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VOLUME 92, NUMBER 1

NEWS

BEHIND THE BLUEPRINTS

LETTERS

CHICAGO’S APARTMENT DEVELOPMENTS

MIES VAN DER ROHE’S PROMONTORY AND LAKE SHORE PROJECTS demonstrate an economical yet beautiful combination of concrete, steel, brickwork and glass and an unusual method of financing.

COMMUNITY DEVELOPMENT TRUST gives private enterprise a means of providing urban housing, finances the development of new building techniques and provides architects with a perpetual and well-healed client.

NEW CONSTRUCTION IDEAS developed by Architects Holman, Holman, Kiekkamp & Taylor save space, time, materials and money in apartment building.

OPEN CORRIDOR DESIGN by Skidmore, Owings & Merrill and smooth finished concrete construction minimize costs and rents.

INTERLOCKING FLOOR PLANS and big rooms distinguish a low-rent housing project by Perkins & Will.

NEW FORMS FOR MULTI-STORY APARTMENTS

VERTICAL GARDENS in a 10-story building by Burton Schutt offer millionaires as much terrace space as they want.

LE CORBUSIER’S “LIVING UNIT” in Marseilles is designed like a filing cabinet on legs to provide outdoor living and indoor privacy—a progress report.

SPIRAL FLOORS IN A CYLINDER by Architect I. M. Pei and real estate tycoon William Zeckendorf promise unusual construction economies and layout flexibility.

FHA’S IMPACT ON THE FINANCING AND DESIGN OF APARTMENTS

A close look at the “608 program”—why it is booming, why it is by-passing the modern architect, and why it may backfire in the taxpayer’s face.

PORTFOLIO OF OUTSTANDING APARTMENTS

MODERN STUDIO APARTMENTS in Spokane by McClure & Adkison.

GARDEN APARTMENTS in Houston by Wilson, Morris & Crain.

BALCONY APARTMENTS in Seattle by Paul Thiry.

ONE-TOUR APARTMENTS in Wellesley, Mass., by Hugh Stubbins.

MULTI-STORY DUPLEX APARTMENTS—a project by Hugh Stubbins.

LOW-COST APARTMENTS in Alexandria, Va., by investors Syndicate.

SMOOTH FINISHED CONCRETE

A round-up of new techniques for the elimination of plaster in apartment buildings and other concrete structures.

ACOUSTICAL TREATMENT OF APARTMENTS

A discussion of the various means of controlling noise in multifamily buildings.

REVIEWS

PRODUCT NEWS

TECHNICAL LITERATURE

Cover, Lake Shore apartments (p. 75) by Mies van der Rohe. Photo: Hedrich-Blessing Studio.
Progressive builders, architects and finance men have found that nothing makes a home "package" more complete, more attractive, than carpet. That's why Home Designers & Builders, Inc., builders of the 1500-unit Expandable Homes, Inc., development in Milwaukee, offered houses complete with carpet. And because they knew the carpet must not only look good and feel good but must perform well, they chose an attractive, durable twist carpet by Gulistan.

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 READ what this builder writes!

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R. M. Smith, Sr."
Exposed corridor roof shows Fenestra insulated Type C Panels laid as a spandrel between windows of first and second floors. This is four panels high, consisting of 14' long panels laid horizontally.

Exposed corridor roof shows Fenestra Type D Panels laid with flat side down. Main roof area under panels at right in photo was finished with a suspended plaster ceiling. The roof was finished over a large area in the early stage of construction.

This photo shows an exposed ceiling of Panels extending from wall to wall. Fenestra Panels, factory prime-painted, provide a smooth surface, economically finished by adding only a coat of paint. Attractive, non-combustible. Note Fenestra Hollow Metal Doors. Corridor daylighted by Fenestra Intermediate Windows at right.

Architects: Bennett & Straight, Dearborn, Michigan.
Contractor: Carl B. Foster, Flint, Michigan.

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- **Spandrels Between Floors**:
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  - 289 Intermediate Projected.
- **Shop and Power Plant Windows**:
  - 21 Commercial Projected.
- **Home Economics Model Home**:
  - 3 Residence Casements.
- **All Doors, excepting main entrance doors**:
  - 135 D.S.P. Doors, Frames and Hardware.
Architects Bennett & Straight of Dearborn, Michigan, faced a familiar set of requirements:
—Large size, with a layout involving considerable perimeter for good daylighting.
—To be ready for fall occupancy.
—Limited budget, calling for low cubic-foot cost.
Convinced of the speed of erecting with Fenestra* Building Panels, the architects looked into their costs... saw how on-the-site labor could be saved if the building was planned specifically to use standard units to minimize special work.
They decided on a 7' module. Classrooms were established in a 28' width, with partitions spaced at 14', 21', 28' and 35' intervals. The structural steel frame was designed in a bay size of 14' x 28', saving weight in steel. Saving in roof construction was achieved with standard Fenestra Type D Panels on the 14-foot span. Standard Type C Panels formed spandrels between floors and the window walls of Fenestra Intermediate Projected Windows.
For the roofs of the 100' x 100' gymnasium and the shop, Fenestra Acoustical Holorib Roof Deck was used. This provides a surface for application of roofing materials. The underside provides a sound-absorbing, perforated surface. It is non-combustible and, being steel, withstands impact. Holorib was used as the permanent reinforcing form for the seats in the spectator stands of the gymnasium.
Fenestra Panels—Fenestra Windows—Fenestra Doors—combined in this structure to help the architects and contractor achieve their triple goal of a sizable, sound structure, speedily erected, at low cost.
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Birmingham, Michigan

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St. Charles Project,
Elmhurst, Illinois

J. E. MERRION
Merrion Square Project,
Chicago, Illinois
WHO WILL BUILD AMERICA in the second half of the 20th Century? The industry begins to probe its central problem

Looking back on 1949, tomorrow's builder will be less impressed with Building's record-shattering volume—a million housing starts and some $19 billion worth of construction—than with Buildings' efforts to cope with its central problem. "Little as I realized it then" he will say, "the big news in Building, as we entered the last half of the century, was not the promise of another booming year in 1950, nor the technological revolution on which Building had embarked—no, the big news was the beginning of an integrated building industry, an industry that had begun to find its real strength only after facing up to the threat of complete government domination. In 1950, builders decided that they, not government, would keep on building America, and in 1950 they began to organize to achieve their purpose."

The cause. After 15 years of going to bed with government, Building began to count the cost. Since the start of FHA in 1934, Building—that sprawling agglomeration of somewhat-free enterprise comprising architects, engineers, contractors, builders, labor, mortgage bankers, life insurance and savings bank investors, realtors, appraisers and dozens of other arts, crafts, sciences, trades and professions—had watched FHA supply the principle cement to bind all elements of the industry. Government, with its money and legal powers, had been the largest single integrating force in building. Then, late last year, came the jolt which showed how quixotically government could wreck what it had largely built. Washington's new nondiscrimination regulations (see Washington) aroused the industry not so much by their provisions as by their implications. Henceforth the housing market would be subject to vitally important decisions made purely for political purposes. The proof was there for all to see. Exactly one week after Solicitor-General Philip Perlman's publicansque pronouncement in New York, FHA Assistant Commissioner Warren J. Lockwood was soothing Texan home builders by saying they would have plenty of time to get racial restrictions on new development property before the nondiscrimination regulations become law.

The effect. The industry speeded examination of its position—and its conscience. New Jersey Realtors courteously listened as Robert Armstrong, head of New York's chapter of the American Institute of Real Estate Appraisers, charged them: "unless the real estate interests find better arguments to sustain their position, unless they will at least try to offer a solution to slums as opposed to public housing, I am afraid present trends will persist."

The National Association of Home Builders started to establish its own mortgage exchange corporation to stimulate purchases of mortgages by the package in a private secondary market.

In Congressional hearings at Washington, Leroy A. Lincoln, President of Metropolitan Life, suddenly invited little business to step up and ask for loans. In New York, other life insurance executives were reported listening carefully as mortgage bankers probed with them the possibilities of insuring mortgages with private, instead of public, funds.

Significantly, at a mid-month meeting in Washington, the U. S. Chamber of Commerce coralled 17 bigwigs in the industry's higher echelons of banking, construction, insurance, law, marketing, manufacturing and reality to learn if Building's private enterprisers could unite on a solution to the problem that plagued them. That problem had just been stated by the National Lumber Manufacturers Association: "The Federal Government should not engage in the financing or building of houses."

The stakes. Builders could keep on thriving in 1950 as public construction replaced the losses expected in private building. But even in heavy construction, they crossed swords with government. (The Associated General Contractors were still fighting government-paid day labor.) The architects had, through the efforts of A.I.A.'s Ralph Walker, barely saved their fee structure from a fast one pulled by PHA (see page 12). The home builder still had to battle bureaucracy as it wielded obsolete building codes (see Law). The freedom of the building worker, too, might be in jeopardy if NLRA paid lip service to Taft-Hartley but passed up elections it enforced on other industries (see Labor).

At the turning half-century, Building might supply its own cement to give the industry much-needed cohesion. It appeared that Building's men were beginning to realize that without financial freedom they might not long have any other. There were indications that Building would heed the admonishment of economist Miles Colen to last month's meeting of the National Association of Mutual Savings Banks: "Your role in the future—if you are to have one—must in no small degree be a political role. You must regain some influence over your own destiny."

WASHINGTON

FHA BANS DISCRIMINATION: Is civil rights battle moving toward housing?

Will government insurance on privately-built housing soon mean no segregation between Negroes and Whites? That question persistently threaded its way through the housebuilding industry last month.

The question's urgency had blunted considerably since Solicitor-General Philip Perlman's announcement that "the FHA is amending its rules so as to refuse to aid the financing of any properties the occupancy or use of which is restricted on the basis of race or creed or color." At first, builders, leaders—the entire industry—had stared at the headlines in stunned disbelief.

When everyone had read the fine print, however, the breathing was easier: the new regulations would apply only to covenants recorded after February 15. FHA jumped in the day after Perlman's announcement to calm whatever fears remained. Witholding insurance on property where re-
MODERNIZATION ON CAPITOL HILL

Congress reconvenes this month under a new ceiling. House of Representatives' old skylight and iron trusses (above, lower) have been replaced with new steel and reinforced concrete roof, indirect lighting, and new air conditioning (above, top). Other improvements to come will bring reconstruction cost to $2,567,000. Similar remodeling of Senate (which also has new ceiling) will cost $2 million. To repaint interior of Capitol dome (right), workmen used special aluminum scaffolding designed by Washington Aluminum Co. of Baltimore. Suspended from balcony railing, structure has 51 ft. drop, is equipped with wheels for mobility, weighs less than 1,000 lbs.
NAACP want some clear-cut action not only from FHA, but also from the Public Housing Administration, which up to now has been sitting snugly on the contention it could leave all racial issues up to local authorities."

**Next step—608?** At month's end, Marshall was still awaiting Richard's reply. And U.S. Housebuilding was awaiting the administration's next step. A possible first step might be taken through the Section 608 program (or whatever its equivalent will be if Congress permits 608 to expire next March; see p. 97), where the peculiar kind of government builder contract gives the government the right to impose requirements on the builder without actually interfering with the mortgage. Presumably this could be carried so far as to give the government the right to determine occupancy.

Would the government use that right? Would it claim others like it? No one could be sure. There were too many indications the federal administration would adroitly direct its political campaign for civil rights toward the well-worn battleground of housing—the field on which it had already won substantial victories and hoped to win more.

* An example of local authorities' determination to bend over backwards to provide equal facilities for Negroes came from Charlotte, N. C. last month. FHA in Washington held in abeyance a request for 4,000 units for Negroes there until a similar need was shown for Whites.

**HEAVY FANNY MAY causes administration some apprehension**

At least part of the reason for the recent weed growth of VA 501 program is that the weed has been fertilized by the vast reservoir of the Federal National Mortgage Association. Lenders, forced by competition to make 4 per cent GI loans, didn't mind too much as long as they could turn them over to the RFC's secondary market. Last month there were serious indications the reservoir was drying up. At the end of November, Fanny May had only $940 million of its $2.5 billion authorization left. At this rate Fanny May's authorization would not last out the fiscal year.

Not all the concern centered on Fanny May's approaching poverty, however. There was worry over the size of the fortune she had already spent. The Bureau of the Budget, which had anticipated that FNMA's drain on the treasury for fiscal 1950 would be around $300 million, indicated that it—along with HHFA—would welcome restrictions to make FNMA a bank of last resort and no more—by requiring such measures as purchase at a discount and mortgage holdings by the seller for at least one year.

**CO-OP HOUSING looms as next challenge to private finance**

President Truman, in his "state-of-the-nation address, gave the nod to co-op housing plans that had long been cooking in Washington. Those plans—aimed to serve the nation's "middle income group"—called for a government-chartered corporation, "The National Mortgage Association for Housing Cooperatives" to be set up under HHFA and financed with an initial investment of $100 million from the Treasury. The Treasury would get stock in the corporation and would be entitled to dividends.

The corporation would be empowered to issue some $2 billion in tax-free debentures, to give virtually free assistance in organization and planning to "non-profit cooperatives" and to loan them money (at talked-about rates of 3 per cent) for as long as 60 years.

The legislative strategy by which this co-op loan plan (designed to mollify the ardent advocates of more obvious direct lending) would be hustled through Congress was neat and simple: the new Corporation would be proposed in an amendment to the long range Senate bill now pending (and already passed by the House). The amendment would, presumably, be passed by the Senate and go directly to a conference committee of the House and Senate, thus escaping an open battle on the House floor.

As always, private industry appeared unorganized to meet the threat. A few builders actually approved co-op housing. Others had not even heard of Senator Sparkman's junket to Sweden and, because co-op housing had been such a flop in the past, tended under-rate its potential power in the future. Their comments: "only one project here, organized more than two years ago and not one house completed" (Los Angeles), "another idea, the woods are full of them, best for Negroes, they seem more willing to pool their efforts" (New Orleans), "Texans have too much individualism to be interested" (Houston), "no co-ops here, and no prospects of any" (Seattle).

But some builders were worried. Cried they: "co-op housing is a form of direct lending that will raise more problems than it solves."

**The problems?** Co-ops, which seem to thrive in good times, go bad quickly in bad times. Default of only a few people in a co-op can cause default on the whole project. In purely private co-ops, the cooperators take the rap (as they did in the '29 crash). But under a government-insured (or direct) loan program, the government would take it.* Would Congress consider that?

The Bureau of Internal Revenue, apparently, hoped it would. Scratching around for new sources of tax money it recently listed 99,467 tax exempt organizations that had, in 1946, received $8 billion in tax-free income. Co-ops had the greatest tax benefit of any group on BIR's list. In 1948, it is estimated, co-ops would have been liable for $500 million in taxes if they had not been granted tax-exempt privileges—"privileges," said Wallace Colwell of the Detroit Builders Association, "denied the individual home buyer."*

* One rap the government stopped taking was Lustron. Late last month RFC announced it would lend no more to Carl Strandlund's ill-starred venture.

**PUBLIC HOUSING**

**PUBLIC HOUSING has heavy month; requests, grants and sales**

President Truman approved PHA loans totalling more than $15 million to 118 localities for the planning of 34,040 low-rent homes for some 300,000 low income families. This brings the total of preliminary loans by PHA to almost $36 million, covering planning of 221,390 units by 227 local housing authorities.

In addition, PHA has reserved funds for 60 additional local authorities which have yet to obtain approval of local governing bodies on their loan applications.

Other news on the public housing front:

► The Bureau of Labor Statistics reported that, as of July 1, 1949, nearly 54,000 new dwelling units—in 11 states and 225 cities—had been provided since V-J day under state and local housing programs.

More than 70 per cent of the total was built in cities of more than half a million population (64 per cent in New York City alone).

► New Orleans, hoping to get 5,000 federalally financed units, completed the legal technicalities necessary to get the funds ($650,000) to make their plans.

► The Chicago Housing Authority earmarked 656 acres for the construction of 9,990 units (the first group of 21,000 units already approved for Chicago under the new act) next summer. Little more than half of the units (5,020) will be built on unimproved land, the rest in slum areas.
ACOUSTICAL FURNITURE and screens solve privacy problem in open offices

To increase the openness and flexibility of offices, to give them better light and air and to permit the use of deep windowless space, Designer Maria Bergson has successfully subdivided office areas with waist-high screens and bookcases. This scheme obviously creates an acoustical problem which can be only partially solved by acoustical treatment of the ceiling and wall-to-wall carpeting. So Designer Bergson has brought acoustical controls close to the source of the noise. In the typewriter table is an interchangeable panel of perforated 1/8 in. enameled steel backed by 1 in. of glass fiber, reducing typewriter noise about 50 per cent. Partition screens and bookcase backs are also acoustical panels. The 43 in. high screens are fabricated in 3 and 5 ft. lengths and are comprised of steel or walnut-finished birch frames fitted with 2 in. of glass fiber, covered both sides with 22 gauge perforated metal (either steel with a baked enamel gray finish or satin-finished aluminum). Bookcase backs are similar acoustical sandwiches 1/2 thick. Perforations are 1/16 in. holes, 1/16 in. on centers, and may be tacked into with thumb tacks, making a bulletin board of any surface. Patents covering details of design, construction and installation have been applied for.

GOOD AMERICAN HOME PROGRAM

"The Good American Home Program," sponsored by the National Retail Lumber Dealers Association and U. S. Savings & Loan League, gets under way this month with a campaign which the backers hope will provide a quantity of $7,500-$12,000 houses throughout the country. Program will attempt to show "middle income families" how they can buy one of five houses designed by Randolph Evans (one of them shown at right) for 25 per cent of their income, by offering those families a budget for the remaining 75 per cent. Detroit will start program off by building the first group of "Good American Homes." Building manufacturers contributing to the program are Ruberoid, Yale & Towne, Lockport Cotton Batting, Sanitas Division of Interchemical Corp., N. Y. Wire Cloth, Kelvinator, American Radiator & Standard Sanitary.

ARCHITECTS FEES for public housing set by PHA, A.I.A. and NAHO agreement

After months of dickering, the Public Housing Administration, National Association of Housing Officials and the A.I.A. finally agreed on architects' fees for public housing.

Under their agreement, a local housing authority and its architect may contract either on a lump sum basis—with fees not exceeding the schedule promulgated by PHA last fall (and briefed below)—or on a reimbursable basis.

The formula for the reimbursable contract involves a complicated three-way calculation based mainly on 1) a fixed fee, 2) an allowance for production costs limited...
to technical salaries on a time-card basis and 3) an overhead allowance. That the reimbursable contract may provide the larger fee is shown by examples released by PHA for non-elevator apartments (elevator apartment schedules are higher):

<table>
<thead>
<tr>
<th>Project cost</th>
<th>Lump fee</th>
<th>Maximum reimbursable fee</th>
</tr>
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<tbody>
<tr>
<td>$ 500,000</td>
<td>$ 6,500</td>
<td>$ 17,500</td>
</tr>
<tr>
<td>1,000,000</td>
<td>22,500</td>
<td>37,800</td>
</tr>
<tr>
<td>10,000,000</td>
<td>124,000</td>
<td>133,000</td>
</tr>
</tbody>
</table>

The construction cost used in computing fees on either basis will be the estimated improvement cost as determined when a project is approved by PHA. After architects costs have been established by use of the reimbursable contract on several projects, the entire fee schedule is subject to future adjustment based on past experience.

How much the A.I.A. had gained over the arbitrary fee schedule originally proposed by PHA remained to be seen. Though busy architects will probably insist on the higher schedule, local authorities are still free to find an architect with time on his hands who will work for the lump sum figure. Thus, the quality of design on public housing projects could depend more on economics than on good architecture.

Determined that good architecture would win out, however, A.I.A. exhorted its chapters to send delegates to a national meeting in St. Louis on January 31. There the A.I.A. will consider "the architect's responsibility in the public housing program," will hear "carefully selected" speakers on architecture, planning and "no propaganda for or against public housing."

**ECONOMY**

**RISING COSTS begin to vex the builder and building labor**

Under the benign influence of unseasonably mild winter weather, building boomed merrily on into 1950. The boom brought heavy upward pressures on prices and costs—and thus on builders. Said R. L. Murphy of the St. Louis Master Builders Association: "I hope prices don't go any higher. People with money to spend are reluctant enough already to spend it." Murphy echoed the Federal Reserve Board's M. S. Szymczak, who told credit men: "The present balance is a delicate one."

However delicate it might be, builders, like everyone else, were enjoying the spree. There was money, money, money—everywhere. The nation's mutual savings banks gained $82 million deposits in November, a 67 per cent rise over last year and in Wall Street investors added $6 billion to the values of listed shares between July 1 and year's end. All the experts were predicting a continuation of the boom. Yet all signs indicated that builders would have to play every card in the deck to keep selling prices attractive. They faced a cross-rough between rising material prices and higher wage costs.

**Prices up and going higher.** December saw the payoff on the pension pact in steel. Structural shapes rose $3 a ton to $69. Pipe and tubing went up $5 to $8. Other prices rose, too. Cement averaged 2 cents a barrel higher on Engineering News-Record's 20-city index. Plywood, increased by one big producer three times since last August, was apparently due for another hike as a result of higher log costs. Zinc rose 1% of a cent to 10 cents a pound, and demand was active.

There were some declines. Lumber dipped $1 to $3 per thousand board feet in six of 20 cities surveyed by ENR late last month. Paint and brick failed to rise. Tin dropped to 77½ cents, down more than 25 cents from last October.

**Building costs may depend on labor.** Upward prices in materials reflected producers' higher labor costs. If building labor wanted to make a race of it with factory labor there would be trouble ahead for builders. In Atlanta builders expect a 3 to 5 per cent rise in the cost of houses by next spring. Detroit still suffered from a plasterer's shortage, one builder charging the union with restricting the number of apprentices.

Contractors were paying plasterers $23 a day ($6 over scale). Could builders seek stability with long-term wage contracts? In San Francisco carpenters served notice they will press for more money next month. But in Pittsburgh most unions had agreed to a wage scale which is not expected to rise this year. In Seattle, wage stability was attributed to an industry-wide contract hitched to the cost of living index.

In some cases labor seemed well aware that its costs might determine whether or not the building boom could continue. Said Y. F. Gesselin of the Atlanta Building Trades Council: "Labor is not going to ask any increase more than the cost of living. Labor is as much interested in holding the line as any other group." Courtney D. Ward of the Cleveland Painters Union agreed. To labor's great credit, builders were praising the increased productivity of building workers. They hoped it would continue.

**DESIGN**

**DESIGN Merger: Chermayeff's Institute joins Illinois Tech**

Two of design's most respected training institutions have merged. Serge Chermayeff's Institute of Design, founded in 1937 as the "New Bauhaus" by Lazlo Moholy Nagy, became the department of design of Illinois Institute of Technology. Chermayeff is director of the new department which will continue its curricula in industrial design and visual communications. Ludwig Mies van der Rohe remains director of Tech's department of architecture.

Administrative functions were consolidated soon after the merger was announced. Academic consolidation will begin next semester, when some of the institute's students will transfer to Tech.

**STUDENT PROTEST hits "Spanish Re­ legiate" of Texas U plans**

Last month the eyes of collegiate Texas were on architecture. The results were typically Texan—robust, dramatic and packed with color.

Students at San Antonio's Trinity University got a peek at the plans for the first unit of Trinity's new plant, a contemporary concrete-brick-glass structure which will be built on a wooded hill overlooking the city (M.I.T.'s William Wurster is consulting architect.) Trinity students were pleased.

Over in Austin, students in the University of Texas School of Architecture were not pleased at all. They immediately set up a roar—not at Trinity's plans but at a series of Spanish Renaissance buildings planned for U.T. Cried 72 students in an open letter, the faculty building committee, and the student assembly: "The dummy dormers, ornate friezes and superimposed pediments probably will waste the cost of much additional equipment ... . If the university is to fulfill its role in developing the cultural background of the coming generation, its entire attitude should be creative, not imitative."

Architect Lemmon, who had been shocked to find that Harvard has "just completed a building in the modern manner . . . not more than a stone's throw from the rare book library, which is in the Georgian tradition and was designed by the man who worked on the Williamsburg restoration," had a quick reply to the students' complaints. Said he, about the building he had designed: "I think it's lovely . . . ."
MARKET FOR 1950 will be big in size, slightly different in character. FORUM queries some of the leaders in four of the industry's branches, presents their analyses of construction in the new year

LENDERS
L. Douglas Meredith, executive vice president, National Life Ins. Co., Montpelier, Vt.: We will continue actively in the mortgage market to about the same extent as in 1949, with particular emphasis on FHA loans. Unless governmental agencies take steps to ease the pressure on the money market, somewhat lower mortgage yields will probably result. Most signs portend active construction in 1950, but a sudden decline in business or adoption of adverse governmental policies quickly could make the outlook less promising.

ARCHITECTS
Wallace McKenzie, president, Smith, Hychman & Grylls, Detroit: We expect our volume to be slightly higher in the first half of 1950, but we are not very sure of the second half. The first half increase, if there is one, will probably result from an attempt to get existing backlogs out of the way. On this, we stand in a fair position, but we do not have as large a backlog as we would like to have. Our greatest problem is to get down to greatly simplified designs and increased efficiency in the construction industry in order to encourage owners to proceed with building.

CONTRACTORS
H. C. Turner, president, Turner Construction Co., N. Y. C.: 1950 should be a good construction year volume-wise and a reasonably good year profit-wise. Construction costs have decreased on the average about 10 per cent during the past year, (but) appear to have stabilized, and the next change is likely to be upward. However, any increase should be moderate. The industry's principal anxiety is that increased taxes and broadened social welfare might discourage private industry from expanding or investors from supporting new developments.

HOUSE BUILDERS
Joseph E. Merion, Chicago: This year we completed 300 units and started an additional 250. Next year, we plan to finish 400 by summer and begin work on another 400, all in the $8,500 price bracket for a two-bedroom duplex unit. Heretofore we have been building in the $10,500 price bracket. We have changed our approach by going into a basementless frame house containing basic room areas with provisions for future expansion. A vast, almost untouched market lies among persons earning $60-$65 a week. The builder's greatest problem is the uncertainty of government policies affecting home financing aids.

Earl B. Schwulst, president, Bowery Savings Bank, N. Y. C.: We expect to come close to last year's mortgage loan volume ($117 million) provided Congress and FHA regulations do not unduly restrict builders to the extent that the volume of private residential construction is seriously curtailed. We have been, and will continue to be, substantial investors in mortgage loans to veterans. We do not foresee any lack of mortgage money. Low yields on government and corporate bonds make mortgage an attractive investment.

George A. Bryant, president, Austin Co., Cleveland: We have now entered on the second phase of the postwar period. In the first, there was a rush to meet the need for expanded facilities and to cash in on immediate opportunities. The premium paid could be justified by competitive advantages which depended on speedy construction. Now, most industries are more concerned with attacking their problems at the source. If one problem transcends all others, it is the need to cast aside preconceived concepts and traditions that stand in the way of functionalism.

R. E. Pickert, president, Walbridge Aldinger Co., Detroit: The market next year should approximate the volume of 1949. There has been an increase of both state and federal school and hospital construction; this will continue and may increase in 1950. Construction prices are lower than in 1948 and the trend is still in that direction but we expect prices to level off by spring. The cutbacks are largely due to intense competition. In this highly competitive market the greatest problem is to stabilize the industry as regards labor, costs, material prices.

George West, Sr., president, First Federal Savings & Loan, Atlanta: I expect to make the same volume of loans next year and maybe more. They will probably be for a much longer time and at a cheaper rate because of the government's fixing of rates and the new laws affecting housing. We are now charging 5 per cent for conventional and I don't think we will change. Conventional loans will not be so attractive in 1950. The biggest problems next year will be competition with government, especially if materials get short.

Weldon Becket, president, Wurdeman & Becket, Los Angeles: With a backlog of between $125-$150 million, we will execute a larger volume of commissions than ever before. New clients are attracted by our experiments in lightweight concrete construction, with its consequent saving in costs. Major problem facing our industry is keeping prices down. The architect's responsibility is no longer limited to shrewd selection of materials and application of new construction techniques. He must actively assist their development by study and experimentation.

B. F. Modglin, president, Modglin & Kahn, San Francisco: We will have more business in 1950—a slight increase, anyway. Most of our business is public work. Our costs have remained about the same this year. Labor has gone up, but so has efficiency. I doubt that there will be a marked change next year. The rainfall will be similar over the country, with plenty of construction, especially public works, I doubt that costs will rise much as long as labor remains at its present level. The grave problem facing the industry is labor unrest.

Fritz Bureu, Los Angeles: We will build as many houses as we did in 1949 and possibly a few more. We have always built for $10,000, and this year we will be coming down to $8,000 and under. There might be a change in our selling price, due to streamline and simplifying design methods. Building costs are no lower, but we hope to get the price down a little by coordinating things in the building trades a little more. Simplify the management-labor relations and cut both the public and private of type of house at a lower price. The biggest single problem facing builders this year is merchandising.

Thomas P. Conigan, Miami: Low cost building has created an unbalanced picture. The market for slightly better homes has been neglected—homes a little larger, with tile baths and other refinements. We will switch from the $7,000-$8,000 to the $9,000-$9,000 market. The people who have learned to build have not had to worry about home ownership. We will be our best prospects in 1950. They have been waiting for a price drop. It has not come. There is no sign of a decline so now they will go ahead and buy. The greatest problem is lack of permanent federal legislation. We must have legislation for at least three years.
HHFA RESEARCH PROGRAM starts with $2.3 million budget this year

With appointment of Dr. Richard U. Ratcliffe (since 1944 Professor of Land Economics at the University of Wisconsin) as Director, the Housing & Home Finance Agency's new Division of Housing Research this month starts an ambitious program of inquiry into almost every phase of housing and the construction industry.

Current budget for Ratcliffe's operation is $2.3 million, of which $1.3 million will pay for research contracts to be farmed out to schools and colleges. Of the latter sum, $725,000 will go for technical and $600,000 for market research.

Ratcliffe's staff and its cooperating specialists will seek to develop 1) national and regional construction cost indices 2) a better understanding of housing credit and finance 3) data for housing market analysis 4) more current housing statistics 5) a model building code 6) cost-cutting construction practices 7) simplified and more economical residential design and 8) engineering data and statistics.

If the Division of Housing Research comes up with all the answers it seeks, it will, in effect, be the Delphic Oracle of Building—the first fountainhead of total knowledge on the industry since bricks were first laid in the Tower of Babel.

LABOR

T-H AND BUILDING: labor, management seek clarification

When the Taft-Hartley law made it mandatory for workers to choose by election the union they wished to represent them, construction looked the other way. The unique character of building labor was such that it seemed ridiculous to hold costly elections which would give a union the right to bargain for only the few months duration of a construction job. And contractors, who needed to have a firm idea of their labor costs before construction began, were not eager to give up their long-standing practice of negotiating with a union before construction.

So both labor and management rode along on the assumption that T-H could not really apply to the building industry. Last month the National Labor Relations Board set about trying to determine whether it actually did.

When Chester Hewes, a machinist on an atomic energy job in Hanford, Wash., neglected on his promise to join the AFL International Union of Operating Engineers (which had asserted jurisdiction over the machinists in pre-construction conferences), the contractor fired him. An NLRB trial examiner ruled that since no election had been held, the union did not represent the machinists; the contractor was found guilty of unfair labor practices.

Clarification sought. The contractors and the union took the case to Washington. They sought a blanket exemption of the building trades from the T-H requirement, or at least a clarification of how T-H is to be applied in Building. Said J. D. Marshall, president of the Associated General Contractors: "Give us at least the benefits that we would get from elections."

NLRB itself was puzzled. There was no indication that Congress had intended Building to be exempted from T-H regulations, but even NLRB had to admit the difficulty of the election requirement. Suggested General Counsel Robert Denham: "There may be some basis of arriving at representation other than by election." If NLRB could determine that basis, big contractors would be greatly relieved.

Builders in doubt. Residential builders weren't so sure they wanted union shops without elections. At month's end the National Association of Home Builders was preparing a statement suggesting separate representation other than by election. If NLRB could determine that basis, big contractors would be greatly relieved.

MONEY

4 PER CENT CONVENTIONALS in Chicago points up 1950 money supply

Just how available will Building Money be in the new year? The most dramatic hint came out of Chicago late last month when Morton Bodfish, chairman of Chicago's First Federal Savings & Loan Assn., announced that his organization will offer conventional non-FHA loans at 4 and 4½ per cent interest (from ½ to 1 per cent below existing rates.)

To meet further the new competition in money, First Federal will insert an "open end" clause into its mortgages, providing for additional advances to the borrower up to 80 per cent of property value. Bodfish called this the "most inexpensive way to borrow money open to the average family," which will have access to the paid-up balance of its loan for property improvement and modernization. (Forum, June '49.)

First Federal will also write prepayment privileges into its contracts, permitting the homeowner to pay off as much of his mortgage as he wishes during times of high income.

LAW

RENT CONTROL WAR waxes warmer, battle lines are forming for 1950 fight

Trumpeters for rent control lost little time in saluting the Supreme Court's unanimous December decision to uphold the 1949 Rent Control Act. Blared Housing Expediter Tighe Woods: "The Court in effect rules that the housing shortage growing out of the war still exists." He promptly pressed for renewal of the Act near June.

Realtors reacted bitterly to Woods' warning. William Schmidt, head of Chicago's Property Owners League, advised his constituents to "take the law into their own hands and violate it until it is repealed, as the Prohibition law was."

Plainly, the 1950 rent control battle would be as big, and possibly bigger, than last year's. Labor, public-housers and candidates for office would surely favor continued control. How much heat the White House might put on Congress depended on the results of surveys (by the Bureau of Labor Statistics and FHA) to determine what has happened to rents in certain decontrolled areas. Realtors were making their own surveys and preparing for a last-ditch fight for public—and congressional—opinion.

NEW YORK CITY RENT CONTROL ruled invalid by state court

New York City landlords moved swiftly to collect 22,071 rent increases granted by the local office of the Housing Expediter between March 1 and November 25 of last year as the New York State Court of Appeals ruled the city's Sharkey Law invalid.

But with equal swiftness, Republican legislative leaders promised they would press for new enabling legislation at Albany to legalize operations of the City Rent Commission in overruling rent increases allowed by the federal expediter. Should such legislation be enacted landlords were prepared to fight it on the ground that the enabling legislation would be as much in conflict with federal law as was the Sharkey Law itself. Meanwhile, they merrily went about collecting an estimated $1 million in rent increases from some 300,000 New Yorkers.
RESTRAINING ORDER lifted, newspaper continues “shoddy construction” charges

When a group of Pasco, Wash., veterans refused to sign the mortgages on their new FHA-approved houses until certain “faults” were corrected, the builder, Columbia Construction Co., promptly sued one of them for breach of contract. The area’s newspaper, The Tri-City Herald, took a look at the houses, decided the veterans’ complaints were valid, and set out to prove it on the front page.

It planned a series of four articles, charging the houses with, among other faults, warped doors, “potentially disastrous” heating systems, and “cracks through which the sand and cold wind whistled.” It illustrated its articles with photographs of loose masonry and cracked braces (see pictures.)

After the third article was published, the builder got a court order restraining the Herald from printing any more. For three days, while alarmed newspaper men shouted “dangerous precedent!” the Herald sat on the rest of its charges.

Finally a superior court removed the restraining order. The same issue which carried a news story of the court’s decision carried also the fourth and last article in the Herald’s series—a charge that the plumbing in some of the houses apparently carried also the fourth and last article in the series—i.e., crack in studding brace the straining order. The same issue which carried a news story of the court’s decision illustrates “dangerous precedent!” the Herald’s series—a charge that the

CHICAGO GETS NEW CODE—dry wall champions win a pyrrhic victory

Chicago finally got its new building code late last month, and a 4-year plaster battle ended in a compromise amendment.

The amendment was not a clear-cut anti-plaster victory but it did give a foot-in-the-door to wallboard, plywood and prefabrication against the plastering trade’s union’s virtual monopoly on interior wall finish.

Twice Mayor Kennelly had postponed a final meeting with the city council on the code. Finally forced by irate public opinion to brave the wrath of big Byron Dalton of the powerful plasterers’ union, the Mayor wrote the council: “Many of our citizens are in need of homes and everything possible should be done . . .”

What came through the legislative hopper was no great anti-plaster victory. The amendment put stringent limitations on housing in which plaster can be eliminated. The prefab, plywood and wallboard applications can be made only in small, one-story houses of not more than 1,000 sq. ft. area. Moreover, the houses can not be within Chicago’s so-called fire limits, which cover all but about 36 square miles of the city. Thus plasterless construction would be permitted only in the town’s sparsely-settled areas. The anti-plaster advocates ran into heavy going on specifications. Wallboard, for example, must have a flame-spread rating that will mean costly flame-resistance coating. The compromise left builders wondering if, in view of the specification limitations, they could produce interior finish that would be less costly than plaster. But they accepted the partial victory in hopes that cheaper ways can be developed to meet the new code’s specifications.

Dalton had run full-page newspaper ads screaming “Shall we Abandon Fire Safety in Chicago?” and virtually accusing Architect John O. Merrill, who headed the Code Committee, of willfully condemning Chicagoans to death by fire. At the first hearings on the code, Dalton stood in the gallery, frequently called the aldermen to his side, and saw to it that Merrill’s dry wall provision was turned down flat.

Merrill belittled the indignation aroused by Dalton’s tactics, stressed other great advances in the code: 1) performance ratings 2) liberalized loads 3) provisions for wider use of new steel alloys 4) reduction of live loads and minimum wind pressures. 5) recognition of fire-resisting qualities of lightweight aggregates for insulating concrete 6) reduction in thickness of nonbearing spandrels from 12 in. to 8 in.

“America families do not want to be pushed around or turned into guinea pigs, no matter how noble the motive”—Leon Keyserling, Acting Chairman, Council of Economic Advisors.

Thanks to our friendly relationship with Administrator Foley, the Congress and the heads of FHA, VA and Fannie May, good financing was maintained”—Frank Cortright, Executive Vice-President, National Association of Home Builders.

“I think we are going to have a tough job before Congress next year”—Tighe Woods, Housing Expediter.

“There are a great many people who feel that research will have failed if it does not produce a house that can be transported to a new site and erected as one opens an umbrella”—C. F. Rasseweiler, Vice president in charge of Research, Johns-Manville Corp.

“If the Federal Government continues to pry more and more deeply into private affairs, the 1950 census questionnaires may read like the Kinsey Report”—Rep. Clarence Brown.


“The public will not regard us as professional men if we are in price competition with one another”—Ralph Walker, President, A.I.A.

“We toured the whole city (Chicago) and saw for ourselves that the greater part of it consists of slums”—A. Larenkov, correspondent for the Russian “New Times.”

“Be very careful in your explanation of this (basis for architectural fees) to a wily businessman. He might not understand it” —Architect Herbert M. Tatum.

“Sometimes I think architects forget we ladies were not all trained in the U. S. Army”—Isabelle (wife of architect Morris) Ketcham.

“Small business men would do a darn sight better to come and sit down with us instead of coming to the government”—Leroy Lincoln, President, Metropolitan Life Insurance Co.

“If we abuse the power given to us, the state can always take it away from us.”—Joseph T. Sharkey, New York’s Councilman speaking of his local rent law. (See page 15.)
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CLAY PRODUCTS ASSOCIATION OF THE SOUTHWEST, Littlefield Building, Austin, Texas; First National Building, Oklahoma City, Okla.
BEHIND Mies Van der Rohe

The spectacular Promontory Apartments (p. 69) rising on Chicago’s Lake Shore represent a feat of teamwork rarely equaled in the usually hyper-thyroid, highly speculative field of apartment house construction. They reflect the design talents of world-renowned architect LUDWIG MIES VAN DER ROHE, the practical experience of CHARLES B. GENTHER of PACE ASSOCIATES, who worked closely with Mies and supervised construction, and the technical engineering know how of HOLSMAN, HOLSMAN, KLEKAMP & TAYLOR. An aggressive young real estate promoter, HERBERT GREENWALD, helped bring designer and mortgage lender together and gained the public acceptance necessary to make the project financially feasible.

Eighty-two year old Henry Holsman has zealously espoused the cause of good apartment house planning for more than 30 years and his concept of mutual ownership, on which the project is based, is largely calculated to take such construction out of the hands of quick-profit speculators and thereby enable top-notch architects to apply their talents to the design of multi-family dwellings. He is senior partner of an architectural firm whose partners specialize in finance, cost accounting and design (l. to r. in photo: Bernard R. Klekamp, William T. Holsman, Henry K. Holsman, D. Coder Taylor, John T. Holsman).

Mies van der Rohe, least publicized of modern architecture’s greats, was born in Aachen, Germany in 1886 and practiced in Berlin from 1911 to 1938. For three years of that period (1930-1933), he was head of the famed Bauhaus in Dessau. Also part of this European era are the two Mies van der Rohe classics, the German Pavilion at the Barcelona Exhibition (1929), and the Tugendhat House in Brno, Czechoslovakia (1930), two of the purest examples of modern architecture ever built. Mies van der Rohe came to the U.S. in 1938, has been chairman of the department of architecture of the Illinois Institute of Technology since his arrival.

Charles “Skip” Genther, an early student of Mies van der Rohe’s and an ardent disciple, was brought into the picture because he and his young partners at Pace Associates understood what Mies was doing and were ready to accept his leadership. They acted as Mies’ architectural office. With the Holsmans as consulting architects to bring seasoned housing experience into the picture, the team was organized. The result was not only a superlatively designed building bearing the unmistakable stamp of the master Mies van der Rohe, and a project of surprisingly low cost with important implications for the future management and financing of big city apartment houses. Greenwald was formerly in social service administration, entered the housing field in 1939 when he took a job in the Holsman office, is now a real estate promoter in his own right.

BEHIND THE BLUEPRINTS

Mies Van der Rohe

Holzman et al.

Greenwald
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...who specified the materials in his built-to-order house. Because built-to-order houses mean more profitable orders for you, it is important to tell your story to House & Garden’s owner-builders...the people of means and taste who have the power to specify your product.

House & Garden

...for the owner-builder market
IN ALL POPULAR SIZES, IN A WIDE VARIETY OF PRICE RANGES

CROSLEY

offers you a Complete Line of

KITCHEN APPLIANCES AND EQUIPMENT

Now, at last, you can install a complete Crosley kitchen—with all the appliances and equipment specifically styled and designed to go together—in almost any size or shape of room and at prices your clients can afford.

Crosley offers you a complete new kitchen line—adaptable, modern, beautiful.

You can "create" your Crosley kitchens from a choice of scores of appliances, cabinets, and accessories in the popular size and price ranges. Specialized assistance is available through Crosley National Builder Sales—a department developed to supply complete information for your building needs.
Choose from 9 beautiful Crosley Refrigerators
(2 Apartment-Size Models)

Only Crosley offers you the exclusive Shelvador™ that doubles "front-row" refrigerator space and triples bottle storage. Puts frequently used foods right in front, in plain sight, at the "convenience level." And Crosley gives you the wonderful "ButterSafe," plus full-width freezer compartment on most models, plus compact electromanometer unit, hermetically sealed, requires no oiling or servicing. Warranted for five full years.

You have a choice of 34 different Crosley Electric Water Heaters

Crosley offers a wide range of Custom and De-Luxe Models in capacities from 12- to 65-gallon—in both round and table-top models...

Select any of 7 handsome Crosley Electric Ranges
(2 Apartment-Size Models)

Crosley incorporates the type of features that housewives have actually asked for:

- Self-sealing, self-adjusting oven door...
- Automatic cooking...
- Recessed toe space...
- High-speed surface units with 7 speeds...
- Deep-well cooker.

You can offer homeowners and tenants a choice of models—single-oven, double-oven, cluster-top or divided-top, large-size, apartment-size—and many others.

Crosley Home Freezers offer you a full line of sizes from 3.2 to 20 cu. ft. capacity, including the Crosley Kitchen Freezer—world's lowest-priced home freezer. Here's a special feature you can offer tenants and homeowners for as low as $6.50 a month!

Write for full information about the NEW CROSLEY BUILDERS' PLAN FOR BUILDERS AND ARCHITECTS:

National Builder Sales, Crosley Division,
Avco Manufacturing Corporation,
1329 Arlington Street, Cincinnati 25, Ohio

HOME BUILDERS' SHOW—FEBRUARY 19-23
Visit the Crosley booths—160, 161, 166, 167 located in foyer of the Stevens Hotel

There are 7 Crosley Kitchen Sinks to fit your every need

Now you can install a Crosley Cabinet Kitchen Sink with all these very latest features... king-size bowls—splashless faucet and spray assembly—divided limineum-lined drawers. Sound-proof doors flip open easily, and inside there's a sliding wire bin for vegetables, a cutting board, "Shelvatrays" for washing powders and cleansers, a dual towel rack.

A CROSLEY EXCLUSIVE!

Here's the type of progressive planning that's helping to put Crosley out in front with homeowners—an attractive, full-toned radio designed especially for the kitchen! Styled in gleaming white Dulux finish, with polished chrome dial and knobs.

The Crosley Electric Kitchen Waste Disposer—Revolutionary design can't jam or clog—and it can be fitted to practically any sink.

You have a wide selection of other equipment too—basement, wall cabinets, corner cabinets, utility cabinets, range and refrigerator pantries, plus accessories like the Crosley cup holder, bread box, flour bin.

CROSLEY
Cincinnati 25, Ohio

Better Products for Happier Living

Shelvador™ Refrigerators...Farm and Home Freezers
Electric Ranges...Electric Kitchens...Steel Cabinets
Sinks...Electric Disposers...Electric Water Heaters
Radios...Radio Phonographs...Television
and of course, they're electric!
They all add up

Whenever you're in the market for equipment that will do things to temperatures, chances are there is a combination of Trane products that will meet your needs.

Your temperature problem may be associated with human comfort or industrial process; with solids, liquids, or gases. You may want temperatures high for heating or temperatures low for cooling, in home, commerce, or industry.

Select the individual items you need for your particular temperature problem, and you'll find they all add up to an efficient, smoothly operating system.

That's because all Trane products fit into a definite, sharply defined pattern. They are all designed together and built together for use together.

This unified line of interrelated products makes us an organization of specialists. Our 2000 workers in factory and field devote all their time to the production and application of equipment for heating, air conditioning, and other forms of heat exchange.

When the Trane Development Committee evaluates proposed new products, decisions are based not merely on "would it be profitable" but, rather, on "does it fit the Trane pattern?"

In other words, does it add up?

This sort of specialization has been going on for years and years. Trane and Temperature are becoming synonymous. It's good for us, and good for you, too.

We'll prove it—at the drop of a postcard.

THE TRANE COMPANY LA CROSSE, WISCONSIN EASTERN MFG. DIVISION SCRANTON, PA. TRANE COMPANY OF CANADA, LTD. TORONTO
YOUR copy of Hauserman Catalog 50 is now ready. It's a fully illustrated, 60 page catalog that thoroughly describes all the proved advantages of Hauserman Movable Steel Interiors. It also contains all the latest technical developments and specifications.

You'll find that this new catalog is a handy, easy-to-use reference. It shows and explains all the Hauserman types for commercial, industrial and institutional buildings.

Hauserman Catalog 50 and the services of trained Hauserman engineers are yours for the asking. Just call the Hauserman office or representative nearby, or contact The E. F. Hauserman Company, 6758 Grant Avenue, Cleveland 5, Ohio.
Superior Unit Wood Windows are being installed in thousands of individually built small homes, in addition to many projects like the Geneva Gardens Apartments.

One of the many reasons being ... Superior's patented flexible jamb-liner weatherstrip which insures smooth, free, easy-sliding windows.

Superior Windows are made of Ponderosa Pine, kiln-dried and scientifically-treated to give long satisfactory service. The fact that wood is a natural insulator insures low maintenance cost and greater durability. Not only do Superior Windows provide all these advantages plus greater comfort and convenience but also saves money by speeding up completion of jobs through quick, easy installation.

Superior Unit Wood Windows are distributed by leading Woodwork Jobbers throughout the 37 Eastern States.

CARR, ADAMS & COLLIER COMPANY, Dubuque, Iowa

Also manufacturers of Superior Unit Wood Windows • Exterior & Interior Doors • Entrances and Shutters • Clostite Casements • Carr-dor Garage Doors • Basement Unit Windows • Louvers & Gable Sash • Breakfast Nooks • Combination Doors • Screens & Storm Sash • Corner (China) Cabinets • Glid-dor Cabintets • Inswing Board Cabinets • Mautelt & Telephone Cabinets • Multiple-Use & Linen Cabinets • Stair Parts.
Selectomatic is an ingenious electrical intelligence with a nervous system that is alert to every floor in a building. It automatically registers all service calls... it instantly reacts to answer those calls... it continuously regulates the entire elevator bank and automatically matches elevator service to the varying traffic patterns.

Controlling a bank of elevators is no longer a fumbling hand proposition—an operation involving a "starter" who stands in the lobby of a building and makes frantic guesses at when to send which cars where.

This old method, known as signal control, was once adequate, but it hasn't a chance against quick-changing traffic demands in a modern multi-floor building. Solving today's elevator problems calls for a mastermind—and that calls for Westinghouse Selectomatic.

See how you and your tenants can enjoy the benefits in this new era of elevator control. Send for Book B-3597 for the complete story of Selectomatic—Science's Greatest Achievement in Elevator Transportation. Write Dept. F1, Elevator Division, Westinghouse Electric Corporation, Jersey City, N. J.
Here's Why It Pays To Specify

Pittsburgh Steeltex Lath For Plaster

You get low maintenance and high fire protection in your buildings with Pittsburgh Steeltex Lath for Plaster. This combination of galvanized welded wire mesh and absorbent backing makes possible positive embedment of the wire mesh and provides maximum reinforcement and protection against plaster cracks. Also this reinforcement has earned high fire ratings for Steeltex including Underwriters' Laboratories, Inc. test R-2258.

In addition Steeltex provides a rigid troweling surface which speeds its application and saves plaster. For better plaster construction see our catalog in Sweet's or write for your copy of our Catalog D.S. 130 to Dept. AF, Pittsburgh Steel Products Company, Grant Building, Pittsburgh 30, Pennsylvania.

PITTSBURGH STEEL PRODUCTS COMPANY
A Subsidiary of Pittsburgh Steel Company
Pittsburgh, Pa.
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The Simple, Fast, Safe Way
To Install Wall Type Fixtures

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NEW!

DRY CHEMICAL TYPE
FIRE EXTINGUISHER

EXCLUSIVE DESIGN
assures you of fast, positive
fire protection

SELF-CONTAINED UNIT . . . rugged construction . . . no extra gadgets protruding or complicated operating parts . . . one of the most efficient, foolproof, easy-to-use fire extinguishers known . . . two convenient sizes, 20 pound capacity and 30 pound capacity.

C-O-TWO DRY CHEMICAL STAYS FREE FLOWING . . . no syphon tubes or valves within the cylinder to become clogged or inoperative . . . discharge hose and squeeze type discharge nozzle remain empty until the fire extinguisher is actuated. Inverting the fire extinguisher before using provides mechanical breakage by changing the position of the dry chemical in the cylinder. Bumping to actuate the fire extinguisher provides additional mechanical breakage as well as continuous carbon dioxide gas pressured agitation or fluffing of the dry chemical. These combined features plus a skillfully blended free flowing extinguishing agent assure you of a faster, more effective and complete discharge.

APPROVED . . . Underwriters' Laboratories, Inc. rating is B-1, C-1. C-O-TWO Dry Chemical is non-conducting, non-corrosive, non-abrasive, non-freezing and non-toxic . . . highly effective on flammable liquid and electrical fires.

RECHARGEABLE ON-THE-SCENE . . . no special tools needed . . . one piece removable top assembly leaves large unobstructed opening in the top of cylinder for refilling. C-O-TWO Dry Chemical for recharging is available in handy pre-measured moisture proof containers.

Write today for complete free information on this new, quick-acting fire extinguisher . . . no obligation.

C-O-TWO FIRE EQUIPMENT COMPANY
NEWARK 1 • NEW JERSEY
Sales and Service in the Principal Cities of United States and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

LETTERS

Forum:
The October issue of the Forum . . . is one of the most stimulating documents which has come to my desk in a long time. I hope that some of our New York State architects who still cling to traditional architecture—there are only a few of these now—read the publication and become aware of how far behind the times they are about to be.

There are matters on school building planning which trouble me very much . . .

One problem has to do with change, just for the sake of change. Occasionally an architect says, “I want to do a school building which is different,” or a member of the board of education says, “We want a school building that is different.” This seems to indicate an attitude of wanting something different just because it is different. This attitude on the whole is wholesome in that it indicates a complete lack of complacency with what has been done. On the other hand, when something is done differently, the architect should have a carefully studied and well-founded reason as to why he wants the different planning.

The other problem has to do with natural light. We are encouraging the use of bilateral lighting in New York State school building planning. Henry Blatner’s job at Clarksville is an example and while some of the older architects may sniff at it a little bit, many are taking cues from the Clarksville job but, of course, “doing it better.” (This last remark is only an aside.)

We struggle and strain and some times fret and fume to get more natural light into school buildings—and as I said this office is encouraging this move—and then we struggle and strain and work just as hard to control the natural lighting. Then to go a little bit further into the difficulty, in New York State where the sky is overcast much of the time during the school year, we still have to depend to a large extent on artificial lighting.

I admit to a great deal of confusion in my own thinking on this matter. Sometimes I think that we should be pushing for more and more natural lighting; other times I wonder if we shouldn’t simply build fairly small windows just to see out of and depend in the main upon artificial lighting. Yet until a responsible medical group will say that it is all right to consider artificial light as the primary source of light, we would hesitate to follow this second thought very far . . .

DON L. ESSEX, Director
Division of School Buildings & Grounds
State Education Department
Albany, N. Y.

Forum:
We wish to congratulate you on the October issue which is devoted to the design of contemporary school buildings. It is, we are sure, proving of great value to school officials in communities where new buildings are being planned. When—

(Continued on page 40)
Home owners and builders who know Durall are saying all the things you read above, and more!

With its first introduction, this remarkable new kind of window screen captured the imagination—and appealed to the good sense and pocketbooks—of home owners and builders alike. Over 2,000,000 are in use today!

FREE BOOKLET! Get our special, free Durall booklet, showing complete specifications and prices—for your A.I.A. Files. Write today, Dept. AF-1. See Durall at your building supply dealer's.

NEW YORK WIRE CLOTH COMPANY • 445 PARK AVENUE, NEW YORK 22, N. Y.
New... Tailored For Today's Apartments

Complete HOTPOINT Electric Kitchen

One Low Price Buys Everything!

One Order - One Invoice - One Installation!

There's a simple, streamlined answer to all your kitchen-equipment problems: The Hotpoint #60 Packaged Kitchen.

One order, one low price delivers everything at one time—Hotpoint Range with three surface units, 4-cubic-foot Hotpoint Refrigerator, your choice of sink with stainless-steel, Formica or linoleum top, two Hotpoint metal wall cabinets and a matching Hotpoint undersink cabinet.

Not stripped-down models, these genuine Hotpoint top-quality appliances are perfectly matched, built for lasting service and assure utmost user satisfaction. By dealing with one source for all your kitchen equipment, you greatly simplify your installation, maintenance and service problems. Ask your Hotpoint distributor for full facts about this amazing time- and money-saver. The Hotpoint #60 Packaged Kitchen. Hotpoint Inc. (A General Electric Affiliate) Chicago 44, Ill.

No stripped-down appliances in this Hotpoint #60 Packaged Kitchen
Only 60 inches long!

Look to Hotpoint for the finest... first!

Ranges • Refrigerators • Food Freezers • Dishwashers • Disposalls®
Water Heaters • Clothes Washers • Dryers • Ironers • Cabinets & Sinks
replaces 10
car-switch elevators with
8 OTIS AUTOTRONIC ELEVATORS

Saves The Cost of 2 Cars and Reduces Passenger Waiting Time Throughout The Entire Business Day

Hanna Building tenants and visitors will be delighted with the time-saving convenience of modernized service. For the new Otis AUTOTRONIC Elevators, with their traffic-timed automatic supervision, have been designed to reduce the elevator interval from 50 seconds to less than 25 seconds during the morning peak period. A similar speed-up of service will be applied to the other 5 traffic patterns of the day. So, with the time interval reduced through automatic supervision, 8 AUTOTRONIC elevators will serve all floors—and give far better service than the manually operated 5 Express and 5 Local cars they replace.

From the management viewpoint there's the increased prestige of unexcelled elevator service and the economy of installing and operating 8 instead of 10 elevators. Otis AUTOTRONIC ELEVATORING—already bought by 38 NEW and MODERNIZED office buildings, hotels, banks and department stores—is explained in Otis Booklet B-721-A.

Elevator service in the Hanna Building Annex is also being modernized by replacing 4 Car-Switch Elevators with 2 Otis ELECTRONIC Signal Control Elevators. Here, too, the modernization will be dramatized with Otis electronic "touch" buttons that summon cars as if by magic. Otis Elevator Company, 260 11th Avenue, New York 1, N. Y.
NOW AVAILABLE
FREE TO EVERY ARCHITECT
American-Olean "Color Book of Tile"

The most complete, most helpful tile book ever produced. One hundred pages, including thirty full color pages of typical installations, plus color charts of wall and floor tile, trim and hand decorated inserts. Full architectural data and ready-to-use specifications.

YOUR COPY WILL BE MAILED TO YOU SOON. BE ON THE LOOKOUT FOR IT.
If you’ve ever searched through a catalog for tile specifications—or puzzled over a client’s “description” of desired colors—you’ll find relief in American-Olean’s new “Color Book of Tile”.

Specifying tile becomes easy. You’ll like the color selections and the complete 42-word specifications which are given for each installation—ready for you to copy.

Your clients will like “The Color Book of Tile”, too. With it, they can select colors and visualize the installations just as they will be in the homes you are planning.

All installations are shown in full color, with alternate treatments to choose from.

There’s no other book like “The Color Book of Tile”—no other book so complete and easy to use. A file-size copy is on the way to each architectural office on our list. Be sure to watch for it.

See our catalogue in Sweet’s Architectural File for 1950, Sec. 13b, Twenty pages, largely in color.
Put THIS spring balance in YOUR windows for...

ECONOMY
SMOOTH OPERATION
PERMANENT SERVICE
plus perfect weatherstrip protection!

MASTER NO-DRAFT
Sash Balance

Nowhere in the building does satisfaction mean so much to home owners than trouble-free windows. SELL THIS FEATURE with this combination unit. Equips both new and old sash. Eliminates weights and pulleys and painting. Made of non-corrosive metal and stainless steel for salt air locations or as a distinctive sales feature. Tested and proved in thousands of installations including government buildings.

Write today for complete information and specifications.

See Master No-Draft demonstration at our Booth in space 117 at the National Association of Home Builders Show at the Stevens in Chicago, Feb. 19-23

MASTER METAL STRIP SERVICE
1724 N. Kilbourn Ave., Chicago 39, Ill.

Please send me, without obligation, complete information about Master No-Draft Sash Balance.

NAME

ADDRESS

CITY  ZONE  STATE

ARCHITECTURAL FORUM January 1950

LETTERS

ever we have had the opportunity, we have suggested to members of school boards that they obtain copies of this issue.

We have found that in many cases, school officials do not realize the faults of schools as they have been built in the past, and are only vaguely aware of the many improvements that have been made. They are, however, keenly aware of their responsibilities, and when properly informed, are very much interested in modern school design.

HERMAN T. HUNTER
Zeller & Hunter
Springfield, O.

• A limited number of extra copies are available at $2 each.—En.

Forum:

This article is timely and in line with my thinking and planning.

In St. Louis schools we are combining the use of steel studs and steel bar joists, with a poured insulated roof. The exterior walls are thick veneer to the window sills and corrugated asbestos board sills to eaves, and completely insulated. The floor is dampproof concrete slab. We are using forced air gas heat, and one entire side wall of each classroom is a window.

We are able to build these attractive schools at approximately $10,000 per classroom, which is much less than the conventional two- and three-story reinforced concrete structure. This new type of construction can be erected in approximately four months. It is true the one-story school will require more ground floor area than the two- or three-story building; however, there is a considerable saving by the elimination of stairways, second-floor toilet rooms and corridors, and as the ground cost is usually not more than 10 per cent of the total cost, the additional land necessary for the play area taken up by the building should not materially affect the project's economic balance. Also, the land is always available for resale in case the school should not be required in the future.

I believe in a school which can be economically sound if it is necessary to "write it off" or convert it into other usage in 15 to 30 years. One-story, semi-prefabricated schools are safe, flexible and can provide all the functions of the larger school. The nonbearing partitions make the interior adaptable to other use occupancy.

V. Harry Rhodes
Commissioner of School Buildings
St. Louis, Mo.

(Continued on page 48)
For 50 years Roddiscraft doors have been known as the architects' door. Roddis has worked closely with architects in the production of doors in keeping with new architectural trends and developments.

From "turn of the century" ornate inlaid doors to the simple beauty of the modern Roddiscraft flush door, Roddis has been a leader in door design and construction.

Roddiscraft Firsts —
In the interests of better construction, Roddis pioneered the hot plate press method of bonding—so essential to economical waterproof construction.

Roddis has pioneered and insisted on the use of standard thickness face veneers as opposed to thicker veneers as a proved method of improving the quality of flush doors.

Roddis developed specialized machinery which permitted quantity production of the Housemart Door with accordion type veneer core which gives solid core strength with 50% less wood content.

In Roddiscraft's past performance is the promise of the future. Architects can look to Roddiscraft with confidence for continued quality and pioneering in the interests of better products.

Roddiscraft
QUALITY FOR 50 YEARS
RODDIS PLYWOOD CORPORATION
Marshfield, Wisconsin
Nationwide Warehouse Service
15-STORY APARTMENT BUILDING HEATED BY REVERE COPPER RADIANT HEATING COILS EMBEDDED IN CONCRETE FLOORS

According to recent building reports, the "Gold Coast" in Chicago has been chosen for the location of several very fine, new apartment buildings. Among them is 1350 Astor Street.

One of the interesting features of this outstanding building is that apartments on all fifteen floors will have the comfort and convenience of radiant panel heating. The heating coils are imbedded in the concrete floors. They utilize over 52,000 feet of Revere Copper Water Tube...nearly two-thirds of a mile of tube per floor.

From the beginning of the installation throughout a lifetime of service, Revere Copper Water Tube is ideal for radiant panel heating. Long lengths of this lightweight, easy-to-bend tube—the joints made with solder-type fittings—reduce the time and cost of installation. And experience has clearly proven that you can rely on this tube for long years of trouble-free service.

All Revere Copper Water Tube is stamped at regular intervals with the Revere name and the type as your assurance of top quality.

Revere building materials—which include Sheet Copper, Revere-Keyestone Thru-Wall Flashing and Reglet and Reglet Insert Flashing, Red-Brass and Copper Pipe—are available through leading distributors in all parts of the country. The Revere Technical Advisory Service is always ready to serve you. Call your Revere Distributor.

REVERE COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801
250 Park Avenue, New York 17, New York

Sales Offices in Principal Cities, Distributors Everywhere.
At the Horace Mann School in Warren, Ohio, J&L Junior Beams have again demonstrated that they can do a better job in unusual applications, as well as in ordinary styles of buildings.

Notched over lintel beams and cantilevered three feet beyond the outside walls, J&L Junior Beams support not only the roof but also an attractive permanent sun shield over classroom windows.

Because of their versatility and adaptability, J&L Junior Beams go far towards meeting the demands of today's builders. They cost less to buy and less to erect. At Horace Mann, Warren Engineering Company, who erected the school, assisted by J. A. McMahon, Ltd., Niles, Ohio steel fabricators, has found that lightweight, 12" Junior Beams, 30 ft. long, may be easily raised, placed and bolted directly into place by three men with the aid of only a hand-operated winch.

This means dollars saved—through speed of erection, elimination of secondary operations, and ease of handling. Yet in light structures, J&L Junior Beams often offer all the advantages of heavier structural members.

Junior Beams, made exclusively by J&L, are the lightest weight hot-rolled steel beams available.

In schools, office buildings, apartments, residences, industrial buildings, hospitals, and other light occupancy structures, J&L Steel Junior Beams offer the modern builder many advantages. They are economical... fire-safe... rigid... shrink-proof... termite proof... easy to install... low in maintenance... and are permanent.

ARCHITECTS • BUILDERS • CONTRACTORS
It will be worth your while to follow the lead of Arthur F. Sidells, architect for the Horace Mann School, Warren S. Holmes, consulting architect, and William C. Fisher, structural engineer on the job. Send for descriptive literature and engineering data on J&L Steel Junior Beams and J&L Junior Beam Floor Systems.

JONES & LAUGHLIN STEEL CORPORATION
From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY and JALLOV (Hi-tensile steels).

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

Left—Workman easily guides notched Junior Beam into place during construction of Horace Mann School.
Below—Completed school showing clean functional design and unique cantilever construction.
CRANE
the preferred plumbing

For apartments . . . for homes . . .
the Crane Westland counter-top
lavatory. In white or attractive
pastel colors. Install in counter
top of any material . . . tile, lino-
leum, glass, or composition. Con-
sult your Crane Branch or Crane
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CRANE CO., GENERAL OFFICES:
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PLUMBING AND HEATING
VALVES • FITTINGS • PIPE
"I can wash both sides indoors!"

They had looked over a number of attractive homes. All had the usual "blanket" mortgage appliances. Then they were shown a home with an extra something—R·O·W wood windows that are REMOVABLE. That closed the sale.

The sales appeal of R·O·W REMOVABLE windows costs little or no more than ordinary windows. R·O·W's spring cushion action automatically adjusts for swelling and shrinking caused by weather changes.

OVER FOUR MILLION IN USE. Consumer acceptance for R·O·W Windows has been built by national advertising in BETTER HOMES & GARDENS, AMERICAN HOME, and SMALL HOMES GUIDE. It's the window women want.

MERCHANT BUILDERS: Dramatic merchandising and display helps are available to make your home selling easier. Fill out and mail the coupon today for merchandising samples and more information about the wood window with SALES APPEAL.

STANDARDIZE ON
Removable
Opens Easily
Weatherstripped

See R·O·W Windows at the 1950 National Association of Home Builders Show, Booth No. 81. See Sweet's Architectural or Builders File.

When in New York see R·O·W at Architects Sample Corp.
OUR BUSINESS IS IMPROVING YOUR BUSINESS

BETTER AIR CONDITIONING
FOR YOUR CLIENTS

In all your planning for clients, remember that any business can be made a better business with YORK air conditioning and refrigeration. Each YORK product is designed to cut costs, improve service, make a profit for those who install it. YORK gives you real help on every job, from the first outline to the final installation. With YORK you get experienced aid all the way through, with full cooperation from a national organization that maintains branch offices and trained engineers throughout the country.

"See Your Architect, Engineer, Contractor, First"

YORK believes in channeling contract work through You...and YORK gives you unequalled support in providing the owner with the finest central station system possible.

- a complete line of equipment
- competitive prices
- accurate, dependable product ratings
- technical assistance based on "case histories"
- cooperation with architects, engineers, and contractors
- practical help from York-Trained Engineers
- a national organization
- continuous product research and development
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YORK Engineers have at their command an inexhaustible supply of practical information gathered from thousands of successful York-equipped installations. This information and their services are at your disposal. If you are "planning" any work involving air conditioning or refrigeration, call your nearest YORK Office. You get impartial, experienced help from the start. York Corporation, York, Pennsylvania.
RUST can be stopped

... stopped easily, surely, economically!

RUST-OLEUM is the answer. For 25 years it has proved its capacity to stop and prevent rust at sea, in fume-choked industrial areas, on railroad rolling stock, bridges and signaling equipment.

RUST-OLEUM... an exclusive formula... protects metal with a tough, long-lasting pliable film that dries to a hard, firm finish that defies rain, snow, salt air, fumes and weathering. It adds years of extra use to metal roofs, tanks, sash, fences, stacks, gutters, downspouts, machinery and other metal surfaces.

RUST-OLEUM decorates as well as protects. It is available in all colors, aluminum and white. It can be applied to metal where rust has already started. You don’t have to remove all the rust.

RUST-OLEUM is stocked and sold by Industrial Distributors in most principal cities. See our complete catalog in Sweets, or write for full information.

RUST-OLEUM CORPORATION

2409 Oakton Street, Evanston, Illinois
Corruform
100,000 pounds per square inch.

Corruform pays for itself with the concrete it saves. That's because Corruform is tough-tempered to spring back under construction abuse and carries concrete over joists without sag, stretch, bend or leakage. Tough-temper, high strength Corruform, made by processes patented by Granite City Steel Company, is nearly twice as strong as conventional steel of the same shape and weight.

Furnished uncoated, mill-primed for painted exposed joist construction, or galvanized ... with clips to fit all standard joists. Send for AIA file today.

Specify CORRUFORM by name
Guarantee
Standard tough-temper Corruform is made to one specified strength and thickness with guaranteed average strength over 100,000 p.s.i. and certified minimum strength for single test over 95,000 p.s.i.

LETTERS

DISCRIMINATION
Forum:
I find the October school issue of the FORUM to be not only a fine guide and stimulus to architects but a most helpful and progressive civic contribution as well. There is a little fly I would have you remove from the cream before it contaminates the well-brewed coffee.

In the section dealing with “Long-Range Planning,” W. W. Caudill, A.I.A., advises architects and planners to pay careful attention to “social boundaries.”

... Must tomorrow’s architects and planners fall victim of yesterday’s ideas on racial segregation just because Mr. Caudill happens to be circumscribed by his Texas environment?

HAROLD J. LEVY, Architect
Brooklyn, N. Y.

Forum:
I was profoundly shocked...
Unfortunately there still exist areas in this country in which racial segregation is the rule, and it appears that the author of your article came from such a region. This, however, should be no excuse whatsoever for your implied acceptance of such an anti-American standard.

TALBOT HAMLIN, Dean
School of Architecture
Columbia University
New York, N. Y.

Forum:
... I must take exception to certain thoughts expressed in the article by Mr. W. W. Caudill...

MAXFIELD F. VOCELE, Architect
New York, N. Y.

Forum:
Apparently, your critics do not realize that social boundaries do exist and planners cannot close their eyes and imagine that they are living in an idealistic society.

Many cases exist where schools and homes (yes, and churches, too) have been abandoned with great property loss because of changing and overlapping of social boundaries. As long as segregation prevails in certain sections of our country, planners in those regions shall have to consider social boundaries as factors in the selection of school sites.

Incidentally, your staff is certainly to be congratulated for the excellent issue on schools. It will go far to help give our children of all races better buildings for learning.

WILLIAM W. CAUDILL, Research Architect
Texas Engineering Experiment Station
College Station, Texas

* Architect Caudill’s comments were obviously influenced by the fact that he works and lives in the South where the existence of social boundaries do affect planners and school plans. It is regrettable that Forum’s publication of Caudill’s article erroneously implied to some readers that FORUM favors discrimination.—Ed.

(Continued on page 60)
**Color, Color.** One of Danbury's most exciting assets is the tremendously wide range of 34 marbleized colors, tile-deep for life-long beauty. Danbury Rubber Tile offers a color range that allows full expression of your ideas for appropriate color schemes. For further details write for folder and samples or see Sweet's File.

**Cove Base**

- **CB86** Black
- **CB84** Red
- **CB60** Blue
- **CB70** Walnut
- **CB30** Green

- **33-13** Apple Green
- **84-10** Ruby White
- **10-04** White and Green
- **50-00** Plain Black
- **55-15** Lemon
- **81-15** Bright Red

- **29-10** Coral White
- **60-15** Grey Paisley
- **46-10** Royal Blue
- **50-86** Black Paisley
- **31-10** Green and White
- **18-58** Ivory Gold
- **64-18** Dark Stone

- **50-10** Black and White
- **87-15** Maroon
- **67-15** Silver Grey
- **72-18** Walnut
- **10-83** White Paisley
- **46-84** Lavender
- **42-10** Pale Blue

- **10-05** White and Black
- **43-14** Blue Slate
- **50-12** Black and Gold
- **25-72** Light Oak
- **41-10** Blue and White
- **63-15** Stone Grey
- **25-12** Moss Green

- **86-12** Mahogany
- **88-14** Old Rose
- **65-15** Nickel Grey
- **84-43** Ruby Red
- **10-02** White and Blue
- **83-25** Brick
- **50-13** Verde Antique

* Medium Gauge .084" Regular Tile in colors marked with (*). 6" x 6" — 9" x 9" — 26" x 26" and 1" x 36"
* 1/8" and 3/16" Regular and Waveedge Tile in all 36 marbleized colors—6" x 6" and 9" x 9"
* Cove base comes in 2 solid harmonizing colors, 1" Feature Strip—in all 34 marbleized colors plus #10-00 Plain White and #23-00 Plain Yellow.
ONE MATERIAL INSULATES A
200°F.-1200°F. TEMPERATURE RANGE

KAYLO HEAT INSULATING BLOCK can be easily sawed, cut and scored with standard tools. Cement, canvas or other outer finishes can be applied with minimum effort. Finished jobs have a neat, clean appearance.

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Every architect ever confronted with insulation problems should know about Kaylo Heat Insulating Block and Pipe Insulation. No other insulation provides such a combination of advantages.

Available in block or pipe covering form, this material is remarkably efficient throughout a wide 200°F.-1200°F. temperature range. It is strong and resistant to effects of moisture for long service. It is lightweight, easy to handle and apply.

Many types of industries have found this material ideal for their insulating needs. Get the facts now about Kaylo Heat Insulating Block and Kaylo Pipe Insulation.

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Owens-Illinois Glass Company
—Kaylo Division Dept. N-10, Toledo 1, Ohio

Gentlemen: Please send me Kaylo Heat Insulation samples and descriptive literature.

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Universal introduces the revolutionary new Select-a-Range.

and presents a striking new conception in kitchen planning flexibility by Royal Barry Willis.

Fresh in conception... imaginative in design... revolutionary in application flexibility... powerful in consumer appeal!

It's the dramatic new Universal electric Select-a-Range, the first really significant advance in range design in over a quarter of a century!

Now for the first time, you can design kitchens with a flexibility and freedom never before possible. Now, you can match cooking facilities exactly and realistically to the specific requirements of each residential unit. And you can do it practically and economically without custom-built equipment... and with matchless efficiency!

Yes, all this is readily achieved with the new Universal Select-a-Range. Based on modular design, it is truly functional, completely flexible in adaption and extremely simple to install. But best of all, it frees the designer from the rigid dimensions and the limited planning imposed by the conventional "package" range.

The Select-a-Range is another great advance in the 108 year history of Landers, Frary & Clark, leader in the electric range industry. Pioneers in the electric appliance field, Universal holds many basic patents in range design and has contributed many outstanding improvements to better, faster, easier electric cooking which today are the standard of the industry. It is this experience and this leadership that are responsible for the development of the revolutionary Select-a-Range... as well as a whole new approach to kitchen planning and cooking convenience.

and here it is!
Presenting the dramatic new UNIVERSAL

Now you can design your range as you like it!

More than 25 different arrangements can be created from these three basic modular units. Each unit is complete in itself so that it can be installed separately... recessed in stock cabinets or custom millwork. Or these units can be fitted together... with a right-hand oven, left-hand oven, double ovens... all at the "Convenience-Level" height to eliminate back-breaking stooping and bending.

Typical right-hand oven arrangement. Surface unit and oven are located at "Convenience-Level" height for easy cooking. Six storage drawers for large utensil capacity.

COMPLETE OVEN—with one-piece porcelain enamel-lined interior, Thermostat Control and Pre-Heat Push Button. Automatic Timer and Minute Minder are standard equipment but can be eliminated if desired.

STORAGE DRAWER—extra-heavy gauge steel, high-baked enamel inside and out, brass runners.

Economy arrangement. Minimum equipment provides complete cooking facilities in a compact space at low cost for apartments and small homes. May be economically expanded at any time.

PLATFORM SURFACE UNIT—with four fast-heating "Monotube" Thrift Units, Seven-Heat Control Switches. Platform backsplosher and platform light are optional.

Two-Oven arrangement. One of many arrangements for large homes, estates, farms. Ovens may be right-hand, left-hand or separated at any height desired.

Separated arrangements. Platform surface unit is recessed in peninsular counter to serve either side. Oven can be placed on counter or fitted into wall. Oven venting fitted to oven door. Extra units can be added any time.

Big capacity arrangement. Two surface units and two ovens, large work and storage areas, big capacity make this arrangement ideal for institutional use.

Left-hand oven arrangement. Oven is located at extra high "Convenience-Level" for taller people to eliminate stooping and bending. Provides greater comfort and convenience.
to give you complete electric range flexibility in kitchen planning!

to give you over 25 range variations and freedom to design kitchens as you want them!

to give you something new...something different in kitchen design to help you sell your house!

Now you can create and specify exactly the range design in your kitchen planning. Gone are the restrictions of conventional range inflexibility. Here's a great new opportunity to project refreshing new ideas into kitchen design with the revolutionary Universal Select-a-Range.

The Select-a-Range is based on modular design. It is made up of three basic interchangeable, independent, self-contained units...an oven, a surface cooking unit and a roomy storage drawer. These units can be fitted together exactly in more than 25 different arrangements.

Ovens and surface units can be placed in any location at any height desired. They can be assembled as a conventional range with the much desired "Convenience-Level" oven height or they can be separated into individual units. Because each unit can be purchased separately, you buy only what you need. The Select-a-Range is easily installed and requires no elaborate preparatory work.

For added sales appeal in every kitchen, here's something new for you...something different...something to help sell the house! It can be financed on the mortgage at low cost.

for greater freedom and flexibility in kitchen planning...
From the board of Royal Barry Wills come these six sparkling, modern kitchen designs...illustrating how the flexibility of the Universal electric Select-a-Range adds exciting freshness and sales appeal to kitchen planning.

It is this flexibility that gives the designer greater scope to make the whole kitchen contribute more fully to better living. It is this flexibility that provides full cooking facilities in the most compact kitchen where even the smallest apartment range will not fit. This flexibility gives you no-stoop ovens at the "Convenience-Level"...larger work areas...increased storage capacity...greater beauty...fuller utilization of space.

All this adds up to more sales power for you. Now homeowners can select the cooking capacity they want...from a minimum range that can be expanded later all the way up to maximum capacity. Yes, here's something new...something different to increase the desirability of the kitchen. And here is sales appeal at low cost because the Select-a-Range is priced to meet the demands of today's building market. The price of a Select-a-Range of any design can be included in the original mortgage or in a modernization financing plan.

Whether in new construction or modernization, the Select-a-Range is equally at home in Traditional, Modern or Ranch House architecture. Its flexibility is unmatched for apartments, hospitals, small institutions...in fact, wherever modern cooking facilities are needed.

National Advertising and Promotion

These six Royal Barry Wills kitchen designs will be offered in four-color full-page and two-page introductory advertisements in leading national magazines such as Better Homes & Gardens, Saturday Evening Post, House Beautiful, House & Garden, etc., announcing the Select-a-Range to the public. These advertisements will appear in the Spring and will be supported by a national promotion and publicity program to consumers, builders, material dealers and appliance retailers.
Universal
Select-a-Range

FOR RESIDENTIAL,
APARTMENT AND
INSTITUTIONAL
INSTALLATION

in these smart new kitchen designs

for greater freedom
in your kitchen planning...
Match the Select-a-Range exactly to your

**basic Select-a-Range units**

**TOE BASE—RA9404**—Outside dimensions: 20” wide x 21” deep x 4” high. Serves as base on which storage drawers and oven or surface unit can be mounted as one integral piece. Side fastening permits two or more bases to be locked side by side for multiple “stacking” of units. Baked black enamel on heavy-gauge steel.

**SPASH BACK & LIGHT—11-9402-075 & -700**—Outside dimensions: 20” wide x 11½” high to top of light. Fastens to back of the surface unit with chromium trim concealing the joint.

**COUNTER TOP—11-9403-050**—Outside dimensions: 20” wide x 25” deep x 1¼” high. Heavy steel with acid-resisting porcelain enamel finish. Serves as top cover for storage drawer unit.

**OVEN—RA9401**—Outside dimensions: 20” wide x 25” deep x 24½” high. Baking unit 2300 watts; broiling unit 2500 watts. Maximum connected load 4800 watts. One-piece, porcelain enameled interior 16” x 16” x 19” with rounded corners. Built-in rack guides assure level alignment of racks. Counter-balanced door with dual-hinge spring lock. Two oven vents at top of door. White porcelain enamel outside finish. Wired at the rear through a built-in compartment, permits oven to be backed flush against finished wall or cabinet. U.L. installation rating Form O. Mounting holes in base to fasten oven to counter or storage drawers.

**PLATFORM SURFACE UNIT—RA9402**—Outside dimensions: 20” wide x 25” deep x 9” high. Four fast-heating “Monotube” units; three, 6½” 1100 watts; one, 8½” 1900 watts. Maximum connected load 5200 watts. Seven-heat control switches for each unit. White porcelain enamel outside finish with acid-resisting platform top. Wired at the rear through a built-in compartment, permits unit to be flush mounted within outside dimensions. Mounting holes in the base to fasten unit to counter, storage drawers or framing.

**STORAGE DRAWER—RA9403**—Outside dimensions: 20” wide x 25” deep x 7¾” high. White baked enamel exterior finish. Drawers are suspended on brass runners for quiet operation. Extra-heavy gauge steel, one-piece body. Mounting holes in top and bottom for assembly to other drawers, oven or surface unit.

**supplementary Select-a-Range units**
specific design requirements

The design of the Select-a-Range provides for the building up of required cooking facilities from basic modular units. These units can be quickly assembled into one or more integrated groups as desired.

The drawings on this page illustrate how the modular design of the oven, surface unit and storage drawers permit grouping in almost unlimited variation.

Complete specifications, dimensions and construction detail are shown on the opposite page.

Detail drawing showing chromium fillet concealing joint between the oven and surface cooking unit when these two units adjoin. This fillet makes the surface easy to clean and eliminates dirt catching crevasses.

Surface cooking unit can be brought up to counter height with three storage drawers mounted on a toe base.

When two "stacks" are designed as one integral unit, the "stacks" are fastened together providing a secure foundation.

Convenient working height for the oven can be provided with two or more storage drawers and a toe base.

Three storage drawers plus one counter top; or two storage drawers plus one surface cooking unit equals the height of the oven.

The height of the oven can easily be raised or lowered at any time by adding or subtracting the number of storage drawers under it. In this way, the oven can be adjusted to the most comfortable working height for the user.

Installation is simple and low cost

When the Select-a-Range is assembled as an integral unit with oven, surface unit and drawers in one assembly, installation is the same as with a conventional range. One 3-wire, 120/240 volt feeder circuit is brought up to the terminals in the back of the oven or surface unit and interconnection made between the two.

When the Select-a-Range Oven is to be installed in a wall or in cabinet work, the recess must be 20¼" wide x 23½" deep x 25½" high. At the bottom of the recess, three lengths of 2" x 4" are to run from front to back, narrow side up to support the oven. No insulation space or venting is required. Feeder circuit is brought in at the bottom rear of the recess.

When two Select-a-Range Ovens are to be installed one on top of the other in a wall or cabinet, the recess must be 20¼" wide x 23½" deep x 50½" high. No additional bracing needed for the second oven.

When the Select-a-Range Platform Surface Unit is to be installed flush in a counter, the recess should be 20¼" wide x 23" deep x 9" high. Feeder circuit should be brought into the recess at the bottom rear.

When two Select-a-Range Ovens are to be installed side by side in a wall or cabinet, the recess must be 40½" wide x 25½" deep x 25½" high. Separate bracing is required at the bottom of each oven.
Famous Universal quality Range features make Select-a-Range cooking faster, easier, better!

EXTRA LARGE OVEN INTERIOR
- 16" x 16" x 19" with Balanced Heat and 40% faster preheating with automatic cut-off.

AUTOMATIC TIMER
starts and stops oven as desired with simple, foolproof precision.

COUNTER-BALANCED OVEN DOOR
has automatic broiling stop.

MINUTE MINDER
keeps track of time for any cooking operation from one to sixty minutes.

"MONOTUBE" THRIFT UNITS
are fast heating, cannot warp or bend, concentrate heat distribution.

SEVEN-HEAT SWITCHES
give exact control of heat for every desired cooking requirement.

SWIVELED UNITS
swing up and out for easy cleaning. Chromium flanges keep hot utensils away from porcelain top.

For further information about the new Select-a-Range and the name of your nearest distributor, write to Dept. B-D, Landers, Frary & Clark, New Britain, Conn.
Always a Good (Insurance) Policy:

NORTON Non-slip FLOORS

A good insurance policy is a sound investment in protection. The John Hancock people knew this because insurance has been their business for 87 years. Their new home office building is convincing testimony of a sound policy to make a long term investment in protection. Elevator lobby floors and all stairs have been made permanently non-slip by using ALUNDUM Terrazzo Aggregate. Even when wet these surfaces will be slip-proof and where foot traffic is severe, durability has been increased greatly by adding diamond-hard ALUNDUM Aggregate.

In stores, factories and office buildings, eliminate the hazard of falls by slipping. For permanent non-slip protection in terrazzo, cement, tile or mosaic floor and stair surfaces, invest in long-wearing Norton Non-Slip Floors.

See our catalog in Sweets or write for free catalog to

In the elevator lobbies and on the stair treads of John Hancock Insurance Company’s new office building, permanent protection against slipping and increased resistance to wear have been attained by the always sound policy of investing in Norton Non-Slip Floors.

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"MEDUSA WHITE"

...A World-Wide Specification

Medusa White Portland Cement is a world-wide specification... specified for distinctive architecture in South America, England, New Zealand, India, and many other countries. Architects in countries far removed from American shores know there is no finer white, no whiter white than Medusa White!

Make your construction resplendent with beauty. Specify Medusa White for white concrete, stucco, cast stone, building trim, sculpture work, or Terrazzo floors—white or tinted. When this construction needs water protection, use Medusa Waterproofed White Portland Cement®... the cement that prevents water absorption. For full details, mail coupon for architectural booklets.

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Please send me a copy of your free booklets "Medusa White Portland Cement" and "A Guide to Finer Stucco."

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*Where Medusa Waterproofed White is not available, use Medusa Waterproofing Paste or Powder.

TRICOLOR FLAG RAISING

Forum:
I have the pleasure to announce that the flag has been raised on top of the Marseilles living unit (October 6, 1949). I believe, in all modesty, that this local event might interest you. I attach a photograph of the flag.

LE CORBUSIER, Architect
Paris, France

... Which also shows reader Le Corbusier atop his building. A more detailed report on this interesting project is presented elsewhere in this issue.—En.

CON
Forum:
... The magazine has deteriorated badly.... When you are not playing up to the builder and banker your language is too precious to be valid....

DAVID F. TOND
Flashing, N. Y.

PRO
Forum:
... Although my interest is primarily in civil engineering, I hope soon to go into the house building field. Your articles on design... are right up my alley, and I am extremely glad to have them in my permanent reference file. ...

Although your work on modern residence design is quite complete, I would like to see more discussion of the reasons why each architect designed as he did.

LAWRENCE H. FALLS
Potsdam, N. Y.

Forum:
Being partially trained as an architect, I read your magazine with a great deal of interest and appreciate your attitude that financing, the government, labor, economy, etc., are as much a part of the architectural picture as stone, concrete, steel and wood.

ROBERT S. WAPLES, Vice President
Midland Mortgage Co.
Cedar Rapids, Ia.

(Continued on page 66)
“Micarta...or equal”? 
These check lists prove it has no equal...

Only Micarta has all these exclusive features:

The 9 new decorator colors — The new pastel colors preferred today — selected by a national jury of leading architects.

Larger sizes — Sizes up to 48” x 96” — often provide greater cutting economy and larger areas can be covered with fewer seams.

The “Beautymask” — Every piece of Micarta is covered by a strong, manila sheet that protects the surface until all applying and trimming is finished — until the entire unit is ready for use.

Panels with waterproof plywood — Micarta panels are made with waterproof glue on waterproof Weldwood Plywood.

True satin and glossy finishes — The satin finish is built-in ... not just a brushed-down glossy finish. Both satin and glossy are true, original finishes.

Micarta Equals or Exceeds the Standards of National Electrical Manufacturers’ Association

Check it for chipping
Test it with the cooking utensils or silverware ordinarily used in a busy kitchen.

Check it for scratching
Of course Micarta can be scratched with the point of a sharp steel knife. But just try to gouge Micarta with the edge of a coin.

Check it for staining
Pour boiling water on it ... alcohol, fruit juices, even nail polish or polish remover.

Check it for denting
Strike it with cups, ash trays or similar objects.

Check it for scratching
Snuff out a cigarette on it.

Check it for beauty
40 bright, rich colors in solids or three different patterns plus Truwood (real wood veneers).

Two Types: No. 1—1/16” sheets to be bonded on plywood according to specifications by fabricators. No. 2 — ¾” and 1 ¼” panels. Micarta sheets already bonded to waterproof Weldwood Plywood with waterproof glue.

Two Grades: Standard and cigarette-proof. Actually, standard grade will withstand burning cigarettes; cigarette-proof grade is guaranteed against such damage.

Two Finishes: No. 1—High-polish mirror glass. No. 2—Satin-finish.

Check Micarta yourself
SEND FOR FREE SAMPLE

Micarta is manufactured by WESTINGHOUSE and sold, for decorative purposes only, by UNITED STATES PLYWOOD CORPORATION.

UNITED STATES PLYWOOD CORPORATION
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I want to check Micarta myself. Without any obligation, please send me a FREE sample.

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Leads the Field in
VETERAN HOSPITAL BUILDING

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In construction products CECO ENGINEERING
As a building method, concrete joist construction leads the field in the Veteran Hospital Building program. Here, as in other buildings, strength and durability are of prime importance. Concrete joist construction meets the need in supplying rigid, strong floor constructions which are fire resistive and sound proof. Construction costs are low since steelform jobs require less concrete, less lumber, less labor. Steelforms are used over and over again at a nominal rental charge.

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GUIDE CHARTS

for SPECIFYING RESILIENT FLOORS

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NOTE: This rubber tile contains no oils—no ingredients to dry out and leave the tile brittle.

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APPROXIMATE COST RANGE CHART

Where two or more groups appear in a price bracket, the least expensive is on top.

Cost based on installing a minimum area of 1000 square feet over cement underfloor.

<table>
<thead>
<tr>
<th>Cents Per Square Foot</th>
<th>Kentile</th>
<th>Kencork</th>
<th>Rubber Tile</th>
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<tr>
<td>20¢</td>
<td>1/8” GROUP A</td>
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<tr>
<td>25¢</td>
<td>1/8” GROUP B</td>
<td>3/16” GROUP A</td>
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<td>30¢</td>
<td>1/8” GROUP C</td>
<td>3/16” GROUP B</td>
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<td>35¢</td>
<td>1/8” GROUP D</td>
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<tr>
<td>40¢</td>
<td>1/8” SPECIAL*</td>
<td>3/16” GROUP C</td>
<td>3/16” GROUP D</td>
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<td>45¢</td>
<td>3/16” SPECIAL*</td>
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<td>55¢</td>
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<td>5/16” NATURAL FINISH</td>
<td>1/8” THICKNESS</td>
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<td>65¢</td>
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<td>5/16” FACTORY FINISH</td>
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<td>70¢</td>
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<td>75¢</td>
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*Special Kentile for Industry (Greaseproof)
### Residential Installations

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<thead>
<tr>
<th>Room Type</th>
<th>Kitchens</th>
<th>Bathrooms</th>
<th>Bedrooms</th>
<th>Nurseries</th>
<th>Living Rooms</th>
<th>Foyers</th>
<th>Basements</th>
<th>Playrooms</th>
<th>Utility Rooms</th>
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<tbody>
<tr>
<td><strong>Kentile</strong></td>
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<td>Cork Tile</td>
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### Commercial Installations

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<thead>
<tr>
<th>Room Type</th>
<th>Reception Rooms and Office Working Areas</th>
<th>Private Offices</th>
<th>Hospital Wards and Corridors</th>
<th>Schools Public Buildings</th>
<th>Libraries</th>
<th>Stores Groceries ... Drug Chains ... Dept. Stores</th>
<th>Restaurants</th>
<th>Factory Areas</th>
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<tr>
<td><strong>Kentile</strong></td>
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<td>USE SPECIAL KENTILE FOR INDUSTRY (GREASEPROOF)</td>
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<td>RUBBER TILE</td>
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<td>BUT NOT IN OR NEAR KITCHEN AREAS</td>
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<td>by the makers of Kentile</td>
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*When properly maintained

If you would like to have additional copies of these guide charts, please write the office nearest to you.

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**LETTERS**

**PITTSBURGH RENASCENT**

Forum:
I have read with interest the Pittsburgh story in the November issue of FORUM. Your organization has done an outstanding job, as usual, and this issue will be something for future reference.

ROY A. HUNT, President
Aluminum Company of America
Pittsburgh, Pa.

Forum:
I want to compliment you on the splendid coverage given Pittsburgh. Incidentally, the other articles in the issue are equally informative and attractive.

BENNETT S. CHAPPEL, JR.
Assistant Vice President
U. S. Steel Corp.
Pittsburgh, Pa.

*FORUM* was guilty of the following oversights and errors in its November report on “Pittsburgh Renascent”: 1: The Heinz family has given $1½ million for a playhouse now being designed by Jo Mielziner. . . . “Actually, only $50,000 of this sum came from the Heinz family, in the person of Howard Heinz, and Jo Mielziner’s role is that of consultant to Pittsburgh architects Charles M. and Edward Stotz. 2: “Carnegie Tech is in the middle of a $15 million expansion for its 12,000 students . . . W. L. Mellon has given $8 million to set up a school of business administration at Carnegie Tech . . . “ Actually, Carnegie Tech is in the middle of a $4 million campus renovation program, and the W. L. and May T. Mellon Foundation has granted Carnegie Tech $6 million to establish a graduate school of industrial administration.—En.

**ERRATA**

- The construction outline for the new Coward Shoe store in Brooklyn, whose front was described in the December *FORUM* as “ingenious, good looking”, failed to credit the exterior panel of expanded metal lath (see photo) to Wheeling Corrugating Co.—ED.

- In its presentation of the new terminal building at the South Bend Airport (Nov., p. 90) *FORUM* failed to note that its air conditioning system is supplemented with baseboard heating equipment supplied by C. A. Dunham Co.—En.

- In its November issue (p. 122) *FORUM* incorrectly stated that Builder Levitt’s radiant heating coils were spaced 12 ft. on centers. The actual spacing is, of course, 12 in. on centers.—En.
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Sealuxe-Browne "Folding Flue" Windows Manufactured of huge extruded shapes in Aluminum - Bronze - Stainless Steel

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Sealuxe-Browne "Folding Flue" Windows are free of maintenance. They are air tight - have permanent pure wool felt weather-stripping. Available with or without muntins; reversible mullions to accommodate partitions of any width; inside screens; inside mechanical operators; with or without stools; with or without sills.

"Folding Flue" Saves Air Conditioning and Heating Costs

The sash in the Sealuxe-Browne "Folding Flue" Window fold open. Can be easily set at any width opening desired - will not move under wind pressure. When slightly bowed open outwardly, without leaving any openings on sides, form a flue that gives 100% controllable ventilation even in windy, rainy weather.

The Sealuxe-Browne "Folding Flue" controllable ventilation principle makes it possible to utilize nature's perfect weather during many months every year, resulting in substantial savings in air conditioning and heating costs.

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APARTMENTS are playing an increasingly important role in the housing boom; therefore this month’s FORUM is devoted exclusively to apartment building. On the pages immediately following is a detailed presentation of Chicago’s pioneering apartment design, construction and finance, highlighted by Mies van der Rohe’s Promontory Apartments (above). The second section (p. 87) reports three radically new apartment ideas now being worked out in New York, Los Angeles and Marseilles. Introduced by a discussion of FHA’s impact on the design and financing of rental housing (p. 97), the third section is a portfolio of pace-setting apartment projects (page 107). Finally, a technical section (p. 116) discusses two subjects of particular importance to apartment builders—unplastered ceilings and apartment acoustics.
GLASS AND BRICK IN A CONCRETE FRAME

Mies van der Rohe's Promontory Apartments open to lake view. Loft construction costs $8.55 per sq. ft.

LOCATION, Chicago, Ill.
MIES VAN DER ROHE, Architect
PACE ASSOCIATES, Associate Architects
HOLSMAN, HOLSMAN, KLEKAMP & TAYLOR, Consulting Architects
FRANK J. KORNACKER, Structural Engineer
PETER HAMLIN CONSTRUCTION CO., General Contractor

Chicago's finest apartments, tall, new, and elegant, have been built at very nearly the lowest cost, because they use loft construction undisguised. Directness was the trait by which, long since, Chicago's architects brought their city world renown. Promontory and Lake Shore (p. 75) have pushed on to new heights of directness. Promontory, visible from far off on Chicago's esplanade, is nothing more than pale yellow brick panels and aluminum sash in a concrete frame left uncolored and exposed. Lake Shore, just begun, will be simpler yet—twin steel frames, steel faced, 25 stories high, glass filled.

Promontory cost $8.55 per sq. ft., less than most of Chicago's slum clearance projects; Lake Shore is coming in for about the same low price.

To say that any builder could do the same is true with a big "almost." He would need few inventions, no tricks; but he would need the kind of all-around architectural thinking which amounts to genius. Watching the designs grow, ever so slowly, ever so thoroughly, on Mies van der Rohe's drawing board, Charles Genther of Pace Associates found the secret, both for the elegance and for the low cost, in "a return to first principles in building."

As may be seen at a glance, structural plans are regular, involve no expensive changes; the joining of parts is precise, involves no left-overs and no fuss; details are simplified, and drawings few. But the thinking that has gone into them is subtle and compound: not only is Mies, son of a bricklayer, concerned with the construction method at every point, but, as a great architect, he is concerned that what satisfies the need must also satisfy the eye.

Apartment plans were difficult in the crowded space. Every apartment, nevertheless, has through ventilation; only unimportant windows face the angles of the courts; and the plastic character of the interior space has permitted occupants to live as they prefer: with Chinese furniture or grandstand arrangements by romantic architects, or stock from Marshall Field.

But it is through its architectural structure that Promontory's influence has already spread—a fresh victory for Chicago's way of "building straight."
DETAILS show close attention to function, workmanship, appearance. The buttress-like columns (opposite page) are thickened toward the bottom, for extra load, by stepping out the face, leaving the inner wall surface smooth, and all the brick filler panels exactly equal in width, so that brick can be precisely laid, without cutting, to a drawing made in advance. Concrete columns are scored at every story (photo at left) to soften the visual effect of the steps in the columns. Use of air-entrained cement made a dense surface capable of self-finish. Aluminum windows have a "fixed" upper sash which can be unlocked and pivoted for indoor washing.
Apartments in Promontory show great diversity and tenant owners, in some instances, changed partitions. Some used the kitchen pass-through (middle picture) others had it walled up. Floors were covered according to owners' wishes at their expense. The finest effect is that the apartments, wide-windowed, almost literally include the lake.

Promontory's total construction cost was $1,496,000, excluding parking and driveways and floor finishes, but including stoves and refrigerators; the 1,662,249 cu. ft. cost 90 cents per cu. ft.; the 174,930 sq ft., $8.55 per sq ft.

GLASS IN A STEEL FRAME

Lies van der Rohe develops his open design in the Lake Shore Drive apartments with floor-to-ceiling windows.
The Lake Shore apartments gave Architect Mies an opportunity to execute a concept he had sketched as far back as 192— the all-steel and glass tower, the crystal cage for humans. The omission of spandrels will be fully appreciated by persons seated back from the wall on the 25th floor; its effect can be tested on the sketch (opposite page) by covering with white paper the part of the window below the crossbar. Never is the radical difference and a glass wall so strongly felt as at such height. Like Promontory, Lake Shore will be radiantly heated through ceilings and floors. Structurally it is still neater with its 21 ft. square bays completely regular (details are shown on page 75). But the floor plans finally adopted for rental purposes are a far cry from the original concepts of the architect for twentieth century living (opposite page). Unorthodox in surrendering corners of the large apartments in the south building to bedrooms not living rooms, the architect gains shorter corridors, a much nicer kitchen, neat straight lines of interior circulation. And the initial studio apartment plans of the north building are breath-taking.

Final apartment plans (above and below), in contrast to original plans preferred by the architects (opposite), will unquestionably be easier to rent. Most people will probably prefer the living room in the corner, and the closed-off bedrooms, even though public corridor space is increased, kitchens are smaller, passages have more kinks and corners.

THE FINANCING OF PROMONTORY

A variation on the cooperative theme helps pay for expert architectural service, helps the promoter raise his equity cash.

Like many a top-flight architect, Mies Van der Rohe has a design portfolio of distinguished but unbuilt buildings. But for some unique promotion and financing, both of his Promontory and Lake Shore apartments would still be in this portfolio rather than standing, trim and lean along Chicago’s lake front. It is a sad but sober fact that the U. S. apartment promotion pattern is not designed to produce such unusual buildings as Mies Van der Rohe’s Promontory and Lake Shore. In the speculative rush to build as cheaply and as quickly as possible, good design and construction techniques are given short shrift. The result has been to reduce apartment “design” to a few tricks like the corner casement window, the jazzed-up lobby and back-to-back plumbing.

Fortunately, both of the Mies apartments were promoted and financed under a plan which permitted, among other things, a free hand for design and construction practices seldom seen in U. S. apartment houses. Known as Mutual Ownership Trust, it is responsible not only for Promontory and Lake Shore Apartments but also for a group of ten other unusual postwar apartment projects in the Chicago area. Developer of the plan is Architect Henry K. Holsman of the old-line Chicago firm of Holsman, Klekamp & Taylor.

Mutual Ownership is a form of cooperative but with some special Holsman touches. Most co-ops are tax-conscious devices where the promoter leaves the tenants on their own after the building is built. Mutual Trust, on the other hand, provides for promoter responsibility during the whole life of the building. Tenants buy a trust certificate representing their share in the building but they do not run it. The promoter sets up a board of trustees, usually including himself, to do the job. Perhaps the most compelling proof of the promoter’s responsibility under mutual trust is that he and the other trustees are fully liable in the event of financial difficulty. (Tenant liability, on the other hand, is limited to their original equity investment.) In addition to these fiscal safeguards, the tenants have all the rent reducing and tax advantages of the co-op system. The net result of the trust plan is a qualitative change in the promoter’s approach to his building. The reason: he and his trustees take the financial rap if anything goes wrong. Under such a set-up, a promoter is inclined to check any speculative shortcuts either in design or construction. It was precisely because of this widespread speculative disregard for good workmanship that Architect Holsman developed his plan back in the Twenties. Before the Bust, he and his associates sponsored and built six small trust apartments in Chicago. Significantly, all of them stayed afloat financially during the depression while the great majority of the Chicago co-ops went under.

The trust idea was mothballed during the lean

(Continued on page 124)
COMMUNITY TRUST permits private enterprise to build city apartments and to build them better—a statement by one of the Trust’s administrators, John T. Holsman

The operating details of the Community Development Trust are explained on page 77 in conjunction with the financing of Promontory Apartments. Mr. Holsman’s statement below covers the broad philosophy and purposes behind this form of building finance.—En.

The housing shortage is almost entirely concentrated in cities of 100,000 or more population. This is partly because almost all the increase in U.S. population in the last 20 years has occurred in these cities, whereas most of the housing produced during these 20 years has consisted of small individual homes in the suburban areas and in smaller communities.

If we are to solve this urban housing shortage, we must find ways to get homes built in multi-story structures in large enough projects so that they will establish their own protective environment. Most multi-story apartments today are built by speculative interests, and most of them, when built, cost too much for middle-income families to rent.

Almost all single-family houses are sold to individuals who put up equity money to own their own homes. Individual houses built as an investment for rental are almost unknown. This is because under rent control houses cannot be rented profitably in competition with individual ownership.

In the apartment field the same disparity exists between the rent which must be demanded to justify a speculative capital investment and what the same apartment would cost a tenant-owner living in his own apartment. In fact, the cost to a tenant-owner over a 20-year period is not much more than half the rent he would have to pay a speculative owner.

The traditional pattern of rental housing is one of simple speculation. Little real investment money has ever found its way into this field. This is well known to be true even under FHA. The amount of speculative money and the number of speculators both are limited and cannot be counted on to produce enough apartment units, especially for low-income or middle-income families. The only solution to the urban housing shortage for middle-income families must lie in some form of tenant ownership of apartments.

Equity funds from the people

The families who need and want apartment housing do have resources with which to pay. In fact, the funds available from these families, if they can be induced into the production of housing units, are much greater than any other source of equity money. They offer the only source of funds in sufficient volume to solve our cities’ housing problems.

There are very few top-flight, technical and professional men available in the apartment building field. Speculative operators do not, in general, make good clients and they do not pay for top-flight technical personnel. Therefore, there are very few architects, lawyers or real estate developers with experience in housing and particularly in the problems of multi-unit mutual housing development. The most competent men in all of these fields have shied away from housing because other fields of activity were more profitable. If housing problems are to be solved, more of the really competent men must be attracted into this work.

For large numbers of individual families to pool their resources, find and employ competent technical service, acquire a proper site, let sound contracts, and realize an economical and worthwhile housing development is extremely difficult, so difficult that there must be some established pattern available to them—an organization willing and able to guide and safeguard the effort. It is for this purpose that the Community Development Trust was organized.

Each project under the Community Development Trust plan is a Special Mutual Ownership Trust estate with a board of Managing Trustees and a Corporate Trustee holding title. In addition to these Special Trusts there is a General Trust which likewise has a board of Managing Trustees and a Corporate Trustee.

The purpose of the General Trust is to initiate Special Trusts, to coordinate and guide their operation, to promote and champion the Mutual Ownership method of producing housing and to create a pool of resources.

Reserve funds for development purposes

Each project, as a Special Trust, when it is organized, agrees to establish out of mortgage and equity funds a surplus reserve equivalent to 10 per cent of the cost of the project. The General Trust prorates expenses to the Special Trusts. These charges are paid out of this surplus reserve account. The remainder of the reserve account is placed in the General Trust by the Special Trusts and Certificates of Beneficial Interest in the General Trust are issued therefore. These Certificates of Beneficial Interest in the General Trust pay a limited dividend of 5 per cent.

The result of this process is that the General Trust accumulates resources derived from Special Mutual Ownership projects. These Special Projects are developed for the individual families at cost, without speculative profit, and in return the special development adds its share of reserves to the general pool, thus creating a strong central organization responsive to the needs of the individual parts and capable of the highest form of management guidance.

One of the important results of the strong General Trust is that it assures the architects and builders and other special agents employed in this field a continuing opportunity which will encourage the most competent architects and other professionals to devote themselves and their organizations to finding solutions to the many complex problems in housing. This continuity and coordination of effort through the General Trust is of particular significance and value in the development of new and improved construction techniques and materials and the application of them in the field.

There appears to be a period of five to ten years of economic security ahead in which to develop this program. If resources are available to push it ahead quickly, it is anticipated that a fund of from $20 million to $30 million may be accumulated in this General Trust during this period. If this can be accomplished, the Community Development Trust will enter the next economic recession with cash resources and a large staff of competent technicians experienced in all phases of housing available to it. At that time it will be possible to accumulate properties, remodel, repair or demolish them and re-plan neighborhoods on a large scale for true neighborhood redevelopment.
PIONEERING CONSTRUCTION IDEAS, ranging from reinforced brick walls to radiant heated ceiling beams, save space, time and money

The most interesting construction job the visiting British building industry representatives found anywhere in the U. S. was a series of apartment projects in Chicago which embody so many new construction ideas that one of the Englishmen called them the "only completely modern thing" he saw.

The walls were built differently; the floors were laid differently; the wiring was run differently; the heating was designed differently; the windows were framed differently; the ceiling were finished differently; even the grading was done differently. In fact, so many things were done differently that it might be shorter to list their points of similarity than their points of difference from the usual garden apartment.

Inevitably, apartments which embody so many new ideas are frowned upon by FHA, so they are financed differently too (see page 78). But the end product is a construction cost per square foot of $7.76* in walk-ups and a net cost per month to the occupants from 1/2 to 1/2 less than comparable housing in a typical FHA garden apartment.

The new ideas for these buildings have been worked out over the past quarter century by an old line Chicago architectural firm whose present name is Holsman, Holsman, Klekamp & Taylor, and the cost of the research and development work of these new construction methods is spread over the various projects erected for mutual ownership by the Holsman-inspired Community Development Trust (see page 78). The senior Holsman, now 83 years old, is an inventor as well as an architect. In fact, he was one of the automobile pioneers, bringing out the Holsman car in 1897—a car which kept up with the field until about 1908.

When he shifted his undivided interest to building and architecture, he never ceased to be an inventor, and his sons and partners share this bent. In the building field, their inventiveness has been concentrated on ways to get the cost of a good apartment down, and their own estimate is that—over and above the economies made possible by good planning for maximum utilization of space—they have also worked out construction economies which reduce the cost of building more than 15 per cent.

In these savings, Holsman senior believes the biggest single item is a scheme for making four-story walk-ups practical for Chicago—one story more than the FHA maximum. (The typical Chicago apartment is built atop an English-type basement, which projects 7 to 8 ft. out of the ground.) In the Holsmans' atypical four-story walk-ups, only 40-43 steps separate the sidewalk from the top floor—"and," says he, "you can't find a conventional apartment in Chicago where the walk up to the third floor isn't more than that."

The trick is done partly by grading the land up at the front and down at the back so that in front the ground floor

* Costs exclude land, landscaping, interest on construction loans, architects' and service fees. Square foot costs are calculated without including basements and penthouses.
is only one step up, but in the back there is plenty of height for basement windows; it is done partly by an ingenious floor construction system which reduces the thickness of the floor slab to a little over 3 in. and thereby makes possible an 8 ft. 4 in. floor-to-floor height with an 8 ft. ceiling. As a result, the fourth floor is only about 26 ft. up from the ground and in a typical Holsman apartment the fourth floor rents for $1 a month more than the ground floor and only $1.25 less than the third floor and $3.50 less than the second floor*. (The fourth floor rentals are aided by two added selling points: some of them can have fireplaces, and all of them have "studio ceilings," which is another way of saying that their ceiling follows the low pitch of the roof.) Getting four stories instead of three into their walk-ups makes it possible to spread the grading, sewer, water main, foundation, basement and roof costs over 1/2 more apartments.

Other large economies claimed include $629 per apartment through the substitution of an 8 in. reinforced masonry wall in rowlock bond for a 12 in. brick and concrete block wall; $650 per apartment on the floor system; $156 per apartment on the stairs; $55 on the foundations, mostly due to lighter construction; $97 per apartment on the heating system and $50 per apartment by using vertical wiring circuits and by omitting individual apartment meters.

Three main ideas underlie the construction savings:

Minimum cubage per square foot of apartment area (on their four-story walk-ups they believe that by a combination of low ceiling heights, minimum partition thickness, half-basements at the rear of buildings and four stories instead of three over the same foundations, they have reduced the ratio of cubage to room size nearly 25 per cent);

Maximum use of prefabricated parts, including stair stringers, stair treads and risers, floor slabs, window trim, gable blocks and welded steel box joists with their reinforcement installed at the factory;

Simplified design to reduce the number of field operations required to put the various parts together.

The most recent projects on which these savings have been achieved are the Lunt Lake Apartments, which consist of two 9-story elevator apartments and one 4-story walk-up, and Winchester-Hood, whose various units will eventually provide some 800 four-and-one-half to six-room apartments in 4-story walk-up and 5-story elevator buildings. The elevator apartments are all four to a floor, giving each apartment corner ventilation. The walk-ups all run clear through the building. Their most distinctive design feature is the way the living room wall is pushed out diagonally in the belief that getting away from rectangular rooms makes the living area seem bigger and more flexible for furniture arrangement.

Here are the details of the cubage saving and cost saving ideas worked out in the Holsman apartments:

**WALL CONSTRUCTION**

**REINFORCED BRICK MASONRY**—For ordinary brickwork, the Chicago code requires a 12 in. bearing wall for a 3-story apartment; 16 in. for the lower two stories and basement of a 3-story building; 20 in. for first story and basement of a 7-story building and 16 in. for the next 3-stories.

By using reinforced brickwork, the Holsmans hold their bearing wall thickness down to 8 in. (except for the ground floor of the two 9-story Lunt Lake buildings, where the walls had to be 10 1/2 in. thick for 1-story height only.

In addition to costing less, the 8 in. reinforced brick wall eats up considerably less cubage.

**ROWLOCK BRICK WORK**—Further economy on the exterior wall is effected by laying the bricks on edge in rowlock bond with alternating headers and stretchers and a 3 1/2 x 8 in. cavity. This requires only nine bricks per square foot of wall, compared with 13 for a regular 8 in. wall and 21 for a regular 12 in. wall. The 1 1/2 in. vertical reinforcing steel rods 10 ft. long are placed in the cavities on 24 in. centers by the steel setters, and 3 1/4 in. horizontal reinforcing rods are placed every third course by the bricklayers. The wall is then fused into a solid monolithic unit by filling the cavity with a 2,500-psi. cement concrete grout poured from a bucket by the bricklayer's helpers. The mortar is first allowed 20 to 30 minutes to set and, to assure filling the cavity, brick is run up only 3 to 5 courses between grout pours. As the grout is poured some of the moisture is absorbed by the brick, and it is claimed that this makes the concrete much more dense and ultimately much harder than the same mixture if poured into removable forms. No additional labor is required for pouring the grout, but it is found that the bricklayers lay only an average of 650 bricks a day in this bond, as compared with 900 for regular bond in a 12 in. wall.

**NO STRUCTURAL STEEL LINTELS.** Another substantial economy claimed for this type of wall construction is the elimination of structural steel lintels. The reinforced brickwork over the windows forms its own lintel beam as soon as the concrete hardens. The Holsmans estimate the ordinary lintel steel over their 12 ft. window openings would cost about $5 a foot, whereas an extra reinforcing rod costs only 10 cents per foot.

**CANTILEVERED BRICKWORK.** The reinforced brick masonry makes it easy to cantilever the walls above the corner windows and for the service stair balconies in the walk-up buildings.

**WINDOW FRAMING.** Further construction savings are claimed for the way the windows are set in. To eliminate the temporary installation of a rough window frame, the precast sill and stool is set to grade on the brickwork, and on it is placed a retracted wooden template with adjustable stops set to proper height and width. Precast trim is erected around the template with the jambs tied to the sides and the head trim resting on the top. The brickwork is brought right up to the precast jamb which is placed before the window height courses of brickwork are laid (see cut).

As a combined result of all these economies, the Holsmans estimate that their masonry walls cost $1.46 per sq. ft. (including 86 cents for brickwork, 18 cents for equipment and ground labor, 25 cents for screen windows trim and labor, 4 cents for overhead, and 13 cents for contractors profit), compared with $2.65 for a 12 in. brick and concrete block wall, or $2.97 for a 12 in. brick and concrete block curtain wall on a reinforced concrete frame.
WINCHESTER-HOOD APARTMENTS incorporate many of Holsman's planning trade-marks: projecting open service stairwells, space-saving angular stair landings, interior bathrooms, through ventilation, corner bedroom windows, splayed living room walls and utility closets.


ROWLOCK BRICKWORK forms a 3 1/2 in. cavity into which vertical steel rods are placed and concrete is poured to produce a reinforced brick wall. Brickwork goes up easily around precast concrete window trim held in place by adjustable wood template. Reinforced horizontally, the brickwork over windows does not require the usual steel lintel.
The Holsmans have applied for a patent on their floor system which consists of 3 in. slabs of precast lightweight concrete 12 x 32 in. supported on 36 in. centers by exposed steel-box, concrete-filled joists 8 in. deep. The concrete mixture used in the slabs is designed to give them a fine, porous texture which produces a finished acoustical ceiling with a symmetrical pattern of V-joints between the slabs. The joists give the effect of a beamed ceiling. The economy in the system lies partly in the height saving made possible by the exposed joists, partly in the fact that the steel and the slabs need only a coat of paint to produce a satisfactory finished ceiling.

PREFABRICATED STEEL FORMS—The joists boxes, made of 16-gauge galvanized steel, are brought to the site with the reinforcement in place and fastened to thrust blocks or angle plates welded to the ends of the joist. For the girders, a 16-gauge, U-section soffit pan is used.

In erecting the floor system, this soffit pan is first set up on shoring and the joist boxes are supported on the girder soffit flanges to span across from it to the pockets in the side wall. In the wall pocket a bent bar is hooked over a horizontal reinforcing rod. Across the girder a U-bar ties the ends of the opposite joists together. Then the girder sides are closed by field welding filler pieces between the joist boxes. The Holsmans believe similar prefabricated steel boxes could be used to advantage to pour the columns.

All metal parts, which include the joist boxes, soffit pans and filler—cost an average of 29 cents per sq. ft. of supported floor area. Forms for the columns would cost about 35 cents per sq. ft., $9.54 per column per floor.

PREFABRICATED FLOOR SLABS—The floor slabs cost 81 cents each or approximately 27 cents per sq. ft. They are laid by common labor. Top groove joints along their long edges furnish a channel for heating tubing and for a field poured concrete rib reinforced with 1/4 in. rod.

POURING CONCRETE—The concrete for the columns, girders, joists and slab ribs is poured simultaneously and, after shrinkage, the deck is grouted.

SQUEEGEE—A thin smoothing coat over the rough concrete floor is spread with a 3 or 4 ft. rubber edged squeegee with a handle long enough so the finisher can work on his feet (see cut).

The Holsmans estimate the complete cost of their floor system at $1.22 per sq. ft., including 29 cents for metal boxes and joists, 9 cents for reinforcing steel, 27 cents for precast slabs, 53 cents for erection and 4 cents for the cement floor finish. Against this they estimate the cost of the conventional Chicago pan and joist system at $1.78 per sq. ft., including $1 for the pan-joist construction complete, 60 cents for the metal lath and plaster ceiling, 12 cents for the conventional trowel finish on the cement, and 6 cents for the extra cost of brickwork for an 8 in. higher story.

Erection time is nine days per floor on the walk-up apartments—three days for brickwork, five days for floor framing and mechanical installations, one day for pouring the concrete. The Holsmans try to have three buildings under construction simultaneously to keep all the various crews continuously occupied.

OTHER SAVINGS

HEATING SYSTEM—Considerably economy on the cost of radiant heating has been achieved by placing 3/4 in. copper tubing in contact with the flanges of the steel joist boxes. By taking advantage of the high conductivity of steel, it has been found practical to run the tubing on 36 in. centers instead of the customary 12 in. centers, thereby reducing the amount of tubing needed by at least one-half. On
RADIANT HEATING coils of \( \frac{3}{8} \) in. copper tubing are spaced 36 in. on centers in contact with the steel joist boxes which thus become integral parts of the heating system.

JOIST BOX of 16 gauge steel, 8 in. deep, is delivered to job with reinforcement in place. It serves as forming for concrete, acts as a heat radiating surface, and creates the appearance of a beamed ceiling (see photo below). Note 7 ft. high storage partitions.

STAIRS are comprised of precast one-piece treads and risers, one end of which is built into the wall, the other into shelf angles welded on a steel stringer.

Lunt Lake, this saving on tubing alone amounted to almost $10,000. By being able to take a greater temperature drop through the coils additional savings are achieved on the use of less main piping and smaller pumps. This system adapts itself to sudden changes in temperature more readily than the usual radiant plant where it is first necessary to heat (or cool) the entire floor slab.

VERTICAL WIRING—The mutual owners of each apartment buy their electricity wholesale, and there is no sub-metering for separate apartments. The elimination of separate meters saves an estimated $25 per apartment, and an estimated $25 more is saved by running the wiring vertically instead of horizontally. Under this system, less than 10 ft. of conduit is required per outlet.

STAIR DESIGN—The Holmans have invented a system of stair construction utilizing precast treads and risers, one end of which is built right into the masonry wall and the other into a 10 x 5/16 in. steel plate stringer prefabricated in story heights with shelf angles welded on. One advantage of this stair construction is that no outside scaffolding is ever necessary, since stairway erection from floor to floor keeps pace with the erection of the wall.

Cost of the stairway is $198 for a typical 13-riser flight, including $80 for the stringer and rails, $25 to erect the stringer, $43 for the precast concrete treads and risers and $50 for putting them in place. Against this they estimate the cost of a conventional stair with channel stringer, newel posts and pipe railing, metal riser and poured concrete tread in metal pan at $440.

FOUNDATIONS—Partly because of the lighter weight of the thin outside wall, partly because of the lightweight construction of the floors, and partly because there are no concentrated wall loads to require irregular footings, the Holmans report a foundation cost of 87 cents per sq. ft., as compared with their estimate of $1.10 per sq. ft. for conventional construction.

ROOFS—The only cost of the roof is the installation of \( 1\frac{1}{2} \) in. of fiber glass and 3-ply tar and gravel over the top story ceiling which is pitched 2 1/32 on 12 from the ridge girder. The wall extends only high enough to form a curb, which is covered with a metal gravel stop built into the coping edge. Thus, the expense and maintenance troubles of parapets are eliminated.

CLOSETS AS PARTITIONS—Where privacy is not necessary, closets 7 ft. high are used as partitions to add to the spaciousness of the room and to save the cost of ceiling-high plaster wall.

CONCRETE BLOCK PARTITIONS—The Holmans have recently designed a concrete partition block 11\% x 3\% in. whose proportions are sufficiently pleasing so that it needs only a coat of paint to make a satisfactorily finished wall. This block costs 7 cents.

OUTSIDE BACK STAIRS—On the walk-up buildings the cost of the required second stair is held to a minimum by placing it outside the building and lighting the front stairs through it.
Ogden Courts, a public housing project, shows better planned apartments, at less cost, than any "608" private elevator apartments reported out of Chicago since the war. Unlike the promoter of "608", Elizabeth Wood of the Chicago Housing Authority was able to employ top-flight architects, ask for their best "look into the future." The small size of these relocation projects (for people displaced by redevelopment schemes such as New York Life's forthcoming $18 million scheme in the Michael Reese area) made experimentation permissible. The result is a standard of exposure and ventilation in Ogden Courts comparable with plush New York insurance projects being built to rent for as much per room as Ogden Courts are likely to obtain per apartment. But the construction cost will be not more than 8.65 per sq. ft. (8.42, by CHA calculations); and anything under 9 is cheap indeed for a well built elevator apartment today.

The architects built their two buildings around the idea of an upstairs sheltered sidewalk for every floor. On an irregular site in two blocks they arranged their 136 required dwelling units ten to the floor in two 7-story elevator buildings. These cover only 16.4 per cent of the land. Apartments are of just two kinds. The long cross bar of the T is lined with 4 two-bedroom units per floor, all with big windows facing south, all strung on an access balcony, 8 ft. wide, on the north side, so that all of them have through ventilation. At the three terminal positions of the T-plan are pairs of three-bedroom apartments with cross ventilation—six such apartments per floor.

In contrast with the sumptuous planning, construction is neat and cheap. Modeled closely on Mies van der Rohe's Promontory Apartments (page 69) the concrete skeleton of columns, slabs, and beams calls for no visible crossbeams in apartments. The exterior surface, rendered dense by use of air-entraining cement, will require neither veneer nor paint. The visual contrast of this gray skeleton with the red brick filler panels and, on the north, the checkerboard pattern of glazed block panels (probably blue-green) will be trim and gay, in keeping with the new bright living standard.
Photographs of the model show the unusual skill with which the exposed skeleton of hard-surfaced, self-finished concrete has been integrated decoratively with the plan and with other materials. Columns fall between alternating bays of living rooms and bedrooms, so that strings of aluminum windows, continuous from column to column, vary in sill height according to whether the space inside is a bedroom or living room. Red brick filler panels, contrasting with gray frame, can be laid from inside without scaffolding. The access balconies or porches seen in photo below are semi-sheltered upstairs' sidewalks, faced with alternating panels 4-in. glazed tile and of open-wire, floor-to-ceiling fence. These areas serve as rainy-day recreation space (conveniently supervised by mothers from kitchens); it is hoped they will not become a jumble of storage. The glazed tile pattern will give Chicago a touch of gaiety more common in South America than in the Windy City.
One of the most cogent criticisms of new housing of all kinds is that too few rooms are built to accommodate large families, and some jokes have been coined about insurance companies cutting down the birthrate on which their actuaries depend, by supplying only small apartments. No such criticism can be leveled against Chicago Housing Authority’s Racine Street project. It contains 121 dwelling units for a southside population, mostly Negroes who are being relocated to make way for redevelopment programs. These families are not only large but very large—from seven to 12 persons. Hence the use of dormitories, housing as many as four beds per room for the use of large families; hence, too, the ingenious interlocking plans, by which dwelling units planned in the orthodox manner around one stair hall can “borrow” a room from another dwelling off another hall. (See plans, right.) Basements are included, too, against the current “economy” trend, not only to accommodate the large laundering activity needed, but recreation also for large numbers of children. (Although toilets are included in the basement, the authorities swear that nobody is to sleep there.)

To cut costs, Perkins & Will drew on Phil Will’s prefab experience, Lee Cochrane’s public housing experience and came up with the same mechanical core for every dwelling plan so that every stack could be largely shop fabricated.

Coal firing of the gravity operated warm air heating systems was made necessary by absence of gas at the time of designing, was welcomed for low maintenance cost and the pride it developed in tenants taking more stake in their homes. However, coal delivery necessitated well paved concrete alleys for trucks. The pattern of splayed alleys and of back walks, so designed that coal trucks could back up to dump coal at each unit, limited the site plan.

The total general contract for the 121 dwelling units was $1,429,000, including the extensive site development, the service building and incinerators. Site work included sidewalks, drives, alleys, sewers—there are some 59,043 sq. ft. of heavy macadam, 1,800 ft. of curbs and gutters, 30,000 sq. ft. of black-topped play area, and 50,464 sq. ft. of concrete alley. All these site costs are included in computing the sq. ft. cost at $7.33 (including basement), the cu. ft. cost at $.887, the dwelling cost at $11,810—for a six-room average. (Omitted from these last computations is the cost of incinerators and the maintenance building.) The tag for the average room cost would depend on whether living room, dining room, kitchen combinations were counted in as 2½ rooms, or whether credit were given for the generous well-equipped basement space as another room, making the total for each apartment 3½ rooms plus the bedrooms. On the former basis, cost per room is $1,970; on the latter basis, $1,690.
STACKED GARDENS provide outdoor living space for each tenant in a costly 12-story project

LOCATION: Los Angeles, Calif.
BURTON SCHUTT, Architect

This project is the first ever undertaken to provide really adequate outdoor living space, floor above floor, in a multi-story apartment house. It has been variously described as a stack of hanging gardens and as a stack of penthouse apartments. The amount of space devoted to outdoor living varies with the tenants’ option, but in the two typical plans shown on this page, the outdoor living space runs from 1,200 to 1,400 sq. ft. Lavish terrace planting (seasonally refreshed) will thrive under infra-red lamps, implementing bountiful California sunshine. These big terraces are a far cry from the 6 x 12 ft. balconies which are about as far as any existing apartment has gone to provide space for outdoor city living.

“A home away from home” for a dozen prosperous out-of-towners, this 12-story cooperative apartment will soon be built in Los Angeles. Each apartment—only one to a floor—will sell for about $100,000 plus a monthly “stipend” for upkeep. Despite this price tag, most of the units are already spoken for by men who must frequently visit Los Angeles on business. Chances are that these men, who now run up huge hotel bills during their prolonged business visits, will write off the cost of their apartments as business expenses.

The main (second) floor will provide a large lobby, a restaurant and an outdoor dining terrace with access via exterior ramps from the main entry and the swimming pool. The ground floor accommodates a parking garage and, beneath the dining terrace, a “lanai.”

Typical apartment plans (above) show the large ratio of terrace garden space to indoors area. Street view (far right) shows a trellis screening the building’s main entry.
LE CORBUSIER'S "LIVING UNIT" in Marseilles is an ingenious stacking of long, narrow duplex apartments — a progress report

The first gleam of Le Corbusier's "radiant city" is now visible in Marseilles. The enormous apartment house frame is now complete, wherein 1,600 people in 337 units will test his formula for "vertical" living. Basic to the planning of this great French theorist is the belief that people need small, bright, well-planned and equipped quarters for private use; large open spaces for recreation and play. The unique feature of the plan is that apartments run crosswise to the building instead of parallel, so that the larger units resemble brownstone houses, 66 ft. from front to back, stacked high.

Structurally, the building is a "bottle rack"—a ferro-concrete frame with regular rectangular slots into which 23 different types of apartments will be fitted. These individual units are prefabricated and installed with entirely dry construction methods. Their independence of the frame and each other ensures excellent acoustic insulation. Almost all apartments are duplex, arranged so that elevators stop only at every third floor. The living area of each is two stories high with a full-length balcony. Great window space, protected from excess sun and glare by a brise-soleil, allows light to reach far into dining areas and master bedrooms. Since each unit stretches entirely through the building (east to west) the bedroom and living area at the other end is also bright and has its own balcony. At both sides there is the "sun, space and greenery" which is the promise of the "radiant city." Apartments, all multiples of the ones shown at right, range from small units for "celibataires" to those for families with five children. The kitchens, located in the center, are ventilated mechanically—a fact about which the French are still wary.

In contrast to the compact individual units, community services will be lavish and varied, unequaled so far in any but luxury housing. The entire roof will be public territory, with a swimming pool, solarium and running track. The 17th floor will provide gymnasium, nursery and play areas. The seventh and eighth floors (halfway up) will be given over to a shopping center, restaurant and clinic. Around the great rectangular slab on every side there will be a rolling park and a broad vista reaching to the mountains and sea.

Since the project is publicly financed by the Ministry of Reconstruction, every one in the area feels violently about it—pro and con. Some say gloomily that interiors will be dark, ventilation poor, cost too high. As to the first complaints, Le Corbusier has demonstrated to public officials that actuality proves them false. As to cost, although prices have tripled since the original estimate of $1 million, the expense will not be out of line with conventional construction. Moreover, Le Corbusier points out, he is providing for national and international use "a delicate prototype." A similar project for Nantes is already on his drawing boards—in cost and plan it will benefit from his Marseilles experience.

LOCATION: Marseilles, France
LE CORBUSIER, Architect

The "Modulor," Le Corbusier's system of building measurements based on the proportions of the human body (sketch left) is, the architect claims, essential to its esthetic integrity. A full-size, 6 ft. concrete relief of this figure marks the main entrance to the building. The duplex form of most apartments (see typical cross-section and floor lay-out below) gives a variety and airiness to units that might otherwise seem oppressive—all are limited to a 12 ft. width. The exterior pattern formed by the various apartments shows the kinship of Le Corbusier, architect, to Jeanneret, painter. This variety will be even more noticeable when the building is complete, since individual balconies will then be painted in an assortment of bright colors.

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The building block is raised 23 ft. above the ground by two gigantic tiers of sills—another Le Corbusier trademark. This arrangement does not permit as clear a "through" view as might have been hoped for; it does, however, solve two other problems—free circulation of air at ground level and ease of passage from one side of the building to the other. Original plans for an automobile underpass and adjacent garage have not as yet been included in the budget.
APARTMENT HELIX

What's the matter with practically all the big apartments in our cities—including particularly those now being built? "Plenty", says Real Estate Tycoon William Zeckendorf.

1. Even the newest ones take practically no advantage of all the research and technological progress of the past 20 years. In fact, I don't know anyone who, given a choice, would not prefer to live in an old building, for its apartments have bigger rooms, better finish and more solid walls.

2. The new apartments cost too much to build, largely because they take so little advantage of recent research to offset the rising cost of the old methods.

3. They are all crowded together to kill off each other's view, and none of them makes adequate provision for everyone's desire for a little outdoor living—so pretty soon the tenants move to the country to get some light and air and some greenery.

4. They are inflexible. If you have a 2-room apartment and your wife has a baby, you can't add another room. If you have a 12-room apartment and business gets bad, you can't cut your apartment in half.

5. Because they are inflexible and cannot be altered economically to meet changing conditions, they face a high vacancy rate in hard times and a quick rate of obsolescence. All the big apartments on Park Avenue are absolute because, with present taxes, hardly anyone can afford to live that way—but it costs as much to cut them up into small units as it costs to build a brand new building."

These are the problems William Zeckendorf outlined to his top flight architectural designer, I. M. Pei, formerly of the Harvard School of Architecture, now head of architectural research at Zeckendorf's firm of Webb & Knapp.

Architect Pei came up with an answer that is as exciting to the eye as to the mind and still meets all five of Zeckendorf's objections to present apartments. It is completely flexible. ("you can almost turn a 12-room apartment into three"

4. The whole building would be supported without columns by eight radiating fins of prestressed concrete which would do double duty as sound-proof dividing walls between the eight wedges. The sections of these fins will be precast on the ground and lifted into position, as will also the inverted U-shaped sections at the apexes of the triangles. The fins will leave an opening for a door from wedge to wedge almost 25 ft. back from the windows.

Many advantages:

The circular plan of the Zeckendorf-Pei apartment puts the elevators and stairs in the least desirable space, with a minimum length of hall. Vertically it reduces the necessary pipes and ducts to the minimum by getting the utilities for all the apartments close together at the center. Horizontally it almost eliminates them. It puts the toilet and kitchens in inside space. It gives minimum perimeter in proportion to area, with consequent reduction in heat loss and cooling load.

Perhaps most important of all, the circle makes it possible to construct each segment as an identical modular unit, with great economies through prefabrication (see page 94). The only major limitation is that two circles of 100 ft. diameter cannot be spaced economically on less than a 250 ft. block (in Manhattan, the north and south blocks are only 200 ft.). Pei and Zeckendorf agree that the spirals should be spaced 60 ft. apart for a land coverage of about 30 per cent.

The plan is predicated on air conditioning or forced ventilation. "In fact," Zeckendorf says, "this is the first apartment whose planning started with air conditioning. But because we started with air conditioning, we have an ideal setup for installing it, and so we have an estimate that our combined heating and air conditioning cost will be only $2.61 a ft., or about half what it is costing to air condition New York's new office buildings."

The balconies are one of the most carefully worked-out features, for they raised two problems: how to give them privacy and how to keep their overhang from darkening the windows below. These problems were met by putting terraces only on every second pie slice and by letting them project only 4 ft. beyond the outside wall. There is also a 4 ft. overhang over every window, which will serve as an adequate sun-shade on the sunny sides. Incidentally, the balconies are budgeted to add only 10 per cent to the structural cost of the building and only 2½ per cent to the total cost.
RESTAURANT

POSSIBLE EXPANSIONS

GARAGE

MECHANICAL EQUIPMENT

SCALE 0 5 10 15 20 30 40 50 ft.

- Brown: Single segment apartment
- Yellow: One-and-a-half segment apartment on two levels
- Green: Two segment apartment on two levels
- Red: Two-and-a-half segment apartment on three levels
- Light Blue: Three segment apartment on three levels
STRUCTURE combines both precast and poured-in-place reinforced concrete plus some novel assembly methods

The structural system evolved for the spiral apartment is such that the building could be entirely executed in precast concrete were it not for some inconvenient building code restrictions on this subject and for the great weight in relation to present capacities of hoisting machinery. For these reasons a certain amount of poured-in-place work—floor slabs and corridor floors—will be necessary.

At ground level there will be eight radiating walls of varying heights supporting the spiral. These will be poured along with the foundation.

The central core consists of vertical slabs (that create the stairs and elevator shafts) surrounded by a concrete ring which can be made with movable forms like those used in silo construction. Always kept a few stories ahead of peripheral construction, the core serves as a hoisting tower to lift the precast service units into place. These are cast as inverted U-shaped wedges each containing openings for mechanical shafts.

Following the building’s plan, pouring of each floor slab and placement of each half-story precast bearing wall occurs in spiraling sequence with the completed, adjacent apartment unit serving as a working platform. Tin pan forms will be used for the floors. Corridor floors at the same level will be poured simultaneously. Vertical reinforcing rods in the wall panels create stirrups for hoisting, serve as dowels to brace the panel above. Stair openings in floors and walls will be blocked where desired by removable panels.

In this project, all major elements of the structure, including the installation of utilities, are subject to such a novel approach that cost comparisons can only be matters of conjecture. However, recent experience shows that precast concrete walls save more than 20 per cent of the cost of conventional construction. And since, in the U.S., saving in man hours is becoming more and more the governing cost consideration, it seems reasonable to assume that the simplicity, standardization and repetition of the spiral apartment makes for a highly efficient and economical construction job.

If an all precast structure were not taboo, the engineers believe it would be entirely practical to cast the complete floor slab of one apartment and half of bearing wall and simply stack them spirally, in an inverted U position. Developing cranes with sufficient hoisting strength should not prove to be an unsurmountable obstacle. The shape of the units makes for easy handling and, because of the circular plan, it would seem feasible either to erect them by crane (which would have a very short reach of the boom minimizing the tipping moment), or by gin poles supported on the central core.

1. Precast vertical sections are stacked to create central mechanical and elevator core.
2. Precast service units of inverted U-shape are only a half-story high but when stacked in spiral pattern create full ceiling heights.
3. Each precast half-story high wall section is put in place to support the floor segment of the adjacent half level.
4. Lightweight reinforced concrete floor segment is poured-in-place. It is of tin pan construction, reinforced with double rows of 1 1/4 in. rods, as shown in diagram. Concrete has depth of 16 in. at reinforcing ribs, 3 in. over pans.
MECHANICAL INSTALLATION is ingeniously integrated with shape of building to effect unusual saving

JAROS, BAUM & BOLLES, Consulting Engineers

PLANS of double-decked equipment penthouse at left show air conditioning equipment and horizontal duct system. Duplicate equipment for the lower half of the building is located on one floor in the basement.

SECTION below shows vertical distribution of air (bold arrows) and heat (small arrows) in each vertical half of the building.

The triangular shafts of the central core accommodate the flow and return of chilled water for cooling, steam risers and return for the air-conditioning equipment, domestic hot and cold water, and electric feeders. Air-conditioning, ventilating and some plumbing stacks are located on the inner ring of the service area.

Due to the central grouping of the utilities, the absence of corridors and the fact that none of the building is more than one room deep from the source of air-conditioning, horizontal runs of piping and duct work are held to an absolute minimum thus achieving a major structural economy. Conventional heating and air-conditioning layouts for new office buildings in the metropolitan area are currently running from about $4 to $4.60 per sq. ft., and since offices are more easily and economically handled than apartments the estimated cost of $2.61 per sq. ft. for this building is nothing short of sensational.

The air-conditioning system will include cool and tempered ventilation from the same source. Emanating from the periphery of the service ring, warm air is directed toward the outer wall where heat loss is greatest. Manually operated louvered at the mouth of the supply ducts permit individual regulation for each unit.

For maximum efficiency the building was divided in half horizontally, the upper portion served by air-conditioning equipment on the roof, the lower by similar equipment in the basement.

Radiant heating is located in the ceiling to gain extra sensitivity and eliminates any possible loss of efficiency due to carpeting. As shown on the diagram, in the few apartments that include a half-unit, twin coils are planned.

While the mechanical performance of the structure has been ingeniously worked out, the shape of the building itself is highly important both to comfort and economy. Because the circumference of a circle is the shortest length enclosing a given area, minimum heat loss is achieved on the peripheral wall. Furthermore, rooms laid out on an arc undergo a very gradual reaction to the sun's movement whereas on right angle buildings, thermal variations are much more abrupt and radical. This allows the thermostatic zoning of the spiral building to be kept to four sections, north, east, south and west, controlled by only four shielded thermostats on the roof. (Conventional buildings often require two or three thermostats to an apartment and as many air-conditioning outlets.) Where one of the spiral apartments spans two quadrants of the circle, it is served by two of the roof thermostats. Finally, a high degree of standardization has made the whole heating and ventilating job simpler by making the use of double insulating glass economically feasible.
APARTMENT BOOM floated on public risk and private profit.

FHA's 608 program has stimulated the volume of rental housing but watered its finance and stifled its design.

Not since the tinsel days of S. W. Straus & Co. bond financing has the U. S. seen anything like its present apartment boom. On Long Island meadows, where only yesterday big estate holders Alfred P. Sloan and Harry F. Sinclair had nothing more than an occasional golfer to obstruct their view, enough garden apartments have sprung up to swing election districts which had been Republican for decades. In Miami, owners of new apartment buildings slashed rents 10 per cent, still could not fill them up. In Chicago, where a complete new rental city of 11,000 inhabitants had appeared 27 miles from the Loop and tycoons by the dozen were becoming part owners of apartment buildings, to rent advertising lineage was up 100 per cent over a year ago. Some 30 per cent of last year's record housebuilding starts were in apartment buildings.

But the remarkable fact about the Great Apartment Boom is that this time it is being supported, not by the optimistic financing of some contemporary S. W. Straus, but by the U. S. government. Last year, by conservative estimate, 70 per cent of the apartment buildings started were covered by FHA mortgage insurance, under which for ½ of 1 per cent a year the government assumes 100 per cent of the risk. This means that if too many vacancies appear and mortgage payments cannot be made, the U. S. government may become the owner of up to $2.4 billion worth of apartment buildings. Nobody else involved in the deal will lose a cent. In fact, they will all have made money.

The apartment buildings are all being financed under FHA's famous section 608 which guarantees up to 90 per cent of their hypothetical cost or value. This miraculous piece of legislation makes it possible for almost anybody of moderate acumen to become an apartment owner without spending a cent of his own money. The money comes from some eager lender who, even at the worst, cannot fail to make a little profit. In the event of mortgage default, he can simply hand the property over to the government and take back federal debentures, now somewhat above par. Even if he just becomes restive, or sees a chance to put his money to work at ½ per cent more, he can sell the loan to another helpful federal agency, the Federal National Mortgage Association, which already owns about $28 million worth of 608 loans. This combination of public risk and private profit is perhaps the only way an apartment building boom could have got started under rent control, which suspends the normal action of supply and demand on all postwar housing. It has, in fact, put up so many apartments that in most cities the housing shortage is now more a matter of politics and rent control than a matter of less housing units per thousand population than was considered normal before the war.

Hundreds of builders all over the East have found that the surest way to tap the 608-bonanza is to consult a local specialist in the idiosyncrasies of FHA apartment building. More often than not this specialist is an architect. One such specialist, who will be referred to as John Smith, thinks that the surest way for a 608-builder to go bankrupt is to hire what the Forum might call a good modern architect. Mr. Smith is quite possibly right. But this should dismay more than modern architects; it points to the very heart of what is the matter with today's government-backed apartment boom.

Under the 608 set-up, most builders are interested only in a quick profit. They naturally find that they can add nothing to this by making their buildings any better than they have to. The real way to make a profit is to figure out ways and means of making the actual cost of the building less than the amount of the mortgage loan approved by FHA. And just about the easiest way to start this process is to pay the architect only 1½ per cent instead of the 5 per cent fee which FHA allows in its estimate of building costs. By this one simple step, the builder adds more than two-thirds to the 5 per cent profit that FHA expects him to make. Smith can quickly point out to him a great many more ways to the same end.

So far Architect Smith has had his finger roughly on $66 million worth of 608 building, and a good guess would be that his earnings have been over $1 million. As for 1950, Smith is not particularly worried about the impending March 1 demise of Sec. 608 which has been so kind to him. He is sure that Congress will share his own opinion that a shut-down on 608 building would precipitate a major depression. "This title alone," he says, "is keeping three million men employed in construction and an additional three million in the materials industry."

Nor is Smith particularly disturbed by the fact that 608 apartments are now being freely offered for sale in the New market on a 33 per cent return basis—i.e., if the new buyer is able to keep them rented at the FHA rent schedules, he will make 33 per cent a year on his investment. This profit rate is some indication of what the smart guys who are selling out think the buyer's chances are.

Smith simply thinks the sellers are very wrong. He is convinced that more inflation is on the way—"we have to pay
off the national debt in cheap money”—and that “these 608 buildings will be cheap compared to what we can buy later.”

Some more detached observers of the present housing situation share Smith’s point of view. They say that it is the manifest purpose of the government to provide housing. Some of this housing is being provided by direct government action under the public housing law passed last summer. The balance is being provided by government guarantee under this or that FHA Title or under the VA program. The public what rent schedule to set up, where to go for mortgage financ-

He has the whole encyclopedia of rental housing

These philosophic viewers hold that, even if the government eventually has to swallow the cost of all the FHA apartments put up since the war, the cost will be much less than the cost of public housing. And by harnessing the most acquisitive aspects of private enterprise to FHA housing, the government has already gotten more new apartments started under FHA in the past three years than it is likely to provide in the next two or three under public housing and at about four-fifths the cost. Under the circumstances, perhaps it is unkind to look a gift horse in the mouth and wish that the standards set for the FHA housing had been better.

Rent control dilemma

In any event, Smith is an intelligent man and a competent architect, and an excellent specimen of an indispensable element in our society: the man who gets things done. Unlike many other diggers in the FHA gold mine, he is no apologist. “Sure we’re gambling with the government’s money,” he says cheerfully. “Any man who would gamble with his own money under rent control would be a fool.” It is hard to argue with this point of view. In a way, the FHA formula is an attempt to compromise with the basic economic dilemma of rental building today: the fact that new rental building at $2,000 a room must compete with rent-controlled buildings built ten years ago for $800 a room—and still pretty good housing.

For many years, Smith has specialized in designing the type of apartments favored by FHA and is widely acquainted with its staff. He has the whole encyclopedia of rental housing regulations written in the back of his head. He knows how to meet 608 minimums without spending an extra dollar, and he also knows just what kind of plans will get the quickest processing.

Smith’s intimate 608 know-how has put a lot of men in business. “Give me any smart business man,” he says, “and I can make him an apartment builder in three weeks.” Candidates show up in his office by the hundreds. He tells them how much they can afford to pay for land, exactly what to build, what rent schedule to set up, where to go for mortgage financ-

ing. He attends to all the FHA processing. The builder is on his own for materials buying and for construction (if he lacks experience, he simply hires a good building superintendent).

One of the ways in which Smith is a great boon to a 608-builder is his precise knowledge of current construction costs. He gets this by the direct route of being a 608-sponsor himself. This year he is building (as well as designing) $10 million worth of 608 jobs, and says he will build $25 million more next year. His building firm is an interesting one: participants in the sponsorship are the plastering contractor, floor layer, carpenter and Smith.

Smith’s architectural work has not appeared in the Forum. This is no reflection on his ability, but rather an indication of his own frankly expressed prejudice against contemporary design. “No matter what kind of project these modern designers attempt,” he says, “it always turns out to look just like a gas station.”

While Smith’s own planning principles would sound elementary to a qualified “modern” architect, they are probably in advance of the great body of 608 apartment planning. In spite of the huge volume of work in his office (“We turn out plans in three weeks.”), he does all preliminary sketches himself. He makes an effort to relate siting to contour, to obtain enough interior wall space to take furniture, to provide ample closet space, some ventilation in bedrooms, etc. His claim to distinction is the really brilliant way he can execute these minimum requirements of apartment planning within a very rigid cost limit—a limit set by the sponsor’s intention of realizing a maximum cash take out of the deal. Here is a rough idea of the builder’s possible cash take:

⇒ He may save up to ¾ per cent of the 5 per cent architectural fee allowed by FHA.
⇒ He may get a 3 per cent premium from the mortgagee. (In New York, the premium has ranged as high as 4 per cent. Over the country as a whole, a 1½ per cent premium is commonplace, and, with the advent of New York and Massachusetts savings bank money in the national market last summer, competition for 608 loans became even keener).
⇒ He may build faster than FHA’s allowable schedule of 12-18 months. (Some builders finish in five to six months, not only making a tremendous saving in labor but realizing six extra months of rent.)
⇒ Most importantly he tries to turn an honest penny by cutting construction costs below the estimates made by FHA in setting loan value. (Savings up to 8 per cent on subcontracting and materials shopping are possible. Moreover, since up to 18 months may elapse between FHA processing of the application and building completion, the builder will profit from any general drop in construction costs—like the 10 per cent drop over the last year.)

“Why shouldn’t the more efficient builder make a greater profit?” ask many defenders of the FHA status quo. So far this has sounded fine to Congress, as it does to any casual observer. But in this case the profit isn’t the customary per-

98 Architectural FORUM January 1950
centage taken by enterprisers for their own management time or their own risk capital—but, through all these devices, up to 12 per cent cash actually taken out of a long-term mortgage loan backed up by the taxpayer’s credit. It is in addition to the 5 per cent builder’s fee which FHA allows in making its estimates of allowable construction costs.

Even if the builder isn’t smart enough to make money by undercutting the building costs allowed by his FHA loan contract, two more ways to a quick cash profit are still open to him. These are by inflating the value of his land and by eventual sale of his inflated or fictitious equity after the job is built (although few buyers have as yet appeared in the market).

FHA allows current market value, not actual purchase price of land in valuing 608 projects, but limits the amount that land may count in the deal to 10 per cent. In cases where the builder has made a favorable land buy, he may profit accordingly. But even surer ways of making money out of land are available. Mere FHA approval of a 608 plan will jack up land value overnight. There is considerable speculation in FHA commitments and several heads of FHA district offices have admitted it, while arguing that they have no power to prevent sale of commitments. Speculation in FHA commitments works like this: A speculator buys a piece of land, then secures FHA approval of a plan designed (more or less) for the site. The FHA stamp of approval enables him to sell the deal at five or six times what he paid for the land.

**Land deals**

Another way the builder can realize immediate cash profits out of land after loan commitment is to sell it and then build on a leasehold. There are plenty of prudent investors ready to hand the builder this extra cash profit by buying land at many times its precommital value. From the land buyer’s point of view, it is a sterling investment. Both federal mortgage insurance and the value of the building itself stand between any default on the lease—and if the development is burdened by lease payments based on a precarious inflation of land value, nobody can lose but the government.

Whether these fascinating pieces of financial legerdemain are the legitimate rewards of ingenuity may, perhaps, be argued. But their net effect is scarcely debatable: to reduce the long-term value of the rental buildings covered by the taxpayers’ guarantee.

Because the whole 608 program is insulated from the normal forces of a competitive market by government insurance, neither the builder nor the lender need have the slightest concern with whether the apartments being put up so fast today will be vacant tomorrow. Just what this means to building quality can be seen by contrasting 608 sharp-shooting with the program of a legitimate equity investor in rental housing like the New York Life Insurance Co. New York Life’s chief concern is to build as much long-term “livability” value in its developments as it possibly can under current construction costs. This—and this alone—can be expected to hold tenants and rent levels as the years go by.

Just how thin a 608-equity can get is demonstrated by cases where commitments have been issued to so-called “owning corporations” who lack even the resources to post the required FHA examination fee (0.3 per cent). The “owning corporation” then peddles the commitment to a builder on this basis; the builder posts the necessary cash, takes over the mortgage fund, builds the building, pockets the difference between the loan and the cost, and turns the completed property back to the promoting group, which sometimes also shares in the builder’s profits.

**Continuous inflation**

Those who feel that the day of the Great Default will not be forever delayed by the current shortage of rental space point out that the 608 formula demands a continuous inflation. Future earnings for many a 608 project are calculated on the basis of 1) inflated rents; 2) an inflated mortgage; 3) reduced construction standards. This inflation of equity rests upon the assumption that every item of cost and income will remain constant for the life of the project—that is, sustained high building costs, constant operating costs, 7 per cent vacancy (10 per cent used to be considered “normal” by apartment operators in the immediate prewar years). Even where 608 equities are real rather than fictitious they amount, of course, to 10 per cent as compared with the 30 per cent equity customary in the conventionally financed apartment house.

If there is no reason for the “equity” owner to try to hold onto it in bad times, what about the loan stake in 608 projects? Or, in other words, what may the government eventually get for its money? FHA-insured loans typically amount to eight to eight and a half times the gross rent role at high rents. This compares with the customary appraisal of existing first-class properties at six to seven times the rent role at federally controlled rents. It should be noted that this is a comparison of loan value on a 608 and market value on what many investors now call a “legitimate house.”

Inflation may very well continue to rescue 608 projects by making up for whatever may be missing in equity and loan values. But any reverse of this process is likely to be disastrous. The whole FHA risk-bearing formula, which has flourished in a period of rising real estate values, has yet to meet the decisive test of a serious value decline. Cynics point out that a special HOLC for apartment buildings will not, however, be necessary, since the mechanism for mortgage collapse is already set up: the Federal National Mortgage Association, now buying whatever 608 loans lenders want to sell and even stepping in as direct lenders where private lenders will not venture.

The two most vulnerable points in FHA’s rental stake are the large number of high-rent ($95 to $130 a month) apartments and the high proportion of “efficiency” units which it has permitted to get a start. FHA has made belated attempts
to stop both high-rent and "efficiency" building. By now, practically all local insuring offices have cut their rent ceilings from 10 to 20 per cent (ceilings vary according to building location). Typical current rent ceilings on a 2-bedroom apartment are: Washington, $65 (the local office is so convinced that the area is overbuilt that it is actually processing nothing but applications for Negro housing); Los Angeles, $80; Detroit, $75; Atlanta, $65. Last summer the New York FHA office found a rental lag as high as four months in buildings in outlying sections and stopped processing rents higher than $110 for a 2-bedroom apartment. By October, this ceiling was discovered to be still too high and rents were again cut (to $88 for the comparable 2-bedroom apartment). But these belated rent cuts will make little difference in the rent levels of 608 projects built throughout 1950, because commitments run so far ahead of actual building. For example, when New York set a November 1 deadline for its most recent rent crackdown, it already had applications on file for 3,100 units, all of which will have to be processed at the old ceiling of about $25 per room.

The big 608 building boom was set off in 1948 when FHA made an important shift in its formula for computing loan limits. Previously the loan limit had been $1,800 per room and builders had argued that it simply was not possible to meet FHA minimum requirements at that price. When FHA changed the loan limit to $8,100 per apartment unit, applications zoomed. The shift meant that the builder could stretch the loan limit by putting in plenty of 1½-room or 2-room "efficiency" units. This started the building of elevator apartments in high-priced locations. In the first 11 months of 1947 only 2.6 per cent of 608 applications had covered elevator apartments; by 1949, elevator apartments accounted for 24 per cent. Examination of commitments issued during the first six months of 1949 shows that roughly half of them were for units of 3½ rooms or less (a 3½-room count: living room, bedroom, kitchen, dining alcove)—a size inadequate for a family with even one child. By last November, most local FHA offices had stopped accepting plans including anything less than one-bedroom units and were refusing to pass any large number of these.

When FHA began to plug the 608 rental program late in 1946, it hoped to meet the accumulated shortage of rental housing and give veterans some alternative to buying a house in a peak cost period. FHA said it was especially eager to increase rental supply in smaller communities and offered quicker processing for small projects. How far these latter aims were met can be gauged by the fact that roughly half of all 608 commitments so far issued are clustered in the

ONE GIANT EXCEPTION to the general mediocrity of 608 work is Park Forest, a complete new city of 11,000 population built 21 miles from Chicago's loop—39 minutes by electric train. Planned by Chicago architects Loeb, Schlossman and Bennett, this development is located on 2,400 acres of rolling, wooded farmland. Its handsome 5- and 6-room duplexes cover only 11 per cent of the building site (110 families per acre). The development is owned by American Community Builders, Inc., a firm organized by Philip Klutznick, Nathan Manilow and Jerrold Loeb. Park Forest was started in 1947 under the old $1,800 per room 608 loan limit. But very little other 608 building got underway in the Chicago area until FHA adopted its $8,100 per apartment unit loan limit. Currently dozens of tall elevator apartments are under construction within the city limits and builders have not yet felt the chill of lagging rentals which has blighted the Eastern garden-apartment belt.
environ of the cities of New York, Washington and Baltimore. At the end of 1948, over 56 per cent of dwelling units were in projects of 100 units or more (16 per cent of these were in projects of 300 units or more).

Of all the parties involved in a 608 deal, the FHA is the only one with a real financial stake in the long-term value of the properties. FHA's principal mechanism for getting long-term value is a document called "Minimum Property Requirements for Multi-Family Dwellings" and the countless decisions made by hundreds of over-worked, underpaid FHA employees in relating the blueprints before them to the standards set by this bible and to the unpredictable future of the rental market. Neither the minimum standards themselves nor the design philosophy which sets them are adequate protection for the unparalleled risk involved in this $2 billion worth of government-backed loans.

One trouble with officially set minimum standards of any sort is that they tend to become maximums. Many architects say that the average FHA official is more enthusiastic than the builder himself in holding plans to the required minimums. One architect recalls that he persuaded the sponsor to adopt larger room sizes and other amenities not required by FHA in the interest of long-term rentability, only to have the sponsor told by the FHA examiner: "You're crazy to build anything this big!"

Many architects argue that FHA minimum standards are already substandard. Its minimum 150 sq. ft. living room is 10 sq. ft. less than the minimum living room acceptable to the New York City Housing Authority for a family of four. Its master bedroom minimum of 100 sq. ft. compares with a master bedroom of 125 sq. ft. in New York public housing. Useful size of the living room is generally further reduced by the fact that it is used as a passage to reach other rooms. FHA uses the interesting phrase "semi-privacy" to lend special approval to those plans where this passage is accomplished at one end of the living room rather than diagonally across it. Corner ventilation (two windows at right angles as distinguished from through ventilation) is a minimum requirement for all bedrooms, but even this is usually waived in the case of small apartments.

Agreement not to compete

There is no way of knowing how many other exceptions have been made to the already low 608 minimums. In each local insurance office, the chief underwriter has the right to waive minimum standards if local need for housing is severe.

Although they are certainly not intended to do so, FHA minimums actually serve as a general agreement to restrain competition. Because the buildings are protected from the normal hazards of future rentability by government insurance, nobody needs to build any bigger rooms than anybody else.

One member of the New York Chapter A. I. A. housing committee which has just begun an investigation of 608 design standards says: "Minimum standards on mechanical work are not being adequately met. FHA requires that mechanical work be designed by a registered engineer, but builders who don't want to pay an engineer's fee frequently turn to engineers employed as salesmen by equipment manufacturers. With the minimum examination of mechanical work permitted by FHA, this subterfuge often succeeds. These men can't give much time to each individual job; they often are obliged to use rule-of-the-thumb methods. We were once able to reduce the cost of a mechanical installation by one-half over the plans presented by the manufacturer who designed the job."

This same architect, a member of one of the few top-rank architectural firms which have had a chance to do 608 work, also recalls that on one big recent job, the mechanical subcontractor called up to inquire if the plans would show the size of the boilers, size of piping, where the valves were going, etc. He was unaccustomed to getting such detailed plans on 608 work and said that he was obliged to increase his bid where he had to supply mechanical information.

Impregnable conservatism

It was not always so. When FHA appeared in the housebuilding business in the depressed year of 1934, its planning and construction standards were actually regarded as a great light in a wilderness at the mercy of jerry-builders and fly-by-nighters. In the area of the moderate and low cost single-family house, this was, during FHA's early years, pretty close to the facts. In the area of rental housing, FHA's effect was more limited since, until the advent of 608 in 1942, it had insured only about $144 million worth of loans covering 37,964 units. Even so, it can be credited with popularizing the livable 2- and 3-story garden apartment, a building type which appeared before the depression and held its rent levels remarkably well in the real estate disaster which followed.

But as the agency and its standards aged, its initial crusading fervor was buried under an impregnable conservatism. Meanwhile, the housebuilding industry itself, as a result of war expansion and of an accumulated technological advance, finally passed across the threshold of the industrial revolution. As FHA acquired a large interest in existing residential real estate values, it became increasingly fearful of any threat to those values—either through the introduction of new construction techniques or new planning principles. Moreover, FHA's specialty was the single-family house, and its standards for the apartment building were in many cases simply adapted from standards considered adequate for the detached dwelling. When the 608 rental program suddenly boomed to enormous proportions in 1948, FHA was dealing with a building type with which it had had little previous experience and to which its whole point of view was maladapted.

One of the most fascinating aspects of FHA's underwriting position in today's rental building is its strange mixture of financial radicalism on the one hand and design conservativism on the other. That is, FHA shows an optimism in going along with nonexistent equities and inflated loans that would make a conservative banker blanche. But it is far

(Continued on page 104)
GEORGE NEMENY and A. W. GELLER, Architects
BRYAN J. LYNCH and DONALD L. KLINE, Landscape Architects
PETER W. BRUDER, Consulting Engineer
608-APARTMENTS shrank to "efficiency" plans in 1948

These two plans for 608 apartment developments show the difference between planning for long-range rentability and simply meeting FHA's minimum standards. Centennial Gardens (page opposite) was built in Syracuse, N. Y. "Modern" architects Nemeny & Geller, although working within very sharp cost limits, managed to increase room sizes 25 per cent above FHA minimums and to open their site plan for light, air and vista. The development was built under the old $1,800 per room loan limit. It has 63 five-room apartments ($105), 39 four-room apartments ($85) and 24 six-room apartments ($127).

A more typical 608 job (above) is now under construction in a town of comparable size and climate. The shift to the $8,100 per unit loan limit invited the sponsor to load the project with 30 2-room units (no bedroom, $60-65) and 45 3½-room units (one bedroom, $80-97). There are 25 4½-room units (two bedrooms, $100-107). Surrounded on three sides by a beautiful city park, the Syracuse development covers only 20 per cent of its site (25.5 families per acre). Over strong opposition from FHA, the architects opened the site plan for maximum view ("FHA insisted right up to the end that the corners of the building be joined," they recall.) Buildings front on 90 ft. courts. All apartments have through ventilation (half of them have cross ventilation in addition). All apartments have entrance foyers with coat closet. Owner Jackson Potter believes that plan and location will maintain the present rent levels. "There has not been one tenant turnover," he says, "as compared with a 3 per cent vacancy in five other 608 developments I own."

The development shown above covers 34 per cent of its site (65 families per acre), even has four basement apartments. About half the apartments face a 52 ft. wide court, one-fourth face the rear asphalt-paved garage court. Over a third of apartments have neither cross ventilation nor through ventilation; another third have cross ventilation only. One-third of apartments lack foyer; most have inadequate dining space. Small double-hung windows with shutters contrast with large picture windows in Syracuse buildings.
more conservative than the average banker in its refusal to take a chance on any new architectural solutions for the problem of rental building.

FHA’s well-known hostility to the great body of new building techniques loosely labeled as “modern design” is probably the surest way to expose the already dubious value of its insured projects to severe competition from new rental building in the future. The quickest way to demonstrate this is to examine what many architects call “FHA’s court fetish.”

If there is one area in which modern designers excell, it is undoubtedly in their ability to extract the maximum use from whatever inside and outdoors space is allotted by the financial exigencies of the building problem. That is, by freeing both the site plan and the building plan from the requirements of traditional symmetry, they are able to provide more space for the requirements of family living.

But FHA seems irrevocably wed to the “court plan.” That is, apartment buildings must be twisted around a court—sometimes only 50 ft. wide—even if this means siting against the grade. (“Once they had us moving half the hillside around,” one architect says.) Orientation to sun, to prevailing winds, to view—all this is likely to be overlooked in favor of a “pretty” court plan. While the court plan may mean slightly less total building perimeter, it also means an irregular interior, where the tendency is to squeeze rooms into not fully useable corners.

In defense of the court plan, it must be said that where projects are built on barren flats or close to the building line in heavily developed areas, perhaps the best that can be done is to create a little landscaping and turn the view inside. But architects who have engaged in near mortal combat with FHA on the matter say that the court is required even where all semblance of reason has disappeared—in cases where the contour is rolling and the view magnificent.

Another example of an obsolete point of view is FHA’s requirement that the kitchen must be closed off from the living area by a door. This blanket attitude completely neglects the fact that modern ventilating devices take care of kitchen odors, that families with small children are not likely to shut the door between the kitchen and other living areas, that a cheaper and better solution might be to baffle off the kitchen from view.

Most “modern” architects who have encountered FHA processing agree that the most disheartening aspect of the situation is official insistence on routine planning with which they are familiar and a complete unwillingness to try any-
thing new. With both FHA and the sponsor lined up solidly against any departure from exactly what was done yesterday, the architect is helpless. If he wants to keep his 608 clients, he soon learns not to start any arguments with FHA processors. Some local FHA offices actually go so far as to suggest that the architect simply make use of FHA’s stock site or building plans, which it is happy to take off the shelf.

Part of FHA’s resolute conservatism is no doubt related to what it has time to review. There is often simply not time for examiners to study new designs or new systems. If it continues to occupy its pre-eminent place in the nation’s house-building, FHA greatly needs more and more competent assistants—a reviewing staff not prejudiced against independent architectural initiative.

Priority for good planning

Another factor that has conspired to hold 608 planning firmly to the familiar ways of yesterday is the builder’s rush to get his plans in before some deadline or other has expired. Title VI has been extended by Congress in a series of indecisive stops and starts; various changes in administrative regulations urge builders to get their applications in before something new turns up. Builders thus want their architects to do a quick and minimum job (for a minimum fee). One very practical thing FHA could do to counteract this would be to adopt a progressive attitude on planning, then give commitment priority or other preferential treatment to applications where an excellent planning job has been done.

When the fabulous Section 608 expires next March 31, Congress will be under great pressure to renew it. But this time Housing & Home Finance Administrator Raymond Foley will not be among those bringing pressure to bear. Foley has never been really happy about the continued post-war extension of various parts of the emergency Title VI, a special insuring fund set up to cover the extra risks of war housing and kept separate from FHA’s regular insuring fund. He will probably recommend that Congress allow 608 to lapse, but give a little more appeal to the old 207 rental program. Thus 207 loans might be authorized up to 90 per cent for low rent apartments (grading down to 80 per cent in inverse ratio to rents), but the appraisal base changed from 608’s “costs not higher than those of December, 1947” back to Title II’s “reasonable long-term value.” This is about what happened on the single house program last year. Foley and FHA Commissioner Franklin Richards have both said recently that costs have adjusted themselves to the point where there is virtually no difference between the long-term valuation and replacement cost yardsticks.

This would undoubtedly be a step in the right direction, and would probably put FHA-insured rental buildings on a somewhat sounder financial footing. But it would not cure the basic flaw in the FHA formula for getting apartments built: the fact that there is every incentive for the builder to undercut the long-term value of the property and a complete lack of incentive for him to do anything else.

Part of the trouble with the quality of current rental building is that FHA has not fully recognized nor discharged its responsibility for representing the public interest. Congress shares some of FHA’s confusion. “After all,” some Congressmen say, “the government isn’t lending the money, is it?” But the difference between making a loan on an apartment building and insuring that loan is not so great as FHA appears optimistically to believe. Actually complete control of the building operation has passed from the private lender to FHA. Even the most cautious private lenders now exercise their prudence simply by rejecting whatever FHA-insured loans seem to them unusually precocious. On what FHA-insured loans they make, their participation in the building operation is limited to rubber-stamping the plans and specifications that have been through FHA processing.

FHA can argue that its regular inspections of the building job are more effective than lender supervision in the old days. It can point to its requirement that the owner make regular payments into a replacement reserve, so that when repairs or new equipment are necessary there will be money to provide them. But it can hardly argue that it has done much to improve apartment planning over what was commonplace in prewar building or to enlist first-rate architectural talent in the job. On the contrary, its rigid insistence on routine planning has reduced the architect to the status of a draftsman. Its prejudice against “modern” design has served to keep the country’s best architectural talent from lending a hand in the solution of the critical problem of reducing the cost of rental housing. Its indifference to what the builder actually pays in architectural and engineering fees is enough in itself to make sure that top-rate firms will continue to have little to do with apartment building.

In a period of acute housing shortage, there may be some excuse for hastily putting up what many architects call the “slums of the future.” But when FHA returns to the 207 rental insurance program it ought immediately to set about raising and revising its minimum standards. It ought to undertake research to see how well these minimums have actually provided for family living requirements. It ought to ask itself if it will continue to exert its massive force against any improvement in American living standards. If there is any reason to extend the public credit to risks not considered prudent by private capital, it is certainly not to the risk of thin equities and inflated loan values but to risks more properly in the public interest—the risk of new planning methods and experimental building techniques.

Help the long-term investor

FHA will probably continue to be the dominant force in both single-family housebuilding and apartment building for as far ahead as anybody can see. But it may not be too late to inquire if, for apartment building at least, there are not other, and perhaps better ways, to the same end. First-class rental housing—if the investor can manage to hold on to it.
long enough—can be shown to be a better long-term risk than, as real estate operator Robert Dowling says, "than even the best-managed groups of other investments." Most of the apartment buildings which went through the wringer of the last depression are now paying off a handsome return—although not to the original bondholders. It is this kind of long-term assurance which persuaded New York Life to put $30 million into its spectacular Fresh Meadows housing development in a year of peak building costs.

But if the insurance companies are investors big enough and patient enough, to wait for long-term returns on rental housing investment, there are few others. The special handicaps and hazards which beset this type of investment are usually enough to make equity stakes drop like apples in any sharp economic downturn. It might be well to consider how the government fiscal power—instead of being limited to the awkward FHA formula—might be employed to offset some of the disadvantages which an equity investor in rental housing must suffer. The first of these, of course, is the obsolete real estate tax system, basically unchanged since land was the nation's primary source of wealth. Federal income tax incentives for the legitimate equity investor in rental housing would be an even more powerful tool for directing the flow of money into a socially useful direction. In a future article, FORUM will explore some of these alternative ways to lick the rental housing dilemma.

608 DEFENDED — A rebuttal by Architect Erwin Gerber, a 608 specialist, claims, among other things, that modern architecture prices itself out of the apartment market

One of the early pioneers of the garden type apartment, Architect Erwin Gerber of Newark, N. J., has had a long experience in the planning and design of this variety of apartment building both as an FHA technician and more recently as a prosperous practicing architect. Today he is a specialist in the design of FHA 608 apartment projects and is thus a professional colleague of the architect referred to as Mr. Smith in the preceding article. FORUM showed Architect Gerber proofs of this article and invited his comments. His statement appears below.—Eb.

Rather than attempt an unnecessary defense of FHA, I will endeavor to answer the charges in the preceding article against 608 as one who was in at its birth, helped to expand it and finally reaped a few of it's benefits while on the outside looking in.

Not all FHA offices allow 5 per cent for architectural work, some drop the fees as low as 3 per cent. We must not forget that the fee includes engineering and landscape work, which in some cases exceeds the work by the architect.

The builder who is smart enough to buy a $75,000 piece of land for $25,000 should not be vilified. The builder who by smart purchasing and elimination of excess overhead and lost motion saves an additional amount should not be classified as sharp. Does the trade give a bad name to the general contractor who customarily adds 10 per cent overhead, 10 per cent profit and 10 per cent for emergencies to any job that he figures? Does the answer lie in public housing? This writer remembers 1939 when the preliminary costs of a public housing project, without the costs of the structural project for 24 cents per cu. ft., while the FHA builder was erecting an entire apartment itself, ran to 16% cents per cu. ft., while in 1939 when the preliminary costs of a public housing project were built in a suburban area where they did not belong in the first place.

The FHA court fetish could possibly have been overdone. I am one architect who literally developed high blood pressure while in constant war with the land planning section of FHA over site layout, in which work I take particular care and pride. However, when I look back in retrospect I believe the fault lay with all concerned. Land planning is a field by itself and very few architects have the touch in developing a suitable site plan. The constant work load pressure on the various FHA architectural sections has led them to leave site planning criticism to the overworked and undermanned Land Planning Section, which in turn took on a shell consisting of a court, a re-angle and a cul-de-sac. Quite a few layouts which I had to jam down the throats of "experts" appeared later in the experts' book as recommended layouts. Perhaps we should all go back to school to learn how to build a $10,000 apartment for $7,000 without the sponsor providing the $3,000 difference.

FORUM's solution in the substitution of 207 for 608 brings a hearty guffaw to this pioneer, for 207 was always fraught with red tape, strict compliance to rent schedules and profit limitations. A 207 can only be built where something in the fall of one year, the job is processed in the fall of the following year and the contracts are let three months later. In the meantime prices have done "flip flops."

FORUM's solution is the "Great Default" which will also affect the insurance companies and banks who are lending money on non-608 apartments and commercial buildings. A close analysis will disclose that their typical mortgage amount has about doubled over 1939. I know of no 608 loan which has exceeded 100 per cent of a 207 loan of 1939. If the 608 mortgage set-up is wrong, then we must condemn every maximum private loan made.

The condemnation of efficiency units in 608 is both unfair and unproved. The truth of the matter is that, as a 608 sponsor, I can honestly state that the efficiency apartments are the first to rent and stay rented. The proof in long term occupancy, as any owner of apartments during our last depression will testify, is that the so-called efficiency apartments stayed rented at all times, unless the apartments were built in a suburban area where they did not belong in the first place.

The FHA court fetish could possibly have been overdone. I am one architect who literally developed high blood pressure while in constant war with the land planning section of FHA over site layout, in which work I take particular care and pride. However, when I look back in retrospect I believe the fault lay with all concerned. Land planning is a field by itself and very few architects have the touch in developing a suitable site plan. The constant work load pressure on the various FHA architectural sections has led them to leave site planning criticism to the overworked and undermanned Land Planning Section, which in turn took on a shell consisting of a court, a re-angle and a cul-de-sac. Quite a few layouts which I had to jam down the throats of "experts" appeared later in the experts' book as recommended layouts. Perhaps we should all go back to school to learn how to build a $10,000 apartment for $7,000 without the sponsor providing the $3,000 difference.

FORUM's solution in the substitution of 207 for 608 brings a hearty guffaw to this pioneer, for 207 was always fraught with red tape, strict compliance to rent schedules and profit limitations. A 207 can only be built where taxes are extremely low. The real bugaboo in FORUM's desire for modern thought in apartments is that, if the cost figures disclose a greater differential than 5 per cent over the capitalized figures, then the project must be abandoned altogether. I believe that 207 will work when some of the good sections of 608 are added to it.
STUDIO UNITS
exploit local materials and a view

LOCATION: Spokane, Wash.
McCLURE & ADKISON, Architects
BRUCE WALKER, Associate
ERIC E. PLATT, General Contractor

This two-story strip of studio apartments achieves a suitably carefree solution to its problems. Gang-plank approaches bridge the two levels of a steep site and eliminate the need for interior halls. The entire structural frame is openly set on stilts. So pleased was the owner with the design that he reserved a double unit for his own use—leaving only six apartments for rent (at $85 each per month).

The mild climate of Spokane makes possible a broad use of glass along the north side, overlooking the city (photos below). Each living area receives light at both ends: the north window-wall and a full-length glass panel at the south. Built-in closet and cabinet space make up the rest of the south wall and give privacy to the entrance side. A ground level "garden room" fitted with barbecue pit and indoor games provides extra recreation and entertainment space. Laundry and drying area, as well as the heating plant, are housed on this level.

All six studios were rented well in advance of completion, and a similar strip may be built later at the lower end of the 100 x 130 ft. lot. Total cost, exclusive of land and landscaping, was $51,940, or $9.28 per sq. ft.

Mondrianesque pattern of the north facade is revealed both day and night (photos above and upper left). Waist-high plywood panels of dining alcoves form a pleasing contrast to window-walls.

Interiors are finished in plaster and cedar plywood. The owner's living area (at left) boasts a handsome brick fireplace.
DOUBLE-DECK BREEZEWAYS contain entries to two-story flats, eliminate interior stairs, create sheltered play areas

Some interesting variations on the usual appearance and layout of garden apartments mark this small 16-unit project. Particularly noteworthy is the placing of an 8-ft. wide breezeway between each of the apartments on the project's main court. This variation on a normal party wall separation has much to commend it from the standpoint of the project's livability.

In the first place, it gives every apartment on the court four-way exposure—a climatological blessing which is particularly welcome in Houston's hot and humid climate. The main and service entrances to both the upstairs and downstairs apartments open off this breezeway—a single stairway serves both second-floor apartments. Result: The omission of interior stairs and halls increases living space and improves the floor plan. FHA objected strenuously to the breezeway arrangement, claiming that it did not provide a "suitable" front entrance to the apartments. The architects won out, however, with the argument that prospective tenants would prefer the functional advantages of their "side entrance" to the monumentality of a "front" door.

On the exterior, the architects have used a trim, warm arrangement of second hand brick, shakes and good-sized windows. The roofs have a low (25 per cent) pitch with wide overhanging eaves which permit hurricane-proof ventilation of the attic. In interior layout, the one-bedroom units which adjoin the breezeway are, in the architect's words, "smaller than we would like them to have been." Noteworthy, however, is the separation of the dining area from both the kitchen and living room so that it can be used, temporarily, as a guest bedroom.

The project's six duplex apartments are all located in a separate unit that was built without benefit of breezeways. Here, however, the architects have also given careful study to the design of the entrance which benefits from a small exterior porch, interior separation from the living area and easy access to the stairs.

The apartments were built under the FHA 608 program. Rents are $95 for the duplex units, $75 for the smaller flats, six of which are furnished and rent for $100. Construction cost was $112,500 or about $7,000 per dwelling unit. The $115,000 mortgage was taken by Houston's Gulf Coast Investing Corp.


LOCATION: Houston, Texas
WILSON, MORRIS & CRAIN, Architects R. C. WEST, General Contractor

I. B. Lindenthal
Trim effect is obtained by extending part of shingle sidewall across breezeway as a protective railing. As a result, the two open areas are neatly in scale with the groups of double-hung windows on either side of each breezeway. Mothers living in the project find the breezeways a lifesaver on rainy days when they provide a dry play space for their moppets.

Second-floor overhang provides protection for entrance to duplex apartments (above). Brick wall is extended beyond building to close off utility yards between buildings. Interior picture (right) shows living area of duplex apartment, looking from dining area.
THREE STORY APARTMENT HOUSE uses full-length balconies to gain maximum living space

LOCATION: Seattle, Wash.
PAUL THIRY, Architect
E. J. McCAUL CONSTRUCTION CO., General Contractor

This 12-unit apartment house squares off a neat compromise between the restrictions of a hilly site and those of the Seattle building code. It promises, moreover, a neat annual profit of 10 per cent. In evolving the design, the architect was faced with a number of stiff conditions. Less than half the lot (100 x 100 ft.) was usable. A frame building, as this was classified in Seattle, is restricted to three floors above ground. The owner demanded, in addition to the 12 apartments, garage space.

The fact that the apartment had to be set right at the sidewalk line and, also, that the fine view of Lake Washington and the Cascade Mountains was towards the east, led to the placement of all balcony and window areas on that side. An elevated concrete driveway was provided at the rear to open up the entire length of the basement level for a garage.

The full-length balconies on every floor provide unusually generous additions to the living area of each apartment. They also provide the second emergency exit to stairwells, as required in the local code. This is worked by affixing doors of obscure glass to the permanent panels which mark off individual balcony space (shown in the vertical section). Exit doors open only from the outside and thus keep unwanted visitors off the balcony. This space manipulation saves the two extra hallways which would otherwise be necessary.

Utilities are also geared for economy—and to render a resident manager unnecessary. Each apartment is heated by radiant panels set in the ceiling, controlled by an individual thermostat. Individual metering is used, not only for overall heat but for water, hot water and electricity. This arrangement not only guarantees individual comfort but permits savings when the apartment is not in use. The basement level has laundry facilities as well as individual storage space. Charge for garage space is included in the rent ($110-$135 a month).

The building cost was $126,000 ($9 per sq. ft., including basement); land and landscaping brought the total up to $141,000. A mortgage of $68,400 (20 years at 5 per cent) was provided by the Citizens Federal Savings & Loan Association without FHA insurance.

The total monthly income for the 12 apartments is $1,440—a yearly gross of $17,280. Expenses (including taxes and maintenance) run to less than $2,300 a year. The $15,000 net profit represents a 10 to 11 per cent annual return on this carefully calculated investment.
Turning its back on the suburban street (upper left) the building opens up at the back to admit a view.

Floor plan (right) reveals minimum of hall space. Emergency exit for each unit is provided via balconies.

An approximation of indoor-outdoor living is gained by balconies and generous windows (below) in living areas.
ONE STORY ROW HOUSES are staggered in two directions to improve the usual pattern, gain privacy and create useful outdoor living areas

LOCATION, Wellesley, Mass.
HUGH STUBBINS, JR., Architect

Design of this 90-unit state-subsidized veterans' housing project sets a new standard for the planning of small public housing developments on raw land and demonstrates an imaginative site planning technique which can benefit private housing as well. With 15 acres of elbow room, it was deemed desirable to give the tenants one-story row houses on 33 ft. wide lots rather than narrower, less costly two-story duplexes.

Two-way staggering of the dwellings makes the most of the site and produces several auxiliary benefits. The two- and three-bedroom units (675 and 788 sq. ft. respectively) are grouped in pairs, three of which in staggered formation comprise a six-unit building. The set-backs give privacy to adjacent apartment entrances and avoid the monotonous appearance of the typical row house building. Privacy and variety are further enhanced by the staggered arrangement of the 15 buildings on either side of the project's main road. Living rooms opposing each other across the courts are separated by a minimum of 100 ft. and will be further isolated by heavy planting at the center of this intervening "front yard."

The compact planning of the radiant heated apartments features a 45-55 sq. ft. storeroom to replace the basement, generous closets, living rooms free of main paths of circulation and, in the three-bedroom unit, an interior bath made feasible by the one-story construction. As shown below, construction costs will average $9,507 per unit. Total operating costs including debt service are estimated at about $70 per unit per month, which will be met by average rents of $46 (plus $5 for additional utilities) and a state subsidy of $24.

<table>
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<th>COST ESTIMATE PER DWELLING UNIT</th>
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<td>Site acquisition: $155</td>
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<td>Pre-occupancy charges: $10</td>
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<td>TOTAL: $11,697</td>
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All rooms on the street side of each dwelling are protected from outside view by both obscure glass (beside the main entry) and by a perforated cinder block wall which forms a service court for laundry drying and other unsightly “back yard” activities. Dwelling units were purposely faced north and south to avoid the hot western exposure. Those whose garden fronts face north have south clerestories over the living and bathrooms to admit sunlight.
SKIP-LEVEL ELEVATORS and duplex apartments cut construction and operating costs


HUGH STUBBINS, JR., Architect

Designed for the same purpose and same town as the preceding one-story project, this multi-story building was proposed to accommodate about the same number of families (75) on a site one-third as big (five acres). However, despite its ten-story verticality, the building offers much the same kind of accommodations as are normally provided only in two-story, garden-type apartments. Each dwelling unit is a duplex apartment with living-dining area and kitchen on the lower floor and two or three bedrooms and a bathroom on the floor above.

Unusual in multi-story construction, this type of planning holds advantages for tenant and landlord alike. In addition to the psychological attractions of the duplex form (it is like a two-story house) the tenant enjoys the benefits of more open outdoor space (the building occupies only about 3 per cent of the site) which results from vertical construction. On the other hand, the owner's construction and operating costs are lowered through the reduced public corridor space and skip-level elevator service permitted by the duplex arrangement of the apartments. As shown in the accompanying photos, the public corridors occur only on alternate floors. For the 12-story design, originally proposed, construction costs were estimated at $869,200, or $10,865 per unit, $2,173 per room. Rents were to average about $56 per unit, excluding a state subsidy of about $29 per unit.

Although about 90 per cent of the prospective tenants were in favor of this type of multi-story project, it was abandoned when neighbors objected to its height in relation to the towns' typical one-family houses and succeeded in influencing a town meeting to restrict the height of residential buildings to three stories. However, substitution of one-story row houses shown on the preceding pages in no way detracts from the merits of this efficient and handsome multi-story design which was favored by both the architect and the local housing authority. It is an effective variant of an apartment planning technique widely used in Europe.

**COST ESTIMATE PER DWELLING UNIT**

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<th>Cost</th>
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* Based on 12-story building

Typical apartment's lower living floor opens to southern view through wall-to-wall window. Outside is a private balcony which provides outdoor living space and, by connecting apartments in pairs, serves as an emergency fire exit.

Two elevators in the projecting service tower make only three stops each—at every other layer of duplex apartments. Thus, elevator costs are minimized and elevator service improved. (This section shows the originally proposed 12-story building in which living floors were grouped in pairs to minimize inter-apartment noise. When the design was cut to ten stories—opposite page—living areas were placed on alternate floors.)
North facade's interesting fenestration is composed of small bathroom windows, large bedroom windows and strip windows. The composite plan, shown for the sake of brevity, shows living and bed­room floors in a single drawing and does not Therefore dramatize the fact that circulation galleries extend the full length of the building between the cen­tral elevator tower and the emergency stair towers at either end.

On the north facade, projecting living room and dining room floor plans have been omitted. Each room has an elevator near one end so that all amenities such as laundry, storage areas etc. are conveniently located near each apartment. Note that all apartments and floors are economically stacked one above another.

The composite plan, above, shows living and bed­room floors in a single drawing and does not Therefore dramatize the fact that circulation galleries extend the full length of the building between the cen­tral elevator tower and the emergency stair towers at either end.
Smooth concrete ceilings without plaster—methods for this money saving technique have been mature for several years and are in broad use, but indications now in 1950 are that new attention will extend their application from minimal buildings to luxury apartments, hotels, and high rent business structures.

The workmanship of finish on exposed concrete, used on both interiors and exteriors, has been improved vastly in recent years, and the ultimate gesture of leaving bare concrete ceilings on apartment interiors is nothing new to jobs like the giant New York City housing projects. Postwar, the New York Housing Authority has built 42 projects totaling $540,000,000 with only paint, no plaster, on the slab ceilings. And, of course, industrial jobs and utility buildings are seldom plastered. But now luxury apartments like Skidmore, Owings & Merrill’s Manhattan House in New York (to be built on the high rent upper East side for the cost-and-luxury-wise N. Y. Life Insurance Co.) are to wear unfrosted ceilings, and planners of other costly apartments, hotels and office structures are also interested in withholding the trowel.

The reasons are cost and performance. A lot of money has been saved by leaving plaster off concrete slab ceilings and, with the recent techniques of placing concrete in slick formwork, there does not have to be any substantial sacrifice of the finish. Estimates around New York of the cost of plastering an apartment-height ceiling (three coats totaling 3/4 in.) run from $1.50 to $2 per yard. If plaster is omitted in favor of the latest methods of assuring a smooth finish to a concrete slab, the cost above routine structural slab cost runs about 60 cents per yard.

Another reason which may seem minor on first consideration, but is not, is the vertical space saved by eliminating furring and plastering on the ceilings of multi-floor structures in tightly zoned cities.

A good example of both these reasons for picking smooth concrete ceilings over plaster is New England Mutual Life Insurance’s 12-story, 260 unit apartment building in Cambridge, Mass., planned from the outset with smooth concrete finish on ceilings, columns, and beams. Cost was the primary reason, but space was important too.

According to Mutual’s Architectural Consultant, A. O. Willauer, a basic considera-
tion in planning the building stemmed from the zoning height limitation of 100 ft., motivating an effort to cut the ceiling-to-floor above dimension to a minimum in order to get 12 floors in the building's 100 ft. height. If the ceilings had been furred and plastered, they would have had to dig this building into the ground an additional 2 ft., thus doubling the excavation cost and adding about 45,000 more cu. ft. of expensive building inclosure. Another possibility, but one remote to the actuaries, would be to give up one floor and its income.

**MONEY PLUS SPACE**

The answer to the space requirement was smooth concrete, and it is expected to be a highly economical answer as well. Mutual expects to show a saving of 25 per cent on estimated cost of plastering throughout, or about 3 per cent on the cost of building. Not mentioned in this job's economy was time—but one big New York builder says two months are saved in construction of a 15 story building by substituting smooth concrete ceilings for plastered ceilings.

Present techniques for producing smooth concrete ceilings began to be developed more than 20 years ago, about the same time present practices in the fluidity of concrete mixes began to come into use. Today's concrete mix is very dry, with a low water-cement ratio compared with that used generally from 1910 to 1930. Today's forms for concrete are also very tight, compared with older forms, which allowed a great deal of seepage or bleeding from the wet concrete between the boards.

In the Twenties engineers began to emphasize the importance of controlling the ratio of water to cement for strength and durability in the finished concrete. Introduction of vibration was a big advance in this direction. Also in the Twenties engineers began to work for better concrete finished surfaces, like ceilings, which would be smooth and dense and eliminate the necessity for resurfacing. The first attempts were lining the forms with various materials—among the liners tried were newspapers, roofing paper, linoleum, and metal sheets. The earliest form liner used was plywood, but in those days the right kind of plywood was not in great production, so the choice generally went to composition board.

Composition board is still used widely as form liner to achieve smooth finished concrete, but since the Twenties, plywood's cost and availability has changed considerably, and most forms today for smooth finish are plywood. The most interesting smooth concrete development in the Forties was a resin plastic finish for plywood forms which added an extremely smooth, tough, and re-usable artificial surface. Advantages and economies offered by these plastic finished plywood forms are great, so most of today's precisely finished concrete is placed in them. Steel forms are in use, but most of the big jobs go to plywood, which is easier for workmen to handle.

**OTHER FORMS**

Magnesium forms are being developed and have been used on small jobs. Absorptive forms, which "drink" the water from the mix and leave a particularly tough outer coating somewhat similar to vacuum finished concrete, have also been studied and used on projects like dams for years.

The process of making a smooth concrete ceiling starts with the forms, which must be put in place carefully and cleaned thoroughly before the concrete is placed. Careful leveling of formwork on rigidly placed centering is required. Most plywood is available in a maximum size of 4 x 8 ft., so the joining at the edges is very important, because the seam or ridge is sure to show after the forms have been stripped.
Large sections of smooth forms, made up of 4 x 8 ft. slabs of smooth plywood, are shown above before assembly. In second picture concrete is being placed. Closer picture of form work, right.

from the slab. If the plywood is not coated it must be oiled before the concrete pour; opinion on whether it is necessary to oil plastic coated plywood forms still varies, with most of the big contractors still saying yes. Wetting of the deck to close up joints and to reduce absorption of the water in the formwork is also important.

After the concrete is placed, vibrated, and has set, the forms are removed. The small ridges which show between forms now are the problem, solved by a carborundum grinder or hand rubbing with abrasive. The texture of the concrete strip where the fin between forms is ground off is never the same texture as the rest of the ceiling, but the variation is minimized by a brushing on the entire ceiling of a mixture of Portland cement and finisher. A rub with a plasterer’s trowel fills in air voids or “bug holes,” and the concrete is ready for paint—at least 28 days later. This period is the minimum time generally recommended for curing, and two coats of paint is the prescription. If the concrete must be painted while still green, it should be treated with a neutralizer (zinc sulphate) first.

PREVENTING RUST SPOTS

Chicago architects Holabird & Root & Burgee, who have studied smooth concrete carefully, have another caution to advise in planning for exposed concrete areas. They point out the importance of requiring the chairs and supports for the reinforcing steel of beams and slabs to be galvanized or painted for portions which will occur within 1 in. of the formwork. The object is to reduce or eliminate the number and extent of the iron oxide spots in exposed concrete.

Re-use of the forms is an important matter in all concrete work, and the new plastic finished plywood forms are good in this respect too. At the giant Parklabrea housing project in Los Angeles of the Metropolitan Life Insurance Co. (2,754 dwelling units scheduled for completion in 1950) smooth concrete exteriors and ceilings are poured in 13 story buildings using one set of forms repeatedly. Three quarters of a million sq. ft. of plastic overlaid Douglas fir plywood make up these forms; for the less exacting concrete work, 2 million sq. ft. of exterior type fir plywood forms are in use. The floor slabs at Parklabrea are formed by ⅜ in. thick panels of plastic finished Douglas fir plywood panels nailed to 2 x 4 ft. joists, 24 in. on center with 4 x 4 in. wales, 4 ft. on center. This framing is braced with 4 x 4 in. T-posts, set 3 ft. apart. The upper surface of the floor slab is hand troweled. The concrete frame and floors are placed in a cycle of two pours: the first is from sill to window head of the outside wall, and from underside of floor slab and
columns to underside of slab on the interior wall. The second pour is from head to sill of window, including the floor slab, in a monolithic pour. As work progresses, the plywood forms are moved up in sections.

Manufacturers say their plastic finished forms are good for 14 uses without exceptional care. When edges wear off they can be cut back, as with untreated plywood forms, which are good for fewer uses. Rental forms with coated plywood liner have been used as many as 50 times on each side, a total of 100 pours. Plastic finished plywood forms in New York are about 35 per sq. ft. against about 25 cents for regular plywood, according to local contractors. On a big job the increased number of uses more than pays for the difference.

The Lester Patterson Houses in New York, a N.Y.H.A. project, is a good example of plastic forms in action. About 1 million sq. ft. of smooth ceiling surface is being placed, using about 150,000 sq. ft. of forms. Willcox - Bein - Fish - McHugh, the builders, use a new set of forms for each building from the first to 13th floors. After completion these forms are used on other jobs, but not on "finish work."

QUICK POURING

Here the pouring cycle has been cut down to three days in some cases. On the morning of the first day the pour is made. The second day forms are stripped and raised to be placed on the next floor. The third day engineers snap axis lines; steamfitters, plumbers and electricians place sleeves and inserts; bottom reinforcing steel is placed; electric conduits are placed; top steel is placed. Concrete is poured the fourth day.

The objections to smooth concrete ceilings, unplastered, come first from the plasterers' unions. Union labor will plaster walls in housing, and leave the ceilings unplastered—but not in office buildings. Another serious objection raised by architects is the matter of noise control. Many architects are very dubious about the effect on acoustics of bare concrete slab ceilings. These two objections are linked in solution to some degree in the fact that many new office buildings, especially air-conditioned structures, have acoustical hung ceilings anyway, with ducts and piping above.

TEXTURED CEILINGS

One creative approach to the problem of the unplastered concrete ceiling is voiced by Walter Shaw, vice president of the Turner Construction Co., an outfit with vast experience in concrete work. Shaw asks why smooth ceilings and considers the answers: easy painting; good light reflectivity; easy cleaning. But there is still extra expense in producing a sufficiently slick painted concrete ceiling to take the test of today's low-ceilinged apartments, although the expense of finishing concrete smoothly is far less than that of plastering. It has been suggested, he says, that experimentation be done in the development and acceptance of textured surfaces, rather than the uniformly smooth surface which has long been the objective. This might be even cheaper than smooth concrete, and there is reason to think it might be acceptable—most acoustical ceilings, for example, are of an irregular surface and many people prefer them to smooth surfaces. In the textured surface, the small scars where forms join might be lost, as the panel edges of adjoining sheets of striated plywood are. Some work has been done in the use of grooves and fillets to de-emphasize form fins, but the problem remains to be worked out economically and esthetically. Smooth concrete ceilings, on the other hand, have been well worked out and it looks like this will be a big year for them.
With high costs necessitating rigid economy in apartment construction, acoustics often suffer. Once a building is completed, and occupied, after mistakes have been made, the situation is immediately evident and terribly expensive to correct. True, sound conditions within a room can be improved easily by applying sound absorption material to walls and ceiling, but too few architects and builders realize that this does little to cut down on noise transmission from one apartment to the next.

Noise-stopping measures should be taken in the planning stages. If they are not, the real value and future renting appeal of apartments are hurt measurably. The measure will be economic: noisy apartment buildings just become notorious—and difficult to rent in a normal market. In this respect, a little economy in construction can be a dangerous thing.

Richard Bolt and Robert Newman both own wide experience in the field of acoustics. They are members of the faculty of Massachusetts Institute of Technology, teaching and conducting research in the M.I.T. Acoustics Laboratory in Cambridge. They are also members of an outstanding acoustical consultant firm, Bolt, Beranek & Newman. In the following article they have picked out some of the commonest acoustical flaws in apartment construction and diagnosed them—with prescriptions.

THE PROBLEM OF ACOUSTICS IN APARTMENT BUILDINGS

By Richard H. Bolt and Robert B. Newman

Most new apartment buildings are not adjacent to a boiler factory, an elevated train, a noisy super highway, an airport, a turkey farm, or other source of specially annoying external noises. The principal noises are the more usual ones coming from neighboring apartments and from children playing outside. Even these, however, are a serious consideration.

To a considerable extent, trends in contemporary design of dwellings have done much to increase noise control problems. Gone are the old fashioned bearing masonry party walls, the several small rooms for the various household functions, and the many halls and dead spaces separating these elements. The trend toward open planning and thin lightweight walls makes for increased difficulty in confining noises to their places of origin. Since there are many reasons for this trend, however, and since the movement toward lightweight and prefabricated elements will probably increase, we must bring to bear the full knowledge of acoustics on these problems.

Basically, noise isolation requires impervious massive barriers. Sound passes readily through a porous wall or blanket and through cracks around doors, windows, pipes, or outlet boxes. The usual rough 4 in. terra cotta wall, before plastering, has a transmission loss (see figures, 1 2 and 3 for definitions) of less than 20 decibels. When the cracks and openings are completely sealed with plaster on both sides, the transmission loss increases to about 40 decibels. Once the wall has been made impervious, the transmission loss can be raised further by increasing the weight.

* Acoustics Laboratory, M.I.T.
Thus 4 in. of brick plastered both sides gives about 45 decibels, and its weight is about 45 lbs. per sq. ft. compared to 29 lbs. for the terra cotta tile. In general, doubling the weight adds 4 to 6 decibels to the transmission loss, if other factors are held constant.

If the nearest neighbor lives in a separate house some 20 or 30 ft. away, the probability is less than 1 in 4 that his noise will be bothersome—but there is some chance. This chance is about the same if, instead, he lives in an adjacent apartment of the same dwelling with a party wall whose transmission loss is 55 decibels. Therefore, why make party walls better than this? In fact a transmission loss this high is not easy to achieve (see fig. 4).

**STANDARDS**

The optimum standard (a 55 decibel party wall) is now considered essential in Great Britain, but the American pocket book is not yet adjusted to this price for privacy. Customary American “good practice” employs party walls having transmission loss of 45 to 50 decibels which, survey shows, gives cause for complaint to one out of three or four tenants. At 40 decibels transmission loss, one out of two tenants complains while two out of three are unhappy when a 35 decibel wall separates neighbors. Much statistical evidence is building up—people do not like intruding noise. They dislike both the intrusion on their own privacy and the inhibition which is imposed on them by the fear of intruding on the neighbor’s privacy.

A transmission loss of 45 or 50 decibels can be obtained in walls in figure 5.

To achieve 55 decibels from these walls in practice requires careful detailing to avoid short circuits between the separated elements: no bridging by mortar or rigid metal ties, no tying across by continuous joists or light slabs. A typical mistake is shown in figure 6. Studs are staggered but the plate transmits sound through the wall. Two ways of guarding against this are: breaking the plate, or carrying the partition up the ceiling to the slab.

**A COMMON MISTAKE**

Beware of medicine cabinets back-to-back in a common wall! In this very common detail, sound passes easily through the light metal backs or past the edges. Some cabinets even provide razor blade slots to make sure that the neighbor can be heard talking under his breath. Although the rest of the wall may have a transmission loss ranging from 35 to 55 decibels, the net effectiveness is reduced to about 25 decibels by this construction. This condition together with several solutions is shown in figure 7.
IMPACT TRANSMISSION

Although the nose reduction of airborne sound through the usual 4 to 6 in. concrete slab is adequate (about 50 decibels), such construction is almost transparent to impact sounds from overhead. Footsteps and sounds from pianos and radios resting on the floor come through such floors very readily. For real satisfaction a floor must provide between 15 and 20 decibels more impact transmission loss than bare concrete. Carpets, cork and rubber tiles, etc. give 5 to 10 decibels improvement while a 15 to 20 decibel reduction can only be obtained with a special floating floor (figure 8). A wood deck or second concrete slab can be floated on distributed steel or hairfelt pads, or on a continuous blanket of mineral wood or glass fiber. In all these floating constructions, the floor must be kept separated from the rest of the structure.

NOISE ISOLATION IN THE PLAN

A noise reduction of 55 decibels, hard to achieve in a single wall, is easily obtained through an intervening space such as a hall with ordinary partition construction as shown in figure 9, although total transmission loss of both partitions is not realized here because spacing is close, on either side of narrow wall.

The use of dead space such as closets and storage rooms is also useful in increasing the noise reduction between rooms. The benefits to be derived from closets are frequently over estimated, however, as illustrated in figure 10.

The presence of clothes in closets does little to increase noise reduction because doors are neither heavy nor tight fitting. With fairly heavy, tight fitting doors, the transmission loss might increase to 45 or 50 decibels.

If rooms within the dwelling and in adjacent dwellings cannot be separated with dead spaces, they should be arranged so that inherently noisy and quiet spaces are separated. Bedrooms are much better placed next to bedrooms than to living rooms (figure 11).

PLANNING THAT PAYS

This type of common sense planning can obviate much of the necessity for special construction to obtain adequate noise reduction. We must also give more consideration to the use of sound absorbing materials to localize noise sources within spaces. For wall constructions we must use complex “sandwiches” with alternating resilient and damped heavy leaves; or if greater thickness can be tolerated, lighter weight partitions with greater separation between elements can be used. If we want to obtain anything like adequate noise isolation in our dwellings, acoustics considerations must be taken seriously.

Perhaps the reaction of tenants to inadequate noise isolation is less violent than it would be to a roof cave-in, but the adverse effects on health due to lack of privacy, embarrassment, and inhibition are probably much greater than is realized. When, as happened in a recent British survey of 2,000 families, one out of three complained when separated from neighbors by only a 45 decibel wall, it is occasion for concern. How long would a new model automobile last with 33 per cent complaints?
SPONGE RUBBER gloves for condensation control on pipes

Sponge rubber has a new use in building as condensation insulation on water pipes. Sleeves of the flexible foam material are worn on the pipes which carry cold water to the under-window air-conditioning units from risers in the new office building at 100 Park Avenue, in New York (FORUM, Dec. '49).

Molded to fit, the insulation can be slipped on easily. Besides speed of application and good insulating performance, sponge rubber sleeves have a further advantage in handling: this copper pipe is sweated into place, and the rubber tubing can be pulled back easily while the joint is being braised, then slipped back up on the joint. Jaros, Baum & Bolles were mechanical engineers on the job. Kerby Saunders, Inc. were mechanical contractors, and George A. Fuller Co., general contractors. Architects were Kahn & Jacobs. The tubing is manufactured by Sponge Rubber Products Co., Shelton, Conn.

AUTOMATIC WINDOW packaged for use in houses

A packaged automatic window for home installation, the Vita window is opened and closed by a 1/4 h.p. electric motor built in the window head. The frame is steel, with vertical tracks upon which standard steel channels of double insulating glass ride up and down when the concealed motor is put into operation. The insulating glass is supported by a treated screen which is wound on a roller at the window top, pulling the glass into closed position when furled and, when unfurled, lowering the glass and replacing it over the opening. The window can be stopped in any position.

The entire mechanical unit is fabricated; the switch can be installed anywhere in the room. Prices are: $398 for 66 x 42 in. glass size; $516 for 84 x 66 in.; $582 for 96 x 72 in. Manufacturer is Vita Automatic Windows, Inc. 101 Park Avenue, N. Y.
THE FINANCING OF PROMONTORY
(Continued from page 77)

Thirties, then revived by the Holsman organization after the war as an answer to the apartment housing shortage (see page 76). As an apartment-building device, mutual ownership is now a major force in the Chicago area. Total value of postwar trust construction: $20 million. By year's end, 12 trust projects, totaling 2,828 units, will be built or building. The Holsman organization has a design hand in all of these with 82-year-old Henry K. still taking a lively and patriarchal interest in the development of more projects.

Promontory apartments is a typical example of how mutual ownership works in one project. The building was promoted by sure-footed young (33) Herbert S. Greenwald who got the Mutual Ownership gospel when he went to work for the Holsmans in 1945 as an administrative assistant. After an instructive year of trust promotion, Greenwald decided to do some of his own in the luxury apartment field. As an added filip, he plunged forthrightly for contemporary design. After canvassing the design field, he commissioned Mies van der Rohe to do the building in collaboration with Pace Associates, a firm of young Chicago architects. Later Greenwald added the Holsman office to his already imposing list of architects. In practice, the Promontory design team was Mies for overall design, Pace for working drawings and the Holsmans for special work.

Admission fee: $6,500

Having lined up his professional team, Greenwald then concentrated on selling Trust Certificates to prospective tenants under the mutual ownership plan. His assets at the time were the Promontory site, for which he paid $95,000, and very little else. Under Illinois security laws, he had to sell one-half of his certificates before he could start building. The price of the 122 certificates—one for each apartment was a stiff $5,000. (The last 61, however, were sold for $6,500. Rising construction costs accounted for the higher price.) Much to the surprise of the Chicago real-estate fraternity, Greenwald sold more than half the certificates from plans. The rest were gone before the concrete frame was up.

The $701,500 thus collected represented one-third of Promontory's cost. Getting a mortgage to cover the other two-thirds was not easy. Greenwald peddled his plan to most of the big insurance companies. Says he: "They fell into three groups—those who weren't impressed by Mies van der Rohe's plan, those who weren't impressed by the mutual-ownership idea and then those who didn't like anything about either one." Finally, he got a taker: Cincinnati's Western & Southern Life, which gave the Promontory Trust a $1,350,000, 25-year mortgage. The loan called for a constant 4 per cent amortization with interest at 4 per cent on the declining balance remaining unpaid.

This sizeable mortgage plus the impressive sale of trust certificates is not so much a tribute to Greenwald's promotional skill as it is to the inherent soundness of the mutual ownership plan. Particularly important are the safeguards which mutual ownership provides against financial failures, over and above the fact that tenant liability is limited to their trust certificate investment. The trustee's obligation to evict defaulting tenants minimizes one of the chief financial headaches of orthodox co-op plans. Management of the building by a group of professional experts is a safeguard against the inefficient management and politicizing that characterizes many a co-op tenant-management committee. The trustees for Promontory are a realtor, an architect and a certified public accountant with Greenwald acting as their agent.

Aside from these buffers against fiscal difficulties, Promontory tenants are now enjoying a substantially lower monthly rental for their plush apartments. In signing their leases, Promontory's trust certificate holders agree to pay an "economic rent" for their apartment, i.e. its median value in the open market. Market rents at Promontory run from $120 for two-bedroom units to $207 for three-bedroom, two-bath units. Their actual rental is considerably less than their market rent, however, since the trustees charge only the building's total operating budget, prorated equally among all the trust certificate holders. During this first year of operation, the difference between the economic rent and actual rent allowed by the Trustees is $30. Greenwald thinks that he can get this down another $24 after seven years. The reason: at that time, more than $490,000 of the mortgage will have been amortized. As a safety factor Western & Southern Life, the mortgagee, asked for—and got—an additional $150,000 amortization in the first seven years. Principal payments will drop over $25,000 a year with a resultant cut in the building's operating expenses.

If a trust certificate holder wants to sublet his apartment, he may do so and keep the trust certificate. Even if he should surrender his lease, he can still keep the certificate as an investment and pocket the difference between the rent he charges and the trust's rent. To keep the building occupied by Trust Certificate holders, however, the Trustees can call in the certificate of a non-leaseholder after two years. He has to surrender it at book value unless he finds a buyer himself. (At the present time, the certificates are worth about $1,000 more than their book value.) In addition to all these rent-reducing advantages, Promontory's certificate holders get the usual tax benefits accorded co-op owners: deduction of their mortgage interest and real estate taxes from their gross income.

Lake Shore Drive Apartments, the second Mies project sponsored by Greenwald (p. 75), was ordered by him soon after Promontory turned the financial corner in June 1948. Although Architect Mies van der Rohe ignored Chicago's apartment-building convention even further by specifying floor-to-ceiling windows for all the living rooms in Lake Shore, Greenwald and a new associate, Robert H. McCormick, Jr., has had no difficulty in selling Trust Certificates ranging in price from $6,500 for a 3½ room unit to $12,000 for a six-room, two-bath unit. With construction just started, he has sold more than one-half of the certificates. He also found it easier, but still no pushover, to get a mortgage. Mutual Benefit Life Insurance Co. of Newark is giving the Lake Shore Trust a $3,100,000, 20-year permanent mortgage at 4½ per cent and New York's Manufacturers Trust Co. is providing construction money at 5 per cent.

Little trusts, big trusts

Greenwald, of course, has no qualms about taking the 10 per cent profit allowed the promoter under the trust plan. However, the Holsmans who are themselves sponsoring ten middle-income trust projects in Chicago, have some different and interesting ideas about mutual trust profits. Like Greenwald, they have a separate trust for each apartment, known as the Special Trust. Unlike Greenwald, they also have an overall fund, known as the Community Development Trust which receives all of the 10 per cent profits from their Special Trusts. (However, the Holsmans do collect a separate 10 per cent from each of the Special Trusts as their architectural and service fee.)

The Community Development fund will be used to promote other middle-income trusts. The whole idea, according to the Holsmans, is a natural development of their original trust plan. The special trusts, built separately, are not big enough financially to permit any considerable savings in construction and promotional costs. The Community Development Trust is the overall instrument, in the Holsman scheme of things, which will be able to do this. They have already assigned two main functions to the fund. It will be a research fund to investigate more efficient, less costly apartment construction methods and, secondly, it will be a revolving fund for direct financing of special trusts without hiring outside money.
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DAYLIGHT IN ABUNDANCE. There are some places in the home where this is wanted, but privacy must be assured, too: In bathrooms, entrance-ways and stairwells, for example. Pittsburgh Corning Glass Blocks are ideal here, because they meet these two requirements fully. What’s more, they are actual moneysavers for your clients. Their insulating properties cut heating bills and they hardly ever need repairs or replacement; never require painting.

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TO FRAME THAT VIEW of the garden, road, pond or distant hills and make it a living picture for enjoyment from inside the house. Here Twindow, Pittsburgh's window with built-in insulation, is the logical answer. Twindow units are flawlessly transparent; have exceptional surface beauty. Architect: J. P. Trouchard, Washington, D. C. 

TWINDOW is made up of two or more panes of Pittsburgh Polished Plate Glass, enclosed in a protective, long-lasting stainless steel frame. The hermetically-sealed air space between the panes offers effective insulation—minimizing downdrafts, cutting heat losses through windows, reducing condensation. Forty-five standard picture window sizes are available and are adaptable for either wood or steel sash. Twindow is another example of the extensive Pittsburgh research which helps to solve architectural problems by supplying materials that will produce better jobs.

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MINIMUM FINANCING COSTS for a 2,000-unit apartment project are achieved through a packaged building plan which foregoes FHA's construction loan insurance and capitalizes on cost-cutting construction

ALBERT D. LUEDERS, Architect

With its present ban on insuring high-rent projects, FHA had set the tune for 1950 apartment-house construction. And many a U. S. builder, as he prepared to fall into line with the new policy, wondered how he could cut costs to meet the new specifications. However, some FHA lower-rental projects were already underway. One is the $15 million Shirley Duke garden apartments, now being built in Alexandria, Va., on the white-collar outskirts of Washington, D. C. Rents for its 2,100 units: $59.75 for a one-bedroom unit, $72.50 for two-bedrooms. While this was still far above FHA's $45-55 definition of low rent, Shirley Duke's rental schedule was closer to the goal than the average 608 project. (The median rent for new 608 projects last year was around $80.) Such rents directly reflect the project's low ($6,600) cost per unit, and its even lower ($6,500) mortgage per unit.

The credit for keeping the big Virginia project in the lower-rental, lower-cost bracket goes largely to Investors' Diversified Services, Inc., the Minneapolis trust company which is financing the project.* Shirley Duke was planned and built to Investors' specifications. A shrewd and long time mortgage operator, Investors has begun a long-range program to strengthen its portfolio with well-planned, low cost apartments in areas where it thinks the rental market will continue strong. Washington was selected after Investors' local representative E. M. "Hap" Bros checked the market, then decided that a project with a $75-rent top would be a good investment. Together with Don Loftus, Investors' building consultant, he planned all phases of the Shirley Duke project, from land buying to the selection of materials. They organized a syndicate of builders who are constructing, and will own, Shirley Duke when it is finished. (The builders, all active in Washington area, are Herman Hutman, Earl Preston, Bryan Gordon.) Throughout the whole planning operation, the emphasis was on low cost construction. To its builders' schedule of cost-cutting devices, Investors added one of its own. It agreed to pay out its construction financing without benefit of FHA insurance. Says Hap Bros: "In a normal project that we were financing, we wouldn't pass up FHA insurance as we did here. But in Shirley Duke we knew just what the costs were and where the money was going. There was no need to insure a sure thing." Investors, of course, charged the going rate for its construction-money payouts—5 per cent plus the current 1.5 premium. It has a firm FHA $13, 846,000 commitment for the final mortgage. Some impressive savings resulted however from its decision to by-pass FHA insurance during the construction period.

Eliminated from Shirley Duke's cost sheets was FHA's 1/2 of one per cent insurance charge—a total of $69,000. Also eliminated: the escrow funds which FHA requires as part of its construction insurance. At Shirley Duke, about $1,670,000 would have been tied up in such funds before the completion of the project. Broken down, this amount would include: $60,000 for the payment of off-site improvements, $207,000 (1 1/2 per cent of the working capital) held in escrow to guarantee the completion of the project and, finally, about $1,400,000 in stage construction payments (10 per cent of the total) which are withheld until the mortgage is closed. Freeing these funds resulted in cost-clipping economies all along the line. Unhampered by FHA's strict stage-construction system, Builders Hutman, Gordon and Preston draw their construction money directly from Investors when the construction schedule warrants it. Investors has a C.P.A. and its own engineer on the job to check the requisitions. This ability to tap the till at their convenience permits them the advantage of mass purchasing, prompt-payment discounts. Although these construction-financing savings were significant at Shirley Duke, the main reason for its lower rentals was in careful control over the design and construction.

* Better known as Investors' Syndicate. Its name was changed shortly before control of the organization was taken over last year by Railroad Tycoon Robert R. Young's Alleghany Corp.
Another unusual use of Insulux Glass Block:

In this Chicago apartment building, twin screens of Insulux Glass Block effectively conceal the outside service stairway. At the same time, Insulux lets daylight into individual apartments while hiding unwelcome views from the tenants.

There are many, many uses for this remarkable glass block material—bathrooms, entries, living rooms, partitions, and kitchens are but a few possible places for Insulux.

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NEW FURNITURE IS HARDY AND HANDSOME

Lest we forget that all that's modern need not be Eames—here are a number of recent designs which broaden the field of inspection and choice. None of them is revolutionary in materials or cost—all honestly try to combine the useful with the pleasing.

Since metal shortages have disappeared, two designers are using it with especial elegance and precision. The expandable table base offered by Edith Hernandez & Co., New York City, is composed of polished bronze parts. These contrast finely with an impervious slate table top as well as with one of plate glass (which allows its meticulous joinings to be seen). William Armbruster produces solid designs that have earned solid acceptance in years throughout the commercial field. His new chairs, tables and sectional sofas take advantage of metal's durability, using narrow frames of square steel tubing, welded at the joints. These, finished in several mat colors, are unconditionally guaranteed. Nylon upholstery and foam rubber cushions round out a group that is noteworthy for hard wearing qualities.

Traditions in wood and plywood also carry on. Alvar Aalto has joined the free-form throng with a coffee table whose plate-glass "wobbly" top floats over a neat laminated base. A high backed chair, a sofa and additional cabinet groups make further use of Finnish light-colored woods and tapering curves.

Clayton Lewis, designer in Springfield, Ore., makes the most of the fine stand of wood still left in his native state—maple, ash and chinquapin. His furniture (below) is as handsome as it is reasonably priced.—S.K.

Alto's free-form table (above) costs $81.50 retail. His table and chair (right) are $107 and $65.50, respectively—at Finsven, New York City.

Edith Hernandez' expandible bronze base for a coffee table is completely demountable (upper right). Base parts alone are $50; with long slate top, $72; with glass, (right) $56.

William Armbruster's designs for Edgewood Furniture Corp. (below and right) use frames of square steel tubing. The table with a top of Vermont slate is $99; the chair, $89.

Claywood Design Products will be welcomed to the lower cost field. The chair (right) with seat of hard twist cotton cord is $22.50; the table is $90.

Claywood stool (above) stacks beautifully, costs $15.

Photos: Ezra Stoller—Pictor; Ben Schnall; William Armbruster; Philip Lewis; Ronald Partridge
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NEW!

"DECIDEDLY BETTER" SLIMLINE

Once in a blue moon, a truly great fixture makes its appearance. Now, after years of research and designing, the matchless new Day-Brite "LUVEX" is ready.

All the usual advantages of Slimline, of course—instant starting...extremely high efficiency.

But then, add these "LUVEX" extras—sturdy, no-sag, heavy gauge steel chassis, enclosure and louvers completely interlocked into a rigid one-piece unit, quick, easy installation and smart appearance—and the "LUVEX" is absolutely everything you expect of Slimline lighting.

Maintenance? Simple! So simple, in fact, that the "LUVEX" can be relamped and cleaned without disturbing a single part of the fixture—without so much as touching a latch, chain, nut or bolt!

Get the full "LUVEX" story. It will pay you to know all the facts about this remarkable new Day-Brite development. Write today for Bulletin 10-M.

For two 96" T-12 Slimline lamps, single unit or continuous installations. For suspension mounting, listed with 8" and 28" "J-J" Adjustable hangers.
SERVEL'S Lower is a

3,010 GAS REFRIGERATORS were chosen for Park Forest — Chicago's most modern community, now under construction by American Community Builders, Inc., Loeb, Schlossman & Bennett are the designers.
YOU'RE not guessing when you choose Servel Gas Refrigerators. Experience with multiple installations has shown that Servel's upkeep cost is only a small fraction of the cost required to maintain other types of refrigerators ... thanks to Servel's basically different principle of operation.

By having a tiny gas flame do all the work (instead of a motor), the Servel freezing system does away with all moving parts. Thus there's no machinery to grow noisy ... to wear and need repairs. That's why only Servel stays silent, lasts longer ... gives you and your tenants dependable, worry-free service year after year with no loss in efficiency.

Consult your Sweet's catalogue for full details, or write to Servel, Inc., Evansville 20, Indiana.

*Just Look At The Record

"After nine years our 398 Servels cost only 1¢ a month per unit for upkeep." MOBILE, ALA.

"In 12 years our Servels have cost us nothing for repairs." LOS ANGELES, CALIF.

"Our 750 Gas Refrigerators are 4 years old and cost less than 50¢ a year per unit to maintain." CORPUS CHRISTI, TEX.

"In the six years we have had our Servels, we've had no maintenance costs or service calls." CHICAGO, ILL.
Louis Sullivan’s last testament (now reprinted after almost a quarter-century) is well-titled. It is the story, not primarily of the genius who was acclaimed early, then wasted by 30 years of public neglect, but of the birth and growth of the single idea, in which this man, its creator, never lost confidence. Today the world knows Sullivan’s idea through his buildings and through those of his more-famous one-time assistant, Frank Lloyd Wright. This book, in its own right a minor American classic, is the story of the development of—“form follows function” or, as he alternately phrased it, “of-the-thing-not-on-it.”

From the beginning to the end of his life Sullivan kept an exploring, pioneer mind. The amazing originality and resilience which could establish its own first principles in the midst of early Chicago’s hurried materialism is evident on every page of his record—from the alert infant blinking at Donati’s comet in 1858 to the sick, ignored artist of the 1920’s. His first meeting with destiny is characteristic. The 12-year old boy walking about the streets of Boston heard a workman refer to “the archeetec.”

“What is an archeetec,” he asked, “the owner?”

“Naw, he’s the man what drawed the plans for this building.”

“What! What’s that you say: drawed the plans for this building?”

“Sure. He lays out the rooms on paper, then makes a picture of the front, and we do the work under our own boss, but the archeetec’s the boss of everybody.”

“Louis was incredulous, but if the laborer’s statement were true it was glorious news . . . He asked the man how the architect made the outside of the temple. “Why, he made it out of his head: and he had books besides”. . . .

“How could any man make so beautiful a building out of his head? What a great man he must be; what a wonderful man! . . . Then and there Louis made up his mind to become an architect and make beautiful buildings ‘out of his head’.”

Sullivan’s childhood, as he himself recognized, held the clue to all his later work: “What the child accepts, we accept; what the child rejects, we reject.” His parents and grandparents, his schooling, his early architectural jobs—all are the soil from which the final flower, the idea, sprang. He describes them with wit and precision noting justly in himself—“keen accuracy of observation and lively interest in all constructive affairs.” Interspersed with these accounts are chapters of rather formless philosophizing (“baying at the moon,” Wright once called it); but this, too is part of the development of the man in his time.

Sullivan reveals that his considered thought was far less arrogant and arbitrary than it appeared in everyday life—for instance as it (Continued on page 140)
In the plan of this most interesting school a series of class rooms projects from a corridor. The practically complete window-wall on two sides of each room provides full daylight with control of sunlight and ventilation at all times. According to this plan, each class room has a full view of its own private grass and pavement court. The illustration is of the kindergarten wing at the end of the building.

This treatment is enhanced by the harmony between the classroom window-wall and the window at the back of the court. The versatility of Hope's Steel Windows was important to the success of this layout and their substantial construction will prove a lasting satisfaction for the life of the building.

HOPE'S WINDOWS, INC., Jamestown, N.Y.

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS
now make the
BEST even BETTER

Presenting TWO Great New Features
of the Original, Genuine

DUST-STOP AIR FILTERS

33 DUST-STOP Air Filters now have ONE-THIRD longer life with the same high efficiency as before.

UL DUST-STOP Air Filters are now listed by the well-known Underwriters' Laboratories, Inc.

For the detailed story behind these great money-saving improvements, write to Owens-Corning Fiberglas Corporation, Toledo 1, Ohio.

FIBERGLAS IS IN YOUR LIFE . . . FOR GOOD!

This marker is now on the DUST-STOP label. Look for it... you can rely on it.

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ANNOUNCING
The Lupton "Master"

DATA SHEETS
LUPTON window engineers have prepared a set of practical Data Sheets on the new Lupton "Master" Aluminum Window, including full size drawings of window sections. Write for your set.
Specially Designed for Hospitals, Schools and Office Buildings

A really important development in window design — the new Lupton "Master" Aluminum Window.

From a design standpoint, it opens up great new opportunities in window planning — better appearance, minimum infiltration and a greater adaptability to modern building design.

From a construction standpoint, it sets new standards of high durability and low maintenance costs.

Check these features of the new Lupton "Master" Aluminum Window:

1. **NEW DEEP SECTIONS** — both frames and ventilators 1-5/8 inches — sturdier without sacrificing lightness — added strength in this new Lupton Window.

2. **PRECISION WEATHERING** — Ventilators fit snug and tight — naturally — without forcing. Full 5/16 inch overlapping contact.

3. **SPECIAL HEAT TREATED ALUMINUM ALLOY** used in this new Lupton Window eliminates painting and costly repair and maintenance.

4. **STURDY CONSTRUCTION** — welded ventilator corners — strength where strength is needed.

The new Lupton "Master" Aluminum Window is the newest member of a great family of metal windows — Lupton. A family of windows that has grown up through more than forty years, with the constant development of new designs, new materials, and new production techniques to meet the changing demands of the constantly changing building industry. You will find it well worth your serious consideration.

MICHAEL FLYNN MANUFACTURING COMPANY

700 East Godfrey Avenue, Philadelphia 24, Penna.
In this attractive, modern plant, it's mullions by Alberene—
because Alberene mullions match so well the shadow effect
of the windows... blend so perfectly with the exterior of the building as a whole.

And...it's Alberene Stone, too, for modern-looking, durable, maintenance-free spandrels... sills... stools... trim.

Here's why—

- Esthetically, Alberene soapstone is right for giving a building—
  institutional or industrial—the modern touch. Because... its natural greenish-blue color harmonizes with any decorative pattern. And its moisture-proof surface does not chip, scale, or split—it always looks good!

- Financially, Alberene soapstone is right for pleasing even your most budget-minded client. Because... its reasonable price... its ability to be cut into thin sections... and its outstanding durability makes it triply economical.

Why not write or phone us today for samples and further information?

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MODERN buildings...

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Modern dairy plant in Richmond, Virginia. Architects: Ballou & Justice

seemed to Frank Lloyd Wright (Genius and Mobocracy, FORUM, September, 1949). He writes with enthusiasm of Henry Richardson—"he of the strong arm and virile mind—sole giant of his day" and for John Root "the man of power," under whose superficial nonsense, Sullivan "had faith in him and took joy in him as a prospective and real stimulant in rivalry." He had other heroes too—all sorts. "All honor therefore to Frederick Baumann (foundation engineer) man of brains, exploiter of a new idea which he made up out of his head." He admired such bridge builders as Captain Eames and C. Shaler Smith.

Most important of all to Sullivan is an early teacher Moses Woolson. To him Sullivan accords much the same reverence as that which Wright now accords to Sullivan. Woolson, "blend of wild man and poet," won from Sullivan "a sense of obligation and of gratitude so heartfelt, so profound that it has remained with him in constancy throughout the years. There may have been teachers and teachers but for Louis Sullivan there was and could be only one. And now, in all too feeble utterance he pleads his token, remembrance, to the memory of the ONE long since passed on."

One finds also in this account the inspiration for Sullivan's wonderful decorative motifs—his "unique efflorescence" as Wright termed it.

Through a gap of 60 years Sullivan recalls his happy days on his grandparents' farm and his pleasure in tending his own garden patch: "Had he not reared all these cherished beauties from the very seed? Had he not watched them growing, day by day, from infancy to blossoming—putting forth tender leaf after leaf, and unfolding their tiny buds into lovely flowers? Had he not watered them and weeded? How often, on hands and knees—close up—had he peered and gazed long, hungrily, minutely at them one by one, absorbed in their translucent intimacy; indeed worshipped them in friendship until he seemed to feel them grow; that they were of his world and yet not his world; that they seemed to live their own lives apart from his life."

The actual events recorded in his Autobiography end with the Columbian Exposition of 1893—that catastrophe to the progress of the Idea. Here Sullivan makes his often-quoted prophecy, "the damage wrought by the World's Fair will last for half a century from its date, if not longer." He dismisses without a reference his own 30 disappointed years of existence after that date—the Idea was his life.

One of the most admirable qualities shown by Sullivan's account is his entire lack of self-pity. "It requires courage to remain steadfast in faith in the midst of such pollution," he admits at the very end, adding immediately, "Yet it is precisely such courage that marks man in his power as free spirit."

Louis Henry Sullivan is still a man with a message for U. S. architecture.—S.K.

(Continued on page 148)
—speakin’ of homes—beautiful dry homes—

In widely-separated areas of the United States, these beautiful THOROSEALED homes testify to the substantial quality and beauty of THOROSEAL and QUICK-SEAL, the pioneer masonry walls coatings.

When VaBar is used as plaster bond on interior masonry surfaces of all exterior masonry walls, satisfaction and assurance of protection to interior plaster and painted surfaces are guaranteed.

Write for our 20 page brochure, pictorially describing masonry problems, and specification writer’s wall chart.

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are sold than all other makes combined
“Can I be sure the Structural Facing Tile I choose is a quality product?”

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There are other questions you could ask, but these two simple ones spring naturally to your mind when you’re choosing Structural Clay Facing Tile—the “wall and finish in one.”

They’re more easily and satisfactorily answered, when you ask them of any one of the companies named above.

These companies are all members of the Facing Tile Institute. *And the aim of the Institute, and of the members who maintain it, is to furnish you with fine quality, easy-to-use Structural Facing Tile, glazed and unglazed."

The Institute, in fact, was formed for this purpose. Through the years, members have devoted continuous research toward improving quality, simplifying and standardizing shapes and sizes, and obtaining a full range of colors and finishes.

Each member of the Institute guarantees that any product manufactured by him will conform to the quality standards, tolerances and grading rules established and maintained by the Institute.

For more information about the “10 good names to know” and technical data about Facing Tile, write to the Institute, Desk AF-1, for new catalog 50-C.

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Cutaway of typical J-M Movable Wall construction. The 7/16"-thick asbestos panels, on patented steel studding, are available in a light green and light tan. NOTE HOW THE COLOR GOES ALL THE WAY THROUGH EACH PANEL!

No more painting. No more redecorating maintenance.

In the world's largest laboratory devoted to the improvement of building materials, Johns-Manville scientists have perfected a process for introducing inorganic pigments as an integral part of the asbestos panels used in J-M Movable Walls.

As a result, these beautifully-textured, fireproof panels now come pre-colored.

What's more, you'll have the advantage of "integral coloring," with the color going all the way through each panel, so that it will never wear off. Your walls will have that "first-day newness" every day for years and years to come!

By eliminating painting and decorating expense, these new Transitone Movable Walls will help you to meet your wall and partition requirements economically.

Transitone panels are hung on steel studs, forming a 4" double-faced partition. Also used as interior finish for the outside walls. Lighter than ever, they are readily installed or relocated. For details or an estimate, write Johns-Manville, Box 290, New York 16, New York. © Reg. U. S. Pat. Off.

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Transitone

MOVABLE WALLS with asbestos panels colored all the way through
Mr. Smith "Slept in" this Morning!

Fortunate is the man who can let steel pipe shovel his snow while he takes an extra "forty winks" on a blustery winter morning!

Yes, by circulating hot water through steel pipes embedded in the concrete, snow can be melted on contact, ice formations prevented, and driveways and walks kept dry and safe all winter long. More and more home and building owners, plants, airports, and institutions are installing such systems.

Steel Pipe is the first choice, for good reasons. Not alone in slab heating for snow removal, but in the similar service of Radiant Heating for interiors as well... because steel pipe has been proved for more than 60 years in the transmission of steam and hot water for conventional heating purposes.

Economical to begin with, easy to form and weld, expansion co-efficient the same as concrete and plaster, durable beyond the life of the structure... steel pipe embodies all the characteristics necessary to successful installation and operation!

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BUILDERS everywhere, like the Liberty Building Company of Los Angeles, have found that American-Standard products help sell the houses they build. No heating equipment and plumbing fixtures are better known . . . none better made. Their outstanding quality, backed by strong, consistent advertising, has created wide public acceptance. It will pay you to take advantage of it!

When you install American-Standard products in the houses you build or remodel, you create satisfied customers. And whatever the type of installation . . . whatever the size of the budget . . . you will find what you need in the American-Standard line. Ask your Heating and Plumbing Contractor for details.

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REVIEW


Twelve years ago the first edition of this book was published in England. Since that time the aims and methods of modern design have been more fully discussed and documented, but later books (notable among them Giedeon's Mechanization Takes Command and Fitch's Building in U. S.) still supplement this earlier work rather than outdate it.

The new edition carries over the clear judgment and broad vision of the first version and has added to its merits more detailed chapters on the development of modern architecture in England and the U. S. The photographs, too, have been increased—from 84 to 137. It's an important addition to any design bookshelf.


This is perhaps the simplest and sanest book yet published on what modern art—in its many forms—is all about. Its main hallmarks (abstraction, distortion and emphasis on flat pattern and color) are illustrated for the intelligent onlooker with clarity and common sense. Professionals and businessmen, often among the strongest opponents of "art that doesn't look like something," may be surprised to see how closely today's art is influenced by their own tools and methods. Artists, far from tossing the world out the studio window, have been trying to express "the enlarged world of physical forces, machinery, the life of the unconscious—all of which lie beyond the human eye."

Large type, brief paragraphs, many illustrations of art of all times, clarify point after point. The reader may still "like what he likes" after perusing this, but he will know what the other man likes—and why he likes it.—S.K.


Maybe the English in their present austerity are seeking escapism in interior design. Anyway, Decorative Art begins with a lush Hollywood pacesetter that seems slightly rich to the American taste: Raymond Loewy's Palm Springs house with "indoor-outdoor" swimming pool. Whether or not the authors are trying to undermine our American architectural reputation, they follow up Loewy with a chaste English example:

(Continued on page 152)
The architects for these fine new Tudor Plaza Apartments in Buffalo, N. Y. centered one big responsibility on National Gypsum Company. They specified Gold Bond products and Gold Bond building methods. The result is that National Gypsum is solely responsible for the performance of all these related materials.

Two sturdy, fireproof Gold Bond Partition Systems were used. Walls between apartments are of Gold Bond Hollow Wall construction. In addition to making each unit practically soundproof, this system allows space for piping, wiring and ducts. Walls within each apartment are Gold Bond 2" Solid Partitions of metal lath and plaster. These streamlined partitions save approximately 4 inches of floor space per wall, provide more spacious rooms throughout.

Altogether, there are now over 150 Gold Bond quality building products, fully described in Sweet’s. For special assistance in meeting unusual problems, the engineering facilities of National Gypsum are immediately available.

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Architects: Backus, Crane & Love
Buffalo, N. Y.

Gen'l Contr.: Boehm Const. Co., Inc.
Buffalo, N. Y.

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Over 150 Gold Bond Products including gypsum lath, plaster, lime, wallboards, gypsum sheathing, rock wool insulation, metal lath products and partition systems, wall paint and acoustical materials.
The UN Secretariat is a TRULY MODERN building

...SILBRAZ® joints are installed

Architects and builders know that it takes modern building components to make a modern building. That's why the first skyscraper erected on the site of the United Nations' buildings has brass and copper pipe runs joined with Silbraz joints—the modern way of joining brass or copper pipe or Type B copper tubing. Silbraz joints are silver brazed—not soldered or threaded—and are stronger than the pipe itself. They are leakproof, permanent, and will not creep or pull apart under any condition which the pipe or tubing can withstand. They literally form "one-piece pipelines" that save money by eliminating leaky connections, costly maintenance, and repairs.

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The Walworth Company manufactures a complete line of Walseal Valves, Fittings, and Flanges for making Silbraz joints. The Walseal material used in the United Nations building was furnished by Glauber, Inc., and Asco Supply Company, Inc., both of New York City.

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Schematic drawing for complete drainage system.

Do you hesitate to specify all-copper sanitary plumbing systems for homes because of cost? Here's the case of an owner* who installed copper for less than a conventional cast iron and steel sanitary system would have cost.

The original bid on a cast iron and steel system was $961.04. The plumber refigured the job in ANACONDA Type M Copper Tube and came up with a bid of $948.64—or $12.40 less. The installation involved 105 feet of tube from 1½" to 4" nominal diameters.

You can give your clients a lifetime all-copper plumbing and heating installation at a cost usually comparable to conventional materials by specifying ANACONDA Copper Tubes. Would you like us to send you complete data on ANACONDA Type M Tube for sanitary piping and on ANACONDA Water Tube for plumbing and heating piping? Just write to The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

*An actual case. Owner's name on request.
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BUILT-IN INSTALLATION

in bathrooms . . . .

At last . . . a moderately priced shower unit expressly created for recessed installation . . . the only prefabricated metal shower cabinet that provides for continuity of the bathroom wall material. By the elimination of all apparent cracks or joints it becomes an integral part of the structure rather than merely a fixture.

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In Canada: Fiat showers are made by Porcelain and Metal Products, Ltd., Orillia, Ontario

(Continued on page 158)
these 4 low-cost modules are the "building blocks" of a perfect custom-fitting lighting installation...

D 4 75-Watt T-12 42.5 Million Lamp Slimline Lamps
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modules fit together perfectly end to side, end to end, side to side...to form more than 50,000 different lighting patterns...to fit any ceiling shape or size...mixing all light sources in one harmonious system...with equal brightness throughout (no dark sides or ends)...so you can put the light where it is needed!

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ON THREE SIDES of this comfortable den, windows are the walls—adding to the coziness of the room an extra measure of friendly sunlight, an extra portion of the view.

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New Magna-Grip "plug-in" connectors contribute
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standardized, modular dimensions for unmatched
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The complete story is in Booklet B-4213. For your
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Modern home planning considers the future as well as the present needs of the owner. Telephone raceways conceal telephone wires within walls. They also provide for the relocation or addition of telephones later on.

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**BELL TELEPHONE SYSTEM**
New, 132-Apartment Building has

**Kohler Plumbing Fixtures**

Sherman Garden Apartments, Evanston, Illinois, is one of the hundreds of new apartment buildings throughout the nation for which Kohler plumbing fixtures have been specified. Architects Holsman, Holsman, Kleckamp and Taylor designed the building in two units containing 56 and 76 apartments of various sizes. In 13 apartments there are 2 bathrooms, and 40 have a bathroom and washroom.

All 132 apartments have the Kohler Cosmopolitan Bench Bath. This is a bath of distinctive, modern design, cast of rugged, non-flexing iron which protects the lustrous, glass-hard surface of Kohler enamel. Each bath is equipped with a Triton shower fitting with convenient Niedecken mixer. The attractive vitreous china Gramercy lavatories have a useful shelf and depressed soap dishes. Closets are smooth-functioning K of K Wellworths.

The compact, convenient kitchens are equipped with the Kohler Delafield, flat-rim, ledge sink with two compartments, a handy swing spout and lever-control sprayer.

Kohler chromium-plated brass fittings, which are used throughout, match the Kohler fixtures in beauty of design and efficiency. Kohler Co., Dept. 3-P, Kohler, Wis. Established 1873.
For cooler, cleaner kitchens that sell...

Specify EMERSON-ELECTRIC KITCHEN VENTILATORS

to meet your specifications...

Wall Models:
1. Double-lipbell-sealed outer door prevents inside moisture condensation, gives weather protection.
2. Telescoping adjustable sleeve fits walls 5 3/8" to 13".
3. Square outside frame, easy to brick or frame around.
4. Convenient chain actuates fan switch and outer door.

Ceiling Model:
1. Adjustable sleeve joint in ceiling housing fits standard 3½" x 10" rectangular duct, for necessary extensions.
2. Outside grille has angle baffles for weather protection.
3. Automatic shutter closes duct when fan is not operating.
4. Can be operated by drop chain from fan or wall switch.

Both Models:
1. Dependable Emerson-Electric induction motors, with thrust bearings.
2. Quiet-type 10" blade moves 470 CPM, a complete air change every 2 minutes for average kitchen.
3. Competitively priced.

... and her specifications!

Both Models:
1. Equipped with attractive grille finished in baked white enamel.
2. Easily cleaned and serviced — fan and grille are hinged to swing down as a unit without disconnecting.
3. Exceptionally quiet operation — built for long, trouble-free service.
4. Designed to quickly whisk out cooking odors, smoke, steam and heat—protects furnishings from greasy vapors.

Architectural FORUM January 1950


This enormous, handsome, scholarly volume is again available — there's little wonder that it went out of print during the war. Its 888 clear and apt illustrations give an excellent record of the ins and outs of British dwellings from Saxon through the Victorian days—from castle to cottage. It admirably keeps its focus on organization and construction rather than antiquity worship, combining humor and human interest with good taste and an alert eye. The jacket flap says no more than the truth:— "No other book unfolds with such completeness, both explanatory and visual, the story of the great inheritance of English domestic architecture."— S.K.


These two how-to-do-it books are a pleasure to read and see. Pen, Brush and Ink is not only competent and clear in its instruction, but pleasantly written. Henry Pitz is an enthusiastic craftsman who manages to get his enthusiasm into words as well as pictures. "Pen-and-ink has its own personality," he says. "All media do, but pen and ink's is brighter than most. The clear-cut directness of it, its sparkle, the miracles of suggestions it performs!" He also keeps a steady eye on the qualities of pen and ink for reproduction printing.

Pencil Drawing is equally handsome and helpful. In addition to a generous "Gallery of Professional Examples," Author Guptill visibly practices every lesson he preaches—from quick sketches to meticulously detailed renderings.

Both books fully cover various grades of materials, and a variety of special usages as well as basic techniques and effective composition.
Modern living demands economical heating... and this is particularly true of housing projects built as investments. The selection of Superior Steam Generators for Redfield Village was based upon performance... the performance of more than 120 garden apartment installations in New Jersey alone... many of which, like Redfield Village, were designed by architect Erwin Gerber whose activities are reported in an editorial feature of this issue.

Redfield Village’s 312 families sprawl over a spacious 26 acres of beautiful rolling countryside... part of the Hansen Estate, now owned by Irving Hansen who supplied the cost figures above. Its five Superior Steam Generators provide heat through a forced hot water system of the modern type... and in addition, heat ample quantities of domestic hot water.

Superior Steam Generators are the logical choice for every large scale heating project... and are widely used throughout industry for process steam and power, as well as for heating.

Easily installed, fully automatic, burn gas or oil, sizes from 20 to 500 b.h.p. for pressures up to 250 p.s.i. Write for Catalog 212.
You may think this cartoon's ridiculous. But it's a fact that you can save one floor out of ten by specifying the Carrier Conduit Weathermaster System for air conditioning new buildings. Using small conduits instead of bulky ducts, this system saves up to 85% of the rentable space taken up by other systems. In terms of extra income, that's mighty important to an owner.

Invented by and exclusive with Carrier, the Conduit Weathermaster System is suited to hospitals, hotels, office buildings and apartments. It can be installed in existing multi-room buildings without extensive alterations or interruptions to normal service. A year-round system, it allows individual regulation of temperature in each room at the twist of a dial. It also provides every other air conditioning benefit—the proper control of humidity, ventilation, draft-free circulation and the cleaning and filtering of air.

Pioneer in air conditioning, Carrier has contributed every major advance in the field. Its experience is world-wide and on every type of structure. This know-how is at your disposal through our representatives, who will be glad to co-operate with you on any undertaking. Carrier Corporation, Syracuse, New York.
Yes, this installation will stay beautiful and new-looking for years and years, thanks to the use of prize-winning* Kalistron at points of greatest wear. Kalistron starts as transparent vinyl sheeting; by the exclusive Blanchardizing process color is fused to the underside of the sheeting, then backed up with a suede-like flocking which permits easy bonding to wall surfaces. Thus nothing can touch Kalistron color—its guarded beauty lasts on and on, is well-nigh indestructible.

Kalistron is scuff-proof, scratch-proof, water-proof; cannot chip, crack or peel; cleans with a damp cloth.

Send for FREE Nail-File test card—a piece of Kalistron plus a triple-cut nail file; see if you can injure Kalistron!

*Winner of latest Modern Plastics award for furniture and interior decorating material.

FLUSH WALL Built-in Radios

are in the kitchens of Gerholz Community Homes

"The outstanding home value in Michigan," say competent insurance company and bank appraisers

Says ROBERT P. GERHOLZ (President Elect of the National Association of Real Estate Boards and Past President of the National Association of Home Builders), "We use built-in radios to please prospective clients and to help sell our houses because we feel that the conventional radio has no more place on the work benches of our ultra-modern kitchens than it would have on the front seat of our automobiles." And there are many other applications for these top-quality space-savers... not only in homes, but in apartments, offices, schools, hospitals, etc.

A RADIO BUILT IN THE WALL!

- CONVENIENT TO OPERATE.
- RADIO IS 5-TUBE AC-DC.
- PANELS TO MATCH COLOR SCHEME OF ROOM.
- WALL BECOMES PART OF SPEAKER-BAFFLE, GIVING CONSIDERABLE IMPROVEMENT IN TONE.
- FOR KITCHEN, BATHROOM, PLAYROOM, BEDROOM, ETC.
- FOR ARCHITECTS TO SPECIFY IN NEW HOMES.
- FOR ELECTRICIANS TO INSTALL.
- FOR BUILDERS... A NEW CONVENIENCE.
- APPROVED BY UNDERWRITERS LABORATORIES.

LOW COST... retail price only $34.95 plus installation

Panels Extra: Plain Masonite $2.45... Plastic Colors $4.45
Special Trade Net Prices on Request

Your electrician will install FLUSH WALL for the same cost as a Regular Outlet!

Please Send Detailed Particulars on FLUSH WALL Radios To...

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Architect
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Contractor
Dealer

Architectural FORUM January 1950
Presenting The New and Beautiful

Double-Duty

INSULITE

INTERIOR FINISH BOARD PRODUCTS

A Colorful New Line for Imaginative Design

Mr. Faber Birren
— nationally known consultant on color preferences of the buying public, selected these new consumer approved Insulite colors. He is retained by many of the world’s largest manufacturers strictly for his experience in the vital field of consumer color preference and its relation to consumer buying habits. You profit by his two decades of research in the color wants and buying motives of the American public.

No Guessing Against Human Taste — These are Colors the Public Wants

Why gamble in selecting colors? Since color is vital to the success of your projects, every possible avenue of fact and scientific analysis was assessed and judged for its selling value before these new Insulite colors were chosen.

This was neither guesswork nor private opinion. Choice was based upon market research to accurately measure the desires of today’s buying public. You can be sure these new Insulite colors are keyed to buying opinion.

Exceptional Sales Advantages

Rarely has there been a line of new products as rich in variety and flexible in adaptation as these new Insulite Interior Finish Products! Singly or in combination, they can be employed in a stimulating variety of striking and original effects. The finished result is beautiful . . . attention-getting . . . and exceedingly flattering.

Best of all (from the builder’s point of view), these new products can be applied fast and easy . . . without special preparation or the use of special clips. No skill required — anyone can do it. Just use nails or staples direct to frame-work. Saves time, cuts application costs. This line was designed as a practical material for doing better interior jobs at economical cost.

New Insulite Joint

Assures a trim, neat, tight joint that defies dust infiltration and stays securely in position. Concealed fastening without using special clips. Application is fast and easy with nails or staples.

LUSTERLITE TileBoard and Interior Board


DUROLITE Plank and Interior Board

Colors: Ivory, Pale Green, Woodtone Light, Woodtone Dark. (The two Woodtones in the Plank are cartoned, half light and half dark, to provide variegated effect in application.) Texture: Rough . . . highly durable. Joint: Plank employs new Insulite Joint (illustrated below); Interior Board has square edged joint. Sizes: Plank widths are 8", 10", 12", and 16" — Lengths 8", 10", and 12". Interior Board — 4" width by 6", 7", 8", 9", 10", and 12" lengths.

WEVELITE Interior Board


SMOOTHLITE Interior Board


ACOUSTILITE ¾" and FIBERLITE ½"


*Reg. U.S.T.M. Refer to Sweat’s File, Architectural Section 10a-9 100

In 1900

INSULITE DIVISION OF MANDO MINNESOTA AND ONTARIO STONE COMPANY MINNEAPOLIS 2, MINNESOTA
MODULAR ELECTRIC RANGE AND STORAGE DRAWERS offer convenience-level cooking, unlimited flexibility

A welcome new development in kitchen appliance design, the Select-a-Range should have tremendous appeal to both the architect and homeowner. Custom requirements of almost any kitchen—for studio apartment, suburban home or grade school—can be met with combinations of these separate cooking and storage units, and at very reasonable prices.

Not only has Universal exploded the standard combination arrangement of oven-boiler and platform surface burners but it has progressed several steps further, adding matching white enameled steel drawers and work top, and manufacturing all parts on an adaptable 20 in. module. Components may be stacked in conventional or inventive patterns, or may be spread throughout the room to meet the particular needs and pocketbook of the purchaser. Only the imagination of the kitchen planner limits the variations possible.

A homemaker of any height, from diminutive to Junoesque, can have an oven—or ovens—placed at her most comfortable working level by the addition or subtraction of storage drawers beneath. The oven may be placed either to the right or left of the surface unit, adjacent to it or separated by a section of drawers and work top. When the two cooking sections are joined at different levels a triangular chromium filler strip is inserted to eliminate dirt catching crevices. Because of their Low Underwriters' rating, the well insulated ovens may be set directly in or on wooden cabinets.

Outer dimensions of the oven are 20 in. wide x 25 in. deep x 24 1/4 in. high. Included in standard equipment are the baking and broiling compartments, a counter-balanced door with dual hinge spring lock and automatic broiling stop, a pre-heat push button and thermostat control. Complete with a precision timer and Minute Minder (for food preparation taking less than 60 seconds), the oven unit will retail for about $130, including federal excise tax; for somewhat less without these two items.

Measuring 20 in. wide x 25 in. deep x 9 in. high, the platform surface unit contains four fast heating Monotube burners, each with a seven-stage heat control switch. It is priced at $80.

Storage drawers are 20 in. wide x 25 in. deep x 7 3/4 in. high. Suspension on brass runners assures quiet operation. Priced at $13.50 individually, three of these drawers plus a work top and toe base sell for $53.50. Each of the basic parts has mounting holes for bolting the pieces together. A back splash and lamp attachment are also available at $3 and $10 respectively.

One of the Select-a-Range's most favorable distinctions is its expandability. A growing family on a budget can buy essential elements now, add another oven, surface burner unit, and more drawers, later.

Manufacturer: Landers, Frary & Clark (Universal), New Britain, Conn.

(Continued on page 170)
TO BE TRULY MODERN A BUILDING MUST BE AIR CONDITIONED

Year 'Round Comfort
by Chrysler Airtemp


Chrysler Airtemp Individual Room
Air Conditioners Selected for
Washington's Largest and Finest
Apartment Building

In Washington's new Berkshire Apartments—believed to be the largest single apartment building in the United States—Chrysler Airtemp Air Conditioning units were selected due to their attractive and compact design; their quiet, automatic and dependable operation. Here over 1000 tons of Chrysler Airtemp refrigeration and water cooling equipment—using 1350 individual room units—is now being installed.

Perhaps you, too, are planning new construction or the modernization of an existing building. If you are, Chrysler Airtemp offers through its nationwide dealer organization or regional offices in principal cities the services of highly-trained field engineers to help select the most efficient air conditioning systems for your specific job. And when desired, Airtemp Construction Corporation—wholly owned subsidiary of Chrysler Corporation—will see the entire job through to completion, including supervision of field operations.

For additional information relative to Chrysler Airtemp's engineering services, send coupon today.

3 BASIC SYSTEMS TO MEET EVERY BUILDING NEED

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AIRTEMP DIVISION OF CHRYSLER CORPORATION, DAYTON 1, OHIO
Most modern lighting

SYLVANIA
"Flexi-Module"
LUMINOUS CEILING

Consists of THREE simple parts—

1. The completely flexible Lighting Fixture.

2. The adjustable Hanger Strap and "star" suspension unit.

3. The non-static Aluminum Grids... no dusting... no repainting.

SYLVANIA's modern Flexi-Module Lighting System is not merely a louvered ceiling but a luminous ceiling lighting system composed of conventional type louvers as well as opaque panels, luminous panels, plastic panels.

Extremely flexible in application, this louvered system is ideal for stores, offices, and schools. As indicated by the photograph above—a portion of the interior of Jordan Marsh, Boston—a wonderful "open" feeling is achieved... as well as a clean-cut look brought about by complete concealment of wiring, air conditioning ducts, sprinkler systems, and other utilities!

SYLVANIA's Flexi-Module system is a new approach to lighting—one that architects will want to know about... one that their clients will want to carefully consider, particularly in respect to its amazing low cost.
ASY TO INSTALL!

Here's what happens: First the Sylvania lighting fixtures are hung; then to the upper ceiling or other overhead support (A) you screw or bolt (B) the supporting strap. This perforated strapping (C) has holes on 1 1/2" centers for rough length adjustment. Approximate maximum extended length using positive binding speed nut (D) is 38". (Standard pipe strapping can be added for longer length.)

VERSATILE AS WELL AS FLEXIBLE!

Colored sections may be used to create effects desired. For example, four sections colored red were used for the Christmas display shown left—a novel, attractive effect employed by the great, new Jordan Marsh store.

Further contributing to the Flexi-Module system's flexibility is the fact that the lightweight grids may be cut to fit any desired shape with a pair of tin snips!

AMAZINGLY LOW IN COST!

Unlike conventional plaster or concrete ceilings, none of the utilities such as telephone ducts, air-conditioning ducts and vents, sprinkler and electrical systems need be buried. In fact telephone and service wiring can be suspended in the “dead” space between the actual and false ceilings, doing away with expensive conduits! Not only is expensive, buried-in-concrete construction avoided, but all utility systems are readily available without chopping to get at them. All in all, the Sylvania Flexi-Module System compares favorably with conventional lighting in plaster ceilings...and is lower in cost than other types of systems!

ELECTRIC
Where building budgets restrict floor space, Thermopane* insulating glass in the windows becomes doubly important. All of the room is usable because the inner pane stays warmer in winter and downdrafts are minimized.

Areas next to windows stay comfortable and furniture can be placed for maximum convenience. An unused “low-comfort zone” is expensive to build. A window wall of Thermopane to give the feeling of spaciousness and to allow full use of the room is the economical solution.

The 1/2-inch insulating blanket of dehydrated air sealed between the panes of Thermopane does the trick. Builders now are erecting Thermopane window walls at little or no advance in cost over conventional wall construction. For design flexibility and building economy, Thermopane is made in over 30 standard sizes. For details, write for our Thermopane book.

FOR BETTER VISION SPECIFY THERMOPANE
MADE WITH POLISHED PLATE GLASS

2 Panes of Glass
Blanket of Dry Air
Bonded Seal* (Metal to Glass)

MADE ONLY BY LIBBEY-OWENS-FORD GLASS COMPANY
3715 Nicholas Building, Toledo 3, Ohio
Check the specifications on these WELDWOOD FLUSH DOORS

You’ll find many applications where one of these types is just what the client ordered

WELDWOOD FIRE DOORS are the only wood-faced doors that carry the Underwriters’ Label for Class “B” openings. Special construction with fireproofed edge-banding and mineral composition core gives you absolute fire protection in approved installations. Cross bandings and facings are bonded with waterproof phenolic glue that enables this door to withstand moisture indefinitely. Standard faces are selected Birch veneers. However, the Fire Door can be supplied with a wide variety of other handsome hardwood faces on special order. Thickness 1¾”. Standard sizes.

And only WELDWOOD FIRE DOORS can give you all these important advantages:

1. Increased Safety. 4. Dimensional Stability.
2. Striking Beauty. 5. Lightweight.
7. Moderate Cost.

THE STANDARD WELDWOOD MINERAL CORE DOOR

Utilizes the same core material as the Weldwood Fire Door but edge bandings are not fireproofed. Recommended for locations where a labeled door is not required. Standard thickness: 1¾”. Also available in 2¼”, 2” and 1¾”.

THIS ATTRACTIVE WELDWOOD DOOR HAS A SOLID LUMBER CORE!

For convenience, ease of working and durable, trouble-free beauty, clients will appreciate your specification of this new all hardwood flush veneer door.

The specially designed lumber staved core gives exceptional dimensional stability, enables you to hang the door from either side and makes it especially adaptable to custom-cut lights or louvres. Hardware goes in quickly, easily and permanently.

The waterproof phenolic bonds mean you can specify this door for interior or exterior use.

The Weldwood Lumber Staved Core Door is made with richly figured veneer faces in all the popular hardwoods. Standard sizes in 1¾” and 1¾” thicknesses. Also available in 2¾” and 2¼”.

Check the complete specifications and data on all these popular Weldwood Doors. Your nearest Weldwood dealer can supply you with literature. Or, write us today. We’ll rush complete information.

UNITED STATES PLYWOOD CORPORATION
55 West 44th Street, New York 18, N. Y.


In Canada: United States Plywood of Canada, Limited, Toronto. Send inquiries to nearest point.
PORTABLE ELECTRIC DISHWASHER needs no special plumbing or electrical connections.

Installation of General Electric's new dishwasher involves merely connecting a rubber inlet hose to the hot water faucet and plugging in the electric cord. Manually controlled the dishwasher performs the same job as a deluxe fully automatic machine and has the same capacity, holding up to 100 pieces of china, glassware, silver, pots and pans.

The washing is done by streams of hot detergent solution sprayed by a high speed impeller on all surfaces of the tableware. Washing cycle recommended by the manufacturer includes a five minute wash and two short rinses. Less than 5 gal. of hot water are used in the entire operation. Drainage is accomplished automatically through a separate hose by a pumping action of the motor. When the process is completed, the lid is raised to allow the dishes to dry. The dishwasher measures 36 in. high and 23½ in. in diameter. Acid resistant white porcelain enamel lines the tub; skirt and top opening lid are finished in baked enamel. All trays are made of stainless steel and may be removed. Casters are rubber tired and ball-bearing mounted for easy movement of the machine. A faucet adapter permits connection of the water inlet hose to almost any tap. The model sells for $170.

Manufacturer: General Electric, Appliance & Merchandise Dept., Bridgeport, Conn.

HOT WATER HEATER WITH SPHERICAL TANK has high thermal efficiency.

Recent independent research has established the Servel hot water heater to be one of the most economical on the market. Operating costs are lowered about 10 per cent as a result of high efficiency Btu absorption and heat transfer and reduction of radiation losses. Common-sense engineering of the heater's internal design is the key to this fuel saving. An alloyed copper ball-type tank is contained within the white baked enamelled cylinder. Not only is the sphere a strong shape but it also offers less external surface than other three dimensional forms and consequently loses less heat by radiation. For quick heating of the water a steel heat exchanger runs vertically through the center of the ball tank. Rapid heat transfer is insured by means of channel fins extending the entire length of the exchanger, and a series of suspended baffles.

(Continued on page 176)
LEADER Troffer DIRECLITE
This incandescent spotlight may be used between Troffer units in continuous runs or at ends of run, or as individual units. Unique ball and ring assembly provides vertical light adjustment of 45° and horizontal adjustment of 360° for flexible high-lighting... Also furnished as incandescent unit with flat diffusing glass or (Holophane Cont...)

Here is a long, symmetrical fixture that "cooperates" enthusiastically with architects and contractors who want to achieve the present-ultimate in lighting beauty and economy. Recessed lighting in extra-long fixtures with a shielding-choice of louvers, baffles, glass enclosures and various special type lenses. Extra length means fewer lamps... reduced maintenance cost. Ask us for full details!

SPECIFICATIONS: The LEADER SLIMLINE-TROFFER is wired for 1, 2 or 3 slimline tubes, in 42" to 56" length. Housing and channel of 18 gauge steel. Exterior and end cap finished in rich silver-gray enamel, with high-reflecting white chip-proof baked enamel interior. Extra-sturdy one-piece construction. Instant-start 100, 200, 300 or 425 milliampere operation.

Sold and installed only by the better electrical wholesalers and contractors

Manufactured exclusively by

LEADER ELECTRIC COMPANY
3500 North Kedzie Avenue, Chicago 18, Illinois
Leader Electric—Western: 800 One Hundred Ave., Oakland 3, Calif.
HOW SOSS HINGES HELP OTIS STREAMLINE AN ELEVATOR

For over 16 years Otis has been using SOSS INVISIBLE HINGES to give their elevators a streamlined, harmonious, gracefully modern appearance. Otis also considers the SOSS HINGE a definite safety factor as it has no protruding hinge butt to bruise people, tear clothes, etc., when elevators are crowded.

You, like Otis, will find SOSS HINGES ideal for creating unique, streamlined, luxurious, distinctively modern interiors. There's a weight-rated SOSS HINGE, for every type of installation. They're perfect in every respect for secret panels, cupboards, and doors of all kinds. Your clients, too, will like this "hinge that hides itself."

Write for FREE CATALOGUE that gives complete details, blueprint templates, and the many uses of this modern hinge to—

SOSS MANUFACTURING COMPANY
21779 HOOVER ROAD DETROIT 13, MICHIGAN

LO-LEVEL COOLERS
BATTERY
WALL
PEDESTAL

A COMPLETE LINE for every need

For your 1950 requirements you can choose from a wide variety of Halsey Taylor models for school installations. The new Lo-Level cooler for school cafeterias is but another evidence of Halsey Taylor's continuous development in drinking-water equipment design. Thus you can be sure of the ultimate in economy and service, no matter what your needs!

THE HALSEY W. TAYLOR CO., WARREN, OHIO

The Little Cooler for Little People

This ideal cafeteria cooler is the right height for children. Foot-pedal operation means extra convenience for the child and less confusion in the room, and Halsey Taylor engineering means trouble-proof service!

HALSEY TAYLOR Drinking Fountains
You know and we know that "all flush doors are NOT just alike." Door qualities vary as much as the experience, know-how, efficiency and integrity of their makers.

Mengel Flush Doors — Hollow Core and Solid Core — are built the way you'd want them built, of the materials you yourself would choose. Their specifications prove it. Finer or more dependable doors cannot be obtained at comparable prices.

Get the facts and specifications on Mengel Flush Doors, as contained in the A. I. A. Catalog illustrated above. Use the coupon for convenience.
Raymond MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD
2. STEP-TAPER
3. PIPE STEP-TAPER
4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underdriving, borings and soil investigations, waterfront construction and harbor and river improvements.

Raymond Standard Concrete Piles have a heavy, uniformly tapered permanent steel shell. On friction piles, this taper acts like a wedge, giving these specific advantages:

1. Driving resistance is maintained.
2. The load is transmitted to the soil through the entire length of the pile.
3. The load can be carried by shorter piles, because of their greater carrying capacity.
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited.

Raymond CONCRETE PILE CO.

140 CEDAR ST., NEW YORK 6, N.Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.
Famous builder, William Levitt, says: 

"Sales come easy when you give people what they want, and that certainly includes Electric Ranges."

Successful builders everywhere recognize the public demand for modern cooking equipment. As Mr. William Levitt, President of Levitt & Sons, Inc., says: “When you offer home buyers what they want, at a price they can afford to pay, your selling job is practically done. Among the features that have made Levitt Homes as efficient to live in as they are good to look at, is the modern Electric Range in the kitchen. People really go for it.”

This remarkable 4-room-and-bath Levitt Home on a 60 x 100 plot in Levittown, Long Island, includes a completely equipped kitchen. Mr. Levitt says: “The time to install an Electric Range is when you’re building a house. That cuts installation cost, and provides a definite sales feature.”

Here is the straight-line kitchen-dinette featured in the Levitt Homes. It’s modern, it saves steps, time and work for the homemaker. Equipment includes a modern range with automatic oven control and—OF COURSE IT’S ELECTRIC!

Equip your houses with ELECTRIC RANGES

ELECTRIC RANGE SECTION - National Electrical Manufacturers Association, 135 East 40th Street, New York 17, N. Y.

ADMIRAL • COOLERATOR • CROSLEY • FRIGIDAIRE • GENERAL ELECTRIC • GIBSON • HOTPOINT

KELVINATOR • LEDO • MONARCH • NORGE • QUALITY • UNIVERSAL • WESTINGHOUSE
Water near the outlet at the top of the tank—the water used first—is heated first. The controls are enclosed in the cylinder but are readily accessible behind a snap-on panel. Unique in water heaters is the Servel's burner: a cast stainless steel ribbon port burner requiring a minimum of outside unheated air for combustion. Each heater is provided with a flushing valve and a gas pressure regulator, features adding to its overall effectiveness. Retail price for the 30 gal. model, measuring just 28 in. high, is $188, not installed. This particular model will serve a family of five or six persons. Because of its convenient height and direct heating of water near the outlet, very successful installations have been made in home laundries directly over the automatic washing machine.

Manufacturer: Servel, Inc., Evansville 20, Ind.

STEEL BRIDGING FOR WOOD JOISTS is ready to use without cutting or fitting.

Tru-Tye, a new type of steel bridging, is now available in one stock size for wood joists of any standard depth installed on 16 in. centers. Each steel piece is rustproofed and ribbed for extra strength and may be affixed with just two nails. The bridging is first placed in line over the top of a joist before the flooring is laid and prongs are driven and countersunk with one hammer blow. Laying of the flooring then can proceed before further bridging is done. Next, a nail is driven through the metal piece into each face of the two adjacent joists, holding the steel taut and assuring a neat application. Each end of the bridging is then bent around the base of the joists and the prongs are driven into place, so that the bridging holds the joists in tension and acts as permanent reinforcement for the building framework. Cartons containing 50 pieces of Tru-Tye are priced at $8, f.o.b. Toronto, Ohio. Shipping weight is 32 lbs.


STAINLESS STEEL FASTENER for low density materials automatically clinches itself.

Loc-Nails are ideal for use on gypsum sheathing, asbestos or wood shingles. Driven in like ordinary nails, these ingeniously devised fasteners automatically clamp themselves behind materials at different thickness by means of radial bending. If a stud is encountered, only the fine point will penetrate it; the double metal folds and clinches itself in back of sheathing but in front of the stud. This fine point also prevents material displacement. Packed in tin cans containing 2,500, the fasteners sell for $3.50 per 1,000, f.o.b. Hartford, Conn. Retail price to applicators on the job is $4.40 per 1,000. Ultimate cost is about the same as other self clinchers on the market sold by weight.

Manufacturer: E. G. Building Fasteners Corp., 101 Park Ave., New York 17, N. Y.

VERTICAL SLIDE WINDOW is completely assembled, set in wood surround at factory.

Offering many advantages to both the builder and building occupant, Rusco Prime Window is an adaptation of the best features of the company's combination window altered to meet requirements of today's construction methods. A trim, efficient window unit that is practical, durable and trouble-free is the net result. Simple to install, the Prime Window includes glass and Lumite screen panels, felt weatherstripping, and toxic-treated wood surround. Units with self-storing storm sash are also available. The panels, set in quality Armco hot-dipped galvanized steel sash and frame, are finished with baked outdoor aluminum enamel; only the wood surround remains.

(Continued on page 184)

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Save up to 35% in deadweight... design up to 4,000 psi

When you want lightweight structural concrete with adequate strength, specify the use of Waylite aggregate. Waylite is a cellular aggregate made by processing molten slag. Its air cells are completely sealed giving lightness and strength. Design for strength with Waylite as in ordinary plain or reinforced concrete. Handles similarly. Approved by Board of Standards and Appeals, New York City. Waylite Concrete 2,000 psi weighs 100 pounds per cubic foot... 4,000 psi Waylite weighs 108 pounds.

Waylite offers many important economies and advantages in structural design. Also widely used as floor and roof fills. See data in Sweet's—for additional information and quotations write The Waylite Co., 105 W. Madison St., Chicago 2, or Box 30, Bethlehem, Pa.
into a new decade
and a new year...
an amazingly
perfect window!

FOR AIR CONDITIONED STRUCTURES EXCLUSIVELY
ELIMINATES OUTSIDE WINDOW WASHING
WILL ACCOMMODATE UP TO 1 INCH DOUBLE GLAZING
NO SIZE LIMITATIONS
GUARANTEED

an innovation in fenestration for the functional modern building that is in design stage today
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No commercial building metal on the market today has as much to offer as Stainless Steel. Unlike non-ferrous metals, Stainless will not corrode, pit, mark or discolor. And it will not rust, chip, peel, or bleed off onto adjoining surfaces.

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 PRODUCTS OF SHARON STEEL CORPORATION AND SUBSIDIARIES: THE NILES ROLLING MILL COMPANY, NILES, OHIO; DETROIT TUBE AND STEEL DIVISION, DETROIT, MICHIGAN; BRAHANR STEEL COMPANY, WARREN, OHIO; SHARON STEEL PRODUCTS COMPANY, DETROIT, MICHIGAN, AND FARMVILLE, PENNA.; CARPENTER town COAL & COKE CO., M T. PLEASANT, PENNA.; FAIRMONT COKE WORKS, FAIRMONT, W. VA.; MORGANTOWN COKE WORKS, MORGANTOWN, W. VA.; JOHANNE COAL COMPANY, RACHEL, W. VA.; Hot and Cold Rolled Stainless Strip Steel—Alloy Strip Steel—High Carbon Strip Steel—Galvanite Special Coated Products—Cooperage Hoop—Electrical Steel Sheets—Hot Rolled Annealed and Descaled Sheets—Galvanized Sheets—Sawing—Grinding—Grade Steel—Welded Tubing—Galvanized and Fabricated Steel Strip—Steel Strapping, Tools and Accessories.

Asbestos Corrugated Transite reduces load-bearing factor 83% on new power plant addition! Transite sheets give attractive, streamlined appearance... and they can't rot, rust, or burn.

This type of construction, compared with solid masonry, reduced the load-bearing factor from 120 to 20 pounds per square foot! It also provided fire protection, insulation, and permitted the use of less extensive pilings and foundations for the rest of the building.

Architects and engineers are constantly discovering new uses for J-M Corrugated Asbestos Transite, not the least of which is its surprisingly effective function in attractive, modern design.

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conceived and engineered by
an Architect* to meet the
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Note compact streamlined
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Safe continuous feeding, during operation eliminates
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Exerts two-way cleansing, overcomes clogging,
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Plastic-Faced Plywood
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Formed to conserve the natural supply and to raise and stabilize the mill standards of genuine Northern Hard Maple Flooring, the MFMA has, naturally, watched and recorded for many years the performance of the thousands of fine Maple Floors that have been laid in American institutions, residences, stores, offices and factories.

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FLOOR WITH NORTHERN HARD MAPLE
BEECH AND BIRCH
Fedders Convector-Radiators are made in sizes and types to fit every installation requirement.

They are made in standard Type F free-standing and semi-recessed models available from stock and also a wide range of models for special applications.

Men who design, sell and install heating equipment can take advantage of Fedders wide range of models including flat and sloping top, wall hung and free-stand ing models with and without base grilles. Other models include semi and completely recessed Convector-Radiators with overlapping and plaster fronts to conform to any decorative scheme.

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Also manufacturers of Fedders Unit Heaters, Wall Radiation, Unit Coolers, Air Cooled Refrigeration Condensers, Room Air Conditioners, Automotive Radiators and Car Heater Cores.

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BUFFALO 7, N. Y.
when you specify venetian blinds made of new Flexalum slats and vinyl plastic tape

only Flexalum gives all these advantages that cut maintenance costs:

**Wipes Clean**
Dust doesn't linger on the non-porous surface of new Flexalum vinyl plastic tape. A damp cloth whisks away dirt, grime, sticky spots, stains. Costly labor hours saved!

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The color is locked into Flexalum tape. Even the sun won't fade or discolor it. This sturdy plastic tape will look new for years. No more constant re-taping!

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Flexalum vinyl plastic tape won't shrink or stretch. Flexalum slats won't rust. Costly moisture damage is eliminated!

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Bend them, abuse them, bear down with a vacuum tool...these spring-tempered aluminum slats keep their shape. Replacement costs are cut drastically!

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The permanent baked-on finish won't chip, crack or peel. Flexing won't harm it, either. Blinds of Flexalum stay new-looking!

**Look for This Mark**
Be sure the blinds you buy carry the Flexalum "visible-invisible" trade mark. Write for sample tape and slats. Make your own test of Flexalum's cost-saving features.

120 color combinations... custom-made into venetian blinds by quality manufacturers and sold by leading retailers.

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ROOFING TILE

The outstanding name in roofing

Economical in price, permanent as brick or stone, Ludowici Tile covers many of the nation's largest public and private housing projects.

Here the architects' specifications and selections of permanent hard burned shale Ludowici Tile, provide hundreds of these functional buildings with roofs of beauty as well as years of service at lowest cost of maintenance.

For housing, whether it be large or small, public or private, institutional, ecclesiastical or educational, Ludowici Roofing Tile offers a wide variety of authentic architectural designs of many textures and colors that faithfully answer the requirements of both the traditional and modern designs.

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Lauderdale Courts Housing Project at Memphis, Tenn.
Detail of Ludowici Lightweight Interlocking Weathered Tile.

We also invite your consideration of Ludowici Shale Slips, a beautiful quarry tile for floor and walls.

quires painting in the field. Tubular construction of the units gives maximum strength and rigidity with minimum weight. Glass panes are bedded in mastic and held in place by removable stainless steel splines. Sashes slide freely and automatically lock in any ventilating position. No weights, balances or cords are used. The plastic screen insert may be left in place all year as an air filter. A wipe with a damp cloth will clean it.

Both glass and screen inserts can be removed very easily from inside the home, an aid to the window-washing housewife and to the builder. In installation, frames can be placed in position, lumber materials passed through the wide opening during construction and glass and screen panels inserted when the house is ready for occupancy. Rusco Prime Windows are available in 20 standard slide units. With mullions these can be combined in almost any arrangement of twin, triplet or picture window with flanks. Cost to a purchaser of 100 Rusco units—each complete with storm sash, screen, wood surround and horizontal muntin bar, and having glass panels 24 x 24 in.—would be less than $40 per unit.

Manufacturer: F. C. Russell Co., Cleveland 1, Ohio.

DOUBLE HUNG ALUMINUM WINDOW comes packaged with storm sash and screen.

Fleetlites are factory precisioned windows with double hung sash, storm sash and screen. Thin and graceful in line yet rigid in construction, these extruded aluminum windows are completed at the factory, including glass held tightly in Koroseal mounts and velon screen set below the upper storm sash. Both frame and sash sections are accurate to extremely close tolerances, and so obviate the problems of weather tightness, sticking and rattling. When a builder receives a Fleetlite window he simply takes it out of its carton, sets it in place in the concrete block or brick structure and uses it as a form for the masonry. If he is working with a frame wall he just nails the anchor lugs to the studs. Many man hours spent in assembling, fitting, glazing are thus eliminated. Cost of a standard residential Fleetlite window (24 x 24 in. glass sections) to a builder of ten or more houses is less than $40 each. The ultimate cost to the home owner is no more than that of a good quality wood window, separate storm sash and screen.

Manufacturer: Fleet of America, Inc., 411 Dun Bldg., Buffalo, N. Y.

(Continued on page 188)
Why 10,264 Nesbitt Convectors are going into this apartment project

The owners, architect, and heating contractor of Lynnewood Gardens — largest apartment project in Pennsylvania and one of the largest in the United States — chose Nesbitt Model U Convectors. They chose Nesbitts over the next most favored convectors after a point-by-point comparison.


Because, you see, Nesbitt Convectors are made by a house that has been known for quality manufacture since 1912 . . . Nesbitt Convectors are styled to fit naturally into modern interior design . . .

Nesbitt Convectors have a curved-top grille which increases stack height for maximum capacity and economy . . .

Nesbitt Convectors are universal — one cabinet, for free-standing or semi-recessed installation; one heating element for steam or hot water; one style headers for every practical piping arrangement. Two simple connections which can be made without removing the element from the casing means valuable manhours of labor saving . . .

Nesbitt Convectors are mass-produced for lowest possible pricing of a quality product.

All in all — protectively packaged as a complete assembly — Nesbitt Convectors offer the completely satisfying answer to the question of heating comfort for the designer of homes and apartments who knows the superiority of clean, convected heat. Send for Publication 252.

Nesbitt Convectors are sold exclusively through Plumbing and Heating Wholesalers
WOULDN'T YOU BE SURPRISED IF YOU GOT ONLY "HALF-A-DOOR"?

It CAN happen if you forget to check into AFTER-SERVICE

Getting an industrial door from an organization without a real service set-up is just like getting half-a-door. The package isn't complete without the service.

And, service is what counts when door troubles crop up—as when a truck caves in a couple of panels or nudges the track a little too hard.

These things happen all the time to industrial doors and, all too often, somebody has the bright idea of calling the architect—TO FIND OUT WHAT TO DO ABOUT SERVICE!

This is a nuisance to the architect and, to prevent it from happening with Crawford Doors, we have done three things:

1. Built a product about as service-free as can be made.
2. Set up a nation-wide organization to service ANY make of door, day or night, week-ends or holidays.
3. Provided a legible sticker for the lock bar of every door telling the user to Call the Local Authorized Crawford Dealer for Service.

So, when you specify Crawford industrial doors and operators your client gets the full package—a good product; the finest door service in the country; instructions on how to connect with it—fast (without bothering YOU).

Incidentally, do you know that Crawford industrial doors come in sizes up to 30' x 16'? And that heavy-duty hardware is available on sizes 8' x 8' and up?

Why don't you call the local Crawford Door Sales Company listed in your Yellow Pages and get them to send you the dope on these recent developments—or, write us direct.

Visit Booth 39 NAHB Show at the Hotel Stevens

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MAIN PLANT: 2-401 St. Joe Ave., Detroit 14, Michigan

FABRICATING PLANTS in Portland, Tacoma, Los Angeles, San Francisco, Dallas, Kansas City, Chattanooga, Milwaukee, Hudson, Mass., Cadillac, Ottawa, Canada.

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SAFEGUARD STRUCTURAL BEAUTY...
specify CRYSTAL Silicone Water Repellent

Amazing new exterior water-repellent actually penetrates to prevent moisture and water damage... gives you two important benefits:

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ONE COAT OF CRYSTAL is all that's needed, applied at any temperature... saves money... saves time on the job!

Send for your free copy of "Exterior Masonry Waterproofing Manual."

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Completely modern, attractive in design, and beautifully laid out, the new 210-family Grover Cleveland Apartments in Forest Hills, New York, are equipped with dependable Spencer Boilers. Builder: Ben Okun; Heating Contractor: Soling Heating and Cooling Company; Architect: Philip Birnbaum.

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You have 76 different models to choose from, ranging in size from 290 to 42,500 net load, steam.

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You can adapt Spencer Boilers to all common fuels—oil, gas, coke, and anthracite or bituminous coal.

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You will appreciate the flexibility that Spencer offers. All models are adaptable to either front, rear, or side installation when automatic firing is used.

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You can assure owners of immediate heat whenever they need it. Special built-in coils provide instantaneous service hot water.

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You can be sure that Spencer heavy-duty construction throughout means extra dependability, extra trouble-free service.

EASY CLEANING
You can easily explain to owners that all Spencer Boilers are designed for easy cleaning.

For better apartment heating, specify Spencer

When planning apartments—and other types of residential or commercial structures—you'll find many advantages to specifying Spencer for heat and hot water. Note (at left) just a few of the many reasons why Spencer has earned an outstanding name among professional men and owners alike.

For further details on the complete line of Spencer Boilers, write, wire, or telephone today.

construct in accordance with ASME requirements. Fully approved by the Steel Boiler Institute.
**PRODUCT NEWS**

**ELECTRIC GLASS RADIANT HEAT PANELS**

have curved surface for greater efficiency. The clean, healthy, odorless heat of Electriglas panels now may be obtained at an operating cost which, according to the manufacturer, compares favorably with other heating systems. Attributing this increased efficiency to the convex shape and prismatic composition of the extremely durable Temprex glass, the manufacturer states that the new panels consume 25 per cent less electricity than those previously designed. Because they have no moving parts to wear out or replace, the panels require no maintenance. Another feature of the system is thermostatic control which makes it possible, by fingertip switch, to heat every room in the house equally or to vary the temperature in each room as desired. Cost per panel to the consumer is approximately $90, installed. Since no furnace, piping, duct system, chimney or storage tank is necessary, a sizeable saving is afforded in the initial building and installation costs. Panels, measuring 16 in. by 30 in., are mounted on the wall in a metal frame, and wired into the regular AC or DC 110 v. or 220 v. circuit. They warm up immediately, and one will heat a small room, yet may be touched safely.

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

**NEW BASEBOARD** has sponge rubber seal to prevent dirt streaking from circulating air.

Webster's new baseboard, designed for use with forced hot water systems, incorporates several improvements in appearance and operation. The baseboard is narrower and lower, projecting only 2 ¼ in. from the wall and standing but 3¼ in. high. Both molding and baseboard enclosure are metal for increased strength. To insure absolute tightness, even on irregular walls, the molding is provided with a sponge rubber seal. A ¾ in. copper tube and copper fin construction with flattened front and back edges to reduce depth makes up the heating element. All parts are supported or positioned on sturdy wall brackets, thus simplifying installation of the baseboard. An optional feature of the new design is a manually operated damper made of extruded magnesium alloy. By means of this device, heat delivery may be reduced in bedrooms at night or in rooms used only occasionally. A control knob and connector complete the assembly. Cost of the baseboard for two exposed walls, each measuring 12 ft. long, would be $60, based on the list price of $2.50 per lineal foot. With the damper and damper handles the price would be about $69.

Manufacturer: Warren Webster & Co., Camden, N. J.

**SURVEYING AID** eliminates guess by sight.

By projecting a pin point of light through its tip this new plumb bob allows no margin for guess work and consequent error. The bob retails at $3, less the 3 v. magnifying lens bulb and two pin-type batteries.

Manufacturer: Illuminated Plumb Bob Co., 2521 Third St., N. E., Washington, D. C.

**TEMPLATE** facilitates isometric drawing.

Sixty perfectly concentric ellipses are formed in this notebook-size template. Axes and sizes are indelibly printed on the matte finished face of the template. Price is $2.50.

Manufacturer: Rapidesign, Inc., Box 592, Glendale, Calif.

(From the Technical Literature, page 194)
PARKVIEW APARTMENTS, South Hawkins Ave.
The Hendrich Hall Harter Company, Builders and Operators
Photograph shows part of Parkview Manor consisting of 17 buildings housing 98 suites. Last word in modern conveniences, individual Gas-Fired Janitrol Winter Air Conditioners provide personalized heating for each family unit.

HIGHLAND COURT APARTMENTS,
Typical of Several Multiple Units built by R. C. Dewey, Inc.
Janitrol Triple Service Systems are exclusive equipment with this builder. Efficient operation and low maintenance costs influenced Mr. R. C. Dewey’s choice of Janitrol for servicing 200 family units. Providing convector radiation with forced hot water circulation, the Janitrol units also supply hot water for all domestic uses.

27 APARTMENT UNITS, North Cicero Ave.
E. L. Anderson and Company, Builders and Contractors
These ultra modern apartments reflect typical Swedish architecture. Each building containing nine apartments is serviced by a Janitrol boiler providing a forced flow of 200° hot water. Each apartment is provided with a thermostat control for both the convectors in living quarters and small cast iron radiators in bathroom and kitchen.

Write today!
Complete specifications on typical Janitrol installations for apartments, industrial and commercial buildings and homes are available in A.I.A. file folders. Send for your copies today, there’s no obligation, address— Architectural Service SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO.

TIME-TESTED  TIME-PROVEN
Janitrol
GAS FIRED WINTER AIR CONDITIONERS • UNIT HEATERS
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TRIPLE SERVICE HOT WATER SYSTEMS
FROM COAST to COAST
IN-WALL TABLES and BENCHES
CUT SCHOOL BUILDING COSTS

Multiple use of space means economy. Hundreds of schools in cities from coast to coast now use and testify to the practical advantages of In-Wall installations—seat more students in less space, maintain better discipline, eliminate storage area.

Sturdy, welded, long-life metal construction, sanitary composition surfaces, oil-less bearing rubber casters.

Consult Sweet’s Catalog or write direct for complete details and name of nearest representative.

SCHIEBER
Manufacturing Co.
12738 Burt Road
Detroit 23, Michigan

FOLDING TABLES & BENCHES
The lasting beauty of Truscon Residential Doors will grace any home.

Truscon Sliding Closet Doors provide greater availability of storage and room space.

long timeless service...

New progress in steel
...new opportunities for extra quality at lower cost!

Truscon Residential Steel Interior Doors and Frames are attractive in design. Handsomely modern in appearance. Precision engineered and manufactured, these doors assure smooth, quiet and trouble-free operation. Outstanding economy of labor and material for installation is a major feature. Steel construction protects against warping, shrinking or sagging during the life of the structure. Efficiency of space and operating convenience are special advantages of the sliding closet doors. Truscon Residential Interior Doors are steel...are strong...are sensible.

Write for the new Residential door catalogue giving complete range of sizes and full details.
GRANT Sliding Door Hangers

Adaptable to interior, wardrobe and cabinet doors, Grant Sliding Door Hangers greatly increase the 'usable space' in apartments—space otherwise lost with ordinary hinged doors. Operating at the flick of a finger, doors can now slide smoothly, effortlessly. All Grant Hangers are center hung, all glide on ball bearing carriers and only Grant Hangers are equipped with the 'self-aligning' pendant bolt.

945 5th Av., N.Y.C.
Architect: Emery Roth & Sons
Builder: Mr. Samuel Rudin
Note: Closet doors equipped with Grant No. 15 Hanger.

The Grant No. 15 Hanger is adaptable to a wide variety of doors, up to 75 lbs. in weight. It requires but 2½" headroom, is simple to install. Can be supplied with apron, reducing headroom to an absolute minimum.

Exclusive 'self aligning' feature

Operating on the principle of the ball and socket, Grant's self aligning feature offsets header irregularities. The pendant bolt permits lateral and vertical adjustments which take care of possible header sag and chafing doors. Thus any door warpage can be easily corrected.

Exclusive 'self aligning' feature

Cement Board

Poretherm, a high-grade, permanent insulating cellular concrete is poured on top of asbestos cement boards, laid on Sub Purlins. This makes a fire-proof roof deck—weight, only 10 lbs. per sq. ft., provides the same heat insulation as 1½ inches of cork, at lower cost. Write today for complete information.

Poretherm, Mfg. Co.
N. Arlington, New Jersey

CEILING SPACE NOW PAYS DIVIDENDS
WITH THE FAMOUS PALMER GAS/FIRED SUSPENDED HEATER

Architects, builders, distributors and dealers all agree this is the finest, most efficient unit heater ever produced. Truly "the design of tomorrow."

Palmer is equipped with automatic controls and embodies exclusive high performance features. Customers receive "heating comfort plus" without so much as lifting a finger.

Yes, with a Palmer suspended heater, ceiling space pays dividends in trouble-free heating efficiency, appearance and economy.

Dividend-wise, Palmer will pay you 100 and many-fold. Simply specify Palmer. There's a model and size for every heating need.

Write for free literature today Dept. P-2.

Palmer Manufacturing Corporation
manufacturers of the famous Sno-Breeze air coolers
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GRANT PULLEY & HARDWARE Co.
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How to Increase the Value of Your Houses Without Increasing Their Costs!

SPECIFY NATIONALLY ADVERTISED EQUIPMENT LIKE AMERICAN KITCHENS TO GIVE YOUR CLIENTS CONFIDENCE THAT THE HIDDEN MATERIALS IN THEIR NEW HOME ARE TOP QUALITY, TOO!

Your clients want confidence as well as comfort along with their new home. They want assurance that it's built as well as it's designed.

That's why so many leading architects today specify American Kitchens for every house they design. They recognize that American Kitchens are the leaders in the field—in styling, in construction and in convenience features. They know, too, that American Kitchens actually cost less per running foot than quality wood cabinets! What's more, their easy adaptability to rooms of all sizes and shapes makes it possible for you to create a "custom" kitchen without spending long hours in detailed planning.

Specify an American Kitchen for your next house—for economy, planning speed and greater owner prestige.

FREE—SPECIAL ARCHITECTS' FILE

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Please have my nearest American Kitchens supplier furnish me—without charge or obligation—your new Architects' File, complete with specifications and roughing-in diagrams.

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Address: ____________________________
City. ___________________ County. _______ State. _______

AMERICAN CENTRAL DIVISION CONNERSVILLE, INDIANA
FLOORS OF

GREASE-RESISTANT AZPHLEX ASPHALT TILE

Here’s a floor that can take the wear and tear of apartment or home use... that stays new-floor fresh under years of hit-or-miss maintenance... that offers an exceptionally wide range of color choices and combinations. Highly resistant to the effects of animal, mineral or vegetable greases, alcohol, alkalis or mild acid solutions. Economical to install, amazingly easy to maintain.

For the complete story on why you should always specify AZPHLEX, see Sweet’s Architectural... or call the AZPHLEX-AZROCK dealer near you... or write direct to Dept. C.

LITERATURE COMPETITION announced by Producers’ Council and A.I.A.

In an attempt to answer the long felt need for improving technical and promotional literature, the Producers’ Council and the American Institute of Architects are holding a competition. As incentive to manufacturers to make their publications more attractive and intelligible, and consequently more effective and useful to architect and builder readership, awards will be presented in the form of Certificates of Merit. These will be made to three classes of product literature: technical and design data; use and application of products; and promotional literature. Winning entries will be placed on exhibition this May at the annual convention of the Institute and the Certificates will be presented at that time. Six members appointed by the Institute and three designated by the Council will serve as jury of awards. In addition to selecting the best entries the jury will publish a rating scale to guide manufacturers in the preparation of future literature. Deadline for entries and nominations is March 15, 1950. Building product manufacturers may submit their literature to the Producers’ Council, 815 Fifteenth St., N. W., Washington, D. C. Individual architect members of the A.I.A. or chapters of the Institute may send their nominations to the American Institute of Architects, 1741 New York Ave., Washington, D. C.


Here is a choice example of what product literature can look and read like when thoughtful and artistic effort goes into its conception. Theatrical Lighting (Architectural Lighting and Television Lighting are in preparation) covers not only stage and night club requirements but also lighting for pageants, fairs and window displays. Tastefully executed in two colors, the book can rest comfortably on the most fastidious architectural library shelf, i.e., when its useful pages are not being well thumbed. Lucid presentation and text go hand in hand. Spot drawings and definition work together to give the lay lighting engineer—and the professional—a clear concept of the workings and functions of the different kinds of spot and floodlights, of special equipment and accessories.

FURNITURE. FFM, Functional Furniture Manufacturers, 40-17 22nd St., Long Island City 1, N. Y. 30 pp. 10 x 12 in.

Prepared primarily for architects and decorators this new catalogue contains an inclusive group of furniture designed by Allan Gould. The photos, featuring many of the items in informal settings, and price list are encased within a richly textured folder. Several items stand out as being especially versatile. One of these, a right angle desk with both typing and writing levels and an undershelf for a portable typewriter, may be used in combination with storage sections. It can be set in a corner or with one wing extending into the room. The “lift up footboard” bed has a dropleaf

(Continued on page 200)
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GLASS BLOCK. New Idea in Fenestration. American Structural Products Co., Toledo 1, Ohio. 4 pp. 8½ x 11 in.

A method of fenestration combining the advantages of light directional glass block and the conventional double hung window in a single unit is discussed in this pamphlet. Sketches illustrate the unit in single ribbon applications. In addition to its light bending properties (prismatic glass block bends light rays toward the ceiling to be redirected into the room, thus measurably reducing glare and contrast) the publication points out that glass block has the same thermal insulating value as 8 in. of solid brick. The entire outside surface of block and clear sash may be cleaned as easily as a regular double hung window, a feature which makes the unit especially desirable in multi-story buildings.


This bulletin offers current information on the wide range of Benjamin units for factory and commercial lighting systems. It contains detailed descriptions of fixtures for lighting factory yards, platforms, entrances and sport areas; explosion-proof and dust-tight units for hazardous locations; and fluorescent lamps for work areas. Specifications and list prices on the Sky-Glo luminous louvered system for inconspicuous, high intensity lighting are also included.


Markel’s complete line of wall attachable, wall recessed and portable electric space heaters are described in this catalogue. Heetaire models for many applications—including farms, factories, service stations, roadside stands and offices—are pictured and their particular advantages explained. Serving as buyer’s guide as well as installation manual, the catalogue lists five points for consideration in the selection of an electrical space heater: size, exposure and type of room; climate of the area; and general purpose for which the heater is to be used. Architects and builders should find the information concerning layout of various heating jobs useful as well.


A turning vane and volume control device for balancing heating, ventilating and air-conditioning systems is fully described in this folder. Photographs, diagrams and tables supplement the text on construction, installation and operation of the Turnotrol. How this mechanism eliminates one sided air flow is explained, and smoke test photos show the control of the air stream by simple adjustment of the regulating rod. Dimensions and installation data are given for 7 sizes of the unit ranging 12½ to 30 in. in diameter.


This brochure, outlining the manufacturer’s new line of intercommunication equipment in a readable manner, should be interesting to factory and office planners. It describes such items as the Chime-Matic, a signaling system which indicates calls by a mellow chime and signal light.

ENGINEERING RESEARCH. 1949 Review of Current Research and Directory of Member Institutions. Engineering College Research Council of the American Society for Engineering Education. F. W. Dawson, College of Engineering, State University of Iowa, Iowa City, Iowa. $1.75. 6 x 9 in. 186 pp.

Over 4,000 current college and university research projects in engineering, representing outlays of more than $35 million, are listed by title in this review. Administrative policies of 82 member institutions of the Council are described; responsible personnel and expenditures are listed as well as short courses, conferences of special interest and titles of all current research studies at each school. Use of the book is facilitated by a complete subject index and a breakdown of projects according to the department involved.
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