December 1954

St. John the Divine
Should this great Gothic cathedral be finished in contemporary architecture? (p. 112)

Eight modern churches
Their widely different shapes are deeply rooted in the past (p. 118)

Building engineering
A geodesic cow barn .... Cantilevers 250' long .... Glass block and flat glass compared .... A wall panel at 7 lb. per sq. ft. (p. 158)

New kind of prison
It is designed to prevent riots, save money and reform criminals (p. 148)

Educational buildings
A cluster-plan school built for only $646 per pupil (p. 152)
and a whole college planned from scratch (p. 132)

Glass bank
Its luminous ceilings light a golden partition and banish outside reflections from its all-glass walls (p. 104 and below)
Board of directors room has rich-textured Vicrtex walls.

Employees lounge walls stay bright thanks to Vicrtex.

Vicrtex protects walls of dining room and lounge.

Passing hands can't mar Vicrtex-covered corridor walls.

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ARCHITECTS: SKIDMORE, OWINGS & MERRILL • PHOTO BY Ezra Stoller

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ARCHITECTURAL FORUM • DECEMBER 1954
The interesting results of Day-Brite lighting in a school addition

Firm believers in top quality equipment, Architects Taylor, Foster & Yasko specified Day-Brite for their Jefferson School project. But even they didn't expect the premium lighting results they got.

Two months after the Jefferson School addition was opened, Karel Yasko made a demonstration. Partly for the benefit of the School Board and the City Council. Partly to reassure himself.

With a freshly calibrated light meter, Mr. Yasko measured the performance of the Day-Brite LUVEX* installation his firm had specified. He reported his findings and enthusiasm to us in a letter we treasure very much.

In part, the letter states: "The LUVEX fixtures are spaced 8'0" on centers, 8" hanger suspension from a 10'0" high acoustical tile ceiling. We obtained readings at the desk tops of 80 footcandles at mid-spacing and 75-78 footcandles directly under the 2-lamp fixtures. Remarkable!"

And most important, these high levels combine with over-all LUVEX low-brightness to furnish a completely comfortable visual environment for young eyes.

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School and local government people rightly expect good lighting. And because lighting results are so vulnerable to comparison, so easily measured, your lighting installation is often the first phase of your work called upon to prove itself.

Day-Brite's LUVEX consistently offers the most dependable answer to the school architect's lighting needs.

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Day-Brite Lighting, Inc., 5471 Bulwer Ave., St. Louis 7, Missouri.
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ABOVE: Clean, fresh design in classrooms is heightened by the high level of evenly distributed illumination from LUVEX fixtures. LUVEX is one of the very few fixtures with low enough cross-wise brightness to allow this type of "across-the-room" lighting layout.

LEFT: The kindergarten is cheerful and kind to young eyes. Good lighting, such as this LUVEX illumination, is important in helping children get their school life off on the right foot. Learning is a process 80% controlled by the eyes. Youngsters in this kindergarten won't be denied the opportunity to see properly, even those sitting in the back of the room.

BELOW: This spacious area serves as a multi-purpose room. The exposed wood beams and steel roof deck form an interesting overhead pattern. Day-Brite incandescent lens boxes are mounted directly to the roof deck to furnish a novel and effective lighting layout. Recessed Duo-Frame lens boxes light the stage.

THE FIRM OF TAYLOR, FOSTER & YASKO of Stevens Point and Wausau, Wisconsin, designed the Jefferson School addition. At left is George Foster; center, Karel Yasko; right, Gage Taylor. Engineer was John K. Primm, P.E., Manitowoc, Wisconsin. The Electrical Contractor was Markle Electric, Marshfield, Wisconsin.
Lighting as a design element

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Versatile "Magna-Flo" SYSTEMS
go to any length to fit your lighting requirements!

Yes, one fluorescent lighting system for all three lengths of T12 Slimline Lamps! It's Benjamin "Magna-Flo"... so easily adapted to any size area, any type of location found in industry. No matter where you want fluorescent light... high ceilings or low ceilings, assembly lines or drafting rooms, lighting for inspection or mass production... whatever the seeing conditions and requirements of the task, there's a "Magna-Flo" System to fill the need exactly. As shown by the chart below "Magna-Flo" is really complete... yet so simple to order and specify, because just three channel sizes and four basic reflectors form the backbone of over 300 different fluorescent lighting systems!

Write for Bulletin AD 5705 for complete specification data on Benjamin "Magna-Flo"... see how it goes to any length to suit your fluorescent lighting needs!

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BENJAMIN "Springlox"—the exclusive "easy-in easy-out" lampholder which reduces maintenance costs and re-lamping time with a patented spring design... "Springlox" is standard equipment with all "Magna-Flo" units.
The distinctive new Guestledge lavatory for hotel and motel bathrooms

**offers dressing table luxury, easy-to-clean, one-piece construction**

Especially designed for hotels and motels, the new Guestledge serves as both a lavatory and a dressing table. Featuring a spacious integral counter area, this handsome fixture makes average-size rooms look larger, more luxurious. Where space conservation is an important factor, the toilet can be placed so it will also serve as a vanity seat.

The Guestledge is of easy-to-clean, one-piece genuine vitreous china with matching pedestal. All fittings are finished in gleaming Chromard.

**The modern fixture for modern buildings.**

This unusual fixture is the answer to the public's demand for "that extra touch of refinement." In shape, in quality, and in the convenience it offers, the Guestledge lavatory is strikingly different! The diagram above and the photograph at the right show how this finer fixture can be worked into your plans. For additional information, please contact your nearest American-Standard sales office, or write direct to American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 22, Pa.
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Weyerhaeuser 4-Square West Coast Hemlock has earned the name "Ability Wood" because it serves so well in such a wide variety of places.

As paneling, for example, this fine species from the West offers straight grain . . . fine, even texture . . . and a light, warm color which mellows slightly with age. Also, West Coast Hemlock ranks high as siding because it is easy to work . . . resists the elements . . . takes nails without splitting and remains firmly in place year after year. Hemlock takes paint or natural finishes beautifully and holds them exceptionally well.

For almost any use . . . from framing to paneling, from flooring to moldings and built-in cabinets . . . Weyerhaeuser 4-Square West Coast Hemlock offers refreshing beauty and enduring service at moderate cost. A selection of grades is available from the yards of Weyerhaeuser 4-Square Lumber Dealers. Descriptive literature will be mailed you on request.
HEAT LARGE AREAS with Type BT units mounted high on outside wall in inverted position. Heated air is directed downward for maximum comfort.

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Then see how much better Modine Cabinet Units do the job....

MODINE has the answers to your heating problems. Whether it's new construction or remodeling, Modine Cabinet Units do the job better ... in less space ... at lower cost. The heating applications pictured above are only four of many hundreds of efficient, attractive installations.

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Please send me immediately a free copy of Bulletin describing Modine Cabinet Units.

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C-1246
The smooth, closely-textured surface of Azrock is no accident—it's deliberately built into this rugged asphalt tile—to make it easier to clean and keep clean. Azrock's dense inter-laced structure means years of extra wear, too.

And whether it's a modern airline terminal...a hospital, restaurant, school or home...Azrock sets the color theme with lighter, brighter colors you wouldn't expect to find in this low-cost flooring. Azrock colors are smart and modern...clean and bright...compatible with modern décor.

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With all its extra qualities, Azrock costs no more than ordinary asphalt tile—a longer wearing, better looking flooring with exceptionally low cost. When there is no added cost, why not specify the best—quality Azrock Asphalt Tile. Samples and detailed product data sent on request without obligation.

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THE VAST MAJORITY OF THE NATION'S FINE BUILDINGS ARE SLOAN EQUIPPED

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THEODORE ROCKWELL mechanical engineer
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SAUER, INC. plumbing contractor
AMSTAN SUPPLY DIVISION, AMERICAN RADIATOR & STANDARD SANITARY CORP. plumbing wholesaler

Donner Hall, new men's dormitory, CARNEGIE INSTITUTE OF TECHNOLOGY, Pittsburgh, Pennsylvania, has the distinction of having been designed by two 1932 graduates of Carnegie's College of Fine Arts, and erected by a former Carnegie student, the General Contractor.

NEW MEN'S DORMITORY HAS "NEW LOOK"

- In the minds of many college administrators and students 1954 will be long remembered as the year during which much-needed dormitories began to bloom on scores of campuses throughout the land. High on the list of notable sleep-and-study buildings made ready for Fall occupancy is Carnegie Tech's new million dollar men's dormitory, Donner Hall, providing modern, quiet living facilities for 243 students. Contemporary in design, equipment and furnishings, Donner Hall is a two-wing structure with major exterior areas of aluminum and glass. The wings are joined on the ground floor by two spacious lounges available for dances, social events and other functions. Also on this floor is a student counselor's suite. Above, each room floor has its own smaller lounge.

SLOAN Flush VALVES, famous for efficiency, durability and economy, were selected for installation throughout Donner Hall—more evidence of performance that explains why . . .

more SLOAN Flush VALVES
are bought than all other makes combined

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

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The beautiful surface of this long-wearing wall covering is smooth, easy to clean. That's because it's made of Krene.

Krene is extra-quality material, always tough and flexible. It resists scratches, cleaners, foods, acids, alkalies, alcohol and other agents. Keeping the surface clean is a simple matter, most dirt is merely wiped right off... very quickly, easily, and economically.

Specify wall covering made of Krene, and upholstery, too. It's a splendid solution for hospitals, hotels, restaurants, for any heavily-used rooms or corridors where styling and service must both be tops.

Hospital corridor wainscoting is covered with easy-to-clean "Kalistron," made by Kalistron, Division of United States Plywood Corporation, New York 17, N. Y. It's made of a clear sheet of Krene, with colors fused to the underside so that the durable surface takes all the wear.

BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation INC 30 East 42nd Street, New York 17, N. Y.
The attractive Travertone ceiling contributes to the pleasant atmosphere of the hospital's carefully styled, well-lighted lobby. Quiet as well as beautiful, Armstrong Travertone is a highly efficient, incombustible acoustical material.

In the new unit of Lancaster's St. Joseph's Hospital, three distinct sound-conditioning problems prompted the use of three different acoustical materials — Armstrong Travertone®, Arrestone®, and Perforated Asbestos Board.

In the lobby, chapel, and patients' rooms a distinctively beautiful ceiling appearance was as important as acoustical efficiency. Armstrong Travertone offered both features, as well as complete incombustibility.

In the kitchen, large 24" x 24" tiles of Armstrong Perforated Asbestos Board provide efficient acoustical treatment and easy maintenance at a surprisingly low cost.

The high sanitary standards of the nursery suggested a material that is easy to keep clean and spotless. Here, Armstrong Arrestone, an incombustible metal-pan unit, will require only an occasional washing to stay new looking for years. In addition, highly efficient Arrestone soaks up as much as 85% of the noise that strikes it.

Economy was the deciding factor in sound conditioning the kitchen. Large 24" x 24" tiles of Armstrong Perforated Asbestos Board provide efficient acoustical treatment and easy maintenance at a surprisingly low cost.


* Trademark

Sound is muffled, kept from becoming a serious problem under this Armstrong Arrestone ceiling. Arrestone's high acoustical efficiency, incombustibility, and ease of upkeep make it especially suitable for nurseries and other hospital areas.
Few building legislation changes expected from new Congress

In last month’s Congressional elections the Republicans were upset, apparently lost the Senate as well as the House of Representatives. Washington experts, however, foresaw only minor changes for construction as a result of the political reversal. Reasons: the slim margin of Democratic control; the conservative bent of most seniority-heavy Southern Democrats who will dominate Congressional committees; the probability that southern Democrats will line up with Eisenhower Republicans on many crucial issues.

Prospects on specific matters affecting building:

School-building aid might gain more support in both houses. Despite their feelings about racial segregation, many southern Democrats have backed federal school-building aid as a general rule, because most come from relatively less affluent states. The Eisenhower Administration has been blocking such a bill pending study and would like to put it off still another year.

Those who hope for expanded federal building allocations observe that Democrats traditionally have been less inhibited in buying orthodox public construction: highways, dams, post offices, river and harbor facilities, etc.

Anti-bid-shopping legislation, requiring general contractors on federal jobs to post their subcontractors and the amount of their general contractors on federal jobs to post their subcontractors and the amount of their subcontractors and thus preventing bid shopping, may have a strong new Senate backer in Patrick McNamara of Michigan who has a plumbing contracting background.

Construction unions, like most of American labor, will probably have little luck in getting the Taft-Hartley law repealed or amended. No matter how the new Congress is viewed a repetition of last session’s stand-off on Taft-Hartley seems likely. The House labor committee will be run by Graham A. Barden of North Carolina, a conservative who is under little pressure from organized labor from his district. The Senate labor committee will be headed by James E. Murray of Montana, who is friendly toward labor. The balance of power will rest with Democrats from southern states, where laws prohibiting union shops—laws on which the AFL has declared total war—are prevalent. About the best labor can hope for is a stalemate, for there is some feeling in Congress for tightening Taft-Hartley, and Commerce Secretary Sinclair Weeks in his jurisdictional dispute with Labor Secretary James Mitchell would like to see labor unions made subject to federal antitrust laws.

A program of the AFL Building and Construction Trades Dept. calling for partial recognition of a closed shop in the building industry, among other things, appears to have little chance of being passed, whether it is introduced in an omnibus bill, as a series of separate bills, or as Taft-Hartley changes.

Public housing enthusiasts are not very optimistic about getting their program revived. A bill might get past the two banking and currency committees. Both new chairmen, Sen. J. W. Fulbright (D, Ark.) and Rep. Brent Spence (D, Ky.), would be more favorable toward public housing than their predecessors, Sen. Homer Capehart (R, Ind.) and Rep. Jesse P. Wolcott (R, Mich.). But from then on the going would be rough, especially in the House, where two conservative southern Democrats, Howard Smith of Virginia and Albert Thomas of Texas, heading the rules committee and the independent public housing committee respectively, are bitter opponents of public housing. What’s more, the Supreme Court decision against segregation in schools—expected to be extended to other fields—makes southern Democrats more opposed than ever to public housing. One big public housing job was opened by the election: New York State Housing Commissioner Herman Stiehman was replaced by a Democrat. Most likely to be named: NYCHA Executive Director Joseph McMurray, or National Housing Conference President Ira S. Robbins.

Rental housing is dead because of the tight provisions in the new housing law against mortgaging out. There probably will be no attempt to revive the program, with both parties fearing a revival of windfall investigations.

Support grows for saving Grand Central concourse

From several quarters last month came support for preserving the concourse of New York’s Grand Central Terminal if plans to rebuild the station with a huge office tower above it are ever put through.

Although they withheld formal comment for the present, it was indicated New York Central Chairman Robert Young and New Haven President Patrick B. McGinnis were giving serious consideration to the open letter in November’s Architectural Forum in which 220 leading architects urged them to spare the concourse—and also to Forum’s suggestion for an international competition for a redevelopment design that would retain it.

Said a New York Times editorial approving this proposal and the architects’ letter: “This handsome room belongs to all America....We have learned to conserve remnants of nature’s grandeur. Before it is too late we should also learn to respect our man-made masterworks.”

A Christian Science Monitor editorial took a similar stand. The New York Herald Tribune editorial page reprinted extracts from Carroll L. V. Meeks’ Forum article on the terminal, ending with Meeks’ observation: “A more utilitarian transfer point can never achieve its uniquely successful blend of efficiency and civic dignity.”

Another important new source of support: the American Institute of Architects’ committee for preservation of historic buildings.

At month’s end, William Zeckendorf, who hoped to have a large hand in any Grand Central redevelopment, disclosed that he also was launching studies to rebuild New York’s Pennsylvania Station. Pennys President James M. Symes and Zeckendorf said they agreed on terms on which the railroad would be willing to give Zeckendorf an option to buy air rights over the station. “If the studies are favorable and the option is exercised,” they said, the terminal would be “thoroughly modernized below the street level” and a huge new building erected over it.
NAREB convention:

Industrial brokers hear optimistic forecasts for 1955, with money easier, but trend to higher building costs; post office ready for $300 million of lease deals

Despite forecasts of a small decline in industrial construction next year, cheerful optimism dominated the Society of Industrial Realtors sessions at the annual NAREB convention in Cleveland last month.

Surveying 1955 industrial building prospects, James E. Hanson of the SIR governing council predicted: 1) a continued high level of construction in almost all areas, spurred by modernization or "put-your-house-in-order" building programs by many large corporations; 2) a slight trend to higher building costs; 3) easier financing. Hanson said costs will be nudged upward by higher labor and materials charges, which will rise because of record demands for both from almost all other types of construction next year. His easier financing forecast was supported by SIR's annual survey of leading industrial mortgage lenders. This found "a large and constantly increasing supply of funds" available—and interest rates now averaging from 4 1/2 to 5%, compared with 4 1/2 to 5 1/2% a year ago.

Post office plans. In Cleveland during the convention the post office was moving into the largest leased quarters ever built for it anywhere. This was an $8.25 million, highly mechanized 600,000 sq. ft. parcel post building; 200,000 sq. ft., including interior sidings for 72 railroad cars, occupied by the New York Central Railroad; 400,000 sq. ft. occupied by the post office. It also has docks to accommodate 132 trucks, will receive and distribute mail over the highways for a distance up to 250 mi. Asst. Postmaster Ormonde A. Kieb told the Realtors the post office was ready to launch a program for another $300 million of large buildings in 60 major cities on both lease and lease-purchase deals. Most will range from 200,000 to 400,000 sq. ft. and cost an average of about $3 million. Three or four about the size of the Cleveland building are planned for the New York City area, which accounts for 10% of the nation's mail. Insurance companies are enthusiastic over these deals, said Kieb; one told him it has earmarked $18 million to finance such projects.

Kieb also hailed a new law that now authorizes the post office to take direct options on building sites, later transfer such options to private firms submitting the best bids to erect structures to its specifications under lease or lease-purchase arrangements. Now, said Kieb, the post office can bent or "freeze out" speculators who used to corner-option all the suitable potential post office sites in a given area and then demand a high profit from anyone else trying to obtain any of them for a government structure.

Build America better. Plans for a tenfold expansion of NAREB's slum clean-up and rehabilitation program were drawn, but temporarily held in abeyance. Explained new Treasurer C. Armel Nutter: Fritz Burns of Los Angeles requested $100,000 for this program for 1955, compared with $10,000 to $12,000 this year, but approval was delayed until the January directors' meeting acts on a proposed $5 a year membership dues increase. (In addition to his NAREB budget, President Chinnock told the convention, Chairman Burns has spent more than $50,000 of his personal time and money pushing the Build America Council's work.)

Convention resolutions supported the Build America campaign and the federal urban renewal program with a series of recommendations favoring: 1) optional one-to-five-year tax write-off privileges covering demolished buildings in conservation areas; 2) five-year write-offs for the total cost of new capital improvements in such areas; 3) the same depreciation rates for existing buildings as applied to new construction under the 1954 tax laws; 4) enactment of state minimum housing standards for either "state-wide or local" enforcement.

Henry Waltemade, Bronx realtor, named '55 leader

"State after state came in to recommend him. No other name was considered—or submitted."

In those words, Nominations Chairman Charles B. Shattuck reported the nomination of Henry George Waltemade of the Bronx, now NAREB's 1955 president-elect. Stocky, vigorous Waltemade, 49, was chairman of the Realtors' Washington Committee this year, and national convention chairman in 1948 and 1950. He also has headed the Real Estate Board of the Bronx and the New York state realtor organization.

Waltemade's father was a German immigrant who came to the US alone at the age of six. Although he received no formal schooling he worked his way up and finally established Henry Waltemade, Inc., Bronx realty firm. His Bronx-born son, Henry, attended public high school and Columbia University, joined his father's office in 1923 and has headed the firm since his father died in 1938. The firm does an "all-around real estate business," particularly mortgages, says Waltemade (MAI). He sits on the boards of the Manhattan Life Insurance Co. and several New York savings and commercial banks.

Herb Nelson retiring; directed NAREB 32 years

Herbert U. Nelson, for 32 years executive vice president of NAREB and one of the building industry's—and nation's—most influential lobbyists, will retire July 1.

For years, internal and external foes had tried to unseat Nelson, whose articulate conservatism sometimes carried him into political storms. He weathered all tempests, gave real estate the benefit of a seemingly boundless work-or-read-all-night energy and a disarming personal charm which soothed ruffled feelings.

Last summer, the burden Nelson had placed on his physique for 32 years took its toll. At 68, his health broke. Last month at NAREB's annual convention in Cleveland, he did himself what his opponents could never make him do: he asked to retire. After July 1, he will become a "consultant" to NAREB.

Minor, journalist, realtor. Born in Ellsworth, Wis., in 1886, Herbert Undeem Nelson graduated from the University of Minnesota, worked briefly as a silver miner, a seaman, and for a few months at the Seattle Post-Intelligencer. He quit journalism because "there wasn't enough money in it." From 1917 to 1921, he was secretary to the Minneapolis Real Estate Board; in 1919-20 was also secretary of the city's planning commission. In 1922 he was named executive vice president of the then 15-year-old NAREB.

Herb Nelson rendered real estate many invaluable services. By working for brokers' licensing laws, by organizing NAREB's several institutes to lift the standards and refine the techniques of appraising and management and to study farm, industrial real estate and urban land use problems, he did more than any other single person to give the responsible real estate man the professional stature he now holds.

In the early thirties, President Hoover called on Nelson to help launch the Home Loan Bank system. A few years later he worked with Cordell Hull, Marriner Eccles and other Democratic leaders drafting legislation to create the HOLC, and later the FHA.

Linked Taft to Reds. After World War II, Nelson's ardent campaigns against rent control and public housing caused President Truman to speak contumuously of the "real estate lobby." In his zeal, it was Nelson who once accused the late Senator Robert A. Taft ("Mr. Republican") of having "lined up with Communism" by sponsoring public housing—but apologized the next day.

At such times some of its more liberal realtors felt NAREB might fare better with a less controversial executive, but at board meetings any plans for ousting or retiring the durable, captivating pioneer (and efficient administrator) were always sidetracked.
CABINET RANK for a new Department of Urbiculture was recommended at an S.I.R. session by Walter S. Schmidt, former president of both NAREB and the Urban Land Institute. Richard Seltzer (seated) predicted a back-to-the-city trend as suburban taxes soon caught up with city levies.

ELECTION PORTRAIT of old and new presidents and their wives found 1955 President-elect Henry G. Waltemade (l) in contemplative mood, but retiring President Ronald Chinnock wreathed in smiles. Chinnock (with Realtor "First Lady" Mary Swain Chinnock) continues as head of NAREB until the end of next month, when Waltemade (with Jeannette) will be inaugurated.

PROUDEST MOMENT at Cleveland convention for retiring Executive Vice President Herb Nelson occurred when he presented a plaque to his former protege Frank Cortright (center), who won NAREB contest for writing a realtor’s pledge. At right: Realtor Committee Chairman E. Fred Kemner.

LEASE-PURCHASE PROGRAM will help the post office acquire new buildings in 60 big cities, said Asst. Postmaster General Kieb, former N.J. Realtors' president.

"BANG-UP" SALE of surplus US reality after inventory is ended next March was promised by GSA officer David H. Brill. New law will allow brokers full commissions.

CIVIL WORKS of the Army that aid industry were outlined at an S.I.R. luncheon by Maj. Gen. S. D. Sturgis Jr., chief of engineers. The St. Lawrence Seaway projects, he noted, will stimulate considerable Great Lakes area industrial growth. With him: S. I. R. President E. Sanford Gregory.

SHOPPING CENTER economics were studied at Appraisal Institute session addressed by (l to r): Martin J. O'Brien, Addison T. Cutler and Horace Carpenter Jr., vice president and general manager of Detroit's huge new Northland Center.
Driving rain kept soaking right through the brick walls of this Buffalo, N. Y. laboratory. Typical damage to interior paint only six months old is shown at left.

Then above-grade masonry water repellent made with LINDE Silicones was applied outside, and the interior wall repaired and repainted exactly as before. This time, after six months, the paint was still as good as new (right)!

Even though exhaust fans constantly keep the laboratory's interior air pressure lowered, tests indicate that these silicone water repellents will remain effective for ten years.

Above-grade masonry water repellents made with LINDE Silicones have been tested by years of service. They are easy to apply by spray or brush. They cause no change in appearance. They put an end to spalling and cracking caused by freezing moisture. They keep masonry clean and free of streaks, since water rolls right off, carrying dirt with it. Efflorescence is stopped.

While they let no outdoor water in, they do let indoor dampness out. Walls can still "breathe" freely.

By eliminating moisture damage to interior plaster, woodwork, paint, and wallpaper, these amazing repellents already are making sharp reductions in repair and maintenance costs for hospitals, factories, schools, institutions, to name a few. New buildings can be fully protected; old buildings fixed up to last.

For further details and a list of representative suppliers of above-grade masonry water repellents made with LINDE Silicones, write today to Dept. A-12.
Wright and Mies open New York offices; Mies to do modern Park Ave. tower

In September, Frank Lloyd Wright opened a New York office, in the Hotel Plaza, to supervise construction of his spiral-shaped Solomon R. Guggenheim Museum on Fifth Ave. overlooking Central Park.

Last month it looked as if Wright might have touched off a migration of major modern Midwest architects to New York: Mies van der Rohe also was opening an office, and Chicago's Holabird & Root & Burgee were establishing an eastern business office after a lapse of more than a year. Mies was coming to New York for a more utilitarian building than a museum. With Phillip C. Johnson as his collaborator, he was going to design another full-block Park Ave. office building that architecturally promised to rival Skidmore, Owings & Merrill's dramatic Lever House. New York's Kahn & Jacobs with work with Mies and Johnson as associate architects on this project, mainly for drafting and technical services. George A. Fuller Co. will be contractors.

Civic "contribution." The structure Mies and Johnson were commissioned to design will be a high-rise $8 million executive headquarters for Joseph E. Seagram & Sons, Inc. It will stand cater-corner across Park Ave. from Lever House in the next block to the south. So far the designers have only been exploring economic and zoning problems; architectural details will be evolved later. Present buildings on the 100,000 sq. ft. site are yet to be razed, but the company hopes to have its new building completed before the end of 1957, to help celebrate the Seagram Civic "contribution." The structure Mies will work with Mies and Johnson as associate architects on this project, mainly for drafting and technical services. George A. Fuller Co. will be contractors.

President's daughter. Although she gives credit to Seagrams' "building committee" for the selection of Mies, no one had more to do with awarding him this commission than Mrs. Phyllis Bronfman Lambert, 27, the distillery president's daughter. A painter and sculptress, Mrs. Lambert studied architecture at Vassar and New York University. At the building committee's request she made a "scouting trip" around the country interviewing leading architects and architectural college deans on the qualifications of prospective designers. Mies picked Johnson as his associate after being chosen for the job, said Mrs. Lambert.

Pereira & Luckman model. Last summer, when Seagrams first announced its intention to build in New York, it exhibited a model prepared by Los Angeles' Pereira & Luckman. The final award to Mies and Johnson, however, was in no way a "switch" in architects. P&L were engaged only for preliminary consultations, and "to make a model that could be shown at the company's annual distributors meetings. At that meeting Charles Luckman, previously president of Lever Brothers, defined his office's role very carefully: "I have to . . . in fairness to everyone concerned, make one thing clear, and that is that whatever work I have been doing for the past several months has been in the area of being a consultant on this project. At the moment the architect has not been selected. Our firm is just one of a great many [about 14], believe me, that are being considered."

US Supreme Court OK's redevelopment land resale

Slum clearance and urban redevelopment won a landmark victory in the US Supreme Court last month. In a unanimous decision the court upheld the constitutionality of the District of Columbia Redevelopment Act, rejected a challenge to its validity that claimed the government has no right to take the property of a private citizen except for public agency use.

Property owners in a deteriorated Capital area protested proposed condemnation of their land because it was slated to be resold for redevelopment by private parties instead of by a public agency. But the Supreme Court, in a decision written by Justice William O. Douglas, held that Congress, by enacting the District Act, had made a valid "legislative determination" that it was the "policy" of the US to promote the public welfare in the District by eliminating injurious conditions by all "necessary and appropriate" means. Douglas wrote:

"Once the object is within the authority of Congress, the means by which it will be attained is also for Congress to determine. Here one of the means chosen is the use of private enterprise for redevelopment of the area . . . Subject to specific constitutional limitations, when the Legislature has spoken, the public interest has been declared in terms well-nigh conclusive. In such cases, the Legislature, not the judiciary, is the main guardian of the public needs to be served . . . whether it be Congress legislating concerning the District or the states legislating concerning local affairs."

In 21 out of 23 states where similar cases had been tried, courts of final appeal had ruled along the same general lines followed by the Supreme Court. Until the Supreme Court rendered its first definitive federal decision in such a case, however, many lawyers held a slight reservation—wondered what turmoil might ensue if the Supreme Court should rule the other way. Last month all reservations were canceled.

Eisenhower urges support for ACTION program

Before an audience of some 200 legislators, officials, civic and housing leaders, President Eisenhower last month gave the American Council to Improve Our Neighborhoods a warm personal endorsement as it set about its mission of spurring nationwide efforts to stem the spread of blight and slums. At the ACTION kickoff lunch in Washington's Mayflower Hotel (see cut), the President said:

"This group seems to represent, to me, much more definitively and much more emphatically than most, almost the philosophy of government by which I try to live: that federal government has certain functions, but that federal government, or any other government [at any level] . . . can succeed only as the locality and the individual citizen does his full part and seeks ways of organizing and combining together to do his part collectively and locally. So, with the million houses, I am told, becoming slums each year, to find the local people undertaking to do something about this, to stop this kind of economic deterioration, is very wonderful."

HHFA Administrator Cole (second from right) called the council a "significant new resource and a new ally" in the urban renewal aims of the 1954 Housing Act. Also pictured (1 to r): Sen. Homer Capehart (R, Ind.), Liry Publisher Andrew Heiskell, an ACTION vice chairman; the President; Maj. Gen. Frederick A. Irving (ret.), ACTION president; and Ovilla Culp Hobby, secretary of Health, Education & Welfare.
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For Business and Industry. Seeburg will work with you and your clients to bring the acknowledged benefits of music to their businesses. To do this Seeburg now makes available ... under its own label ... the finest library of work and background music ever recorded. This library, plus a complete Seeburg High Fidelity Sound System, gives you the opportunity to specify the most advanced, practical and economical music service ever developed.

WRITE for descriptive folders on the new Seeburg Background Music Service and the name of your Seeburg Distributor.

Seeburg Background Music Library. Specially arranged, programmed and recorded for work and atmosphere use. Mastered and pressed by RCA-Victor on Seeburg label. Monthly refresher service.

J. P. Seeburg Corporation, Chicago 22, Illinois

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Building forecast for '55

Commerce and Labor Depts. reinforce FORUM's estimates made in September, raise total volume a trifle higher, to $39.5 billion; revised '54 estimate — $37 billion

Three months ago, FORUM forecast another record construction year for 1955 on top of the peak volume being set this year (AF, Sept. '54). Total 1954 expenditures will reach about $36.9 billion, and next year's outlays will soar to $38.75 billion, predicted FORUM's market study prepared by Economist-Consultant Miles L. Colean.

Last month analysts of the Departments of Commerce and Labor released the government's latest construction estimates for this year and next. They solidly reinforced the forecasts—as a matter of fact reflected an even more sanguine attitude toward the future than this magazine was able to register amid the uncertainties of September. In both cases Commerce and Labor put an ace on the king, predicted expenditures for 1954 will reach $37 billion, and in 1955 total $39.5 billion.

Increasing optimism of all forecasters suggests that nothing has developed since September to weaken confidence in the year ahead. Quite the contrary, the unfolding improvement of business during the last three months has only confirmed and strengthened FORUM's earlier views. Next year will certainly total close to $39 billion or beyond.

Minor variations. Differences between government and FORUM estimates for various types of building are not great (see table). For 1954, Commerce-Labor estimates for private activity are somewhat higher, and for public construction somewhat lower. Within the private sector, Commerce-Labor see more residential and less nonresidential; but in all these cases differences are more a matter of shading than disagreement.

For 1955, the two forecasts agree on all fundamentals. In private building both foresee substantial increases in residential, commercial and institutional activity. On the public side, both expect expenditures for hospitals, post offices, etc. These higher estimates are well within the bounds of possibility.

Dodge forecast comparison. Early in November, preceding the government forecast, F. W. Dodge Corp. issued its annual predictions. Because Dodge estimates cover only 37 eastern states and do not give the same amount of detail or follow Commerce-Labor classifications, complete comparisons are not possible.

However, Dodge apparently agrees with Commerce-Labor that private commercial building will be lower than expected by FORUM; and agrees with FORUM that private residential building will be lower, and total public construction greater than expected by Commerce-Labor. Especially bullish on highway expansion and schools, Dodge sees total public construction next year rising 10% above 1954, compared with FORUM's 8% increase and Commerce-Labor's 5.4%.

Housing volume. In September, Forum expected at least 1,130,000 new nonfarm housing starts for 1954, and 1.2 million for 1955. The 1954 figure now looks low—it will be very close to 1,200,000. For 1955, the Bureau of Labor Statistics offers an estimate of 1.3 million, and Dodge about 1,250,000. NAHB officially stands at 1,250,000, although some of its key men would argue to a higher figure. FHA Commissioner Mason says that 1.2 million is conservative; he expects more. FORUM now feels its September estimate of 1.2 million for 1955 represents the minimum rather than a median probability.

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<td>36,900</td>
<td>37,000</td>
<td>38,750</td>
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</table>
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Dormitories, Michigan State College—Ralph Calder, A.I.A.
A few days after Madison, Wis., voters had said "yes" (15,169-13,885) to the singular question on their ballots last month, "Shall the City of Madison employ Frank Lloyd Wright as an architect for designing and planning a municipal auditorium and civic center?" Wright had heard from another quarter that he said would impel him to move Taliesin out of Wisconsin forever. The Wisconsin Supreme Court ruled that Wright's home and school near Spring Green (the school is on 80 acres of 3,000 that he owns there) was not officially an educational institution and therefore was subject to local taxation. "The tax situation amounts to $13,000—there's no hurt there," Wright said, "but the interpretation out of which it springs does hurt. Instead of getting help from our county and state, where I have invested so much of myself, we've been looked upon askance. Under the circumstances, I don't care to continue." Wright has been educating about 60 students a year on the site (he was born nearby) since the school was established in 1932. In winter the students move to Taliesin West in Arizona. Wright said he would sell the acreage not occupied by the school (upon which he has been paying taxes), but keep the stonework on the other 80 acres in memorial to his forebears. "Our work has been drifting eastward and this court decision is so equivocal that we don't want to stay in Wisconsin," he told Forum. "The county won't exempt us from taxes because they say we make so much money we cannot possibly be a cultural organization, and yet we lose money each year. It is unfortunate that I have to give up something which I have put so much love and work into." He said he would transfer his base to the Berkshires or the Adirondacks. Gov. William G. Stratton of Illinois invited him to move there; Wright said he would consider the offer, added that it was "interesting and refreshing" to find a governor with "an eye on architecture." At month's end Wisconsin's governor also had his eye on architecture: he was trying to get Wright to change his mind about leaving the state.

Philosophic Architect Richard J. Neutra and pragmatic Associate Professor Richard Dewey of the Illinois University sociology department reached the same conclusions, but from different lines of thinking, when they spoke on the same panel at the recent convention of the American Society of Planning Officials. Urging compilation of sufficient information as a basis for sound planning, Dewey said: "I am not nearly so interested in the democratic answer as I am in the right answer." Democracy does not establish the size of a steel beam to be used in a bridge, he explained. Knowledge determines this. He also stressed the need for developing a "broad philosophy" for planning, after citing ways in which the "democratic" and "planning" approaches both failed to solve some fundamental community problems. Neutra proclaimed the "need for a dynamic philosophy" for planning, after reviewing ways in which communities have developed in a manner that often frustrates "human needs." Said Neutra: "The man, the biological and psychological entity, must be used as the basis for determining not only the scale, but the content and character of the community."

Mrs. Jacqueline T. Leonhard, the 37-year-old woman who inspired and directed a $31-million building and renovation program which hauled New Orleans schools out of the horse-and-buggy days, was defeated for re-election last month after six notable years on the Orleans Parish school board. Victor (by 7,000 votes in a small election-day turnout) was Matthew R. Sutherland, a lawyer new to public office. Louisiana laws prohibit endorsement of school board candidates by organized political factions. There was little question, however, that Mrs. Leonhard's defeat could be attributed to activities of Mayor de Lesseps Morrison's machine, the Crescent City Democratic Assn. She and the mayor have been at odds over school board jobs.

Mrs. Leonhard was elected to the school board in 1948. There had been no school construction for many years; buildings were unsafe, unsanitary, inadequate. She started a minority battle for a long-range plan to build contemporary, functional schools. Her efforts became majority rule in 1950, when two candidates she campaigned for were elected to the five-person school board. In 1952 two more pro-Leonhard members were elected. Most of her program (11 schools finished, including celebrated Thomy Lafon—AF, Nov. '54, 11 others in construction or ready to be started, 41 renovated, 40 repaired) has about run its course.

Many architects had good reason to regret Mrs. Leonhard's defeat. Her insistence on improvement of the physical conditions of learning resulted in elimination of an architectural department from the New Orleans school system and substitution of a program of selecting and cooperating with independent outside architects. Some began to shudder at prospects of politics and reactionist attitudes seeping back into the school board. Said one: "Jackie was the only board member who felt good design was more than showmanship. . . . I am particularly incensed by her defeat since . . . school architecture in New Orleans (quadrilateral classrooms, raised classrooms, zoning of grade groups) was just beginning to have some effect on schoolhouse planning in other states."

GE electronics lab built on Stanford University campus

Newest industrial tenant of land-poor Stanford University, in an ambitious plan to raise its endowed by leasing two thirds of its 9,000-acre campus near Palo Alto, Calif., is General Electric Co. Last month GE leased an electron tube development laboratory, built for it by Stanford at a cost of $120,000. Quick construction and simple structure characterize the 10,000 sq. ft. single-story lab. Designed last July by San Francisco Architect John C. Warnecke, and built in four months by Haas & Haynie, San Francisco contractors, the laboratory has two rear tilt-up walls and two walls of glass, roofed with timbers. GE was drawn to Stanford by the university's research institute, which has pioneered microwave tube studies. It is one of eight industries to take up Stanford's offer to lease land which the university can not sell under terms of original grants by Founder Leland Stanford and his widow. Two other industries already have plants built on sites leased for 99 years; plants for five more firms will be built next year. Architecture and site planning are closely controlled by the university, which will accept only industrial tenants that are smokeless and quiet. Other tenants include: 43 families living in houses built on 24 acres (of 4,500 acres set aside for residential use), and a $15-million, 50-store, 55-acre shopping center designed by Welton Becket & Associates, Los Angeles. Plans also are in the works for a $10-million teaching hospital.
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BUILDING TRENDS:
Steel output stages recovery;
October plywood production sets a record

Steel production in October and November, mirroring the business upturn, has staged a sharp recovery from its midsummer doldrums. Large orders from auto plants were mainly responsible, aided by a steady increase in buying for appliance, farm equipment, machinery production and construction. Shipments of structural steel, a great prop to the industry through the lean part of this year, totaled 2,679,348 tons for ten months, compared with 2,592,941 for 1953. Backlog orders were 1,293,779 tons, compared with 1,927,240 last year.

Northwest fir plywood mills were also flooded with fall orders; October production exceeded any month in the industry's history. Demand was well ahead of supply and some mills reported order backlogs as large as 60 days. Sustained homebuilding and other light construction were given most of the credit for this unseasonal situation, although some mills reported heavy buying for next spring. Early last month prices were holding steady at $85 MSF for quarter-inch AD, sheathing $90. In the lumber market, some Douglas fir items started to show weakness by midmonth, but not so much as is normal in November, usually the year's low point.

Timber purchase. One of the largest business transactions ever seen in the Pacific Northwest took place last month when Georgia-Pacific Plywood, in a deal involving about $13 million, bought out the stock of the Oregon Mesabi Corp. This purchase gave Georgia-Pacific control of about one billion board feet of lumber, a big percentage of it plywood peeler logs, in a 23,000 acre forest that has seen almost no cutting for 40 years.

Branching out. In the trend of many building material and equipment producers to enter new fields, US Plywood formed a new division to manufacture wall covering, luggage, automotive and upholstery products. Armstrong Cork Co. went into the rug business by purchasing the Deltex Rug Co. of Oshkosh, Wis.; Minneapolis-Honeywell bought stock control of Boston's Doelcam Corp., producers of precision instruments and control equipment. Plans were announced to merge Toledo's Glass Fibers, Inc. with the Fiber Glass and Corrugated divisions of Libbey-Owens-Ford Glass Co. The new firm will be called Glass Fibers Corp. To capture a bigger share of air-conditioning equipment sales, York Corp. is splitting itself into two divisions—Industrial and Commercial.

New York architects ponder means to curb excessive Santa Clausing

What will happen when an irresistible overgenerous contractor or manufacturer meets an immovable overconscientious architect? This problem may become a real one this month in New York, where the AIA chapter's Oculus recently carried the following notice:

"It is not unusual these days for a practicing architect as late as April or May to break open an excellent bottle of Bourbon or Scotch from its original Christmas wrapping, or perhaps open a bottle of sherry with a silver-plated corkscrew bearing his name in letters of gold. These treasures are not usually the gifts of grateful clients, loving family or boyhood chums. They come from our good friends, the contractors and manufacturers. It's very cheerful, but isn't it getting out of hand?"

"The executive committee thinks so. On Oct. 5 they passed a resolution (freely paraphrased) that while we architects have none but the warmest feelings for our builder companions, all we want of them is low bids, a superlative workmanship and occasional free advice. Costume jewelry, leather goods, comestibles, and all other seasonal tokens of good will are looming too large in the traditional pattern of mutual respect between architect and builder. The committee is considering means for bringing this to the attention of the too generous donors."

E. H. Brockh & Associates' building cost indexes rose to new highs for the second consecutive month. Apartments, hotels and office buildings moved up 0.2 points to 256.4 in October, from 255.4 in Oct. '53. Commercial and factory buildings edged up 0.2 points to 257.2, compared to 255.2 a year ago.

Expenditures for new construction remained at a high level in October. The total of $3.6 billion showed a seasonal decline of 2.8% from September but stood 8% above Oct. '53. The ten-month total of $30.8 billion was 4% ahead of the same 1953 period. Reflecting the continued boom in private residential construction, housing starts in October totaled 106,000, a record high for the month (18% above Oct. '53), but were down seasonally (7%) from September. October starts lifted the 1954 total to 1,016,500, the first time since 1950 that the ten-month level topped the million-unit mark.
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See our bulletin in SWEET'S CATALOG
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NEW BUILDINGS (continued)

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In keeping with the keynote on quality, BUSH air conditioning and heating products were selected. Over 600 capacity-tons of BUSH equipment (300 tons in the new Lord and Taylor store alone) provide year-round shopping and working comfort.

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Bush Air Handling Units . . . in vertical and horizontal models . . . provide Architect, Engineer and Contractor with a widely diversified line of central station units where direct expansion, water or steam coils are required.

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HOTEL-CLUB-RESTAURANT FOR CULTURAL CENTER

still under water) north of Miami where Western hemisphere nations could display their products in modern exposition buildings. Economic soundness of the scheme is suggested in a study by Ebasco Services, New York construction and consulting firm. Total cost of the center is now estimated around $200 million. Its backers hope it will be self-liquidating as tourists amble, drive and boat through its three levels of exhibits. W. H. Walker, president of the First Federal Savings & Loan Assn. of Miami, has been pushing the center since 1950, is now chairman of the authority. Present promotion designs, termed "futuristic" by the center's promoters, are the product of an architectural board: Alfred B. Parker, John E. Petersen, Robert F. Smith, Robert L. Wood, all of Miami, and Russell T. Pancoast, of Miami Beach.

UNESCO bids below estimate

Bids received last month for construction of the UNESCO building in Paris (AF, Aug. '52 et seq.) ran a good 20% below original estimates—well within a total budget of $6.25 million, including furnishings. Bids came in from almost every country in Western Europe and contracts were let to a group of subcontractors rather than to one large builder. Work will be coordinated by UNESCO's construction office and by the building's three designers: Marcel Breuer, Bernard Zehrfuss and Pier Luigi Nervi. Bidding under estimates was attributed mostly to the comparative instability of Paris' building costs, which makes all preliminary estimating difficult. The prospective savings are expected to more than offset the cost of the two designs that were scrapped before the present one finally was approved.

Clay products research center

Research by the Structural Clay Products Institute, now carried on in several midwest cities, will be centralized in a new laboratory-office at Geneva, Ill., 35 miles west of Chicago. The institute says many features of the center, designed by Howard T. Fisher & Associates, Chicago, are symbolic of its purpose: materials are mostly brick and tile.
The Manufacturers Trust Company has succeeded in creating more than another bank building. They have created... a showcase for service. Marlux Corporation is proud to have played a key role in the lighting of such a distinctive monument to Architecture and banking.

Our part of the success in the lighting of this building was no mere accident. From the start we have collaborated with Professor Parry Moon of Massachusetts Institute of Technology and Professor Domina Eberle Spencer of the University of Connecticut to make practical their dream of completely luminous ceilings. Moon and Spencer developed the interflection theory, devised a method for the design of luminous ceilings and proved that they provide the optimum luminous environment. It was the result of a suggestion by Leon Lipschutz of Architects Carl Koch Associates, that we became the first to corrugate paper-thin vinyl sheeting. This was first used in Carl Koch's Fitchburg Youth Library.

Marlux is currently the most imitated product in the lighting industry. However, we intend to ensure that Marlux will remain the symbol of continued progress in lighting, by combining our years of experience with the scientific guidance of our team of experts. You have an opportunity in the Manufacturers Trust Company's new building to see for yourself the effect made possible by the Marlux lighting system. In the privacy of your own dreams, may we suggest that you visualize your building as its own showcase. We can help bring life to your dreams.

Whether you plan to light the vestibule of a home or to light a skyscraper, try the Marlux way... for more detailed information contact your electrical contractor or write direct.

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walls are load-bearing masonry, six flues to carry off fumes from lab operations are gathered in a massive brick chimney, and the side-by-side placement of the center's two units indicates consciousness of the shape and pattern of structural clay products. Nevertheless, the architecture gives no clue as to whether progressives or diehards are in control of the institute; architecturally, the research center is as neatly perched on the fence as any building could be (see cut). One section of the center will be large enough to hold full-size experimental buildings for indoor study. Even part of the ground will be left exposed so foundation conditions can be duplicated. The center also will have large-scale ceramic testing equipment. Architectural research space will be provided in a smaller, air-conditioned office section.

**S&L office by a harbor**

A new $700,000 building for the *Newport Balboa Savings & Loan Assn.*, at Newport Beach, Calif., has many of the latest touches (radio-controlled parking lot gates, music controlled from the receptionist's desk, electrically-operated doors in the president's office) characteristic of banking's rush to escape its stodgy monuments and embrace the efficiency of functional structures. From the street the bank looks slick and fresh—modernistic rather than modern. From the harbor it resembles a yacht club. The outstanding interior feature is a group of booths each designed for cozy meetings of the four persons (buyer, seller, broker, loan officer) usually involved in sale of a house. The front of the building (it was designed and built by the Bank Building & Equipment Corp. of America) has floor-to-roof tinted windows, louvered by precast concrete fins. These have been sprayed with blue-colored plastic.

**Tilt up terrazzo**

Seattle Architect Paul Thiry has used what probably are the biggest (7' x 12') tilt-up factory-cast terrazzo panels made so far, at least, on the West Coast, in a $142,000, single-story branch library he designed for his hometown. The panels, faced with quartz particles, form the outside wall, running 7' from foundation to windows. They are backed inside by concrete blocks. H-columns, between which the buff-colored panels are inserted, are finished in black on the outside, as are other visible structural members.
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- Regardless of pressure or temperature changes in water supply lines . . . shower temperature remains constant wherever bather wants it.
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- No danger of scalding caused by "dead end" in hot water supply line. Powers mixers have a reliable thermostatic safety limit of 115°F. A sudden rise of 100° in hot water supply to mixer is barely noticeable by a bather in a Powers regulated shower.
- Powers Mixers Save Water. No time or water is wasted by bather having to get out from under shower due to fluctuating temperature. Water conservation makes them more economical.

Consult Powers on Shower Planning. For Engineering data on thermostatic control for all types of shower baths call your nearest Powers office or write us direct.

Service Available in 60 Cities in the U.S.A., Canada and Mexico. See your Phone Book.
No costly maintenance problem here

Corrugated Transite has been featured in this contemporary plant design. The shadow lines of the corrugations provide decorative interest for the large wall areas.

For maintenance-free exterior walls and roofs, plus protection from fire, rot and weather

You save money on construction and maintenance when you build with Johns-Manville Corrugated Transite®. Corrugated Transite comes in large sheets that require a minimum of framing... permits fast economical construction of maintenance-free industrial, commercial, institutional and agricultural buildings.

Made of asbestos and cement, Corrugated Transite is practically indestructible. It never needs paint or special treatment to preserve it... it's fireproof, rotproof and weatherproof. Corrugated Transite is also used increasingly for smart interiors... the streamlined corrugations and attractive shadow lines that give it such unusual architectural appeal for exteriors offer unlimited interior design possibilities.

Investigate Johns-Manville Corrugated Asbestos Transite and learn how you can build quickly and easily... have an attractive, long-lasting, trouble-free structure regardless of size or purpose. For complete details write Johns-Manville, Box 158, Dept. AF, New York 16, New York. In Canada write 199 Bay St., Toronto, Ontario.

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Easy to nail to wood
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high quality

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PREFABRICATED ROLLS of American Welded Wire Fabric wound on large mandrels can be unrolled continuously from beam to beam, making installation easy and assuring continuous reinforcing.

PITTSBURGH'S RENAISSANCE is symbolized by these new Gateway Buildings which are built with short-span floors reinforced with American Welded Wire Fabric.

LEVER HOUSE contains American Welded Wire Fabric Reinforcement. American Fabric often exceeds the new ASTM Specification A185-53T; it puts an extra margin of safety in your designs.

REINFORCEMENT is the backbone of your concrete structures, so it pays to specify the best wire fabric for walls, floors, roofs, and concrete ground slabs. And the very best is American Welded Wire Fabric.

American Fabric not only meets the new ASTM Specification A185-53T, it often exceeds it. We make a concerted effort all along the line, in making the steel, in drawing the wire, and in fabricating and testing the fabric, to see that American Welded Wire Fabric is the best it's possible to make.

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USS AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL
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For complete information on Pittsburgh Doors, see Sweet's Architectural File ... sections 15a/Pl and 15d/Pl, or write to Pittsburgh Plate Glass Company, Room 4385, 632 Fort Duquesne Blvd., Pittsburgh 22, Pa. Ask your local Pittsburgh distributor for a copy of the de luxe Store Front Detail Book.
are the preferred entrances for all kinds of buildings because of their architectural fitness, their beauty and dependability. Pittsburgh's Herculite and Tubelite Doors are the first choice of architects and building owners all over the country.

Pittsburgh's Herculite Doors, in 3/4" thickness, have been specified by America's leading architects and demanded by building owners because of their modernity, appeal and architectural adaptability. Now, with the addition of the new 1/2" Herculite Door, this Pittsburgh line achieves greater flexibility of application. Herculite is Polished Plate Glass, subjected to a special tempering process, able to support a weight four times as great as ordinary glass; its resistance to impact is seven to eight times greater. Moreover, Herculite Doors are quickly and easily installed; their operation is unexcelled. Architect: George L. Dahl, Dallas, Texas.

The New and Improved Tubelite Doors and Frames represent an achievement in hollow metal entrances. Their clean, simple lines make them easily adaptable to any type of building design. A unique feature of these Tubelite Doors is their interlocking construction. This gives maximum rigidity, assuring the holding of their true shape through long and continued use. The glazing, handling and installation of Tubelite Doors is simple and quick. Feature-for-feature, Pittsburgh's Tubelite Doors are easily the highest value at the lowest cost. Architect: Gilbert A. Johnson, Rockford, Illinois.
How Honeywell Customized Temperature Control helps you

Give your clients better indoor weather

Why Honeywell Customized Temperature Control is a "must" in modern buildings

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

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  plates and elevator sills. Also
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  Catalog 1954—12b/Am.

EVENTS

Market Research and Design, two-day conference 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 Michigan, Ann Arbor.


National Retail Industry Show, sponsored by the Store Modernization Institute, including an exhibit on store building and modernization Jan. 7-11, Madison Square Garden, New York.

American Road Builders Association annual convention, Jan. 10-13, Hotel Roosevelt, New Orleans, La.

American Society of Heating and Ventilating Engineers annual convention, Jan. 24-27, Philadelphia.


Mason Contractors Association of America, annual convention and exhibition, Jan. 30-Feb. 2, Jefferson Hotel, St. Louis, Mo.

American Concrete Institute, 51st annual convention, Feb. 21-24, Hotel Schroeder, Milwaukee, Wis.

Conference on Church Architecture, sponsored by the Church Architectural Guild of America and the Council of Churches' Bureau of Architecture, Feb. 23-25, Netherlands Plaza Hotel, Cincinnati.

Associated General Contractors, 36th annual convention, March 14-17, New Orleans.

Building Officials Conference of America, annual meeting, April 18-21, Milwaukee.

Western Mountain District, American Institute of Architects, regional meeting, Apr. 28-30, Camelback Inn, Phoenix, Ariz.

American Institute of Architects, annual convention, June 20-24, Hotel Radisson, Minneapolis.
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REMODELED HEUVELTON CENTRAL SCHOOL demonstrates how modern space saving equipment increases usefulness of classroom floor and wall space. Architect: John C. Ehrlich.

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THE MAGAZINE OF BUILDING
Michael Pfaff and his sons Bill and Dick are experts on how to get up in the world economically. They build steel stairs with J&L Junior Channels. In fact during 1953 alone, their company, Standard Metal Products, built 456 floors of stairs—five times the height of the Empire State Building.

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LETTERS

YOUNG MEN

Forum:
Forum's section in the October issue on the work of young architects is inspiring and reassuring.

In itself, it is a good reply to those critics who have tried to bury contemporary American architecture under a gravestone labeled "The International Style." These young men have proved that today's architecture in the US is American architecture and that its vitality does not depend alone on the great pioneers of the past 50 years—national or international.

MORRIS KETCHUM JR.
Ketchum, Gina & Sharp, architects
New York, N.Y.

Forum:
The work illustrated is not unlike other work shown in Forum since the war. It is neither more crude, nor more sophisticated, better or less well detailed, more or less arresting in conception than the average run of the well-studied jobs in your monthly presentations. These buildings are in the mainstream of American architecture (by which I do not mean building). They are healthy looking, appear suitable for the purpose intended; if there is no particular invention shown, this may be due not to the designers' inability, but to the exigencies of program and budget, for we all know how our best schemes end in file or wastebasket.

On the whole, I always prefer something a little more off the beaten path. It might be interesting for Forum to show a group of unbuilt designs by these very men. I'll bet they are more interesting!

PERCIVAL GOODMAN, architect
New York, N.Y.

Forum:
I congratulate Forum for finding the portfolio of fine work by younger men. This sort of thing shows that American architecture is continuing to renew itself with creative young blood and therefore is doing just what I believe it should, rather than the too-familiar retreat into the expressions of the great masters of the last generation.

However, if a drive-in church is the wave of the future then I am sorry. Perhaps if the first drive-in church I had ever considered had been in the redwood forests in California instead of the Florida hammock, I might have liked the idea better. This is, however, no reflection on the straightforward little building.

The Girl Scouts are indeed to be congratulated on their dining hall in Anne Arundel County!

HARRIS ARMSTRONG, architect
Kirkwood, Mo.

continued on p. 72
...and for
LEVITTOWN HIGH SCHOOL
LEVITTOWN, NEW YORK
the program signal, synchronous clock, communication and fire alarm systems required for the smooth operation of this modern school were designed and produced by Auth

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at a new low cost!

standard ducts can be buried in
structural concrete—without fill

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Underwriters' Laboratories Tests
Recent tests made at Underwriters' Laboratories have established fire ratings for R/C Duct Floors with the ducts in the structural slab. One test used reinforced concrete construction with joists 6" deep, plus a 2" top, and a 3/4" vermiculite ceiling. This construction was given a three-hour fire rating, which meets all building code requirements. Another test was run on heavier-type reinforced concrete construction with joists 6" deep, plus a 3" top, and a 1" vermiculite ceiling. This fire test was stopped after six hours. In both test floors, the forms were dropped 2" under the ducts and junction boxes. No special provision was made for the ducts, which were buried in the structural concrete—no fill required.

Before you design your next building, investigate R/C Duct Floors. They can be built with standard forms and ducts, and require no special engineering. And, compare the cost of R/C Duct Floors with cellular-type construction!
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ARCHITECTURAL FORUM • DECEMBER 1954
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No one knows better the value of CERTIFIED CBM BALLASTS than the manufacturers of fluorescent tubes. For the satisfactory performance of their lamps is vitally dependent on the ballasts that operate them. Here's what they say:

CHAMPION says:
"Fluorescent lamps are designed to operate at specific electrical values. The use of auxiliary equipment that has been proven to meet these agreed upon standards will assure the user maximum value for his lighting dollar with a minimum of operational failures. Certified Ballasts are inexpensive insurance."

SYLVANIA says:
"The light and life ratings of fluorescent lamps are based on three hour burning cycles under specified conditions and with ballasts meeting American Standards Association specifications. Ballasts marked with the CBM emblem and certified by Electrical Testing Laboratories, Inc., meet ASA specifications."

GENERAL ELECTRIC says:
"The life and light output ratings of fluorescent lamps are based on their use with ballasts providing proper operating characteristics. Ballasts that do not provide proper electrical values may substantially reduce either lamp life or light output, or both. Ballasts certified as built to the specifications adopted by the Certified Ballast Manufacturers (CBM) do provide values that meet or exceed minimum requirements. This certification assures the lamp user, without individual testing, that lamps will operate at values close to their ratings."

WESTINGHOUSE says:
"Use ballasts that are tested and Certified by Electrical Testing Laboratories or ones that are otherwise known to meet the specifications of the lamp manufacturer. These will give best results with Westinghouse fluorescent lamps."

By using fluorescent fixtures that are equipped with CERTIFIED CBM BALLASTS you are assured long lamp life, full light output and trouble-free operation.

That's why CERTIFIED CBM BALLASTS merit the slogan—Tailored to the Tube.

CERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO
In face of the fact that the economy of the country has expanded for more than 50 years at a remarkably steady rate in excess of 3% per annum, and the further fact that most school districts can borrow at less than 3% you can bet that the majority of voting citizens still feel that bonded debt is sin. The less the bonded debt the less the sin. Morally, the less the bonded debt the less the imposed retrenchment when the next economic "slip" comes and the less the likelihood of public school bankruptcy.

Although bonded debt no longer appears sinful to me, I still see it with some very genuine reservations. The prophets of gloom and doom are not all dumb and they can all be wrong forever. I'd like to see some public school credit left after the next "slip". We'll need it.

Now is the time, in my view, when real and honest "federal aid" is desperately needed. Changes in federal income tax laws to allow public school districts to retain out of federal income taxes (before their trip to Washington) enough to staff, operate and house their own public schools in their own ways (provided of course that their ways were more frugal than Uncle Sam's) would do the trick.

School buildings can be built for 25% less than they are being built now when both school administrators and architects are willing to take off the blindfolds, recognize the seriousness of the dilemma, take the ugly word frugality into their vocabularies and invest it with legitimacy. Needless to say they would not arrive at the same schools. They probably would arrive at better schools, and far more of them than the big merchant housebuilder could ever be expected to produce.

STAYTON NUNN
School coordinating architect
Houston, Tex.

Forum:
All new housing developments should be planned to be integrated into their communities, and zoning or regional planning commissions should work from the beginning with the builders to allocate land for community facilities. Together with the board of assessment, the school boards and other public agencies, they should work out the financial program—perhaps, for a limited time, along the lines suggested by Philip Klutznick in order to get sufficient funds to get construction under way without delay. But I would strongly recommend that the design of the schools and other public buildings are not turned over to the builders, but that architects be selected by the school boards as customarily or by AIA-sponsored competitions. If funds are promptly made available and the architects are selected to work in the early stages of the planning of the development, the plans for the schools, carefully worked out with the school board and parent-teacher associations, could be well

continued on p. 78
easy on the eyes...

- Frequently you have to design fenestration for an "impossibly bright" location. Examples are 1) overlooking a white concrete parking or recreation area, 2) unusually sunny localities or exposures, 3) unusually cold localities where the snow lies on the ground for months at a time to create intense glare.

If you have these problems, the new PC Suntrol Blocks will solve them.

Suntrol Blocks contain a pale green fibrous glass diffusing screen that reduces glare by 35%, compared to standard blocks. This screen also reduces instantaneous solar heat gain by 25%. Suntrol Blocks are available in a light directing pattern for above eye level and in a light diffusing pattern for above or below eye level. The new green screen is also available in Skytrol Blocks for use in top-lighting systems.

Suntrol Blocks, available only from Pittsburgh Corning, don't cost any more than standard glass blocks. So if you have an unusual glare problem, bone up on what Suntrol Blocks can do to help.

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**DARACONE** is outstanding!

Thousands of buildings have proved the efficiency of silicone water repellents. But experience has also shown that it must be the *right* silicone. There must be enough of it. It must be carried into the masonry to the right depth.

That's why there is a big difference in the efficiency of silicone water repellents. That's why so many architects and contractors, *after making their own tests*, specify DARACONE water repellent to insure lasting protection against leakage, efflorescence, weathering, staining and spalling.

Send today for this brochure that includes both the information you need to make your own tests of the efficiency of silicone water repellents ... and suggested specifications that insure long-lasting protection.

DARACONE is used on buildings of Tufts College, Arthur D. Little, Inc., Monticello, — many other important buildings.

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**LETTERS** continued from p. 76

under way when the housing construction starts. Perhaps the actual construction could well be undertaken by the builder with its consequent savings in cost, but the specifications and supervision should be left under the independent architects' control.

Pressing as is the need for classrooms, the question remains: "What are we getting for the square foot?" I fear that the developer will end up using prefabs and other means to cheapen the costs, with no better results than producing "disposable teaching cartons."  

**SAMUEL E. HOMSET, architect**

Wilmington, Del.

Forum:

I would not like to see the public school system influenced by private enterprise. I still think it should be handled in the democratic way by a town meeting or by public consent.

We should push for more advanced planning in the community. Let the community keep up with the housing projects; also, keep the housing projects under the control of the community rather than forcing the community to come up and meet the housing project demands.

I think it is reasonable for the community to put an excise tax or a special tax on every house of a housing project to take care of the school that must go along with that project. This should apply to all houses in the community, however, and not just to a housing project. It would be similar to an auto excise tax on a new automobile. This would be a very economical and just way to take care of the capital investment needed for schools.

**ALONZO J. HARRIMAN, architect**

Auburn, Me.

Forum:

We can build adequate elementary school facilities for about $20,000 a classroom. If this were measured in terms of dollars and cents to the average new home owner, it would probably result in $700 per dwelling unit. I believe that it would be easier to finance this $700 by means of a low interest rate bonding program rather than to add it to the cost of the house with its accompanying high interest rates and carrying charges.

The cost of financing secondary school facilities in most cases must be spread over a broader base than just a mere residential area. There should be either taxable industrial plants which would contribute to this at a local level, or there should be a redistribution of taxable wealth from industrial areas at a county level, a state-wide or federal level. I feel that it is better to have secondary schools as well as elementary schools planned and developed and paid for in part by the people who use them.

I do not believe that there is any foundation to the implication that there is a great saving in the construction of school facilities... continued on p. 82
GERHOLZ COMMUNITY HOMES uses VISQUEEN® in 800 unit project polyethylene film

Perimeter insulation is individually wrapped in VISQUEEN film.

16 foot wide VISQUEEN drops into place with minimum of labor.

Concrete slab floors protected forever from moisture penetration by VISQUEEN film barrier

VISQUEEN film, job tested on hundreds of homes, is the moisture barrier under the slabs floors in Robert P. Gerholz' prize-winning community development in Flint, Michigan.

"I used VISQUEEN film in my Westgate Park development for two reasons," says Mr. Gerholz, past president of the NAHB. "First it is the most enduring vapor and moisture barrier I can buy, and second, it costs less in place under the slab than any comparable material."

IMPORTANT: VISQUEEN film is all polyethylene but not all polyethylene is VISQUEEN. Only VISQUEEN, produced by process of U.S. Patents No. 2461975 and 2632206, has the benefit of research and resources of The VISKING Corporation.

VISQUEEN® film ... a product of THE VISKING CORPORATION

World's largest producers of polyethylene sheeting and tubing

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Extra-wide (up to 16 ft.), extra-light (1000 sq. ft. weighs less than 20 lbs.), VISQUEEN greatly reduces labor costs for installing the moisture-proof membrane. Often the savings are as much as or more than the cost of the film.

Now builders everywhere can have this superior moisture barrier under slabs, in crawl-spaces, on stud walls and ceilings, for flashing and termite shield.

Mail the coupon for detailed information and name of distributor serving your area.

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Plastics Division, Terre Haute, Indiana

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☐ Who is the distributor in my area?

Name ____________________________
Company ________________________
Address __________________________
City __________________ Zone _______ State ______
Another case of COPPER where it counts!

DETAIL AT LEFT shows gutter expansion joint. Gutter detail is below. The 32 oz. gutter was installed in accordance with techniques recommended in Reverso's booklet, "COPPER AND COMMON SENSE." Do you have a copy? The seams were riveted to transfer the stress and soldered for watertightness. NOTE: seams that join ends of sheets together must possess strength at least equal to that of the sheets themselves. In gutter linings of heavy copper (24 oz. or over) having greater strength than a good soldered seam, the sheets should be riveted together to develop proper joint efficiency.
This building was selected from our case history files primarily because it combines fine gutter design by the architect with splendid execution of the specifications by the sheet metal contractor.

Check the detail at left and you'll see what we mean. Also note photograph #1 showing prefabricated gutter sections as they were delivered from the contractor's shop. Copper lends itself so well to prefabrication, with resultant savings in time and labor. Also note photograph #4 showing the placement of the gutter expansion joints approximately 25' apart, a most important factor in trouble-free installations. (Caption #4).

In fact, proper installation is as important as good design. The two go hand in hand. For modern, trouble-free installation techniques consult Revere's "Copper and Common Sense", a booklet that has become the "bible" of the sheet metal industry. It is based on more than a century and a half of experience with sheet copper. If you do not have a copy send for it today. And if you have any technical problems confronting you on current jobs, let us know and we'll put you in touch with Revere's Technical Advisory Service. No obligations.

We are not just mouthing an advertising phrase when we say, "Keep out of trouble with copper." For this "ageless" metal has proved its enduring qualities for centuries. It can't rust or rot. Its design possibilities are unlimited, thus giving the architect a free rein. Sheet metal men prefer to work with it as it solders beautifully, requires no special tools, is readily worked into any desired shape and is ideal for shop prefabrication. In fact, there is not another metal or alloy that has all of the outstanding construction characteristics of copper. Write us today about the money-saving advantages of Revere Keystone Thru-Wall Flashing®. And, if you have technical problems, we will put you in touch with Revere's Technical Advisory Service.

We are not just mouthing an advertising phrase when we say, "Keep out of trouble with copper." For this "ageless" metal has proved its enduring qualities for centuries. It can't rust or rot. Its design possibilities are unlimited, thus giving the architect a free rein. Sheet metal men prefer to work with it as it solders beautifully, requires no special tools, is readily worked into any desired shape and is ideal for shop prefabrication. In fact, there is not another metal or alloy that has all of the outstanding construction characteristics of copper. Write us today about the money-saving advantages of Revere Keystone Thru-Wall Flashing®.

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1. PREFABRICATED SECTIONS of gutter prior to installation. Much time is saved on the job when sections are prefabricated in the shop. This also prevents delays due to bad weather.

2. SOFFITS being installed. The copper pans underneath gutters are attached to wood outriggers with Fiberglas insulation between the outriggers.

3. FASCIA AND CORNICE being attached. Gutters are of 32 oz. Revere Copper with the outside cornice of 20 oz. Revere Lead Coated Copper; all cold rolled.

4. SHEET METAL MEN prefer copper to any other metal with which to work. It solders to perfection. No special tools are required and it is readily worked into any desired shape. Note expansion joints which are spaced approximately 25' apart. Spacing of expansion joints in relation to the gauge of metal used is of the utmost importance to a trouble-free installation (See "COPPER AND COMMON SENSE").

---

45,000 LBS. OF REVERE SHEET COPPER were used on this job. Entire building was flashed with 16 oz. Revere Sheet Copper under the sills. Revere Copper was also used for through-wall flashing, cop and base flashing.

---

REVERE
COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.


SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS
The MARLOU "Halo" louvre ceiling fixture is recognized by the government, prominent architects and engineers, when stem mounted, as producing the finest overall illumination. It corresponds to Federal #362 to #365 series, and due to its unique engineering design up light almost equals down light. Result—the very finest, diffused even light from one of America's best designed fixtures.

Complete installation of the MARLOU "Halo" Fixtures are being made in the Justice Department, Post Offices and many other Government departments.

Specify the "Halo" Fixture for your Job.

"Above All Else...MARLOU is Quality Lighting"

The state of Georgia with sales tax money is building schools for local systems on a lease-purchase basis. Under this program, the State School Building Authority allocates money to a county based on $7.50 per sq. ft. and an arbitrary number of square feet per student in the county.

The counties' needs are established by surveying committees of the State Department of Education. Such a committee establishes the number of schools to be operated in the county and the size and general location of each school. Based on the size, the specific program for each school is established by a Division of School Building Services of the State Department of Education. Then buildings designed from these programs are financed by the School Building Authority on land deeded to it by the local school system. The total capital investment is owned by the Authority for 20 years on a lease-purchase arrangement, the schools reverting to local ownership at the end of the term. The state in turn pays to each system sufficient money to pay rent.

School costs in Georgia are being held to less per square foot than anywhere else we know of. They run around $8 per ft. Because of the way state aid is allotted, this is an absolute necessity. One of the factors that makes it possible is that all of the school funds for any one county are bid on the same date and contractors are asked to bid on an individual school basis and also on a combined or total project basis. Very few schools are being built on an individual basis because of lower costs on the combined bids. Such combined bids have been taken on as many as 14 schools in one county. The average project is for six to eight schools.

RICHARD L. AUCK AND F. J. BULL
Auck Associates, architects
Atlanta, Ga.

WHERE CREDIT IS DUE

In its presentation of the Base Line Junior High School in Boulder, Colo. (AF, Oct. '54), Forum failed to credit Phillip-Carter-Osborn, Inc., as structural engineers.—ED.
NOT JUST **THIN** ... NOT JUST **THINNER** ...
BUT THE WORLD'S **THINNEST**
SHIELDED LUMINAIRE

**NEW**

**Thin-Lite**

**THR 440**
49" long, 26 3/4" wide, 2 3/8" thin.
Four 48" Rapid Start lamps.

**THS 496**
97" long, 26 3/4" wide, 2 3/8" thin.
Four 96" 430 MA. lamps.

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49" long, 12 1/4" wide, 2 3/8" thin.
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97" long, 12 1/4" wide, 2 3/8" thin.
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The fundamental concept behind the Thin-Lite series is the creation of a semi-recessed effect by means of an extremely shallow surface mounted fixture (an unbelievable 2 3/8" thin). Imagine—the depth below ceiling is essentially the same as troffers fitted with dished shields.

Thin-Lite luminaires can be mounted end to end or side by side to form any desired lighting pattern. From every viewpoint—appearance, economy, ease of installation and maintenance—Thin-Lite by LPI is a born leader.

Write for Complete Details

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NOW!  PERFECT WEATHER

...at your finger tips!

when you plan with...

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HEATING AND VENTILATING UNITS

Now...save yourself laborious planning, yet give your clients "perfect weather" with the system that you yourself custom-fit to your architectural plan. A Herman Nelson Heating and Ventilating Unit is completely sectional—designed with a wide range of components and accessories for assembling the units you need, for any location. Choose from seven different radiators—three distinct filter types—a wide range of motor sizes and fan combinations; further choices, too, in unit bases, wall intakes, damper sections, humidity control.

Proof again of Herman Nelson leadership in heating and ventilating! Select from this vast array of Herman Nelson equipment for specification in all types of commercial and institutional buildings. Our engineering staff will gladly assist you anytime in the application of this equipment to your needs. Write for Bulletin 775!

American Air Filter COMPANY, INC.
427 Central Avenue
Louisville 8, Kentucky
Alcoa Architectural Colors used for first time in new Aluminum Office Building

Alcoa offers architectural details of new Cincinnati office building

Complete details of the aluminum curtain wall used in the new Cincinnati office building are being distributed by Alcoa. This latest application of the Alcoa Aluminum wall system will be of interest to all architects and designers, since it introduces the practical combination of texture and color in curtain wall construction.

For complete information and your copy of Alcoa's architectural details on this new building, call your local Alcoa sales office. You'll find the number listed under "Aluminum" in your classified directory. ALUMINUM COMPANY OF AMERICA, 1887-M Alcoa Building, Pittsburgh 19, Pennsylvania.

Aluminum Company of America

WARWICK REALTY COMPANY, CINCINNATI, OHIO, owner.
P. F. SCHELL, AIA—MARTIN KNABE, ASCE, PITTSBURGH, PA., architect-engineer.
FRANK MESSER & SONS, INC., CINCINNATI, OHIO, contractor.
GENERAL BRONZE CORPORATION, GARDEN CITY, L. I., NEW YORK, aluminum subcontractor.
NEWMAN BROTHERS, INC., CINCINNATI, OHIO, aluminum subcontractor.
Aluminum curtain walls in color give striking individuality to Alcoa’s Cincinnati office building

Alcoa Architectural Colors in aluminum curtain wall construction are used for the first time in the new Alcoa sales office building in Cincinnati, Ohio.

The wall facing panels on the front are composed of pre-assembled Alcoa® Aluminum Extrusions prefinished in gold. Aluminum wall facing panels on the rear of the building have a sparkling blue finish. Mullions, windows and other trim are natural aluminum color.

By combining the texture of the extruded aluminum panels with enduring, nonfading Alcoa Architectural Colors, the architect has endowed this new building with a striking individuality.

The use of color in exterior aluminum walls gives you an important new design element to add to your "kit of architectural tools." For Alcoa Architectural Colors mean you can now design in color when you design in aluminum.

But there's a lot more than color to the story of this new building in Cincinnati. There's a story, too, of savings in fabrication, construction, maintenance and usable floor space brought about by the use of Alcoa Aluminum for curtain wall systems.

Erection of the wall components is simple, rapid and relatively low in cost. Extruded aluminum mullions, windows and facing panels are shop assembled into one unit and anchored into place between columns. Rigid glass fiber insulation is installed behind the panels from the inside. The interior finish is plaster applied to metal lath on furring channels.

Total thickness of the wall is but 6 inches, with the flush interior surface unbroken by columns. Wall weight is less than 13 pounds per square foot and heat transmission value is 118 Btu/hr/ft²°F, both extremely low.

To achieve the effect of continuous windows, as well as take advantage of the lightweight wall, 4 x 6-inch columns are spaced 4 feet on centers. This not only eliminates the need for piers, but also permits interior partitions to be installed at increments of 4 feet.

Window jambs are retractable to allow the vertically pivoted window sash to reverse for easy inside cleaning. Copings, window sills, interior trim and many other practical and economical uses of Alcoa Aluminum have been incorporated into this new structure.

For complete information on Alcoa Architectural Colors or other architectural applications of Alcoa Aluminum, call your local Alcoa sales office. You'll find the number listed under "Aluminum" in your classified directory.

ALUMINUM COMPANY OF AMERICA, 1887-M Alcoa Building, Pittsburgh 19, Penna.

Advantages of Alcoa Aluminum for Curtain Wall Systems...

- Design and Fabrication Advantages
  Design versatility offers an almost unlimited variety of architectural effects through cast, extruded or sheet shapes with wide range of colored and textural finishes.

  This wall construction can increase rental income by providing more usable square feet of floor area.

- Construction Advantages
  2. Larger and fewer wall facing units.

- Maintenance Advantages
  Permanent material eliminates painting need.

- Cleaning of wall areas is assisted by rainfall.
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Your imagination has lots of room to work when you use Corning engineered lightingware.

You determine the lighting job you want to do—and Corning can provide lighting glassware exactly engineered for the task. And you get utility plus attractive design.

Just for an idea, take the panel the fellow in the picture is holding. It's Corning Pattern 70 Low-Brightness Lens Panel. You use this pattern to control fluorescent lighting. A pattern of six-sided pyramidal prisms directs a maximum amount of light into the useful zone and reduces fixture brightness at all glare zone angles. You can get Pattern No. 70 in single panels for troffers or for larger luminous elements.

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For every room division or door closure problem, there's a simple, economical, space-saving solution. That's "Modernfold," the original folding door.

Specifying "Modernfold" doors keeps clients happy. For these steel-framed, vinyl-covered doors can't be equaled anywhere for quality of design... for quality and strength of materials.

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For Fire-resistant Roofs that are Light in Weight

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Chatney High School, Youngstown, Ohio.
Scheckel and Shaffer, architects.
Charles Shuttrump and Sons Co., contractors.

Other Truscon products in this new school include Clerespan® joists; commercial projected, architectural projected, and intermediate combination steel windows; screens; series 31 industrial doors and frames; Ribplex® metal lath; lath clips; welded wire fabric and reinforcing bars.

This Truscon "package" provides a roof construction that is light in weight, fire-resistant, long-lasting, and economical. It is quickly erected and can be insulated to any required degree.

Truscon "O-T" Steel Joists for floor and roof supports are light, strong, and fire-resistant. Being light in weight, they lessen the time and labor required for erection, save material in supporting framework and foundations.

The Ferrobord Steeldeck can be clipped or welded directly to the joists and comes in lengths that span three or more purlins. It is easy to handle, easy to place. It roofs large areas quickly... flat, pitched, or curved. Erection is done from above. No scaffolding needed. Exclusive design allows for full-length interlocking and greater strength.

When laid, Ferrobord's top surface presents a smooth, unbroken face that is ideal for the application of insulation and built-up waterproofing.

The key to successful installation of this type of roof construction is the use of both companion Truscon products. They'll be delivered to your job site on schedule as promised. Get Truscon's figures for jobs you now have on the boards. Ask your Truscon representative, or write:

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Here at low cost is filtered, natural daylight from overhead

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Skytrol Blocks are a flexible building unit, giving the architect freedom to design practical toplighting panels of virtually any size. The panels can be flat or curved and are not limited by special orientation requirements. The blocks are bonded into a weathertight, reinforced concrete panel—the same method that has been used with success for many years in northern Europe.

But one of the best things about Skytrol panels is their cost. Actual installed costs are running between $4.50 and $6.50 per square foot of panel area. If you’re considering toplighting, you’ll do well to investigate the Skytrol method. Compared with methods giving comparable results, you’ll find Skytrol out-performs, yet costs less.

New. Skytrol Blocks are now available with the new Suntrol pale green diffusing screen to reduce heat and glare in difficult locations.

Consult our section under “Skylights” in Sweet’s, or write for more information. Pittsburgh Corning Corporation, Dept. E-124, One Gateway Center, Pittsburgh 22, Pa.
YOU CAN BUILD FOR THE AGES
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What's the building on your mind? Maybe a big multi-story structure—or an industrial building, like our own Research Laboratory (see above)? Maybe a plant office building—or a bank, store, school, power station, warehouse, hospital, hotel? Or perhaps it's an existing structure that needs a facelift—modernizing the exterior, as well as the interior.

In any case, you're sure to consider curtain wall construction, because it's the newest, most modern method. Packed with advantages over masonry, too: such as fast, all-weather installation; more space per floor; more floors on a given foundation, etc. And you'll be equally sure to realize that stainless steel-surfaced panels (again, see above) promise the best long-term protection for the building investment. No other surfacing material is at once as hard, tough, strong, and lastingly beautiful, as impervious to wear and as resistant to heat and corrosive influences as stainless steel.

That's just why Allegheny Metal generally figures to last longer and cost less in the long run—wherever you use it. Let us help you to realize its benefits. Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.

Make it BETTER—and LONGER LASTING—with Allegheny Metal

Warehouse stocks carried by all Ryerson steel plants
Recently we asked architects from coast to coast what they thought of the new Gold Bond Metal Base and Clip Assembly. 89% of the reports said it was the “simplest joining base and clip assembly ever seen!”

This new Metal Base snaps into place easily, locks at top and bottom and holds rigidly. It saves time and money in construction. Use it with Gold Bond 2" Solid Metal Lath, Plaster and Channel Stud Partitions...Studless Metal Lath Partitions...Hollow Walls and Furred Exterior Masonry Walls.

No special T's or prefabricated corner or angle units are needed because the base can be bent and cut on the job. Completed sections of this Metal Base form an attractive base trim for the finished wall or partition, and are designed to compensate for normal floor irregularities.

For complete information on the new Gold Bond Metal Base and Clip Assembly, write to National Gypsum Company, Architects Service Department for Bulletin 2026.

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Build better with Gold Bond

OTHER TYPICAL COMMENTS ABOUT THE NEW GOLD BOND METAL BASE

"...best one we've seen."
"Improvements would be difficult."
"Intend to use it in my specifications as soon as possible."
"Excellent use of simplicity and strength."
"...the kind of base we've been looking for."

METAL LATH AND PLASTER
Does Thermopane really cost more?

You can't get a true answer by comparing only the cost of Thermopane insulating glass with that of single glass. You need to measure performance, too. First, the savings on heating and air conditioning. Measure both in terms of equipment required and operating costs. Then assess the important intangibles...the extra comfort, the reduced chances of condensation, the good will of employees and other building occupants.

In many buildings, savings alone will make Thermopane insulating glass the logical choice. In others, the balance will prove so close that the "human" benefits alone will tip the scales in favor of this double glazing. That's why so many well-designed, successful buildings are being glazed throughout with Thermopane. Figure your next job both ways—with single glass and with Thermopane standard sizes. The slight additional cost is an investment that pays off in lifetime operating economy and occupant comfort.

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a Great Name in GLASS

Houston's building code once required a 13-inch thick exterior wall. Not any more. The selection of a ⅝" Georgia Etowah Pink Marble veneer for Houston's new Anderson Hospital permitted a width reduction of 4 inches that still met the four hour fire rating. Houston's code was changed. Thirty-four hundred square feet of usable floor space were gained.

This is only the beginning. Georgia Marble's dense, crystalline structure (absorption: 5/100 of 1% by weight) will eliminate practically all maintenance problems. Its sparkling beauty, unmatched by any other stone, will endure the extremes of climate for many generations.

More than thirty varieties of marble and limestone are available from the Georgia Marble Company (see your 1955 Sweets file). Structural sales representatives, located throughout the country, are equipped with samples and full information on the use of these products for modern or conventional construction. You are invited to make full use of their services without obligation.
Newest member of a famous family...the

**RUSCO**

**AWNING-TYPE WINDOW**

This newest RUSCO PRIME WINDOW—the Awning-Type—offers Architects and Builders another important window treatment with all the famous RUSCO precision-built qualities and installation economy features.

The Awning-Type Window permits complete control of ventilation from the inside of the room. The individual window vents can be partially opened to "break up" air currents—provide draft-free, indirect top-to-bottom air circulation—or adjusted to the full-open position for 100% ventilation! Awning protection from rain is automatically provided with the vents in a partially open position.

Two or more of any of the standard types of RUSCO Awning Windows may be combined, horizontally or vertically where large glass areas are desired.

For complete technical information and literature, write: Dept 7-AF-124

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CLEVELAND 1, OHIO • In Canada: Toronto 13, Ontario
Another Outstanding Installation of Joanna Vinylized WALL FABRIC

10,854 sq. ft.

for the new offices of the National Association of Manufacturers

In this day of fierce competition, a product must prove itself in every way to be accepted in offices like those of the National Association of Manufacturers. Here, Joanna Vinylized Wall Fabric is an integral part of the beautiful remodeling designed by Michael Saphier Associates.

Joanna's acceptance has been earned by outstanding performance. Time after time, on job after job, Joanna Vinylized Wall Fabric has demonstrated its durability, economy and beauty.

Joanna’s tough vinyl surface is resistant to the hardest usage—it’s built to take the bumps and scrapes that are part of the daily life of any office wall. It’s economical, too—lasts for years, requiring a minimum of maintenance. Washing with soap and water makes it new again. Think of the decorating costs that saves.

And as for beauty—Joanna Vinylized Wall Fabric is an integral part of any well-planned design. A variety of colors and textures provides outstanding decor for any wall, anywhere.

Any job that’s important to you is well worth Joanna Vinylized Wall Fabric. Write for sample.

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You could almost enjoy being sick in this

EASY-TO-INSTALL OAK PLANKWELD adds a cheery background to this unusually pleasant waiting room. Plankweld can be installed on any wall with special metal clips which hide nails.

Weldwood paneling helps new Lankenau Hospital, Overbrook Pa., escape from austere, institutional design. Cheerful, real wood lifetime interiors boost patient, visitor and staff morale.

Call it built-in get well psychology! Call it a therapeutic assist on the part of the architect, builder and supplier alike! In any event, the Weldwood paneled walls in Lankenau Hospital represent a refreshing new approach to hospital interior design.

Gone is the plain institutional atmosphere so often associated with many hospitals. Lankenau, which proudly lays claim to being the finest, most modern hospital in the world, more closely resembles a resort hotel, where the patient's recovery is speeded by pleasant surroundings as well as by medical skills.

Easy-to-install pre-finished Weldwood Plankweld® (16½" wide), in a variety of fine wood faces, was used to soften walls in visitors' lounges, patients' waiting rooms and other areas. Plankweld keeps down cost because it is completely pre-finished, easy to maintain and is guaranteed.

HALF-INCH RED BIRCH WELDWOOD was used to achieve this unique method of paneling in conference room. ¾" recessed joints are backed by strips of white birch plywood. Stay-Strate Door is birch. Sliding door acts as room divider when necessary.

PHILIPPINE MAHOGANY PLANKWELD WALLS bring restful charm to this staff study room. Plankweld walls like this can be installed in a matter of hours. Desks are Weldwood birch; tops are white Micarta.

AFRICAN MAHOGANY WELDWOOD was used to panel auditorium walls. Notice the dramatic staggered grain effect made possible by this tier arrangement. Each tier is approximately 3′ high.
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DECEMBER 1954

THE MAGAZINE OF BUILDING

ARCHITECTURAL FORUM

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MODERN ARCHITECTURE
BREAKS THROUGH THE GLASS BARRIER

The new bank at 43rd St. and Fifth Ave. in New York City already has been acclaimed widely on the basis of a painstakingly perfect scale model (AF. Sept. '53) but the difference in architectural content between model and final reality is a revelation. The model showed a daringly rational solution, a design distilled down to a diagram of essential structure, nothing more. Glass from sidewalk to roof, it was a brilliant and paradoxical exposition of the essential wares of a bank: safety and convenience.

What is added now that the building has been finished? A surprising element for modern architecture—a quality of gentle, serene grace that belies the brisk rigidity of the rational concept.

When you look at most glass-walled buildings in daylight you cannot see inside; instead you see your own ghost reflected darkly in the glass. But, thanks to its bright interior, this is not true in the new bank, and because it is not true, this may be the first big building truly to fulfill architects' immaculate drafting board idea of glass as an invisible material.

The building's lucid grace, which contradicts the steely quality of most metal-and-glass architecture, can be traced to one physical fact behind the sheer glass walls—the glowing ceilings. These accomplish two things. From outdoors they reduce to nothingness the apparent weight of the floor slabs hung from interior columns; instead of resting heavily on their supports the slabs seem almost to float, anchored by the columns. But even more important, the tremendous wealth of illumination which these vast plaques pour down from overhead does nullify the shine and reflectivity of the glass wall. It is an old merchandising trick—if you have a store window and you want the contents seen from outside, you have to put more feet-candles inside the glass than there are foot-candles of natural light outside the glass, or it mirrors. But doing this to a five-story building is new and surprising, a true landmark in delineation of space. It makes a glass wall into something it has not been before, an invisible control instead of a mysterious barrier. At last the deeply sculptural feeling of a steel frame under construction has been retained in the completed building.

Photos (including color) © Ezra Stoller

INTERIOR STRUCTURAL COLUMNS hold up the floor slabs, from which the exterior wall hangs in tension, a true curtain, supporting nothing, not even itself. Air conditioning ducts and services all run up in the south wall (left, above) then run north with the beams to distribute or receive their cargo. (In penthouse, ducts go up in far wall of building, then come across roof in central high section and dump down.)

FIVE STORY STRUCTURE nestles in midtown New York, shaded and protected from sky glare by taller buildings around it. Building to left owns air rights above fourth floor over to edge of penthouse, which helped form the decision not to use this site for a standard skyscraper with a bank in its base.
From Across Fifth Ave., the facade is articulated gracefully, colored gently. It has the biggest panes of glass ever put into a building, 22' x 9'-8". Mullions are aluminum. (detail, p. 107).

Inside, midway back in the great second floor banking room (7,000 sq. ft.) contrasts begin to be heightened, ending in the bland force of Harry Bertoia's great sculptural screen of golden steel.
There is complete consistency between the outdoor and indoor feeling of this design, and equal care in the scaling and articulation of big spaces as well as small components. The big room and the unity in understated decorative treatment between design of interiors and exteriors show much the same studied touch. S.O.M. and decorator Eleanor LeMaire worked in team here.

The mezzanine banking room is linked visually with the floor below by the view down, and physically by the moving stairway. All upper floors are cantilevered to Fifth Ave., from two columns, to 43rd St. from four columns. The cantilever to 43rd St. is 20' carried on steel members; toward Fifth Ave., it is 10' on reinforced concrete beams.
LACK OF REFLECTIVITY in bank building is demonstrated by comparison with Lever House by same architects, both photographed in sunlight (which invades bank for only a few minutes of the day).

THIRD FLOOR LOBBY is for people awaiting appointments in the private loan offices—quiet, cork-lined spaces down the hall. Most of rest of floor is open.

SECOND FLOOR BANKING SPACE. Banking counter also serves as air return. Wheeled tellers carts can be squeezed together or spaced out as traffic demands.

FIRST FLOOR BANKING SPACE. This area, buried downstairs in most banks, is for quick check cashing, payrolls, etc., the routine business which makes banks convenient to their depositors.
THE CEILING actually seems to be sealed down, rather than up, by the intensity of its light glow. It is made of thin corrugated plastic supported on aluminum T's, below a field of cold cathode tubes spaced 17" o.c. (In the first floor elevator lobby, which technically is a means of egress from the fire tower, glass is used instead of the plastic, and does not diffuse as well as the plastic.) Air conditioning outlets for the high velocity system complete the ceiling. In some areas the ceiling has not solved the acoustical problem—not all sound frequencies get through the plastic to be absorbed above, some frequencies bounce down. But the glaring surface has another dividend: its platter of light extends right up to the curtain edge and de-emphasizes glare through the colorless glass walls on bright days by diminishing contrast. The silhouette of ceiling edge against sky is not harsh.

THIRD FLOOR GENERAL OFFICE
**TOP FLOOR** of the new branch is a suite of offices, and boardroom. Climaxing this is the president's office at the end of the long interior corridor in photo (right). The magnificent room (below) has a desk at one end for the president, at the other for a secretary. The entrance is at the center—visitors have already been screened and announced by the receptionist at the elevator. The paneled bulk in the middle of this space encloses the president's private bathroom and dressing room. Beyond the glass wall is a graved roof terrace spotted with potted trees. At the bottom of this page, beside the penthouse plan, is the deft sill detail of the exterior wall.
Lore. As a commission, the Manufacturers Trust Co.'s bank is already surrounded by lore. One aspect is illustrated in the photo, right: across the street is the classic building from which the branch moved.

When Skidmore, Owings & Merrill first got the job, their design room at 575 Madison Ave. (a Uris Brothers Building with an excellent view of Lever House) was alerted and an esquisse competition held; first prize, $50. Charles E. Hughes III took the honors with a design scheme much like the one that has since been built.

Then Gordon Bunshaft, the New York design chief, went to work on it with another partner, William S. Brown, coordinating, the client bought it, and Al Labie was tapped to be job captain on the working drawings. "This one has to be perfect" he was told, "and, oh yes, you've got ten weeks." Labie demanded pick of the crews, got it, and with Roy Allen, Bunshaft's right hand man, egging them on, the crew did a notable job (see representative detail p. 107).

The contractor and his workmen got in on the spirit of high quality too. At one point a carpenter picked up some door hardware to install, looked at it, and said, "This must be wrong. The architects could not want this in this job." He hunted up Doug Logan and Bert Warrington, SOM superintendents and asked them. They looked at the drawings; the hardware checked, but the carpenter insisted no, this was not up to the rest of the design. Logan called Bunshaft and he decided the carpenter was right. The change was made.

Bunshaft ascribes a lot of the credit to the client, an old architectural curtsy, of course, but believable in this case because of the novelty of the bank. "Hap Flanigan (the bank president) was terrific," he says. "You know, there are two kinds of good clients, the ones who help you and the ones who just leave you alone. He was both."
CHARTRES’ TWO TOWERS, separated by centuries, led Henry Adams* to exclaim:

“The quiet, restrained strength of the Romanesque married to the graceful curves and vaulting imagination of the Gothic makes a union nearer the ideal than is often allowed in marriage. . . . The French architects felt no discord, and there was none. Even the pure Gothic was put side by side with the pure Roman.”


ST. JOHN THE DIVINE: STARTED IN GOTHIC SHOULD IT BE FINISHED IN MODERN?

Acting on repeated suggestions that St. John the Divine was having difficulty getting enough funds for its completion in costly Gothic, FORUM asked JAMES M. FITCH, Associate Professor of Architecture at Columbia, to open a broad inquiry on the further question whether the cathedral might not better be finished in modern style. Other thoughtful contributions will follow later.—ED.

On St. John’s Day, 1892, the cornerstone was laid in New York for the world’s largest cathedral and second largest church. Today, 62 years later, this church, the Cathedral of St. John the Divine, is perhaps three fifths complete. This is not a particularly good record: Chartres (excluding the spires) took but 64 years, Notre Dame 72 and even St. Peter’s required only 120 between Bramante and Maderna. Of course, by American standards, 62 years is a mighty long time. And completion is still far away—conservative estimates are that it might take as much as 14 years (and up to $20 million) to finish the church according to designs of the architects, Cram & Ferguson.

The task of completing a half-finished cathedral must have always posed thorny problems for the people involved. Even with the slow movement of Gothic times, and certainly with the accelerated pace of the Renaissance, there was always that change in belief and attitude, that shift in intellectual perspectives, which underlies all artistic development. Thus, after a lapse in the building of a cathedral, there would be the problem of whether to continue in the stylistic level at which it had ceased or to resume work in a thoroughly contemporaneous (i.e., modern) idiom. Controversy there probably was; and yet we know that always, after each lapse, the builders carried on in their own modern style, expressing their own points of view. The remarkable thing is that generally speaking, they managed to maintain an organic continuity between the new work and the old (photo, left).

Can we do as much with the Cathedral of St. John the Divine, today? It is possible, even necessary, to raise the question. For, as we shall shortly see, a whole series of developments make it unlikely that the cathedral will be completed in the manner envisaged by the 40-year-old design of the architects. But, if we are at all serious, we must admit the almost agonizing implications of the question. For it raises the question of our connections, not only with a remote Gothic tradition but with our own immediate past. It exposes a live nerve of present controversy: how do contemporary American architects propose to live with their own tradition?

In the design of secular buildings the architect can ignore not only the “how”; he can challenge even the “why.” But in church
La Farge's prize-winning design is Gothic in profile but Romanesque in detail, deliberately avoiding pointed arch and flying buttress. The interiors, with their glowing mosaics, would seem today much closer in spirit to Byzantium than to Westminster or Manhattan.

Cram & Ferguson's plans for the completion of St. John's are correct and cool, the apotheosis of Ralph Adams Cram's scholarly historicism. A High Gothic fabric completely conceals La Farge's buoyant eclecticism.

**Time for a change?**

Hence the need is real and pressing to complete at least the central section of St. John's—and to do it quickly, economically and appropriately. Cram & Ferguson's design (right, below) will be neither quick nor economical. The load-bearing masonry columns and genuine groined vaulting of the tower and crossing would, alone, cost $5 million. They would require five years to build, even if the money were immediately available. And, since the money is not available, a long fund-raising drive would have to precede actual construction. From a practical point of view, therefore, a less costly, less time-consuming alternative would seem desirable.

Even beyond such considerations as these, there is the further point that many people, including the cathedral authorities, are seriously questioning the appropriateness of proceeding with drawings which are decades old and based, in turn, on concepts which are anachronistic. The question arises: ought the cathedral be completed in a contemporary manner? Obviously, there is precedent aplenty for such a change. Indeed, you would be hard put to it to find a cathedral completed in one regime, by one master, in a simon-pure and unchanging style. And this is already the case with St. John's. It has had two sets of architects up to date and these have changed their designs repeatedly. As a matter of fact, even in his original prize-winning design Grant...
La Farge sought to recreate exactly this effect. "In the works of the medieval past it is not the few finished examples, in which the last word has been spoken to the point of dryness, that most excite our imagination. It is rather those in which successive styles appear together."*

The competition for the design of St. John the Divine occurred in 1891 at the very pinnacle of eclecticism. It produced a fascinating set of proposals. Some of them, like Carrère and Hastings' are platitudinous; some of them, like Halsey Wood's (drawing above) make us flinch at their awfulness; while others, like Buffington's (above, right) have a kind of rude yet admirable vigor. The prize-winning design, by the firm of Heins & La Farge, was a bold and florid piece of eclecticism—more Byzantine than Romanesque within, more Gothic than Romanesque without (facing page). The plan was very compact and un-Gothic, with wide and stubby nave and transepts. Central feature of the whole composition was to have been a huge dome over the crossing, topped by a great pyramidal tower.

This central feature was to prove the nemesis of both Grant La Farge and Ralph Adams Cram after him; it is still unsolved to this day. La Farge's proposal was ingenious. He would enclose the crossing with four gigantic arch-ribs of granite, these arches to be braced in their turn by eight buttresses (p. 116). This system would support both the dome over the crossing and the tower above it; but, being only structural, it would be completely concealed in the fabric. Although he completed the arches and buttresses, La Farge was unable to go further because, in the process, he ran into foundation conditions (quicksands and subterranean springs) which made his ultimate design unfeasible. Work proceeded on choir and apse with its ring of small chapels; but 18 years after the cornerstone, the crossing was still unroofed. It was at this point that Guastavino was called in to roof the crossing with his light, self-centering terra-cotta dome over the arch-ribs. And it was at this point, too, that La Farge was discharged as architect.

For, whatever the merits of his building, it had become the victim of the express-train speed of modern history. In 1907, 15 years after the start, La Farge had found it necessary to publish his longest and most detailed defense of his design.† It is a moving document and reflects, however indirectly, his understanding that the tides of public taste were shifting beneath his feet. His intuition was correct: the very next month, American Architect published the famous "Candidus" letter. This anonymous communication was a thoroughly hostile document, challenging the La Farge design on the basis both of historic precedent and esthetic congruity. In addition to being wretchedly lit and badly heated, Candidus charged that "much of the huge structure is a needless outlay, superfluous in a Gothic cathedral; that a great mistake has been made by changing a possibly good Byzantine design into a bad Gothic one." Candidus admits that "facts have gone too far to rectify them in choir and crossing" but urges "that a reconsideration of the nave should be made before it is too late, to save money and avoid a still more hybrid effect."‡

From one style to another

Whoever Candidus was, he obviously spoke for an influential body of opinion, both ecclesiastical and lay. For shortly thereafter, Ralph Adams Cram was appointed consulting architect and, in 1911, La Farge was removed as architect and the task of completion was given to the firm of Cram & Ferguson. "A harsh divorce," as the Architectural Record tartly observed, which put St. John's in the hands of a " 'consulting architect' whose own works show an entire lack of sympathy with what has thus far been accomplished." § La Farge's inability to master the problem of the crossing may have played some role in his dismissal. But, in retrospect, it seems inevitable that the impeccable scholarship of Dr. Cram would have been selected by the period in preference to La Farge's more vigorous but freer eclecticism.

In any event, the Cram office immediately discarded the unbuilt portions of the design. The nave, the transepts, the west facade, even the roof of the finished choir—all were recast into High Gothic, irreproachably accurate, though rather thin and cold. But the problem of the crossing remained to dog the footsteps of Dr. Cram. He was committed to the 100' square crossing by the sheer presence of La Farge's completed choir and circle of arch-ribs; and he was committed to a central tower by the sheer logic of the composition. Cram's original sketches, submitted in 1913, showed "twin towers with lofty spires located at both north and south transepts, accompanied by a massive but rather low square tower at the crossing. Subsequently, the idea of the transeptal towers was abandoned and the later designs and perspective drawings were of towers located at the crossing. The next two completed designs were of polygonal towers of varying heights, fol-

† Ibid.; pp. 385-401.
‡ American Architect, May 18, 1907 (Vol. XCI, pp. 203-4).
§ Architectural Record, Aug. 1907 (p. 212).
Four great arches and eight buttresses were proposed by La Farge to carry a sti tched dome and soaring pyramidal tower above the crossing. Cram's solution for the crossing used La Farge's arches but not the buttresses; it replaced the dome with punctiliously correct Gothic vaulting.

lowed by a third [1920] whose base was similar to the former two but was topped by a richly paned, lofty spire.”* But years elapsed before the new architects could publish a satisfactory solution. Finally, in 1927, they evolved an ingenious new design which was hailed as an accomplishment that “had never before occurred to Gothic architects from the twelfth century to the present time.”† This was a scheme for inserting four more masonry arch-ribs between the La Farge originals, locked together egg-crate fashion (see above). This scheme reduced the vaulting problem to manageable proportions while keeping the space of the crossing open. It also presumably furnished adequate support for the huge flat-topped tower.

Yet rising building costs and difficult foundation problems (despite its elevated location, the Cathedral subbasements are full of sump pumps) led, finally, to the abandonment of this tower, too. In the forties it was replaced by the fleche of the current design (photo above) which some wag has identified as being the one from the roof of Ste. Chapelle, merely inflated to American proportions.

A challenge for today's architects

Now, history has overtaken the cathedral again. The history of St. John's up to date may seem to us one of mistaken, if sincere, efforts, but it has the great merit of being still unfinished. It thus presents still another generation of American architects with a challenge. It seems to the Forum, as it does to me, that this challenge should be accepted. The cathedral should be finished and finished in a thoroughly contemporary idiom, just as cathedrals have always been. But it is one thing to call for a change and quite another to decide what kind of a change to make. If the cathedral authorities have qualms about our raising this issue, their qualms are easy to understand. American architects have seldom dealt imaginatively or gently with the past—their own or anybody else's. Generally speaking, each time a change of bath water has been indicated, the baby has been thrown out, too. If the cathedral is to be brought to a satisfactory completion, then the architects—whoever they may be—are going to have to display more historical perspective, more sympathy for and at the same time more detachment from the forms and symbols of the past, than they commonly do. They must produce a new work consistent, congruent with the old.

And this consistency, this congruity, cannot be merely literary: it must be real, tangible, visually apparent. For example, the new design must finally solve what has always been the heart of the problem, structurally and esthetically: the crossing. This is more difficult than it was in Dr. Cram's day, since there are now three powerful elements to be resolved—La Farge's great Romanesque choir, Cram's soaring Gothic nave and his half-finished north transept. And there is now talk of moving the altar down from the choir into the crossing, so that La Farge's conception of this element as a great luminous area, lit from above, is more valid than ever. Thus, whatever its design and material, the new crossing will have to satisfy a number of architectural and esthetic problems.

Externally, the crossing will be marked by a tower. This might be of open metalwork, echoing the George Washington Bridge towers up the river. It might be a ring of tall masts from which the crossing roof could be suspended like a great baldachino. It might be a light shell of molded concrete or a lacework of aluminum and stained glass. But whatever the form or material, it must in its general configuration be consistent with the dominant features of Cram's steeply pitched roofs, gray stone masonry, and flying buttresses with their crockett-edged pinnacles.

There is also, in cathedral circles, some feeling that the proposed south transept might be entirely omitted. If this is done, the south wall of the crossing automatically becomes a gigantic window. Since it will be 100' wide and at least 150' high, it will obviously require fairly heavy wind-bracing. (The cathedral is exposed to high winds and carries heavy insurance against glass damage.) This will, of itself, constitute a tracery, and whatever its detailed pattern, this tracery will have to be congruent with that of La Farge's and Cram's stained glass windows. There are other problems, too, to be reckoned with—the unfinished towers of the west front, for one, and the fate of the little Greek revival building just south of the crossing. For composition reasons, the two towers must ultimately be completed. Should they, too, be redesigned in the contemporary idiom? If so, what materials will they use, what form will they take, how will they accommodate the great bells which the authorities hope some day to have?

As to the Greek revival structure (p. 113), its demolition has always been envisioned to make way for the south transept. But if there is not to be a south transept, what then? The building is handsome, of some artistic and historic interest, dating from the 1840's. (It was built for the Leake & Watts orphanage which formerly occupied the site.) Both Dean and Chapter confess a desire to see it preserved. But it stands only 40' from the south wall.

* According to a letter from Mr. Chester A. Brown, member of the firm of Cram & Ferguson, dated Boston, Mass., Nov. 18, 1954.
of the crossing, squarely athwart the proposed new window. Can it be kept here? Should it be razed? Or might it be removed to some other location? These are all questions of real substance and cannot be evaded in any new design.

Nowhere is the contemporary architect so sharply confronted with the necessity for making his peace with tradition as in the field of ecclesiastical art. For here the past cannot be ignored. The church comes out of the past, has deep roots in the past; its iconography and liturgy can be neither ignored nor greatly modified. Both have been molded by the centuries, so that their symbols are inextricably a part of the faith itself. At St. John's, as elsewhere, the new art must interpret these symbols and do it convincingly and intelligently.

These are limitations, no doubt about it. But limitations never prevented artistic accomplishment; on the contrary, they often seem a necessary precondition. Undoubtedly, Europeans are more adept at this sort of thing than we are since they have had more experience at it. But as the relics of our past accumulate around us, we shall see more rather than less of this sort of problem.

One limitation, however, we are mercifully spared—that peculiar slavery to tradition, to historic precedent, which crippled La Farge and his generation. Since they had no genuinely contemporary idiom of their own, they could only express themselves in the dead language of the past. The tragic consequences of this are very clear in La Farge's defense of his design.* He cannot propose anything without citing historical precedent. He is opposed to flying buttresses because he does not think they would long withstand "the ferocious attacks of our climate." But that is not sufficient argument: he must also cite a Gothic church without flying buttresses. He finds it at Albi. He wants a big crossing, domed and lit from above, but he cannot justify it on merely functional grounds—that it makes a better auditorium; or on an esthetic basis—that it creates a more splendid intersection of nave and transepts. No, he must cite precedent, Gothic precedent, at that. He can find only two (the Cathedrals of Ely and Gerona) but these, as he wryly puts it, are "good enough." Every aspect of his design is similarly based on precedent—he cites chapter and verse to prove it.

It would be grotesque, in 1954, to see a church design justified in any such fashion. This of itself is proof that we stand upon higher ground than La Farge's generation. But this new position, bitterly fought for and newly won, should give us a new perspective of the past. It should enable us, at long last, to live comfortably with tradition, on terms of equality and respect.

CHURCHES have had a hard time catching up with the twentieth century. Many building clients, quick to accept new design standards for their week-day surroundings, still seek refuge on Sunday in reassuring (and expensive) copies of the past. Perhaps one reason lies in the bewildering variety of modern churches that make coherence and continuity hard to find. In the good recent churches shown on the succeeding pages, the variations are considerable but are soundly based. Each church fits a specific established tradition of worship, a specific region, a specific technology, and budget, as well as the newer esthetics. In one whole group of what are here called tent churches, a similarity of purpose and method has brought a striking similarity of form. This has the advantage that comparisons can be made in detail, leading to an improvement in all-around excellence.
True ancestor of this modern Unitarian chapel is the old Puritan meeting house like the one in Rockingham, Vt., built 1787. Missions sent by these churches left their stamp on the Orient, and now the ideas of the Orient have crossed back to influence West Coast church design.

A CHAPEL FOR CHILDREN

In this little chapel is beautifully expressed the goal of all congregations: to make religion a spontaneous and lasting experience for their children. This is the fifth of six buildings that started with the parent church in 1886, grew into a family circle that will be completed with a school building for the first six grades (see plot plan, above).

The new chapel is a full-fledged member of the family, standing alone yet linked with the others in a grouping around pleasant little courts and gardens. It gives the children of the parish a church of their own, right next to their own classrooms and playgrounds. It is no replica of the old church, but it uses the same redwood and earth colors in a fresh way while retaining a family resemblance.

Most important, it is scaled down to child size and made exciting with a handful of devices shown on the following pages. The little-theater atmosphere that results should make Sunday school every bit as appealing as a TV puppet show.

New chapel is connected by covered walk to nursery school at far left. It is only 19' high at the ridge, has 7' doors with sculptured figures depicting simple themes taught at church school. Redwood grille, made of studs and scrap lengths with swinging glass panels on interior, throws a lively pattern of sunlight into the nave.
Some of the best features of the chapel, which won an award of merit at the AIA convention last June, actually grew out of cost limitations and code requirements. The decorative latticework of the exterior, repeated over the chancel to screen the furnace space, is simply stock lumber and waste pieces nailed together and stained. Plaster, the cheapest building skin that would give a one-hour fire rating, was neatly panelized with plaster grounds into crisp-edged wall sections, leaving the supporting wood posts exposed and giving the chapel the character of an all-wood building. Between the plaster panels the architects used inexpensive tinted glass—pink strips with brown inserts—producing a warm-light quality within the room rather than trying to create costly pictures with conventional stained glass. A fire restriction was turned into an asset by setting a brick wall on the property line, using the 4' space between it and the chapel as a sunlit, planted backdrop for the altar (photo above). Sliding glass doors and curtains here close the 12' opening against weather. Ceilings are acoustical tile, floors are cork on slab for further sound reduction and easy maintenance.
Freestanding brick wall is fire protection for adjacent property, extends the limited interior (1,100 sq. ft.), and gives rear access. Effect of outdoor backdrop is seen in photo (opp.).

Movable pews seat 70 children. Separate Sunday-school services are given for grades 1-2, 3-6, 7-8 and 9-12. Space above altar is used for hot-air furnace.
DRILL PIPE, FAITH AND HARD WORK

Hand built in the oil fields by oil workers, this little church has the simple sincerity of the oil derrick from which it takes its character and some of its materials.

Shaped like a tepee to enclose the most space with the least outside area, the church seats 300 in a circular nave and another 100 in a Sunday school room below, at a total cost of $20,000. It reflects as few buildings do, the region and the people, who in this case erected it themselves: an Oklahoma pastor and his flock of pipe welders, drillers and riggers, and their families.

The spidery trusses that support the 12-sided cone are actually 4" round "drill stem" welded to 21/2" line pipe, and the siding is the corrugated aluminum often used for oil-field shacks. The central lighting fixture that dangles down from the "smoke hole" is made of rigid conduit, metal cake pans and silver-bottomed light bulbs. Even the pews are made of pipe and planks.
Windowless for privacy from nearby highway, nave is ventilated by plywood flaps behind perimeter benches. Small hydraulic cylinders lift glass lid off top of cone for flux effect. Panels of foamed plastic are nailed to underside of roof deck for insulation and sound absorption. Sunday school is in basement.
Circular baptistry of limestone and aluminum stands to one side of entrance.
A PLAN IN THE OUTSTRETCHED ARMS OF CHRIST

For centuries decorative art and reaching spires have intensified the meaning of the Catholic liturgy. In this church the basic forms themselves try to convey even deeper symbolisms. Its plan is a parabola, and to some a parable as well: the ending of the long pilgrimage that started with the self-centered circle of men alone, then broke out down the long naves of life in search of higher truth, and now appears to draw to a close around a final goal. The open sweep of the sidewalls seems to welcome the pilgrims arriving from near and far, drawing them in through a clear veil of glass to the warm, rich interior. Before them, at the burning focus of the parabola, Christ awaits them in the altar tabernacle. Above hangs a great halo and above this a domed skylight, which in baroque tradition sends a burst of sunlight down on the ritual of the Mass. Still higher is the bell tower, marking the altar focus for miles around and soaring in resurrection to a life after death with Christ. After the body of Christ is shared and the candles extinguished, the pilgrims arise refreshed. The great arms of the church now appear outflung, gesturing them out again to continue their worldly journey.

* By Robert Harmon, with Emil Frei. Statues of Blessed Mother and Child and Joseph the Artisan are by Hillis Arnold.
As was the custom in cathedrals and churches of old, this modern Catholic congregation has united its architecture with the work of noted artists of the day. The traditional symbols are all there, but cleanly and colorfully stated in contemporary art, not in ornate relics borrowed out of habit from the past. Since the parish is in one of the more liberal dioceses in the country, Architect Murphy was able to work freely with a handful of artists, integrating building and decoration into an articulate whole.

The shape of the plan and the arrangement of the pews in slight curves give every member of the congregation an unusual sense of nearness to the altar and the Mass. Seating for 625 on the main floor is so disposed that the furthest seat is only 21 pews back from the altar rail. Another 125 seats are provided in the choir loft.

The church, including tower, baptism and rectory, contains 500,000 cu. ft., was built for $590,000 or $1.18 per cu. ft. Furnishings including pews, murals and sculpture, came to an additional $55,000. The convent, with 112,000 cu. ft., cost $159,000, $1.41 per cu. ft.
Stations of cross by William Schickel line rose-brick wall above confessionsals. Ideas are stated directly in simple forms with thin black wooden crosses, wrought iron numerals, and walnut panels for text. Clerestory band of stained glass (by Robert Frei, with Emil Frei) portrays public life of Christ Lord in graphic line symbols. In this segment: disciples going to Bethphage to find ass and colt; hoofprints against palm leaves on journey to Jerusalem. Light colors admit ample natural light to interior.

Aluminum altar rail separates raised sanctuary from pews. Choir and organ loft at rear floats free of side walls on two large pedestals bridging the center aisle. These contain stairs, washrooms, riser ducts to ceiling, which is hung from four diagonal trusses.
More and more rural and suburban congregations are turning to single, high-gabled roofs for their new churches. The bold simplicity of the form fits well with modern concepts of worship; its economy appeals immediately to the many church groups with limited budgets. And behind it lie deep traditions. It is the old north country church, boiled down to a new structural clarity appropriate to the times, yet retaining the best of old essentials: the warm, neighborly personality, the humble aspiration and some of the medieval magic. Its triangular silhouette—a symbol of stability, shelter and prayer—conveys the idea “church” so universally and so strongly that elaborate bell towers, steeples and sculpture can often be omitted.

The church (shown below) has an unusually steep roof, supported on wooden A-frames. These are carried to their footings clear of all the low walls, front or side, to keep the structural system honestly visible. A chancel curtain and storage for folding chairs and tables adapt the nave to social activities. Seating capacity: 200-250. Cost: $67,000, about $15 per sq. ft.
A LARGER, MORE FORMAL VERSION

Designed to seat 500, this more urban church carries its tent roof atop low buttressed side walls. It is near San Francisco and serves a congregation which includes many young families sympathetic to Architect Smith's straightforward brand of architecture. They requested that the building be dignified and churchlike, but that it retain the warmth and intimacy of character found in English parish churches. For his wider spans Smith used steel beams on 15' centers, supported on the side walls, a roof of 8" x 8" wood purlins, 2" plank deck and cement asbestos shingles. Masonry walls are buff-colored concrete block; hard plaster was used over the chancel for brilliance, acoustical plaster over the back of the nave for sound absorption. A full basement accommodates six small classrooms opening on a large assembly room with platform stage, and a choir room, bride's room and heater space. Building cubage: 186,310 cu. ft. Total cost: $157,578 (including fees).
BOLD STRUCTURE AND TEXTURES
SET A DEEP RELIGIOUS MOOD

In this little Canadian church, the full power of the triangle form is exposed to the congregation inside, with no side walls to screen the base of the roof beams that spring from the earth to the infinite. These solid members (18" laminated wood) march down to the chancel, concealing spotlights which pinpoint, in theatrical fashion, the altar, cross and pulpit. On either side, panels of acoustical plaster establish a rather emphatic horizontal, pulling the eye toward the service (and concealing strip windows and fluorescent tubes for up and down lighting). The church seats 144 in pews, 50 in folding chairs to one side. Including the parish wing, it cost $59,123—about 78¢ per cu. ft.—plus architects' fee, landscaping and furnishings (designed by the architects).

Sparkling stone of many colors forms a rich background for worship. At left, behind pulpit, is a chancel sidelight of frosted glass.

Stark silhouette of 38' equilateral triangle is etched against cold white skies. Gable end sets a cross of white mullions against blue heat-absorbing glass.

Side gallery for late-comers and extra seating also accommodates baptismal font, temporary organ. A low ceiling here heightens the effect of the pointed nave.

ST. ANSELM'S CHURCH, VANCOUVER, B. C.
SEMMENS & SIMPSON, architects
ERIC ACLAND & ASSOCIATES, lighting
NAROE CONSTRUCTION, LTD., contractors
MULTIPURPOSE NAUE FOR MINIMUM BUDGETS

During services this mission church seats 150 in folding chairs, with choir and electronic organ behind a movable screen in the rear. For church suppers the screen is placed across the chancel and folding tables are set up. Acoustical partitions at each 8' bay fold out for Sunday school cubicles. Cost: $24,822, including parish wing, sprinkler system, all furnishings.

CHRIST THE KING LUTHERAN CHURCH, RESEDA, CALIF.
CULVER HEATON, architect
SAMUELSON BROS., contractors

PHOTOS: (top) Culver Heaton; (below) George W. Sommer.

PREFAB CHAPEL COMES OFF THE BACKS OF TWO TRUCKS

Plywood skin panels and built-up bents get this church under roof in four days at total cost of $20,000 to $22,000 ($14 per sq. ft., 80¢ per cu. ft., plus wing and basement). The basic chapel seats 150, sells at $11,250 F.O.B. Urbana, including all materials, chancel furnishings, limited supervision. This lower cost compensates for a less sophisticated design; seven are finished, more abuilding.
LAKE leads into composition of central buildings; dormitories are along shores.

FOR A NEW COLLEGE

SENIOR COLLEGE FOR MISSOURI SYNOD, LUTHERAN CHURCH
EERO SAARINEN & ASSOCIATES, architects

In the early German moor village of Aichhoush, all rows were oriented the same way for defense against the onslaught of nature, creating a strong effect which is to be re-used for more subjective purposes by Eero Saarinen in the US Midwest.
AN OLD VILLAGE SILHOUETTE

Near Fort Wayne the Lutheran Church will soon start building Concordia Senior College, to prepare students for admission to its St. Louis seminary, and to implement a belief: "Good leaders are never born as such; always, they must be trained. . . ."

The school's design is superficially as different as it can be from the General Motors Technical Center by the same architect (AF, Nov. '54). Where GM is Saarinen's projection of technology, the solution for Concordia lead him into history. In simplest architectural terms, the rhythmic series of steep, dark-tiled roofs all angled the same way "will look," Saarinen predicts, "strong against the white sky. It is the same kind of white winter sky you see in northern Europe." The architect and his associates are seeking to capture simultaneously the tranquillity of the Lutheran Church and its stern morality, the exhilarating thrill of belief and the demanding devotion of conviction. To find forms to hold this content, the designers looked where the Protestant church was born, under that white sky.

In religious buildings, Saarinen has looked to the past for shapes before, as in the MIT chapel now under construction (AF, Jan. '53), a kind of modern medieval keep. Religion is old, he seems to say; there is no need to reinvent significant forms for it. But this time, in designing not just the church but the village around it—classroom buildings, living facilities, library, dining hall—he is taking this ancient melody for lute and recorder and orchestrating it into a rather radical composition for today, with all today's imbalances and other subtleties surrounding and deepening the simple theme.
The case for the pitched roof

A statement by Architect Saarinen:

"In giving visual expression to Lutheran traditions and objectives, the appropriate concept seemed to be one of common buildings intimately grouped around a central square with the chapel dominating the highest slope; the lesser buildings clustered around it; and the student housing radiating outward.

"Designing within this villagelike concept, we could achieve a tranquil, unified environment into which the students could withdraw to find a life complete and balanced and still related to the outside world. This villagelike plan also seemed suitable to the gently rolling prairie land—framed by protective green forests. The chapel could command the group, the other buildings could adapt themselves to the lesser slopes and ridges, and the hollow below the chapels could easily be transformed into a little lake. . . . The challenge was to achieve these permanent and dignified yet friendly and serene surroundings with the greatest possible economy.

"Now, what about the pitched roofs? Very important, in addition to the village-concept, was a site where the buildings would be seen in silhouette from outside as well as from within the group. How does one achieve an interesting silhouette with horizontal roofs? Then the thought kept recurring how nice the silhouette was of medieval hill-towns and how nice the silhouette was of Danish villages with the church dominating.

"Then there was the question—is the sharp horizontal really the best relation of building and sky? One of the esthetic problems is the transition between flat land and the sky-vault above it. Are the boxes that our age takes for granted really the best thing? Then there is the question of whether a flat line at the eaves is really best with the horizontal base line. I had been impressed when I was at the Upper Villa at Caprarola by the way Vignola's wall was related to the woods behind it. It wasn't just a straight wall—the only kind we know—but a curving, dipping one which gave the trees behind the wall a chance.

"Then, in addition and as important: with the flat roof you create certain limitations to your mass. The pitched roof lets you look up and—as in Chinese perspective—you can see or at least comprehend the total outline or total plan of the building and can also comprehend the relation of the buildings to each other. By running all the roofs in one direction, the total order which one desires seemed to come about.

"These all are awarenesses which we seem to have forgotten in our more or less standardized approach. But they were awarenesses we wanted to explore. We discovered that it was possible to explore these things without letting go of or violating the principles of modern architecture—like integrity and articulation of structure, respect for function, modern technology, and the rest—to which we are all dedicated."
DORMITORY DRAWINGS show how space is saved under broad pitched roof, with five floor levels for rooms. Each separate dormitory will accommodate only 34. Intention is to keep group small enough so that each individual will feel himself a responsible member in all its activities.

DINING HALL INTERIOR. Structure is steel bents 16' on center and box columns. Wood roof deck is supported by wood purlins 5'-4" o.c. Hall seats 450 (300 on main floor, 150 on concrete slab mezzanine) plus 24 in private dining room. Students will eat breakfast and lunch cafeteria style using only main floor; dinner will be served "family style" with elevator to raise food to mezzanine.

DIAMOND-SHAPED GRILL of masonry in front of glazed wall is being studied as a repeating vertical motif to complement pitched roofs, which will be black tile with strong texture (gray tile in dormitories). Other walls will be glass, white-painted brick or metal panel. End walls will reveal structural pattern.
A NEW KIND OF CLASSROOM. The group instruction program was carefully analyzed in the program for this college, and summarized in this question to the architect: "What kind of space, equipment and environmental treatment will enable a group of 30 students and one teacher to work together most effectively in group instruction so that, in each meeting, one half of the 30 will form the nucleus and focus of group activity?"

Saarinen's answer: a two-level space which puts half the class in the spectator's position, the other half in the performer's. At the head of the lower table is the instructor. Roles will change at intervals. Two test classrooms of this design are in successful operation.

THE ROOF PITCH. All roofs except the chapel (interior, right) will be pitched at 23.5° from the horizontal; the chapel will be 23.5° from the vertical, the same pitch as the world's axis against the sun. Roof gutters for the chapel will be long pools underneath the roof edge; pools will also reflect light up into the chapel. On this college project, the Saarinen office's designer-in-charge is Glen Paulsen, and the project manager is William C. Linde.
CHAPEL ROOF dominates surrounding buildings (left to right): administration building, classrooms, library.

CHAPEL INTERIOR is daylighted through continuous strip windows beneath eaves.
PARTITIONS WITH A PURPOSE

NAM's new headquarters feature four varieties
in wood, steel and glass, plus a folding wall 42' long

This new Fifth Ave. headquarters for the National Association of Manufacturers is notable for the flexible manner in which the floor area is divided. Most partitions are frame-and-panel enclosures which can be easily moved, and the partition materials themselves vary with their function: clear glass (with draperies) or patterned glass where daylighting is as important as privacy; polished walnut where appearance is paramount; steel sandwich panels in corridors where maintenance costs are important; and, where day-to-day flexibility is the major need, a 42' partition which folds up (see p. 140).
partition materials vary with purpose

the partition above separates an executive's office from his secretary's desk and must therefore be translucent. it consists of glass with an integral egg-crate pattern in white. set at an angle, the egg crate creates privacy for the boss' office but allows daylight to reach the secretary.

secretaries' desks have built-in efficiency

although this secretarial row typically occupies interior space, it is pleasant space. the inside partitions of the bosses' offices and their private conference room are fully glazed and the air is fully conditioned. patterned draperies are pulled when the directors require privacy. each secretary has built-in filing and storage space within her cubicle and ample desk-top area. the part of the desk which extends into the storage partition is lighted by an egg-crate fixture built into the soffit (photo below). woodwork is walnut; desk tops are off-white laminated plastic; the carpet is beige.

the partition below separates an open office from a corridor. it consists of 5/8" thick sandwich panels (two layers of corrugated kraft paper between sheets of 14 ga. steel) set in a steel framework. the paint finish is baked on in the shop. color: light blue panels in a dark gray framework. note that the panels are free from both floor and ceiling to aid air circulation.
Specifications


Conference room partition unfolds to divide room in half

This 42' x 44' room serves many purposes. As one big conference room it seats 154 people. With the folding partition closed, it is two rooms—one for a smaller meeting, the other perhaps cleared for a display of some kind (about 80% of the tables fold up for easy storage). From the ceiling hang 28 microphones which pick up the voice of a speaker seated anywhere in the room and broadcast it through 28 loud speakers. To control reverberation, the partitions were built slightly out of line, the ceiling covered with absorbent tile and the floor, carpeted.
THE HOSPITAL BEHIND THE GUN

Photos: (top) Life-Gordon Tenney; (sharle) Elsie Meisel-Dallas

CANCER PISTOL "fires" small radioactive gold projectiles into tumors from injection needle. Healing agent is gamma rays. Pellets' radioactivity lasts ten days.

The only US hospital which packs the new English cancer gun (left) in its holster is Houston's M. D. Anderson Hospital for Cancer Research. It is a large structure in the Texas Medical Center which does treatment, teaching and research under one roof (see complete background story, AF, Feb. '52). Not a pallid temple to antiseptics, it has walls clad in an unusually rich, rosy marble (Georgia Etowa Pink) and the furnishings are by one of the leading modern interiors firms.

Some of its carefully studied features: thick concrete floors for isolation of the atomic medical equipment; thin curtain walls for space saving (but with marble cladding that is remarkably impervious to both weather and radiation—its water absorption is 0.01%; its 7/16" thickness stops as many harmful rays as 3/16" lead); individually controlled air conditioning units placed neatly over hall doorways instead of bulkily under windows; one of the first all-foodwagon serving systems; transportation and communications facilities including a pneumatic tube system to transport sup-

MARBLE SHEATHING contrasts with aluminum spandrels, windows and fascias.
plies up to 33\(\frac{3}{4}\)" in diameter and 13\(\frac{1}{2}\)" long; a visual call system for doctors and nurses which practically eliminates the perpetual discreet gonging in most hospitals; two-way radios between beds and nurses stations; unique acoustical construction to house the Betatron (p. 145) and other atomic equipment, which sometimes makes as much noise as 70,000 people all shouting at the top of their lungs; a pleasant, colorful atmosphere in both public spaces and private rooms (opp. and p. 144); and not least, a traffic pattern which is a marvel of organized intricacy—there are separate entrances for doctors, nurses, in-patients, out-patients, trainees, kitchen supplies, lab supplies, animals (which require air locks to prevent spread of smells) and also special elevators for some of these categories.

The space planning itself is a hard and shrewd investment in the constant fight against hospital costs (total here, $8,375,000, or $23.95 per sq. ft.), but pleasantness was retained stubbornly for staff and patients. Anderson is not an aloof research facility, but a practicing hospital in every respect, with a 310-bed nursing unit and a complete medical services wing. Housing also the offices of a monthly medical magazine, the hospital is the correlating center of Texas' effort against this one disease. To be reminded of the intricacy of this effort, check the simplified diagram below.

**COVERED WALK** reaches out from base of stair tower into parking lot.
MAIN FACADE is mostly marble. It is 7/8" thick, backed up by 1" airspace, then 4" perlite block, metal lath and plaster. Building is completely air conditioned, and windows on sun walls are kept small.

CORRIDOR to examining rooms: six signal lights beside doors indicate whether rooms are in use and, if so, by what kind of diagnostician.

SOLARIUM offers lounging space of an unusual character for a hospital. Informal arrangement of modern furniture is abetted by cheerful colors.
BETATRON, rated at 26 million volts, is housed underground within thick walls (plan, left) plus interior acoustical treatment. All told, decibel reduction is from 94-96 decibels to 15.

BEDROOM INTERIORS vary but all hit out for life and color. The Knoll Planning Unit did not dimension the rooms, as they sometimes do, nor did they specify such equipment as lights, but otherwise they researched and furnished the entire structure with the architects. Patients’ rooms were made “not wildly bright, but clear bright,” according to Florence Knoll, by including color in small areas; colors were used more strongly in public areas. Single rooms, (left) face out on broad balcony, baffled for privacy, with an adjustable sunshade for each division. In the four-bed wards, drawing (bot. left) a central storage cabinet, shared for magazines, flowers, etc., is intended to present the patients with something to look at besides each other. Frequently it becomes a central island of foliage. (Each patient has a bedside cabinet in addition.) Curtains are made of a Dutch material and their colors—rose, blue and yellow—are arranged to form a controlled pattern over the facade.
OPERATING ROOM has observation facilities above, like a skylight. These rooms are paired around central work and scrub-up room so one surgeon can shuttle between two operations without delay.

STORAGE for "hot" material consists of concrete pigeon holes which receive lead containers. Note thickness of drawer front. Of ordinary materials, concrete is an unusually good barrier against radioactivity.
Architectural research is still in its infancy. Its methods are happenstance. Its purposes are confused. Its usefulness is spotty. Organized support for it hardly exists.

The author—director of a remarkable English hospital study project supported by a foundation—thinks architectural research often makes so little headway because it is confused with command. His program gives the architect and the client tools but does not try to do their job. This approach makes just as much sense for other building types as it does for hospitals; the research methods described here are already being applied to English agricultural buildings, will soon be used to investigate industrial laboratories.—ED.

A STUDY IN HOSPITAL FUNCTION AND DESIGN...

by R. Llewelyn Davies *

One of the most important things we have learned in the five years our team has been studying hospitals is the need to break down problems into aspects that can be studied objectively.

Suppose you start with the problem of what is the best design for a hospital ward. So long as you leave the problem in this general form, there is not a lot you can do to study it. You can look at wards and watch their operation. Some work better than others but it is difficult to make objective comparisons between them. You can organize questionnaires but they tell you little. They can only tell what a number of people think about the questions—the results are purely subjective. The people who work in a building usually criticize it only in terms of the pattern of work they know, and even this is likely to have been influenced by the design of the building. The views they express will probably contain no effective fundamental criticism of the design.

We therefore set to work to break down the problem of design into a number of separate issues, susceptible to closer study. They fall into three groups: medical, nursing and architectural. I can best illustrate this method by brief comment on some of the findings of our nursing ward studies.

* Director, Division for Architectural Studies of the Nuffield Foundation; associate, Royal Institute of British Architects. This material is excerpted from a speech by Davies at the recent American Hospital Assn. convention.

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### EXTENT OF PATIENT DEPENDENCY

<table>
<thead>
<tr>
<th>Type of patients</th>
<th>General surgery: 155 patients</th>
<th>General medicine: 167 patients</th>
<th>Gynecology: 100 patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bedfast</td>
<td>Partially ambulant</td>
<td>Fully ambulant</td>
</tr>
<tr>
<td>Actual conditions</td>
<td>50.3%</td>
<td>20.0%</td>
<td>29.7%</td>
</tr>
<tr>
<td>If early ambulation</td>
<td>16.4</td>
<td>35.0%</td>
<td>48.6%</td>
</tr>
<tr>
<td>If traditional procedure</td>
<td>66.7</td>
<td>17.3%</td>
<td>16.0%</td>
</tr>
<tr>
<td></td>
<td>53.3%</td>
<td>24.6%</td>
<td>22.2%</td>
</tr>
<tr>
<td>If early ambulation</td>
<td>25.7</td>
<td>28.3%</td>
<td>46.1%</td>
</tr>
<tr>
<td>If traditional procedure</td>
<td>61.1</td>
<td>13.9%</td>
<td>25.0%</td>
</tr>
<tr>
<td></td>
<td>48.6%</td>
<td>33.0%</td>
<td>20.2%</td>
</tr>
<tr>
<td>If early ambulation</td>
<td>16.2</td>
<td>45.5%</td>
<td>38.4%</td>
</tr>
<tr>
<td>If traditional procedure</td>
<td>55.7</td>
<td>31.0%</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

**Patient dependency** table indicates percentages of bedfast, partially ambulant and fully ambulant patients in a group of English general hospitals, also indicates how percentages would differ if physicians used thoroughgoing early ambulation methods and if they used traditional procedures (staffs of hospitals studied were closer to traditional school). This study, made by the doctor-member of our research team, has been one of our most useful pieces of planning data. Such information is vital for determining toilet and washing facilities, size and placement of day rooms, patient dining facilities. Complete survey covered eight representative hospitals.

### SINGLE ROOM REQUIREMENTS

**Medical ward of 16 beds (based on data from ten wards)**

<table>
<thead>
<tr>
<th>Type of patients</th>
<th>Two types of single room*</th>
<th>Close-supervision rooms only</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of time rooms meet need</td>
<td>% of time rooms properly used</td>
</tr>
<tr>
<td>Number of single rooms</td>
<td>% of time</td>
<td>% of time</td>
</tr>
<tr>
<td>2</td>
<td>47%</td>
<td>97%</td>
</tr>
<tr>
<td>3</td>
<td>67%</td>
<td>92%</td>
</tr>
<tr>
<td>4</td>
<td>82%</td>
<td>84%</td>
</tr>
<tr>
<td>5</td>
<td>92%</td>
<td>79%</td>
</tr>
<tr>
<td>6</td>
<td>97%</td>
<td>66%</td>
</tr>
<tr>
<td>Surgical ward of 16 beds (based on data from eight wards)</td>
<td>36%</td>
<td>95%</td>
</tr>
<tr>
<td>2</td>
<td>65%</td>
<td>86%</td>
</tr>
<tr>
<td>3</td>
<td>84%</td>
<td>74%</td>
</tr>
<tr>
<td>4</td>
<td>94%</td>
<td>62%</td>
</tr>
<tr>
<td>5</td>
<td>98%</td>
<td>52%</td>
</tr>
</tbody>
</table>

* Those requiring close supervision and those not requiring it.

**Proportion of single rooms** or cubicles needed in medical and surgical wards—on medical grounds only—was also surveyed by the doctor-member of our team. Because the survey showed a wide fluctuation in room needs from time to time, results were statistically analyzed for efficiency of occupancy. Single rooms were divided into two types—those requiring close supervision and those not requiring it. The table shows, for example, what a luxury six single rooms per 16-bed ward would be: while they would meet the need 97% of the time, they would be properly used only 66% of the time. On the other hand, two rooms would be properly used almost constantly (97% of the time) but would meet the need less than half (47%) of the time. This distinction—as well as over-all proportion—is obviously important in planning. Full survey covered 900 patients, indicated that for English practice 25% single-room accommodations are needed in medical wards; 20%, in surgical wards.
Journeys by nurses were traced with cotton thread. Each nurse during a duty shift made between 300 and 400 trips, adding up to an average of 2 to \(2\frac{1}{2}\) mi., excluding movements around patients' beds. The higher a nurse rises in the hierarchy, the less her walking. The most useful results of this survey—made by the nurse-member of the team working with time-study engineers—were tabulations of the proportion of trips made from bed to bed, from bed to various ancillary rooms, and from ancillary room to ancillary room. This offers guidance to placement of ward elements relative to each other. It also underlines the desirability of a compact, rather than strung-out, arrangement of bed areas. Actual tabulation of trip proportions would differ with another country's hospital practice, but the same method could give guidance.

Daylighting studies were made because the deeper a ward building is, the more economical its construction cost is apt to be and the shorter the nursing journeys. We considered the limiting factor is daylight, and we wanted to know just how deep a ward could be and still be well lit from its windows. Our studies, made by the architecture members of the team with the aid of government building research scientists, differed from most school-lighting studies by taking reflected light into fuller account. We think our results were of considerable importance, and not only to hospital design. Among the findings: 1) the amount of natural light, including reflection, received at the back of a room can be as much as eight times that received directly, so if reflection is given full credit some current onerous standards for daylighting are unnecessary; 2) it is possible to measure separately the lighting contribution made by each room surface, useful data in designing color schemes; 3) carrying the normal sill level down to the floor increases deep lighting appreciably by admitting light bouncing upward from ground surfaces; if these are paved with reflective surfaces light is increased again; 4) but where large windows are used, a further increase in window areas does not produce a proportional increase in daylighting because windows not only admit light—they allow it to escape (as an internal reflective surface, a window equals a black wall).

Ward plan of experimental hospital in Belfast incorporates many of our findings—for instance compact bed units and centered ancillary rooms, as indicated by the nurse-journey studies; deep wards with natural light, as guided by daylight studies; proportion of single rooms indicated by medical survey. It is important to note that these studies have been interpreted in terms of British hospital practice. The same or similar data applied to the US or any other country would inevitably result in different schemes. So would they, quite properly, in another British hospital. [See the author's comments on standard plans in text below. Ed.]

Cross-section of model ward at a cooperating hospital shows one arrangement for bringing in deep light. A horizontal baffle 7" above the floor level cuts off the brightest part of the sky from patients beside the window, but lets light pass above. Facade of experimental hospital at Belfast shows another arrangement for bringing light deeply into the ward but at the same time controlling window area.

...and a new look at the job of architectural research

Limitations: Research can give tools to architects, management and administrators but it cannot do their job for them. If this is not realized clearly, researchers may mistakenly attempt to provide final and complete answers. This is rather like the early days of medical research which set out originally to discover the elixir of perpetual life. More headway was made in medicine when they settled down to tackling more limited problems. Medical research, like other successful operational research, does not now attempt to standardize diagnosis or treatment; it aims to give essential knowledge and leave its application to the practitioner.

Similarly, architectural research can illuminate some aspects of the architect's problem and provide him with data, information and analyses methods which enable his imagination to work on a better and fuller understanding. But it cannot make his decisions. In fact many of his decisions must be made on hunch or judgment and this will remain true however much research we are able to do.

Standards: So I do not think it is any part of the work of a research team to produce type plans or standards. These (continued on p. 174)
A NEW KIND OF PRISON

LOUISIANA STATE PENITENTIARY, Angola, La.
Department of Institutions, State of Louisiana,
Reed Cozart, assistant director
CURTIS & DAVIS, architects and engineers
CARY B. GAMBLE & ASSOCIATES
and WALTER E. BLESSEY, consulting engineers
Consultants: Federal Bureau of Prisons, James V. Bennett, director
Robert D. Barnes, senior architect
Three years ago the worst prison in the US was probably the Louisiana State Penitentiary at Angola, a collection of seven shack camps on 18,000 acres of remote brush country locked in a wide loop of the Mississippi River. One day the news leaked out that 31 convicts had slashed their heel tendons in protest against guard brutality, and gradually newsmen uncovered one of the ugliest scandals in prison history: 1,760 Negroes and 880 whites living like jungle animals in filth and depravity (photo, right), underfed and worked to exhaustion, flogged and even shot by their prisoner guards for minor infractions, jammed as many as 300 to a room, with unlimited gambling and perversion.

As a result of Angola and the chain-reaction prison riots of 1951-53, the nationwide prison problem hit the headlines and stayed there. Another result: a new kind of prison has been developed—and at the very place where the trouble started: Angola.

Citizens of most states, say leading penologists, are paying a far higher price for physical obsolescence than they realize, not only in higher-than-necessary operating costs but in the further hardening of criminals by the old kind of prison; two thirds of them are released only to commit more costly crimes and find their way back within five years to live in the same embittering conditions—at public expense.

The building industry, says Federal Prison Bureau Director James Bennett, has at least $150 million of potential business in replacing worn-out penal plants. Of the 152 state institutions, only 17 are less than 50 years old, and many are well over 100—not counting an estimated 10,000 city and county jails and lockups. Maryland’s prison is 146, Massachusetts’ Charlestown, 148. Built like fortresses on principles of design long since disproved, many of these structures resist destruction from without as effectively as they do from within. Progressive wardens, struggling with dungeon inefficiency, overcrowding, forced idleness and mixing of criminal types, say they cannot even begin to prevent riots and apply positive techniques of modern penology. In Bennett’s words: “Every prison—staff and inmates—seeks the level set for it by its physical characteristics.”

Until now state progress has been limited pretty much to short spurts (paced by such successful forward steps as California’s 1,500-man “open” institution at Chino). But at the new Angola, Governor Robert Kennon’s reform administration (elected in no small part in a reaction to the prison scandal) is making the first clean sweep of a state penal system in modern history. For almost the first time a prison is getting the public support and design talent usually reserved for its more popular blood brothers: hospitals, schools, industrial plants. At Angola good architecture and good administration will get more from the prison dollar, more for the prisoner.
Lift slabs form raised, covered walkways connecting all buildings

The new Angola will offer, in one economical plant, what progressive penologists have long pleaded for: facilities diversified and flexible enough to make the confinement fit the criminal. All-cellblock prisons are expensive (up to $15,000 per inmate) and can lead to trouble when single cells have to be used for two men or for less-hardened criminals. Medium and minimum-security barracks usually cost from $3,000 to $10,000 per man and when overcrowded can result in unhealthy mingling of types. Angola on the other hand, combines all three security grades for under $3,000 a man*, and at the same time offers its new warden a chance to separate his men into many groups for specialized treatment. The relatively few (10%) who require heavy discipline or isolation get solitary confinement in outside or inside cells (photos opp.). All the rest will live in the same basic dormitory unit (sketch left), a 37' x 104' room 11'-4" high with adjacent locker and washrooms. This unit is economically repeated four times to form a cloverleaf, which in turn is repeated four times in the fenced medium-security compound, six times in the minimum security area. This gives the warden 40 separate, small (60-man) dormitories in which he can classify up to 40 gradations of prisoner groups by age, behavior, race and common interests to reduce friction, bad influences—and the urge to escape or riot. He can set up or take down partitions, as prison needs fluctuate, to turn some of these shells into units devoted to honor rooms, squad rooms or cubicles for inmates who need or merit more privacy.

Lift slabs, used in standard 54' widths for almost all buildings, are proving a major economy, and construction is so simple that four of the cloverleaf units are being built by inmates from the old camps nearby, at less than 70% of normal contract costs. Floor slabs are raised 3' for dryness and all pipes and wires are hung underneath, eliminating expensive trenches and future maintenance. Layout permits reduction of the present 400-man guard force to 175 trained, civil service guards, 50 of whom cover the prison and all outside work details at peak hours.

* Total cost: $7.5 million, including housing for 2,300 to 2,800 inmates, all facilities shown on preceding page, plus a nearby administration building, an initial 41 new houses for guards and their families, conversion of the best existing camp to a women's institution.
Well-centralized facilities at the new Angola include:

- A 76,000 sq. ft. dining hall and kitchen, divided into medium and minimum security and staff sections, with a large warehouse and vegetable cannery behind.

- An education-administration building directly across from the dining hall, with eight classrooms, a library (10,000-book capacity), offices for chaplains, instructors, classifiers and newspaper.

- A reception building with open, lobby-style visiting room for 60 family groups, locker and washrooms for guards.

- An industrial compound for bookbindery, furniture and garment shops, sheet metal plant (auto license plates, road signs and other state needs). Off site, soap and paint factories may be added to the present meat-packing plant. Farming is being revised so that the prison can live almost entirely on its own produce and supply other state institutions as well. New industry and agriculture will provide inmates with useful, healthy activity, vocational training and pocket money, could eventually make Angola as much as 75% self-supporting. For the moment, the maintenance goal is $2 per inmate per day. Most older prisons have to spend at least $3 a day to approach the new standards Angola has set.

Concrete arches of dining hall span 200' total, are hinged at center (above). Columns for administration building are in foreground.
Campus plan breaks school into seemingly independent little houses connected by open, covered corridors.

**CLUSTER-PLAN SCHOOL**

**HOLLOW TREE ELEMENTARY SCHOOL**
- Darien, Conn.
- 16 classrooms
- 520 students (by Connecticut standards, 30 per classroom, 50 each in two youngest groups).

**FEATURES:**
- Three-dimensional dispersal saving grading costs and trees
- Convertibility to junior high
- Versatile 'live!' walls for changeable equipment
- Ingenious economy vestibules
- Covered outdoor playroom

**CONSTRUCTION:**
- Slab on grade
- 6" x 8" steel columns exposed on exterior
- Open web steel joists; 8'-8" module giving greatest span for least expensive (18-gauge) roof deck
- Cement block (six to module) walls with brick veneer on ends
- Radiant panel hot water heat
- Interior roof drains over plumbing

**COST:**
- Construction (including extensive built-in equipment but not including sitework of $61,440 or architects' fee): $336,090
- $13.13 per sq. ft.
“I would strongly recommend, instead of one immense building, to have a small one for every professorship, arranged at proper distances around a square, to admit of extensions, connected by a piazza, so that they may go dry from one school to another. The village form is preferable to a single great building for many reasons, particularly on account of fire, health, economy, peace and quiet.”

—Thomas Jefferson, 1816

Architect Jefferson had a university on the drawing board. Elementary schools were too small to take “village form” in his day. But all the advantages he foresaw have been realized in this 16-classroom K-6 school, in operation since September (previewed AF Oct. ’53).

The photographs and drawings best illustrate most of the building’s advantages and its remarkably interesting detailing. As for economy, construction cost came to $646 per pupil, compared with $1,180 for the 52 other elementary schools finished or building in Connecticut during the same period (’53-’54). Fully equipped cost came to $730 per pupil, compared with $1,260 for the other schools.
Modular wall standards make equipment changes easy

Teak standards 3' o.c. take modular strips, boxes or panels. Plan view shows neat detailing for trimming up the standards; wall bracket is slotted for horizontal play in bolting to wall, and standard itself is slotted to give backward-forward play in vertical alignment. Detail also shows fastening of single-module pegboard panel.

Chalkboard in 8' (two module) panels spans outer edge of standards, fastens to keyhole strips with angles and blocking. Either height or horizontal placement can be easily shifted. Scheme was devised to allow for future conversion to junior high, but flexibility is also much appreciated by elementary school teachers.

Tackboard panels have fastening similar to that for chalkboard panels, thus can be more than one module wide. Acoustic panels can also be fastened to standards (and spotted at random on ceiling) where meter readings show necessity. This device (plus acoustic properties of exposed block) saved an estimated $16,000.

Wardrobe strips detailed above are used between tables in multipurpose room. Pegs protrude on inner side of strips for safety and neatness. Children wear jackets and caps to lunchroom in winter because access from all but youngest grades is customarily along open outdoor corridors.
Stock wooden boxes fastened to teak standards provide economical and flexible classroom shelving. Each box yields two shelves, whether used singly or in tiers.

Vestibules include architect-designed sink and fountain fixture with stock stainless steel bowls, janitor’s storage below. Sound baffle above takes tack-up three-dimensional displays, has light fixture concealed behind.

Classrooms each have one big window wall, one strip-window wall on opposite, outdoor corridor side, permitting economical ceilings. Exposed structure and wall teaching aids are bright colored. Note exposed block construction.
Fresh solutions make activity spaces thrifty

Main entrance leads past kindergartens to juncture of administration and multipurpose areas. Kindergarten is the only wing jutting above grade; boiler room is under.

Plan shows classrooms' curtained visual-aids alcoves on vestibule side; blackout detail, right. Children like the dwarf firedoors beneath the strip windows.

Wardrobes for classrooms are ingeniously combined with visual-aids blackout. Counter-weighted tack panel covers wardrobe, or slides upward to cover strip-window above.

Open playroom, in place of gym, permits all-weather outdoor games and exercise. Sides can be enclosed, if that seems desirable, when school is converted to junior high. For K-6 use, school administration welcomes opportunity to test advantages of fresh-air play even on rainy days. This paved porch with its partially sheltered sides saved $34,000 over cost of a gym.

Multipurpose room seats 160 diners at wall-fold and roll-fold tables. It can be converted into assembly, seating 136 in 20 min.; into assembly, seating 232 in 45 min. Library end of room (rear in photo) has curtain and fold-up sliding stage. Kitchen, at opposite end, is used only for serving because food in carts is brought from nearby junior high kitchen, saving personnel costs. When school is converted to junior high, classroom off multipurpose space will become library, kindergartens will become shops.
Library shelving at end of multipurpose room consists of stock wooden boxes (hollow blocks) fastened to stock metal wall standard strips. The same boxes are fastened to welded bar frames for movable stacks (detail, top left). Library wall forms backdrop to folding stage, which is retracted in photograph view below.

Site uses preserved natural features, also gives clearly defined outdoor activities areas. View here of southernmost cluster and play-porch corner shows bicycle parking off front sidewalk access. Trees saved on site provide most of the sun and sky glare control, but in a few special cases, slightly translucent corrugated plastic hoods are used.
BUILDING ENGINEERING

1. Plastic skin for 84’ space frame dome
2. Light steel cantilevers for widespan low-cost hangars
3. Glass block vs. clear glass windows for schoolrooms
4. Porcelain enamel panels for lightweight spandrel walls

1. GEODESIC COW BARN

Combination of reinforced plastic and geodesic framing produces an 84’ dome for only $2.40 per sq. ft.

The building industry’s newest structural technique, geodesic framing in laminated timber, has joined the industry’s newest cladding material, tough, reinforced polyester plastic, to produce a highly practical and efficient 84’ diameter storage barn. As one of the most interesting building experiments of the year, it is likely to have many other useful applications.

Erected on a farm at Ste. Anne de Bellevue, just west of Montreal, this demountable 84’ space frame consists of 1/16” thick glass fiber reinforced polyester panels fastened with aluminum clips to a laminated timber frame. Connected in 12-14’ triangular sections, this frame is mounted atop 20 concrete footings that double as leveling pads. There is no floor slab, the animals are insulated from ground frost by a 4’ deep dry manure pack which is kept healthful by inoculation of Bacteria and nitrogen. A skirt of heat-treated Orlon taffeta, plus a top vent, allows ventilation in the dome; animals are kept away from the Orlon by a perimeter bank and wire stretched inside the framing members.

Complete with two 25’ high silos, the 5,540 sq. ft. prototype barn cost $26,000. If its performance through the winter comes up to expectations, which already seems more than likely, the geodesic barn will be mass-produced and distributed on an installation charge and rental system. With production of 100 units, its cost is estimated at $12,000, or $2.40 per sq. ft., while its low weight, 17,380 lb., or 3½ psf, can be packed in only 712 cu. ft. for easy transportation.

Stressed skin design
Framing members, all B.C. fir 9½” x 2½” laminated and pressure treated timbers averaging 12’ long, are assembled to form equilateral framing triangles with sides of 12’ to 14’. The ends of each member are fitted with steel shoes that butt against 1” dia. steel bearing pins in the center of each joint, abutting members being secured by stainless steel aircraft cables tightened by turnbuckles to 16,000 lb. tension (see photos, top right). To prevent possible bowing up of the horizontal members at the footings, these members are

Photos: Gordon Koch

Translucent skin becomes luminous at night
Laminated framing members, 9½" x 2½" and 12" to 14' long, are fitted with steel shoes that butt against 1" dia. pin in each joint. Members are secured by cables around joint.

Perimeter joints atop footings are braced with steel spacers as well as cables, to prevent horizontal members from being forced upwards. The dome is mounted atop 20 such footings.

Erection of space frame is done from light scaffold after silos are built inside dome. Because framing members are connected by rigid joints, they exert no lateral thrust on foundations.

Supplementary framing members and 6" x 6" wire mesh are used temporarily to facilitate positioning of triangular reinforced plastic panels; these are 1/16" thick and weigh 35 lbs.

Complete frame is a single day's work for six men. Thanks to long lasting plastic, aluminum, stainless steel and pressure-treated timber, barn should last 60 years.

Joints between panels are made by aluminum extrusions pressed into grooves in framing timbers atop lapped edges of plastic panels, then sealed by 4" wide plastic tape.

Topmost joint has five framing members, carries a flowering type vent mounted on bearing pin. Connected to aluminum extrusions securing plastic panels, vent is also lightning conductor.

Reinforced polyester plastic has about the same coefficient of expansion as timber. Therefore, the triangular plastic panels are designed to fit rigidly into the tops of the timbers, and, by acting as stressed skin surface, the plastic panels provide enough lateral stability to permit a weight saving of 75% in the framing timbers. Edges of the panels are formed to fit grooves in the timbers. Adjoining panels are wedged into each joint by long aluminum extruded clips, secured by aluminum nails and the entire joint waterproofed by 4" wide polyester tape glued the entire length of the joint.

This barn is descended from the geodesic structures developed and patented by R. Buckminster Fuller. It is designed by Jeffrey Lindsay, head of the Fuller Research Foundation of Canada, for Client Dr. John Hackney, who judged it to be more durable and more economical than three conventional alternatives.
2. HANGARS WITHOUT COLUMNS

Ingenious cantilever construction spans 120', weighs only 11.8 per sq. ft., costs $3.26 per sq. ft.

Because today's aircraft have outgrown their hangars, a crop of boldly designed widespan hangars is mushrooming all over the US. Typical of the growing trend is this highly efficient Temco Aircraft Corp. hangar at Greenville, Tex., where a clear, unobstructed, 30' high hangar space has columns on one side only. The roof is carried on 120' steel truss cantilevers via "skyhooks" atop 56' tall inner columns, which in turn, are joined to 39' outer columns placed 40' farther back where they form useful workshop and office space. Pre-fabricated framing for this hangar was bolted together in only six working days for a cost of $3.26 for framing and roofing, and $5.06 for the complete building including services, foundations, and 32,400 sq. ft. of concrete apron.
Key element in the design of each framing bent is the 76' long member connecting the top ridge of the cantilever truss to the top of the inner column. This long member has two important functions:

1. It is designed to act either in tension or in compression—in tension to support the weight of the roof structure and roof loading; in compression to withstand a 30 lb. psf uplift from wind under the cantilevered roof, a mandatory provision under many building codes.

2. It also counters the downward deflection of the roof under snow load in winter. (The key member, exposed to outside air temperature above the roof, will contract, while the steel of the truss proper is kept warm inside the heated hangar.)

Speedy construction helped hold down costs. The columns were erected first; the rear ones were bolted atop deep concrete piers as they must withstand considerable pull, roughly 14 tons on each column, from the weight of the cantilevered roof structure. Next the columns were joined and the cantilever trusses raised (in one piece) and held until the rocker joints and the long tension members were in position and adjusted. Then the roof joists, cross-bracing and lower chord bracing were erected. Finally the structure was enclosed with prefabricated panels of galvanized corrugated iron.

Main doors are track-mounted, electrically operated, with provision for 5" vertical movement, the maximum deflection anticipated at the ends of the cantilevers. Vertical clearance is 30', but goes up to 45' inside three tail housings which open at the edge of the overhanging roof to admit the huge tails of large aircraft.

This patented construction is designed by the Erwin-Newman Co., designers and constructors, who are adapting the same technique to other widespan hangars and a factory building, shown diagrammatically at the left.

"Doghouses" project above roof to permit entry of tail planes up to 45' high. Boeing's Stratocruiser, shown here, has tail 38½' high.
3. GLASS BLOCK UNDER TEST

Classroom temperatures behind clear glass and glass block walls trace almost identical curves.

Recent studies at the Texas Engineering Experiment Station have indicated 1) that classroom temperatures are about the same whether the window walls are of clear glass or of glass block; and 2) that natural cross-ventilation improves thermal comfort in two ways—first, by reducing effective temperatures roughly 1° and, second, by pushing upwards the temperature at which discomfort first becomes noticeable, again about 1°.

Some have felt that glass block stores up and radiates more heat into classrooms in warm weather than does clear glass. This idea is proved to be false. On sunny days, an unvented room with clear glass is slightly warmer by day (by 1° - 3°) and is slightly cooler by night (by \( \frac{1}{2}° - 2° \)). Reason: the insulation effect of glass block is somewhat more than that of clear glass.

The temperature difference between rooms with clear glass and glass blocks is decreased by the addition of Venetian blinds. This difference is practically eliminated when windows are opened to permit cross-ventilation. In an unvented room a feeling of discomfort is felt at an average 84° effective temperature (a combination of temperature, humidity and motion), but an average 85° in a room having cross-ventilation.

An unexpected conclusion of the Texas study is that overhanging sunshades have little or no effect on midsummer thermal comfort, although tests were made with fenestration walls facing directly south. This is because in midsummer the sun is so nearly overhead that its rays are almost vertical, meeting the window walls at a very large angle of incidence at which they can have practically no solar heating effect. In spring and fall such overhangs have considerably greater value.

The studies were made in a 30' x 30' test building having one window wall; the other walls and roof were heavily shielded against solar radiation. The building was partitioned into two 15' wide rooms, each having one 15' wide window wall above a sill about \( \frac{1}{2} \) high. An identical 2' high vision strip in each room could be opened outwards to give a downward air flow through the room. Above each vision strip, one room was fitted with clear flat glass, the other with the standard glass block of two manufacturers.

In all, 40 tests were made of vented and unvented rooms under various conditions of sun control—no controls, Venetian blinds, small overhangs immediately over vision strips and large overhangs shading the entire window wall. Reading of outdoor and indoor (dry and black bulb) temperatures and room air speeds were noted at hourly intervals.

Test classrooms, one with glass block, the other with clear glass windows were compared for heat gain under summer and fall sunshine.

Typical temperature curves for classrooms with no Venetian blinds and no outside overhangs: top, with vision strip windows closed; below, with vision strip windows open. Note how ventilation tended to close gap between temperature curves. Tests were conducted on behalf of the glass block manufacturers.

Measuring instruments in classrooms were identical. They were used to measure wet and dry bulb temperatures and air speeds every hour throughout each 24 hour, midnight-to-midnight, test. The results were then plotted in a series of curves such as those above.
4. LIGHTWEIGHT CURTAIN WALL

Sandwich panels of foam glass and steel go up fast, are only 2" thick, cost $3.60 per sq. ft.

The walls of Douglass Elementary School in Kansas City, Mo., are only 2" thick and weigh only 7 lb. psf. They consist of 392 prefabricated curtain wall panels in sizes up to 3'-8" x 7'-4½" which cover the 4,768 sq. ft. of continuous spandrel wall area around the building. Erection time was fast: 6.9 sq. ft. per man-hour. Cost was low: manufacture, $2.75; erection, 85¢; total, $3.60 per sq. ft. in place.

Made entirely in the factory, the wall panels consist of a 2" cellular glass insulating core faced with sand-colored 18 ga. porcelain enameled steel sheet and backed with 22 ga. galvanized iron that can be painted as desired. Front and back skins are joined with dowels inserted through holes in clips welded on the inside of the front and the back of the metal skins (see diagram). These rods are simply driven through the cellular glass insulation and eliminate the need for bond between metal skins and the insulating core of the panels.

The sandwich panels have a U-value of 0.166, are designed for a lateral loading of 35 psf (equivalent to a 114 mph gale) and are expected to require little maintenance since all materials offer good resistance to moisture. The panels are also efficient vapor barriers and should be free from internal condensation.

Erection is simple and effective. Each panel is set into a hollow steel frame. The bottom of the frame is buttered with caulking compound and carries three ½" thick shims to prevent the caulking from being squeezed out under the weight of the panel. After caulking the side and top joints of each panel, it is secured by a small steel angle trim screwed into position at the top and sides. A 4½" x 14" ventilation louver, also of porcelain enameled steel, is set in the spandrel wall of each classroom to provide a fresh air intake to classroom unit ventilators.

Three-story school is clad with 4,768 sq. ft. of insulated porcelain enameled panels, including cafeteria, auditorium-gymnasium and full services, school was built for $13.77 per sq. ft.

Erection of panels, each weighing 180 lbs., is carried out by two-man crews, who average 6.9 sq. ft. of spandrel wall per man-hour. Sand-colored porcelain enameled panels are caulked, then secured by steel angles at top and sides.

Ventilation louvers, also of porcelain enameled steel, are set in spandrel walls to provide air intake to classroom unit ventilators.

Strengthening dowels connect exterior and interior surfaces of 2" thick insulated panels. Original design used two plugs of lightweight concrete cast around stainless steel anchor clips welded inside each surface.
Pipe organ and choir do their best only when integrated to church design

In the act of worship sound has greater impact than any other factor. It ranges from a single voice in prayerful supplication through voluntaries, anthems and canticles of choir and organ and up to the majestic surge of many voices in their praise and adoration to the Almighty. Planning for sound in worship is of vital import to both the architect and the churchgoer. Yet, new churches and new books on church architecture are almost totally indifferent to the all-important factor of an appropriate acoustical environment for worship.

The architect alone coordinates all creative effort, and squarely at his feet lies the task of designing a room in which sound enhances rather than defeats worship, in which aural control matches visual and in which denominational requirements are realistically consummated.

Worship is a corporate act. Appeal to both the intellectual and emotional capacities of the worshipper is almost totally dependent on 1) the voice of the minister; 2) sounds from the organ and choir and 3) the response of the congregation through music and the word. The entire tone of worship demands that all hear easily and properly. Even more important, sound must be acted on by the space to gain subjective qualities. Acoustic fundamentals are found in such good references as Acoustical Designing in Architecture by Knudsen and Harris. Competent consultants are available. But architects must realize that purely scientific criteria will not always achieve a realistic worship room.

Solution of acoustical problems has recently advanced from a hit-and-miss process to one which can be solved with confidence as a part of a total concept of any architectural design.

The importance of reverberation

Truly corporate worship is possible only with adequate sound reverberation, distributing sound throughout the room for easy audibility and imparting qualitative value. Resonant exhortation, prayerful supplication of the voice or similar intonations in...
music, acquire the most effective appeal in a “live” environment.

A worship room with controlled but ample reverberation promotes inspiration and aspiration, plays up the higher emotions, lifts. From time immemorial, worship has been upward—praise and adoration offered up to Deity. It is not logical to expect worshipers to waft upwards their prayers in an environment emphasizing a pressed-down, confining atmosphere created by wrong shapes and acoustical padding.

Acoustically “dead” space is incapable of distributing sound in good quantity and quality. On the other hand excessively reverberant environments sometimes found in very large churches cause sound to be unintelligible, confusing.

Reverberation times to be attained in design depend on the worship tradition of the denomination in question. At one extreme the Roman Mass demands an especially live atmosphere but the Christian Science service, where speech predominates, requires only enough sound reflection to support the spoken word.

The optimum reverberation time at 512 cycles for church music recommended by Knudsen and Harris varies logarithmically from 1.3 seconds in a room with a volume of 10,000 cu. ft. to 2 seconds where the volume is 1,000,000 cu. ft. Below 512 cycles reverberation time should be gradually increased. In larger rooms this increase may be as much as 150% at 100 cycles and should be proportionately less in smaller rooms. Where commercial sound absorbents are used to control reverberation time, this gradation is easily attained, for these materials are less absorptive at lower frequencies.

Recommended reverberation times for speech are given as nearly one-half the values for church music. This might lead the architect to compromise the requirements of music and speech in the church service. Actually both the musician and the minister must gauge the tempi of music and the rates of speaking so that they are appropriate for a given acoustical environment regardless of whether the reverberation time is long or short. Church music and liturgy were conceived for unhurried paces in reverberant spaces that would give life to the sound. Hence, churches should be more live than the lecture hall even though both are places where speech must possess a high degree of intelligibility.

Spaces, shapes and surfaces

Development of a church plan cannot be successfully undertaken without regard for relationships of the minister, organ, choir, and congregation as sound sources. Ideally, all persons should be a closely grouped body of worshipers. Usually this cannot be accomplished literally. A little separation is needed for auditory perspective, and this often supplies just the space needed for the circulatory element of the plan.

The proper sound reinforcement system for any auditorium is the reflective surfaces of the space and their arrangement.

Sound-focusing shapes such as domes, barrel vaults and arched ceilings tend to concentrate sound so that the resulting sound intensity is not uniform throughout the space. Instead, shapes should be devised to distribute sound in uniform intensity. Long, parallel surfaces which may exist between opposite walls or between a floor and a flat ceiling may cause flutter echoes. Slight non-parallelism or splayed planes of sufficient width avoid this acoustical defect.

In very large spaces where some absorptive surfaces may be required to reduce reverberation time, patches of sound absorbents irregularly placed on opposite parallel walls may solve the problem of flutter. Walls more than 40’ from a sound source may return an echo. Adroit space shaping will relate such reflective surfaces so that they direct sound down to auditors seated close by, thereby raising the sound intensity at a point removed some distance from the sound source.

... and finishes

Finishes can spell the difference between spiritual uplift and depression, between success and failure for sound in worship.

The padded cells which many churches are in this country today ruin utterly any possibility for dynamic worship. Concave ceilings, often covered entirely with acoustical absorbents, gobble up the very portions of the sound spectrum, be it speech or music, which are essential to dynamism, result in little else than morbid turgidity. So do carpeting, drapery, wall padding, other finishes which are basically non-reflective. One exception is pew cushioning which tends to equalize the acoustical difference between the full and empty room.

Acoustically padded spaces prevent music from being complete and virile, result in sound which is heavy, tubby, and ponderous. Vocalists sound vapid, choirs sluggish, organs hooty. In large part, this is caused by the unwarranted and ill-conceived absorption of sound upper partials, the very parts of sound which give brilliance, dynamism and ringing conviction.

Most acoustical absorbents, as customarily installed, do not act upon all sound frequencies at the same rate. Little or no absorbent is required for the average size worship space of proper shape.

Integrating organ and building

Planning for music requires the sympathetic, able assistance of the competent church musician and the artisan organ builder from the very beginning. Few church committees are capable of choosing an organ. The wise committee will engage a consultant who knows organs and is also an active church musician.

Organ builders must also be retained as consultants. Organs must be integrated to the total architectural scheme just as sculpture and stained glass. A good organ is a work of art, and the building in which it speaks is half its success. The room itself is part of the organ, always. Architects should learn more about the instrument, the materials of which it is made, and the natural arrangement of pipework. Visually it can enhance the church interior (see photos left). Contrasts of pipework of wood,
Ideal organ and choir plans for small (left) and larger churches: organ and choir are closely knit, have common acoustical environment. Larger console is turned 90° to give choir unobstructed sight line to signals made by organist's left hand.

Compromise plans: although organ and choir are closely knit and organist-director has good control over choir, organ at left is boxed in on three sides and does not speak in same direction as choir; low notes of organ will escape more readily than high ones. In plan at right, choir is stretched out too far for easy control by organist.

Poor, but common plans: in plan at left, divided choir is difficult to control; divided organ is more expensive and tonally less desirable than single unit. Sound is altered in quality in turning corners to reach nave, and loss in sound requires larger organ and unnatural forcing of voices. At right, choir and organ are in different rooms.

Design standards for church, organ and choir facilities

Organ design and placement depend intimately upon each other. Ideally, the organ must be placed entirely within the walls of the room. This permits unhindered passage of tone from the source and allows the organ sound to be natural, unforced. Sound which proceeds directly, however, should be sufficiently separated from listeners so that space itself may act upon it and perspective made complete. The buried organ suffers both as to sound quality and quantity. A smaller, more tonally satisfactory instrument will serve when the organ speaks within the walls of the worship room. Furthermore, an organ in an auditorium receives heat from the space easily and uniformly, thereby staying in tune.

Some principles regarding the relationships of organ, choir, and organist-director are shown in accompanying sketches. The choir should be a relatively close knit unit facing the director. Since many organists also direct from the keydesk, the console should be so placed that his left hand can be seen by the singers.

Choir and organ should have a common soundboard as a backdrop for best results. Choir and organ as two instruments will then perform in the same acoustical environment. Orchestras are always arranged as single units in a semicircular grouping despite the wide range of orchestral voices present. Division into two or more groups produces separate orchestras and not different groups of the same unit. In similar fashion a divided choir is really two choirs, and a divided organ, two organs.

Placement of the organ-choir group within the worship room will be governed in part by the denominational attitude toward the function of music in worship. Architects must remember, and clients understand, that music in worship is primarily an auditory, not a visual factor.

Help for the architect

Design of a realistic worship room demands sympathetic assistance from minister, musicians, organ builder and acoustical engineer, all working with the architect as coordinator. This requires imagination and resourcefulness from any architect but will pay dividends. No organ builder, no church committee should attempt to define or solve a problem alone. This is for professionals in whom there must be faith.
HOSPITALS—BEDROOM PLANS AND SIZES

PRIVATE ROOMS - PRIVATE BATH

PRIVATE ROOMS - PRIVATE BATH

2-BED ROOMS - PRIVATE BATH

2-BED ROOMS - BATH ON CORRIDOR SIDE

SEMI-PRIVATE BATHS

180 sq.ft. per room 190 sq.ft. per room
BATH WITH SHOWER-LAVATORY IN ROOM
202 sq.ft. per room 215 sq.ft. per room (varies with tub)
BATH WITH TUB-LAVATORY IN BATH
196 sq.ft. per room 196 sq.ft. per room
BATH WITH SHOWER-LAVATORY IN BATH

18.4 sq.ft. per room 19 sq.ft. per room
BATHS AND LOCKERS BETWEEN ROOMS

208 sq.ft. per room 209 sq.ft. 220 sq.ft. 240 sq.ft. per room

230 sq.ft. per room 250 sq.ft.
BATHS BETWEEN LOCKERS IN ROOM

240 sq.ft. per room 243 sq.ft. per room 264 sq.ft. per room
BATHS AND LOCKERS ON CORRIDOR SIDE OF ROOM

220 sq.ft. per room 184 sq.ft. per room
ALTERNATING SINGLE AND 2-BED ROOMS WITH PRIVATE TOILETS

265 sq.ft. per room
2-BEDROOM TURNED LENGTHWISE TO CORRIDOR
HOSPITALS—BEDROOM LAVATORIES

LAVATORIES FOR PATIENTS’ BEDROOMS

FLOOR

ELEVATION

With:
- Goose neck spout
- Aerator
- Blade with handles
- Open strainer

DENTAL LAVATORIES

FLOOR

ELEVATION

With:
- Flushing rim
- Open strainer
- Cold water supply

DISTURBED PATIENT’S LAVATORIES

FLOOR

ELEVATION

With:
- Flushing button
- Supply valves
- Slow draining strainer
- Optional combined spout and drinking bubbler

FIXTURE CLEARANCES

FLOOR

ELEVATION

These clearances allowed in room plans for the nursing unit. Doors to toilets and baths shown as 24” wide.

FLOOR

ELEVATION

Each room must be provided with a lavatory

Lavatories should have knee or wrist control to prevent cross-infection and should have open strainers to prevent washing in standing water. A high gooseneck spout makes it possible to fill basins and containers. Dental lavatories are required in rooms to be occupied by tuberculous patients.

REQUIREMENTS FOR BATHS ADJOINING PATIENT’S ROOMS

Bathroom doors should always open outward.
Baths should have an emergency nurses’ call button and a grab bar.
Baths adjoining patients’ rooms should be as sound proof as possible and should have soundproof doors.
Baths in chronic hospitals must be arranged to accommodate patients in wheel chairs, with no raised thresholds, wall-hung lavatories open underneath, and grab bars on either side of toilet enclosure.

RECOMMENDED FLOW OF HOT OR COLD WATER FOR FIXTURES IN GALLONS PER MINUTE

1. LAVATORY
   2. BATH TUB
   3. SHOWER HEAD
   4. WATER CLOSET
   5. BEDPAN CLEANSER
   6. BEDPAN WASHER

REGULAR TUB

Controls should be out of reach of person in tub. Supply valves and shower unit are usually placed in a locked cabinet above the tub. Spray fitting is also available.

INSTITUTIONAL BATH

BASE IS SOMETIMES SUPPLIED WITH TUB

STANDARD SHOWER STALLS
NEW PRODUCTS

Vinyl tile cut in classic geometric shapes, modern proportions

*Geometile*, the first resilient floor to be die-cut in a series of modular geometric units, is now coming off Robbins' plant No. 2 assembly line. These simple but expressive forms permit the architect design freedom with an easy maintenance material. (Machine buffing without wax is best treatment for heavy traffic areas). And *Geometile* gives him compatible solid colors to work with. (Confounding to the manufacturer, not one of the 100 or so architects who have seen the new flooring have disputed the selection of platinum gray, gray-beige, slate, and off-white. Architect I. M. Pei at Webb & Knapp called *Geometile* "the interior designer's dream," and J. Gordon Carr is considering using some of the new tile shapes on several tenants' floors in Manhattan's Socony Vacuum Building. It is already being written into specifications by other architects for three office buildings interiors.) Both the fat diamond (60° and 120° corners) and slim diamond (continued on p. 184)

**Four tile shapes** now obtainable in vinyl at 85¢ a foot (and soon in adhesive-backed rubber at 70¢) make up the eight starter patterns above. Both the slim and wide diamonds pictured measure 1' tip to tip; and 18¢ version of the thinner will be made for large rooms and lobbies. A fifth shape, the octagon (lower right) is practically self-aligning as square inserts counter-check seams.

Film to wrap buildings (p. 188)

A nail pierces steel (p. 192)

Glass rides in a groove (p. 194)
How long do you think the reshaping of a city might take?
—A century, 50 years, perhaps 150 years?

The question is pertinent now that the new ACTION® organization has made urban rehabilitation prospects real. Many still think, however, that despite such imposing committees, representing all major factions of the community, truly large-scale action is remote. “Nothing much will happen,” they say.

Let’s see how long building or rebuilding cities does take.

Chicago, now housing 3.7 million, was nothing more than a fort in the war of 1812. In the last 75 years Chicago has grown not by any fractional percentage but by a multiple of ten. Chicago of 1955 is Chicago of 1880 x 10. Los Angeles is an extreme case. In 1880, under President Rutherford Hayes, it was a village of under 10,000. At 2.1 million, Los Angeles of 1955 is roughly Los Angeles of 1880 x 200. New York, in a more settled area, multiplied itself in the same period only five times; Boston “only” three times. Smaller cities may have grown less but are they any less transformed?

Nor does growth and change mean only the spreading of cities over a vastly larger area. The downtown district of a big city, during its growth, gets rebuilt over and over again. When plans for a Chicago 100 years hence were recently displayed at the Art Institute (AF, Nov. ’54) the Planning Commission shrewdly guessed that people would consider the projected transformations quite “impossible,” so pictures were shown of transformations effected already, in the “natural” course of events. One of these is reproduced herewith. Would you believe that these wooden stores, with a sidewalk that steps up where some progressive merchant had lifted his floor above danger of floods, still existed in 1850 in Clark St. in the middle of the Loop? If change has been so unbelievably radical in the past 100 years, what may the year 2055 not bring?

Of course rates of expansion are flattening out as usable raw land is harder and harder to find, and as people find that ultimately taxes cannot be escaped. Indeed, viewed totally, building new streets, new sewers, new water and electric supply, new schools, new protection against fire and crime in the suburbs is a tremendous expense, the more so because the old ones in the central city cannot be abandoned (with all the investment they represent) no matter how many people desert their old “ fouled nest.” Hard-headed Realtor Zeckendorf has been proclaiming no less eloquently than the reformers that ultimately the tax cost of maintaining our cities downtown and in our suburbs must be considered as a single package. Bankrupt big cities are no national asset.

So rehabilitation, the reshaping of cities inside and out, is our next major job.

And with the proof before us of the way our cities have in the past been transformed, through sheer energy and despite the lack of correlated plans, we know it can be done.

Let’s face it, however: if the reshaping of our cities is to be not only healthy and efficient but also fine, it is the architectural profession which must be transformed. Except among a few farsighted leaders, the viewpoint of the profession is obsolete.

For a majority of architects any remodeling or rehabilitation is the most distasteful of all jobs. Too often those architects who have mastered it have been the grubbers, not the men of vision. When it comes to remodeling, many architects, whose work is shiningly resplendent, possess not even a workable technique. In the hands of such men the cost of doing a really fine rehabilitation job runs too high, and they themselves can make no living at it.

This is natural enough. The architectural assignment of the past 25 years has been a departure from the past. There was a big job to be done, not only in planning new buildings but also in shaping the new industrialized construction and equipment into an architectural style.

The job of the next 25 years may, however, well be a relinkage with the past. Emphatically this does not mean a return to compromise and eclecticism in architectural style. It does, however, mean mastering the art of combining the new with the old, of bringing older sound structures, older areas, representing a past investment of money, work and brains, into fresh use—and without doing violence to what was really fine and true in the work of predecessors, including their basic architectural expression.

The creation and use of a national shelter system—shelter not only for families but for commerce and industry and institutions—can no longer be considered as a series of haphazard individual events. What all of us really live in and work in is not a succession of structures but a town.

ACTION as a group creates the opportunity anew, gives the reshaping of our cities the support of businessmen, bankers, sociologists, labor, all factors in the community. Architects are represented on it too. Let this opportunity be captured for architecture. And may architecture rise to it, so the key-stone will be inserted in this arch.

* * *

John Root was the man who directed attention to the fact that architecture as the art of fine building must now attend not only to our own cities and our own past but also to the great world beyond. The amount of work and responsibility undertaken abroad by this country or its individual citizens since World War II, is quite astonishing. So much so that FORUM will devote most of its forthcoming January issue to the subject. We hope the scope of the activity will be as fascinating to you as it was to us.

* * *

And this is the last time this column will be addressed to “architects only.” Many may have noticed anyway that it was designed to be read by others over the architect’s shoulder. Architecture, fine building, will continue to be the subject but, as Ned Purves says, it cannot be furthered by architects talking only with other architects. Many means exist for communication within the profession but more are needed that take it out into the forum of the community.—D.H.
Every Ro-Way Overhead Type Door—whether for residential, commercial or industrial installation—is true custom quality, engineered and built with custom detail, custom care.

Sections and panels are selected West Coast lumber. Millwork is both drum and hand sanded to a lustrous finish. Mortise and tenon joints are both glued and steel doweled. Sections are rabbeted to assure weathertight joints. Heavy gauge steel hardware is Parkerized and painted—after fabrication—for maximum protection.

And these exclusive custom features give Ro-Way doors the ultimate in easy up-and-down operation the year around, and year after year. Smooth running, ball bearing Double-Thick tread rollers . . . Power-Metered springs matched to the weight of each door . . . Taper-Tite track and Seal-A-Matic hinges that work together to assure snug, weathertight closing. Plus superb Ro-Way styling, clean and simple to blend with any style of architecture.

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ROWE MANUFACTURING COMPANY, 929 Holton St., Galesburg, Ill.

there's a Ro-Way for every Doorway!
true color
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Clear, prismatic Amcolens with its high light transmission in ELIPTISQUARE allows merchandise to reflect true color values—providing the color accent that does a dynamic selling job.

ELIPTISQUARE supplies the general area lighting and ELIPTICONE, the other half of the merchandising pair, delivers the "punch" of attractive high-lighting for featured goods.

This merchandising pair combines to provide modern store lighting . . . making goods look better and sell faster.

Here is sales-producing incandescent lighting at its best!

ELIPTISQUARE

Merchandise lighted with ELIPTISQUARE'S clear, prismatic Amcolens reflects its true color value. For general area lighting, advanced ELIPTISQUARE recessed and surface units provide highest light transmission efficiency.
ELIPTICONE

For the optimum in accent lighting, ELIPTICONE delivers the unusual in shielded, recessed and surface illumination. Complete absence of brightness, from any normal viewing position, on the visible surface of ELIPTICONE, creates a dramatic unawareness of the light source.

THE ART METAL COMPANY
CLEVELAND 3, OHIO
HOSPITAL FUNCTION
(continued from p. 147)

can be useful, of course, as the work of the US Public Health Service shows, but such standards are inevitably instruments of national policy and must take into account many other factors outside the field of research. If a research body issues standards, it implies that the standards are derived from research, which can never completely be so.

Methods: Our principle of breaking down a problem into aspects that can be studied objectively is illustrated by the accompanying material on nursing wards.

Sometimes you want a subjective answer to research—for instance, we are now doing a study on tolerable levels of hospital noise. If you want to find out what noises people think they can stand, subjective research is appropriate because the fact being sought is itself subjective. But the question of where noises originate and how loud they actually are—which the architect also needs to know—is not subjective and cannot be studied as if it were. The important thing is not to attempt to find objective facts by asking people what they think, how they like to do things, what improvements they suggest.

Results: No scientist would dream of publishing a paper saying: "I have done a great deal of research on problem X and I have the following answer." Yet this is what is frequently done in hospital planning. It would be far more useful to publish an account that includes methods as well as conclusions—so the reader can evaluate its worth and draw conclusions of his own.

Experimental design: It is open to argument whether this is a proper task for a research body at all, but we have felt the need to take this step—to put together the results of a number of separate studies and see what they led up to in terms of design. So we have designed and constructed experimental hospital buildings. The value of such an experiment to an architectural research team is enormous: it corrects the tendency to focus too closely on particular issues (a tendency which inevitably arises from an analytical approach), it brings out interrelationships of the different needs a design must satisfy; it gives a practical test, without which the research might soon become sterile and academic.

But this is not the same thing as production of a type. We look upon an experimental design as one example only of the sort of design that may arise as a result of research. The research materials themselves are the basic materials and they can be interpreted in an infinite variety of ways to suit individual circumstances.

It is a good old principle of military organization that the intelligence service should be divorced from command. The principle is sound, and applies equally well to architectural design.
"Clay Tile...Modern Answer for Durability, Easy Care and Smart Design"

Perkins and Will's attractive design for a school corridor vividly demonstrates clay tile's unbeatable advantages.

Glazed wall tile is always a wise choice for use in an open-type locker arrangement like this. Just one swipe of a damp cloth removes sticky fingermarks and smudges. Richly colored ceramic mosaic tile on piers adds a smart decorative note, keeps maintenance costs at a minimum. And your clients will appreciate quarry tile for heavy traffic areas because it resists a lifetime of abuse, yet remains clean and attractive with minimum janitor maintenance.

When you design or build any commercial, institutional or residential project, remember clay tile's qualities—because clay tile will reflect good judgment by providing lasting satisfaction for your client.

When it comes to color and design possibilities, the range of today's clay tile colors, shapes and types gives you the widest range of any modern building material. Clay tile never fades, burns, stains or needs refinishing. This means your clients can figure their first cost as their last cost—because clay tile installations are a lifetime proposition.
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- (B) 8" rib, .032" thick.
- (C) 8" rib, .040" thick. Rib depth, 1".

Finish: Stipple-embossed.

Lengths: From 5' to 14' 5½".

Weight per square:

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- (B) 53.1 lbs.
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BUILDING PRODUCTS

ARCHITECTURAL FORUM • DECEMBER 1954
BOOK REVIEWS

MATERIALS OF CONSTRUCTION. By M. O. Withey and G. W. Washa. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N.Y. 6" x 9\(\frac{1}{2}\)". Illus. $9

This is both a textbook and a reference book. According to its preface it "aims to provide essential information concerning the sources and manufacturing of the principal building materials; to give carefully selected data covering the more important mechanical and physical properties and the influences of various factors upon these properties; to show the causes of defects and variations and how they may be discovered; to furnish an acquaintance with the technique of testing materials; and to present to the student some of the more general uses of the different materials." M. O. Withey is Emeritus Dean of the College of Engineering and G. W. Washa is Professor of Mechanics at the University of Wisconsin.

LIGHTING FOR COLOR AND FORM. By Rollo Gillespie Williams. Published by Pitman Publishing Corp., 2 W. 45th St., New York, N.Y. 340 pp. Illus. 6" x 9\(\frac{1}{2}\)". $8.50

This book brings together a vast number of different but related branches of lighting knowledge. Part I deals with the scientific factors underlying the subject of color lighting. Part II discusses light sources and filters useful in applied color and directional lighting, along with equipment for color, accent and modeling work or for architectural, concealed or color lighting effects. Part III defines artistic use of directional light, shade and color. Part IV deals with display, architectural, photographic, motion picture studio, television studio, stage, exterior and photochemical lighting.

Rollo Gillespie Williams is a Member and Fellow of the Illuminating Engineering Societies of the US and Great Britain respectively. He is famous on both sides of the Atlantic as a lighting designer and an authority on mobile color lighting.

ESTIMATING PRODUCTION AND CONSTRUCTION COSTS. By Louis Dallavia. Published by The Dallavia Co., 2110 Elmen, Houston 19, Tex. 257 pp. 8\(\frac{1}{2}\)" x 11". $15

This book contains some very valuable information on estimating and application of job and labor variables, but the value is somewhat weakened by the claim that "this is the first estimating book ... that by its application will never go out of date." Never is a long time and puts one in a critical frame of mind.

In addition to normal unit labor costs for different sections of the country which are included in most books giving cost data, this book continued on p. 180.

Why Cookson Power Doors Cost Less

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**BOOK REVIEWS** continued from p. 178

The book emphasizes the variables affecting rate of production, such as good, normal or hard times; poor, normal or good supervision; bad, fair or good weather. There are eight classes of variables similar to these. These factors can influence rate of production from 25% to 100%.

The main portion of this book consists of typical shift production cost tables. The "shift crew" cost becomes the unit rather than wages of individual trades. The typical shift crew is set up to meet the particular construction operation; the personnel in the crew may be changed to meet the needs of a medium or large project. Unit-in-place prices may vary in ratio of ten to one between jobs.

**ART AND INDUSTRY.** By Herbert Read. Published by Horizon Press, Inc., 220 W. 42nd St., New York 36, N. Y. 239 pp. 6 1/4" x 9 1/2". Illus. $6

Because this book in England has long been considered the standard work on industrial design, US designers, architects and teachers will be pleased that it is now available in the US—revised and up-to-date with new American material.

**PRESTRESSED CONCRETE DESIGN AND CONSTRUCTION.** By F. Walley. M.Sc., A.M.I.C.E. Published by Her Majesty's Stationery Office. American agents: British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. 279 pp. 7 1/2" x 10". Illus. $6.75

This is perhaps the most practical reference book yet for structural engineers and architects wishing to enter the growing field of prestressed design. The author, who has considerable experience in prestressed concrete construction at the British Ministry of Works, discusses simply and effectively the principles underlying the design and manufacture of prestressed concrete units and covers a few special design problems, including continuous framed structures, composite action, two-stage prestressing and circular tanks.

In a 97-page design chapter, many design problems are worked out in detail, the reader being led through the thinking from which each design develops. Questions are answered as they arise (but only to the extent necessary for practical design). Subsequent chapters cover behavior under load, materials and allowable stresses, practice, experimental work and stress losses (helping the designer to determine the approximate stresses at different design stages and the changes of stresses with time, a problem peculiar to prestressed concrete). Fire tests, for instance, indicate that a 2 1/2" concrete cover over prestressing steel earns a two-hour fire rating, and that the failure of loaded beams becomes imminent once the temperature of the steel rises above 750° F. A useful appendix includes 36 pages of section properties to facilitate the design of efficient beam sections.
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Latex paints are different! Based on a new concept of paint chemistry, they offer you a combination of advantages no other paints can match. They dry to a tough, impermeable film that's highly resistant to acids, alkali and greases. Because of this smooth film surface they can easily be cleaned with soap and water and are so durable even repeated scrubbing won't change their color and light-reflecting surface.

But those aren't the only advantages of latex paints. They apply easily, dry quickly, leave no objectionable odor, save cleanup time. In addition, latex paints can be applied over hot plaster with savings up to $75.00 in a five room house! Leading paint manufacturers make latex paints in a wide range of colors to match or complement every conceivable decorating scheme . . . in soft pastels, modern deep tones and bright, warm hues. For further information on these wonderful new paints, write to Dow, Plastic Sales, Department PL-514 M1, the Dow Chemical Company, Midland, Michigan.

This Dow microphoto shows how latex looks as a paint raw material. Tiny latex balls suspended in water.

As the latex spreads out in a layer and the water evaporates, the little balls start to move closer together.

As the latex dries further, the balls crowd closer until they all touch . . . a film of latex is now starting to form.

Now tremendous forces of cohesion take part. The latex balls are fused together into a continuous elastic film.

you can depend on DOW PLASTICS
The school board of West Mifflin Borough, Allegheny County, Pennsylvania, took care of roof maintenance almost permanently when the new Walnut Grove School was built. They did it by specifying a roof of long-lasting USS Stainless Steel.

The roof is approximately 385 feet long and 75 feet wide. The Stainless Steel roofing panels have a satin-type architectural finish. They are of 26-gage material fabricated into a standing seam panel 27½" wide by 12 feet long.

Stainless Steel's superior corrosion resistance, combined with its almost complete freedom from maintenance, fits it for years and years of satisfactory service. It has excellent reflective properties, and features needed strength with light weight.

The Stainless Steel roofing sheets are laid on double-coated, 35 pound asbestos felt. Each cross seam is caulked and the roofing is locked into the Stainless Steel gutter. Gutters and downspouts are of 22-gage Stainless Steel, architectural finish.

In addition, all attachments, supports, hanger bars, bolts and screws are Stainless Steel.

Stainless Steel is finding wide favor with school architects, not only for roofing, but for exterior walls as well when used in the form of insulated panels. Of course, its wonderful possibilities for interior trim are also being used to advantage.

If you have a new school in the planning stage, now is the time to think in terms of Stainless Steel and its many benefits. And think in terms of perfected, service-tested USS Stainless Steel. For more information, mail the coupon below. If you like, we will be pleased to have one of our representatives call.
Please send me information on architectural use of Stainless Steel.

United States Steel Corporation
Room 4564, 525 William Penn Place
Pittsburgh 30, Pa.

Name: 
Title: 
Address: 
City: State: 

Stainless Steel

United States Steel Corporation
Room 4564, 525 William Penn Place
Pittsburgh 30, Pa.

Please send me information on architectural use of Stainless Steel.

Name: 
Title: 
Address: 
City: State: 

USS STAINLESS STEEL

UNITED STATES STEEL

ARCHITECTURAL FORUM - DECEMBER 1954
New shapes for vinyl tile:
an equilateral hexagon which
can be combined in strips
with a diamond (shown alone
far right in bold harlequin).

it's new! it's shallow!

"The Garfield"
A & B 13000 SERIES

4 & 8 FT. LUMINAIRES
FOR INDIVIDUAL
OR END-TO-END
MOUNTING

- The 2-lamp Garfield is a gracefully styled luminaire with
  long, low lines that give it a "built-in" look. Its 3 1/8" depth
  makes it ideal for surface mounting on low ceilings—yet it
  is equally handsome when pendant mounted.
- Diffusing polystyrene side panels and 35° x 35° louver
  bottom result in a desirable brightness pattern. Closure type
  reflector with baked-on white finish assures highest efficiency.
- Open chassis construction makes the unit easy to install and
  maintain. Side panels slip into position; hinged louver
  opens or removes quickly.
- Unit is wired complete, ready to install in line or indi-
  vidually. Finished in all-white. U.L. listed.

Write for Bulletin N
It gives complete specifications, di-

dimensional drawings and engineering
data for the Garfield.

CAST MINERAL TILE is strong, naturally
colored

Mineral aggregates are bonded under high
pressure to make rich-hued Caltile wall
and floor surfacing. Suitable for outdoor or inte-
rior use, the 1' squares and 1' x 2' oblong units
cost about 41 to 51¢ per sq. ft. plus 50 to 75¢
for application. Pigments—clay red, buff,
yellow, slate blue, green and matte black—
are akin to the material and uniform through-
out the tile. If a high gloss is wanted, Caltile's
sandstonelike surface will take wax well. The
pressure used in processing gives the material
high-strength characteristics so that it can be
made thinner (7/6") and thus lighter than
quarry tile.

Edges, squarely cut, will butt precisely.
An adhesive bed is suggested for the bigger
tile since it would not take much mortar
shrinkage to destroy the bond. Although Cal-
stone Co. makes 113/4" squares and 113/4" x 235/8"
units for mortar laying, it recom-
mends the thin-bed method for its waterproof-
ness and resiliency.

Manufacturer: Calstone Co., 970 Commercial
St., San Carlos, Calif.

continued on p. 188
evolution of a SEALUXE facade

the uni-wall system

Miracles in Metals

SEALUXE ENGINEERED UNI-WALL SYSTEMS for metal-glass buildings provide a complete package unit giving more efficient construction at no increase in cost over conventional walls — buildings that are easier to heat, cool and maintain. Erection costs are reduced by the fact that they are light in weight and are easily and quickly erected by Universal Corporation's Field Erection Department.

Properly designed, the glass may be cleaned from the inside, reducing maintenance cost and insuring the full beauty and function of glass. Properly insulated, these facades provide low heat transfer and vapor transmission characteristics.

Universal Corporation assumes the entire responsibility for SEALUXE metal-glass facades, from design to approval of the completed job.

IMPORTANT: Send Universal Engineers your preliminary drawings for study in Climatology, Orientation and Scale in Metal-Glass Facading. This is an added service to Architects throughout the Nation.
You will never have complaints about "Root Clogging" if it's PERMANENT CAST IRON PIPE

Unless you've advocated Cast Iron Soil Pipe sewers, you can't blame your customer if she calls you to complain that her drainage system is clogged with roots ... or needs major repairs or replacement. Naturally she doesn't want to dig up her beautiful lawn and shrubs or incur this cost that could have been avoided in the first place.

Your customers look to YOU. Pleased customers are your biggest business boosters.

When you install permanent Cast Iron Pipe, your customers will never have root clogging troubles. Caulked with oakum, sealed with lead, its tight but flexible joints are impervious to tree roots. It resists ground settlement and heavy loads and will outlast any home. You can recommend Cast Iron Soil Pipe with complete confidence that you'll have no come-backs.

Our Company does not make Cast Iron Soil Pipe, but produces quality pig iron used in its manufacture by many of the nation's leading foundries.

WOODWARD IRON COMPANY
WOODWARD, ALABAMA
Your designs accurately executed in *Erie* porcelain enamel panels—
Filled, Insulated or Plain

Complete co-operation from drawings to final erection...
5 developed panel designs to choose from or custom fabrication to your designs.

ERIE gives you full choice of plain or Porock filled pan type porcelain enamel panels or 5 different types of laminated or box type double-faced insulated panels suitable for spandrels, window walls and curtain walls. Your problems are fewer with Erie because the panel designs are developed and ready for your adaptation to sash frame suspension, mullion bar systems or attachment over furring. Recommended suspension systems are also available to you from Erie's engineers.

Plan your next project around Erie Porcelain Enamel Panels in the standard designs offered—or custom fabricated to your exact specifications.

WRITE for new 16-page "Architect's Sketch Book of Panel Wall Systems" giving detail drawings of panel designs and suspension systems.

**ERIE ENAMELING COMPANY**
ERIE, PENNSYLVANIA
CHICAGO • PHILADELPHIA

Missaukee County Court House
Lake City, Michigan
Architect: Gordon Cornwell, Lincoln, Neb.
Contractor: John Saul, Lincoln, Neb.
NEW PRODUCTS continued from p. 184

An Investment Worth Your Investigation

MOUNT AIRY GRANITE

Here's a Shrine which compliments the architect's choice ... a fitting tribute of lasting beauty with Rock-Faced Mount Airy Granite Sawed Bed Ashlar strikingly contrasted with 8-cut Mount Airy Granite at entrance door, window trim, copings and cross ... chosen because of its distinctive light grey (almost white) coloring, its hard and durable composition, its maintenance-free qualities and its very attractive price comparable to other stones.

Mount Airy Granite offers unlimited design opportunities both for small churches and large cathedrals ... ideal for base courses or the entire facade. Mount Airy Granite is definitely an investment worth your investigation. Why not write us today regarding specific church applications?

NORTH CAROLINA GRANITE CORPORATION
MOUNT AIRY, NORTH CAROLINA

POLYETHYLENE FILM, a practically perfect vapor barrier at $1.50 a ft.

Currently packaging everything from sweaters to sirloins, polyethylene may soon wrap up the building field. The thin, pliable plastic's low price ($1.50 psf for the .004" thickness), lightweight (1,000 sq. ft. weighs 19 lb.) and its high resistance to moisture suit it to countless construction uses. (Troops who have made amphibious landings with ammunition sealed in the film can vouch for its waterproofness and toughness.) It stays flexible in temperatures as low as —72°F. and so can be handled in weather that would make many other materials brittle.

Produced in continuous lengths polyethylene film now comes in widths up to 20'. Seams can be lapped, stapled or taped, or welded with an ordinary iron. A .002" sheet of the noncorrosive, nonflammable, chemically inert membrane applied on the warm side of outside walls is said to eliminate condensation for the life of the structure. As a vapor barrier beneath a concrete slab, the heavier gauge (.004") is put down over a layer of sand; no gravel or stone base is necessary. Placed in a crawl space with sand on top to keep it in place, it guards subfloor and joists against moisture damage. Laid over a subfloor it acts as a dust and draft-barrier and squeak-muffler.

Polyethylene film also will serve as flashing, termite shield, waterproofing for shower stalls, and as tarpaulin for machinery and materials left outdoors. Some other uses: concrete, form liner, vapor barrier in roof deck, concrete-curing blanket, drop cloth, and cavity-wall liner. Visking Corp., biggest producer of the film trade named Visqueen (but no end products) is experimenting with a quilted double layer of the polyethylene. The manufacturer suggests that a fabricator could sell this as a bantam-weight insulating blanket for as little as 4¢ per sq. ft. The quilt's insulating fill: air, in tiny pillows.

Manufacturer: The Visking Corp., Plastics Div., Box 1410, Terre Haute, Ind.

continued on p. 192
How to help a building put its best face forward

Stainless Steel number and doors make a clean, modern entrance at 430 Park Avenue, N. Y. Doors at right by Schacht Associates, Inc., N. Y.

Department stores like New York's Lamston's have stainless steel doors that withstand daily wear and tear from thousands of customers.

Make its doors a combination of glass and Enduro Stainless Steel!

This is the metal that gives you freedom of design. The metal that lends itself to modern styling.

This is the metal that gives your clients beauty with practically no maintenance. With Enduro, you clean infrequently. And then you take off the dirt only. There is no coating to wear off. No pockmarking from weather. No oxidation. And perspiration from peoples' hands has no effect on it.

Enduro gives a door strength without added weight. Enduro provides a strong frame that does not sag. And it is tough and hard to withstand the daily scuffing and kicking of millions of feet.

There you have it. Beauty. Less maintenance. Client satisfaction. Want to know more? Sweet's has all the facts. Or write to:

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York
Students study in comfort in this outstanding new library at Oklahoma A&M. Complete with summer-winter air conditioning, the new structure is rated as one of the finest college libraries in the nation. Air distribution throughout the building is handled by Uni-Flo equipment—ceiling diffusers as well as supply, return, and door grilles. This is the eighth building constructed in the past six years on the Oklahoma A&M campus where Barber-Colman equipment has been specified. Strong testimony, indeed, to the design, construction, dependable performance and engineered results of using modern Uni-Flo developments.


BLAZING THE TRAIL TO BETTER AIR DISTRIBUTION

First with integral volume control
Among many pioneering "firsts" accredited to Barber-Colman research is this opposed-blade type integral volume control. Linear control of volume extends from full open to shutoff. Blinds are gang-operated from a single lever. The lever is hidden from sight, but easily accessible for adjusting volume. Volume control is available on all types of Barber-Colman ceiling diffusers, round or square, recessed or surface mounted. For information on this, and the dozens of other Uni-Flo "trail-blazing" features, call your nearby Field Office (consult phone directory), or write us.

BARBER-COLMAN COMPANY, Dept. L, 1135 Rock St., ROCKFORD, ILL., U.S.A.
...but how does your school design sound?

Your renderings and prints show the school board how the project will look, but what about the control of clamor in classrooms or gymnasiums?

When you're looking for a sound buy to fit the budget, remember . . .

Only Fiberglas* Sound Conditioning delivers all these values:

1. **Acoustical Value.** High noise reduction coefficient—up to .90—equal or superior to any material for quiet classrooms.
2. **Fire-Safety.** Easily meets all school building safety codes. Carries the Underwriters' Laboratories label service.
3. **Beauty.** The most complete fire-safe line of decorative textures, patterns and colors. High light reflection for bright, airy rooms and halls.
4. **Permanence.** Dimensionally stable as a window pane. Will not warp, buckle, expand or contract under varying temperatures and humidity. Odor-proof, rot-proof, sanitary.
5. **Maintenance.** Easily cleaned by standard maintenance methods. May be sprayed or brush-painted.
6. **Low Cost.** Actually the lowest cost fire-safe ceilings available. Lightweight, easy to install and maintain. Provides added thermal insulation, helps save on fuel bills.

Owens-Corning Fiberglas Corporation, Toledo 1, Ohio.

*Fiberglas, Sonofaced, Stria and Noise-Stop are trade-marks (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation.
FASTENING TOOLS: tempered nails hand-driven into steel and concrete

Liechtenstein-fabricated Hilti fastening systems should get a warm welcome from US contractors. These simple steel shafts pack a powerful punch; with them, conical-shanked nails (formed of hardened steel) can be driven through \( \frac{3}{4} \)" carbon steel plates or into concrete with a few blows of a heavy hammer. A stud embedded in 1" of masonry will withstand a 700-lb. pull. Several variations of the basic steel tube-encased plunger are made for use in electrical, plumbing and carpentry trades. The standard nailing tool will sell for under $20 (duty included); the studding tool, less than $12. Nails range from 3\( \frac{1}{2} \) to 10\( \frac{1}{2} \) and studs are 4\( \frac{1}{4} \) each.

Hiltis have in fact captured the fancy of Realtor Robert Dowling (whose usual foreign interests run to theater and cinema), and his City Investing Corp. will handle distribution of the hand-drive tools here and in Canada and may later include a line of Hilti powder-actuated stud guns.

Manufacturer: Maschinenbau Hilti Schaan-Forst, Liechtenstein.
Distributor: City Investing Corp., N.Y., N.Y.

TWO-BLADE POWER SAW grooves plaster for electric lines

One messy and time-taking job in alteration work is running new metal conduit in old walls and ceilings. Now, instead of hacking away at the plaster with hammer and chisel—a practice that frequently cracks the plaster surface—the electrician or maintenance man can score a parallel cut with Wodack's new double-blade power tool. He then can chip the pieces out of the clean groove easily. The plater cutter's two 4" abrasive wheels can be set at

continued on p. 194
Savings in Slabs...

Architects bank on pre-cast concrete slabs for design flexibility and enduring good looks

Mo-Sol Slabs by Mabie-Bell Co., Greensboro, N. C., used on both jobs.

Pre-cast slabs of architectural concrete give architects design flexibility and freedom. Made with special aggregates and a matrix of Atlas White Cement, these versatile modern facing units offer almost unlimited variations in form, color and texture. The true whiteness of Atlas White enhances the color values of both aggregates and pigments.

Moderate first cost and low upkeep costs make long-lasting pre-cast slabs a wise choice for use on commercial and other structures. Lettering and decorative effects can be cast as integral parts. Modular design is simplified.

Atlas White Cement complies with ASTM and Federal Specifications. See SWEET'S Catalog, Section 12g/Un and 3d/Un, or write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

FOR BEAUTY AND UTILITY

ATLAS WHITE CEMENT
FOR TERRAZZO, PAINT, SLABS, STUCCO

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

ARCHITECTURAL FORUM • DECEMBER 1954

193
Flora* shows you

General Electric

1. SOUND RATING—Only G-E ballasts are sound-rated to assure you of meeting your sound level requirements. You can choose the proper G-E ballast whether it’s for a quiet installation or for an application where noise is less important. G-E sound rating eliminates expensive noise complaints.

4. LAMP-MATCHED DESIGN—The ballast governs light output and life of the fluorescent lamp. G-E ballasts are lamp-matched to provide up to 50% longer lamp life and up to 30% more light output. Here you save two ways—lower lamp replacement costs and more light from your installation.

Whether you use, install, specify or make fluorescent fixtures, G-E ballasts mean savings to you!

The six reasons why you save, described by Flora above, grow out of these simple facts:

• G-E ballasts are designed to high engineering standards (1, 3, 4, 5 above).
• G-E ballasts are made under exacting quality control standards (2 above).
• G-E ballasts are backed by complete sales and engineering services (6 above).

Only G.E. offers you all these money saving features.

In every conceivable way, we make sure you get more when you use G-E ballasts. For example, G-E engineering standards...
six ways . . .

ballasts help you save lighting dollars

2. UNIFORMLY HIGH QUALITY—Lighting specifiers have learned to depend upon the consistently high quality of G-E ballasts. Rigid material specifications and constant production line tests mean uniformly good ballasts; save lighting dollars on early replacement and maintenance costs.

3. LONGER LIFE—G-E ballasts are designed to operate 10% cooler than U.L. and Certified Ballast Manufacturers’ standards. Tests show that a 10% reduction in ballast temperature rise can mean up to 50% longer ballast life, giving you half again as much ballast life!

5. PROVED PRODUCT LEADERSHIP—General Electric has the largest group of specially trained ballast design and development engineers in the industry. They’re constantly improving G-E ballasts, assuring you of all benefits of top quality when you “specify” General Electric.

actually exceed the specifications established by the Certified Ballast Manufacturers where extra quality pays off to you. Another example: Ten quality control stations make dozens of physical and electrical checks during manufacture to assure that each ballast measures up to the high G-E standards.

Next time, specify General Electric Ballasts. Dollar for dollar they’re your best ballast value.

LOOK FOR THIS G-E BALLAST TAG

A G-E ballast tag on your fixture is proof that it’s equipped with a top-quality ballast. It’s the easy way to be certain. For further information on G-E ballasts, contact your nearest G-E Apparatus Sales Office or G-E Distributor. General Electric Company, Schenectady 5, New York.

*Miss Flora Ballast, G-E Ballast Mascot.

Progress Is Our Most Important Product

GENERAL ELECTRIC
NEW PRODUCTS continued from p. 192

different widths up to 1\(\frac{3}{4}\)" and an adjustment of the wheel guard controls cut depth. Weighing 13 lb., the 16\(\frac{1}{2}\)"-long tool is designed for easy handling; it has a trigger switch in the handle and a side grip on the wheel guard. The tool’s model number is CDH-B; price, $126. It will also score tile, marble and concrete, and can make single cuts for outlining new door and window openings. Manufacturer: Wodack Electric Tool Corp., 4627 W. Huron St., Chicago 44.

![Season's Greetings](image)

and best wishes for a good 1955

from your friends at

Karnak

Marty Jelin  Lou Kern  Ben Hazeltin

Duke Wellington  Bill Stewart

Ernie Hutson

Lewis Asphalt Engineering Corp.  30 Church Street, New York 7, N. Y.

SLIDING WINDOW: glass lights glide in redwood frame

A generation of station wagons has proved the merit of sashless windows. Providing unobstructed viewing plus ventilation minus the mechanical woes of many windows, the window type is so logical that architects often detail their own versions for many small building types. Here is a sashless sliding unit that can be purchased knockdown in 22 stock sizes. The Pierson redwood frame is machine-grooved for two unmounted panels of 3/16" glass with polished edges. Only hardware on the mass-produced window is a small brass lock which holds the panes tightly together but lets them part for scratchless sliding; this inobtrusive hardware also will secure the panes with a 2" ventilation space between, or release them to be lifted out for cleaning.

According to Pierson, weatherstripping is unnecessary; water along the outside edge of the 3" glass lap holds the panes even closer. Weep holes in the sill carry off rain and condensate. The lapping and weight of the glass panels prevent rattling. Jamb and header edges are molded so that the trim is complete whether installed with plaster or dry wall. Frames for two-lights come in 14 sizes from 2' x 3' to 3'6" x 6' and three-light from 2' x 7' up to 3'6" x 8'. Retail prices run from $8.82 up to $18.06 plus shipping. Storm sash grooves are optional. Manufacturer: Ernest Pierson Co., 4100 Broadway, Eureka, Calif.

continued on p. 198
Now! **WHITE** Industrial SEATS

Olsonite Shock-Proof white seats won't dis­color — keep that sanitary white appearance, under normal use, for the life of the building.

**SHOCK-PROOF SOLID Olsonite SEATS**

A truly white seat looks more sanitary, is more attractive, brightens and lightens the room. And now—you can specify a white seat that stays white for a lifetime of normal use.

The new Olsonite White Shock-Proof Seats are ideal for all industrial and public toilet installations. Independent research laboratory tests have proven no visible discoloration, even after years of service. And these tests have also proven an ability to withstand shock five times greater than ordinary solid seats. Even deliberate abuse in public toilets and industrial installations won't crack, chip, or break the new Olsonite Shock-Proof Seats—and they won't absorb water.

Add to these new advantages the Olsonite features of concealed hinge, no exposed metal to rust or corrode; one material, sanitary white all-the-way-through; and one piece construction, no applied finish to crack or peel. Then—specify the seat that stays white—that can "take it" without damage even in public toilets—Solid Olsonite SHOCK-PROOF Seats.

**SWEDISH CRUCIBLE STEEL COMPANY**
Plastics Division, 8561 Butler Avenue, Detroit 11, Michigan

All Olsonite Industrial, Commercial, and Public Toilet Seats are now of Shock-Proof Construction. They are available in both black and white.

Olsonite's complete catalog is available on request. Please write on your letterhead to:
HOPE'S STEEL CHURCH WINDOWS lend themselves to modern or traditional architecture. The Hope's Windows above have leaded art glazing inside and protective glazing outside.

Hope's new method of double glazing permits either protective exterior glass or decorative interior glass to be removed at any time for replacement or repair without disturbing the glass in the other side. The widest choice in sizes and design of glass and utmost flexibility in arrangement of ventilators provide almost unlimited variety in layout for the designer. The unsurpassed strength and rigidity of Hope's Steel Windows assure trouble-free operation and a minimum of maintenance.

Write for Booklet 134P.

HOPE'S WINDOWS, INC., Jamestown, N.Y.
THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS
HEVI-DUTY USF COMMERCIAL

The Most Rigid, Economical All-Steel Door You Can Specify

KNOW THIS TOP QUALITY LINE

Get acquainted with this new line of all steel flush doors and frames that have already been proved in some of the finest new commercial projects erected in the past few years. All USF Doors are triple box constructed and internal welded for rigidity—mass produced for economy.

USF 1¼" Doors are made in every type you require and follow a flush surface design that permits all doors in your project to match exactly. One-piece matching frames are easiest of all to install. All types of USF Doors and Frames can also be furnished in stainless steel if desired as illustrated in roof entry above.

Let us send you fully descriptive literature or see our catalog in Sweet's.
NEW PRODUCTS  continued from p. 194

Quick access to the big troffers' lamps and ballasts is provided by double-hinged face panels.

NAME TROFFERS rest on suspension T's

Metro's modular recessed troffers integrate easily with ceilings of big acoustical boards hung on inverted T's. These 2' x 4' light fixtures for rapid-start bi-pin or slim line fluorescents are obtainable with diffuser faces of ribbed and patterned glass, translucent plastic, and egg-crate louvers in steel or plastic. User net prices range from $54.69 to $104.58. (Square units 2' x 2' are available on special order.) The big troffers slip up easily on the bare grid or may be installed after ceiling boards are in place. Since their sizes correspond to the fiber or metal panels, the fixtures can be rearranged as interior lighting needs change without disturbing the ceiling's continuity. Louver models are hinged on either side with patented hangers; glass shields are gripped firmly by contact latches. Ballasts on both are easily accessible for servicing from below.

Manufacturer: Smithcraft Lighting Div., Chelsea 50, Mass.

CORRIDOR LIGHT: shaft of light for narrow space is easily installed

The tapered section and simple mount of this one-lamp fixture frankly connote the kind of linear space it should go into—school and office hallways, library stacks and similar areas that need continuous light. Its molded plastic shield gives good color and light transmission with reflectivity of not less than 86%, and the shield slips out easily for servicing. Knockouts are provided on the steel housing frame for either pendant or surface mounting. Although the unit can be used singly in washrooms or over phone-book stands, it probably will have best effect in tandem runs. (The ends come off for continuous wireway installation.) List price is $25.21 for the 4'; $45.31 for the 8'.

Manufacturer: Sylvania Electric Products, Inc., 1740 Broadway, New York 19, N. Y.

continued on p. 202
Possibly half the masonry-work currently being done in the U. S. utilizes concrete blocks. Despite this wide usage, very little information has been issued on the type of workmanship required for good concrete-block construction.

The booklet shown above contains a full description of good block workmanship. It is completely illustrated. It is endorsed by leading officials of the American Institute of Architects, Mason Contractors Association of America, National Concrete Masonry Association, and the Bricklayers, Masons and Plasterers International Union of America. It should be in the hands of every architect, contractor and bricklayer. Use the coupon today for getting your free copy.

Published as an Industry Service
by the Manufacturers of
BRIXMENT for MORTAR

Louisville Cement Company — Dept. AF-8
Second and Walnut Streets, Louisville 2, Kentucky

Gentlemen:
Please send me a free copy of "Type of Workmanship Recommended for Concrete Block Walls".

Name
Firm
Address
City
State
Why architects choose CRANE for public buildings

Buildings that are used by vast numbers of people are generally designed both to serve them efficiently and to please them visually. Also, of course, such buildings should be easy to maintain.

This applies to the buildings' equipment, too... and public washrooms are an important example of this. That's why so many architects specify Crane plumbing.

There are Crane fixtures for every purpose. They are handsomely designed and well engineered. And they are built to give satisfactory service, year after year after year.

Less faucet repairs! Crane Dial-ese faucet controls last longer—require less maintenance. That's because of the simple replaceable cartridge that contains all working parts. When necessary, old cartridge can be replaced by new one in seconds.

New York Air Terminal features Crane plumbing

Four million people a year will use the new $7,500,000 East Side Air Terminal in New York City. It will be, for most air travelers, the first point of entrance into New York and the last point of exit. Until a similar West Side Terminal is built, air line busses for all New York airports will serve this block-square building—a total of some 550 bus trips a day.

Naturally—for a building so important and so busy—Crane plumbing was specified. In all types of commercial as well as domestic installations, Crane enjoys a justly superior reputation. Yes, Crane plumbing equipment will serve your clients better.
Office Layouts and Daylighting Made Easy with Movable Walls Glazed with Mississippi Glass

Efficiency is the word for the ease with which present and future office layouts can be made with famous VMP Mobilwalls that can be arranged to grow with need. Virginia Metal Products Company has designed its partitions for utmost efficiency in maintaining high lighting levels as well as meeting space requirements. Mobilwalls feature glazing with a variety of Mississippi Glass patterns. Adjacent areas are flooded with copious quantities of "borrowed light" which make offices seem larger, friendlier. Seeing tasks are easier and the result is a modern, efficient work area combined with a pleasant atmosphere.

There is efficiency, too, in the glass, itself. For glass never wears out, never requires painting. It wipes shining clean with a damp cloth... always looks new.

MISSISSIPPI Glass Company
88 Angelica St. Saint Louis 7, Mo.
New York • Chicago • Fullerton, Calif.

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

TRANSLUCENT GLASS GIVES MOVABLE WALLS EVEN GREATER VERSATILITY

Make your client's office tasks lighter. In your plans for office interiors, specify glass by Mississippi. Available in a wide variety of handsome patterns and surface finishes wherever quality glass is sold.

Write Dept. 6 today for free idea booklet. Samples on request.
Connects Buildings Directly with the Municipal Fire Department

Wherever life or property should be safeguarded against fire, this Gamewell system gives reliable 24-hour daily service.

Alarms may be transmitted manually, or automatically by fire detectors. Thus, even when buildings are unoccupied, they are at all times connected directly with the Municipal Fire Department.

Write for additional information about Gamewell Auxiliary Fire Alarm Systems.

THE GAMEWELL COMPANY
Newton Upper Falls, Mass.

COPPER-CLAD WIRING is safe outdoor heating element

Its resistance wires protected by tightly packed mineral insulation and a seamless copper sheath, Heatflex is a rugged, self-contained heating element useful in many tough locations. A modification of Safety MI Wiring (New Products, May '54) the new cable’s hot section has nickle-copper conductors. Its cold section, like MI, contains all-copper wires. It is impervious to moisture, chemicals; and can be bent, flattened and twisted without damage. Outdoor temperature does not affect its performance, and its own temperature is thermostat controlled.

Heatflex may be imbedded directly in a slab for snow-melting applications or left exposed and wrapped around outdoor pipe lines, tanks, and under catwalks to prevent icing. The diagram (above, left) illustrates how the wiring is installed in a driveway; no insulation or special conduit is necessary. A cold MI line runs from the drive to the thermostat. Although copper will oxidize at 482°F. in still air, where the cable is imbedded in material or immersed in liquid (noncorrosive to copper), operating temperature (and Btu output) can be even higher. Heatflex runs 62¢ per lin. ft. plus the cost of controls and terminals.

Manufacturer: Continental Electric Equipment Co., Box 1055 Cincinnati 1.

MULTIPLE OUTLET STRIP is run from regular outlet box

Switch controlled Plug-in Strip can be mounted directly to outlet boxes with this Nepco fitting. Simplifying new installations of the switch-controlled type CF-3 strip, the new CF 3-629 box cover can also bring fresh wiring flexibility to buildings where power is adequate but outlets scarce. Underwriters’ approved, the box plate fitting is furnished with three splicing jumpers and insulator tubes with connections which crimp on the Plug-in Strip.

Manufacturer: National Electric Products Corp., Gateway Center, Pittsburgh.

continued on p. 206
The new 300,000 sq. ft. plant of the Rex Manufacturing Company at Connersville, Indiana has an unusual mezzanine floor of Flexicore precast concrete slabs.


"We didn't have to wait for pouring and curing of the mezzanine," he says. "We went right ahead on the main floor without interference from either formwork or shores."

The Rex plant was designed by Giffels & Vallet, Inc. and L. Rossetti, Detroit. It is 760' by 420', with a steel frame, corrugated metal curtain walls and channel slab roof.

The mezzanine runs the 760' length of the building on one side and varies in width from 60' to 240'. It is used for light assembly, stockrooms, and storage. Flexicore was selected to get flexibility for future changes.

The slabs clear-span 20' bays.

Flexicore concrete slabs make hollow-core fire-resistant floors and roofs. Each slab is a monolithically cast unit with a clean, smooth undersurface that gives an attractive panelled ceiling without plaster. The joint between the slabs forms a grout lock that ties the slabs together in a flat, rigid unit.

Flexicore slabs fit right into conventional design and have cut costs and reduced construction time on thousands of jobs from coast to coast. See Sweets for catalog information. Phone or write your local manufacturer for complete facts.
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of rentable space to
aluminum building

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Crimped to perforated aluminum ceiling panels, a grid of aluminum tubing circulates hot or cool water for winter or summer. Chilled water in this panel cooling system meets half of the summer's air conditioning needs. For the balance of the cooling and for all dehumidification, primary air fans in three locations service local mixing units on each floor. Chilled water for both systems is supplied by two Worthington 625-ton centrifugal refrigerating units — each unit consisting of a compressor, condenser and water chiller. And because this new air conditioning system eliminates radiators and their extensive piping, the building's rentable area is increased by the equivalent of one and one-half floors.

For over half a century, Worthington air conditioning installations have been serving business and industry. Today, the complete Worthington line can meet any assignment, large or small. So when you think of air conditioning — think of Worthington. Get in touch with your nearest Worthington district office or write to Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.4.32, Harrison, New Jersey.
Folding doors turn lobbies into showrooms for cars or cabin cruisers by creating extra wide entries. A few turns of a screwdriver and these revolving doors fold away, glass shell and all.

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Architect: J. A. Britton

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REVOLVING DOORS fold back wings and walls to let big things through

Not only do the revolving doors in International's "movable wall" series fold up, but, on occasion, the rounded enclosure themselves glide to the side to make one wide opening. The occasion presents itself quite often in hotels whose lobbies are used for displays. For still-wider door openings the glass arc shell can be specified with double-hinged sections that flex open. As a safety feature, enclosures also can be equipped with an automatic release so that both walls and doors will spring open if rushed by a panicked crowd. Costs run from $2,000 to $2,500 more installed than similar fixed entrances. Except for somewhat heavier lintels to support the transom over the 20' gap, outward appearance of the doors is the same.

Manufacturer: International Steel Co., Evansville, Ind.

PARKING BARRIER keeps cars in line, needs little upkeep

A redesign of the old log stop, the "X" parking barrier helps keep order on the parking lot. Anchored to any surface—black top, cement, macadam or gravel—the cast aluminum brackets lift standard 4 x 4's off the ground, pitching them as tangents to front tires for a gentle stop. The "X" creates no drainage problem; easily cleaned under, its timbers are less likely to rot than if set on the ground. The barriers also protect buildings and fences from bumper nudging.

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Manufacturer: Fred Ex Enterprises, Inc., 310 E. Ohio St., Chicago 11, III.

continued on p. 210

POrette MANUFACTURING CO., North Arlington, N.J.
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continued from p. 202
NEW WASCOLITE HATCHWAY PROVIDES DAYLIGHTING PLUS ACCESS TO ROOF!

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NEW PRODUCTS
continued from p. 206

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PATIENT-ROOM FURNITURE: flexible cases combine in 82 ways

Designed by Gerald Luss, Kaleidoscope hospital furniture features case components that can be combined in 82 different arrangements for patient rooms which vary in size and layout. A warm birch finish keeps these contemporary storage pieces, and their companion chairs and beds, from looking overclinical. A basic 20" case sells for $55 to $65 depending on number of drawers; the 39" double unit is $87 to $104. The adjustable-height bed, with electric control, (pictured left) is $250; a crank-operated model, $154. Manufacturer: Carrom Industries, Inc., Ludington, Mich.

BUFFET KITCHEN puts lid on galley to become cabinet

Specialist in galleys for air transports, Dwyer has turned its talent for compact kitchens to a neat cabinet unit, the Dwyer 400. Providing every facility for food preparation in its 48" x 42½" x 22" box, the new buffet kitchen can change a motel room into an efficiency apartment. It could also add a touch of graciousness to an executive office and would be a welcome convenience in an employee lounge. Cabinets come in either blond or mahogany color on a furniture steel base with brass hardware (on the outside). The one-piece sink and worktop is porcelain enamel, and the two-burner range may be wired for 110 or 220 v. (Total connected load of the heavy-duty model is 3,360 w. including refrigerator and appliance outlet.) Unit pictured costs $495. Another model without the sink is $475. Manufacturer: Dwyer Products Corp., Michigan City, Ind.

continued on p. 213
Burroughs ACHIEVES CONSTANT EFFICIENCY
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EDWARDS Clock and Program Systems for SCHOOLS • HOSPITALS • OFFICES • INDUSTRY!
NEW PRODUCTS
continued from p. 210

JUNGLE PLYWOOD from 300′ Klinkii tree has seam-free face

If a manufacturer were to create an ideal tree for the production of plywood, it probably would be the Araucaria Klinkii. Fiddes-Moore Co. of Chicago did not invent the Klinkii but they found it in New Guinea where, to get to the tropic sun, this jungle giant has to grow fast and straight up—300′ up in 75 years. Rained on every other day, the tree grows steadily in the 80° to 90° climate; its timber shows no seasonal variation.

When Fiddes-Moore set up a modern mechanized mill in the UN mandate and began whittling the trees down to plies, it found the end-product far above standard. Klinkii plywood had no core voids, and at least one face could be made seamless as well as defect-free. Since first shipment to the US in June, 15 million sq. ft. of ⅛″ and ⅜″ Klinkii has been absorbed by jobbers, and Fiddes-Moore is bringing in 3 million sq. ft. a month. (Current plans call for importing some veneers and laminating them on the West Coast into ¾″ stock since shipping costs on this thickness pre-glued would be prohibitive.) Light tan in color, Klinkii has a distinctive pattern that ranges from straight grain to tiny birds-eye. Many architects who specify it for wall paneling and fixtures find that not only is its purchase price low (19¢ for ⅛″, 30¢ for ⅜″) and appearance near-perfect, but that Klinkii needs no filler and takes on a fine patina with half the usual finish coats.

Manufacturer: Fiddes-Moore Co., 400 W. Madison, Chicago.

(Technical Publications p. 214)
In Industrial Doors . . .

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THE MAGAZINE OF BUILDING
BOILER ROOM of new Ste. Justine Hospital, Montreal, Canada. Architect, Joseph Sawyer. Associate architect, Henri S. Labelle. Consulting engineers, Leblanc & Montpetit. Distributor, James Robertson Co., Ltd. All the above firms are located in Montreal, as is the Industrial Plumbing & Heating Co., Ltd. who made the installation.

SHOWN ABOVE are 8" Type K water main, 6" fire main and two 6" hot water lines. Note tubes do not touch steel support. They rest on copper strip welded on U-shape support.

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