San Francisco as seen from the unique outside elevator that takes guests to the top of the new Fairmont Hotel Tower. Elevator cars and entrances by W. S. Tyler. Architect: Mario Gaidano. General Contractors: Haas and Haynie. Elevators by Otis. The W. S. Tyler Company • Cleveland, Ohio.

St. Catharines, Ontario. Offices in principal cities. W. S. TYLER
and managing editor is delegated full responsibility for the editorial policy and direction of the magazine, and for its editorial content, its quality, and its timely production. The managing editor also supervises the editorial office and staff of 30 people.

At the other end of the line is the advertising department whose 13 salesmen are distributed in six offices around the country. They sell the advertising which not only generates much of Forum's revenue, but also provides much useful information for its readers.

Serving both of these departments is the production manager and his two assistants. Through them is channeled all traffic with the paper mills, photoengravers, printer, binder, and post office.

The circulation department consists of a small staff in New York which encourages the renewal of old subscriptions and sells new ones—mostly by mail. It is served by a contractor in Marion, Ohio, who handles the myriad problems involved in keeping straight Forum's ever-increasing list of subscribers. (The list at the moment is more than 65,000 names long—about 55 per cent longer than it was in 1952 and about 55 per cent longer than the list of either of the other magazines in the field.)

The five-man promotion department serves the advertising department by assembling and distributing information about the building market and about Forum for the benefit of building materials manufacturers and their advertising agencies. For example, the advertisement on page 191 (which also appears in five marketing magazines) is a product of this department. So is a series of folders explaining the six essential differences which set Forum apart from other magazines in the field. (Readers who would like to learn more about the Forum operation may write to the promotion manager for copies of these brochures.)

Finally there is the publisher's office, assisted by the general manager, which supervises and coordinates the work of all five departments and is responsible to the management of Time Inc. for the editorial and financial success of the magazine.

And that, very briefly, is what makes Forum.—J.C.H. JR.
Armstrong Ventilating Ceilings: a new air-diffusion system plenum-engineered to work evenly, thoroughly, silently

(WITHOUT DIFFUSER DUCTS, CONVENTIONAL DIFFUSERS, DIRT OR DRAFTS)
FDR MEMORIAL FAILS FINE ARTS TEST

On February 21 the Federal Commission of Fine Arts turned down the proposed FDR Memorial, thus dimming the chances of eventual construction for the controversial design.

For over a year, the only noncontroversial aspect of the Memorial has been the manner in which a design was obtained. The story began in 1955 when Congress established the 12-man Franklin Delano Roosevelt Memorial Commission, chaired by former U.S. Attorney General Francis Biddle and advised by seven experts in the architectural arts, “to formulate plans for the design, construction and location of a permanent memorial” to President Roosevelt. A national competition was held; 574 entries were submitted and judged by a distinguished jury headed by Architect Pietro Belluschi.

The best design out of 574 submitted from all over

The winner was the design by Architects Pedersen & Tilney (with Norman Hoberman, sculptor; Joseph Wasserman and David Beer, associates; Ammann and Whitney, structural engineers). For the design to be constructed, however, it would have to be reviewed favorably by many groups including The Commission of Fine Arts, which met on January 17. Speaking for the proposed memorial were Judge Francis Biddle, Architect Philip Johnson, Jury Chairman Belluschi and several others. They found the design to be a success. “I think we are in an age of great monuments. I think this is one,” said Johnson. On the other side, the conservative National Academy of Design’s President John Harbeson thought it “a disorganized agglomeration of ugly forms.”

Legalistic objections

After listening to these and other views, the Commission of Fine Arts expressed its (reportedly) unanimous disapproval of the winning design. The seven members felt that it was not “harmonious” (as law demanded) with the nearby Washington, Jefferson, and Lincoln Monuments; that “it is lacking in repose and the quality of monumental permanence that are the essence of the three memorials with which it must by law conform”; and that the durability of the proposed concrete finish was questionable.

Francis Biddle responded immediately: “I ran hardly think that the action of the Commission of Fine Arts is calculated to encourage the Government hereafter to rely on the best architects they can obtain to plan and build public buildings.” The next step: Judge Biddle will consult with his commission and report on the matter to Congress.

TR to shout “Bully”

Meanwhile, FDR’s kinsman, Teddy, was getting his memorial—a 17-foot-high bronze statue by Sculptor Paul Manship of the President on the verge of shouting “Bully!” To be located on Theodore Roosevelt Island, the statue will be the central figure of an oval plaza 264 feet wide, with fountains and four monoliths carrying inscriptions of statements by TR. The Commission of Fine Arts passed this orthodox, if less than sophisticated, memorial by Architect Eric Gugler without hesitation.

Lafayette Square goes square

Changes will be made in the “front yard of the White House.” Lafayette Square seems headed for a massive renovation. All the old buildings on the east side and most of those on the west side of the square will be razed to make way for federal buildings. Gone will be the Dolly Madison House, the Benjamin Tayloe Home, and the Belasco Theatre, along with the traditionally intimate, residential scale of the park. In their stead will be such important edifices as the new executive offices of the President, the United States Court of Claims, and the United States Court of Customs and Patent Appeals—all, evidently, in the stripped neoclassical manner.

President Kennedy seems to favor the new look (after some initial hesitation), and the Commission of Fine Arts, which will review the final designs for the new buildings, is expected to applaud intelligently. Construction may start in the fall on the east side of the square, and early next year on the west side.

FDR's inscribed tablets (above); TR's park and statue (below).
New Dunham-Bush Fin-Vector radiation is designed for universal structural adaptability. It's always esthetically and functionally correct for residential buildings or commercial or industrial or institutional installations. Slide 'n snap installation saves time, saves money. Three cover styles with snap and lock design, eliminating screws and splice plates, provide uninterrupted flow of beauty. . . your assurance of adaptability to any specifications.

Request complete Fin-Vector data, Forms No. 1271 through No. 1277.
THE DUNES OF INDIANA QUESTION

Will the Indiana Dunes become a 9,000-acre National Park, or will much of the Lake Michigan waterfront be converted to a deep-water harbor? Four members of a nine-man Senate subcommittee are reported to be in favor of saving the dunes for recreational uses. One more vote in favor, and the case would be passed on to Congress.

President Kennedy has recommended that the dunes be conserved. Also for the proposed park is the Department of the Interior, which has stated that the dunes contain "outstanding scenic, scientific, and recreational values...are of national significance, and should be preserved in federal ownership for the enjoyment and benefit of all Americans."

Such support has encouraged proponents of the park, led by Democratic Senator Paul H. Douglas of Illinois, whose bill is before the subcommittee. He and 250,000 petition signers feel that the dunes constitute a wonderful waterfront recreation area in the midst of the Chicago-Gary complex of 7 million people.

Opponents of the park scheme include steel interests which own much of the dune land, and Indiana politicians headed by Governor Matthew E. Welsh and House Minority Leader Charles A. Hallock. This group wishes to build a deep-water industrial harbor at Burns Ditch. A feasibility study by the Corps of Army Engineers has indicated that the port could be built for an estimated $68 million, $25.5 million of which would be supplied by the federal government. One likely benefit: more employment in the area and more revenue to the state.

RICE PREPARES STUDENTS FOR REAL WORLD

Rice University's Department of Architecture has developed a new appendage to its educational system. Called the "Preceptorship Program," it is designed to remove the student from his synthetic, academic world where there are no clients, "no cost realities, no construction, no supervision, no hog at nine feet to play havoc with footings, and no building committee to say no."

Fourth, fifth, or sixth-year students will live for two or three weeks with a preceptor—that is, an outstanding architect practicing in the South and Southwest. Thus, these promising students will be exposed to "the way of life, the thinking, the problems, and the satisfactions of an architect of high professional stature."

Preceptors for the next two years: Richard L. Azeck, Atlanta; O'Neil Ford, San Antonio; Charles Granger, Austin; David G. Murray, Tulsa; George F. Pierce, Houston; and E. Davis Wilcox, Tyler. In the words of its originators, the new program is "a controlled, educational experience for potential leaders, by leaders."

TIBURON BRIDGE SCHEME DEFEATED

Unlike the original plans for the hyperplain San Mateo (Calif.) Bridge, which died of abundantly justified esthetic criticism [Forum, Jan. '62], the plans for the Tiburon Bridge are dying a more natural death: the bridge's usefulness is in doubt.

From the beginning, not many liked San Francisco's proposed second link with Marin County. Architect George Rockrise of the city's planning commission called the Tiburon Bridge "absolutely murder of open space, of the hills and the waterfront." The bridge was to have originated at Telegraph Hill, risen high enough to clear ocean liners and aircraft carriers, touched down at Angel Island, and taken off again for Marin. The approaches in San Francisco, according to the Chronicle, "would wind around the Embarcadero like spaghetti."

The City Planning Commission condemned the project as a threat to Telegraph Hill, North Beach, Angel Island, and the Tiburon Peninsula. Said one member of the Commission: "This bridge is a sort of lonely hearts club. San Francisco and Marin aren't sure they want it, but a very active marriage broker is trying to bring them together."

The "broker," State Senator J. Eugene McAteer, who wants to succeed Mayor George Christopher this fall, then put a stop to $300,000 worth of studies and test borings, but continued a $200,000 project of "regional traffic studies, aerial maps and surveys." The likely contribution of this substitute project, however, is slight.

WOOD BASKETRY-TENSEGRITY GEODESIC DOME

This picture shows 340 pieces of precut lumber of two standard sizes, a telephone pole (used only as an assembly rig), a Southern Illinois University Instructor named Harold Groosvsky, and his design class. Missing: E. Buckminster Fuller, the class' professor and inventor of the 72-foot-diameter "Basketry-Tensegrity Geodesic Dome" pictured. Although this "unskinned" pilot model of Fuller's radical construction system cost about $3,000, commercial acceptance of the system, according to Fuller, would pare costs by 50 per cent. Not only would the lumber industry be revolutionized, he adds, but also widespread use of the method "could economically and satisfactorily house a world already too demanding of irreplaceable natural resources." Even more importantly, the system is expandable; it uses only about one-third the material mass of conventional geodesic domes and can be enlarged to enormous sizes by adding more members—not bigger ones.

On the basis of the SIU experiment, Fuller has told Japanese architects to go ahead with plans for the three basketry-tensegrity domes he was commissioned to build. Included: an 800-foot dome for the Tokyo Giants' ballpark.
Introducing Eljer's new "Triangle"

Fit a toilet in a corner? Eljer did it and look what a smart idea it is. Looks dramatically new. Saves valuable space.

Whether you are designing new homes or modernizing older ones, this new toilet gives you greater design freedom. Now you can more easily create new bathroom designs using the built-in flexibility of the Triangle toilet by Eljer.

Available in six beautiful colors plus snowy white. The Murray Corporation of America, Eljer Plumbingware Division, 3 Gateway Center, Pittsburgh 22, Pennsylvania.
THE PERENNIAL PROBLEM: RAPID TRANSIT

Everybody talks about transit, but few seem to get past the planning stage.

Boston has passed the wishful stage and is after funds. The Mass Transportation Commission and Joint Legislative Committee on Transportation want $4.6 million from the HHFA and $2.3 million from the state for a series of experiments and studies. These would include: a feasibility study for the extension of rapid-transit facilities into suburban areas; comprehensive surveys of transportation patterns in Boston; tightening the railroad schedules; and lowering rates to attract commuters. Earlier, however, the Boston & Maine railroad announced that it would probably have to cancel half its commuter services when the new interstate highway into Boston and tunnel into Boston harbor are completed.

Philadelphia, meanwhile, is looking ahead. An integrated transportation grid for the greater Philadelphia area in the next quarter century is proposed by the Penn-Jersey transportation study. The study puts forth four alternative plans, one of which will be the object of a $3 million, three-quarter century is proposed by the Joint Legislative Committee on Transportation for a series of experiments and studies. These would include: a feasibility study for the extension of rapid-transit facilities into suburban areas; comprehensive surveys of transportation patterns in Boston; tightening the railroad schedules; and lowering rates to attract commuters. Earlier, however, the Boston & Maine railroad announced that it would probably have to cancel half its commuter services when the new interstate highway into Boston and tunnel into Boston harbor are completed.

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Washington, D.C. will consider private transit: the privately owned D.C. Transit System, Inc., headed by O. Roy Chalk, has proposed an elevated, high-speed train from Georgetown to Washington International Airport. Cutting across a broad suburban area where the population is rapidly expanding, the line would cost $73.2 million. It would cover the 5.9 miles in 35 minutes—20 minutes faster than by existing transit. The plan also represents, interestingly enough, private enterprise's challenge to the federal government's National Capital Transportation Agency, which has already recommended a combination bus-subway system to be considered by Congress in November. D.C. Transit's scheme has the advantage of being cheaper to construct and to maintain.

Los Angeles, according to L.A. MTA Board Chairman A. J. Eyraud, is not just talking transit: "We are boring through the earth to discover what lies in the path of our subway construction." Dig they did—and were startled to strike oil on Wilshire Boulevard. Taking brief note of the small deposit, MTA continued with its preliminary engineering stage of the "Backbone" route extending from west of Beverly Hills, through downtown L.A., to El Monte. Pending congressional approval of federal insurance to guarantee private revenue bonds, the 22.7-mile route will be constructed by January 1965. MTA also announced that an investigation was being carried out "to determine the feasibility of using large-capacity helicopters to serve areas beyond the point where rapid-transit lines will terminate."

New York and New Jersey have yet to strike oil, but they have struck a bargain. The Port of New York Authority has plans to extend the Hudson Tubes system so that New Jersey commuter railroads will be linked with rapid transit to Manhattan. To be included are: a new link of the Hudson Tubes extending from Hoboken to Secaucus; a $25 million tubes and bus terminal in Jersey City; three new transfer stations in New Jersey; and rejuvenation of track and equipment. All this will cost an estimated $150 million (with another $270 million set aside for a World Trade Center in lower Manhattan's west side.)

While several of these points were suggested in previous years, and an East Side World Trade Center was proposed last year (see FORUM, May '61), New Jersey's legislature has not in the past given its approval although New York's has. This time, however, New Jersey came through, and New York followed suit last month. The only problem seems to be to determine the value of the Hudson Tubes and of the two terminal buildings in Manhattan.

CALIFORNIA'S PROPOSED GUBERNATORIAL MANSION

One hundred and ninety-seven entries were submitted in the first stage of the competition for the new Governor's Mansion to be built in Sacramento, Calif. In December, the field was narrowed to ten finalists and last month the award went to the project (above) by Worley E. Wong, Allan Don Fong, Harry W. Nimitz and Terry Tong—all of the firm Campbell & Wong of San Francisco. The four-man jury included Pietro Belluschi, Frank W. Kent, Stephen C. Pepper, and Lulah Maria Briggs; William W. Wurster and Daniel J. Nacht were professional advisors. Planned around a 50 by 36-foot central patio, the mansion will have living quarters for the Governor upstairs and the official rooms on the ground floor. "We weren't trying to build a monument to the architects," said Allan Don Fong, "We realized that people would be living there." And the Governor will live well: a 100-foot veranda on the second floor, a musician's loft, ten baths and eight fireplaces are designed for the mansion, and a swimming pool, cabana and barbecue facilities for the grounds.

A total of $475,000 has been appropriated for the building, which will be located in the center of a block across from Capitol Park. Construction is scheduled to start later this year and the mansion should be ready for occupancy next year.

DOWN WITH ARCHITECTURE! UP WITH THE COLUMNS!

Manhattan's Pennsylvania Station will definitely be demolished, much to the regret of thousands of admirers of Charles Follen McKim's 1910 masterpiece. Included in their number is CASABELLA, the highbrow Italian architectural magazine, which called the plans for Penn Station's proposed replacement "awkward and rather unhappy." The plans include a high-rise office building (the AMF Tower), a new Madison Square Garden, and a 20-story combination office building-hotel. Construction is to start this summer.

All, however, is not lost: New York's Park Commissioner, Newbold Morris, is trying to save the 84 Doric columns that adorn the exterior of the station (above). He hopes to relocate them somewhere—perhaps in Flushing Meadow Park after the 1964 World's Fair.
Why damage before dedication?

Chances are this floor will receive more abuse during construction than in the next 5 years combined. As the building goes up, we forget to look down... but it's a very critical time for new floors.

The Hillyard floor treatment program will do the job better than "KEEP OFF" signs... and for a longer time. Your Hillyard Maintainer will show you how to protect all floors during construction, and he will be pleased to draft a plan that will cut maintenance costs by 50% when the owner takes over. You'll like the way flooring complaints will be eliminated. No matter what type of floor you specify—Hillyard seals and finishes are manufacturer approved.

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NEW GROWTH PATTERN FOR U.S. CITIES?

Eight years ago, when the J. L. Hudson Co. opened Northland at the geographic, if not population, center of the Detroit metropolitan area, it was a shopping center only. Now it has become an urban "subcenter," and it is still developing. Already built on Hudson's 400 acres of land are office buildings for Reynolds Metals (Forum, Nov. '59), Standard Oil of Indiana, Michigan Bell Telephone, and three insurance companies. Being constructed in the vicinity are eight other office buildings, a 200-room hotel (the largest built in the Detroit area since the 1920s), a restaurant, and a seventy-story medical building.

One result of this building boom has been to make the immediate area an eye-catching architectural display for the heavy traffic along Eight Mile Road. While no obvious attempt was made to relate the architecture of the new buildings to one another, neither is there much cheap jersey-building strip construction going up. Certainly best of the group is Minoru Yamaki's Reynolds' building (below), with its gold anodized sunscreen and reflecting pool.

Because of this boom, Northland was included in the 26-square-mile city of Southfield when that city was incorporated in 1958. Southfield had a 1960 population of over 31,000, anticipated 70,000 in 1970.

The dramatic Northland expansion suggests a new growth pattern for American cities: that of building around a successful shopping center because of its success. Signs of urban subcenter building have appeared beside Seven Corners Center, Arlington, Va., Randhurst and Oak Ridge Center, Chicago, and elsewhere.

SYMBOL VS. PRECEPT IN THE ARIZONA DESERT

Frank Lloyd Wright thought that steel towers carrying high-voltage power lines symbolized "the scaffolds of a pioneer society." He also believed that a building should achieve a close affinity with nature. Nowhere, perhaps, did he design a house which fits into its environment so completely as at Taliesin West in Paradise Valley, Ariz. There, his home-school-workshop, a recognized masterpiece with its great concrete masses and its light, tentlike ceiling, effectively echoes the mountain and desert landscape. At Taliesin West, in 1930, symbol and precept clashed for the first time. The Bureau of Reclamation of the Department of the Interior built a power line down the valley. Wright strongly opposed the line, fought its construction in vain. Now, the Bureau has another power line planned and the Arizona Public Service Company wants to add three more. The proposed total: five lines, a "virtual forest" of steel where it will be most productive.

The Bureau of Reclamation has always wanted to get better architecture in public housing. Last month, a directive was issued to PHA regional directors and local housing authorities. It states that procedures "should be more flexible in order to encourage the concentration of effort where it will be most productive." Present standards, under Section 207.1 of the low-cost housing manual, are no longer to be regarded as mandatory but more as "guide lines." Public housing projects still may not be elaborate. Neither should they be drab. In a related move, the PHA also set up a joint committee with the AIA which will advise the PHA on all aspects of design and architectural practice.

BRIEFS: STEEL CODE, FLOOD INSURANCE

The American Institute of Steel Construction has recently announced a new code for structural steel in buildings. First revision since 1945, the new standards will allow important economies in the use of steel in high-rise buildings. Not only can savings of from 5 to 10 per cent be effected, but also about 10 to 15 per cent of excess weight can be trimmed from buildings to permit simpler, cleaner design as the new steels perform more work per pound. Since steel costs can amount to about 15 per cent of total building expense, the savings promise to be considerable.

As a result of the recent destructive storm that struck the Atlantic coast, interest in the dormant Federal Flood Insurance Act of 1956 is being revived. Co-sponsored by then-Senator John F. Kennedy, the legislation is on the statute books, but has never been implemented because of opposition from an appropriations subcommittee. Should funds be realized, the building of second homes in waterfront vacation areas would be stimulated because mortgage money would be easier to find, and premiums on water and wave damage insurance would become more feasible.
As you can see from the new model 77 shown here, Von Duprin leadership in exit hardware covers design as well as engineering... and "the safe way out" is also the smart way out. The 77 is available in bronze or chromium finish, plain or with tough vinyl fabrics—in six warm, wonderful colors—applied permanently to cases and/or crossbars. Write for free, full-color Bulletin 611, showing 77 rim, mortise lock and vertical rod devices... or for Von Duprin Catalog 59V, showing the full line of exit devices that look best and work best!

VON DUPRIN DIVISION, VONNEGUT HARDWARE CO. 402 W. MARYLAND ST., INDIANAPOLIS 25, INDIANA
announced the appointment of AUGUST HECKSCHER to the try to coordinate it."

U.S. CULTURAL COORDINATOR "to work with the staff and take a look at the general policies of the Government in the field of the Arts and Treasury, plus the Urban Renewal Administration, have programs that affect the cultural renewal. Wrote Heckscher: "We brought into balance with our materials well-being." The answer, he added, was a "wonderful challenge." True

what of it is going on and to try to coordinate it."

What is going on? Several departments, such as Interior, H.E.W. and Treasury, plus the Urban Renewal Administration, have programs that affect the cultural environment of the country. What, exactly, Heckscher will suggest remains to be seen. But, in 1960, he contributed a chapter on "The Quality of American Culture" to the Report of the President's Commission on National Goals. Wrote Heckscher: "We face the question today whether our cultural standards can be brought into balance with our material well-being." The answer, he felt, was "not reassuring." He added that the government should "create a home for art," that it should help support the arts and material well-being. The answer, he said, was "To me housing is a vital thing. We rout people out of their homes when we tear down slums to improve the city. (We locate them in projects.) Then we put them out of housing projects and they form their own slums again." Bert Steingruby is a foreman at a small plant now. He earns $500 a month. He has no regrets.

HALPRIN ACCEPTS HIGHWAY CHALLENGE IN SAN FRANCISCO Last month, Landscape Architect LAWRENCE HALPRIN was engaged by the state as consultant to improve the design of San Francisco's proposed, controversial freeways. "The job," said Halprin, "is a wonderful challenge." True enough—and he will need all his skills to meet it. One major attempt to push seven superhighways through the scenic, hilly city ended when a massive protest from citizens moved the board of supervisors to block the freeways at the edge of town (Forum, April '59). Shortly after that, work on the elevated Embarcadero Freeway was halted before it could spoil the city's view of the entire waterfront. Perhaps Halprin can solve the esthetic problems; he is well known for his consulting work on the Oakland Overpass as well as his landscaping for the Empire Expressway in Seattle and the Federal Exhibits building at the Seattle World's Fair. His first new task in San Francisco will be the design of a link between the Central Freeway near Civic Center and the Park Presidio via the Golden Gate Park Panhandle area. Discussing the work ahead, Halprin added, "We do have an opportunity to do the job well, and we do need the freeways." That, too, is true enough.

architect-City Planner VICTOR GRUEN, perhaps best known for his Northland Shopping Center, was elected a Fellow of the International Institute of Arts and Letters. His Midtown Plaza in Rochester, N.Y., the nation's first
downtown urban renewal project wholly financed with private funds, is scheduled to open later this spring. The 1962 Gold Medal of the Royal Institute of British Architects has been awarded to SVEN MARKELIUS, Swedish architect and city planner. His Swedish Pavilion in the 1939 New York World's Fair was widely considered the most important building at that exhibition. He also was a consultant for the U.N. Building in New York and designed the Economic and Social Council chamber there. In Sweden, he was city planning director of Stockholm from 1944 to 1954. Under his inspiration were built such fine satellite communities as Välingby and Farsta.
Structural wire fabric solves

a hot problem in the new NABISCO plant

Hot ovens hundreds of feet long cause serious expansion problems in the floors of large bakeries. In the new NABISCO plant in Chicago, about 540 feet of the building had to be built without any expansion joints. This was necessary for two reasons. First, expansion joints are undesirable within the length of the ovens. Second, the joints are unsanitary in a food plant.

To assure a safe and stable structure, all temperature stresses had to be taken up internally. This was done by reinforcing the floors top and bottom with high-tensile USS American Structural Wire Fabric.

Installation costs were reduced because the reinforcing steel was placed in large sheets, eliminating tedious piece-by-piece tying. Sheets were generally 8'10" cc of longitudinal wires, by 23'6" tip to tip. Longitudinal wires were 0.4615" in diameter and transverse wires were 0.3625" diameter and spaced 6" on centers.

The cold drawn wire in USS American Structural Wire Fabric has a minimum yield strength of 60,000 psi which permits a design stress of 30,000 psi and gives a substantial safety factor against possible overloads. The amount of reinforcing steel required is reduced by almost 30%, compared to conventional reinforcing bars. If you are not already receiving our technical bulletins on Structural Wire Fabric, write on your letterhead to American Steel and Wire, Dept. 2146, Rockefeller Bldg., Cleveland 13, Ohio. USS and American are registered trademarks.

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Two layers of steel fabric on 6" centers help keep expansion and contraction to a minimum in heated floors.
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Asbestibel Perforated Asbestos—a way to design moisture out, beauty in. Guaranteed not to shrink, warp or sag, even in above-average humidity areas. And when the panels are backed with mineral wool pads (in various thicknesses), you get a wide range of sound-absorbing coefficients. New features have been added: 1. Perforated Asbestos Panels with a low-cost membrane backing that reduces sound by diaphragmatic action. 2. New special coating for surface protection makes cleaning easier and faster. 3. A new “rippletone” texture for heightened visual interest. For even more ways with ceilings, call your Gold Bond* Representative. National Gypsum Company, Buffalo 13, N. Y.
‘Look-alikes’ may puzzle the novice; but the man of experience doesn’t just look at hardware. He looks beyond and sees—the tangibles and intangibles of his specification.

He knows the practical value of having his order analyzed as a double-check against errors, and the reassurance of custom-engineering assistance when it’s needed.

He knows that the guarantee of durability and smooth function is in the original design, basic metal, precise machining and the expert finishing of an item.

He knows the time and money that are saved when the correct hardware reaches the building site on time.

Because this man knows GJ... he specifies GJ... for the quality that he demands, the service-extras he has a right to expect, and the scheduled delivery that he needs.
Asbestibel Perforated Asbestos — a way to design moisture out, beauty in. Guaranteed not to shrink, warp or sag, even in above-average humidity areas. And when the panels are backed with mineral wool pads (in various thicknesses), you get a wide range of sound-absorbing coefficients. New features have been added: 1. Perforated Asbestos Panels with a low-cost membrane backing that reduces sound by diaphragmatic action. 2. New special coating for surface protection makes cleaning easier and faster. 3. A new “rippletone” texture for heightened visual interest. For even more ways with ceilings, call your Gold Bond® Representative. National Gypsum Company, Buffalo 13, N.Y.
when there’s a hardware selection to be made...

this man relies on past experience

"Look-alikes" may puzzle the novice; but the man of experience doesn’t just look at hardware. He looks beyond and sees—the tangibles and intangibles of his specification.

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In Defense of Architecture

The following letter, printed almost in full, is from Mrs. Sibyl Moholy-Nagy. It was prompted by various critical discussions that have appeared in Forum in regard to the Death and Life of Great American Cities, the recent book by Forum Senior Editor Jane Jacobs. Mrs. Moholy-Nagy is, of course, a distinguished architectural critic and historian. Her letter concludes Forum's discussion of Mrs. Jacobs' provocative book.

It is one of the great services rendered by Jane Jacobs' book (The Death and Life of Great American Cities) that it has made this new professional field as incomprehensible and hermetic as faith healing. Architects have barely been given a chance to intrude into the implementation of either planned or inflected urban renewal, and this too is borne out by Jane Jacobs' book.

On the first few pages the city emerges as a network of streets threatened by housing projects. Both are evaluated and found good or evil according to purely social criteria. With Chapter 19 ("Visual order: its limitations and possibilities"), the tenor of the book changes abruptly. Italics proclaim that "a City Cannot Be a Work Of Art," and from then to the conclusion 75 pages later, not the planner but the architect is the villain. Bravely solving what has puzzled millennia before her, Jane Jacobs develops a new theory of art whose ultimate purpose is "to make us see our own humanity," although the theory is full of fictional "arbitrary, symbolic, and abstract." Any notion to consider this an interpretation of the School of New York painting is dispelled by the next thought which fixes her target: "To approach a city, or even a city neighborhood as if it were a larger architectural organism capable of being given order by converting it into a disciplined work of art, is to make the mistake of attempting to substitute art for life. The results of such profound confusion between art and life are neither life nor art. They are taxidermy. In its place, taxidermy can be a useful and decent craft. However, it goes too far when the specimens... are exhibitions of dead, stuffed cities."

This life-killing architectural taxidermy, "continuously more picky and precious," in collusion with the "futile and deeply reactionary" Garden City Movement, are unmasked as "primarily architectural design changes rather than cultural reform. Indirectly through the Utopian tradition, and directly through the more realistic doctrine of art by imposition, modern city planning has been burdened from its beginning with the unsuitable aim of converting cities into disciplined works of art. Surely, the repetitive use of the term "disciplined work of art" as an accusation is no coincidence. It forces even on the most evasive architectural reader the realization that he is guilty by association with 3,000 years of urban history.

This primitive ignorance of the profound concern of architects for the city puts Jane Jacobs in the same camp with administrative city planners, whose prominent representative, Edward J. Logue (Forum, March '62), could declare from the lecture platform of New York's Museum of Modern Art that "architecture is a silly profession." (He followed this statement with a caricature of architectural attitudes that only come from a professional architect. Only he can translate the new visions in space, form, structure, material, and multiple relationships into the next development of urban environment.

Admittedly people with such aims are poor participants in the frantic brotherhood of the street, proclaiming a grotesquely distorted concept of democracy. To serve the city best, the architect must love his art more than the people. The mold he creates for their lives will only be beneficial if it fulfills an ideal standard that transcends their limited social experience. Man became man not only through his urge for survival, but through his desire to create a beautiful environment. Any African native, European peasant, or eighteenth-century American would find this statement redundant.

Architecture, being nonscientific, noncategorical, and pragmatic, has been and remains man's greatest tool to make this desire visible and viable. Only the architect can "approach a city neighborhood as if it were a larger architectural problem, capable of being given order by converting it into a disciplined work of art." This release from chaos through design is the last hope of the depersonalized city dwellers of today to see himself restored to urban tradition. The quality of his dwelling will give him the will to endure—as did in their time and for their inhabitants the houses of the Ile St. Louis, of Bath, Mannheim, Chamartin Village, Stjordalshallen, and Roemerstadt—because architecture is the fourth dimension of history. SIBYL MOHOLY-NAGY

New York City

Forum's "New Look"

Forum: Now and then an issue of a magazine makes one proud to be an architect, and that is just what the February Forum does for me.

It is a beautiful issue with richness for Cloisters, do not seek art to confirm their humanity. They have come to participate unconsciously in a cultural continuity that transcends their meager personal life-span.

If this were all the architect as autonomous artist had to offer, it would demand his inclusion into the redesigning of every city; but architecture is more universal than this. A recognized truth, such as the need for housing, is nothing but a generality until a creative mind gives it form. Jane Jacobs carefully avoids hinting at the type of dwelling that must replace the tenements of Manhattan when even social reform can no longer prevent their collapse. If the city is to survive as a residential location, these dwellings will not be designed by the fantasies of romantic slum dwellers or by the artistically inefficient housing commissioners. A new prototype of urban dwelling can only come from a professional architect.

In city building each sin is Original Sin, permanent and irredeemable. The sin of arrogance that finds designed environments contemptible, because it sometimes clashes with either expediency or sentimentality, deprives the defenseless citizen of all respect for the artistic process, and of the dignity of participation in the new architectural concepts of his time. No journalistic sleight of hand can transform streets into primary causes unconditioned by the architectural volumes that define their vacuum. The fate of the more-or-less happy sidewalk watchers, invented by Jane Jacobs, is determined by architectural tradition.

The grace or failure of the architects who designed their city, generation after generation and building by building, made their habitat identifiable. Beyond this at-homelessness with the face of their street rather than with its soiled feet, urban character was assumed in the "functional service of communal experience in which the people each in his apertures at home and of the civic centers and monumental edifices, the boldest statements of architectural conviction of a leading cultural minority.

Since the beginning of the city, this unduplicated civic personality has provided a communal experience in which the people of all the gray Hudson streets of the world could proudly share. Not "eye catchers... landmarks... pushcart vendors... edifices in cheap and makeshift fashion..."—advocated at various points by Jane Jacobs to induce a strained and artificial diversity—but buildings as singular masterpieces, as functional servants, and as designed dwellings in inexhaustible variety, proclaim a city rich or poor in vitality. The great "uneconomical" plazas, the "empty" parks, the "dull" avenues with elegant homes, furnish the festive counterpoint to the modern environment of the service streets. The bandstands marching over the terraces at Versailles, looting on the Spanish Steps, paddling on the Serpentine, or thronging the Guggenheim Museum and The Cloisters, do not seek art to confirm their humanity. They have come to participate unconsciously in a cultural continuity that transcends their meager personal life-span.
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specified reinforced, precast white concrete for the graceful structural columns of this new music building in Cleveland. Made of ATLAS WHITE portland cement and exposed quartz aggregate, the shaped columns, with haunch, support both the roof and second floor. The 5-inch-thick insulated spandrel panels are also precast exposed aggregate white concrete, attached with bolts to the structural concrete frame. More architects are recognizing the structural as well as the decorative qualities of precast white concrete. It can be cast in a variety of sizes, shapes, colors and textures. Installation is fast, simple, economical. Maintenance costs are low. For specific information, consult your local precast concrete manufacturer. For a 32-page brochure titled "White Concrete in Architecture," describing properties and installation details, write to Universal Atlas, 100 Park Ave., New York 17, New York.

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Can you pick the Butler buildings in this group?

1. This is the first theatre of its type, designed and constructed in the round, specifically for showing Cinerama productions. No, it is not a Butler building. However, the rotunda is sheathed in Butler Monopanl, insulated curtain wall. One-foot width modules and permanent, self-sealing joints were part of the reason.

2. No single photograph could convey the ingenious design treatment throughout this bowling lane by Takashi Anbe. Here, the steel structural and roof systems are by Butler.

3. This warehouse is essentially a pre-engineered Butler building, all but the façade on the street side. This is faced with masonry, and a decorative tile product manufactured by the owners.

4. Everything in sight on these two buildings is by Butler... roof, curtain walls and structural systems. Butler's two finest, insulated curtain walls are used throughout. These precision-fabricated structures bear the closest scrutiny for materials, fabrication, detailing and appearance.

Actually, there are no "Butler buildings" in this group. That is the point. In each, there are other materials in greater or lesser proportion, and the role of the architect is paramount. Butler offers you not a "packaged building"—but a pre-engineered, modular system, useful on the one hand as one or several components—or on the other, as an integral total approach to design and materials.

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Multidomed museum by Philip Johnson (below)

Tall tower and placid pool in Cleveland (page 33)

Circles for a bank and a church (page 35)

1. Houston offices by Kenneth E. Bentsen

2. Philip Johnson's domes for Dumbarton Oaks museum: eight galleries around a court

3. Prototype for floating schools by Tishman Research Corp.

4. Portland, Ore. apartment house by Wolff & Zimmn

1. TALL OFFICES IN HOUSTON.
The Southwest Tower, slated for a downtown corner in Houston, will stretch up 21 stories from a brown-brick sidewalk plaza. Bright aluminum mullions, black porcelain enameled, and gray glass will provide a bright-and-dark contrast to emphasize the tower's vertical lines. The Bank of the Southwest, the tower's landlord, will reserve the basement and a lobby bank for itself, rent the rest. Architect: Kenneth E. Bentsen.

2. DUMBARTON OAKS MUSEUM.
Nine cylinders, eight of them pavilions topped by domes and the ninth left open, will be added to the Georgian mansion at the Dumbarton Oaks estate in Washington, D.C., to house the pre-Columbian art collection of Mr. and Mrs. Robert Woods Bliss. The domes will line up three to a side to form a square around the court and pool; each will cover a separate glass-walled gallery. Architects: Philip Johnson Associates.

3. FLOATING SCHOOLS.
For cities near oceans, rivers, or lakes, the Tishman Research Corp. proposes streamlining Liberty ships into floating schools, to be moored wherever the classroom shortage is most acute. The first such school, under consideration by a UN-sponsored school for staff members' children on New York City's East River, would probably cost in the neighborhood of $4 to $5 million. The price is admittedly high, but subsequent ship-schools, benefiting from the design experience of the first, would cost less. A number of shipbuilding firms, a designer of ship interiors, A. Baker Barnhart, and the Ford Foundation's Educational Facilities Laboratories worked with Tishman on the model design.

4. PORTLAND APARTMENTS.
University Senior Citizens, a non-profit corporation, plans to build this apartment house near the University of Portland campus and overlooking the Willamette River in Portland, Ore. Its 25-story grid of reinforced concrete will contain 380 apartments, dining rooms, an auditorium, and other facilities. Portland Architects Wolff & Zimmn estimate the cost at $5.6 million.

continued on page 33
**WORLD'S LARGEST SCIENCE EXHIBIT** is housed in Federal Science Pavilion constructed entirely of precast, prestressed concrete components made with 'Incor' 24-hour Cement.

**ARCHITECTS:** Minoru Yamasaki & Associates; Naramore, Bain, Brady & Johnson; **STRUCTURAL ENGINEERS:** Worthington, Skilling, Helle & Jackson; **GENERAL CONTRACTOR:** Purvis Construction Co.; **PRESTRESSED COMPONENTS:** Associated Sand & Gravel Co., Inc.

**FOUR-ACRE COLISEUM** is uncluttered by interior columns. Roof trusses are supported by massive concrete tripods and edge beams made with Lone Star Portland Cement.

**ARCHITECT:** Paul Thiry; **STRUCTURAL ENGINEERS:** Peter H. Hostmark and Associates; **GENERAL CONTRACTOR:** Howard S. Wright Construction Co.; **READY-MIX CONCRETE:** Pioneer Sand & Gravel Co.

**SIXTY-STOREY SPACE NEEDLE** is securely anchored with 2820 cubic yards of Lone Star Cement concrete, largest pour ever in Seattle. Decks and diaphragm bracing at 100-ft, 200-ft and top levels are also concrete.

**ARCHITECT:** John Graham & Co.; **GENERAL CONTRACTOR:** Howard S. Wright Construction Co.; **READY-MIX CONCRETE:** Pioneer Sand & Gravel Co.

**MONORAIL SYSTEM** whisks visitors out to the Fair along precast, prestressed concrete beams manufactured with 'Incor' 24-hour cement.

**DESIGN:** Alweg Rapid Transit Systems; **CONSTRUCTION:** Howard S. Wright Construction Co.; **PRESTRESSED BEAMS:** Concrete Technology Corp.

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**new ideas take concrete form at Seattle World's Fair**

Seattle's Century 21 Exposition offers the opportunity of seeing at first hand some of the most spectacular and imaginative uses yet made of concrete. Delicate arches, sculptured panels and massive foundations furnish impressive testimony to modern concrete's beauty, strength and durability. Lone Star Portland and Incor® 24-hour Portland Cements were selected for all of these major "theme" structures of Century 21.
5. HALL OF MEDICINE. For the New York World's Fair, Skidmore, Owings & Merrill have designed a Hall of Medicine and Health for the American Museum of Health. Some 50 exhibits will be displayed behind the pavilion's glass walls, the most important ones illustrating accident prevention and man's life-span. Associate: Will Burtin.

6. BOYS' SCHOOL IN NEW JERSEY. Montclair Academy in Montclair, N.J., will pull down its old buildings to make way for a string of six new ones curving along the hilly site. The new buildings, by Architects Epple & Seaman, Philips & Kaufman, are (left to right) a circular gym, classrooms, a library (foreground), and a wedge-shaped chapel.

7. CLEVELAND TOWER. The first segment of Cleveland's mammoth Erievie urban renewal project to get under way will be this 40-story tower, part of Architects I. M. Pei & Associates' plan for the whole area. Developers John W. Galbreath and Peter B. Ruffin have bought the site and selected Harrison & Abramovitz to design the tower, following the Pei plan for a metal-and-glass façade, reflecting pool, and plaza.

8. COLLEGE CHAPEL. A big tent roof of split-cedar shakes will drop nearly to the ground in Vincent Kling's design for the Keuka College chapel in Keuka Park, N.Y. Another higher roof will admit daylight through a band of clerestory windows over the transept. Inside, too, the roof will dominate, the timbers exposed over the 500-seat sanctuary. Classrooms and offices will be in a single story tucked underneath.

9. TEXAS SHOPPING CENTER. That revered Dallas institution, Neiman-Marcus, is invading Fort Worth to establish its own shopping center around a large branch store. Blocked out in ten squares stepped down from the center, rental space will add up to 40,000 square feet. These smaller shops will be built of block-bearing walls and open-web steel joists; the Neiman-Marcus store will be framed in steel. Finishes are of textured stucco. Architects: Edward Larrabee Barnes, Preston & Geren, associated.

continued on page 35
UNUSUAL PRECAST CONCRETE DESIGN for GYM ROOF

Modern precast concrete was imaginatively used to achieve an outstanding combination of function and beauty in Miami Central High's new gymnasium.

The three-hinged arches were cast on a concrete form at Precast Corporation's plant for minimum tolerances and maximum uniformity. In place, they rise directly from buttress footings supported on precast piling. Unusual precast roof slabs span the 16' between arches. In addition to upward and downward legs for a shingle-type fit, the slabs also have a unique facing of glazed tile.

Lehigh Early Strength Cement was used for peak efficiency in the production of all precast units. In precasting the arches, for example, its use made it possible to turn out two arch-halves a week from a single form.


The small picture above shows shape and ceramic tile finish of roof slabs. Each panel spans 16', is 2" thick, and 4' wide including upward and downward legs. Special units at bottom act as rain gutter. Aqua colored high-glaze tile was applied by casting it integrally with the slabs as a form liner. Tiles were later grouted and given a coat of silicone waterproofing.

View of completed gym speaks for its grace and practicality. Roof slabs were attached only by welds to dowels in the arches, solving problems involving thermal expansion and contraction. Then joints were covered with sheet copper strips set in a caulking compound.

Miami Central High School Gymnasium
Architects: Polovitzky, Johnson & Associates
Structural Engineers: H. J. Ross Associates
Contractor: Thompson-Polizzi Construction Co.
Fabrication/Erection of Precast Concrete: Precast Corp.
All of Miami, Florida

Each of the arches spans 160' and is spaced 16' center to center. The arch skeleton is braced by precast lateral members with welded connections. Gym floor space is 12,000 sq. ft., and there is a 10' wide covered walkway on each side. Note "steps" and projecting dowels cast into arches for securing roof panels.
11. COLLEGE DORMITORIES. The University of Massachusetts in Amherst plans to shelter 1,200 members of its expanding student body in this complex of new dormitories designed by Hugh Stubbins & Associates of Cambridge. The structure will be precast concrete bents; masonry will be used for both interior and exterior walls.

12. NEW JERSEY CAPITOL PLAN. The state of New Jersey is rushing its Capitol Development Program, by Frank Grad & Sons, to a 1964 completion, in time for the state tercentenary. In this model photograph of the Trenton riverfront, the two structures rendered in detail are a 13-story labor and industry building by the Grad firm, and a health and agriculture building and attached round laboratory by Alfred Claus & Associates. The block towers are proposed offices.

13. CIRCULAR BANK. A round pavilion cantilevered eight feet from a stone base is Welton Becket & Associates' design for the Security First National Bank in Del Webb's International Airport Center, Los Angeles. Four precast concrete bridges will carry customers over a dry moat and into a main banking room walled in glass and roofed with tapered precast concrete vaults.

14. CIRCULAR CHURCH. For Fort Wayne's Immanuel Baptist Church, now taking shape, Architect Orus Eash has elevated the sanctuary, wrapped perimeter classrooms in stained glass, and drawn the roof into a saw-toothed peak. Concrete bents cantilever the main floor past a ring of basement classrooms and storage space.
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As shown here, the I-beam nests inside the box section. Extended the length of the span, the beam locks with a few turns of a bolt at the bottom of the box section. The weight of the top slab flattens the beam's built-in camber so that it is entirely level.

Three standard beam sizes span from 6 to 17 feet. With the addition of another box section telescoped over the I-beam's free end, the beam can be made to span 21 feet. The weight of the smallest beam, which spans 6 to 10 feet, is 45 pounds; the largest, spanning 11 to 17 feet, weighs 74 pounds. Currently the Alcoa®Hico beam is available in Boston, New York, Chicago, Pittsburgh, and surrounding areas at a rental cost of 4 to 6 cents per square foot of floor slab supported. Later this year it will be available nationally.

Manufacturer: Hico Corp. of America, 30 Rockefeller Plaza, New York 20.

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A new rubber coating for plywood, permanently laminated to it in the factory, promises to give that material a tough, weatherproof finish good for 20 years without maintenance. The coating is Du Pont's Hypalon synthetic rubber; the permanent laminating process (and the plywood) belong to Georgia-Pacific, who claim that the new product will resist weather without becoming brittle, even with age, and will outlast by four or five times the best quality paints.

As shown in the photograph below, finished panels come from the plywood hot-press covered with paper release sheets to protect them until they are installed. In production now are 8 by 10-foot panels, 3/8 inch thick; other sizes and thicknesses will come later. Panel edges are shiplapped and do not require further covering (although matching battens may be used to cover panel joints, and roof panels can be called and taped for appearance and added protection, as on the school walls pictured). The colors available are pastels: blue, green, gray, yellow, and white. Installed price is competitive with other quality factory-finished siding, including metal, and with quality unfinished siding that must be painted on the job.

To round out its new line, Georgia-Pacific markets matching accessories: screw-shank aluminum nails in the same colors, Hypalon-coated battens, and Hypalon touch-up paint for window casings and other trim.

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NATION'S LARGEST MANUFACTURER OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT

SELF-SHARPENING SAW

A radically new chain saw—which sharpens and oils itself, jet sprays fuel into its engine, and vibrates much less than previous models—is now being marketed by the McCulloch Corp. of Los Angeles. This small but powerful single-cylinder, two-cycle machine, the McCulloch BP-1, packs into a 15-pound frame advantages hitherto available only in heavier equipment. It is being produced in limited quantities, with full production slated for later this year.

Most important to the smoothness of the saw's operation is the balanced-piston principle on which it works. In this system, one power piston is counterbalanced by a second piston which does not fire. This second piston equals stroke and thrust at the crankshaft to smooth out the shakes common to most engine-powered saws. The balancing piston also doubles as a timing valve to regulate fuel intake and as a compressor to charge the combustion chamber with fuel.

In another refinement, a pushbutton sets in motion a carborundum wheel which sharpens the saw while it is in use; the button also adjusts the wheel to the proper filing angle.

Alloys of aluminum and magnesium account for the engine's lightness. It weighs only 9 pounds by itself, 15 pounds complete with saw. The cost is about $300.


SMALL FASTENING GUN

Any construction man can look like "Gunsmoke's" Marshal Dillon when he packs Pow-R-Set, Ramset's new fastening tool that comes with its own leather holster. In action, the new gun tackles a variety of medium fastening chores, especially those in hard-to-reach places where a bigger tool would be clumsy to maneuver. It drives pins or threaded fasteners into metal, masonry, concrete, or wood.
This is the first time Ramset has combined a powder-actuated device, which works on the principle of its heavy-duty Jobmaster tools, with piston action in a low-velocity gun. A pull on the trigger fires a blank cartridge, the power from the cartridge pushes the piston, and the piston hammers the fastener into the surface.

Used on two major jobs so far, a housing project in Brooklyn and a high school in Maryland, Pow-R-Set speeded up the fastening of window frames and curtain-wall components. The supervisor on the high-school job figured a time saving of two weeks; the client estimated at least $8,000 pared from labor costs.

The gun is compact, about three inches longer than a man's hand, and weighs 4 1/2 pounds. It operates at a low noise level and automatically expels spent cartridges. For $112.50 (list), the buyer gets the gun, an assortment of tools, and a tool kit; the holster costs $5 more.

Manufacturer: Ramset, Winchester-Western Div., Olin Mathieson Chemical Corp., 275 Winchester Ave., New Haven 4, Conn.

Thermoelectric Ice

Hexagonal ice cubes might seem a little far-fetched, but to Borg-Warner the facets are good business: the larger surface area of a hexagon freezes faster and cools drinks quicker than does a cube or a cylinder. With this new shape in cubes, the company has introduced the first commercial thermoelectric ice-cube maker that also stores its own ice. Last year Borg-Warner installed the first batch of thermoelectric refrigerators, which made 18 cubes in a single tray, in the Chicago-Sheraton Hotel (Forum, May '61). Further work on the thermoelectric principle—passing direct current through two dissimilar metals—and more efficient use of materials enabled Borg-Warner's York Division to reduce the cost substantially. When it goes on the market in June, the storage unit, which freezes cubes in 28 minutes and stores 30 pounds of ice at a time, will cost $300 to $1,000, compared to the single tray, which took 5 hours to freeze and cost $200.

Individual ballast protection in every Day-Brite fixture is designed to prevent undesirable conditions which sometimes result at end of ballast life:

- Prevents ballast smoking
- Prevents ballast leakage
- Prevents violent failure

At the first sign that such unusual conditions are developing, the ballast inside the Day-Brite fixture is immediately de-energized either by a temperature-sensitive system of thermal protectors built into each ballast or by a current-sensitive fuse built into the fixture. No "nuisance" outages . . . ballast is de-energized only at end of useful life.

Other advantages of Day-Brite individual ballast protection:

- Prevents unauthorized tampering.
- Speeds up servicing.
- Other lighting fixtures on the branch circuit remain lighted during the ballast failure of one fixture.

For further information on individual ballast protection in Day-Brite fixtures, contact your Day-Brite representative listed in the Yellow Pages or write . . .

Day-Brite Lighting, Inc.
6260 North Broadway, St. Louis, Mo., Tupelo, Miss., and Santa Clara, Calif.
Amalgamated Electric Corporation, Ltd., Toronto 6, Ontario.

Nation's Largest Manufacturer of Commercial and Industrial Lighting Equipment
Schools and Universities are finding a long lasting economy in Ellison quality doors of rugged construction with hardware requiring minimum maintenance.

Ellison engineers can make recommendations on structural support, traffic flow, wind and suction conditions that will be helpful in early planning — for new or modernized buildings. Along with all these advantages — the customer receives a trouble-free door.

Equally significant features of the new machine, says Borg-Warner, are that it has no moving parts, runs indefinitely without maintenance or repair, and requires about the same amount of power that a single floor lamp uses.


LOW-COST DOOR

To its standard line of steel doors, Steelcraft Manufacturing Co. has added an aluminum flush door lower in cost, according to Steelcraft, than any other quality aluminum door on the market. Cost range: $60 to $70 each, plus installation, in the least expensive finish.

Like the steel doors which Steelcraft has been turning out for some years, the new one is a sandwich panel of impregnated-paper honeycomb, but bonded to facings of heavy-gauge aluminum. Besides an absolutely flat surface, Steelcraft will offer Alcoa's embossed patterns and a variety of finishes: anodized, prime coated, or finish painted for interior and exterior use.

Standard heights: 6 feet, 8 inches to 8 feet; widths: 2 feet to 3 feet, 8 inches; thickness: 3-4 inches.

Manufacturer: Steelcraft Manufacturing Co., 9017 Blue Ash Rd., Cincinnati 42.

CHILD-SIZE DOMES

A student entrepreneur at the Harvard Graduate School of Design, Lionel Spiro, is marketing tot-size versions of Buck Fuller's geodesic domes, both hemispheres and spheres. Sold knocked-down and packed into
cartons ready for assembly, both versions require only pliers and a wrench to bolt the metal connectors together. Equal-sized struts are hardwood dowels with a red and yellow baked enamel finish.

There are two dome sizes, 8 and 11 feet in diameter, which cost $50 and $80 respectively (vinyl covers are available at extra cost). The sphere, actually two 8-foot domes combined, costs $100.

Manufacturer: Children's Domain Div., Best Lumber Co., 794 N. Main St., Fall River, Mass.

PREVIEW

A portable version of the Visual Task Evaluator, an optical instrument which determines amounts of light required for specific tasks (FORUM, June '59), enables lighting engineers to make on-the-spot measurements rather than relying on bulky equipment in the laboratory. The prototype, developed by Dr. H. Richard Blackwell and Benjamin O. Pritchard at Ohio State, is about the size of a portable typewriter.

The principle of operation is the same as in the large instrument: a bright light and a glass plate set up an obstacle of reflection through which the observer tries to see his task. By adjusting the light source, he reaches a point where he can barely make it out; that barely visible point is called the "threshold level." The task can then be matched to a laboratory disc for which the lighting requirements have been worked out, thus determining the necessary levels of the new task. The portable evaluator was developed for the Illuminating Engineering Society by the Illuminating Engineering Research Institute, which will license manufacturers to produce instruments. END

Jamb Preparation Costs will be lower at the new Perth Amboy General Hospital, with McKinney Wide-Throw Hinges

At the new Perth Amboy General Hospital, Perth Amboy, New Jersey, McKinney Wide-Throw Hinges will provide full accessibility to all patient room doors.

And frame preparation costs will be lower because the new full mortise type Wide-Throw Hinges by McKinney will mount in conventional 5-inch mortise on the metal jambs...no special mortising...no extra costs.

You'll save money for your contractor and owner clients on your next hospital job by specifying and furnishing the new McKinney Wide-Throw Hinges...choice of quality-conscious consultants.

Templates and catalog information available on request.

Project: New Addition
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Perth Amboy, New Jersey

Architect: Ferrenz & Taylor
New York City, New York

General Contractor: William A. Berbusse, Jr., Inc.
White Plains, New York

Hardware Supplier: Madsen & Howell, Inc.
Perth Amboy, New Jersey

Armond F. Tedesco, A.H.C.

Hinges:
210 pair 5" T4B3785CD full mortise Wide-Throw
573 pair 4 1/2" x 4 1/2" TB2714CD regular full mortise
108 pair 5 x 4 1/2" T4B3786CD extra heavy full mortise
27 pair 5 x 4 1/2" T4B3386CD extra heavy full mortise
plus other miscellaneous hinges
No matter what style doors you plan to use, there are Norton® door closers to compliment and control them.

For specifications, sizing information and complete details write for new Norton Catalog "K".

Norton Door Closers
for Complete Architectural Compatibility
372 Meyer Rd., Bensenville, Illinois
Anaconda Copper Products for radiant panel heating

In hospitals... In schools...
In churches...
In commercial buildings...
In residences...

There's a growing demand for this superior, clean, draft-free, uniform-temperature type of heating system, and in installation after installation Anaconda is specified.

The reason: Anaconda products make it easy to take advantage of the demand by offering tube in convenient 60' and 100' continuous-length coils...20'straight lengths...a complete range of fittings...and ready-to-install preformed panel grids. The latter, an exclusive Anaconda development known as PC's, offers many economies.

Anaconda Publications B-1 and C-6 will give you complete information including engineering data and installation procedures. For your free copies, write Anaconda American Brass Company, Waterbury 20, Conn. In Canada write: Anaconda American Brass Ltd., New Toronto, Ontario.
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TUTTLE & BAILEY
AIR DISTRIBUTION
EQUIPMENT
has been proved in
every kind of installation

The broad range of T&B air distribution devices and accessory equipment for heating, cooling and ventilating answers every requirement of the architect, engineer and client. As the largest full-line manufacturer, T&B offers the precise piece of equipment for each job... setting the highest standards of appearance and performance.

Write for the name and address of the Factory Office or Sales Representative nearest you.

TUTTLE & BAILEY
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New Britain, Connecticut
Tuttle & Bailey Pacific, Inc., City of Industry, Calif.
From Stamford to Stockton...

"the word" in office building air conditioning is Acme

Striking new office buildings are multiplying in cities across the nation. Featuring dynamic, modern design, the newest building materials and equipment, they achieve a happy harmony of functional beauty, efficiency and comfort. In the latter area, what could be more functional than air conditioning? For, certainly, people feel better, work better, in clean, temperate, properly humidified air. As a result, office building air conditioning is rapidly becoming an "automatic."

More and more, too, owners, architects, engineers, contractors are turning to Acme-system air conditioning... a turn occasioned by Acme’s time-proved talent for delivering unrivaled quality at a competitive price. True, Acme equipment may cost more. Frankly, it's worth more, for Acme steadfastly refuses to cut product corners. But, there's more to the cost of air conditioning than the equipment price tag. Initially, there are additional building structural and equipment installation costs. And, year after year, there are operating and service expenses. Acme-system engineering saves you money in all these areas and gives you longer equipment life, to boot! So, when you're "shopping" for air conditioning, look for quality... look at all the cost factors... look to Acme to give you more for less, plus the convenience of leasing and financing plans, if desired.

Acme INDUSTRIES, INC.

JACKSON, MICHIGAN • GREENVILLE, ALABAMA

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Architectural Forum / April 1962
the most exciting ideas take shape in fir plywood
THE NINE SOARING PINNACLES of this church, recalling the boldness of Gothic arches, are a vigorous expression of advancing plywood technology. The roof is a space plane, a step beyond the folded plate with more versatility than any other clear-span technique using wood.

Like all folded plates, the space plane acquires strength and rigidity from interaction of inclined plywood diaphragms. But its components may take shapes other than rectangular, to create more complex designs. Here they are triangular stressed skin panels. Forces are transferred from one to another, and the entire multi-faceted roof becomes a lid-like shell, supported only at edges. Steel buttresses anchored to foundations absorb lateral thrusts. Clear-span area is 32' x 110'.

The absence of framework or posts is only one of several advantages this roof shares with space planes in general. It went up fast (15 days); huge plywood components were precisely fabricated to insure exact fit. Prefabrication also guaranteed close cost control and quality of workmanship and materials. In-place cost compared well with other means of obtaining a similar span.

For basic fir plywood design data, write (USA only) Douglas Fir Plywood Assn., Tacoma 2, Wash.
QUALITY WARRANTS
CALM CONSIDERATION

OPEN FRONT MODELS
with or without covers for regular or elongated bowls. Black, white or color.

CLOSED FRONT MODELS
with same options as above. Both models provide choice of six hinge types.

PRICE can never substitute for judgment. The intrinsic value built into the product...the design, the manufacturing skill, the base material...must be evaluated along with the integrity of the maker to determine true value. This process precedes good specifications. At Beneke similar thoroughness precedes production of the complete line of seats that merit your specifications. May we prove it?

BENEKE* CORPORATION

*THE FIRST NAME IN TOILET SEATS—NOW THE LAST WORD IN SPECIFICATION QUALITY SEATS
Eliminate this Problem in YOUR New School

Install a SPENCER Vacuslot System

Dirty mops mean a messy building. Yet mops can't be properly cleaned except by vacuum. For faster cleaning and superior sanitation, specify Spencer Vacuslot... the built-in vacuum system that handles all these maintenance chores:

- Dry mop cleaning.
- Carry-off of dirt and litter.
- Conventional vacuum cleaning.
- Wet pick-up.
- Boiler tube cleaning (with significant savings on fuel).

Request Bulletin No. 153C

The SPENCER TURBINE COMPANY
HARTFORD 6, CONNECTICUT
A glass-walled entrance framed with vertically channeled siding and a plank-and-beam overhead creates an imposing approach to the interior court of the Bay Tree Apartments. This extraordinary 7-unit, 2-story design is located in Los Gatos, California. Architect: Fred Marburg.
For individual comforts in multiple dwellings

use WOOD... and your imagination

Unlimited livability is apparent in an apartment building of wood. You can work wood into any shape to fit your design, achieve infinite variations in a basic plan to suit the site. Yet wood retains its familiarity in every application to create inviting exteriors, warm interiors. Lengthy laminated beams, narrow-spaced paneling, or random-width flooring... all bespeak the inherent strength of wood, its integrity and economy.

The diversity of wood's grains and tones welcomes the use of other materials of every kind. Its acoustical advantages help quiet next-door noises, maintain room-to-room privacy. Wood has the ability to insulate naturally, too... the capacity to weather generations of wear, beautifully. For more information on designing with wood, write:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1619 Massachusetts Ave., N.W., Washington 6, D.C.

Wood blends naturally into this sloping, semi-wooded, 2½-acre site to accomplish a unique change in apartment living. Wood fencing, dividers and close-spaced railings give all apartments full privacy.

Settled around the pool in a garden-and-tree-filled courtyard, these apartments of rough-sawn siding, exposed framing, and overhanging plank-and-beam roofing provide comfortable living room for more than 20 families per acre.
Fore! Arthur Elrod, A.I.D., had just designed the El Dorado Country Club in Palm Springs, California... all except for the carpet. He invited Magee to take a swing at it. The Magee men teed off on the problem and came in with three sensational sporting designs that were real winners. No extra charge, of course, for Magee's Commercial Carpet Design Service. To get it, wire or write.

Magee COMMERClAL CARPETS

THE MAGEE CARPET COMPANY, 255 FIFTH AVENUE, N.Y. 16, N.Y.

THE AUTOQUIP

DOCKMISER

TRUCK LEVELER

It's "PACKAGE DESIGNED"! The Autoquip Dockmiser is a complete unit ready for use. Two men can readily complete installation in 3 hours. And no underground piping!

CONSIDER THESE FEATURES

- Easy access to power system. Entire power system (rams and power unit) is easily removed through access opening for servicing... without entering pit!
- Wheel locator speeds trailer positioning over Dockmiser, saves time, trouble.
- Pit requirement is minimal. Dockmiser recesses in less space — another savings.
- Rugged platform design... proved safety!
- Maintenance is greatly reduced.

Write today for complete information

Autoquip CORPORATION

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The Pace-Setting Sabre by miller...

...now in TWO NEW SIZES at LOWER PRICES

- Two new sizes meet virtually any requirement
- 2, 3 and 4 LP. units in 4 ft. and 8 ft. lengths
- New, self-hinging closures of prismatic plastic

FOR LIGHTING SCHOOLS, OFFICES, STORES

Now, you can choose a SABRE to satisfy practically any of your general lighting needs. Sabre, the original, prismatic plastic wrap-around fixture has been completely redesigned to provide you with full flexibility for today's and tomorrow's lighting requirements. Performance and quality are high as ever; prices are so low you'll find them pleasantly surprising. The end result is the most fixture-per-dollar yet!

TWO NEW SIZES—Sabre 12—2 lp. unit, with a generous 13⅝" width. Sabre 16—2, 3 & 4 lp. units 17½" wide.

Both of these new SABRES are now available in 4 ft. and 8 ft. channels. NEW, SELF-HINGING CLOSURES in convenient 4 ft. length provide easy access from either side for relamping and cleaning. Closures are of crystal-clear, prismatic plastic offering excellent lighting efficiency and brightness control. Choice of light stable grade Polystyrene or Acrylic lenses.

For a free four-page folder describing these new Sabre fixtures in full, write Dept. 162 or contact your Miller Representative.

THE miller COMPANY • MERIDEN, CONN. • UTICA, OHIO
Specify the Doors with the LIFETIME GUARANTEE

You can see at a glance the built-in quality features of Formica® LifeSeal® Doors. Sturdy inner construction with the finest materials, exacting workmanship, plus rugged Formica laminated plastic faces mean lasting, trouble-free service on the job.

That's why we proudly give this door a Lifetime Guarantee.

Other outstanding features:

- Prefinished, mortised for hardware, ready to install. Only 20 minutes from carton to completion.
- Ease and economy of maintenance. Doors never require repainting or refinishing, are easy to keep clean.
- Available in 3 types: Standard, Fire, X-ray.
- Choice of 55 colors and woodgrains to harmonize with practically any decor.

For technical information and specifications, see Sweet's Architectural File or phone your nearest Formica sales representative. He'll be happy to show you samples and point out construction features.

Formica LifeSeal Doors are a product of Formica Corporation subsidiary of CYANAMID.

FORMICA CORPORATION
Cincinnati 32, Ohio
The congregation of this church chose Par-Tile for its rich warmth of texture, low initial cost, and because it isn't damaged by women's spike heels. Par-Tile is guaranteed for 15 years.

Par-Tile was used to hold the line on building cost in this school multi-purpose room. Par-Tile is not damaged by women's spike heels, kids boots, roller skates, heavy furniture. Will not check or splinter.

In this family room Forrest Par-Tile provides a warm, clean, durable floor for kids to play on. Par-Tile makes an excellent dance floor, too.

**PROBLEM**

HOW TO HOLD THE LINE ON COST AND STILL PROVIDE A QUALITY WOOD-BLOCK FLOOR

**SOLUTION**

SPECIFY FORREST PAR-TILE* WOOD-BLOCK FLOORING... IT'S BEAUTIFUL, YET COSTS ONLY ABOUT 40c PER FOOT, APPLIED

The pressure is on you every day to design a quality school or home or office building, but to **hold the line on cost**. You know, too, that, in nearly every instance, when quality is improved, cost jumps.

However, in the case of wood-block flooring this is not necessarily true. Forrest Par-Tile wood-block flooring is a quality product... yet it can be applied for approximately 40c per square foot. And—it is prefinished at the factory. No sanding or finishing on the job.

True, it lacks the conventional wood grain. But look at the advantages: • When applied, it is rich and warm. Really beautiful • Par-Tile is uniform, smooth, harder than oak or maple. Women's spike heels, which ruin other floors, won't leave the slightest dent • Par-Tile is tongue and groove, forms one solid floor • Easy and fast to lay • Prefinished at the factory with twin coats of vinyl • Par-Tile is guaranteed for 15 years • Exceeds FHA requirements.

Par-Tile is proving successful in churches, schools, offices, bowling alleys, ballroom floors. In homes for family room, and party room, Par-Tile is perfect.

Builders tell us that Par-Tile in the family room, study, party room, make it much easier to sell "spec" homes.

**OTHER FORREST FLOORING**

**FORREST 2BY·FLOR®**

2' x 4' panels, 4 to a carton, nails included. Easy to handle. Easy to put down over old floor or on new construction.

**FORREST QUIK·FLOR®**

4' x 4' panels for fast application over old floor. Goes down fast on new construction. Makes ideal new floor.

**FORREST RADIO·PLANK®**

The same quality material as Forrest Par-Tile in plank width and random lengths. Tongue and groove. Simulated wood pegs optional.

For complete information, ask your floor covering or building material dealer, refer to A.I.A. File No. 19-E-92, or write to Forrest Industries, Inc., P.O. Box 78, Dillard, Ore.

*Pat. No. 3001902*
PRESENTING

*Tiffany*

LAY-IN ACOUSTICAL PANELS
FOR 2-HOUR UL FIRE-RATED ASSEMBLY

NOW...FROM CELOTEX...

MOST COMPLETE RANGE OF FIRE-RATED CEILINGS!
With elegant new Tiffany pattern now in 2' x 2' and 2' x 4' panels for fast lay-in... the Celotex family of PROTECTONE fire-retardant mineral fiber tiles and panels offers the widest choice of patterns for UL time-rated suspended ceiling assemblies. No spray or membrane intermediate protection required. Dry installation speeds other trades. Building owners save money... benefit from earlier occupancy, reduced insurance premiums. Your Acousti-Celotex distributor, listed in the Yellow Pages, is a member of the world's most experienced acoustical organization. He offers valuable Ceiling Consultation Service, without obligation.

### PROTECTONE MINERAL FIBER TILE & PANELS FOR UL FIRE-RATED ASSEMBLIES

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ACOUSTI-CELOTEX PRODUCTS

THE CELOTEX CORPORATION, 120 S. LA SALLE ST., CHICAGO 3, ILLINOIS

IN CANADA: DOMINION SOUND EQUIPMENTS, LIMITED, MONTREAL, QUEBEC

†Trademark
HOW TO PLUG A LAMP

The method is quite simple — you begin with an outlet. That’s how the Lamp and Shade Institute of America have sparked their vigorous, new, advertising campaign. Careful study showed the need for more and more portable lamps that can be placed wherever the need is, and more outlets to accommodate them.

To design a truly functional home, plan to put more outlets in every room. The Lamp and Shade Institute of America is plugging the lamp — your contribution will be appreciated.

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Write for Catalog Sheets on Office Valet, Checker and Decorator Wardrobe equipment and Decorator Hook color card. VOGEL-PETERSON CO.

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by... GANG-NAIL®

Only Gang-Nail Fabricators offer exclusive new Invis-Nail. Used wherever plywood (or other sheeting material) is fastened to lumber. An ideal fastener for stressed skin wall panels. Makes stronger-than-ever box beams at lower-than-ever cost! Many residential, commercial and industrial applications.

Automated Building Components, Inc.

APPEARING IN HOUSE BEAUTIFUL AND HOUSE & GARDEN
Modern concrete masonry gives full value for the building dollar with a superb combination of visual dynamics and functional stability. The beauty lasts—especially when reinforced with Dur-o-wal, the truss-designed steel rod assembly that can more than double flexural strength, outfunctions brick-header construction. For technical evidence, attach this ad to your letterhead, send to any Dur-o-wal address below.

**DUR-O-WAL**

**Masonry Wall Reinforcement and Rapid Control Joint**

**DUR-O-WAL MANUFACTURING PLANTS**
- Dur-o-wal Div., Cedar Rapids Block Co., CEDAR RAPIDS, IA.
- Dur-o-wal, of Ill., 260 S. Highland Ave., AURORA, ILL.
- Dur-o-wal Prod., Inc., Box 629, SYRACUSE, N. Y.
- Dur-o-wal Prod. of Ala., Inc., Box 546, BIRMINGHAM, ALA.
- Dur-o-wal Div., Frontier Mfg. Co., Box 45, PHOENIX, ARIZ.
- Dur-o-wal of Colo., 26th and Court St., PUEBLO, COLO.
- Dur-o-wal Prod., Inc., 4500 E. Lombard St., BALTIMORE, MD.
- Dur-o-wal of Minn., Mankato, MINNEAPOLIS, MINN.
- Dur-o-wal Ltd., 789 Woodward Ave., HAMILTON, ONTARIO, CANADA

Strength with flexibility—the two basic factors for a repair-free masonry wall are assured by these engineered companion products. Dur-o-wal reinforcement, top left, increases flexural strength 71 to 261 per cent, depending on weight Dur-o-wal, number of courses, type of mortar. The ready-made Rapid Control Joint, beneath with its neoprene compound flange flexes with the wall, keeps itself sealed tight.
Vertical split-case construction permits easy servicing without breaking pipe connections.

2 sizes of removable bearing frames cover entire range from 1 to 60 H.P.

**B&G Universal Pump**

now available in "C" size units up to 60 H.P.

**Harder-than-glass "Remite" Seal is wear- and leak-proof.**

**THE Quiet PUMP FOR CIRCULATED WATER SYSTEMS**

B&G Universal Pumps are engineered and built to satisfy in every detail the exacting demands of circulated water heating and cooling systems...distinguished by numerous features which assure silent, vibrationless operation. When properly installed, flexible connections or resilient pads are not required.

Universal Pump motors, for example, are specially constructed and selected for extra-quiet operation. Long sleeve bearings are used in both motor and pump — another assurance of silent, vibrationless operation and long life of both pump and motor. The oversized shaft is made of special alloy steel, with an integral, heat-treated thrust collar to absorb end-thrust. Water leakage is prevented by the file-hard "Remite" seal...a B&G development.

Stock Universals are available with non-overloading motors to 25 H.P....made-to-order "C" sizes are available to 60 H.P. and can be equipped with motors best suited to design conditions of head and flow.

**SEND FOR SELECTION DATA**

**BELL & GOSSETT COMPANY**

Dept. HB-62, Morton Grove, Illinois

Canadian Licensee: S.A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

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The slow progress of architecture in Washington

was not helped when the Commission of Fine Arts last month vetoed the design for the FDR Memorial, going over the heads of one of the finest juries in one of the best-organized art and architecture competitions ever held in the U.S.

Whether the competition ever should have gotten under way was a subject on which there were divided opinions, especially on the part of those who disliked seeing further monuments in Washington (except for their own favorite subjects). Also there were criticisms of the bold design itself, and not all of them by traditionalists. But the most important item that went under the axe with the Fine Arts Commission's disapproval was the probability that any bold, forward-looking design at all could ever win approval for use in Washington by the federal government.

There have been two concepts to which the Commission of Fine Arts in Washington has been, to put it mildly, uniformly unsympathetic. One is competitions as such, and the other is the use of any design not Beaux Arts in any important Washington location.

The case in favor of competitions is that there is great need in a democracy for a way of getting fresh blood into government work, and that the best way is professional leadership. Admittedly, even professional juries are fallible—but let us face it, when did a fresh, bold design ever win unanimous support, either within the arts, or among the general public? There simply is no way of creating a fine national work of art by public-opinion poll. The only way that offers some hope is for democracy to enlist leadership; to ask a highly qualified group of artists and art critics to arrive at a selection.

Another argument for competitions is that they upset cliquishness by government bodies responsible for art. The group from which these pick their artists tends ever to narrow. The Commission of Fine Arts reflects this in the way it has been bestowing or withholding its approval. It knocked out the splendid winning design of the other big national competition for a Washington government building that it was called on to review: the 1939 design for a Smithsonian Gallery of Art by the late world-famous architect Eiel Saarinen. Beaux Arts designs seem always to get through, even when they are architecturally as vacuous as the New Senate Office Building. The record threatens to become permanent: Beaux Arts designs in, living architecture out.

A mild consolation is that the Administration seems to be moving away from the sort of stereotypes long dictated by the Commission of Fine Arts. Last month, there were two further reports from Washington: first, at Cabinet level the President's Ad Hoc Committee on Federal Office Space declared that "care must be taken to avoid the development of an official style. Design must flow from the architectural profession to the government, not vice versa." And, second, the White House announced the appointment of August Heckscher, director of the Twentieth Century Fund, to be coordinator of cultural affairs to the President. Mr. Heckscher has long been a wise and discerning friend of the arts. We wish him luck. We wish the arts luck. Both will need it.
BOLD STRUCTURES FOR INDUSTRY
The designers and owners of this great, spiderlike potash plant in western Canada would be amazed to see their building published or exhibited as an example of some highly sophisticated art form. For buildings like this plant just seem to happen; no one tries to make them beautiful; the engineers just try to make them work. If someone thinks the result looks OK, so much the better; if not—too bad.

Yet it is simple industrial buildings like this plant that have inspired modern architecture for more than a century. They continue to do so today: for some of the evidence, see the next 20 pages.
THE LOOK OF INDUSTRY

Fifty years ago architecture, to most Americans, meant stylistic revival. But to many European architects and critics, American architecture meant something quite different: they were excited by the seemingly undesigned, unsophisticated, but tremendously vigorous buildings of U.S. industry. Indeed, the only other U.S. buildings they admired were such bold structures as Wright’s Larkin Building of 1904—which, of course, was a genius-brother-under-the-skin to the standard grain elevator of the midwestern plains.

U.S. architecture long ago caught up with its critics. It has also overtaken them—and not always in the direction first mapped out by the Larkin Building: for a while it seemed as if the bold shapes of silos, train sheds, factories, and warehouses were going to undergo a new kind of cosmetic treatment—twentieth-century froufrou.

Now it seems that the beauticians may be on the wane, and that America’s best architects are returning to the original sources of their inspiration. A sophisticated designer like Louis Kahn may be talking about San Gimignano’s towers when describing his medical research center at Penn (above), but in the back of his mind is also the image of a grain elevator. And Vincent Kling, who has been responsible for some hand-
some, decorative architecture, may justify, in terms of pure engineering, the powerful form and delicate cross bracing of his new Space Environmental Laboratory (above). But engineering alone did not produce this cool cube: Kling, like Kahn, took the sober vocabulary of industrial building and turned it into magnificent prose. (The lab was built for the General Electric Space Technology Center at Valley Forge, in association with Jackson & Moreland, Inc.) The steam-electric plant of the Arkansas Power & Light Company (top) was not designed for anything but power and light in the most literal sense—but it has lent much of that power and light to sophisticated designers like Kling, whose selective eye can translate the cross-braced steel frame of the Arkansas engineers into a striking piece of architecture.

It is important that this distinction between engineering and architecture be kept clear: quite frequently, a structure that has been straightforwardly engineered will look ugly as sin (but function extremely well); and just as frequently, a basically handsome industrial structure will be spoiled by insensitive architects called in as exterior decorators.

But when creative engineers and sensitive architects reach an understanding, the result is apt to be a highly successful industrial structure. One reason for this is that few industrial buildings have to satisfy secondary requirements of public...
relations and salesmanship—requirements that often destroy commercial building designed for spurious “eye appeal” (see page 194).

The industrial look is by no means confined to new U.S. architecture; in fact, some of the finest examples are found in Europe and Asia—especially in countries not quite rich enough to waste money on “eye appeal.” Invert the TVA’s rugged concrete dam (above, left) and you have something quite similar to Gino Valle’s concrete administration building for Zanussi Rex in Pordenone, Italy (right). With its brute, exposed concrete forms, Valle’s powerful structure also shares some qualities with raised highways and overhead cranes.

Because the U.S. is so large, transportation and communication have always been central to American life; and structures connected with transportation and communication have given the greatest impetus to American building and American architecture. The great bridges, train sheds, highways, harbors, airplane hangars, radio towers are familiar sources of inspiration; less familiar is the technology of railroad cars, automobiles, ships, and airplanes, and the impact its forms have had upon U.S. architecture. The pumping plant in Walnut Creek, Calif. (opposite) by John Carl Warnecke was framed with familiar steel arches—familiar, in part, because they were first developed for such structures as the battleship Maine (right),
and have since become the stock-in-trade of industrial and other building. They have lost none of their power or elegance in the process; indeed, when refined by a sensitive architect, these simple structural forms gain in grace. And when left alone by an intelligent client, they can declare the rugged power of industrial building so often concealed behind the frills of exterior decorations.

On the next 12 pages are some of the new industrial buildings that were designed by architects, consciously and carefully, to express that rugged power. Tomorrow's critics may well consider these straight industrial structures the true spokesmen for our architecture.
KAHN NEWSPAPER SHOP

The concrete structure shown on these pages is the latest completed work by Architect Louis Kahn.

When Mrs. Robert Herbert, owner of the Greensburg, Pa. Tribune-Review decided to build a new plant for her paper, her nephew, William Huff, was working in Kahn's office. Mrs. Herbert had thought that Kahn would not be interested in designing so mundane a building as a newspaper plant, but was happy to discover through Huff that the opposite was true: Kahn was delighted to do it. The structure shown here is the result.

The plant is, in effect, three buildings side by side: two large two-story blocks on the outside, with a narrow, four-story spine sandwiched between them. (The lower floors of the two-story blocks and the two bottom floors of the four-story block are underground—see section page 84.) The entrance level contains the major functions of the newspaper.

On one side of the spine are circulation, mailing, advertising, news, and business offices. The last are unroofed cubicles. On the other side of the spine are the composing room and the stereotype and pressroom. Dispatch, proofreading rooms, and toilets (all of which serve both halves of the entrance level) are in the block between. The top level of the core
contains a skylighted boardroom and a lounge.

Newsprint, ink, and other printing equipment are stored in the basement areas of the two large blocks. The basement also contains the mechanical equipment room, darkroom, locker room, and janitor's closet.

Under the spine is an air-handling trench large enough to be considered a subbasement. Fresh air is sucked into the core at the north end of the building under the concrete block box which contains the cooling equipment. It then passes through the mechanical equipment room into the trench, and from the trench up into vertical shafts in the outside walls of the spine. Conditioned air enters the various rooms through registers; it returns through vertical slots in the inner walls.

The structure is concrete block, concrete brick, and precast and cast-in-place concrete. In the two large blocks of the building, the cast-in-place floor of the entrance level is carried on four rows of supports: two inner rows of cast-in-place columns and two outer rows of concrete-brick piers. These piers continue up to carry the precast, prestressed concrete roof beams which, in turn, carry the precast roof-deck. The floor and roof of the mezzanine are the same precast deck; the entrance-level floor is cast-in-place.

Supporting elements of the structure are distinguished from those elements which are nonsupporting. In the east and west
sides, the concrete-block wall helps brace the piers and, thus, butts directly against them. On the north and south sides, on the other hand, the piers can stand alone, and deep reveals separate them from the walls. In both cases, the wall is clearly considered a screen with the windows cut into it. To make this emphatic, the glass is placed at the back of the wall plane and set in grooved blocks. This effectively eliminates all but one horizontal muntin bar.

Even the most minor connection or detail is carefully considered. The expansion joints, the blocks which cover the pre-stressing wires in the beam-ends, and the joints in the roof coping and their cover caps—each detail bears study.

On the east and west sides of the building, the windows were made narrow slots to control the morning and afternoon sun. The north and south sides could be opened up, but the client wanted a maximum of usable wall area against which to put filing cabinets, shelves, et cetera. Kahn’s solution: large openings above head height, small ones below.

FACTS AND FIGURES
Gradual automation is bringing with it a number of direct changes and several indirect side effects

These trends may reshape factory design

Push-button factories—acres of machines tended by a few human beings of solitary and heady power—are still much further in the future than cartoons and banquet prophecies would have us think.

Automation today, and presumably for years to come, is a combination of highly mechanized operations mixed with less mechanized or even unmechanized steps. In the words of James Bright, author of one of the principal works on the subject, automation means “doing things notably more automatically than customary”; this turns out to mean radically differing stages of advancement among different automating industries and even among different processes within the same industry. For example, a mechanization profile of an oil refinery, one of the most highly automated types of plant, shows a startling interspersion of hand tool and hand procedures, mingled with self-directing and self-correcting machines.

How automation may affect design

Nevertheless, in its spotty fashion, automation is proceeding far enough and fast enough to account for several emerging trends in factory design. These trends have to do with space needs, control of the environment, and appearance—in short, with factors that are very much the traditional concerns of architecture. It will be less possible to put up a brick structure, top it with a tin roof, and come up with a workable factory building. But the architect of an automated plant will find that while more is demanded of him, more constrictions are put upon him also. He will have to do more, and do it with less freedom.

Fortunately, plant architects who are sensitive to the changes as they occur, will not be suddenly flummoxed by bewilderingly new requirements, even though these changes may add up, cumulatively, to breakthroughs. From time to time, to be sure, a fairly radical jump may come, but hardly by magic or without heralds. For instance, one factor that confines much automation today to islands within production processes is the inflexibility of materials movements imposed by track, belt, or chute systems: a lift truck with a man operating it can be tremendously more flexible. Lift trucks that can find their own way around may be developed; and when they are, this one factor will certainly stimulate mechanization and self-control in other, adjacent steps and will bring, in its train, automation to processes and products for which automation would not be worthwhile today.

As automation proceeds, it requires fewer (and frequently less skilled) production workers but it also requires a higher proportion of highly skilled maintenance workers. Arthur Brown of A. D. Little, Inc., the industrial research firm, points out that the push-button plant is still only a dream, but that eventually, if the process of automation were to reach its logical conclusions, a building skin for the protection of workers might not be necessary. The machinery, in the sense that it is a housing and pipeline for products, might be built outdoors, as much refinery equipment is now. Maintenance workers would then carry along, or produce as required, their own plastic skins, just as they can carry along their own lights in factories that have no need for permanent lighting.

Meanwhile, the need for highly skilled maintenance in mechanized plants may, according to Dr. Brown, eventually result in other design changes as well: for example, the higher proportion of clerical, and probably female, workers, and the three-shift operation logical for expensive and intensive mechanization may impel more plants to locate within central cities. This, in turn, would require more emphasis on vertical materials handling systems, and it would mean overcoming or countering such disadvantages of multistory buildings as their resistance to expandability and to long spans combined with heavy floor capabilities. But these are distant problems.

More capacity, less space

Automation generally means fewer machines, not more. The machines are more complex but more compact. In addition, less space is needed around machines for operators, much less aisle space is needed, and less temporary, in-process storage around machines. All this adds up to smaller factories, even though capacity may be vastly increased.

On the other hand, warehousing, both for materials coming in and those going out, is apt to be considerably larger and more dramatic than in older plants. For instance, automated bakeries, feed plants and the like convert from temporary, in-process storage around machines. Flour arrives in huge bulk shipments to go straight from storage into conveyors, and thus one of the first automated bakeries has storage silos 90 feet high for its ingredients. At the output end of an automated plant, little storage should be needed—at least in theory. The products ought to be shipped off almost as they come from the lines. This is what high-production plants aim at, but it is more easily said than done; for it requires fantastic dovetailing of production schedules with customer requirements. The penalties of any hitch in shipment or sales, in a plant where it costs a lot to stop production schedules with customer requirements. The penalties of any hitch in shipment or sales, in a plant where it costs a lot to stop the machinery, where two or three shifts are operating, and where the lines have a very high capacity, can be a situation like that faced by the sorcerer’s apprentice. Warehousing for expectable abrupt contretemps is only realistic.

Warehouse design may thus pose some of the greatest demands on
the ingenuity of plant architects. For instance, pie-slice shaped warehouses are a possibility, for concentrated input and speedy output.

**Machine environment**

Complex machines are less adaptable to their environments than human beings. Automated plants mean more temperature and humidity control, to closer tolerances. The degree of control is apt to vary within a plant; in automation lingo, the range is from "white" (very highly controlled, as in computer rooms) to "gray" (areas in which the environment control is more for the benefit of the product than of the machinery).

Controlled environment means a more closed environment, which in turn means few or no windows. But this, of course, has to be reconciled with human needs, so the result is not oppressive and avoids overwhelming monotony. Color and greater design attention than is usual in rest rooms and lounges are obviously desirable.

**Layout first**

In automation, the machinery layout comes first; the enclosure and its subsidiary facilities are last in the planning process. This has always been true to some degree of good plant design but it reaches an extreme where automation encompasses movement of the product from process to process. The tyranny of layout, and the precision of layout, are quite beyond the normal province of architectural considerations. For instance, columns or other building structure features become useless as reference points. The grid or module of an automated plant is "set up with a transit instead of a ruler." The grid marks must be accurate to within 1/8 inch, sometimes less. The contractor is therefore supervised by plant engineers, rather than by the architect.

This is one aspect of a more general situation in the architect-client and architect-contractor relationships for factory building. In most building jobs, the engineers with whom architects principally deal are structural, mechanical, and electrical engineers who take their main cues from architectural decisions. In automated plant design, engineers plan the layout and make most decisions to which the shelter and the architecture, if any, is cued. The engineer also has a larger voice in all client decisions.

**Appearance for production**

Paradoxically, the sheer look of things, as one factor of plant design, can be more important in an automated plant than in older-style factories. This is recognized in even the design of the automation equipment itself. Color, heavy brushed-chrome knobs, even built-in ashtrays, are examples. There is method in this ostentation. It is intended to impress the people who are responsible for the machines (a responsibility that may require the exercise of very little actual skill) with the fact that this is an expensive machine. The idea is to make the machine's tenders careful and proud of it. Suitable impressed workers have been known to bring in gifts of appreciation and homage to a machine's designer!

Bright points out that pride seems to have almost as much influence as conscious dollar-and-cents figuring on the decision to automate. "If we're going to build a new plant, we want the best." Is a common attitude of a management pursuing automation. A certain risk and willingness to experiment are usually implied.

The plant designer who fails to appreciate these intangible but powerful factors will miss part of the point; he will also miss a large part of his opportunity to create a significant industrial building, rather than a routine shell.
ENGINE TESTING PLANT

There is much more to the new building by Architect Harry Weese for the Cummins Engine Company than its walls (see page 90), handsome as these are.

The building houses the company's dynamometer engine-testing facility. This facility takes heavy diesel truck engines off the assembly line, subjects each one to four hours of carefully monitored "running in" tests, performs other tests on related electrical systems such as generators, and then crates them for shipping either by truck or rail. The building, latest product of the company's continuing relationship with Architect Weese, is located in Columbus, Ind.

Clearly, any plant in which men must conduct tests on big truck engines running steadily presents problems of employee welfare.

One problem is keeping the air free of noxious vapors. Mufflers, located over each test room, exhaust vapors to the outside through a forest of small roof stacks.

Noise is a second major problem. Though the men wear earplugs, the architect asked Bolt, Beranek & Newman to conduct thorough studies of the physiological impact of noise. As a result of their report, each testing block was enclosed on three sides and overhead to form a cell lined with acous-
tical material. The massive engines are moved in and out of the test cells by large hooks sliding along a framework of overhead runners.

Lighting also received careful consideration, for psychological as well as physiological reasons. A skylight system, using plastic domes, provides a level of 35 footcandles on a gray day. In addition, however, glass was installed in the walls at eye level to give employees views of the horizon.

The test building (at right in photo above) is connected to the main plant and forms a vast horizontal complex with it. The building has two floors, the upper given over to the tests themselves, the lower used for storage.

FACTS AND FIGURES


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WALLS FOR FACTORIES

Of the four industrial walls shown here, one posed a problem so interesting that its solution was almost bound to be interesting. The other three turned out to be interesting because their designers and owners took "ordinary" problems more seriously than they are normally taken.

Nothing, it would seem, could be more routine than a warehouse wall in the Tennessee hills. But American-Saint Gobain got a more-than-decent warehouse façade by use of two of the company’s new materials not yet on the market: wired corrugated glass, and insulated spandrel panels with a royal-blue glass exterior, polyester foam center, and sheet-steel backup. The building was designed by the Compagnie de Saint-Gobain of France with the engineering concern of H. K. Ferguson Company, Inc., and built by the Daniel Construction Company.

The Parke, Davis Chemical Plant wall in Holland, Mich., second from left, is the one with the offbeat problem. Explosions are a constant possibility in this plant. So the walls were designed as a grillwork of slender precast concrete ribs (in story-high panels), filled in with 10,000 blue plastic "pop-out" windows which occupy 80 per cent of the exterior wall. At a pressure of 20 to 30 pounds per square foot, the
plastic pops out to relieve interior pressure instantly and minimize blast damage. The pop-out wall, which cost $5.30 per square foot (including development costs), was conceived by the architect-engineers, A. M. Kinney Associates, and the patents assigned to Parke, Davis & Co. Darin & Armstrong, Inc. were the builders.

The Cummins Engine Company's dynamometer testing building, second from right, has self-supporting concrete walls formed of ribbed panels that were cast in concrete molds 400 miles away, shipped by flatbed truck and erected with a 20-ton crane. The system cost $4.20 per square foot in place, including insulation. The panels are 28 feet high, 6 feet, 8 inches wide, and 2½ inches deep. They were secured to the structural frame at each corner and at the top and the base. Where glass occurs, it is held by a cast rabbet and gun-applied caulking compound. Harry Weese & Associates were the architects, Repp & Mundt the builders.

The power plant at the Parke, Davis research center in Ann Arbor (right) is sheathed with a crisp, glass-and-aluminum curtain wall over a structural steel frame. Designed by Skidmore, Owings & Merrill and constructed by the Barton-Malow Company, the wall cost $5.80 per square foot. It represents an ultimate of a familiar type—and none the less handsome for that.
SIX-STORY WAREHOUSE

Stairs, air-conditioning equipment, and even corridors are brought to the surface as bold design elements in Architect Egon Eiermann’s sophisticated warehouse and office building. Home of the Neckermann mail-order company in Frankfurt, Germany, the structure provides four floors for storage and distribution, with two floors of offices on top.

Two related considerations were primarily responsible for the building’s form:

The first was that the warehouse floors could function most efficiently if each was a continuous, uninterrupted space. To achieve this, those elements which normally do interrupt spaces—service cores and air-conditioning equipment—were pulled outside the basic envelope (plan, above, and photo, top left). Glazed passages (photo, top center) link the main building with four service cores containing stairs and washrooms. Large air-conditioning units, serving the four warehouse floors, are hung on the long façades, six on each side. The upper two administrative floors have a separate air-conditioning system.

Fire safety was the second consideration. The building, which houses 3,000 men and women, is 860 feet long and 200 feet wide. And, because of these great dimensions, the
four service cores were too far apart to allow satisfactory emergency egress. The architect's solution, stamped clearly on the façades, was to rim the building with galleries which lead to free-hanging exterior stairs, two on each long side.

The structure consists of a reinforced concrete skeleton forming a 20 by 20-foot bay. Eight expansion joints, six longitudinal and two transverse, cut through the building. Where they occur, stanchions are doubled, providing space between them for electrical cables and ventilation ducts. The expansion joints also helped in the construction process, dividing the building into separate sections which were erected by different construction companies at a great saving in time.

A series of rooftop courts (photo, top of page), carved out in depths of either one or two stories, brings light and views to office workers in the top two floors.

FACTS AND FIGURES

Josef Neckermann mail-order house, Frankfurt/Main, Germany. Architect: Egon Eiermann. Engineers: Karl Winkelmann & Rudolf Lux (structural), Dr. Hans Friedrich (mechanical), Dr. Hans Leusink (soil conditions), Nico Hariton (factory layout).

Building area (main block): approx. 1 million square feet. Special features: mail order operation controlled by IBM 7070 data-processing equipment capable of handling 150,000 mail orders daily. These and other business machines have been located in separately air-conditioned area on fourth floor of the building.
The stove bolts, the go-carts, and the boxes of nutmegs we cannot live without lie in those beautiful old warehouses down by the waterfront. If you explore the warehouse district on a fair Sunday morning you begin to feel the essence of these buildings. It comes out in their atmosphere of solidity and use and heavy work. The very style these structures have evolved, simply by nature, could not be more fitting. And behind those rows of russet iron shutters one senses the wealth of wildly improbable goods, of spice, timber, tobacco, musk, and axle grease.

The warehouse exists because all the interminable shoving and hauling and parking and ticketing of materials has to have a place of operations somewhere near shipping and railroading. And, yes, those barns and incubators have style. They are far more satisfying to look at than, say, a typical municipal museum building that has been designed to put you into a self-consciously cultural mood.

The finest examples of warehouse, architecturally speaking, are found in our older seaboard cities and towns. The photographs on these pages are a fair sample of the genre.
A Sunday morning at the loading platform.
The silences of Water Street, Brooklyn
Nineteenth-century brickwork and iron stars
URBAN RENEWAL: RUNNING HARD, SITTING STILL

"It takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that."

No planner, architect, or city official could have described the present $4 billion urban renewal program any better than Lewis Carroll’s Queen of Hearts. She was, admittedly, speaking of other things. But the vast urban renewal program—now some 930 projects of many kinds in about 520 localities—while broadening its scope of operations, is, at the same time, nervously analysing its many serious defects.

The most serious defect is the unsolved problem of relocation, and this ties directly into problems of rehousing minorities and into the rehabilitation of slum dwellings. Some observers think that rehabilitation is the answer to the problem of the rehousing of slum dwellers, but rehabilitation seems unable to get off the ground.

In subsequent months, FORUM will examine several of the basic issues of urban renewal, such as the role of the private market and the importance of better urban design to the program. This first article, however, will deal with the problems arising out of the expansion of the renewal program, as well as the social and economic implications of its increasing orientation toward the total community.

An experiment full of paradoxes

Professor William L. C. Wheaton, director of the University of Pennsylvania’s Institute for Urban Studies, says that “renewal has so far been an experimental program on an experimental basis. We’ve just been developing skills.”

In the course of developing skills, renewal has become a very different program from what it was in the early 1950s, when slum clearance was its prime goal, or even after 1954, when slum prevention was added to that objective. What has happened is, according to Urban Renewal Administration Commissioner William L. Slayton, that “what was once a slum clearance program has become a land use program.”

Housing is no longer the focus for the renewal effort. About 11 per cent of all renewal land under contract is now slated for commercial reuse, and another 17 per cent for industrial use. Moreover, about 35 per cent of all renewal acreage has been set aside for public facilities. (Cities are learning fast that it is worth their while to lump as many public facilities as possible into renewal areas, and thereby receive credit for their cost toward the city’s one-third share of total renewal cost.) This leaves only 37 per cent of total renewal acreage for residential reuse.

This shift in emphasis from residential reuse and slum clearance represents only one of many apparent paradoxes of an urban renewal program administered by federal housing agencies. Here are some of the others:

- Although purportedly a slum clearance program, urban renewal has cleared only about 2,000 acres of slums in a dozen years, and HHFA Administrator Robert Weaver acknowledges the program will in the future minimize clearance and stress rehabilitation and conservation. The basic reason is that clearance has solved few problems, and intensified the problem of relocation.

- Renewal was started as a housing program, but nonresidential land use is now dominating the picture (see above). Latest figures show that renewal has built far fewer units (42,767) than it has destroyed (138,574), which indicates another reason why relocation is so critical.

- While it was once felt that renewal’s toughest problem would be attracting the private market to develop slum land (and it was a key problem at first), the situation is reversed in many cities today, where would-be redevelopers have to be turned away because cleared land cannot be made available to them.

- Renewal has been regarded as the means of getting lower-cost new housing. Economist Louis Winnick has said that “the real objective of government aid is to bring down the rent, or price, of new private real estate to its market level.” But most housing built under urban renewal has been high-rent housing, so much so that some cities—including New York—have called a halt to some new projects until a more rational economic approach is devised.

A strategy for renewal—and the human dilemma

These paradoxes derive in part from what has been, until recently, a limited view of urban renewal’s potential and its objectives. The new emphasis on land use, coupled with programs passed last year for mass transit and open space, show how the program is moving away from housing and clearance, and toward total city—and, indeed, area—redevelopment.

This shift can be seen clearly in the revamped program for Philadelphia, generally reputed to have done as good a job of urban renewal as any city in the nation. William L. Ralsky, director of the Redevelopment Authority, acknowledges Philadelphia’s effort is now “a far cry from slum clearance... it is based upon four major areas of action: 1) center city development, in the realization that [center city’s] health is vital for the whole area; 2) rehabilitation and conservation of housing; 3) land for industry, most of it assembled...
Urban renewal: the techniques of rehabilitation, of design and of financing are still unclear

through Title I procedures; and 4) aid to institutions." Nowhere in Rafsky's program is slum clearance as such a stated goal, although it is implicit, and new housing is not mentioned at all.

In an effort to put this sort of program on a rational basis, Philadelphia (and about 40 other cities) are currently working on a community renewal program (CRP). This is designed to provide cities with "a strategy for renewal," as former URA Commissioner Richard L. Steiner puts it. This strategy, he adds, "must assess the extent, nature, causes and trends of blight . . . identify all the tools . . . and set forth a program realistically related to resources and limiting factors."

No single device is more symptomatic of urban renewal's current self-appraisal than CRP. Some critics have even wondered whether or not renewal programs should be delayed somewhat until CRP's are completed. (New York's $2 million CRP will take two years, San Francisco's about 18 months.) But Wheaton, who had much to do with fathering this broad-gauge approach to renewal planning, thinks not: "We are not really doing . . . much damage in our current program, and we will probably continue to use the tools we have, crude as they are."

CRP work now underway points beyond the immediate problems of time lags in application processing, and the dangers arising from cities undertaking occasional projects, unrelated to any rational program. Planners are beginning to realize that most of the paradoxes of the program can be resolved. But many realize also that they must tackle, head-on, the much broader problems of what makes slums start and grow, and what to do about slum dwellers themselves, before renewal can make the most of its ambitious plans. Until this is done, renewal may run hard, with its broader approach, completely related to the tools we have, crude as they are.

Relocation: Already a dirty word in America

If you were to ask an urban renewal official what his toughest problem is, he would unhesitatingly answer "relocation." HHFA Administrator Robert Weaver, for instance, says flatly that "relocation has become a dirty word in America." (It has become so dirty to federal officials propose changing the name to "rehousing"—but this would not change the problem.) While some renewal proponents thought relocation of families from clearance areas would become easier if the housing shortage abated, relocation has become "more prickly than ever," according to URA Assistant Commissioner Frederick Hayes.

URA has, in the past year or so, made relocation rules much stiffer, to insure that cities will not slide out of their legal responsibilities for finding safe and sanitary housing for displaced families, as they have in the past.

URA Commissioner Slayton points out that some 75 per cent of all displaced families have moved into standard housing as certified by local agencies, and only eight per cent went to sub-standard units—contrary to federal law. Of course, the government cannot force people to go into standard housing, any more than it can force them into public housing, which an increasing number of families abhor. While public housing has long been the crutch for relocation (with about half of all displaced families eligible for it), only 10 per cent of all relocated families have gone to public housing, and many of these go resigned.

And no one has yet come up with an answer to what is in many respects relocation's most excruciating problem—the very poor. Statistics indicate that about 11 per cent of all families displaced by urban renewal cannot even afford the rents in public housing projects—and public housing, in turn, doesn't want them because the very poor depress the rent roll. URA relocation head James Banks, who did one of the best relocation jobs in the nation when he was with Washington D. C.'s Redevelopment Land Agency, is well aware of the problems that make relocation prickly. And he says hopefully that "we are in the process of meeting the failure of relocation." One of the biggest failures of all has been in New York City, where relocation has been handled by private redevelopers themselves, some of whom simply milked the slums they bought from the city for their own benefit and then bailed out. Although New York's urban renewal agencies have been thoroughly overhauled in the wake of scandals, it remains the only city where slum property, rather than cleared land, is sold to redevelopers, who then must clear it and relocate families. Banks says: "This is not the way to handle relocation, which is, I believe, basically a public responsibility."

As a public responsibility, relocation must do a better job, in social terms, if renewal is to survive. Last year's Commission on Civil Rights Report on Housing said flatly that "the most significant failure of urban renewal has been in relocation." Over 60 per cent of all families displaced for urban renewal have been non-white. The great postwar displacement of white, middle-income city dwellers with nonwhite, lower income families from rural areas is a problem which has not been met with much honesty. In the South, renewal has been openly used to maintain segregated school districts, and box Negroes into ghettos. And the record in northern cities is not much better. Renewal techniques in cities and in the federal government cannot, as some think, wait for a free housing market to develop by itself in cities so that at least relocation can be dislodged from racial considerations. And an executive order from the White House banning discrimination in federal programs will not be the answer, either, although it would help.

"Promise of stability"

The Civil Rights report suggests that one answer to the problem of relocation might lie in a different direction from that generally taken in renewal so far: "New . . . emphasis on the preservation of existing housing rather than clearance [holds] future promise of stability to central city residents, many of whom are Negroes and members of other minority groups."

This promise is likely to be thwarted, however, by two overriding factors: 1) Rehabilitation is so far stymied, with techniques

of design and financing still unclear; and 2) even with rehabilitation, it is unlikely that a project area’s residents will be allowed to stay there.

Rehabilitation has so far worked best through massive intervention by social institutions of influence, such as universities, hospitals, or even the local government. Thus Hyde Park in Chicago, under the steadfast direction and careful shepherding of the University of Chicago, is often cited as a landmark. And it might well be that institutions can do large-scale rehabilitation, where the object is to preserve residential character—and land values. But what of most gray areas, depressed socially and physically, seemingly with no place to go but down? In these areas are captured vast reservoirs of nonwhites, with the most limited housing choice, because of both income and color.

It is not the great gray areas that are currently slated for rehabilitation and conservation. It is rather those areas which appear, on the basis of real estate appraisal studies, to be most marketable. The private real estate market established the early pattern for what areas would be cleared under the 1949 Title I law, and this pattern led directly to “projectitis”—the unplanned and massive development of scattered slum areas. Yet today, for all the fine work being done to put renewal on a community-wide basis, the private market continues to be the focus of concern in rehabilitation.

Continuing effort to enlist the aid of the private market, through FHA and other attractions, to help solve the knotty problems of rehabilitation and relocation is understandable. For the private market has proved eminently successful in heeding public exhortations to build luxury housing on renewal sites that have been prepackaged by local authorities. James Rouse, the Baltimore mortgage broker who was chairman of the redevelopment subcommittee which gave birth to urban renewal in 1954, believes that “rehabilitation has many of the same problems that renewal had six years ago . . . and until we lick those problems we can’t hope to cope with the gray areas.” Rouse believes that techniques must be devised to make vast areas available for rehabilitation by develop-

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The 1962 recipient of the American Institute of Architects' gold medal designed his own life with the same concentration, fierce attention to detail, and immense force that he spent on his buildings.

EERO SAARINEN, A COMPLETE ARCHITECT

"Eero had a happy childhood, with people from Sibelius to Mannerheim frequenting his father's house in Finland, but he recalled childhood as a time you just had to endure before you could grow up and begin really having fun." In Los Angeles last month Charles Eames reminisced about an old friend. Just as Eero Saarinen used to, Eames paused at length between sentences. "Fun to him was superadult concentration on his work. But with all Eero's highly refined skills, he remained always like a puppy with big feet."

"I remember, for instance, twenty-five years ago when he worked out fantastic methods for bumming cigarettes. He would light a match and bring it up to his face and look surprised: 'Oops—I thought I had a cigarette.'"

Many people were reminiscing about Eero Saarinen this month, before he began to slide away from personal memory into myth. It was already evident there was going to be an Eero Saarinen legend; it had begun even in his lifetime. When he sat with his wife Aline at last year's AIA banquet for Le Corbusier in Philadelphia, a part of the crowd, he was also apart, the most famous young architect in America, perhaps in the world. His abrupt death four months later at 51 was like Thomas Wolfe's at 38, George Gershwin's at 39. Like Gershwin and Wolfe, he had rushed very early into the mansion of his talent; and there were indications he was struck down just as he reached the staircase.

These indications, his last designs, are larger than they were a year ago, for some of them now are near completion: the sinewy, majestic Dulles Airport terminal (left and page 108), the rich, rough Yale Colleges (page 116), the toughly intellectual CBS office tower design (page 112). In these designs and several others his demand to become a very great architect was beginning to come into final focus.

If Saarinen does not make the list of history's great architects, it will not be for want of trying, and probably not for want of talent, but for lack of time. He was a tremendous worker, and was not just plodding across a desert; he was headed up the Matterhorn. Personal memories of Saarinen by friends center in his unswerving force, his quiet confidence in methodical work to produce inspiration, and his lust for that work. He did not approach a problem in design or in life and walk around it, observing. He threshed it, like wheat. He was a man of many parts, but like the stones in Macchu Pichu, the parts were fitted so close together that in action he seemed like a single idea.

His surprising quality to people first meeting him was lack of pretentiousness. Most famous architects act a lofty role, but Eero Saarinen was too direct for that. All his pride—and there was plenty of it—went into his buildings. He was one designer who did most of his sketching on ugly, yellow, lined legal pads, not crisp tracing paper. (He got in the habit because the pads were usually what turned up at clients' meetings.) As pressure increased on his time, he became more and more methodical in all matters. Aline Saarinen remembers when he was coming to New York to court her nine years ago, taking her out to exquisite dinners at the best restaurants: "At first I was amazed, then amused at Eero for carrying around a little list of the best vintages of wines in his pocket. While the waiter stood by, he would take his list out and thoughtfully check the restaurant's wine list with his own categorized notes. What impressed me was that in contrast to most men I knew, he had the strength of a man who didn't have to pretend."

His technique in conversation, as in design, was usually to proceed amiably toward a discernible conclusion. If the discussion became one of opposites, he inevitably pulled his
opponent to his own slow pace, pausing to listen, puffing his pipe, finally pushing him over with an eloquence in disguise. But mostly he listened. Elia Kazan, one of Saarinen's clients for the Lincoln Center Repertory Theater, says, "I've never seen a man absorb so much." He was not totally absorbent; when a hurried member of a client's committee interrupted him in the middle of a design presentation, and asked him if he could talk a little faster, Saarinen listened to the question politely, puffing his pipe, then said calmly, "No." Puff, puff. "But I can say less."

It was difficult to get a show of real anger out of him. Says Philip Johnson: "Eero just got silence and silence and silence—but then, finally, sometimes, would lash out with the insult direct, real arrogance." Richard Kelly, the lighting expert, remembers being called to the telephone in San Diego by Saarinen in New York. Saarinen had just finished an argument with someone about lighting, but wanted to check all his information with Kelly. (He also suspected his opponent might be calling Kelly too.) "Eero as usual was right," Kelly says, "But I asked him anyway how he had gone about convincing the other fellow. 'I just listed my facts in order,' Eero said, 'At the beginning I told him in the first place, you may be wrong.'"

His associates and employees still treasure his dependability—"He never, simply never, let you down"—and his humor. This is the kind of guileful story Saarinen himself took glee in telling: He had been one of 40 American architects invited in 1959 to the University of California at Berkeley by a team of Carnegie-supported psychologists inquiring into the nature of creativity. In one of the many tests, each of the 40 architects was put into a private booth with a set of small, colored mosaic tiles and invited to make a design. After they had all finished, Saarinen was standing in the hall chatting with Philip Johnson, a man as mercurial as Saarinen was meticulous. Saarinen recalled, "I asked Philip what he did with the tiles, and he said, 'Oh, those colors were awful. I threw the colored tiles away and used only the black and white. What did you do, Eero?' "I told Philip I had used only the white, and he was so jealous."

When a young designer came into the Saarinen office looking for a job he was likely to be given a test: "Draw a horse," he was told. It wasn't the accuracy of the drawing he was judged by, but the zest with which he reached for the paper and pencil and went to work. (One applicant insisted he had never seen a horse. "Then draw a woman with no clothes on," was the rejoinder.)

The bright young architectural graduates did come in droves, a sure sign of an architect's vitality, and Saarinen and his partners, John Dinkelow and Joe Lacy, built a brilliant staff, with Kevin Roche as Saarinen's right hand in design.

Saarinen recognized that the sure way to get good employees was to get interesting jobs, and he developed into a forceful client's man to do it. It was he who had Charles Eames make a motion picture to convince the airlines to approve the Saarinen scheme for the Dulles Airport job, perhaps the first filmed architectural commercial. Most of his success with clients was on the basis of steadiness. Says President A. Whitney Griswold of Yale, for whom the Saarinen office has done some of its best work: "Eero was always patient, with no desire to score back wittily against critical clients who went after him. He was painstaking, professional, indulged in no recriminations. He never got angry, even when he had a right to. There was no false pride. He had unmatched ability in site planning, and a feeling for history as a continuous stream, rather than as a series of unrelated episodes. He was both an artist and a scholar." But the other secret of Saarinen's relations with clients was the fact that he pulled them along with him up the slope of his Matterhorn. He educated them in the importance—and the pleasure—of ambitious architecture.

Eero Saarinen completed arrangements for his famous move from Michigan to Connecticut just before he died. A large, new, drafting-room wing was built behind an enormous old brick mansion atop a hill near New Haven. He sited the new wing very carefully, to spare an immense tree growing in what became the parking space. After the building was finished the tree was felled by lightning, enlarging the parking space somewhat, but such is the momentum of The Saarinen rhythm. At his death, it looked as though Saarinen might have been born, the big house in Cranbrook before the war, in a house in Georgetown from 1944 to 1945 (doing projects for the O.S.S.), then, after the war, back in Bloomfield Hills. The Saarinen rhythm might not have been as speedy as a city's, but it kept him in gear almost all the time. It was the protective but unremitting creative life of the studio into which he had been born, the big house in Finland. Aline Saarinen recalls: "Eero would come home about 5:45 and we would have martinis, and play with Eames.
(their son, now 7) until about 7:30. They drew a lot of pictures together, of course (above). We had dinner usually about 7:30, then coffee and some talk, and then we would go to the workroom. There was a break about 10:30 or 11 for a drink, and perhaps a look at the news, then long, wonderful conversations, discussions, and yellow-pad drawings over night caps. He worked late, and so he slept late; he seldom got over to the office before 9:30 in the morning.” When Saarinen had to go back to the drafting room to work at night, rather than in the workroom at home, his trail would be ascertained intently the next morning by his staff, by following the path of Old Granger tobacco he left. For a new draftsman to find a sizable amount of Old Granger on his drafting board was a worrisome experience. For him to find the boss’ spectacles was alarming.

Saarinen was probably one of history’s most incessant list makers and charters of action. Everything had to be reduced to paper. At the bottom of this column is page two of one such list, with items dutifully marked DONE. This charting included even the making of a half-serious master-appraisal sheet for a future wife, between his two marriages, including categories all the way from amount of style in dress to emotional generosity. (Says Aline, “I came across this chart after we were married and discovered he had not rated me high in clothes, and was furious.”) Mrs. Saarinen, a well-known, and very smartly dressed art critic, sometimes read her day’s production of prose to her husband in the evening; typically, he would sit drawing a chart with a rising and falling line of interest as she read from page to page, then present it to her.

This intensely close life of the Saarinens was extended by the excitement of many quick trips across the country and the world, usually based on business, but always including architectural tourism too. In the six years from 1955 these trips included destinations such as London and Paris (several times each), Oslo, Portugal, Australia, Indonesia, Cambodia, Thailand, Italy, Finland, Hong Kong, Japan, Brazil, Athens and the Greek Isles (three times), and Munich. On these, the earlier sketching of his post-student days (above) was replaced by the constant clicking of his camera.

Saarinen’s will stipulates that his name shall not go on any work he did not design personally, but the matter of formal reorganization of Saarinen and Associates has not yet been worked out. The firm is too busy just now completing old jobs and beginning new ones.
Saarinen's formative years as an architect began to culminate in the 1950s in a strenuous quest

A seeker after new shapes

Soon after his widely acclaimed General Motors design Saarinen began building exuberant shapes, and critics decided he was becoming a structural architect, one bent on expressing more the way a building was engineered than what it does. But he denied this; he held that the vast dome of the Massachusetts Institute of Technology auditorium was the most Miesian building he had yet done, in that he was creating a valid structure, then tenanting it as he wished. Many of his colleagues passed this off as a sophisticated defense for the almost indefensible effort of cramming an auditorium into that shape.

But as time passed and more buildings came out of Bloomfield Hills it became apparent that Saarinen did have a different balance in mind than most architects between function and architectural characterization. Even as he was completing the G.M. job, he had designed the steep shapes of Concordia College near Fort Wayne. It was mood architecture; at the time, he said he had in mind the white German winter sky where Lutheranism originated. From this and other buildings, Saarinen kept learning. What Concordia taught him, he later said, was the importance of keeping the interiors keyed in feeling to the exteriors (Concordia disappointed him in this respect.) Other lessons: On a trip through France in the late 1950s, visiting Romanesque churches, he said he realized the arches on the chapel accompanying the M.I.T. auditorium were not strong enough. Saarinen felt the Irwin Trust Co. bank was a success in that it fitted into its city site gracefully and improved the neighborhood, but from it he learned something important to him about emphasis; sometimes it was necessary to overstate: "If you are going to have an overhang, it has to be a hell of an overhang, if it is going to come across to people."

What it all came down to was his wish to build an expressive architecture, an anti-assembly-line architecture. Each building should be as distinctive as each person should. It was toward the end that he really began to get the hang of orchestrating the nature of the project, the nature of the spaces, nature of the site, nature of the materials, and nature of the construction method to compose a completely balanced statement, whose component characteristics did not compete, but built up on one another.

It is likely that the most majestic single statement of this integrated expressionism will be his design for Dulles Terminal at the new Washington International Airport to open in the fall. The building is unfinished in that the window wall has not yet been inserted, but the great exposed frame and roof are a rare architectural experience today in sheer strength and grace. Centrally located on a site of more than 15 square miles, the terminal consists of two rows of outward leaning pillars with a vast suspension roof slung from them. It fits its function in a neater way than any other airport (see page 108); it is majestic not only from the ground but from the air; approaching it from the hilly access road is as exciting as going to a great ocean liner in a small launch, climbing the crests and troughs of waves as it sits there waiting.

Influence of a famous father on his son

Eliel Saarinen was a man very unlike Eero, alternately stem and sparkling; his work was deeply steeped in humanism rather than technology, without the striving quality of his son's. One of Eero Saarinen's medal-winning student projects at Yale, a design for a police station (right) shows the mark of the famous father on the renowned son. Below is Eero's own first design within his father's office, a community building in Fenton, Mich. Towards the end, Architect Ralph Walker thinks that the son began to have a stimulating effect on the father's work. But still the elder's influence continues to be seen in such expressions as the designs for the new Yale colleges (page 116), in which outdoor spaces are defined almost into rooms by masonry buildings, somewhat as the elder Saarinen did it at Cranbrook, near Detroit, the school and studio where his son grew up. Another of Eliel's subtleties, the element of surprise, is also included in Yale, as it is at Cranbrook, a place which demands many visits before really being known. Eliel Saarinen used a number of Milles sculptures at Cranbrook. Eero engaged sculptor Constantino Nivola to execute scores of works to put on and among the buildings of the new colleges in New Haven.
WASHINGTON'S HUGE INTERNATIONAL AIRPORT NEARS COMPLETION

Dulles Terminal is a mighty building, and behind it are significant operational ideas. From this central structure immense vehicles called mobile lounges (below) will trundle the passengers out to the airliners waiting near the two-mile-long runways. This will save not only a great deal of walking for the passengers, but also a great deal of taxing for the planes. (Their servicing center is set out nearer the runways than the terminal, and is like an immense gas station.)

The idea of using a vehicle to carry passengers to and from planes out on remote aprons is not new; this is done in several European airfields. But Saarinen was determined to make the buses into something more architectural, and—in principle, at least—he succeeded. Although a consultant on the design of the lounge, Saarinen did not control its design, and the prototype vehicle, although it seems to work efficiently, is a lumbering beast, at best, in its appearance. Prime design contractor on Dulles is the engineering firm, Ammann & Whitney. The Saarinen office is part of their team.
Early sketches (above) and later drawings (below) for repertory theater at Lincoln Center, done by Saarinen office with Jo Mielziner as consultant.
Saarinen's shrewdness in searching for architectural answers could be applied alone or in team

Competitor and Cooperator

Relaxing on the beach at Newport one summer with his wife, Saarinen heard there was to be a competition for sand sculpture. It is typical of him that he leapt into it, with full attention, also typical that he ended up with a special prize in his age group (photo, right). He usually did win competitions.

Competent as Saarinen was as a competitor, no less formidable a force than Gordon Bunshaft, of Skidmore, Owings and Merrill, testifies that he was also an excellent collaborator. Each was assigned to do a separate building at Lincoln Center, but the site was so cramped they decided to marry the buildings. To everyone's amazement the two strong men worked together as smoothly as Bunshaft's Mercedes.

Designing a theater to be sited inside another building

"You have to first chase the problems," Saarinen said, "Once you have caught them, you can always solve them." The repertory theater by Saarinen, to be combined with Skidmore, Owings and Merrill's library at Lincoln Center, is a fine example of this process. The Saarinen office, with Jo Mielziner as consulting designer, started designing it from the inside out before there was a site. They rented two vacant theaters in Pontiac, Mich. and for four months made full-scale mock-ups to establish sight lines. Saarinen's architectural impulse was to "paper the house with people," using a system of shallow balconies (sketches, below and facing page). But when this proved difficult because of lighting angles, he cheerfully gave up his favorite idea, the reverse balconies. He did keep a highly finished "permanent" feeling in atmosphere.

To give the stage flexibility, the designers mounted an apron down front on a hydraulic lift. Even without this extension the stage projects 12 feet into the audience. The proscenium is also designed as an iris, to be closed or opened at will. Not only is the backstage big, but trucks can drive directly in from the street to unload scenery.

The stages of strategy in a competition are well illustrated by the Saarinen office's entry in the World Health Organization competition in 1960, an invited tourney in which they placed second to Jean Tschumi of Switzerland.

The first move was to study the jury. "Who is the strong man?" Saarinen always asked. "And what will stimulate him?" The next was to make space diagrams, "to see it on the wall." Then, before getting too familiar with the problems, they laid out dummy perspectives and plans on sheets so they could settle on coherent terms of presentation to the jurors. "Later on, we won't be able to look at it as freshly as they will."

Then came design: analysis of shapes and massing, defining all the diverse physical possibilities. In this case Saarinen and his staff began to work toward a building supported at the corners. Saarinen made a trip to the site in Switzerland and came back strongly convinced that the building should stand parallel to Lake Geneva, and should be a tall one with sculptural form. Then came, according to an associate, "an unembarrassed reaching for shapes." A truss idea evolved from the ear-

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Saarinen's buildings were usually built to programs that were themselves made works of design.

An analyst and an organizer

When Saarinen was tapped in 1960 to design the CBS building for a blockfront site on Sixth Avenue in the 50s, he knew that the throat of the problem was the New York zoning law, then under rewriting, and he went for it. The episode, now well along (the site is almost cleared; construction contracts have been signed), is a clear example of his ingenuity, indefatigability, and insight as an operational architect.

Immediately, as most architects do in New York, he wanted to build a sheer tower, set back from the street, on stilts. Soon he was having exploratory meetings with zoning experts, such as Gordon Bunshaft and Ed Matthews of SOM, and Jack Gurney, and later with James Felt of the Planning Commission and other New York City planners, to find out if a tower could work economically. He established that the area per floor would have to be near 20,000 square feet gross for an economical structure (in contrast to Seagram's 16,000 square feet on tower floors). The proposed new zoning would still have permitted only 16,000 square feet, but, working together, the city planners and architects came out with a new formula which would yield the right square footage and produce a pleasant plaza for the city.

Another eminent design factor was that Chairman William Paley of CBS specifically did not want a sleek, shiny building: "I thought we'd had enough of that around New York." The Saarinen office agreed heartily; Saarinen already wanted to use reinforced concrete for structure, and face it with stone. For the sake of economy, however, a steel design was kept on the back of the stove all along. But as it worked out, according to Kevin Roche, they hit a time when the steel cost curve, going up, intersected with the concrete curve, going down. The building's contract price has come in five per cent under the budget, although interior spans are 35 feet—very wide for concrete—and there are no columns in the office space.

Mock-ups, models, and full-scale site selection

Mock-ups and model techniques, which since World War II have become the mode of the modern, major American architect, owe a good deal to the Saarinen office. The mock-ups were full-scale sections of buildings completed to test the technical advances. The models, such as CBS (across page, planted in its urban environment by Forum's art department), were not only for demonstrating the design to clients, but for determining it. One afternoon, for example, a number of the collaborators on Lincoln Center held a meeting at the Saarinen office and talked about revising the site plan. Saarinen had six designers standing by, and whenever a suggestion was developed in the committee, one designer would dart out, make a massing model and return in minutes. That afternoon settled a great many things.

As Saarinen's models got bigger and more complete, the sketches got faster and more basic; but the ideas were in them. Right is an early sketch of his last design, a church for Columbus, Ind. Below: working full-scale, siting the Deere Co. building in farmland near Moline, Ill.

Design by-product: It was at Cranbrook before World War II that Saarinen first began designing chairs. The group of students there in the 1930s has become a famous one, including Mari-anne Strengell, Edmund Bacon, Harry Weese, Charles Eames, Harry Bertoia, Ralph Rapson, and Florence Shust, a ward of the Eliel Saarinens, who later became Mrs. Hans Knoll, and now is Mrs. Harry Hood Bassett. It was with Eames that Saarinen won a prize in the Museum of Modern Art chair competition in 1941. All his own designs were produced and marketed by Knoll Associates.

The most popular piece of furniture Saarinen designed for the Knolls was a shapely armchair with metal legs, but the most famous was his "womb" chair shown here baked in the form of a birthday cake by Florence Knoll for Eero Saarinen. When the late Hans Knoll wrote Eero in 1948, asking for a more conventional name for the piece, Saarinen replied: "I have been thinking and thinking about a printable name for that chair, but my mind keeps turning to those which are more biological, rather than less biological."
Envelope studies for the CBS building in model form (left) show a few of the more obvious alternatives open to the Saarinen office in massing. The old-style conventional wedding cake is the first, top, succeeded by various tower studies in which open plaza space is traded for the right to build straight up from the lowest floor. What the final design (right) does is set a tower, with no “bustles” behind it, cleanly on a depressed plaza. A small, separate building contains the truck dock.

In plan the service core of the building is designed to permit circulation within its walls, saving the space of a public corridor around the core. (Adding two doors to the core walls brings circulation to the four quarters of the building, which means there can be four tenants per floor.) The top floor and the floor directly above the lobby are mechanical floors, with ducts running up and down in the exterior columns (above).

When the CBS tower is completed, its siting will probably make it the focus of its neighborhood of massive new commercial buildings, making most of them look like weak brutes. It will be that rare event, a New York office building with a strong identity.
A very responsible architect

When the Old Dominion Foundation, headed by philanthropist Paul Mellon, friend and Yale classmate of A. Whitney Griswold, bestowed the magnificent sum of $15 million dollars on Yale in 1958, President Griswold suggested to Mellon that Saarinen be commissioned to build two new residential colleges for Yale. The site selected was a tight wedge between the looming medieval-cathedral architecture of the Payne Whitney gymnasium to one side, across a busy street, and the brick semi-Georgian angularity of the graduate-school tower to another side. But the problem went beyond compatibility.

For one thing there was the matter of budget. The total was large, but only half of it was for building. "Saarinen was tied down by financial strings like Gulliver in Lilliput," says Griswold. Most difficult, Saarinen had deliberately been getting away from handcraft methods in his designs, favoring industrial walls, but masonry was strongly hinted by the client as a material. "A feeling of permanency" was the requirement. Saarinen could accept direction, but he turned it into his own direction. The colleges, now nearing completion, are masonry, but of an industrial style: the stone was dropped into formwork, then a special mortar was pressured in through hoses attached to sides of the forms, and scrubbed out later to reveal the stonework. Most significant, the wall, according to the Saarinen office, cost less than "a good brick wall."

Having invented them, what the designers then did with these walls, against the backdrop of imitation Gothic and imitation Georgian (and real street traffic), was an exercise in a more subtle strength. They retained the best, and least dated, of Yale architectural attributes, the small, intricate outdoor spaces among buildings. The characteristic of the architect which the Yale colleges will bring out is probably the one Eero Saarinen himself was proudest of in his office: "Responsibility to the client and to the surroundings."

A letter from an architect to a corporate client

Few architects generated such personal warmth from clients as did Saarinen. Part of the reason for this regard-beyond-business may be indicated by a letter Saarinen wrote to a client, William A. Hewitt, president of the Deere Co. Hewitt, in fun, had sent Saarinen some clippings of hideous Victorian furniture from a French magazine, asking if this wasn’t the way they should plan to furnish the Deere boardroom. Part of Saarinen’s grave reply:

Dear Bill:

We have just been working on models of the executive area and they show real promise of achieving interiors of the same quality as the Katsura Palace . . . . It would be a shame to spoil them with furniture . . . . I could, for instance, imagine that in your office we would have a low (very low) beautiful lacquer table—something about 12 inches high. The quality of the lacquer should match the finish of the telephone, because you will probably need a telephone. In the other corner, diagonally across from this table, we might provide a neck rest, which takes the place of the chaise longue of the Western world. Now, the boardroom. I have in mind there the same general treatment—that is, concept of de-furnishing. The room is planned to seat 30 persons. Instead of providing that horrible monstrosity produced by the Western world—the standard corporation boardroom table—why don’t we provide for each member a small lacquer tray, about 12 by 16 inches, and on these they could keep a neat rice-paper pad and a pencil (or a brush if they preferred—that part could be optional). For some of the older members of the board with creaking knee joints a small pillow could be provided. Instead of the traditional bottle of water and the glasses which adorn every boardroom table, I suggest—and here again I go to borrow from the great Japanese tradition—the Geisha girl. She would stand immobile in the corner of the boardroom and the moment one of your board members looked thirsty, she, in her attentive way, would snuggle up to him with a cool drink of water (or sake— if he was the type). This would eliminate entirely the gross interruption to the spatial quality of the room made by the tray with water bottle and glasses.

Now I realize fully well that there are some objections to this mode of corporate life. I approached IBM with somewhat similar suggestions—they turned me down, even if it would have saved Tom Watson money. General Motors also did not wish to go along with this—they never told me quite why. Their objections, as will be yours, are that legs of Western-civilization men simply are not used to sitting on the floor. This is all Tommyro— in six months people would have developed the ability—and they could think with joy about all the muscles they never would have used if they were not working for John Deere and Company. Then the argument will go—Yes, maybe so, but what about visitors? Quite frankly, for them you may have to provide an occasional chair. But not all visitors—a large percentage of your visitors come from the ranches of the West and there they have a way of kneeling and leaning on one leg—thus a large percentage of occasional chairs for visitors could also be eliminated. It really all boils down to keeping six or eight chairs around for the Wall Street people when they come to look you over—they are not very flexible and their joints creak . . . .

Now, I have outlined my thoughts about the furnishings for the special areas, and as you see, they are in conflict with your suggestions. I hate the word compromise, but I suppose there is nothing else to do but try to hammer out one of those . . .

As ever, Eero
Two new Yale residential colleges, now nearing completion, are walled off from side streets by a line of shops which are part of the design; another college, to be added in the future, will extend the curve of these two toward area in upper right of the site plan, above. Beyond the new colleges in the photograph below appears the Gothic height of Payne Whitney gymnasium.
A building begins to deteriorate from the very first moment it faces the elements. It is attacked from all sides and from within. Its pieces settle, its joints flex in the wind. Airborne chemicals and dirt attack and coat the exterior and eat away at the skin. People bring dirt inside with them, wearing down floors and marring walls. All the while, hardware is getting looser, light bulbs are burning out, and elevator and air-conditioning machinery is wearing out.

The problems of building maintenance are of concern to architect, contractor, and client alike. The architect’s professional reputation depends greatly upon how well his buildings hold up. For the contractor, it is not only a matter of reputation; there are guarantees to be backed. And in the end, of course, it is the client who must live in the building and pay the bills for cleaning, repair, and replacement.

The appearance and real-estate value of a building, not to mention its ability to fulfill its basic functions, depend largely upon just how much it is allowed to wear out. Once a certain point is reached, the building is economically dead.

The speed with which the usable life of a building passes varies considerably. A building considered primarily as a means to a quick profit may be maintained to a very different set of standards than an owner-occupied or institutional building. The speculative building will very likely be designed with low first cost as the prime consideration, all but ignoring later maintenance costs. But, like the car owner who doesn’t “trade in” every year or two, the building owner who keeps his building may find the maintenance problem looming large.

MAINTENANCE STARTS WITH DESIGN

Cleaning is one of the largest single items in the building budget. The National Association of Building Owners and Managers says that a good 50 cents per square foot per year are spent on cleaning commercial buildings, plus about 22 cents per square foot on repairs, alterations, and redecoration. In short, the annual maintenance costs for a typical office building may add up to over five per cent of its original cost. The figures for stores, schools, and other buildings do not vary too much from these.

Although maintenance begins only after the completion of the building, its extent is dependent upon decisions made in the design and construction phases. Among the design decisions are ease of access to mechanical equipment, provisions for convenient cleaning, and the selection of materials with
good wearing properties and appropriate finishes. Almost all mechanical equipment has a limited life-span. For example, the approximate useful life of an AC motor for an air-conditioning fan (considering obsolescence as well as deterioration) is about 15 years; for an evaporative condenser, about ten. A 40-watt fluorescent tube may last 15,000 hours. Access doors and working room around electrical and mechanical equipment are, therefore, necessities.

The cleaning process itself can affect design. A standard example: Baseboards—which are subject to marking by vacuum cleaners, waxes and mops, and splashing by soapy waters, solvents, or chemicals—should be of a dark, durable material.

It is best to avoid placing two materials which need radically different cleaning methods directly next to each other, e.g., a floor which must be washed (stone or terrazzo) alongside a floor which must be sealed, polished, or both (wood, vinyl).

**FIRST COST vs. MAINTENANCE COST**

A material with a relatively high first cost may actually be less expensive to use than a material with a lower first cost and higher maintenance cost. To calculate the actual yearly cost of a given material, some building owners and architects divide the first cost (plus interest on first cost—usually taken at five per cent) by the expected life in years and then add the annual cost of cleaning.

The life-span of a material varies enormously, depending on where and how it is used, but a comparison of flooring materials, for example, shows that high first cost and high maintenance cost do not necessarily coincide. Terrazzo on first cost may run $1.80 to $2 per square foot installed, about six times as much as asphalt tile at 35 cents per square foot, and about twice as much as homogeneous vinyl tile at about $1 per square foot. However, costs of upkeep, according to maintenance companies, are less for terrazzo than for vinyl and less, in turn, for vinyl than for asphalt. (To figure total cost, the life-span of the material must be known.)

Much the same criteria apply to wall and ceiling materials as to floor materials. Generally speaking, gray or neutral colors show less dirt than blacks or whites, and matte surfaces show smudges and stains less than glossy ones.

Air conditioning can reduce interior cleaning and painting as much as 70 per cent by filtering out dirt before it enters the building. Viscous impingement, water spray, or dry filtering systems—depending upon the particular type—are able to remove up to 80 to 90 per cent of airborne dirt by weight, but they remove fewer of the smaller particles which discolor surfaces than more expensive electrostatic precipitators.
On the exterior of a building, three variables come into play: cleaning costs, structural maintenance costs (calking and pointing), and heating and ventilating costs. A thin, metal curtain wall may provide more rental space inside the building line than a heavy masonry wall, but in some cases first costs may be greater for the curtain wall. Both need maintenance: the masonry wall will need pointing, sealing, and cleaning from time to time; the curtain wall will need recalking and washing.

The maintenance of glass presents its own set of problems. Inexpensive, oil-based calking compounds will generally mean more broken panes and more frequent recalking than will the more expensive resilient types. Glass is cleaned more often than most other exterior wall materials. Fixed glass on multi-story buildings usually requires a special window-washing platform: an exterior, open elevator rig that may run as high as $100,000. But, this is almost a necessity if broken panes must be replaced from the outside and if the spandrels and trim as well as glass must be cleaned frequently, as is the case with most metal curtain walls. Operable windows can be cleaned and replaced from the inside, but they are more expensive than fixed. Mohawk Maintenance Company, one of the largest, charges almost one-third less per square foot to wash fixed glass with an outside rig than to wash movable glass, because the fixed glass can be washed more quickly.

Architects Anshen & Allen investigated both systems when designing the International Building in San Francisco (FORUM, March '62). They found that a window-washing rig alone ran in the neighborhood of $70,000, and that fixed windows would cost half again as much to maintain as operable windows. This would offset the extra first cost of operating windows in less than five years. (One reason for the higher cost of cleaning fixed windows: High winds often make outside cleaning on a rig next to impossible in the afternoon in San Francisco.) The building, moreover, was to be faced with precast concrete spandrels, which require less cleaning than most metal curtain walls, and hence less need for a rig. Result: the building has vertically pivoted windows.

**DO-IT-YOURSELF, OR CONTRACT OUT?**

Once the construction gangs have departed, the maintenance of the building is in the hands of the owner. It is he who must put in motion the anonymous army of maintenance people, the nighttime occupants of the building.

There are protagonists of both staff and contract maintenance. Those who favor the former claim that they can look after their own building and their tenants better than an outsider can. Those in favor of contract cleaning cite these
advantages: transfer of responsibility for personnel and supervision to an outside specialist, and the replacement of a variable item in the budget with one that is agreed upon and fixed. For most large office buildings the sheer size and complexity of the cleaning and maintenance problem means that at least some of the work must be contracted. But regardless of whether the owner or operator chooses to maintain the building with his own staff or use contract maintenance, the maintenance of the building should be organized systematically. This will entail detailed and regular cleaning, replacement, and preventive maintenance schedules.

In the long run, preventive maintenance is usually more economical than spot maintenance. The ubiquitous light bulb is an example. In many medium- to large-sized buildings, labor cost, not bulb cost, is the controlling factor. Labor cost for spot replacement of burned-out fluorescent tubes, according to one survey, averages about $1.40 per tube, whereas labor for group relamping rarely exceeds 20 cents per tube. Group relamping is generally economical when tubes have gone through 70 to 80 per cent of average lamp life.

FUTURE HELP FOR BUILDING MAINTENANCE

Unfortunately, a great problem—and one which is almost certain to grow more acute in the future—is the relative lack of objective performance data on the new materials which are flooding the building market. Early dry-joint curtain walls, in many cases, have already had to be caulked. The anodized aluminum curtain wall of the Alcoa Building in Pittsburgh has not yet provided its intended test of the weathering qualities of anodized aluminum: the protective lacquer coating is so good that it has yet to wear away. But, along with the inevitable uncertainties, new materials may bring solutions to many of the traditional maintenance problems.

To some extent help is already here. Epoxy coatings are being used in such places as concrete warehouse floors to give almost indestructible surfaces, and with other plastic coatings they may almost eliminate the deterioration of metal walls. The Division of Buildings and Stores at Yale University, for one, has found that the new transparent silicone coatings can make masonry walls almost element proof and otherwise nearly maintenance free. Similarly, the life of mechanical equipment, from lamp bulbs to bearings, is being extended.

The ideal, presumably, is a building which would need no cleaning and all of whose elements would wear out at exactly the same time—a building which lives to a ripe old age and then dies all at once. But, until that ideal is reached, and probably beyond, buildings will need careful design and a good deal of elbow grease.
LIFT-SLAB APARTMENTS

The tallest lift-slab buildings in the U.S., and the biggest lift-slabs anywhere, are the Huron Towers Apartments in Ann Arbor, Mich. It is not alone as a technical tour de force that these twin towers are significant, however. They are unusual too in design, in financing, and in site utilization.

High-rise apartments are a largely urban phenomenon, but Huron Towers are in a relatively small town—and on the outskirts at that. (Except for University of Michigan dormitories, Ann Arbor hadn't seen any high-rise housing built since the twenties.) Developer Morton Scholnick gambled on the quality of the buildings, and a fine site (bordered by the Huron River, a municipal golf course, and Michigan's new north campus) to attract tenants at comparatively high rentals from the fast growing university and several nearby industrial research laboratories.

Financing is of interest chiefly because 82 per cent of the total cost was covered by a $5,770,800 mortgage, the largest ever insured by FHA's Detroit office. As Bernard Landis observed in last month's Forum, FHA's tendency to encourage repetition of yesterday's successes, and discourage tomorrow's, isn't universal. FHA's Detroit office is evidently one that welcomes intelligent innovation.

A fresh face with character

Architecturally, these buildings stand in refreshing contrast to the featureless, neuter facade that almost always envelops the American apartment house. Depth and texture are provided by fieldstone walls at the base, by cantilevered balconies with serrated edges, by the exposed aggregate of the precast balcony parapets, by patterned paving and plantings on the broad terrace between the towers. These are not slick buildings even though the exterior walls (set six feet behind balcony edges) are glass and porcelain enamel.

Lift-slab construction contributed one of the buildings' architectural graces: the exceptionally thin, delicate-looking floor slabs. The lift-slab technique also made it possible to pour concrete during a rigorous Michigan winter. Because reinforced concrete slabs were poured one on top of another at ground level, a temporary plastic shelter could be rigged easily to protect the pour. When all slabs had been poured around the 36 steel columns (with collars to permit jacking), the shelter was dismantled and the slabs were hoisted up along the columns by hydraulic jacks.

At first, the columns were two stories higher than the topmost slab. Then the slabs were lifted, two at a time, by jacks atop each column. When slabs reached the column tops, two
Technologically advanced apartments also offer good looks, good planning, some unusual amenities.

Plastic tent keeps work area warm enough while floor slabs are poured

Columns of nearer tower must be raised for stack of slabs to go higher

TYPICAL FLOOR PLAN

more stories were added to the columns' height and the process was repeated. A truck-mounted crane drove around the top slab during its slow ascent lifting steel for the columns and other building components. As each of the slabs reached position, it was welded and grouted to the columns in a permanent bond. Twenty weeks elapsed before the highest slab was in place, during which time other work was, of course, proceeding on lower floors.

Architects King & Lewis concede that a Mexican lift-slab building is taller than their twins, which have 12 apartment levels above high-ceilinged, largely open lobby floors. But their slabs are the largest and heaviest yet lifted—215 by 70 feet, and 820 tons apiece. Among the interested sidewalk superintendents was Philip Youtz, Dean of Michigan's School of Architecture and coinventor of the lift-slab method.

The towers each contain 180 units ranging from efficiency apartments renting at $119 to three-bedroom apartments that rent for $340. Typical floors contain five efficiencies, five one-bedroom units, three two-bedroom units, and two three-bedroom units. Kitchens and baths parallel the double-loaded corridors, reserving window-wall light and view for living rooms and bedrooms. Sliding glass doors lead to balconies that are screened for privacy at each party wall.

One building's ground floor contains a beauty salon, drugstore, valet service and similar conveniences. Both lobby floors, connected by a covered walk, have promenades overlooking a landscaped terrace that is the roof of a 313-car garage. Because of the sharply sloping site, each of the garage's three levels has an entry on grade. Parking costs $22.50 per month, but free outdoor parking is also available.

FACTS AND FIGURES


Construction details: four rows of nine steel columns carry floors of reinforced concrete cantilevered on all sides to form 6-foot balconies. Nine-inch slabs are 215 by 70 feet, weigh 820 tons, and were lifted into position by hydraulic jacks. Wall sections of glass and aluminum, 5 by 8 feet, are fastened to slabs by stainless steel screws in aluminum anchors. Aluminum vertical members support balcony parapets precast in 10-foot sections. Living rooms and bedrooms have heating and air-conditioning units with individual thermostatic controls and fresh-air intakes. Each tower is served by two elevators. Penthouses conceal elevator machinery, exhaust fans, and other equipment.
Bear entrance (above) opens onto an outdoor parking lot. Canopy protecting walk between main entries (below) echoes pavement pattern.
Knoxville's old Market House (above, foreground) was razed and streets on each side were closed to form Market Square Mall (below).
KNOXVILLE’S NEW MALL

With a few notable exceptions, such as Toledo and Kalamazoo, the rebuilding of downtown into a pedestrian paradise has remained the stuff of dreams on many an architect’s drawing board. By working together with businessmen and city officials, however, the architects of Knoxville, Tenn., have helped to turn the dream into a profitable reality in that city’s new Market Square Mall.

The mall, which replaces Knoxville’s venerable Market House (photo opposite), was conceived by a group of businessmen in 1958 and authorized by the city council in 1959. Architectural services were volunteered by the East Tennessee Chapter of AIA (the cost to be borne by a pro-rata assessment of Knoxville members). The Downtown Knoxville Association, a businessmen’s group that sponsored the Gay Street Promenade (FORUM, Feb. ’61), enthusiastically adopted the mall as its second civic improvement project.

Of course, the mall had opponents too. There was sentiment for the preservation of historic Market House (built in stages between 1853 and 1890)—until fire gutted the interior. In addition, it was discovered that the land had been deeded to the city generations ago on condition that it would revert to the donor’s heirs if used for anything other than a public market. The matter is before a court, but the city contends that its title is validated by the open-air market pavilion that stands at the north end of the new mall.

The sidewalk canopies, which do much to unify the 130 by 440-foot mall and camouflage some undistinguished store fronts, were not part of the original plan. They were separately commissioned by the store owners, who shared costs on a front-foot basis. Plans are also underway for the remodeling of individual stores.

On the basis of their new mall, merchants predicted $6,780,000 in sales in 1962, an increase of 21 per cent. Actually, volume is running slightly better than this. The store vacancy rate dropped from 24 per cent to 8 per cent while the mall was being planned and built, and is now diminishing toward the vanishing point. New tenants are of high caliber. The undertaking already seems to have justified itself economically.

Costs were $86,000 for the mall, $47,000 for the pavilion, $55,000 for the sidewalk canopies, and $125,000 for the relocation of utility lines. Total cost: $313,000.

A special committee of the AIA chapter acted as architects for the mall and pavilion. Painter, Weeks & McCarthy designed the sidewalk canopies. General contractors: Roehl Construction Co. and Southeast Construction Co.
A TUNNEL IN PICCADILLY

Both inside and out, necessity was the mother of invention in this remodeling project for Iraqi Airways by Architects Alison and Peter Smithson.

Two doors from the airline's small offices on Piccadilly in London are the offices of Pan American Airways, whose fascia sign is high, wide, and glaring. Against this, the Smithsons decided to pose discreet understatement (photo right).

Inside, the airline's ground floor ticket office, 14 by 75 feet, would fit into a jetliner's fuselage. So the architects made a virtue of the tunnellike quality of the space by emphasizing it (photo opposite). Half of the building's frontage was taken up by entries, and a conventional window display would have completely blocked the tunnel mouth; so the Smithsons ingeniously sank a display well below the sidewalk, where it can be viewed "from the air" by passersby (photo below).

Copies of Iraqi bas-reliefs are molded in undulating walls the color and texture of desert sands. Counters are faced with blue tile from Iraq; carpeting is pale khaki. Cylindrical light wells in the ceiling and floor let daylight into the back of the office and transmit some of it to the basement beneath.

Cost, including less extensive remodeling and repairs on five other floors, was about $50,000. Lettering and displays were designed by Edward Wright.

Undulating walls of the "tunnel" (opposite page and right) are of plaster on metal formwork. First display in the sunken show window (above) depicts one of man's earliest interests in flight: falconry.
REBUILDING GOES UP 15%

The growing trend toward remodeling of older structures, in preference to demolishing and starting anew, is strongly reflected in Forum's final compilation of building permits issued in 1961. Among 16 cities surveyed (see table below), the dollar volume of additions and alterations ranged as high as 42 per cent of all building authorized. Of this volume nonresidential remodeling took by far the lion's share, averaging 75 per cent of permits issued (in Detroit the figure was closer to 90 per cent). And despite the lingering effects of recession, total rebuilding permits in 1961 rose over 15 per cent over the previous year.

Property owners and architects, the figures would seem to indicate, are becoming more aware of the advantages to be gained in salvaging older buildings whose structure and location are sound. In Philadelphia, for example, where remodeling permits were up a whopping 61 per cent, an increasing number of old brownstones, some of them slum tenements, are being stripped to the frame and the interiors transformed into modern and extremely rentable apartments. The trend is not confined to Philadelphia by any means. The figures would seem to indicate that is becoming more aware of the advantages to be gained in salvaging older buildings whose structure and location are sound. In Philadelphia, for example, where remodeling permits were up a whopping 61 per cent, an increasing number of old brownstones, some of them slum tenements, are being stripped to the frame and the interiors transformed into modern and extremely rentable apartments. The trend is not confined to Philadelphia by any means. Property owners and architects, the figures would seem to indicate, are becoming more aware of the advantages to be gained in salvaging older buildings whose structure and location are sound. In Philadelphia, for example, where remodeling permits were up a whopping 61 per cent, an increasing number of old brownstones, some of them slum tenements, are being stripped to the frame and the interiors transformed into modern and extremely rentable apartments. The trend is not confined to Philadelphia by any means.

Prospets for 1962

Prospects for 1962 indicate continued rises, contingent to some extent upon mortgage rates, which are currently caught in the battle for savings between the banks and the savings and loan associations. However, if Congress should, as expected, permit commercial banks to make mortgage loans from time deposits, considerable money will become available to spur building activity.

In any event, a $60 billion building year is forecast by the experts, with the major gains expected in hospital, school, office, and apartment building and rebuilding. Predictions are for a 5 to 7 per cent increase in educational building, a 7 to 11 per cent increase in hospitals. On the other hand, the boom in hotels and motels (Forum, Feb. '62) may be petering out.

END
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SPANISH MONASTERY. Architect Miguel Fisac designed this Dominican monastery in suburban Alcobendas, near Madrid. The tower (right) rises 198 feet and is crowned by a cross enmeshed in iron, also designed by Fisac. A succession of ramps leads to the top of the tower, which is supported by 16 pillars, in groups of four. One wall of the monastery is composed of variegated fragments of glass imbedded in the concrete siding. The artist, Austrian Adolf C. Winternitz, has executed these vitrales with scenes from the Bible and the lives of the martyrs. The main chapel (above), dedicated to St. Peter the Martyr, is dominated by a hanging cross sculptured by Pablo Serrano, flanked on two sides by brick walls and lighted naturally through glass panels overhead. The grilled screen beyond adds another pattern of light to the interior of the chapel, which is dominated by a massive altar.

BRAZILIAN MUSEUM. Rio de Janeiro’s new Museum of Modern Art by Architect Affonso Eduardo Reidy is rising apace on its magnificent site overlooking Guanabara Bay. The administration building (above) is being used temporarily to house exhibits and has the same sidelighting and expansive view that will be found in the connecting gallery now nearing completion (right). Bifurcated external frames of reinforced concrete provide support for the floors of the gallery, which will be entirely free of interior columns. A projected 1,000-seat theater will complete the group.

FINNISH CHURCH. Architect Aarno Ruusuvuori’s winning entry in a 1956 competition has been recently constructed at Hyvinkää in southern Finland. The pyramidal church is lighted principally from acute-angled windows near the ceiling and to the right of the altar (above), sealing in the congregation from the outside world and concentrating attention on the unadorned cross. An organ loft to the right of the altar forms a horizontal break in the church’s interior of soaring beams.
ROMAN EMPORIUM. A dramatic addition to Rome's Piazza Fiume is La Rinascente, a new department store designed by Architects Franco Albini and Franca Helg. A "machine for selling" with a strong architectural character of its own, the store has a steel frame sheathed in prefabricated panels of crushed granite and red marble. Undulations in the windowless wall (below) provide not only design interest but space for air conditioning and water risers. Entrance is through two "air doors" to three floors below ground, and six floors of selling, storage, and office space above.

ITALIAN HOURGLASS. The water tower and pumping station shown in the model below was designed by Architect Angelo Mangiarotti in collaboration with Engineer Aldo Favini. Its curvaceous façade will soar 164 feet over the Roman campagna. The water reservoir, in the top quarter of the tower, is balanced by a broad base containing utility rooms. Connecting the two are central elevators encircled by a winding staircase. This neat solution combines all functions of a hydraulic plant in a single fluid shape.

GERMAN POOL. Friedrich Hetzel's new swimming stadium at Wuppertal, near Düsseldorf, offers Olympic facilities for water polo, diving, and swimming meets in one big pool. Column-free seating for 2,100 spectators is provided under a catenary suspension roof of 2¼-inch-thick concrete, designed in collaboration with Engineer Fritz Leonhardt. The roof is supported by 22 members of rigid concrete, each 18 feet wide. The ceiling of lightweight aggregate panels is suspended from the roof, with the intervening space utilized for ductwork.

SWISS CHURCH. St. John's Catholic Church at Döttingen, designed by Architect Hermann Baur, is an interesting study in counterpoise between a low-lying gabled roof and the eccentrically slender shaft and boxlike belfry of a free standing tower (right). The altar of fitted stone and the candelabra (above) are by Sculptor Paul Spack. The rear wall provides a pattern of asymmetrical light and shadow; the choir loft here is hung before a window of irregularly divided glass.
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As a former student of Wright has said, he was one person in the lecture hall, another on the site, but the whole man only when a pencil was in his hand. This volume, one of the most complete collections of his drawings to be published, reproduces—scribbles, erasures, patches, and all—some 300 of them, from the earliest house renderings to some of the more fanciful stadium and "driving machines" of later years (see cuts).

The quality of the drawings varies almost as much as the designs themselves; some are Wright's own quick sketches, others the grandly detailed work carried out by the Taliesin fellowship. They range from the lavish projects for the Mile High Steel needle, the Madison Civic Center, and Broadacre City, down to curtains, lighting fixtures, and chairs. A surprising number have never appeared in public print before.

The task of selection was carried out by Arthur Drexler, director of the Department of Architecture at New York's Museum of Modern Art, who worked at Taliesin East and West with full access to Wright's abundant files.

An exhibit of originals of Wright's drawings will be on view at the Museum of Modern Art until May 6.

THE GREAT AGES OF WORLD ARCHITECTURE.
8 volumes (5 more in preparation). Published by George Braziller, 215 Park Ave. South, New York, N.Y. Each volume about 125 pp. 7½” x 10¼”. Illus. $4.95 each.

This ambitious series of slim monographs, written by scholars and aimed at serious students of art history, is also intended for general consumption. And certainly the very slimness of the volumes will be far more alluring to the timid neophyte than the bulk of other, more formidable tomes. The essays are brief, running to 48 pages, followed by 60-odd pages of photographs and drawings—which are not only well chosen but excellently reproduced, though inconveniently separated from the text—plus footnotes, bibliography, and index.

Still, in its attempt to reach both professional and amateur at the same time, the series runs the risk of being neither fish nor fowl, and the results, inevitably, are uneven.

The essays, by Carnegie Tech's Howard Saalman, for example, frequently uses brief and obscure parentheses which can only stump the laymen without fully satisfying the scholar.

On the other hand, Modern Architecture, by Yale's Vincent Scully Jr. (by all odds the most successful of the group), is told so vividly and avoids superficiality so completely that it can, and should, delight both serious student and armchair architect.

Other volumes in the series are: Greek Architecture, by archaeologist Robert L. Scranton of the University of Chicago; Roman Architecture, by Yale's Frank E. Brown, a scholar in classical archaeology and history; Early Christian and Byzantine Architecture, by art historian William MacDonald, also of Yale; Gothic Architecture, by Robert Branner, art historian at Columbia; Renaissance Architecture, by Bates Lowry, chairman of the Department of Art at Pomona; and Baroque and Rococo Architecture, continued on page 168.
After Styrotac™ bonding cement is applied to either the wall or to Styrofoam, the insulation is pressed in place (center). After overnight setting, gypsum wallboard is either spot-coated or notch-trowelled with Styrotac and pressed in place over the Styrofoam insulation (right).

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"Without patronizing his young readers, and without exposing them to occupational exhortation, director McLaughlin of Princeton's School of Architecture has written a superb description of the profession of architecture for would-be architects. It is an encouraging picture he draws, but not an especially romantic one; his choice of pencil is nearer F than 3B. The satisfaction promised is that of creating useful buildings. The money isn't bad, either, the author points out, but the work schedule can be a drain. McLaughlin lists a typical week of a typically successful architectural firm, and it is both full and diverse. The picture is delicately optimistic, but such undertones as the drift of design responsibility to the drafting room are implicit, if not underscored.

To give greater depth to the explanation of a profession, five architects' biographies and positions are sketched, each in ten or fewer pages: Louis Sullivan, Charles F. McKim, Louis Shidmore, Eero Saarinen, and Louis I. Kahn. All are well done.

A good deal of Dean McLaughlin's book, quite naturally, is about education; information is presented rather neutrally, but is complete to a list of approved architectural schools.

If all Macmillan's "Career Books" (Professor, Lawyer, Physician, and Nurse so far) are as well done, it is a fine series. Architect might even be good reading for someone not planning to become an architect, but considering marrying one.—W.M.C.


Mr. Rosenberg is a master of creative reticence, and his beautiful, lucid "portrait of Ruskin's genius" builds up for the reader the terror of a brave man's fate far more effectively than sentiment and emphasis could. For Ruskin in all his "shattered majesty" was a hero who never thought that his duty was less than to plunge into the vortex of the most desperate contradictions with which he, and the arts he was concerned with, were beset.

The title "The Darkening Glass" recalls that Ruskin (for reasons which his intellectual biographer wisely does not try to sound—they might even have been "purely physical") turned gradually mad under his own horrified self-observation, and spent his last eleven years "slowly dying" beyond human communication. Yet Rosenberg is concerned with Ruskin not for his life but for his thought; the life has to be recounted because Ruskin was a genius whose personal experience directly conditioned the development of his thought.

Ruskin's entire background and his beliefs were intensely evangelical, but he had an acutely and incurably sensuous nature. For example, there was his intense concern with economic justice, a concern which he set down in Unto This Last and which was to set afire a young man named Gandhi in distant India. Indeed, Ruskin's thought was to suffuse the approach to "welfare" of all twentieth-century nations. Yet, this concern started out of esthetics: the starvation of ordinary people's dim, drab spiritual lives. Ruskin's theories about the sumptuous Venetian paintings that he so loved started, on

continued on page 173
New York Hospital adds color... for life. This is the new Coney Island Hospital in Brooklyn, New York. The face is colorful and clean and will stay that way for the life of the building because the architects chose HANLEY Duramic® Glazed Brick for the exterior. If you want to add color, not costs, to your next project, take a look at HANLEY'S more than fifty shades of glazed brick and tile. Make your projects distinctive and colorful permanently because HANLEY Duramic® Glazed Brick is self-cleaning and colors do not fade. Specify uniform quality HANLEY Duramic® Glazed Brick for your next project.

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the contrary, out of morality: it was through this combined moral passion and erotic love that he got these priceless treasures preserved.

Ruskin faced up to whatever he saw. His early passionate Wordsworthian love of nature, and his translation of Turner in terms of truth to nature, were embittered for him when he discovered even in nature the cruelties that his more scientific contemporary Darwin also found. Ruskin's "unconversion" from the narrow faith of his parents through the greater largeness (and voluptuousness) of Veronese's and Tintoretto's world was summary. But he never lost the preaching habit, for his faith in truth and faith ever remained, and salvation was to be sought even though it never seemed to be at hand.

Alas, Ruskin could not face up to what he simply could not understand, and a qualified psychiatrist would have a field day interpreting the inversions and frustrations of this star-crossed spirit.

Mr. Rosenberg's well-organized, clear, unpretentious account of Ruskin's full thought is well worth a modern reader's time, for the reader is given the means of going beyond the writer to sound out the depth to which today's views of architecture and city planning (among other things) are Ruskinian still. This is true not only of such outgrowths as Lewis Mumford's pompous, multi-story dispensations concerning cities and human life, but of many unexamined everyday articles of belief, held close by serious architects, concerning such things as "truth" in architecture and the salvation by architecture of the society it serves.—D.H.


This is the eighth year of publication of the Swiss annual encyclopedia, a handsome potpourri of articles and illustrations of recent world architecture, urban studies, and the "plastic arts." Included are extensive and well-photographed coverage of "the Style of Nervi," "My Thoughts, My Worries, My Hopes" by Richard J. Neutra, and "Mondrian and the Idea of Architecture," by Michel Seuphor. One section is devoted to the best examples of Swiss architecture of the current year and singles out Swiss Architect Otto Glaus with a compendium of his most recent work.

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ers, just as they buy cleared sites today under Title I. “Only if the developer is given a large enough area so he can create a truly new environment can rehabilitation work.” People in the areas would all be removed, as in clearance. There would be little or no provision for voluntary rehabilitation.

Others are less optimistic than Rouse. Winnick says that “future prospects do not point to the replacement of all or most existing slums by private real estate facilities,” and he is particularly pessimistic about gray areas, where “it would be difficult to find a market for apartments renting for more than $18 to $25, per room. In such cases, something more powerful than land write-downs may be needed.”

The “something else” Winnick mentions has been given much thought, and some observers believe that the gray areas need a vast injection of public funds to do the rehabilitation and clearance job where private enterprise will not undertake it. This could happen, they say, if urban renewal were afforded anything like the vast reallocation of federal funds which John Dyckman and Reginald Isaacs suggest in their provocative book Capital Requirements for Urban Development. The authors show that it is feasible, within the foreseeable growth potential of the nation’s output, to sink one trillion dollars into renewal to clear all urban and rural slums in a dozen more years. But here is precisely where renewal would come right back to the very essence of what plagues rehabilitation and relocation—i.e. unpopularity in the slums themselves.

An unpopular program

The dilemma was stated this way by David Wallace, Professor of planning at the University of Pennsylvania: “To go into the gray areas with massive intervention ... would be to court disaster. The program would get less popular rapidly.”

The program is unpopular in the slums, no matter how much real estate interests, merchants, and local chambers of commerce might like it. As Planner Carl Feiss says, “the basic weakness of slum programs since the earliest days is that slum people are not storming city hall to get out of the slums.”

If anything, the contrary has been true. Renewal has engendered a great deal of bitterness, and this bitterness has already been traduced upon by interests dead set against renewal on philosophic grounds. (Renewal programs have already been killed in Phoenix, Ariz., Spokane, Wash., Springfield, Ore., and other cities.) Slum dwellers, who must be relocated, seem not to want high-rise apartment living even if they could afford it. They believe renewal is aimed at displacing them, not rehousing them, and are cynical about what gets built on renewal sites—high-cost apartments, insulated from the greater community by having their own schools, stores, and recreational facilities.

Can a middle class be created?

Many forward thinking critics perceive that until the elementary problem of the slum dweller himself is conquered, slums themselves will be with us for a long time. No city has generated more thought on the subject than Philadelphia, where Temple University has requested a grant from the Ford Foundation for a pioneering program for North Philadelphia’s slums. This program “rests on the assumption that North Philadelphians can be motivated to improve their lot.”

What Temple University proposes to do, with a small army of social workers and psychologists, is to inculcate in the slum dwellers certain middle-class attitudes which they do not now possess. The area would be divided into districts, each with its own microcosm of social and political services. A first effort will be to “induce and assist workers (unskilled and semiskilled) to upgrade their skills.”

Can slum dwellers be impressed into the middle class? And to what middle class will Temple University’s researchers lead them? The comfortable, white, suburban middle class? The almost equally (economically) comfortable but less privileged Negro middle class? Toward which most gray-area residents would presumably aspire? The Temple program seems to be driving to the very heart of the urban redevelopment problem—but is it on the right road? Or must cities wait until today’s slum dwellers develop their own middle class, as their predecessors did before them?

No matter what programs are undertaken, from chopping a few days off the time lag in urban renewal project processing, to the broad reaches of imposing middle-class mores and goals on slum dwellers, urban renewal is a long way from achieving its ultimate objective of clearing slums and preventing blight in American cities. As Edmund Bacon, executive director of Philadelphia’s City Planning Commission, has said “the notion that the final objective of urban renewal is to produce a total, completely renewed neighborhood is cockeyed ... a great many people will live in blighted areas for many years to come.”
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