AUGUST 1949 ARCHITECTURAL FOLUM

MAGAZINE OF BUILDING





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VOLUME 91, NUMBER 2



THEY stood in line TO BUY



The sellers' market had switched to a buyers' market. Yet in just three days last March, 3,000 veterans, who had seen only a model, lined up to buy Levitt's new style \$7,990 homes before they were built in Levittown, Long Island. Buyers really "went for" the floor-to-ceiling *Thermopane* window wall in the living room, a window 8 feet high, 16 feet long.



4,000 low-cost houses!

How Builders are beating the 1949 Buyers' Market

Foreseeing a buyers' market for houses in 1949, Levitt & Sons redesigned its 1948 low-cost house to make it more exciting and livable. A leading feature they added was a *Thermopane** window wall like the one that had made a big hit in their higher priced homes.

When Levitt opened the 1949 model house, home hunters stormed the office to buy one. Those people, like most, feel that living in a small-windowed house is as boring as standing in a corner. They like big windows that open up a home, give it "big house" feel.

And the practicality of *Thermopane* assures continuing home - owner satisfaction, lasting comfort, economy and livability. The insulating shield of dry, clean air, sealed between *Thermo*pane's two panes of glass, keeps the home warmer in winter, saves fuel. Keeps it cooler in summer. Also, it minimizes condensation. That's why each Levitt home also has a kitchen window of *Thermopane*.

Levittown is dramatic proof that *Thermo*pane is an economical way to build sales appeal into a low-cost house. Having seen how it attracts buyers, many other builders are now using *Thermopane* in their small homes.

Thermopane units are available in more than 70 standard sizes and in stock sash of all kinds. Write today for our *Thermopane* book and list of sizes. Libbey Owens Ford Glass Company, 7289 Nicholas Bldg., Toledo 3, Ohio.

*1



Cutaway View of Thermopane

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The huge Secretariat Building will be the first of several to rise on the United Nations site from 42nd to 48th Streets along the East River. Wallace K. Harrison of Harrison and Abramovitz is the principal architect. Syska & Hennessy, Inc., are the Consulting Engineers. Builders are Fuller-Turner-Walsh-Slattery, Inc. Almirall and Co., Inc., are Mechanical Contractors.



100 Park Avenue is the address of this 36-story building, now under construction. It is scheduled for completion early in 1950. Kahn and Jacobs are the Architects. Jaros, Baum & Bolles are the Consulting Engineers. General Contractor is the George A. Fuller Company. Kerby Saunders, Inc., is Mechanical Contractor. Owners are 100 Park Avenue, Inc.



The Mutual Life Insurance Building with 25 stories, between 55th and 56th Streets on Broadway, is expected to be completed about the middle of next year. Architects are Shreve, Lamb & Harmon Associates. General Contractor is Turner Construction Company. Jaros, Baum & Bolles are Consulting Engineers and Wolff & Munier, Incorporated, Mechanical Contractors.



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- 12 Air is distributed without drafts.
- 13 Provides ideal winter heating with hot water.
- 14 Pre-fabricated fittings and conduit make it easily installed.



The 41-story building at 1407 Broadway, is scheduled for completion early in 1950. Architects are Kahn and Jacobs. Consulting Engineers are Jaros, Baum & Bolles. General Contractor is J. N. Taylor Construction Co. Mechanical Contractor is Raisler Corporation. S. M. Hirsch is President and William Zeekendorf is Chairman of the Board of the 1407 Eroadway Realty Corporation. AN INVITATION

You are cordially invited to consult with us at any time about the advantages of the Conduit Neathermaster System for multi=room buildings



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For technical information consult your Sweet's Architectural Catalog or A.I.A. files. If further data is needed, your local U.S.G. representative will be glad to cooperate with you, or you can write United States Gypsum, Chicago 6, Illinois.

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ROCKLATH, Insulating ROCKLATH and USG Metal Lath—U.S.G. offers many specialized partition systems such as those pictured below.





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SOLUTION: 2-Inch Solid ROCK-LATH (or Metal Lath) and RED TOP Plaster partitions require 3 inches less space along their full length than conventional partitions. **REQUIREMENT:** Lightweight yet durable partitions that offer high fire resistance.

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NEWS

HOUSEBUILDING'S MIDYEAR BOOM, sparked by industry's switch to low cost units, will boost 1949 volume over the 825,000 mark

With the Bureau of Labor Statistics estimating that 100,000 dwelling units were started in June—a record June figure and within 300 of the all-time monthly record—housebuilding was proving itself to be one of the strongest sustaining forces in private construction in 1949. Taking into account final corrections of the first quarter's estimates, the total number of starts for the half year stood at 450,800, within 5.6 per cent of the 477,600 started in the first half of 1948, and nearly 27 per cent above the 355,300 for the first six months of 1947.

The June results sent forecasters to a re-examination of their portents and omens. Quickly forgotten was an unofficial forecast of 700,000 units for the year's total that had emanated from the National Association of Home Builders during the lagging weeks of early spring; and the most unyielding pessimist was willing to foresee a final tally of at least 825,000.

Consensus seemed to be that 850,000 dwelling units—approximately the total for 1947—would be the final figure.

The fact was that housing demand, in spite of the familiar talk of the construction industry pricing itself out of its market, was still going strong. Reasons appeared to be:

1. Liquid savings of individuals, from which home purchases are financed, remain at peak levels. These assets of individuals probably exceeded \$175 billion at the end of 1948—up from the previous peak of \$172 billion (Federal Reserve Board estimate) at the end of 1947 and more than three times the 1939-40 prewar liquid assets of around \$50 billion.

2. Total income of individuals, at an annual rate of \$217 billion in early 1949, remains at unprecedented levels, and thus underpins a continuing high level of consumption and investment expenditures as well as substantial savings.

3. Home-buying intentions early in 1949, as revealed by the Federal Reserve Board, equalled last year's record volume of 2,400,000 homes purchased (new and old). The accuracy of previous estimates from these FRB surveys supports the probable accuracy of this year's preview of buyer demand so long as incomes hold up.

4. Fundamental requirements for housing (which savings and income combine to translate into housing demand) continue the unparalleled postwar expansion. Marriage rates far above prewar levels, the war and postwar crop of babies, the propaganda decrying sub-standard housing, and liberal home financing—all have helped to fill the new units almost as fast as they can be completed.

5. A shift to lower priced homes has been made to take advantage of a greater part of the new demand which postwar incomes have created. As the demand in the more lucrative higher-price market is leveled, builders are diverting production facilities to the more stable field of middle and lower price homes.

6. **Rental housing** in expanding volume under the FHA's Section 608 program is expected to compensate in part for the slight declines in 1949 in small home starts.

7. Somewhat lower construction costs, including closer profit margins, and improved quality were providing support to the market. Although the cost of land, labor and materials for comparable new houses was, on the whole, probably not down more than 5 to 8 per cent, there were enough additional gains from absence of contingencies, better workmanship, closer profit computations, and wide selections of materials to give some bargain aspect to the market.

8. Loosening of mortgage money, after a year's relative stringency, stimulated demand.

Just how much was the contribution that came from each of these elements, no one could say. One thing at least was certain. The "economy house" drive, launched by the home builders and later given the blessing of the government (despite strong labor criticism), was proving



House Production this year started slowly but is gaining month by month (below), is already ahead of 1946 and 1947 midyear marks (above).

much more a success than its cavilers would care to admit.

Because of this shift as well as some reduction in construction cost, the dollar volume of residential work is certain to be less than that of 1948, and proportionately less than the number of starts this year when compared with the last. For the first six months, expenditures for residential construction have been jointly estimated by the Departments of Commerce and Labor at \$2.9 billion as compared with \$3.3 billion a year ago—a drop of about 12 per cent. The year's total will probably reach 85 per cent of last year's whopping record of \$7.3 billion.

WASHINGTON

PUBLIC HOUSING WINS a tough race, barely skimming final hurdle

Of all the bright track stars which Harry Truman had launched in his Fair Deal track meet last January, Public Housing had the somewhat dubious distinction of being the first—and perhaps the only winner. One by one the others—socialized medicine, Taft-Hartley repeal—had buckled under. But last month Public Housing came panting victoriously down the track, a little winded from its run through the floor of the House of Representatives, but fundamentally intact.

Some of the obstacles it had encountered during the last few weeks of running had been formidable enough to spark the opposition with a last-hour hope and raise the nation's spectators to their feet. The most serious: the 81st Congress' gradually growing awareness of the need for economy. Even this obstacle, how-





LIGHTNING in GE's new plant

General Electric calls its new High Voltage Engineering Laboratory in Pittsfield, Mass., the largest man-made lightning center in the world. GE brings five million volts inside its laboratory to show (above) how 25 years ago an electrical storm would douse a home's lights. Right, a strand of copper wire disappears in a streak of flame as five million volts are surged through it.

HOUSING EXPEDITER'S HOUSE is minute but costly

One of Housing Expediter Tighe Woods' chief complaints is that not enough housing has been built in the low priced class. He took it upon himself (in a private, not an official capacity) to show that it could be done. Last month he revealed the result of his experiment.

With the aid of Architect R. J. Barr, Jr., of Joliet, III. Woods put up two demonstration houses designed for suburban locations which, he said, can be sold at a modest profit for 6,750 including let, well and septic tank. (Woods' much publicised 551 sq. ft. house sells for \$12.24 per sq. ft. and, on this major count, finishes a poor second to the 720 sq. ft., 41/2-room house built by Place & Co. in South Bend—p. 86—to sell for 6,350 or 88.82 per sq. ft.)

Woods' house, complete with one-half acre of ground, is a two-room structure. The large living room has a screened-off kitchenette equipped with electric refrigerator, automatic washing machine. An extra bedroom could be attached for \$1,200 more.

Exterior finish is redwood boards, with a layer of insulating board next to the outside finish, then rockwool, with insulating foil next to the birch plywood interior. Roof is insulating board covered with asphalt shingles; the floor is a radiant heated concrete slab.

Woods' houses could be sold to veterans with no down payment and \$30 a month mortgage payments, with amortization in 25 years.

SIGNS OF THE TIMES: "children wanted"

Glassman Brothers, Washington, D. C., builders of apartment developments, placed an advertisement (right) in the four Washington dailies which showed clearly a sign of the times: "Children wanted." Several such ads throughout the country (motivated as much by a desire for tenants as an urge toward humanitarianism) would tell a far different picture than the old "No Children" ads of 100 per cent occupancy days.







ever, popped up too late to stop the Fair Deal team's first victor.

Smiling Harry Truman was waiting at the tape, fountain pen poised, to sign over to the government the solemn prerogative of acting as landlord to some 3 million of its citizens. (For a detailed report of the Public Housing law, see page 83.)

PRIVATE ENTERPRISE BILL is coolly greeted by the industry

As a sop to the opponents of Public Housing, the Administration threw out a suggestion several months ago that it would sponsor legislation which would make things easier for the private builder. The benevolent Administration-and the cooperating moderate Republicans-also wanted to make things easier for the veteran, the middle income family, and anyone else who wanted help. As a result, the Sparkman "private enterprise aid" bill which was finally thrown in the hopper last month (eight pages longer than the 84-page Public Housing bill) was a catchall of every new idea thought up in the last three years. It would:

Authorize direct government loans (\$1 billion of them) to cooperatives, and \$300 million to veterans unable to find 4 per cent loans elsewhere.

Transfer permanent war housing units to local public housing authorities, communities, or educational institutions.

• Create a new category of FHA Title II financing, which would authorize mortgage insurance for 95 per cent loans on houses priced up to \$7,000, with provisions for a price boost to \$8,000 if the property has three bedrooms, \$9,000 if it has four.

Extend FHA Title I loans for home modernization and repair for three years and liberalize that part of Title I dealing with new construction to permit a 95 per cent mortgage on a \$5,000 house.

▶ Free the Federal National Mortgage Association from the restriction purchase of mortgage loans for veterans, rental housing, and cooperatives. (FNMA would continue to be restricted to buying no more than 50 per cent of a bank's portfolio of cther loans.)

▶ Permit the Veterans Administration to guarantee 60 per cent (instead of the present 50 per cent) of a GI home loan if the entire loan does not exceed \$7,500 (instead of the present \$4,000).

Cool reception. Reception to the omnibus bill was decidedly cool. The New York *Herald Tribune*, noting the housebuilding industry's recent "unexpected signs of life," pointedly asked: "Do builders need further aid at this time?" The building industry, which admittedly has done a remarkable job without these aids, would nonetheless look with favor on such sections of the bill as the boost in Title II insurance. But, along with most Americans who balk at the prospect of the building industry or any other sector of the nation's economy getting under the government's thumb, the industry violently opposed the provisions for direct loans. And it deeply resented the elimination of the joint FHA-VA mortgage (505-A) which was the housebuilder's greatest support during the record 1948. Such inclusions and omissions led the National Association of Home Builders to comment: "Some authorities believe (it) would be more damaging to private mortgage lending institutions and private housing construction" than the Public Housing bill.

The Senate Banking Committee planned to push the bill through to the Senate floor with only three days of public hearings. Industry spokesmen, resentful of any effort to stampede them into accepting an all-ornothing bill, would have to wait for House committee hearings to make their objections known.

Best guess was that the bill would pass the Senate unscathed, but that the House would pass only those sections relating to FHA and war housing and keep the rest in the icebox.

The Congress last month also:

>Put finishing touches on the O'Mahoney Bill which would permit manufacturers to use the delivered point pricing system so long as it is used on an individual basis and not in collusion. This means a partial return to the outlawed basing point system and probably lower steel and cement prices in areas far removed from production centers.

Sent to joint conference a bill which would provide a special category of FHA mortgage insurance for multi-family rental housing on or near military installations. Cost may not exceed \$8,100 per unit. Most of the housing will be built on land leased from the armed services. Amount of insurance authorization was \$500 million, with another \$500 million available at the discretion of the President. Developers are not likely to be as attracted to this plan, which provides for 90 per cent FHA mortgages, as they would have been to the original idea of offering 100 per cent mortgages. Let die the inflation-born powers of the Federal Reserve Board to control the purchase time of consumer goods, and to control bank reserves. To builders, this meant more money for mortgage loans.

LUSTRON AND RFC: two deals involving people and money

Lustron Corp., out of the headlines since it asked—and received—a \$7 million loan (its third) from RFC last February, was back in again last month. This time there was more than news about loans (although there was that, too; Lustron got another \$2 million—instead of the \$3 million it had asked for).

Family friends. A senate subcommittee, headed by Arkansas' J. William Fulbright, became alarmed when it discovered that two Missouri boys, family friends of the Trumans, were on Lustron's payroll. Herschel Young was a Washington repre-

senative. His brother Merl was the \$18,-000 head of the company's Washington office. What made committee interest sharpen was the discovery that Merl had been RFC examiner during the period when Lustron's first two loans were approved.

There was nothing new about RFC officials taking jobs with companies who had received RFC loans. But Senator Fulbright thought it was downright unhealthy. He promptly introduced a bill which would prohibit any RFC employee who had participated in making a loan to a company from accepting a position with that company for five years after the loan is granted.

ECONOMY

PRICE CURVE LEVELS and producers reopen some plants

The dipping cost curve which building men — and business men generally watched with mixed feelings began last month what appeared to be the gradual process of leveling off. As plywood mill prices evened off at about one-third under last January's quotation, one Portland producer breathed a relieved sigh and said: "Our price cutting hysteria has ended. It had to or we'd all be broke." Mill owners looked for a turn upward in the fall.

Elsewhere the turn upward had already started. Copper effected two price boosts in less than a week, to get back to its May level. Lead and zinc went up slightly. Brass, after a 50 per cent production slump in the last six months, recorded a substantial sales pick-up. American Radiator & Standard Sanitary Corp. made plans to reopen some of its plants which had been idled by lagging sales.

Graph lines down. Whether or not the price drop was over for good, it had left its mark. It and the other significant factor in the new picture of building costs—increased labor productivity—had succeeded in pointing many a graph line down. Melvin J. Baker, chairman of the Construction Industry Information Committee, put the cost drop of residential construction since last year's high at 10 per cent. According to the Austin Co. index of Cleveland, the cost of industrial building in the last quarter had dipped 8 points (4.6 per cent). The Aberthaw Index recorded a drop of 6.5 points.

The general reduction was dramatized last month in Detroit, where the Board of Education, taking bids on a proposed school addition, discovered to its surprise that it could build the addition for 30 per cent less than it could have a year ago. Going by last year's figures, it had planned to spend \$400,000. Now, low bidders will construct the addition for \$279,306.

The big three. Detroit builders, mulling over the reasons, came up with the same three which by now are trademarks of the new market: return of competitive bidding, material price drops (the three main ones in Detroit are lumber, sand and gravel, and brick), and increased labor productivity (Detroit contractors are able to hire workers again on a five-day basis instead of paying them for an ineffective sixth day).

HEAVY BUILDING hits 7-year high

Private utility companies gave the go ahead signal for enough construction in June to offset a slight decrease in contracts for public works and push the monthly total of heavy construction contracts to \$239 million—a seven-year peak. (The May total was \$213 million; the June, 1948 figure, \$216 million.) Public works continued to acount for roughly half the heavy construction total.

HOUSE SALES TIME listed by FHA

Ever since the buying public first started tightening up its purse strings, every one has known that houses whose price tags kept to four digits were selling faster than those with five-digit prices. Last month FHA proved it with a survey of the average selling time of the housebuilder's product: Houses under \$8,500 sell in 30 days.

- F Houses under \$8,500 sell in 50 days.
- Houses between \$8,500-\$12,000-60 days.
 Those over \$12,000-"more than 60."



SPURT IN OFFICE BUILDING REMODELING will total \$175 million by year-end as building owners insure against the future





1, 2) Don Morgan: 3) National Photo Service: 4) Cortland V. Hubbard: 5, 6, 7, 8) C. W. Brown When it became apparent that New York City was embarking on a postwar splurge of new office building construction (49 new buildings have been started or announced since the beginning of 1945), owners and managers of many an older building began to sniff in the air an approaching competition for tenants, and to look critically at their dingy entrance ways and drab interiors. Some saw clearly the shape of their task and went to work. One of these, Cushman & Wakefield, dug into a \$2 million project to modernize and repair the buildings it controls.

When the Parents' Magazine building, for instance (shown in before-and-aftermodernization photos, A, above), needed a sand-blasting, a new lobby and a downstairs overhaul, agents Cushman & Wakefield put \$40,000 of the owner's money into the job. The Parents' Magazine building serves as a good illustration of the benefits of modernization because of one tangible and immediate reward for the landlord: a substantial increase in the rent roll.

\$175 million program. Not every city faces the competition from new building that New York does. But, whether because of such competition, or to forestall it, building operators are ripping out obsolete elevators, snipping off dated ornamental bric-a-brac and handing out sizeable refinishing contracts in almost every major city in the country. During 1949, U. S. building owners and managers will spend \$175 million on improvements to their structures.

Philadelphia revamp. Philadelphia, where no new building has gone up for 15 years, is spending \$10 million on modernization and claims to lead the list. One significant Philadelphia project is the 13-story Otis building (B) whose lobby, entrance and







elevator enclosures were completely modernized by its owners (Davill Realty Co.) at a cost of \$35,000. The owners did not raise rents. Said Manager E. G. Crockett: "I look upon it as more insurance for the future."

Another Philadelphia building, the 50year old Crozier building (C) is now being air-conditioned and revamped throughout. Owners already foresee an annual rent increase from \$44,820 to \$105,000.

Denver rejuvenation. In Denver, where obsolescence has progressed at a rapid rate, office tenants started moving into converted residences and warehouses. Building owners promptly inaugurated a \$5 million modernization program. One of . the most interesting is the \$101,000 rejuvenation of the 60-year old Ernest & Cranmer building (D). Its owners spent \$50.-000 for new store fronts, \$2,500 for a lobby cigar stand, \$5,400 for new entrance doors, \$4,400 for terrazzo flooring and travertine marble wainscoting, and \$2,000 for lobby lighting. The rest went for carpentry and plastering. E. & C. owners expect to get their money back in ten years.

The story was the same from Beaumont to Boston. Major modernization jobs were being done on the 40-year old Davison building in Baltimore, the old Foley Bros. building in Houston (at a staggering cost of \$3 million), the 70-year old Commercial building in St. Louis, the Southland building in Dallas, the Mills building in San Francisco. Building Owners everywhere are investing heavily in Crockett's "insurance for the future."

DESIGN

ART CRITICS look at housing, toss one small bouquet to insurance company

If there is any one type of building which symbolizes the growing American approach to residential planning, it is a large, multi-unit, garden-type apartment, usually established in an outlying city belt by a local housing authority or an insurance company. More often than not it consists only of unimaginative, doubleor triple-decked row houses bent around corners. Design has been given little attention in the growing approach.

Many have expressed concern with this, and few more strongly than a committee of architects of New York City's Municipal Art Society which made a tour last month through all of the city's large-scale developments—from the Bronx, along the East River, to the New York Life's 3,000unit "Fresh Meadows" in Queens. **Concern and condemnation.** The committee, headed by William F. R. Ballard, admired the concern with design shown by some of the life insurance companies. It singled out Fresh Meadows for approval. But for FHA-backed projects it had only condemnation: "The FHA-guaranteed projects suffer from narrow and stereotyped controls imposed by the Administrator. . . . In some cases the FHA-insured projects represent a quality of conception, design and execution shockingly inferior to either subsidized projects or private insurance company projects."

It was just another voice of protest. Enough such voices, however, might one

MONEY

RENTAL HOUSING YIELDS, despite FHA insurance, attract few investors

FHA's Title VII yield insurance program, through which the government has tried to get rental housing built by guaranteeing investors that they will make a profit, has not attracted the big insurance companies the way FHA had hoped. FHA guessed that investors had failed to realize just how safe their investment would be. Last month it published some figures intended to show that a Title VII-protected investor might "erase from consideration the problem of risk to capital."

Yield insurance, FHA pointed out, guarantees a 2 per cent annual amortization plus a 23/1 per cent return on the outstanding investment every year. But investors would earn considerably more than the minimum guaranteed yield. On the basis of rent schedules approved by FHA at the time of construction (allowing a 31/2 per cent return with a 7 per cent vacancy), the investment would produce a return of 51/2 per cent, including amortization, during the early years of a building's life, which would rise above 36 per cent of outstanding investment in the 34th year. FHA offered. in its Insured Mortgage Portfolio, a set of charts to prove the point.

Unimpressed investors. But the kind of investors whom FHA hoped to interest remained unimpressed. For one thing, FHA's calculation of gross income seemed to assume that the present price level (or higher) would continue for the 34 years of the project's life. On the other hand, the level operating expenses used in FHA's estimate could probably be accomplished only with steadily declining prices—since operating costs and taxes usually rise with the years. day convince FHA that the new approach to American residential living must include other factors than size.

QUALITY HOUSE Institute moves to Texas

To expand its program of "raising the standards of design and construction in moderate-priced houses," the Revere Quality House Institute (co-sponsored by Revere Copper & Brass, Inc., and The FORUM) last month became the Revere Quality House Division of the Southwest Research Institute in San Antonio.

Revere plans to study in its new laboratory this year the problem of design in 12 different localities.

FHA's well-intentioned yield insurance program still seemed unlikely to attract any but a very uncommon building customer: an investor daring enough to want to own some housing, wealthy enough to finance the entire investment, and timid enough to prefer complete protection of capital to profits higher than the yield of government bonds.

GIANT MORTGAGE DEAL conveys \$100 million of HOLC loans to Brooklyn bank

The Home Owners Loan Corp., organized in 1933 to save the thousands of homes about to go under, loaned more than \$3 billion to distressed home owners during its three-year lending period. It began its liquidation in 1936, as soon as it ceased lending. By last May it was more than 90 per cent liquidated.

Last month it took a giant step toward total liquidation. In a deal involving the largest amount of mortgage money ever handled in a single transaction, it turned over its entire New York State portfolio totalling more than \$100 million and covering the homes of more than 40 million families—to the Dime Savings Bank of Brooklyn, principal mortgagee for Long Island's host of merchant builders. About \$25 million of the portfolio will be allotted to a syndicate of Savings and Loan Associations headed by Zebulon V. Woodward, executive vice president of the New York State Savings and Loan League.

Everyone pleased. All parties were pleased with the transaction. HOLC prepared to repeat the operation in other states where it holds large amounts of home mortgages. Dime Savings' president, George C. John-

NEWS

son, said that bank plans are being made to process its new bulk of mortgage accounts, with the aid of additional personnel and new mechanical devices.

\$500 MILLION FOR FANNY MAY puts her back in business

Fanny May (known more formally as the Federal National Mortgage Association), had spent all her money. Her entire \$1 billion mortgage purchasing authority was gone.

Builders and mortgage men took the news with a jolt. Without Fanny May's secondary market (she can buy up to 50 per cent of a lender's portfolio of VAguaranteed and FHA-insured loans) there was considerable doubt that mortgage money would continue to be available in sufficient volume.

Congress took the news with businesslike dispatch. It pushed through a stopgap measure dropping another \$500 million into Fanny May's yawning purse.

VA LOANS REAPPEAR as 4 per cent money regains popularity

The surprising upturn in house starts (see page 11) carried a lot of corresponding surprises with it. An increase in VA loans was one of them.

At a time when everyone just about agreed that the Veterans Home Loan Program was drying up under VA's refusal to look at any mortgage which did not carry a 4 per cent interest rate, VA announced that its program was 18 per cent higher in May than in April. Moreover, straight 501's were increasing at a faster rate than 505-A's, the combination FHA-VA loan on which the first mortgage, insured by FHA, carries 41/2 per cent interest.

Most finance men were inclined to dismiss the new trend as "seasonal upturn." Some, however, thought they saw signs of a return to 4 per cent money. VA had not budged from its position: but obviously the mortgage lenders had.

MORTGAGED TV SETS provide house builders with new sales stimulus

Three builders last month came up with the same answer to sagging sales: television sets included in the packaged mortgage. The Edmondale Building Co. of Baltimore installed a \$349 Crosley set in its \$11,950 house. On Long Island, Drake Homes advertised a \$17,750 house with the note: "All this and television, too." Another Long Island builder, Walter Uhl, installed TV sets in his \$27,900 houses.

Other builders watched to see how the

buying public would take to television with its home mortgages. Said one of Uhl's salesmen: "It is hardly fair yet to say it sells any houses; but it definitely is a factor of interest."

PEOPLE

William Wilson Wurster, dean of the Massachusetts Institute of Technology School of Architecture, has been named to fill Maj. Gen. U.S. Grant, III's position as chairman of the National Capital Park and Planning Commission in Washington. Grant, chairman since 1942, will retire.



Brig. Gen. John J. O'Brien, in charge of all Army real estate during the war, last month became president and general manager of leading prefab Gunnison Homes, Inc., of New Harris & Ewing Albany, Ind. The

company's founder and retiring president, Foster Gunnison, moved up to chairman of the board of directors.

Ralph Walker, recently-elected president of the American Institute of Architects, last month won another election, this time to the National Institute of Arts and Letters.

Joseph Hudnut, dean of the Graduate School of Design at Harvard University, received the degree of doctor of fine arts from the University of Michigan last rooth.

MATERIALS

BRAB GETS \$25,000 and gets going on building research

The Building Research Advisory Board, established last spring and hailed by both government and industry, chalked up three distinct successes last month. It got enough in contributions from private industry (\$25,000) to keep it going for the first year, it hired the University of Illinois' William Scheick as its first executive director, and it completed its first job.

Director Scheick, who has been coordinator of Illinois U's Small Homes Council since its establishment in 1944, will head a board of 28 government, educational and independent research agencies in laying the groundwork for BRAB's program.

Double duty. BRAB's first job, an investigation for HHFAdministrator Raymond Foley into the obstacles impeding modular coordination, unearthed a general confusion on the subject which, if corrected, might bring the modular system into wider use. This function of BRAB (focusing attention on subjects in need of research; it does no actual research itself) is only one of its major duties. The other: coordination of all the housing research conducted in some 2,000 laboratories throughout the U. S. BRAB last month showed the real need for such coordination. It discovered that six different universities are doing research on the heat pump, each of them probably unfamiliar with the work the others are doing.

AW

REALTORS ACQUITTED of price-fixing charge

Twice the Department of Justice has attempted to nail the National Association of Real Estate Boards on a charge of violating the Sherman Anti-Trust Act, because it fixes brokerage fees through its local and national groups. A year ago NAREB was vindicated in a criminal court of such a charge.

i ast month the realtors achieved their second victory, this time in a civil action. Federal Judge Alexander Holtzoff, dismissing a suit againt NAREB and the Washington Real Estate Board, said that agreement upon brokerage commissions (5 per cent in this case) is vastly different from illegal price fixing on commodities, and similar to the right of labor unions to establish wages. Moreover, such commission agreement, the court ruled, is actually "in the public interest."

RELAXED RENT CONTROLS permit increases to cover maintenance

As the rash of rent decontrol broke out over the country (Texas followed Nebraska in lifting state controls; 76 cities decontrolled themselves), Housing Expediter Tighe Woods took a second look at the regulations concerning rent increases for federally controlled landlords who have made capital improvements to their apartments. He decided that that section could stand a little more liberalizing.

From now on, many items formerly regarded as ordinary maintenance (a roof repair job, for instance) will be ground for rent increases. So will the higher costs of equipment replacement and the material and labor required for maintenance.

BE PROUD AS A PEACOCK!



... of course, it's Electric!

You can *really* be "proud as a peacock" of the houses you design and build—and so will the customers who buy them—if you include the kind of cooking equipment more people want—modern Electric Ranges!

The trend to Electric Cooking is proved by the fact that another million American families switched to it last year. Conservative estimates indicate that the same thing will happen again this year.

So build houses that are modern today and will stay modern for years to come. During construction, include wiring for an Electric Range, leading to a range outlet in the kitchen. An Electric Range, like electricity itself, is now a "must" in every modern home!

ELECTRIC RANGE SECTION, National Electrical Manufacturers Association, 155 East 44th Street, New York 17, N.Y. ADMIRAL • COOLERATOR • CROSLEY • FRIGIDAIRE • GENERAL ELECTRIC • GIBSON • HOTPOINT KELVINATOR • LEDO • MONARCH • NORGE • QUALITY • UNIVERSAL • WESTINGHOUSE



Another 1,000,000 American families switched to Electric Cooking last year

For months now, MACY'S Bureau of Standards has been subjecting this new vinyl carpeting to rigid floor tests under peak traffic conditions on a large area of one of their most active selling floors . . . and now . . .

Southbridge Plastics presents

Day after day, week after week, for the past months, customers and personnel at Macy's have been trying out this new vinyl carpeting on more than half of a complete floor. For almost a year, continuous exhaustive and severe tests have been made by Macy's Bureau of Standards. And now, Southbridge Plastics Inc. launches this new modern miracle in floor covering.

VINATRED Vinyl Carpeting is an em-bossed fabric-backed vinyl plastic laid on a sponge rubber base. It has a rich multi-

vinyl carpeting

level textured surface. It is easy to install, easy to keep clean, easy under-foot. It is 36 inches wide. It is ideal for steamships, theatres, hotels, stores, banks, hospitals, showrooms, homes, offices, for floor areas where floor coverings must undergo strenuous daily traffic and constant soil hazards ... and keep a clean, well-groomed look. By actual test, it withstands temperatures from tropical heat to 12° below the freezing point of water. It meets the need for luxury at a modest cost. And in addition, these advantages:

inatrea

Style: VINATRED has a textured surface and comes in high-style solid colors or smart patterns.

Comfort: VINATRED has under-foot resilience, since it is laid on a springy cushion. Safety: VINATRED with its surface embossing gives a sure footing. It is flame-resistant,



will not support combustion.

Cleanliness: VINATRED is non-porous, does not absorb dirt, and can be readily cleaned Economy: VINATRED with slight need for expensive upkeep and no need for waxing makes with vacuum or mop.

it an important cost-saver. Wear: VINATRED has been pre-tested in the famous Macy Bureau of Standards and proven



highly resistant to severe abrasive wear.



Architectural FORUM August 1949

18



FOR LONG LIFE

OW COST

BUILD WITH

ALCOA INDUSTRI.

Write for Engineering and Application Data This free book gives detailed Information on engineering and erecting buildings using Alcoa Industrial Roofing and Siding. Call your nearby Alcoa Sales Office or write, ALUMINUM COMPANY OF AMERICA, 1866-H Guif Bidg., Pittsburgh 19, Pennsylvania. Here is the answer to the need for long-lasting roofing and siding that can be erected quickly and at low cost . . . thick, strong Alcoa *Industrial* Roofing and Siding.

Compare costs with other building materials of comparable quality. Low in first cost, it slashes erection costs, too. Properly engineered and installed it does not require painting or expensive maintenance; will give years of trouble free service.

Alcoa Industrial Roofing and Siding is made of an Alcoa Alloy that is unexcelled in resistance to atmospheric corrosion by any aluminum alloy now made. It withstands smoke and common industrial fumes. It can't rust-streak, rot, warp or shatter. It provides a maximum of attractive appearance and long life at minimum cost.

Here are the Details

032

ROOFING AND SIDING

THICKNESS: .032 inches. LENGTHS: 5, 6, 7, 8, 9, 10, 11 and 12 feet. WIDTHS: Roofing sheet, 35 inches. Siding sheet, 33³/₄ inches; coverage 32 inches. CORRUGATIONS: ⁷/₆ inch deep. 2.67 inches, crown to crown.

Load-Carrying		Capacity		
PURLIN	CLEA R SPAN	UNIFO P. (Safety	RM LOA s. f. Factor;	2)
6'6"	76"		29	
6'0"	70"		35	
5'6"	64"		41	
5'0"	58"		50	
4'6"	52"		63	
4'0"	46**		80	



ALUMINUM THE METAL THAT asts

INGOT - SHEET & PLATE - SHAPES, ROLLED & EXTRUDED - WIRE - ROD - BAR - TUBING - PIPE - SAND, DIE & PERMANENT MOLD CASTINGS - FORGINGS - IMPACT EXTRUSIONS ELECTRICAL CONDUCTORS - SCREW MACHINE PRODUCTS - FABRICATED PRODUCTS - FASTENERS - FOIL - ALUMINUM PIGMENTS - MAGNESIUM PRODUCTS



QUALITY FEATURES



DRAWER SLIDE. Exclusive Geneva deign. Heavy steel channels prevent varping, sticking. Roller type interlockde slides Long-lasting myton rollers



SUPER FINISH. Cabinets Bonderized, followed by rust-inhibiting primer, finished with a heavy coat of chip-proof, easy-to-clean, baked-on enamel.

INVISIBLE PROTECTION. Double-

door and drawer fronts enamiside for extra protection against

Want your clients to sing your praises? Specify Geneva Personalized Kitchens for new and remodeled houses!

Owners really *like* the roomy storage space; the wide counter tops; the work-saving sinks; the sound-deadened doors and drawer fronts; the all-welded construction; the rounded edges; the chip-proof finish; the sleek, simple lines; the step-saving accessories; the beauty and quality throughout.

You'll like the wide range of sizes that makes it so easy to fit Geneva units to any size kitchen, any shape layout.





KUDOS

LETTERS

Forum:

Just a note to let you know what we think of the May FORUM. After I had read the account of "Two Office Building—The Prudential Building and the General Petroleum Building," I put it on the *must* reading for our entire office.

This has given us concrete facts on new office building construction that we have not been able to obtain in the past, not only as to cost and materials, but also some changes in design. We feel that the information included in this article will be of great value to our office in coming to a determination as to when we build our next office building, and how. . . .

GEORGE A. KUHN Klein & Kuhn, Real Estate Mgmt. Indianapolis 4, Ind.

BIGGEST PICTURE WINDOW Forum:

Could it not have been that more important than the factors you mention for the north-south orientation of United Nation's Secretariat (FORUM, Jan. '49) was the esthetic one? The dominant features of the southern view from "the World's most enormous windows" would have been the four giant chimneys of the nearby N.Y. Steam Corp. plant, which for many years will belch black smoke toward the big white marble slab. To the north there is a Chinese wall of big apartment houses. Surely, Wallace Harrison and his distinguished associates would not have been guilty of the all-too-common error of providing a "picture" window without the picture.

JULIAN H. SALOMON Camp Consultant & Planner Suffern, N. Y.

AUTOS & HOUSES

Forum:

I've been reading the \$81/2 Million Bust (FORUM, Apr. '49). I sometimes wonder at your championing mass production of homes to such an extent as you do.

I really like you and the stories make good reading, but aren't you a bit naive about the whole thing? Of course costs can be reduced by mass production, but mass production is no panacea.

Sure you can do it like an automobile. But did you ever stop to think that an auto is a pretty tinny thing and only good for a little while? A house has to be better built by far and have more equipment, yet a car costs a good deal more per cubic foot than a house!

If mass production would do it, trailers would be cheaper, too. Here again they cost more per cubic foot than a house, and (Continued on page 22)



Remarkable new features are incorporated in the Ware Aluminum Awning Type Window. Vents may be opened beyond normal ventilating position for easy washing of outside as well as inside surface. When closed all corners are weather-tight. Easily operated. Easily cleaned. Draft-free ventilation. Two types—Monumental for schools, hospitals, institutions. Intermediate—for most residential applications. Immediately available. *Write for details.*

WARE LABORATORIES, Inc. 1827 Delaware Parkway, Miami 35, Fla. New York Office: 21 West Street, N.Y 6, N.Y.

THE NEW FUEL SAVING COMFORT (pronotherm

NOT JUST A MOSTAT

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The new Plug-In Chronotherm is designed to replace all manual thermostats. All the advantages of the regular Chronotherm. Anyone can install it in a few minutes.

THE new Honeywell Comfort Chronotherm is not just a thermostat. Of course it is the finest, most accurate and most sensitive thermostat ever conceived, but in addition it is a real fuel saver, 24 hours a day. Equipped with a Telechron clock, this amazing Chronotherm automatically lowers the room temperature to a fuel saving level at night, and automatically returns it in the morning—at any hours selected. Recommend and specify Chronotherm on every job. Assure your clients of complete automatic heating satisfaction. They will not only have the finest in thermostats but will save fuel and gain untold convenience as well. And remember, Chronotherm will pay for itself in fuel savings.

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FEATURES THAT HELP YOU **SELL MORE** WATER HEATERS-



Homeowners need lots of hot water at an economical cost — that's why a KOVEN Electric or Gas Water Heater is the most efficient unit to recommend and install. Completely automatic, clean, dependable, silent and safe! Available in models and sizes for every requirement.

Liberal 10-year guarantee on pure copper or extra-heavy copper-bearing steel tanks when ordered with cathodic protection.

BEAUTY . ECONOMY . EFFICIENCY . PERFORMANCE

L. O. KOVEN & BRO., Inc. 154 OGDEN AVE., JERSEY CITY 7, N. J. Plants: Jersey City, N. J. Dover, N. J. they will depreciate to a permeable talus heap in 15 years.

LETTERS

The main secret of Bill Levitt's success is not so much mass production as it is subletting of labor reduced to a science, and even at that I think I could take one smart Swede, two comic opera Italians, a Cockney bricklayer, a bog-trotting plasterer, a down-East Yankee and his adolescent son—good fellows all—and a good, flat, sandy field, and build Levitt's house almost as cheap as he does himself.

Probably he'd agree with me that what Levitt has accomplished is the ability to do a thousand houses just as cheap per house as one small builder could build it individually. He takes what savings he can get by pre-cutting and prefabrication and mass purchasing, but retains the benefits of the small operator by subletting labor, so his labor costs do not more than offset his savings by mass purchasing.

I'm about as familiar with Levitt's methods as an ecdysiast on a flying trapeze, but that's the way it looks from here.

Anyway, it's always well to bear in mind that if houses were built like automobiles. they'd cost a lot more than they do now. It can't be so. Or can it?

ROYAL BARRY WILLS, Architect Boston, Mass.

• No need for Reader Wills to be unfamiliar with Levitt's methods. FORUM'S April issue detailed Levitt's success (p. 84), as well as Byrne's "bust" (p. 143), showed that much of Levitt's success stems from his subcontracting operation. FORUM is for cheaper automobiles, too.—ED.

OPEN-END MORTGAGE

Forum:

The June issue contains an article on the "open-end" mortgage. You are to be congratulated for a valuable contribution toward the solution of a problem in financing small homes.

Our office represents several Federal Savings and Loan Associations. I have been quietly endeavoring to foster the necessary legislation.

As I have quite a bit of what might be called educational work in the next few weeks, I am inclined to use as part of my portfolio a reproduction of the article.

BURTON C. MEIGHAN Counselor at Law New York, N. Y.

Forum:

I was much interested in the article entitled "The Open-End Mortgage."

When our Association printed a new trust deed form in May 1940, the following was among the agreements: "That the (Continued on page 26)



HOW FORTUNE SELLS

STRUCTURAL MATERIALS

It happened on page 118 in August, 1948. A manufacturer of facing tiles used a four-color page in FORTUNE, and in October inquiries were "still averaging 18-25 per day."

"Some of the companies who responded to the advertisement in FORTUNE were Gillette, Ford, Union Pacific Railroad, Dow Chemical, Illinois Society of Architects, Eastman Kodak, Burroughs Adding Machine, Shell Oil, Squibb & Sons, Republic Aircraft and Phillips Petroleum," the report reads. "And there were letters from architects and general contractors from all over the country, three libraries, and many from the advertiser's own dealers, each of whom forwarded requests from 15 to 20 people."

In addition, this advertiser reinforced its FORTUNE campaign with direct mailings of FORTUNE's merchandising folders, and is "tremendously pleased with the response from top management men."

WAREHOUSING SERVICE

It happened on page 160 in September, and on four other half-pages this year. A company advertising a field warehouse receipt service reported that it was "particularly impressed by the character of our inquiries which have opened up sales communication for us to a sizeable list of firms rated as triple A by Dun & Bradstreet."

"Our experience with FORTUNE thus far gives us the impression that it delivers a message from the management of your advertisers to the buying executives of U.S. Industry in a direct and influential way."

It happens on every page, every month that advertisers in FORTUNE are "impressed by the character" and "amazed by the quality" of the market they reach, and no wonder: a survey just completed reveals that 84.2% of FORTUNE's quarter-million subscribers are engaged in business and industry, over one-third of them in the management of concerns with annual sales volume of \$5 million or more.

FORTUNE

The Magazine of Managerial Leadership

KENTILE GIVES NON-BASEMENT HOMES HANDSOME, LONG-LASTING FLOORS



A CHILD'S BEDROOM like this gets hard usage - but that won't faze Kentile. Colors go clear through the tough, scuff-resisting material—can't wear off. Kentile stoutly resists dirt and stains - a few flicks of the mop and it's shining like new. The many desirable features of these attractive resilient floors are being brought to your clients' attention in leading magazines.



EVERY ROOM in the 6,000 Levitt Homes is floored with Kentile. Because it permits installation right over concrete on grade, Kentile helps cut construction costs in homes like this.



KENTILE floors give you freedom for design at low cost,



Installs on concrete in direct contact with the earth—All fillers, binders and pigments in Kentile have high resistance to the alkali found in concrete. And Kentile's asbestos filler assures insulation against the cold and moisture in concrete floors. Equally ideal for installation on radiant-heated concrete slabs.

Also: Kentile can be laid over double T & G wood floors—or directly over firm plywood. Saves installation and labor costs because it can be laid tile by tile—eliminating the handling problems in laying flooring from heavy, hard-to-move rolls. Ready for use as soon as it is laid.





IN ADDITION TO 23 COLORS and a wide variety of feature strips, you can select "Kenserts" and "Themetile" – individual decorative touches for adding custom-made distinctiveness at low cost.

DAVID E. KENNEDY, INC. 58 Second Avenue, Brooklyn 15, N. Y. • 1211 NBC Bldg., Cleveland 14, Ohio • Bona Allen Bldg., Atlanta 3, Ga. • 452 Statler Bldg., Boston 16, Mass. 705 Architects Bldg., 17th and Sansom Street, Philadelphia, Pa. • 4532 So. Kolin Avenue, Chicago 32, Ill. • 350 Fifth Avenue, New York 1, N. Y. • 1440 11th Street, Denver 4, Colo. 2201 Grand Avenue, Kansas City 8, Mo. • 1855 Industrial Street, Los Angeles 21, Calif. Why play "hide and seek" with buried pipes?



Every house needs at least one Milcor Steel Access Door, Public buildings need hundreds!

Instant Access to Key Points in plumbing, heating, electrical, and refrigeration systems.

A SCREW DRIVER

MILCOR STEEL ACCESS DOORS

Ready to install • No special framing • Painted with rust-inhibiting prime coat • Concealed hinges • Flush, screw-type lock • 11 Sizes — from $83_6''$ × $83_6''$ to $243_6''$ × $83_6''_8''$ • For plastered or non-plastered walls • With or without expanded metal wings.

give instant access to key points

—and they last longer, cost less, help you deliver a job to be proud of

Convenience is a prime factor in any modern building. And maintenance convenience calls for Milcor Steel Access Doors.

They're flush to the wall — you can paint or paper right over them. No ugly frame protrudes. They eliminate dust-catching projections. They can't warp, crack, shrink, or rot.

Installation is quick and easy. And Milcor Steel Access Doors actually save so much on building time that they actually cost less than the old style doors with their special wood-framing!

So, for convenience and economy that really sells the client on your jobs — specify Milcor Steel Access Doors. Consult the Milcor Catalog in your Sweets File for complete information.

Milcor — the complete line of fireproof metal lath and steel building products.

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parties of the first part will keep the said premises in as good order and condition as they now are and will not commit nor permit any waste of said premises, reasonable wear and tear excepted, and upon their failure to do so, the Association shall have the right and option either to foreclose under this deed or to make reasonable and necessary repairs to same, the amount spent thereon for repairs, however, not to exceed 20 per cent of the original amount of this loan and the sum so spent with interest thereon shall become a debt secured by the lien of this deed; said amount so spent with cumulative interest thereon shall be paid by extension of the monthly payments provided for in this deed until the full amount spent under this paragraph with interest be repaid to the Association."

LETTERS

You will note that the borrower has the advantage of waiting until the original amount of the loan is paid before starting to pay for the repairs; usually the borrower elects to add the interest on the additional advance to his regular monthly payment so that at the end of payments on the original loan the indebtedness is exactly the amount of the advance.

Our Lawyer advised us to leave the option to repair with the lender on the basis of restoring his own security. The limitation to 20 per cent of the original amount of the loan, we think fortifies the conception of maintenance rather than a transaction beyond the scope of the original contract,

The maintenance clause appeals to the imagination of the new borrower and wins the full apreciation of the one who has made use of its provisions. It is a boon to lender and borrower.

> OWEN R. EASLEY Executive V. P. & Treasurer Mutual Building & Loan Assn., Inc. Martinsville, Va.

VENTS

Forum:

... There is one new idea in modern window construction that has received too little editorial comment compared with its very decided desirability to the home owner, that is louver ventilation. After over two years in a house where all glass is fixed and ventilation is 100 per cent through louvers, I cannot say too much to express my enthusiasm for this feature...

The editor who champions the cause of louver ventilation will someday be looked upon as a farsighted prophet of a new construction feature that will be used extensively.

NORMAN DENO Kreicker & Meloan, Inc. Chicago, III. (Continued on page 30)



hour after hour day and night

BUSY DOORS NEED MCKINNEY OILITE BUTT HINGES

*OILITE is a bronze metal with ability to hold about one-third of its volume in free lubricant. Its application to butt hinges was developed by McKinney in 1938, after exhaustive tests and research.

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m ou}$ don't have to sell homeowners on the advantages of Stainless Steel—everyone knows it is unsurpassed for beauty, durability and performance. But when you suggest Stainless Steel for gutters, downspouts, flashings and other roofing accessories, the first thing they are likely to say is "Sounds fine, but can we afford it?"

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FSLIC & FDIC

LETTERS

Forum:

I notice in your June issue (p. 16) an article about savings and loan associations beating the banks. You say "the Federal Government stands back of every \$5,000 worth of shares." I think if you will check this statement you will find that the Federal Government does not stand back of the Federal Deposit Insurance Corp. or the Federal Savings & Loan Insurance Corp. These corporations stand on their own feet and have a rather small amount of reserve to cover the amount of that insurance. I think you will find, however, that the government does not either directly or indirectly guarantee the savings and loan shares. If I am in error please correct me.

W. W. GASSER

President Gary National Bank Gary, Ind.

• Reader Gasser is correct, but so is FORUM. True, the Federal Government does not directly garantee the insurance reserves of FDIC or FSLIC. However it does stand behind FDIC; the Treasury has the power to purchase bonds issued by FDIC which, in an emergency, could be used to bolster FDIC's insurance program. Similiar legislation, endorsed by the President and now pending in Congress, would give the Treasury power to purchase up to \$750 million of FSLIC bonds. And, even now, RFC has the power to buy FSLIC bonds.—ED.

TOPSY TURVY

Forum:

Will you please tell me why in the May issue page 103-104 is bound in bottom side up?

Ordinarily I would not ask this question but would assume it was an accident; but you people do so many peculiar things I am wondering if you had some particular purpose in mind.

> S. WINTHROP ST. CLAIR, Architect Sturgis Associates, Inc. Boston, Mass.

boston, muss.

• Forum was not attempting anything as "peculiar" as a magazine with alternate pages upside down so that it might be read simultaneously by two people on opposite sides of the table. Quite by accident, the bindery placed a two-page color insert bottom side up in Reader St. Clair's May copy.—ED.

2 PER CENT MONEY

Forum:

A word of praise on your May Forum with the article on Lustron Houses, which I have read three times. The one article is worth my subscirption price.

Lustron has the answer to our housing problem, but I question the price range they have entered as being the one for its most rapid development. . . .

(Continued on page 34)



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31

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Write Managing Director for latest literature on foreign and domestic Marbles. Dept. 39-E



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HARRY W. BRYAN Bryan Abstract Co. Van Buren, Ark.

HARDLY CRICKET

I FTTERS

Forum:

While I have for many's the long year had for the reading matter in the Forum a reverence verging on the superstitious, I regret to state that the June seventh issue of the Weekly Bulletin of the Michigan Society of Architects makes you look pretty bad, in the department of rich, beautiful prose,

Well, in the Bulletin there is a story about the opening of the New Stouffer Restaurant in Detroit, designed by C. Howard Crane & Associates. Hold on to your Eames chair and listen to this:

'Revolving doors, set in stainless steel frames, lead into the black terrazzofloored lobby. The visitor is at once aware of a warmth of rich and gracious elegance as his eye surveys the interior. There is a sudden sense of expectation, as though one were about to be participant in a great event-as waiting in line to be presented at Court, or filing into the grandstand at the English Derby.'

After a brief and stupefied interval I began to worry about this. It seems to me, old boy, that this is hardly cricket. 'I file into a restaurant, intent on snatching a portion of the deep-dish apple pie and a cuppacawfee, and what comes over me? A feeling that I am about to be presented at Court, or file into the grandstand at the English Derby. A thing like this could upset me for a week. You know me; I am just a bundle of nerves anyway. . . .

It would do me no particular good if, intent on a nourishment, I got the feeling that I was about to witness the running of the Derby. I am looking for a waitress; not the \$2 window. . . . I do not go into restaurants to be reminded of facts like this. . . .

I designed a restaurant myself, here in Grand Rapids, last year, and it seems (Continued on page 38)



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to be making large sums of money. I cannot understand this, as when you go into Holly House (that's the name of it), you merely get a feeling that you are about to get something to eat. I can't imagine what I was thinking of, being so humdrum.

ROGER ALLEN Architect Grand Rapids, Mich.

PAT ON THE HEAD

IFTTERS

Forum;

I graduated from Kirksville in 1946 and am interested in manipulation including cranial osteopathy . . .

I would like to know more about the situation described . . . in the Forum. Edna M. Schoenek, D. O. Dade City, Fla.

• We would, too .- ED.

TEAM WORK

Forum:

With reference to the April issue devoted to the work of the "Architect and Builder Teams" . . . I noted with deep interest the several projects illustrated.

As past president of the N. J. Chapter of the A.I.A. and the N. J. Society of Architects and the present president of the N. J. State Board of Architects, I am probably taking my life in my hands in saying anything complimentary about close cooperation between the architect and the development builder covering large-scale operations ... (But) I feel sure these teams working closely together with the technicians and land planners of the FHA, together with a close study of the needs of the localities in which they are active, will continue to produce housing for the large mass of American people who will not build an individual house but want to buy a "package" job, for a price determined ahead of time.

Your April issue has forcibly brought out the fact that the small house (For Sale) is not the problem of the architect alone but is the joint problem of the "Architect and Builder" team, because only in mass production of this type of commodity can the price be brought within the means of the average buyer, and neighborhoods developed on a pattern that will guarantee value over a long period of time, NEIL J. CONVERY

> Architect Newark, N. J.

ERRATA:

• Construction photographs of the ALCOA administration building presented in the June FORUM were taken by Alice Cook.—ED.





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40 Architectural FORUM August 1949

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-dormitory, recreation center and classrooms-are laid out in the form of a U, to avoid customary overcrowding of a single entrance hall. Each of the three residence floors boasts its own screened porch, lounge, kitchenette, single and double bedrooms with built-in storage units. The partially-covered roof terrace can be used for sun bathing and also for an openair living room on warm evenings. The large recreation room or "commons" serves as a link between the residence and the one-story classroom building. The south wall of this room is glass, opening out on a central landscaped patio. Private reading and writing alcoves adjoin this area, partially cut off from it by the large fireplace. The school wing provides laboratories for dietetics and nursing arts, library, visual arts amphitheater, and a large lecture hall which is divisible into smaller units. Architect Vincent Kling designed the building which is of concrete, rigid frame construction.

MODERN MUSEUM for Texas uses triangular elevation to dramatize good daylight

The Museum for the Contemporary Arts Association of Houston, Texas, is following the footsteps of more famous experiments in trying to find a shape dramatize its very individual



problems (Wright's helix and LeCorbusier's labyrinth). The triangular elevation, designed by architects MacKie & Kamrath, seeks in a single sweep to satisfy the need for a well-lighted exhibition area and adjacent storage space. The main part of the interior $(42 \times 60 \text{ ft.})$ is an unbroken gallery which allows for vertical, oblique and horizontal display. A continuous band of clear corrugated plastic runs along both sides of the roof apex (which is 21 ft. high) and lets in abundant natural daylight. This is supplemented by the light admitted through the diagonal plate glass *(Continued on page 48)*

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sections which make up the front wall. The space under the narrow roof angle at the right is sectioned off storage and crating. Only experience, however, will show whether this low-ceilinged area is really practical. Offices and rest rooms are placed back of the exhibit area. The museum will be structurally fireproof, with steel framework, exterior corrugated asbestos sheathing, and smooth asbestos board for interior walls and ceiling. The museum will be ready for a formal opening in September.

CHICAGO SHOE STORE imports a successful design formula from New York

The Florsheim Shoe Shop in Chicago (Mielke & Smith, architects; Ketchum, Gina & Sharpe, consultants) again puts into use the formula which proved eminently successful in the New York City store for the same firm (FORUM, Oct. '46).



As in the earlier store, the two walls adjoining the street will be entirely of glass-with the front set back to form a recessed diagonal. Formal show windows are eliminated. Light movable display cases hold the merchandise and permit uninterrupted view of the whole interior sales area. As before, shelving of stock is moved out of sight and a full louverall, or egg-crate, ceiling conceals lighting fixtures and airconditioning equipment. Since this new shop is for men's shoes, design details are more substantial than those in the New York store for women's wear. The interior is of oak and salmon-colored brick with leather chairs. Exterior trim is of aluminum and gray crushed stone, with enamel lettering. It will be completed sometime this summer.

ONE-STORY WELDING PLANT in Ohio is engineered for minimum handling and maximum visual control

The \$8,500,000 manufacturing plant for Lincoln Electric Co. in Cleveland, Ohio will spread out its full 850,000 sq. ft. of floor area on a single level. The plans by Austin Engineering Co. employ a welded steel frame and a windowless exterior of aluminum siding. Intensive study produced a layout which makes possible at all times visual control of all material stores and processing. By this means the overhead cost necessary for materials' handling has been cut to a minimum, as well as the need for extensive records and paper work. Offices and research laboratories are located in the center of the building overlooking both basic divisions of the company's production-welders and electrodes. Employee service units (locker rooms, cafeteria, dispensary, rooms for educational and demonstration programs) are situated on a floor below the main level, where there is no danger of conflicting with the layout of production lines.



Schmidt and Paolinelli, Architect

Photo Piaget Studio

WRITE FOR

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Thomas, Jameson & Merrill were architects for Dr. Pepper's palatial Headquarters at Mockingbird Lane, Dallas, Texas, and the Engineers were Zumwalt & Vinther. The Kewanee gas-fired firebox boilers which will deliver ten million heat units apiece, steaming at 100 lb. working pressure were ordered thru Southland Supply Co., Dallas and installed by C. Wallace Plumbing Co., Summer Street, Dallas, Texas.





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DEIM



ALVAR AALTO, Finland's brilliant architect and furniture designer, hops from continent to continent, dividing his creative output between his Finish architectural office and M.I.T., where he is Visiting Professor of Architecture. A 1921 graduate of the Helsinki Technical College, he achieved world renown for the Tuberculosis Sanatorium at Paimio and the Viipuri Library, both in Finland, and for his revolutionary plywood furniture designs. Americans viewed his Finnish Pavilions at the N. Y. and S. F. World Fairs, can now inspect his new M.I.T. Dormitory in Cambridge (p. 61).

NATHANIEL OWINGS, of Skidmore, Owings & Merrill, heads that giant design organization's Chicago office. Educated at Cornell, and the University of Illinois, he served as development supervisor for the Chicago World's Fair before researching his way around the world in 1935. His tour of study took him to Japan and China, India and England where he cemented a partnership with Louis Skidmore. The architectural firm they created in 1936, has grown to include one more senior partner and six offices throughout the world (p. 68),



ROY A. WORDEN, architect for Andrew Place's Wilmore Hills subdivision (p. 86), was born in La Porte, Ind., moved to South Bend before the year was up and remained there even to attend college. He graduated, with a B. S. in Architecture, from Notre Dame in 1928 and worked for 12 years in several architects' offices before striking out on his own in 1940. The war interrupted his private practice, sent him to designing war plants for other architects. In 1945 he re-established his office, built up a practice consisting mainly of industrial and commercial design. Worden has also made a specialty of small house design for merchant builders.

C. BENSON WIGTON and **E. P. ABBOTT** are New Jersey engineers and contractors whose list of clients form a veritable *Who's Who* of Industry. Since the firm's incorporation in 1924, it has hammered out a construction record of more than 1,000 buildings and plants (p. 89) costing over \$250 million for the Ford Motor Co., General Electric, General Motors and a host of others. Wigton, who is president of the firm, is a civil engineer trained at Cornell University. Vice-President Abbott is also a civil engineer, with a degree from Rensselaer Polytechnic Institute. Prior to 1924, the firm functioned for nine years as the General Contract Div. of Levering & Garrigues Co., industrial builders.

HARWOOD K. SMITH and JOSEPH M. MILLS, Dallas architects, are Texans by adoption, not by birth. Smith was born in Chicago, came to Texas 14 years later and stayed to study architecture at Texas A. & M. He spent three years in several Dallas designers' offices before going into private practice in 1939. Mills is a native of Paducah, Ky. and a Texas resident since the age of six months. He graduated from the University of Texas, worked for architects in New York, Los Angeles and Dallas, became Smith's partner in December, 1945. Together they accounted for \$5 million worth of commercial and industrial work (p. 92) last year, and an additional \$5 million in large scale housing.

JOHN YEON is a self-trained young perfectionist and a vigorous critic of "easy architecture." At 26, he designed the Watzek House, a prize-winner that has had a strong influence on modern domestic architecture in the Northwest. Yeon also pioneered the now widespread practice of separating light and view sources from ventilation by the use of louvers and fixed glass. The Visitor's Information Center (p. 98) is a recent application of this technique. Since the war, most of Yeon's residential projects, from Connecticut to San Salvador, have been stymied because of building costs.







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On the campus to the north, the extraordinary hanging staircases steal the show (and are stirring a hornet's nest of comment). Converging lines of the stairways meet in the heavy triangular support of the entrance canopy. There are no bedrooms on this front—only common rooms and utilities. Picture below shows how the serpentine form gives almost every room a view up or down the river. It also serves as a reminder of how classical M.I.T.'s main buildings are. "Only a selfassured institution and a highly independent architect would have experimented so daringly, would have thrown such a challenge to classic and modern architecture alike."





M.I.T. SENIOR DORMITORY

Only an institution as self-assured as Massachusetts Institute of Technology could afford to carry the experimental approach so far in a dormitory for 353 seniors. Only an architect as stoutly independent as Alvar Aalto, internationally famous Finlander, ardent admirer of Mark Twain, would have dared throw so romantic a building close to M.I.T.'s sober columns and dome, or so solid a fortress across the glass path of current fashion.

M.I.T. knew that no one knew, and no graphs could tell, how her seniors might ideally be housed. Aalto's imagination came up with an unprecedented range of free choice: quarters small and quiet, larger and chummy, or even downright sociable and noisy, treating the men as human beings with wide differences.

He fancied the students approaching the building across the campus as a big sociable stream, splitting up at the entrance as a river divides at its delta and going to their quarters by their several ways. His "delta" took an unprecedented architectural form: a huge vertical V, formed by broad divergent ALVAR AALTO, Architect PERRY, SHAW & HEPBURN, Associate Architects ABERTHAW CO., Contractor



stairs, dramatically hung against the side of the building like a colossal vine. (Top view, opposite page.)

But on the other side, to the south, a genuine river flows past the building across Memorial Drive, the yacht-dotted basin of the Charles. "How do you place your feet when you look at a river?" asked the admirer of Mark Twain. And forthwith he drew his plan in the form of a big wave, so most rooms could face the river the way one plants his feet—looking not straight across but either upstream or down. Besides, this wavy line gained more rooms, all looking south, than any straight-line plan. When there still were not enough, the architect thickened the building at the ends, feathering it out "like a pine branch." Result: 60 students added, and still not one bedroom facing north. These end rooms are the most fascinating of all, in shape, in daylighting, in concept of college life. (See the room plan on page 65.)

For neither the architect nor the institution has the voyage been smooth. Costs rose; all-important grace notes, which would have qualified the terrific mass, were left off; personal events intervened which took the architect away on prolonged absences in distant Finland. Scurrilous attacks were made; honest debate will be prolonged. Will the building grow beautiful? Time will tell. In heroism and character it is big, draws a salute.









The dramatic feature of the building on the campus side is this projected, easy rising, sunlit stair. As the drawing above shows, the ever-lengthening floor area behind the landings is used for ever larger upstairs lounges, widening and lighting the corridors. Stair windows would have been better in metal as the architect had planned them.

Main entry (left) is compressed between wide slate-covered steps and a thick, slate-faced canopy. The latter is supported by a heavy piece of V-shaped concrete whose proportions are more clearly shown in the side view to the right.



Dormitory entry and stairs are boldly shaped

At the entrance level, Aalto had the problem of a lounge with a ceiling no higher than that of the bedrooms which had to be introduced on the ground floor (see plan below). He prepares the visitor for this at the entrance. It is marked by no portal but a very heavy Vshaped concrete slab supporting the low slate-faced canopy (photo, left below), a miniature of the V-shaped stair. One rather expects to duck as he enters behind this slab, then passes the mail desk at the left, and climbs a few steps into the low-ceilinged, blonde-finished lounge, for which by now the visitor is psychologically prepared.

This main lounge is a gathering point rather than a place of leisure. The entrant seeking an upper floor makes a left turn, has a choice between a small elevator and a broad, easy, sunlit stair (small photo, opposite page). In rush hour the elevator is preempted by top-floor occupants. Arriving at the head of the stair, one finds that above-stair floor space has been used to widen out the upstairs corridors into lobbies, ever larger as the stairs go higher and farther from the ground floor lounge (note drawing to left).

From the main lounge one can also enter the dining room mezzanine, shown in the plan and pictures on the next page.





Upper floor of dining room is really a mezzanine waiting space and overflow gallery. It enjoys a magnificent view across Memorial Drive and the Charles River.

With the mezzanine light turned off the illumination of the main dining floor by the ceiling floodlights is clearly demonstrated.





Dormitory dining hall is the real building

Aalto has jokingly said that his dining room structure "is the real building, and the dormitory just the backdrop." The dining room exhibits more of his accustomed Scandinavian grace. As shown in the plan below, its main floor is at the level of the "basement," a floor which is largely exposed above the sloping grade. The dining mezzanine is at the first floor lounge level, shown in plan on page 65.

From Memorial Drive, of an evening, there is pretty drama in the *exterior* floodlights, shining down through cylindrical roof portholes which double as skylights during the day. (For economy these cylinders were lined with metal instead of plaster.)

Scandinavian design likes to soften transitions. Note, accordingly, the delicate filigree in transom sash at window heads, the softening of column forms with trellises intended to support potted vines.

The building is framed in reinforced concrete. A careful perusal of floor plans will show how cleverly wide piers have been incorporated in the interior partition walls to catch floor beams coming in eccentrically and on the diagonal. The facing is red brick with overburnt pieces deliberately roughening the texture.



Dormitory rooms and halls follow no rut

The dormitory is properly climaxed by the variety, charm and livableness of the individual quarters. It represents a healthy reaction against the "modern" mania for large groups of completely standardized rooms, which reduce occupants to door numbers.

A study of furniture arrangement in the plan will show how regularly left-hand light is brought in over desks (no place for a lefthanded man!) and how deftly furniture is accommodated to irregular plans—often by the introduction of a post in the room, serving as a kind of equipment tree (photo, opposite page).

Furniture and furnishings were completely designed by the architect and by his wife, the magnificent Aimar Aalto, before her tragic death during the construction. Chairs were imported from Sweden, beds and desks were made in Boston.

Aalto's dormitory cost M.I.T. \$2,500,000, or roughly \$7,000 per student at 1947-48 top prices, and including every bit of equipment, from kitchen ranges to ashtrays. High by routine standards, this is not a high price for so deliberate a smashing of stereotypes, for so significant an adventure of the spirit.





Floor plan shows how building's curved wall gives most rooms a river view. It also produces an interesting variety of room shapes. Instead of the usual combination of sleeping and living rooms, this dormitory provides sleepingworking cells and large lounges which are in effect extensions of the corridor. Only these lounges face north.

CONSTRUCTION OUTLINE: Exterior walls—face brick on concrete frame, backing sand lime brick; inside—furring and smooth faced shale tile. ROOF-ING—tar and gravel. WINDOWS: Sash—wood double hung; aluminum in service area. Glass — quality A or plate. ELEVATORS — Payne Elevator Co. FLOOR COVERINGS—asphalt tile, Armstrong Cork Co. and bluestone. FUR-NISHINGS—F. B. Curry Co. and Artek-Pascoe. HARDWARE—Yale & Towne Mfg. Co. PAINTS—Boston Varnish Co., E. F. King Co. and Benjamin Moore & Co. ELECTRICAL INSTALLATION: Wiring—rigid conduit, Toch Bros. R. W. waterproofing. Switches—Pass & Seymour and Westinghouse Electric Corp. PLUMBING FIXTURES—Kohler Co. HEATING—forced warm air and hot water system. Radiators—Trane Co. and Vulcan Radiator Co. Grilles—Tuttle & Bailey, Inc. Weatherstats—Minneapolis-Honeywell Regulator Co. Valves— Jenkins Bros. and Leslie Co. Exhaust fans—American Blower Co. Pumps— Nash Engineering Co.

> The startling way in which Aalto's building plays sharp wall angles against curved walls has had the same disturbing and upsetting effect on critics as the dissonant passages in modern music. The force of the impact cannot be denied.





Typical single bedroom shows surprising charm obtainable from a difficult room shape, Walls are tile, furniture Canadian birch, storage is built-in. Corridor doors (photo, opposite page) might better have been supplied with ventilating transoms.



Typical double bedrooms gives each student a semi-independent space of his own by partitions of Brazilian pine. Aalto's uncovered heating risers are unostentatious through thoughtful design.



Large bedroom, at southwest corner, serves three students, is an example of provision for those whose temperament lets them work side by side. The building recognizes that people are of many kinds.









PREVIEWS

PICKABACK OFFICE BUILDING


SKIDMORE, OWINGS & MERRILL, Architects

Architect's statement:

Several years ago the Building Managers Association asked me to prepare a paper on "The Ideal Office Building of the Future." They suggested that in the Terrace Plaza in Cincinnati, we had, perhaps, developed the ideal hotel-andstore land use for a downtown building site, and now what could we think up in the way of a dream child for an office building?

To do this I selected an imaginary site in the granite caverns of Chicago's downtown loop and described and made sketches of a project which, as far as I then knew, was strictly on the dream side.

Today this dream-child project, in almost identical shape, is going into working drawings, and a portion of it is already under construction for the Greyhound Bus Terminal in those very caverns in Chicago's downtown loop. (Mr. Owings' speech is reprinted on p. 75.)



PARKING LEVEL

WAITING ROOM LEVEL

LOADING LEVEL BUS

The architect's first problem was to help Greyhound develop a complete bus terminal on an important site a block from Marshall Field's in the Chicago loop without sacrificing the inherent income producing possibilities of the property. Nat Owings solved that immediate problem (in collaboration with Greyhound's real estate adviser, H. C. Michels) by putting the entire bus terminal underground, so that almost the entire street level could be redeveloped to rent for \$250,000 a year more than it formerly earned. (The underground space was perfect for the bus terminal, the buses will have direct access through a \$432,500 tunnel to Wacker Drive two blocks away and will thus escape all the traffic congestion in the loop; an intermediate level 10 ft. 6 in. below grade provides ample space for waiting rooms, ticket offices, and various concessions.)

With the bus terminal problem solved, the architect went on to project above it his "ideal development" for a high priced. two-acre downtown site, complete with stores, restaurants, a garage. a private park with trees and a 20-story glass and stainless steel office building designed to rent for at least \$1 a ft. more than any offices in Chicago.

In working out this grand design, he proposed such incidental innovations as two levels of weather-protected parking, delivery entrances to the stores through the ceiling, windows washed by a mechanical squeegee on an exterior monorail, cantilevered floors supported by channels instead of I-beams, a new way to pack pipes and ducts close to the columns, prefabricated curtain wall sections, sprayed vermiculite fireproofing, and a new record for light-weight skyscraper design.

\$6 million plus \$6 million

Work has already started on the construction of the bus terminal and the redevelopment of the street floor, with provision for parking on the roof. The estimated cost of the terminal and the tunnel (including wrecking and interest during construction) is \$6,010,-000. In a most farsighted move, Greyhound bought the land eight years ago for \$2,100,000. Since then the existing buildings, including office space, theater, and other commercial facilities, have produced substantial income, and the value of the property has increased to the extent that the terminal project is economically sound from the real estate point of view.

The estimated cost of completing the project by covering it over with two garage levels, putting a park on the roof, and erecting the 20-story office building is an additional \$6,333,000. This building will not be erected by the Greyhound Corp., which hopes simply to rent the air rights to help balance the terminal's budget.

OFFICE BUILDING R – How to create space that will be worth a rent premium of \$1 a foot

The basic assumption underlying all the planning for the office building is this: At today's construction costs no investor can afford to build any space that will not command a premium rent.

"No one can expect to build a modern office building to compete on a price basis with buildings built before the war," Nat Owings comments. "Our finest office building in Chicago, the Field Building, was put up for 60 cents a cu. ft. Today, new office buildings will cost \$1.50 a cu. ft.

"However, in practically every office building standing today there is Class A, Class B and Class C space. The cost of building the Class C space is not less than the cost of building the Class A space—and yet the rental returns for this B and C space are usually from onethird to one-half less than the so-called Class A, or tower space.

"It was therefore my theory that instead of trying to compete on a price basis with existing buildings, the thing to do would be to build an ideal office building, with perfect space distribution and perfect orientation, and set it in a green park with trees, grass and fountains right in the center of the loop. The Greyhound site offered an ideal opportunity to do this, since the land use had already been developed sufficiently to pay most of the rent on the land."

Floor plan

Each of the office floors will be 183 x 72 ft. for a gross area of 13,000 sq. ft. and a net of about 10,000 sq. ft., which the architects consider the optimum area for single tenant leasing in Chicago. The long axis is east and west, partly to give more offices north or south light, but also partly because there are tall buildings both to the east and west, whereas on the north there is nothing between the tower and the Chicago River and on the south an unobstructed view is always assured over the rooftop park of the terminal itself. Width of the building was set to provide a depth of 32 ft. (two offices) on either side of an 8 ft. corridor. The floors are being worked out on a 5 ft. module east and west. Two fire towers are required under the Chicago building code. Floor to floor height is 12 ft.

Cantilever construction

The floors are cantilevered out 6 ft, beyond the columns on both the north and the south face. This cantilever has two advantages: 1) it adds 12 ft, to the width of the building or 2,196 sq. ft. in all without necessitating any change in the column spacing set by the bus terminal below; 2) it frees the exterior fenestration from any interruption by columns. Against this the cantilevering had one important disadvantage: the columns set back 6 ft, from the wall seriously lessen the architect's freedom to plan the width of the exterior offices. With the 5 ft, module and the 20 ft, column spacing these must almost automatically be either 10 ft, or 20 ft, wide and must all end at the column line.

Framing

This is the first tall office building whose windbracing girders will be built up from continuous channels running from wall to wall on either side of the columns instead of I-beams from column to column. This offers three important advantages: 1) It makes it easy to cantilever the floor 6 ft. beyond the columns. 2) It makes rigid connections easy without knee bracing. 3) It makes it possible to pack pipes and ducts close against the columns.



TYPICAL FLOOR PLAN

It was this third advantage which lead Skidmore, Owings & Merrill to begin using channels instead of I-beams in hospitals, where there are so many wet columns. With I-beams, a 2 x 2 ft. dry column is apt to become a 3 x 5 ft. wet column. With the pipes packed close between the channels the column is enlarged in only one direction, stays about 2 x $3\frac{1}{2}$ ft., occupies only half as much space.

In a lower building the columns could have been turned in their weak direction so that the face of the channel could be riveted flat against the flange. In that case the pipes could have been packed still closer into the fireproofing. In the Greyhound building, where the need of a rigid steel frame was increased by the light-weight construction contemplated, this was not possible.

Prefabricated curtain walls

The exterior of the building will show nothing but glass set in stainless steel frames $31/_2$ in. wide. In contrast to the United Nations Secretariat (FORUM, Jun. '49), whose aluminum mullions project 4 in. beyond the glass, this will be as nearly as possible a flush building with the glass set only $3/_8$ in. behind the steel.

The windows are tentatively designed as fixed panes $6\frac{1}{2}$ ft. high and 4 ft. $8\frac{1}{2}$ in. wide, perhaps double glazed and perhaps with heat absorbing glass in the outside pane. The spandrels will be glass backed up with 3 in. of some light-weight insulating material that withstands the two hour fire test. The choice of the backup will be settled partly on a basis of price, but the extreme lightness of a new silicate-asbestos material (20 lb. per cu. ft.) will count heavily in its favor.

The architects are detailing units one module wide (5 ft.) and a story high in which the exterior stainless steel, the glass, the insulation, the air-conditioning window units, stainless steel interior trim



for the mullions and stainless steel covers for the window units will all be preassembled on the ground ready to be bolted into a grid of 5 in. I-beams outside the spandrel beams. These 5 in. channels run vertically through each mullion and horizontally at the head and the bottom of the windows (see diagram).

Light-weight construction

The design of the office building goes further in the direction of minimum weight than any other tall office building has ever gone. The total design dead-weight of the tower is only 12,515 tons (including 665 tons of air-conditioning and other machinery) against a design live-weight load of 8,000 tons, or a ratio of only a little over one and one-half to one. By way of contrast, the recently completed Petroleum and Prudential Buildings in Los Angeles (FORUM, May '49) attracted considerable attention by their light-weight construction; yet the ratio at Petroleum was three to one and at Prudential a little more than two to one.

The extreme lightness of the Greyhound design is achieved largely through the very light-weight of the exterior walls—a contemplated 10 lbs. per sq. ft. as compared with between 55 and 60 lbs. in the Petroleum Building—and by using sprayed vermiculite for the fireproofing of all the steel columns, girders, and beams. Actually, the design weight of the floor, which will be a steel pan construction covered with a light-weight fill, is 42 lbs. per sq. ft., 8 lbs. more than the 3 in. pumice concrete floors of the Petroleum Building, and ap-

DEADWEIGHT TONNAGE

Floor system, 20 office stories	5,590	Exterior walls, 20 office floors 600
Roof	270	Exterior walls, mechanical floors 350
Two mechanical floors	940	Partitions and duct walls 2,000
Structural steel	2,000	Equipment 665
Column fireproofing	100	TOTAL 12,515

proximately the same weight as the 41/2 in. pumice concrete floors of the Prudential Building.

Because of this extreme lightweight, additional rigidity will have to be built into the steel frame and all of its connections.

Window washing

"All windows are fixed. The windows are not washed as such. The entire building is washed!" the architect explains. "Men simply start on built-in scaffolding suspended from the cornice and wash down the entire building at regular intervals. Tested from the efficiency point of view, we find that the time required for the external washing of the windows is cut in half by this system." Alternatively, consideration is being given to developing a vertical type of automatic squeegee.

Since it would be dangerous to lower a window washer from the roof without some nearby support, the architects are debating whether to run a horizontal monorail system around each floor or a vertical monorail system down the mullions.

Air-conditioning

Present plans call for a dual air-conditioning system with individual units under all the windows to take care of the exterior zones, and a conventional system for the interior. The ceiling in the central bay will be only 8 ft. high (as compared with 9 ft. in the exterior bays). Plans are being worked out to eliminate horizontal ducts by making this entire lower ceiling an air-conditioning pleneum. All the fan rooms and other mechanical equipment will be concentrated in the penthouse and on the lower floors at the base of the tower. None of the equipment could be placed in the basement, of course, since this will be entirely taken up by the bus terminal.

BUS TERMINAL is built like a subterranian boat anchored below water level and supporting a double decked parking lot

The huge pedestal beneath the office tower will contain six levels which, from top to bottom, are the roof-top park, a two-story parking garage, a street-level terminal entrance surrounded by shops and a restaurant, and, below grade, an intermediate waiting room level and finally (25 ft. below grade) the bus loading floor. Busses will enter and leave the terminal via a tunnel (with an 8 per cent grade) to a relatively quiet side street leading to Wacker Drive and so to the Outer Drive. Entering the building from three streets, passengers descend to the terminal by electric stairs in a two-story well at the center.





Basement construction

Since the lowest floor is 10 ft. 6 in. below the level of the Chicago River two blocks away, it had to be built like a boat and anchored down. The reinforced concrete floor is 18 in. thick, and under the wide roadways, where the hydraulic upward pressure was not countered by the weight from any columns, it was necessary to sink piles to which the beams connecting the columns could be held down with hooks. Otherwise the roadway would at first tend to buckle upwards under the water pressure. Eventually, as the heat of the building dries out the soil, the clay will tend to recede from the slab. Then the piles will change their role from tension to compression

When the office building is added, the parking lot atop the terminal will be decked over to create a two-story parking garage (red portion of longitudinal section below). Another idea is to use the garage for pick-ups and deliveries through the floor to the ground-floor stores and restaurants below.



LONGITUDINAL SECTION



Deep trusses

The combined width of the roadways and the sawtooth loading platforms on the lowest level called for a clear span of 58 ft., which the architects decided to handle by trusses 10 ft. 6 in. deep. (See crosssection, left.) On the theory that space below grade will bring little rent, these trusses were placed in the intermediate basement except where open space was needed for a lunch counter and a waiting room seating 500 passengers. On this side of the terminal the trusses were located at the garage level one floor above the street, so that both the ground floor and the waiting room floor below it are suspended from columns which hang down from the trusses.



ROOM

Street level rentals before demolition for the new bus terminal are shown in the plan on the left. The Lake Street (left) end was almost a blighted neighborhood. The other half was occupied by a theater paying \$4 a ft. and five shops at left, \$7 to \$18. The plan on the right shows the anticipated rentals on the street level of the new bus terminal which average almost twice as much.

GLARK ST

Intermediate level of basement is cut up on three sides by deep trusses over the roadways. This chopped-up space will provide storage for the stores and restaurant above, office space for the terminal management, six small concessions. Center is a two story entrance well alongside the waiting room.

FOR AT

Lowest level of the terminal is designed to handle up to 120 busses every hour—some 18,000 passengers per day—with an allowance of 15 min. for the loading of each bus. *Photos: Hedrich-Blessing*

THE IDEAL OFFICE BUILDING—A "dream boat" speech by Architect Owings which is materializing in the Chicago Greyhound project

You are all familiar with the often used quotation, "Through the aid of new techniques and new materials, the postwar building industry will be revolutionized." This has been a favorite cliché for so long that some have begun to believe it. I am sorry to say that these prospects are largely false. The "new techniques" usually cost more and the new materials develop new limitations and new shortcomings with amazing regularity and rapidity.

Another favorite of those seeking to excuse the high cost of building is to blame the high cost on the "obsolete building code." Here again, largely, the wish is father to the thought. Many aspects of a truly modern code will cost *more* money, not less. In fact, under the best of codes, I'm afraid that a sizeable percentage of all existing construction is in violation today. In fact, one realistic way of effecting slum clearance would be to enforce city building codes.

To complete this bright and cheery picture—and you can see that I've taken a vow to add no more wishful thinking to the present oversupply—the *existing office space* countrywide has withstood the strain of the wartime bulge. Is there *really* even a demand for more office building space? We have seen several large corporations in Chicago and New York spend the price of a new building remodeling existing space within the last two years.

With a slight recession in demand for space—a vacancy of 15 per cent, for instance—competition among buildings will begin and rents slip down a little. This would be tough on a new building that *had* to get, .say, \$5 a ft. to survive.

Now, I've said all this because, if we're going to be realistic, let us take as our problem for clinical analysis the job of designing an office building that will be commercially successful under the conditions that exist today and will exist in the forseeable future.

Like a streamliner

Regardless of how well we use our techniques, brains and ingenuity, our costs will require higher rental than any existing building, so we must strive to create the ideal environment for the tenant. We must offer extra *items of appeal* to his physical and psychological well being.

Some years ago the streamlined train and the four-motored plane stirred the imagination of the American business man with their styling and their intelligent aids to the comforts of the customer. In like manner, I see no reason why an office building could not be so conceived, planned and styled as to throw into obsolescence our present standards of multistoried building design. It will require nothing particularly new to do this, merely an assembly and combination of known facts and techniques to develop a merchandise-wise package that will stand up and hold a market against depressions.

I firmly believe that the American will pay for whatever he wants but he has got to want it and want it badly. This takes glamorizing, takes a keen knowledge of human passions, takes courage, brains to produce.

Set in a private park

A man can't live long where a tree won't grow. We are all sun worshippers. A tree growing in the rocky canyons of our Montgomery Streets, our La Salle Streets, or our Wall Streets would be news and would also be very pleasant.

And so *this building* of ours—let us give it an environment that will set it apart from its older and less fortunately

(Continued on page 164)

HOUSES

Weekend cottage of tree-house design and rough-hewn construction is playfully at home in the Ozarks

LOCATION: Jefferson County, Mo. ARCHITECT: Harris Armstrong









This weekend house (described by owner-architect Harris Armstrong as an Ozark Fantasy) was designed in a holiday spirit to give its guests a feeling of complete freedom from the formalities of city life. Perched on a Missouri creek bank opposite an old limestone bluff, the structure is casual and playful, with its soaring, prow-shaped upper level and its batwing wooden shutters that seem to lift it off the ground. The stone walls, which could easily pass for the ruins of an old barn, were carefully designed (and partly laid in place) by the architect to anchor the cantilevered second floor, which serves as a roof over the porch beneath. With simple native materials, Armstrong has here borrowed design elements of Amerian camp architecture to build a house that is homespun and comfortable yet free of log cabin clichés.

Although confined to two rooms, the cottage is eminently livable. The large living room can be subdivided by curtains into three small bedrooms and a central area around the fireplace. Beds sit up to become chaises longues during the day. Unique, too, is the deployment of space over two floors. Although this was largely dictated by terrain, it gives the house a feeling of mass. Rustic to the point of having neither inside plumbing nor electricity, it was also remarkably inexpensive to build. Of a total cost of \$4,160, \$1,700 went for framing, \$700 for masonry. Millwork cost \$250 and kitchen floor (of brick) was laid for only \$30.





Living room (above) is a spacious 20 x 26 ft., but can be subdivided by curtains into four areas for sleeping. A furnace makes the house usable at any time of the year. Approach is directly onto upper level from rear (below).





CONSTRUCTION OUTLINE: Foundation—stone. Exterior walls—stone, plywood and cedar slabs. Floors — brick or oak. WINDOWS: Glass — double strength, quality A. WALL COVERINGS: Living room—Indian rugs. HARD-WARE—Schlage Lock Co. KITCHEN EQUIPMENT: Range and refrigerator—bottled gas, Servel, Inc. BATHROOM EQUIPMENT—Sears-Roebuck. HEATING—warm air system. Burner—gas fired, Bryant Heater Co.



As homelike as it is modern,





Glass is used liberally here without becoming monotonous. Drop in sill line adds interest and fits nicely with builtin furniture.

Photos: Dearborn-Massar



Dining area is arranged to give all guests a dramatic view of Lake Washington and Mt, Rainier. Kitchen is an arm's reach from the table.



this small house has ample space around interior core

This three-room house, built on an unusual but rectangular floor plan, shows how modern architecture, in the right hands, can foster friendly, comfortable living. With straightforward design, open circulation, and a minimum of halls and entranceways the architects have done more than give the illusion of space: they have created it. And by locating the utility core in the center of the plan, they have been able to face all the living and working areas toward the dramatic view which is so much a feature of the house. A homelike and intimate atmosphere is here achieved without shutters, pitched roof, or any straining for coziness.

The same general flexibility which marks the overall plan is carried through in the detailing. Viewed straight on, the basically boxlike proportions of the house are relieved by a shrewd variation in sill heights, which rise successively from the entry platform at left to the dining area at right. From the inside, this variation opens up the view from the living room while providing needed wall space for the dining table. In profile, a deadpan vertical effect is avoided through the extended roof and a floor which slightly overhangs its foundation.

What helps most to give this house its feeling of interior warmth is the meticulous attention paid to such details as shelving, window space, doorway location, and surface textures (wood, brick, asphalt tile, ceiling insulating panels). The dining area is unique in that it faces all diners toward the view, on one side of a long fold-down table. In sum, here is a modern house that has successfully broken through the rigid pattern of living that too many small homes impose.

LOCATION: Seattle, Wash. CHIARELLI & KIRK, Architects BLAIR KING, General Contractor

CONSTRUCTION OUTLINE: Exterior walls-cedar T & G, building paper, 15 lb. rag felt, shiplap Douglas fir, studs; inside—cedar boards and plywood. ROOFING—built-up. INSULATION — Johns-Manville. WINDOWS: Glass crystal sheet. FLOOR COVERINGS-asphalt tile, Armstrong Cork Co. WALL COVERINGS: Sodrooms-Weldtex, U. S. Plywood Corp. Bathrooms-Masonite on plywood, Masonite Corp. PAINTS - Benite Co. and W. P. Ful-HARDWARE - Schlage Lock Co. ELECTRICAL ler. SWITCHES - Bryant Electric Co. KITCHEN EQUIP-MENT: Range and refrigerator-Frigidaire Div., General Motors Co. LAUNDRY EQUIPMENT: Washing machine -Bendix Home Appliances, Inc. BATHROOM EQUIP-MENT - American Radiator-Standard Sanitary Corp. HEATING-warm air floor furnace, The Coleman Co.

Built-in corner sofas, paneled walls and exposed ceiling beams give the living room a feeling of warmth and livability.



A seemingly artless vacation house gives



well directed views and three-way exposure to every major room

Winner of a mention in the A.I.A. house competition at Houston, this vacation house well exemplifies the "Wurster firm's" scenningly artless approach to practical, easy living in close touch with nature. Actually the plan is a masterful arrangement of two houses on a small sloping lot, $60 \ge 150$ ft., in such a way as to give every master room three-way exposure and a view through cypress trees to Carmel Bay, while the traffic streets above and below are blocked out. (See plot plan, opposite page.) Trees filter out the west sun.

Nearest the water (photo below) is the bright living room, its window sill line carried out through the adjoining glass-walled terrace as the top of a fence screening the downhill view of traffic. To the rear is the twostory section, with a generous first-floor bedroom for the parents, and two children's bedrooms upstairs. The kitchen stands in the cool northeast corner handy to the "front" door. The house has no street entrance; the main entry is at the rear, off the driveway.

The two houses were built for a total of \$39,000, or \$10.55 a sq. ft.

LOCATION: Carmel, Calif. WURSTER, BERNARDI & EMMONS, Architects THOMAS D. CHURCH, Landscape Architect ROSS TREWHITT, Contractor

CONSTRUCTION OUTLINE: Foundation—concrete. Exterior walls—redwood boards and battens, and felt: inside plywood or redwood. ROOFING—4-ply tar and gravel. FIREPLACE: Damper — Superior Damper Co. WINDOWS: Glass — Mississippi Glass Co. PAINTS — Fuller Paint Co. GARAGE DOORS — Frantz Mfg. Co. HARDWARE — Schlage Lock Co. ELECTRICAL FIX-TURES— Kurt Versen and Peerless Co. Fan—IIg Electric Ventilating Co. BATHROOM EQUIPMENT — American Radiator-Standard Sanitary Corp. HEATING—warm air system, Aladdin Co. Water heater—Ruud Mfg. Co.

Photos: Roger Sturtevant



These details show how everyday building methods can produce exceptional grace



The ordinary posts and beams used by builders all over America are here employed with no special trim and quite generally exposed. It is "carpenter building" which depends on forthrightness and sensitivity for the whole difference. Critics call this "the cottage style," point to the absence of erudite systems of detailing and space manipulation; but it is precisely this informality and lack of strain which, to those of a different temperament, is the attraction of this kind of a house.

Franklin stove in the master bedroom connects to one of those round, light-weight "patent chimneys" standing outside the building, which are features of informal California houses. This chimney may be discerned in the first picture accompanying this story.



The use of glass right up to the roof peak is not illogical when one considers that the end wall of a house with a pitched roof is not loadbearing. How much it does for the interior may be seen in the picture on page 81.

Looking into the entrance of the main house, note how unobtrusively a switch is made from open-tread stairs to closed stairs as a matter of practical convenience. Simple wooden clothes pegs are natural in a vacation house.



HOUSING ACT OF 1949-an analysis of what it is,

how it works and what it means to the building industry

Like it or not, the building industry has been handed a big public housing program by the Government. The importance of arguments pro and con this legislation now pales before the importance of executing the program with as little waste as possible. The FORUM will therefore report from time to time the progress of the program with illustrative examples of notable accomplishment and notto-be-repeated mistakes. In anticipation of the enactment of federal public housing legislation, the first such article appeared in the June FORUM—a summary of the latest in public housing design developed under New York State's own program. This is the second article.

After more than four years of consideration—and in spite of the bitter opposition of the building industry—Congress last month passed the biggest federal public housing program in U. S. history. The Housing Act of 1949 will initiate the construction of 810,000 units of low-rent housing, the clearance of over \$1 billion worth of slum land, a broad program of housing research and the repair or remodeling of about 135,-000 new farm houses. The total direct cost to the taxpayers is figured at between 11/2 billion (estimated actual) and \$2 billion (maximum permitted).

As the President put his signature to this voluminous piece of legislation, the National Association of Home Builders announced that it would shift its attack on the low-rent housing program to a local level. The housebuilders are convinced that millions of taxpayers are not anxious to see their poorer neighbors re-housed at their expense, and believe they can bring considerable pressure against the official municipal finding of "need" required for federal aid under the new Act. The Housing Act will have a profound effect on the industry. This effect will come, not only from the much publicized provision for 810,000 units of federally aided low-rent housing, but from provisions about which little has been said: the program of federal research aimed to reduce house costs and the allotment of federal funds for writing down the cost of slum land to a point where it is economic for private redevelopment.

The provision for a federal write-down of the excessive cost of slum land—a principle advocated by many of the groups which opposed the legislation—is the result of some clearer thinking than marked the initiation of federal housing activity in the thirties. This provision is based on the recognition that slum clearance and low-rent housing are not the same thing, but two problems. These problems can be stated very simply: 1) one-fifth of the residential area of our cities is in slums, but the cost of this decayed land is so high that nobody can afford to put it into new use; and 2) according to 1947 income figures, 19 per cent of city families can afford to pay no more than \$30 a month for shelter, including heat and utilities. The fact that most of these families are now living in slum areas does not *necessarily* mean that the same land is the best place to re-house them.

Public housing—in which some see the threat of socialism has since its beginning in this country been confused with a lot of other things. It was first advocated as a means of evening out downswings in the industrial cycle; it later became a make-work program. Even when its objectives were re-defined by the Housing Act of 1937, public housing was still regarded primarily as a means of slum clearance. Thus housing authorities were generally obliged to build low-rent units on land which, no matter how many slums it held, was nevertheless high-priced. They were not able to follow the logical course taken by private enterprise in building low-rent apartments: move out to cheaper outlying land.

Write-down of slum land

In the new Act, the problem of slums and the problem of low-rent housing are clearly separated. Title III revives and extends the low-rent public housing program initiated by the 1937 Act (see chart, p. 85). Title I is the implement providing for private or public rebuilding of slum land. It authorizes federal loans to cover the purchase of blighted land and federal grants to help write-down the excess cost of this land. These loans and grants are to be made only when a city has prepared a workable plan for either private or public redevelopment-or a combination of both. This means that where a builder sees a market for small apartments for middleincome groups in a city neighborhood like the blighted sections around New York's Washington Square, he will be able to buy the land for something close to what he might pay for land in the garden apartment belt of Queens. It means that the city can create more park and recreation space in close-in neighborhoods. It means that local housing authorities will have more room to move out to cheap land and build row houses and the other building types more suitable to the large families which public housing typically serves.

The new Act establishes another important principle in the hotly debated field of federal intervention in matters hitherto considered a private or municipal concern. This is the principle of using grants of the taxpayer's money as an incentive to stimulate local reforms in the taxpayer's interest. Thus loans and grants under the Title I slum clearance program are made contingent upon a city's adoption of an up-to-date building code and zoning ordinance and upon municipal action to end restrictive building practices. If Title I proves effective in stimulating slum clearance, it should prove equally effective in accelerating building code and building labor reforms.

While Title I provides a pattern and several billion dollars for an attack on the hitherto insoluble problem of urban slums, it is easy to overestimate its potential. At a maximum, this program may generate the private building of about \$3 billion worth of rental housing in near-in city neighborhoods over the next five years—or about ten times as much rental housing as has been built in the last five years. This estimate is based on the assumption that roughly half the slum land acquired under Title I aid will be sold or leased to private enterprise for redevelopment.

Underlying this assumption is another, and even more precarious, assumption. This is the assumption that, when land costs are knocked down by one-half or even three-fourths, private enterprise will find it possible to build at rents which the middle-income market can afford. The Metropolitan Life Insurance Co. would probably doubt that this assumption will prove to be correct. In the case of Metropolitan's Stuyvesant Town, knocking down land cost by one-half would have meant a reduction of 10 per cent in project cost. Since it costs \$2,500 a room to build such a project, this would have meant a reduction of only \$250 a room. Compared with the saving Metropolitan realized on this project in tax exemption of the improvements (N. Y. State Redevelopment Companies' Law), this 10 per cent reduction would be negligible. But even with the much greater advantage of a tax freeze at the old value of the property, Metropolitan has decided to build no more Stuyvesant Towns.

Balanced against the conclusions which might be drawn from Metropolitan's experience is the fact that no rent limits are set under the federally aided slum clearance plan (Stuyvesant Town rents were first fixed at \$14 per room; later raised to \$17). There is also the fact that the New-York Life Insurance Co. has just embarked on a Chicago project more comparable to what might be expected under the new federal program. The Chicago project is the first to be built under the Illinois Blighted Areas Redevelopment Law passed in 1947 with a boost from Governor Green. New York Life will soon start building an \$18 million project on a 60 acre slum site acquired and cleared by the city at an estimated cost of \$2 a sq. ft. Three-fourths of the cost of land acquisition and clearance is being knocked off by a joint city and state subsidy. New York Life expects rents for 1,400 units to range from \$75 to \$100. The project will pay full local taxes.

The total expenditure for slum land projected under Title I is \$1,750,000,000. This impressive figure becomes somewhat less impressive when measured againt the real magnitude of the slum problem. It would be only enough to acquire all the slum and blighted land in New York City alone (7,671 acres) if this land were purchased at the price which Metropolitan paid for the Stuyvesant Town site, about \$5 per sq. ft.).

The financing would work like this: suppose a slum area selected for redevelopment costs \$1 million to acquire and clear. The city redevelopment agency gets a short-term federal loan covering this amount—the "gross cost." Then suppose that after the sum is cleared resale of the land to a private developer or to the local housing authority brings in \$500,000. This means that the net cost of the project is \$500,000. At the proper time, the Housing & Home Financing Agency, or its division handling this program, will make a grant covering two-thirds of this net cost, or \$333,000. The city pays the remainder, or \$167,000. These grants, plus the proceeds from sale of land are used to pay back the short-term federal loans.

Land may be leased

What if the city sells only half the reclaimed land and decides to lease the rest? This will not affect the amount of the federal grant. The capitalized value of the lease over the period it runs would be figured in with the amount obtained from actual sale. If half the land in the sample project were sold for \$250,000 and the other half leased, the net cost would still be figured at \$500,000. But the city agency would get a long-term loan from HHFA covering the section leased. It would borrow \$250,000 for up to 40 years at 2½ per cent. This would help retire the original short-term financing.

Four kinds of land may be purchased by cities under the Act: 1) a slum area predominantly residential in character; 2) a blighted area, not necessarily residential—perhaps an old business or warehouse district bypassed by the path of development; 3) an arrested area such as a defunct subdivision; 4) open land needed for city growth but which private enterprise has been unable to acquire at an economic price this kind of land.) The last three categories of land must be developed with projects which are predominently residential.

What may impede or delay private enterprise participation in the program more than anything else is the require-(Continued on page 178)

Industry leaders comment on Title I:

"The urban redevelopment fund made available by the new housing act is a very constructive thing. It opens the door for effective treatment of districts not as good as the sites acquired for Stuyvesant Town, Peter Cooper, etc. One of the areas in New York designated for redevelopment is the site south of Washington Square. The present cost of this land would be about \$12 a ft. The redevelopment fund would knock down the cost of this land to \$2 to \$3 a ft. Many private builders would be interested at this price; we ourselves are." —ROBERT DOWLING, City Investing Co., New York City.

"So long as the federal government does not attempt to dictate to local communities, but leaves the plan and selection of areas to the cities, we should make progress under the program." —NEWTON FARR, Chicago, former president, National Association of Real Estate Board

"The new Housing Act should lead to a great opportunity for slum clearance by private enterprise." —OTTO L. NELSON, vice-president in charge of housing N. Y. Life Insurance Co.

		FEDE	ERAL LOAN	E	EDERAL GRANT	LOCAL GRANT	REQUIREMENTS
TITLE I-SLUM	Amount	Term and Rate	Purpose	Amount	Purpose	Amount	
GLEAKANGE Administered by Housing & Home Finance Agency -new urban re- developmentunit	\$1 billior by 1953	1 40 yrs. at going fed- eral rate, also short- term	To finance municipal ac- quisition of slum or blighted land to be resold or leased for public or pri- vate redevelopment	\$100 million annually for five years	To cover two-thirds of the difference between the cost of slum land and its re-use value	One-third of the differ- ence between cost of slum land and its re-use value. (May be in construction of needed public facilities instead of cash)	Establishment of a local redevelopment agency. Preparation of a satisfactory redevelopment plan. Plan for relocating families displaced by slum clear- ance. Community action to modernize building code, zoning ordinance, eliminate restrictive construction prac- tions adout community-wide ollan.
RENT HOUSING Administered by Housing & Home Finance Agency PHA	\$1.5 billior	1 40 yrs. at going fed- eral rate	To finance construction of 810,000 units of low-rent housing. (Since private financing is available, this loan fund will actually be used for planning advances and as security for sale of housing authority bonds.)	\$308 million annually for 40 years	To help cover the differ- ence between the cost of the projects and the rents tenants will pay	Tax exemption (but proj- ects will make an annual contribution in lieu of taxes of 10% of shelter)	Establishment of a local housing authority. Construction cost (excluding land) limited to \$1,750 per room or to \$2,500 per room in high-cost areas. Upper rents of project must be 20% below lowest pri- vate rents for decent housing. Tenant income limited to five times rent including utilities (\$100 allowance for every minor dependant). Equivalent number of slum units to be demolished within five years of project completion (remodeled
TITLE V—FARM HOUSING Administered by Secy. of Agri- culture	\$250 million by 1952	33 yrs., 4%	To assist farm owners in providing adequate hous- ing and other farm build- ings	Sec. 503 \$5 million over 4-yr.	To assist farm owners whose farms are not pro- ductive enough to support debt service, but can be made so within five years		slum units may count against demontion). Farm owners must be unable to provide needed facili- ties either with their own resources or with avail- able credit.
				Sec. 504 \$25 million over 4.yr. period	To assist farm owner-op- erators whose farms are neither adequate nor po- tentially adequate to sup- port a family in repairing their own homes		
TITLE II-AMEN	DMENTS 1	O NATIONAL	HOUSING ACT TI	ITLE IV-HOUSIA	IG RESEARCH	Econo housing	mic research may relate to appraisal, credit, and market data; housing needs, demand, and supply;
FHA Title I insu are authorized th authorization ceil with proviso that	rring opera rough Aug ing raised the Presid	tions, which ce ust 31, 1949. 7 from \$5 billio lent can furthe	T T T T T T T T T T T T T T T T T T T	he limited progra ist year has been e and economic resea uce housing costs.	m of research which Congres xpanded to a general program rch in the field of housing in The authorized subject mat elonment and promotion of	s authorized finance of technical and the ended to re- The A ter is almost governm	and investment; land costs, use and improvement, type of housing required for low income families. dministrator is directed to use the facilities of other ent agencies so far as possible in carrying out the program, but he may contract with nongovernmental

SUMMARY OF THE IMPORTANT PROVISIONS OF THE ACT

with proviso that the President can further raise it to \$5.5 billion. Sec. 608 rental housing program, which expired June anticipates enactment of separate legislation covering longer-term extensions of these FHA aids. Bills have already been 30, is extended through August 31, 1949. (Congress evidently introduced for this purpose. H ar au

proved materials and methods is authorized. The program may cover building codes; standardized dimensions and methbuilding materials, and equipment; and methods of producduce housing costs. The authorized subject matter is almost unlimited. The development and promotion of new and imods; improved design and construction; housing components, tion, distribution, assembly, and construction.

TITLE VI-covers miscellaneous administrative provisions. priate up to \$5 million annually for this program.

agencies for research projects. Congress is expected to appro-

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BUILDER'S \$6,350 HOUSE with ample storage space, a new heating system and engineered construction sets a stiff pace in the "economy house" field

PLACE & CO., Builders ROY WORDEN & ASSOCIATES, Architects

A pace-setting example of what the Building industry had in mind when it launched its economy-house program earlier this year, the 4-room house pictured here is being built by Place & Co. of South Bend, Ind. and sells for a rock-bottom \$6,350. Moreover, it measures up well against the Metropolitan Life's new mortgage yardstick.

Key to its low price is explained simply by Builder Andrew Place: "We spent more time and effort in planning and designing this budget house than we usually spend on a \$15,000 or \$25,000 house." With labor and material prices still high, Builder Place concentrated on a closely engineered house, with construction costs cut to a minimum by careful scheduling. His architects, Roy Worden & Associates, designed the house to mesh in with the site fabrication system Place & Co. has used since the end of the war to build 700 houses. (See FORUM, June '46.) On the site, Place keeps tabs on his labor (all unionized) with a daily job-card check of work completed.

Such planning is paying off handsomely for Andy Place and his partner-father, Virgil. Unit price for the 720 sq. ft. house is \$8.82 per sq. ft. including lot, about \$2.75 less than the local average. (For detailed breakdown of costs, see table opposite.) Despite this economical construction, the Place house is, in many respects, an economy house in price only. Included in its \$6,350 price-tag are such betterthan-minimal details as: combination screen and storm windows, metal kitchen cabinets, complete insulation, copper gutter and downspouts, reinforced concrete stoops.

Two features of the house stand out above these premiums—the heating system and the storage space. A specially designed hot air system uses a down-delivery furnace to circulate heat through underfloor vitreous ducts to registers in each of the main rooms (see plan opposite). The Places feel that the more even distribution provided by this system justifies the extra cost (\$125) over the minimal space heater. Architect Worden's addition of a 5 x 8 ft. utility-storage room adjoining the kitchen is a neat touch to relieve the dearth of storage space typical of small houses. Even neater is his specification of heavier ceiling joists (2 x 8's) in the area above the storage room and kitchen, to carry an additional overhead storage space of 385 sq. ft. with access via a disappearing stairway.

With these extras, seldom found in a \$6,000 house, the Places had no difficulty in selling out their 1949 program of 100 houses before a single unit had been erected. The house is sold to veterans for \$325 down and \$41.50 a month. The mortgages are insured to the 95 per cent limit specified in FHA's \$6,000-maximum loan program. They were taken by the Metropolitan Life Insurance Co. which describes the house as "one of the best values we've seen in our small-house mortgaging program in a long time." (For further details on Met's reasons for taking the mortgage on the Place house, see p. 88.)



FRAMING MEMBERS in the house are precut in a central carpenter shop. Typical of the simplified construction used by Place is the prefabbed plumbing stack, left center above.







GENEROUS-SIZED KITCHEN provides dining space for four persons. Of equipment shown above, only sink and cabinets are included in the \$6,350 price.





COUNTER FLOW OIL BURNER is set over plenum which feeds hot air into tile pipe extensions beneath floor slab. Sixth duct (lower right) is for possible bedroom extension.



TILT-UP WALL construction is used to increase labor efficiency, eliminate scaffolding costs. The horizontal framing operation is done on the floor slab. Layout plates are used to insure accurate stud placement for interior drywall finish. Sheathing, exterior siding, door and window frames and window-head flashing are all installed before the wall is raised.



COST BREAKDOWN

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Lot	\$400
Survey	30
Clearing, grading and seeding	115
Top soil	50
Sand fill	60
Foundation reinforcing steel ma-	
terial	232
Foundation insulation material.	60
Foundation labor, including in-	
stallation of air ducts	330
Heating-including oil tank and	
sewer pipe air ducts	246
Asphalt tiling	95
Lumber and millwork	1,078
Kitchen cabinets	120
Stairway, tiling, shutters	45
Hardware, flashing, louvers and	
medicine cabinets	96
Gutters and downspouts	35
Carpentry labor, including shop	
work	750
Chimney liner	53
Plumbing, including sewer and	
water service from street	605
Wiring and fixtures	125
Painting and decorating	390
Miscellaneous labor, trucking	
supervision, etc	200
Architectural costs	25
Financing charges	100
Overhead, interest and taxes	405
Profit	705
	and the second second second

e 400

Total Sales Price..... \$6,350

CONSTRUCTION OUTLINE: Waterproofing — Sisalkraft Co. Exterior walls — plywood on beveled siding or Creo-Dipt cedar shingles, The Creo-Dipt Co., studs and sheathing; inside — Sheetrock, U. S. Gypsum Co. Floors — asphalt tile, Tile-Tex Corp. ROOFING — The Philip Carey Co. INSULATION—Kimberly Clark Corp., Owens-Corning Corp. and National Gypsum Co. SHEET METAL WORK — Revere Copper & Brass Co., U. S. Steel Corp. and American Vit. Corp. WINDOWS: Sash—double hung, R-O-W Sales Co. ATTIC STAIR—Wel-Bilt Products Co. PAINTS — O'Brien Corp. KITCHEN CABINTS —Youngstown enamel, Mullins Mfg. Co. HARD-WARE—National Brass Co. ELECTRICAL IN-STALLATION: Wiring — General Cable Corp. Switches—Pass & Seymour. Fixtures—Lightolier Co. BATHROOM EQUIPMENT—American Radiator-Standard Sanitary Corp. Cabinets— Miami Cabinet Div., The Philip Carey Co. HEATING—warm air system, International Oil Burner Co. Water heater—American Radiator-Standard Sanitary Corp. Roy Stevens

METROPOLITAN'S FURNITURE LIST

Living Room

Sofa, coffee table, 3 ft. drop-leaf table or desk, two upholstered chairs, two or three occasional chairs, incidental furniture (lamps, end tables, etc.).

Kitchen

Single "or preferably a double" sink, fourburner range, 6 cu. ft. refrigerator, table space large enough to seat four persons.

Bedroom

Double bed (4 ft. 8 in. x 6 ft. 10 in. minimum), chest, dresser, chair, incidental furniture (night tables, lamps, etc.).



Met's plastic furniture models fit 1/4 in. floor plans

High window in bedroom of the Place house creates wall space for the extra furniture.



Before the Metropolitan Life Insurance Co. took the mortgages on Builder Andy Place's house (p. 86), it tested the house for adequate furniture capacity and arrangement under a unique small house mortgaging program set up last spring.

Like most big mortgagees, Metropolitan has hesitated in the past to take up economy house loans. Its reasons: cramped rooms mean lower resale value, increased mortgage risk. However, the Met decided to reconsider this year as the small-house market boomed while sales slowed up on the bigger units. It called in its construction advisers and its own architect, Dale Wright, to take a long hard look at small houses from a mortgage-risk angle.

The result was an overhauled mortgage-measurement policy for the Met. Tossed out was the time-honored belief that square footage was a realistic criterion for measuring the usefulness of rooms in a small house. In its place, Architect Wright developed these standards for measuring rooms: a) the size and amount of furniture required in a room, b) the space required around the furniture to provide comfortable access and circulation. Wright then worked out a list of standard furniture requirements for a typical family in a 4-room house. Wright's requirements (see table, left) are several hitches above the bare minimum, including sleeping accommodations for four persons, a storage chest or dresser for each, and adequate dining space in the kitchen.

Since last March, the Metropolitan has operated on the premise that no small house will be considered for a mortgage unless it includes space for this furniture pattern. To assist its 110 mortgage correspondents throughout the country in carrying out these requirements, the Met has provided them with plastic ¹/₄-in. scale cut-outs of the furniture. The correspondent can then determine quickly whether a builder's floor plan will take the Met's furniture. (See cut, left.) In addition to the furniture pattern, Metropolitan has set up other design requirements. These include provision for the addition of a future bedroom and also the addition of a future storage room off the kitchen. In both cases, the Met was considering the expansion needs of a typical family over the years as its size and income increases.

During the few short months that its program has been in operation, Metropolitan has found that its emphasis on room-use rather than room-size in small houses has been helpful to itself and builders alike. Typical is its dealing with Builder Andy Place. When Place could not find room for a chest of drawers in each of the bedrooms of his 1949 house, the Met suggested that he replace a double-hung window in each room with a small high window, to provide more wall space. This minor, inexpensive change provides maximum use of both bedrooms. A score of other big builders have taken similar Metropolitan suggestions for replanning room proportions and the location of doors and windows. Most of them have been surprised to find that, as in the case of Builder Place, they do not have to make their rooms larger to insure good furniture placement. Says Met Architect Dale Wright, "We are not trying to make their small houses either smaller or bigger. We are merely trying to make them better planned."

So successful has the Met's small-house design program been that it has decided to apply similar standards to larger houses submitted to it for mortgage financing. Reason for this decision was the company's discovery that some of the "minimum" houses it had mortgaged can hold more furniture and are otherwise better planned than some of the bigger houses in its mortgage portfolio.

Good design, the Met has learned, can mean greater security for itself, a more saleable house for builders and better living for the families who buy their houses.

RESEARCH LABORATORY takes to the hills where technicians can think while gazing through big windows. A handsome building results from engineering rather than architecture

LOCATION: Murray Hill, N. J. AIR REDUCTION CO., INC., Owners WIGTON-ABBOTT CORP., Engineers and Contractors GEORGE SMITH, Consulting Architect

This research laboratory in the New Jersey hills is a good example of the simple functionalism offered by the combination architectural-and-engineering firms which do most of today's industrial building. It offers a marked contrast to the architectural design of the Geophysical building (p. 92).

The trim exterior appearance of this building for Air Reduction (makers of industrial gasses) is achieved simply by a happy combination of big strip windows and red brick spandrels whose horizontality is punctuated by two glazed stair towers. Although the glass walls of these towers certainly are unnecessary, they provide an exhilarating "deep breath" of outdoor atmosphere for the laboratory workers as they move from floor to floor.

As the pictures show, the client wanted plenty of windows and got them. Air Reduction had little use for deep interior office space and was willing to pay a bit more for greater perimeter. Two stories of offices and small laboratories are located along the north side of the large one-story laboratory and are projected beyond it in narrow wings to the north and west. The aluminum sunshades on the south and west office windows were an afterthought added when the sky glare and direct sun through the big windows proved objectionable.

Ben Schnall





Air Photos Associates, Inc.

As in the case of General Motor's new research center (FORUM, July '49), an outdoor, in-the-country feeling was a prime consideration behind the location and design of this laboratory. Dissatisfied with the former location of the lab as an appendage to an assembly plant (lab technicians were continuously called to the plant to consult on minor operating problems), Air Reduction polled its lab employees as to where they would like to work. Consensus: the countryside near suburban Summit. Company officials reconnoitered all high ground in the area, picked a site where their 270 technicians could be "on a hill where they could sit and contemplate." The building's cruciform shape provides an abundance of outside wall area whose big, continuous windows make the offices and laboratories light and airy. Fulfilling one of the client's requirements, these windows and the roof-top cafeteria and terrace command peaceful views of golf course, woods and mountains.

Including a small power house, an acetylene generator building and the 78,000 sq. ft. laboratory, the project cost about \$1,250,000.





Photos: Ulric Meisel

INDUSTRIAL PLANT with an integrated administrative wing turns an eye-catching front to the street

LOCATION: Dallas, Texas GEOPHYSICAL SERVICE INC., Owners SMITH & MILLS, Architects P. O'B. MONTGOMERY, General Contractor

Designed by an architect rather than an engineer, this combination factory and laboratory presents one of the most striking industrial facades erected since the war. Its variety and dynamic massing offer a welcome release from the monotonous red brick, monotonous row windows and monotonous bi-lateral symmetry of most recent plants. Thus, the architect can still teach the engineer a great deal about making buildings better looking.

In this case, however, the design is little more than skin deep. The shop space inside shows no particular touch of the architect and there is little relationship between exterior form and interior function. Who could guess from the photograph above that the second story on the left contains the executive offices, whereas the identical looking ground floor below houses a manufacturing operation? Who could guess that the red granite wall which provides such a dramatic center accent conceals within a clerical department lighted from a clerestory and from the rear?

Geophysical Service Inc. function is to develop and operate equipment for electronically probing the earth to help petroleum geologists decide where to drill. Of their new headquarters, company officials say, "We are a professional organization, and we wanted our home to convey that feeling. Too, we are a working organization (with all but 175 of the 900 employees in the field); we did not want a feeling of plushness in our building."

Like most of the buildings in this remarkably handsome industrial development this one occupies only a small portion (1.000 sq. ft.) of a big lot (seven acres) and is set back (125 ft.) from the street.

Two-story wing makes no outward differentiation between manufacturing area (first floor) and offices above.

Rear shop areas, finished in brick and of stark utilitarian design, are hidden behind the stone administrative front, barely visible at the right of the picture.







OFF.

PROE

One-story office wing with strip window shielded beneath thin stone eyebrow looks like a school building.

Glass wall at main entry, well shaded by second floor projection, serves as window for reception room and library.

COST BREAKDOWN

Plumbing, heating, air-conditioning	with the
(including duct work and boilers)	\$89,339
Electrical wiring and special instal-	
lations	58,936
Steel partitions	10,325
Excavating and filling	7,884
Paving and sidewalks	2,075
Concrete and cement work	31,611
Common brickwork	24,813
Limestone and granite	19,529
Structural steel	49,772
Lath and plaster	12,897
Steel sash, glass and glazing	9,921
Millwork	10,803
Floors	4,791
Painting	4,409
Roofing	9,859
Miscellaneous	15,706
Contractor's and architects' fees	41,217
Total Construction	\$403,888
Land	40,000
Total	\$443,888





FRANK LLOYD WRIGHT ON LOUIS SULLIVAN

When Frank Lloyd Wright went to see Louis Sullivan about a draftsman's job, the Chicago architectural firm of Adler & Sullivan was already famous. The commission for the Auditorium building had come into the office, and Sullivan had just finished his first sketches (the tower had a Gothic look). At 34, Sullivan was recognized as one of the most brilliant architectural designers in the country. He had already taken the first steps toward the expressive vertical form with which in the next decade he would endow U. S. skyscraper building. Wright was 19; he had spent less than a year in an architect's office. But he brought a sheaf of drawings "in his own style." There was an instant current of sympathy between the two men. "You'll do," said Sullivan, after a quick look at the drawings.

Thus began a seven-year-long relationship of incalculable benefit to the development of modern architecture. In his new book, *Genius and the Mobocracy*,* Wright has tried to set down its exact nature. He has succeeded in producing a cultural document whose importance transcends the field of architecture. His account of how Sullivan's ornament awakened his own unmatched gift for plastic modulation in three dimensions goes deep to the well-springs of all kinds of creative work. Here, brought alive by memories which go back to the last golden years of the fruitful nineteenth century, is the very process of that transfer from mind to mind on whose continuity civilization depends. Here, too, is an illuminating exposition of the nature and method of the kind of mind we call genius.

Those who have blinked at Wright's dictum—"Instead of imitating effects, search for the principle that made them original"—will for the first time find in this book an explanation of exactly what he means. Although he calls Sullivan "lieber-meister" and although he was proud to be "pencil in the master's hand" during his years with the firm, Wright makes it clear that he was never Sullivan's disciple. The distinction which Wright makes between the disciple and the apprentice is a profound one and does much to explain his well-known impatience with the great body of modern architecture and architects.

The disciple, Wright thinks, is really a thief. He is perfectly willing to snatch quick success by imitating the "effects" or the style of the "master." The apprentice, on the other hand, is seeking his own way of work by trying to understand the principles on which the master's work is based.

Wholesale imitation is eating away at our whole society, Wright says. It is especially fostered by our system of mass education—"Perfectly good fresh young lives—like perfectly good plums destined to be turned out perfectly good prunes." It has shaped the American house and almost every product of household use. Surrounded by forms produced by an endless copying and blurring, modern man has all but lost

* Genius and the Mobocracy. Duell, Sloan & Pearce, New York. \$5.



Early exercise at the Beaux Arts. Paris. 1875-80

"Louis Sullivan taught me nothing nor did he ever pretend to do so except as he was himself the thing he did and as I could see it for myself. He was the educational document in evidence. I learned to read him with certainty just as you shall see him and see me if you are a good reader between the lines."



Fresco patterns. Paris. 1875

"Here, in his own way, is no body of culture evolving through centuries of time but a scheme and 'style' of plastic expression which an individual, working away in the poetry-crushing environment of a more cruel materialism than any seen since the days of the brutal Romans, had made out of himself. Here was a sentient individual who evoked the goddess whole civilizations strove in vain for centuries to win, and wooed her with this charming interior smile—all on his own in one lifetime all too brief." "Lieber-meister's gift to me was his practice 'of—the thing—not—on—it,' which I recognized and saw most clearly realized in his unique sense of ornament. In course of time I grew eager to go further... I began to ask myself —why not this eternal principle harmonizing any and every building anywhere with environment and for every purpose? Why not the edifice symphonic throughout from footing to coping of the structure itself—a harmony like music? I wanted to see, someday, a building continuously plastic from inside to outside, and exterior from outside to inside."

Plaster panel for first McVickers Theater. 1885



Studies in plasticity. Terra Cotta. 1885

"The nature of materials meant no more to lieber-meister than their nature had meant to the ancient Greeks but with a nameless difference. Materials, all alike, were only grist for the marvelous sensuous rhythmic power of imagination he possessed. His spirit was deeply involved in the fluent organic expressions of form naturally appropriate to a plastic-and clay is the ideal 'plastic.' But, whether executed in stone, wood, or iron, all materials were 'clay' in the master's hands and-well-that was enough? Because of this effulgent sense of sympathy he possessedfor all he cared or anything he seemed to want to know materials were pretty much all one to him. In the primal plastic-clay-his opulent imagery could triumph, and did so. As might have been the case with the Greeks had they the gift he had. But this inconsistency by its very constancy began to disturb me. . . . "



his sensitivity to original workmanship. He feels more comfortable with a house, a car, a picture that looks just like his neighbor's; so also he is more comfortable with readymade ideas. It is this tendency to submerge the individual in the mass which threatens, Wright says, to make a mobocracy of our American democracy.

Like Goethe, that great symbol of nineteenth century humanism, Wright seems always to have known that "one must be something in order to do anything." But few men nowadays can say what they are; the sense of self has been enfeebled by the twentieth century drive toward a uniformly marketable product—whether that product be a house, an idea, or a human being. "What would be the honor of a brick?" Wright asks. "That in the brick which made the brick a brick." So also the honor of a man is that core of individuality which sets him apart from all other men. It is out of recognition and cultivation of this individuality, Wright reminds us, that creative work comes.

But the mob takes an "unconfessed revenge" for the kind of independence shown by those it calls "genius." The firm of Adler & Sullivan did not survive the depression which followed the great success of the Columbian Fair, while the classic revival generated by the Fair architecture buried for many decades Sullivan's contribution to American building. Sullivan died broke; even the commissions for small town banks had long since dwindled away and the great architect had been thrown out of his offices in the Auditorium tower. A few terra cotta manufacturers and a few architectural cronies stuck to the end, visiting him in his disreputable room in a South Side hotel. Wright saw him weekly. A few days before he died, he gave Wright a bundle of drawings, the ornament he had designed in the years of his great building. "Frank, you will be writing about these, someday?" he asked.

Sullivan left over 100 buildings, most of them done in partnership with the "big chief" Dankmar Adler, whose brilliant grasp of structure matched Sullivan's gift of design. It will surprise many students of Sullivan, who believe that when Sullivan turned his back on Richardson's Romanesque the whole course of contemporary architecture turned with him, that Wright found little of his origins in these buildings. Wright thinks that Sullivan only partly succeeded in realizing his organic principle-"of-the-thing-not-on-it"-in the building now revered by modern architects-the Wainwright building, the Carson, Pirie, Scott store in Chicago, the great golden ear of the Auditorium theater. It was in Sullivan's miraculous ornament, executed in terra cotta and plaster in these buildings, that Wright found the seed of his own developing work. Thus the magic world of Louis Sullivan's ornament-the completely independent creation of one man's working lifetimehas been realized in three dimensions within the working lifetime of another. What was in Sullivan's work a purely visual experience has been transmuted, by Wright's massive hand, into the spatial experience we call architecture. It is easy to read between the lines of Wright's account of this great matter his poignant concern: where, if anywhere, has he found the kind of apprenticeship he gave to Louis Sullivan?



Corbel for the Auditorium. Plaster. 1887-88

"More and more, as years went by I would instinctively draw toward expressions more appropriate to other building materials by way of T-square and triangle. . . . The basis of architectural thought was there in what he did, but I know now that many a long lifetime must be spent to find the proper technique—each man for himself—to put into actual building practice the implications of the great philosophy to which the lyric poet dedicated himself in this sensuous efflorescence so peculiarly and absolutely his own."



Continuous plaster band. Proscenium, McVickers Theater, 1890-91.

"The designing partner grew more frequently absent or disinterested and this was more and more license for the T-square and triangle I now wielded as second nature. Great sensuousness to form and especially integration the 'third dimension' as integer—gradually began to come clearer....

When these rare but steadily increasing chances to experiment came my way, I made continual minor ones. Some were disastrous: riding hard on my conscience then. The master . . . would reproach me, occasionally, and sometimes too I was in deep trouble with the chief himself as in the height of windowsills in the Schiller Building which I raised six inches to get the plastic flow of the surrounding frames complete. . . . Anshe Maariv is still there in Chicago on South Michigan Avenue to attest the folly of the experiments I made in violent changes of scale in actual building construction as I had seen lieber-meister practice it in ornament with startling success.

The magic element of plasticity I believed to be the property in building I was capable of using someday."



Plaster soffit. Transportation Building, Chicago World's Fair. 1892-93

"Many years later as I lived, drew, and built I found in what I conceived and drew that the element I now called plasticity (the master had rendered it so completely in clay) carried in its own nature implications of unexplored structural continuity and could exemplify, and even prove the esthetic validity of structural forms themselves. This innate or organic property of all form, if not merely looked at but looked into as structure, absorbed me soon after I had left my work with the 'firm.'"

"Organic building is natural building: construction proceeding harmoniously from the nature of a planned or organized inside outward to a consistent outside. The space to be lived in is now the human reality of any building and in terms of space we will find the new forms we seek."



Study for terra cotta. 1894-95

"In organic sense such building is an entity of the human spirit as that of any tree or flower is of the ground. A natural, human circumstance—possible only to the complete architect. There will never be too many of him. He is master of the elements: earth, air, fire, light, and water. Space, motion, and gravitation are his palette: the sun his brush. His concern is the heart of humanity. He, of all men, must see into the life of things; know their honor."

Terra cotta pier. Guarantee Building, Buffalo. 1895





A TOURIST CENTER any city could be proud of -John Yeon gives Portland a little masterpiece at very low cost

LOCATION: Portland, Ore. JOHN YEON, Designer WICK, HILGERS & SCOTT, Associate Architects L. H. HOFFMAN, General Contractor

KEY TO PLAN

1. Main entrance

- 2. Large exhibition room
- 3. Information desk
- 4. Manager's office
- 5. Conference room
- 6. Lounge
- 7. Small exhibition room
- 8. Rest room
- 9. Garden equipment

View looking down at the Center shows the variety of its component sections; also its position overlooking the highway.

The Visitors' Information Center in Portland, Ore., is a remarkably handsome building to have been put up by a Chamber of Commerce and public authorities. Instead of the banal Greek columns so favored by official bodies it depends on the strong regular rhythm of structural posts for accent and repose. For color it depends not on Coney Island gaudiness but on deep, strong and tasteful coloring of its redwood walls. Located on the chief highway entering Portland, the building is admirably suited to the service of tourists—one of Oregon's chief sources of revenue. The cost was shared by several groups: the State Highway Department and the City of Portland contributed land; the Chamber of Commerce undertook construction and maintenance.

In many ways the Center is unique in conception. Instead of huddling its facilities together in a tight block, it allows them to spread out into four distinct rectangular units (see plan left). Three of these blocks—housing staff offices, exhibits and rest rooms—are drawn into one large group around a central lobby. The fourth unit, for garden equipment, is set off by itself at the end of an outdoor pool and is joined to the other three only by a long pergola.

The whole design brilliantly applies the theory that structure is its own best ornament. Consistent use of an "inside-out" wall, with posts spaced 3 ft. apart in front of the plywood surface, achieves a most satisfying unity despite the diverse height and spacing of wings. This unity is emphasized by skillful use of color and by assigning to each structural component its own individual color, repeated throughout. Plywood panels painted a dark blue-green are set in wood trim of light sea-green. The visible edges of framing members ($2 \ge 6$ studs on the exterior; $2 \ge 4$'s on the interior) are accented in blue-black. Wine-red doors supply dramatic highlights.

The original cost estimate of \$50,000 was whittled down about 10 per cent, thanks to donated labor and materials.





Interior plan centers around a large information desk

The information desk is visible almost immediately from all entrances. Offices for the staff are located directly behind the desk. Across the lobby in the central blocks are rest rooms and a small exhibit area. Down the hall is the larger exhibit room (photo far right) which occupies the whole of the third block. This room can be transformed into a small movie theater by raising hinged panels to cover the high strip windows. Benches set along the wall are moved out to face the screen.

The building makes extensive use of hemlock, a native wood. Ceilings are finished in 6 ft. cleargrained squares with flush lighting fixtures set in the centers; exhibit rooms use it in length strips as wall covering. The walls of staff offices are finished in striated plywood.



Entrance lobby viewed toward the river

Lounge with garden equipment room beyond reflecting pool







Lobby view shows information desk and adjoining offices



Indoor-outdoor harmony is stressed by use of module

The 3 ft. module used throughout the Information Center ties together its various functions-its official duties (given expression by the trim exterior below) and the more social character and esthetic appeal of its garden, pool and glass-framed lobby. This latter side of its character will be greatly developed as the landscaping is completed. This will take full advantage of Oregon's temperate climate to provide varied planting and indoor-outdoor enjoyment of it. Hardy native trees and shrubs will surround the building and its parking area. The long pergola will support a magnificient display of climbing roses-the official state flower. Protected on all sides-by the pergola, the building and a hedge of bamboo trees which will be set along the fencethe interior court around the pool will blossom forth with exotic species of flowers. In this luxuriant setting the measured restraint of the building itself should be doubly effective.

With all its care for formal elegance, the Center was designed to provide competently and unobstrusively for comfort and upkeep. Generous storage and work space are allowed on a second story over the central block. The honey-colored asphalt tile floors cover radiant heating pipes. Since air-cooling is unnecessary in this climate, ventilation is effected by means of louvers, making it possible to set all glazing in fixed sash.





Information center seem from highway



Side entrance with office block in foreground



Pergola looking toward lounge

Lobby looking toward main entrance



PRODUCTS AND PRACTICE



In the future engineers will shift from their present emphasis on numerical computation to a more creative approach. This will be made possible through the development of scientific design methods, the use of ultra-rapid computing machines, and unprecedented building materials

TOMORROW'S STRUCTURAL THEORY By Paul Weidlinger*

INDOOR SWIMMING POOL and grandstand, section above, illustrates evolution of form through meeting of structural demands on overall basis. Extent of concrete and glass is determined by shadow line on seats. Ribs are outside shell to gain compressive strength of inverted T-section, and smooth ceiling also minimizes likelihood of condensation drip, Channels in glass section are also designed to carry off condensation, Lightweight concrete is used to lighten cantilever and also for thermal insulation, again reducing condensation. Circulation into stepped grandstand is from back corridor hung on frame, and space below seats is used for filters, pumps, and coach's underwater observation station. The unconventional frame is an elastic ring loaded with the cantilever, on elastic foundation. Antonin Raymond and L. L. Rado, architects: Paul Weidlinger, structural engineer.

Structural engineering, to me, is primarily an inventive pursuit. Its aim is to create shapes and space which are satisfying and efficient in accordance with standards set by itself. As such, I see it an equal partner with architecture, not a subordinate tool.

The methods of structural theory are applied in two processes, the first of which is analysis. The second is synthesis. Most of our design today leans heavily on analysis, but there are a great number of complex situations which can be met satisfactorily only by new engineering creation. Analysis gives information only about stress conditions existing in given shapes. In itself analysis does not tell anything about the selection of the shape, and this is its limitation. For today we are close to the end of the rope, in the matter of large spans. We need spans which are near or over 400 ft. but at the present they are not available economically.

We must build these spans and, in the future, greater ones, so our theory must advance.

Synthesis is structural designing in its strictest sense. It is the applying or creating of shapes for the purpose of transmitting static or dynamic forces over a definite distance in the most efficient manner, as dictated by function, economy and-I do not hesitate to add-esthetics.

The structure obtained in this manner must of course stand up under the sharp scrutiny of analysis. The complete mastery of analytical methods is therefore necessary-but it is not in itself the complete designing function.

Synthesis and analysis

There are many reasons why the broad field of knowledge included under analysis is not adequate. The most basic reason is inherent in the static nature of analysis. In some instances through inventive trial and error we have arrived at ingenious traditional shapes which today seem almost trivial. Examples include the round cross-sections of our rivets, or the shape of I-beams; also the shape of arches and cables in bridges, or the concept of trussed structures, where every component part of the structure is assigned a definite structural function, shape and dimension.

Another equally important reason for the lack of rational designs is the difference between the behavior of the actual structure and its idealized counterpart which is used for the purpose of analysis. This inevitable error is well known and given

* Based on a paper read at the recent University of Illinois symposium "Tomorrow's Architecture"

recognition in form of safety factors. Our judgment as to the accuracy of our methods can often be only qualitative and relative, arrived at by comparing the expected accuracy in one portion of the structure to that in other parts.

For such reasons a rigorously rational design method today is neither possible nor desirable. It remains then to admit the need for the incorporation of the inventive and creative idea into all but the most trivial design problems.

Looking backward we see that the historic development of the theory of structures re-emphasises the disparity of the methods used in analysis and design.

Analysis was always the scientific core of structural theory. Investigations into the laws of statics probably started with Archimedes and continued slowly to men like Hardy Cross in our times. But interest in strength of materials remained quite empirical during the larger part of this period.

The great anagram

The modern theory of elasticity began much later, at the very definite date in 1667 when Hook published his great discovery in only four latin words: ut tensio sic vis, the extension is proportional to the force. He released his important assertion, in accordance with scientific customs of his time, in form of an obscure anagram, as if presaging thereby the future obscurity of the theory of elasticity in engineering circles. Almost all that the average structural steel designer needs to know today was known in the seventeenth and eighteenth centuries, when the basic problems of bending of beams and stability of slender columns were solved. The comprehensive theory of elasticity is not founded on the results of empirical attempts, but on a very few mathematical postulates formulated on the basis of asumptions as to the structure of matter. This means that a significant portion of the analytical part of structural theory was set on scientific basis almost from its very inception. When recent developments in aircraft structures necessitated the use of sharp methods of stress analysis, a great number of the needed equations could be found in old volumes of the proceedings of learned societies.

But these very same technological developments also acted as a stimulation for further advance in the theoretical field and in experimental techniques of verification.

Stress anaylsis based on reliable and proven assumptions gives us a greater confidence in our calculations, thereby permitting reductions in safety factors. The standard factor of safety in modern steel structures is close to the lower limit of 1.75. Further reductions will not bring about appreciable savings. Recognizing the fact that the present practice involves only the application of the elastic theory, which is based, as the name implies, on the elastic behavior of materials, a newer approach called "limit design" proposes to modify this method by considering that materials can yield sufficiently to bring previously unstressed parts of the structure into play, permitting thereby further utilization of this "reserve strength." At the same time the absolute strength of our building materials is also increasing. It is surprising to learn that the working stress of the reenforcing wires of prestressed concrete structures runs today well over 100,000 psi.

In the future, the present trends in stress analysis, (especially in the analysis of frames, theory of elasticity and elastic stability) will continue. We are on the right track. We will be carried forward by the general impetus of mathematical and physical sciences, and we shall expect further sharpening of the methods of analysis. Elementary and classical theories will be replaced by closer approximations to the real behavior of our materials. This is due not so much to the enthusiasm of practicing engineers for highly complex theories, but rather to the recent revival of interest of mathematicians in the field of applied mathematics and especially mathematical physics. This field, which a few decades ago was considered by the majority of mathematicians as something distinctly "low brow," has today regained its respectability. A method as erudite as tensor analysis-in the past applied in the field of mechanics almost exclusively to the theory of relativity-is used today to elucidate the theory of plates and shells, and even to other parts of the mathematical theory of elasticity.

Science and technology

At the same time, and through similar processes. we are to witness the increasing precision and extension of experimental techniques. New methods in photo elasticity using "frozen stress patterns" permit a literal insight into the elastic behavior of three dimensional shapes. Developments in metallurgy are pointing to alloys of greater strengthweight ratio. Whether theoretical physics will gain sufficient grasp of the ultimate nature of matter to influence the internal structure of our materials is something I dare not predict. But even the speculative possibility is staggering.

Parallel with these trends the work of simplification of design formulae, arithmetization of operations, and collection of the results in the form of tables and graphs will have to continue. Without these all the theoretical work will have been done in vain.

As you have noticed, I believe that the gap between engineering and science will narrow as far as analysis is concerned. Can the same thing be hoped for in the methods of synthesis, i.e. design? With this question I have to enter into the most speculative phase of this forecast. New materials and processes first stimulate analysis, then after further development they may cause creation of entirely new or modified design elements. Finally there emerge previously unknown forms and concepts. Add new dimensions and mass, and unprecedented spans and loads, and the technological advance will deeply influence building.

With these three components in mind, i.e. new or improved basic materials, and new needs of our civilization and the advanced technology, one can contemplate the shape of things to come. This can be done in a surprisingly concrete form with



Optimum shapes have evolved in certain of our common structural situations. Although determination of these curves is trivial, the problem could have been solved originally by mathematics. Above is chord of bowstring struss, which conforms to its shape of equilibrium under continuously distributed uniform vertical loads.

Catenary is the shape of equilibrium of the cable of a suspension bridge, another example of natural solution which can be predicted by mathematics.



Center line of fixed concrete arch in bridges is usually a "modified catenary" corresponding to the shape of equilibrium under the dead load of the arch and certain portions of the live load.



Maillart's concrete truss is interesting example of theoretically proper shape to perform most efficiently under its loading.



Photo (top left): Pratt Whitney Aircraft

ANALYSIS AND DESIGN are exemplified above. Aircraft engine, as a structural problem, is mostly stress analysis. The dimension and shape of parts is predominantly determined by the mechanical functioning of the machine. The selection of the bar joist from tables is the simplest type of stress analysis.

The bridges are typical examples of synthetic structural design. Functional requirements modify the particular concept of the solutions.



PREDICTED slab of "superstrong" reinforced concrete will support same load which today demands slab of dimensions in top sketch. reference to some immediate tasks. Such an instance arises out of the necessity for increased hangar spans—as big as 400 ft.—dictated by the evolution in size of the aircraft. The increasing weight of planes also taxes our ingenuity to provide pre-stressed concrete runwavs capable of supporting these loads. A number of similar examples could be found but all such structures will remain for a long time to come the result of individual accomplishments.

Besides, the further industrialization of building will lead to the standardization and prefabrication of more and larger units. This will direct design efforts toward diversified assembly of standard units.

New materials

As to the invention of new materials the prediction can only be along varied and general terms. It is impossible to foretell the type of new alloys or plastics which are to be developed. It might be safe however to predict that some developments are due in the near future along the lines of composite materials, i.c. combinations of plastics and metals. Advanced technology also means increased and widely distributed power production possibly through the use of nuclear power projects. This will have great bearing on the availability of some metals the production of which demands large quantities of electrical power and the wider structural use of metals such as aluminum could be considered a very important advance.

Further advances are to be expected in the development of cement chemistry—and in the technology of concrete. Scientific methods applied to the development of concrete units might boost the working stress of concrete to 40,000 or 50,000 psi —as recently predicted in a paper of the A.C.I. (Proceeding Vol. 45).

These are the components of the driving force which will channel our designs into new directions. But this still leaves unanswered a second question: how, through which processes of thought and by which methods shall we arrive at the realization of these potential results?

This question also brings into sharp focus the present lack of well defined and scientific methods in structural designing. Today, trial and error coupled with intuition dominates. Analysis is science, and design has not caught up with it as yet. While the completion of this evolution cannot be predicted it could well become at least a program for future efforts. Let me briefly recall the definition of structural design: "the creating of shapes for the purpose of transmitting . . . forces over a definite distance in the most efficient manner as dictated by . . . a number of requirements" The formulation of this definition should be highly suggestive to the mathematician. What we are looking for in most instances is a geometrical
curve. The curve (or shape) has to be such that the function defined by it in terms of a number of independent variables will become a maximum in terms of the efficiency of the design. The curve, which I spoke of, means the shape of the structure or of its parts. The function is the relationship as expressed by the variables such as efficiency and economy. The method of finding such curves is well known under the name of calculus of variations. Again, as so often happens, we find that in diversified fields we often talk about the same or analogus problems but under different names. The different language of the various fields is a retardant of evolution. In this case, the similarity between the aims of design and of the calculus of variations is at least highly suggestive.

This comparison might be labeled either far fetched or primitive. I am encouraged, however, by the fact that similar trends appear in other branches of engineering. Norbert Wiener, one of our most outstanding mathematicians, has discussed similar problems in communication engineering and pointed out that "... in general, engineering design has been held to be an art rather than a science ..." and he reaches the conclusion that the calculus of variations is the tool which might permit us to obtain "an explicit best solution." (Norbert Wiener, *Cybernetics*, p. 17.)

Human factor

Whether by this precise method or by some similar method, design will surely be brought closer to science. This will eliminate trial and error and leave more time for the intuitive creative process.

If these thoughts, which I might have to concede include the whole range from rational forecasting through speculation to wishful thinking, are accepted as a possible or even probable picture of future trends, then some deductions ought to be made about the people and the society who shall bring about these accomplishments.

The most appalling fact from the human point of view is probably the increasing complexity and quantity of mathematical or arithmetical operations which will be needed to carry out our objectives. The amount of labor and time required to solve and tabulate the numerical results of some of the important equations resulting from problems in structural theory are even today serious obstacles. Modern ultra-rapid computing machines promise an answer not only because of the unprecedented speed of these machines but because of their inherent capacity to carry out a long sequence of complex operations without human supervision; to retain, or memorize data until required in the sequence of operations; and finally to make choices and decisions in accordance with the initial order fed into them by the operator. The implications of this in social terms cannot be underestimated. I like to cite Wiener's conclusions on this topic:

"Perhaps I may clarify the historical background of the present situation if I say that the first industrial revolution, the revolution of the 'dark satanic mills,' was the devaluation of the human



arm by the competition of machinery. There is no rate of pay at which a U. S. pick-and-shovel laborer can live which is low enough to compete with the work of a steam shovel as an excavator. The modern industrial revolution is similarly bound to devalue the human brain at least in its simpler and more routine decisions. Of course, just as the skilled carpenter, the skilled mechanic, the skilled dressmaker have in some degree survived the first industrial revolution, so the skilled scientist and the skilled administrator may survive the second. However, taking the second revolution as accomplished, the average human being of mediocre attainments or less may have nothing to sell that it is worth anyone's money to buy."

History has shown that such evolutions created only temporary unemployments, since the increasing diversified needs created by the very same machines absorbed those who were originally displaced by them. One can hope for a future form of society which will be able to cope with what Norbert Wiener calls the "second industrial revolution."

This, I believe, applies also to the engineering profession. I do not think that the work of engineers will be relegated to fantastic robots, but I am looking forward to liberation from the slide rule, tedious repetitive routine calculations, when the engineer can become the highly skilled and creative scientist. Similar conclusions are forced upon us by considering the other effect of industrialization in form of the production of large prefabricated and standardized structural units. In mass produced units everything must be highly safe and satisfactory. They have to be designed, tested, and developed by the most skilled personnel, but the detailing of a routine assembly in accordance with standard patterns will not be classified as engineering.

These are not really forecasts, but rather conclusions which one is compelled to draw from predictions concerning the basic facts of engineering and theory.

Advanced architecture

In conclusion I would like to call attention to the role to be played in this evolution by the architect. The gap between engineering and architecture should considerably narrow in years to come, MOBILAR HANGER is an attempt to provide a standard structural element which will permit a variety of unique solutions. Complete requirements are satisfied by a simple but sophistocated standard joint. (Designed by K. Wachsman; Paul Weidlinger, structural engineer. Model by Raymond A. Lester.)



Anna Wachsmann



GABO's construction is an almost totally unrstricted exploration of space, extreme example of one element in synthesis.

just like the gap between engineering and science. This process will have to begin at the level of the education in both professions. The architect of tomorrow will not be able to understand the language of tomorrow's engineer without acquiring a large amount of basic knowledge in this field. The elementary engineering taught today to architects might have to be replaced with a broader curriculum aimed at the understanding of more complex structural problems but not requiring the detailed familiarity of the engineer with the specific solutions of the problems. Thus, the customary course of lectures on "elementary engineering" might be supplanted by a subject which will approach closer the topic of "advanced architecture." This path will have to be followed by the practicing architect, and in this sense we should be looking forward to or at least hoping for a broader and deeper knowledge instead of specialization in microscopic fields. This might become the return, on a higher plane of evolution, to the architect-artist-engineerscientist of the Renaissance.



MAILLART'S BRIDGE at Aarve has a highly unconventional Gothic soffit curve and other details. They are dictated by "function, economy . . , and esthetics."



STAINLESS STEEL as an exterior finish. New office building uses standard prefab panels faced with fluted stainless steel sheets in light curtain wall construction

The first sizable use of stainless steel on the exterior of a building has been made in a new four-story, 460 ft. long office structure at General Electric Co.'s \$30 million turbine plant in Schenectady, N. Y. The alloy is used as the exterior cladding on standard prefab curtain panels which consist of a 20 gauge fluted front sheet over 11/2in. of glass fiber insulation and a flat 18 gauge carbon steel back sheet. Sections are 2 ft. wide, with lengths varying from about 3 to 17 ft. for onepiece installation between stories or windows. Stone & Webster, General Electric's engineers, decided to use the stainless curtain wall when space requirements for the building were increased after construction of the steel frame had begun. With the weight economies possible in curtain wall construction, the original frame and footings could support another story without trouble. Since big city office building fire tests did not have to be met, the panels represent no major change—in any respect but the facing—from the standard prefab panels widely used in factory construction.

General Electric Co.





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ROWE MANUFACTURING COMPANY 954 Holton Street, Galesburg, Ill., U. S. A.

Standard sizes available for prompt delivery. Good delivery on special sizes for commercial and industrial use.



There's a Rollay for every Doorway!



Protection can be Beautiful

Today, we supply the architectural profession and construction industry with nationally-known and favorablyaccepted THORO System products; THOROSEAL and QUICKSEAL Wall Coatings, to keep water out of masonry walls and with which substantial structures can be designed and protected at reasonable cost.

EIGHTEEN SOUTHERN COLLEGE DORMITORIES PROTECTED AND BEAUTIFIED WITH THOROSEAL. MOST ECONOMICAL AND WEATHER RESISTING PROTECTION KNOWN FOR STRUCTURAL CONCRETE AND MANUFACTURED BLOCK CURTAIN WALLS AND PARTITIONS.



SHARP, ANGULAR ARCHITECTURAL LINES COMPRISE THE BEAUTIFUL BUILDING DESIGNS at FLORIDA SOUTHERN COLLEGE, LAKELAND, FLORIDA ARCHITECT, ROBERT LAW WEED, MIAMI, FLORIDA.

John Templin's, Inc. contractor for buildings shown above, states, "We used THOROSEAL for sealing and finishing of all masonry surfaces of the eighteen buildings of this two-million-dollar program, and we have found, through the long use of this material for the beautifying and protection of masonry surfaces, it is the best on the market today." Florida Southern College, one of the country's largest Methodist Institutions of higher learning, overlooking Lakeland's most beautiful body of water, Lake Hollingsworth, is noted for striking and unique architecture. A second multi-million dollar building program designed by world-famous architect, Frank Lloyd Wright, is now underway on the campus and THOROSEAL will form an important part of this building program.









Automatic Anthracite Stokers —Installed in an existing boiler or furnace; or in new houses, automatic hard coal stokers deliver *plenty* of heat quickly...save up to 52% on fuel bills... eliminate fuel worries.



2 The Revolutionary Anthratube—The Anthratube saves on fuel bills . . . its proved efficiency is over 80%. This scientifically engineered boiler-burner unit, with "Whirling Heat" and other revolutionary features, produces quicker response and superior performance than units using other types of fuel. Fully automatic.

Anthra-flo boiler-burner unit—An entirely new type boiler-burner which features a simple burner mechanism, attached by two bolts with all working parts outside boiler. Fully automatic, coal feeds direct from bin across single *stationary* perforated plate . . . ashes discharge by gravity into container within unit.



TODAY YOU CAN OFFER YOUR CUSTOMERS modern automatic heat with Anthracite equipment.

You can show your customers how to save money . . . as much as \$100 to \$200 every year and yet have *plenty* of *heat-clean*



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 1. New Anthracite Stokers

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The Weyerhaeuser program of tree farming means there will always be good lumber for good homes

TIMBER IS A CROP—it is one of the few major renewable resources. It is a crop that requires planned harvesting, regrowth and protection.

Careful harvesting removes the mature trees and releases forest land for the young growth, for natural re-seeding and supervised planting. Good forestry practice protects the new growth from such forest enemies as fire, insects and disease.

This is the concept and practice of Weyerhaeuser in the management of timber resources.

As a result of continuing research, Weyerhaeuser mills and processing units, with improved machinery and more efficient methods, are converting more and more of the log into better lumber and other useful forest products.

Weyerhaeuser 4-Square Lumber is properly dried—it is precision manufactured to exact lengths and sizes, and accurately squared—it is ready-to-use as it comes from the mill . . . without needless sawing, fitting, or material waste. This saves lumber while contributing to building economy.

Our forests are rapidly approaching the basis of a sustained yield at which the new growth will equal the harvest . . . and lumber, the best and most economical building material, and other forest products will be available to serve America today, tomorrow, and for generations to come.

WEYERHAEUSER 4-SQUARE LUMBER AND SERVICES

FIRST NATIONAL BANK BUILDING . SAINT PAUL 1, MINNESOTA

BUILDING REPORTER



A cool \$20,000,000

Glenn McCarthy's fabulous hotel, "The Shamrock"-new \$20,000,000 Aladdin's palace in Houston-has given rise to hundreds of exciting stories.

We'd like to tell you about 18 of them that are completely airconditioned.

That was because equipment-Trane-built to engineers' rigid specifications-came into the picture. Making possible the world's most completely individualized air conditioning system. It heats, cools, dehumidifies every square foot of "The Shamrock" from lobby to penthouse.

Here's what it took to do the job. Over 1200 Trane-built room units. 25 Trane Climate Changers and dehumidifiers. Dozens of Trane heating and cooling coils, convectors, unit heaters. All tailor-made to exacting specifications by the makers of the same equipment that makes air more efficient, more comfortable, more usable in thousands of stores, offices, plants.

You may not want to cool a hotel: but if you have an air problem, remember that Trane engineers know air. How to warm it, cool it, dry it, humidify it, clean it or move it. Your local Trane representative will be glad to work with your own architect, engineer, or contractor.

THE TRANE COMPANY + LA CROSSE, WISCONSIN TRANE COMPANY OF CANADA LTD., TORONTO

Manufacturing Engineers of Heating and Air Conditioning Equipment . . . Offices in 75 Cities.



Wyatt C. Hedrick, Architect and Engineer, Houston • Charles L. Kribs, Jr., Air Conditioning Engineer, Houston • Stone and Webster Engineering Corporation, Construction Managers, Boston Installed by Associated Mechanical Contractors, Houston.



COTTON ACOUSTICAL TILE is designed to quiet without killing life and tone of voices and music.

Ideal for classrooms, offices, theaters and radio stations, this new cotton-base acoustical tile filters out harshness and echoes, leaving voices and musical tones unmuffled. The material, manufactured in 12 in. units, is verminproof, acts as a good insulator, and costs about 35 cents per sq. ft. installed. It weights so little—about 3 oz. a tile—that it may be shipped economically by air. Although the natural off-white surface may be cleaned easily with a vacuum cleaner, the tile can also be painted with a non-oil paint without impairing its acoustical qualities.

The "give and take" action of the surface could be compared to the function of the middle ear. Due to non-symmetrical movements of the tile diaphragm (each piece of cotton tile will contain about 1/10 cu. ft. of trapped air) sound waves are minutely diffused. Most of the many resonant, nonharmonic frequencies are absorbed—an important factor in the proper diffusion of sound. This method of acoustical correction creates interiors that are "alive" with natural sounds.

Before installation of the material, its manufacturers suggest that a careful scale drawing be made of the tentative layout. Spacing can be adjusted in one direction or both to take up odd inches. Extra spacing may be covered by a pointing-up compound which dries to the same color as the tiles. In application, a center line is snapped on the ceiling and the tiles installed from either side of the line. A special adhesive, applied to the lips of the tile either by hand or with a calking gun, keeps the tile permanently in place. The tile is then pressed to ceiling or wall by a wooden frame. Setting the tile around pipes and light fixtures is handled by cutting and telescoping.

Manufacturer: The Heerwagen Acoustic Decoration Co., Fayetteville, Ark.

WINDOWS WITH BUILT-IN INSULATION and heat-absorbing outer glass are available in new standard sizes.

Both Pittsburgh Plate Glass Co. and Libbey-Owens-Ford have added new sizes to their regular stock lists of double-glazed windows. Pittsburgh's four new Twindow sizes, developed for use in steel sash, are: $503/_8 \times 477/_8$ in., $665/_8 \times 477/_8$ in., $503/_8 \times 601/_4$ in. and $665/_8 \times 601/_4$ in. These units list at \$49.62, \$62.58, \$61.72 and \$82.52, respectively. Two other sizes for use with wood sash measure $551/_4 \times 36$ in., selling for \$40.32;



and 75 x 36 in., \$54.76. The additions bring the number of Twindow sizes to 45. All Twindow units are enclosed in stainless steel channels and contains two lights of 1/4 in. polished plate glass separated by 1/2 in. hermetically sealed, dehydrated air space. Heat-absorbing Solex will be supplied in place of the regular outer plate for from \$3 to \$5, depending upon the dimensions of the unit.

Thermopane, a product of Libbey-Owens-Ford, is now being manufactured in sizes 551/4 x 36 in. and 75 x 36 in., making a total of more than 70 standard units. Large sizes up to 9,600 sq. in. (maximum length, 132 in.) may be purchased with heat-absorbing plate for the outer light. Triple glazed Thermopane is available for industrial uses.

Manufacturers: Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh, Pa.; Libbey-Owens-Ford Glass Co., Toledo, Ohio.

TWIN CASEMENT KITCHEN WINDOW UNIT comes to dealer cartoned, ready for installation by builder.

The Malta twin casement kitchen unit is assembled, glazed, fully weatherstripped and treated at the factory, and is adaptable to any type of construction or wall thickness. This



modular unit, which fits into a wall opening measuring 3 ft. 93/4 in. x 3 ft. 21/2 in., saves time and labor on the job because of ease of installation. Other features include patented watertight sill joints and supports and easy-operating hardware. A positive locking handle is provided for both windows. The unit retails for approximately \$60 with heavy duty solid bronze hardware; for \$50 with standard hardware. Manufacturer: Malta Mfg. Co., Malta, Ohio.

NEW COATING gives satin finish to furniture and woodwork, withstands rugged treatment.

Sapolin Paints, Inc., has added New Mode, a synthetic coating, to its well known line of paints and enamels. Applied to wall surfaces, wood or metal furniture, this coating dries to a satin finish in two hours. Scratching, hard scrubbing, scuffing, even hot grease will not mar its original smooth luster. For most surfaces a single coat is sufficient; no special undercoat or primer is required for new wood, wallboard or other porous materials. The coating, available in ten label-identified colors, can be purchased, retail, at \$.70 per 1/2 pt., \$1.20 per pt., \$2.20 per qt., \$7.95 per gal.

Manufacturer: Sapolin Paints, Inc., 229 E. 42nd St., New York, N. Y. (Continued on page 118)



Here is a moderate cost shower cabinet that is perfectly suited for bathroom installation. The Built-in Cadet shower is completely recessed behind the wall material of the bathroom. Joint around the door opening is covered by the Fiat escutcheon that frames the door and gives a smart trim finish.

Installed cost is considerably less than a built-up tile shower and is considered by many builders as superior in appearance. It makes a permanent water tight installation, will not crack and develop leaks with settling of the building, as often occurs when mortar joints are depended upon for watertightness.

Standard equipment includes metal top and chromium plated dome light.

An important feature is the reversible side panels, valves can be installed on either side without special drilling.



GIVE THE BUILT-IN CADET SPECIAL CONSID-ERATION FOR YOUR NEXT HOUSE; IT CAN BE MADE A STRONG SALES FEATURE.

FIAT METAL MANUFACTURING COMPANY 1203 ROSCOE ST., CHICAGO 13, ILLINOIS

LONG ISLAND CITY 1, N. Y. In Canada—Fiat showers are made by Porcelain and Metal Products, Ltd., Orillia, Ontario

LOS ANGELES 33, CALIF.



Your clients' homes can be

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DRAFT-FREE WARMTH EFFICIENT COOLING POSITIVE DEHUMIDIFICATION FINGERTIP CONTROL DEPENDABLE PERFORMANCE FILTER-CLEANED AIR ECONOMICAL OPERATION 5-YEAR WARRANTY NO MOVING PARTS IN COOLING SYSTEM

COOL IN SUMMER WARM IN WINTER AT THE FLICK OF A FINGER WITH SERVEL *All-Year* Air conditioning

One way you can provide your clients with more comfortable living is to include Servel All-Year Air Conditioning in the plans.

This amazingly compact unit provides summer cooling and winter heating . . . plus humidity control and filter-cleaned air. With a mere flip of a switch, the homeowner can have refreshingly, dehumidified cooling, or instantaneous draft-free heating. Between sea-

sons, Servel circulates filtered air at prevailing temperatures. Damaging dust and dirt and irritating pollens are filtered out.

Servel All-Year Air Conditioning is ideally suited, also, to stores, business offices, doctors' clinics, and other small structures. For full facts, ask your local Gas Company, or write direct to Servel, Inc., 2908 Morton Avenue, Evansville 20, Ind.





IT'S a fact! These beautiful new Weldwood flush veneer doors are guaranteed against swelling and sticking in the summer . . . or shrinking and rattling in the winter.

Combine that feature with light weight and the rich beauty of real wood...and you have a truly



superior door that you'll want for your next job. Write or contact our nearest branch for full information on this new Weldwood Flush Veneer Door. Also ask about the amazing new *Weldwood Fire Door* which carries the Underwriters' label for Class B openings.

ONLY WELDWOOD DOORS GIVE YOU THESE 5 UNIQUE ADVANTAGES

- 1. PERMANENT HOT PLATE BONDING of veneers to core and banding with TEGO Film Waterproof Glue.
- 2. VERMIN AND DECAY PROOF mineral core resists fungus, decay and termites for life of structure.
- INSULATING PROPERTIES are superior to double glazing, such as opening protected by storm door ... when door is installed in an exterior opening with weather stripping.
- 4. EXCELLENT VAPOR BARRIER assured by TEGO Film Phenolic Glue bond between core and veneer.
- 5. INCOMBUSTIBLE MINERAL CORE has a fibrous reinforcing with a nominal density of 20 lbs. per cubic foot. This material has a sturdiness which assures proper performance under most severe conditions.

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Paulos Brooking Buffels Chinese U. C. Margel Dis

Distributing units in Baltimore, Boston, Brooklyn, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Fresno, High Point, Los Angeles, Milwaukee, Newark, New York, Oakland, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, San Francisco, Seattle. Also

U. S.-Mengel Plywoods, Inc., distributing units in Atlanta, Birmingham, Dallas, Houston, Jacksonville, Louisville, New Orleans. San Antonio, St. Louis, Tampa. *In Canada*: United States Plywood of Canada, Limited, Toronto. Send inquiries to nearest point.

DON GRAF DETAILS ON NEW RECESSED TROFFER



24", scored in the middle) is available in plain surface and with holes or kerfing for noise reduction. Some types are predecorated. These tiles with the new Sylvania Shallow Recessed Troffers offer the designer a low-cost ceiling that is modern and that provides acoustic correction, combined with highly efficient and truly architectural, fluorescent lighting. Troffers are simple to install and maintain; they are precision-made under the famous Sylvania standard of quality. The same basic units may be equipped with one, two, or three lamps, and they may be glass-shielded or louver-shielded to suit requirements of the installation.

Mail coupon today	Sylvania Electric Products Inc., Adv. Dept. L-7008 500 Fifth Ave., New York 18, N. Y.
VIVANI	I would like to receive the complete series of Don Graf details on Troffers, as they are issued, for my files.
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FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; LIGHT BULBS; PHOTOLAMPS; RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES

HOLLOW FLUSH DOORS have arched rib construction.

This new Arch-Kor flush door employs a series of arched ribs, running vertically within a solid frame, to support the face panels of the door. Each rib, of 1/8 in. veneer on a 11/2 in. center, is arched a full 2 in. to provide overlapping support for increased strength. Having put the doors through severe tests, the manufacturer claims that elimination of horizontal members in contact with the face panels prevents any "show-through" of core construction in the finished door, and that the use of cross-grained hardwood and birch veneers, bonded to the core by hot press resin, results in a balanced construction having a maximum re-



sistance to warping and buckling. The Hasko Arch-Kor doors are available through wholesale outlets in two grades: unselected for color but carefully matched for grain; and unselected for color and unmatched.

Manufacturer: Haskelite Mfg. Corp., Grand Rapids 2, Mich.



GYRO-LITE has 90° vertical adjustment, 360° horizontal adjustment, and can stay put an any angle.

Attractive and practical in design, Swivelier's recently introduced light unit may be rotated in a complete circle. Once adjusted, it will not shift position (although all parts as well as housing are of heavy gauge aluminum) because of two spring tension sockets. These sockets eliminate the need for wing nuts or set screws. As simple to install as a non-adjustable recessed unit, the Gyro-Lite is mounted in a plaster ring in the ceiling, floor or wall. No dismantling is necessary. The new fixture may be utilized in store windows and interiors and to illuminate wall niches. It is adaptable also for art galleries, theater marquees, and many other places where flood and spot lighting are required. The unit lists at \$29 and a louver attachment for color lenses sells for \$2. Prices for five different color lenses range from 65 to 80 cents.

Manufacturer: Swivelier Co., Inc., 30 Irving Place, New York 3, N. Y. (Continued on page 122)



GIVE YOUR CUSTOMERS more home comfort... more planning freedom

WITH CRANE **BASEBOARD HEATING!**

Crane Radiant Baseboard Panels are as inconspicuous as they are efficient . . . especially when painted to match the walls. They heat rooms evenly throughout, from the floor up. Best of all, these modern panels permit complete freedom in furniture arrangementthey claim no valuable floor or wall space.

Crane Radiant Baseboard Panel Heating is economical and utilizes the maximum amount of heat developed by the heating system. Available in two types (Type R, Radiant-Type RC, Radiant-Convection), baseboard panels may be used with 2-pipe steam or hot water systems-they're completely practical for remodeling as well as for new homes.

See your Crane Branch or Crane Wholesaler for full information on Crane Radiant Baseboard Panels.



CRANE BOILERS cover every heating need. Among them are, left, the CRANE SIXTEEN Boiler, a completely packaged boiler-burner unit; and, right, the CRANE TWENTY Boiler, which may be installed to burn coal, or later converted to stoker, oil, or gas.

CRANE CO., 836 S. MICHIGAN AVENUE, CHICAGO 5, ILL. **Plumbing and Heating** WORLD'S LARGEST PRODUCERS OF VALVES AND FITTINGS

EVERYTHING FOR HOME HEATING





Oil Burners Stokers

Radiators and Convectors





Controls

NATION-WIDE SERVICE THROUGH BRANCHES, WHOLESALERS, PLUMBING AND HEATING CONTRACTORS



for more than 9 years...

ONLY THE WINDOW WASHER HAS HAD TO TOUCH THESE WINDOWS!



THE ONLY MAINTENANCE these Adlake Aluminum Windows have required since they were installed over 9 years ago—is routine washing! Ultimately, by eliminating all maintenance costs, they will pay for themselves. And they will last as long as the building!

ONLY ADLAKE WINDOWS have the combination of woven-pile weather stripping and patented serrated guides that assures minimum air infiltration and absolute finger-tip control.

Adlake Windows never warp, rot, rattle, stick or swell. They retain their good looks and easy operation for the life of the building.

FOR THE WHOLE STORY on how Adlake Aluminum Windows wipe out maintenance costs during a lifetime of worry-free operation, drop us a post card today. Address The Adams & Westlake Company, 1101 North Michigan Avenue, Elkhart, Indiana. No obligation, of course.



City Hall, Rock Island, Illinois



ADLAKE

ALUMINUM WINDOWS

have these "plus" features:

- Minimum Air Infiltration
- Finger-tip Control
- No Warp, Rot, Rattle, Stick
- No Painting or Maintenance
- Ease of Installation





You owe it to your building to install the new ELSCO

MODEL A-for elevators

ON YOUR ELEVATORS

Safety Roller Guides

RESULTS HAVE BEEN AMAZING

The greatest fire hazard in your building may now be completely eliminated.

ings the amount of savings is tremendous.

Savings in electric current approximate 24% to 44% with Elsco Safety Roller Guides and since elevators consume the largest amount of electricity in buildIremendous. B Hatchways no longer need

cleaning to remove grease, result-

ant dirt and filth.

Emergency safety jaws hold much better in the event of an accident.



MODEL C — for counterweight and low rise, low speed elevators

Dry rails and shaftways are now the recognized modern and only proper way of elevator operation. It is common knowledge that in the event of fire, elevator shaftways with inflammable oil and grease act like flues and help the rapid spread of fire. Modernize your elevators so that you may save life, property and money. Elsco Safety Roller Guides have now been in operation since 1941. They have been approved unanimously by the Board of Standards and Appeals of New York City. They have been installed in leading buildings from coast to coast and abroad. They are the only safety roller guide with oscillation, traction and knee-action.

(Patented and Trade Mark Registered)

For Further Information Inquire of your dealer or

ELEVATOR SAFETY CORPORATION 165 Broadway, New York City 6, New York

BUILDING REPORTER



HORIZONTAL TYPE HOT WATER BOILER is well adapted for baseboard, floor or ceiling panel hot water heating.

Designed and priced for small low cost housing, this unit has a maximum capacity of 70,000 Btu and recovers 93 gals. of water per hr. at 87° rise. The boiler proper is cylindrical and can be purchased with or without jacket. Outside jacket dimensions are 18 in. wide, 18 in. high and 39 in. long, with the burner equipment projecting from the jacket. Manufactured under strict A.S.M.E. Code Inspection, the boilers can be fired interchangeably with Breese or gun type oil burner or gas fired equipment. Oil fired equipment is Underwriter approved and gas burners are A.G.A. listed for use with natural, artificial or L.P. gas. Prices for various models range from \$234.50 for a jacketless boiler with Conco Breese type burner to \$340 for a jacketed boiler with gun type burner. Units



USE DEAD BOLTS . . . to be sure!

Lockwood Sectional Trim mounted with Series 5100 Heavy Duty Lock with dead bolt and Equipoise Knob Action.

ome hardware makes a big difference . . .

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There's a lot to be said about the kind of Finishing Hardware you select for your next building.

Style . . . finish . . . durability . . . all play major roles, all must bear the closest consideration.

The design has to carry out the architect's intent. The finish must blend in tone and quality. And durability must be built in for the life of the building.

Lockwood Finishing Hardware beats these three points with room to spare. What better choice can you make? 24-A

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HARDWARE MANUFACTURING CO. DIVISION OF INDEPENDENT LOCK COMPANY, FITCHBURG, MASS.

*

having Roberts-Gordon No. 400T gas burner retail from \$283.50 to \$310.50.

Manujacturer: Dewey-Shepard Boiler Co., 1311 N. Capitol Ave., Indianapolis, Ind.

RADIANT HEAT DRYER creates infra-red rays which prevent sun-fading and kill moth larvae.

Combining infra-red heat from Temprex panels mounted at the top of the cabinet and artificial breeze produced by three exhaust fans, this clothes dryer is reported to give clothes the crisp freshness of an outdoor drying without the fading effects of sunlight. The unit will take from 8 to 14 lbs. of wash and



is designed to dry everything from handkerchiefs to rugs. An average laundry may be completely dried in about an hour and a half, damp-dried for ironing is less than an hour. Wash is hung over removable rustproof stainless steel rods (space equal to 40 ft. of clothes line) which slide forward for easy loading. The dryer, which can be plugged into any 110 v., a.c. outlet, is vibration free—needs no bolting, is noiseless in operation, and consumes about the same wattage as an electric iron. Retailing for \$129.50, this *deluxe* model measures 36 in. long, 36 in. wide and 24 in. deep. It is fully insulated, has an all steel bonderized cabinet with white baked enamel finish and handy worktable linoleum top.

Manufacturer: Appleman Art Glass Works, Bergenfield, N. J.

OUTDOOR FIREPLACE CHASSIS of heavy gauge steel construction may be assembled by means of a screw-driver.

The Fyro-Grill is a complete outdoor grill unit which may be situated in as simple or as lavish a setting as desired. This fireplace, selling for \$19.95 at Buffalo, can be utilized as an



incinerator as well as a grill. Features of the form include a removable steak grill for use indoors, a two position grate for either charcoal or wood fuel, and a front bar which doubles as handle and utensil rack. Adaptable for use with or without a chimney, the unit may be removed from the surrounding masonry and taken indoors during the winter if simple directions for installation given in the Fyro-Grill folder are followed. Dimensions of the Fyro-Grill form complete are: length, 21½ in.; width, 17 in.; height, 22 in.

Manufacturer: Price Fireplace Heater & Tank Corp., Buffalo 7, N. Y. (Continued on page 126) MAKE YOUR CLIENTS HAPPY ...

DESIGN A ROOM LIKE THIS

··· Just for Fun!



Put a plaid pattern of Mura-Tex* on the wall. Design a shuffleboard into the Flexachrome* floor. Make a table from a lolly column. Presto! you've designed a playroom a millionaire would be proud to own...and one almost every client can afford.

Point out how easy it is to transform the dreary waste space "down cellar" into a gay playroom the whole family can enjoy. Quickly. Easily. Reasonably.

One of the most important questions you'll have to answer is, "What to do about floors and walls?"

You are sure to please when you specify Flexachrome for floors, and Mura-Tex for walls. Why?

Because they're decorator-designed in a wide range of sharp, clear colors . . . *Companion colors* that harmonize or contrast perfectly. You can design special inserts to set into the tile, like the shuffleboard above . . . a personal monogram . . . or anything that meets a whim, yours or your clients'. We'll cut them to your order.

And your clients will sing your praises long after your job is done.

These plastic-asbestos tiles are so tough and durable the most active family imaginable isn't likely ever to wear them out. Yet they stay clean and sparkling with a minimum of maintenance . . . a real boon for today's "help-less" housewives.

Get full particulars on these and other Tile-Tex products. See Sweet's, or write us. We'll rush complete data and specifications. THE TILE-TEX DIVISION, The Flintkote Company, Chicago Heights, Illinois.



Flexachrome makes a dramatic entrance



A good first impression is a foregone conclusion when you specify Flexachrome for the foyer. Big black and white tiles in a sharp, clear checkerboard pattern make a striking entrance, as durable as it is beautiful ... as easy to clean as it is easy to look at.

*Registered Trademark, The Flintkote Company

NKING preserves the lines of the architect's designs

Your modern interior designs retain their drawing board beauty when you specify Viking Flush Type Sprinkler Heads. Viking Sprinklers remain out-of-sight, cast no shadows, do not interfere with the symmetry of your design.

Viking Flush Type Sprinkler Heads are approved by the Underwriters' Laboratories and the Factory Mutual Laboratories. No sprinkler head gives better water distribution.

Write today for full information about Viking . . . the Sprinkler Head that overcomes many limitations in the design flow of modern commercial interiors.

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CONVENTIONAL SPRINKLER



Write for Complete Bulletin

INTERIOR-TYPE Douglas Fir Plywood GRADE B-D D.F.P.A. INSPECTED

Linoleum, Tile, Carpeting— All Need This Better Base Panel



SUGGESTED DETAILS FOR THE USE OF PLYBASE IN TYPICAL FLOORING JOBS

LINOLEUM DR RUBBER TILE ASPHALT TILE

PLYBASE

For Subfloors-PLYSCORD

Under PlyBase or any type of finish floor-ing, PlyScord is the ideal subflooring. The big panels of PlyScord cover joists quickly, provide a smooth, even surface that's strong, rigid, tight and draft-free. Identified by the "grade-trademark" at the right.

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5/8" PLYSCORD SUB-FLOOR

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3/8" PLYBASE

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relas fir Plywor PLYSCORD PLYBASE is a NEW GRADE of Interior-type PLYBASE 15 a NEW GRADE Of Interior-type Douglas fir plywood with a face of B (solid) veneer, and a back of D veneer. All sanded both sides. For full details on PlyBase use and application are Sweet's File Architect and application, see Sweet's File, Architecand application, see Sweet's rife, Architec-tural, or send for the new 1949 Basic Ply-wood Catalog. Write the Douglas Fir Plywood Catalog, while the Doughas III IIy wood Association office nearest you: Tacoma wood Association office nearest you: Tacoma Bldg., Tacoma 2, Wash.; 848 Daily News Bldg., Chicago 6; 1232 Shoreham Bldg., Washington 5, D. C.; The 500 Fifth Avenue Bldg., New York City 18.

PLYBASE THICKNESSES: 3/16", '4", '4", '5", '4", and '4". PLYBASE WIDTHS: 30", 36", 42" and 48". PLYBASE LENGTHS: 60", 72", 84", 96", 108", 120", and 144".

duced to a minimum; the covering is smooth, firm

... looks better, lasts longer. Sanded smooth, PlyBase presents a tight, solid surface. The large panel sizes go down quickly, are easy to handle, save time and labor on the job. Use PlyBase on remodeling work, too, as a firm surface for new coverings over old, rough, worn floors. And on walls, PlyBase serves as a backing for wall tile and over finish coverings which require a smooth,

Specify PlyBase-identified by the grade-trademark solid backing.

shown above!



BUILDING REPORTER



TREATED GLASS for use in lighting fixtures has advantage of egg-crate louvers and is easily maintained.

Resembling a sheet of glazed cheesecloth, Corning's new $\frac{1}{8}$ in. thick Fota-lite glass is reported to provide all the advantages of egg-crate lighting plus easy maintenance. The new material, made of photo-sensitive glass, has vertical louvers photographically transferred to its full thickness. Thus when it is used over recessed ceiling fixtures or on almost any type of luminaire requiring a glass panel shield, it functions to cut off glare in much the same way as conventional egg-crate louvers. In addition its surface can be quickly wiped clean. Since the glass seals the fixture, the tubes and reflectors also remain clean to help maintain the original efficiency of the fixture. This glass has 45° cut-off of glare

Include a stand-by KOHLER Electric Plant in your specifications



to guard against power failure

When central station electric current fails, disaster threatens! A storm or accident may cut off light and power in a hospital operating room during major surgery, endangering the patient. Sudden darkness at the entrance or in the halls, and interrupted use of sterilizers, X-ray machines, signal systems,



Kohler Electric Plant 3A21, 3KW, 115 volt AC. Automatic start and stop. Length 41", width 16", height 27¼".

circulating pumps, and heating system can cause further danger, suffering and confusion among patients and staff. In theatres, power failure may mean disorder and necessitate refunds to customers. In schools, stores, public buildings of all kinds, panic, loss or injury may result. Failure of sewage disposal plant equipment might menace public health. If police radio is cut off, public protection is reduced. In homes, lack of refrigeration and automatic heat may cause extreme discomfort and food spoilage. In industrial plants, stoppage of processing equipment may mean severe loss.

A stand-by Kohler Electric Plant easy to install and care for—will take over the load as soon as central station service fails, providing reliable electricity as long as the emergency lasts. Sizes, 350 watts to 10KW. A Kohler field organization is ready to help you determine the most practical plants to fit your specifications. Write for illustrated folder E-19. Kohler Co., Kohler, Wisconsin. Established 1873.



obtained within its $\frac{1}{16}$ in. thickness and will not deteriorate with age. Transmission of Fota-lite is greater than 65 per cent and reflection is greater than 28 per cent. A true glass with an opal appearance, the new material can be cut or curved to fixture specifications and is not affected by heat. *Manufacturer:* Corning Glass Works, Corning, N. Y.

STREAMLINED WATER SOFTENER has push-button control, refills automatically.

Regeneration of the new Cul-Matic zeolite water softener has been reduced to a few minutes personal attention with a valve attachment which automatically salts, rinses and returns the softener to service. An automatic drain device refills the appliance with water, thus eliminating spillage. For those homes where facilities for adequate backwashing are not available, Culligan Zeolite Co. has a nation-wide soft water exchange service plan. The local dealer substitutes his own service softener while the Cul-Matic is being rejuvenated, sterilized and returned to top efficiency at the plant. The softener retails at less than \$150.



Manufacturer: Culligan Zeolite Co., Northbrook, Ill.

ELECTRIC SAW has a protective guard between saw and motor to seal out dust and grit.

An improved 8 in. saw has been added to the Speedmatic tool line. The new saw, type K-89, features a more powerful motor (115 v., a.c., or d.c.) than previous models and is the fastest (7,000 r.p.m.) crosscutting and ripping 8 in. saw ever built by Porter-



Cable. This model is a medum weight, high powered, onehanded saw for general work. It sells for \$130. The position of the handle, at the top at the center of gravity, enables the operator to guide the saw with a minimum of effort. Helical gear drive delivers the high percentage of motor power to the cutting blade. A strong fan draws air through the motor and discharges it at the front, keeping the line of work clear of sawdust and fully visible at all times. Abrasive cutting wheels are available for work with tile, metal, etc. The saw is adjustable for any depth up to 23/4 in. and is graduated for any angle up to 45° . Standard equipment includes a steel carrying case, 10 ft. cord and plug wrenches and rip gauge. The overall size is 12 in. long x 83/6 in. wide x 111/2 in. high. Net weight is 7 lbs.

Manufacturer: The Porter-Cable Machine Company, Syracuse 8, N. Y. (Continued on page 130)

NEW, IMPROVED FIBERGLAS DUCT INSULATIONS... Two types ... for any job



The new, blanket-type insulation, made in a variety of densities and thicknesses to effectively insulate round ducts and irregular-shaped equipment, is a superfine material having an exceptionally high ratio of insulating value to weight.

Fiberglas* "Aerocor*" Insulation comes in rolls up to 200 feet in length and is available in five standard widths and thicknesses. Can be applied rapidly with standard tools and methods.

Aerocor has a k-factor as low as 0.23 at 75° F., mean temperature, weighs as little as 0.3 pound per cubic foot. Its glass fibers cannot rot or mildew, cannot support combustion or sustain rodents.

Ask the local Fiberglas Sales Office for complete information and data on Fiberglas Aerocor Insulation.



Use this semi-rigid board material as a thermal or acoustical insulation on square ducts and flat surfaces. Can be used either inside or outside ducts, with complete fire safety. When applied *inside* ducts to deaden noise, this insulation will withstand air velocities up to 6,000 feet per minute without eroding.

It's easy to cut to shape with a knife, can be applied either with adhesives or by mechanical fasteners. Has strength to support its weight, is readily finished and painted without preliminary preparation.

Like all Fiberglas Insulations, its glass fibers will not support combustion or sustain rodents, cannot rot or mildew.

Get complete information and data sheets on both these Fiberglas Insulations by phoning the local Fiberglas Sales Office in leading cities.

Or write to OWENS-CORNING FIBERGLAS CORPORATION, Dept. 830, Toledo 1, Ohio.



* Fiberglas (Reg. U. S. Pat. Off.) and Aerocor are trademarks of Owens-Corning Fiberglas Corporation for products made of or with glass fibers

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BUILDING REPORTER



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At about \$25 per 1000 sq. ft., Sisalation saves 50% or more, compared with other types of insulation. Sisalation costs less to apply. Provides both sidewall insulation and vapor-barrier (FHAapproved). Lining attics with Sisalation makes them more livable and attractive. Highest quality construction at low cost!



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See Sisalkraft Insert in Sweet's ARCHITECTS' File



FRIGIDAIRE KITCHEN CABINETS have durable, grease resistant material on work surfaces.

Frigidaire's new kitchen cabinets, as well as their table model electric water heaters, are now being manufactured with a tough plastic composition on their tabletop work surfaces. Called Vitalast, the new heat and grease resistant material looks like black



marble and is reported to wear better than any other type of kitchen work surface now available. It not only withstands hot pots and boiling water, but is unharmed by common fruit acids which stain or eat into many other composition materials. An occasional wipe with a damp cloth keeps it clean. Permanently bonded to treated steel under tremendous heat and pressure, a Vitalast surface will not buckle or warp, and water cannot seep under to cause damage. It is also resilient and skid-proof. Facing edges curve over the rim, thus eliminating sharp corners and the need for protective molding. The complete line includes five different base cabinets with matching wall cabinets, five special purpose cabinets and two cabinet sinks. The manufacturer reports that when two or more cabinets are used side by side, they can be firmly joined together to form a smooth unbroken surface without the use of metal stripping.

Manufacturer: Frigidaire Div., General Motors Corp., Dayton 1, Ohio.

(Technical Literature, on page 136)



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but . . . shut out the <u>weather</u>!

Today, you can give home-owners plenty of "view"—plus new, scientific protection from wind, dust, heat and cold! That's why Curtis Silentite windows are so often first choice where comfort and fuel savings are important. These Curtis windows are truly weather-tight.

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If the owner's choice is casement style windows—investigate the Silentite casements. Here is an insulated *wood* casement with special features that assure less air infiltration than other types.

A major improvement in casement design provides draftless ventilation. The sash is thoroughly trouble-free—can't rattle, vibrate or swing in the wind. No bulky hardware on the inside no exposed hardware on the outside. Made in several sash styles.



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JAMESTOWN, N. Y.

TECHNICAL LITERATURE

HEATING. Electric Heating. Industrial Engineering and Equipment Co., 711 South Theresa Ave., St. Louis 3, Mo. 76 pp. 834 x 11 in.

This catalogue of electric heating equipment is a loose-leaf spiral binder which has been revised and considerably enlarged recently. Some of the new items are: Bulletins E-36 and E-37 which cover bottom outlet immersion heaters used in heating vessels of water, icing tubs and steam tables; and Bulletin E-50 which deals with oil and water preheaters used for preheating heavy fuel oils so they can be burned properly.

ELECTRICAL APPLIANCES. Planning Book for Electrical Living Homes. Westinghouse Electric Corp. 306 Fourth Ave., Box 1017, Pittsburgh, Pa. 24 pp. 81/2 x 11 in.

Living comfortably with electricity is here explored for four different pocketbooks. The "first degree" of utilizing electrical conveniences includes appliances such as an electric range, refrigerator, fan and water heater. Pieces of equipment are added to the fundamental list until the ultimate is reached in the "fourth degree" with the Precipitron, an electronic air cleaner. Interior and exterior photographs, floor plans and wiring diagrams of four especially constructed homes illustrate the formulas in action. Suggestions and wiring for various types of lighting are also given.

HOSPITAL EQUIPMENT AND FLOOR PLANS. Hospital Handbook. General Electric Co. 1 River Rd., Schenectady 5, N. Y. 183 pp. 9 x 12 in. \$19.75.

Offering a wealth of technical information on electrical equipment, space requirements and construction, this new handbook for architects, consulting engineers, executives, and (Continued on page 140)



For Insulating Masonry Walls

Porex saves valuable building dollars, reduces heating costs 50%. Lightweight fire-and-water-resistant slabs of mineralized wood fiber and Portland cement are used for furring and insulating the walls of apartment and hospital buildings. They make a good plaster base. Write today for full information.

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Back roof, where double pitched roof and dome roof meet.

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Because the roof obviously had to be permanent, enduring and impressive, common sense demanded copper. Thus, more than 13,000 pounds of Revere lead-coated copper were specified for the batten seam installation.

Regardless of whether it's a small or large job on roofs, flashing or gutter, Revere copper and the Masonic Memorial ... national shrine each year for thousands of visitors. Architect—Harvey W. Corbett, New York, N.Y. General Contractor— Eugene Simpson and Brother, Alexandria, Va. Roofing Contractor— Gichner Inc.



Installing caps on batten as roof nears completion.

Revere manual on sheet copper installation will help guide you to finer, more durable construction.

Revere sheet and roll copper, lead coated copper and other Revere quality materials are available through leading distributors. A Revere Technical Advisor stands ready to consult with you without obligation.

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REVERE QUALITY HOUSE INSTITUTE TAKES

Activities widened through affiliation with Southwest Research Institute

I^N ORDER to widen its scope and increase its service to the public, the Revere Quality House Institute on July 1 became the Revere Quality House Division of the Southwest Research Institute. This Institute was founded and endowed by Mr. Tom Slick, Texas oil producer and rancher, and is located on the 4,000 acre Essar Ranch, eight miles west of San Antonio, Texas. It is engaged in four specialized fields of scientific and practical research: Housing; Fire Technology; Petroleum Technology; Oceanography and Meteorology. Among its resources there are research departments in Chemistry, Physics and Engineering which provide extensive facilities for investigations of building materials, methods of construction, and standards of quality. All these facilities will be employed in a continuing endeavor to bring constantly increasing quality to American homes. Under the administration of Dr. Harold Vagtborg, president, the housing programs of both Institutes will be combined, for even greater public service.

It is expected that in addition to Revere Copper and Brass Incorporated, other manufacturers of quality building products will join in supporting the broad objectives of this program, and in promoting locally or nationally such houses as seem to fulfill the ideal of quality at low cost.

The basis of the expanded program will continue to be that of local design to meet local conditions, and construction by capable merchant builders. An increased number of field studies will provide information on methods of assuring higher quality, greater value, in moderate-priced houses. Along with work in the field will go investigations of a more scientific nature, using the laboratories and other facilities of the Southwest Research Institute.

Another new activity for the Revere Quality House Division is the preparation of a "Check List" of house quality features, for the guidance of home buyers. This is now under study, and, it is hoped, should be available in the near future.

This expansion of the Revere Quality House movement gives Revere the greatest satisfaction. It was made possible by the thorough work done by the eight original architect-builder teams who designed and built the first Revere Quality Houses. Revere salutes them, and also the Institute staff, which is being maintained. John Hancock Callender, A.I.A., remains as architectural consultant in the New York Office of the Division. C. W. Smith, director of the Division, will make his headquarters on the Essar Ranch in September.

NOTE TO BUILDERS

The expanded Revere Quality House program presents new opportunities for builder participation. More projects than ever before are now possible, and under newly attractive conditions. For full information, write:

BUILDER RELATIONS DEPARTMENT Revere Quality House Division, Southwest Research Institute 280 Madison Avenue, New York 16, N. Y.

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TECHNICAL LITERATURE

other persons concerned with hospital planning has been written by men of the General Electric organization who have worked closely with architects and engineers on hospital projects. Based primarily on the equipment recommendations of the U. S. Public Health Service, the book contains illustrations of apparatus for air-conditioning, lighting, X-ray, heating, cooking, chemical laboratory as well as floor plans and specifications to help the architect in selection and installation. The reader may quickly refer to any one of the ten sections in the book by means of a clever colored-corner device which corresponds to a color table on the contents page. Included with the text are a supplementary guide on hospital equipment using radiant energy sources and a folder on lighting layout suggestions for various hospital elements. The consultant for this excellent comprehensive volume was Theodor K. Rohdenberg, a member of the faculty of Columbia University School of Architecture who contributed to the design, construction and equipment of 44 hospitals between 1942 and 1946.

PLUGS, RECEPTACLES AND CORD CONNECTORS. Midget Ever-Lok. Russell & Stoll Co., Inc., 125 Barclay St., New York City, N. Y. 12 pp. 81/2 x 11 in.

Illustrations, dimensioned drawings and convenient ordering information concerning automatic locking Midget Ever-Lok plugs, receptacles and cord connectors are features of this new brochure. According to the publication, the Ever-Lok is a rugged and reliable 10 amp. 250 v.—15 amp. 125 v., a.c. or d.c. unit which is readily adaptable as a component for all types of portable equipment and, as such, has utilitarian value for business offices, institutional buildings and factories.

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Walls in this world famous exhibition home on the Steel Pier, Atlantic City, New Jersey, are finished with permanent BEAUTEX COLORED PLASTER. Beautex's hard, easily maintained surface, applied to the dry brown coat, was ready for immediate use without messy, time-consuming aging, sizing, painting or papering.

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BEAUTEX COLORED PLASTER is the ideal material for finishing walls and ceilings in residences, apartments, offices, churches, schools, salesrooms and public buildings.

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Here's why so many architects now recommend resilient flooring made of VINYLITE Brand Resins!

- They have lighter, brighter tones and clearer colors than any other resilient flooring materials.
- They are highly resistant to soaps, cleansers, grease, oil, and to acid and alkali solutions.
- 🗱 They're resilient, yet outwear other types of floor coverings.
- They're flexible, conforming to uneven floor surfaces and absorbing normal play of wood floors without cracking.
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- ★ They come in an almost infinite variety of stable colors.

VINVLITE Brand Resins give to upholstery materials, too, their phenomenal resistance to aging, cracking, flaking...their limitless colors...their resistance to abuse. These materials work, drape, and shape perfectly, and can be formulated to match the fire-resistant requirements of New York City and Boston.

No wonder more and more manufacturers are producing floor coverings and furniture upholstery made from VINYLITE Brand Resins. They are unsurpassed for offices, public buildings, and private homes. Let us send you a list of suppliers of flexible floor coverings and upholstery materials based on VINYLITE Resins. Simply write Department GS-14.

Data courtesy Thos. Moulding Floor Mfg. Co. and Goodall Fabrics, Inc.





BAKELITE CORPORATION, Unit of Union Carbide and Carbon Corporation III 30 East 42nd Street, New York 17, N.Y.



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MODERN

The Tile Council of America was formed in January, 1945, to provide a central source of information about clay floor and wall tile, and to sponsor research and development projects designed to increase the usefulness of clay tile in all types of private and public building.

surface. Soaps, acids and greases are handled with equal ease.

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*Tensile strength, 45,400 lbs./sq. in.; compression strength, 87,000 lbs./sq. in.; impact strength, 18 ft. lb.

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Distributed by PETKO INDUSTRIES, INC., 1107 East Eighth Street, Los Angeles 21, California



Use of *Energy in Color* Improves Production of Bottle Caps, Seals and Filling Machinery, Says Crown Cork & Seal Company's Chief Engineer

CHEMICALS

G H

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U

THESE DAYS ... the alert manufacturer considers carefully every development—no matter how new or unusual which will help him to build more and better goods at lower cost.

COLOR DYNAMICS is winning increasing approval among industrial executives in many fields because it has proved that its use improves both efficiency and well-being of workers.

Characteristic of the comments on this new painting method is the following letter from R. B. Hoffmeister, Chief Industrial Engineer of The Crown Cork & Seal Company of Baltimore, Maryland. This organization is one of the largest producers in the world of bottle crowns for beverages, metal milk bottle caps, closures for food, cosmetics and pharmaceuticals, and the equipment for filling these containers.

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How easily you can plan attractive basement work rooms like the one pictured here in the beautiful home of Michael Pinto, Tuckahoe, N. Y. Heating Contractor: Costello Brothers Fuel and Heating Company, Inc., Tuckahoe, N. Y.

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REVIEWS



The theater building (above) is exploded into three basic elements — backstage, auditorium and entrance-lobby.





The above scene from "Summer and Smoke," combining realistic and symbolic scenery, is analyzed in diagram at left.



THEATERS AND AUDITORIUMS by Harold Burris-Meyer and Edward C. Cole. Reinhold Publishing Corp., New York, N. Y. 228 pp. Illus, 834 x 1134. \$8.

When it comes to writing about the theater, the most reliable practitioner seems to find it hard to keep the footlights out of his eyes. This stage dazzle does strange things, especial y in tampering with the author's native sense of proportion. His special interest usually steals the show—giving a far from convincing performance. Thrice hail then to Authors Burris-Meyer and Cole, for this exceptionally true-to-life, well-paced handsomely-produced book on all phases of theater design! Only a great love and sense of the theater could have enabled them to balance the innumerable factors presented in this thorough volume.

It is true that the present crisis in theatrical history is a great spur to honest thought. As the authors put it—"This book is written at a time when it is particularly important to study the economic aspects of any theatrical enterprise before undertaking a building to house it. There is increasing competition for the entertainment dollar and the leisure hour, notably in the fields of spectator sports and radio and television entertainment. To compete the theater, any type of theater, has to furnish a good show for the money. Building costs are high; every part of a projected theater must withstand careful examination, and merit inclusion in the building on the basis of effectiveness."

Since in the long run the audience pays the piper, the authors consider its demands first—a cycle including the trip from home, to and through the performance, until the homeward journey is begun again. Statistics back up their case for the importance of such external factors as parking and loading space, with reference not only to the size of the theater but to its geographic location (urban, suburban, rural). Foyer, lobby and lounge—audience space within the theater—are studied for individual functions and the ways they may supplement each other. The auditorium itself is assessed—what are the latest findings on good seat arrangement, on desirable vertical and horizontal sightlines?

The auditory section of the book is especially good (Professor Burris-Meyer has directed experiments in sound control at Stevens Institute of Technology). The book explains how to do away with unwanted sound (doors, blowers, seats, coughs) and distribute desirable ones with equal intensity and without echos. Effective lighting of the house, not only for visibility but for mood and decoration, is another wellhandled chapter. There is also factual advice on heating, cooling and ventilating the auditorium.

At this point it would seem that the authors were "outfront" men-not truly concerned with the needs of the artists behind the curtain. Nothing could be further from the truth. After settling the audience comfortably, they set out to tackle backstage problems with unprecedented energy and care. Starting with the script and the various types of productions. they run through the facilities required for each, how many actors are needed, what type of audience each draws. The reader becomes acquainted with an actor's routine from tryout to closing night, from his morning look at the call board until his check-out after the performance. The backstage itself is studied from the pit up to the fly gallery, from the front of the proscenium back to the final "blue sky" cyclorama. The stage manager's plea for more backstage room is not merely echoed, but analyzed and tabled. Lighting, scenery, stage wagons and revolves, the treacherous field of sound-amplifying-all fit into these pages. More impressive, (Continued on page 148)

The revolving stage answers many staging problems. As the diagram at the right shows, it raises a few production problems of its own.

EANNEE

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community and college are covered as well as commercial theaters—movies and musicals as well as legitimate drama. An editorial juggling feat if there ever was one!

REVIEWS

Since so much vital spade work is done by the authors, it may be ungrateful to express one or two regrets. However, one must feel disappointment that a number of design experiments worked out in the past decades have not been included here for comparative study (those by Gropius and Paul Nelson, for instance). It would be interesting to see how these suggestions-so interesting in themselves-stack up against the technical information amassed since their conception. There is also an occasional inconsistency in the authors' line of thought-probably caused by an understandable desire to make their basic principles palatable to as large an audience as possible. They set off with the creed: "In no other kind of building is suitability of form to function more precisely demanded than in the theater" wind up with the ambiguous concession that the structure may adhere "in spirit" to "almost any superficial architectural style."



The increase in income-producing area under the N. Y. State Code change of 1938 is graphically shown.

It is also rather surprising to discover in such knowing authors an expectation that New York City will soon begin to build theaters just because present structures are completely obsolete and uncomfortable, and because audiences and producers are pleading for better accommodations. This hope they educe from the fact that New York State has relaxed its building code, allowing income-producing offices to be planned above all sections of the theater except the stage —reducing overhead substantially. On this premise, it is true, many suggestions have been based that have excited architects, designers, and the whole theater-interested world: of combining theaters with restaurants and cafes (as in England) with offices and art galleries (as movie houses have done) with community functions (as in many smaller cities).

All these suggestions, however, have been effectively scotched by interests who fear competition for their existing rattletrap houses. The sad fact is that the building code has been relaxed since January 1, 1938—and not one theater has been built to take advantage of it. The authors themselves cite the true reason in another context—"The commercial theater owner is not a showman. Operating efficiency does not concern him since his income is based on gross receipts rather than net profits. He runs a boarding house for shows, not a theater."

As a blueprint for better theaters in other cities, however —and even for a possible Broadway change of heart—it's good to have a book like *Theatres and Auditoriums*. —S.K. (Continued on page 152)



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A self-built fieldstone-and-concrete house can be handsome; requires only rough labor to set up forms (right),



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POUR YOURSELF A HOUSE by Frazier Forman Peters. Whittlesey House, New York. 217 pp. Illus. 61/8 x 91/4. \$3.95.

Pour Yourself a House has some of the charm of Robinson Crusoe's history. What does a man do when he finds himself —strong of purpose and back, but weak in practical experience—with nothing to get him a shelter but tools and a limited range of materials? Frazier Forman Peter, a twentieth century Robinson, supplies the answer from his own practice—and speaks with 200 self-built masonry houses behind him. Why masonry? "By experience I know that frame construction for the novice is out. I also know that concrete with or without stone facing is entirely possible." The house built thus, he promises, is cheap, attractive—and for the ages.

The point of greatest technical interest in the book is Peter's patented solution for preventing condensation—always a foremost problem in constructing masonry buildings. His method, which eliminates costly furring and the equivalent of a frame interior (see cut below), is offered free to any



Patented wall method (above) promises to overcome condensation — a problem in stone wall.

who are brave and energetic enough to build houses for themselves. Professional builders must make arrangements with the inventor,

What distinguishes this book from the hundreds of other mass-production how-to-do-it voulmes is the evident personal know-how and enjoyment that appear all through it. Peters is a building lover. His method is no easy way out. It may take three years, he warns, if only spare time can be given to it. It entails jobs that he himself would at one time "have thought better suited to an army of slaves." It is a job that pre-supposes the "care and affection so necessary for the best results." With its unabashed personal asides, the book forms an entertaining diary of a country builder—it can be read, not only as the straightforward manual it is, but as a refresher course in human nature and the practical handling of materials.

The author (an architect and professional farmer) has preserved the amateur's enthusiasm about his subject. He delivers an eloquent sermon on stones: "How about round stones? Curse their virtuous, colorless aspect! They seem almost perfect in their natural states with their ducklike top surfaces—but they are to be avoided." His description of cesspools reaches undoubted lyricism of a dark sort. The \$3-4,000 cost cited on the book jacket for a stone house covers only the actual materials—not the necessary periodic recourse to professional assistance (for plastering, electric *(Continued on page 156)*

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wiring, plumbing). The rigidity of Peters' plan is excusable since he is working on a minimum budget. Within the confines of its masonry box, it does provide a rational workable layout. One point gratefully noted: in spite of the traditional shape and building method, its creator is far from a nostalgic antiquarian. He recommends sheet aluminum for roofing, steel sash for windows, suggests slate as a cheap, practical, and handsome sill.

For a Mr. Blandings in search of summer reading fare, this makes an excellent hammock choice—preferably with a cool drink nearby. The processes described are often exhausting and Author Peters is thoughtful enough to point out just where liquid refreshment will make the stones fall into place more readily.—S.K.

ARCHITECTURAL DOCUMENTATION SHEETS published by Bouwcentrum, Rotterdam, Holland. Dutch, French and English text. $8\frac{1}{2} \times 11\frac{1}{2}$. Individual sheets, f. 0.60, 45 or 30 according to length; f. 24 for a year's set. (In American money, app. 25 cents each, \$9.12 for a year.)

A new series of building studies is inaugurated with this dozen compact analyses of outstanding modern structures. Each consists of four or eight-page folders, punched to accommodate every type of spring binder—with plans, photographs and full data on materials and equipment. *Bouwcentrum* plans to publish about 60 a year. Judging by the first group, the photographs are too small and fuzzy to be really satisfactory, but these may be bettered as the series goes on. This first batch includes buildings in Holland and Belgium— Bouwcentrum, the Sports and Exhibition Hall in Amsterdam, The De Volharding Hospital, The Hague, Beatrix Nurseryschool at Rotterdam, and the Municipal Theater at Utrecht among them. Other countries will be represented later.

ARCHITECTS' SPECIFICATIONS—How to Write Them by Goldwin Goldsmith, Ph. B. American Institute of Architects, Washington 6, D. C. $8\frac{1}{2} \times 11\frac{3}{6}$. 134 pp. \$5.

This second edition of Goldsmith's handbook expands its clear and informal presentation of the problems besetting the formulation of each actual set of specifications. Although intended primarily for students, its advice on matters from law to typing makes it a helpful stand-by for any architect. It's been adopted by the A.I.A. as a companion to *The Handbook* of Architectural Practice.

ENGINEERS COUNCIL FOR PROFESSIONAL DEVELOP-MENT, 16th Annual Report. 29 W. 39th St., New York 18, N. Y. 8 x 11. 40 pp. 50 cents.

This booklet provides a running report on educational and ethical standards in U. S. engineering. In addition to summarizing current doings in all the various fields, it furnishes the list of all accredited engineering curricula, as well as the officers of engineering societies.

BACKGROUNDS OF SOCIAL MEDICINE round-table conference of Milbank Memorial Fund, New York City, New York. 6 x 9. 202 pp. illus. with charts. \$1.

Although prepared mainly for professional workers in the health field, this document on the relationship of environment to "death, disease and disability" provides important background material for planners and those interested in large scale housing. It also points out the need for broad studies of working conditions—studies not restricted to specific occupational hazards and diseases. (Continued on page 160)



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REVIEWS

Thomas Ye

The display by George Nelson used dramatic ceiling lengths of fabric around a central mobile kite. The designs are being produced by Mil-Art Co. Inc.

"Leaf Hands" by Dali (right)





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For complete information about R-W DeLuxe FoldeR-Way Partitions and Multiple Action School Wardrobes, contact our nearest office.





ARCHITECTS TRY THEIR HAND AT FABRIC DESIGN ...

Most architects mentally relegate fabrics to the dress department until they see a favorite scheme mangled by misuse of fabrics. To show how to avoid such misfortune New York's Architectural League last month staged a dramatic exhibit of new textile designs. Four architects (George Nelson, Bernard Rudofsky, Abel Sorenson, Edward Wormley) and two artists (Ray Eames and Salvador Dali) designed the 32 patterns shown. Colors range from subtle to splendid; sizes, from Rudofsky's minute type-forms to Dali's 2 ft. swirls.—S.K.





... AND SO DO THEIR CHILDREN

Robert S. Reynolds



The lively abstraction at right (one of the new fabrics collected for Herman Miller Co. by Marie Nichols) is the work of the design field's youngest recruit. Designer Hollister Nelson (son of George Nelson mentioned above) is aged eight.

"Trees" by Wormley

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23

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THE IDEAL OFFICE BUILDING

(Continued from page 75)

environed brethern. We must have a *big site*. It must be approximately eight times the area of the floor plan of the building. That plan will be around 10,000 sq. ft. per floor. We want, therefore, what in Chicago is a half a city block, approximately 400 ft, x 200 ft.

Can we afford such a site downtown? Yes. We have parking in the basement and on the second and third floors, each floor covering the *entire site*.

Our first floor commercial space, plus these three floors of parking will, we calculate, carry the cost of their own construction and a sizeable portion of the cost of the site.

The fourth floor level of the entire site we will make an outdoor park with *real* grass, trees and pools and restaurants. Our office building and entrance is here. Escalators take us from the car parking levels to this oasis of green.

Thus our environment is established. We are self-contained. Because of our size we are clearly identifiable as a single important unit. We have *individuality*. We have *character*? Our office building is a clear simple rectangular shaft rising from a pedestal or base, free of obstructions on all sides, permitting in perpetuity, light, air and view.

Inside the building we must have all-year-round air-conditioning behind fixed, flush, continuous windows. The sealed sash and the acoustical treatment of the ceilings will provide sound control. Direct and indirect artificial illumination will be skillfully handled so as to amplify the natural lights. Permanent external sunshade controls will extend over all windows on the south. The office building shaft will be oriented with a long axis running east and west giving north and south exposures to most of the space. The building will be 60 x 160 ft. in floor plan.

Now we have the environment. We have satisfied the animal comforts of our tenant, be it a he or she, a clerk or a boss, for the eye—the ear—the body—and, we hope, the spirit.

Perhaps you will grant that the space described above would be sufficiently appealing to obtain a rental in average times of \$5 or better in principal cities.

Prefabricated walls. A modern code does not deal with building methods or construction techniques as such, but simply describes what is to be accomplished, leaving the methods up to the architect and engineer. This provides an opportunity for greater flexibility and will result in economies in construction not possible now.

Most existing codes have rigid standards as to the thickness of outside walls. For example, on a skyscraper, a masonry curtain wall 20 stories up must be 12 in. thick, no matter what. However, these same codes will permit the use of glass ¹/₄ in. thick in unlimited areas. But a modern code specifies only that the outside wall thickness provide a one-hour fire resistance. This means we can prefabricate a combination window and spandrel, since we are using fixed sash, with the unit air-conditioner enclosed as an integral part of it, all of which can be literally "snapped" on the building frame—beam and column. There is a wide scope of permissable materials of which this spandrel can be made, such as aluminum, stainless steel, other alloys, and possibly later on some plastics.

This method of factory prefabrication and field erection should mean a great saving over our present methods of constructing the outer skin of a building. Our exterior would then be a flush, unbroken surface of glass and metal, except on the south exposures where concrete sunshades, as extensions of the floor slabs, would appear.

(Continued on page 168)





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(Continued from page 164)



IT HAPPENED IN ST. LOUIS!

The Chemical Building, at 8th and Olive Streets, has long been a landmark in the heart of commercial St. Louis. During the past year, the Waldheim Realty and Investment Co., owners of the building, decided the time had come for complete modernization. Architect Nat Abrahams designed the job, and naturally chose a revolving door entrance. The result, shown above, is considered one of the outstanding modernization jobs in St. Louis in recent years. This new entrance, an alumilited aluminum revolving door complete with swing doors and transom, is but one of the International-Van Kannel models, custom-built to eliminate drafts, reduce heating and cooling costs up to 25% and provide maximum safety and traffic control.

For a new building or for modernization, International-Van Kannel revolving doors will meet your entrance needs. From the individually styled custom-built models to the more than 20 economical standard types, they are unmatched for service and beauty. Write in for complete details.



We would pour our office building floors as one great slab-no bases or permanent partitions to be incorporated. There are many single-thickness, finished-on-both-sides types of partition possible, varying from 1 to 2 in. in thickness. Channels would be laid on a module basis in floor and ceiling and these partitions slipped into place or removed with ease.

Lightness is the theme throughout our building. We will use the very lightest type of concrete slab construction on steel frame so as to reduce our dead loads to the absolute minimum.

Low maintenance cost. We have spent our money in order to give the building facilities our competitors do not have. We have spent it, also to insure against the constant . . . problem of maintenance and operating costs.

The complete skin of our structure is non-corrosive metal and glass. There will be no painting required-no tuckpointing needed. We have designed this building with a flush skin surface, with all the metal connection for the glass on the interior. We will wash these windows with a vertical type of automatic squeegee which will run on tracks on the exterior, completely around the building. This is a permanent installation and will be automatically controlled. lubricated with a warm water supply which moves along with the squeegee. This will reduce the cost of washing the windows more than half since only the interiors will have to be manually washed.

Internally, all electric power and telephones lines will be laid in grids in floor or ceiling, or both, on a module basis, which will permit alterations of partitions without affecting basic structure or using wet trades.

The all year round air-conditioning will reduce dust and dirt, and thereby reduce maintenance costs. Lighting, generally, will be long-life and require minimum changing through the extensive use of low intensity fluorescence.

Summary,-Our departures from convention lie, primarily, in the following aspects of the problem. We believe that a comparatively large site is necessary so as to permit control of the orientation of the office building shaft, to guarantee permanent light, air and view, and to provide adequate parking for the occupants of the building.

We believe that grass, trees, and fountains are a merchantable asset to the project and will help hold-up rentals against competitors in hard times.

We believe that the office space should be a simple, flexible, rectangular plan with the thinnest possible skin and the maximum amount of glass, that all the known scientific devices for control of sound, temperature, humidity, and natural and artificial light are mandatory, not just desirable.

We believe that the modern office building must be designed to provide for the human beings, who spend a quarter or more of their lives therein, all of the comforts, conveniences, and amenities that modern science tells us we need and tells us how to provide.

This solution is arrived at through studying the behavior patterns, the actual physical, mental and emotional cycle for each of the basic types of occupant. By this research we establish the criteria for the space, means of access to it, and materials and mechanical devices that will be required to serve it

We believe that there are enough tenants who can and will gladly pay the \$5 to \$6 a sq. ft. necessary to make this project economically sound.

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ment that a satisfactory plan for relocating residents in the area must be made before a slum clearance project can be started. This means that private redevelopment of the area would probably have to wait upon completion of low-rent housing projects, in which displaced persons (if eligible on the basis of income) would get priority. How pressing this relocation problem may be is indicated by the New York Real Estate Board's 11th annual survey of tenement vacancies, which showed literally 100 per cent occupancy in 10 out of 11 study areas. However, private redevelopment could move rapidly ahead in industrial slums where no population movement would be required.

Some 26 states already have enabling legislation believed to be adequate to permit cities to apply for federal loans and grants under Title I. But few of these enabling laws describe the mechanism for setting up the local redevelopment agency or define the relationship of this agency to the local planning commission. Safeguards are obviously needed to guard this kind of agency from political influence; if the slum clearance program gets underway in any volume, the local redevelopment agency together with the planning commission will be making decisions of great importance to the whole city. The local planning commission may be suddenly boosted from what is in many cities a purely advisory or theoretical role to an active part in setting the pattern of city redevelopment. The planning commission and/or the local redevelopment agency will not only choose the sites for redevelopment but they will also decide whether this rebuilding will be done as low-rent projects by the local housing authority or by private enterprise for middle-income groups.

A pattern suggested by federal housers for the local redevelopment agency is a three-man board composed of the head of the planning commission, the director of the local housing authority, and a third member appointed by the mayor. It seems reasonable to suggest that this third member might well represent private building to make sure that private enterprise, as directed by the Act itself, gets a maximum chance at urban redevelopment. Long-term considerations make it very important to guard against what may seem an easy way out of the population displacement problem: giving local housing authorities the maximum go-ahead to build low-rent housing in slum areas acquired with the help of the federal write-down.

Although the HHFA expects that it may take at least four years to initiate planning of a slum clearance project and bring it to a point where the land is cleared and re-sold, some cities are already far along in planning redevelopment projects (among them, Chicago, Detroit, Los Angeles, Milwaukee, and Providence). HHFA predicts that within a year slum clearance projects will be actually underway in eight or ten cities and that planning advances will be approved for about 25 more.

Will public housing check price drop?

The 810,000 units of low-rent housing authorized by the new Act are more than four times the amount of low-rent dwellings built under the U.S. Housing Act of 1937 (170,000). These units are to be built over the next six years at an annual rate not exceeding 135,000. (The President is empowered to limit this rate to 50,000 if public housing's demand for materials and labor should interfere with the private building industry. He is also empowered to lift the rate to 200,000 units a year if his board of economic advisers believes the economy needs this extra stimulation.) The projects will be supervised by local housing authorities, designed by local architects selected by the boards of these authorities, and built by local contractors who are awarded contracts by open competitive bidding.

Since the method of operation of the low-rent program was established by the 1937 Act and has been little changed by the new legislation, the main question which private enterprise asked as it regarded the new program was: how much will the building of an additional 135,000 units a year affect the functioning of the private building industry? One of private enterprises' chief fears was that the appearance of the federal housing program would forestall any further drop in building prices-the kind of drop needed, for instance, to revive Metropolitan's interest in rental building. But HHFA argued that these 135,000 units of low-rent housing a year are only about one-ninth of the annual amount of building (1,200,000 units) estimated as imperative to take care of the nation's needs. HHFA pointed out that both building materials production and supply of building labor had expanded greatly after the war to keep pace with increased private housebuilding construction and that it would be reasonable to expect this expansion to continue at a rate adequate to supply both private and public building.

Rents up to \$55

The next major question private enterprise raised about the program was whether the subsidized rent levels would be in fact competitive with rents in privately owned housing. The new Act, unlike its predecessor, stipulates that rents must be 20 per cent below the lowest figure for which private enterprise can provide decent housing in new or old quarters. But nobody knows exactly how this 20 per cent gap will be figured. If the differential were based, say, housing newly built under the FHA rental program, rents could go to the ridiculously high figure of \$62 a month.

The average rent in existing public housing is \$30 a month, and local housing officials say the rents in the new program will range from \$10 a month in Memphis to \$55 a month in Syracuse. These figures are said to be 20 to 70 per cent below the rents of comparable private housing. Rents are graded to family income and number of minor dependents; a family with four children will pay less and get more space than a family with one child. Families are eligible for admission to public housing only if their income (plus a \$100 allowance for each child) is no more than five times shelter rent and utilities. Thus if rent plus utilities amounts to \$25 a month, the income limit for a family with three children would be \$1,800.

Since the mechanics of public housing are already set up-450 local housing authorities in 41 states, Alaska, Puerto Rico, Hawaii, D. C.—the new building program will get started as soon as local applications can be approved in Washington and architectural plans made locally. According to an Associated Press survey, 61 cities already have plans in varied stages of readiness for about 256,000 units. HHFA said that projects would be tackled on the basis of need, but private enterprise wondered just how need would be determined. Unlike other federal programs (public roads, for example), the Act provides no distribution formula. The only stipulation is that no one state may get more than 10 per cent of the program. Building and real estate opposition, strongest in the big cities, might cause more of the projects to go to smaller cities.

One of the new features of the Act is the requirement that 10 per cent of the low-rent housing be built in rural non-farm areas communities of 2,500 or less and hitherto a kind of no-man's land in which neither city nor farm housing aids could operate. This seems likely to produce a building type new to public housing, and it is possible that factory housebuilders like Lustron may get a chance to contract for these units.

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In the time it takes to disassemble the usual tubular lock, the YALE lock is on the door.

Total savings resulting from installing YALE's standard duty tubular lock all over the house are considerable. Together with the home-owner's appreciation of YALE beauty and security, these savings make a good reason for selecting YALE.

THE YALE & TOWNE MANUFACTURING CO., stamford, conn., u. s. a.

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The advertising pages of FORUM are the recognized market place for those engaged in building. A house or any building could be built completely of products advertised in THE FORUM. While it is not possible to certify building products, it is possible to open these pages only to those manufacturers whose reputation merits confidence. This THE FORUM does.

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basis for beauty





Above: Milledgeville Hospital, Milledgeville, Ga. Scroggs & Ewing, Architects, Beers Construction Co., Contractors. Truscon Maxim-Air, Intermediate Projected, Basement Windows and Screens.

Streamlined Truscon Maxim-Air Steel Windows

• All ventilators are top-hinged to open-out, are mechanically controlled and open or close simultaneously by a completely concealed mechanism. The resulting elimination of unsightly arms and shafts permits the most convenient and effective arrangement of shades, screens and draperies.

Truscon Maxim-Air Steel Windows are ideal for use in warm climates, enclosed porches, solariums, or in any structure wherein it is important to provide free circulation of air in inclement weather as well as on sunshiny days. Detention type windows in this design can be made with glass heights as

INTERMEDIATE

PROJECTED

INTERMEDIATE

COMBINATION

MAXIM - AIR

LOUVER TYPE

GUARD

TYPE

DONOVAN

AWNING - TYPE



Above: Interior view of Milledgeville Hospital, illustrating complete concealment of operating mechanism on Truscon Maxim-Air Windows.

HEAVY

DOUBLE - HUNG

SERIES 46

LIGHT DOUBLE - HUNG

SERIES 138

LIGHT AND

INTERMEDIATE

CASEMENTS

low as five or six inches for use in psychiatric institutions.

This unique Truscon development is offered in a wide range of designs and sizes. Architects are thus assured of an opportunity to design their requirements around specific needs without unduly restrictive limitations as to unit size and ventilator layout.



PIVOTED

TYPE

COMMERCIAL

PROJECTED

ARCHITECTURAL

PROJECTED

SECURITY

TYPE

PSYCHIATRIC

TYPE



2 MILLION BENDS Prove Long Life of Glass-Surfaced Water Heater Tank!

The Multiple Flex Test, pictured here, the Thermal Shock Test, and other conclusive demonstrations prove the durability and resilient toughness of the glass-surfaced heavy steel tanks of Permaglas Automatic Water Heaters. The fact that the diamond-tough inner glass surface will not crack or chip under even extreme shipping, installation, and operating conditions is also proved by the performance record of hundreds of thousands of installed units.

This dependable, built-in protection against rust forming in the tank is a major reason why Permaglas Water Heaters provide completely satisfactory automatic hot water service, at the lowest actual cost. For ALL the reasons why "Permaglas" means complete satisfaction, send the coupon today.

GLASS THAT BENDS within the elastic limits of the steel is demonstrated by this "mechanical man" flexing a special thin ring of SMITHway glass-fused-to-steel. The ring pictured here has been flexed more than two million times . . . yet the glass surface is still in perfect condition.

Jermagla

A SMITHway WATER HEATER*

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TRADE MARK REG U S. PAT OFF

PERMAGLAS" **Dealers** Display This Emblem



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• Without obligation,	Firm
formation on SMITH- way Water Heaters.	Street
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D Both	City

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	Los Angeles 14 • New York 17
~	Dallas 1 • Midland 5, Texas
	Pittsburgh 19 • San Francisco 4
	San Diego 1 • Seattle1 • Tulsa 3
-	International Division: Milwaukee 1
	Licensee in Canada:
-	John Inglis Co., Ltd.





Stop Profit Leaks . . . Sell Eljer Quality Brass



Here's the long and short of Eljer's Line of Renewable Brass Fittings: Just two working units . . . with a minimum number of precisionmade, *interchangeable* parts. In years to come, repair units will still fit valves and faucets made

today ... and wearing parts can be replaced quickly and economically.

The first cost of Eljer Brass Goods is only a very few cents more than ordinary, cheap fittings . . . an insignificant factor in the total cost of even the lowestpriced house. Not only do you save costly time, making an installation, but you can be *sure* that your customers will be satisfied and expensive call-backs to correct faulty fittings will be unnecessary.

It *will* pay you to sell Eljer Quality Brass . . . and when you install Eljer Plumbing Fixtures, remember, they deserve to be equipped with Eljer Brass Fittings. If you are not acquainted with Eljer's Line of Renewable Brass Fittings, see your Eljer Distributor or write Eljer Co., Ford City, Pa.

It pays you, it pays us - because we specialize in Plumbing Fixtures and Brass



• For longest service at lowest cost, select a product of quality— The "OVERHEAD DOOR" with the Miracle Wedge. This door's sturdiness and uninterrupted performance year upon year result from perfect engineering and use of finest materials, including hardware tested for maximum durability. Any "OVERHEAD DOOR" may be manually or electrically operated. For <u>service at a</u> <u>savings</u> choose this quality door. It blends with any style of architecture in residential, commercial or industrial buildings.

QUALITY Serves Long, and Well,

TRACKS AND HARDWARE OF SALT SPRAY STEEL

TED KAUTZKY

