Architect and client forum
Six big reasons why better planning is more important—and worth more—than ever before, and six ways to get it (p. 146)

Three country buildings
Engineering office, windowless factory and rustic showroom demonstrate different ways to handle a suburban site (p. 156)

Building engineering
Four modern techniques for spanning large areas: prestressed lift-slabs, cables in tension, cantilevered timber beams and welded camel-back trusses (p. 168)

New thinking on college buildings
The most important new additions to the nation's higher education plant (p. 116)

A new kind of office building
Y-shaped plan for UNESCO's Paris headquarters combines the advantages of the slab and cross (p. 105 and below)
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NEWS

114 Eisenhower names Realtor Charles Slusser as Public Housing Commissioner.

116 New Thinking on College Buildings

The client demands a higher architecture for today's higher education—by Harold Taylor, president, Sarah Lawrence College.

CAMPUS PLANNING

119 A master plan for expanding the University of Michigan's cramped campus by Architects Eero Saarinen & Associates.

SPECIAL-PURPOSE BUILDINGS

124 Harvard's Allston Burr Lecture Hall and Gordon McKay Laboratory demonstrate the impact of science on the science building. Shepley, Bulfinch, Richardson & Abbott, architects.

REMODELING

129 Miami University converts Spanish to modern and saves $300,000. The Merrick building by Robert M. Little, architect.

ART GALLERY AND SCIENCE BUILDING

130 At the same university by the same architect.

DORMITIES

134 Two case studies in university housing: at State College of Washington by Paul Thiry, architect, and Philip E. Keene, college architect; and at Wellesley by Architects Shepley, Bulfinch, Richardson & Abbott.

THE NEED FOR BETTER PLANNING

146 . . . and how to get it—report on architect-client forum sponsored by Architectural Forum and AIA's Public Relations Committee.

THREE SMALL SUBURBAN BUILDINGS


C. A. Norgren Co. plant, Englewood, Col.; Stanley E. Morse, architect, Jared B. Morse, associate.

Allied Arts Guild sales building, Menlo Park, Calif.; Germano Milone, architect.

HOSPITAL CENTER

162 East Bronx Medical Center on a big New York City site features convertibility and the introduction of general hospital psychiatric facilities. Pomance & Breines, architects.

BUILDING ENGINEERING

168 Prestressing and lift-slab techniques are integrated for a parking deck . . . . Cable and sheet steel are combined for the roof of a livestock judging pavilion . . . . Laminated wood beams are cantilevered for a warehouse frame . . . . Camelback trusses are welded for a wide-span factory.

NEW PRODUCTS

174

TECHNICAL PUBLICATIONS

240

Cover: proposed UNESCO headquarters in Paris

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local agencies operating under state law."

Although a federal handout was precisely what private industry did not want injected into urban rehabilitation, support of the idea by public housers could avert time-consuming wrangles as more and more cities across the nation tackled the long-neglected slum cleanup job.

Conservation commission. Among the nation's big cities, Chicago continued to make one of the most promising attacks on its slum problem. Last month, the city council set up a Commission on Neighborhood Conservation, the first of its kind in the nation and a model for part of NAREB's still broader plan. Its assignment: to supervise Chicago's effort to keep once-fine residential areas from slipping into slums. Outlining its program, the commission said: "New slums are developing faster than we can clear and rebuild the old ones. We simply cannot afford to wait until older areas reach the slum state."

For ideas on how to tackle its job, the commission needed to look no farther than its own back yard. The South East Chicago Commission, a private civic organization of Chicago university officials, businessmen and neighborhood leaders, was achieving remarkable initial success against deterioration in the Kenwood, Hyde Park and Woodlawn districts. Adopting a practical approach, the commission hired a private housing detective: Otto Novotny, a retired fire battalion chief who had lived in the South Side 30 years, watched and worried over its skid. His job: to ferret out sneak conversions, building, fire and safety violations, follow through with city authorities for prosecutions.

New York failure. New York still fumbled its slum problem, despite the ominous warning of a Brooklyn grand jury: "If no adequate steps are taken to stop housing deterioration and decay, taxes from real property will become less and less until our city becomes a financial ghost town."

NAHB's Yates Cook put it even more bluntly: New York's slum problem is being "grossly mishandled" by city and state officials, said he: "Many blighted areas of New York can be salvaged at the expense of slum landlords whose neglect and indifference are largely responsible for today's slum crisis. But planners (like City Construction Coordinator Robert Moses) want to tear down structurally sound apartment buildings, rebuild from the ground up and pass the bill on to the taxpayers. They are trying to bail out the slum landlords at the expense of the already overburdened New York taxpayer."

At mid-month, Architect Frank Lloyd Wright contributed his views to the debate. Said he: "Decentralization is coming in. The city is going to the country. You'll see more greenery in 25 years. Grass will grow where least expected now and flowers will bloom in the concrete. The city is a hangover from feudal times. Once it was necessary, but it reached and passed its peak and now you will see it disappearing."

Pay increase pattern from 8 to 16c an hour emerges from spring strikes, wage pacts

Spring contract negotiations by labor and the construction industry were producing a moderate crop of strikes and pay increases generally ranging from 8 to 16c an hour (see table).

But there was a new note of stability. In Nework, N. J. five Essex County bricklayer, plaster and mason locals withdrew requests for a 35c an hour increase and a 4% pension fund. For the first time since World War II, they renewed contracts at existing rates ($3.55 an hour and 3% welfare payments). Explained a joint announcement: "Realizing the danger of inflation, the . . . unions in conjunction with the contractors have reached the first tangible effort toward the leveling off of the cost of construction." Other unions renewing without increases: Washington, DC carpenters and bricklayers, Des Moines laborers, masons and carpenters.

Wage hike patterns. Among the settlements in other major cities:

Chicago building trades that completed negotiations accepted increases of 15c an hour (except common labor, 10c) without a strike.

Most Cleveland crafts signed for 121/2c increases, although composition roofers were holding out for 25c and late in May painters struck, demanding 20c more an hour.

Dallas structural and sheet metal workers demanded another 25c an hour and 71/4c for fringe benefits during a three-week strike in March. They went back to work for 121/2c (same for Fort Worth) and no fringe on top. Common labor accepted 8 1/2c. Most other contracts ran to July.

Strike front. Large disruptive strikes were not absent this year, but probably were noticed less because they were free of violence. Still causing trouble were:

A Detroit dispute that began May 1 when carpenter locals began picketing individual contractors who refused to grant them 17c more an hour. Painters seeking 321/2c an hour more joined the movement, and when other crafts refused to pass picket lines a creeping paralysis began to grip Detroit construction. AGC, the Carpenter Contractors and Metropolitan Builders Asns. countered by ordering a layoff for all carpenters on May 11, which was soon followed by union charges to NLRB that employers were using "threats of force and violence" to make 400 contractors stop their jobs. Most other Detroit crafts had agreed to increases from 12 to 171/2c.

A Philadelphia-Camden area tie-up led by carpenters and ironworkers had idled about 30,000 workers since May 1. Contractors first refused any wage increases. Later, they settled with some trades for 71/4c, but carpenters refused it, keeping some $1 billion of building tied up.

A teamster strike that halted virtually all St. Louis building in mid-May by stopping supply deliveries. Three employer groups agreed to pay 121/2c—against the drivers' original 20c demands, but while lumber yard and mixed concrete plant operators refused to sign, the tie-up continued.

Chicago painters at long last agreed to use spray guns and roller applicators for oil painting rough concrete, cinder block and other masonry unsuitable for brushes. Their price: 71/4c an hour more for welfare programs and a 25c an hour pay boost to $3. Detroit plasterers, hiked from $3 to $3.14 an hour, will pay 2c an hour to match employer funds to advertise against the spread of dry-wall construction. Little Rock plasterers withdrew a request for an increase from $2.75 to $3 when employer and union officials agreed some architects were designing "around" plaster.

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R—Renewed at old rate
N—Still in negotiation
P—Chicago painters increase entirely for pensions
so over last week-end I panelled his office in English Oak

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NAREB urges conservation commissions with tax power and federal tax aid to fight slums

For more than a year, NAREB had been studying ways and means of putting the fight against city slums on a pay-as-you-go, private enterprise basis. Last month, NAREB’s directors approved the resulting plans “in principle.” President Charles B. Shattuck hailed the formula as “the most important and constructive action ever taken by our board of directors.” Said he: “This plan takes into account everything that has been learned, and every mistake that has been made, in previous attempts to meet the grievous problems of slums, blight and deterioration in our cities.”

The realtors’ blueprint went beyond mere enforcement of housing ordinances as a tool for rehabilitation—although this, said Shattuck, “is now working on the biggest scale that we have seen.” NAREB called for creation of community conservation commissions with broad powers to coordinate local law enforcement in selected areas where blight must be either wiped out or prevented. Specifically, the realtors would empower conservation commissions to:

1. Prohibit occupancy of buildings which do not meet minimum standards of occupancy or maintenance.
2. Acquire (by condemnation if necessary) and raze buildings too blighted to be rehabilitatable. (But NAREB would have the land remain in the owner’s possession. He would be free to redevelop it or sell it for any purpose consistent with neighborhood conservation plans.)
3. Acquire (by condemnation if necessary) both buildings and land needed for private facilities like parking lots when necessary to carry out conservation plans. Commissions would be required to sell such property within a year by competitive bids.
4. Levy a small tax on all property within a city to provide a revolving fund to administer the conservation program. Part of the fund would be earmarked for advances to property owners who cannot find private financing for repairs ordered by the commission. Advances would become a special assessment lien on the property.
5. Levy special assessments on each parcel of property within a neighborhood conservation area (after a majority of voters in the area approve), to finance purchase of land and buildings to carry out conservation plans. Property owners, NAREB suggested, should have up to 10 years to pay the assessment in yearly installments. Assessments would go to a special bond lien, and the commission would market the bonds.

Tax aids asked. The striking aspect of the plan, noted Chairman Fritz Burns of NAREB’s council on conservation and rehabilitation, was that “this is a realtors’ group proposing legislation which is going to tax real estate.” Burns had this explanation: “It’s only a minority who refuse to keep property in repair, who want to milk it. To most realtors, the essence of persuading them to invest in property maintenance is assurance of uniform standards of main-

Tenance—either voluntarily or backed by law enforcement.” NAREB’s plan would provide the big stick to deal with recalcitrants.

NAREB also called on the federal government for antiblight aid in four ways:

1. Provide “maximum marketability at the lowest possible interest” for assessment bonds by insuring them.
2. Encourage voluntary slum rehabilitation by amending income tax laws to let the residual value of buildings razed by conservation commissions be deductible in one to five years, at the taxpayer’s option.
3. Encourage new investment in conservation areas by permitting a five-year tax write off of the total cost—the same as for defense facilities.
4. Amend FHA and/or VA mortgage insurance laws to meet the special needs of conservation areas.

Public houser opposition? In an industry noted for controversy, NAREB’s proposals seemed likely to stir up their share. Although the realtors’ ideas for government aid involved no direct dollar subsidy and might well cost the government little or nothing in the long run, it was a good bet that public housers would try to smear them as a “steal.” Builders and realtors have both touted renovation of slums as a substitute for public housing. NAREB’s blueprint made that approach clearer than ever. Public housers, on the other hand, contend the job of wiping out slums can only be done with both public housing and rehabilitation. It was on this basis that they were beginning to give rehabilitation wary encouragement.

Federal aid urged. The National Housing Conference, at its annual meeting in Washington, called upon the government for a “major new program to encourage and assist communities in the development of programs of neighborhood conservation and rehabilitation” including “federal technical assistance to local housing, planning, conservation and redevelopment agencies, insurance of home repair and modernization loans on special terms and loans to

Two more bridges to span SF Bay; FLLW offers design for one

Politicians bickered for seven years over whether a second bridge across San Francisco Bay between San Francisco and Oakland should parallel the present bridge (the world’s longest) or lie four miles south where it would funnel less traffic into downtown San Francisco. While Gov. Earl Warren, who favored a parallel span, was at the coronation, the legislature passed a bill authorizing a $235 million southern crossing and Lt. Gov. Goodwin Knight signed it. The law directs the state department of public works to design the much-needed new span. A preliminary study several years ago by the department leaned toward a causeway, tube and trestle—an arrangement regarded by many an architect as serviceable but out of despair to beauty.

Last month, Architect Frank Lloyd Wright descended into the fray on a flying visit from Wisconsin. Before an eager audience at San Francisco’s Museum of Art, he showed a 16" model of a steel-reinforced concrete bridge (sketch above) which he said should cost “one third less than your present temporary Bay Bridge.” The main arch would divide 200' above water level into two graceful curves bearing one-way traffic, with a park between. His butterfly bridge, said Wright, would survive earthquakes, last for centuries, and would not “cost a million dollars a year just to put a coat of paint on it!” like the present Bay Bridge.

For the $62 million San Rafael–Richmond bridge (sketch below), designed by the state engineers and now under construction across the north end of the Bay, Wright had only scorn: “The most awful thing I’ve seen—bits of steel held together with smaller bits of steel, and all of them rusting away at such a rate that a crew of painters must spend full time painting it.” With Wright’s views on the north bay bridge, most California architects agree. Some of them tried to persuade designing engineers to alter their plans, but got a cold shoulder.
last month from Fred Hof of Brooklyn’s Lincoln Savings Bank: temporary (or per­manent) school space, especially in spots where schools are jammed. Advantages: fireproof construction with ample exits and washrooms, sometimes air conditioning and usually central location. Skylights or flu­orescent lighting could offset the lack of natural light, said Hof.

Small loan agency foreseen replacing soon-to-die RFC

In January 1932, the Hoover administra­tion established the Reconstruction Finance Corp., granddaddy of all the government’s direct business-assistance agencies. Through depression and war years it lent more than $13 billion. Many of its loans supported large construction projects.

But Ikemen decided to let RFC expire, have sharply curtailed its lending, this month were elapsing about half of its 32 field offices, dismissing 500 of its 2,200 em­ployees. At a Senate banking committee hearing, new RFC Administrator Kenton R. Cravens was unconcerned whether Congress approve a proposal by Sen. Harry F. Byrd (D, Va.) to abolish it Dec. 31 or allow it to expire June 30 next year.

To replace RFC, Cravens favored some sort of small business administration, the subject of five other bills before the com­mittee. Prospect: no Congressional action at this session; creation of a substitute small loan agency between January and RFC’s scheduled funeral next June. The new agency probably would have a $100,000 to $200,000 ceiling for each loan, require priv­ate lenders to participate in each deal.

House subcommittee backs bill aimed at federal bid shopping

Specialty contractors won a round this month in their drive for a law banning bid shopping on federal construction. A House judiciary subcommittee headed by Rep. Edgar A. Jonas (R, Ill.) approved the “Federal Construction Act of 1953.” It would force bidders on federal construction to: 1) name the specialty subcontractors on whose estimates their bids are based, 2) agree not to switch to others upon getting an award unless it means substantial savings which will be passed on to the government, 3) refrain from doing their own mechanical work unless they have special qualifications.

General contractors and most govern­ment construction officials oppose the mea­sure. But subcontractors outnumber gen­erals, hence pack more political punch. Even subcontractor groups, however, do not expect the bill to get passed at this session. But they think that even a little progress toward passage will keep the heat on generals.

Houston housing authority gets third director in a year

The embattled Houston Housing Authority changed directors again this month. Into the $10,000-a-year post went Thomas F. Booker, 42, director of the Houston-Harris County board of public welfare since 1949. Harris did not apply for the job, but was sought out by board members. He succeeded Col. E. A. Eversberg, who, after five months on the job, resigned in May under heavy pressure from the authority board.

Eversberg, in turn, had replaced Erwin W. Blum, former president of the National Assn. of Housing Officials who was con­victed in January of falsifying reports to PHA, illegally raising his own salary and diverting government paving materials to his own use. Four of the five old members of the board thereupon resigned in apparent shame at not detecting Blum’s manipulations (AF, Mar ’53, News).

Asked new Board Chairman Leo Linbeck at a stormy April meeting: “What has Col. Eversberg done to clear up conditions in the authority? If bad or criminal condi­tions exist, what has he done to correct them?” Two weeks later, Eversberg, facing dismissal, quit. Cried he: “... unfair, unjust, unpleasant.” He said his doctor had ordered him to a hospital.

SIDELIGHTS: a bus terminal creates a traffic problem and a churchman says only modern design can meet budgets

Greyhound’s new $10 million bus terminal in Chicago (AF, April ’53, News) was pro­ducing more traffic headaches in the already congested Loop, traffic engineers complained. Buses moved swiftly and silently into docks at the second basement level through a pri­vate tunnel. But there were no off-curb delivery areas for trucks servicing the termi­nal’s 12 main-floor and 6 basement stores and shops, no pull-in area for taxis and autos picking up and unloading passengers on busy Loop streets. Similar problems arose on Chicago’s southwest side, where trucks serv­iced a new Goldblatt Bros. department store warehouse via great doors opening off traffic-burdened Ashland Ave. Said City Traffic Engineer Leslie Sorenson: “What every city badly needs is a technical committee of traf­fic men and architects working together to make sure that a problem that’s already oppressive doesn’t get more complicated every time a new structure goes up.”

The Washington Housing Assn. was voted out of the Community Chest in April because Chest contributors objected to their funds being used to espouse public housing. Last month, the association laid plans to up its budget from $13,400 to $30,000 by staging its own fund drive.

Normally, the last thing public housers want to talk about is their proportion of Negro occupants. Last month, 74 Negro leaders from 12 southern states put the racial statistic squarely on record in petitioning federal offi­cials to continue public housing. They re­ported: while Negroes constitute one tenth of the US population, they occupy one-third of its public housing, in the southeast they occupy 58% of public housing.

US churchmen, amid a great building boom which this year will probably see $450 mil­lion invested in new churches, have often bewailed the schism between old and new forms of design which too often spawns mean­ingless architectural hybrids. Last month one churchman predicted the outcome can go only one way. Said Canon W. Clinton Billig, executive assistant to Episcopal Bishop Francis Eric Bloy of Los Angeles: “The eco­nomics of building is forcing us, kicking and screaming, into a new expression. The cost of stone is prohibitive and more and more we are forced to turn to contemporary architec­ture to bring budget and building into realistic combination.”

The new GOP boss of the General Services Administration, Edward F. Mansure, wants to turn the vast job of cleaning government buildings over to private enterprise. He asked one of the nation’s top building main­tance firms for an estimate on cleaning the Pentagon. The private firm could not beat the government’s cleaning costs.

Controversy broke out in Dallas over whether merchants should be permitted to extend buildings over sidewalks. Sanger Bros., the city’s oldest and largest department store, got permission from the outgoing city council to build a four-story garage across the street from its main downtown store, connect the two with a two-level bridge 24’ above the sidewalk and a block wide. Competing mer­chants awoke belatedly, began fussing that the project will make a tunnel of a city street for private gain. Sanger’s retorted it was only trying to ease Dallas’ critical downtown parking problem.

Dobbs Ferry, a New York bedroom suburb on the east bank of the Hudson River, created a board of architectural review to control exterior design of buildings in and near its residential districts.

AGC protested angrily to GSA Boss Mansure and Defense Secretary Wilson against the pro­visions of the revised federal construction contract form which was ordered into use June 19. Managing Director H. E. Foreman complained that the new contract form is almost the same as the 1942 version it replaces and still denies contractors the right of appeal to the courts. The redial “almost completely disregarded” the “solicited criticism and recommendations” of the AGC, AIA, ASME and ASCE, Foreman charged.
Building volume up despite hard money; rising plant outlays seen

Although homebuilders cried that the pinch on mortgage money caused by the GOP’s hard money policy could well bring a drop in housing production this summer, overall construction surged ahead this month in even greater volume than last year’s record rate, gave no signs of being more than jiggled by tight money, defense cutbacks, or peace scares.

Dollar volume of all construction last month was 6.2% ahead of May, 1952, the Commerce department reported, and 5.9% ahead for the first five months (see table). The 6% dollar increase meant an increase of about 2% in physical volume after allowing for higher construction costs based on the 1947-49 based price index.

**Chicken v. egg.** Financial experts said money would get tighter for some months before getting easier. But construction responds slowly to changing conditions. Many an organization contemplating or committed to large construction projects found the stiffer money rates “distasteful but not decisive,” was proceeding with building plans, said James Hanson, head of the industrial department of the Alexander Summer Co. in New Jersey. Besides, there was a hint that GOPplanners might slow down their anti-inflationary moves. When 2 1/2% government bonds plunged below 90 last month, the Federal Reserve began buying short-term government paper to ease the market again. And the Treasury pigeonholed plans to float more long-term bonds this year on the basis that the market was too wobbly.

**Plant boom.** Freed from defense materials limitations of prior years, commercial construction unsurprisingly was running a fat 48.8% ahead of last year. What was remarkable was the sustained strength in private industrial construction. After the 1951-52 fast-amortization defense plant boom, it had been expected to dip sharply this year. Instead it held great promise of continuing strength. One indicator was SEC’s latest forecast. It predicted private plant and equipment expenditures for the third quarter of this year will be about $7.2 billion compared with $7.1 in the current quarter. By the end of September, said SEC, plant outlays will be running 7% ahead of last year.

**Defense cutbacks cheered.** Industrial Realtor Robert Forman of New York’s Cross & Brown Co., which has served scores of the nation’s largest corporations in plant location programs, noted that some defense plant cancellations pleased rather than disappointed manufacturers. They were able to adapt the new plants to their own uses almost immediately.

Why was the high cost of financing deterring no important expansions? Forman noted they are usually based on long-range plans and/or basic decisions to decentralize, move into more efficient plants, or save transportation expenses and locate closer to markets.

**SIR’s optimistic.** In Cleveland, which FHA last month tagged the highest construction cost area in the country, firms were “taking a great deal more time to make up their minds” before signing new leases or building contracts, according to a semiannual market survey by the Society of Industrial Realtors. But Cleveland was the exception; from other areas came encouraging reports:

- New Orleans—heavy industry construction over the last 12 months totaled $251 million, and the tidelands decision in favor of the states was expected to spur oil plant construction in Louisiana and other Gulf Coast states;
- Chicago and Midwest—the bulk of defense plant demands has been satisfied and the edge is off just a little. But prices remain at peak in many industries;
- Kansas City—areas inundated by the 1951 flood have lost value and find it difficult to attract new tenants or plants. Demand is strong for space and new plants in higher areas, which have increased in value.

During its 50th anniversary last month Ford Motor Co. alone revealed it plans to spend $500 million “in the next few years” supplementing $900 million it has spent since 1946 for new plants and warehouses, modernization and plant expansions.

The pace of industrial construction reflected none of the concern of fretful homebuilders studying trade-in programs and seeking more government financing assistance to maintain volume in the years ahead. Instead it held great promise of continuing strength. One indicator was SEC’s latest forecast. It predicted private plant and equipment expenditures for the third quarter of this year will be about $7.2 billion compared with $7.1 in the current quarter. By the end of September, said SEC, plant outlays will be running 7% ahead of last year.

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**In this month’s news:**

- The realtor-mayor of Akron is nominated as public housing commissioner.
- Public housing support loses the mayor of Los Angeles his re-election bid.

(see pp. 114-115)
**First National Bank, Tampa, Florida**

*Architect: W. G. Knoebel  
General Contractor: Paul Smith Construction Co.  
Acoustical Contractor: Pearsons, Inc.*

In remodeling the interior of this beautiful bank, there were two prime considerations in the choice of a sound conditioning material. They were beauty and fire-safety. Architect Knoebel's selection of Armstrong's Travertone for the ceiling's provided both.

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Associate Architect: Joseph G. Weir

General Contractor: Frouge Construction Company

Engineering Firm: Winfield S. Bondy

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Photos are construction scenes at St. Louis Produce Market. The concrete floor of the two 114 x 1235 ft. one-story buildings was a giant casting platform (center). Precast concrete wall panels were tilted into place (bottom). More than 23 miles of precast concrete joists went into the roof (top). L. Roy Bowen & Associates, of St. Louis, were the architects and engineers. Robinson Construction Company, of St. Louis, was the contractor.

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NABOM CONVENTION eyes rapid spread of operatorless elevators, studies problems posed by decentralization of cities, worries over threat of overbuilding

To economy-minded members of the National Assn. of Building Owners and Managers, the biggest news at their 46th annual convention in Pittsburgh this month was the rapid spread of operatorless elevators to nearly every type of commercial building. The trend has now gone so far, the 950 delegates learned, that operatorless cars will be installed in two of the biggest, top-quality office structures now rising in the world's two greatest office centers: the 26-story Tishman office building on Manhattan's Park Ave. and the 41-story Prudential building in Chicago.

Westinghouse's Walker G. White and Otis' Emmett W. Hines made a joint report on operatorless cars (AF, Jan. '53), which they called "almost human, now that the human element has been completely eliminated."

Some 75% of Otis and Westinghouse elevator sales in the first quarter of this year were automatic installations. For the entire year, they expect this to rise to 80%. By contrast, 1950 sales of operatorless elevators were 12.6%; in 1951, 32.7%; in 1952, 38%.

Building owner acceptance has been speeded by wage savings that range from $5,500 to $7,000 per car per year, plus...
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“the solution of downtown problems” like traffic and transit snarls.

To serve as a clearing house, NABOM created a downtown committee led by William H. Doughty of Chicago. Said Doughty: “Doing nothing at all to cope with an ever more critical situation is the error of omission that has been mainly responsible for the difficulties we are in.” He besought NABOM backing for slum clearance and other civic improvement programs, urged owners to spend depreciation funds regularly for modernization, and commended private organizations which have already concerned themselves with aspects of the “downtown dilemma.” He particularly cited FORUM for its round table on traffic and parking (Feb. ’53) and the National Retail Dry Goods Assn’s. study, “Parking, How It Is Financed.”

**Gunnison Homes readies plant to build steel buildings—from schools, hospitals to houses**

Gunnison Homes, US Steel’s prefab subsidiary, was about ready to make its long-anticipated plunge into steel buildings. At Shiremanstown, Pa., four miles outside Harrisburg, workmen this month were completing a $6 million, 324,000 sq. ft. plant equipped to turn out a 4’ x 9’ steel and glass-fiber sandwich panel adaptable for one-story schools, hospitals, warehouses, industrial structures or homes.

Test runs, said Gunnison officials, would begin in late July. Full operations were due to start about Oct. 1. First production would “probably be units for demonstration hospitals, schools or barracks.” The flexibility of the panel made it clear Gunnison would be shooting for a wide range of new business at about the same time when steelmen expect surplus steel-making capacity to emerge as the peak of defense needs taper off.

**Cost savings.** The big sales point of Gunnison’s steel structures will be cost, it appeared. Gen. John J. O’Brien, Gunnison president, this month estimated that his steel buildings would save 40% compared to conventional construction for the same cubicage on hospitals, schools and similar structures. Moreover, he estimated that a 75 bed hospital (requiring about eight months to erect conventionally) could be built in two weeks (after the slab floor was finished) by a crew of 20 men using Gunnison panels. Another six weeks would be needed for plumbing, wiring, heating and installing special equipment.

The panels (see cut) will be formed of 20 ga. copper-bearing steel bonded to a 2¼” glass fiber insulating filler. Each panel —no heavier per square foot than wood panels for today’s Gunnison houses, will be “light enough to be readily handled by two average workmen.” Along the perimeter of a slab, two small anchor bolts are embedded in concrete where each panel division joint will rest. A cold-formed steel anchor is fastened to the bolt, and each wall panel is fastened to the anchor by steel pins. Between panels goes a metal spline wrapped in glass fiber and covered with vinyl plastic (not shown in cut). After a workman with a hammer taps a wedge home, the panels are so tight that Gunnison men say no caulking is needed. Corners call for a closer of insulated steel with a diamond-shaped spline. Standard 14” box beams go across the top of the wall panels, fastened by wedge pins to the top of the spline joints. “Nowhere in the building,” say Gunnison officials, “does steel touch steel.”

**Dealer interest.** The pin and wedge technique—the key to the structure—has been tested for several years on structures built by Gunnison and other US Steel companies. Wiring will run through wall panels, each of which will come equipped with fish wires to permit easy installation. Each panel is completely grounded, so TV and radios have operated in test houses with no ill effects. Still being worked out are fenestration (though windows, doors and storage walls will definitely be of steel), and some marketing plans. The panels will be distributed through Gunnison’s existing dealer organization, say officials. But they shy away from announcing whether Gunnison’s network of dealers will begin bidding on hospitals, schools and industrial structures. As word seeped through the industry of the venture in steel, Gunnison was being deluged with inquiries that indicated would-be dealers foresaw a big future.

Gen. A. Benton

**Boost for downtown.** Last year’s convention in Chicago was reassured by Realty Analyst James C. Downs Jr. that downtown areas will survive decentralization, need not fear becoming ghost towns. But amid the multiplying problems of US cities (see p. 46), NABOM this month decided to end passivity, do something to downtown areas will survive decentralization, need not fear becoming ghost towns. But amid the multiplying problems of US cities (see p. 46), NABOM this month decided to end passivity, do something to make sure. Delegates recommended that local associations begin programs to achieve...
US chamber group urges 'major changes' in redevelopment law, raps land subsidies

Since the 1949 Housing Act put the federal government into the slum redevelopment business, HHFA has set aside $241 million of subsidy funds for 253 cities to write down land values in cleared areas. But only $8 million has been disbursed. For only in 18 areas, in 12 cities, was land assembly far enough along for slum clearance to be underway. In only five of these had new buildings been started. Only in Philadelphia was one completed.

Last month, such slow progress led the US Chamber of Commerce's construction and civic development department to conclude that if the government is going to stay in urban redevelopment "major changes in policy and method seem called for." In its "Construction Markets" bulletin signed by Lumberman Norman P. Mason, chairman of the department committee, the chamber warned: "For private investment, the incentive is less than it was originally assumed to be, while for government the cost is proving to be so great that the present formula cannot be considered to offer a practical solution."

Bait but no lure. Although devising administrative rules and plans has been turtled-paced, that is not "the main source of the lag," said the chamber. One big trouble has been finding investors "who see a profit in utilizing the cleared sites to bid for them and wait out the . . . tedious and protracted job [of assembling the land]." Yet for the first 25 projects for which federal grants were approved, the average land subsidy from the federal government alone (which pays 2/3 of the write down) averaged almost $80,000 an acre. And the average sales price of cleared slum land is expected to be only 30% of the cost of buying and clearing it.

Explained the chamber: "The apparent need for paying enormous subsidies . . . goes back to the unjustified values at which slum property is held. . . . Many slum areas are close to active commercial and industrial districts. Owners hope for further expansion of high-paying uses; city zoning ordinances are usually based on such expectancy; tax assessments tend to rise accordingly; and in condemnation cases the tax base (often much higher than the realiz-able market value) is not infrequently an important consideration. At the same time, owners of slum property are able to hold out for high prices because the shortage of housing has made the poorest houses rentable, because cities have been lax in enforcing standards of health, safety and occu-

pancy, and because, as a result, it is possible to get a good yield from deteriorated property."

Tax slums to death? Instead of coddling slums by inaction, said the chamber, cities should "make it tough to hold on to neglected property by rigorous tax collection and strict enforcement of minimum standards." And blighted areas must be given more "real value" by "eliminating smoke, building highway and parking facilities, improving schools and expanding parks and playgrounds."

The chamber cited another danger: "Once acquisition prices are established on a subsidizing basis, the difficulties in negotiating purchases in other areas, supposedly eligible for subsidy, are increased. Write-off subsidies, instead of reducing price, are apt to be a form of price support."

Recipe: more guts. Even under the best of today's conditions, said the chamber, investing in income-producing real estate is a very speculative enterprise. . . . It is ironic that, while government has been striving, by the unnatural means of write-off subsidies, to induce new investment in the least promising areas, it has also, through rent control, cost-making building codes, public housing and inhibitive tax and tax depreciation policies, discouraged real estate investment except where a large, quick profit is likely. . . . The way to get widespread redevelopment is to remedy the conditions that discourage it, rather than to seek . . . more and more subsidy."

The chamber's recipe: better law enforcement against slums, city planning, more public works, better building codes, revised tax and depreciation policies.

NAHO says halt in public housing will balk redevelopment; some cities dispute it

Would the threatened death of public housing stymie urban redevelopment projects now in the pipe lines? The National Assn. of Housing Officials, many of whose members make their living from public housing, looked into the question last month and reported: in many cities, it would. NAHO noted that 116 of the 128 redevelopment projects under a loan and grant contract or in final planning involve razing residential slums. Some 78,000 families face relocation. About half of them, according to HHFA estimates, are eligible for public housing. Under the law, redevelopment cannot proceed until slum displacements are rehoused.

Although NAHO made its pronouncement after a "nation-wide survey," it cited no threatened cities by name. For those respondents looking into the question, meanwhile, found an encouraging number of cities where local officials said a shutdown in public housing construction would not balk relocating slum residents for redevelopment projects. For example, Boston, with an annual 10% turnover in its 11,000 public housing units, anticipated no problem. By taking redevelopment slowly (two projects were about to start), relocatees could be absorbed by vacancies. The Sacramento (Calif.) Redevelopment Agency pointed out that its No. 1 project involved relocating only 30 families, foresaw no trouble finding them new homes. (But the city council halted further action on slum clearance until the attitude of the GOP administration "has been defined clearly.") In Perth Amboy, N. J., Redevelopment Director Thomas Patton said only one-third of the 129 families being displaced by two redevelopment projects were eligible for public housing; they could be placed in existing housing projects. In St. Louis, however, two pending redevelopment plans called for relocating 4,908 people. Authorities said there was no hope of squeezing them into the city's 2,019 existing public housing units or the 1,736 abuilding. Without continued federal public housing, said Chairman Saul A. Dubinsky of the city plan commission, "our entire slum clearance program will be impaired, if not permanently stopped."

At mid-month, Nat Keith, HHFA redevelopement director, summed up the outlook this way: "Projects now underway are pretty well covered from a relocation standpoint by public housing projects now under construction. The retarding effect on redevelopment, if no additional public housing is authorized by Congress, would be concentrated on projects now in the planning stage. . . ."

Expressways hasten urban decentralization, warns expert

Are big US cities only helping dig their own graves by encouraging freeway construction? One man who thinks so is Executive Director Walter H. Blucher of the American Society of Planning Officials. He told a University of California planning conference last month:

"I am convinced that the net result of the expressway is to make it easier for the people to live in the outskirts, which means that the expressway takes more people out
of the city permanently than it brings in. If you can live in the suburb under the mistaken notion of lower taxes but where at least you think you have good government and good schools and clean air, and if at the same time you can get into town by driving your automobile for 30 minutes, isn’t that better than living in town midst the squalor where you have a 30 minute ride on existing transportation facilities? . . . I am convinced that the expressways leading to the centers of our cities will be one of the most important instruments we have created toward the cities’ decentralization. I marvel that downtown merchants are usually in the van in urging their construction and creation. Maybe they think they can pick up all the business they are losing in the new outlying shopping centers . . . ."

To Blucher, another indication that expressways serve no useful purpose was that in all the nation, there were only 331 miles of them, half in New York. The answer to city traffic, he said, lies in making interurban transit service more attractive and planning it for entire metropolitan areas, instead of piecemeal parts. Other Blucher thoughts on problems of metropolitan decentralization:

- Most big US cities are broke. So instead of coping with their problems, they run to the federal government for everything from a new fire engine (excuse: civil defense) to a new sewage plant (excuse: "interstate commerce is involved, using the definition of a navigable stream as [one] that will carry a rowboat.") Cities blame the problem on "urban sprawl, but it's actually local abdication."

- The influx of nonwhite population into US cities is causing "great overcrowding of housing . . . and a changing pattern of land use." Although this is a "prime factor" in speeding white immigration to the suburbs, "no large city in America has really developed a positive program for the decent housing of these immigrants."

- A survey by the national industrial zoning committee of 137 plants which moved to the suburbs in the last five years showed that 61 had sites of ten acres or less. Thus, "if we had a mechanism with which to permit the expansion of existing plants in towns, some of them might remain in spite of all the other handicaps."

Hush-hush listening agency to build $30 million home

Last year, a House investigating committee complained that although not all the barracks at Ft. George G. Meade, Md. were being used, the Army was planning more. This month, the Pentagon let more than $5 million worth of contracts at Ft. Meade —$2.4 million for barracks and $749,000 for BOQs. They were the first units in a $30 million headquarters to be built there for the hush-hush National Security Agency, which runs a super-communications network, monitoring and translating broadcasts from all parts of the world for the State and Defense Depts., CIA, and White House. By comparison, the Pentagon cost $65 million, contains 4 million sq. ft. Today, $30 million might buy 1 million sq. ft. of office space, but the Ft. Meade figure includes the cost of expensive electronic equipment, too.

California votes special tax for services in fringe areas

In California, which accounts for some 20% of the nation's building, one of the more vexing problems of sprawling suburbs is that many of them lie in unincorporated territory, which means that taxpayers in nearby cities virtually subsidize their police and fire protection.

Last month, Gov. Warren signed a law intended to make fringe developments—both residential and commercial—pay their share of municipal services. It provided for creation of special taxing districts in fringe areas by vote of county supervisors or a referendum if 10% of the area's voters petition. It requires county supervisors to levy taxes for extended police and fire protection, park or recreation areas, or miscellaneous services.

Four Florida Gold Coast buildings win awards at AIA conference

Not all the hotels and motels along southeast Florida's Gold Coast (Palm Beach to Miami Beach) are garish, glittery or gauche. A jury (Architects G. Thomas Harman, Edward D. Stone, Julian E. Beria and Geffery Baker, Editor Thomas Creighton) last month gave top awards to the four tasteful contemporary buildings shown here at the South Atlantic AIA regional conference. Winner in the hotel class (above) was Watson and Deutschman's La Fonda Hotel at Miami Springs. The panel commended it for superior planning and new ideas, liked flexibility and openness of public space.

In a talk, Architect Stone remarked: "When you are striving for vulgar ostentation, you do not produce good designs nor good architecture." Beria described New York's Fifth Ave. as "nothing but a high-class slum" with narrow courts, poor lighting, and practically no ventilation.

ALLIED BUILDINGS WINNER: ROBERT F. SMITH'S KEY COLONY CABANA CLUB ON BISCAYNE KEY

MOTEL WINNER: FATIO HOUSE, DELRAY BEACH, BY RUSSELL T. PANCOAST & ASSOCIATES

APARTMENT WINNER: LANAI APARTMENTS BY WAHL SNYDER. JURY LIKED FLOOR-TO-CEILING GLASS
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- It is extra strong. Heavy extruded aluminum sections are used throughout. Ventilator section is 1 3/8" deep, with web member increased 50% beyond normal thickness for adequate stiffness and airtight closing. Truss-type aluminum hinges add strength while retaining slender architectural lines.
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- Larger glass sizes allow approximately 8% more light and ventilation per window opening. In the modern manner, new Truscon aluminum casements emphasize horizontal lines. Ventilators are wider.
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- Heights are identical with those of standard steel casements. You can specify new Truscon aluminum casements in homes originally planned with windows of other widths.

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Legislatures vote $600 million for building; 11 states defeat public housing referenda bills

In the 44 states where legislatures met this year, most sessions were either over or about to end this month. All were confronted with measures affecting construction. Forum correspondents surveyed the results, found state lawmakers had:

- Rejected proposals in 11 states to require a local referendum on each new public housing project; adopted referenda in two. Additionally, a referendum bill headed for adoption in Illinois would set up rules so stringent that the Chicago Tribune, in favor of it, conceded it "would kill public housing in Chicago."
- Taken so little action toward substituting state rent control for federal controls expiring July 31 that it appeared 43 states would be rid of controls at the end of next month (except for critical defense areas).
- Authorized almost $600 million for construction and repairs, not counting roads, bridges or loans to municipalities to aid local projects.
- Adopted laws in six states covering licensing, fees or other rules affecting architects, engineers, builders or real estate brokers.

Public housing votes. Montana and Oregon legislatures adopted laws compelling referenda on public housing projects. Gov. Paul Patterson vetoed the Oregon bill because it also required a local vote to approve redevelopment projects.

Oregon and Minnesota passed laws permitting local authorities to vote to dissolve. Referenda bills were still pending in New Jersey (with a good chance of passage) and Michigan. California, which already had a state constitutional amendment calling for a referendum, was considering a bill aimed at the Los Angeles squabble (p. 115) by providing a method of abandoning projects where the people vote to do so.

In Illinois, the referendum bill passed the Senate May 13, was expected to clear the House after a bitter fight. The bill, similar to one vetoed two years ago by former Gov. Adlai Stevenson, would require approval by voters living within a mile of each proposed site. It also would require an annual report of budget plans by local housing authorities, bar spending money until the local governing body approves the report.

The 11 states where referenda bills failed: Arizona, Arkansas, Indiana, Maryland, Massachusetts, Missouri, New York, North Carolina, Ohio, Pennsylvania, Washington. The Connecticut House killed a bill that would have allowed municipal governing bodies to stop housing authorities from proceeding with new projects within 60 days after each was proposed.

Rent control action. Despite the imminent death of federal rent ceilings, most legislatures (where cow county representatives usually dominate) did not even consider the subject. Illinois and Missouri rejected state control, although Illinois, at the behest of Chicago judges fearing mass evictions, amended its eviction law to authorize nine month stays (with a 10% rent increase meanwhile). New York extended state rent control to June 30, 1955 after exempting one and two family units vacant after April 1), but upped the allowable net return to landlords from 4 to 6%.

Connecticut continued its standby rent law two years, Massachusetts adopted a local option law, with the state paying 40% of administrative costs. In New Jersey, a local option law was headed for passage, but it had a huge loophole: a "fair return" to landlords was defined as 25% after taxes and depreciation for under five units and 20% for over five.

Maryland adopted a law permitting Baltimore, Hagerstown and Allegany County to set up local controls, but its constitutionality was doubtful because the Senate version did not include Baltimore County.

Mansions and offices. By mid-month, at least $596 million was authorized for construction (see table) but legislatures still in session would boost the final figure well past $600 million before they adjourn. Florida and Missouri voted $250,000 each for a new mansion for the governor. North Carolina appropriated $465,000 for a new state school of design building to unite under one roof its architecture, landscape architecture and projected products design departments. But most impressive was a parade of new state office buildings:

Illinois voted $12.5 million for a Springfield office being designed by the state architect and scheduled to be started by December. Objective: to save about $400,000 a year in rent. Kansas approved a $9 million building just west of the Capitol in Topeka, voted an extra $500,000 for parking space for it. Washington voted $3 million for a "modern" building in Olympia to be located a short distance off the capitol grounds to avoid conflicting architectural style; it appropriated $4.5 million for an office building in downtown Seattle.

Florida authorized a $25 million structure and California was expected to vote for one $32.5 million building this year, appropriate $300,000 to plan another.

In sight and probably to be built in a year or two: a $50 million Massachusetts structure on the old Braves Field in Boston, already recommended by the legislature's committee on state administration; a $4.2 million building for which Connecticut voted $660,000 this year for site acquisition and planning; a $10-$15 million Indiana structure to be developed by a commission the legislature created this session; a $6 million Texas building scheduled for consideration by voters at a referendum next year.

Professional rules. Arkansas overhauled and stiffened its 28-year-old engineering licensing law, approved restraining injunctions for the first time, fines up to $200 or jail up to three months for violating registration board regulations. To replace its architect and engineer licensing laws declared unconstitutional (Forum, Jan. '53 et seq.), Colorado enacted new ones that were still subject to a court test of their validity. Texas boosted architects' fees on state construction. On individual projects it authorized fees up to 6% for the architect and any consultants he employs, on repetitive projects retained the old scale, 5 to 3.3% depending on size.

In Washington, an earthquake-resistance design bill favored by structural engineers was defeated. On the last day of the session architect-favored licensing revisions that had passed the Senate were killed in the House. The architects broke even by killing a Grange-sponsored bill for uniform school plans—a victory matched by California architects fighting the same battle. Montana rejected one, but Connecticut became the 40th state to adopt a real estate brokers licensing law.

Contractor rules beaten. Oregon wrestled with several construction labor bills, rejected a proposal to license powder men that was opposed by AGC. It also killed contractors' licensing bill that has come up at the last three sessions. Painters and decorators backed the licensing measure hoping to curb fly-by-nights from other states. AGC members and home builders opposed it. Massachusetts was advancing a bill for state sub-contracting on large projects, despite AGC opposition.

CONSTRUCTION FUNDS VOTED BY LEGISLATURES (in millions of dollars)

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*In millions of dollars

**- = Enacted new law specific to building.\n
**= Appropriated funds for new buildings.\n
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**Two-year program.

p=Preliminary approximations or estimate, legislation still in session.
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**PEOPLE:**  Ken Wischmeyer, ill, quits race for AIA chief; Architects Paul Williams and Frank Lloyd Wright win medals

Illness this month removed Architect Kenneth E. Wischmeyer of St. Louis as a candidate for AIA president at this month's convention in Seattle. His withdrawal left outgoing Secretary Clair W. Ditchy, FAIA, of Detroit, unopposed to succeed Glenn Stanton. Wischmeyer was hospitalized three weeks in January for a kidney operation. He spent May in bed at home, but was up again this month.

Architect Paul R. (for Revere) Williams of Los Angeles won the 1953 Spingarn Medal for distinguished achievement by a Negro. The award will be presented this month in St. Louis at the convention of the National Ass'n. for the Advancement of Colored People. Williams' architectural accomplishments, include not only public housing (Langston Housing, Washington, DC) and low-cost $4,975-to-$7,975 houses (in Tucson, Ariz. for Del E. Webb) but also show residences for Hollywood stars and commercial structures like Saks 5th Avenue's store in Beverly Hills, the glassy Palm Springs Tennis Club, the Arrowhead Hot Springs Hotel near San Bernardino.

In New York, Architect Frank Lloyd Wright accepted a Gold Medal for architecture from the National Institute of Arts and Letters, observing the honors given him "may cause the disease of humility." Wright, long recognized abroad before he was in the US, was introduced by Architect Ralph Walker as the "great pioneer" in modern architecture.

Last month Denver Traffic Expert Henry A. Barnes gave Baltimore a blistering report after making a $5,000 survey of its traffic mess. Bluntness paid off. A week later he was hired as Baltimore's permanent director of traffic on his own terms: $18,000 a year and appointment of several aides with job protection. His salary, $3,000 more than Mayor Thomas D'Alesandro's, led Barnes to quip that he would never run for mayor because he could not afford the salary cut. "Just so you don't run for governor," replied D'Alesandro, who hopes to make that race himself in 1955, although the governorship pays only $4,500 a year and expenses.

CONGRATULATIONS: To Richard E. Dougherty, consulting engineer and former New York Central chief engineer, elected president of the Moles, New York tunneling and heavy construction fraternity; Howard Barringer, advanced from vice president and treasurer to president of the F. W. Dodge Corp., and president Thomas S. Holden, appointed vice chairman of the board; Paul L. Hershfield, president of Mississippi Glass Co., St. Louis, elected president as well as board chairman of Walsh Refractories Corp.; Harry J. Volk, vice president in charge of Prudential Insurance Co.'s. western operations, on winning the 1953 Fellowship Award of the National Office Management Ass'n.

Margaret Truman's grand piano did work itself disconcertingly into a crack in a White House second floor beam once, but stories that it almost fell through the floor into the dining room are "all a legend . . . [have] no truth . . . whatsoever." So said Lorenzo S. Winslow, 61, who retired this month after 20 years as White House architect for the Public Buildings Service. Reminiscing about his two executive mansion bosses, Winslow hinted that he regarded FDR as more architecturally inclined, Harry Truman as more artistic.

DIED: Adolph Teichert, Jr. 68, former (1949) AGC president and chairman of A. Teichert & Son, Sacramento, Calif., May 5; James Baird, 79, former president of the George Fuller Construction Co. and construction supervisor for the Lincoln Memorial, the Tomb of the Unknown Soldier and the Folger Shakespeare Library in Washington, May 16 in Tucson; Theodore (Ted) Kautzky, 56, architect, author and artist, whose architectural work (for several years with the New York City department of parks) led him into illustrating, lecturing and writing on art, and many of whose sketches were used commercially in Overhead Door's advertisements, May 18 in Yonkers, N. Y.; Dr. Charles Butler, 82, hospital designer and former president of the New York City AIA chapter and the New York state board of architect examiners, June 4 in New York.

On May 18, Architect Walter Gropius turned 70. And 300 of his friends, associates and former students turned out in Chicago to honor him at a lunch in the Blackstone Hotel, hear his old friend, Ludwig Mies van der Rohe, offer this notable tribute: "I don't have to tell you Gropius is one of the great architects of our time. . . And you know that Gropius is one of the greatest educators in his field. But what I want to tell you is that Gropius has always been a gallant fighter in the never-ending battle of new ideas." As a battler for

(continued on p. 56)

**Corbusier builds city in India with parasol roofs as sun shields**

For years, France's Charles-Edouard Jeanneret, better known as Le Corbusier, has advocated vertical cities. Paradoxically, the first complete city he has had a chance to create—Chandigarh, the new capital of India's Punjab—is horizontal. The reason: not only land is cheap, but in purse-poor India, as Corbu explains, "The question of high buildings does not arise. Elevators would cost too much."

Although Chandigarh (pop. 150,000) is laid out on a gridiron pattern, Architect Le Corbusier has plotted a 14 sq. mi. green town, with a central group of government buildings surrounded by 25 self-sufficient residential sectors. Seven different types of roads will separate high speed from local auto traffic, cyclists, pedestrians and ox carts. Around the capital complex, roads are being sunk 14' below grade. Pedestrian paths cross them by bridges. Corbusier's panoramic sketch above shows the complex from the High Court building. At the left is the Secretariat (subsequently cut from 15 to 8 stories), the Assembly Chamber, Governor's Palace with a crescent-shaped roof garden and (far-right) an "open hand" monument symbolizing Indian friendship.

Most astonishing design feature of Chandigarh's larger buildings are butterfly-shaped parasol roofs, hanging over the regular roof to serve as a sun shield eight months of the year and as an umbrella against monsoon rains the other four. In two years of building, 1,000 houses of hand-made clay brick and hand-poured concrete have risen on the dusty plain. Another 2,000 are to be finished this winter. The main road system in residential sectors is built. The High Court is underway. Although the Punjab government will shift to Chandigarh this winter, the city will not be complete until 1956. The 30,000 men and women building Chandigarh work seven days a week.
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ideas, the founder of Bauhaus who retired last year as architecture chairman at Harvard, measured up to Mies’ accolade at both a birthday press conference and a 28 minute luncheon talk. Samples:

- “In the future, the artist is to be the brother of the engineer and manufacturer—and design is to be part of the whole process of production and selling.”

- “What we need is a unity which will permit great individual diversity (in US housing). An old New England town, with its white buildings, has a unity and liveliness, but when you look closely every single one of these white buildings differs from all the rest.”

- “A house with 100,000 exact duplicates is not the answer to our problem, like the Lustron house of doubtful fame. But much of the answer can lie in prefabrication. Machines can make many identical parts, which can then be assembled in many different ways. The machine must be adapted to the individual, not the individual to the machine. But building is the second biggest field of commerce and there is no reason why the machine should stop on the threshold of building... Machines can cut costs and improve quality by making millions of prefabricated parts, and yet the houses built from these parts can look enough different so that when you come from a cocktail party you can find your own door.”

Gropius’ birthday also marked the Chicago opening of an exhibit of his work, The exhibit, originally organized by Boston’s Institute of Contemporary Art, had an added attraction—a model and drawings of an airy, 18-story glass office building Gropius had planned for a Loop site owned by his friend Walter Gropius for Chicago Loop would have sheer glass walls broken by white marble shields in front of heating-air-conditioning units. Says Gropius: “These mechanical parts of a building grow more and more each year, and architects keep trying to hide them, instead of making them an organic part of the whole building. But the mechanics are functional and there is no reason why they should not be a visible, even a decorative part.”

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GLASS SKYSCRAPER designed by Architect Walter Gropius for Chicago Loop would have sheer glass walls broken by white marble shields in front of heating-air-conditioning units. Says Gropius: “These mechanical parts of a building grow more and more each year, and architects keep trying to hide them, instead of making them an organic part of the whole building. But the mechanics are functional and there is no reason why they should not be a visible, even a decorative part.”

Akon 8, Ohio, 105 State Building, Hickory 4174
Allentown, Pennsylvania, 516 Hamilton St., 5-4442
Atlanta 3, Georgia, 1101 Spring Street, N.W., Emson 2731
Baltimore 18, Maryland, Federal Land Bank Building, Hopkins 9100
Battle Creek, Michigan, 614 Security National Bank Bldg., 2-4146
Birmingham 6, Alabama, 1220 Brown-Morse Building, 6-8884
Boston 16, Massachusetts, 442 Park Square Building, Liberty 2-0655
Buffalo 2, New York, 1116 Rand Building, Washington 2506
Cincinnati 2, Ohio, 110 Empire Bldg., Parkway 7420
Cleveland 15, Ohio, 1146 Home Building, Cherry 3-1724
Columbus 12, Ohio, 1334 Grandview Avenue, Room 225, Kingswood 6144
Dallas 4, Texas, 2300 Maple Ave., Sterling 5186
Dayton 2, Ohio, 301 Eleven W. Monument Building, Hickock 6384
Denver 6, Colorado, 619 Confidential Building, Main 8461
Des Moines 5, Iowa, 316 Des Moines Building, 8-1006
Detroit 2, Michigan, 1212 Fisher Building, Trinity 1-8300
Erie, Pennsylvania, 1022 G. Daniel Building, 2-2301
Evansville 8, Indiana, 100 North Main Street, 2-3212
Fresno, California, 444 Blackstone Avenue, 6-2532
Grand Rapids 2, Michigan, Beverly and Porter Streets, 3-0156
Hartford 5, Connecticut, 919 Albany Avenue, 6-5078
Houston 4, Texas, Prudential Insurance Co. Bldg.,Justin 1589
Indianapolis 2, Indiana, 1803 North Meridian Street, Hickock 5927
Kansas City 2, Missouri, 200 Plaza Theatre Building, Jefferson 3606
Little Rock, Arkansas, 319 Commercial National Bank Building, 6-6722
Los Angeles 5, California, 601 South Armore, Dunkirk 8-2125
Louisville 1, Kentucky, 2500 South Third Street, Calvin 4271
Miami, Florida, 920 Ingraham Bldg., 9-2792
Midland, Texas, 305 Central Bldg., 2-9290
Milwaukee 3, Wisconsin, 1412 Majestic Building, Marquette 8-1051
Minneapolis 3, Minnesota, 202 Hoyt Temple Building, Filmore 4601
Minneapolis 7, Minnesota, 202 Hoyt Temple Building, Filmore 4601
New Orleans 12, La., 507 International Trade Mart Building, Raymond 4258
New York 17, New York, 19 East 47th Street, Eldorado 5-7200
Omaha 2, Nebraska, 603 Redick Tower, Jackson 6164
Pocatello, Idaho, 807 Citizens Building, 4-9141
Philadelphia, Pennsylvania, (Camden), Lambert 3-8300
Phoenix, Arizona, 3509 W. Van Buren, Atchison 3-1050
Pittsburgh 10, Pennsylvania, 3210 Grant Building, Atlanta 1-3445
Portland 9, Oregon, 935 N.W. 12th Avenue, Room 213, Allerton 5474
Richmond 15, Virginia, Fifth & Cary Streets, 2-2941
Rockford 6, Illinois, 512 Temple Building, Hanson 6250
Saginaw, Michigan, 707 Second National Bank Building, 5-2316
Salt Lake City 1, Utah, 22 South Main, 5-4236
St. Louis 8, Missouri, 414 Lindell Boulevard, Franklin 2000
San Diego 1, California, 338 Land Title Building, Main 6-1846
San Francisco 3, California, 1225 Folsom Street, Honolulu 2-3708
Seattle 8, Washington, 1804 Westlake Avenue North, Acker 1056
South Bend, Indiana, 306 E. Notre Dame Avenue, 2-6623
Spokane 10, Washington, 359 Empire State Building, Riverside 4592
Syracuse 2, New York, 420 University Building, 2-6849
Tampa 2, Florida, 522 Stovall’s Professional Building, 2-7288
Toledo 2, Ohio, 1220 Madison Avenue, Room 219, Garfield 2206
Tulsa 14, Oklahoma, 314 Boulevard Building, 5-1400
Washington 6, D.C., 520 World Center Building, National 5316
Wichita 2, Kansas, 304 Wheeler-Kelly-Hagny Building, 4-5076
York, Pa., Room 302, 25 N. Duke Street, 6664
Youngstown 12, Ohio, 1627 Market Street, 2-1913

The Magazine of Building
MODERN DESIGN HAS ALUMINUM IN MIND

DESIGN FOLIO

A completely new manual on architectural aluminum with drawings for direct tracing. Please request on business letterhead.

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

SEE "Mister Peepers" Sundays, NBC-TV. HEAR "Fibber McGee and Molly" Tuesdays, NBC radio. Consult local listings for time and station.

Capable, experienced Reynolds Architect Service Representatives are available without obligation for assistance on your aluminum design problems. This nation wide service is Reynolds way of saying, "Here's help toward getting the very most from aluminum." It's proof that Reynolds is keeping pace with architects' demands on aluminum to achieve a wide variation of expression in aluminum's many logical applications.

To gain the most from aluminum's advantages, also include standard aluminum products in your planning. Reynolds distributors, with complete stocks of architectural aluminum mill products are located across the country. Names of aluminum building products manufacturers will be furnished on request.

Reynolds Metals Company, 2328 South Third Street, Louisville 1, Kentucky.
Experience proves... REVOLVING DOORS turn PROBLEM space into PROFITABLE space

- Because they keep all lobby area comfortably usable right up to the entrance... keep out drafts, dirt and noise that sweep in through swing doors... revolving doors turn otherwise problem space into highly profitable revenue space.

And space-making is just one of the important money-making advantages gained with revolving doors. "Always closed," they minimize decorating and maintenance — cut cooling and heating costs as much as 25% per year. "Always open," they speed the orderly flow of in-and-out traffic — operate smoothly, safely, year in and year out with least upkeep or attention.

In virtually all types of commercial and institutional buildings, over half of all revolving doors sold are swing door replacements. Including these doors in original specifications is sound client relations. See our catalog in Sweet's for full data.

NEW ENGLANDER CROWNED AS '53 APPRENTICE BRICKMASON CHAMP

Thomas J. Gernux (left), 24, of Springfield, Mass., defeated 30 other state and local winners in the finals of 1953 national Apprentice Brickmason Competition at the AFL Union Industries Show in Minneapolis. Seated on his winning work (judged not on output per hour but on neatness, accuracy, joint uniformity and his skill and dexterity) he received a $500 check from 1st Vice President A. J. Cleland (right) of the Bricklayers, Masons & Plasterers International, and a week's vacation at the Greenbrier Hotel in White Sulphur Springs, W. Va. Said Labor Secretary Martin P. Durkin last month, boosting the Labor Department's apprentice training program: "The very future of the building and construction industry depends upon the creation of sufficient numbers of qualified trades craftsmen. Apprentice training is a capital investment in the [industry's] future."

As the new administration filled out its ranks of policy-making officials more construction industry men headed for Washington. Sworn in as General Services Administrator, in charge of the government's major nonmilitary public buildings programs, Chicago textile ex-executive Edmund F. Mansure; as an asst. postmaster general Norman R. Abrams of Maplewood, N. J. Congoleum-Nairn vice president. Nominated as an SEC member and expected to become its chairman: Pittsburgh attorney Ralph H. Demmler, who was Equitable Life's principal representative supervising the Gateway Center construction there during the last three years.

Architects were taken to task gently for neglecting to design better window advertising areas for bank buildings. Bankers must realize their quarters are "supermarkets of bank service," Maurice Blouin, president of a New York bank displays company, told a financial advertisers meet-

(continued on p. 60)
180,000 Sq. Ft. of Mahon Steel Deck
Protects Another Industrial Plant!

Here is another modern light weight, permanent steel deck roof under construction on a large industrial plant. The trend to steel deck roofs is significant, and can be explained in two simple statements: No matter how you figure, Steel Deck is the most economical permanent roof construction available today, because, it can be insulated to the exact degree to meet "U" Factor requirements in any given locality ... and, most important, Steel Deck's light weight permits substantial savings in the supporting structure—total dead load, including insulation and waterproofing material, is less than any other type of permanent, firesafe roof construction. Mahon Steel Deck is available in Galvanized Steel, Galvanized Enamel Coated Steel, or Enamel Coated Black Steel. Stiffening ribs are vertical—no angular or horizontal surfaces where troublesome dust may accumulate. In the enamel coating process, the metal is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. These Mahon features warrant your consideration. See Sweet's Files for complete information, or write for Catalogs B-53-A and B.

THE R. C. MAHON COMPANY
Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities
Manufacturers of Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Insulated Metal Walls of Aluminum, Stainless or Galvanized Steel; Insulated Metal Wall Panels; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

ARCHITECTURAL FORUM • JUNE 1953
Republicans have held the New Jersey governorship for nine years, and their nominee this year, Paul L. Troast, 59, a heavy construction industry leader, is the candidate most likely to become His Excellency in November. Troast heads the New Jersey Turnpike Commission, but has never before sought elective office. His Mamily-Troast firm (organized in 1928 with his brother-in-law) specializes in large industrial and business structures, has shunned public construction except World War II military contracts.

Commissioner-Director Walter E. Keyes and Engineering Supervisor William Speed resigned from Florida's State Improvement Commission at Gov. Dan McCarty's request. They denied their resignations resulted from a legislative probe into alleged use of substandard materials and extravagant, unnecessary construction directed by the commission including a Capitol renovation that ballooned from a $150,000 job into a $608,000 project. Their explanation: Gov. McCarty's ideas about the commission "are diametrically opposed to those of the former (Gov. Fuller Warren) administration." During the last seven years the commission borrowed $60 million and supervised $49 million of state construction. But Gov. McCarty and his cabinet have ordered a virtual halt to all commission borrowing and construction, and asked for a full report.

NEWS (continued on p. 62)
An acoustically efficient, incombustible material of outstanding natural beauty

This fissured tile, newly developed by Simpson Research, uses a special type of rock that is melted and re-formed into highly-absorbent rock wool. A natural formation of fissures, different on every tile, provides a beautiful ceiling texture. It has a soft white finish for maximum light reflection, and comes with either square or beveled edges in 11/16" and 13/16" thicknesses. Its sound absorbing efficiency is unexcelled by any like material, and the tile may be repainted without the loss of acoustical effectiveness.

Simpson Acoustical Products include the following: SIMPSON ACOUSTICAL TILE (Perforated Fiber Tile), METAL ACOUSTICAL UNITS, PERFORATED HARDBOARD, PERFORATED CEMENT ASBESTOS BOARD, FISSURED MINERAL TILE
After 3-year study, New York votes code change on theaters

After three and one-half years of bureaucratic reviewing and committee cogitation, New York's city council adopted a series of bills this month to allow construction of modern legitimate theaters within commercial or apartment buildings. As soon as Mayor Impellitteri signs the city will at last be rid of obsolete building code regulations that banned construction over a stage, above or below street level. Under the old code, the potential income possibilities of theaters was so seriously limited that nobody had a new theater in Manhattan for 25 years. The new bills also ease bans on smoking and the sale of liquor in legitimate theaters.

Theater Angel Howard S. Callman, chairman of the Port of New York Authority, heads a group considering building a large modern office-theater building (FORUM April '53), but no one else had announced similar plans.

Extortion indictments name 12 St. Louis union leaders

Last September the Department of Justice started investigating labor racketeering in St. Louis. In April prosecutors began presenting findings to a grand jury. Results: indictments last month charging 12 AFL construction officials with extortion or attempted extortion from contractors and subcontractors. Among those indicted: Vincent James Lee, vice president of the plasterers and cement finishers international and a member of the St. Louis City Plan Commission for about five months in 1951; William H. Anderson, operative plasterers and laborers business agent; Paul H. Halahan, hod carriers and common laborers business agent; ex-convict Lawrence L. Callanan and John L. Lawler, president and business agent for the steamfitters local; Peter Higgins, former head of the building material and construction chauffeurs affiliate of the teamsters union.

Town gives up battle against tax-free plant, grants permit

Cuyahoga Heights, Ohio won a point if not its whole battle against invasion by a tax-free $40 million Air Force-financed plant to be built and operated by Alcoa (AF, Feb. '53 et seq.) From January through March the little (pop. 752) Cleveland suburb refused to issue building permits for the project, protested being burdened to provide free municipal services for the plant and losing $33,000 of
Proven by Performance!

it's JOANNA

Vinylized wall fabric
(plastic-on-cloth)

The only test that counts—the test of performance in America's outstanding institutions—proves that Joanna Vinylized Wall Fabric, today's modern plastic-on-cloth decorating material, combines lasting, colorful appearance with exceptional ease and economy of maintenance. Joanna is made for lasting luxury... with special colors styled for walls in friendly, uniriting tones. Joanna is made for service... sturdy cotton cloth thoroughly coated with rich textured vinyl plastic for strength and durability. Joanna is made to wear and wash... scuffproof, scratchproof, stain-resistant, and washes easily with soap and water.

It's made for you!

Easy to install... will not shrink or open up at the seams. Joanna Vinylized Wall Fabric can be quickly installed by any good paperhanger using standard techniques on any smooth wall surface.

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Resists Fire, Wear, Abuse!

Tested and classified for resistance to fire and other abuse by the Underwriters' Laboratories. Approved and recommended by the Wallpaper Research Bureau of the Painting and Decorating Contractors of America.

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Satisfy your requirements!
Please building owners and maintenance superintendents with FIAT quality compartments, and their beautiful, durable, easy-to-clean finishes.

Now, FIAT offers you a complete line, with adaptability to any type of installation. All FIAT compartments are made of the finest stretcher-leveled furniture steel, either cold rolled or bonderized-galvanized... finished with a baked-on prime coat and two coats of baked-on enamel. Available in white, choice of eight colors, or any two-color combination.

Check FIAT construction for the latest improvements. For greater strength, pilasters in the ARISTO line have solid wood cores. Other FIAT exclusive features are theft proof screws and concealed type fastenings. All chrome-plated hardware has been newly designed to complement the streamlined beauty of these compartments.

The block-square federal office is too wide, says its builder

Commissioner W. E. Reynolds of the Public Building Service offered a candid confession this month: there were bugs in the design of the government's monster new General Accounting Office.

The block-square Washington structure has the biggest uninterrupted floors of any office building in the world, economically packs 1,330,000 sq. ft. into seven stories. To do so, Reynolds designers had to make it 365' wide. That, said Reynolds, "is too wide. The clerical force gets a feeling of claustrophobia since it is concentrated in the interior while officials with private offices have the edges." Reynolds is still sold on block-type office buildings, but thinks they should be no wider than 250'. If he builds another one, he was also considering pulling private offices into the interior beside the service core, leaving the windowed areas for large clerical rooms.

A second trouble with the 82½ million building was probably no fault of its design. Clerks complained the air conditioning system (the only thing that made the big floors possible at all) was inadequate. The explanation: the building was intended for GAO's miles of files and acres of business machines. But as soon as it was finished, DPA and other emergency agencies grabbed most of it, partitioned it off to suit themselves, interfering with air flow. Reynolds was having the air conditioning installation restudied, expected he could boost it enough to stop complaints of headaches and stale odors.

For other Reynolds remarks see p. 216.
Cleaver-Brooks boilers save $25,000 per year for Hoosac Mills...pay for themselves in 2 years' time!

Installing 3 Cleaver-Brooks self-contained boilers at Hoosac Textile Mills, New Bedford Division, was a major step in ending boiler worries. Hoosac can count on yearly savings of $25,000, and they’re set up for future expansion as well.

Before deciding what type of boilers to install for replacing old, hand-fired boilers, Hoosac carefully considered these factors:

1. Efficiency of steam generation — the cost for supplying 12,000 lbs. of steam required each hour at peak capacity for heating and processing.
2. Saving labor costs — through safe, automatic operation.
3. Cleanliness — important to textile manufacture.

A study of past performance and prominence of similar units in the industry showed that Cleaver-Brooks self-contained boilers would fill the bill.

Guaranteed 80% thermal efficiency was one of many influencing factors in selecting the 3 Cleaver-Brooks 150 hp. boilers. Even with loads as low as 30% of rating, these boilers operate with a flat 80% efficiency. (Hoosac operates their plant over widely fluctuating loads, particularly in summer.)

That they attained their objectives is borne out by these results — results which showed the boilers paid for themselves in 2 years’ time.

1. $15,000 savings in fuel — fuel cost studies showed 275,000 gals. of oil at $5.00 per gal. provide steam for a year’s operation. Same steam formerly required 2,000 long tons of coal at $15.00 per ton.
2. $10,000 savings in labor costs — fully automatic operation minimized boiler maintenance. Personnel were then available for productive plant work.
3. Cleanliness — modern boiler room proved more efficient than previous cluttered arrangement. Hand firing, removal and disposal of fly-ash was eliminated.

In addition to these substantial savings, the installation provided for economical future plant expansion. At present, boiler operation is rotated so all three periodically receive the same service and maintenance.

Cleaver-Brooks boilers are showing similar savings in many other businesses. Investigate — write for Catalog AD-100 and complete information on standard size oil, gas, combination oil/gas fired Cleaver-Brooks boilers, 15 to 500 hp., 15 to 250 psi.

Cleaver-Brooks ORIGINATORS OF THE SELF-CONTAINED BOILER
Steam Boilers • Oil and Bituminous Tank Car Heaters • Distillation Equipment Oil and Gas Fired Conversion Burners

After installation and starting service was completed, a check was made on boiler output. Tests indicated efficiency exceeded the guaranteed 80%. After eight months’ operation without tube cleaning, stack temperature showed no noticeable gain, indicating high efficiency had been maintained. Planned and installed by Frank I. Rounds Co., Newton Highland, Mass.
Looks inviting when new...stays inviting for life

This entrance says "come-in" today. It will say the same thing years from today...and look just as handsome...because it's made of Republic ENDURO Stainless Steel.

Built-in beauty is one of the reasons why ENDURO stays so good looking...so long. It's solid stainless steel...all the way through...with a distinctive permanent lustre that lasts. Its smooth surface is easy to clean...and keep clean. And that's something clients like to know...in advance.

ENDURO actually makes open designs like this possible. It allows you to use thinner, lighter sections without sacrificing strength or durability. It's easy to fabricate, too. And it's so versatile that you can combine it with many other materials to obtain striking effects.

Does ENDURO Stainless give you an idea? File it with your future plans now. Sweet's will give you the details on this remarkable metal.

For special help in developing your own ideas, write Republic.

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FOAMGLAS was selected by Robert and Company Associates, Architects and Engineers, to insulate the radiant heated and cooled “floating walls” of this remarkable building housing the General Offices, Pilot Mill and Research Laboratory of the Springs Cotton Mills, Fort Mill, South Carolina.

The moisture-proof sealed glass cells of FOAMGLAS make it possible to control precisely the temperature and humidity within such air conditioned buildings. Your clients, too, will benefit when you specify FOAMGLAS. For more information about this efficient, long-lasting insulation send us the coupon right away.

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When they ask...

"WHO WAS THE ARCHITECT ON THIS JOB?"

he can step forward with pride

This flooring is Wright Rubber Tile. It will need no apology ten years from today... or one hundred years from today! For Wright Rubber Tile far surpasses conventional tile for long life and lasting beauty.

Through the years, a Wright Rubber Tile floor will bear witness to your sound judgment in having specified it. It will bring your client lasting satisfaction. It will confirm your own good reputation.

Economical—Because of its exceptional durability, cost per year of Wright Rubber Tile is less even than inferior floor covering.

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We invite you to compare Wright Rubber Tile with any floor covering on the market. Send for a free sample. Then specify Wright Rubber Tile with complete confidence.

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FLOORS OF DISTINCTION

* WRIGHTTEX—Soft Rubber Tile
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EVENTS

American Society for Testing Materials' annual meeting, June 21-24, Chalfonte-Haddon Hall, Atlantic City.

International Design Conference, Aspen, Col., June 21-26, conducted under auspices of Aspen Institute for Humanistic Studies with support of leaders in various phases of design, ranging from architecture to fashions. Theme for 1953: "Design, a Function of Management." Registration fee, $35 payable with hotel registration. For information, registration card, address: Aspen Institute, Aspen, Col.

American Society for Engineering Education's annual meeting, June 22-26, University of Florida, Gainesville.

Construction Industry Integration summer conference, Lake Forest College, Lake Forest, Ill., June 29-Aug. 21, under direction of Howard T. Fisher. Will be similar to McGill Conference but problems will include schools and other building types as well as housing. Tuition $125; total expenses about $350. Five full scholarships and some part scholarships available; enrollment limited to about 90. For information address Lake Forest College.

Fourth Annual Design Workshop for students of architecture, July 11-Aug. 22, Instituto Tecnologico de Monteray, Mexico.

Competition—In connection with the Fourth Centenary of the City of Sao Paulo, next winter, an international exhibition of architecture will be held at the Sao Paulo Museum of Modern Art. Open to architects of all nationalities, and to officially recognized schools. Awards in 11 categories, with a special prize to a young (under 35) architect and to a school. Submissions no later than July 15. For information, entry forms, address: Secretariat, II Bienal do Museu de Arte Moderno de Sao Paulo, Rua 7 de Abril 230, Sao Paulo, Brazil.


City and Regional Planning course, conducted by MIT's School of Architecture and Planning, Aug. 24-Sept. 4, offers intensive review of administrative and technical aspects of urban and regional development to men and women in the fields of building, investment and industry, as well as to practicing professionals. Tuition for two-week program, $100; enrollment limited. For details, application blank, write: Office of the Summer Session, Room 3-107; MIT, Cambridge 39, Mass.

Third International Congress of Architects, Lisbon, Portugal, Sept. 20-28. All architects invited. For information and program, address: Secretario do Congresso, Rua de S. Bernardo 14, Lisbon.


National Savings & Loan League's fall conference, Nov. 8-11, CasaBlanca Hotel, Miami Beach.

National Association of Real Estate Boards' annual convention, Nov. 8-14, Statler and Biltmore Hotels, Los Angeles.

Mortgage Bankers Association of America's annual convention, Nov. 13-19, Miami Beach.
Imaginative architects and engineers know that inhibitions and prejudices must be stifled if creative development is to have full freedom of expression. That's why many seemingly senseless drawing board doodles often emerge as revolutionary ideas in building technology.

We are happy to have had a hand in shaping some of these mental images into metal miracles for today's innovations in the heating, air conditioning, lighting, acoustical, structural and ornamental fields of building construction.

where ideas take shape for the industries that serve the nation
Another interesting REMOTAIRE installation!

Individual-room remote type units in resort hotel provide year 'round air conditioning

Summer cooling... winter heating

The Concord Hotel, Kiamesha Lake, New York, found the answer to efficient, economical year 'round air conditioning through the installation of the Remotaire Well Water System—one of a number of different Remotaire systems available for multi-room buildings.

The Remotaire Well Water System may be used in localities where well water is known to be available in adequate supply, proper temperature, and of good quality. The cold well water is used in lieu of a water chilling plant. Consisting of Remotaire Room Units in each room connected by a piping system to the central plant equipment (as shown in the diagram), this system costs less to install and less to operate. Individual control of each Remotaire unit allows the occupant to choose the room temperature that suits him best without affecting adjoining rooms.

This resort hotel installation is another example of the versatility of the Remotaire for hotels, motels, hospitals, apartments, and other multi-room buildings.

Top Quality Construction... Easy To Install

The Remotaire is sturdily built of heavy-gauge steel—plus a reinforced air grille—with a bonded, baked-on semi-gloss enamel finish. All air passages are acoustically insulated for thermal efficiency and quietness. Coil is designed for right or left hand connections. Spacious end compartments permit easy access to coil connections and controls. Adaptable to a variety of ventilation systems, the Remotaire is ideal for modernization as well as new construction and is available in three models—200, 400 and 600 cfm.

Write for Remotaire Brochure, Form 298.

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"We would like to suggest… now… that you refer to your Sweet's Architectural File and look at our catalog. Our line is complete. Specifications are all stated. Get the habit of using it in your planning. It will save you hours in your work."

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WROUGHT IRON
Keeps maintenance costs from cutting fancy figures

Rightly recognizing that long-term performance depends on long-lived materials, more and more engineers and designers are specifying wrought iron for ice skating rink coils.

Responsible for this increasing confidence is wrought iron's superior service in this application. In ice skating rinks across the nation, Byers Wrought Iron pipe has given performance-proof of its ability to minimize costly maintenance and repair.

FOR SERVICE RECORD FACTS...
Our Engineering Service Department files are packed full of actual performance records established by wrought iron pipe in ice rinks. We'll be happy to review your problems, and suggest, on the basis of past experience, how wrought iron can answer your service-life requirements. Write A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

W IS FOR WHAT?
Sirs:
Re Electrolux Recreation Center (AF, Apr. ’53—see plan), W is for what?

Messrs. Raymond & Rado have gone too far. The advantages of back-to-back plumbing in the toilet rooms off the recreation hall are by far offset by the devious route to the women's toilet.

We think the idea is just a little too advanced for even a recreation center.

MARTIN J. SPERBER, et al
Division of school planning
Department of Public Instruction
State of North Carolina
Raleigh, N. C.

* W is indeed for what! What embarrassment! We will never know how that errant W wandered all the way along that devious 350' route from the women's toilet to the men's shower room! Nor will we cease to be impressed by how closely some people read our magazine.—Eo.

PENN CENTER
Sirs:
Forum's presentation of the problem of space vs. rental dollars arising out of the proposed development of the Pennsylvania Railroad holdings in central Philadelphia (AF, Apr. ’53) is worthy of the attention of all urban planners and developers. Light and air are no longer unaffordable luxuries in city buildings—they are now a necessity.

Both Bacon's and Dowling's proposals are deserving of study and consideration. Efficiently planned building space which is properly related to the adjacent street pattern, to the surrounding development and to the current and future urban requirements should command profitable rentals.

I believe that crowded, bulky office buildings have long since demonstrated their undesirability. With continued improvement in the transport of workers from their residences to their office desks, greater open space should be possible in our urban centers. It is a mistake to erect new office buildings on crowded sites. Recent development in Pittsburgh, where I participated in city planning endeavors, presents decided contrasts in urban office building. The Pittsburgh Point area presents a desirable openness, whereas the upper triangle area presents an overcrowded condition which was made much worse by the recent addition of several new office buildings. Triangle streets are much too narrow to adequately support the building bulks which abut upon them.

(continued on p. 76)
All Advance core and coil assemblies are completely enclosed in moisture resisting, dust-proof containers, die-formed or drawn from heavy gauge cold roll steel, thus affording sturdy, uniform construction. All containers are coated with a rust protecting, lasting black japan finish. Rubber covered cotton braided heat-resistant U.L. approved lead cable is firmly anchored to the coil leads. All external lead lengths are sufficient for easy installation without splices.

The capacitors used in Advance Ballasts for power factor correction and phase displacement are of highest quality construction. Rigid inspection and tests are conducted of all capacitors of prescribed ratings.

The core of Advance Ballasts is constructed of high-grade silicon steel laminations, stamped to close tolerances and annealed and treated to insure low wattage core losses. Objectional noise emanating from the laminated core and shell becomes almost non-existent by the unique Advance method of precision stacking and riveting.

All Advance coils are precision-wound on rectangular cores of high grade varnish-impregnated paper with quality annealed copper wire. Special high production multiple coil-winding machines insure firmly wound, compact coils of identical size, shape, weight and characteristics.

To insure rapid heat conductivity and the consistency necessary to dampen vibration and noise, a compound containing a high percentage of silica is used in each Advance Fluorescent Ballast. Complete and careful filling of each unit seals out moisture and increases insulation resistance, thus insuring quiet, trouble-free operation.

All Advance coils are precision-wound on rectangular cores of high grade varnish-impregnated paper with quality annealed copper wire. Special high production multiple coil-winding machines insure firmly wound, compact coils of identical size, shape, weight and characteristics.

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The Advance forced core design makes possible the proper placement of 8 rivets at the points of magnetic stress outside the flux path, thereby providing a most efficient core and shell assembly that insures positive low noise level.

The core of Advance Ballasts is constructed of high-grade silicon steel laminations, stamped to close tolerances and annealed and treated to insure low wattage core losses. Objectional noise emanating from the laminated core and shell becomes almost non-existent by the unique Advance method of precision stacking and riveting.

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CYCLONIC COMBUSTION
PRODUCES MORE STEAM...
IN LESS SPACE...
AT LOWER COST!

- In multiple installations or as a single unit, a Cyclotherm steam generator is your assurance of quick, dependable steam—plus greater all-round economy.
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- Cyclotherm steam generators can be conveniently located in any building where steam is required. With only 3 sq. ft. per Boiler Horsepower your Cyclotherm saves up to ½ the space of conventional steam generators. Installation is easier because each Cyclotherm arrives complete... connect fuel, electricity, water and a simple flue and it's ready to generate steam. Controls are fully automatic.
- A guaranteed minimum efficiency of 80% saves on fuel—gas, oil or combination—and lowers maintenance costs. Cyclotherm gives you full power from a cold start in 15 to 20 minutes. In multiple installations, an automatic battery control panel distributes the load for maximum operating economy.
- Cyclotherm steam generators are designed for 18 to 500 h.p., 15 to 200 psi operating pressures. Approved—ASME, National Board Standard, and Underwriters Laboratories, Inc.

Find out how Cyclotherm Cyclonic Combustion will fill your steam requirements. Write for a free illustrated folder. Dept. 22

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Etc.

DAIRIES,
SCHOOLS,
Etc.
or DECENTRALIZED
units


Cheerful Wall-Tex Decoration at St. Albans Naval Hospital

low-cost maintenance—lasts for years...

Wall-Tex patterns and colorings in this U. S. Naval Hospital show today's trend. Now, pleasant, cheerful decoration instead of bleak, depressing walls. Wall-Tex fabric wall coverings have many advantages for hospitals, hotels, buildings of all types. Its surfaces are nonabsorbent, resist staining, and are really washable. Its strong cloth base protects walls against scuffing and cracking. These practical features mean real economy in decoration. Wall-Tex keeps its beautiful new look for years—with less work and lower maintenance cost.

Pre-trimmed, easy to hang

Any staff decorator can apply Wall-Tex with professional results because it's precision trimmed at the factory, in 24-inch widths that are convenient to handle. Edges are trimmed straight and true for easy matching and smooth-fitting seams. Mail coupon for File Folder of information and Wall-Tex swatches.

WALLTEX fabric wall coverings

Send your File Folder on Wall-Tex and Sample Swatches.

Columbus Coated Fabrics Corporation
Dept. AF-63, Columbus, Ohio
Send your File Folder on Wall-Tex and Sample Swatches.

Name:
Street:
City: State:

THE MAGAZINE OF BUILDING
New type of large-area lighting

with Formed Diffusers of PLEXIGLAS

Here is a new development in the use of PLEXIGLAS acrylate plastic for luminous ceilings. Each of the four-foot-square diffusers in the installation shown above is a shallow dome, formed from white translucent PLEXIGLAS. The domed design gives structural rigidity to the panels, making the use of such large diffusers completely practical from the standpoint of safety, ease of handling, and permanence of shape.

Notice how the use of PLEXIGLAS results in uniform, efficient diffusion of light from completely concealed fluorescent lamps. Three lamps are mounted above each panel on separate controls for three levels of illumination, ranging from 50 to 90 footcandles. Diffusion is so complete that panels are illuminated evenly at each level of light intensity.

In addition to formability and efficient diffusion, PLEXIGLAS offers other advantages in lighting—strength, light weight, dimensional stability, and resistance to breakage and discoloration. For better lighting, investigate the use of PLEXIGLAS for luminous ceilings and large-area fixtures. We will be glad to send you illumination data on the installation shown above.

PLEXIGLAS is a trademark, Reg. U. S. Pat. Off., and other principal countries of the Western Hemisphere.

Canadian Distributor: Crystal Glass & Plastics, Ltd., 130 Queen's Quay at Jarvis Street, Toronto, Ontario, Canada.

PLEXIGLAS is listed in Sorensen's Architectural File, Section 600 Ru.
THE MILLER LEXINGTON florescent luminaire offers these important advantages:

LIGHTING—highly efficient with extremely low brightness for true visual comfort.

ECONOMY—easier, quicker installation, and low maintenance — low overall cost (of fixtures, installation and maintenance the true cost). Achieved by new engineering features. More for your school lighting dollars. Write for details.

DESIGN: Functional—clean, simple lines.

EASY 2-way lamping—1 ladder position.

STRENGTH: Rigid 1-piece steel louver.

THE MILLER COMPANY Meriden, Connecticut
LEADERS IN LIGHTING SINCE 1844

CENTRAL BUSINESS DISTRICTS

Central business districts will continue to serve as the heart of our urban communities but they must be remodeled to meet the advancing standards of service and comfort.

ARCHITECTURAL FORUM should continue the theme of urban modernization and redevelopment, using all available examples in various cities to arouse discussion and interest.

Sirs:

...Your handling of the whole Penn Center problem over the last several months has been a fine example of creative reporting. ...

EDMUND N. BACON
Executive director
City Planning Commission

Sirs:

...The only interest I have in Mr. Greenfield's financial machinations or those of Mr. Dowling, is that they both controvert accepted density standards. They tend, therefore, to be in opposition to the proper objectives of those interested in providing better urban living and those others who are interested in providing economical urban services. Whether they spread out as in the case of Mr. Greenfield, or follow the Corbusier-Dowling concept of piling people on top of each other, they put the same strain on the inmates. Neither is, therefore, acceptable as far as I'm concerned.

On the other hand, I value highly a free competitive society and expect nothing more of those in the business and industrial field than that they conform to the laws of the country which have been set up to prevent hijacking and wholesale robbery in those fields. That Mr. Dowling and Mr. Greenfield know little and care less about the economic and emotional strains they are creating does not surprise me nor does it keep me from respecting their ingenuity and originality in their chosen field. They are apparently both good men and were it their business to serve the public as it has been mine for a number of years, I can only assume that they would do it very well.

I compliment you on the lively article. . . .

T. LEYARD BLAKEMAN, executive director
Regional Planning Commission
Detroit, Mich.

NEW HOTELS

Sirs:

The article on hotels in the January FORUM was very interesting, indeed. Your comments covering the evolution of new hotel construction were both practical and encouraging.

CHARLES A. HOBWORTH
Executive vice president
American Hotel Assn.
New York City

(continued on p. 80)
The new hospital of the Forest Hills Foundation (shown under construction at left) is being built to last. To keep maintenance expenses low and fulfill life expectancy of the building, plumbing contractor William Grossberg, Inc., chose ANACONDA 85 Red Brass Pipe to fill the architect's specifications for hot and cold water supply lines.

Twenty thousand feet of it—in standard sizes ranging from ½ in. to 4 in.—will be installed in this 6-floor, 150-bed hospital. With ANACONDA 85 Red Brass Pipe, the Forest Hills Foundation can count on a trouble-free supply of water for years and years to come.


good for a long, long time

Anaconda®
85 Red Brass Pipe
New Protection Against Roof Damage

NEW CELOTEX
Channel-Seal
TRADE MARK
ROOF INSULATION

guards against blistering and separation of felt and insulation

For an extra margin of safety against costly roof damage due to the building up of high-pressure air pockets where insulation meets felt—specify new Celotex Channel-Seal Roof Insulation!

Each piece has bevels $\frac{1}{8}$" high by $\frac{1}{4}$" wide on all bottom edges. When units are laid on the deck, these bevels form a network of broad, interconnecting channels extending over the entire roof.

“Safety Release” for Trapped Air
As higher pressures build up in some areas of the roof because of rising surface temperatures, they are relieved by air and vapor movement through the channels. This equalizes and reduces pressure—minimizes the danger of blistering or separation of felt and insulation!

Made of a low-density board of high insulating efficiency, Celotex Channel-Seal Roof Insulation comes in a range of thicknesses to meet the specific insulation requirements of each job. It is asphalt coated on both sides and all edges, for extra moisture protection in storage and on the job.

Low in Cost
Light and easy to handle, yet remarkably rigid and tough, Channel-Seal is low in both initial and applied cost. Resists damage from job handling. Quick, easy to apply. Smooth surface assures positive bond to both roof deck and roofing felt.

Moreover, it is the only roof insulation made of tougher, stronger, long Louisiana cane fibres—and protected by the patented Ferox® Process from dry rot and termite attack. Write now for full data on Channel-Seal and other types of job-proved Celotex Roof Insulation. The Celotex Corporation, Dept. AF-65, 120 S. LaSalle St., Chicago 3, Ill.

For a Better Roof... Specify Genuine CELOTEX ROOF INSULATION

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

THE MAGAZINE OF BUILDING
When your structure has to be completed in record time...

Better have ALLIED fabricate and erect the structural steel

Three fabricating structural shops with identical equipment combine as a huge manufacturing unit on large tonnage jobs. On smaller tonnage jobs, each individual shop is fully adequate.

These exclusive Allied production advantages mean that fabrication schedules can be met easily, regardless of tonnage.

On location, experienced erecting crews know many short-cut methods to meet, and even beat, the most exacting erection schedules.

Send your plans and specifications to us to be estimated.

Clinton Bridge Corporation
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Fabricators and erectors of structural steel for highway and railroad bridges; industrial, office, school, and government buildings; airport structures; harbor facilities.
TIMBER CONSTRUCTION
Gives You Safety, Flexibility, Lowest Cost

Carrying 26' Span Trussed Rafters.*

Erecting 31' Span Trussed Rafters.*

Architects, Engineers and Contractors
Find Timbers FIT TODAY'S NEED

In the constant search for more economical building methods, engineered timber construction points the way. Architect after architect is achieving maximum results with minimum cost outlay in the proper use of timber construction members.

Experience has proved that engineered timber construction withstands emergency winds and seismic loads. It resists combustion, fire-free from the hazards of load-bearing collapse under extreme heat. It possesses all the elements essential to permanent construction.

Crossett timbers meet all tests in this new demand for structural wood. Big mill production at Crossett embraces every modern technique in quality control. Crossett timbers are engineered to specified stress values. Available in untreated, WOLMANIZED** treated and Creosoted stock, they qualify under Southern Pine Inspection Bureau standards as well as Federal Specifications MM-L-751b.

FOR FURTHER DETAILS, write Crossett to obtain specific information regarding your own designing problems. See for yourself how timber construction can answer many of your difficult design and building problems today.

*Employing Teco Connectors.


CROSSETT LUMBER COMPANY
CROSSETT, ARKANSAS

LETTERS continued

URBAN TRAFFIC FORUM

Sirs:
You are to be congratulated in having the initiative to plan and the ability to carry out the Urban Traffic Forum involving so many pertinent interests and resulting in such a comprehensive report (AF, Feb. '53). All of the 13 points are valuable and worthy of much study.

We feel much indebted to you... and hope the report of your forum will have the wide circulation it deserves.

FRED T. BASS, manager
Industrial Dept.
Chamber of Commerce
Cincinnati, Ohio

Sirs:
... This type of work will build more friends for you throughout the country...

DAVID LEE HOWARD
Real Estate
Leesburg, Fla.

Sirs:
... This is one of the best digests I have seen...

C. COLBURN HARDY
Carl Byoir & Assoc., Inc.
New York City

Sirs:
I compliment you on the excellent coverage of a very technical subject. I was greatly impressed by the manner in which the entire subject was so skillfully handled and I feel sure that those who surround me in this work will agree.

It is obvious from reading the article regarding the forum that many hours of sound and constructive thinking were necessary in order to produce such an intelligent report.

I can assure you that the fullest use will be made of the conclusions reached by the members of the forum.

MATTHEW P. ENGLISH, manager
Metro. Traffic & Transit Dept.
Chamber of Commerce
Los Angeles, Calif.

Sirs:
Forum has developed some of the most practical thinking on downtown parking and traffic that has been brought out to date. We were particularly impressed with the following:

1. Street and parking facilities cannot be considered separately. Each contributes to the efficient and economic use of the other.
2. The exact location of parking lots is important. The difference in location of even one block may substantially reduce the effectiveness of the lot.
3. We must accept the fact that the desirable amount of two to four times as much parking space as rental space is just not available in the downtown district and that actually only about 1/15th of this desirable amount is available in congested business

(continued on p. 82)
Workers Sing in the Showers
Regulated by POWERS
at The SINGER MANUFACTURING CO.
Plant in Elizabethport, New Jersey

Above:
A magnificent new model in the already world-famous line of SINGER Sewing Machines

Right:
One of Singer's Shower rooms has 98 showers, another 58 and there are several smaller ones for individual groups.

Some of the 190 Clean, Modern Showers at The Singer Mfg. Co. Each shower is individually controlled by a

Powers Thermostatic WATER MIXER

The Best Showers that money can buy — is only one of the many reasons why employees remain almost twice as long with SINGER as the national average.

Mr. F. H. Gummick, Plant Engineer for this famous 100 year old firm, says "The Singer Mfg. Co. has provided employees with the best shower room equipment obtainable. We consider it an investment in good employee relations."

Powers Temperature regulators on each individual shower as well as on the hot water generators serving the showers is the best insurance for a SAFE, COMFORTABLE shower.

No Unexpected "Shots" of icy cold or scalding water here. Powers thermostatic water mixers always keep the water temperature just right — regardless of pressure or temperature changes in water supply lines. See Powers catalog in SWEETS, section 24b

(b14a) • Only ONE Shower Accident Can Cost Many Times More Than POWERS Water Mixers •

Established in 1891 • THE POWERS REGULATOR COMPANY • SKOKIE, ILL. • Offices in Over 50 Cities
Wherever Heat or Power or Industrial Process Steam is required there is a Kewanee Boiler just right for the job. And into every Kewanee goes more of everything that adds to a boiler's life and makes it most economical. Owners expect more from Kewanee Boilers... and they get more.

Pictured is a battery of two Kewanee Scotch-type Boilers, for low pressure in the boiler room of the Men's Dormitory, Bradley University... a Kewanee series which "stands on its own legs," needing no special setting and requiring comparatively little floor space or head room.

KEWANEE-ROSS CORPORATION
Division of American Radiator & Standard Sanitary Corporation
KEWANEE, ILLINOIS

Men's Dormitory
BRADLEY UNIVERSITY
Pekoe, Illinois
GREGG-BRIGGS & FOLEY
Architects
ASSOCIATED ENGINEERS
Construction Engineers
2 Kewanee Scotch Boilers installed by
PEORIA PIPING & EQUIPMENT CORP.

LETTERS continued

areas. Obviously there is a limit in the number of commercial buildings that should be torn down to build parking lots, which, if exceeded, will result in a reduced value of the entire business area.

4. Rapid-transit facilities for each additional commuter during peak traffic periods cost only approximately \( \frac{3}{8} \) to \( \frac{3}{4} \) as much per commuter as is required to provide additional streets and parking facilities should this commuter drive his own car. Mass transportation is the only answer for most cities to the traffic problem in the downtown business area.

5. Downtown streets and parking spaces to be used fairly must be rationed. It is a problem of supply and demand, and a system of charges made to the user in proportion to the cost and value of these services is the most effective means. These prices should make it profitable to the consumer to use mass transportation, and to the truck driver to deliver in off-peak hours, also to the businessman to provide at least off-street loading and unloading areas. . . .

DAVID D. ROWLANDS, city manager
City of Eau Claire, Wis.

Sirs:

To provide thoroughfares for everyone wishing to drive to the shopping district and to provide parking space would cost so much that it would be many times more than any city could finance. In fact, it would probably be cheaper to give the city back to the Indians and simply rebuild an entire new city, such as is done in South America.

We now have a group of unhappy people trying to negotiate the congested streets. By spending all the money available, we could make twice as many unhappy. We never could make everyone happy by applying suggested remedial measures.

The congested areas should be zoned and the loading and unloading of large delivery trucks be prohibited in the street areas. All-day parking in the congested zone must be eliminated. Customer parking should be only in private parking lots provided by the store for their customers. All through-traffic routes and extensions of primary roads must be routed around the business districts.

In short, no one should be allowed to drive into a congested district unless they have business there, and parking space must be provided for those who do venture into the district. At least half of the existing office buildings and stores could be operated more profitably on the outskirts of the city. Most of the customers and employees live out in the suburbs anyway and merely clutter up the streets going to and from the business district. The only solution is to tear down at least half of the buildings and use the space for parking lots.

In our city, an enterprising grocery-store owner purchased a fairly new three-story
THE BERTOIA CHAIR

that became famous overnight.

Sculptural design of exciting form, color and rhythm,
with a strong supporting structure.

Comfortable seat frame of white plastic coated wire
or black oxide, foam rubber padding.

Available in standard K160 rough-textured
cotton/rayon in colors of charcoal, yellow, camel, red, grey.

Upholstery removable for outdoor all-weather use,
 easy cleaning. Black oxide, non-rust base.

Style No. 420. Prompt delivery.
FIVE TYPES OF HEATERS . . .  
—each designed for a particular service

Together they cover the entire field of large volume water heating—hard water, soft water, naturally corrosive, and zeolite softened water. Each heats water for ordinary service and for high temperature sterilizing—always clean and rust free.

No single type of heater can do all of these jobs well—the selection of the correct type from the full Sellers' line and Sellers' experience are required.

SEND FOR YOUR FREE COPY!
Before you buy any water heater—send your letterhead for this informative story on water and how to heat it. It's free—no salesman will call. Address Dept. A-6.

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4876 N. CLARK STREET CHICAGO, ILL.
Everything you could ask for in an automatic door control

**DOR-O-MATIC**

**INVISIBLE DOR-MAN**

Completely Automatic
The very instant a person steps on the specially designed carpet which leads through the doorway, the Invisible Dor-Man goes into action . . . opens the door quietly, quickly, automatically.

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The Invisible Dor-Man can be applied to any standard stock door (glass, wood, or metal). No alterations are required—no devices in the head jamb. The operating units remain entirely "invisible."

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The Invisible Dor-Man can be installed for perfectly silent service. Not a whisper is heard as the door glides open and closed . . . mute testimony to quality design and construction.

all this—and
OUTSTANDING ECONOMY
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THE IDEAL DOOR CONTROL FOR EVERY TYPE OF DOOR—EVERY TYPE OF BUILDING

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Dor-O-Matic concealed door controls for manual operation are available in sixteen models.

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NOW...

one nurse can do
the work of two

WITH THE NEW "VOKALCALL"
AUDIO-VISUAL NURSES' CALL SYSTEM

The new "VOKALCALL" now combines in one nurses' call system all the advantages of natural two-way voice communication between patient and nurse, with all the advantages of the time-tested method of utilizing visual and audible signals to call the nurse. With "Vokalcall" the nurse can talk directly to patients without leaving her station, thereby saving herself countless unnecessary trips to bedsides. With "Vokalcall" the nurse can cancel all visual signals originated by patients' calls at either her control station or at patients' bedsides. With "Vokalcall" the nurse can "listen in" to each room at any time (with patient's permission) without leaving her station and without disturbance to anyone.

"Vokalcall" doubles the nurse's effectiveness through saved footsteps, ability to attend more patients, greater concentration on direct bedside care, and increased morale and feeling of accomplishment. Patients like "Vokalcall" too. They benefit from a feeling of security and their needs are known sooner and met faster. To hospitals the tremendous advantage of greater service, reduced operating costs, and increased goodwill are obvious.

A new booklet entitled "VOKALCALL" tells the whole story. Write:

AUTH ELECTRIC CO., Inc.
34-20 45th STREET, LONG ISLAND CITY 1, NEW YORK.
14 YEARS AGO—

THE ORIGINAL OLSONITE SEAT

TODAY—MILLIONS

The years since 1939 have more than justified our basic principles of seat design and construction:

1. A closet seat must combine beauty and durability.
2. It must be made of one material—all the way through.
3. For permanence—it must be compression molded under tons of pressure.
4. No metal should be exposed to rust or corrode.
5. It must be available in a wide range of colors that will not fade.

Architects, master plumbers, wholesalers, and consumers have agreed with these principles over the years by continually increasing their demand for solid Olsonite seats.

ONE MATERIAL,
ONE PIECE,
ONE COLOR

ALL THE WAY THROUGH!
NOW! New, Exciting

**COLORED** Kawneer Zourite!

Now, 7 exciting colors are available in popular Kawneer Zourite facing. Rich, lustrous, eye-pleasing colors on versatile aluminum Zourite enable you to design even better, more eye-catching store and building fronts.

With Zourite’s four widths, 9 trim members, and application flexibility in glowing new colors, you have a facing product that will make your work sparkle and stand out. And a colored facing that permits you, for the first time, to specify full availability, low cost, easy application, lasting beauty, low-cost maintenance, in solid colors or combinations.

Five new Kawneer Zourite colors—**ACADEMY BLUE**, **HARVEST BROWN**, **SUNSET RED**, **SPRING GREEN**, **VELVET BLACK**—are high-heat glazed, oven-fired porcelain enamel.

The other two lustrous Zourite shades—**ALUMILITE** and **ALUMILITE GRAY**—are applied through a special alumilting process.

All seven Zourite colors are permanent, will not fade, are highly resistant to corrosion and chipping. Zourite has heavy gauge (.050) aluminum as the base metal, is easily cut and handled on the job or can be shop fabricated. Alumilite and Alumilite Gray are stocked in 20-foot lengths, colored porcelain-finished in 16-foot lengths. Widths from 2 1/4" to 8 1/4".

Special colors can be furnished for national account color schemes.

Zourite is easily applied to metal, masonry, or wood construction with patented concealed fastenings that hold securely, but allow for expansion and contraction.

Learn how you can specify colored Kawneer Zourite for building fronts. Get information, including construction and architectural details from a nearby Kawneer Installing Dealer. He is listed under "Store Fronts" in your telephone book's classified pages. Call him today, or write Kawneer, Niles, Michigan.
In every community there are buildings where civic pride must be included in your design. Structures such as large Department Stores, Hotels, Banks, Hospitals, Libraries, City Halls, and others of civic and institutional nature are often regarded as community property. Their income, patronage, profit, revenue, or other support, are often influenced by public regard . . . and the bid they make for that regard through appearance.

Kawneer products can easily be used to make that bid successful, and compliment your design skill.

Producers of architectural metals, doors and entrances, permanently colored chip- and rust-resistant Zourite aluminum facing, and aluminum sun control products, Kawneer now offers you even wider applications, easier availability.

The glazed, fired, porcelain colors of Zourite facing are pleasing to the eye. All Kawneer products are easy to specify, easy to apply, easy to clean and maintain. An occasional soap and water washing keeps a Kawneer installation sparkling clean.

You will design new or remodeled structures, of any kind, if you utilize such services as Kawneer complete architectural details, literature, Field Representatives, and Installing Dealers.

There is a factory-trained Kawneer Installing Dealer in your vicinity. Call him for qualified assistance. Look for him under “Store Fronts” in your telephone directory’s classified pages. Or write Kawneer, Niles, Michigan.
Some of America's most beautiful buildings are to be found on the campuses of her colleges and universities. Fittingly enough, many of these institutions elect to preserve the traditional beauty of their buildings with the long-lasting protection of Barrett Roofs, including the renowned Barrett Specification® Roof.

Leading architects and engineers have long specified Barrett in the knowledge that Barrett materials, specifications and application procedures result in the strongest, most durable built-up roof ever devised . . . a roof that regularly outlives its guaranty bond by many years and gives matchless service under all weather conditions. Specify Barrett — and be sure.
build a lifetime of maintenance-free beauty into WALLS

with low cost

LAMIDALL

DECORATIVE PLASTIC LAMINATE

In any building or remodeling budget you can afford to include the lasting, maintenance-free beauty and durability of Lamidall . . . for walls, wainscoting, top surfaces—and even doors! Lamidall is a genuine plastic laminate made in 1/4" thick structurally strong 4' x 8' and 4' x 12' panels—easily applied with simple tools on the job!

Lamidall matching moldings are used to achieve wall surfaces of continuous unbroken beauty. Lamidall wipes clean with a damp cloth, resists stains, heat and stands much abuse. It's the practical answer for long-lasting, maintenance-free walls and top surfaces. From the broad selection of beautiful natural wood grains, decorative colors and patterns you can select one or more to exactly suit your application.

Write for free samples and descriptive color literature.

Address Inquiries to Woodall Industries, Inc., Chicago Plant, 3500 Oakton St., Skokie, Ill., where Lamidall is produced. Other Woodall Plants: Cleveland • Detroit • Laurel, Miss. • Mineola, N. Y. • San Francisco

Lamidall is ideal for counter tops
and door surfaces

LETTERS continued

district has been stimulated by the complete banning of curb parking either for peak periods or for all day. Other large business districts more recently developed either contain large parking lots ancillary to department stores, etc., or are now building or have lately completed parking garages for the increased demand. Also in many of the smaller business districts programs for adequate off-street parking are being financed by metered curb and lot parking spaces. Your recommendation as to a better use of price mechanism has proven out here in stimulating the growth of off-street parking.

The parkway (freeway) system initiated in my office in the late thirties is now under construction, although annual progress is slow due to pay-as-you-go financing. This results in a completed parkway having traffic diverted to it never contemplated in the original planning of the system. Each of the two parkways built through the most congested areas are now carrying in excess of 100,000 cars daily. The State Legislature is presently debating measures aimed at expediting the highway program.

Increased rates granted the trucking industry for line haul through congested areas may eventuate in special facilities being constructed for trucking through the urban areas.

Sir:

I have read it with great interest and much personal gain and feel that you have produced one of the finest compendiums to ever appear regarding a very moot question. This will undoubtedly become a widely read and continuously used source of material and ideas by the thousands of people who are interested in the whole subject or particular phases which were discussed therein.

I have full praise for the pertinent detail, the awareness of the complete problem and the excellent editorial work which appeared in the organization and presentation of the story.

One opposing point of view which I hold strongly concerns one conclusion and recommended action in particular. I feel that the conclusion that cities should be given the power of condemnation to obtain parking sites is wrong in a very absolute sense. In the matter of a basic principle in our economy it has an off-color slant and in terms of an answer to needs it has little to offer. It is a slow, costly process with so many probable errors inherent in it besides being wide open to political manipulation.

(continued on p. 98)
CECO HAS ACHIEVED AN EXACTNESS IN INTERMEDIATE WINDOW DESIGN THAT MEETS THE NEED OF THE PRESENT... SETS THE PATTERN FOR THE FUTURE

It's easy to make a cheap product and it's easy to over-manufacture. But it requires ingenuity and infinite skill to create the ideal of quality and selection without compromising value or indulging extravagance.

Only CECO offers you 1¼" and 1½" intermediate windows

For years Ceo engineers have been experimenting so as to give you the "just right" window.

Today we can announce mission accomplished in the two new Ceo creations...

1¼" Intermediate Windows and 1½" Intermediate Windows.

For here are two windows that can be adapted to any building problem where intermediate design is indicated. The 1¼" window gives you weight and strength plus beauty at a sensible price. Hardware is handsome bronze lacquer finish.

The 1½" window assures greater strength and rigidity, adequate for any need, longest trouble-free service, will outlast any structure.

New beauty is reflected in rich solid bronze hardware.

In these new windows Ceo has reached deeply into the future to bring you truly balanced design plus an innovation in simplicity... an exactness you can find nowhere else.

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CECO PRE-PLANNING CONSULTATION SERVICE

Ceco Product and Design Specialists will assist you in the application of Ceo building products at the pre-planning stage... Call your nearest Ceo office for overnight consultation service.

In construction products

CECO ENGINEERING makes the big difference
300-bed St. John's Hospital in Springfield, Mo., reflects progressive techniques in architectural design. Maguolo and Quick, St. Louis, architects and engineers; Gustav Hirsch Org., Inc., Columbus, Ohio, electrical contractor.

Westinghouse Control and Power Center was fabricated at the local Westinghouse plant especially for the hospital. Control center operates ventilating motors. Power center steps down 480 volts to 120/208 volts for lighting loads.

Westinghouse Air-Cooled Power Center, 300 kva, 480/208 volts, contains 1000 ampere convertible distributon panelboard. One of nine, this compact factory-assembled unit saves valuable space and minimizes layout problems.
Electrically, it's Westinghouse... in St. John's Hospital

Where modern power is matched to modern architectural design

The new St. John's Hospital in Springfield, Missouri, reflects the most progressive techniques in architectural design. Moreover, its system for distributing electrical power is as modern as the building—assuring a high degree of service continuity.

This reliable power system was planned during the blueprint days by the architects and engineers, with Westinghouse assistance. It provides for two primary feeders with dual switching and control equipment. Further, if the incoming power supply is interrupted, an engine generator keeps essential services in operation.

Bus duct feeders distribute power throughout the hospital at 480 volts. Motors are supplied this voltage through control centers, while 120/208-volt lighting and appliance circuits are supplied by "Triplex" power centers.

Westinghouse unitized power and control centers are located in every section of the hospital. Placed near the loads they serve, these compact units save valuable space... minimize layout problems.

In every building, the design of the distribution system is a vital consideration. It must be planned early... tailored to individual requirements... matched with well-engineered equipment.

Westinghouse builds apparatus that gives you more freedom in design techniques... and backs it up with technical assistance to help select the right distribution system for your building. For complete information, call your nearest Westinghouse office and ask for the construction application engineer. Or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

YOU CAN BE SURE... IF IT'S Westinghouse
They got the most for their money today and easy expansion for tomorrow

This power center is the heart of the power system at St. John’s Hospital... and it shows sound planning by Maguolo & Quick and Westinghouse.

St. John’s wanted their electrical dollars put into working equipment, not stand-by capacity. But they also had to allow for future expansion. So they chose a Westinghouse Power Center with the ASL Air-Cooled Transformer, which is completely safe and doesn’t require a vault. Provision was made for future airblast equipment, so that as the load grows, transformer capacity can be boosted with slight increase in cost.

The end units house air circuit breakers which provide protection for the incoming line and the 480-volt power feeders which serve the hospital. Controls are so arranged that a stand-by diesel generator automatically cuts in and supplies operating rooms and other vital circuits if utility power should fail.

For complete information about Westinghouse Power Centers, ask for Booklet B-4162.

Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.
Electrically, it's Westinghouse... in St. John's Hospital

Power for the boilerhouse! Here, 600-ampere duct feeds the 300-kva sub-power center in the boilerhouse. Note how duct hugs the wall. This run is over 400 ft. long.

Tee for two! Here an 800-ampere main feeder connects with two 600-amp branch feeders. Tee is one of several standard units. Note circuit breaker cubicles for overload protection.

Bus duct minimized power loss, matched perfectly with building plans

The choice of Westinghouse Bus Duct to carry power in St. John's Hospital was highly suitable to the client, the architect and the contractor.

Of prime concern was the possible power loss in carrying 480 volts the considerable distances between the main and sub-power centers. Bus duct minimized this loss, assuring distribution economy.

Bus duct matched perfectly with building plans. Standard lengths, elbows and tees, plus specially fabricated sections, made it easy to fit the runs into the structure, around obstructions.

Installation was fast, simple. Pre-assembled in advance of the installing crew, sections bolted together easily; were swiftly mounted with sliding cantilever and "C" type hangers.

These advantages, plus reliability, reduced maintenance and flexibility to handle additional loads without expensive rewiring, make Westinghouse Bus Duct ideal for institutional, commercial and industrial buildings. For full details, see your Westinghouse Representative, or write for B-5835, Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa.

Westinghouse
Designers select control centers for substantial savings

Motor control was needed for the ventilating fans and compressors at different locations throughout St. John's Hospital. "We specified control centers because of their lower over-all cost for this job," said G. E. Quick, consulting engineer.

"We were sure," Mr. Quick reported, "that grouping controls in one location would cut installation costs up to 40% and save on maintenance in the future." Westinghouse Control Centers install easily. Factory built at a nearby Westinghouse plant, each control center was individually wired, tested and shipped to the job, ready for operation. Because the single enclosure of the Westinghouse Control Center houses all necessary starter units and wiring, it leaves the surrounding wall area free and clean.

Westinghouse Control Centers offer other advantages for greater safety and flexibility to meet any motor control problem. For further information, write for Control Center Booklet, B-5621, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

YOU CAN BE SURE... IF IT'S...
Westinghouse Panelboards provide modern, labor-saving control of lighting and appliance branch circuit power distribution . . . electrically and mechanically.

Circuit breaker panelboards cut maintenance, eliminate unnecessary power outages

The electrical nerve centers of St. John's Hospital are 89 Westinghouse Circuit Breaker Panelboards. These panels provide maximum circuit protection and minimize interruption of the services so vital in a hospital. And, with fuses eliminated, they cut maintenance time and cost.

The hearts of these panels are the famous Westinghouse De-ion® Circuit Breakers. They trip instantly on short circuits and dangerous, high overloads, but ride out temporary, harmless overloads. Unnecessary power outages are ended. Circuit breaker handles provide positive trip identification when breaker has opened automatically. When faults are cleared, a flip of the handle restores power.

On standard lighting panelboards, each circuit and the bus to which it is connected is clearly and permanently identified. Ends costly ringing out of circuits. This and other quality features of Westinghouse Panelboards can cut job installation costs.

There's a Westinghouse Panelboard to answer every circuit protection problem. Thirteen assembly plants assure prompt service and quick delivery throughout the country.

For the full story, call your Westinghouse Representative, or write for B-5260-A, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.
Hysteria has hit our cities in the sudden jump in growth of automobile ownership, but boom conditions are no strangers to the alertness and flexibility of American enterprise. Answers can and will be found, and best found by the solid front of hundreds of aggressive people in the proven parking industry, combining their energy and experience, rather than by cumbersome and wasteful political processes. Neither can provide overnight miracles, but the odds are overwhelmingly in favor of private enterprise working through normal channels to do the parking job in the quickest and best way.

Private enterprise in parking does not need government help. Any entrance of the city into the picture in any form or fashion means a definite deterrent to the forward movement of the parking business. Condemnation is one of the major forms of city participation in the business, whatever may be the ultimate handling of areas so obtained. It offers no panacea and does introduce disease in the present sturdy framework.

Three billions of dollars to date devoted to the conduct of the parking business is difficult to overlook in the matter of accomplishment, and it is quite a service structure to place in jeopardy by cities jumping into the business. These items seem to be consistently overlooked in all discussions, leading to the conclusion that it is one of those instances wherein "None is so blind as those who will not see."

We in the parking industry receive great encouragement from the fact that influential and high-rating publications such as yours do seek intensively for realist and factual data in the problem of central congestion....


Sirs:

...I was much impressed. It presents the problems and possible solutions very clearly and concisely.

GEORGE S. WELLS
Director of public relations
Chicago Association of Commerce and Industry
Chicago, Ill.

Sirs:

I read the proposals on the downtown traffic problem with great interest. Fundamentally, the arguments are good.

I believe this problem should be handled in a separate bureau or department, but I am against "authorities." We have learned too much toward supergovernment by authorities as a cure-all for evils and are just beginning to realize that authorities do not always work satisfactorily.

I. RUSSELL RIKER, borough engineer
Department of Engineering
Princeton, N. J.

(continued on p. 100)
today... more architects can specify world-famous......

Big things are happening at Ludman! With architects all over the world specifying more and more Auto-Lok Windows, Ludman has increased production again! Now in this new plant—the largest in the world manufacturing awning windows and jalousies—Ludman is in position to supply all demands!

No other window adds so much to building appearance and utility. Air-tight, draft-free—but with 100% ventilation—Auto-Lok windows with Patented Automatic Locking hardware seal and lock tight... ten times tighter than generally accepted standards. They reduce heating and air-conditioning costs—help heating and air-conditioning equipment to operate more efficiently.

For beauty... practical utility, ventilation control, easy operation, trouble-free service and long life—specify Ludman Auto-Lok Windows...

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KINNEAR
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increase efficiency in another modern building

Ward Steel Co. Pleased with Kinnear Doors

"We certainly are very pleased that Kinnear Doors were selected . . . we operate five of them, and at all times have experienced the utmost of performance."

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— And in thousands of other buildings, old and new, Kinnear Rolling Doors have proved that they give better service at lower cost. Their efficient coiling upward action and protective all-metal interlocking slat construction permit maximum use of all space around doorways — inside and outside the building — always.

Kinnear Rolling Doors open and close with smooth, time-saving ease year after year. They assure extra protection against wind, weather, intrusion, and fire. Available for manual or motor operation. Electrically operated doors can be equipped with control switches at any desired number of locations. Kinnear Steel Rolling Doors are built in any size, for easy installation in old or new buildings. Write for full details today.

The KINNEAR Mfg. Co.

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When guests stop at The Homestead they have everything!
Old Dominion beauty and romantic atmosphere, plus the world's most modern luxury—Lees Carpets underfoot!
Shown is Hot Springs, a 3-frame Wilton looped-pile carpet in a geometric pattern, just one of many fine Contract Carpets by Lees. Lees Contract Carpets are specially constructed to withstand wear and steady traffic. They come in a wide range of colors, patterns and textures, also custom designs for special interiors. Send for specific information from James Lees and Sons Company, Contract Carpet Division, Bridgeport, Penna., or offices in principal cities.

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Lees Carpets

The Homestead, Hot Springs, Virginia, where Lees Contract Carpets were chosen to add that final touch of comfort and luxury.
The thinking and experience that produced these special purpose doors

Peelle-Esavian Door - BRISTOL AEROPLANE ASSEMBLY PLANT - Filton, England

The front of this huge, three-bay hangar presents a continuous opening of 1045' in width and 65' 9" in height. To close this opening it was necessary to build one of the largest doors in the world, consisting of 3 pairs of sliding-folding aluminum-covered sections. Motive power is housed in the power mullions at each leading edge of the door structure.

The Peelle-Esavian Door is based on an entirely new principle which eliminates the necessity for expensive structural features in the building. The entire weight of the door is carried on the bottom track and the motivating power is on the door. This door offers many unique advantages, particularly for large openings of unusual height.

Write for new Peelle-Esavian Brochure.

Jet Engine Test Cell Door - PRATT & WHITNEY AIRCRAFT, East Hartford, Conn

To contain and deaden the roar of jet engines on test, Pratt & Whitney Aircraft had The Peelle Company design and build ten of these huge concrete and steel doors for its new jet engine test cell block. Big enough to admit the most powerful engines of today and the even bigger ones to come, these doors had to be built as thick as the walls of the cells themselves to control the enormous volume of sound produced by the engine while running. Constructed in place, these dense concrete doors weigh 45 tons each, yet their electric motor drive travels them horizontally at the rate of 10 feet per minute quite easily. And, from outside the closed door, only a moderate hum can be heard of the earth-shaking roar of the jet engine running inside.

Motorized Door Measuring 24' x 35' - SEWAREN GENERATING STATION

This towering stainless steel and glass door was engineered and built by The Peelle Company to carry out the architectural treatment of the building and to satisfy the engineering requirements. Three vertical sliding panels in the door are counter-weighted and are operated by a triple parallel gear head reducing unit with brake. Door panels move at varying speeds to arrive simultaneously at open position.

This is one of many types of motorized doors and partitions designed and built by The Peelle Company for factories, power stations, warehouses, terminals, hangars, mills, garages, hospitals and schools. Peelle Engineered Doors merit consideration in your plans.
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OFFICES IN PRINCIPAL CITIES

Manufacturers of the Peelle Motorstair
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Save dollars and copper with higher voltage. Have safety and convenience with G-E remote control switching.

A new amendment to the National Electrical Code extends the use of 480Y/277-volt distribution to include supplying ballasts of fluorescent fixtures in large schools, office buildings, stores. This means that the economies of higher voltage for lighting are no longer limited to industrial uses.

For example
In many larger buildings, power at 480 volts, 3-phase, is already used to operate heating and air conditioning systems and other heavy-duty electrical equipment. In a “Y” connected system, the phase to neutral voltage is 277 volts which can be used efficiently with standard fluorescent lighting fixtures. Original installation costs for a 480Y/277-volt lighting system can be as much as 40% less than a comparable 120-volt system—copper needs can be cut up to 50%.

G-E Remote Control for Switching
The G-E remote-control, low-voltage wiring system eliminates the higher voltage at the wall switch. The remote-control switch requires only 24 volts. The switch actuates a relay which can be installed in any convenient location. The relay does the actual ON-OFF switching of the higher voltage.

Investigate 480Y/277-volt distribution

An Extra Feature of G-E remote-control wiring is that you can have master selector switches to control nine circuits from one switch.

Small, Lightweight Control Wire connects switches to relays. The small wire saves copper—and switches are less costly to move.

Remote-Control Relay operates on 24 volts—does the actual switching of the higher voltage. Rated 10 amps at 277 volts. U. L. approved.
With this new Y-shaped office building for UNESCO, horizontal Paris gets its first modern

HORIZONTAL MONUMENT

If at first glance this new scheme for UNESCO’s Paris headquarters looks familiar, it is because it uses an architectural language that is now as well established as any period of the past.

But do not jump to the conclusion that this is only a cliché-building simply because it employs spread-leg stilts, sunshades, glass walls, horizontal lines and a formalistic-looking building shape.

The stilts as used here are the precisely right device for filtering a monumental piazza through and around the building. The sunshades are pure artistry because of the way they express subtly varying character and rhythm of the different facades. The apparently formalistic three-prong building shape makes supreme good sense.

In addition to this graceful mastery of a style, the project has other important things to say: • It uses horizontal space instead of height to create a contemporary monumental building and thus is figuratively a landmark for all horizontal, monument-conscious cities—Washington for instance. • It is an up-to-the minute building that respects its venerable neighbors and actually joins hands with them (p. 106). • It contributes a corridor innovation that all office-building planners will have to study (p. 108). • It is probably the first modern government building designed to meet the lobbying realities of political policy-making processes (p. 109). • Visually and functionally its facade makes the most of round-the-compass orientation (p. 111). • It glories in daring and poetic concrete engineering (p. 112).

UNESCO's third try produced this Y-shaped secretariat and fluted delegates' building on a monumental piazza. For details of the two ill-fated earlier efforts see overleaf (also AF, Aug. '52, Oct. '52 and Nov. '52).
Troubled design history of UNESCO (United Nations Educational, Scientific and Cultural Organization): The French government first-donated site on semicircular Place de Fontenoy for which French Architect Eugene Beaudouin designed semicircular building shown below, Scheme 1. It was rejected on grounds that baroque site made impossible architectural demands. Scheme 2 by Breuer, Zehrfuss and Nervi (bottom) for a second site—long and narrow, fronting on Bois de Boulogne (see map)—was abandoned when French government withdrew its offer of this site to accompaniment of protests against a skyscraper for Paris. Final scheme, presented here, is for original site. It is thus possible to compare two schemes (by different designers) for same site and two schemes (by the same designers) for different sites!

Here is a building that fits its site without being warped to it. The first part of this remarkable fact about the new UNESCO scheme is obvious from a glance at the air photo. The designers filled out a preconceived seventeenth-century baroque composition—to the apparent satisfaction of a most pernickity city—without compromise of their contemporary esthetic.

The problem, as Zehrfuss puts it, was "to respect the past but turn toward the future." The designers did just this.

The north curve of the Y makes the graceful bow to the past by completing the semicircle of the Place de Fontenoy and balancing the mass of blocky twentieth-century ministry buildings enclosing the opposite arc. The "front yard"—the monumental southwest piazza—faces an obsolete section of Paris ripe for large-scale replanning, "a district of the future."

Now, it happens that every solution previously suggested for this difficult site was improvised in some way, from Beaudouin's Beaux-Arts-haunted scheme (see model, left) to Saarinen's suggestion that the Place de Fontenoy be given a curved screen with rectangular building forms behind it. It is only natural to suppose that this curved Y, so neatly solving the plan problem, was dictated by the site and carries at least a secret compromise.

But the most remarkable fact is that this solution represents no compromise, no sleight of hand of any kind. The curved Y would be an extraordinarily functional and appropriate building no matter what the site.

Here, in particularly striking form, is that perennial achievement of masterly architecture: function and esthetic not yielding to each other, nor even merely at peace with each other, but actually each abetting and lifting the other.

There is always some element of mystery in this art—even for the creators of it—but it may be instructive to know that in this case the designers did not begin by fitting functionally abstract, esthetically specific forms to the site. They began by hunting for practical solutions for a specific building. To learn why the designers first developed this Y, turn the page.
Air view with model superimposed shows how slightly asymmetrical curve of Y-shaped secretariat completes semicircle of Place de Fontenoy. Compare this solution with Baudouin's first UNESCO scheme for same site (model on opposite page). Diagram to left of air view shows relation of site to Great Axis of Paris. Eight-story height matches adjacent buildings.

Site plan faces secretariat, conference building and grand piazza away from seventeenth-century Place de Fontenoy, toward run-down Suffren-Grenelle district.

Main facade: Stilts stand in mosaic-floored pool with garage beneath. At far left is Place de Fontenoy; at right, main piazza.
Here is a Y with the continuity of an O. For the curved Y-shaped secretariat is one continuously flowing building; it can be diagrammatically shown as a punched-in circle. This is a new and important piece of office-building planning because it means office space is not interrupted at the juncture of wings—as opposed to the usual Y or X plans which are essentially separate wings buttoned together at a core.

Anyone who has ever struggled with space allocation for a highly departmentalized organization and has cursed the constipation at wing intersections will appreciate what this means in flexibility of office space.

This flexibility and continuity was precisely the designers' purpose. When they knew they could go no higher than eight stories they also knew a wing plan of some sort was inevitable. On the common-sense assumption that they must first of all learn what kind of building they would like to put on their site, they concentrated on continuous-wing plans. And when they had solved this, they found they had also solved—“almost fortuitously” says Breuer—the site problem too.

Their second big planning innovation is an essay in realistic political architecture

On paper the three divisions of UNESCO (corresponding to the three divisions of UN in New York) are: 1) secretariat, 2) conference facilities, 3) assembly. New York’s UN faithfully translates this into a distinct three-part physical plant; so did the first Breuer-Zehrfuss-Nervi scheme for UNESCO.

But the new scheme differs radically in this way: it links the secretariat lobby, the delegates’ lounge and the executive offices so they make a new, a fourth element that flows from one main building into the other with bar and patio at its hub.

This new element is a common, day-in, day-out meeting ground for secretariat staff with delegates and guests (not called for in the program and unprovided for at the UN).

Here is architectural recognition that ideas, policy and coordination are personal and do not grow in out- and in-boxes. Here is a deliberate attempt to counteract the isolation of persons and functions logically separated on organization charts. Here in physical embodiment is a reality of government we all know under the name of a “cloakroom powwow” and “lobby.”

Says Breuer: “This common, informal element is the functional heart of the whole organization.”
Delegates' hall has flared roof structurally continuous with supporting end wall. Span is 135'.

Structural details of delegates' hall roof, below, show how triangular concrete space frame members are braced and completed by slab which forms bottom chord over supports and rises gradually to form top chord at center of span. Drawing at lower right shows structure of supporting end walls. Side walls are nonsupporting; their perforated surfaces serve both as acoustical treatment and lighting pattern.
Charles E. Slusser, realtor-mayor of Akron, to head public housing

The same day (April 7) that Guy Hollyday's nomination as FHA commissioner went to the Senate, HHP Administrator Albert M. Cole had an hour-long powwow with the realtor-mayor of Akron, O., Charles E. (for Edward) Slusser. When Cole refused to let photographers snap them together, did not take Washington long to suspect that Slusser was in line for the other big housing appointment.

This month, President Eisenhower nominated Republican Slusser to succeed Democrat John Taylor Egan as public housing commissioner. Although Slusser heads his own insurance and real estate firm (Charles E. Slusser Agency, Inc.), which is a member of the Akron real estate board which has waged a stiff fight against public housing, he kept himself aloof from Akron's referendum last year in which public housing suffered a surprising defeat (H&H. June '52, News). On the day of his nomination (June 8), he told Forum he believes private industry wherever possible should provide housing. But he added that since high construction costs make it impossible for low income groups to build homes, the government must provide low-rent housing for them. Except for that utterance, Slusser's only other public record on public housing, contrasted with Wagner-Taft-Ellender bill which did set same time reducing the city's share of the tax rate."

Support by all ranks. Despite a long personal friendship with Sen. Robert Taft (he was a Taft delegate to the 1945 GOP convention), Bob Slusser has had quiet support from the CIO. Despite his apparent belief in public housing, Slusser will come to Washington with the backing of the man who led Akron's fight against it, Realtor Clinton R. Miller. Said Miller this month: "We in the building business wholeheartedly endorse Charles E. Slusser to head PHA. He is a businessman who understands our problems. He is a man of ability and integrity who will do an outstanding job."

As PHA chief, Slusser still plans to keep one foot in Akron where he and Mrs. Slusser have lived for years on middle-class Kenmore Hill. "I'll get an apartment in Washington and come every Friday night for the week end," he said. He hopes to spend "a lot of time" this summer on Lake Erie in his 38½' cabin cruiser, which has

* At MIT's Bemis Foundation conference on economic development and housing abroad, Cole last month remarked: "The object of public housing should be quantitative construction at minimum costs. I do not believe that we have had that in the past . . . My criticisms of the past have been based on the contention that public housing has not been meeting the legitimate needs of low-income families. Naturally, I would expect to try to change that."
East facade displays wider end wall of conference building

Aug. 6 10 a.m.
Dec. 22 10 a.m.

Aug. 6 2 p.m.
Dec. 22 2 p.m.

Aug. 6 2 p.m.
Dec. 22 2 p.m.

Southwest facade viewed from main pedestrian approach through plaza

Typical office layout
Cantilevered beams in secretariat are balanced by the center spans. Positive bending moments at center are nearly equal to negative moments over supports. Undulating floor slab collaborates with beams, gives minimum floor construction thickness and weight. Supports are 20' apart and always 10' behind facades. Slab undulations form office ceilings.

**Structural design** of the secretariat is shown in drawings on this page. Structural design of the conference building and delegates' hall (right) attains Nervi's lofty goal: to demonstrate "the potentialities of pure construction, clear planning and the poetry inherent in the lines of a man-made crystalline structure."

His creation is both absolutely honest and undeniably poetic—an exquisitely refined fusion of the straightforward and the subtle. His butterfly roof first divides the building into two great spans—90' for the conference facilities, 135' for the delegates' hall—with both halves framed in reinforced concrete corrugations resting only on similarly corrugated end walls and a single row of interior supports. Over the long span the slab traces the undulating bending moment. The exterior corrugations, subtly widening or narrowing as they deepen, will be sheathed with green copper on the roof, with gray and brown stone mosaic on the end walls. The tilt of the walls, the geometry of the ceiling, are acoustically excellent.

There is a sad irony somewhere in this daring and poetic engineering: the workmanship is possible only in a land of low-cost labor; its rationale is rational only in a land of scarce materials. In American terms these conditions are Europe's failure; but has prosperity ever spoken more affirmatively, more proudly, more imaginatively than this?

Cross-section shows undulating slab construction with hung ceiling for conduit runs over corridors. Longitudinal section of a typical bay is at left. Ground-floor columns are rectangular at top, elliptic at bottom.
Delegates' hall has fluted roof structurally continuous with supporting end wall. Span is 135'.

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In politics, Slusser began quietly. He was elected a city councilman in 1935. Instead of seeking re-election, he ran for the board of education in 1938, served six years. In 1943, he upset the Democratic incumbent by a surprising 10,000 votes, becoming at 46 the youngest mayor of Akron in 25 years. As he had promised in the campaign, Slusser went after gambling and prostitution. The city has been far cleaner ever since. But Slusser is prouder of another achievement: "expanding and modernizing our city facilities while at the same time reducing the city's share of the tax rate."

Support by all ranks. Despite a long personal friendship with Sen. Robert Taft (he was a Taft delegate to the 1948 GOP convention), Bob Slusser has had quiet support from the CIO. Despite his apparent belief in public housing, Slusser will come to Washington with the backing of the man who led Akron's fight against it, Realtor Clinton R. Miller. Said Miller this month: "We in the building business wholeheartedly endorse Charles E. Slusser to head PHA. He is a businessman who understands our problems. He is a man of ability and integrity who will do an outstanding job."

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supplanted golf as his hobby. The Slussers have four children: Richard, 31; Donald, 29; Mrs. Donald F. Tenney, 33; and Nancy Lynne, 11; and five grandchildren.

As expected, the Senate last month voted to permit 35,000 federal public housing starts in the next fiscal year. The House having voted to permit no starts at all, the future of public housing again was up to a conference committee. The committee would meet about the same time Rep. Clare Hoffman's committee on government operations was expected to issue a blast at PHA for continuing to spend federal funds for public housing in Los Angeles after voters there balloted to stop it (see col. 2). Washington observers suspected the stage was set to halt public housing in conference.

PHA's sixth major sale of long-term tax-exempt bonds last month produced the highest interest rates yet: an average of 2.82%. Rates on the previous issues: July '51, 2.073%; October '51, 2.051%; January '52, 1.95%; September '52, 2.544%; January '53, 2.396%.

Los Angeles ousts mayor who supported public housing

As returns in the primary foreshadowed, (AF April '53, News), Mayor Fletcher Bowron of Los Angeles was finally beaten for re-election after a record 15 years in office. His successor: Oregon-born GOP Rep. Norris Poulson, a 57-year-old accountant who entered California politics in 1938 as a state legislator and is now serving his fourth term in Congress. The chief campaign issue: public housing, which Bowron continued to support after his previous supporters turned against him. He: "It was all over public housing... because I took a positive stand—having entered into this [public housing] contract with our eyes open we had to fulfill it..."

Back of the whole thing was the campaign that started over a year ago against what were termed 'socialistic housing.' The same group that financed and conducted that campaign led the campaign against me. Los Angeles was selected as a battleground. They thought if they could cause a switch here it would start a trend across the country [against public housing]. They thought their chances here were best."

The vote: Poulson 287,619; Bowron 252,721. Winner Poulson promptly announced he will ask the five members of the city housing commission to resign when he takes office July 1. Then he flew to Washington, conferred with HHFA Administrator Cole to seek a way to halt Los Angeles' $110 million project.

Stormy public housing hearing probes Hatch Act violations

A week before the Los Angeles mayoralty election, Rep. Clare Hoffman's House committee on government operations staged a four day hearing in Los Angeles. The subject: public housing. Said crusty Chairman Hoffman smoothly: "This committee is not going to delve in any form or fashion into local politics." Democratic committee members, however, felt differently, boycotted the hearing on the ground that Hoffman was doing just that.

In the surcharged atmosphere of Los Angeles politics, the televised hearing produced more angry charges and refusals to answer (on self-incrimination grounds) than it did light on the subject under investigation. It ended with Mayor Fletcher Bowron, who appeared as a voluntary witness, stumping angrily from the witness stand to tell a luncheon club: "I was never insulted before like I was this morning." Between outbursts, the committee developed some evidence of how the Los Angeles Housing Authority worked:

Although free PHA legal services were available, Authority Director Howard Holtzendorff spent $457,000 in four years for private lawyers, including $10,000 for one who admitted he served as a lobbyist for three months at the state legislature.

Of 531 housing authority employees, 489 were induced to authorize payroll deductions to raise funds to fight a state constitutional amendment in 1950 which provided no new housing projects could start without a vote of the people. (It passed). Although Hoffman and Committee Counsel John McKenna questioned whether such contributions violate the Hatch Act ban on political activity Holtzendorff contended the act specifically exempts campaigns for constitutional amendments, referendums and municipal ordinances.

Although, according to testimony by Los Angeles' police chief, information was placed in Holtzendorff's hands 16 months ago that at least three of his employees were Communist suspects, they were not fired until seven months later when the California Senate committee on unAmerican activities publicized the data.

At an official meeting of housing officials in 1950, according to testimony by HHFA Economist James W. McCreary, Holtzendorff urged his fellow workers to avoid building single houses and concentrate on "extravagant and expensive projects" because "then it will be impossible to liquidate our program."

Prudential starts building Florida's tallest office

On May 16, Prudential Insurance Co. broke ground for its new south-central regional headquarters, a 22-story skyscraper at Jacksonville that will be the tallest office (300') in Florida. The 400,000 sq. ft., air-conditioned building, designed by Architects Kemp, Bunch & Jackson of Jacksonville, will take up only 1½ acres of Prudential's 19 acre site along the south bank of the St. Johns River. Six acres will be kept for a 750 car parking lot and the balance will be landscaped into walks, a riverfront promenade and recreation center. The tower and its two wings will have a riveted steel frame, limestone facing and aluminum windows, set off by white marble spandrels. An escalator will rise to the third floor.

While published reports have put the probable cost at $20 million, Prudential officials say they do not yet know because the prime contract has not been let. When the building is finished, probably about October 1954, it will house some 1,800 employees serving ten southern states.
NEW THINKING ON COLLEGE BUILDING

From 17 colleges and universities, 30 pages of the latest in

THE COLLEGE AS CLIENT

by Harold Taylor, president of Sarah Lawrence College

For the architect, the college is a multiple client. Everyone has views about architecture and about education, and when the two are put together, the massed opinions of trustees, college officials, faculty members, donors, students, newspaper editors, art critics and friends of the college converge on the architect and command attention. To accept a commission from a college is often like joining a discussion group in which someone unfamiliar with the subject matter has already been appointed chairman. In this situation, it is up to the architect to listen, to understand and to educate.

In architecture, as in education, most colleges have looked to the European past for guidance and direction. On the other hand, there are educators who, like Thomas Jefferson, have looked to contemporary ideas for help in planning buildings for the lives of students and teachers together. The architectural style has varied with the region, the character of the education, the needs of the college and community, and the cultural attitudes of the educators. There are still other colleges where no particular philosophy of education or of architecture has been at work, and where a heterogeneous collection of housing arrangements has accumulated from year to year.

The college must choose its architect in the same way it chooses its deans or faculty members—with a view to carrying out an educational ideal. If dormitories are built, should they be separated entirely, both in site and in allocation of space, from the classrooms, seminar rooms, faculty offices, and administrative services? If they are, they do in fact separate the social and personal lives of the students from the teaching and the learning of the campus community. Should an administrative building be separate from classrooms and conference rooms? Should music, theater, dance, the visual arts and recreation be housed in separate places? (The separation becomes real in the experience of the students.) Should a college theater be built for producing plays for the spectators or should it be built for experiments in teaching and creating music, theater, dance and opera? These are questions which can only be answered by a decision made on grounds of educational principle. Under every decision of function and fitness must run a continuing and deep concern for the quality of the life which the buildings will make possible.

There is something more. Very often educators forget that most of their students have had no chance to experience new ideas in the arts, or to recognize esthetic values in their everyday surroundings. They have read, and they have traveled, but seldom have the students lived, or spent very much time in situations which have roused esthetic emotion. As far as the college environment is concerned, this is one part of the education of college students for which the architect and the college are mutually responsible—the former to make a work of art, the latter to encourage the architect to do so.

To find satisfactory solutions, the architect, whoever he may be, must absorb the experiences of life on the campus, must catch the flavor of the college, watch the students and teachers at work together, visit classes, analyze the nature of campus activities, talk with the students and faculty about what they want and need, and then investigate on paper the various ways in which these needs may be met. He must do so as one member of a group in the college community, a member who is respected as an artist and an educational planner in his own right. By his questions and by his proposals, he sharpens the focus of his educational colleagues on the problem of education itself. Without losing his own esthetic integrity he must yield to legitimate demands for change in design, and on his part, must become sufficiently aware of educational problems to know when such demands are legitimate.

Harvard (built in 1880)

Yesterday’s pomp is giving way to . . .
over-all planning, special purpose buildings, remodeling and dormitories

in enrollment—now two million and headed up

AN EDUCATION IN FACTS AND FIGURES

Colleges have to work their way too

Fifty years ago, in 1903, a new Ford cost $850, and the total expenses for a year's attendance at a top US college came to about the same sum. Today a Ford costs about $1,900 without extras, and so does a year at a top college—without a convertible or coonskin coat.

The half-century has brought mass production to the colleges as well as to the automobile industry—the college population has risen from 108,000 in 1903 to 2,148,000 this commencement month. The advantages of mass production, however, have not helped the colleges hold their own in buildings. Reason: the dollar also has been mass produced—and devalued.

Forty years ago Harvard could build luxurious dormitory suites with private bedrooms and studies, nearly 300 sq. ft. of space for each student plus gargoyles on the roof, for a little over $3,000 each. Today 90 sq. ft. of dormitory room costs about $5,000 per student. So the gargoyles have been lopped off, and the rent has been raised.

It is estimated by American School and University, the annual yearbook published this month, that since 1949 US colleges have added 4,902 buildings to their total physical plant (worth $2,325,000,000); last year 865 were built ($840 million worth). But even so the colleges have not yet caught up with the post World War II surge in enrollments, and there is not much time for them to gather themselves before another big wave breaks.

Students

There was a general opinion post World War II that as soon as the income from G.I. assisted students ran out the boom would be over, but like the prognosis on many another US boom, this now seems unreal (see chart). The peak year for veterans in college was 1947, when they made up 1,122,000 out of a total enrollment of 2,338,000, but the total enrollment for 1954 is expected to reach that level naturally without much military assistance. And then, just a few years off, is the generation now in grade school, the biggest this country has ever had. Estimates for the increase in college enrollment in the next decade range from 60% to 100%.

Dollars

The question where the money is coming from to finance even the most economical of college construction is a tough one. Already this money ques-
tion has changed the complexion of education in the US. Twenty years ago most college students were attending privately endowed colleges; today two-thirds are at state-supported institutions.

The state schools like the University of Michigan and the University of California are already several times as rich as even the colossus of private education, Harvard, and the process is continuing. In 1930 the plant expenditures by private colleges were 59.2% of the total; public colleges spent 40.8%. By 1950 this had more than reversed, with 66.8% of the outlay made by public colleges and only 33.8% made by the private colleges. (The total investment in 1930 was $125 million. Last year it was $479 million.)

Dormitories or student unions are the only college buildings that can be financed conventionally; their prospective incomes can be applied against loans or bond issues, and amortizing stability can be obtained. But even with dormitories, it has become necessary for some colleges to mortgage both old and new dormitories to get loans to build the new ones. Other college buildings must be built by grant or gift.

Endowments are up in the private colleges, where fund-raising organizations have made a major industry of soliciting alumni, but they are not up as high as the school building cost index, which has doubled since 1939. A federal inducement for corporations, which allows donations to education up to 5% of income before determination of taxes, will help, but on the other hand, Washington's generally tighter money policy is not going to make it easier for most universities to finance their construction. Another gloomy suspicion by educators: even federal assistance to state universities under the land grant program may be cut.

But the graphs are climbing, and since the graphs in this case indicate potential students, these are the greatest reality of all. The growth of the educational plant of the US has always been at an impossible rate, in practical terms, and it will probably continue. For at least the next decade, somehow, surely, the colleges will be big builders. And the demand for economy and simplicity will go up with the graphs.

### COLLEGE AND UNIVERSITY BUILDINGS BUILT 1951-52

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<td><strong>All types</strong></td>
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courtesy of The American School and University

Old campus is on this side of Huron River on map above; new campus is top block (cross-hatched) beyond river. Pattern of seemingly random growth through city is typical of most universities, which create towns, then compete with them for land.

New campus, in model form. An earlier scheme, this grouping of buildings has since been altered, but still shows the aim: a pliable pattern which will stand bending over the years, and will avoid the hazardous growth shown above.
of Michigan, an answer to expansion:

don't extend the old campus; add another one

A bold new solution for expanding the cramped college campuses of the US is coming out of the Midwest, where the University of Michigan, already one of the biggest of all universities, has decided to stop nibbling slowly at its college-town borders, and instead build a suburb.

Across the Huron River from its present 17,000-student campus in Ann Arbor, the university has bought and is laying out another complete campus in a college planning parallel to the merchandising world's retreat from "downtown" to suburban shopping centers. Students will live on this campus; only the faculty will commute. Here are Michigan's reasons for the move, as spoken by the university's staff supervising architect, Lynn W. Fry:

"At the end of World War II the University of Michigan had grown from its original 40 acres to a point where it was practically bisecting the town. And in the immediate postwar building program all of the university-owned property had been used so the university was facing a prospect of purchasing new property for any other expansion.

"At that point the regents at our university—in anticipation of a prospective enrollment of 25,000 students or more in the 1960's—knew that it would not be economical to purchase the required land in Ann Arbor at the prevailing prices. And there were other problems which any university faces:

- The taking of residential property from the tax rolls;
- The overloading of public utilities;
- The increasing of parking problems within the city;
- The incurring of the animosity of residents in taking over their homes.

"So instead of pushing out from inside the campus the regents went across the Huron River to purchase a plot of rolling ground out in the country. The original purchase included about 230
Rough terrain, above, is tamed but not terrified in campus development plan. From flat area in center of valley, a system of interlocking courts will be built, terraced at slightly different levels. Ridges to east and west inclose site.

Typical court is shown in early sketch (below). Saarinen & Associates are architects for over-all plan, but not for all buildings.

acres, but this has already been increased to 376 acres.

"Then in May 1951, Eero Saarinen & Associates were selected to study the program and prepare development sketches for this new campus. An attempt was made to foresee the requirements over a period of the next 100 years, and yet make the plan so flexible that it could be reviewed and minor changes made without harming the over-all development."

"Campuses should grow like babies . . . . ."

Saarinen obviously is not out to create one majestic quadrangle to be edged gradually with buildings over the years. Instead his idea is to string a necklace of smaller courts to be developed as needed.

The new campus is on good land, well bounded. A fairly steep valley (see topo map, left), it is inclosed to the east and west by ridges, which make the new land an entity and shield it from future development at the sides. Other protective boundaries include the river, a golf course and a cemetery. This will be primarily a graduate school with a large proportion of its area dedicated to research. Eventual enrollment is planned to be about 12,000.

The land's steepness may make building somewhat more difficult than a tennis-court campus would, but it will also have advantages: it will be beautiful; various sections may fit the land well—i.e., an amphitheater seating 2,000 is planned for a conveniently sloping glade; noisy testing buildings can be partially land-insulated. Heights may be used to define areas (research, administration, dormitories, housing for the marrieds, etc.).

Michigan forum

In the middle of the valley is a flat area of about 25 acres. It is Saarinen's plan to make this the center of the operating campus, a "business district" of common use to all the students, including the library and student union building. This center he compares with the forum of ancient Rome—built in the valley among the hills.
Also on this plane will be the engineering group which will grow on to the north. The shop area (see map) will be there, and the research group will start at the end of the central area, also the school of music, the school of drama and television and the school of architecture. Since the auditoriums of the music and drama schools will get a good deal of public use, it is logical to site them near the main campus entrance from Ann Arbor.

A sequence of spaces
The buildings housing architecture, music, and drama form the large informal entrance court, with a road threading through them. The next court is more formal, a square surrounded by the library, the union and some of the engineering buildings—a smaller court with fewer trees. Then comes a long, narrow quad, leading to a memorial court which may be developed as a pool with fountains. Some of these interlocking courts will be sunken, some elevated.

Says Saarinen about the necklace plan: "This type of plan has many merits over other types. Certain master plans for colleges have been made along great axial schemes. They do not work out very well when you add the dimension of time. The building on one side of an axis is built now; 20 years later a symmetrically placed building is built when the building program may have changed completely. Usually at that time the plan falls apart. This master plan is simply an indication of a beginning. The program will change and the plan will have to readjust to the new program. In other words, a master plan should be a continous process, not an ironclad design. It should grow like a baby, in all directions, outward. A master plan also has to build well. The buildings which come next should be fairly closely related physically in order to eliminate the first great costs of sewers, roads and maintenance."

Two other major features of this contemporary campus plan:

Parking. At the present university campus every fourth person (including students and faculty) has a driving permit, and the percentage is in a steady climb. So Saarinen assumed a safe 30% parking ratio as minimum and actually stretched it to 40% on the plan.

Building height. Since it is a country campus and since the break of classes means a mass move at the end of each hour, elevators were out of the question. There will be a general three-story height limitation on all structures except faculty office buildings, etc.

On the hilly campus all road grades will be held to 4%, except where there are duplicate road-routes from point to point. There is a good hard-headed reason for this: in winter Michigan is icy, and it is dangerous to put steeper grades in front of fire trucks.

AT YALE: a design gallery with a roof of intricate strength
LOUIS KAHN and DOUGLAS ORR, architects
A new structural principle, concrete tetrahedra, breeds a new design. (See also AF, Nov. '52.)

AT HOLY NAME COLLEGE, Birmingham, Mich:
simple massing
S. PILAFIAN, architect
Glass block builds a private exterior, but a well-lighted interior.

AT UNIVERSITY OF ARKANSAS a fraternity house
ED STONE, architect
The most famous Arkansas traveler in architecture secludes fraternity life behind a pierced brick wall.
AT GEORGIA INSTITUTE OF TECHNOLOGY: a new architecture school

BUSH-BROWN, GAILEY & HEFFERNAN, architects

Georgia Tech came to a decision unique in the wistful annals of architectural teaching. The people who knew best what they wanted, the faculty, were commissioned to design the new $1 million architecture building. Latest report: satisfied clients.

AT MARYSVILLE COLLEGE: a chapel and theater

SCHWEIKHER & ELTING, architects

Simple geometric plane, plus a rippling section of shell roof will mark a new approach not only for this college, but for the architects as well.

AT UNIVERSITY OF OKLAHOMA: new home economics building

WILLIAM BURGETT, architect

To combat Oklahoma glare, deep shaded windows
At Harvard, special purpose:

SHEPLEY, BULFINCH, RICHARDSON & ABBOTT, architects
GEORGE A. FULLER CO., general contractors
BOLT, BERANEK & NEWMAN, acoustical engineers
THOMPSON ENGINEERING CO., electrical engineers
LEO J. CROWLEY, heating and ventilating engineer
LEROY M. HERSUM, structural engineer

First-floor lobby has bluestone flooring. Concrete and steel stairway is handsome piece of straight structure.
a scientific building to teach science

The typical college science lecturer is a standard comic character. As the class sprawls dozing in the rear rows or sits watching apprehensively up front, he putters around a battered lab table setting up experiments and illustrations, erasing one patch of hieroglyphed blackboard to add another new mystery—in general acting the baffled servant of forces he cannot really explain.

Not at Harvard. In the new Allston Burr lecture rooms no student sits more than 12 rows away from the lecturer, and the pit is as deep and magnetic as that of an operating room. There is a minimum of soporific setup work for students to watch; instead this is done in special preparation rooms where experiments can be set up before class and wheeled in over a concrete runway when the class is ready. A full curtain falls across the preparation room behind the lecturer so assistants can change the scene invisibly while he is lecturing. All the lecturer’s controls are at his hand in a convenient instrument panel: lights, a.c. and d.c. current, distilled and tap water, compressed air and other gases, moving blackboards and movies or slide projectors.

Says Joseph P. Richardson of Boston Architects’ Shepley, Bulfinch, Richardson & Abbott about the lecture hall: “The new general-education courses, compulsory for all students, require dramatic presentation of principles of science, illustrated by spectacular experiments on the laboratory table, moving pictures, diagrams and projections on screens and walls. The shifting from one type of presentation to another has to be instantaneous, and this
Trim detailing is typified in photos and drawing of brick edging.

A well-cut suit for a bulky frame

Exterior of the newest lecture hall in Harvard Yard (Allston Burr faces the northeast corner of the Yard) is an unpretentious, dignified work, recognizably in the spare, honest mood of the new Boston architecture. Neat brick walls (of permachrome vitri granite face brick) enclose carefully studied interior shapes and reveal them with strict integrity. But the facades are handsome in themselves.

Honors

This building already has won honors for Harvard and Shepley, Bulfinch, Richardson & Abbott: last month the Boston Society of Architects awarded it the Parker Medal, a prize given each year if there is a new building the society considers "the most beautiful piece of architecture, building, monument or structure within the limits of the city of Boston or of the Metropolitan Parks district." Allston Burr Hall was so considered.

Construction cost: $800,204, or $32.38 per sq. ft.

MORE HARVARD: a flexible laboratory building to meet the changing needs of science

This order from Harvard was for a building for scientific research of about 53,000 sq. ft. gross, the exact use of which was not yet determined.

Within the tentative program the architects went ahead and designed this neat, noncommittal structure. Three floors were included, with provision for two more. Entrances, stairs, elevators and service rooms are gathered at one end, the north, leaving unbroken laboratory space of 9,100 sq. ft. net on each floor. Column spacing of the steel frame is 24' o.c. lengthwise and 20' o.c. across.

The building is 64' wide and 230' long, with provision for service shafts every 12' (compressed air, electricity, water, gas)—a scheme which will allow eminent flexibility is subdividing lab space. Floor loading is 150 psf except on the west bay of the first floor, where it is 1,000 psf for possible heavy machinery. (Two bays of this area can also be heightened by removal of second-floor joists.) So this building is ready for almost anything in its line.

Redwood grids frame long east and west sides, with clear plate glass in all squares. Spandrels are backed by 1/4" cement composition panels, 3" behind glass, painted blue. Above on each floor are steel projected sash, then more fixed glass. Architects estimate this wall treatment saved $50,000 over the least costly treatment of continuous steel sash with red brick spandrels.

West side has some double glazing, ventilated at top, with Venetian blinds in the cavity. Eventually this will be installed throughout building.

Construction cost: $858,050, or $16.13 per sq. ft.
Two-story room has high door and removable intermediate floor to permit varying uses.

Redwood grids, 4' x 4', frame east, west walls. On each floor, top square is fixed glass, middle square steel sash bottom blanked.

Face brick is water-struck, backed by tile, a pipe space, then cinder block.
At Miami University, remodeling:
clean new clothes for a stiff old frame—contemporary architecture is hung
on an archaic structural skeleton, saving $200,000

Remodeling is a common problem in antiquated college plants, and the lavish eccentricity of original
designers makes trouble for many a contemporary architect when he approaches the task. An enormous
example: the University of Miami's original building was begun with Spanish grandeur (sketch, left)
during the boom of the twenties when the Florida coast was selling for $100 a wet foot. It was de­
dsigned deliberately to be complex—full of bumps, changes of level, and varied bay widths.

But then the real estate tide ran out. So did the Floridians who had signed pledges to subscribe
millions to their university. It is only in the fifties that the building has been finished, and it is an
almost unbelievable job of simplifying: gone are the whimsical irregularities of the original building.
They have been replaced by a striking contemporary design with interesting masses in an evenly march­
ing rhythm. Here is what Architect Robert Little has to say about the remodeling: "The Merrick building
was a big strong frame, ready to resist most architect­
tural attacks, so in working on it, I fortified a

Start of Merrick Hall was this grandiose, old-world conception, an enthusiasm
of the 1920's. Interim state of the idea was this group of naked structural bones
(below) which stood unfinished for 30 years.
thought I have long held on remodeling: don't sub-tract, add. Don't dig down into the past of an old building and try to rethink it entirely. Don't chop down existing columns and replace them if they're in the way a little. Keep what you have that is sturdy, even if it isn't in the form or with the flavor you would like, and spend your effort in re-defining what the other man tried to do. Don't try to fit a whole new idea, or spans, or new floor levels onto the old basis. If you do that, remodeling will cost your client more than a new building.

"If you will sing duet with the old original designer most of the way, then you will be in a position to go beyond him on your own in the final 20%, or whatever proportion can really be new. In this final, finishing part of the design you can bring something of your own to the building. But if you start arguing with the basic premises of the old designer too early you probably will spend all your effort and money in the argument—and the old building may win anyway.

"We had another very real influence on us in the Merrick building to go along with the spaces and levels defined by the old structural frame. This frame was represented to the public as sound, ready to be completed into a much-needed space for the university, and funds were solicited on this basis. Now it was obvious to us, after some study, that many changes should be made to this frame to produce a real contemporary building, and we were tempted to make them. But we finally decided that the complicated solution was the only honest one, and so we did spend all the new money on the new skin and enlarging—but not changing—the old skeleton. Nothing came out; we just fussed and worried—and added."

Money-saving disadvantage

The naked frame of the Merrick building was more than a sentimental dictator, the way Little used it. It saved $200,000 in structural cost, and once Little had recognized its soft but firm limitations, he went ahead with a hard mind and designed a good building on those old Spanish notions.

He superimposed some major new thinking; for instance, opening up a wasted basement for small classrooms by amputating a pretentious carriage approach and adding an extra floor atop the roof at one end, after he had run tests on the roof and found it was overdesigned enough to support all floor loads. (It was, in fact, merely a repetition of the floor framing.)

Here are some of the adjustments he had to make, in order not to toy with the basic building (see also pictures, right):

1. The spans were set, and set in concrete. Large columns had a spacing which he did not wish to use; but rather than adding supplementary columns, he merely plugged in concrete-filled lally columns wherever he needed them.

2. The great Spanish dream was planned for many levels with rich, intricate stairings up and down all through the building. Little had either to blank the old levels and superimpose one new level, which would lose him a good deal of vertical space,
or go ahead and contend with a very nervous set of floor levels in his new building—which he wanted to be calm. His solution was compromise: he ground down the edges of many of the old changes of level and created very quiet, almost imperceptible ramps.

3. The old Spanish-flavor formula called for lots of massive wall pierced by windows. Little's idea was lots of windows—or jalousies—where the weather would permit, interrupted only by the structural frame. He superimposed this essential idea boldly and economically on his heirloom by merely framing his windows right past those columns which did not fit his module. Total cost of the remodeling, $1 million, or $9 per sq. ft.

MORE MIAMI: a handsome art gallery at lowest cost

Little's success in superimposing his own esthetic on the old wrecked Spanish galleon, the Merrick building, can be seen by comparing it with his highly economical though charming Lowe Art Gallery for the same client, the University of Miami.
The building is designed with shrewd informality. In space it is simple and unforced, a set of several moderately shaped rectangles. In span it is clear, without columns. In cost it is low, only $10 per sq. ft.

The exposed ceiling tells much of the story.

A single material makes up the finished ceiling, the acoustical absorption and insulation—ridged fibrous concrete panels. These panels also served as the formwork for reinforced concrete joists poured overhead; using only scaffolding, no formwork, the architect made his roof by laying reinforcing rods in some of the ridge valleys and then filling them with concrete; in the vacant valleys he then ran ducts and conduits. He also sank hooks into this ceiling every 4' (see detail) which support a trolley beam from which a great diversity of lighting fixtures can be fed. The hooks are also invaluable for the startling innovation of hanging display devices and screens instead of standing them on the floor.

Another architectural economy: the museum storeroom demanded a lot of protection. Grillwork was too expensive, so Little made his windows a large-scale grillwork themselves by running a pattern of concrete block through them. The building cost only $140,000.
Science building will use flexible plan and economical construction of a small factory with a court cut out of it.

NEXT FOR MIAMI: an industrialized science hall

Architect Little's science building for the university will be a simple grid of classrooms built over a service run which is inexpensively dug into a trench, not suspended above, as is more usual. Outdoor corridors will follow the inner and outer periphery, penetrating at only two points, and spacing of columns will allow maximum flexibility without distorting room shapes. Planned also for ultimate economy, flexibility and use of Florida's climatic advantages, the building is in a pattern being developed simultaneously by school architects in several parts of the country.

AT UNIVERSITY OF PUERTO RICO: a crisp new science building

HENRY KLUMB, architect

Considerations of this clear-cut design: sunlight (for sharp shadows and definitions); air movement (through louvers for coolness in the hot climate); simple shapes (for economy).

AT OBERLIN COLLEGE: a memorial auditorium

HARRISON & ABRAMOVITZ, architects
ELDREDGE SNYDER, associate

A strong shape of limestone and concrete block will house a careful acoustical enclosure for a college famed for its music.
AT THE UNIVERSITY OF NEW HAMPSHIRE:
a competition-winning student union
DAN KILEY & RONALD GOURLEY, architects
Boldness was a quality cited by the jury which awarded this design first place. On a rocky site, it matches the simple strength of the landscape.

AT THE FORESTRY EXPERIMENTAL STATION, VANCOUVER, CANADA:
spare wood dormitories
SHARP & THOMPSON, BERWICK, PRATT, architects
A regular pattern of rooms stretches over service and communal areas in these student living quarters.

AT ACADEMIE DE RENNES, FRANCE:
a strong new college of law
CORNON & LE NORMAND, architects
The influence of Le Corbusier is stoutly upheld by sturdy concrete stilts and well-shaded glass.

AT THE UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, CANADA:
a war memorial gymnasium
SHARP & THOMPSON, BERWICK, PRATT, architects
A handsome new concrete and glass structure (steel-trussed roof) on Canada's West Coast is reminiscent of the great Dutch institutional buildings.

Photos: Tony Archer, C. Dupret, Visual Education Service, UBC
At Washington State, dormitories:

neighborhoods within neighborhoods—
a large girls' dormitory is cut down
into four self-contained communities

Whatever direction colleges take, whether their major emphasis (and building budget) goes into science, arts or utilitarian studies, there is an inevitable supplement to every dollar spent on classroom buildings; it is an investment in dormitory construction to sleep the scholars. Girls' dormitories are more intricate than men's because of the greater problems of control and more thorough facilities required. On these pages are presented two excellent solutions of typical problems:

1. On the West Coast by Architect Paul Thiry for the State College of Washington (below),
2. On the East Coast by Architects Shepley, Bulfinch, Richardson & Abbott for Wellesley (pp. 140-145).

Before programming the new Regents Hill dormitory for the State College of Washington, Architect Philip Keene went on an inquisitive tour of other colleges. Some of his observations, which Thiry and he shaped into structure:

1. Overcome the weakness of a large dormitory (in which shy girls tend to retreat into themselves, failing to share the benefits of companionship) and a small group (in which there is limited opportunity for contact with other diverse points of view and background) by breaking down the building into medium-sized, self-contained units of about 100 girls.
2. Build four floors, the maximum height for walking, avoiding the high initial cost and maintenance of passenger elevators. For a hilly site, try ramps.
3. Never forget maintenance goes on year after year after year. Choose surface materials on the basis of their future as well as appearance and cost.
4. Built-in desks, dressers, etc., are more than merely convenient. They decrease damage due to moving furniture about the room.
5. Desks should have good artificial light (most study is done in the evening) and should not face each other.
6. Provide space for wet washcloths, towels, wet nylon stockings, toothbrush, etc., in the rooms (many existing dormitories fail utterly in this regard).
7. Central lavatories, showers, and toilets for each 25 students are satisfactory.
8. Each dining room should hold a maximum of 100 students, the size of the "neighborhood," but must be on the same floor as the central kitchen for efficiency.
9. Good size for single rooms: 100 sq. ft.; for doubles, 190. Twice as many doubles as singles.
10. Make the dormitory a place which will provide opportunities for self-government, for profitable use of leisure time, for organized social and cultural programs which contribute to the education of the students in the largest sense.
Sleeping wings are down slope from social center. Bridges connect at mid-level, so girls who live on top floors do not have to walk all the way downstairs before walking up to social center.

Uphill architecture

Before you enter this large, complex dormitory, something else besides the intricate answers to the program comes clear: the new structure fits unobtrusively into the character of the countryside.

As Frank Lloyd Wright has demanded many times, this building is on the hillside rather than on the hilltop. This land, the heart of the State of Washington's Poulouse country, is a country of rolling hills whose topsoil is layered shallowly over rock, and the sharp falls of land went unbroken. The most prominent blocks of the dormitory sit on stilts and ride the slope. There is a good practical reason for this: for economy this 500' long stretch of building had to follow the flat contours perpendicular to the steep slopes (see contour map) and a 500' foundation wall would completely dam hillside drainage. So Thiry raised the dam gate.

Over the slope

Another reason for the rise from grade: the lifted blocks are mostly sleeping rooms; raising them on piers frees the uphill half of the first floor from the slope by:
1. adding privacy and light,
2. using both sides of a central corridor,
3. giving reasonable supervision over the comings and goings of the girls.

This also allowed a minimum of excavation into the rock, leaving the garden areas and surface drainage reasonably undisturbed. But most important in the architect's mind was the esthetic effect of preserving the naturalism of the country. The building's aloofness is really a very friendly attitude; the gardens and rock outcroppings can flow beneath and around it in an indigenous form.

There actually are three separate units to this dormitory, two hives of rooms divided into four 100-girl "neighborhoods" about one social center. This social center was put on the only real shelf on the slope because direct access by road was important. The "neighborhoods" are in a wide V-plan pair of wings which ride the contours lower
Wing intersection saves stairways and creates an opportunity for wide double-exposed porches on each floor. Open first floor minimizes drainage problems. Note exterior framing, another money-saving design element.

down the slope, connected and interrelated to the social center by bridges and ramps. Thiry's reason for coupling the neighborhood units: separate wings would have required two stairways each; combined, the stairway requirements were reduced and this money could instead be spent for sun decks and other dormitory luxuries.

Other reasons for separation of the social center from the dormitory portion: the latter is made up of small rooms, easily adapted to repetition in plan, even to service areas and kindred facilities. Also, this portion is convor-heated, requires quiet intimate surroundings, and is short-span construction. The social center, on the other hand, is communal and noisy, relaxed, recreational and entirely for group use. Its rooms are large, and for the most part each has a different use, and this part of the building requires long-span construction.

But easy access back and forth between the wings was imperative, and it was necessary to minimize stairways to make such an over-all scheme a success. This was accomplished by the central location of the social center; it is only necessary for a girl to cross a bridge and to descend two flights or ascend two flights by ramp at most to reach either extreme of the dormitory.

Structure

The frame of the building is monolithic concrete exposed on the exterior (except for roof and grade enclosures which are surfaced with ceramic tile) and insulated on the interior surface by furred insulating lath and plaster. Interior partitions are steel studs with gypsum lath and plaster, very neatly arranged to minimize jogs in the necessarily small rooms for pipe risers, etc. Columns were set outside the building to permit horizontal convor runs to flow the complete length of each floor without interruption, and the architect reports that this frank framing saved 8% of the cost over conventional frame. Because the climate in Pullman is severe in winter, weatherstripping was specified throughout. Also double glazing was used for all windows in the most exposed building, and double-doored vesti-
PAUL THIRY, architect
PHILIP E. KEENE, college architect (consultant)
SOUND CONSTRUCTION & ENGINEERING CO., general contractors
SIGMUND IVARSSON, structural engineer
LINCOLN BOUILLON & ASSOC., mechanical engineers
BEVERLY A. TRAVIS, electrical engineer
SELMA STREIT, consultant on college food and housing

Bridge view toward social center from inside one of the suspended halls. The other bridge is visible through the long window. Boomerang shape of dorm wings allows access from the center of each wing to bridges.

SOCIAL BUILDING

Uphill traffic is given a lift by Architect Thiry's idea to link sleeping sections to social section by bridges. Covered connection was also necessary for rainy-day access to dining rooms in social building.

Main lounge in social building, viewed from balcony off music and recreation room. Here recitals, musicales, teas, receptions, etc., can be staged. For dances, dining rooms are thrown together.
Corner porches mark the juncture of the two dorm wings. Beyond them are the floor lounges.

bules were included at entries. For summer comfort western windows were glazed with heat-resistant glass.

The rugged winter temperatures and winds favored flat roofs without parapets, since this would allow the snow to blow off. All drainage, however, is to the center of the roof planes so outlets and downspouts can be kept within the warmth of the building and no dangerous icicles will form.

**Indoor life**

Within the 100-girl “neighborhoods” is further sub-division: each 25 girls have separate bath facilities isolated by corridor doors from the rest of the building. Also, each 50 girls has its own laundry facilities and each full “neighborhood” of 100 is provided a sun deck at the center of the building plus a lounge with a built-in kitchenette at each intermediate level of the ramp. In the large dormitory slabs are typing and sewing rooms. Counselors are located at the ramp for advice and supervision of activities.

Thirty enthusiastically followed the mandate to build in as much furniture as possible, including:

- **Built-in desks** with reading lamps which may be turned on without disturbing the other occupants of the room who might be sleeping.
- **Built-in beds** on tracks. The track saves wear and tear on the floor when the beds are pulled out to be made.
- **Built-in storage** for small items like shoes (up to tennis rackets) under the beds.
- **Built-in bookcases** above each desk forming, over the center desk, a screen room divider.

- **Built-in bureau drawers** which separate the flush closets and are flanked by individual towel-drying compartments,
- **Built-in communication equipment** connecting each room with the main desk at the lobby. A selection of three radio programs may be made from the same speaker,
- Daylight is controlled and privacy is created in these rooms by an adaptation of the ancient Japanese shoji. Running on a track atop each convector are sliding screens with aluminum frames and composition glass cloth fillers. These eliminate the need for window shades and draw drapes, and over a period of time are expected to more than pay for themselves in replacement and maintenance cost. They can be cleaned just by placing them in a tank of soapy water, then rinsing.

The girls from all the dorm groups come together in the social building, but even there dining rooms are scaled to the neighborhoods. Each dining room is designed for 100 settings; for dances and other social occasions, however, electrically operated walls fold back and combine the three dining rooms into one. Other necessary contents of a good collegiate social center: a pleasant lobby-lounge where men may wait for their dates, and other less-important callers may be received; a control desk near the lounge with intercom system and mail desk; an adjoining head counselor’s suite and guest room; upstairs, a recreation room for general use; downstairs, another important accessory, a coat room and lounge for men.

Cost: $1,608,629, excluding fees and landscaping, or $16.76 per sq. ft.
Rooms have many built-ins, from bulletin boards to medicine chests. Under window is continuous convector with adjustable shutter to permit a degree of temperature selection. Towel-drying racks are recessed into face of convector.

Floor plan gives all rooms sunshine part of the day. Most rooms (doubles) have southeast or southwest vista out over campus. Subdivision of each floor into groups of 25 girls was encouraged by concentrating services near ramp.

Service entrance is approached by special drive, leading into elevator base. Because the building receives its primary use in the long, cold Washington months of October to May, design deliberately welcomes sun gain.
At old Wellesley, new architecture:

one of the world’s most famous women’s colleges makes her biggest capital investment in contemporary design

Most of the Wellesley campus looks older than it is. The reason for this curried antiquity: the tone of campus architecture was set in the period when the US was looking backward to establish cultural roots and connections with the past. But the roots are complete and growing now. Wellesley's newest building was designed with today's certainty about what was wanted, not yesterday's reach for reassurance. Says Architect Henry Shepley: "We worked toward a scale which would be small and intimate, with a sense of simple spaciousness and freedom to the layout."

As in Paul Thiry's Washington dormitory (p. 134) changing levels also play an important part in these structures on the rolling hills of Massachusetts. Here the architects used the slope to clear up a tricky traffic situation, and segregate services from other areas.

Entrances are on the uphill side, on what is actually the second story. At this level, and above, are the sleeping rooms. Downstairs, open to Wellesley's rolling lawns, are the dining and social rooms for each "neighborhood" of 137 girls. The kitchens are also on the ground floor, buried under the turn-around approach to the dorms. They have their own service road on the side slope.

This dormitory, housing a total of 274, completes the Wellesley campus by bringing all student living accommodations onto the great grassy sward. Before its completion a number of the girls lived in wooden houses in the village and had to take substantial walks back and forth to class. The new dorms also are the largest capital investment in Wellesley's history, more than $2 million.*

* Another record: girls moved into the buildings 14 months after the sketches were approved by the president and trustees. Owner-contractor agreement was based on a maximum guaranteed cost with provision that if the actual cost was less, 3% of the difference was to revert to the owner, 5/4 to the contractor. Under this arrangement the saving to the owner was $41,000.
Wellesley’s dormitories are unusually narrow, but with purpose. Five stories high with a penthouse on top, and 32’ wide, their proportioning works very well for the reinforced concrete design since half the rooms in the dorms are singles and half are doubles. Columns are right down the middle of the 32’ slab; just three rows of columns carry the full width of the two-room-plus-hall span. Downstairs kitchen planning in this dormitory is also particularly neat; although each “neighborhood” has its own individual dining room, all three dining rooms are served by a common kitchen and cafeteria, without cross-circulation or loss of identity.

Self-service

The wise women who administer Wellesley have decided that maid service is becoming a luxury and that students will do almost all their own housekeeping. With this in mind, many labor-saving devices are provided for light housekeeping as opposed to professional maid service. Example: light vacuum cleaners will be used in the rooms instead of dry mops, which—the architects reasoned—simply stir up the dust and, when shaken out the window, deposit it on the lower floors. To further discourage the dust mop, screens will be left in place all year round. A large utility room or housekeeping center at the center of each floor includes a cleaning sink, a shelf for the storage of housekeeping devices, and an incinerator chute for the disposal of rubbish. The passages to the central washrooms on each floor are lined with racks for towels and toilet articles, confining all dampness to these areas. In the washrooms are special basins with shampoo sprays; in the lounges are electrical outlets for hair dryers.

These lounges, with adjacent telephone booths, are expected to have heavy use. (Their architectural appointments will allow the college girl to give the classic excuse to a telephoning male, “but I’m washing my hair,” and mean it.) Here also are ironing boards.

Another shrewd simplification of the dormitory routine: there is a central linen room in the base-
Small lounges are on each hall of rooms for coffee drinking, telephoning, ironing, etc.

SLEEPING STRATA

Facilities core is central on each floor where it serves 11 double plus 11 single rooms. Furniture arrangement in rooms is optional to occupants. Bathing facilities are proportioned one tub to four showers. Trunk rooms are in basement and include special racks which permit easy access to any trunk at any time.

Towel racks line walls of washroom hall.
ment in each of the 137-girl units where girls subscribing to a laundry renting service will turn in soiled linen for clean. This will eliminate extra handling and storage on individual floors and automatically prevent loss of inventory. There is also a laundry in the basement of each dormitory with coin-operated washers and dryers where the girls may wash their own clothes.

The ground floor, the social stronghold, is compartmented for use. Each building has a warm, pleasant sitting room with fireplace, and outside, a terrace with a long view. Beyond the living room is the “quiet room,” with bookshelves and another fireplace, which will be used as a library and study area. Also, on the ground floor are five smaller rooms for small classes and meetings, eliminating the necessity to open classroom buildings in the evenings. And although they are labeled seminar rooms on the architect’s plans, it is expected they will also have heavy use as date rooms.

The dining rooms on this lower level have big glazed walls to the north and plastic bubble skylights over the interior ends. Breakfast and lunch are served cafeteria style, but even this does not break the unity of this kitchen service as opposed to the split in actual dining rooms. The architects divided the long cafeteria into three sections, and made the traffic work.

Construction cost: $1,950,000.
Quiet room for reading and study is at end of social wing.

Glazed hall leads from entrance lobby to living room.
ARCHITECT-CLIENT FORUM:

The need for better planning

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Here is a joint statement
from architects, engineers, contractors and clients on

1. The need of better planning
2. The budget for better planning
3. The organization of better planning

Never before has such a united program been adopted by outstanding representatives of all the groups with a stake in better building.

We believe this agreement is of great importance to every architect, every building engineer, every contractor and every client. And if these recommendations are followed, we believe America will get much better buildings at lower cost.

The signers of this joint statement include six of the most important and experienced clients for architectural and engineering service, presidents of two of the most famous real estate investment companies, the chief executives for building of General Motors, General Electric and Allied Stores and the official in charge of building for the US government. They include two of the country’s outstanding builders and three of the country’s most famous engineers. And they include 13 outstanding representatives of the American Institute of Architects.

The two-day forum at which the problem was thrashed out and the recommendations drafted was sponsored by ARCHITECTURAL FORUM in collaboration with AIA’s Public Relations Committee of which John Wellborn Root is chairman.

...and how to get it

Good planning before construction starts is more important today than ever before. In fact, better planning now gives our industry its one best hope of offering a new built-in economy and a new built-in efficiency of function that could keep construction booming long after the present shortages are met.

We realize that no nation in all history has made such widespread use of architectural service as America today. Never before has professional training for architecture been so exacting. Never before have so many architects made such rapid and significant contributions to better building. Within a generation the ranks of qualified architects and the use of architectural service have more than trebled.

But the need and importance of better planning have increased still faster, and we doubt if even 10% of all the buildings erected in this greatest building boom of all have had anything like the study and planning needed to achieve full economy of construction, full economy of operation, full efficiency of function, and even a modicum of delight. For this underplanning we can suggest two explanations:

1. Most recent building might be termed necessitous construction, rushed up to meet some crying shortage or to seize some quick opportunity. Under such time and profit pressure it would be unreasonable to expect a high level of beauty, economy or efficiency. In the tougher times ahead many of these half-planned buildings may not prove good enough to hold their own against more carefully thought-out structures.

2. Too few building clients start with any real understanding of what good architecture and good planning mean, or what the right architect and the right engineers could add to the success and profit of the project—provided they had the time and money needed to do the planning right. The average client builds but one building, or perhaps two, in his lifetime. He does not realize the tremendous change our generation has seen in every aspect of building. He does not understand the new importance of the engineer and the broader new function of the architect. Too often he thinks of his architect in yesterday’s terms—a quasi-artist retained primarily to make the building look better—and hopes only that the architect will not add too much to costs.
Here are six reasons why better planning is more important today

—six reasons why better planning should pay for itself many times over—six reasons every client should understand and weigh carefully before he undertakes any building venture for tomorrow's more competitive market.

The first three of these are perhaps negative reasons, in that they reflect today's much greater cost of not having the best planning.

1. Building costs have more than doubled, so every error or oversight in planning costs twice as much. The time to correct your mistakes is on the drafting board, where they can be corrected with an eraser. To correct them later may cost more than the entire fee for planning the building!

2. Today's buildings are so much more complex that much more planning is needed, first to design all the new mechanical services, then to fit them together economically into a coherent whole. And often the second of these new planning assignments is almost as exacting as the first.

3. Only buildings planned for maximum efficiency and economy and full utilization of space can compete with old buildings built at prewar costs and long since fully depreciated, or with war-built structures subsidized by quick tax write-offs.

The other three reasons are still more important, for they are positive. They focus on the opportunities that can be realized only by careful, imaginative, creative planning.

4. Everything about today's building is new and different. The lighting is new, the fenestration is new, the acoustics are new, the hung ceilings are new, the air conditioning is new, the whole concrete technology is new, the lightweight walls are new, the aluminum is new, the plastics are new, and the styling is new too to keep pace with these and countless other changes. In times of such rapid change more careful planning is needed to take advantage of all these innovations and make sure the building will not be half obsolete before it is finished. (More careful planning is also needed to hold down the cost of innovations, for the high price of unfamiliar work is notorious.)

5. Tomorrow's building must be studied not alone as shelter, but as an integral part of the operation it will house. The production costs of a factory, the sales of a store, the economy of a hospital, the teaching success of a school, the rent level of an office building, the profits of a hotel will all depend in large measure on how well the building was planned for full economy and efficiency of function.

This new concept of the building as a cost-cutting, profit-raising tool offers the one best hope of keeping construction booming when the present era of neccissitous building ends, for in competition against new buildings so conceived yesterday's buildings, no matter how fully depreciated, will often prove as obsolete and high cost as any other item of yesterday's machinery.

This new concept is perhaps the most important of all the reasons why tomorrow's building must be more carefully planned. The sixth reason carries this same thinking one step further.

6. Tomorrow's building should be studied not alone for functional efficiency but for more intangible values. We are just beginning to understand how subtly good and appropriate architecture can influence the child's willingness to learn, the patient's response to treatment, the worker's pride and regard for his job and company, and so the whole morale and efficiency of the working force. We are just beginning to understand how civic pride can be stirred by good commercial and industrial architecture as by good civic architecture. We are learning again the old lesson that good architecture is also good advertising. Some of these concepts are so fresh that even experienced clients are still too apt to overlook their importance.

For all these reasons we all believe clients would be wise to budget an increased share of their building dollar to pay for better planning. The most foolish mistake a client can make is to think he can save money by skimping on architecture and engineering design, in the broadest sense of the word. There will be many times when a little more money spent for planning will save ten times as much on construction.

But architects and engineers have a major job to do before they can expect their clients to upgrade their thinking about paying for planning. They must work out a better way to let clients see more clearly what they will get for more money—and what they cannot get for less money.
Here are six ways to get better planning

—some of which involve current misunderstandings which architects and engineers must clear up, some of which include truths they must get across:

1. Architectural design and engineering design are not fixed commodities that can be bought at varying prices. They are highly personalized professional services whose worth will vary greatly with the widely differing skills of the individuals employed and the time they can give to the work. The margin of profit is usually so small that any reduction in price must almost always be reflected in a reduction in service.

2. Consequently there is not and there cannot be any fixed scale of compensation for architectural or engineering service. When various AIA chapters suggest certain minimum fees they are not proposing "ethical" standards. They are simply recording an experience figure and suggesting that the planning job probably cannot be done right for less.

   To help their clients understand what they are getting for their money, some architects are putting their services on a cost-plus basis, charging so much an hour for research and drafting-room time plus an obviously reasonable fixed fee for their own time. Other architects have adopted a special contract form listing in detail all the services they expect to perform, from help on site selection to final supervision, and these architects modify their fee if certain services are crossed out. Some firms who offer both architectural and engineering design find it better to charge separately for each and so let the client see a little more clearly where his money goes.

   We do not recommend any one basis of compensation as necessarily better than any other. All such plans should work out to about the same total pay for the same work.

   But we do most urgently recommend that all architects and all engineers should make a real effort to give clients a better understanding of their charges. Lacking such an understanding it is almost inevitable that many clients will think it good business to shop for an architect and an engineer who will work for a small fee.

3. There is no one fixed way to employ architects and engineers. The client is free to buy complete architectural and engineering service from a single firm. He is free to retain one firm for architectural service only and rely on consulting engineers. He is even free to call on several architects to collaborate on a single project—for example, to retain one architect for the excellence of his design and another for his special knowledge of some particular building type, or, for a second example, to call in a large metropolitan firm to work with his local architect on certain aspects of a project.

   We do not recommend any one of these plans as necessarily better than any other. In any case, it is imperative that there should be a coordinator for all these talents, and we are unanimous in urging that this coordinator should be an architect. We are also unanimous in urging architects to be quite frank in recommending the use of consulting architects and other experts whenever necessary and in urging clients to stand ready to pay the necessary consultation fees. This will surely save them money in the end.

4. Architects are cost conscious but they are not necessarily cost experts. Owners should not press them for cost estimates or expect cost guarantees, and architects should steer clear of releasing any cost figures until they have had time for careful study and for consultation with contractors and subcontractors.

   Perhaps the most serious single public relations problem faced by the architectural profession today results from the unhappy experience too many clients have had with buildings costing more than the architect had let them expect. Some of this underestimation can be explained by inflation and rising prices. Some of it reflects careless optimism. Some of it reflects the owner's own too frequent unwillingness to listen to unpleasant truths or some owner's unwillingness to assume a sufficiently responsible place on the planning team. And a little of it, unfortunately, reflects some architects' unwillingness to let commissions get away from them by giving the owners discouraging figures.

   Whatever the explanation, the hard fact remains that it has given architects a bad name for not understanding costs and how to keep costs down. Worse than that, it has raised a needless and quite unjustified suspicion that there is cause and effect relationship here and that architect design makes construction more expensive. Exactly the opposite should be the case.

5. Engineers should not be compensated at the expense of the architect any more than the architect should be compensated at the expense of the engineers. Most owners should see the wisdom of setting aside an adequate engineering budget at the very outset when they are making their financial arrangement with the architect, and that engineering budget should be satisfactory to all three parties. Without such an arrangement, there will always be some danger of a most undesirable conflict of interest between the two professions (in most cases actual payment for the engineering will be made by
the architect, either to some member of his own firm of architects and engineers, or to some consulting engineer called in by the architect.

When mechanical costs represented only 10% or 15% of the total it may have made economic sense for the architect to throw in engineering design without special compensation, but on many buildings today mechanical costs are running as high as 40% and 45%. The client needs the best engineering to get full value from his mechanical investment, but how can the architect afford to provide that best engineering for so large a mechanical program out of a fee not always adequate for architectural service alone? Because total fees have not been increased to keep pace with the greater demand today's building economy puts on both architect and engineer, the architect and the engineer too often find themselves forced to compete to see which will get an adequate fee out of too small a budget. Where the engineer is retained first, he may be tempted to economize on architectural design. Conversely, when the architect is retained first, he may be tempted to economize on engineering design. Either way, the real loser is the client.

The client is doubly the loser because the inadequate fees engineers get when they must take a small cut from the architect's fee discourage good engineers from entering the building field when more profitable employment is offered them in other industries.

6. Planning a big building must be a team operation.
The job has become too complex to handle well in any other way. This planning team should be set up at the very outset and should include the owner himself or his special representative, the architect, the engineers, the builder, the real estate expert, and whatever special consultants (school, store, hospital, rental, financial, etc.) the building type may require. (If the architect is himself a specialist in that type he can often do double duty for one or more special consultants.) The role of the various team members will vary from project to project (for example, on rental projects the rental expert may rank second in importance only to the owner), but in every case:

The owner should be the No. 1 man on the team and should recognize that he cannot escape that executive responsibility. No one else can make the necessary final decisions on where to pay more and where to economize, what product is good enough and what product is not up to his requirements, what tangible or intangible values are worth their cost and what features can be dropped to meet the budget.

Under the owner the architect should be captain of the planning team, charged with coordinating the work of all the other members and so translating the owner's requirements economically into actual construction. This coordinating function is becoming perhaps the most important function a client should expect his architect to perform—just as important as the concern for appearance and styling which was the architect's principal responsibility not so long ago when buildings were simpler. Today's architect must be a rare combination of artist and executive, and on him devolves primary responsibility for the economy and efficiency of the building designed under his leadership.

Every member of the team should recognize that he has a double responsibility—a limited responsibility for excellence in his own specialty, a broader responsibility as a member of the over-all planning group.

Whenever possible the builder (sometimes called the general contractor) should be brought into the team at the very beginning even if, in the end, competitive bidding is required. The experienced builder can make a very important contribution by supplying the good cost estimates which are so essential to economical planning and by giving good advice on construction method changes which might result in substantial savings. We view with some concern the recent tendency to hold the builder at arm's length until a low bid wins him a place on the team after the plans are fixed. More often than not owners can get a better building cheaper if they let their architect help them select a builder they can trust and work with from the very start.

But in the final analysis, there is no substitute for the value in good planning and good design that a client can get from the services of a good architect as the captain of the team—a professional person working in a professional capacity with complete independence.
Some of the questions they discussed:

What can good architecture add to the value of an efficient building? Profitable esthetics

Chairman Prentice: Let us explore how architects can get more owners to set a higher valuation on the importance of first-class architectural and engineering services. By architectural service, I mean complete architectural and engineering services. In many buildings now going up it is obvious to anybody, even a quarter of a mile away, that not a very high appraisal was placed upon the value of architectural services by the people who put up the money for the buildings.

Harrison: We have cases right here in New York. There is no architecture going into many buildings, and very little engineering.

Zeckendorf: We tell the customer to consider one question only: occupancy costs—not how much am I paying per sq. ft.? If you can prove that you can create a better quality of space and more functional space by spending more money for the same cube, and if you produce something more salable, you will find that the intelligent owners will go for it. Therein lies the real spirit of progress in architecture and the real thing that the men in real estate are interested in.

Gruen: That can be transferred word for word into the language of the shopping center. Instead of needing 100 sq. ft., the store man needs only 80 sq. ft., because of certain features in your new store which weren’t in the old store.

Welch: There isn’t any question but what you can get 10 to 25% more man-hours of work out of a new building than you can get out of an antiquated building.

Kump: Isn’t there an economic value in the architectural appearance of the building? We hear a lot about operating and maintenance costs, but what about the environment of the building and the character of the building? That hasn’t been mentioned at all.

Zeckendorf: Yes, of course. There is a definite value on the esthetic side, if that is what you mean. You can appeal to the egocentricty or the feeling of being progressive of any forward-looking concern by offering it a better building. And you can collect some additional rent for that bonus.

Kump: How about architecture’s contribution toward public relations?

Zeckendorf: An industrialist friend of mine who is not in the soap business told me that Lever House is worth $500,000 a year in advertising and public relations value to Lever Brothers. If that is true, that is like saying that there is a capitalized value there of about $8 million which they could well afford to have spent on making the building something more than an ordinary office building.

Kump: If you were building that building, would you pay that $8 million?

Zeckendorf: We would do it somewhat differently than Lever did, but I certainly feel that what Lever did is in good taste.

Kump: Have you arrived at a building type, say, for offices, in which you have achieved, within your own judgment, utmost economy, including maintenance and operating efficiency and, if you were to put up a series of those buildings in the competitive market, would you feel it would be advisable to spend a little more money on them for esthetic reasons?

Zeckendorf: I think it is a terrible economy to save on that sort of thing. We just got through altering an office building. We air conditioned the building, we put in new lavatories, new elevators—everything inside was brand new. But when people went past the building, nobody knew that we had spent a cent on it, because we had not done anything to the outside of the building or in the lobby. I said, “We must find a way to spend 10% extra to tell the story about what we did inside.” We spent the extra 10% in the lobby and we got credit for the 100%.

Gruen: We talk so much about the economic return of buildings and about maintenance and upkeep, that it appears that the only aim of architectural design, planning and engineering is to design a building which will pay a good return, and which will be easy to keep up and easy to maintain.

If we believe that that is the only aim, we will arrive at something which I call the “janitorial style” of architecture. It’s merit is measured by how easy it is for the janitor to keep it up. But that is only part of the proper approach; we have to add to it that certain something which gives the spark to the design.

Zeckendorf: To abandon esthetics is to abandon the profitable. We spend too little money on good taste. An extra amount of money should be spent on it for it pays the biggest return. Real estate has to be merchandised, like any other business.

Kump: Have you found in your experience that the creative mind or imagination can take the same materials and construction methods that will give you the best maintenance and economy and achieve unusual architectural aspects that set the building apart without increasing its cost?

Zeckendorf: That is the greatest contribution an architect can make.

Chairman Prentice: An owner can get that plus value only with the wholehearted interest of a first-class architect.

Zeckendorf: An architect who is sufficiently articulate to explain to his client why he should spend an extra 10%.
Yowell: In industrial plants we don't care too much about the esthetic qualities. I believe their public relations value is limited.

Show: You wouldn't mind if we made a good-looking factory for the same amount of money? The answer to that is, "Get a good architect."

Schlossman: Isn't it conceivable, Mr. Yowell, that in this "esthetics" we are talking about, we also get into the field of human nature and what the building does to the people who are exposed to it and have to live with it.

Yowell: From many standpoints I think you are 100% correct.

In the case of our Research Laboratory in Schenectady—one of the main considerations involved in the original concept of the project was that it must be outstanding in facilities and provide pleasant and attractive surroundings for top-grade scientists and personnel. I subscribe 100% to your statement regarding that type of project.

When we come to a straight manufacturing plant, we want good lighting, good employee areas, all features affecting employee comfort, good service areas, and so forth, but I do not feel that the pleasing appearance of the exterior of the building has the same value as it does with an office building or a laboratory. It is important to us to keep the costs down, because the cost of that building goes into our product and we have to compete with others in order to stay in business.

Schlossman: This added factor goes further than just a pleasing appearance for the exterior of the building. There is something more fundamental than just that. And if it is of value in attracting top-notch scientists, it may also be of value in pleasing and attracting the greater mass of employees. That factor does not necessarily add to the cost at all—sometimes it may even be had at a lesser cost if the building is properly conceived by the architect. It is an added value that an architect can furnish, and therefore it is essential for him to be brought into the picture very early in order to do that.

Yowell: That is correct. But the things that seem to me important from that standpoint in factory operation are those which affect the comfort of the employee: air conditioning, good light, clean toilets, and so forth. It is very true that the location of a manufacturing plant in an uncongested area with good landscaping and good surroundings will make that place so much more attractive to the people who work there.

Luckman: It is less expensive to be creative than pedantic.

I do not know how to put a dollar sign on it but there is no question about its value.

Haskell: You have probably done time and motion studies to establish what makes efficient production processes. Have there been any studies as to whether workers' efficiency depends upon how long the assembly line is, or how big the building is?

Yowell: I don't know of any such studies.

Green: I believe if they were made, you would find some very surprising results, because if it is true that Mr. Reynolds finds a psychological influence in working conditions of large office buildings with mass office space (which is very little different indeed from working conditions within the General Electric workshops), and if it is true that cows give more milk when they listen to music, it must be true that there is a psychological influence of design on workers.

Haskell: I don't think that the size of the job yet to be done is really appreciated by industrialists.

The fact that the American factory is the biggest building on the landscape that is seen by the American on any part of his traffic routes makes it an important architectural problem. It should get a great deal better treatment than it has, simply as a matter of civic pride.

The interior environment of industry has not begun to be studied to the degree that it has in commerce. I think that industry, which makes the biggest boast of efficiency, has the least of it in interior environment.

We are still at the beginning of an epoch. If the architects haven't been more convincing about that point, it is because they aren't even accustomed yet to talk about it.

When does the economist come before the architect?

When the architect is no economist.

Chairman Prentice: What is the most important function you want the architect to perform well for you?

Dowling: Design.

Luckman: What do you mean by "design"?

Dowling: Not plot designing, because plot designing has to do with economics. It is basically an economic question. Once the economics are right, then all the genius that can be brought to bear upon the design is simply magnificent. But the financial structure has to come first.

Harrison: Would you be willing to modify the word "design" to the word "imagination"?

Dowling: Yes.

Haskell: One reason that Mr. Dowling got the plot plan that he has for his Gateway project in Pittsburgh is because of ideas thought out by that great man, Le Corbusier, in France, many years before. He maintained that you should put your cities into parks instead of putting parks into cities. If it hadn't been for that architect's idea, Mr. Dowling's plot plan would bear no resemblance to what it now is.

Dowling: Despite Le Corbusier, with all his greatness, we were not conscious of his influence.

Green: Either consciously or subconsciously, that is where it came from.

Chairman Prentice: It is a basic question, whether architecture is added to a building at the end, or whether architecture is something which has to be integral with the building from the very beginning.

Dowling: There would not have been a chance of the Pittsburgh buildings being built or land being bought if leases were not already available. Leases had to be had first; otherwise there would have been no land purchased, no reclamation of the slum area, no willingness to do the job at all. Some renting men were consulted, including real estate men who made a plan as to what would rent. The tenants were offered that plan and they accepted it to such an extent that it became possible for the financial agency to feel assured that they could go ahead and build something and could buy and reclaim a big slum area.

So it was born out of the necessity of having leases, which renting men could provide better, perhaps, than architects, or any other group of businessmen.

After we offered that rentable space to the tenants and they said, "We like it; we will take it," the owner decided "we will go ahead, and we will buy the land, and we will reclaim the slums, and we will employ architects, engineers and a board of design," and it was carried out.

Luckman: What you say, in effect, is that at the very end, if the architectural-engineering firm wants the job, they must take it or leave it. If they have any better ideas, it is too bad, because the basic plan has already been worked out."

Dowling: It happened to be so in that case.

Green: This is the "case of the unknown architect." There was an architect. Either it was Dowling or somebody in his office! There was an architect somewhere. We just don't know who he is.
How does the client suggest the architect
increase his stature, influence and fees? Salesmanship

Luckman: I would like to hear an answer to this question: "What does the client expect of the architect?"

Dowling: Here is my answer. The standards of architecture have got to be raised and the public's appreciation of the standards has got to be raised. We are dealing with the biggest asset of our nation. We are dealing with $440 billion, if you take metropolitan structures alone. That is out of $800 billion of replaceable wealth in this nation.

The greatest assets of the nation are its structures and the architects are the people who are designing them. Two-thirds of our people live or work in these structures.

If you make medicine or breakfast food, you have to put on the outside of the box what is inside of it, and it has to be a factual statement. I don't think we have had enough of that by architects.

Chairman Prentice: As a builder you are in the middle, between the client and the architect; have you any good advice to give the architects?

Turner: The architect has got to be more of a businessman. I don't say that in a critical sense. The people he is selling to are businessmen who are interested in time and costs, as well as in having something that will house their personnel.

Zuckendort: Architects have got to become more sales-minded. They have got to be able to sell the reasons for good architecture. A businessman is, generally speaking, a pretty intelligent animal; if you can show him why something is a good investment, he will buy it. Businessmen today are willing to buy something is a good investment, he will buy it. They don't know how to sell. That is the main ingredient in any business success.

Secondly, I don't think they define their services. They let people who buy them remain in ignorance. I don't think the average architect or engineer pays enough attention to what we are trying to accomplish with a building.

I can tell you from working with probably 75 concerns around the country what the average businessman really think of an architect. They think he is either an artist or a mechanic. That goes for the engineers, too. They don't get into the economics of what is needed; they don't study the problem thoroughly before starting design.

To me, that is one of the biggest contributions that an architect can make. I am not decrying their work on the appearance of the building, and I don't think it has to cost money. I have seen some of the most horrible-looking buildings which have been very expensive.

To me the most successful architects and engineers are the men who basically are good salesmen and good economists.

We have found that so lacking that we felt it was necessary to build up our own staff of men—architects, engineers and designers—to lay out and study the basic needs and do the economic study. Then we turn the job over to the local architect and say, "Here is what we want. You design and detail the building."

Part of the problem, I realize, basically, is in the lap of management because they really don't know what they want themselves. They expect the architect to come in and be a sort of panacea to solve their problems.

Chairman Prentice: I am reminded of the biggest mistake in selling that everybody on the face of the earth makes: he wants to talk about what he has to sell, instead of talking about what the client or prospect wants to buy. If the architectural profession would concentrate its thinking on what the client wants to buy, they would have a lot less trouble getting clients and getting well paid for their work.

Broillette: The architect and engineer have to find out what the problem is that has to be solved, and what the needs of the owner are. In too many cases they don't.

Gruen: Mr. Reynolds said much the same thing. He said it was probably the fault of the fee not being big enough to permit the architect to do the proper research.

Yowell: We believe in retaining the architect early in the game. However, in designing our industrial projects, we must remember that these projects must pay out financially. The architect should be able to perform a real service for us by showing us in his design how we can obtain economy in construction.

The principal reason many companies do not place a high value on first-class architectural service is their belief, though incorrect, that top-grade architectural service will result in higher costs as a result of expensive finish treatment and too much emphasis upon the esthetic features.

The architects should attempt to counteract that by showing that they can and do produce economies in design which save the owner money.
How to put together a building team: Here is an organization chart

Zeckendorf: There is no difference between building a building and running any other business. The building venture is a complete business venture. The owner has to have an organization chart and has got to know where he is going. If you don't, you may as well get ready for all the mistakes in the book. We have made mistakes by not doing it. Everything we have had a proper chart and men qualified to exercise the work that was given them, we minimized our mistakes.

The work has to be done as nearly as possible by professionals at every level. I don't believe in a building committee as such, running a job for hospitals—one fellow banker, one a shoemaker, and so on.

Cromwell: In many cases, the owner is not a professional.

Zeckendorf: Whether it is building an apartment house or office building, or running a factory, the same basic principles apply. The trouble is that, because construction is so full of professionals, each of whom has idiosyncracies and professional pride and so forth, they don't want to cross lines. If an organization can be set up as in any other business, you will minimize mistakes.

Chairman Prentice: What organizational chart do you have in mind?

Zeckendorf: State the problem. Is it going to be a home, office building or factory? You will have different types of persons on the job. Let us say it is a speculative office building, a multiple-story building in an urban area. The first thing he has to do is decide on the location and analyze the economics of the land in that area. Having decided that, he calls in the renting agent and says, "Can I rent space in this area for $6 a ft., $5 a ft. or $4 a ft.? What is the demand?

Let us assume he says this neighborhood demands showroom space. The prevailing rate is $3 a ft. In that area. I am assuming you have chosen wisely in this renting agent and that he knows what the market is, that he knows what the column spacing should be for that trade, what kind of ventilation is needed for merchandise display space. He is the man to work with your architect and come up with a plan. The owner and the renting expert in concert must tell the architect to build a building of a certain character and type. The owner adds, "I can't afford to spend over $12 a sq. ft. for the building." While the architect does not necessarily know all the market and construction costs, he has a sense of direction as to what kind of specifications he has to have. It is a tough job to produce something of that kind for $3 a ft. He has to have air conditioning, so he calls in a first-class air-conditioning engineer, and says, "This is the budget."

After working together, the renting man, the architect and the engineer go back to the owner and say, perhaps, "Sorry, we don't think we can afford to build it. You can't do it for $3 a sq. ft. in rent. Can you get $4 a ft. or $3.50 rent? If so, let us get a builder."

You have not spent a lot of money in planning yet; you have lost nothing in architecture or construction. You have a rental expert, an engineer and architect, and a builder who says, "I am not the engineer or architect, but I have had a lot of experience recently and I can show you how to save a little money, because such and such materials happen to be cheap now."

There is a soft spot, let us say, in a certain type of structural material. There is not much buying in reinforced concrete, for instance, and he says, "Let us try it."

In summary I would say that the lines of authority would go as follows: Directly from the owner of the property to the renting agent, architect and engineer, and the builder. After the owner and renting agent have given their instructions, the architect is boss down to and including the point where the builder comes up with opinion of costs.

Why are not buildings better engineered?

Cut-rate consultation

Chairman Prentice: We are in an age which some people like to call the "Age of Engineering." We are told that the greatness of America is due to engineering. There certainly is great engineering on many, many fronts. Yet one British engineer deprecates the fact that buildings are not as well engineered as the Eskimo igloo.

Whereas building inevitably attracts the best architects, because there is no other place for them to go, I wonder if building attracts the best of the engineers.

Leopold: Let us assume for the moment that the best engineers are not attracted to this profession. I don't know. There is a good cause: First, our engineering schools teach people to be good engineering employees for large corporations.

Second, if an engineer must depend for his livelihood on the leavings of the architect, he has no chance to do the kind of imaginative work that any good engineer wants to do. The engineer works on a third of the total budget. If he is to be paid a portion of the architect's fee, I do not see how—whether he be structural or mechanical—he can afford to be original.

Most of my work is direct customer work. I work very happily with a number of architects and profit by it, but I could not have built the kind of organization I now have by depending upon the customary fees paid by architects.

We have discussed budgets. I am working on a project for which we have prepared budgets on seven different methods before submitting a preliminary report. This would not be reasonable with the customary fee paid by an architect to an engineer.

Lucknow: I agree with most of what you said, except for one thing. In my personal opinion, it is less expensive to be creative than it is to be pedantic.
Leopold: It takes time, because a large amount of research is required for safety.

Luckman: I cannot agree. There are too many engineering concepts, just as there are too many architectural concepts which are fettered in the past and thus have become complicated. Many of them are, therefore, expensive to execute—not for the owner, but for engineers and architects in terms of what it costs us in the shop to execute complicated and difficult drawings. On the other hand, originality frequently results in simplicity of concept which is less expensive to all concerned.

Leopold: That is correct, but the more you learn, the more avenues you want to explore.

Kump: There is a customary fee or economic fee above which the owner does not want to pay, and that determines the quality of service that the architect and engineer render. Maybe we should sell the owner the idea that more money should be put into the budget for the architect and engineer.

Leopold: I have known very few owners who, when asked for additional fees for engineering by their architects, refused them. I have known many architects who refused to ask for an additional fee for the engineers, figuring that you buy engineers as you buy potatoes. This is a problem of human nature.

Luckman: I don't think so. We are now talking about the fundamental problem that our entire fee arrangement is wrong. We normally operate on a percentage of costs, and the better job we do in terms of reducing the cost to the client, the less fee we earn. If we as patients of a doctor went to him and said, "If you will operate on me and get me up on my feet in half the time of a normal convalescence, I will pay you half of your..."
THREE SMALL BUILDINGS

for suburban businesses

The three small business buildings shown on this and the following five pages express two growing trends among US businesses: 1) movement to uncluttered suburban locations, and 2) use of architecture to trademark the character of business going on in the building.

These three business buildings are about as diverse in function as they can be. The first is an office and research building. The second is a complete manufacturing plant. The third is a handi-craft sales building in a parklike suburban housing development.

Photos: Fred Lyon; Rondal Partridge & Photo & Sound Production
A fair number of US business firms have recently moved to offices in the country, but few make good use of the country. Magna Engineering, when it decided to unite two separate San Francisco offices, put up a new single building on a two-acre site in the open fields still to be found at Menlo Park, a rapidly growing industrial suburb. (Across a field are the Sunset offices, a pioneering example of the country-life office building movement—AF, Feb. '52.) And the grass roots crowd against the slab.

The one-story height and the spread-out plan sprawl the building out on the ground.

The connecting link between the engineering and the administrative wings puts nothing between balmy Nature and hard-working Magna workers when they enjoy their lunch or "coffee break," except protective sheets of glass, reaching from the ceiling to the floor on the ground.

The long north- and south-facing walls have virtually continuous windows that sweep the inviting country view, or parts of the planted patio.

Informality goes along with the countrified atmosphere—private offices and formal corridors are kept to a minimum.

The **structure** is of an economical open-loft type suited to the informal use. The floor is a radiant heated slab on 1' of rock fill. The roof is carried on steel pipe columns and wooden beams. Walls are nonbearing, framed with 2 x 6 studs with diagonal sheathing and a 1" exterior stucco lin-
ing which yields to brick veneer where the front of the building is tied in with the brick of the curved patio wall. The entrance canopy continues as a shading arcade along the south side of the patio. The outer one of a pair of stainless-steel pipe supports (see photo, p. 156) acts neatly as a roof drain from the hidden gutter.

Cost of the 11,500 sq. ft. building came to $14.30 per sq. ft. ($165,000) including fees.

This building won an award of merit in the Bay Area AIA exhibition covering work of the past 20 years.

Informal lobby in administrative wing opens off covered front walk. Walls are birch plywood, floor is rubber tile.

Open loft space in office contributes to sense of communal activity. Louvered clerestory in south wall supplies working light.

Lunchroom between two wings, brings engineering and administrative people together at lunch and during two coffee breaks each day.

Executive office is one of few private spaces in the nearly corridorless building. Even here layout and furnishings stress informality.
2. Handsome factory complements landscape, but regulates the view

This manufacturing plant is in a position to enjoy one of the most dramatic suburban locations conceivable: a site with a 100 mile view of the Rocky Mountains outside of Denver. In addition, the plant is adjacent to a suburban park where workers enjoy—at noon or after hours—such recreational activities as baseball, swimming, golf and picnicking. Oddly enough, except for the lobby, the first floor is windowless. The view may be enjoyed only from the second floor lobby and "view terrace."

Architecturally, the building speaks of crisp, no-nonsense operation. The plant mass-produces pneumatic products (air-operated machinery) and the nature of the precision work requires concentration and accuracy on the part of the workers. Owners anticipate the new suburban location and the more efficient building will increase productivity as much as 20%.

The building is steel framed (except for a masonry bearing wall on the west side), has masonry walls and lightweight concrete roof and floor construction. The administration section is enclosed with cavity walls: plastered cinder block inside, flagstone outside with insulation between.

Photographs: (top) Maxwell; (below) Albert O. Carwin

Lobby is at front of administrative section; stairs lead to upper lobby and terrace roof, door to sales office. Production of pneumatic products takes up rear two-thirds of building.
ALLIED ARTS GUILD STORE, Menlo Park, Calif.
GERMANO MILONO, architect
THOMAS D. CHURCH & ASSOCIATES, landscape architect
LOUIS A. ANDERSON, contractor

3. Crafts showroom makes the most of its wooded site

Being spontaneous looks easy but is most difficult for many of today’s architects. Witness how few buildings in parks are truly informal, how few are genuinely rustic without being heavily self-conscious.

In this unostentatious little garden and crafts salesroom set under big trees in parklike surroundings, Architect Milono has been quite subtle. Notice how he lets his roof sweep low on two adjoining sides and how he lets it stop higher up on the other two, so each gable has a long leg and a short one, in an interesting repeated rhythm—yet there are no complications about the juncture of ridges or valleys or fascias. The details are equally unfussy—the impression is that most of them have simply been left to skilled carpenters to do as came natural. The result is a charming little stained wood structure that goes well with surrounding farmhouses as well as the handsome early Gardner Dailey traditional houses of the neighborhood; so well that the AIA jury chose it as one of the best in the Bay Area for the past 20 years.
Rustic design blends building comfortably with the wooded entourage.

High north window is primary feature of stained wood building which fits well among the large trees on the 3½ acre site.
Model shows tuberculosis building in foreground, general hospital in rear. Most patient rooms in both buildings face south (toward camera)
New York builds a general hospital group with elbow room, convertibility and an up-to-date psychiatry program

This giant teaching center—an 898-bed general hospital and 500-bed TB hospital set in a 60-acre tract—combines some advanced medical thinking with some sharp architectural thinking about site plans.

The doctors made the discovery that the old tuberculosis hospital is not eternal and has to be changed. The architects have discovered that the old demand of flat and “usable” sites is not eternal. Just as the hospital, after its tuberculosis use, can be converted to something else, so land which hitherto has been of no use can be converted into top-notch hospital property.

The site—which works out as almost a miracle of ample, long-range hospital planning in a big, jam-packed city—has been passed up again and again by institutions, commercial builders and housers because it was so rugged.

But Architects Pomerance & Breines studied this cheap ($700,000) ugly duckling and came up with a scheme that turned the contours to advantage.

They put the hospitals proper on high ground with a view. They placed main entrances on the high western side, service and basement and sub-basement levels on the east, nicely segregating these functions. They put service buildings unobtrusively in a hollow. Future housing for superintendents’ families will not be embedded in the institution as is customary in municipal hospitals; it faces into a nice residential street.

Study of the site began because of what looked like bad luck—loss of another, choice 20-acre site to a municipal housing project. After it was clear this second, 60-acre site could be made to work, the Department of Hospitals and the architects did a lot of careful staff work on a city-planning level. They patiently followed up every ramification of their plan: bus company and transportation officials agreed to reroute a bus line around the site; the Parks Department swapped land for a bus terminal in return for a swath to widen a parkway; everybody involved, from the Bronx Borough president’s office to the sewage department, learned how the project affected them.

Result: When the site acquisition came up for approval by the city, there were no unknown quantities, no flaws, no reasons for not breaking hospital site-size precedent.
"Long-stay hospital" is a more accurate name for this unit than TB hospital," says Dr. Marcus Kogel, New York's hospital commissioner. Looking forward to a hopeful day when TB hospitals—or anyway this TB hospital—may not be necessary, the needs of chronic patients in general were considered equally with those of TB patients. For instance, all showers are equipped for wheelchairs; walls have rails to aid walking.

Most facilities that characterize this as a "long-stay" unit are grouped on the second floor (see plan). Auditorium and classrooms are patients' facilities, not—as might be assumed—for staff or students. The basement has a complete clothing care department; each floor has its own dining room and such unusual conveniences as self-help stocking-and-underwear-laundry for women patients.

"To make the hospital still more flexible, we were careful to take nothing away from nursing units that would make them impractical for general hospital use," says Kogel. This acumen will pay off very shortly, in fact. When the unit opens in January, 1954, it will immediately take pressure off badly crowded Bronx hospitals by serving as a general hospital (with outpatient department) for everything but obstetric and pediatric cases. It will switch to TB cases after the new general hospital opens in 1955.

To keep grounds to the south open and quiet and to leave ample space adjoining the hospital for patients' terraces and walks, the outpatient and visitors' entrance are behind the patients' wing, on the west.

This gave the architects the problem of making the main entrance look like what it is, rather than a "back door" at the rear portion of the building. To this end, they indicated sculptural accent for the big (78' x 53') gray-brick facade raised 10' above the entrance.

The winner of the invitation competition to fill this space, Milton Hebold, arrived at a very happy solution, on a scale which is satisfactory both in terms of the architecture and of the human beings who will enter the building. His four figures (the two larger about 12' high), are sculptured in the round, rather than in the bas-relief which most other entrants chose, because Hebold believed the stark facade needed both an emphatic accent and the enlivening qualities of light and shadow.

Cost data:

<table>
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<th>Description</th>
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<td>General hospital</td>
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<tr>
<td>TB hospital, service buildings, bus shelters</td>
<td>12,150,000.00</td>
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Per cu. ft: 1.75
Per bed: 20,400.00

* Excludes architects' fee and $800,000 for sitework and landscaping.

Sculpture-in-the-round of family welcoming back the father will give heroic-size accent to 78' x 53' entrance facade of TB hospital.
Patients' wing of TB hospital has continuous balconies and two north-south solaria on each floor.

Second-floor plan shows special "long stay" facilities, suitable for all chronic patients.

TB hospital viewed from boilerhouse to northeast.
The general hospital has a feature that merits study by all hospital architects: its unusually complete psychiatric service—outpatient, day-patient, inpatient, and psychosomatic service for patients of surgical, medical and obstetrical services.

This is very much a coming thing for general hospitals of all sizes except the smallest. More and more frequently, architects are going to discover psychiatric facilities listed in general hospital programs and they will need to understand why it is important to integrate these facilities into the hospital, as Pomerance & Breines did here, rather than set them apart in any way.

The reason why this new problem comes up at all, as Dr. Kogel points out, is that “medicine has now advanced to a point where we can successfully treat certain psychiatric conditions in the general hospital.”

The chief reasons why these new facilities have to be woven right into the rest of the hospital are: This helps overcome the stigma of inpatient mental treatment. Patients and their families will often welcome psychiatric treatment in a “plain hospital,” while they resist clearly labeled psychiatric care until the patient is badly deteriorated. It helps overcome a similar reluctance toward psychiatric outpatient and day-patient care, which means that more patients can be treated while they are in relation to their environment—instead of waiting until they must be removed from it—and with the aid of other community services. (Note how the architects have tactfully treated the separate mental hygiene clinic as simply another outpatient entrance.) Inside the hospital, integration helps educate all staff members on psychiatric treatment and problems (some psychiatric education is becoming indispensable for all doctors). And it makes all services alert to psychiatric complications. The psychosomatic service also has an extra reason for integration; its flow of patients comes from, and returns to, other departments.

Like other general hospitals that have started psychiatric services, this one will keep no custodial patients. Only patients with good prospects for reasonably quick recovery will be accepted for treatment; most will be ready for discharge within 30 days.

This municipal hospital will also have considerable transient psychiatric traffic, however. Like New York’s famous Bellevue, it is responsible for accepting all psychotic cases brought in, seeing cases through commitment court, if necessary, and routing them to other institutions.

Because the facilities are for short-term treatment and because the wards are “diluted” by even shorter-term transients, Kogel thinks the space allotted for living-dining and inpatient therapy is adequate. This is a controversial subject. Majority weight of opinion seems to be that a general-hospital children’s psychiatric ward of this size (see ninth-floor plan, opposite page) ought to have two playrooms plus a dining room; that a group of 26 quiet or adolescent patients should have at least three general living-dining rooms, and that general hospital psychiatric wards should contain a fairly high proportion of single rooms.

Agreement is general, however, that the larger breakdown shown on the floor plan—into adolescent, child and quiet groups (plus the breakdown of facilities on other floors)—is excellent.

The over-all organization of the hospital includes a unique experiment: Instead of a general kitchen for all patients, complete kitchens are put on alternate floors (with serving pantries on nonkitchen floors). The idea behind this is that cooks who have their own domains (instead of being submerged in a “factory”) will both produce better food and be more stable employees. When “frozen meal” feeding systems become practical, the hospital will be ready; kitchens will be converted for electronic thawing of prepared foods.

This new teaching hospital center will serve Albert Einstein Medical College of Yeshiva University, to be built close by.
Construction view shows steel going up for general hospital. Floor slabs of all buildings are reinforced concrete, walls are brick over hollow masonry.

Outpatient entrance is on street, leaving hospital grounds open and quiet as possible.

Psychiatric units on ninth floor are notable for good breakdown into large groups—adolescents, quiet adults and children. Greater provision for subgroups within each such ward is recommended by some authorities (see text, opposite page).

Maternity floor (seventh) has neat nursery-and-ward units with own circulation.
1. PRESTRESSED "WAFFLE" LIFT-SLABS

Three modern developments in concrete technology combine

Since World War II there have been three outstanding developments in US concrete construction, especially applicable to factories, warehouses and parking decks:

1. Youtz-Slick lift-slabs to cast floors and roofs on the ground instead of on temporary scaffolding way up in the air (AF, Sept. '51, p. 180);

2. European techniques of prestressed concrete have been adapted to our high labor-cost economy to give stronger, more durable construction (AF, Sept. '51, et seq.);

3. Concrete slabs have been made lighter by using prefabricated coffer pans in the underside of the slab. These pans have been made of precast concrete, metal, corrugated cardboard (AF, May '53, p. 150) and now polyester plastic reinforced with glass fiber.

After perfecting the Youtz-Slick lift-slab method, Southwest Research Institute engineers in San Antonio aimed at greater flexibility of column spacing. Existing jacks could only lift 50 tons each so that, with adequate safety factors, columns could not be more than 20' to 25' apart. Stronger prestressed waffle slabs allow column spacing to be increased to 36'-3'' one way and 28' the other and the slabs lightened from 140 lbs. (compared with equivalent flat-plate construction) to 90 lbs. per sq. ft.

Last year, the first prestressed slab was lifted to form an experimental roof over a laboratory building at the Southwest Research Institute. It, however, was a simple prestressed slab with no attempt made to lighten it by the waffle technique.

Louisville parking garage

Dahlem Garage in Louisville is a single-story structure with an open-air parking garage on the roof. This is cast in two sections on the ground-floor slab and hoisted 11½' into position.

The largest slab is 100' long and 35 to 51' wide supported on ten 8' steel columns placed 32' and 28' apart, the other 38' x 75' upon six columns. Both are cast upon polyester glass-fiber pans 24'' square at the bottom, 18'' square at the top and 10'' deep, each weighing 7 lbs. Placed side by side in both directions these pans form a wafflelike slab with two-way concrete joists 4'' wide at the bottom, 6'' wide at the top and 24'' o.c. Designed for 100 psf
to produce long, light, crackless spans

live load, each slab weighs 90 psf plus additional solid concrete around columns raising the average weight to 105 psf.

In addition to mild steel reinforcing each joint contains prestressing wires anchored at the edges of the slab. These are 3/4" diameter high-tensile steel wires, arranged in four wire units across the short axis of the slab and alternate four-wire and six wire units along the long 100' axis.

High-strength concrete

Once the wires are in position, top mild steel reinforcing is placed around the columns and the entire slab covered with wire mesh to reinforce the 2" thick concrete above the pans. High-grade concrete is carefully vibrated to achieve a strength of 5,000 psi average in seven days, and 6,200 psi average in 28 days. Prestressing began after five days curing, using 30-ton hydraulic jacks, one on each end of each group of wires to minimize friction losses.

To prevent bond with the concrete each group of wires is wrapped in plastic and greased. Wires are tensioned to 145,000 psi and final stress is about 120,000 psi after 15% shrinkage loss (their ultimate tensile strength is 220,000 psi). This required a 14 ton pull on the four-wire groups and 21 tons on the six-wire groups. After tensioning, wires were anchored against the edges of the slab with a double-headed wire technique and the anchorages grouted. Tensioning averaged about 15 minutes per unit.

A small incident on the Louisville job demonstrated the importance of high-quality workmanship in prestressed concrete. When one of the six wire units was under full tension it burst through the concrete for a distance of 7" back from the edge of the slab. Examination showed that the concrete at this point was weak due to insufficient vibration. After release of the wires the crack was grouted and the edge reinforced by a 1/2" angle iron: after curing of concrete the wires were tensioned and anchored without further difficulty.

The slab was lifted in 17 1/2 hours. As it rose many of the plastic pans simply fell onto the ground; the few that were stuck to the slab were removed by a jet of compressed air blown into a gap chiseled at the edge of each pan. Pans are rented at $40 per pan and have proved very durable; some have been reused 15 times.

Although prestressed lift-slabs should save 10% in material costs over standard reinforced slabs, they currently cost 10¢ per sq. ft. more. However, the developers believe a major use for the prestressed lift-slab technique to be in parking garages where they believe it is well worth a small premium to eliminate cracks in exposed concrete decks and avoid deterioration under alternate freezing and thawing conditions in winter.

Contract price for the 7,300 sq. ft. Dahlem garage was $55,000 or $7.55 per sq. ft. It was designed by the Ohio Lift Slab Co. (who report that they have obtained bids on two prestressed parking garages in Akron and Cleveland for under $3.00 per sq. ft.); the slabs were prestressed by Prestressing Inc.; contractor, Dahlem Construction Co.

San Antonio physics building

A three-story physics building for the Southwest Research Institute is now under construction at San Antonio, Tex., to the designs of Keppel O. Small and Eldon Teschner, architects. Three slabs each 96' x 34' are carried on 8' x 8' steel box columns spaced 36'-8" one way and 26' the other. Live loads on the floor are 65 psf and on the roof 30 psf, carried by slabs of similar design to the Louisville garage.
America's first big permanent suspension roof is now covered. Roof flutter in the catenary surface (the problem that has prevented construction of more of these economical roofs) is controlled by a two-way system of tension cables. Seventy thousand square feet of corrugated steel deck, insulated and topped with light-colored built-up roofing, now encloses North Carolina's famous 5,500 seat livestock judging pavilion. The deck was erected in four weeks by ten men and cost 15¢ per sq. ft.

The structure, originally conceived by the late Matthew Nowicki, employs a unique stemming principle (AF, Oct. '52, p. 134). Steel box columns support two crossed oblique compression arches of reinforced concrete; the roof is carried by tension cables slung between them. Side walls are composed of glare-reducing glass fixed between columns, which are close enough (6'-11") to act as mullions.

Main problem in the suspension roof is to prevent flutter. Primary cables are slung across from arch to arch at 6' intervals; these are held down by longitudinal secondary cables also 6' apart, attached beneath them to provide a 6' x 6' cable grid. Main cables, 3/4" to 1-5/16" dia., and secondary cables, 1/2" to 3/4" dia., are delivered in the required lengths and with ends socketed for easy erection.

Hot weather might slacken the cables, therefore secondary cables are prestressed to hold down the main cables at any normal temperature. The system is further stabilized at each side by guy wires tensioned with adjustable springs.

At each 6' x 6' grid intersection the cables are anchored by double clips fastened by workmen in crow's-nest baskets atop long booms of crawler cranes.
The 27 ga. corrugated steel roof deck is composed of 2'-9" x 7' sheet coated with zinc and asphalt impregnated asbestos felt. Undersides are aluminum painted.

The first few rows of roof deck were placed down the middle of the arena by men working from the boom crow's-nests. After a workable area of roof had been fixed, work could proceed from the roof itself. The deck is covered with 1½" rigid insulation board and built-up roofing.

The pavilion was designed by William Henley Dietrick architect, and the late Matthew Nowicki, consulting architect; Severud-Elastad-Krueger were the consulting engineers. The ingenious erection procedure was developed by the contractors, William Muirhead Construction Co.

Corrugated steel panels are fixed to cable grid with strap clamps. Light-toned panels showing aluminum-painted undersides are arranged ready for erection. Guy wires in foreground are under tension to help resist roof flutter.

Cable grid of 6' x 6' squares is 85' high at center. Panels are erected by men atop crane booms assisted by others on the erected part of the roof. Roof is topped with fiber-board insulation and built-up roofing.
3. LAMINATED TIMBER CANTILEVERS

Rigid-frame mill construction cuts warehouse structure cost to $1.45 per sq. ft.

Laminated timber construction is becoming more and more competitive. One of several such warehouses in the Kansas City area, this 117' x 482' timber structure, with cantilevered beams, purlins and 2" sheathing, was erected in 4½ weeks by 14 men with a small crane for only $1.45 per sq. ft. in place.

Only two rows of columns run down the inside of the warehouse, producing a 38' center bay and 38'-9" outer bays spanned by laminated beams 7" wide, 2½" deep and 46'-9" long. Each beam is cantilevered 8' into the center bay and the remaining 22' spanned by 5½" wide and 19½" deep members simply supported. Main beams are 25' o.c. joined by 5½" x 13" laminated purlins.

Advantages of this construction: 1) design moments across these wide spans are cut 28%; 2) weight of beams and purlins is cut 20%; 3) complicated multiple beam-to-column connections are eliminated, 4) framing cost is cut 19%.

All beams and purlins are fabricated of 1½" laminations of Douglas fir bonded with phenolic resin glues. Based on a safety factor of 3 to 1, design stresses are 2,400 psi in bending and 2,000 psi (parallel to the grain) in compression, sufficient to earn a Class II "mill construction" fire insurance rate of 32.5c.

Main beams are carried on concrete block side walls and 6" WF 20# interior columns set in a 5" concrete floor slab. The simply supported beams hang from the cantilevered beams by a 1" steel tension bolt at each joint. Ends of the beams are sloped for ease of erection. Purlins are nailed into metal "stirrups," spaced 8' o.c. along the main beams; tops of purlins and beams align to receive 2" sheathing.

Architect for the warehouse is Wm. B. Fullerton Jr.; framing was designed by Timber Structures, Inc. and it was built for the A. W. Zimmer Real Estate Co. by Estrin Construction Co., contractors.
4. WELDED CAMEL-BACK TRUSSES

Huge 250' span prefabricated trusses are welded to save 13% steel and 5% erection costs

Thanks to a maximum use of large, prefabricated sections, shop and field welding saved 13% steel and came out $45,000 cheaper than riveting in this wide-span, 200,000 sq. ft. factory extension for the Fairchild Aircraft Co. at Hagerstown, Md. Erection bids came to $840,000 for welded construction (2,353 tons at $358 per ton) versus $885,000 for riveted (2,700 tons at $328 per ton). The camel-back truss construction weighed 23 lbs. per sq. ft. of area covered, a saving of 4 lbs. as compared with standard parallel chord truss design.

Further, by exposing the 200' and 250' steel trusses 25' above a flat roof line, the engineers achieved an economical roof resulting in 6% less surface area and 14% less space to heat than if the trusses had been enclosed within a curved roof.

Fairchild's existing factory has been extended on two sides. The north extension covers 150' x 250' with 250' clear-span camel-back trusses spaced 100' apart by cantilevered parallel chord trusses 25' on center, which carry the roof purlins. The 825' x 200' east extension is of similar construction. Here the camel-back trusses span 200' and the parallel chord trusses 100' between them, also 25' on center. Both structures provide 47' high clear working space to the bottom chords of the trusses, also designed to carry four 10 ton cranes.

Camel-back trusses are prefabricated in three sections using both shop and field welding—470 lbs. of weld metal per truss in double-V, butt-type main welds. Both the large trusses (250' span, weight 105 tons) and the smaller trusses (200' span, weight 94 tons) are fitted on the site and erected with two crawler cranes.

Large welds, some of them over 3" thick, are made in small passes at a time and the trusses turned over between welds to minimize shrinkage distortion. Welds were also X-rayed and all joints proved satisfactory.

This Fairchild factory extension was designed by Architects Fordyce & Hamby; structural engineers were Strobel & Salzman; mechanical engineer, Guy B. Panero; contractors, Lehigh Structural Steel Co.
NEW PRODUCTS

Radiant panel is created as conditioned air travels through the uninsulated ducts and heats or cools neighboring acoustical pans. By the time the air is discharged through perforated pans, it is within 10-15° of room temperature.

Components include perforated pans, ducts and duct faces. These are mounted on 8' long snap bars, suspended on utility angles. No cross furring is needed.

Set flush with the faces of the brushed aluminum acoustic pans, the smooth ducts and light troffers form an inobtrusive pattern on the ceiling.

MULTI-FUNCTION CEILING installed easily by one-trade crew

Integrating prefab ducts with its perforated aluminum pans, the Simplex-hung ceiling combines air conditioning and sound control. While most such double-duty ceiling systems are put up by an assortment of lathers, plasterers and plumbers, Simplex can be installed solely by a sheet metal crew armed with angle cutters and padded mallets. The ceiling provides radiant heating and cooling via its exposed ducts as well as draftless air distribution through perforated pan outlets. As conditioned air travels through the ducts, it heats or cools neighboring aluminum pans by conduction, and thus creates a partial radiant panel effect. During the cooling phase, this radiation is evident along each 1' wide duct bottom and 1' to either side. During heating, Btu contributions from lighting troffers help extend radiant effectiveness to almost the entire ceiling.

According to Engineer John D. Dillon, the system's designer, its major economy is that 40 to 60% less air can be used because of large temperature differentials. For cooling, the air can be sent into ducts as low as 47°; by the time it actually enters the room through the perforated pan at the end of the duct, it is about 65°—approximately the same as that delivered by conventional diffuser systems. For heating, air can be delivered to ducts at 170° and will be discharged through the outlets at about 90°. Return air may be brought up from the periphery of the room over the suspended ceiling and carried back either through ducts or the entire area may serve as a plenum.

In application the 1' x 2' acoustical pans are pressed into metal snap bars which are hung on utility angles. Standard lighting troffers fit into the ceiling, and sound absorbent pads are laid across the pan flanges to complete the job. Cost for Simplex with ductwork is estimated at about $2 per sq. ft. installed.

Manufacturer: Simplex Ceiling Corp., 552 W. 52nd St., New York 19, N. Y.

(continued on p. 224)
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Architect-Client Forum continued


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normal fee,” that would be ridiculous. No doctor in his right mind would say, “Yes.” Yet we are supposed to be in our right mind when we do just that.

Leopold: Any one job judged by itself is unsound on a percentage fee. But five years’ work on a percentage fee comes out all right.

Schlossman: There is an implication I don’t think Mr. Luckman intended in his statement that an architect working on a percentage fee is inclined to increase the cost of the job. I have not found that to be true. I believe that architects and engineers, whether working on a percentage basis or any other kind of basis, have the interests of the owner at heart.

Chairman Prentice: The importance, the difficulty and the intricacies and involvement of good planning have increased to such a very great extent in the last generation that it is shortsighted for owners not to recognize that they should pay substantially more for planning. The owner has such a tremendous financial stake in the economy which can be provided by the best engineering, that the wise owner will see to it that adequate money is provided to pay for engineering that is at least as good as the project calls for.

Severud: In an ideal setup, the architect will have sense enough to know that one of the major contributions of the team will be the handling of the engineering part. If he doesn’t recognize that, he doesn’t know much, because buildings are more and more becoming functional. An architect who wants to keep peace with himself believes what he tells the owner; that he is the best qualified for this particular work, not he alone but in a team with highly qualified engineers. If results are produced, you don’t have to worry about fees. If you can produce results, and if you can give what people want you to give, you don’t have to worry about compensation. Instead of kicking the subject of fees around I think, first of all, we should determine how we are best able to give the owner what we represent that we are able to give, and to produce the final product in a superior fashion. Whatever money is involved should be secondary.

So I think we will do much better if we continued on p. 184
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Other Items I'd like to know about______________________

ARCHITECT-CLIENT FORUM cont’d.

explore what is going to be the spirit of our activities. Are we going to drag it down to a commercial basis and say, "well, we want to make money?" Maybe so. Or, is it a question of honestly living up to the representation that we made that we are clever, that we like our work, that we can do something you will like which will be to the credit of all of us?

Leopold: I think that is a very fair question. I value my architectural associations but I have enough direct owner work, so that I don't have to depend solely on the architect. I am going to speak for some of the other men in the field who don't happen to enjoy the reputation of Mr. Severud. I say they are inhibited in their growth, because they are grossly underpaid.

I will specifically state that a man making from 1 to 4% on a mechanical project running half a million dollars cannot afford to study it properly.

Chairman Prentice: A wise owner will be willing to pay more for his total planning—and there is no good reason why there should be any conflict between the engineer and the architect over both of them getting an adequate fee to put the amount of research and study and imagination and figuring into the project that the project calls for.

Leopold: But once the architect has made his deal with the owner, he goes on a shopping expedition for engineering service. We have clients of both kinds. The majority of the clients are the ones who do not go shopping at all.

Severud: If any architect is shortsighted enough to want to make a little more money on the job and teams himself up with someone who may endanger his business, that isn't intelligence, is it? So, in any intelligent teamwork, the proportion of the fee is something that we have never had any trouble with.

Panero: I am heartily in accord with Mr. Leopold when he says a mechanical engineer—and I am a mechanical engineer—can't live on the terms of the architect. The actual fact is that many large architectural firms right here in New York, the moment they have a job on their hands and have a fixed fee, will actually send out bids. That is a real fact.

Shaw: If an architect does that, he is just as wrong as he can be.

Panero: But, it is being done.

Schlossman: This discussion has pertained largely to individual situations and to certain special kinds of building operations. Much of what has been said is not representative of the big bulk of the construction that is going on elsewhere in the country.

continued on p. 188
RUUD-MONEL
\textit{two \textsuperscript{\texttrademark} temp}
Sanimaster

\textbf{RUIND-MONEL \textit{two \textsuperscript{\texttrademark} temp} SANIMASTER DELIVERS \textit{BOTH} THESE HOT WATER TEMPERATURES FROM THE SAME TANK, AT THE SAME TIME!}

The Ruud-Monel Sanimaster will do double-duty for you, too. It is \textit{the} answer in commercial or industrial operations where both extra-hot water and regular hot water are needed at the same time.

\textbf{AUTOMATIC GAS WATER HEATER}

\textbf{DOES DOUBLE-DUTY IN THRIFT DRUG STORE!}

Its 180° sanitizing hot water does a perfect job in the automatic dishwasher. Its 140° general use hot water is ideal for lavatory and other faucets. THE RUUD-MONEL two \textsuperscript{\texttrademark} temp SANIMASTER DELIVERS \textit{BOTH} THESE HOT WATER TEMPERATURES FROM THE SAME TANK, AT THE SAME TIME!

from the same tank, at the same time ... Sanimaster delivers 140° water continuously for lavatories and other general use faucets.

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\end{figure}

\textbf{180° SANITIZING HOT WATER}

\textbf{140° GENERAL USE HOT WATER}

\textbf{180° water is piped right into the Hobart SM-4 dishwasher at this Thrift Drug Store. Water at 180° for positive bacteria destruction ... perfect sanitation.}

\textbf{From the same tank, at the same time ... Sanimaster delivers 140° water continuously for lavatories and other general use faucets.}

\begin{figure}[h]
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\end{figure}

\textbf{FOUNTAIN MANAGER CALLS SANIMASTER OUTSTANDING INVESTMENT}

Michael Patsales, fountain manager of the Thrift Drug Store, 912 Liberty Avenue, Pittsburgh, Pa., says: "This Ruud Sanimaster Water Heater is one of the best investments that we have ever made. You can't imagine how much more efficient it makes our fountain operation to have water hot enough to sanitize dishes in the dishwasher, yet to have tempered water at the pot sink or lavatories. And to have both kinds of water from one tank!"

\begin{figure}[h]
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\end{figure}

\textbf{RUUD MANUFACTURING COMPANY}

Pittsburgh 1, Pa. • General Offices • Toronto 14, Ontario

\textbf{RUUD MANUFACTURING COMPANY}

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\textbf{ARCHITECTURAL FORUM • JUNE 1953}
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Complete, Pre-Assembled Units — Fitted, Glazed and Finish-Painted —
Make Big Savings in Installation Time and Cost...

Here is the window the whole building industry is talking about—the first truly complete window treatment. Proved through thousands of installations in the United States, Canada and Alaska, the Rusco Prime Window offers many unusual advantages. Made of tubular galvanized steel, bonderized and finished with baked-on outdoor enamel it is strong and rigid, yet streamlined and light in weight. Because it is fully pre-assembled, glazed and finish-painted—all ready to install in the window opening—it makes substantial savings in installation time and labor and in maintenance. Removable sash offers many conveniences and saves breakage during construction.

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GLASS... + SCREEN... OPTIONAL + WATERPROOFED FELT WEATHERSTRIPING... + INSULATING SASH... OPTIONAL — FULLY ASSEMBLED IN METAL OR WOOD SURROUND...

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DEPARTMENT 7-AF-63 CLEVELAND 1, OHIO
IN CANADA: TORONTO 13, ONTARIO
Belmont Hospital at height of fire

What fire? You mean you didn't read about it? How it started by spontaneous combustion — just as do many tragic hospital fires.

Only — and this is why you may not have seen the news item — the fire at McLean Hospital in Belmont, Mass., set off a Grinnell Automatic Sprinkler System. One sprinkler head extinguished the flames before the Fire Department arrived. Patients were unaware of the blaze and the damage was slight.

Grinnell Sprinklers stop fire at its source, whenever and wherever it may strike, night or day, automatically. 75 years experience proves this.

Consider the cost of fire ... in terms of lives lost; property damaged; records ruined. Then ask yourself whether you can possibly afford not to fully protect your hospital, warehouse, plant, theater, hotel, or school, against this scourge.

The time to act on Grinnell Protection is now — before fire strikes — burning you out, or crippling your business. The irony of it is, if you have fire insurance, you're probably paying for Grinnell Protection anyway in higher premiums.

So why not have it! Grinnell Company, Inc., Providence, Rhode Island.

GRINNELL
FIRE PROTECTION SYSTEMS

Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878——
What we have said pertains particularly to
large jobs with qualified owners who build
many, many times and not to the man who
builds once, and that is all. Likewise, I think
the kind of thing now being brought up is
not typical. At least, I hope not. I suppose
some architectural firms do solicit their
engineering services on a bid basis. But I
don’t think it is general. I think that gen-
erally, the facts are converse of that and I
think the implication is wrong that the dol-
lar which the architect makes is the ruling
factor in his decision on who is going to be
on the team. There is an ever surprising
amount of idealism and altruism in archi-
tects, just as there is in most other profes-
sions. The ruling desire is to get the owner
the best building possible for the least money.
The last thing thought of is his own dollar.

Leopold: The approach that is frequently
made is this: “Charley, we would like to
have you do this job. We will pay you as
much as we pay X. but we can’t pay any
more.”

Schlossman: I suppose that is sometimes true,
but I don’t think it is general.

Panero: I have a letter from a prominent
architect down South asking whether I could
do a 200-bed hospital for 2½%. Well, you
just can’t do it.

Leopold: I am working in ten states at the
moment; I am not reporting on New York
alone.

Chairman Prentice: Do you find somewhat
the same situation in all those ten states?

Leopold: No. in the

Severud: It should be recognized that the
loser is not only the owner. It is also the
architect.

Crandall: To get back to Mr. Prentice’s ques-
tion. . . I asked this question of the colleges,
“How many engineering students are going
into the construction field?”

We found out that in my day about 70%
were going into civil engineering. In the early
forties or late thirties practically none of them
were going into the civil fields—a very low
percentage. Today it is building up very fast.
The boys are again going into the civil field—
into the construction business.

Panero: However, the greater proportion of
them go into industry.
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MATICO Confetti!

HURRAHS — from America's value-wise home buyers. It's high-style flooring at low prices...easy to clean...lasts for years!

APPLAUSE—from leading decorators. They welcome the fresh, new styling that gives them wide freedom in creating exciting decorative schemes.

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Confetti is available in 10 gay, festive colors, in 9” x 9” tiles of 1/8” thickness.

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Joliet, Ill. • Long Beach, Calif. • Newburgh, N. Y.
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from rooftop to foundation

FAMOUS TRIBOROUGH BRIDGE

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CAREY ASPHALT PLANK.
Over 100,000,000 crossings without one cent for repairs or maintenance. That’s the durability and economy record of Carey Asphalt Plank on the Harlem River span of the Famous Triborough Bridge in New York City!

CAREYSTONE, the modern corrugated asbestos-cement roofing and siding material—can reduce building costs up to 40%; cut maintenance cost to the bone. It’s easy to apply, won’t corrode, rust, rot or decay and needs no preservatives of any kind. Shown here on roof and sidewalls of Westinghouse TV-Radio Plant, Metuchen, N. J.

CAREY THERMO-BORD was specified for exterior walls and roof deck of this temporary building erected at the Cleveland, Ohio, Hopkins Airport; where a new Air Terminal is now under construction. Thermo-bord was selected for its heat insulation qualities and structural strength at low cost for temporary buildings.
Carey products and Carey services provide scores of opportunities to cut costs and build longer life into buildings of every type and size. They have a reputation for quality and dependability backed by over 80 years of Carey experience and up-to-the-minute technical research.

For example, low-cost erection of permanent buildings is readily accomplished with the help of Careystone. Made of asbestos and pure Portland cement, it is corrugated for strength, won’t burn, rust, corrode or rot. Comes in big sheets that cover fast, needs no preservative treatment whatsoever.

Carey built-up roofs and roofing products bring roof construction and maintenance costs down to earth . . . and Carey Asphalt Plank provides a maintenance-free traffic surface that is virtually impossible to wear out. Your Carey Industrial Sales Engineer will supply you with full information about these and other Carey products for your construction requirements. See what Carey can do for you . . . call your Carey Industrial Sales Engineer for technical assistance in selecting Carey products for jobs you want done right, fast, at low cost. Or, write Department AF-6 in Cincinnati and outline your problem.

BUILT-UP ROOFING at the White Motor Company’s huge truck plant, Cleveland, Ohio, is maintained in prime condition by tough, long-lasting Carey-clad and Carey Fiber Coating—both especially formulated to withstand the grinding abrasion of weather and corrosive fumes.
we put the "Automatic" in FIRE PROTECTION

You've no doubt read or heard from time to time that one or another type of fire protection is the correct answer to your safety problem. One says foam is best. Another says water sprinklers are the answer. Perhaps carbon dioxide, dry chemical, or other media will do the trick.

What is the most effective method?
Without a thorough understanding of all conditions involved, we wouldn't hazard a guess. For fire protection, like any other scientific problem, requires (1) technical know-how, and (2) application of that knowledge. Most methods of fire safety are good...but only through "FIRE PROTECTION ENGINEERING"—designing, manufacturing and installing the specific type of system best by test—can you be sure of maximum safety.

So, we take all methods of fire alarm and control, combine them with extinguishing mediums—FIRE-FOG, Air Foam, Sprinklers, etc.—and compound the results by adding "Automatic" technical know-how as well as test and field experience. The result...the finest "Automatic" FIRE PROTECTION available at any price.

The subject is more vividly covered in our colorfully illustrated literature, "The ABC of Fire Protection." Write for free copy today.

ARCHITECT-CLIENT FORUM cont'd.

What has given the architect his blackest eye?
optimistic cost estimates

Dowling: Architects are most criticized not for their taste, but for the fact that the building costs more than the architect says it will. If we can get some reliable way of assuring people—not by guarantees—but if we can raise the accuracy of estimates so that architects could be trusted, so that people would believe in them, that would remove some of this distrust.

Of course, the architect's ability to design is the No. 1 factor. He must design well. He must give you something which is satisfying to the eye and to the mind and to the economics and to the heart. But part of the distrust of architects also comes from the fact that the costs are so universally underestimated. Isn't it possible to have better prognostications of costs?

Zeckendorf: I would like to say something on that. Elliott Cross, my late partner, was a successful architect in New York. He had one inflexible rule. Neither he nor any of the partners would ever give an estimate of the cost on anything. He told his client, "I am here to design the building, and if you want an estimate, go to a builder."

Dowling: That is fine, except that an owner must have some idea of the costs to know whether he can afford to pay for it.

Zeckendorf: That is not the job of the architect.

Dowling: People expect them to give some impression of costs.

Zeckendorf: A professional builder should do that. Why seek something from a man who is not qualified to give it?

Leopold: The architect and engineer should be in a position to give a reasonable estimate of costs.

Crandall: I don't agree. We have people who estimate, but we don't even rely entirely on our own estimates for certain special parts of the work. We will often go for our estimates to mechanical people who do know that business. The ordinary builder is in the same boat with the architect when it comes to giving a general estimate for the whole job. But the builder is in a position to know much more than the architect about estimating because the estimator soon gets out of the field if he goes into the architect's office.

Gruen: How early would you, as a builder, be willing to undertake such an estimate and on what kind of terms?

continued on p. 196
The moderate cost of Armstrong's Linoleum, along with its ability to withstand concentrated traffic, makes it a favorite floor for corridors. Floor care is minimized with Armstrong's Linoleum, too. Since this material comes in rolls, 6' wide and up to 90' long, it provides a smooth surface with few dirt-catching joints.

McClatchy Newspapers Building, Sacramento, Calif.
Lockwood Greene Engineers, Inc., Architects - Engineers
Dunbar Beck, Designer

ARMSTRONG'S LINOLEUM
ARMSTRONG CORK COMPANY • LANCASTER, PENNSYLVANIA
check these important points and be SURE you get the best!

It pays to dig for facts when you contemplate the purchase of unit ventilators. Ask questions—get Experience Reports—look beneath the surface for the qualities that mark the difference between a doubtful buy and a sound investment. For example, check such little things as the thickness of the linoleum table-top surfaces (ours are ½ inch thick burlap-backed battleship quality) not just thin felt-backed material. Ask about the cabinet doors—are they interchangeable? (Ours are.) Are they awkwardly hinged? (Ours run on smooth tracks and can be easily removed without tools.) Is the shelving adjustable? Are the cabinet corners rounded for appearance and safety? (Ours are.) How are the cabinets constructed? (Ours are monolithic welded for lifetime performance.)

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This dependability starts deep down inside the product—the result of the superb CRAFTSMANSHIP that has made Herman Nelson the outstanding name in the unit ventilator field.

When we talk about CRAFTSMANSHIP we mean much more than just being skilled workmen. We mean the determination to take infinite care in the planning and putting together of every single part of our finished product. Herman Nelson CRAFTSMANSHIP is the result of an honest desire to create a better product from the inside out—without compromise on the unseen as well as the visible components.

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Supt. of Schools, A. E. MCDONALD; Architect, S. R. WITWER; Mechanical Contractor, BIG HORN PLUMBING.
Crandall: Too often cost estimation is done in five minutes.

Tuttle: Clients have a tendency to be overoptimistic—they want to believe that they can park a car in 200 sq. ft.

Crandall: If the plans are very preliminary, it is going to take considerable work, and it can’t be done in five minutes. Too often it is done in five minutes. We should sit down with the architect and go over the great many details so both the architect and ourselves know what is contemplated. And the contractor should be paid for it if it is just a service and he is not going to build that building.

Gruen: Instead of giving estimates ourselves, we have gone to the builder and agreed on an amount which the builder will be paid in case he will not be awarded the contract.

Severud: Some architects are not strictly honest, for their optimism carries them away.

Dowling: Their overoptimism on costs brings more disrepute to the architects than any other single thing. It is a constant joke. Everybody takes it with a smile. There ought to be some way of getting past that point so that architects have a higher standing in the general public opinion.

Shaw: We should do our best to give clients right figures otherwise, we shouldn’t give them at all.

Zeckendorf: That is right.

Yowell: One thing which probably does the standing of the architect or the builder the most harm is the inability to provide estimates that are somewhere within a reasonable range of the final cost of the project. Either the architect should be able to provide good estimates, or he should make none at all. The average owner generally has in mind approximately the amount which he proposes to expend for a particular project, and he relies on his architect either to tell him that he can get what he wants for that amount or to tell him that it can’t be done.

One of the worst things that can happen is for the owner to proceed on the basis of the architect’s opinion that the work can be done within the available funds, complete his plans, obtain bids, and then find out that he can’t afford to build the job.

Harrison: You are putting all the blame on the architect. I want to blame the owner, because I have seen owners add more stuff after the preliminary estimates are made. They didn’t think about it in the beginning, when you started it, but as you go through,
For insurance against noise

Thousands of square feet of J-M Sanacoustic are installed in the new Pan-American Life Insurance Co. building in New Orleans ... a recent "Office of the Year" award winner.

A Johns-Manville Sanacoustic Ceiling provides quiet comfort and a cheerful atmosphere in the cafeteria of the new Pan-American Life Insurance Co. building.

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Johns-Manville SANACOUSTIC*

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The complete Sanacoustic unit is manufactured by Johns-Manville. It consists of a perforated metal panel backed up with a noncombustible, sound absorbing element of high acoustical efficiency. J-M Sanacoustic Ceilings will not burn, rot or disintegrate. A baked-enamel finish makes them easy to keep clean. They may be applied over new or existing construction; and can be painted and repainted without loss of acoustical efficiency.

An exclusive J-M patented construction system permits interchangeability of flush-type fluorescent lighting and acoustical ceiling units.

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ARCHITECTURAL FORUM • JUNE 1953
A New Elevator Era For Heavy AUTOMATIC TRAFFIC
...the only system that adjusts and readjusts itself AUTOMATICALLY to any traffic demand 24 hours a day

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Automatic Traffic Pattern weighs the passengers, counts the stops in each direction, counts the corridor calls and locates their position, counts the by-passes and measures time. From the computation of this data, Automatic Traffic Pattern instantly selects the most efficient pattern for the existing traffic conditions and automatically shifts the system to this pattern. All without dial settings by starters, who now become building good-will ambassadors.

Westinghouse Selectomatic with Automatic Traffic Pattern Control cuts operating costs up to $7000 per car a year—keeps traffic moving and is popular with tenants and building visitors.

This equipment is ideal for new buildings. Added to existing installations, it makes any elevator system ultra-modern. Call our nearest office listed in the Yellow Pages of your Telephone Directory.

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YOU CAN BE SURE...IF IT'S Westinghouse
**for toplighting homes**

Wascolite Skydomes are best. They come in clear or white translucent acrylic plastic, three basic shapes. They allow the architect a free hand in creating more pleasant, private and practical homes because he no longer depends on perimeter areas alone as a source of daylighting.

**for toplighting schools**

Wascolite Skydomes are best. They are completely prefabricated, lightweight, shatterproof. They provide abundant glare-free daylight for classrooms, libraries and all interior areas. They cut construction costs because they permit simple frame construction, lower ceilings and are installed with a minimum of labor.

**for toplighting industry**

Wascolite Skydomes are best. They are weatherproof and strong, made with exclusive flash-welded frames of extruded aluminum. They bring better light to all operations, free periphery areas for storage, reduce electric light bills. Practically self-cleaning, they eliminate maintenance costs.

(All photos taken without artificial light).

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**ARCHITECT-CLIENT FORUM cont'd.**

it is added piece by piece, and they blame the architect or the contractor because their estimates aren't right.

I think this is really the cancer in the building industry, because none of us can tell what a building is going to cost.

**Yowell:** I agree that there is often a lack of a meeting of minds between the architect and the builder and the owner as to just what the owner expects to obtain in the way of a completed project.

**Luckman:** Having been on both sides of the fence, I think there is a solution to that problem. I have bought many buildings and never bought one for what I was told it would cost. Having been an architect myself, I never expected otherwise.

The solution of the problem for the owner—and I agree the owner is one of the worst offenders—is one where it should be the responsibility of the architect to tell the owner that the things he is adding are going to cost more money—and tell him at the time! This is an area in which we, as a profession, are woefully remiss. Yet it is a very positive obligation on our part. "Well, as long as we are going this far, we may as well add a directors' dining room." The architect should tell the owner *at once* how much this item adds to the budget. We have learned by experience that when we start pricing the additions, the owner stops making them.

I do not agree with the philosophy of Mr. Zeckendorf's former partner. Neither does Mr. Zeckendorf! Our firm has done work for him and he asked for—and got—a complete cost analysis from us. And he was right.

For a while we actually tried refusing to give any cost estimates. It didn't work. Instead of being able to eliminate our estimating function, we found that we had to build up a Cost Control department, staffed with experienced and truthful men. These men are not permitted to give a "quickie" estimate—and are never permitted to be "optimistic."

Of course, some of our clients are willing to select a contractor, and in this event we are able to make use of his organization to price out our designs. Some of our other continued on p. 204

**Luckman:** The great curse of our profession is our reputation for wrong estimates.
Most Versatile Warm Air Gas Heating Unit Ever Built!

Model FHS

as a
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as a central heating system

Perfect accessibility and adaptability

A GAS-FIRED UNIT HEATER

Janitrol's inconspicuous good looks and ultra-quiet operation make it an ideal unit heater for installations in schools, churches, offices, stores, sales rooms, restaurants and similar buildings.

Optional use of filters provide a new degree of cleanliness for unit heater operation. Directional louver give precise air deflection to deliver warm air where most needed.

Four sizes of Janitrol FHS Units range from 65,000 to 150,000 Btu/hr. AGA rated input. Widths range from 17" to 22". Heights range from 23 3/4" to 24 1/8". Lengths range from 39 1/2" to 47".

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Here is the most adaptable and different gas heating unit... clean, simple, compact design establishes a new standard in flexibility and economy... saves useful floor space, so important in today’s trend to compact house designs. This greater freedom in unit placement results in more economical installations whether for perimeter heating, conventional type layouts or Janitrol Save-Way System with Constant Air Circulation and 4" duct.

It is the inherent design combination of the famous Janitrol ribbon burner and multiple heat exchangers that makes this Janitrol so compact and durable*

* With nearly a million Janitrol steel heat exchangers sold since 1940, replacement of the tubes due to all causes has been less than 1/4 of 1%.

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- It is non-combustible... won't burn.
- It is rigid... doesn't sag or warp.
- It has a permanently hard, impervious surface, unaffected by time, abrasion and exposure to the elements.
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1 repels water from masonry surfaces
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ARCHITECT-CLIENT FORUM continued

Cromelin: Why are the architects so much more sensitive than the engineers?

Crandall: The builder knows much more about cost estimating than the architects.

Remington Rand, Inc., famous throughout the world for its labor-saving, money-saving business machines, has discovered that air conditioning, too, can step up office efficiency and morale.

Employees in the smart new Remington Rand office in Detroit enjoy complete year-round comfort provided by dependable Marlo Air Conditioning Units.

For a quick, economical solution to any air conditioning problem, large or small, specify Marlo equipment. Write to Marlo today for complete information.

Shaw: One method—educational, not disciplinary—is to have Mr. Prentice publish your comments for all architects to read.

Zeckendorf: A man has to be a crystal ball gazer in a rising market to tell you today what a building might cost that will start four months later and will be finished another year later on.

continued on p. 208
In selecting Seaporcel Porcelain for the exterior mullions of the Bethlehem Steel Company building, the architects chose this superior building material for durability and color of lasting beauty. Seaporcel porcelain, unaffected by weather and corrosion-resistant, reduces maintenance cost to a negligible factor.

Just as a new building's beauty is enhanced by Seaporcel's everlasting, versatile material...older buildings, too, can be strikingly transformed. Seaporcel will cover unsightly steel or brick columns that jut out between windows. It will similarly beautify ugly exteriors of old facades.

Available in the fullest scope of textures and colors, in all contours, forms and sizes, including shaped parts...Seaporcel can be combined harmoniously with virtually every type of structural material in every style of architecture.

For Some Job...Somewhere... You Can Use SEAPORCEL®

To find out how Seaporcel can fit into your plans, ask for our local representative to call, or write for brochure No. 24.
Why Honeywell Customized Temperature Control is a wise investment for apartment owners

*Increased "rentability" will be an important factor in the years ahead*

Lots of sun, fresh air, room for children to play—these all appeal to tenants at Meadowbrook Apartments, a garden apartment development in Indianapolis, Indiana.

And so does Honeywell Customized Temperature Control that gives each tenant individual temperature control, an advantage unfortunately not enjoyed by many apartment dwellers.

For at Meadowbrook there’s a thermostat in each and every apartment.

When you talk to tenants about the heating system and the individual temperature control they enjoy, they agree both are the best they’ve ever known, that they’re equal to what you find in the finest private homes.

And the resident manager of Meadowbrook, Henry C. Dickson, feels that Honeywell Customized Temperature Control definitely helped increase "rentability" at the time the buildings were finished.

What’s more, he feels Honeywell Customized Temperature Control will give him a definite competitive advantage, tenant-wise, for years to come.

The Honeywell thermostat in the typical apartment at right is located on the wall between the living and dining areas. Individual thermostats give each tenant his own temperature control as he wants it and when he wants it. Result: comfortable tenants. And comfortable tenants are satisfied tenants.
For Comfortable, Even Temperature in New or Existing Buildings—of Any Size, Use Honeywell Customized Temperature Control

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Once equipped with Honeywell Customized Temperature Control, they'll have the right kind of controls to keep their employees, customers and tenants comfortable. And, besides, they'll save on maintenance—and cut fuel costs.

For complete facts on Honeywell Customized Temperature Control, call your local Honeywell office. There are 104 across the nation. Or mail the coupon today.

"It's no trouble at all when it comes to maintenance," says William D. Gill, Meadowbrook's superintendent of buildings and property.

"Tenants are happy with Honeywell Customized Temperature Control because it gives them individual comfort. But for my money it's ideal because it requires very little maintenance."

Architect J. Lloyd Allen, above, of Allen and Kelley, Indianapolis, looks on as designer R. K. Zimmerly describes how Honeywell Customized Temperature Control helped solve a knotty exposure problem. The model shows clearly the varied exposures of Meadowbrook's 37 buildings, its 647 one- and two-bedroom apartments that are located on the 50-acre tract.

Meadowbrook was designed to give families all the convenience and comfort of apartment life, yet retain many advantages normally only available in private homes.

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**ARCHITECT-CLIENT FORUM cont'd.**

**Dowling:** Nobody will have any objection to that. That is beyond his control. I am talking about "carelessness" in order to get a job.

**Zecchendorf:** That is just straight dishonesty.

**Green:** The architect needs the courage to say the truth, and the owner needs the courage to take it.

A few days ago, I had a discussion with a client, not about costs, but he wished to talk about how many sq. ft. you need to park a car. He asked me, "How many do you think?" I said, "I think you need 400 sq. ft."

And he said, "I know another architect who does it for 250" [laughter].

**Dowling:** That happens all the time.

**Harrison:** I know a well-known contractor who went into the ownership business—owning a housing development. He went busted. He said, "I kept making the stoves bigger and I got better paint, and so forth, and by the time I came out, I had lost $600,000." He is a very able estimator. He got into the position of being the owner instead of being the contractor and not checking and double-checking.

I know everybody here has to check themselves. Maybe you are asking too much of the architect. Maybe what we ought to have is a clarification of how much the architect can do. He can give an estimate, but he can't actually tell you what it is going to cost.

**Schlossman:** Architects should accept some responsibility for costs. I think we should see what can be done to improve the situation. We all have to bear the same reputation as architects which is sometimes given to architects by a few. We should seek to find some means of making more cost information available to architects and owners everywhere. One of the things that is lacking in the industry is a better yardstick for measuring, early in the game, and more accurately than anything we have now, what costs may be. Possibly the way to get that is through an information-assembling group, where cost data can be reported periodically and given out to those who have need for it. Conceivably, the AIA itself could serve in that capacity.

**Tuttle:** Clients also need courage. They have a tendency to be overoptimistic. They want to believe that they can park a car on 200 sq. ft. They ask us to believe it. They insist upon believing it, and they will shop for the man whose optimism agrees with theirs. I think the information is available. I think any architect who is operating a proper office

continued on p. 212

architectural forum

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Berglund Motor Co., Camden, New Jersey. Architects: Radey & MacNelly. Electrical Contractor: John T. Plaskett
This is a report on one of the most successful lighting installations of its kind ever made. You may well find valuable ideas and suggestions here for you.

How to light an auto showroom

Out east, they're still talking about the Berglund lighting job. Opened for business last December, this well-designed, well-located automobile agency is directly on the Wilson Boulevard in Camden, the main artery leading into Philadelphia. Not only does the Day-Brite lighting turn the sales floor into a brilliant display area, it also reaches outside to attract and interest prospects who use this heavily traveled thoroughfare.

What makes this Day-Brite installation such an unusually good example of auto showroom lighting?

First, the lighting is a delicate balance of fluorescent and incandescent illumination. The long, graceful rows of Slimline fluorescent troffers deliver a uniform high level of cool, glare-free illumination. Recessed incandescent units add warmth and brilliance in just the right proportion to display color, paint finish and fabrics to best advantage.

Recessed into the showroom’s 14-foot ceiling are three continuous rows of Day-Brite three lamp glass-enclosed Slimline troffers on 8-foot centers. Alternating between these rows are 300-watt Day-Brite Duo-Frame lens units on 8’ x 8’ centers. In the cove, over the balcony, Day-Brite Slimline strip furnishes soft, pleasant perimeter lighting. At the level of the car hoods, the intensity of the illumination ranges from 125 to 175 footcandles.

Showroom lighting is supposed to create a “sales promoting” atmosphere. This Berglund installation does just that—with power, drama and architectural distinctiveness.

And lest we forget the practical dollars and cents factor, this lighting job went Day-Brite to assure the long range economy of top quality equipment. Every week, every month, every year these quality Day-Brite fixtures are at work, the savings in better performance and lower maintenance costs will mount up.

Perhaps you have an auto showroom or a similar project on your board that calls for “sales lighting.” Give it power! Give it quality! Give it the advantages of Day-Brite!

In the office area, three rows of Day-Brite PLEXOLINE-2 Slimline fixtures furnish excellent lighting for employees. The PLEXOLINE-2s are equipped with low-brightness lens bottoms and provide 60 footcandles of very comfortable illumination.

In the salesmen’s meeting room, the same high lighting standards have been followed. Three rows of PLEXOLINE-2’s with ribbed Skytex glass bottoms provide comfortable seeing conditions with intensity of illumination averaging 70 footcandles.
Photograph taken in 1934 during the original program of research by the U. S. Forest Products Laboratory, Madison. Glued, laminated arch frames built of "stress-graded" southern yellow pine by Unit Structures, Inc. were tested to destruction and furnished the basic data for acceptance of laminated, glued wood structural units by the construction industry.

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The foundation for this most economical method of roof construction was laid back in 1934 when Unit Structures produced the first all-glued, laminated arches accepted for the building industry by the U. S. Forest Products Laboratory. This pioneer leadership in experience and manufacturing facilities is yours to draw on and work with. See SWEET'S catalog for basic arch information; and write, without obligation, for detailed technical information on any specific problem.

**UNIT STRUCTURES, INC.**

600 Peck Avenue
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and a fairly sizable one—and who is doing important work—knows the costs, generally speaking, of buildings.

**Zeckendorf:** We are building several buildings which to the uneducated eye would look like identical factory buildings. Yet there is a range in price on those buildings of 100%.

For example, one client wanted a building of 300,000 sq. ft. and it cost $10 a sq. ft. We built an identical building, from the standpoint of a nonprofessional eye, for somebody else and it cost $5 a sq. ft. Yet we threw no money away at $10 a sq. It is simply that that client wanted different things.

How can an architect answer you when you come in and say that you want 100,000 sq. ft. of a one-story factory building, and ask, "What will it cost?" It is like saying, "How high is up?" You need a building contractor for that information.

**Harrison:** In architecture, there are good men and there are bad men, as there are in every other game. I have worked on a great many big projects. On some of them we have failed, as I am sure every business has, but in most cases we have come through on the nose on our estimates. Those estimates have run as high as $60 or $70 million and in some cases over $120 million dollars. The record is a lot better than a lot of people think it is. We are so close to it, we see everything that is wrong with it. I want to put the other side before you. I think there is a great deal of good in the industry.

You have been talking about how bad the architect is, and how bad industry is. I don't agree with it.

I think the building industry is the most efficient industry in the country. That is a broad statement, but I will put it down. I talked to a manufacturer the other day who said that he got 25% of the selling price of his product—for producing it. On the other hand the 10% overhead taken out by the building industry is one of the smallest bits that is taken out by any great industry comparable with ours. I think our industry is very efficient.
Here you see a pleasing use of West Coast Hemlock in modern cabinet construction.

This vertical grain West Coast Hemlock flooring is tough and wear-resistant, with the attribute of enduring beauty.

**Weyerhaeuser 4-Square West Coast HEMLOCK**

*The Ability Wood*

This West Coast Hemlock (*Tsuga Heterophylla*) is a superior type of Hemlock that grows in the mild, moist climate of the Pacific Northwest. Straight-grained and uniform in texture, it takes a beautiful finish, whether natural or painted. It is stiff and strong—and is available in stress grade items. West Coast Hemlock is exceptionally easy to cut and shape, and is free from pitch, checking and splintering. It nails securely with a minimum of splitting.

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- Weyerhaeuser takes this abundant Ability Wood and through scientific logging, accurate sawing, controlled kiln-seasoning, precision surfacing, proper grading, careful handling and shipping, produces a wide range of 4-Square West Coast Hemlock lumber products.

These qualities make West Coast Hemlock ideal for a wide variety of uses... for so many uses that it is known as the Ability Wood. As Weyerhaeuser 4-Square West Coast Hemlock bevel or bungalow siding, paneling, flooring, ceiling, boards and dimension, shelving, moulding or other products, it invariably earns the respect and admiration of the user. These West Coast Hemlock products are used where the dependable service of multi-purpose softwood species are desired.

The fact that Weyerhaeuser 4-Square West Coast Hemlock gives excellent service inside and out—that abundant supplies are available—makes it one of the most desirable multi-use species. Literature on Weyerhaeuser 4-Square West Coast Hemlock, the abundant Ability Wood, is available.

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**UTILIZE THE BEAUTY OF HEMLOCK... THE ABUNDANT ABILITY WOOD**
A graded depression cups the theatre proper, with entrance to sloping seat ramps through ground-level arch.

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WOOD IN OUTDOOR THEATRE
Stage Superstructure Resists Decay Despite All-Weather Exposure

Structural pine planking in Kansas City’s impressive Starlight Theatre is as good as new after two years of outdoor exposure—and will last 3 to 5 times longer than untreated planking.

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Ask us for this informative booklet, titled “Specify Penta.” Complete details on properties and uses of this preservative. Upon request, we will also send you facts on Santobrite—sodium salt of pentachlorophenol—for preserving organic fibrous products such as insulating board. Address:

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Built and financed as a civic enterprise, Kansas City’s Starlight Theatre seats 7,200—one of the largest outdoor show places in the nation. Wood used for stage construction was pentachlorphenol-treated.

Lumber can be pressure-treated to your specifications at commercial treating plants throughout the country. Penta adds only a small percentage to the over-all cost of untreated wood, yet it pays off many times over in customer satisfaction and economy of upkeep.
How does the federal government, as the architect's biggest client, appraise its building experience?

More expensive than necessary

Reynolds: We can save money in the long run if we spend more on the building to get the job done properly.

Reynolds: We seek from an architect the ability to produce a structure that will be economic in operation and costs of which are low over the life of the building.

For instance, we often find we can save money in the long run if we spend more on a building to get the job done properly. A good many architects don't give sufficient study to those phases of costs of operation which we think are very essential for proper design of a building. For instance, they don't go far enough into floor coverings, wall coverings and so forth. The window design very often is apparently based upon what somebody would like to see, looking down Fifth Avenue, and not on how it operates for that particular building. It may need all glass, or it may need none. It depends upon what you are going to use it for, how deep the working areas are from the walls to the center of the structure, and many other factors.

The answer might be to pay the architect more money and see that the engineers get more money, too, because a lot of this is engineering. It is essential that in an office building it be so designed as to get the maximum use of every square foot of space, since a reduction to 90 sq. ft. per person from 100 sq. ft., as an example, is a capital saving of 10% and an operating saving of like amount.

We operate 100 million sq. ft. of space. If we can save one cent a foot of the cost of operation per year, we save the taxpayer $1 million. So it is worth-while looking for that penny.

These are essential things, and they are not getting the consideration in architecture in America that they deserve. I have been greatly interested in the office buildings that have been erected the last few years. A great many of them violate principles that we think are necessary for the proper design of a building.

We have a problem in the General Accounting Office Building. This building is block type, 365' wide, and there are a lot of offices around the perimeter with partitions running full height. It was laid out for General Accounting Office purposes, but we had to put in the Defense Agencies whose staffs wanted private offices, private secretaries, private secretaries' rooms and everything else. That seriously affected the air conditioning since the original design was based upon more open space.

No block-type building used for offices should be wider than 250'. Then you put the main corridor right down the center of the building and locate all facilities adjacent
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This booklet is an exposition of fireproofing methods employed when Q-Floor is used in conjunction with structural steel framing in a multi-story building and must meet local building code requirements. It covers most problems likely to be encountered by the designer and contains charts of typical code requirements, fire resistance ratings, and framing and ceiling details, both basic and with all combinations of extras.

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Schlossman: Do you think a view through the skylight serves the same purpose?

Leopold: If you have very high ceilings and large areas as some factories have, I don't think the feeling of claustrophobia is the same.

Reynolds: In a windowless building you can get along better with executive offices than you can with open areas for the other people. We have no trouble with the executives' offices. It is in the "pool" operations that we get into trouble. The problems of ventilation — stale air, lighting, etc. — can be largely met by using very low partitions.
Many an architect has seen his best work disfigured by weeping joints and efflorescence. Weeping joints—ugly stains originating at the bottom of vertical joints between blocks or facing slabs and extending horizontally across the course—caused by absorbed moisture leaking through from the back, carrying solid ingredients from the mortar which are deposited when the water evaporates. Efflorescence—that white, powdery, disfiguring deposit on a masonry wall—caused by the evaporation of water containing alkali salts from the mortar. Eliminate both of these evils by specifying Medusa StoneseT, the white, non-staining mortar cement, for all ornamental stone facing and face brick. Write for complete information.

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is made to order
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Inherent beauty . . . freedom from fanciful decoration...large, unbroken expanses of materials in their natural form—are all typical of the present-day trend of architectural design. And this trend is made to order for Carrara—the beautiful, enduring structural glass—first choice of leading architects for the walls, stiles and partitions in the washrooms of America's most important buildings.

Carrara is all pure glass . . . with its beauty an inherent part of its gleaming, polished surface. It needs no added embellishment and is manufactured in large slabs for use over wide areas, with a minimum of joining seams.

And Carrara Glass is made to endure. Any architect who specifies it can be sure that the construction will outlast all others expressed in less durable materials.

Additional facts on Carrara are contained in SWEET'S CATALOG.

the quality structural glass

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PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED
NEW PRODUCTS continued from p. 174

**CRIMPED ALUMINUM CEILING PANELS** span 10' without supports from wires or angles

On the market less than a year, Reynolds' corrugated and perforated aluminum panels have already acoustitized 3 million sq. ft. of industrial and office ceilings. Their neat appearance, simple installation and consequent low final price have obvious appeal to designers and building owners. Made in standard sizes up to 10' long (special up to 12') and 33 1/2" wide (1 3/4" allowed for overlap), the crimped strips can be hung without hanging; i.e., they may be rested on the lower flanges of existing trusses without additional supporting wire or channel paraphernalia. Where it is necessary to mask a lot of pipe and duct business above, the panels may be suspended on T's in the conventional manner. No intermediary supports are required, however, and so the panels are ideal for use in corridors where they can be placed on wall-mounted angles. Hung in 8' strips with 1 3/4" thick acoustical blanket, the corrugated panels deflect just 3/16". Installed costs range from $75 to 75¢ per sq. ft. depending on method of application and local labor. The panels are available in baked enamel finish for high light reflectance, as well as natural aluminum.

A new feature soon to be incorporated in the package: integral lighting fixtures with diffusers of extruded plastic corrugated to nest with the aluminum strips.

**Manufacturer**: Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

**Distributor**: Elof Hansson, 220 E. 42nd St., New York, N. Y.

**SHREDDED-WOOD ROOF DECK** is light, strong, fireproof

_Excelsior!_ The classic Latin cry "still upward, more lofty" has been time-twisted to mean the curled shreds used for packing china and stuffing cheap upholstery. _Tectum_ board may give renewed prestige to the lowly wood waste fibers. Excelsior and cement baked into a cake fit for a contractor. _Tectum_ is an industrial processing answer to a multitude of construction needs. Incombustible, lightweight, stronger in many ways than concrete, an excellent sound absorber and thermal insulator.

(continued on p. 228)
Rolling Steel Doors

Manually, Mechanically, or Power Operated

A good, quick opening, quick closing, power operated rolling steel door offers more desirable features than any other type of door. The vertical roll-up action of a rolling steel door utilizes no usable space either inside or outside the opening... there are no overhead tracks or other obstruction to interfere with crane operations. No other type of door offers these inherent advantages of space economy and compactness in operation. In addition, rolling steel doors are permanent— their all-metal construction assures you a lifetime of trouble-free service, and provides maximum security against intrusion and fire. When you select a rolling steel door, check specifications carefully... you will find many extra-value features in Mahon doors — for instance, the galvanized steel material, from which the interlocking curtain slats are rolled, is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and, the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. See Sweet's Files for complete information including Specifications, or write for Catalog G-53.

THE R. C. MAHON COMPANY
Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities
Manufacturers of Rolling Steel Doors, Grilles, and Automatic Closing Underwriters' Labeled Rolling Steel Doors and Fire Shutters; Insulated Metal Walls and Wall Panels; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms.

Three of fifteen Mahon Rolling Steel Doors installed in a large midwest foundry, Spence Brothers, Saginaw, Mich., Con's Contractors.
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There's nothing finer in roofing anywhere than Follansbee Terne Metal. It is truly America's glamour roof—proudly displayed on America's finest homes.

No other roofing material offers architects and builders so many desirable features.

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IT'S SO EASY TO APPLY . . . 50-ft. seamless rolls cover quickly, eliminate cross seams, save construction time.

IT'S SO WEATHER PROOF . . . keeps weather outside. Fireproof, windproof, hailproof, easily grounded. The perfect answer to drainage problems of low-pitched roofs!

Be sure your plans include Follansbee Terne Metal "Glamour" Roofing. Write for complete details today.

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COLD ROLLED STRIP SEAMLESS TERNE ROLL ROOFING POLISHED BLUE SHEETS AND COILS
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for multi-story hospitals or the one-story plant—

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FOR ARCHITECTS, INDUSTRIAL DESIGNERS
who prefer the structural adaptability of the ONE STEEL JOIST that fits all job requirements without hours of labor at the site.

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who save hours of labor and tons of material with Macomber Nailable Steel Joists.

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who can prefabricate piping layouts because all panel points of all Macomber Joists are on 24” centers.

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ENGINEERING • FABRICATING AND ERECTING •
Century's Dramalite looks better and works better because it's built better. The egg-crate louver positively cuts off glare and holds regular glass color filters inside. Accommodates all standard reflector lamps. Wide adjustment on concealed swivel joints . . . available as shown or on longer suspension stems. Built for long, dependable service.

Manufacturer: CENTURY LIGHTING, INC., 521 WEST 43RD STREET, NEW YORK 36
626 NORTH ROBERTSON BOULEVARD, LOS ANGELES 46
The ceiling provided the finishing touch in converting this loft area into a bright, cheerful, modern office.

Made of translucent corrugated VINYLITE Plastic Rigid Sheets, it diffuses the light of the fluorescent tubes it conceals. There's no harsh glare, no sharply contrasting shadows, no dark corners. Yet the room is bright enough for the most detailed work.

No ugly fixtures mar the sweeping lines of this ceiling. Pipes, ducts, beams, and conduits are out of sight. From one end to the other, the room presents a clear, clean view, bathed in light.

The dimensionally stable VINYLITE Plastic Rigid Sheets rest on supporting channels suspended from above. Light in weight, flexible, the VINYLITE Plastic Rigid Sheets are easily installed, instantly removable for cleaning, or rolled back for access to burned-out lamps. They're resistant to oil and moisture, and will not support combustion. Since the VINYLITE Plastic Rigid Sheets lose their corrugations and fall at combustion temperatures, so that sprinkler systems remain effective, and fire insurance rates are unchanged in the majority of cases. Sound absorbing pads attached to the supporting channels provide excellent acoustical correction.

Reducing fatigue, adding beauty, promoting efficiency, ceilings of VINYLITE Brand Plastic Rigid Sheets deserve your consideration. They're one of the scores of VINYLITE Plastic products for defense and industry. To learn how they can help your building or remodeling plans, write Dept. OX-14.
ARCHITECTS appreciate the way Jenn-Air "Low-Contour" Power Roof Exhausters blend into the clean, horizontal lines of modern design. But that's just one reason why more and more prominent architectural firms are specifying Jenn-Air. Besides "Low-Contour" design, Jenn-Air offers many additional plus features. Investigate Jenn-Air!

Send for free illustrated brochure, c/o Dept. F-6, for complete specification details.

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ARCHITECTS & BUILDERS BLDG. • INDIANAPOLIS 4, INDIANA

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PROVED THE BEST PRODUCT FOR CURING & PROTECTION — ON THOUSANDS OF JOBS!

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And use Sisalkraft over fill to waterproof slabs on ground.

Available in rolls 3 to 8 feet wide and blankets in any width up to 26½ feet.

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Chase Square Copper Tube Bus Conductors give you the high mechanical strength, electrical and thermal conductivity you need to carry power vertically. In hundreds of installations, Chase Buses are carrying the total electric energy with a minimum of short circuits, failures, overheating and other disturbances.

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Waterbury 20, Conn.
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or any other fastening device. Molded Ultra-fine may be painted or left as is. It will not powder or deteriorate, can be trodden under foot without breaking, and will not turn mushy in contact with water. It comes in 3/4", sizes to fit pipes 2" through 10", and is available in four wall thicknesses: 3/16", 3/8", 1" and 11/2". Insulation 1" thick for 2" pipe costs about 36¢ per lin. ft.

Manufacturer: Gustin-Bacon Mfg. Co., Kansas City, Mo.

**NEW PRODUCTS continued**

TUBULAR SCAFFOLDING goes up without tools; needs no bolts or pins

An ingenious slip-fit and notch joint on Brainard's new scaffolding system speeds erection of framework in almost any size or shape. The *Kwik Scaf* system, introduced this spring, comprises two basic lightweight parts—a frame and tie bar made of welded steel tubing. Recently the manufacturer announced a further simplification of *Kwik Scaf* utilizing repeats of the 24 lb. framing member and a minimum of accessories. Four of the frames nested into one another form a section 5' square by 4' high, and multiples of these can be added vertically for tower structures or horizontally for long runs. The new scaffolding is adaptable to most heavy and light construction jobs as well as to repair work and painting. Dismantling is quick, and storing made easy by the compact stackable design of the frames. One man can build a *Kwik Scaf* platform 4' high and 18' long in about 1½ hours; he can put up a 14' high by 5' square tower in just 8 minutes. Each framing unit is load tested at 400 lbs. psf. The standardization of parts also helps keep the price within reason. Framing for a structure 35' long, 20' high and 5' wide would cost around $600, or about 87¢ per sq. ft.

Manufacturer: Brainard Steel Div., Sharon Steel Corp., Warren, Ohio.

FACTORY TRUCK has gas engine, electric transmission

The Dynamotive, a stylish and functional accoutrement for industrial plants, was uncorked at the Materials Handling Exposition in Philadelphia last month. The new little power truck with style undertones of Euro-
When a masonry wall leaks, water almost never passes through the masonry units or through the mortar. It works its way through cracks or openings between the masonry units and the mortar.

Even when full joints are secured, cracks are not entirely eliminated. The best precaution is therefore to parge or backplaster the face brick with waterproofed mortar, before the back-up brick are laid.

Brixment is permanently waterproofed, during manufacture, with the most effective air-entraining waterproofing agent known. Even under pressure, water cannot readily pass through Brixment mortar. Therefore, if the face brick are backplastered with Brixment mortar, an effective barrier is set up against the further penetration of any water which may have worked its way through cracks or voids in the outside face of the wall.

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In addition, the waterproofing in Brixment gives you two other practical benefits:

1 GREATLY INCREASES DURABILITY
2 HELPS PREVENT EFFLORESCENCE

These additional benefits of waterproofed Brixment are fully described in subsequent advertisements. Watch for them!

Louisville Cement Co., Louisville 2, Ky.
Your designs now can be scheduled for faster completion because we can make prompt deliveries from our big new plant.

This new Rilco plant in Albert Lea, Minnesota, is now producing laminated wood arches, beams, trusses, and specially-designed structural members. See our 20 page catalog in Sweet's Architectural file—2 b/r, or write for a copy of this helpful catalog containing engineering data and design ideas.

**RILCO**

**PRODUCTS, INC.**

2524 First National Bank Bldg., St. Paul 1, Minnesota

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Grilles—For That Distinctive Decor

Just as eye-appealing as they are functional, Hendrick Perforated Metal Grilles will greatly enhance the beauty of any decorative motif.

They provide more-than-ample open area for the free passage of air, and are available in a wide variety of designs to best set off your decor. And they’re easy to install—always lie flat because of a special flattening operation in their manufacture. For more complete details write Hendrick today!

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For really modern washrooms—
the Scott No. 945 Recessed Towel Cabinet and Waste Receptacle

Here’s the fixture designed specifically to meet today’s growing trend to recess fixtures.

For a detailed dimension and installation drawing of the No. 945 fixture or for the help of a trained Scott consultant, write Washroom Advisory Service, Dept. NLD-0, Scott Paper Company, Chester, Penn.

**SCOTT**

Symbol of Modern Washrooms

Here's lasting beauty in modern design. YALE aluminum hardware gives new beauty and efficiency—new durability and maintenance ease, too. Lighter anodized aluminum is famous for strength as well as ability to resist scratching, marking and tarnish. And, the soft lustre of the satin finish enhances every modern decor. Of course, the famous YALE quality is built-in... to give every advantage you want and need. Wire for details! Yale & Towne Manufacturing Company, Builders Hardware Division, Stamford, Connecticut.

YALE & TOWNE MFG. CO., STAMFORD, CONN.
Lock and Hardware Division
*Registered in U.S. Patent Office.
NEW PRODUCTS continued

pean sports cars could prove that its newness was more than chassis-deep; indeed, the sleek shell encases a sense-making principle of operation. Gas-engined for rugged service, the Dynamotive has an electrical transmission for a wide acceleration range with minimum power loss. There is no mechanical connection between engine and drive unit, and so no shock load can be transferred from wheels to engine. Transmission gears, hydraulic torque converters, and overdrive mechanisms (all maintenance bait) are eliminated. The truck's headquarters are launched for good stability and maneuverability in narrow aisles. Its design also embodies several features for the driver's comfort and convenience: good visibility, generous leg room, a bench-type seat, and easy access to instruments which are clustered on the steering post. Optional equipment includes a two-way radio and a load indicator. The truck's 124" lift telescopes to 83" on both mono- and duo-lift models. The Dynamotive has a 3 ton materials-handling capacity and costs about $5,500 F.O.B. plant. A possible problem: will plant superintendents be able to prevent operators from taking the truck home week ends? If its looks tempt abductors, perhaps its 9 mph speed limit will discourage them.

Manufacturer: Automatic Transportation Co., 149 W. 87th St., Chicago 20, Ill.

PLASTIC COUNTER-TOPPING applied with glue and roller

Contractors called upon to furnish Formica on cafeteria counters and other food preparation areas no longer have to call in special fabricators. Recent development of a powerful adhesive, Contact Bond Cement, takes the high-pressure laminate out of the custom class. To install a sheet of Formica (whose top layers are saturated with practically indestructible melamine plastic resins) a workman merely spreads the new cement on the back of the sheet and also on the counter or wall to be covered. After it sets for 40 minutes, he puts the two prepared surfaces together. No sand bags or heavy clamps are needed; gentle pressure from a roller seals the bond. Sink rim can be finished with stock moldings and counter edges treated either with strips of the same pattern plastic or metal rim. Formica is available in sizes up to 4' x 10' in more than 120 pattern and color combinations as well as 13 solid tones at 62¢ to 75¢ per sq. ft., depending on quantity purchased. Actual wood veneers are laminated into the luxurious Real-wood series, which costs about $1.20 per sq. ft.

Manufacturer: The Formica Co., 4616 Spring Grove Ave., Cincinnati 32, Ohio.

Technical Publications p. 240
MENGEL Mahogany FLUSH DOORS

MAKE "MILLION-DOLLAR" EFFECTS
yet cost less than many domestic woods!

Genuine African Mahogany has long been acknowledged the Aristocrat of Woods . . . has long been synonymous with "Quality" to architect, contractor and home-owner alike.

Now Mengel offers you the unsurpassed beauty and sophistication of genuine African Mahogany, in all your doors, for less money than you'd pay for comparable doors, faced with many domestic woods!

Why? Because The Mengel Company operates its own logging concession in Africa's best Mahogany section, imports top-quality logs in tremendous volume, and passes the savings on to you.

Mengel Mahogany Flush Doors and Standardor Mahogany Flush Doors are designed, engineered and built to be better doors in their respective classes. Compare specifications and be convinced.

Door Department, THE MENGEL COMPANY, Louisville 1, Kentucky
For glareless, shadowless lighting...

CORNING LENS PANELS

New Corning Lens Panels give you evenly distributed light with carefully controlled brightness. Fresnel design lenses eliminate shadow and glare—direct light where it is needed.

Light in weight and easy to handle, Corning Lens Panels are made in long lengths, making possible attractive, continuous runs. Not color selective, they transmit true color from the light source, showing off merchandise or putting employees in natural surroundings where they look better and feel better.

Corning Lens Panels are available in two different types: Lightweight Flat, in the Unilens and Twinlens patterns, and Lightweight Curved. Get the facts on this highly efficient engineered lighting glassware from your fixture manufacturer or send for Catalog LS-32.

CORNING GLASS WORKS, Corning, N. Y.

Corning means research in Glass

There's a NEW, HEAVY DUTY FULLY AUTOMATIC, METERING PUMP

Model 53 Johnson Oil Burner

It's built with an amazing new Metering Pump which produces the finest performance ever achieved on "cold starts" and "variable viscosity" oils... plus several other new and improved features which make it exceptionally economical, dependable, and easy to service. Available in seven sizes — from 25 H.P. to 400 H.P. For full description of Model 53 see your nearest Johnson Dealer or write to us direct.

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CAFETERIA COUNTERFRONTS OF MAR-RESISTANT RIGID-tex METALS

pea-green freshmen scuffing up cafeteria countertops turn your architectural designs into maintenance headaches. that's why so many hard-duty areas on modern school and college campuses are naturals for mar-resistant Rigid-tex Metals. various patterns are used not only because they conceal scuffs and scratch marks but because they have unusual decorative value and greatly increased strength. find out for yourself how Rigid-tex Metals can help YOU.

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THE MAGAZINE OF BUILDING
A battery of American-Standard Wall-Type Toilets installed with Zurn Systems which relieves the wall of all the load! There is a Zurn Adjustable Carrier System for every wall-type plumbing fixture—lavatory, toilet, urinal, sink and fountain.

With hourly rates on the high side for cleaning help, the cost of daily, monthly and yearly savings in rest room maintenance have become an item of major importance to your clients. American-Standard Off-The-Floor Plumbing Fixtures installed with Zurn Systems save time and money in maintenance. Superintendents of large office and mercantile buildings have estimated, from careful cost analysis, that off-the-floor plumbing fixtures yield savings of 25% to 30% in maintaining rest room cleanliness. Off-the-floor fixtures provide the maximum in sanitation—insure against untimely obsolescence. Furthermore, American-Standard Off-The-Floor Plumbing Fixtures installed with Zurn Systems effect substantial economies in overall building costs and greatly simplify building design problems.

WRITE FOR THESE BOOKLETS!
These booklets present up-to-date factual information for planning Modern Rest Rooms. The ideas presented are the result of experiences of engineers, architects, general contractors and plumbing contractors who have specified and installed American-Standard Off-The-Floor Plumbing Fixtures installed with Zurn Systems.
ALUMINUM. Welding Aluminum. Reynolds Metals Co., Desk PR, 2500 S. Third St., Louisville 1, Ky. 186 pp. 6" x 9"

Enlarged and updated, this current edition of the 1946 manual discusses 34 processes suitable for welding, brazing and soldering aluminum and its alloys. Much useful reference data is condensed into 125 charts. Flow, stud and induction welding are some of the comparatively new techniques described in this comprehensive manual.


Analyzing the factors which affect "seeing tasks" and the elements that make up good illumination, the new Standard Practice explains how to determine and control the proper quantity and quality of daylight and artificial light for various working environments. Foot-candles required for different jobs accompany an alphabetical list ranging from "airplanes" through "woodworking." Studies and reports not covered in the last edition of Industrial Lighting Standard Practice (issued 11 years ago) include ones on woolen mills, canneries and commercial bakeries. Supplementary lighting and lighting for machining small metal parts are also covered.

WALL LOUVERS. Burt Wall Louvers. The Burt Mfg. Co., Dept. MB, Akron 11, Ohio. 8 pp. 8½" x 11"

Adjustable and fixed wall louvers for industrial, commercial and institutional buildings are detailed and illustrated in this catalogue. Details on louver operators and screens are also included.

SURVEYS. DPI Technical Surveys. Designers for Industry, Inc., 2915 Detroit Ave., Cleveland 13, Ohio. 4 pp. 8½" x 11"

Why, when and how technical surveys should be conducted relative to product development and marketing.


Tagged a "specifications manual," this illustrated handbook is actually a thorough treatise on bonded built-up roofs which utilize the manufacturer's products.


To familiarize architects and designers with colored granite available from US, Canadian and European quarries, this new bulletin re-

(continued on p. 244)
These Young Features Mean Greater Efficiency, Longer Coil Life

1. Corrosion-resistant red brass tubes, staggered in multiple rows for maximum efficiency. Copper fins, heavy-wall Admiralty tubes available on special order.

2. Tubes mechanically expanded to fin collar to form double-wall, continuous metal transfer surface. Assures fidelity to rated standards throughout the life of the coil.

3. Headers formed from heavy-gauge (3/16"), hot-rolled steel with tube ends brazed into headers to insure a permanent, leak-proof joint. End support plate permits free expansion and contraction of tubes.

4. Heavy-gauge steel intermediate tube support formed by two cross angles welded to the tube support and the coil casing. Gives permanent reinforcement to entire coil structure.

5. Galvanized steel casings, with double channel top and bottom, provide support and protection for core. Flanges on four sides facilitate duct mounting and multiple bank installations.


7. Young Coils offer maximum versatility in specifications due to their greater capacity range. Available in either 5 or 11 header widths, 19 tube lengths.

**TYPE "S" STANDARD**

For steam or hot water service. Galvanized steel casings complete with drilled flanges on all sides for connecting to duct work, and permitting stacking in banks. Available in 11 nominal widths, 19 lengths from 12" to 120". Suitable for steam pressures from 2 to 150 psi and temperatures to 400 F. Type "S" coils incorporate Young features described at left.

**TYPE "HD" HEAVY-DUTY**

Recommended for severe industrial applications. Have same design features as Type "S" (above) except that the tubes are larger and of heavier-walled construction. Designed for steam pressures to 300 psi, and temperatures to 500 F. Available in 5 nominal widths, 19 lengths from 12" to 120".

**TYPE "SD" STEAM DISTRIBUTING**

For steam systems where performance is regulated by modulating supply of steam to coils. Double-tube feature provides protection when entering air temperatures are below freezing, and even temperature distribution along face of coil. Casing detail similar to Type "S." Available in 5 nominal widths, 19 lengths from 12" to 120". Suitable for steam pressures from 2 to 150 psi, with 25 psi recommended maximum.

Special-purpose, unencased coils available. For further details, including new Young Heating Coil Catalog, see your nearest Young Representative or mail coupon below.

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We believe this record is unmatched in architectural journalism.

architectural forum
540 N. Michigan Avenue, Chicago 11, Illinois
New Kimble Toplite Panels solve the problem of how to provide daylight for deep interior areas too far removed from conventional, side-wall panels of prismatic Insulux Glass Block®.

This revolutionary new daylighting system lets you bring free daylight in from above through a simple framed, flat roof without monitor, saw tooth, or clerestory arrangements.

Only the Kimble Toplite offers these features:

**PREFABRICATION**
Kimble Toplite panels are factory-fabricated for uniform quality, and low installation cost. They are made up of an insulated aluminum grid into which special hollow glass units are set. The glass units themselves are 10⅝ square by 3⅜ thick, and are installed in the aluminum grid 12″ on centers. Panels are weatherproof with no porous materials exposed to the weather.

**TESTED, TIME-PROVED CONSTRUCTION**
Kimble Glass Company, in conjunction with a leading roof light manufacturer, and the Daylighting Laboratory at the University of Michigan have exhaustively tested Toplite in widely scattered locations under widely varied conditions.

**SELECTIVE CONTROL OF DAYLIGHT**
Kimble Toplite Panels are selective in their light transmission. They transmit a high percentage of the light from the low winter sun and from the north sky but reflect much of the direct light from the high summer sun. Light-controlling characteristics eliminate glare and distribute daylight throughout the room so that concentrations of light are eliminated.

**SOLAR HEAT REDUCTION**
Panels are designed to reflect hot summer sun and have unusual ability to reduce solar heat transmission. Toplite panels have high insulating value thus reducing troublesome condensation during winter. Loads on heating, air conditioning and artificial illumination systems are reduced.

Want more information about this great advance in daylighting? Send for the new, free bulletin: "Kimble Toplite—a new system in daylighting.” Address: Insulux Glass Block Division, Kimble Glass Company, Dept. MB-6, Box 1035, Toledo 1, Ohio.
produces in full color nine different granites and gives data on sizes, thicknesses and finishes.

CURTAIN WALL. Seaporcel by Seaporcel. Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City 1, N. Y. 8 pp. 8½” x 11”

This bulletin describes sandwich panels manufactured with skins of various metals laminated to fire resistant, thermal and sound-insulating cores. Designed for use as interior-exterior wall, as veneer, or as removable partition, the panels are available with two faces of colored porcelain enameled steel or with porcelain on one side and sheet metal on the other, in stock sizes up to 5’ x 10’ in various thicknesses.

DOORS. Fulton Architectural Aluminum Doors, Frames, Entrances, Variety Mfg. and Engineering Co., 810-12 W. Fulton St., Chicago 7, Ill. 12 pp. 8½” x 11”

Neatly illustrated with renderings and diagrams, this spiral-bound catalogue presents a cleanly designed line of aluminum doors and frames.

FURNITURE. The William Armbruster Collection. Edgewood Furniture Co., Inc., 334 E. 75th St., New York 21, N. Y. 20 pp. 9” x 11½”

This file folder contains catalogue sheets on a comprehensive line of crisp seating units and tables designed by Architect William Armbruster for service in public and commercial buildings.


Tables on physical properties and corrosion resistance of various kinds of stainless-steel wire are contained in this booklet as well as a discussion of the wire’s principal uses in manufactured products and in welding.

STORAGE. Steel Shelving. Precision Equipment Co., 3710 N. Milwaukee Ave., Chicago 41, Ill. 32 pp. 5½” x 8½”

CONCRETE CURING. Hunt Process Concrete Curing Compounds. Hunt Process Co., Inc., 7012 Stanford Ave., Los Angeles 1, Calif. 8 pp. 8½” x 11”

CONCRETE FORMS. Deslauriers Round Column Moulds for Reinforced Concrete. Deslauriers Column Mould Co., Inc., 2903 Central St., Evanston, Ill. 4 pp. 8½” x 11”


(continued on p. 248)
NEW ADJUSTABLE DOUBLE DUTY AIR VOLUME EXTRACTOR & CONTROLLER

FACTORY ASSEMBLY SAVES UP TO 50% OVER SLOW HAND-MADE METHODS

11 TREMENDOUS ADVANTAGES:

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11. 14 & 20 Gauge Steel

AIR CONDITIONING OUTLETS

Slash unit costs with this amazing new Titus AG-45. Make it easy for yourself to keep bids low. Use this cost saver to beat competition. Eliminate the extra work of putting in volume controllers. Save time, labor. IMPROVE THE AIR CONTROL EFFICIENCY OF EVERY INSTALLATION. Get complete free information now. Order a sample AG-45 today. Remember, not until you have one of these AG-45s in your hand, can you see its amazing cost-saving value. IMMEDIATE DELIVERY.

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Apartments Use Precast Slabs for Long Span, Pre-finished Ceilings

Flexicore floor and roof slabs clear-spanned rooms up to 21' 6" and eliminated ceiling plaster on this 556-unit Minnesota project. Smooth underside of ceiling slabs was painted. Flexicore's fast, low-cost erection cut total job time 20%. Precast slab design simplified openings. For catalog and nearest manufacturer, write The Flexicore Co., Inc., 17611 K. Monument Avenue, Dayton 1, Ohio.


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Curiosity over costs, particularly anywhere else’s, is probably the greatest common denominator among builders. Invariably each will also try to measure every project against “average costs” and compare relative percentages spent for various parts.

One important point they usually overlook: peculiarities of any building job will keep it from matching so-called “average costs” just as surely as an individual personality will keep any person from ever becoming an exactly “average man”—or “average builder.”

Nevertheless, this fascination with other builders’ expenses will never die. It was recently given some guarded but intriguing figures to flourish on by Turner Construction Co. in its attractive 110-page anniversary book, Fifty Years of Buildings by Turner.

Draw no hasty conclusions. The book itself warns against making misguided comparisons between any two buildings on a square, cubic-foot, or average-cost basis: “Any chart of building costs must be used with judgment, giving careful consideration to all factors involved.” However, it gives a “typical” breakdown for the $1.75 per cu. ft. “adjusted” average cost of 31 representative office buildings Turner erected over the last three decades, but while doing so stresses how innumerable construction variations, even the shape of the structure, can cause considerable cost changes.

This $1.75 applies to a 50’ x 200’ ten-story, air-conditioned building of 1,440,000 cu. ft. But for the same type building, 100’ square (same cubic space but 100’ less exterior walls), costs would drop about 5%, or 9¢ less per cu. ft. Below is a breakdown, with supplementary figures to show several other ways “the cubic-foot cost that was $1.75 very readily can move downward to $1.39 or upward to $1.94”:

### Typical office building cost breakdown

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost per cu. ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations, including piles</td>
<td>$0.09</td>
</tr>
<tr>
<td>Structural frame</td>
<td>$0.32</td>
</tr>
<tr>
<td>Exterior walls (limestone facing)</td>
<td>$0.30</td>
</tr>
<tr>
<td>Interior partitions</td>
<td>$0.17</td>
</tr>
<tr>
<td>Stairs</td>
<td>$0.01</td>
</tr>
<tr>
<td>Floor coverings</td>
<td>$0.02</td>
</tr>
<tr>
<td>Acoustical treatment</td>
<td>$0.07</td>
</tr>
<tr>
<td>Roofing, sheet metal, &amp; insulation</td>
<td>$0.01</td>
</tr>
<tr>
<td>Storefront construction, 1st story</td>
<td>$0.10</td>
</tr>
<tr>
<td>Heating, ventilating and air conditioning</td>
<td>$0.32</td>
</tr>
<tr>
<td>Electrical work</td>
<td>$0.23</td>
</tr>
<tr>
<td>Plumbing</td>
<td>$0.08</td>
</tr>
<tr>
<td>Elevators</td>
<td>$0.10</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$0.01</td>
</tr>
<tr>
<td><strong>TOTAL per cu. ft</strong></td>
<td><strong>$1.75</strong></td>
</tr>
</tbody>
</table>

#### Variations

<table>
<thead>
<tr>
<th>Variation</th>
<th>Deduct/Add per cu. ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>If foundations are placed on hard rock instead of piles</td>
<td>$0.05</td>
</tr>
<tr>
<td>If a face brick facade is used in place of limestone</td>
<td>$0.10</td>
</tr>
<tr>
<td>If a granite facade is used in place of limestone</td>
<td>$0.17</td>
</tr>
<tr>
<td>If air conditioning is omitted</td>
<td>$0.15</td>
</tr>
<tr>
<td>If an underfloor electrical duct system is omitted</td>
<td>$0.04</td>
</tr>
<tr>
<td>If plastic ceilings are substituted for acoustical tile</td>
<td>$0.02</td>
</tr>
<tr>
<td>If outside parking facilities are provided</td>
<td>$0.02</td>
</tr>
</tbody>
</table>

(continued on p. 250)
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### Average Costs

Average cost for 319 representative buildings erected over the last 30 years are charted (above) by Turner Construction Co. to illustrate cost ranges for the same types of structures as well as cost differences between different building types. Because of adjustment to July, 1952 on the basis of a Turner index of building costs, the ranges on these charts completely eliminate any reflection of changes in dollar costs at different periods, but only indicate variations in expenses of individual structures because of their quality or special features.

### But Valuable Nonetheless

Two factors give special weight and significance to the Turner data and two summary charts of its average costs (above) for those who may wish to use them as a qualified yardstick for evaluating their own performance:

- Turner uses a meticulous cost review and analysis system. Every job is budgeted for time and cost; all labor and material items are classified in great detail. Every two weeks cost engineers make a thorough check on building progress and all expenses incurred on every job. Each month they prepare an “indicated outcome” analysis that projects prospective final costs against each original estimate.

- Turner has an exceptionally broad base of experience. In 1951 Turner made contracts for 52 buildings costing a total of over $810 million; from 1902 through 1951 it was responsible for more than 2.5 billion, or over $2 billion if adjusted to current costs. The size range of its 804 contracts for the last 25 years:

<table>
<thead>
<tr>
<th>Size Range</th>
<th>Number of Contracts</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under $250,000</td>
<td>269 contracts</td>
<td>33.5%</td>
</tr>
<tr>
<td>$250,000 to $500,000</td>
<td>127 contracts</td>
<td>15.8%</td>
</tr>
<tr>
<td>$500,000 to $1 million</td>
<td>127 contracts</td>
<td>15.8%</td>
</tr>
<tr>
<td>$1 to $2.5 million</td>
<td>134 contracts</td>
<td>16.7%</td>
</tr>
<tr>
<td>$2.5 to $5 million</td>
<td>114 contracts</td>
<td>14.2%</td>
</tr>
<tr>
<td>$5 to $10 million</td>
<td>43 contracts</td>
<td>5.3%</td>
</tr>
<tr>
<td>Over $10 million</td>
<td>53 contracts</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

Under $250,000 ……….269 contracts or 33.5%
$250,000 to $500,000 …….127 contracts or 15.8%
$500,000 to $1 million …127 contracts or 15.8%
$1 to $2.5 million …….134 contracts or 16.7%
$2.5 to $5 million …….114 contracts or 14.2%
$5 to $10 million …….43 contracts or 5.3%
Over $10 million …….53 contracts or 6.6%
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194, 195 American Air Filter Company, Inc. (Herman Nelson Division)
77 American Brass Company, The
28, 29 American Hardware Corp., The (P. and F. Corbin Division)
70 American Radiator & Standard Sanitary Corporation
29 American Seating Company
253 Anestomat Corporation of America

206, 242, 252 ARCHITECTURAL FOCUS
36, 193 Armstrong Cork Company
7 Art Metal Company, The
47 Auth Electric Company, Inc.
98, 99 Auto-Lok Aluminum Awning Windows (Ludman Corporation)
192 Automatic Sprinkler Corp. of America
229 Bakelite Company, Division of Union Carbide and Carbon Corporation
89 Barrett Division, The (Allied Chemical & Dye Corporation)

Cover II Blue Ridge Sales Division (Libbey-Owens-Ford Glass Co.)
208 Borg-Warner Corporation (Ingersoll Kool Shade Sunscreen Division)
13 Brunswick-Balke-Collender Company, The
52 Buffalo Forge Company
72 Byers, A. M., Co.
60 Caldwell Manufacturing Co.
190, 191 Carey, Philip, Mfg. Company, The
14, 15 Carrier Corporation
91 Ceco Steel Products Corporation
78 Celotex Corporation, The
228 Century Lighting, Inc.
253 Chase Brass & Copper Co.
65 Cleaver-Brooks Company
74 Columbus Coated Fabrics Corporation
254 Concrete Reinforcing Steel Institute
28, 29 Corbin Division, P. & F. (The American Hardware Corp.)
238 Corning Glass Works
242 Croft Steel Products, Inc.
90 Crozett Lumber Company
74 Clynelith Corporation
220 Davidson Enamel Products, Inc.
210, 211 Day-Brite Lighting, Inc.
177, 179, 181, 188 Detroit Steel Corporation
26, 27 Douglas Fir Plywood Association
252 Dur-O-Wal
188 Eastern Machine Products Co., The

Cover III Eijer Co.
33 Federal Seaboard Terra Cotta Corporation
44 Fensal, Inc.
64 Fiat Metal Manufacturing Company
246 Flexicore Co., The
256 Follansbee Steel Corp.
35 Formica Company, The
8 Frigidaire Division (General Motors Corporation)
72 Gallaher Division, The
251 Gate City Sash & Door Co.
104 General Electric Company
8 General Motors Corporation (Frigidaire Division)
176 Glynn-Johnson Corporation
2 Goodyear Tire & Rubber Co.
250 Gotham Lighting Corporation
187 Grinsell Company, Inc.
232 Haertel, W. J. & Co.
1 Hauserman, E. F., Company, The
56 Haven-Bush Company
242 Haw's Drinking Faucet Co.
234 Hendrick Manufacturing Company
203 Horn, A. C., Company, Inc.
18 Ingersoll Kool-Shade Sunscreen Division (Borg-Warner Corporation)
58 International Steel Company
224 J. G. Furniture Company, Inc.
230 Jenn-Air Products Company
53 Joanna Western Mills Company
197, 209 Johns-Manville
238 Johnson Co., S. T.
25 Johnson Service Company
238 Josam Mfg. Co.
16, 17 Kalliston, Inc. (U. S. Plywood Corp.)
88A, 88B Kawaner Co., The
6 Kentile, Inc.
82 Kewanee-Ross Corporation
130 Kewanee Manufacturing Company
243 Kimble Glass Company (Subsidiary of Owens-Illinois Glass Company)
100 Klingar Manufacturing Company, The
256 Knapp Brothers Mfg. Co.
83 Knoll Associates, Inc.
106 Lacelde Steel Company
101 Lee, James and Sons Company
184 Lewis Asphalt Engineering Co.
22, 23 Libbey-Owens-Ford Glass Company

Cover II Libbey-Owens-Ford Glass Company (Blue Ridge Sales Division)
10, 11 Lighting Products, Inc.
52 Littler Manufacturing Co., Inc.
248 Littcraft Manufacturing Corporation
226 Loomis Machine Co.
233 Louisville Cement Company, Inc.
98, 99 Ludman Corp. (Auto-Lok Aluminum Awning Windows)
227 Macomber Incorporated
59, 220 Mahon, R. C., Company, The
204 Marko Co.
189 Mastic Tile Corporation of America
20, 21 McKay, Inc.
231 Medusa Portland Cement Company
237 Mengel Company, The
217 Miami Window Corp.
76 Miller Company, The
206, 207 Minneapolis-Honeywell Regulator Company
202 Mississippi Glass Company
214, 215 Monsanto Chemical Company
5 Multi-Vent Division (The Pyle-National Company)
219 National Gypsum Company
34 National Tube Company (U. S. Steel)
194, 195 Nelson, Herman, Division of American Air Filter Company, Inc.
12 Nebitt, John J., Inc.
9 Oert & Sembower, Inc.
256 Otis Elevator Company

Cover IV Overseas Door Corporation
50 Owens-Corning Fiberglas Corporation
243 Illinois-Glass Company (Kimble Glass Company, Subsidiary)
102, 103 Peclle Company, The Richmond Fireproof Door Company
57 Petrol Division
245 Pittsburgh Corning Corporation
223 Pittsburgh Plate Glass Company
216 Pittsburgh Refractory Co.
240 Pope Mfg. Co.
32 Portland Cement Association
81 Powers Regulator Co., The
5 Pyle-National Company, The (Multi-Vent Division)
86 Raymond Concrete Pile Company
247 Rayne Mfg. Co.
85 Republic Industries, Inc.
66 Republic Steel Corporation
56, 57 Reynolds Metals Company
102, 103 Richmond Fireproof Door Company, The, Peclle Company
238 Rigidized Metals Corporation
234 Rito Laminated Products, Inc.
218 Robertson, H. H., Company
182 Roddis Poodow Corp.
75 Rohm & Haas Company
175 Rowe Manufacturing Co.
42 Ruberoid Company, The
186 Russell, F. C., Company, The
185 Runl Manufacturing Company
55 Saremetal Products Co., Inc., The
230 Scott Paper Company
206 Seaporcel Metals, Inc.
84 Sellers Engineering Co.
222 Servel, Inc.
60, 61 Simpson Logging Company
236 Stainless Co., The
24 Sloan Valve Company
24 Standard Dry Wall Products, Inc.
242 Summerbell Roof Structures
203 Surface Combustion Corporation
88 Swedish Crucible Steel Company
245 Titus Manufacturing Corp.
246 Todd Shipyards Corporation
230 Tranke Company, The
246 Tremco Manufacturing Co., The
48 Trascon Steel Company
71 Union Aluminum Company
229 Union Carbide and Carbon Corporation (Bakelite Company, Division)
255 Unistrom Products Company
226 United States Air Conditioning Corp.
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