the memory of his boyhood surroundings. Although GM is in a very different orchestration, it has also the same soft melody of his father, Eliel Saarinen's, charming complex of slate-roofed brick dormitories and workshops not many miles away at Cranbrook. There the buildings are punctuated by many little courts and lawns, and there is always the play of water in a Carl Milles fountain to balance and focus the site compositions at the head of an avenue or at the end of a grass plaza. The sound and sight of water is the lyric touch, night and day.

GM will have fountains too, but cascading ones, without statuary; the 138'-high gleaming stainless-steel water tower was judged the proper sculpture for this industrial group. The spouting sprays of water will shoot up from the lake surface in alleys of motion among the islands of foliage which sit like great feather dusters stirring in the breeze. At night the outdoor lighting near the lake is from low stems, not pole street lights, yielding to the drama of the water and winds.
The industrial environment is given new life and refinement, surpassing the efficient but barren factory spaces of most plant architecture. This is done without undue delicacy, however; these are plain utilitarian areas. The extra dash is provided by continuation of the fiery approach to color (end wall in big space above is yellow, inside and out) and by the verdant landscaping, which is not aimed outward at the passer-by but inward, through glass, at the employees.

1. Landscaped buffer space stretches between office-lab wing and shop.
2. Inside mechanical shop in Research Group.
3. Test room views long landscaped garden between two wings.
4. Clear glass in wall of this wing, oriented north, contrasts with etched glass above vision strip in next wing. In between is a row of exhaust stacks.
5. Fuel mixing building (left); wings of heavy test cells (right). Red brick (left); blue brick (right).
Simple wall components are varied and rearranged to produce a variety of effects. Among the most cogent is the glass topped and bottomed window wall in the shop above, with a ribbon of porcelain enamel in the middle to kill glare. Top glass adds ventilation and daylight for inner part of deep room.

6. Clear glass wall is at north end of Mechanical Research building between red brick walls.

7. Shop in Process Development Group; windows face west.

8. Glass walled bridges reflect sky, framed in strokes of black steel calligraphy.

9. Strip-windowed wall is at south end of Mechanical Research building.

10. Shop and foundry, from under canopy of Services Administration building.
11. White-painted steel and stone stairway in lobby of building below.

The office environment

12. Canopy of Services office building tilts upward over sidewalk, edged with exposed steel sections.
Cafeteria is in contrast to the rest of the group in two respects: it is monochromatic, and it has overhangs. At right, Process Development administration building.

Vertical character of the glass and porcelain enamel walls of the office buildings is unusual in glass architecture. Saarinen’s reason—to meet the partitions: “If you have a long, horizontal exterior wall, like most modern glass walls, the prefab partitions march vertically up to it on the inside as if they were stepping in front of a train. There can be no impression of joining.”
Lean prefab panel wall has the same dignity inside and out. Its very repetition gives it an austere authority, but the delicate tan coloring of the panels within the dramatic edging of the black plastic of the gaskets, then aluminum, then black steel, keeps the effect from being quite so severe as black and white photography indicates.
19. Stairway in Process Development administration building
Set like an automobile windshield

All who build with fixed glass anywhere in America must now attend to the new neoprene gasket weather seal, developed cooperatively by GM and the architects to replace today's calking. On the first buildings the edges of the porcelain enamel panels or of glass panes were calked where they meet the aluminum framing, but it was found that no calking would adhere satisfactorily to the slick glass and porcelain surfaces. When the volatiles dried out, adhesion was lost.

To solve this problem, a GM subsidiary helped develop a mechanically sealing gasket like those used in automobiles. The gasket has no seal other than itself. It is set in place on the lips of the aluminum sections; the glass or porcelain enameled steel panel is slid into place, then the joints are "zipped" tight by inserting a filler strip of neoprene. This forces the knife edges of the neoprene against the glass or porcelain with a high edge compression. Surfaces, of course, must be flawless for the knife edges of the neoprene to grasp them continuously. The plastic will take edge pressure of 30 lb. per running inch, is estimated to have at least a 25-year life, can be easily unzipped for removal of panel or glass, and is manufactured by extrusion, with molded corners.

The porcelain panels first used at GM were not all satisfactory. The first problem was separation of the bond between the honeycomb paper core used and the steel skin, allowing panels to bulge. Earlier panels bonded between paper and plain metal had held; but here the bond had to be with glass—since the steel cover sheets had to be enameled both sides to equalize stresses. Cleavage occurred in a clean plane between glue and porcelain, delaminating the panels. Again, when the panels were filled with block insulation instead of paper, it was the block insulation itself that pulled apart, not the glue line.

GM and the architects have two answers. The first is a new glue that can hold the glossy surface of the steel, and is now in use. The next will be the use of aluminum-faced panels instead of the steel. It will be possible to fire only the exterior face of the aluminum with porcelain, leaving a good porous gluing surface inside.
Next: the styling center. Now under construction (except for the domed auditorium, which has not yet been completely designed), the styling section is characterized by high big rooms for working on full-size mock-ups of auto bodies. In the auditorium the mock-ups will be studied under the light of an artificial sky dome to eliminate point reflection and distortions of shape. There will also be a walled yard for this work in good weather. The dome will be clad in aluminum shingles with white porcelain enamel finish, themselves domed to make a gleaming cobbled effect.

Technique and intent

Successful architecture always has an underlying mood: romance, aspiration, vast dignity, or some other subjective bridge which reaches the human emotions. GM has it; the particular subjective brilliance of the Technical Center is its tenseness. This taut quality is particularly appropriate to the nature of the technical research, and even beyond that, tension may be a very proper tone of architectural symbolism for our time. But how does GM make the gripping architectural effect? By painting an abstract architectural picture.

Although these buildings differ widely in function (offices, labs, turbine rooms, garages, shops, styling studios, etc.), there is little concrete definition by shape, by massing or by variation of the skin. Except for the water tower and the projected styling dome, buildings are rectilinear, all have blank intense brick ends, all have much the same massing and the soothing, pleasant repetition of delicate porcelain and glass walls—industrial tracery. This is, of course, the efficient way to build today. Function is a transient tenant; it is not the landlord. But even the color on the brick ends of the buildings does not signify anything specific, is not a code system of identification.

Instead, deliberately withdrawn from direct significance, the color is a kind of joyful make-up. It creates a system of personalities for the buildings, after the real personalities of what goes on inside have been boxed in. It accomplishes the vitalization of a vast project which otherwise is beautiful but without emphatic definition, and which lays more emphasis on the whole than on the parts. Not signaling
anything, but conveying a great deal, the colors are a classic mime's gestures, restricted within narrow limits of expression, a tense pantomime of real life.

Not to go unnoticed on another level is the pleasant paradox of ending a building full of machines with a brick wall that—under its Simonized sheen—resembles a mottled piece of handicraft. The rough texture and direct colors are a good transition from the cold metal of the buildings to the imaginations of the people who use them, but this really seems a by-product of architecture as art in this group.

On still another plane: when anyone builds anything as seriously beautiful as the General Motors Technical Center in these days of utilitarian glory, he is going to be asked why. Why the pure, perfect details out there on the anonymous countryside? . . . why the exquisitely alternated planes of hypnotically reflective glass, intensely glistening brick? . . . why this painstaking parable of industry?

It is significant that this huge manufacturer was not interested in building the world's biggest skyscraper on the busiest corner of the world's greatest city, and calling it GM. The intent was clearly different. It was that the focus of the corporation's interior energy should remain where it began, in the steady improvement of its technological product, and never wander away in the more sophisticated mazes of finance and sales, that GM is a great manufacturing company first and anything else second. The tense excitement and glittering perfection of this research center will always keep that intent alive. If you want an idea to be remembered—as the ancients knew—you build it.

Water tower, a true ellipse in elevation, is 138' high, fabricated from type 302 stainless clad plate. One of its legs contains a stairway for service access, one is for water transit and the third completes the triangulation of support. The tower will rise directly out of the lake.
Slum clearance faces Supreme Court test

If District of Columbia Redevelopment Act is held unconstitutional, entire Title I program might be crippled. Illinois upholds slum prevention law in historic decision

The wheels of redevelopment grind smooth only under conditions of extreme municipal industry mixed with good fortune. In addition to the ordinary difficulties inherent in such programs, cities in the past few years have been challenged repeatedly on the constitutionality of their slum clearance laws. Such cases—usually based on a private citizen's protestation that it is illegal to raze his property and then hand it over to some one else for rebuilding—have mounted as redevelopment plans increased. But legal progress has been good. As of last month, in 21 of 23 states where the question has been put to test, the laws have been validated.* One of the most important cases, however, has yet to be decided: a plea before the US Supreme Court challenging the constitutionality of the District of Columbia Redevelopment Act.

This is a big case. The decision could profoundly affect the whole Title I program. While optimistic as to the outcome, government lawyers (representing the DC Redevelopment Land Agency) concede that an adverse ruling might place slum clearance and urban rebuilding operations nationally in serious jeopardy.

For a public use? Washington has extensive plans for redevelopment of its rundown southwest section and has already begun demolition of old buildings. The city went ahead with these plans on the basis of a lower court decision a year ago upholding the constitutionality of the DC law. The crux of the case before the Supreme Court is the same: can the government seize private property under its condemnation powers and turn it over to private parties for redevelopment purposes? The attorney for the plaintiff—the estate of the late Max R. Morris, who owned a department store in an area to be cleared for Washington's Project "B"—argued in the negative. "What is the constitutionality of your argument?" asked Justice Frankfurter.

"The government," replied Atty. James C. Toomey, "has no right to take the property of a private citizen for other than a public use."

New terms in new laws. The public vs. private use is part of the battle; another part was evident in Toomey's argument that city officials do not have the power to take vast areas of property including buildings that are perfectly sound. It is notable that this subject constitutes one of the prime (and one of the least definite) paragraphs in the new rulings on urban renewal. Section 110c of Title I practically hinges on such expressions as "predominantly residential use" and "substantial number of slum . . . accommodations." It is also notable that the matter of terms was mentioned by judges in the lower court who first considered the present Washington case—they raised objections that such words as "blight" and "backward and stagnant land" were not properly defined in the District's act. Counsel for the Redevelopment Land Agency in the Supreme Court case is not only urging reaffirmation of the constitutionality of the law in question, but also that the law not be restricted by the terminological limitations suggested by the other judges.

What are the chances? There is no doubt that a finding favorable toward the Land Agency would give redevelopment authorities elsewhere a powerful assist in cutting back an undergrowth of litigation that is hampering their efforts. And legal opinion both inside and outside the government is in agreement on one point: redevelopment will not be directly affected outside of Washington, no matter which way the court decides. (This is because each state spells out its own powers of eminent domain in respect to the seizure of private property for public use.) The legal fraternity has covered itself in this respect, however, with a fairly unanimous belief that the repercussions from either opinion will be considerable.

No more federal aid? Some government lawyers have said that if the court invalidates the District's redevelopment law FHHFA might have to shut down its entire Title I program.

* Dissenters were Florida and Georgia, where courts interpreted the laws as a misuse of the power of eminent domain.
This view is perhaps extreme. But other lawyers and administrative officials in the housing agencies do admit that if the high court rules against the D.C. law, it would immediately touch off a test of the federal-aid program in other cities. And they feel it is doubtful that the Supreme Court would countenance the use of federal funds for such a program if the matter were challenged.

Top rank housing men—who are disinclined to be quoted by name because of the pending court decision—base their hopes for a "favorable" outcome on the kind of the questions asked by members of the court during the testimony and on a belief that the Court in recent years has been inclined to interpret the constitution broadly where programs involving the general health and welfare are concerned.

A first in Illinois. State courts have also been broadening their concept of redevelopment legislation. Decisions were handed down recently in Maine and Massachusetts, adding to state supreme court rulings upholding the constitutionality of such laws. In Illinois a double decision was reached of first rate importance: it was the first time a top state court had held that the use of eminent domain to prevent slums—rather than clear them—was a public purpose.

In ruling on the Urban Community Conservation Act, the court's opinion included the following:

"We are aware of no constitutional principle which paralyzes the power of government to deal with an evil until it has reached the maximum development. . . . Legitimate use of governmental power is not prohibited because of the possibility that the power may be abused."

On condemnation provisions the court was emphatic: "An owner of property in a conservation area is required to comply with a conservation plan. His property may be taken by eminent domain or a lien may be imposed upon it to bring it up to minimum standards."

On the question of definitions, the court admitted that "mathematical measurements of the extent of the overcrowding of residences and of schools and other community facilities which indicate imminent deterioration cannot be stated. . . ." but added that the enumeration of "various blighting factors" as written in the state's Blighted Areas Redevelopment Act were phrased "with sufficient clarity."

In Chicago, the opinion on conservation in the Illinois courts found favor with Peter Bukowski, chairman of the Neighborhood Redevelopment Commission. "Chicago now has the most powerful slum prevention weapons of any city in the country," said Bukowski. "The decision . . . gives Chicago the green light to step up its program to save 56 sq. mi. of middle-aged neighborhoods from becoming slums, requiring costly clearance." (For news of Chicago's Lake Meadows project, see p. 35.)

Power of eminent domain. The Maine and Massachusetts decisions were concerned, again, with the basic question of the use of eminent domain for a private purpose. What they said:

In Maine: "There is no element of private use in the removal of the conditions of blight. Great public purposes are thereby served and the entire community will benefit."

In Massachusetts: "The plan here . . . does not have for its primary objective the taking of the property of one individual and turning it over to another, so that slum clearance can be said to be merely incidental to that objective. On the contrary, we are of opinion that the main purpose of the plan is slum clearance . . . ."

50 leaders in industry, labor, housing form council to back rehabilitation

Efforts to stop the march of blight across US cities—losing efforts so far—will get a big shot in the arm this month from a new quarter. In Washington's Mayflower Hotel, formation will be announced of a new citizens' group aimed at 1) helping cities learn the complex know-how of conservation and rehabilitation faster, and 2) rallying broad public support behind removing slum conditions and causes through a massive education and promotion program.

The American Council to Improve Our Neighborhoods will get its start with White House blessing. President Eisenhower is to speak on how its objectives mesh with those of the 1954 Housing Act. The new law for the first time created broad federal aids to urban renewal and slum prevention. The council—ACTION for short (initials are no coincidence)—is a nonprofit, nonpolitical, educational organization with an annual budget of $750,000 and a 50-member board of directors representing the gamut of housing interests—labor, religious groups, education, commerce, trade associations, civic, professional bodies, finance and minorities. A small staff headquartered in New York City and led by Maj. Gen. Frederick A. Irving, who retired from the Army in October as superintendent of West Point, will concentrate on spark-plugging nationwide action against the rapid wasting away of the biggest single asset in the nation's wealth—its $220 billion housing investment.

How it works. A research division—guided by a 400-page outline of research needs prepared by Reginald Isaacs, head of Harvard's department of city planning and other consultants—will gather data on problems and set up pilot projects to find out what methods work and which do not in improving homes, neighborhoods and communities. An information division will bring top-drawer advertising talent to bear on the long-neglected job of arousing the public to the threat to national well-being posed by housing decay. ACTION's plans call for advertising in all media, followed by a how-to-do-it approach beamed at home owners. One probable theme: "You can afford to live better than you do." A field service division will offer personal advice to cities or community groups on how to set up neighborhood or community-wide programs against blight, including counsel on technical problems involved like zoning, local promotion, committee organization, pitfalls. All of ACTION's findings will be handed on to trade and professional groups and civic organizations with no effort to get credit for ACTION, but rather for national or local groups to use under their own banners.

How it began. The council had its genesis in a round table on housing conservation more than a year ago sponsored by Forum's sister publications, House & Home and Life. Members of the group felt the only real solution to the problem lay in the hands of the American people as individuals, as neighbors. The group was incorporated, after months of study, under New York State law. General Irving, its full-time, salaried president, hopes to begin active work next March. Other ACTION officers:

Ferd Kramer, Chicago mortgage banker and one of the key men in Chicago redevelopment, vice chairman in charge of research; Realtor Builder Fritz Burns, Los Angeles community developer, vice chairman in charge of field service; Publisher Andrew Heiskell of Post & Times-Herald, treasurer; Joseph Grazier, president of American Radiator & Standard Sanitary Corp., finance committee chairman.

WHAT PRICE REDEVELOPMENT?

The costs of redevelopment in large urban centers continue to be enormous. A recent project announced for New York—the New York University-Bellevue Hospital project—involves site costs of $8,97 million for 106.6 acres, or over $88,000 an acre and over $13 a sq. ft. What this shows is that it costs $19 a sq. ft. to produce a site that in the final outcome is worth only a little more than $6 a sq. ft. In setting the project up, New York slum clearance law says: 'Not a few building experts, however, think this is strange economics and probably no solution to the problem of urban renewal.

Architectural Forum • November 1954
Competition objective was long-range redevelopment of Loop, seen below from northwest. Sketch above indicates land use.
When old Daniel Burnham advised Chicago to “make no little plans” he started a pattern that still holds (see AF: May ’49, Aug. ’52, April ’54). But none of his successors’ schemes has ever broken through to reality the way Chicago’s magnificent lake-front parks and buildings sprang from Burnham’s own master plan of 1909.

Can Chicago once more build as big as it plans? Department-store Executive John Pirie Jr. thinks so: this year he bet $32,500 that the city could start doing something constructive about its downtown mess. In response to his Carson, Pirie, Scott & Co. Centennial Competition, no less than 106 teams of professionals sent in their ideas for untying the snarled Loop and projecting the whole 403-acre business district into the future. Over half the 265 contestants were from outside Chicago: 22 states, Hawaii, Germany, Denmark, the Netherlands. No recent contest for the redevelopment of a city has attracted so much serious attention from so many able architects and planners—or stirred up so much excitement. At least two other cities, noting all the expert advice Chicago got for practically nothing, are already talking about holding competitions of their own.

These cities could well profit from Chicago’s experience in trying to run a big planning competition. Having had only five days to analyze no less than a half-mile of presentation boards and stacks of written reports, a somewhat stunned jury found it would have been grateful for a tighter program and more standardized presentation requirements to help overcome the inevitable frustrations of a problem almost too big.

Doing its best, the jury chose one scheme as the best concept of an ultimate goal, one as the best intermediate plan, one as the best immediate move Chicago could make toward a goal. They were compelled to ignore the fact that the particular first steps they chose did not lead directly to the particular intermediate plan, and this did not lead to the particular goal—which led to some grumbling. But what could you do?

At least the Chicago Plan Commission, as the beneficiary, got an estimated half-million dollars worth of the entrants’ time. How much more Carson’s generous gift could mean to Chicago awaits the outcome of a careful study by a Plan Commission team.

On the following pages the winning plans are presented in detail for the first time. Whether or not any of them sees immediate action, they are full of ideas any city in the US might profitably think about.

**THE JURY:**
Dr. Henry T. Heald, chairman; engineer, chancellor, New York University
Robert E. Alexander, Los Angeles architect and planner
George W. Barton, Chicago traffic engineer
Miles L. Coleam, Washington D. C., building economist and architect
Ladislas Segoe, Cincinnati planner and engineer
Professional adviser: Howard L. Cheney, FAIA, Chicago
Technical adviser: Frederick T. Aebeman, Chicago Plan Commission
Consultants: Philip Will Jr. for the AIA; Dennis O’Harrow for the AIP; Howard Olson for the Chicago Regional Planning Assn.; John Cordwell, planning director, Chicago Plan Commission

**First prize model** shows how winners envision central business district 100 years from now. Tallest building (foreground) houses city, state and federal offices, stands in prominent location as symbol of civic pride. Around it are row of pylons, low exhibits building, three “smaller” office buildings (including Prudential building, which is 41 stories rather than 30-odd stories indicated in model). Six huge office buildings on the west look out over retail district (right, center) and fairgrounds (dome, left center). Hotels get premium view locations along Michigan Ave. Reference points: A—Field Museum; B—Wolff Point.
Chicago, 2054 . . . a clear, dramatic goal to stir men's minds

This youthful team took Burnham's advice—and won.

Entering the competition as their senior thesis in architecture under the eye of their young design professor, the four 22- and 23-year-olds were able to devote full time to the problem for nearly five months, analyzing it for two months and then working as long as 20 hours a day to meet the deadline.

Their dramatic proposals, set forth in eight presentation boards and an elaborate model (preceding page), have already stirred up talk in Chicago and lively professional arguments elsewhere.

The jury, weighing broad objectives and planning principles, found the scheme a clear, well-ordered solution of the district's essential functions—resourceful, highly imaginative, with a beautiful, open arrangement of parks and buildings that would have great appeal to the man in the street. Other critics, taking its indications perhaps too literally, have called it impracticable, authoritarian, overdispersed, out of human scale.

Says competitor Breger: "In an explosive society like ours, any projection into the next 100 years is at best a series of postulations. Yet the need for a general blueprint is basic, for unless some planning can be devised, the future can only resemble the unplanned chaos of the past. Ours is a schematic sort of blueprint, subject to modifications as different conditions arise. We believe that some direction is better than no direction at all."

The competition backers, in placing the winning plans on public view, simply included some very interesting engravings of shantytown Chicago less than 100 years ago. Anything, they seemed to say, can happen: in 100 years US cities are rebuilt completely in any case.
Final stage (of four 25-year stages) brings related activities together in functional groups: wide bands of buildings separated by vast green spaces up to 700' wide, yet tied together by a transit network (see sketches above). Commercial and financial offices are grouped near grain and stock exchanges; lawyers and others dealing with courts and government departments can occupy space in civic center office buildings; transportation offices rise around bus-rail-air terminal (linked with west-side rail terminal by moving sidewalk, pneumatic tubes for baggage transfer). Industrial and agricultural concerns have offices along west side of permanent fair grounds, where they can exhibit in exposition buildings. Retail trade is grouped in convenient central location. Hotels all along park front have lake view on one side, and on other, theaters, shops, restaurants, nightclubs, small museums, broadcasting studios—forming spaces of more intimate scale than business sections. With such facilities and view, hotels could attract profitable "family" business.

First stage leaves major buildings functioning while starting their successors on adjacent bands of lower-income land. New office slabs rise a block west of La Salle St. offices; new department stores (including Carson's, Sears) are built just west of retail belt, currently concentrated on east side of State St. Civic-cultural center is built over ICRR yards at northeast. On the south, deteriorating areas are cleared and RR tracks covered to make way for transportation center and convention hall, which would help hold Loop values from running away to north side. All property owners would be shareholders in central finance authority which would buy and improve properties, distributing profits to all members whether or not they were adjacent to improvements. Most valuable buildings are not demolished until final stage.
SECOND AWARD

Four major anchors: a feasible framework that could lead

The great merit of this scheme, the jury agreed, was that it proposed maximum improvement with minimum effort. Since team leader Von Moltke, employed by the planning commission of Philadelphia, was professionally familiar with the Chicago Plan Commission's own ideas, his approach takes on added interest.

Leaving sound, high-value buildings alone in the center and along Michigan Ave., the plan throws out four big anchors on less expensive sites at the district's fringes. These break up the collar of slums around downtown, give it a chance to breathe by removing some functions to the edge:

1. A civic center, to be built by 1970, straddles the river at the north, in roughly the same semiblighted area proposed for the Fort Dearborn project (AF, April '54). Courts and government offices in daily contact with the public are pulled out slightly but kept on the south bank convenient to the La Salle St. legal-financial district. Offices less frequented by the public are located on the north bank. To unify the two halves of the center and allow pedestrians to enjoy the river, the present upper level of La Salle St. promenade would run north to new courts building, expand into a wide civic plaza. Trees and benches would be added, autos banned.
toward complete redevelopment

Wacker Drive is placed beside the lower level, out of sight under a wide river-front plaza. Parking (north of the center): 6,000 cars.

2. A convention center is to be built by 1990 on low-value land near five of the Loop’s big hotels, directly behind the 3,000-room Conrad Hilton. Parking (west of the center): 5,000 cars.

3. A consolidated transportation center is to bridge the river on the west by 2010. Railroad terminal, bus terminal and existing post office are linked with a heliport and hotel (parking under).

4. A recreation center is to be built by 2030 over the ICRR yards at the north end of Grant Park, which is remodeled to make it more inviting, less cut up with auto traffic. Near the lake is a health center with indoor and outdoor swimming pools; just inland, a cultural center with exhibit halls and a small auditorium, parking for 6,000 cars underneath. Across Michigan Ave. a new hotel serves the civic center, recreation center and State St.

While nailing down the district on four sides against the shifting winds of real estate, Von Moltke’s team would open up a brighter future for the core. As each major anchor is dropped overboard, a heavy line is pulled taut to the next anchor in the form of a promenade avenue. For example, as the civic center is built, State St. gets a face-lifting with trees, plant boxes and benches, autos are prohibited and rapid streetcar lines run south to the next project, the convention center. La Salle St. gets the same treatment (see sketch, left) from the towering Board of Trade building up to the new civic center. Shorter promenades pull the recreation center in from the east and the transportation center in from the west.

East-west streets are dead-ended at both major promenades (with turn-arounds and taxi stands), freeing them from cross-traffic and reserving the three-block-wide core between them for pedestrian use. Pickup and delivery traffic can move into this pedestrian precinct on its two north-south streets, but through-traffic is blocked by looping these streets short of the civic center on the north and the convention center on the south. With no through traffic up the district’s center, the near north and south sides can be developed as quiet residential areas linked by subway direct to downtown.

Gradually the State St. and La Salle St. promenades, now strong lines of interest and communication, would attract the best new buildings. And with all downtown interests pooled in a giant corporation, run-down buildings could occasionally be bought up and demolished to create small plazas along the avenues.
Third Award

First steps: a new downtown commission and bonuses for open space


The authors of this scheme, all directly concerned with Chicago's building future, confined their planning to studies of immediate use to the city and to themselves. Their workmanlike, block-by-block survey, says the Plan Commission, has already saved the city a $30,000 study of its own. Findings:

The Loop is primarily a workshop, not a great center of culture, government or shipping (which is concentrated farther south). Offices account for half (49.2%) the total value of land and buildings, followed by loft buildings (14.5%), fireproof hotels (9.7%), department stores (9.6%), one- to three-story store and loft buildings (4.4%).

Sole expanding uses are offices and parking; lofts are fast diminishing; department stores, theaters and club buildings are relatively static. Office occupancy expanded rapidly from 1940 (28 million sq. ft., 20% vacant) to 1950 (30 million sq. ft., 4% vacant), has now slacked off from an occupancy increase of 640,000 sq. ft. a year to only 70,000 sq. ft. a year. But after the new Prudential building absorbs 500,000 sq. ft. of outside demand,
annual requirements for more office space will rise to and remain at a norm of 200,000 to 300,000 sq. ft.—the equivalent of one new 20-story building a year. The current breathing space offers Chicago an unusual chance for sound planning.

**Give positive bonuses for leaving open space.** To make its workshop more attractive, the city should encourage individual entrepreneurs to work with whole blocks at a time instead of single lots, building on only part of the block. New ordinances should 1) allow developers of half-block sites or larger to build 15% of "bonus" floor space beyond zoning allowances if they keep at least 40% of the site open and maintain it as a landscaped area for public use; 2) exempt such buildings from conventional setback requirements (which so often deform buildings); 3) allow a similar 10% bonus to developers who set their buildings back at least 50' from the Chicago River and landscape them as recommended by the Plan Commission. These positive bonuses avoid the doubtful legality of restrictions for purely esthetic purposes, twice declared invalid in Illinois courts. And more important, they could provide the city with landscaped open areas at no public cost.

**Add subsurface transit.** A consolidated south-side railroad terminal (proposed in various forms by the Plan Commission and several competitors) cannot be financed and built within the foreseeable future. Instead, build three underground pedestrian conveyors like the one scheduled to replace New York's Grand Central—Times Square subway shuttle. These would connect seven of the eight existing terminals, and four large perimeter parking areas with each other and the Loop (see map diagram, above.) Alleviating surface congestion, each line would carry 30,000 persons per hour in small cars riding a continuous belt with a top speed of 15 mph (e.g., a five-minute ride east from Union Station to the Clark St. transfer point near the center of the Loop). Estimated cost for the three lines: $19 million at $2,000 per ft., about one tenth the cost of a consolidated terminal. In addition the Clinton St. subway project would be completed west of the river for $11.4 million, and some years later the downtown El would be torn down and replaced with a new $54 million subway looping in from the north. The Pace-Aldis-Cushman study also proposed to:

> Handle government offices like any other business offices, keeping them downtown for flexibility and public convenience rather than placing them off by themselves in a monumental civic center.

> Add 25,000 parking spaces (financed by $75 million in revenue bonds) on railroad air rights, and in six underground garages to accommodate traffic from the new Northwest Expressway, leasing the air rights above the garages to builders.

> Establish trucking depots outside the district, limit trucks over 20′ long to nighttime deliveries and enforce daytime off-street loading regulations for trucks and airline buses.

> Build, at a later date, a $15 million convention center and adjacent hotels at the south.

Total to be financed by general obligation bonds: $120,400,000, well within the city's reserve of bonding power. In addition, the city could levy special assessments on properties benefited by improvements, plus use and occupancy taxes which would be returned to the district instead of going into the city's general budget. Among the latter: taxes on advertising signs and transient hotel guests, increased liquor license fees.

**As a single, driving force behind redevelopment, the city should create an official downtown commission of nine unpaid members selected by the mayor, with city council approval, from a slate of names presented by the major downtown interests (State St. Council, Building Managers' Assn., etc.).** The commission would: 1) make its own studies and recommendations to the mayor, 2) comment to the mayor on downtown changes proposed by other agencies, 3) pass on plans and appearances of all new buildings and major remodelings, with the help of a municipal art committee, 4) gradually "house clean" objectionable billboards, overhanging signs, sign and light posts. The commission's approval would be required on any special assessment one quarter of which was to be levied within the downtown district, and it would control the spending of use and occupancy tax funds allotted back to the district. Its powers could be enlarged, reduced or dissolved by consent of the city council and owners of 50% of the value of real estate involved. The mayor would appoint and remove the chairman, have veto power over the commission's actions. Under Illinois law, such a commission could be created by special act of the Illinois legislature without public referendum. Its initial working fund of $15 million, to be used for capital purposes only, should be part of the next bond issue submitted to the public.
FOURTH AWARD

Organized highs and lows

Award: $500. Team: Burnham Kelly, Ralph Rapson, Rai Y. Okamoto, Kevin Lynch and Marvin E. Goody, all of MIT.

This skillful perspective from one of the fourth award presentations shows high-density hotel-and-office clusters (floor area ratio: 20), set in a low density background (FAR .75) of pedestrian ways, pools and plazas, restaurants, theaters and shops, introducing spaciousness at a human scale. Sound big buildings are retained and new ones of similar function grouped around them while the hodge-podge of smaller buildings are scraped away from their bases. The whole Loop district is raised on a great plateau with parking and service roads underneath. The ICRR tracks and yards are removed to a freight handling center southwest of the district and the roadbeds converted into a new canal and a chain of pleasure islands. Heavy building masses are kept away from the east side to open up views and ready access to the lakefront. Note newly consolidated retail area along State St. (FAR: 6), civic center at far right, north of the Loop.
ATOMIC POWER

It is opening up broad new fields for industrial plant location and
a new set of problems for architects, engineers and builders

An $8 billion infant just entering the growing-pains stage—that is the US atomic energy industry. In less than 15 years this country has created an industry with a larger capital investment than DuPont, General Motors and US Steel put together. So far most of its growth has been handled by the government. This year marks the start of its development as a private industry. Even now, architects, engineers and builders are being called upon to construct the pioneer civilian atomic installations.

Although the industry is about where the automobile was in 1905 as far as private applications are concerned, it is estimated that by 1965, 10% of the country's new electric power plants will be fueled by nuclear fission. By 1975 the figure will be 20%. One estimate puts the cost of atomic plant and equipment in that period at about $10 billion.

Where will the plants be built? Who will build them? What will they look like? What are some of the problems their designers, builders and owners will face?

New frontiers
Cost of converting nuclear fission into power is a lot higher than using fossil fuels or water, particularly if the conventional plant is fairly close to a source of fuel. Eventually, technological improvements are likely to make nuclear fuels competitive. For the next few years though, atomic energy power plants are going to be economic only in relatively remote and power-starved areas.

As power comes to areas that are rich in resources but poor in power, the industrial map of the US will change. As an example of the kind of change that is going to occur, take the once poor city of Decatur, Ala. In 1934 this was just another little Southern city with 14,000 people and one industry—cotton. Now, only 20 years later, Decatur has a shipyard, an aluminum fabricating plant, a meat packing company, a peanut oil factory, a commercial flour mill and a dairy products processing plant.

What caused the industrialization of this cotton town? Electricity—from the dams of the TVA. Once industry was attracted in the area there was money to spend on soil conservation and fertilizers to broaden and enrich the area's agricultural output. The dollar-and-cents effect is startling. The yearly payroll in Decatur soared from $1 million in 1934 to $12 million in 1953.

What hydroelectric power did for Decatur and the rest of the Tennessee Valley, atomic power will do for the other power-short sections of the country. Atomic power plants are going to create areas that will have the same growth characteristics as TVA towns. Although the growth will be on a smaller scale in each case, the total effect could easily be as great, as more and more of our remote areas find themselves with electricity—the one "raw material" modern industry cannot do without.

All of this means that architects, engineers and builders are going to find themselves opening up new frontiers as they construct the generating facilities that will create electricity—and then build the plants attracted by this electricity.
From the outside, atomic energy plants are not going to look very different from today's power plants. About the only external change will be the absence of railroad sidings, smokestacks and coal dumps. And, inside the plant, from the turbine on, the equipment and its housing will not be much different from the sort of thing builders have been constructing for years.

But great new problems will occur in housing two basic units of an atomic plant. The fuel storage unit and the section containing the nuclear reactor must be treated with the same respect as a hydrogen bomb; they must be enced in a shield and buried for protection against a possible explosion.

These principles will apply to any atomic power plant—whether it is supposed to turn out 70,000 kw or 1.500. Further, because there will be such a big spread in the size of the units, architects and builders who consider nuclear energy plants as too big an operation for them to handle will be talking themselves out of business that should be right down their alley.

1. Small

Calls for the construction of small units are not waiting on the development of larger ones. For example, the army already has 33 industrial firms bidding on a 1,700-kw plant—about the size of the one shown above (left). The winner will call on a building firm to do the actual construction.

The army plans to spend about $8 million for this compact plant that can be transported by airplanes in several sections. It will provide electricity and heat for remote military bases, where transportation of coal or oil would be both difficult and expensive.

The same kind of plant—with an output of less than 10,000 kw—will also be used by private industry in remote areas that are loaded with natural resources. Instead of shipping out thousands of tons of ore, mining companies will be able to process the material on the site. That is just one of the savings that makes such an operation economical. Another is that one airplane shipment can bring in enough fuel to keep the plant going for years.

This type of atomic power unit can be built in almost any part of the world; in mountains, tropical jungles or arctic regions. Construction materials will vary with the climate and geography. In some cases, lightweight prefabricated structures would be required to permit air shipment. In others, local adobe brick and stone could be used. It is even possible that no enclosure would be needed except for the control room. In any case, the fuel units would have to be shielded by enclosing them in a concrete shell (with the cement flown in), or burying them deep in the ground, or installing them in a cave.

If the structure is fairly near a populated area it will be necessary to put up pressure-tight buildings with air-lock entrances for personnel. For further protection, the unit will be enced in a steel sphere and buried. The model (shown at the left above) was designed for a remote area by the Atomic Energy Dept. of American Machine & Foundry Co.

It is a prefabricated building with structural steel supports and corrugated aluminum siding. In the building, which is 80' long, 40' wide and 40' high, the reactor is shielded by a concrete jacket.

2. Medium

In between these "baby" facilities and the biggest project yet planned, there is a medium-sized plant. A prototype, now being built by North American Aviation, Inc. (second and third pictures, above), will generate 20,000 kw of energy. The reactor building will be about 100' long and 50' wide, with a 45' area overhead. The reactor itself will be encased in a steel tank and the entire unit installed underground, with 5' of dense concrete between the reactor and ground level.
3. **Biggest plant** yet planned (shown at left in drawing by Westinghouse artist) will not have smokestacks or coal and rail facilities found with usual power units. Plant's "furnace" is underground, encased in 9' x 25' steel wall. Cube of concrete, 32' on each side and weighing about 3,000 tons, surrounds steel. Building will be 200' x 200' with 100'-high walls.

3. **Large**

The first big private atomic power plant is the 60,000-kw station now being built by Westinghouse and the Dusquesne Light Co. at Shippingport, Pa., 25 mi. north of Pittsburgh. This 400-acre, $46 million plant (picture, above) probably will be in operation by 1957.

Westinghouse, responsible for the construction, has subcontracted the architectural and engineering work to Stone & Webster Engineering Corp. The contractors were so anxious to get the experience that they agreed to do the work for just $1—figuring that the knowledge gained would put them several jumps ahead of the field when it came time to compete for the other atomic plants that will be built in the next decade.

Since they are working solely for experience, Stone & Webster have been playing their cards close to their corporate chest. Specifications for the plant have not been made public. But, based on knowledge of similar plants that have been proposed, it is possible to get a general idea of what the unit will look like and what materials will be used.

The preliminary sketch (shown above) released by Westinghouse shows the two "hot" units at the left. These buildings—one for fuel handling and the other for the reactor and heat exchanger—are the only ones that will require unusual materials. The other segments of the installations, from the maintenance building on through the power lines at far right that will carry the electricity to 400,000 consumers, could be used in a hydro or fossil fuel plant.

The fuel-handling building will probably be a steel and concrete unit with air-lock entrances. Inside, the nuclear fuel will be kept in heavy metal containers above the ground level.

Next door, in the reactor building itself, the steam-producing reactor will be buried underground within a shell of steel and walls of concrete. In other reactors of a similar type the core of the reactor is shielded with a 3,000-ton concrete cube, 32' on each side. The core is really a cylinder of fuel about 6' in diameter and 73 1/2' high. This fuel is surrounded by a steel case about 9' in diameter and over 25' high. The dimensions of the reactor building will probably be 200' x 200' with a height of about 100'. The roof of the reactor building will probably be supported solely by its walls, leaving vehicular traffic free to move around the room. The control room will be located in a balcony protruding out into the reactor room near the roof, and the concrete floor will have to be about 3' thick so that it can carry heavy loads of equipment. Entrance to the unit presumably will be through hatchlike air locks in the ceiling. Air will enter through tunnels, pass through two sets of filters and be heated and then sent into the building—after which it will be filtered again and ejected from the building.

It is likely that the walls, floor and ceiling of the room will be at least partially covered with a thin metal skin that can be peeled off if it becomes contaminated.

From the outside, the area above the reactor room will be at least completely flat without any visible signs of a steam plant.

This element of "invisibility" has been present in a peculiar fashion in almost all steps toward atomic power plants. For while the nation has worried about bombs and has given military applications most of its attention and effort, it has—almost without noticing it—started to move into an era of atomic power.

Small, medium or large, many architects, engineers and builders are going to be building these plants long before the start of the sixties. 

**to serve jungles, farms and industrial towns**

Not designed for a remote area, this type of unit would be used for a rural community to provide the electricity that would attract small industry. The exact price tag on such a plant is not available but it would not be under $10 million.
Can the Grand Central concourse be saved?

The prospect that New York’s Grand Central Station, with its splendid concourse, may be torn down, raises emotions very different from the vague nostalgia that attends all expected demolitions. The concourse is one of those rare examples of fine civic architecture that has been blessed by good fortune as well as skill, and has been taken to the hearts of the people. The good fortune is an element that cannot be had every time for the asking.

On hearing the news, Forum promptly framed an appeal to the heads of the two railroads to plan their future expansion in a way that will save the concourse, that will incorporate it in their new, ambitious program as a living part of the city.

In the belief that the letter represents the strong wishes of the architectural and planning professions as a whole, it was sent to a list of 428 professionals, and their signatures invited. The list was made up largely of those forward-looking, not backward-looking, men whose contemporary creations the magazine has published; it included also the deans of the architectural schools and other leaders. The response was remarkable. More than half replied to a mailing that carried no return cards or envelopes. And of the 235 responding, a phenomenal majority of 220 did join the plea to save the concourse.

The dissenters were thoughtful, too, and their views are reported on p. 136. But in transmitting the letter herewith, we feel secure in saying that it represents the community of those who believe in architecture, the art that creates our cities.
The New York Times reports that you have considered demolishing the Grand Central Station, concourse and all, to put in more compact and advanced station facilities connected with a major office building development.

We are delighted that you are not content with the sleepy inefficiency and obsolescence of so many railroad structures; but before you touch the concourse of Grand Central we urge some careful thinking.

The concourse may not be the most efficient railroad station conceivable for 1955, but—the Grand Central concourse is probably the finest big room in New York.

It belongs in fact to the nation. People admire it as travel carries them through from all parts of the world. It is actually one of those very few building achievements that in many minds has come to stand for our country.

This great room is noble in its proportions, alive for the public and what it loves. We address to you the plea: save the Grand Central concourse.

To throw away a known masterpiece of architecture, this great room is noble in its proportions, alive for the public and what it loves. We address to you the plea: save the Grand Central concourse.
A small but influential minority thinks Grand Central concourse can well be replaced

Against monuments

Forum:  
I can't go along. Years ago, in an article called "Monuments, Memorials and Modern Design," I stated my firm opinion that a railroad station could and should not be a monument in the contemporary scheme of things. By this opinion I abide.

I will admit that I have had much pleasure, in the past years, from entering and circulat ing in the Grand Central because of its fascinating complexity of passages and levels woven about a great space, but once these are removed I see no great architectural virtue in the great space itself. The exterior to the south and the office tower to the north are in any case deplorable.

So, putting aside sentiment, I say let the nature of the taxation of aerial rights take its course.

Sorry!  
GEORGE HOWE  
Philadelphia, Penn.

For greater convenience

Forum:  
... The construction of a combined terminal and office space on a site already fixed as a terminal would be a step forward in making more contacts possible without relatively increasing the traffic problem.

From that standpoint alone the project would be commendable.

Further, I have confidence in the aesthetic values and the things that would be created by Messrs. Zeckendorf and Stevens—and I think they would dominate that phase of the project—to stir things in people as they are being stirred now.

Wouldn't it be a better approach to suggest that the concourse room might be saved—and still have the connection with a tower of offices—but construct it over the Grand Central office building? To raze that structure would not do any great harm to man's spirit.

KENNETH C. WELCH  
Grand Rapids, Mich.

Against inconvenience

Forum:  
Do you really want to retain, in other than photos, the concourse and dungeons of an era of architecture that only retarded the forthright development of our own forms and functions?

Did you ever try to find Track 39? ... the men's room? ... the taxi stand? Did you ever try to get in or out of the place? Or drive around it on Park Ave.? Honestly, the only good thing about the place is the oyster stew, and that is only seasonal!

I hope Messrs. Young and McGinnis think twice before they leap—but I hope they leap ... following not even the UN or Lever House or the aluminum shells and false spandrels rising all about you.

JOHN S. BOLLES  
San Francisco, Calif.

Concourse not significant architecturally

Forum:  
Why such a strong plea for one of New York's great structures composed in the age of eclecticism? ... A much greater architectural creation could be forthcoming. If Grand Central Station is to be retained as Americana the appeal should be on some basis other than architecture.

ALBERT C. MARTIN  
Los Angeles

Forum:  
... Grand Central leaves me cold. ...

ROBERT G. CERNY  
Minneapolis, Minn.

Forum:  
You cannot stop progress for sentimental reasons. Grand Central is not a cultural or historical treasure that must be preserved at any price.

L. L. RADO  
New York

Faith in new creation

Forum:  
We should not put obstacles in the way of a new project which may create a still better architecture. ... I believe in the vitality of our time. Good contemporary architecture stands up against the great creations of the past. Any "cultural" or "local patriotic" hampering of free development of contemporary architecture is dangerous. Let us wait until a new project crystallizes and decide then. ...  

MARCEL BREUER  
New York

Forum:  
Though it is a marvelously beautiful room, Grand Central is in an archaic style, does not particularly express the exciting materials or exciting methods of construction we have today. The new complex should culminate in the most exciting room in the world, per­haps with its roof an elegant perforated tower; the only plans yet released are by Frank Lloyd Wright's 500-story skyscraper, and I hope they will be executed.

MINORU YAMASAKI  
Detroit, Mich.

The real problem is congestion

Forum:  
I am not certain the demolition of Grand Central would be such a serious blow. ... But if it were to be replaced by the world's largest office building diagonally across from what would then be the world's second largest building [Sconset-Vacuum—Ed.] and not far from others among the first ten, congestion in the area would be terrific.

FREDERICK G. FROST JR.  
New York

Keep concourse to avoid congestion

Forum:  
The real reason for not changing the concourse is congestion.

CLARENCE S. STEIN  
New York

Forum:  
Better to question further increasing density in this already terribly overcrowded section of New York with a building. ...  

GEORGE EDSON DANFORTH  
Cleveland, Ohio

Alfred Fellheimer's redesign

Innumerable new ideas have been offered, including Frank Lloyd Wright's 500-story tower; the only plans yet released are by Alfred Fellheimer, who helped plan today's station starting back in 1903. He writes:

In spite of my own pride in the station, I must say it has become an obstacle to attainment of important public objectives. ...

Point one. When the present station was built, there were no cross streets between Madison Ave. and Lexington Ave. Traffic was mainly horse-drawn and light. The area was far north of the intensive development of the city. Anticipating the growth of the city, the architects planned extension of all east-west streets across what was then an open-cut railroad yard, and continuation of Park Ave. in a straight line. East-west and north-south streets were to be at different levels, with ramp connections.

Result: through the insistence of the New Haven Railroad, Park Ave. overpass at 42nd St. was restored—the one feature of the plan that was carried out.

Point two. For the growing number of commuters who would interfere with long-distance travelers the architects planned commuting facilities and exits along 46th St. (with express-train traffic oriented toward 42nd St.).

Result: zero.

Point three. To offset too great carrying charges the architects proposed a tall office building over the station (this won the compe-
Seven important questions about Grand Central:

1. Is the thought of demolition real?
   Answer: Yes. It is reported to have been turned down both tax relief and public operation as ideas. But Grand Central's Young is highly aware of the public's interest.

2. Is the motivation tax-saving or income?
   Answer: Both, but chiefly income. Real estate taxes on the terminal itself, including offices space but not No. 230 Park Ave., are given by the City as $1.33 million a year. This does not include taxes on yards and trackage. The railroads give $24 million as the operating loss for the terminal. The Central is irked because its money-losing passenger business into New York is taxed while airlines use public-owned airports.

3. Is the concourse worth saving?
   Answer: Yes. The architects proposed the then-unprecedented use of the air space over the yards for high-grade buildings. The railroads were doubtful, but permitted construction of one building. The architects brought about organization of a group to finance Grand Central Palace, developed the first techniques of vibration control, and thus laid the groundwork for "air-rights" development of the Murray Hill–Park Ave. district. However, by then the station had been built. Realization of this potential came too late for redesign of urban traffic.

4. Could adequate income be realized and the concourse be saved?
   Answer: Experienced Architect Fellheimer (see left) and imaginative Architect Pei (working with Zeckendorf) both say no, for traffic reasons. But Grand Central's best-dissatisfied owner, Carroll L. V. Meeks, thinks yes, and further independent opinion is needed for a fully convincing answer.

5. How could the answer be found?
   Answer: By putting the world's best architectural and planning brains to work, perhaps through an international competition. Because of the complexity and magnitude, the railroads would however have to retain unusual freedom of action. Yet bountiful prizes would be justified.

6. Is the atmosphere favorable?
   Answer: Yes. President McGinnis of the New Haven is unusually alert to architectural values (he and Mrs. McGinnis have just bought their second modern house) and Central's Young is highly aware of the public interest.

7. Is the city involved?
   Answer: Yes. It is reported to have turned down both tax relief and public operation as ideas. But Grand Central is, as the roads say, primarily a public facility; moreover the city must cooperate on the major traffic and planning problems involved.

**strictly considers operation, income, city traffic**

Complicated-looking diagrams show Alfred Fellheimer's actual simplification of traffic in his new Grand Central proposal. But in the process of carrying Park Ave. right through the station, he has reduced the concourse (front center) to a much smaller, relatively lower, room which Carroll Meeks (next page) compares with a subway station.

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The 200'-wide train shed of imported metal was a wonder of technology and simplicity, but the Second Empire architecture of the head house with cast-iron trim, not so good. Complication already was too great—three separate waiting rooms inside, and the need to haul some cars down Park Ave. to the more central Madison Square station.

Complication had grown still greater, was met by palliatives. Extra stories were piled on the station in full architectural confusion; an indifferent waiting room worked in; the Third Ave. elevated tracks continued on a 42nd St. spur almost to the Grand Central entrance. The trains were already too long and some cars stood beyond the shed.

The triumph of a big focal space, in the concourse, that brings visual order out of a complicated situation. Note the many subway levels to right, and the loop that was intended to carry trains on the outer tracks around the station (it is too tight for anything but locomotives now). Building wings are farther apart than indicated in this drawing, making it possible for south sun to stream through clerestory windows.
When Commodore Vanderbilt began his great passenger station at 42nd St., he had hoped that its uptown situation would solve the congestion and confusion which surrounded the old location at Madison Square. He expected that unifying the services of those scattered terminals would simplify passenger cars still had to be hauled through Grand Central down Park Ave. to the more centrally located Madison Square terminus. His grade-level tracks along upper Park Ave. involved him in lawsuits as people disputed for right of way with his engines. His architects were forced to import the metal for his daring 200'-wide train shed. Stone trim for the Second Empire head house proved too costly. All the cornices and window frames as well as the coins were cast in iron. The three companies sharing the new terminal insisted on separate, independent suites of waiting rooms and ticket offices. This determined individualism meant that passengers arriving on the cars of one company and wishing to travel farther on another line had to pass out into the street and re-enter another set of offices regardless of weather. A few years later when the elevated lines were building, a spur was run along 42nd St. to connect with Grand Central but at a higher level. In the 1880's the trains had grown so long that some cars stood out in the yard beyond the end of the shed.

By 1893 the situation was so bad that palliatives were undertaken. A remodeling program was adopted. A new combined waiting room serving all lines was devised under one end of the shed. The old head house was hopelessly outgrown. A baroque superstructure of appallingly bad design was contrived. The feeder tracks down Park Ave. were walled and bridged but the four lines were heavily taxed.

The Pennsylvania Co. had decided to eliminate their transfer points on the Jersey shore and come right into Manhattan. Their grandiose station plans made the barbarous, battered old Grand Central look even more atrocious. There were subways and buses as well as motor cars to consider now, too. Traffic within the station had increased alarmingly. A new track layout was the only hope of salvation. Considerable courage was necessary to admit that already

only a completely new station would answer. Most of the big ideas were the brain children of Engineer C. Wilgus: the superimposition of two separate stations, one for express trains and one for suburban; the loops; the enlargement of the site.

To solve this stunning complexity of functions with what is after all a comparatively simple plan was an unrivaled architectural feat. A limited competition was held and in some unexplained way it was decided to combine the services of the winners, the firm of Reed & Stem, already famous for a series of new railroad stations, with those of Vanderbilt's relation Whitney Warren and his partner Weitmore. The first firm, it is believed, suggested continuing Park Ave. on a viaduct, allowing 45th St. to continue across the site, and proposed the vitally necessary ramps. They also prepared for the future by building footings and a skeleton capable of supporting 20 stories of office buildings.

This time there was the willingness to build a station which would symbolize the role of the railway as one of the chief entrances to a great city.

Just as Vanderbilt had been influenced by European prototypes, so the third Grand Central derived some of its ideas from Victor Laloux's recently completed Gare d'Orsay in Paris, opened for the Exposition of 1900. There, too, the scale was huge, the entrances were marked by colossal arches and the great hall of the station lay over the tracks and platforms. The trains were operated electrically. In New York, however, where the complexity was infinitely greater and the land far more costly, it was necessary to introduce still more levels, as well as to provide vastly increased accommodations of all types. Furthermore, the station had to continue in use while the old buildings came down, new tunnels were bored and the new building rose. All the fabulous costs including electrification could only have been borne provided that the sale of the air rights was successful. All worked out as foreseen but to an unexpected extent. As the surrounding property continued to help support the heavy costs, land values rose; only the station buildings themselves failed to share in this affluence so producing the present crisis, in which the railroads are being squeezed out by their own spawn.

Passenger stations serve as transfer points and have inevitably been associated with innumerable auxiliary services required to meet human needs. Station-connected hotels came very early. In the 1840's at York and at Euston in London provision for more adequate vehicle space was urgent as early as the 1860's and rarely provided abundantly enough.

There was another major function which stations were called upon to play from the beginning. This was a ceremonial one. The station became a welcoming place. Receptions were held in it for visiting royalty. Conquering generals and presidential candidates were hailed there by the crowding populace. Today swarms of children departing for camp bid farewell to their parents under Grand Central's vault. It became hard to distinguish between the station and other types of public buildings, so much did it become a part of the pageant of life. The architecture of stations came to reflect this added function.

The tradition of stately concourses began with the addition in the 1840's of a great hall to the Euston Station. Philip Hardwick raised a lofty room surrounded with marble columns, roofed by a coffered ceiling and furnished with a baroque staircase.

Today this tradition survives unimpaired in great new stations built on the Continent at state expense, as in Oslo, Giteborg and most spectacularly in Rome. In our own country we have few stations adequately expressive of this cultural role. Perhaps that at Washington, D. C. is the most generally recognized and accepted example. The relation of that station to the Capitol physically and to our history spiritually is unquestioned. The superlative concourse of the present Grand Central, now more than 40 years old, is fast accruing the same rich patina of values. A more utilitarian transfer point can never achieve its uniquely successful blend of efficiency and civic dignity.

Both Grand Centrals have had some claim to simple efficiency. The great train shed of the first station, once one of the sights of New York, ranked for a while second to the National Capitol, was a straightforward solution to the problem of boarding and leaving cars under shelter.

The concourse of the present station manages to function smoothly as a mixing chamber in which the most diverse routes which the passenger may conceive for himself can be worked out with a minimum of confusion and wasted steps. Orientation is easily achieved. The proposed new concourse would be low, cluttered with columns, and would be forced to resort to signs and colored lights like the subway transfer point at Times Square.
Voorhees Walker Foley & Smith

have become architects to industry

by mastering the art of human relations as well as the art of efficient design. Prime example

Much credit for the great quality and great quantity of US laboratories must go to the staid, staunch firm of Voorhees, Walker, Foley & Smith, architects and engineers—and specialists for many years in what they call "the design of structures and sites for special occupancy." Translation: "buildings for people with organized habits of work and particular functions"—mostly laboratories like the ones at the right for DuPont and other buildings for industry (like the 1 million sq. ft. of all-purpose office facilities planted out on a verdant suburban hilltop at Milford crossroads—also for DuPont).

The qualitative "revolution" in US labs actually began back in 1937, when VWF&S did a lab for Bell Telephone at Murray Hill, N.J. based on the flexible-modular concept, and thereby created what is generally considered this nation's first really modern research structure. The underlying principle of the bulk of VWF&S work ever since, up to and including the work shown here, is the same flexible-modular concept.

The quantitative "revolution" got under way soon after V-J Day, 1945, when a decade of depressions, wars, economies and shortages finally came to an end. And no part of the whole great building boom of the subsequent decade was to be more impressive—especially in terms of the future national well being—than the postwar boom in brand new (or newly expanded) laboratories.

By far the lion's share* of the designing of these projects has accrued to VWF&S; for them 1945-54 has been an era of peak production never before matched in the firm's 70 years of existence. Glancing through its postwar portfolio is like glancing at random through some gilt-on-grosgrained Blue Book of Blue-Chip Clients: Bell Telephone, of course, and N.Y. Tel (200 projects), and N.J. Bell Tel (100 projects) ... and Ford, GE, IBM, R. H. Macy (82 projects), Procter & Gamble, General Foods, Union Carbide, Westinghouse, Esso, Coty, Travelers of Hartford, Prudential, Bank of N.Y., Bakelite, Quaker Oats ... and Columbia University (a cyclotron building, among other things), Columbia-Presbyterian Medical Center (54 projects), University of Chicago, MIT, Johns Hopkins, Archdiocese of N.Y., the City of N.Y., the United Nations, the Atomic Energy Commission (item: Argonne National Laboratory; item: "certain facilities" at the big, hush-hush Savannah River Atomic Energy plant) ... and—though certainly not last, not least—E. I. DuPont de Nemours & Co., Wilmington, Del., et environs. Which takes us now to the banks of the Brandywine and the big recent addition to the DuPont Experimental Station.

* $500 million-plus in project-value, 1945 to present
DuPont's laboratory complex (below) and its new office headquarters (p. 146)
DuPont's Experimental Station, the product of close architect-client collaboration, is a campus of six modern laboratory establishments.

The problem of designing this huge complex of DuPont labs was as much as anything else a problem in the delicate, complex art of human relations. Here is what VWF&S partner-in-charge-for-DuPont Perry Coke (Jack) Smith discovered during his introductory visit to Wilmington: 1) DuPont was not one great king-sized corporation, it was 10 different autonomous industrial departments—Polychemicals (plastics), Grasselli Chemicals (ranging from floor waxes to plant sprays), Textile Fibers, Pigments, etc., supported by 12 different staff departments, including Chemical and Engineering. 2) The plants of these departments were spread all around the map from points east to west, Delaware to Cleveland to Niagara Falls to Texas; they were all big; they were all very proud of their own particular prerogatives. 3) Six of them—those named above—were willing to be persuaded to take up housekeeping together in a single Experimental Station, but they had six different ideas of what was best in the size, shape and arrangement of laboratories. 4) Always in the past, the Design and Construction Divisions of Engineering—a 2,200-man department—had handled the designing and building of anything anybody at DuPont wanted built. (Another division is devoted to research.) But now the whole business was too close to home. Should there be one enormous structure housing six or more separate research organizations? Should there be six or more different structures—and if so, how to work out a site plan that would be spatially well composed and at the same time meet the preferences of the six individual departments? (The new Experimental Station is actually an expansion of—and adjacent to—the old Experimental Station located just a few hundred yards from where Eleuthère Irénée DuPont de Nemours had built his first powder mill on the outskirts of Wilmington in 1802.)

"DuPont had reached the point," says Architect Smith, "where they finally had to conclude that it was like nothing so much as trying to teach your wife to drive . . . that what DuPont needed most of all was the outside point of view."

Simple little task for the "outsider": to work out with DuPont a solution acceptable to everybody, especially to DuPont's Engineering Department, whose Design Division would be responsible in DuPont for the design and supervision of construction.

The mechanics of this collaborative process worked like this: design solutions were proposed by VWF&S, examined by Engineering's Design Division, discussed and eventually approved. These solutions were then offered to the using departments (the clients, in this case) as joint recommendations of VWF&S and the Design Division. Needless to say, the effectiveness of this operating procedure required the development of confidence.

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*Total cost, about $30 million; cost of VWF&S-designed portions of project, $23 million.
†Eventually, VWF&S was also to send down liaison teams to work with DuPont in the field and help resolve specific questions of plan interpretation.
Engineering. Here, as elsewhere, the modules added up to three main working stories, plus a service-distribution story in basement.

Polychemicals. Architects gave each structure a different form of entranceway, sought thereby to give each as much individuality as possible.

Oil-pump house: simplicity with a touch of drama

Boilerhouse is reduced to crisp essentials
between the technicians of both DuPont and VWF&S.

Here is how this architect-client team tackled the three major phases of the design problem:

1. The labs themselves—i.e., the individual laboratory rooms. Under the leadership of the architect the various DuPont clients ultimately agreed on one standard "laboratory unit"—its dimensions, bench arrangements, facilities, etc. (Says Smith: "We just put all the 'why's' together, then worked out a hard core of all those 'why's.'" ) The result is presented at the right.

2. The laboratory building—or buildings. At the outset conversations between VWF&S and the Design Division led to a scheme consisting of a single laboratory building for all departments except Textile Fibers. This was natural, for such a design would offer maximum economy, facility for change and growth, and present an impressive appearance. (Textile Fibers—formerly Rayon—needed a separate building because of their special laboratory requirements.) This concept was acceptable to all concerned at first. However, after the design had been sufficiently developed to become real, those who were to work in the building concluded that while they would be well equipped, they would be unhappy in such a large, consolidated laboratory building. DuPont decided that in the long run separate buildings would suit their people better, and a substantial amount of work was abandoned to start afresh on a multiple-structure design.

3. An acceptable site plan. VWF&S went back to work, presently produced a new proposal based on the small-campus concept: diversity achieved through skillful spotting of varished buildings around a centrally located library; unity achieved through facing, interlocking quadrangles. Marvelous to say, the new plan was enthusiastically welcomed on all sides—precisely because VWF&S had gone to great pains to come up with the one single arrangement most accommodating to every department's sensitivities: Textile Fibers was put near the main entrance; Chemical department laboratory—roughed out by DuPont and refined by VWF&S, is a squarish, two floors high to allow for the spinning of fibers. The solution, flowing out toward researchers, needed its larger-than-laboratory experimental area immediately adjacent to all its laboratories. Furthermore, this area in Textile Fibers had to be two floors high to allow for the spinning of fibers. The solution, roughed out by DuPont and refined by VWF&S, is a squarish building with a great open bay in the center, this surrounded on three sides by a double-decked horseshoe of labs. At the open end of the horseshoe: loading platforms.

Not to be overlooked is the design of certain special fixtures for these labs, notably in and around the benches and bench areas. Outstanding among these developments: The 10' benches with separate auxiliary air supply (normal length for hoods is 4'-5'). The self-sustaining mullions incorporated in these hoods, making for unpimmed work space when protective window-sections are in the raised position. Introduction of air-supply ducts into the big, solid bench-lips—this to keep heavy gasses from flowing out toward researchers. Removable front bench panels, so as to provide "deep sections" (6' instead of the usual 3') for experiments requiring high equipment.

Such is the Experimental Station—from which, every half hour, the limousines take off for Wilmington and connect with another shuttle heading southwest, every hour, for another DuPont establishment 12 mi. out in the country: the Louviers office project (see p. 146).

Inside, DuPont's labs are planned for flexibility larger-than-laboratory experiments as well as...
and equipped to accommodate bench-top experiments

Textile fiber department needed space two stories high to allow for spinning of fibers and situated immediately adjacent to its laboratories. This problem was solved by putting labs (off corridor at left) in two-tiered horseshoe around large central semiworks area.

Ten-foot hoods on typical lab benches serve as housings for protective window sections. Sections slide up and down on tracks of "self-sustaining mullions."

Tall distillation columns in special-services laboratory created just one of many special structural problems involving provisions for outsize or extra-heavy equipment. In areas like this, architects mapped all "plumbing" up to specified take-off points; DuPont Engineering worked out concluding details of hook-up and extension.
DuPont's rural headquarters will be a separate campus of H-shaped office buildings

Someday Milford Crossroads near Newark (pronounced New Ark), Del., may house other DuPont headquarters offices. Meanwhile, the first huge H-shaped building—Louviers *—stands there as the prototype for three others which are eventually to rise beside it on the 825-acre rural site. And who do you suppose wholly occupies just-completed Louviers? DuPont Engineering (except for what is at the engineering labs)—proof, if proof were needed, that VWF&S human relations are still working out fine.

Basic concept of the Louviers plan: not a module but a "space unit"—one great floor of one great wing, virtually all of it "net usable space" to be subdivided as the situation may demand into so many private offices, so much open clerical area. In times of growth, more "space units" may be added almost at will, either vertically (more floors) or horizontally (more wings) or both.

Two wings of the same building are joined together by a spine—the crossbar of the H—which is kept as thin as possible so as to obstruct as little light as possible. Elevators, escalators, washrooms are all located at the ends of the spine, where it joins the wings. In the first building the private offices run all along the inner edges of the wings and on through the spine, more or less like production lines; the rest is open clerical space. But if so desired, the arrangement could be reversed—or otherwise changed—with no difficulty whatsoever. (As far as offices go, DuPont believes that privacy should come in a standard economy size—namely, 10' x 13'—all considerations of rank to the contrary notwithstanding. Exceptions are only made in cases of actual necessity.)

Not least among the merits of the H-plan as here applied is the solution it offers to the parking problem. At Louviers, parking lots are placed contiguous to the ends of the H. Quite close to the buildings, they are at the same time out of sight and mind of most of those who will work at the Crossroads—and who will see only, as they glance out their windows, several acres of landscaped courtyard on the one side, several hundred square miles of rural Delaware on the other.

* Name of a town in northern France whence the DuPonts came.
Stairwell at end of one stem of H has vertical band of big windows which contrasts with horizontal rows of small office windows. Since building is completely air-conditioned, all windows are fixed.

 Cafeteria projects from stem of H, is glass walled to admit full view of countryside.
Off-the-ground scheme pre-empts little of desperately needed schoolyard on 3.2-acre site housing more than 2,200 elementary pupils.

SCHOOL ON STILTS

Tiles in lobby—swatches of early learning and early fun—charmingly state both tone and purpose of entire school. Tile mural detail above.
This school (previewed AF, Apr. '53) had all the tangible odds against it. Its pitifully small, slum-surrounded site serves 2,200 students. The budget was so modest everyone conceded only eight classrooms, instead of the fourteen wanted, could possibly be built in the first phase.

But as photos and plot plan show, the solution enhanced the site's little play space instead of eating it. And the $10.35 per sq. ft. was so much lower than anticipated—partly owing to elimination of the corridor and resulting dividends of direct bilateral lighting and ventilation—that the complete projected school was built at once.

As in all cases of triumph over "impossible" tangible odds, the vital intangible odds were favorable. The problem was so acute that the community was in no mood to object to unusual design simply because it was unusual. At the time, New Orleans was blessed with a reform, do-something schoolboard; and the architects chosen and encouraged by the board, and its Planner-Architect Charles Colbert were equal to the demands for ingenuity.

Another reason this school is successful is that the architects took the trouble (and had the chance) to show the faculty how to use it—ventilate it properly, make the most of storage, take advantage of flexibility. Unfortunately, after-hour maintenance funds have been too scant to use the activities wing as the real community center for which it is so thoughtfully planned.
SCHOOL ON STILTS

Kindergarten, looking toward porch and ramp. Shared stair-utility core is at rear.

Typical classroom has full bi-lateral lighting, full cross-ventilation because of no corridor. Glare-reducing glass is blue-green.

Stilt plan eliminates classroom corridors

Plan shows up-in-the-air classroom floor and on-the-ground activities and community wing. Toilets for kindergarten are under school near ramp foot; older children's are on ground near east end.

Stairs lead from playspace to entrance and utility core between each pair of rooms. Pipe stack can be seen behind stair. Larger ground-floor enclosure toward rear houses toilets.

THOMY LAFON ELEMENTARY SCHOOL
New Orleans. 14 classrooms. Designed for 525 pupils, used by 750.


COST: Construction and landscaping (excluding architects' fee of 6%) $457.260 (about $113,000 under budget); $10.35 per sq. ft. rating covered areas at usual $/.
Auditorium-cafeteria wing has sliding panels for natural ventilation. Room is set up for assembly. The opposite side of the hall opens onto a garden bordering the covered walk. Divider beside walk can be glimpsed through building. Children love peering through its "knotholes."

Large hall is in almost constant use as either cafeteria or auditorium. Architects report arrangement for storing furniture under stage works extremely well and setup can be swiftly changed. Stage serves as band-practice room and smaller meeting space, is also equipped with chalkboard and storage for extra classroom service. Plywood mural over kitchen was painted one Sunday by Architects Curtis & Davis; their wives helped by filling in background colors and providing lunch.
Bolivar center, focal point of Caracas' new city plan, features twin office towers, 28 stories high. In foreground is a pedestrian plaza beneath which is a station for 600 buses, a garage for 1,600 cars and a four-lane through-traffic underpass. Only local traffic remains on grade.

Projected buildings as shown in model will flank Avenida Bolivar for more than a mile.
CARACAS—the buildingest city in South America—by May Lumsden

More than 100 years ago an earthquake helped to modernize the capital of Venezuela; recently the young architect-city planners have been creating their own earthquakes. A Caracas resident, returning to the capital after six months' absence may easily lose his way in the center of his own home town. Craters gape where office buildings stood; jagged pieces of raw brick walls wait patiently for tomorrow's blasts, and shining in the rubble are fragments of blue and green glazed Spanish tile that a short while ago lined the impressive entrances of colonial-style houses.

It all started with the discovery of the gold for which the Spaniards were killing Indians and each other in the fifteenth and sixteenth centuries, but with the gushing of the "sluggish black gold" the North American oil companies extracted in the late twenties.

Unlike other countries that have sold their riches cheap and then tried to hold up the buyer, Venezuela has been a partner, financially and economically almost from the start, in the production and use of her wealth. And now, besides being the second largest producer of oil in the world, she is on the way to vying financially and economically almost from the start, in the production and use of her wealth. And now, besides being the second largest producer of oil in the world, she is on the way to vying with the greatest producer of iron ore as well. Only within the last decade was the secret of the great iron deposits extracted from the earth. During that time, the population of the principal cities—Caracas, the capital and metropolitan area, and Maracaibo, the great oil center—has more than doubled; and during the past three years the iron ore capital of Ciudad Bolivar has also grown spectacularly. But the country is still in the boom stage of its development. With an area about equal to the size of Texas plus Oklahoma, Venezuela now has a population of slightly more than 5 million concentrated in the principal cities, but spread also through the hot oil-producing lowlands of the West, the cool coffee regions of the Venezuelan Andes, and on the plains of the Orinoco River basin. Parts of the country, south and east of the Orinoco mine developments, are still unexplored masses of jungle.

City plan. The young men of Venezuela, who have changed the face of their country, studied engineering at the Universities of Caracas and Merida, and also came to the States and went to France to study. During the late thirties in the States, they were entranced by the talk of city planning; by the scientific, economic and sociological studies that were being made as a basis for planning new communities. They were greatly influenced, too, by the planning theories of the Beaux-Arts school and by the French Institute of Urbanism.

In 1937, the "visionaries" started talking of the "urbanization" of Venezuela—the need for planning for the growth of city life. Planning experts from other parts of the world were consulted: Maurice Rotival (of Yale, and an international planning expert), Jose Luis Sert (now dean of the Harvard School of Architecture, and also an international planning expert)—and even Bob Moses was called in at one point to help on traffic problems (he stayed only a few days).

One of the first jobs the young planners tackled might easily have thrown older men. The capital city itself, center of the business, social and government life of the country, lies in a valley 10 mi. long and 3 mi. wide. Until 1946, it was a small Spanish town, completely surrounded by mountains, with narrow streets running up and down the hills, and trolley cars occasionally going in the opposite direction from the one-way auto traffic. Unlike every other important city, Caracas, one of the fastest growing cities in the world, had no main avenue or traffic artery. The method of street widening and modernization which General Gomez had initiated—new buildings were required to be set back several meters from the original street line—added a strangely zigzag appearance to sidewalks already cluttered with iron-railed staircases to help pedestrians cope with hillocks in the center of the city.

The young planners were not satisfied to wait the years that would be required to change their capital on this piecemeal basis. A commission on urbanism was created; the National Planning Board also started work. Headed by young Dr. Gustavo Ferrero, a staff of 150 technicians operates on an annual budget of about $800,000, studying population trends and movements, water supply, soil conditions, housing needs. A master plan for the capital metropolitan area resulted from the combined efforts of Venezuelan architects and engineers and their foreign consultants.

Bolivar center. Because the city's most pressing problem in 1946 was the traffic problem, the planners decided to make the first avenue an express highway slashing right through the center of town. But it was to be more than an express highway; to make it the show avenue of Caracas, the young planners felt that the Avenida Bolivar had to be lined with modern buildings arranged in accordance with a master plan. A government corporation was set up; it issued 6% bonds for the condemned property; razed 400 buildings; has already completed four seven- to ten-story buildings for government offices and shops; has nearly finished two 28-story buildings; provided underground parking space for 600 buses and 1,600 cars. The mile-long eight-lane highway with all its appurtenances will cost about $300 million.

There has been some criticism of the Avenida Bolivar plan. Some say that it is too symmetrical, in the Beaux-Arts tradition;
others argue that, although it has served the purpose of connecting the old part of the city with the growing suburbs of the east, it has also tended to bisect Caracas into north and south sectors. The Caraqueno, with his usual apt phrasing, calls it the 38th parallel.

University City, although it is another government project for the beautification of the capital, serves as an educational center for the nation. This dream started in 1943 with the creation by the government of the University City Institute, an autonomous body charged with the planning and construction of a new university for Venezuela. The old University of Caracas had occupied, since the granting of its charter by King Philip V and the inauguration of classes in 1725, the vaulted halls and spacious patio buildings of the historic convent of the order of St. Francis in downtown Caracas. With time, it became entirely surrounded by shops, and had to rent space in other buildings to keep up with its growing population.

The new university stands in the center of the valley of Caracas, between the old colonial city and the new modern suburbs circled completely by hills, and bordered on the north by a tremendous green reforestation zone of the Botanical Gardens. Less than a generation ago, green sugar plants grew tall and thick here in what was then a hacienda that faced toward the grand mountain peak of the Avila, the highest and most beautiful topping Caracas. In the old hacienda house of the Ybarra family, which stood on a hill overlooking the plantation, a group of young men of Caracas—architects and engineers—studied and worked on plans for improvement of their country.*

Although the project is called University City, after the Spanish example of the University of Madrid, it is really not conceived as a separate city, but rather as a sports, adult-education and health-activities center for the metropolitan area of Caracas as well as a university center for the country as a whole. Privacy for the students is achieved through the isolation of their buildings, but there is easy access to the public facilities.

The Olympic Stadium with capacity of 35,000 spectators completed in time for the Bolivarian games held in Dec. 1951, is a beautiful example of cantilever planning and smooth concrete work. From the back it looks like the huge skeleton of a prehistoric monster. From a distance, framed against the tall green Avila mountain peak, the flowing curves of the structure create an impression of lightness, movement and gaiety that so well express the purpose of the stadium. Facilities are provided in the lower section of the stadium for all the customary services for 448 athletes. The stadium is open at both ends for necessary circulation for parades and folklore festivals.

Close by is the baseball stadium (capacity, 38,000), tennis courts, swimming pool, and gymnasium.

Also available to the public is the large outdoor theater, which seats 3,500. Smaller functions can use an auditorium designed

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*The University City plan was drafted by Dr. Carlos Raúl Villanueva, who had studied at the Beaux-Arts school in Paris and at the Urbanism Institute of the University of Paris. The responsible engineer is Captain Luis R. Damiani, president of the Administrative Council of the Institute. Heading the construction department is another young engineer, Dr. Santiago Britocho.
Floating panels in conference hall were specified by US engineers to solve acoustical problem. Picture shows John Foster Dulles addressing tenth Inter-American Conference.

UNIVERSITY CITY
CARACAS

Stadium profiles in strong sunlight create abstract pattern. At left is end view of tennis stand, at right is back of tennis bleachers, beyond is end view of Olympic Stadium's curved concrete canopy.

Hilltop view of university shows domed conference hall in center next to tall library, stadiums in background, dormitories at left, medical center in right foreground.

Photos: (below) UP; (others) Hamilton Wright
EXCERPTS

Outside opinion and comment on the building industry from the rostrum and the press

A new look for commercialism

Dorothy Thompson cites the nation's new shopping centers as examples of successful civic planning

Excerpts from the noted commentator's regular column in the Ladies' Home Journal.*

"Commercialism" has been blamed for most of the faults in American life, and buying and selling associated with rapacity, its principle being defined as buying cheap and selling dear. The struggle to attract the public eye in an advantageous location has been blamed for land speculation, the inflation of real estate values, and the creation of commercial and residential slums. The commercial spirit has been described as the antithesis of the aesthetic, defacing beautiful landscapes with screaming billboards, blotting out the sky with neon signs.

Commercialism has been accused of cutthroat competition, and socialists and other social reformers have declared private commerce incompatible with cooperative planning. Thus has the case against the tradesman been built up.

As in most cases, there has been an element of truth in the accusations, as usual unbalanced by other truths. The trader has been the great opener-up of the world, the bridge between human cultures, and between country and city. He has been the purveyor of news as well as wares.

More than any other group, merchants created the city and urban civilization, with all its graces and amenities. One of commercialism's greatest recent accomplishments is Northland (AF, June '54). It is prosaically described as a "shopping center," and that is what it is—together with several other things besides. It is the most ambitious of such mercantile centers in America or the world. And it is as new as the twenty-first century. It is extremely practical, and it is perfectly beautiful. It is a model of enlightened planning, and of social cooperation—between merchants, architects, sculptors, artists and civic-minded citizens—and it is entirely the creation of private enterprise; in fact, the creation of one great Detroit department store, J. L. Hudson Co., a family enterprise which has capitalized and financed it to the tune of $25 million for no other reasons than that much-deplored "profit motive," the capacity to think ahead, and the very human desire to create something admirable and worthy of repute.

Northland—which flies its own flag, a white (wind rose) sunburst on a blue ground, and, of course, the Stars and Stripes as well—has not one market place but a series of ten connected courts (piaze in Italy), terraces, malls and lanes. The largest of these—the "courts"—like the terraces" are squares, the courts open on one side; these one enters from the parking lots. Malls are twice as long as they are wide; lanes are smaller. But characteristic of all of them is that their central areas are beautiful gardens. Fountains spray water into the air; everywhere there are solid and handsome oak benches where one can sit and gossip or smoke, and in every court or mall a delightful piece of modern sculpture attracts the eye—and suggests meeting places.

Most of these sculptures are abstract, and many of them mobile, moving and creating new forms as the breeze wills. Victor Gruen (and his associates), who designed and carried out the whole project, wanted no heroic, static or dramatic sculpture, but only what is modern, gay, a little challenging and always amusing.

I find it amazing that shopkeepers were willing to abandon so many of the practices they normally use to bring in business. No shop is allowed paper stickers on its windows, advertising special items. No shop tries to outbid its neighbor by huge and glaring signs. Competition is confined to quality, display and price. The spirit is cooperative as well as competitive. Each

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Playground sculpture—for the fun of it

Fighter-professor-sculptor would substitute challenging and unpredictable apparatus for the traditional teeter-totter.

Excerpts from an article about the work of Joe Brown* in the Princeton Alumni Weekly

When Professor Joe Brown was asked to judge playground equipment designed by Princeton's graduate students in architecture, the University's sculptor-pugilist gave the boys a hard time. He criticized their work as unrelated to human needs, unimaginative and overly imitative of the Scandinavian school of "play sculpture." When the graduate students in effect asked Professor Brown for his credentials as a critic in this field, Joe replied: "I was a boy once." He picked up the gauntlet by designing play equipment which fulfilled his concepts of human needs.

In St. Louis this fall—four years later—Professor Joe Brown delivered a paper before a meeting of the National Recreation Assn. and exhibited models. In designing equipment which would help "to prepare children for the struggles of maturity," Mr. Brown set three interrelated requirements:

1. Play equipment must be continuously challenging and creative for the child, not merely for the designer. (Accidents in playgrounds result from boredom, he believes, after the child has been lulled into a sense of false security.)

2. To provide continuous challenge, equipment must be unpredictable. "Unpredictability, within reasonable limits, is the factor which gives physical activity the creative quality which is the very soul of play." It necessitates decisions and makes each experience a different and new achievement—"a tacit reminder that success is a process, not an end."

3. Play equipment should be so designed as to permit various age groups to use the same apparatus without getting in each other's way and with a minimum of supervision. "In too many cases supervisors have become to the child what the lawyer and the policeman have become—too often—to his father: a substitute for judgment and conscience."

Joe Brown calls his apparatus a play "community" because "any child who uses it is forced by circumstances to recognize the vitality of his surroundings. Through experience he is taught to respect the complexity of every situation even though his personal aims may be simple. This respect will be neither unreasonable fear nor a thoughtless sense of security—just an acceptance of the fact that personal designs and social designs are interdependent.

"The factor of unpredictability—the creative factor—places upon the child the responsibility—at this time in life, the fun—of choosing, of emerging, of choosing again, of emerging again, ad infinitum; practice in the art of living, the rare art of accepting each accomplishment as a signpost in a wonderful journey that never ends; a journey made on one vehicle—a mind and a body, one and inseparable."

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Prototype: this model, Joe Brown has incorporated all his basic ideas. The plastic-coated cables on which the three figures are playing are so arranged that motion at any point is transmitted to every other point in the network. (The central cone is mounted on a ball and the uprights are flexible.) Hence the climbing ropes are never completely stable. "Each time one of the strands is pulled, the whole network moves, complicating the lives of everyone concerned." The motion is enough to draw a child off balance unless he learns to extend and to flex—to give and take—at the right times. The ever changing rhythm makes each trip a new experience.

The massive central element of concrete offers other challenges. A child climbing the outer steps may have to make a choice between following the steps or letting go the right-hand rail. A child descending the spiral slide will be disappointed in his expectation of sliding all the way to the bottom, but a couple of pushes will start him on his way again. Or he may venture out of the curved ledge or descend by the net which can be seen at the left. Younger children can play safely in the interior.

The Whale Yard: this is a modification of the prototype and is particularly suitable for children of varying ages playing together, without getting in each other's way. Smaller children can crawl through the whale, but cannot reach the upper strands of rope. The Whale Yard and another piece of apparatus called a Spring-Tree will be constructed in Philadelphia this spring.

How to develop new methods of construction

Excerpts from a talk by Louis I. Kahn, architect, conference on architectural illumination, School of Design, North Carolina State College

We should try more to devise structures which can harbor the mechanical needs of rooms and spaces and require no covering. Ceilings with the structure furred in tend to erase the scale. The feeling that

* A one-time fighter of note, Joe Brown is now associate professor of sculpture and boxing coach at Princeton.
1. Radial ribs for world's largest dome
2. Metal on paper honeycomb for strong, light walls
3. Tapered steel framing for stronger buildings
4. High intensity lighting for an assembly line
5. Luminous ceiling for a factory
All welded, radial ribbed structure spans 334'. Design holds steel to 22 psf, framing costs to $3.64 sq. ft.

Precise engineering design saved weight and dollars on the world's largest dome, a 334' diameter, all-welded, radial ribbed structure now abuilding over a new games and exhibitions coliseum at Charlotte, N. C. Using a tricky but economical design technique invented in 1863 for considerably smaller domes by the German steel expert J. W. Schwedler, the weight of the structural steel, including purlins and enclosing tension ring, was held to 970 tons, or 22 psf. Thanks to welding and prefabrication of the radial ribs on the ground, the framing steel went up in 3,400 man-days at a cost of $150,500, or $155 per ton of steel.

The dome is built atop 48 cast-in-place columns sloped outwards 7' to keep the rain off of the huge windows and precast concrete wall panels. To compensate for elongation of the 172 ton tension ring, the columns are strained inwards ½" at their tops and the tension ring is bolted atop them before the full weight of the dome is put on the columns. Rib sections, 176' long and weighing 14 tons each are assembled on the ground and ends tied with cables for erection between column heads and a 46' dia. central compression ring mounted upon an erection scaffold. Only three ribs are erected in each quadrant at a time to avoid unbalanced loads on the compression ring. Each three-rib dome section is welded and braced with purlins and adjustable tie-rods before the next section is put in place.

**Design data:** the dome is engineered to carry dead load plus live load (20 psf of roof surface) either over half or over the entire area of the roof; wind loading is for a 125 mph gale calculated for different sections of roof surface according to an inclined surface formula that gives a negative value where suction occurs. Design analysis is based upon cyclo-symmetry, which entails determining the influence of a unit force on all joints assuming a fully-hinged structure. The resultant values are used to design individual framing members, working from the periphery to the center of the dome. This analysis is subsequently checked by the membrane theory.

Roofed with lightweight insulating concrete panels covered with sheet aluminum, the coliseum will seat 10,000 people (on precast concrete bleachers) around a 99' x 212' arena. With an adjacent 2,500 seat auditorium it forms part of Charlotte's new civic center designed by A. G. Odell Jr. & Associates, architects. Severud-Elstad-Krugger are the consulting structural engineers; Southern Engineering Co., steel erectors.
Used with porcelain enamel steel and plasterboard, they meet code requirements for downtown drive-in hotel.

Porcelain enameled curtain wall panels with a 2" core of perlite impregnated honeycomb paper have been installed for the first time in a downtown commercial building, a 170-room drive-in hotel at Brookline just outside Boston. Erected in sizes up to 7'-10" x 3'-10", the panels weigh 4½ psf and have a U-value of 0.25 for a thickness of 2½" (with plasterboard interior finish). Although the panels have not yet been subjected to the official fire test, preliminary tests have convinced the manufacturer, his independent engineering consultants and the town of Brookline that the panels are incombustible and will withstand the standard 4-hr. fire test. In all, 1,720 exterior wall panels totaling 27,000 sq. ft. were erected in 9,120 man-hours. Cost of the exterior panels, including installation cost, is about $3.25 per sq. ft.; interior partitions, having no porcelain enamel facing, cost 60¢ per sq. ft.

The hotel is a two-story structure with concrete floor slabs on steel columns. All rooms have balcony access; all ceilings are finished in acoustic tile. Partitions consist of the 2" honeycomb core sandwiched between sheets of plasterboard, and have a noise reduction coefficient of 38 decibels. The honeycomb paper panel is easily cut and allows conduits to be run inside the partitions themselves. Conduits are placed before the plasterboard finish is glued into place. Perlite fill insulation is only used in the exterior panels and around columns.

Including air conditioning (by fan-coil units below the windows) and a 170-car basement garage, the hotel will cost $2 million. It is designed by Sturgis Associates, Inc., architects; the curtain wall panels are designed and fabricated by Bettinger Corp.
Panels form walls on the outside

Window frames are hung from soffit beams. Alongside window frame is lagged chilled water pipe and steel column.

Porcelain enamel wall panels are joined to wood shoes by plugs driven into floor slab by powder-actuated tool.

Large wall panels, 7'-10" x 3'-10" and weighing only 78 lbs., fit alongside window frames; 786 of these large panels are used in hotel.

Wooden shoe and header for partitions are fastened to concrete floor slab and beam by powder-actuated fastening gun.

Column fireproofing is honeycomb core with granular perlite filling. Paper core panels are easily cut to fit around conduits.

Exterior of finished wall is braced with vertical timbers until plasterboard inner lining is laminated to honeycomb core.

Interior of wall is ready for lining and partitions. Louvers in panel beneath windows are inlets for air conditioning equipment.

Plasterboard finish is applied to column fireproofing. Partitions are clipped to shoe and header then plasterboard is glued to both sides.
3. STRONGER SKYSCRAPERS

San Francisco's strict earthquake resistant code inspires use of tapered spandrel beams and columns, special K-bracing and high-strength bolts.

The strongest skyscraper ever built is being topped out in San Francisco, a 25-story office building for Equitable Life Assurance Co. It is the first tall building to satisfy the strict demands of San Francisco's 1948 building code. This code requires large seismic increases for every additional story on a building until, at 25 stories, the total seismic shear forces to be controlled become almost $2\frac{1}{2}$ times the lateral wind forces. Such design is naturally expensive and, when the new code appeared, tall building construction in San Francisco came to a temporary halt. By detailed analysis of the problem the engineers of this building have come up with an economical solution:

- By keeping the plan dimensions of the tower, 65' x 165', under 60% of the building coverage, 119' x 165', they got code permission to use lower seismic values (see chart).
- By using deep butterfly-shaped spandrel beams and wide, tapered columns (including tapered corner columns), they carried seismic forces in the lower half of the structure entirely in the exterior walls, thus avoiding deep, space-consuming floor beams.
- By a system of shallow K-bracing on the 15th and 16th floors, they transmitted seismic shear forces from the tower (where the entire frame resists lateral loading) to perimeter.
- By mounting the building on 467 steel piles driven to refusal into the bedrock some 132' below ground level, they were permitted a 15% reduction in seismic shear.

In spite of this comparatively complicated design, an efficient combination of welding,
Typical framing details top to bottom: 1) tower framing, 17 to 25th floors; 2) spandrel beams on floors 11 to 16; 3) spandrel beams on floors 3 to 10; and 4) spandrel beams at 2nd floor. Columns are tapered 3/32" per ft., from 42" web at base to 12" web at 14th story.

Perimeter columns are built up by welding plate sections. Note unusual corner column section, right. Lightweight concrete fireproofing is used from second floor on up to top floor.

The building is designed for a live load of 80 psf including partitions. Floor to floor height is 12'-2", allowing 9' headroom, 12" for ducts and 2" for floor beams, floor slab and fireproofing. Lightweight concrete of 2,750 psi and 100 lbs. per cu. ft. is used above the 2nd floor to save weight. The beams and surrounding concrete are designed as composite beams thus increasing beam strength by 15%. Floor slabs are 6" thick (including electric conduits) and act as diaphragms to the exterior walls.

Complete with year-round air conditioning, ten electronic operatorless elevators and an external finish of stainless steel, aluminum and white marble, this 459,000 sq. ft. office is being built for $8,873,401 or $19.30 per sq. ft., including foundations. It is designed by Architects Loubet & Glynn, successors to the late W. D. Peugh, with Irwin Clavan, consulting architect; F. W. Kellberg & Associates are the structural engineers.
4. LIGHTING AN ASSEMBLY LINE

TV set production gets 240 foot-candles of nonreflective lighting to reduce mistakes, increase comfort.

To raise employee morale and production efficiency at the new Batavia, N.Y., plant of Sylvania Electric, illumination over a TV set assembly line has been stepped up from a painfully reflective 36 foot-candle level to a diffused, restful 240.

In the old plant a row of unshielded industrial luminaries gave a band of reflected brightness on the brightly specular surface of each cadmium-plated TV chassis (photo below). A connection seen against the bright metal appeared in silhouette while one seen against a darker area was visible by direct lighting. This produced glare and discomfort and caused many faulty connections, which subsequently had to be located and repaired at considerable expense.

The solution was to increase the illumination but to reduce and equalize reflection. This is achieved by a continuous 32"-wide luminaire composed of two rows of dual 30-w. industrial lamp units mounted side by side and shielded by a continuous row of 32"-square panels of white diffusing corrugated vinyl plastic. For uniform brightness the corrugations are normal to the lamps. The shielding is about 2" below the reflectors and 54" above the assembly line. This design reduced the ratio of brightest to darkest areas in the chassis from 20:1 in the old plant to 3½:1 in the new.

To avoid distracting brightness contrast between the assembly lines and the rest of the plant, the entire work area is covered with 50 foot-candles of general lighting. This is provided by louvered semidirect luminaries, each with two 40-w. lamps, placed in continuous rows 10' and 12' above the floor. Designers: Illuminating Engineers R. M. Smart and Willard Allphin of Sylvania Electric Co.
5. LIGHTING AN ASSEMBLY SHOP

Aircraft part assembly gets 80 foot-candles from luminous plastic ceiling for $2.10 per sq. ft.

While a production line demands excellent light over specific areas, separate assembly tables call for good, low-cost general lighting. At Thompson Products, Inc., Cleveland, a well-diffused lighting of 80 foot-candles in their 50' x 165' assembly shop for high-precision aircraft parts went up in only two weeks for a cost of about $17,500 or $2.10 per sq. ft. This rapid installation was mainly due to production-line assembly of 18'-3" x 21' sections of plastic ceiling on the ground before erection.

The 17"-deep space above the corrugated plastic diffusing screen doubles as a return plenum for the air-conditioning system. Filtered, cooled and tempered air is supplied by ducts to 18 diffusers set in the ceiling and return air passes into the plenum through the numerous openings at each side of the 36"-wide ceiling strips.

The lighting system consists of 8'-long single-tube fluorescent fixtures mounted 2' o.c. lengthwise of the shop and clipped to wooden joists running across the shop. Suspended "T"-rails to carry the plastic ceiling are also mounted lengthwise about 3' o.c., 17" below the lamps, allowing a finished ceiling height of 10'-5". "T"-rail sections are assembled on the ground, lifted into place and the entire structure leveled by transit, after which the plastic is unrolled and stretched into position.

The ceiling is designed by Thompson Products Plant Engineer Norman C. Vicha in cooperation with the H. Leff Electric Co.
GRANDSTANDS AND STADIUMS—PLAN TYPES

FOOTBALL
(one or both sides)
Also suitable for track, soccer, etc.

FOOTBALL
(prise point for sight lines—see sheet on seating details)

TENNIS
For preliminary work assume:
Without backs:
3.25 to 3.5 sq. ft. per person
With backs:
3.9 to 4.2 sq. ft. per person

BASEBALL
Note: dotted lines indicate less desirable seating

SPACE REQUIREMENTS FOR PLAYFIELDS & SEATING AREAS

FORM & SIZE OF THE STADIUM OR GRANDSTAND IS DETERMINED BY:
1. The sport & range of other activities for which it is designed.
2. Topography, and location of stand and playing field to offer maximum protection from sun’s rays for eyes of players and spectators.
3. Desire and practicality of providing best accommodations at location of greatest spectator interest.
4. Conformity to official sports requirements on playing field designs.
5. Type of school or community; number of students, faculty, townpeople.
6. Athletic relations with and proximity to other schools and communities.
7. Emphasis placed on sports and available funds.

NOTE:
Compromise between baseball & football shape is very difficult. A baseball field in a stadium constructed primarily for football (except in colossal structures) must necessarily have one short outfield.

BASEBALL SEATING PLAN TYPES

FOOTBALL SEATING PLAN TYPES

STRAIGHT
Suitable primarily for schools & small colleges
3000 to 10,000 capacity

CRESCENT
Designed in relation to seat preferences at point of spectator interest

HORSESHOE
May be designed as slightly curved stand for future extension into horseshoe or bowl.

BOWL
A. Combined bowl & crescent type
B. Ellipse - 4 tiers permits capacity up to 100,000
GRANDSTANDS AND STADIUMS—SEATING PLANS

DESIGN FACTORS - ENTRANCES & EXITS

1. Entrances and exits should be well-distributed and protected by several passageways fanning out around entrances.
2. Entrances and exits should be protected with safety railings.
3. There should be an adequate number of entrance gates (too many is better than too few).
4. Maximum desirable emptying time is ten minutes.
5. Avoid stairways when possible; otherwise careful consideration must be given to height of stair risers and width of treads.
6. Stadium may be built to advantage of natural slope with spectator entrances at high point.
7. There should be a minimum of 2 exits remote from each other immediately to the outside for each balcony or tier; 3 exits if capacity of tier exceeds 1,000, 4 exits if capacity of tier exceeds 4,000.
8. The aggregate width of aisles, passageways, ramps or corridors should equal the width of exits.
9. If exits do not discharge directly into the street, or open spaces, lanes leading to street should be at least 20' wide.

VOMITORY DISTRIBUTION

Steps in aisles when riser exceed 9" (33" code)

Not more than 33 seats between aisles (code)
28 or 30 pref. This results in 45' to 48' O.C.
for structural bents.

Aisles to be ramped unless gradient exceeds 1:10 (code)
18' 18''
18'' counts as one seat (code)
6 sq. ft. per person for standees

17 seats maximum between one aisle & wall (code)
14 or 16 is preferred.

for secondary aisle (not serving more than 60 seats)

Dim. "x" greater for ramps than for stair; value will vary with slopes & must be worked out in section. Ramps preferred to stair on account of safety & there is always more room under a stadium than can be used.

12' minimum legal
22'' min. legal
30'' min. with seat backs

"Code" refers to A.S.A.
226.2 - Places of outdoor Assembly. Requirements for concrete or steel deck structure.
Much more severe for wood
GRANDSTANDS AND STADIUMS—SEATING DETAILS

Roof, if used, should be cantilever type—seldom used for football, often for baseball & racing.

Press box when roof is used.

Series of uniform slopes simpler to build than true curved sections.

Ramp - maximum slope: 1:10

Flat deck for cameras

Press radio - TV box (enclosed, heated) at rear, if no roof. Allow 6 ft. per man. Allow 8'-0" x 10'-0" for each broadcaster. Total may be 150 to 200 ft. long.

Street higher than playing field permits level entrance & more economical structure.

ALL SEATS RESTING ON EARTH
If playing field is completely enclosed by seats, space for team facilities and concessions, and tunnels from playing field (A) must be excavated. If tunnels for spectators (B) are not provided, it is necessary to climb nearly to the top of the stadium to reach the lower seats. This system is more economical if playing field is not entirely enclosed by seats.

ENTRANCE ABOVE PLAYING FIELD - SEATS PARTIALLY RESTING ON EARTH
More economical if seating area does not entirely enclose playing field. Otherwise, ramps or tunnels from playing field to team facilities are necessary.

ENTRANCE LEVEL WITH PLAYING FIELD
The solution necessary if soil bearing capacity is not sufficient to take load of seats resting on earth. Most stadiums have vertical supports; the example shown eliminates this by means of tension rings around the bowl.

TYPICAL SECTION
If street level is high enough & soil firm, entire stadium may rest on ground - most economical construction.

ENTRANCE ABOVE PLAYING FIELD - SEATS RESTING ON EARTH - TYPICAL SECTION
Structural economy is achieved through taking advantage of natural ground levels.

BACK ROWS - TYPICAL SECTIONS
Sight lines are laid out in same manner as for theater balconies except note that eye height & top of head clearance are greater & that two-row clearance is used.

Provide 3" to 6" space behind last row if against wall; or place last row on deck - type supports if cross-over aisle is behind it.

FRONT ROWS - TYPICAL SECTION
SECTION TYPES
Vault doors revamped by Dreyfuss complement modern banks

More than any single element, the vault door characterizes a bank building as a bank. To keep up with contemporary styling for such structures, safemaker Mosler commissioned Henry Deryfuss to work out a modernized line of the steel hefties (weighing in at 4 to 25 tons). Introduced last year and restyled last month, one of the models has a glass face on the inside which reveals the locking mechanism (photo, right). Exterior of the current door is unchanged; it features a massive crane hinge, with controls—pressure wheel, bolt handle and combination locks—all on a single operation panel. Capable of 100 million combination changes, the "Counter Spy" locks are numbered on the edge of the dial rather than the face to prevent peeking. Several styles of architrave panels are now available for about $2,500 additional on the $12,000-and-up door units, and there is a choice of three interior treatments. Layer upon layer of steel and burn-resistant metal provide ultimate protection against fire as well as siege by sledge, explosive, drill or torch. The doors also have a relocking mechanism which automatically jams the locking bolts (temporarily) should any violence be attempted on the outside.

Manufacturer: Mosler Safe Co., 380 Fifth Ave., New York City.

continued on p. 216
History without fake

Ours is a country that habitually looks forward, not backward, in its city-building. In thinking of that extra, fourth dimension of building called time, we anticipate the future rather than speculate on the past. During the war, when little useful building was being done, English architectural magazines took the occasion to re-evaluate their historical architecture, especially that of the nineteenth century; we, here, used the occasion to project previously unheard of building concepts for "194X." And by now many of them have been built.

In the most youthful days of the Republic, poets like Whitman scorned nothing so much as the dead "old world" they had left. In 1855 Hawthorne, speaking of Coventry in England, remarked, "We wandered wearily up into the city, and took another look at its bustling streets ... a good architecture, especially that of the old masters who created it are to us with deliberate historical creation with deliberate historical tags and "precedents." The revolution has come that separates good work in this industrial age from good work in the handicraft age that preceded it. You can't, as Le Corbusier said, build an airplane that will fly by copying birds.

Yet there are places and occasions, still, where the past can be acknowledged and preserved to our advantage: not as a tourist curiosity but as part of our continuing daily business life. That is why Forum asks the most careful scrutiny when the chance comes to retain such past achievements as the Grand Central concourse in New York. Only the strongest evidence that this inherited building will interfere seriously with the living tissue of our civilization would reconcile us to sadly giving it up.—And then only on the assurance that the old masters who created it are to be given an adequate salute.

What would be an adequate salute? To find the son rising to his time as the father did to his.

Architecture without pomp

Two architects we talked with about the Grand Central problem are exceptionally able men: one a veteran, one a younger man, each representing his generation. Alfred Fellheimer helped conceive the existing building way back in 1903. Yet unlike many architects who love their creations like children, he is perfectly willing to see his original building torn down. The only reality he acknowledges is the play of economic forces out of which buildings grow, and out of which they must be replaced. All else he brushes aside as mere "sentiment." His extraordinary foresight, described in the article in this issue, caused his economic thinking to be often ahead of railroad presidents themselves. But his whole generation came on the scene just as a previous ruling viewpoint, one with some glory in it, was going lost. Said he, "J. P. Morgan declared that a railroad station was not a commercial enterprise—it must be treated as the gateway to the city." Since J. P. Morgan is dead, and railroads must live on their income of today, Fellheimer sees no alternative now but to forget Morgan's grandiose ways and find what handsomeness can be produced in stations that work.

Ieoh Ming Pei as a younger architect, speaks from close association with realty promoter Zeckendorf.

Pei does not mourn Morgan either, but for a different reason. Morgan, says he, was a tycoon and an autocrat, the successor in America of the Medicis in Florence. Such men could impose their will, and it could be good or bad. Since then democratization, says Pei, has been at work. Men like Young and Zeckendorf, whose personal fortunes compared with Morgan's are quite small, guide the building future nevertheless. They do so because the business community has voted them confidence.

What distinguishes a man such as Zeckendorf, continues Pei, is that he recognizes the economic force of intangibles, such as architectural quality. This is treated not as something outside the routine, not as something for Sunday, not for advertising, and with no premium in added cost, but as a guarantee of greater permanent worth. To this important theme, as Zeckendorf and Pei carry it out, Forum will in due course return, giving chapter and verse.

Meanwhile, next month, dealing with another key architectural problem involving past and future, Forum will discuss the proposal that the Cathedral of St. John the Divine be finished in contemporary architecture. n.h.

* And of course, McGinnis.
architect and client see eye to eye...

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primarily for chamber music concerts. Rounding out this group of buildings will be an exhibition hall and a new central library building.

In all these buildings forms are dictated by use; climate dictates orientation; and strong color adds the tropical decorative note. For the most part the buildings are cream color, with sections and pillars painted rich blues, yellows and mulberry; the murals are modern and the colors harmonize with the buildings. A deep mulberry transforms what might otherwise look like a well-ventilated modern factory building into an exciting school for trade and industrial training (some of whose students will be trained in the maintenance of the university itself). The light green planting softening the whole development and the darker green tones of the mountain-peak backdrop soften the bright tropical effect of the buildings. The only spot in which the colors seem harsh is in the entrances to the stadium. Here small blue and yellow glazed Italian tiles fight for attention with the deep oranges, reds and blues of the ticket gates.

**Health center.** Several blocks from the sports center stands a large health center, whose focal point is an earthquake-proof hospital with 1,250 beds. The plans here envisage an interrelationship between the schools of medicine, experimental medicine, pathologic anatomy, and tropical medicine. The buildings housing these schools are directly connected with the hospital, and the schools of hygiene, dentistry, pharmacy, and nursing nearby. One of the special design features of the 11-story hospital is the angled walls which separate patients in the 16-patient wards in such a way that each bed is a corner, and so prevent its being seen from the neighboring bed.

It will be interesting to see what effect this modern, well-planned University City will have on the more than two-centuries’ old customs of its students. Will the well-lighted library and study halls end the picturesque squatting of students under dim street lights for serious study? Will the magnificent new sports center consume some of the energy of the students, and cool their accustomed ardor for participating violently in politics—a practice which keeps so many of the Latin universities closed for large parts of each year?

continued on p. 178
Distinctive treatment of school exterior obtained with colorful Architectural Porcelain by DAVIDSON

Double Oaks Elementary School, a winner in THE SCHOOL EXECUTIVE 1953 competition for better school design, presents applications of Davidson colorful Architectural Porcelain for exterior spandrels and for exterior classroom wainscots. The structural characteristics of Architectural Porcelain combining the natural beauty of glass with the strength of steel are ageless and assure easy, low-cost maintenance. The brilliant colors are fadeless and harmonize perfectly with other structural materials.

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*Pat. applied for.
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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.

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Housing. What will undoubtedly change the living habits of many Caraqueños is the extensive housing program undertaken by the Banco Obrero (Worker’s Bank) directly and through its loans to private developers. The Caracas program is part of a national plan to solve the problem caused by a tremendous increase in population (118% between 1941 and 1950 censuses); by the failure of private financed building to meet the increase needs; by the high cost of financing building; and by resulting slum conditions.

Slum dwellers in Caracas present particularly difficult problem, since they consider themselves property owners. They are usually squatters, who have built themselves ranchitos on the sides of hills—one-room affairs with cardboard walls, wood planks, and tin roofs and with no sanitary facilities. They pay no rent, no taxes, no garbage charges. They receive the health and hospital services of the city free. Huge colonies live permanently in these temporary shacks, taking their chances of being washed down the hills when the heavy rains come, or being smothered by dust in the dry season. Some of the families have settled in well even furnishing their ranchitos with refrigerators, radios and now television sets. But they represent a very real potential health problem to the city. The government has had considerable success in a rehousing plan by which the ranchito was traded in on an apartment or house.

Typical housing project in Caracas accommodates low income families in four-story walk-ups.
Put your windows where you want them

Solve the Sun Problem with CANVAS SHADING

By 5 o'clock on a summer afternoon a 3' west overhang will be so nearly useless that an 8' x 12' picture window will let in almost as much heat as it would without the overhang — about 24,000 Btuh. Canvas Awnings are better than overhangs east and west because they can roll down lower when needed and give complete protection for a fraction of the cost.

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ANOTHER MEMBER OF THE FAMOUS TREE LIFE FAMILY OF FOREST PRODUCTS

CARACAS continued from p. 178

In the redevelopment of this slum area—called the City of Small Planks—70% of the families exchange their ranchitos for modern apartments. The new development razed almost 1,000 shacks in its wake, and when the project is completed close to 1,500 families will have been transferred to new modern quarters with facilities for recreation, education and health service.

One of the largest housing projects in Caracas, covering 45 city blocks, named for Col. Delgado Chalbaud, is composed of workers’ apartments, middle-class apartments, row houses and individual houses. The differentiation is based on income, and the amenities vary with these differences. This integration of the various income groups of the working community is the basic plan of all the government housing projects.

Apartments as well as houses are sold on a down-payment, long-term purchase plan. The public financing permits a 10% down payment and grants a 4%, 15-year mortgage, whereas the usual private financing by insurance companies is at 8% on a ten-year basis. Less-reputable lenders charge up to 12%. Most of the smaller housing units cost from $5,000 to $6,000 and the most expensive, $13,000. Land is supplied by the municipality; streets and lighting are provided by the regional government; building is done by the Banco Obrero; sewers and water supply are the responsibility of the government.

Although these large new developments have helped change the face of the capital, they have not brought in their wake the continued on p. 18

Modern apartment in Caracas contrasts sharply with traditional mansion next door.
Here is another example of the exciting things that are happening at Corbin. A new, modern knob and rose creation — The Crestwood — this design is made for use with Corbin Heavy-Duty Cylindrical Locks and the popular Defender Standard-Duty Cylindrical Sets.

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noise reduction coefficient: .65 | .70

weight per sq. ft.: 1.3 | 1.3

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CARACAS continued from p. 182

widespread destruction that Bolivar caused. Except for the first project, built in 1941 to replace a slum site in the east part of Caracas, the new projects have been built on vacant land—level valley sites—or on squatting-occupied land, climaxing the sides of the mountains as ranchitos do. The Banco Obrero is working with the National Commission on Urbanism and the Municipal Engineering office to try to set aside sites for future housing development, in line with its master plan for the city.

**New suburbs.** But if Caracas is changing fast from old to new, the change is even more drastic in those newly open areas where there was not anything before. Zoning and building restrictions are also helping to speed the change. In an attempt to keep pace with the population growth the planning authorities require nothing lower than ten-story buildings in some new sections of the city. This means that to build a storage warehouse, a company is sometimes forced also to build an apartment house—in an area formerly devoted to farming. And the apartment house provides as good a return as the warehouse.

The demand for apartments sprang up in the past five years, as a result of the heavy influx of short-stay foreigners, and the general decline in the supply of servants (service occupations are still the lowest paid). The new apartment houses range from lowest-rent walk-up types to large luxury apartments with terrace parking facilities, penthouses, elevator servants’ quarters, service shops.

continued on p. 15

Hamilton Wright

Public school for 1,200 children is dominated by a hexagonal sun screen across facade.
9600 lbs. of Steam in only 1000 cu. ft!

The Cyclotherm MC4000 Steam Generator allows you to utilize your space more efficiently... to devote more of your area to storage and production use.

Requires the minimum in boiler room space and costs. Or can be placed in a working area because radiant heat loss is at a minimum. Exclusive, patented, Cyclotherm Cyclonic Combustion makes the most compact steam generator yet developed possible.

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No other method of combustion can equal this accomplishment. The Cyclotherm MC4000 is ideally suited for service wherever steam is needed but boiler room space is at a premium.

See Cyclotherm's new MC4000 Steam Generator at the CYCLOHERM EXHIBIT
Booth 450, 21st Power Exposition, Philadelphia, Dec. 2-7

Cyclotherm Division, U. S. Radiator Corp., Dept. 422, Oswego, New York
Sound conditioning makes advanced school design practical

The designers of Alexandria, Louisiana’s Aiken Elementary School have combined sound conditioning and a unique design to provide improved classroom lighting and ventilation.

Clerestory windows of colored diffusing glass admit light into a corridor along the south side of the building. This light is transmitted into the classrooms through special louvered walls. Since each room is also designed with northern exposure, the result is a well-balanced lighting, free from shadows, high contrast areas, and glare.

The openness of this louvered wall construction might prove highly impractical were it not for sound conditioning. Ceilings of Armstrong Cushiontone Full Random extend from the classrooms through the louvered partition into the corridor. This permits light and air to reach the classrooms, but prevents corridor noises from disturbing busy classes and keeps classroom sounds from building up, too.

Cushiontone is an efficient, low-cost wood fiber acoustical material. Its exclusive “Full Random” pattern of perforations is smart looking and modern, subdues the “tile” effect. Cushiontone has a washable white finish which can be repainted whenever necessary without losing its noise-muffling effectiveness.

Extending from the classrooms through the louvered partitions, the Cushion-tone ceiling is dropped to a height of 8' in the corridor. This allows a maximum amount of light and air to reach the classrooms through the louvers.
Office buildings. Antiquated business settings are making way for tall modern buildings, which sometimes keep the royal palm trees in their back yards. Until about five years ago, large companies—including some of the oil companies, like Shell, and Socony-Vacuum, big producers in Venezuela—housed their principal offices in manorial patio-style houses in the northern sector of old Caracas. The Creole Petroleum Corp., largest oil producer in Venezuela, and employer of about 18,000 (more than 90% Venezuelans) rented a variety of buildings, including a suburban "quinta" to house its expanded services. But now these companies are building for themselves. Shell was the first to move into its modern red brick and concrete building, high up on a hill in an eastern suburb, five minutes drive from the center of Caracas. But even the Shell planners did not foresee the rapid growth they would spark in this newly developing suburb. Their parking space is already inadequate—three years after completion of the building—and traffic snarls are normal at the peak hours.

Creole Petroleum Corp. (Standard of New Jersey) may avoid this inundation by having chosen a site near University City and close to the new main arteries connecting with the Bolivar center. The Creole building is designed by Lathrop Douglass, with Fred N. Severud as structural engineer and Guy B. Pancero as mechanical engineer. The Driscoll Co. of New York (Edward S. Moran is the resident manager for Venezuela) is in charge of construction. Architect Douglass spent considerable time in Caracas, studying the specific office needs of the company and familiarizing himself with the vagaries of the year-round tropical mountain climate as they affected the operating efficiency of his building. He came up with a long narrow building closed at both ends for sun protection, the only type of air conditioning usually required for that climate. The broad base, serving as a platform for the building, resulted from the housing of huge related departments most efficiently on the lower floors. Earthquake protection dictated the other decorative feature—the roof projection of the elevator core. The United Nations building type of construction—the steel flooring and aluminum spandrels—is new to Caracas, but the general exterior design type is becoming almost as familiar a sight as the old patio buildings.

The GAMEWELL Sprinkler Watchman lets you "mechanize" sprinkler systems

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3 Available anywhere. 47% of all clean pressure-treated lumber is Wolmanized . . . nearly as much as the total output of all other sources combined. When you specify Wolmanized lumber, delivery is certain, since 24 qualified wood preserving plants in the United States and Canada provide coast-to-coast distribution.

4 Proved dependability. Dependability of Wolmanized lumber is documented by actual service records. Unusually long life, even under the most adverse conditions, is another advantage of Wolmanized pressure-treated lumber. For further information write: Koppers Company, Inc., Wolman Preservative Department, Pittsburgh 19, Pennsylvania.

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**SPECIFICATIONS**

<table>
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<th>Width</th>
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<td>Thickness</td>
<td>Approx. 1/4&quot; at the crests and rolls, 3/16&quot; at flanks</td>
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<td>Minimum Roof Slope</td>
<td>3' rise in 12'</td>
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<tr>
<td>Maximum purlin (roof) spacing</td>
<td>4'</td>
</tr>
<tr>
<td>Maximum girl (side wall) spacing</td>
<td>6'</td>
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<tr>
<td>Weight per net square, including side and end laps</td>
<td>Approx. 500 lbs.</td>
</tr>
<tr>
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<td>1 corrugation (4.2&quot;)</td>
</tr>
<tr>
<td>Minimum end lap</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

Refer to Sweets—AIA File 12-P

Get striking good looks with low cost construction by using Gold Bond "400" Corrugated Asbestone in your commercial and industrial building designs. Asbestone’s rock-like properties, reinforced with top quality asbestos fibers, resist fire, corrosion and leakage. Wall surfaces need no maintenance and are never affected by summer or winter weather. Best of all, Gold Bond Corrugated Asbestone harmonizes perfectly with brick, cement blocks, corrugated glass or plastic panels. Before you specify old style, high cost walls, investigate Gold Bond Asbestone for your next job.

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BRANCH OFFICES IN PRINCIPAL CITIES

CARACAS continued from p. 190

were. The result of this efficient plan, with sufficient space for access, parking, planting, recreation, and all foreseeable future developments, is a striking addition to the new Caracas landscape.

Other new office buildings in Caracas are the all-steel construction Karam building (built by Driscoll for a Venezuela owner), and the Socony-Vacuum building.

The new hotels, luxury shops with zig-zag parking, department stores, and the most sumptuous of supermarkets with all the latest automatic service gadgets, are modern in design, but as with the modern single-family houses in Caracas, there is little sameness. Originality rather than conformity marks the new designs for Caracas—whether they are drawn by Venezuelans in Caracas or by Americans in New York.

New towns. Outside of Caracas the most interesting new experiment is the joint planning of two towns for Orinoco Mining Co. (US Steel subsidiary) by the Venezuelan Office of Planning & Housing and US Architects Wiener & Sert.

Cerro Bolivar (the so-called mountain of iron) was found to have high-grade iron ore of such great importance that major steel companies of the US have invested more than $250 million to develop the region. The iron-ore find was a major

continued on p. 195
WHENEVER A CLASSROOM IS OCCUPIED!

Regardless of the Season, Cooling is a "Must" for Classroom Comfort

It's the human system that upsets school heating systems! Every student's a stove radiating over 200 BTU's an hour. And there's the additional heat from lights and solar effect, too! That's why temperature continues to go up when the thermostat is turned down. That's why cooling is a "must" for classroom comfort, regardless of the season.

Herman Nelson's approach to the problem of overheating is both simple and logical. DRAFT|STOP is provided with ample fan capacity to insure delivery of outdoor air in sufficient quantities to reduce room temperature to comfort level. Equally important, DRAFT|STOP never contradicts itself while cooling. Its method of draft elimination requires no heat—precludes the possibility of heating and cooling simultaneously.

The danger of overheating is real. DRAFT|STOP's solution is realistic. For complete information, see our catalog in Sweet's Architectural File, or write Herman Nelson Unit Ventilator Products, American Air Filter Company, Inc., Louisville 8, Kentucky.

DRAFT|STOP maintains temperature at comfort level in the classrooms of Westvale School, Anderson, Indiana, Superintendent of Schools: G. E. Ebert; Architect: Miller & Henning; Engineers: Ammerman, Davis & Stout, Inc.

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All at minimum cost

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SYSTEM OF
CLASSROOM HEATING, VENTILATING AND COOLING

New 3-story addition to Shaler Township High School added 20 classrooms, upped accommodations from 750 to 1400 students, cost $1.35 million, has gym, auditorium, three shops, offices and locker. Steeltex Floor Lath on all floors. Charles M. & Edward Stotz, Jr., Architects. Geo. H. Chilli, Contractor.


Pittsburgh, City of Vision, is one of the most progressive cities in America today. Once dirty and smoky and threatened constantly with floods, Pittsburgh, now undergoing a renaissance, is one of the country's cleanest cities.

A vast network of dams in the headwaters of the Allegheny and Monongahela make damaging floods virtually impossible. A stream purification program is well under way. A new $5-million-per-mile east-west parkway, partially completed and in use, will speed traffic through the city's heart without cross streets or traffic lights. New skyscrapers, new research centers, new industrial plants, new parks, new off-street parking garages have brought about a boom in new apartments and public housing, new schools and hospitals, new shopping centers.

When buildings of this type are being designed, poured concrete decks are most desirable and when you pour concrete, it is only natural to specify Steeltex Floor Lath, the galvanized steel wire reinforcing which carries its form on its back (see cross section below left). Steeltex requires no additional form or pencil rod reinforcing. It costs less to install than other types of forms.

One man can roll out a 125' roll of Steeltex in a few minutes. Steeltex provides both waterproof form and steel reinforcement for concrete floors, roofs.
The $3.5-million nurses home at University of Pittsburgh towers 14 stories, completely air conditioned, contains library, recreation room, reception rooms, cafeteria seating 400—comfortable living quarters for 600. Steeltex in upper floors. Ingham, Boyd & Pratt, Architects. Trimble Company, Contractors.

Pittsburgh specify STEELTEX®

doors and roofs

and reinforcement for concrete because Steeltex can be rolled out like a carpet, stretched with a special tool, and clipped tightly in place by one man (see photo below left). Steeltex with its waterproofed backing also prevents waste of concrete by reducing leakage to a minimum from the freshly poured slab—craftsmen can continue working on the floor below without getting splattered. Expensive clean-up time is eliminated.

Steeltex insures a strong floor because embedment of steel reinforcing takes place automatically (see note below left). Steeltex allows concrete to cure slowly, properly—guards against excessive cracking—can be installed over any type of joist—will support ample safe loads from 109 to 886 lbs. per square foot depending on spacing of joists and thickness of slab. No wonder Steeltex has been the choice of architects, engineers, contractors, and building owners alike, not only in Pittsburgh but wherever concrete slabs are poured over joists.

If your building plans call for poured concrete floors, roofs, plaster walls or ceilings, masonry veneer or Portland cement (Stucco) exteriors, there's a type of Steeltex reinforcing that will do the job better, faster, with less effort at lower overall cost.

For complete details see the Steeltex catalog in Sweet's or write for your free copy of a new 24-page illustrated booklet “Pittsburgh Steeltex, Backbone of Concrete, Plaster, Mortar.” It’s yours for the asking.

manufactured by the
Pittsburgh Steel Products Company
a subsidiary of Pittsburgh Steel Company
Pittsburgh 30, Pa.

St. Clair Hospital, Mt. Lebanon Township, Pa., serving the growing South Hills area has 116 beds—cost $1.34 million. Steeltex used in floors. Kuhn & Newcomer, Architects. R. A. Zern, Structural Engineer. H. Busse, Contractor.

Brentwood-Whitehall Shopping Center built on two levels has 25 shops in 210,000 square feet—80% are air conditioned—parks 1,000 cars. All floors reinforced with Steeltex. Forsyth & Blezard, Architects. Leland Cook, Structural Engineer. Landau Bros., Contractors.

Mammoth decks in this fabulous $10-million terminal building at $42-million Greater Pittsburgh Airport, were poured on Steeltex Floor Lath. Last year 2.5-million people including travelers spent $20 million at ticket counters, restaurants, nightclub, theater, hotel and shops. Joseph Hoover, Architect. Leland Cook, Structural Engineer. Dick Construction Co., Contractors.

Here are other recent buildings in Pittsburgh and vicinity using Steeltex:

Amberon Gardens
Bedford Dwellings
Center-Negley Apartments
Greentree Apartments
Hebron Grade School
Kennilworth Apartments
Pennsylvania College for Women (Administration Building)
Shadyside Presbyterian Church (Chapel)
St. Augustine’s High School
Talbot Towers (Housing Project)
Union Railroad (Office Building)
Westinghouse Educational School
Westinghouse Electric Corporation (Atomic Project Buildings)
CARACAS continued from p. 194

factor in the US steel industry's migration to the Delaware Valley, to facilitate receiving the ore from abroad.

The two towns to spring from the first phase of the mining operation have been completely zoned to protect the use efficiency of each area. Climate has been a determining factor in the planning of all the buildings—particular attention being given, because of the tropical heat, to considerations of breeze and view. The paternal plan for the community (AF, Aug. '53) is modern, although retaining the Spanish feature; it provides for familiar and agreeable living. The civic center, community building, school, shops are simple in design. Emphasis is placed on well-designed landscaping, experimental planting and central plazas for relief from the climate.

The individual houses are simple, built of cement blocks made locally, but the proportions are luxurious, and the cellular-cut terra-cotta and cement blocks give the living rooms the openness of balconies. The small, pivoting, louvered windows are ideally suited to the climate.

This joint planning effort by the government and the companies involved should avoid the mistakes of earlier developments by the oil companies alone, which tended to create isolated communities, as business developed outside the camps. In these areas of the Paraguana Peninsula, designated as sites for refineries, the planning continued on p. 202
The walls throughout Emory University's new research laboratory building are Mills Walls—as distinctive and attractive as walls can be. But when Emory’s space requirements change these walls can be rearranged to fit new layouts quickly, easily and at very low cost—without dust, debris, commotion or interruption of normal space usage. They are fully insulated and soundproofed and provide for easy installation of wiring for light, phone and air conditioning controls. Available in a wide range of soft modern colors, their baked-on enamel finishes require no maintenance other than occasional washing.

Write for the 68 page Mills Catalog or see it in Sweet's Architectural File.

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PRODUCERS OF: The new Arnot Partition-ettes; Arnot Functional Office Furniture; Hospital and Laboratory Equipment; Under-Counter Bank Equipment; Aetna Steel Doors and Frames; Kahr Bearings; Beadle Metal Office Partitions (Ashwood).
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**A positive photographic intermediate** is produced directly by exposing the "paste-up" in contact with Kodagraph Autopositive Paper, then processing the print in standard photographic solutions. No negative step ... easy room light operation.

**New design is added** to the Autopositive, which has dense photographic black lines on a clean white translucent base. Required number of shop prints—each crisp and uniform—are produced from this master, which can also be used later on for minor revisions.

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The big five on any lighting job, range from the man who pays the bills to the architect who picks the fixture.

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Design and lighting flexibility win a pleased nod from architects and engineers. Easy installation in any type of ceiling scores with contractors. Easy maintenance is a big feature for those concerned with upkeep. And the man who pays the bills is mighty happy with the handsome appearance and long-life construction details.

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THE MAGAZINE OF BUILDING

CARACAS continued from p. 198

office is now working with the group involved to integrate the various existing communities to facilitate more coordinated expansion.

A completely new community is growing up near San Cristobal, in the heart of the agricultural Andean valley.* Besides the usual housing for workers and middle-class families, this plan calls for bachelor quarters and an artisans' center. The principal handcrafts of Venezuela come from this region—woven fabrics, pottery, wooden objects; and the plan for the area attempts to preserve the customs of this most conservative part of the country within the modern forms of architecture.

No part of Venezuela goes untouched by the plan to develop a modern country from the fabulously conceived superhighway from Caracas to the sea, to the off shore island of Margarita. Margarita, the pink beaches and pearl fisheries, is slated for a community planning job.

Tocuyo, the little agricultural town founded in the sixteenth century, whose adobe huts could not resist the earthquake of 1950, is now being completely rebuilt. Tureño marks a new community development in the hot flat plains of central Venezuela to encourage large-scale agriculture.

* The group of young architects responsible for the planning of this community—complete with schools, shopping center, church, social clubs—are Dr's. Juan Andrés Vegas, Julián Ferris, and Carlos Dupuy.

H. Wright

Road building is also booming in Venezuela. This is an aerial view of Autopista Highway.
Floor to floor height can be kept to a minimum and usable floor space to a maximum with Anemostat High Velocity Air Conditioning. • HV units, used with smaller than conventional ducts, save space, and money too. They substantially reduce pounds of sheet metal required, can be installed faster, with less labor. • HV Manual 48 contains specification data on 7 types of Anemostat High Velocity units, for all engineering and architectural requirements. Write for free copy.
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1. Seeing tasks demand 25 footcandles or more.
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See this sensational new development. Compare it—feature for feature—with any other industrial fixture on the market. Notice the full 8-foot one-piece, porcelain enameled reflectors...the new "bridge-type" ribbed construction...super-comfortable shielding...the many, many features that make the CFI-25 the most modern product in its field. Available for 8 ft. Slimline, 4 ft. Rapid Start and the newly developed 8 ft. High-Output Rapid Start lamps.

IMPORTANT

Here's why only PORCELAIN ENAMEL is used for CFI reflectors!

An industrial lighting fixture is no better than the wearing qualities of its reflecting surfaces. The lasting qualities of baked enamel reflectors are questionable in industrial applications. Only porcelain enamel guarantees a lifetime of service at the least cost.

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The heavy-duty built-in cam lock, attached to the torsion bar, is another functional achievement of Ualco advance engineering.

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**ASK ABOUT OUR ENGINEERING PLANNING SERVICE**

Specifically designed to assist Architects, Engineers and Contractors in making "take-offs" and solving their window problems.
Here is a new milestone in the history of hotel construction. The new Hartford, Connecticut, Statler is architect-owner designed, built for guest satisfaction, efficiency of operation and best utilization of its limiting dimensions.

For example, the exterior curtain walls are only 1½ inches thick, yet were approved by the city of Hartford for this structure. These walls consist of 18,000 square feet of sandwich panels faced with blue-green porcelain enamel on Armco Enameling Iron. For insulation there is 1-inch thick glass fibre between two 1/16-inch asbestos cement boards, the one laminated to the 20-gage porcelain enamel face.

Only seven different sizes of these light, easily installed panels were needed. They take the place of old-fashioned masonry, save space and weight and thus make possible reductions in structural steel and foundation requirements. Panels are easily and economically installed, wash off like a china plate when cleaning is necessary. They are weatherproof and their pleasing colors are non-fading.

If you are interested in knowing more about modern exterior curtain walls, porcelain enameled on Armco Enameling Iron, write us at the address below. We will send you a list of manufacturers who design and erect these panels.
Start to design a research laboratory and you come up against some unique problems. Each laboratory has its own requirements in the way of space arrangement and lighting, for example. And there is a whole set of special needs you must consider: the protection of delicate scientific instruments; reduction of dirt and dust infiltration; maintenance of constant temperature and humidity conditions. At this new research home of Wyandotte Chemicals Corporation, in Wyandotte, Michigan, a Carrier Conduit Weathermaster* Air Conditioning System does all these things. The Conduit Weathermaster System is a Carrier development, perfected through years of experience and designed to answer the special problems of air conditioning laboratories, office buildings, apartment houses, hospitals, hotels. Small-diameter air conduits save valuable space. And occupants of each room or office can dial their own climate. If you are planning a new building of any kind, or about to remodel an old one, perhaps we can help you. Carrier's 50-plus years of experience in the exacting business of air conditioning is as close to you as your telephone. Just call your nearest Carrier office. Or write to Carrier Corporation, Syracuse, New York.
Preserve the appearance of buildings you design by specifying an Induced Draft Bifurcator® Fan to provide constant boiler draft. This fan unit supplies a controlled draft in any weather and eliminates the need for a tall, costly stack. Adequate draft is provided for high-pressure boilers delivering up to 60,000 pounds of steam per hour and for low-pressure boilers rated up to 190,000 EDR. Ask your DeBothezat representative, listed in phone book, or send for catalog.

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The Induced Draft Bifurcator® Fan is an axial-flow fan in a divided housing. Flue gases are bypassed (bifurcated) around the motor chamber so that the motor stays cool, clean, and accessible.

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BOOK REVIEWS

HOUSING FOR THE ELDERLY. Standards of Design. Massachusetts State Housing Board, Boston, Mass. 18 pp. 6½" x 11"

As the median age of the US rises, housing for the elderly (65 years old and up) assumes greater importance. In no area of housing is less known about the needs and wants of those to be sheltered. This booklet concerns itself not only with the design standards of such housing, but also with the sociological and physiological reasons for the standards.

The booklet faces facts: "As a group they [the elderly] are older than 90% of us. They are also poorer than four-fifths of us."

It is also realistic: "Housing for the elderly of low income must be inexpensive. It must be suited to their infirmities. And it must be located to their advantage. Flexibility and ingenuity are of the essence."

Sometimes it is almost poetic: "... these are years of decline. They bring increasing tiredness, loneliness, and introspection. It's longer to the store, the ice is slipperier, stairs are steeper, it's much harder to make a bed."

What kind of apartments? A couple is the largest number any one apartment is to be planned for. A proportion of three dwellings for single people to one for couples is the desirable average. Economy dictates that single occupancy apartments should not exceed 300 sq. ft., while those for couples should not exceed 400 sq. ft. The design problem is to provide for all the normal functions of living through duale, or triple, use of space, wherever they do not overlap in time.

In what kind of building? The restrictions of their social life make the elderly place a premium on a lively view, and their habit of sitting at windows puts a premium on the orientation of buildings. The court scheme is thus inappropriate for the elderly. Front stoops and walks should be laid out to increase chance meetings, and consequent new friendships. Though one-story row housing is the obvious building type, two stories are perfectly acceptable, for not all older people are too infirm to climb a flight of stairs. Anything more than two stories high will need an elevator.

On what kind of site? The friends and associations of their old neighborhoods may be about all these people have left. Any such project should be located where such former contacts may be maintained most easily. Massachusetts' law tries to minimize segregation and institutionalization, and the policy is sound. Several smaller scattered projects are better than one large one. The goal should be a social unit large enough to provide a variety of people, yet retaining a measure of self-help.

Believe it or not...this is FISSURED WOODFIBER ACOUSTICAL TILE

Available only through the Simpson Certified Acoustical Contractors listed on opposite page

Ask the Simpson Certified Acoustical Contractor nearest you to show installations or photos...or mail this coupon today for more information.

SIMPSON LOGGING COMPANY
AT SHELTON, WASHINGTON

Forestone, created by Simpson, is the world's first fissured woodfiber acoustical tile, and the first practical square edged woodfiber tile. (Also available with beveled edges.) Saves up to 35% over the cost of fissured mineral tile, yet has the same rich, travertine-like texture.


Please send full details on Forestone Acoustical Tile.

NAME ____________________________
ADDRESS ____________________________
CITY ___________________ STATE ________

STATE ARCHITECTURAL FORUM • NOVEMBER 1954
The new Ford Motor Company "San Jose Assembly Plant" at Milpitas, California.

The streamlined San Jose Assembly Plant erected for the Ford Motor Company in Milpitas, California, is an excellent example of the lower, close-to-ground-level trend of contemporary design. The most advanced concepts of architectural planning and engineering have been utilized throughout this massive plant.

Ford has installed 78 Westinghouse Water Coolers throughout the building. These coolers are of primary importance to the health, efficiency and morale of the many employees and the convenience of the visitors. Each is designed to withstand the day-to-day wear to which it is subjected. Your client also can enjoy more cold water per dollar investment when you specify Westinghouse Water Coolers.

Model WW14B—Explosion-proof for hazardous locations has water-cooled condenser. Has 14-gallon per hour capacity, automatic stream-height control, patented Pre-Cooler and exclusive Super Sub-Cooler.
Once your client has installed a Westinghouse Water Cooler, he will never accept anything else. That’s why Westinghouse boasts such an impressive list of repeat users. Time after time, industrial and commercial establishments select Westinghouse for quality unsurpassed.

Again, in 1954, Westinghouse steps out in front with a completely new water cooler exterior design. Constructed to harmonize with any architectural motif, this rich-looking cooler has two coats of baked enamel on Bonderized sheet steel. The attractive silver-grey, hammered finish is set off by stainless steel trim and a new escutcheon.

The leader of water cooler sales for many years, Westinghouse now has dual electric control . . . both finger-tip and toe-tip operation . . . at no extra cost. Add to this the patented Pre-Cooler (for pre-cooling incoming drinking water) and the exclusive Super Sub-Cooler (for sub-cooling the refrigerant) and get lower operating costs and increased cooling capacity.

The industry is interested in the new Westinghouse Pay-Way Plan. This is an ingenious formula that demonstrates how sufficient water coolers in relation to work areas can save management many annual payroll dollars, as well as making water cooler investments self-liquidating.

FREE PAY-WAY COMPUTER

To save you time in making calculations and to aid you in specifying the number, type and location of water coolers for your clients, be sure to send today for our handy Computer-Selector as well as more data on the Pay-Way Plan.

You can be sure... if it's Westinghouse

WESTINGHOUSE ELECTRIC CORPORATION
Electric Appliance Division • Springfield 2, Mass.
Sheathing of West Coast lumber — the building material with an outstanding record of performance — assures walls that are strong, rigid and long lasting. Lumber offers high insulating value, real nail-holding power. West Coast lumber is time-tested in conventional construction. And, as always, it remains the natural choice of the day's most creative designers.

For dependable lumber, specify the West Coast species...Douglas Fir, West Coast Hemlock, Western Red Cedar and Sitka Spruce.

Send for folder describing free literature available for your reference files. West Coast Lumbermen's Assn., 1410 S.W. Morrison St., Portland 5, Ore.

WEST COAST LUMBER

Douglas Fir • West Coast Hemlock
Western Red Cedar • Sitka Spruce

whatever the job consider WOOD first!
IN SCHOOLS, THEY CALL IT

‘CHILDPROOF’ PLEXTONE

and no wonder! This new multicolored paint is stain-mar-grease-scratch-chip resistant!

Williams Green Color-flecked PLEXTONE, one of many decorator color combinations for modern or traditional interiors. Also available in monotores and in custom multicores for large projects.

Never before a paint for school interiors like amazing, rugged Color-flecked PLEXTONE. It’s revolutionary ... two or three different colors (sprayed at ONE time from ONE gun WITHOUT SPRAY DUST) which form a multicolored, textured pattern. SCHOOL AUTHORITIES find this new multicolored decorator finish easy on the budget. It resists wear, soil ... and rambunctious youngsters. SCHOOL ARCHITECTS find that PLEXTONE’s uniform coverage on different types of low-cost surface materials gives them new styling resources ... and new design possibilities because of its high light reflectivity and durability. PAINTING CONTRACTORS say PLEXTONE goes on easier, WITHOUT SPRAY DUST, makes possible neater, cleaner jobs. And MAINTENANCE MEN find it unmatched for ease and low cost of upkeep.

SO RUGGED! Color-flecked PLEXTONE resists staining by crayon, ink, candy, grease, and other forms of soil. Its harder, thicker paint film cannot easily be scraped or scratched. It can be washed, scrubbed, scoured — even sandpapered — without marring. And touch-ups, if ever needed, defy detection!

SO PRACTICAL! Imagine! This amazing new paint gives you a color-flecked surface consisting of two or three different colors, sprayed from one gun at one time in one coat without spray dust! And PLEXTONE’s textured surface has unmatched hiding power ... cleans quickly and easily!

SO BEAUTIFUL! You’ve never seen a more unusual, more dramatic, more beautiful effect. PLEXTONE’s multicolor finish matches the most skilled spatter-dash painting ... in subtle tones-on-tone or a brilliant circus of colors.

Write today for FREE color chips and Color-flecked PLEXTONE application data.
VAULT DOOR: 6 tons of stainless elegance for modern banks

Even a callous safecracker would hesitate before scratching the surface of this grandly gargantuan vault door. In designing the unit as a sculpture as well as service element for a contemporary bank, Charles Deaton played up the milling properties of the stainless steel, faceting the inside face (on view during bank hours) with precise cups and repeating the motif on the outside in miniature.

By rotating a hand wheel with one finger the balanced 6-ton door moves smoothly open and shut. It closes much like a press: all contact surfaces on the door kiss the frame at the same time. Instead of the usual numerous bolts, the locking mechanism consists of two bars (set discreetly on each side of the door) which move into the frame with the closing action to secure the door. Prices—$12,000 to $16,000—are about 10% higher than for conventional models. First bank to ante up the premium for fresh design: US National in Denver's Mile High Center.

Manufacturer: Diebold, Inc., Canton 2, Ohio

SQUARED-OFF STERILIZER takes on big load, makes fine public appearance

Square pegs can be fitted into round holes—if the fitter can afford to waste space on all sides. But most hospitals have to operate efficiently down to the cubic inch just to break even. Because the bulk of hospital supplies that must be sterilized—linens, dressings, instrument trays—are bundled in boxy shapes, American Sterilizer has designed a squarish unit in nickel stainless steel. Yielding 35 to 100% more usable room than conventional cylinders which consume the same floor space, these sterilizers are more economical to operate.

continued on p. 220
In planning a new building, adding to or remodeling an existing one... you can specify an IBM Electronic Time System with fullest confidence.

This modern time and program signaling system features around-the-clock self-regulation... as much as 12 hours when required. It synchronizes, coordinates clocks and signals—without special unit-to-unit wiring. Its programing flexibility allows for automatic control of utilities—lighting, heating, ventilating, water-flow—too.

Write to IBM for the latest data on time systems and other IBM time equipment.

FIRE ALARM SYSTEMS add their extra measure of safety to building and occupants... deliver emphatic signals on demand.

INTERCOMMUNICATING TELEPHONE SYSTEMS... automatically connect classrooms and office... save time and steps for teachers, administrators.

NEW RADIO-SUPERVISED TIME CONTROL... a major advance in precision timing, is tuned to U. S. Bureau of Standards broadcast time signals... resets itself if out of synchronization. Delivers radio tone and voice announcement of time, permitting sight and sound check of clock's accuracy.

ELECTRONIC UTILITIES CONTROL... saves time, effort, money by eliminating need for manual supervision in actuating water flow—opening and closing ventilators—switching light circuits, heating and air conditioning systems on and off.
The trend to horizontal sliding aluminum windows has been spurred by your customers' demands for better appearance, less maintenance and greater ease of operation. Peterson Window Corporation has established a reputation as the quality pace-setter of the industry. Thousands of installations from coast to coast are proof of customer satisfaction. Get complete details today.

**PETE RSON HORIZONTAL SLIDING ALUMINUM WINDOWS ROLL OPEN ON BALL BEARING ROLLERS!**

- Sizes to 6' high and 10' wide
- Transom arrangements to 8' high
- Stacking arrangements to 10' high

**Specify Peterson ... For These Features:**

**ROLLS OPEN**
Effortless horizontal operation on ball bearing rollers.

**ARCHITECTURAL APPEAL**
Streamlined beauty for all design motifs.

**STURDY**
Hollow-type aluminum extrusions.

**MINIMUM MAINTENANCE**
No painting, rusting, swelling, warping or sticking.

**ADVANCED DESIGN**
Eliminates putty, sash balances, cranks, projecting hinges.

**EASILY CLEANED**
Sliding sash removes into room for easy washing.

**SAFE**
Positive locking in closed, one, two and three inch open positions.

**WEATHERPROOF**
Hi-pile mohair provides insulated, draft free comfort.

**FURNISHED COMPLETE**
With double glazing panels and aluminum screens if desired.

**50 STANDARD SIZES**
All shapes and sizes popularly specified for residential, commercial and monumental buildings supplied promptly. Special sizes can be obtained at slightly higher cost.

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

**See 14G/pc IN SWEET'S CATALOG or WRITE FOR COMPLETE DETAILS.**

A limited number of exclusive dealerships with protected territories are available. Peterson Window Corporation invites inquiries from reputable dealers.
ANACONDA THROUGH-WALL FLASHING is readily adapted to practically every brick or masonry construction. Note that the smooth selvage (4) forms a counter-flashing free of buckles or distortion at the bend.

Anaconda Through-Wall Flashing protects new Colgate-Palmolive Building

The Colgate-Palmolive Company's new Industrial Service Building, Jersey City, N. J., is four stories high and contains nearly nine acres of floor space. It represents a big investment. Naturally, special precautions were taken to assure sound and lasting construction.

Adequate through-wall flashing of efficient design was essential. Otherwise, water would penetrate the brick and mortar joints...cause damage by deterioration and freezing...eventually reach interior surfaces.

The solution? Jacob Ringle & Sons, Sheet Metal Contractors, Jersey City, N. J., installed 1,552 feet of ANACONDA Through-Wall Flashing.

In the picture above you see four reasons why Mr. Ringle selected ANACONDA Through-Wall Flashing to do the job. They are:

1. **NO LATERAL MOVEMENT**
The ⅞" high zigzag corrugations provide complete bond in the mortar in all lateral directions.

2. **WATER-TIGHT LAP JOINT**
ANAConDA Through-Wall Flashing is easily locked endwise to provide a tight joint by simply nesting one or two corrugations. If desired, the joints can be easily soldered because of the flat surfaces between the corrugations.

3. **INTEGRAL DAM**
The integral dam throughout its length is the full height of the corrugations. The accurately stamped dam and corrugations of the ANACONDA Flashing assures complete drainage in the desired direction when installed on a level mortar bed.

4. **SMOOTH SELVAGE FOR COUNTER-FLASHING**
Flat selvage permits neat, sharp bends for counter-flashing or locking to adjacent sheet metal without distorting the flashing or inhibiting free drainage.

The standard ANACONDA Through-Wall Flashing is made of 16-oz. copper, but lighter or heavier gage metal can be furnished to order. Stock sizes are for 8" and 12" walls. Special sizes to meet unusual requirements are available up to 47" wide over-all. One-piece corner flashings for 8" and 12" walls are also standard stock items.

The American Brass Company is always glad to discuss and offer suggestions on any problem involving sheet copper in building construction. Just send details to our Technical Department.

ate and require fewer loading trips by the attendant. Less costly to install than recessed units (and also cooler since heat dissipates more quickly), the attractive new cabinet models are especially suitable for use in hospitals whose labs go on view as part of public relations. Steam or electric heat units are available in several types and models ranging in price from $2,000 to $4,000.

Manufacturer: American Sterilizer Co., Dept. SS., 1230 Plum St., Erie 6, Pa.

BOLTED COOLING TOWERS come apart at seams to get through tight spots

Halstead & Mitchell’s Take-Apart cooling towers are shipped assembled, then unbolted and toted in sections down narrow stairs into a tight indoor area or—if the roof is still the best spot—hoisted up without an expensive rigger, and put back together. Produced in sizes up to 30 tons (a 5 ton lists at $344 and a 10 ton at $508), the towers carry a 20-year guarantee on damage to wetted deck surfaces by rot or fungus. Drive shafts and fans are stainless and the housing has a triple protective coat of noncorrosive vinyl zinc, vinaylite and chlorinated rubber.


PLUG-IN AIR CONDITIONER wheels from room to room

Wherever cooling needs for particular rooms vary, Unairco’s $329.95 mobile conditioner can keep pace by season, day or even hour. Having capacity to make comfortable a private office (or hotel room, on rental basis) up to 500 sq. ft., the 3/4-ton unit can be rolled from room to room and plugged into any 110-v. outlet. Flexible snap-on pipe lines connect the cooler to a nearby cold water tap and drain. (Water consumption is 30 to 40 gal. per minute.) If and when a fixed location is decided upon, the conditioner is de-wheeled and rigid connections made for about $15. Ivory or dark brown vinyl plastic sheathes the 28" high x 18" wide x 17" unit.


continued on p. 224
McLouth Stainless Steel

For the product you make today and the product you plan for tomorrow.

McLouth Steel Corporation
Detroit, Michigan
Manufacturers of Stainless and Carbon Steels
THE VAST MAJORITY OF THE NATION'S FINE BUILDINGS ARE SLOAN EQUIPPED

JOHN PETRUKIN
architect

SEARS & KOPP
mechanical engineer

S. S. SILBERBLATT
general contractor

ASTROGEN & HTG. CO.
plumbing contractor

CRANE CO.
plumbing wholesaler

The twelve fine buildings which form the spectacular background in the picture above are all equipped with SLOAN Flush Valves.

1. 100 Park Avenue Building 7. 301 E. 38th St. Apt. Bldg.
2. 500 Fifth Avenue Building 8. Commodore Hotel
3. Lincoln Building 9. Chrysler Building
4. 370 Lexington Ave. Bldg. 10. Chrysler East Building
5. 369 Lexington Ave. Bldg. 11. New York News Building

BOON TO AIR TRAVELERS

- As many as 10,000 passengers are serviced in one day by offices of 20 airlines, American and foreign, within this new 7 million dollar terminal in downtown New York. On arrival at the terminal the passengers enter the spacious, air-conditioned concourse by escalator or stairs. Buses load on an enclosed ramp that runs around three sides of the block-long main rotunda and the travelers are whisked away through Midtown Tunnel to La Guardia and International Airports in from 27 to 35 minutes. In this and other terminals, railroad stations, bus depots and other buildings serving a vast and continuous flow of people, the operation of each flush valve in one day is likely to be a dozen or more times greater than in many other types of buildings. Where use is recurring, day and night, the performance, endurance and low cost maintenance of such equipment are of utmost importance. As in the vast majority of fine buildings, this terminal is completely equipped with SLOAN Flush Valves—further evidence of preference that explains why...

more SLOAN Flush VALVES
are bought than all other makes combined

SLOAN VALVE COMPANY • CHICAGO • ILLINOIS

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

Write for completely descriptive folder
WHEN YOU make these square Kno-Draft Adjustable Air Diffusers part of your air conditioning installations, everybody gets a square deal.

YOUR CUSTOMERS get the superior comfort that comes from accurate control of both volume and pattern of air flow. Handsome, unobtrusive and highly efficient, Kno-Draft Adjustable Air Diffusers mix incoming and room air thoroughly, well above the heads of room occupants. This means even temperature throughout the conditioned area — no drafts.

YOU have more to offer and less "engineering" to do. Kno-Draft Diffusers are adjustable after installation. This means less slide-rule work before the job goes in. It also means easy resetting to accommodate future layout changes. Installation in any type of ceiling is quick and easy.

You can get Kno-Draft Adjustable Air Diffusers in round as well as square units. For complete specifications, engineering and installation data, send for the Kno-Draft Data Book. Just clip the coupon to your letterhead and mail to Connor Engineering Corporation, Danbury, Connecticut.

CONNOR ENGINEERING CORP.  
Dept. D-114, Danbury, Connecticut  
Please send me the latest edition of the Kno-Draft Data Book. No obligation, of course.

Name
Position
Company
Street
City Zone State
EMBOSSED ALUMINUM SHEET: sun glare, dents and scratches get lost

Capitalizing on aluminum's inherent malleability, Alcoa has come up with a truly appropriate texture on its new 33½"-wide ribbed sheet. The pleasant pattern, resembling stylius slipping, enriches the surface by breaking up harsh reflections and, important for upkeep, camouflages mar marks. Planned primarily as siding for frame industrial structures, the material also makes a practical facing for new or old buildings of concrete block or masonry. Sandwich walls with the ribbed sheet on both sides of a glass-fiber center are claimed to match 2' of brick for insulation value. The new industrial siding sheet comes in lengths of 5' up to 18' in .032-ga. aluminum. Its 1"-deep hexagon ribs are 29½" o.c. Price is about 35¢ psf. Flat flashing stock and preformed rubber filler strips are available commercially.

Manufacturer: Aluminum Co. of America, Alcoa Bldg., Pittsburgh, Pa.

FLAT TRANSLUCENT PLASTIC produced in continuous strip, uniform thickness

What seems the most adaptable form reinforced plastic could take—plain flat sheet—is now being made in to-order lengths by a big California fabricator, Plexolite. While not so rigid as the corrugated polyester laminates on the market, this simplest of shapes will probably work well in more diverse applications, and create less waste than standard-length panels. Some possibilities for the material: continuous fenestration and wainscoting for factories, greenhouses, display signs, skylighting, and diffuser panels for luminous ceilings (aluminum supports are advisable since both materials have same thermal expansion coefficient). The lightweight translucent sheet is shatterproof and is resistant to salt air, chemicals and heat (it takes 850° F. to burn it). The 1/16" thickness (weight: 8 oz. psf) will support a 130-lb. load psf on 4' span, and has a 18,000 psi tensile strength, 35,000 psi flexural, and static load capacity of 150 psf. With lateral supports the uniform load can be increased considerably. Available in continuous on p. 230

what's your waterproofing problem?

Karnak® WATERPROOFING PRODUCTS

Provide positive protection against seepage or damage to structure by water

For 29 years, all over the world the Karnak Membrane Waterproofing System has proven its superiority through actual test. When you have a waterproofing problem call for Karnak. Available through waterproofing contractors or distributors or write us for information.

Made by Lewis Asphalt Engineering Corp., 30 Church St., New York 7, N. Y.

OTHER KARNAK PRODUCTS
Asphalt Roof Coatings & Cements Aluminum Roof Coating
Asphalt Emulsions Wood Block Mastic
Floor Mastic Tile Cement
Asphalt Paint Joint Filler

Plastic by the roll will fill myriad construction needs. The 2' x 65' piece above weighs just 60 lb.
*Lighting that makes the nation's most important buildings come alive*

When fine lighting is required for either original installations or for modernization programs, more often than not the nation's leading organizations select Ruby-Philite luminaires. And for good reason. Ruby-Philite luminaires are designed to provide high levels of illumination with maximum efficiency and comfort, engineered for lowest installation and maintenance costs, and constructed to withstand hard usage. Write today for complete catalog data.

*PHILITE SERIES 1118 & PHILITE SERIES 1119* • Commercial luminaires with illuminated metal or translucent plastic sides available with choice of metal louver, plastic louver, or extruded plastic shielding.

**Philite Corp.**

32-02 Queens Blvd., Long Island City 1, N.Y.
NOW!
the finest door costs less

THE NEW KAWNEER
WELDED DOOR...

Available now at a new, low price—it's the first new development in door design and manufacture based entirely on what architects, builders and owners need. This is the door that puts your design ideas into action — and saves money for your clients. Accent your entrances with the Kawneer Welded Door identification hardware ... in any color, any design. Specify this door of distinction for any building. Its clean, virtually seamless appearance complements any design. And when you specify the new Kawneer Welded Door, you can depend on long-range client satisfaction. New, exclusive construction features make the Kawneer Welded Door 10% stronger than similar doors. Add the Kawneer Touch to your entrances now! Specify the door that's years ahead and priced at a new low ... the new Kawneer Welded Door. For complete details, write Kawneer, Niles, Michigan.

Hardware in Color!

Kawneer supplies face plate inserts for identification hardware in any color, any design you specify. Think of the distinctive design ideas you can present a client! Each entrance can look "custom-made" with the ease of specifying an ordinary door.

compare—the new Kawneer Welded Door is years ahead...costs less!

- Hardware in color, special identifications
- 10% stronger than similar doors
- New, Kawneer "Deep-Weld" penetrates metal 100% for strongest weld ever made in a door
- Finest polished Alumilite finish
- Takes overhead or floor checks
- Hairline welded joints
- No weld bloom or halo
- No exposed screws
- New offset pivots—tamper-proof, self-lubricating
- Beveled glass stops emphasize glass area
- Takes standard "panic" hardware
- Standard size lock cylinder
"REINFORCED CONCRETE STRUCTURES

start sooner . . .
go up faster!"

All Materials are AVAILABLE LOCALLY FROM STOCK

There are no delays in starting a reinforced concrete job. All the necessary materials can be delivered in a matter of days from local stocks. These faster starts, plus the faster erection made possible with reinforced concrete, save months of delay . . . months which will mean reduced interest charges and extra rental income that could run into thousands of dollars.

Furthermore, reinforced concrete offers lower over-all costs, rugged strength, rigidity, and flexibility of design found in no other method of construction. On your next job, design for reinforced concrete.

YOU'LL SAVE WITH REINFORCED CONCRETE

38 South Dearborn Street, Chicago 3, Illinois

CONCRETE REINFORCING STEEL INSTITUTE
NOW! Full unit control in
...with Trane UniTrane

Each tenant dials his own climate with this air conditioning system. This is UniTrane! And UniTrane means full unit control in multi-room air conditioning. It's the system that offers all the desirable features of a central system...plus individually-controlled room units that cool or heat, dehumidify, ventilate, filter and circulate air for personalized climate control.

UniTrane meets widely varied demands—from large office buildings, hospitals, hotels and commercial buildings down to small apartments and motels.

Because, with UniTrane, each tenant sets the temperature of his room just as he wants it, without affecting the temperature or "climate" of any other room. Tenants prefer it.

Management agrees UniTrane offers more. This unique combination of tenant advantages costs less to install, far less to operate. The same piping circuit is used for both heating and cooling. Individual room units can be shut off in unoccupied rooms without affecting operation of any of the other units. Operating load can be matched directly to fluctuating temperature requirements for lowest possible operating costs.

Architects especially like the savings in valuable floor space, the design freedom. Units are available in all sizes and types—free-standing, recessed, semi-recessed, ceiling—for either exposed or concealed installation.

Discover for yourself just how easy it is to offer full unit control in multi-room air conditioning—with central system economy! Contact your nearest TRANE Sales Office or write TRANE, La Crosse, Wisconsin, for Bulletin DS-420B.
multi-room air conditioning

Units

Trane CenTraVac supplies chilled water for UniTrane and Trane Climate Changer units in large systems. Starts, stops, modulates automatically, with power consumption in almost direct proportion to load. Eight models, 45 to 400 tons.

Trane Cold Generator for smaller installations using UniTrane units or Trane Climate Changers, or both. Delivers chilled water from one compact package. Engineered, built, tested and refrigerant-charged at the Trane factory, 10 to 100 tons.

Trane Multi-Zone Climate Changers are air handling units which can heat, cool, humidify, dehumidify, ventilate and filter air (singly or in combination) for as many as six different zones at once. 28 models, 450 to 23,400 cfm.

In six of New York's newest skyscrapers Trane Custom-Air systems are installed. The Custom-Air system utilizes UniTrane room units combined with a central source of ventilation air to give complete air conditioning comfort plus individual tenant control of room temperature. Installations include 99 Park Ave.; 579-589 Fifth Ave.; 7 Park Ave.; 261 Madison Ave.; 720 Fifth Ave.; 460 Park Ave.

Specify TRANE UniTrane Units

for personalized climate control

MANUFACTURING ENGINEERS OF AIR CONDITIONING, HEATING, VENTILATION AND HEAT TRANSFER EQUIPMENT

The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn. • Trane Co. of Canada, Ltd., Toronto

90 U.S. and 15 Canadian Offices
NEW PRODUCTS continued from p. 224

15 colors in widths 1' to 40”, the 1/6” thick sheet (type 250) is 79¢ psf and the 3/64” (type 175) 69¢.
Manufacturer: Plexolite Corp., 2051 E Maple Ave., El Segundo, Calif.

COMPACT DOOR OPERATOR needs neither compressor nor piping
All in one watertight bundle 29” long x 11” wide x 6½” deep, the Supermatic electro-hydraulic door operator obviates compressor,

Nestled beneath the threshold are all the parts Supermatic uses to operate a door.

FRICION DOOR HOLDERS
FOR MEDIUM WEIGHT INTERIOR DOORS

NO. 870 SERIES

"CASEHOLD” casement adjusters
LIGHT No. 0-1-2
MEDIUM No. 3 AND 4
HEAVY No. 5

NO. 820 SERIES

POLYETHYLENE PIPE, resistant to sunlight, is suitable for outside installations
Ability to withstand sunlight (reported to wreck havoc with many polyethylene materials) is the feature of a new polyethylene-base plastic pipe which also boasts flexibility, light weight (a 100’ length of ¾” pipe weighs 13 lb.) and an unconditional guarantee

against electrolytic corrosion, rust and rot. Its resistance to the sun makes the pipe particularly suited for use as an exterior electrical conduit. Also, even on jobs where its eventual use may be indoors or underground, the piping can be stored outside without fear of sunlight attack. It is furnished in nine standard sizes up to 6” in diameter. Price of the ½” is $12.65 per 100’; the 2”, $55.59.
Manufacturer: Munray Products, Inc., 12400 Crossburn Ave., Cleveland 11, Ohio

continued on p. 236
First the United Nations Building... then Lever House, and the all-aluminum office buildings at 99 Park Avenue and 460 Park Avenue... and now the Manufacturers Trust Company’s spectacular new “showcase” bank building in New York City. All outstanding in design—all with windows and curtain wall facades fabricated by General Bronze.

As you plan new buildings—hospitals, schools, apartments or commercial buildings—we want you to make full use of the service and 40 years’ practical experience General Bronze offers in solving your problems as they pertain to windows, spandrels, curtain walls and architectural metal work.

Our unequalled facilities and our vast experience enable us to serve you well, especially when your requirements are complex or unusual. We will be most happy to discuss your problems with you at any time. Our catalogs are filed in Sweet’s.

* Manufacturers Trust Company
* Fifth Avenue Office, New York, N.Y.
* Architect: Skidmore, Owings & Merrill
* Contractor: George A. Fuller Co.
In stores, restaurants, hotels, institutions...

New, Versatile Consoweld 10 assurs interior walls that please clients!

These are typical applications of new, versatile Consoweld 10—for both horizontal and vertical use. Consoweld 6 (standard 1/16" thickness) is also available for shop-fabricated jobs and some types of on-the-job use, where a smooth undersurface already exists. Both are produced according to rigid standards, and are identical except for thickness.
If you were to ask your client what characteristics he wanted for interior wall construction, chances are he'd give you three answers:

**Beauty—and up-to-the-minute styling**

**Easy maintenance • Down-to-earth first cost**

You can specify just such a wall when you specify new Consoweld 10 Plastic Surfacing. **Beauty** with colors and patterns that are color-tuned by experts in color research. **Easy maintenance** with a surfacing that never needs painting or refinishing. **Low first cost** because Consoweld 10 makes on-the-job application of plastic surfacing truly practical for the first time.

For example, Consoweld 10 can be applied directly over sheathing-grade plywood, gypsum lath ... even over cement or cinder blocks. As you know, that just isn't possible with laminates of conventional 1/16" thickness. But, because Consoweld 10 is a full 1/10" thick, it "bridges" irregularities in the surface. This extra thickness also means easier handling ... permits use of mastic-type adhesive instead of the pressure-sensitive types. Carpenters can easily handle a Consoweld 10 installation—without messing up the building unduly or raising humidity sky-high during the final stages of construction.

This extra-thick surfacing broadens the Consoweld line of high-pressure thermosetting plastic laminates; adds to design flexibility, particularly in vertical applications. Consoweld 6, the conventional 1/16" thick laminate, is also widely used for shop-fabricated jobs, and certain types of on-the-job applications where self-edging is desired. Both thicknesses are available in the same beautiful colors and patterns ... both have unusual durability, even including high resistance to cigarette burns!

Write today for more information on versatile, top-quality Consoweld! We'll be glad to give you more information ... including a brand-new full-color booklet which faithfully reproduces all the Consoweld colors and patterns.

This booklet graphically shows the advantages of Consoweld Color-Tuning

The entire line of Consoweld patterns and colors has just been completely streamlined —by the Color Research Institute of America. Each of the 44 patterns and colors has been selected for its ability to blend harmoniously with complementing base colors ... and each has been thoroughly preference-tested in advance.

Mail coupon for free copy!

---

**CONSOWELD**

the nation's finest plastic surfacing

...good for a colorful lifetime

Consoweld Corporation, Architectural & Engineering Department
Wisconsin Rapids, Wisconsin

Please mail new Architectural File insert, showing additional technical data and reproducing all Consoweld colors and patterns.

NAME__________________________
ADDRESS__________________________
CITY__________________________ZONE______STATE______
When you install plumbing fixtures in a school restroom, you've got to be sure they'll stand up under the awesome energy of youth. That's why so many schools install Richmond fixtures — they're MORE than "equal" to that kind of treatment.

When you specify Richmond, you're choosing plumbing fixtures of maximum durability with minimum maintenance - the end products of correct design, careful selection of raw materials and close control in manufacturing operations. Richmond vitreous china ware, for example, is fired in modern kilns at temperatures up to 2300°F. to give you a highly scratch-resistant surface that is actually comparable in hardness and durability to the natural sapphire. In Richmond cast-iron ware you get a ceramic glaze that's furnace-fused to the base for a permanent, impermeable bond and smooth glass-hard surface. Continuous quality control at all stages of manufacture assures the production of only top-grade fixtures.


Richmond plumbing fixtures are available in a wide range of sizes and modern styles, in famous "Whiter-White" or seven lovely pastel colors.

For long service life with minimum maintenance, it pays to specify Richmond.

Richmond radiator company
Affiliate of Reynolds Metals Co.
Metuchen, N. J.
NEW USES
BETTER DESIGNS
BETTER CONSTRUCTION
PRACTICES WITH

Here are just a few of many NCMA aids to architects — all available through your local NCMA member:

Wall Pattern Ideas — The wide variety of wall patterns using 8" high concrete masonry units, as well as new sizes, shapes, colors and textures now available in many areas, provide unequalled design versatility. Many wall pattern ideas are illustrated in the booklet, *Ideas for Wall Patterns with Concrete Masonry*, winner of Exceptional Merit award in 1954 AIA-Producers' Council competition.

Control Joint Designs and Uses — Architects are making increased use of "control" or "expansion" joints to allow for stresses that occur in any masonry wall. Well designed and spaced control joints provide a continuous vertical separation through the wall thickness, eliminating most of the problems associated with wall movement. The NCMA lintel design booklet, and the "Construction Details" portfolio show several widely used control joint systems.

Lintel Designs — Properly designed and reinforced lintels span doors, windows, and other openings in masonry walls, supporting the weight of the wall and transmitting these loads to adjacent masonry. Award-winning NCMA booklet, *Design and Construction of Lintels*, gives reliable design and load recommendations.

Retaining Wall Designs — A new NCMA booklet, *Reinforced Concrete Masonry Retaining Walls*, gives recommendations for the design and construction of concrete masonry retaining walls up to 10 feet in height, along with sample calculations, reinforcing recommendations and load tests.

Note: All of these, and many other helpful design aids, are available from any local concrete masonry manufacturer who is a member of NCMA.

**DESIGNING A HOSPITAL? A SCHOOL?**

Check on these advantages of concrete masonry construction:

- Low installed-in-the-wall cost.
- Design versatility—with wide choice of wall patterns.
- Durability, fire-safety, low maintenance.
- Beautiful, cost-saving interior walls, too!
- Exposed concrete masonry interior walls save on finishing costs; absorb sound.

National Concrete Masonry Association

38 South Dearborn Street
Chicago, Illinois
NEW PRODUCTS continued from p. 230

STEEL SPRINGS give bounce to gym and dance floors built directly on slab

Easily constructed, the Springaire system by Detroit Contractor Leo Kuhlman will give comfortable resilience to floors for gymnasiums, community centers, roller rinks, dines and dance restaurants built on concrete slab. To overcome objectionable rigidity, the Springaire system floats the finished floor above the concrete base by mounting it on an assembly of 18'-long auto-type leaf springs set on top of asphaltic paper shims bolted to sleepers. To prevent buckling, the sleepers, in turn, are anchored to concrete 5' o.c. and 10' apart. Flexibility of the steel springs is controlled to provide adequate bounce and distribute dead weight and active loads over wide areas. Springaire method absorbs shock otherwise relayed to adjoining walls. It also retards sound transmission by means of deadening felts. A 3½" open space between wood floor and slab allows for adequate ventilation to prevent moisture damage. Cost of the floor completely installed runs about $1.50 per sq. ft. Detroit Steel Products makes the springs but the assembly is available at present through Mr. Kuhlman.

Distributor: Leo E. Kuhlman, 9716 Conner Ave., Detroit 13, Mich.

GLASS-FIBER SCREENING with colorfast vinyl coat will not ravel or sag

Glass yarns are woven into standard screen mesh and coated with tough vinyl to prevent raveling in Chicopee Fiberglas screen cloth. Available in gray or green in widths up to 6', the material has a very high burst strength. It will not fade or discolor, shrink or stretch, thanks to the dimensionally stable glass fibers and heat-set vinyl coating. It is also reported to be unaffected by salt air or industrial fumes. Weight is just 4 lb. per 100' sq. ft. The retail price, 12¢ psf., is a little higher than galvanized but lower than aluminum or bronze. Manufacturer: Owens-Corning Fiberglas Corp., Industrial Textile Div., 15 E. 56 St., New York 22, N. Y.

continued on p. 246
Another famous hospital protects patients and dollars with Sargent Products

BERGEN PINES
COUNTY HOSPITAL

Protect your clients against unforeseen emergencies by assuring fast, safe exits under all conditions.

You can be sure of doing this by specifying Sargent's "Quick" Exit Devices.

Only slight pressure on the cross bar releases the locking mechanism, making latch bolts free floating. Doors can be instantly pushed open. Although ordinary latch bolts may bind and prevent exit when pressure is applied to the door before the bolt retracts fully, the Sargent double roll-back action is actually assisted by this pressure.

These devices are made by the Sargent Shell Molding Process . . . a wonderful new method that produces smooth, close-grained parts of rugged strength, rugged beauty.

You will also find it safe and wise practice to recommend that Sargent Door Closers be used with "Quick" Exit Devices. These liquid closers have special quality features that insure precision closing, perfect control.

Don't forget the beautiful Sargent Integralock . . . the only key-in-knob lock with the extra protection of the Sentry Bolt. Call your Sargent Representative, or write us, Dept.8L, for complete data.
Chase copper roofing products are
16 ounce copper or heavier—last years longer!

When you choose roofing products, look for the die-stamped Chase Trade Mark and Weight Stamp—your assurance of quality, stability and permanence.

To withstand the weight of snow and ice, Chase copper downspouts, gutters, elbows and shoes are all 16 ounce copper or heavier. All corrugations are deep and generous…ample for temperature changes in any climate.

Chase copper leaders are formed from full-width strips, to assure strong, expansion-proof seams. And, since Chase copper roofing products can be joined with standard soldering techniques, the installation will stay watertight and leak-proof for good.

Chase copper roofing products simply can't rust, will resist atmospheric and weather conditions that ruin less durable materials. So insist on Chase copper roofing products.

For more information on copper roofing products and flashing, send for the free Chase Copper Roofing Products Booklet.
In the top photograph, you can see how the green Suntrol screen reduces the light intensity from the lamp. The outer half of the Suntrol Block is bright, but inside, on the room side, the raw light is softened and diffused until it’s easy on the eyes.

The other photograph tells more of the story. You can see the green, fibrous glass diffusing screen (1) that filters the light and divides the block into two insulating cavities. You can see the internal prisms cast into every Suntrol Block (2) that direct the light upward or diffuse it according to the pattern selected. Lastly, you can see the exclusive PC Soft-Lite® Edge (3), of opal glass that eliminates glare through the edge of the block.

Suntrol Blocks reduce brightness 35%, and instantaneous heat gain by 25%, compared with standard glass blocks. If you have an unusual location where glare and heat are a problem, it will be to your advantage to learn more about these remarkable Suntrol Blocks — available exclusively from Pittsburgh Corning. For complete information, write to Pittsburgh Corning Corporation, Dept. E-114, One Gateway Center, Pittsburgh 22, Pennsylvania.

PC Suntrol® Glass Blocks
New TEMTRIM Finned Pipe Radiation
by American-Standard
for Public, Industrial and Commercial Buildings

- Low cost
- High heat output
- Easy installation
- Compact size

TEMTRIM is a welded steel pipe that bristles with steel radiating fins. It has a big, high-output heating surface, yet it is compact. Mounted on the wall, Temtrim projects only between 3 to 5 inches into the room.

TEMTRIM is economical to buy and install. Lengths of Temtrim can be connected and hung on wall brackets in a matter of minutes. Can be used with either hot water or steam systems for any type installation.

TEMTRIM can be installed with fins exposed, or with one of three attractive covers: expanded metal, louvered flat top or sloping louvered top. These sturdy steel covers are bonderized and finished with a gray prime coat.

With the addition of Temtrim, American-Standard offers a complete line of radiation for commercial and residential application. Included in the line are ferrous and non-ferrous baseboard panels and convectors and cast iron radiators, as well as remote type heating-cooling units. For information about Temtrim, mail coupon to American Radiator & Standard Sanitary Corp., Dept. AF-114, Pittsburgh 30, Pa.

TEMTRIM ELEMENT LENGTHS vary from 2 to 12 feet in convenient 1-foot increments. Pipe ends can be threaded or chamfered. TEMTRIM comes in two sizes—1 3/4" I.P.S. with 3 1/2" or 4 1/4" square fins and 2" I.P.S. with 4 1/4" square fins.

TEMTRIM COVERS are handsome and easily attached.

- Expanded Metal
- Louvered Flat Top
- Sloping Louvered Top

TEMTRIM FINS are mechanically bonded to the pipe. They won't work loose.

American-Standard
Dept. AF-114, Pittsburgh 30, Pa.

Please send me literature on TEMTRIM.

Name: ...........................................
Address: ........................................
City ........................................... State .............................

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILES • DETROIT CONTROLS • Kewanee Boilers • Ross Exchangers • Sunbeam Air Conditioners

THE MAGAZINE OF BUILDING
Problem:
Heat 3 Wings of Civic Center
Efficiently and Economically

I

Architect Stanley Meston, A.I.A. specified
Janitrol UNIT HEATERS

He says "A single central heating system with duct work to the 3 separate wings would have been more expensive to install and more costly in the use of fuel."

Building budget dollars can often buy more if careful consideration is given to the heating layout and equipment specifications.

The application of Janitrol Gas-Fired Unit Heaters and Winter Air Conditioners in the Civic Center above is not unusual. Similar Janitrol installations are saving money on the original cost and operating expenses in schools, shopping centers, new and modernized commercial and industrial buildings.

When it comes to the selection of equipment, again your careful consideration will reveal why Janitrol has the great preference among leading architects.

Design wise, Janitrol is far advanced in performance, dependability and economical, quiet operation. Your comparison of Janitrol's construction features will prove this.

PROVEN PERFORMANCE THAT'S UNMATCHED
With more than a million exclusive design Janitrol heat exchangers installed since 1950, less than 1/4 of 1% have been replaced for any cause.

Write for A.I.A. Files on Commercial and Industrial Gas Heating and information on the most durable unit heater built.

Janitrol GAS-FIRED UNIT HEATERS

ALSO MAKERS OF Surface INDUSTRIAL FURNACES Kathabar HUMIDITY CONDITIONING

JANITROL HEATING & AIR CONDITIONING DIVISION, SURFACE COMBUSTION CORPORATION
COLUMBUS 16, OHIO • In Canada: Alvar Simpson Ltd., Toronto, Ont.
YOU CAN'T PUT A PRICE TAG ON THEIR FUTURE

One of America's greatest assets is school children...from their ranks come the leaders of tomorrow. Their well-being depends on adequate facilities to guard health...meet future needs. There can be no price tag here so thoughtful school boards and those who design, build and equip the nation's schools, plan wisely. Take the matter of heat. There must be enough boiler capacity to provide healthful temperatures. Because every Kewanee Boiler is certified to deliver 50% extra reserve power, adequate heat is always available. Kewanee Reserve Plus Rated Boilers guarantee enough power for any emergency...for fluctuating demands, and equally important, they provide for expansion. School enrollment is growing at the fastest tempo ever, so the need for rapid expansion is often critical.

Be sure you follow the Kewanee Reserve Plus Rating Plan in considering boilers. Know these important facts:

1—Boiler rating must be based on nominal capacity, not maximum capacity;
2—Boilers must have sufficient built-in reserve to meet changing demands;
3—Boilers must have sufficient capacity to operate at "cruising speed," not maximum speed at all times;
4—Like examples must be considered in comparing boilers. Don't be confused by vague technical claims.

Choose Kewanee and cut fuel costs—lower maintenance—reduce breakdowns—get longer boiler life.

Maryland Elementary School, Bexley, Ohio • Architect, Sims, Cornelies & Schooley, Columbus, Ohio • Heating Contractor, The Gesling Plumbing Co., Inc., Lancaster, Ohio

Kewanee Reserve Plus Rated boilers certify heat to meet all conditions

Three 7L79 Kewanee Type "C" Boilers used in the Maryland Elementary School. Student health is protected because there's sufficient reserve to meet every need...provision for expansion, too.
for rare beauty at unusual savings... granite

Cold Spring offers unusual units at lower cost

Granite is nature's hardest building material ... the reason why your designs in granite can last for centuries in spite of wear and weather. But hardness makes granite difficult to fabricate. The units illustrated here would not seem unusual in other materials, but in granite they are spectacular—in achievement, beauty and savings. Now possible to make on a mass production scale, they offer new range for your imagination.

The cost? Today the cost of granite is much lower than a few years ago—one of the biggest and most pleasant surprises in the building world. For 12 exact examples of how little granite costs today, write for our free file folder on granite entrances. In addition, you will receive a brochure with colored reproductions of 14 kinds of granite—and the reasons why granite costs less now than ever before. Write today for file 8-B-3.

Cold Spring Granite Company
Cold Spring, Minnesota
BIG BUILDINGS NEED THE BEST TEAMS

"Building today just has to be a team operation — and the bigger the building, the better the team has to be. Take our case as owners of the $45 million Socony-Vacuum Building. Here was a structure so complicated, and with so many ramifications that it took a team of experts, representing a wide variety of specialized technical skills and experience, to work out all the problems involved. But no matter what the size of the building, no one man — no single professional — can possibly make all the decisions that must be made as a project moves from drafting board to final occupancy.

Surprisingly enough, although teamwork in building has been standard procedure for many years, Forum is the only magazine I know which has recognized the team, serves every interest of every member of the team. Because Forum gives its readers this wide-screen viewpoint, I know of no better way for any man — no matter what his interest in building — to keep well-informed on the changing developments in today's big building industry."

Peter B. Ruffin, Vice President
Galbreath Corporation

ARCHITECTURAL forum
is first with the men-of-decision in the big business of big building
THESE NEW BUILDINGS, part of the re­
development of Pittsburgh, Pennsylvania, have short-span floors reinforced
with American Welded Wire Fabric.

ALL 14 BUILDINGS in Rockefeller Center, New York City, have floors reinforced with American Welded Wire Fabric. This high quality fabric comes in prefabricated rolls, wound on large mandrels in any style you need.

FACTORY FLOORS—pounded day after day by heavy traffic and vibration—need the extra protection of American Welded Wire Fabric.

It’s American Welded Wire Fabric for the strongest concrete

- Don’t worry about the strength or durability of your concrete work if you reinforce it with American Welded Wire Fabric. American Fabric doesn’t just meet the new ASTM Specifications A185-53T; it often exceed them. It assures you an extra margin of safety in concrete walls, floor slabs, driveways and roofs, whether they are pre-cast or poured at the job site.

- We make sure our fabric is the best quality by rigid inspections that check size and spacing of wires, soundness of welds, and strength of the finished product. This assures you high quality concrete work that is just as strong and crack-resistant as you designed it.

USS AMERICAN WELDED WIRE FABRIC
UNIVERSAL STATES STEEL
NEW PRODUCTS  continued from p. 236

TOLL GATE substitutes for parking lot attendant

A branch off Western's main line of electric gates for railroad crossings, this toll gate takes the place of a parking lot attendant. Here is how it operates: the driver stops at the gate, reaches out his car window and drops a coin or token in the box. A magnetic control opens the gate to admit the auto and when cleared, closes. (The gate is timed to prevent a second vehicle from free-loading.) The one or two

units needed for most off-the-street lots are said to be less expensive to maintain than individual meters (and far more effective when used without attendants). For retail store parking, the WRRS Gates can be regulated to take a coin and discharge a token to be used in trade. Keyed units are also available for monthly parking patrons or private lots. For a small area, one gate, two detectors and one remote control station complete with lock for key operation are furnished for $1,190 and installed for about $200. To put two gates ("in" and "out") in a larger lot, costs run $1,500 for the gates $600 for four heavy duty detectors $240 for multiple coin acceptor in remote control station. Total: $2,340 F.O.B. Chicago plus $400 installation.

Manufacturer: Western Railroad Supply Co., 2428 S. Ashland Ave., Chicago 8, Ill.

RECESSED REFLECTOR: lens throws spot or spreads sheet of light where needed

Ceiling-recessed over a glass store counter. Century's new downlight can throw an accent spot on merchandise while directing reflections away from the customer's line of vision. Mounted close to a wall mural or bulletin board the same fixture will bathe the vertical surface in even light. The device that makes possible this flexibility in the moderate-priced ($19.50) fixture is its roundel lens which spreads light 60° along one axis and 15° on the other. The lamp receptacle (for flood or spot reflectors) is mounted on a swivel and can be rotated to any useful direction. To illuminate chalkboards in a low-ceilinged classroom the units may be spaced as far apart as 9'; the higher the ceiling, the wider the spacing. Century provides data for determining the most effective location of the units and will help plan for specific conditions.

Manufacturer: Century Lighting, Inc., 521 W. 43 St., New York 36, N.Y.

continued on p. 252
There is a difference in MATICO Parquetry tile flooring. It's different in appearance...rich, luxurious, in perfect keeping with any style of architecture or decorative plan. There is a difference in cost, too. For all its richness and beauty, MATICO Parquetry costs no more than ordinary asphalt tile flooring. And Parquetry is durable...stain and water-resistant...easy to clean...can be installed on, above or below grade and performs efficiently over concrete slab foundations.

Yes, when next you specify tile flooring, consider the many advantages offered by MATICO Parquetry. Parquetry comes in four distinctive shades — walnut, mahogany, oak and maple — in 9 x 9, 1½" sizes. Write Department G-11 for details and specification data today!

Before you specify any tile flooring, consider the distinctive difference in MATICO PARQUETRY

MASTIC TILE CORPORATION OF AMERICA
Joliet, Ill. • Long Beach, Calif. • Newburgh, N. Y.
Manufacturers of: Aristoflex • Confetti • Parquetry • Asphalt Tile • Cork Tile • Plastic Wall Tile
Here is still another case of the most modern of buildings depending on man's oldest metal to seal out the elements. Metals may come and metals may go but the enduring qualities of copper have remained unmatched for centuries. There is not another metal or alloy that has all of the outstanding construction characteristics of copper. It is equally at home in the most ancient cathedral or in the newest streamlined skyscraper. It's adaptability in construction and flexibility in design make it the metal preferred by architects.

That's why, on structures built to last, such as the new Prudential Building, you'll find Revere Copper used as flashing, as gutters, in expansion joints, as roofs and in other vital spots where unerring performance through the years is of utmost importance to the reputation of the architect and the satisfaction of the client.

Copper cannot rust or rot. Its design possibilities are unlimited. Its endurance has been proved for centuries. The enviable reputation copper has earned makes it readily acceptable by the toughest board of directors. Contractors prefer to work with it because it solders beautifully, requires no special tools, is readily worked into any shape or form and is readily prefabricated in the shop. Write us today about the money-saving advantages of Revere Keystone Thru-Wall Flashing and the new Revere Keystone 2-Piece Cap Flashing.

And, if you have technical problems, we will put you in touch with Revere's Technical Advisory Service.
Day-to-day cost of maintaining buildings can become a very large item if gaining access to drainage-line stoppages requires destruction of fittings, walls or floors. Lack of sufficient accesses and use of cleanouts which merely meet code requirements are the causes of such needless expense. As anyone who has ever tried to remove one knows, ordinary "cleanout plugs" freeze immovably in a matter of months. SUPREMO PERFECT SEAL CLEANOUTS will always provide quick, sure access and positive re-sealing, whether the installation is two months or twenty years old.

Code requirements can be hazardous in the matter of cleanout location, as well. Every building drainage plan presents a new set of potential "trouble zones". Provide SUPREMO PERFECT SEAL CLEANOUT access not only at the usual 50-foot intervals, but at every foreseeable trouble zone. It is a client obligation, which, if observed, will pay dividends for years to come.

U.A. ZURN MFG. CO.
Erie, Pa., U.S.A.
Sales Offices in Principal Cities of the World
AFFILIATE: AMERICAN FLEXIBLE COUPLING COMPANY
IN CANADA: CANADIAN ZURN ENGINEERING LTD., MONTREAL, P.Q.

EXCEED CODE REQUIREMENTS — PROVIDE SURE, QUICK NON-DESTRUCTIVE ACCESS TO DRAINAGE LINES WHENEVER IT IS NEEDED!

WHERE SHOULD CLEANOUT ACCESS BE LOCATED?
Below, in isometric view, is a drainage plan for a typical rest room, conceived to illustrate the use of various SUPREMO CLEANOUTS. This plan, one of several presented in the new SUPREMO CLEANOUT Manual, was developed to suggest ways in which SUPREMO CLEANOUTS can be used to reduce building maintenance costs.

Zurn Plumbing Division products include everything for drainage systems from roof to basement.

J. A. ZURN MFG. CO., Plumbing Division
Erie, Pa., U.S.A.
Please send my copy of the new Supremo Cleanout Manual.
Name and Title:
Company:
Street:
City and State:

(COPYRIGHT 1954)
this brand name on lumber also means

kiln-dried

CONTROLLED KILN SEASONING IS ONE OF MANY REASONS WHY WEYERHAEUSER 4-SQUARE MEANS UNIFORMLY HIGH QUALITY LUMBER

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

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

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

See this lumber, in a wide range of species, grades and sizes, at the office of your local Weyerhaeuser 4-Square Lumber Dealer.
BOARDS—Every board bearing this brand name has been seasoned prior to manufacture.

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

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

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

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

Weyerhaeuser Sales Company
ST. PAUL 1, MINNESOTA
NEW PRODUCTS continued from p. 246

Factor/finish of colored glass is fused on concrete block.

AMY

AN INCREASING DEMAND TILES!

Another ROMANY LEADER

Many new homes now enjoy the added luxury of a tile-top working surface in the kitchen, a glamorous tile top surrounding the lavatory in the bathroom.

Because—Real Clay ROMANY Tile has a glazed surface “hard as steel,” it is especially adapted to counter-top use.

In conventional 4¼” x 4¼” square design with ROMANY'S exclusive “Space-Set” lugs, or in the inviting 3” hexagonal shape, ROMANY Tile offers many advantages.

For detailed information see Sweet's — or write us

CERAMIC GLAZED BLOCK needs no finish on the job

Ferro Corp.’s new glazing process coats concrete block front and/or back with colored ceramic. Thus rendered scratch and fire resistant, the new unit is called Glasface. It can be sawed without chipping, is available in wide range of colors and finishes; emblems and special designs can be ordered in the glaze. Ferro plans to license production of this glazed block on a royalty basis, reporting that equipment for a complete plan could be installed for less than $50,000. While the finish can be applied to the various clay, shale and slag blocks, it has been found best suited to lightweight-aggregate block. Application of the glaze does not impair the structural strength of the masonry. Tests have shown too, that the glazed unit can stand a hydrostatic pressure of 15” of water on the reverse side without showing any signs of peeling. Ferro’s current price is 75¢ to 85¢ a block.

Manufacturer: Ferro Corp., Cleveland.

TWO MASONRY PAINTS combined in quick smooth finish for rough block

A finely powdered marble-base paint has been mixed with a concentrated latex alkyd-resin paint to create a washable finish which, in one application, eliminates the voids and pits usually encountered in painting interior surfaces of aggregate block walls. The technique, which combines Marb-L-Cote Texture with Satin Liminal paint mixture, takes a second coat of the Liminal paint for a creamy smooth surface with the purpose of providing a quick smooth finish; it does not claim to substitute for the smooth wall of a plaster job. Estimates show the finish can be applied at a materials cost of $3.45 per 100 sq. ft.

Manufacturer: Liminal Paints Div., National Chemical & Manufacturing Co., 3617 South May St., Chicago, Ill.

continued on p. 258
Trinity White

is a true portland cement

Use it for a brilliant sparkling white,
or with pigments added it gives the loveliest of colors!
Specify it for architectural concrete units . . .
terrazzo . . . stucco . . . and light reflecting
uses. It’s a true portland . . . and it meets all
Federal and ASTM specifications.

It’s the whitest white cement

as white as snow

A Product of GENERAL PORTLAND CEMENT CO. • Chicago • Dallas • Chattanooga • Tampa • Los Angeles
SURCO

Tile prior to application of grout showing SURCO setting and leveling beds.

Roof recreation area of university building with quarry tile flooring. SURCO grout setting and leveling bed used throughout.

Tile being set in SURCO bed with SURCO leveling bed visible behind workmen.

TILE SETTING BED...
tops the class

SURCO is the newest discovery of contractors who need a strong, easy-to-apply tile setting material for indoors or out. Resilient, durable and waterproof SURCO Yellow Label applied $\frac{1}{8}$ to $\frac{1}{4}$ inch thick sets tile fast... usually ready for normal traffic in 24 hours. SURCO's adhesion of 68 pounds per square inch assures a tight bond.

In kitchens, bathrooms, shower rooms, wherever a waterproof tile floor is needed, a SURCO tile setting bed will do the job faster, better and more economically.

• See Sweet's Files or write to:

SURFACE COATINGS, INC
110 Pear Street, S.E.
Atlanta, Georgia
IDEAL LUMINOUS SEMI-INDIRECT COMMERCIAL LUMINAIRES

New MITCHELL "Lume-Glow" sets the standard of excellence in comfortable indirect lighting. It is specifically designed for low brightness contrast and features pleasing eye-ease illumination. Designed for pendant mounting,

Lume-Glow luminaires achieve a desirably high upward component coupled with diffused downward lighting to achieve this new concept in glare-free, restful illumination. The superb combination of abundant light output with low surface brightness is achieved through the original use of polystyrene plastic formed in an ultra-shallow streamlined contour of unusual beauty and distinction. Finally, "Lume-Glow" offers exceptional advantages in simplified installation and maintenance. For full details, specifications and performance data, write for Bulletin No. 4.
Fire bricks (used in tests because of low density) here demonstrate water repellency of LINDE Silicones. Treated brick, unchanged in appearance, floats indefinitely. Untreated brick soaks up water and sinks.

How buildings can keep their heads above water

You can keep water out of your above-grade brick and masonry walls just as it’s kept out of that floating brick, above.

Above-grade masonry water repellents made with LINDE Silicones do the job. Tests already indicate they last ten years and up.

Damage to interiors from seepage is eliminated. Repair and maintenance costs really drop.

Fully protect new buildings. Fix up old buildings. These silicone-based water repellents prevent even 100-mile-an-hour wind-driven rain from penetrating brick and concrete. They do not change surface appearance.

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