The Architectural **FORUM** Magazine of Building

February 1948

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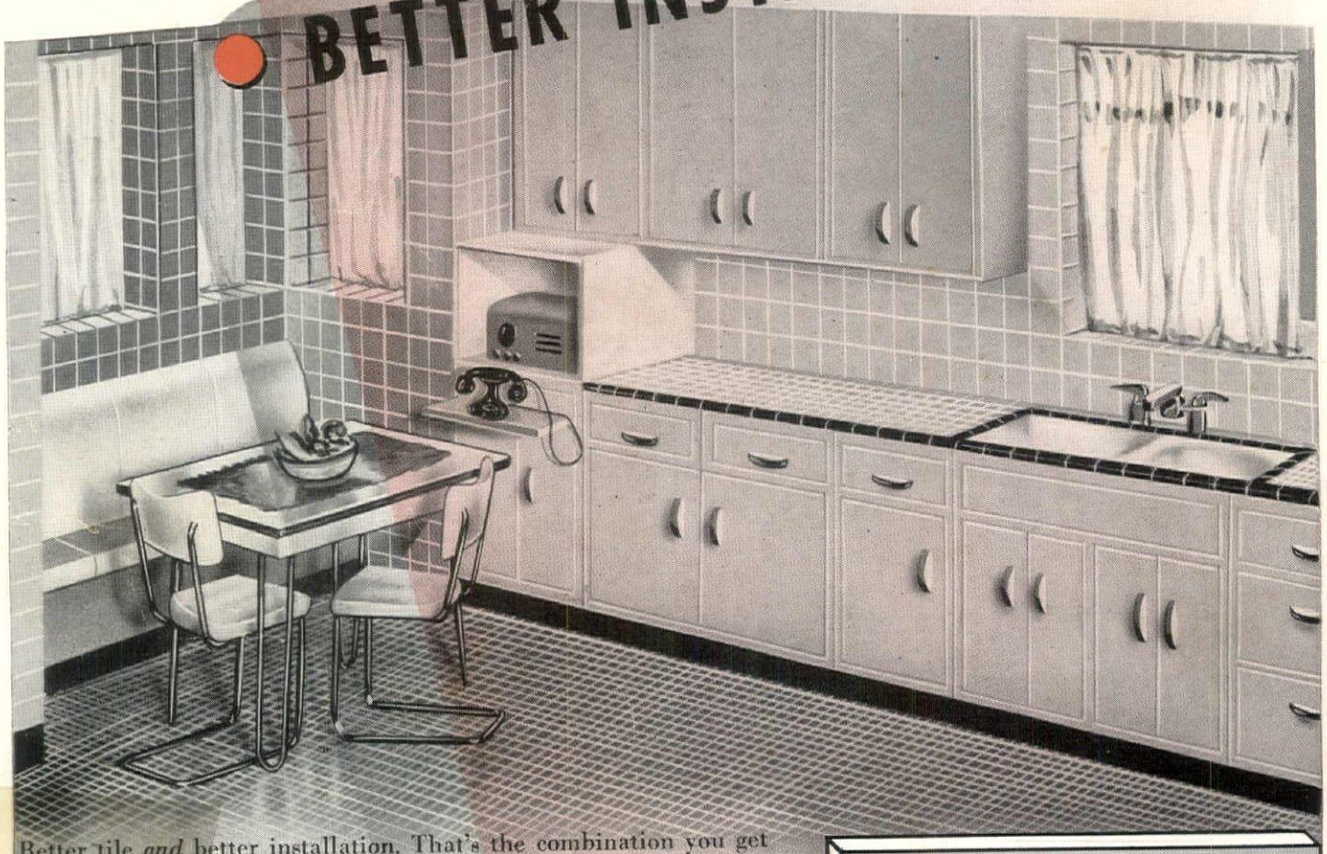

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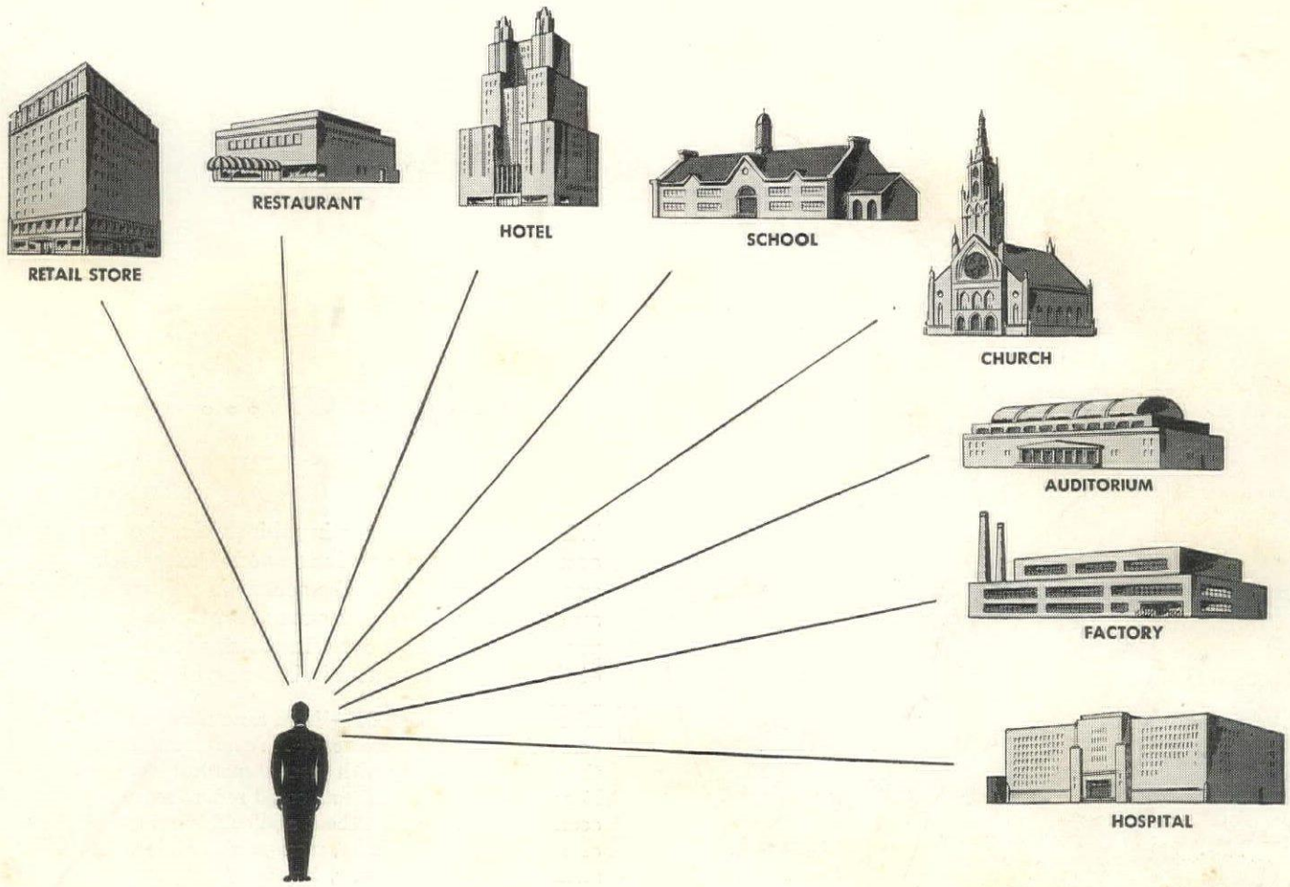

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the acorn is a piker...

This photograph shows the long, tough cane fibres which, when Ferox-treated against dry rot and termites, form the base for many Celotex building products.*

*REG. U. S. PAT. OFF.

When it comes to sprouting things big, the acorn is a piker alongside the *node* from which sugar cane grows. For the acorn only fathers an oak . . . but the sugar cane *node*, through production of tough cane fibre, has sired three of the greatest advances in building history—

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2 sound conditioning—In 1924 came another great advance from cane fibre—Acousti-Celotex perforated cane fibre tile . . . combining high sound absorption with paintability. At last architects had a practical way to build *quiet* into offices, schools, and hospitals . . . to control noise in factories . . . and to correct acoustics in churches and auditoriums. *Today, because of Acousti-Celotex, noise in business and industry is on its way out.*

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The Architectural **FORUM**

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FEBRUARY 1948

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VOLUME 88, NUMBER 2

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A POWERSTAT Dimmer is an autotransformer with a moveable brush-tap riding on a bared portion of the transformer winding. Selection of a particular output is achieved by rotating the contact arm. This operation is smooth and flickerless since the brush-tap is always in contact with the transformer winding . . . much the same as the needle of a phonograph-pickup always rides on the record.

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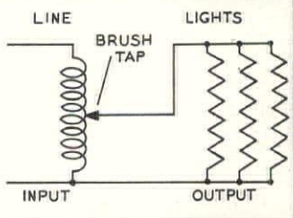

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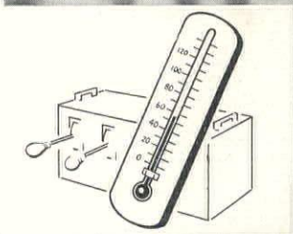

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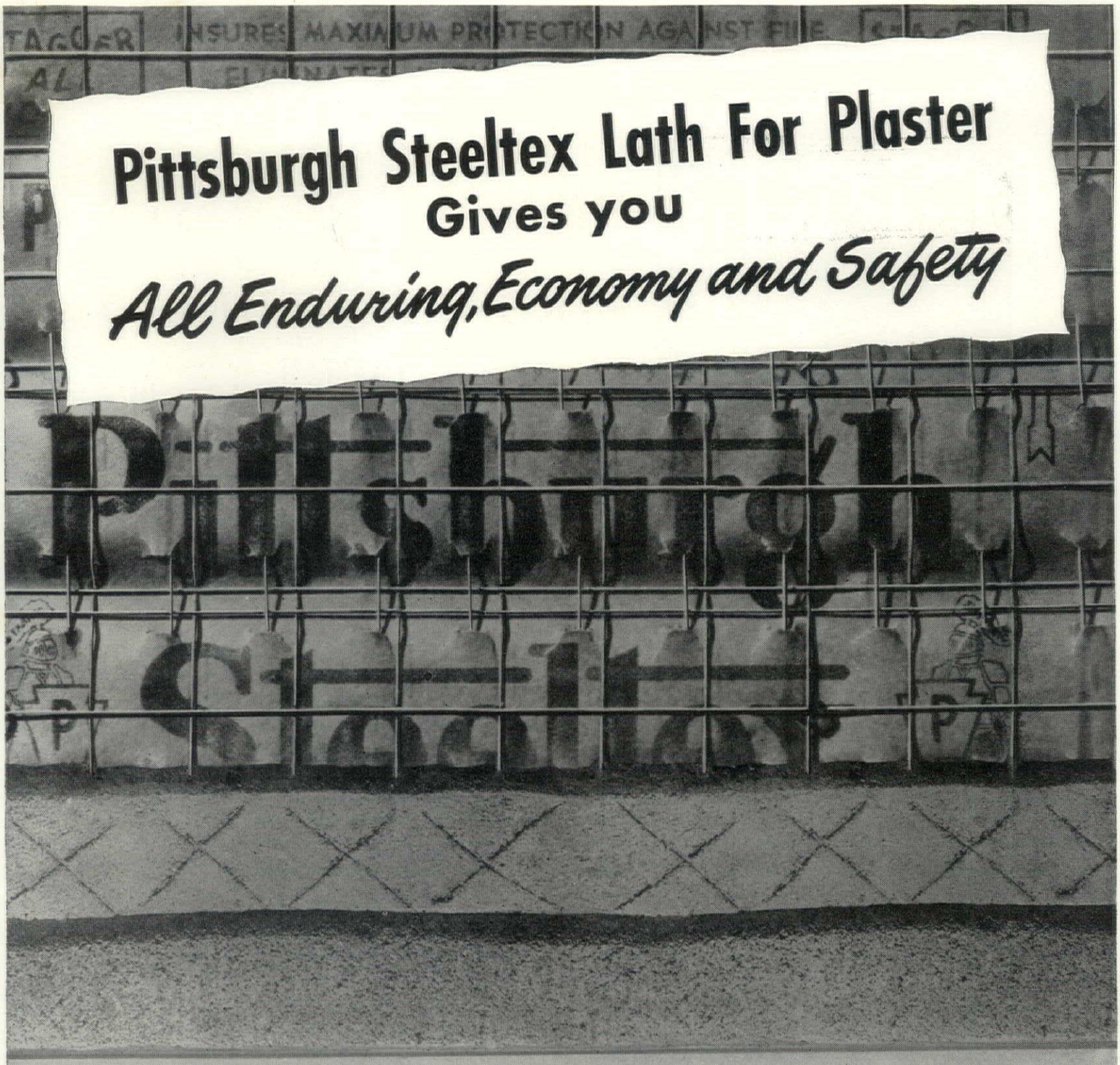

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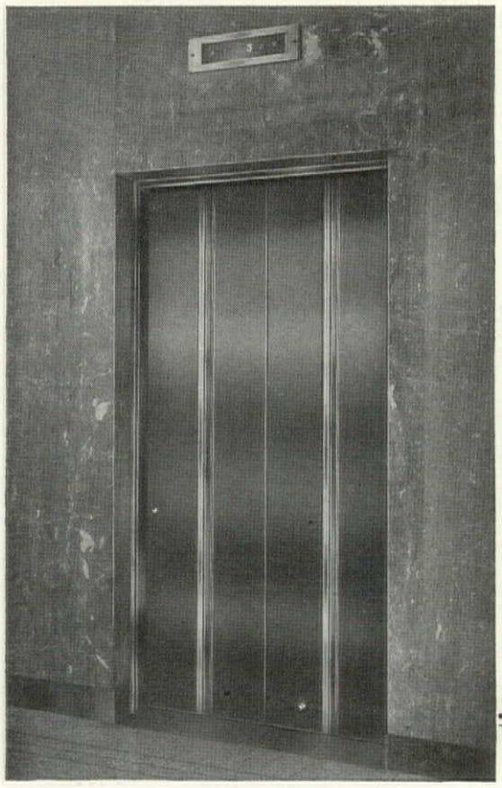

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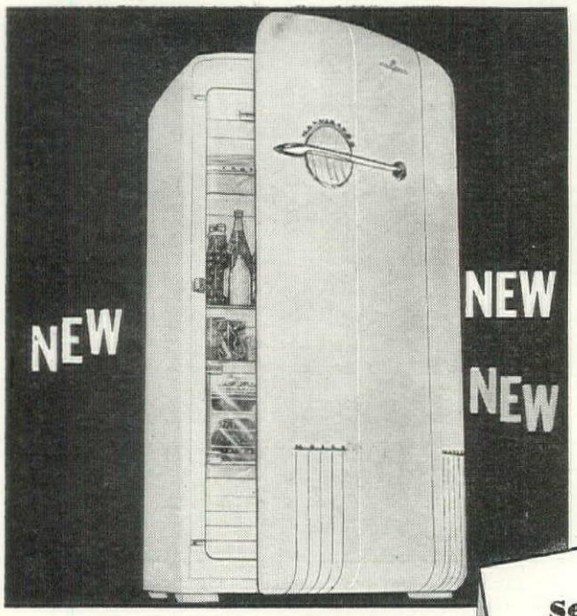

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See! Kelvinator's "Space-Saver Package" Saves floor space in small kitchens!

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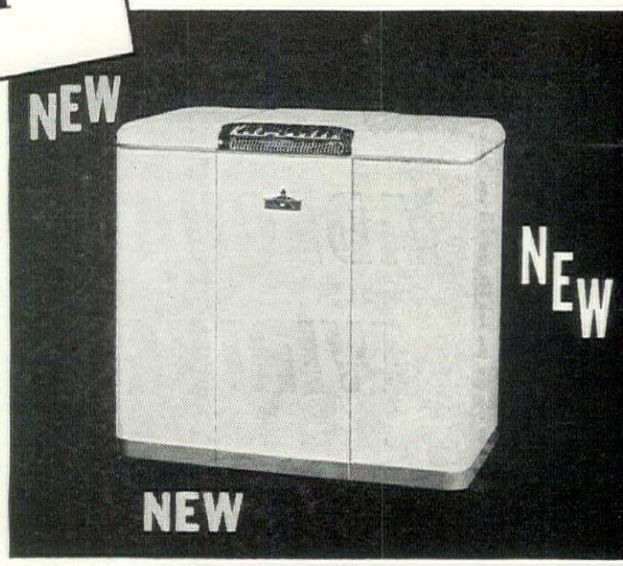

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NEWS

BUILDING MONTH. It was a month of looking ahead and looking backward. This began with the President's Economic Report and extended to the records for 1947 and the even greater hopes for 1948 that practically every factor in the Building industry snapped, like a handsome new pair of suspenders, for the benefit of the Congressmen inquiring about houses. It included some cheerful figures: Building looked back at a $12.5 billion year (860,000 houses started) and looked forward to at least $15 billion this year (900,000 houses). But the dollar volume recorded and anticipated had to be measured against a slightly less cheerful fact: according to the President's Report, the construction industry expanded less in physical volume in 1947 than most major sections of the economy. The Report further suggested that Building's relative lag may continue. "In the decade following the first World War the construction industry represented about 10 per cent of the economy. It now represents only half that percentage. Unless important changes are made in present methods and prices, its relative importance may continue to decline."

Suggestions as to how changes in methods and prices in the housebulding area of the industry could be accelerated were rapidly accumulating in Congress, and the Gamble-McCarthy proposal on housing legislation was due in mid-March. This was not likely to include any endorsement of public housing, although President Truman had optimistically included first-year expenditures for a public housing program in his $40 billion national budget (which also included $348 million for military construction).

As FHA's authority to insure loans under Title VI approached its March 31 deadline, the expected flood of applications rolled in, totaling $250 million in the first week of January—or one-third of available insuring authority. About 30 per cent were for rental housing. The month's biggest rental housing job was announced in San Francisco: a $70 million development to be shared by Stoneson Corp. and others, with Metropolitan Life reported ready to add up to 3,500 units near its Park Merced project.

savings which can be made by the contractor are practically never passed on to the consumer . . . While the contractors' profits are higher than usual, occasionally exorbitantly so, the worst profiteering in the industry seems to take place, according to the experts, at the supplier and manufacturer level."

Like almost every other observer of the current housebuilding scene, Senator Flanders thinks that price reduction can only come through large-scale site construction and factory production of houses, and he urges Congress to "make every effort" to encourage these progressive directions. He specifically proposes that:

- The National Housing Act be amended to provide government aid for financing plant and equipment for large-scale projects (see pp. 12-15).
- Section 609 of the Act, providing insured loans to prefabers and expiring in March, "be extended in time, enlarged in scope, and administered more expeditiously."
- Federal loans to encourage builders to modernize their methods and to "facilitate the entrance into housebuilding of those who are able and willing to break new industrial paths."

WASHINGTON

WINDFALL

Congress beams at lumber price cut.

The Congressional Joint Committee on Housing had visited dozens of cities, heard hundreds of witnesses, and collected thousands of pages of opinions on just what or who is responsible for high housing prices. Last month many of the Committeemen pointed happily to what they considered evidence of the effect of their prodigious labors: Weyerhaeuser's 10 per cent cut in lumber prices. But wise old Senator Flanders of Vermont merely observed: "It's no use shaking the tree until the apples are ready to fall."

Meanwhile, the Senator was showing up as one of the most vigorous tree-shakers the Committee has enrolled. His dryly factual report on the "High Cost of Housing," issued in mid-January, held a number of sharp raps. Samples: "No matter what arguments are presented to explain the larger profits admitted by contractors, almost all the authorities agree that any

TATTLE-TALE GRAY

No legal bleach can be found.

The Joint Congressional Committee on Housing had picked up his trail all over the U. S. Finally they found him, busy as only a gray marketeer can be, in New York. Sure, he said, he'd be glad to come down to Washington and testify. He was doing nothing illegal.

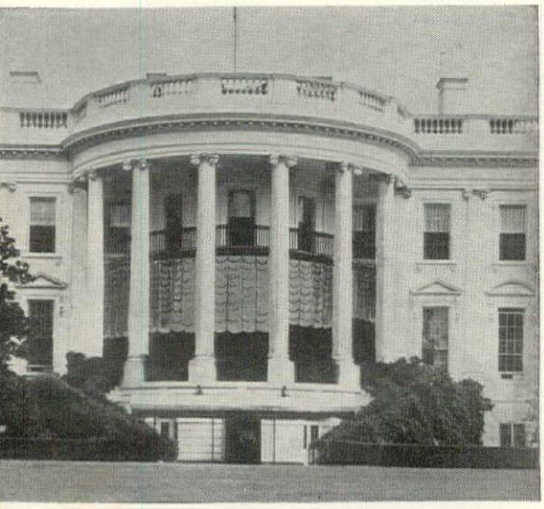
By the month's end, after 301-pound Isadore Ginsberg's picture had hit the U. S. press with all the effect of a John Bunyan figure labeled "Avarice," Congress reluctantly conceded his opinion: there is nothing illegal about a gray market. Reluctantly, Senator McCarthy abandoned the hope that the Federal Trade Commission might be able to lend a hand; the fair trade laws had not been written to apply to an individual speculator in a short commodity.

The real door to the gray market could not even be found, to say nothing of closed. Just how did gypsum building products get in the hands of gray marketeer Ginsberg? Ginsberg had a straight story. He was, he said, really helping out practically everybody. He bought his stuff in slack building areas ("Name one!" cried producers)

(Continued on page 10)

where dealers are alloted more than they can use, and he shipped it to places where it was needed. Builders were only too glad to pay a premium for such enterprise, he felt. Take, for instance, the 731 houses in Columbus that were stalled until he arrived with the gypsum lath. In this case, the "premium" was a sales price of $52.50 per 1,000 sq. ft.—as compared with a factory price of $19 to $24.

New York housebuilder Bill Levitt was on hand to point out cheerfully that if producers would sell direct to big housebuilders (see FORUM, Dec. '47) such leaks in distribution could not happen. But gypsum producers denied that supplies were going to dubious middle-men. National Gypsum vice-president John C. Best said



WHITE HOUSE BALCONY which President Truman started last month over protests from the Municipal Art Commission and the A.I.A. will look like this. Oblivious to press reminders of the fate of Europe's "balcony politicians," the President insisted on having a back porch. The balcony furor inspired the Washington Star to inquire if we really need a White House architect at $9,994 a year.

that his firm's products were sold only to the retail lumber or building material dealers. "In serving 10,000 dealers, occasional shipments may get into the wrong hands. But anxious as we are to eliminate gray markets, we know of no method by which a manufacturer can legally prevent a practice that is not in itself illegal."

Best took advantage of the occasion to present his industry's record on prices and production. His own firm, he said, will produce over 2½ times the amount of building materials it produced in the last war year. And it had absorbed cost increases ranging up to 244 per cent (starch) with an increase in the price of its own products amounting to not more than 29 per cent over 1939.

Threatening a contempt citation, the Committee finally persuaded Ginsberg to produce a list of his suppliers. Gypsum producers promised to submit a list of their dealers. But Committeemen admitted that there is no way that they can bring federal legislation to bear on how an industry routes its goods from producer to consumer. When they have cross-checked their two lists of gypsum handlers, the Committee will probably have to rely on the power of publicity to shake out the gray marketeers.

CENSUS

What's happened to housing?

Housing-conscious Senator Taft wants to make a housing census along with the next population count in 1950, and has introduced a bill to get things started. The check-up will show what's happened to the quality and quantity of the nation's housing since 1940 and also yield valuable marketing data. Example: Senator Taft suggests that census takers find out whether families are using mechanical refrigerators or ice boxes. Since the data will eventually be broken down on a metropolitan basis, manufacturers will be able to figure out how many live customers they can count on in the various cities.

PERMANENT SHIVER

FHA offices worry about what long-term oil shortage means in equipment.

As families shivered in fuelless homes last month, a cold prospect loomed: the oil shortage might not be cured for at least four years. Already FHA field offices were asking whether oil burners should be rejected for mortgage insurance in areas where fuel dealers are refusing to accept new customers.

Back of the big shortage is a big rise in consumption. Fuel oil use alone is up 68 per cent over last year, while per capita use of all oil products jumped to 608 gallons in 1947 as compared to 367 gallons in 1938. While the oil industry combined (under the new anti-inflation law which protects against anti-trust charges) to pool tank trucks, emergency reserves, and plans for meeting the shortage, Secretary of Interior Krug asked that no more oil-burning installations be made. So far, Washington FHA officials have ducked the question of how oil burners should be regarded for mortgage insurance. But builders considered the problem of the typical small house: once construction is completed, it is expensive or impossible to alter the structure for coal-burning equipment and coal storage.

VETS' HOME BUYING SLOWS

Credit tightens for guaranteed loans.

Last month the Veterans' Administration noted the first slackening in its fast-paced home loan program. In December, only 40,000 veterans bought homes under this government guaranty plan, and officials expected the January figure to go even lower. The reduced traffic in VA offices was partly due to a general tightening up of mortgage credit. But even more important, lenders said, was the lack of a secondary market for veterans' home loans. As the Senate Banking Committee pondered a bill to restore the secondary market once provided by RFC, Baltimore housebuilder Morris Macht told them that insurance companies are simply not buying any more VA loans in his area.

Looking back over its year's operations, VA assembled some figures to show just how things were going. The tally:

- Of the 540,000 home loans approved last year, 160,000 covered new houses and 290,000 existing houses. The rest covered remodeling and repair or financed veterans who built their own houses (35,000 of them did.)
- Average price of houses sold under the program was $7,300. For new houses alone, the average price was $8,200.

Since the start of the program in 1945, VA has made 1,056,000 loans for home purchase amounting to $6 billion. Only 1,150 have bounced.

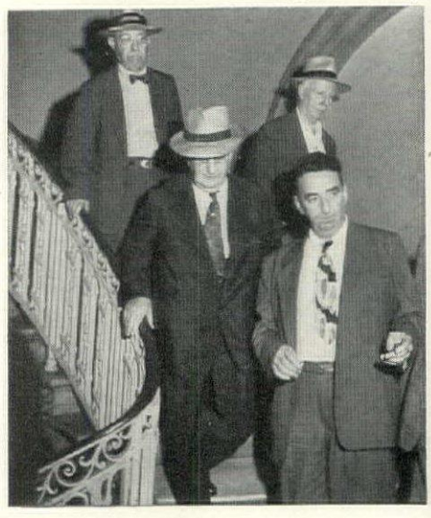
LABOR

WAGE STABILIZATION

Key trades reported ready to sign New York no-raise agreement.

Last summer Mayor O'Dwyer hopefully summoned New York building contractors and building tradesmen to the City Hall. Back of closed doors, the big contractors and the big unions growled at each other (Sample growl: "If you think building tradesmen are too old to be efficient, why don't all you old contractors retire?"). They heard Mayor O'Dwyer say that rising building costs were forcing the richest U. S. city to slash desperately needed public building. They heard UN architect Wallace Harrison tell how rising building costs were cutting down the size of the world's capitol.

Myron Ehrenberg



NEW YORK CONFEREES included (l. to r.) James E. Escher, president, White Construction Co.; Christian G. Norman, chairman, board of governors, Building Trades Employers Association; Tom Curtis, head of the Blasters and Drill Runners Union; Howard McSpedon, president, Building Trades Council.

Then they angrily tramped downstairs again (see cut, left).

But the Mayor, mindful that the heavy construction trades had finally signed a wage stabilization agreement, patiently worked on. Last month, seven months and scores of negotiating sessions later, the Mayor could point to a plum that many another city envied. Of the city's 38 building unions, 27 had agreed to sign a 2½-year wage stabilization agreement—and the rest seemed ready to do so. At month's end, even the stormy bricklayers, who have never before been a party to a master agreement, said they were ready to shake hands on wage stabilization, but still argued on just when the new agreement should become effective.

Aware that further cost increases promise nothing but unemployment, the New York unions have agreed to seek no more wage boosts before June 30, 1950—unless the cost of living rises more than 15 per cent on the BLS index by April, 1949. If it does, wage advances covering one-half of the excess over the 15 per cent rise will be granted.

In exchange for future stabilization, contractors agreed to 25 cent hourly increases for most trades. Most contractors thought the price was cheap: wage stabilization means the end of escalator clauses on labor in building contracts, more customers in the building market.

TAFT-HARTLEY INJUNCTION

Firing starts in Kansas City case.

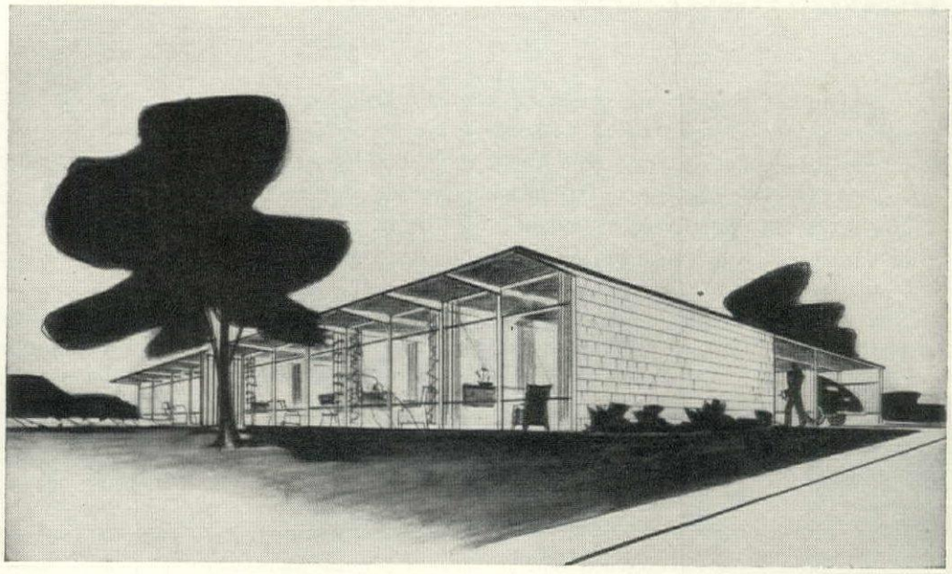
Since last June, prefabers and others have looked hopefully at the Taft-Hartley law as a way through building labor blockades. Meanwhile, the threat of the law has hung heavily over the council halls of the building trades unions—the most deeply entrenched sector of the labor front. But neither side has been anxious to set off the heavy charges with which this legislation is loaded: one false maneuver could lose the whole battle.

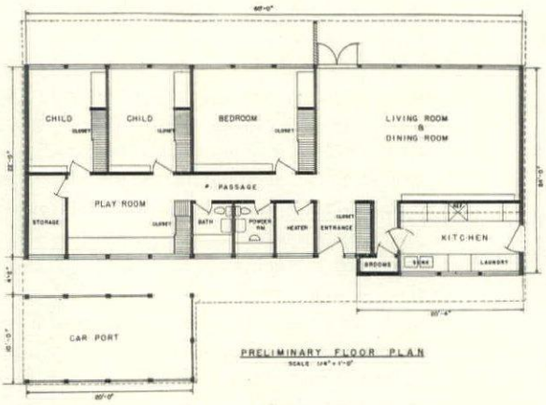
Last month the firing started. In Kansas City, Mo., Klassen & Hodgson, prefabricators, asked a Federal District Court to enjoin the carpenters' union from picketing a site where the firm planned to erect 15 prefabricated houses. This was not a prefab argument. The carpenters had no quarrel with Klassen & Hodgson. They were, however, involved in a wage dispute with the Wadsworth Building Co., which furnished the materials for the prefab houses.

The National Labor Relations Board took a look at the pickets pacing the housing site, and called the union's action a secondary boycott, illegal under the Taft-Hartley law. In the Federal District Court, Judge Eugene Rice agreed. He issued the first Taft-Hartley law injunction granted against a building trades union.

The carpenters obediently removed their pickets from the Klassen & Hodgson job. But this was only a preliminary skirmish. Four days later the carpenters served notice of appeal in the U. S. Circuit Court.

SOLAR HOUSE DEVELOPMENT planned for New York suburbs

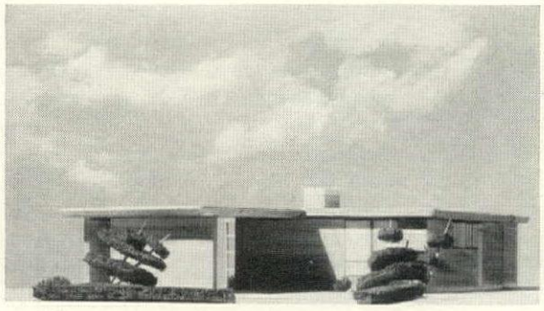




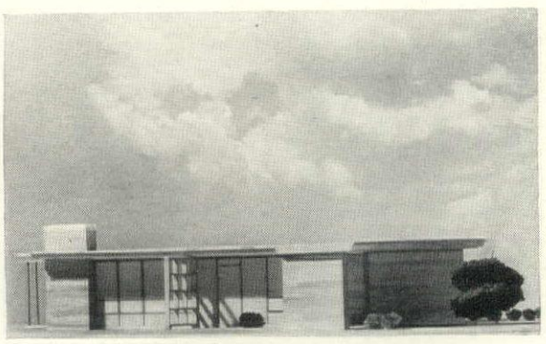
Biggest lot of solar houses yet announced, this 200-unit development is planned by a housing cooperative group, Mark Twain Acres, Inc. The group will acquire land and build the houses on a cooperative basis, but transfer them to individual ownership after completion.

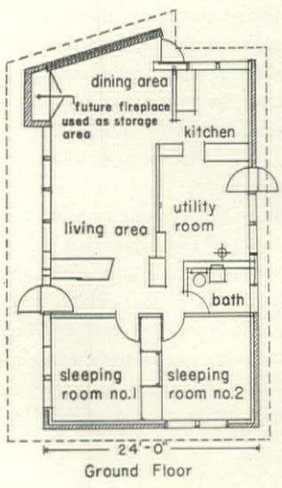
Architect Alexander Knowlton's plans call for a one-story 1,360 sq. ft. house, with six rooms, ample storage space, radiant heating, refrigerator and laundry equipment. The cooperators think they can build this for $11,200.

FLAT ROOFS are okay, Illinois judge rules



When the village of Homewood, Ill. denied a building permit for 11 houses like the model shown left, Chicago architect John V. McPherson and his 11 customers went to court. The Homewood village board banned these houses under a recently passed section of its building code requiring that dwellings must conform architecturally to their environment. Neighboring property owners did not like McPherson's plans calling for flat roofs, glass walls, radiant heating. These plans were, however, approved for FHA insurance. Circuit Judge Harry M. Fisher upset the village ban. "Esthetic considerations cannot be the basis for issuing building regulations," he said.





Ground Floor

CONSTRUCTION FINANCING: let's take a good clear look at FHA's Title VI and see how

If housebuilding is an industry that has scarcely been touched by the magic of Mass Production, it is also an industry signally untouched by the golden hand of Finance Capital. Of the some 30,000 "professional" housebuilders in the U. S., there are probably not more than 100 who can walk into a commercial bank and float $1 million worth of working capital. And even the handful who do command the polite attention of the bankers claim it with the aid of an extraordinarily appealing device: the promise of the federal government to bear the risk of their building venture.

The Federal Housing Administration's elaborate system of mortgage insurance, conceived as a pump-primer in the depression, has had the unexpected result of assisting in the birth of the large-scale housebuilder. It did this by compensating for a number of inadequacies in our system of housebuilding finance. And it did it so successfully that the housebuilding industry is now pleading with Congress to extend the very maximum of FHA underwriting in a period when the nation as a whole is looking frantically for whatever is the reverse of a pump-primer.

The reasons why housebuilding was singled out for one of the first experiments in public risk-sharing are fairly obvious. Since housing is high on the list of essential commodities, it is always a favorite target for government intervention. Moreover, the ancient nature of the housing commodity has saddled this sector of modern enterprise with an ancient financing system, which occasionally shuts up with mollusk-like finality to precipitate a major shut-down in the whole giant structure of modern production.

The mortgage is not only the oldest financial instrument known to man (mortgage regulations were prescribed by the Hammurabi Code in 2,000 B.C.) it is also one of the least well-adapted to the needs of mass production. The picayune, localized nature of the housebuilding industry has been well underlined lately, and a variety of convincing reforms have been advocated. But, whatever else needs to be done, it is easy to see that the housebuilder cannot evolve into an efficient, large-scale manufacturer of houses so long as he is impaled on a financing system unchanged, in all essential respects, from what was a safe way to lend money in feudal times.

CONSUMER FINANCING

The dominance of the mortgage lender in housebuilding can be explained in a variety of ways. In the first place, the mortgage loan is financing for the consumer—and only indirectly for the producer. The fact that housebuilding is the only major industry where consumer financing precedes production financing (and where, indeed, the latter is usually conditional upon the former) is due to the special nature of the housing product. A house is the biggest expenditure the average family ever makes, and the only purchase that a well-to-do family cannot usually make in cash. Thus the supply of consumer credit, occupying a subsidiary place in manufacturing generally, has come to control completely the manufacture of houses.

When, therefore, the New Dealers of 1935 decided to revive housebuilding, they were obliged to adopt a device for unfreezing credit to the house customer. This they did by setting up a system of mortgage insurance, under which the federal government promised to take over any house in default and hand the lender 100 per cent of the loan value in federal debentures.

As everybody knows, the appearance of the federal government as security for a small home mortgage drove interest rates down to 4½ or 5 per cent, eliminated the second mortgage, standardized the moderate down-payment and the amortized mortgage—and so brought home ownership within the reach of thousands of additional families. At the same time, the federal government assumed a position of responsibility in the nation's biggest industry of which neither Congress nor the voters nor the industry itself is fully aware.

UNPLUMBED DIRECTION

Whether we like it or not, the FHA system of federal risk-bearing has a decisive influence on the character of the housebuilding operation. Those who criticize FHA's conservative reluctance to accept new methods and materials, its failure to inspire urban redevelopment, its blessing of the continuing exodus to raw land, etc., etc., are indirectly saying that FHA should exercise its influence in a progressive direction. But, because so few concede the responsibility FHA has assumed in backing private enterprise with public credit, there has been very little thought as to what direction its influence should take. And FHA itself, once having set up its excellent construction and land-planning standards, has, in an ostrich-like fashion, assumed it had no more pressing assignment than protecting itself against losses in the business-like manner of a private lender. Its diligent assumption of the risking-rating perspective of a private insurer is based upon one fundamental misconception: nothing like this giant credit bolster has ever been undertaken by private risk-bearers; business standards of risk-rating simply do not apply to a government agency standing back of one out of every six home mortgages. With mortgage debt at the highest point in U. S. history, the federal government is security for close to $4 billion worth of mortgages—or about 15 per cent of the national residential real estate debt.

The untried factor in the FHA formula is a declining real estate market. The FHA system was conceived at the rock bottom of depression; throughout its short history both real estate values and housebuilding activity have been steadily increasing. Last month, as Federal Reserve Chairman Marriner Eccles* accused FHA of pumping up the balloon of housing inflation, many an unpopular Cassandra wondered what would happen to FHA's prudent balance sheets if real estate prices start another landslide.

One of the basic flaws in housebuilding is that everybody wants to build all at once—or wants to not-build all at once. But unlike other commodities, housing is the poorest investment in times of the biggest production. Another way of saying this is that housing is the only industry where prices go up as production rises.

ROUGE UP THE OLD GIRL

When FHA was born, the government had taken over some $3 billion worth of home mortgages, millions of families were living doubled up, thousands of apartments were vacant. Everybody was wanting to not-build in a very solid way. FHA, as every Congressmen remembers, was got up as a siren to coax mortgage money out of depository storm cellars. One of the early FHA administrators used to put this graphically. When times were bad and more enticement seemed necessary, he would thump the table and say: "All we can do is to rouge up the old girl, shorten her skirts and send her back on the streets."

But with the emergence of the full-blown housing boom of 1947, FHA's siren role was completely out of date. In fact, the old girl had been brought in from the street and married to the housebuilding industry.

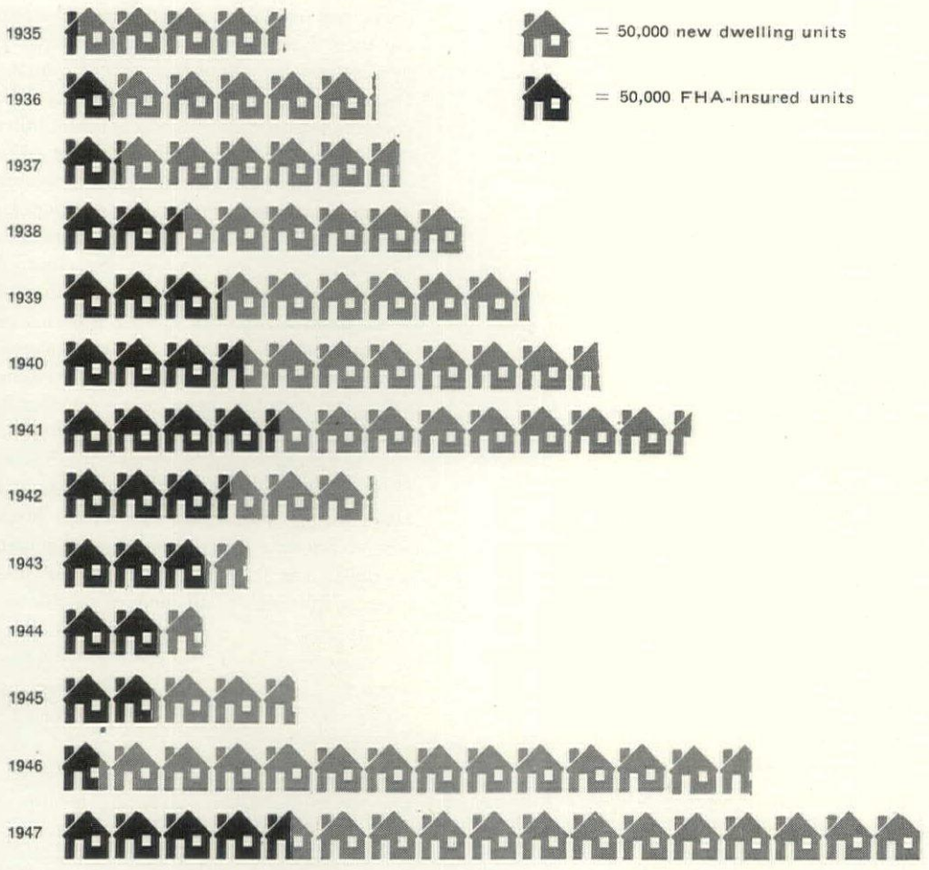
TITLE VI

FHA's conversion from a depression rescue agency to a vehicle for riding the boom was accomplished by the financing instrument known as Title VI. This is the section of the National Housing Act expiring next March 31 and which Congress is now being hotly petitioned by the industry to renew. It was set up in 1940 to absorb the extra risks of war housing, and has been extended (in a series of bumpy stops and starts) every year since because housebuilders are loath to part with its more liberal credit terms.

Congressional confusion on this renewal is easy to understand. Few Congressmen are masters of the intricate insuring provisions of FHA's various Titles and Sections. On the one hand, Congress had heard federal housing boss Raymond Foley (as well as a number of large-scale builders) predict that housebuilding production would be

* Just made Vice-Chairman.

really get what we want



NUMBER OF NEW DWELLING UNITS covered by FHA insurance reached 100,000 for the first time in 1938. Generally speaking, the larger the volume of housebuilding activity, the larger the percentage assisted by FHA insurance. An exception to this is the year 1946. Some say this is because nobody was worried about risks in the immediate postwar housing market. Others point out that FHA did not raise the Title VI loan limit to 90 per cent of a $9,000 house until the spring of 1946, or too late to show up much in this tabulation based on completions. Since most builders found it impossible to build decent family living accommodations for less than $9,000, FHA financing was not of much use to them before the boost in the Title VI loan limit.

reduced at least one-third next year if Title VI were dropped. On the other hand, Congress had heard Eccles and bankers like Chicago's Edward E. Brown say that Title VI is toppling the nation into real estate bankruptcy. As every housebuilder (but not all Congressmen) knows, FHA's Title VI differs from the long-term Title II program of mortgage insurance in two important respects: 1) it provides for 90 per cent loans on houses costing up to $9,000 or on apartment developments with room cost up to $1,800; 2) it says that loan value may be appraised at 90 per cent of "reasonable current costs."

The long-term Title II program, on the other hand, limits a 90 per cent loan to houses selling for not more than $6,000 and further requires that loan values be appraised on the basis of "long-term stabilized values."

To even the most casual student of building finance, it will be apparent that a Title VI loan amounting to 90 per cent of the current market value of a house or of a big rental development means a loan covering at least 100 per cent of the builder's costs. The 10 per cent difference between the amount of the loan and the selling price or "value" of the property is the builder's profit.

But Title VI had another and even more overwhelming advantage for the builder of the house-for-sale. This was its suggestion that the lenders make these 90 per cent loans directly to the housebuilder, instead of insisting that the builder secure a customer before issuing the loan. Now this is the most important change in the character of housebuilding finance since the appearance of the amortized mortgage, and the big housebuilders were not slow to recognize that it yielded what their industry has conspicuously lacked: the working capital for a large-scale operation.

Title VI opened the door to construction financing by making the builder a temporary mortgagor on a large number of houses. Under the regular Title II program, the builder had to strain his resources to the utmost until he had completed his houses and could produce an eligible purchaser. Until a purchaser who met FHA's terms as to assured income, credit rating, equity-raising ability, age, health, education, etc. could be found to sign the mortgage, no financing could be advanced by the mortgage lender. This meant that the builder was obliged to raise construction financing by short-term bank loans. Since a banker's notion of a safe construction loan rarely reached even two-thirds of cost, the builder was forced to start houses in small lots and get his money out before he could start any more.

TEMPORARY MORTGAGOR

Title VI financing, on the other hand, works like this: a builder goes to his local FHA office with plans and specifications for 200 houses. If it approves these plans, FHA gives the builder a firm commitment to insure 200 mortgages. This commitment enables the builder to sign up as mortgagor for 200 mortgage loans and *to secure advances against these loans* as construction proceeds. As the houses are sold, the buyers gradually replace the builder as mortgagors. The importance of the builder's temporary position as mortgagor cannot be overestimated: it is the first step toward production financing ever taken in an industry subservient to an obsolete method of consumer financing.

This aspect of Title VI has been pretty much overlooked in the current controversy about whether this part of FHA should be extended. Most of the discussion of Title VI focuses on its provision that loans may be valued on the basis of "reasonable current costs." Since the current cost of housebuilding seems vastly unreasonable to a large number of people, FHA is accused of supporting housing inflation by easy credit. As one big lender puts it: "Lending on inflated value embalms the evil." But to adopt the orthodox Title II appraisal base of "long-term stabilized value" would threaten—or so a large number of impressive witnesses have assured Congress—to sharply reduce housebuilding activity.

VASTLY UNREASONABLE

This question—and it is obviously a crucial one—again touches on a basic unreality in the conventional approach to building finance. This is the concept of long-term value. Although real estate appraisers have tried hard to elevate property valuation to the status of an exact science, the great changes implicit in dynamic capitalism make their efforts about as substantial as sand-castles. To make an accurate estimate of "long-term" value, an appraiser would have to predict population trends, general economic conditions, industrial migration, neighborhood obsolescence, municipal and private plans—even war or peace! It might clear up some of the confusion to focus our appraisal sights on a more realistic objective: making sure that the house buyer gets the maximum "value" possible under current construction costs and with the benefit of the most advanced construction methods. This is at

least theoretically possible under the Title VI appraisal base, reinforced by the recent administrative attempt to interpret "current costs," not on the basis of an average figure, but in terms of the "costs of an efficient builder." A "building efficiency" yardstick, thoughtfully developed and expertly used, might in the long-run be far more productive of real property "value" than our present rather mystic approach.

The question of how far FHA should go in covering current construction costs is really a question of whether families should be encouraged to buy houses at present prices. There is much to support the argument that they should not, but it is important to recognize that making it harder to buy houses is not certain to bring down house prices. In fact, a contraction in the supply of housing credit might have just the opposite effect. Here is another point where we must decide exactly what we want to do. In the present furor about letting some of the air out of the housing inflation, it is important not to overlook one very real possibility, that of using FHA credit more forcefully to channel a larger volume of building into low-priced houses.

In this direction, Title VI has already had some effect. There is no limit to the price of a house under Title VI, but the loan limit of $8,100 provides every incentive to keep the price down to $9,000. To the extent that price climbs above this figure, the builder has to put in more of his own money and the buyer has to make a bigger down payment. Despite claims to the contrary, government and private industry surveys alike have made it clear that the great majority of families now in need of houses cannot afford to put up more than $900 cash. Under Title II, a builder putting up a $9,000 house would have to ask a $1,200 down payment. Builders argue that most buyers who can raise this amount of cash want a more expensive house, and believe that down payments of this size would soon shift volume to the $16,000 price range.

Even those most distressed by Title VI's effect in bolstering the house market are obliged to agree that it has been a paramount factor in getting built the only alternative to an owned house: rental housing. A great deal has been said about the "mortgaging out" aspect of Sec. 608; this quickly becomes a kind of moral argument about whether the builder should be permitted to become an equity owner without paying for the equity. The question of whether the builder *ought* to be permitted to do this is a rather academic one: the plain fact is that, except for the insurance companies, exactly no rental housing was being built before FHA boosted room cost limits to a point where developers could make use of Sec. 608's 90 per cent loan (see FORUM, Aug. '47).

$600,000 LAND IMP.
(Sewers, water, cutting streets, arch. & eng. fees.)

$250,000 PLANT
(Plant structures, jigs, conveyors, motors, etc.)

$250,000 EQUIPMENT
(Trucks, cranes, wheelbarrows, scaffolding.)

$500,000 STOCKPILE

$1,600,000

INITIAL OUTLAY—1,000 HOUSES

Efficient organization of a housebuilding job for site fabrication demands the heavy initial investment itemized above (not counting cost of land). All these expenditures must be made well in advance of actual building start. Moreover, to maintain a large-scale organization the builder must have several jobs of this size scheduled in sequence.

RENTAL BOUNCE

There is little doubt that even a moderate decline in the real estate market would bounce a number of these 608 projects into FHA's reluctant arms. Similar efforts were once made to stimulate rental building under Title II, Sec. 207, and, even in a rising real estate market, 21 rental developments reverted to government ownership, to be finally rescued by the wartime boom. The most cynical critics of Sec. 608 observe merely that it will cost us less than public housing. One big lender sums up the rental housing dilemma this way: "Moderate-income families simply cannot pay rents that justify investment at present prices."

Congress' decision on whether FHA-insurance will continue to cover 90 per cent of current prices after March 1 will probably be considerably influenced by housing chief Foley's recommendation. On the house-for-sale, Foley is expected to recommend some reduction in the present maximum loan limit of $8,100. In the critical area of rental housing, no reduction in the 90 per cent loan limit or in the $1,800 room cost limit is likely to be made.

The National Association of Home Builders, which has officially asked for a 10-year extension of Title VI and a boost in the maximum loan on the single-family house from $8,100 to $9,900, will not be charmed by this prospect. But the Home Builders are not insensible to the argument that it would be nice to stay in business, and could probably be convinced that a prudent hand on consumer credit this year will help to avoid a slump later on if it were not for their desperate need of Title VI. This is the real heart of the matter: the builder needs the high percentage mortgage loan not so much for its effect on his market as for its effect on his construction financing. And to the very degree that the housebuilder is an efficient, large-scale manufacturer of houses so is his need of construction financing increased.

The organization of the conventional small-scale housebuilding operation is often called irrational and inefficient. But, from the small housebuilder's point of view, it is extremely efficient in at least one respect: the extent to which it distributes capital outlay over as long a period as possible. Materials are delivered to the site piecemeal, and only when it is time to incorporate them into the structure. The material dealers, now a front-line target for the housebuilding reformists (see page 10), contribute to the small-scale housebuilding operation by extending liberal credit. The series of sub-contractors who arrive one by one to handle the various trade operations are also paid one by one—and each contributes his own minute resources of capital and credit. All this stretching-out of cash payments over as long a period as possible has the inevitable effect of increasing the builder's total costs, but, in many cases, it is the only device he has for operating at all.

It is customary to represent the housebuilder as a fellow who is trying to get along without putting up any capital whatsoever, but this flip statement of the case overlooks the fact that credit is the lifeblood of practically all modern productive enterprises. The housebuilder is not so much distinguished from other entrepreneurs by his desire to enlarge his working capital, as by the extremely hard time he has doing it. For most manufacturers, financing is based on ability to produce. For the housebuilder, financing is always firmly geared to the timing and the amount of the credit extended to his customers.

It is for this reason that the 90 per cent mortgage loan becomes vitally important to the housebuilder operating on any scale. In a typical development of 1,000 houses, the difference between 90 per cent and 80 per cent mortgage loans to the house buyers is a difference of $900,000 in the amount of construction advances that will be made as the job proceeds. The timing and amount of construction advances made by the mortgage lender in turn affect the amount and terms of whatever initial short-term loans the housebuilder is able to raise from banks or mortgage brokers.

FINANCING GAP

The work sheet on p. 15, showing construction expenditures and construction advances on a monthly basis, is the record of an actual 1,000-house development. It shows how construction advances are customarily paid out at intervals as work proceeds. (The usual stages in which funds are advanced: 1) when the foundation is poured; 2) when the roof is on; 3) when the house is plastered; 4) completion.) This financial schedule also shows that even under the most favorable conditions a heavy initial investment is required for a period of at least eight months before the first construction advances are made and that another five months elapses before construction advances make much of a dent in monthly cash expenditures. Thus even under the most favorable conditions (Title VI, 90 per cent loans) construction advances

SCHEDULES OF DISBURSEMENTS AND REFUNDS OF ADVANCES FOR CONSTRUCTION

ths Underway	Engineering and Land Improvement: Engr. etc.	Clrg. Grdg. Survy.	Water System	Sewer System	Streets Roads Drains Brdg.etc.	Adm. & Ovhd.	Detached Dwelling Const. - 1,000 Units: Site Prep. & Slabs	Frames	Compl. Interior	Finish External Work	Antic.Monthly Expend.	Insurance Company Advances	Purch. Eqty. applied after Bldr's Profit	Bal. outstanding after Ins. Co. Adv. & Application Purch's Eqty Excl. Land
Sept. 1947	23,839.18	-	-	-	-	-	-	-	-	-	23,839.18	-	-	23,839.18
Oct.	11,649.84	-	-	-	-	-	-	-	-	-	11,649.84	-	-	35,489.02
Nov.	6,080.23	-	-	-	-	-	-	-	-	-	6,080.23	-	-	41,569.25
Dec.	7,000.	6,000.	12,000.	10,000.	7,000.	2,800.	10,000.	50,000.	-	-	104,800.00	-	-	146,369.25
Jan. 1948	8,000.	12,000.	50,000.	25,000.	20,000.	8,560.	20,000.	61,000.	-	-	204,560.	-	-	350,929.25
Feb.	9,100.	12,000.	60,000.	30,000.	30,000.	10,000.	30,000.	49,000.	15,000.	-	245,100.	-	-	596,029.25
Mar.	9,100.	15,000.	30,000.	30,000.	10,000.	6,800.	130,000.	95,000.	80,000.	-	405,900.	-	-	1,001,929.25
Apr.	9,030.75	15,000.	30,000.	60,000.	15,000.	9,600.	160,000.	100,000.	150,000.	30,000.	578,630.75	-	-	1,580,559.25
May	5,100.	15,000.	40,000.	50,000.	100,000.	16,400.	190,000.	150,000.	175,000.	50,000.	791,500.	332,930.	-	2,116,530.
June	5,100.	2,000.	20,000.	40,000.	100,000.	12,960.	230,000.	170,000.	175,000.	65,000.	820,060.	895,320.	1,500.	1,914,364.
July	3,000.	2,000.	10,000.	20,000.	100,000.	10,560.	250,000.	170,000.	200,000.	65,000.	830,560.	1,022,600.	31,500.	1,736,963.
Aug.	3,000.	2,000.	6,850.	14,250.	100,000.	9,840.	250,000.	170,000.	200,000.	80,000.	835,940.	1,089,420.	33,000.	1,586,818.
Sept.	-	2,000.	-	-	80,000.	6,560.	250,000.	170,000.	200,000.	100,000.	808,560.	1,081,300.	39,000.	1,060,136.
Oct.	-	2,000.	-	-	37,692.	3,175.	250,000.	170,000.	200,000.	100,000.	762,867.	1,081,300.	39,000.	750,678.
Nov.	-	550.	-	-	28,324.	2,878.	200,000.	110,000.	90,000.	100,000.	531,752.	613,770.	39,000.	673,475.
Dec.	-	-	-	-	-	-	150,000.	100,000.	85,000.	25,000.	360,000.	366,020.	18,000.	649,455.
Jan. 1949	-	-	-	-	-	-	-	13,000.	80,000.	-	93,000.	161,600.	15,000.	565,855.
Feb.	-	-	-	-	-	-	-	-	80,000.	-	80,000.	161,600.	15,000.	469,255.
Mar.	-	-	-	-	-	-	-	-	80,000.	-	80,000.	161,600.	15,000.	372,655.
Apr.	-	-	-	-	-	-	30,000.	24,000.	80,000.	15,000.	149,000.	248,980.	15,000.	257,695.
May	-	-	-	-	-	-	60,000.	48,000.	80,000.	30,000.	218,000.	342,260.	15,000.	118,435.
June	-	-	-	-	-	-	-	-	10,000.	-	10,000.	61,320.	15,000.	52,115.
													9,000.	42,115.
	100,000.00	85,550.	258,850	279,250.	628,016.	100,133.	2,210,000.	1,650,000.	1,980,000.	660,000.	7,951,799.00	7,800,000.	300,000.	

FINANCAL SCHEDULE of actual 1,000-house development (selling price: $9,000) shows that for at least seven months of construction housebuilder must make cash outlay of more than $1 million. Insurance company advances do not start until ninth month of construction operations.

do not meet the builder's need for initial financing aid. Although almost all builders say 1,000 house jobs would be impossible without Title VI advances, these do not and cannot cover the initial period in which large-scale housebuilding requires a heavy cash outlay.

The schedule reproduced here shows the cost of material, equipment and labor allocated according to the month in which the material is actually incorporated into the structure. But the quantity builder who has set up an efficient system of site fabrication does not make his outlay on this month-to-month basis as work proceeds. A large part of it must be plunked down well in advance of the construction start. In addition to the sizable initial cost of land improvement (utilities, streets, sidewalks, grading, etc.), the large-scale builder must have the resources for setting up what is literally a factory at his building site: the equipment for pre-cutting structural parts. Operations on this scale demand that all materials be contracted for and delivered well before foundations start. One operative housebuilder figures that the minimum amount of cash required to organize a 1,000-house job is $1,600,000, not counting cost of land (see itemization in diagram on p. 14).

Now while the commercial bank's willingness to make this kind of builder a short-term construction loan is considerably amplified by the builder's handful of FHA commitments, this still does not solve the builder's problems. The commercial bank can loan money only until the first advances under the mortgage are made. After this first payment, the principal lender holds a first lien on the property. Banking regulations do not permit a secondary position. If, on the other hand, the banks were willing to carry the construction to completion, on the basis of another lender's commitment for the permanent loan, construction financing would be limited to 66⅔ per cent by most state banking laws.

Last month President Truman's Economic Report suggested that Congress consider ways to speed the emergence of the large-scale housebuilder. A very direct way is FHA insurance for production loans. Such insurance has already been made available for production loans to prefabricators (Sec. 609, Title VI). A similar plan to meet the operative housebuilder's need for working capital ought to go considerably farther than the insured construction advances now provided for rental developments under Sec. 608. In the first place, production loans for the operative builder could be entirely divorced from mortgage financing. This would give the large-scale housebuilder—and, more important, the men on their way to becoming large-scale builders—the flexibility in timing their initial expenditure that they imperatively need. And it would give them access to large new financing sources.

LOAN COMPETITION

This latter aspect of the plan is not calculated to win friends for it among traditional mortgage lenders. One lender doubtless spoke for many when he told the FORUM that "FHA insurance would mean that anybody could make such loans. Fly-by-night lenders would rely on the government instead of on their own know-how." Such objections, as any Building man will recall, were put in even stronger terms when the first FHA-insured loan was made.

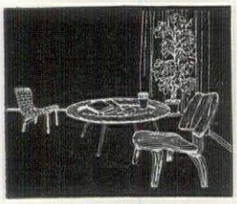
As a matter of fact, qualifying builders for FHA insured production loans ought to be up to FHA (with screening to be further refined by the judgment of the individual lender). FHA has the know-how and personnel for such an operation, and it has the record of most housebuilders at the fingertips of its local offices. If such a plan should be approved by Congress—and there seems reason to believe that its approval would be a big step in the laggard evolution of the housebuilding industry—it would be a good time to do some hard thinking about the direction in which we all want housebuilding to go. It certainly does not seem fair, for example, to open financing aids intended to get really sizable on-site production lines underway to anybody who meets the BLS definition of a "professional housebuilder." And it is certainly not fair to the taxpayers to use our collective credit to open the door to efficient organization and real cost-reduction without making sure that we get tangible results in the way of reduced costs and improved performance.

This whole matter of what we can expect to get in return for the use of the taxpayers' credit deserves some new and vigorous attention. Willy-nilly, such federal risk-sharing as FHA will continue to play a dominant role in setting housebuilding standards. At the worst, this role might be a negative one. By failing to take account of the most progressive directions set by the top-rank of the profession, FHA could someday find itself in the position of subsidizing the inefficient builder by diluting his risk. To make sure that FHA exercises its inescapable influence in a progressive direction is the business both of the industry and of the underhoused public.

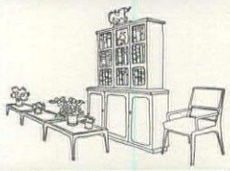
If the industry is as anxious to clean its house as it says it is, here is a very big broom indeed. There is every legal reason for insisting that the taxpayers get some benefits from the use of government credit, and the benefits derived from FHA might conceivably extend to reformed building codes, fair union practices, neighborhood planning and other overdue building efficiencies. Realistic observers of the present scene will immediately object that to make FHA-insurance contingent upon, say, an up-to-date "performance" building code would put the whole FHA program on the shelf in all but a few areas. This kind of objection raises the question basic in any government risk-sharing venture: how can we get the maximum in social returns with a minimum of interference in the operation of healthy private enterprise? The very first thing to recognize about the answer to this question is that it must be always changing. In the FHA program, standards of social return must be constantly raised as the housebuilding industry improves its own performance. This simply means that FHA must be clearly on the side of progress, and not of the status quo.

MODERN FURNITURE: a glossary

Advocating more divisions in the trade vocabulary for modern furniture, design consultant Alfred Auerbach wryly honed the term before a buyers' meeting at the Chicago furniture show last month. His divisions:



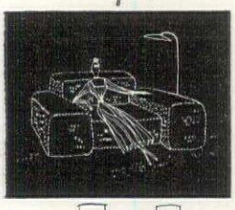
UNRELENTING MODERN is intolerant and uncompromising, but also honest, straightforward, and logical. Auerbach's favorite.



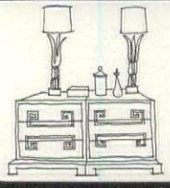
NOSTALGIC MODERN is wistful for other centuries, but streamlines the old. Elegance and suavity make it a very popular type.

FLORADORA MODERN — a lush, full blown species using distressed mirrors, Venetian sconces . . . a darling of many decorators.

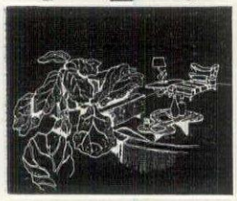
SMORGASBORD MODERN is supposed to stem from Sweden, but might be grounds for a Scandinavian libel suit. Very blonde.



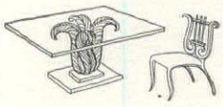
LANE BRYANT MODERN, best known for overblown chairs which look as if they might well be having little ottomans any minute.



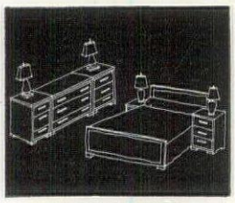
CHINESE MODERN, or Goodbye Mr. Wing Foo Chippendale. Some is good but the Chinese shouldn't be blamed for most of it.



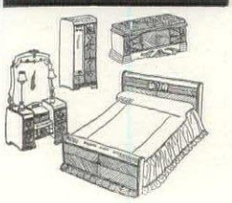
KODAK MODERN is fine for photos and the profession, but maybe a little hard to sit in. Who's at fault? Why, human anatomy.



HOTHOUSE MODERN blooms with curved plastic leaves under crystal tabletops. This is a very hardy species and shows every sign of remaining so.



MONOTONOUS MODERN is perfect for dull living rooms, deadly bedrooms. A cruder use of the Nostalgic Modern, for stoics.



JUKE BOX MODERN, a contemporary borax with sunburst veneering, lots of plastic. A torture of entirely innocent lumber, says Mr. Auerbach.

JOBS

BUILDER'S DIARY

University builders find no magic way around housebuilding roadblocks.

At the University of Illinois, the earnest researchers of the Small Homes Council are conducting a site fabrication study. Recording time, motion and dollars expended, these researchers are building three pairs of houses, all based on the modular plans offered to the industry last fall by the Producers' Council (see FORUM, Sept. '47). Of each pair, one house is assembled according to the contractor's own method; the other, according to a planned system devised by the researchers.

This laudable step toward rationalization of what seems to many a wildly irrational operation has also produced some incidental entertainment for housebuilders. According to the candid weekly bulletins issued by the University builders, not even the most scientific venture into housebuilding is immune to the thousand ills the industry is heir to. Excerpts from the bulletins:

July 3: After more than our usual share of rains, floods, cyclones and tangles of red tape, contracts have been awarded . . .

July 11: On Saturday, excavation was started on the first pair of houses. True to form, it rained almost immediately . . . Footings for the No. 1 Masonry House have been poured. The 12 in. blocks for this house are expected sometime next week. There has been some delay in getting block of that size . . .

July 18: The 12 in. block have been delivered to the site but have not been laid as yet. They were very green . . .

July 25: We have had a week of excellent weather with practically no progress on any of the houses . . . A car of lumber is in transit . . .

August 1: Progress during the last week has been limited to work on the Frame No. 1 house. The masonry subcontractor lost several bricklayers to a job that was paying "incentive" wages, or 50 cents an hour over scale. He promised us to be on the job next week . . .

August 8: The masonry subcontractor has still been delayed this week . . .

August 15: Work on Frame No. 1 house proceeded slowly with roofing paper applied . . . No work was done on Friday due to lack of material. Masonry contractor expects to be at work definitely Monday morning . . .

August 22: Due to excessive heat this week, lack of materials, and lack of laborers, there was not much progress . . .

August 29: The masonry contractor should be on the job again about September 8. He might possibly make it before that . . .

September 5: Masonry subcontractor is still full of promises, but he has not as yet appeared on the job . . .

September 15: The masonry houses are still wrapped in delays and excuses . . .

September 19: Frame No. 1—Exterior siding almost finished . . . Masonry houses —no comment.

September 26: At three o'clock on Wednesday, the masonry contractor arrived . . .

October 3: We have been pushing work on the exterior shell trying to get things under cover . . .

October 10: My enthusiasm of last week was slightly premature . . . The bricklayers were pulled due to inability to obtain mortar materials. The carpenter foreman quit to go to a job at higher pay. The rest of the carpenters were moved to clean up some jobs which the contractor had before . . .

October 17: Frame No. 1—Wiring has been completed but we are still waiting for the plumber . . .

October 24: The lack of speed is due to a shortage of carpenters and common laborers. The contractor found it necessary to layoff some of the men because of their inefficiency, and he has not been able to replace them . . .

October 31: Rain for several days reduced the road in front of these houses to a mud puddle . . . No material deliveries have been possible . . .

November 7: Rains have continued . . .

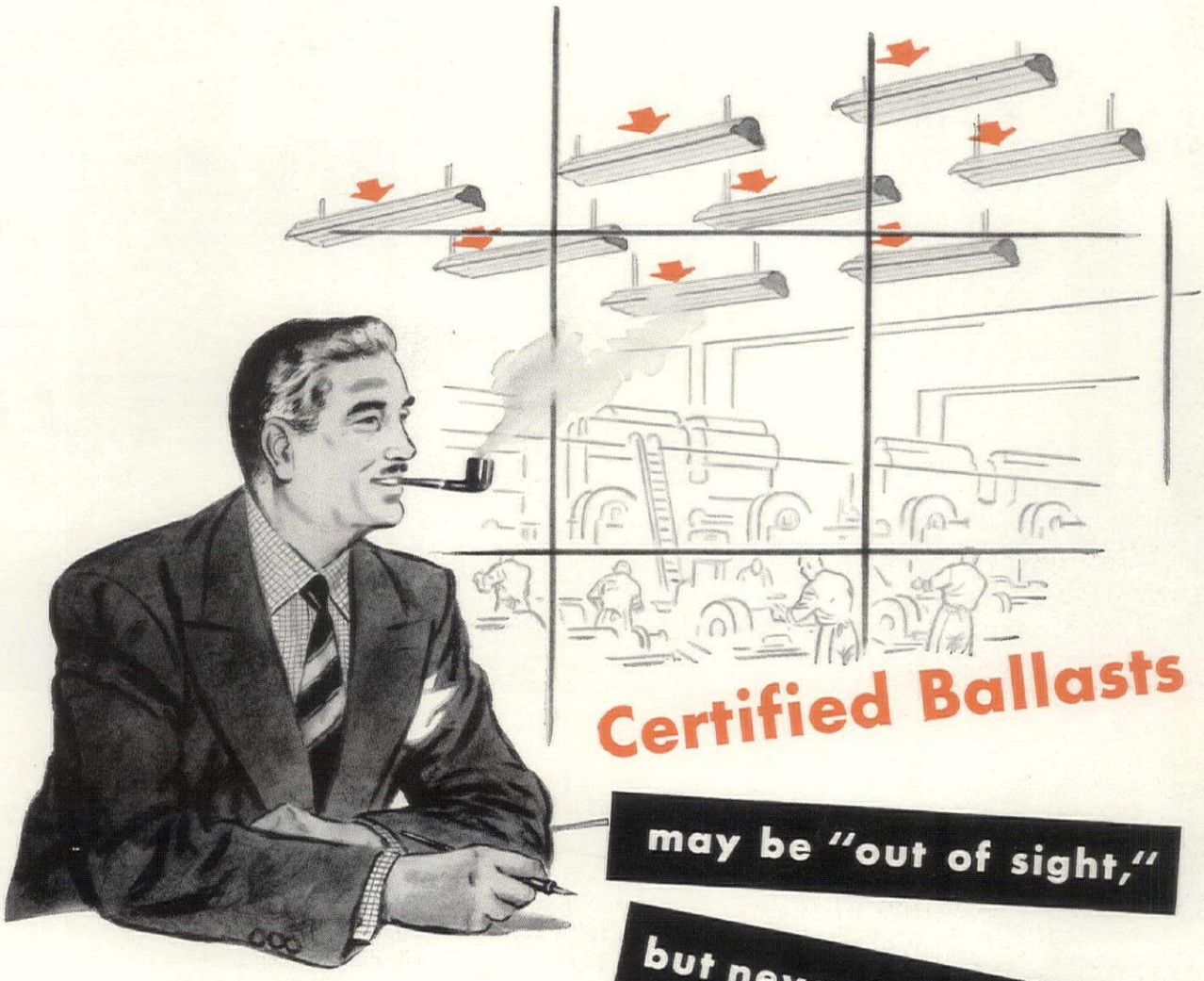
November 14: Rain—no work on Monday. Armistice Day on Tuesday and opening of the pheasant hunting season in Illinois—no work. On Wednesday a small crew worked in the few periods between rains and managed to get the gutter cornice and part of the asphalt roof shingles in place on Masonry No. 1 . . . Continuous rains and occasional freezing temperatures have made progress slow and the spirits of both the workmen and our time study workers very low . . .

December 5: Both the plumbing and heating contractors have promised to be on the job the first of next week . . .

Bell Aircraft

WHEELBARROW PROGRESS

What its producer calls the first radical change in wheelbarrow design in the last 4,000 years went on show at the National Materials Handling Exposition in Cleveland last month. This power-driven wheelbarrow, called the Prime Mover, is made by the Bell Aircraft Corp. The Prime Mover is driven by a 3-h.p. gasoline engine and will carry half a ton. Photo shows Prime Mover in use on veterans' hospital job in Buffalo, N. Y.



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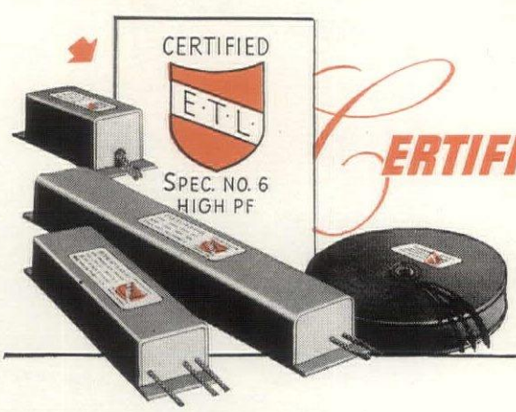

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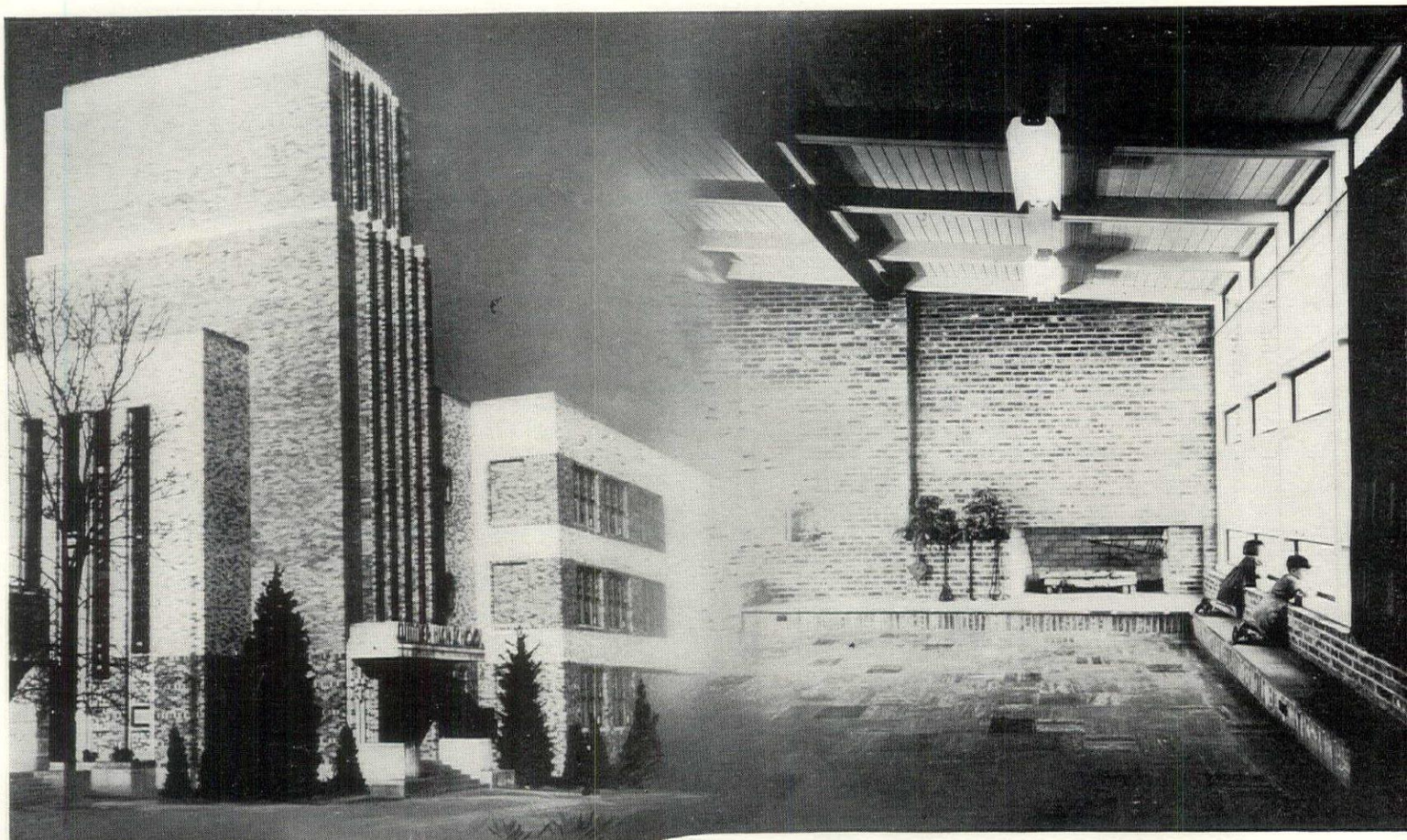

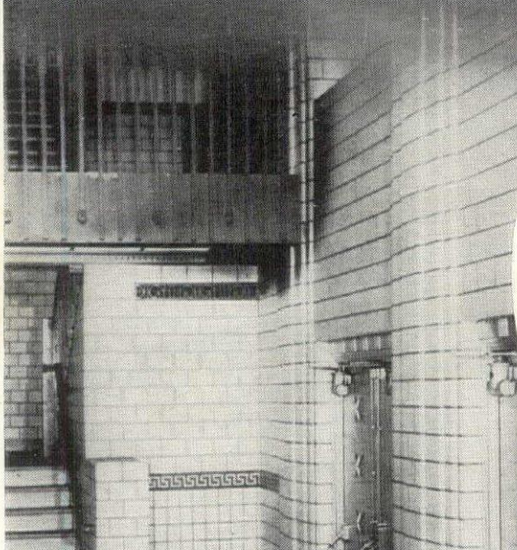

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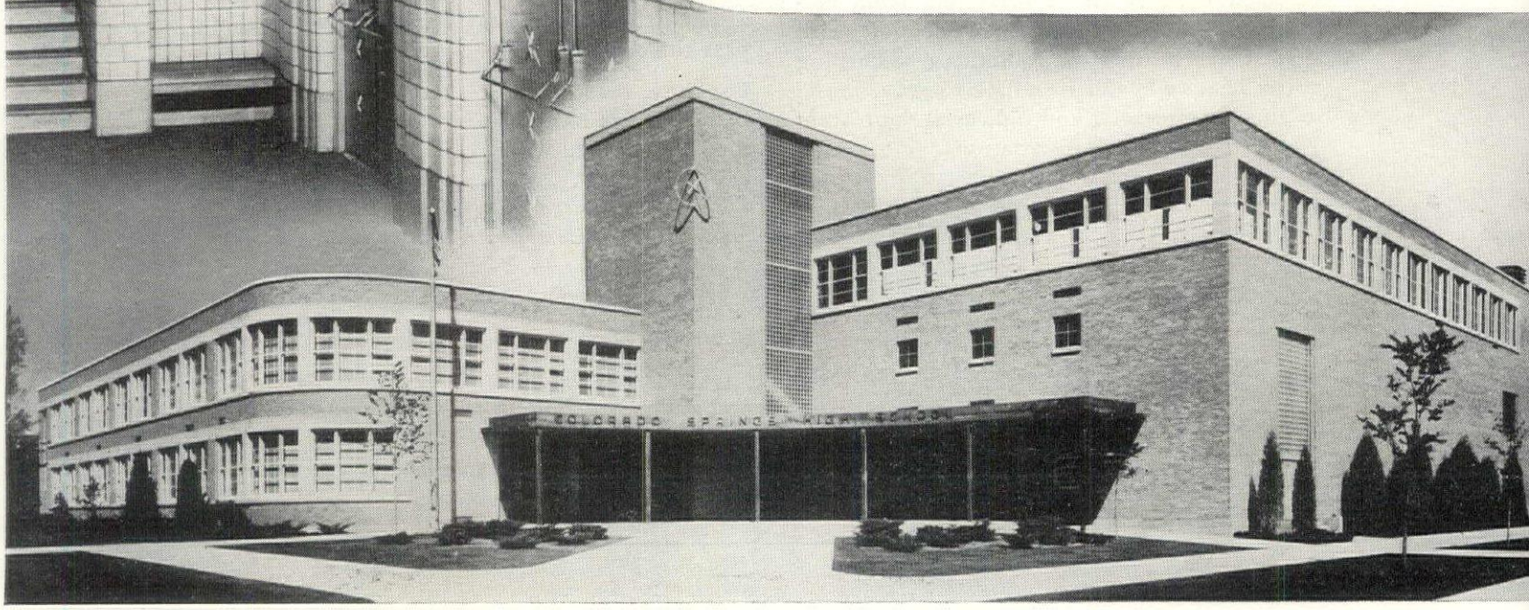

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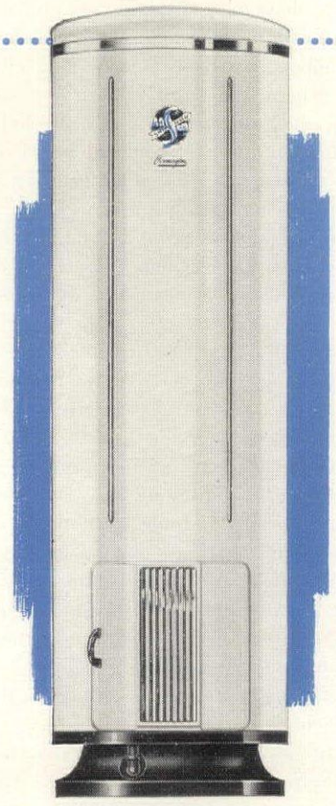

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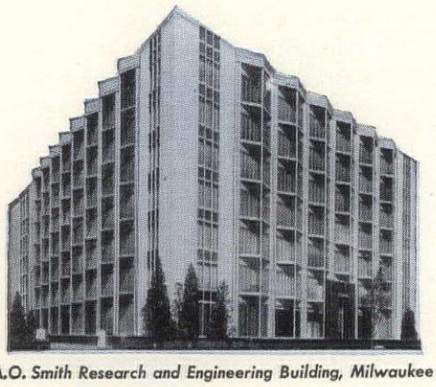

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LETTERS

Philadelphia City Planning . . . Litchfield Goes Modern . . . In Defense of the Bidet . . . Bennett on Architectural Education . . . Corbusier's Modulor Scale . . . Grayson's vs. Gruen & Krummeck . . . Letter from Australia.

PHILADELPHIA STORY

Forum:

I would like to compliment you on the masterful presentation of the Philadelphia planning exhibit. You have killed two birds with one stone, not only in presenting an excellent exhibition technique, but you have also done a great deal to sell comprehensive city planning.

KENNETH C. WELCH

Grand Rapids, Mich.

FLORIDA CONVERSION

Forum:

I have just returned from a short first visit to Florida and while there I had the pleasure of visiting several houses designed in the modern manner by Ralph Twitchell and his associate Paul Rudolph. I have found myself very definitely converted to the appropriateness and the beauty of these houses to and in the Florida scene. Certainly, they do appear more real and native than the imitation Spanish or colonial houses built in years gone by.

. . . There is a possibility, it would seem to me, of overdoing the clear glass wall surfaces, and where the glare of the beach and the sea is not compensated by large-leaved planting close against part of the open wall, the glare found my eyes irritated by lack of shadow. In Mr. Twitchell's own house at Sarasota and his most recent Miller house, I was greatly impressed by the skillful use of the overhead shadows made possible by the exposed trusses. . . .

I am frank to say that amid the lush planting of tropical Florida . . . traditional architecture seems somewhat abhorrent, and that which men like Twitchell and Rudolph have been doing is entirely blessed. Of course, it seems to me there are problems of psychology yet to be explored. How comfortable is it to realize that the casual passer-by, unbeknownst to you, may have you in complete surveillance; and will one always recognize the necessity for pulling the curtains or lowering the venetian blinds when one starts to disrobe—or have we reached a time of Endenlike frankness and simplicity when this is no longer necessary?

Again with all the beauty of the sea and the more intimate interest of the garden made part of the very furnishing of one's room, is it possible to be surfeited with, or to become blind to, these beauties and to find life of less consuming interest because of having all of one's good things at once. . . .

I used the word "converted" in the first part of this letter, but perhaps that is too strong. I have designed many houses of a different character—appropriate, as I hoped to the surroundings in which they were built, but I have always tried to keep my mind, my ears and my eyes open to the lessons in domestic architecture being developed by the young and brilliant American architects of the day. I am ready to say that for Florida, at least, I think that they have achieved a style which is eminently native, of our times and having great charm.

ELECTUS D. LITCHFIELD

New York, N. Y.

FORUM warmly appreciates this commendation from a former member of the Beaux Arts firms of Carrère & Hastings; Lord & Hewlett; Tracy & Swarthout; Litchfield & Rogers.—ED.

THE BASHFUL BIDET

Forum:

It is interesting to see that the attractive designs for Brazilian houses in your November issue all include a bidet in the bathroom. It is unlikely that there is some physiological peculiarity of residents of the North American continent to account for the almost complete absence in buildings here of the bidet, which is regarded in most countries to be as essential to hygiene as a basin is for washing the hands and face.

Manufacturers of sanitary equipment show no marked modesty in advertising their other wares, and it would be good if they could run a campaign for the addition of this most useful item to the equipment of every bathroom, and to convince the public that its use is not restricted to washing babies.

PHILIP B. AITKEN

Deep River, Ontario

LETTERS LOVER

Forum:

I get a big kick out of "Letters." Don't know what I'd do if my subscription ran out.

More power to the guy that writes them. I hope he gets a raise.

PETER J. WEHLE

Chicago, Ill.

How much do you want?—ED.

FREEDOM OR FORMULA?

Forum:

Education—all education, starts at the very beginning of life and often the obstetrician is the first important teacher. Some infants arrive lusty, indignant and bawling to find themselves in a cold ugly world. Such babies may decide to change things and they perhaps become reforming architects. But many babies refuse to take their first breath at all, and here enter our three schools of education. The old school beats the child on the back till he catches his breath and conforms; a small advanced school quietly lays the baby down until he makes up his own mind; but the third school fears both of these approaches and breathes into the baby.

The methods of subsequent education are the same. The curious, aggressive student gets along under most any set of disciplines and conditions, but for far too many other students, response is generated either by punishing or rewarding their conformity to accepted standards, or else the individual ambition, anxiety, personal belief and life of the teacher is breathed into the student second-hand. Only rarely is the student allowed to look around, take his time, get the facts, and develop himself.

This does not mean that discipline is not necessary—arithmetic, grammar are tools we must master, but acceptance of the existing tool does not create Einsteins nor make poets. Observation will confirm the fact that when it comes to the creative arts and sciences, all group education systems apparently fail unless the individual achieves his own inner freedom. Rewarding research and triumphant art occur when the individual dares to step into the unknown and try the untried. These strides must be made alone, even though the starting point is one's teacher.

One cannot divorce architectural design teaching from our inherited and collective attitudes toward architecture as it lies in the framework of our culture. The overwhelming majority of teachers are the product of teaching which recognized a *right* answer, and the best right answer. (The right parti puts a solution in the first medal class, the best of these gets a prize.) This search for the only way, the one God, *the* right, and the remaining wrong parallels the thinking of all societies, for society is a force trying to stabilize things, while the individual, when he can liberate his creative instinct, is a force for change and modification.

Because our institutions emphasize their unique rightness, the young architectural student becomes understandably anxious about going to the right school — at least, the right school for him. Usually his advanced education comes at the same time

(Continued on page 22)

DOUBLE DUTY

DOUBLE DUTY

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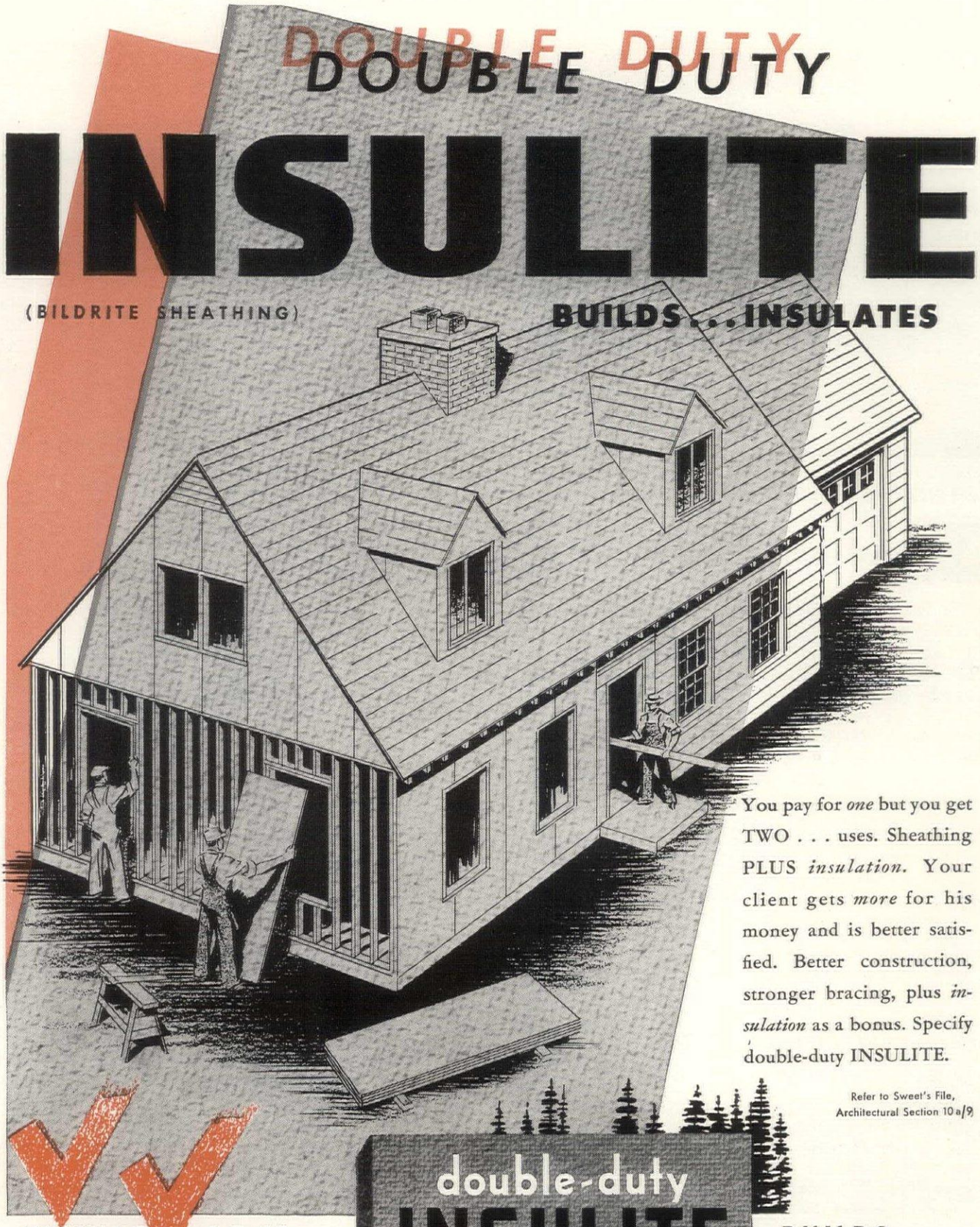

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Refer to Sweet's File, Architectural Section 10a/9

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as his first attempts at independence from his family, so that coupled with the anxieties to choose his course rightly, he is also seeking a substitute for the authority he found in his parents.

As his teachers unfold the past architectural glories and the infinite possibilities that lie ahead, a terrific doubt must inevitably creep into his subconscious, if not conscious mind. The facts in *Sweets, Kidder-Parker* and *Graphic Standards* and the fashions in the magazines are far too complex for all to be contained in any single "right" answer. As the magnitude of the problem grows, the desire for some leader through the chaos of all the things one should know becomes an acute need. On the other side of the gulf of ignorance loom the great contemporary figures who have found their own way—such as Wright, Mies van der Rohe, Gropius, Wurster, Aalto, Markelius. The forms these men have created take on a certain magic, and when they became recognized as "right" answers they achieved the authority of religion. It is unfair to think these men believe that they have found *the* right way to do architecture. They have found their *own* way; they have made forms different from their teachers. The power and the daring to be themselves, they found within themselves.

Now most students will be content to follow such leaders. As middle aged men they will still be defending the right choice of their youth. By then the public will have been educated to accept the new ideas of their student days—and the radical, live thing of one generation has become the conservative, correct mannerism of the next. A few, a pitifully few students will have found that authority can be a self-imposed cage or a small free fire inside themselves, and they will have dared to break with their teachers, or at least to surpass them guiltlessly. Both kinds of individuals, leaders and followers, will build buildings and achieve their own kinds of success.

For society, we must realize, is inconsistent. It bends its educational strength to make one conform, and then rewards those who successfully depart from normal, as well as those who successfully cater to convention.

The final purpose of education, then, is the discovery of ones' self. The study of design as a technique, a discipline, a principle, corresponds to learning to swing a hammer; the elements of architectural form are different kinds of nails, just things. The satisfaction of achieving a clean intersection is no more right than creating a unit rental schedule that will be economic. It is the alignment of the purposes of a building with those of the individual who designs it and the joyful freedom such a designer can find in the area beyond the limits of his program which the student must understand, and for which he must strive.

The kind of design one learns in school will be a formula for those who conform, a sort of religion to follow and defend throughout their lives. But for those who become the great creative artists of the next generation, the methods and elements of design which they have been taught will be something they must destroy or modify into their own way—their way, right or wrong.

RICHARD M. BENNETT
Chicago, Ill.

MISQUOTED HOUSER

Forum:

I should be gratified if THE ARCHITECTURAL FORUM could help me in bringing to the attention of fellow architects the actual facts in a very serious misrepresentation of part of a talk I gave recently in New York on reconstruction and planning in Poland.

Unfortunately the inexcusable misquote appearing prominently on Thanksgiving day on Page 3 of the *New York Times* and quoting me as referring to the U. S. as "a cowed and servile country in the grip of dictatorship," was widely noticed in New York and elsewhere in the U. S. As usual in such cases, the following retraction which appeared in the *New York Times* on Page 16 the next day, seems to have gone unnoticed:

"MISQUOTED ON HOUSING

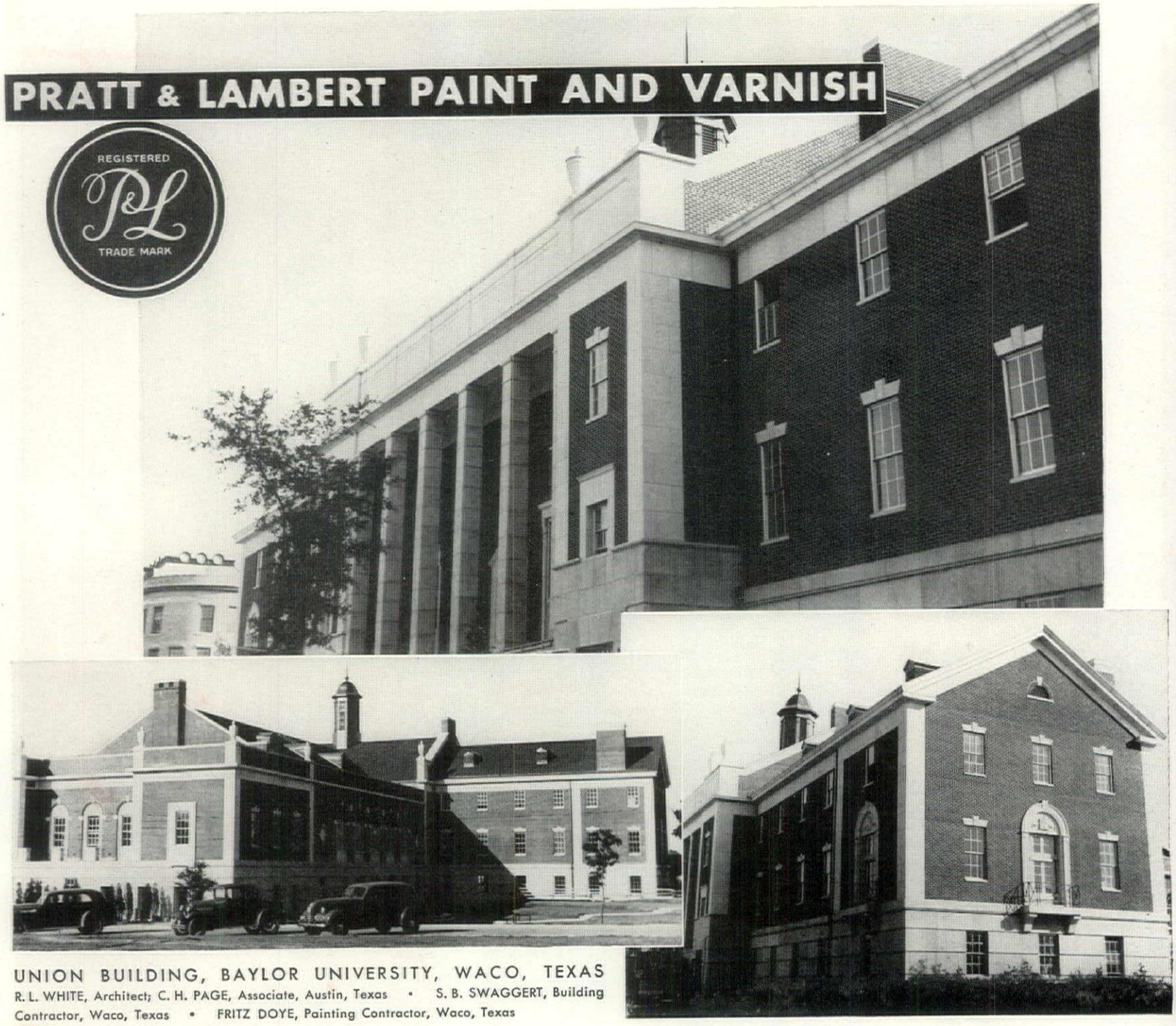
Architect Discussed Conditions in Poland Not Those in U. S.

"In a news account and a headline in *The New York Times* yesterday of a meeting of the building industry division of the Progressive Citizens of America, Hermann H. Field, a member of the American Institute of Architects, was incorrectly quoted as having described the U. S., in its approach to housing, planning and rebuilding, as 'a cowed and servile country in the grip of a dictatorship.'

"Mr. Field was reporting on Poland's reconstruction and planning, on the basis of a recent survey he made in that country. He said that in contrast to the impression here of Poland as 'a cowed and servile country in the grip of a dictatorship,' the Poles were showing a democratic vitality in their planning and national effort."

(Continued on page 26)

PRATT & LAMBERT PAINT AND VARNISH



UNION BUILDING, BAYLOR UNIVERSITY, WACO, TEXAS
R. L. WHITE, Architect; C. H. PAGE, Associate, Austin, Texas • S. B. SWAGGERT, Building Contractor, Waco, Texas • FRITZ DOYE, Painting Contractor, Waco, Texas

CHARTERED in 1845, Baylor University is now in its hundred and third year. The institution originated at Independence, Texas, in a two-story frame building with one teacher and twenty-four boys and girls. From that humble beginning, Baylor University today has units at Waco, Dallas and Houston. At Waco are the College of Arts and Sciences, and Schools of Education, Business, Law, Music; at Dallas, the Baylor Hospital, School of Nursing and College of Dentistry; at Houston the School of Medicine has just moved into its new $1,000,000 building. Two other structures — Bible Building and Browning Library — are to be erected at Waco in the near future, as most of the funds have been provided. As in other outstanding institutions, Pratt & Lambert Paint and Varnish serve to protect and beautify both exterior and interior surfaces of the various units of Baylor University.

Through representatives, trained in the proper use of color, Pratt & Lambert-Inc. offers a practical service, covering new work as well as maintenance. A request to the nearest P&L Architectural Service Department will bring details.

PRATT & LAMBERT-INC., Paint & Varnish Makers
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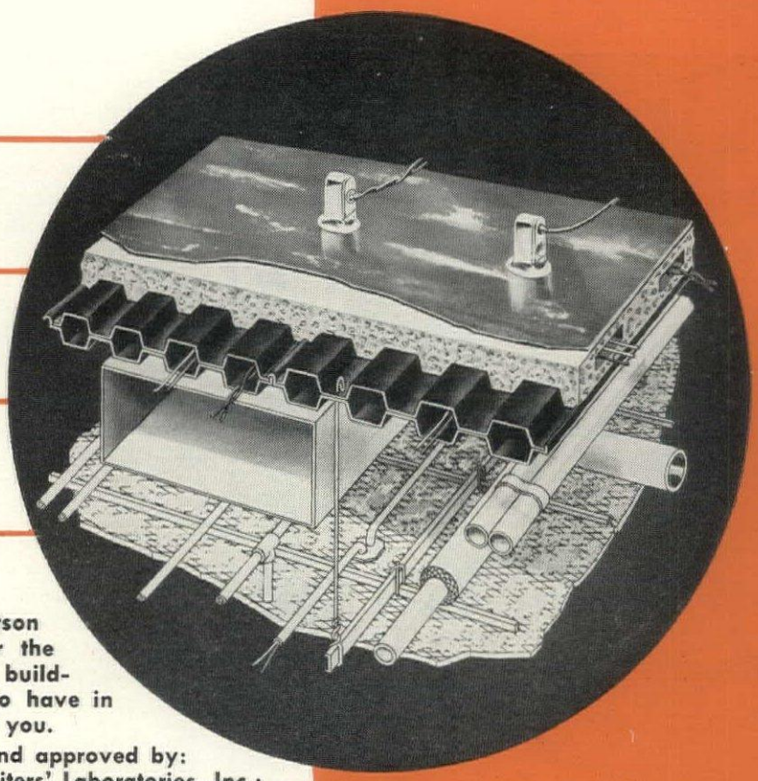


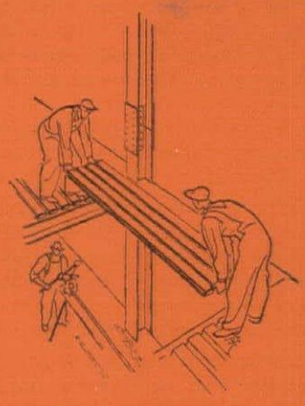
Steel Q-Floors, made by H. H. Robertson Company, have been specified for the largest and most advanced postwar buildings. Here are the main features to have in mind when the subject comes up for you.

1. **Four-hour fire rating, tested and approved by: Bureau of Standards; Underwriters' Laboratories, Inc.; Mellon Institute of Industrial Research.**
2. **Structural properties verified in tests by: Bureau of Standards; Mellon Institute; University of Kentucky.**
3. **Approved for electrical raceway by: Underwriters' Laboratories, Inc., and covered by Article 356, National Electrical Code.**
4. **Over 6,000 installations—many millions of square feet and never a construction fire!**

Consider Construction Time

Completion time, not starting time, is what your client wants. Steel Q-Floors arrive pre-cut. Two men can lay 32 sq. ft. in 30 seconds. Construction is dry, so the Q-Floor immediately becomes a working platform for other trades.

So when estimating time of steel delivery be sure to figure on time lapse for demolition and excavation and then realize that Q-Floors reduce over-all construction time 20 to 30%.



Consider the Electrical Feature

The steel cells of Q-Floor are crossed by raceways for carrying wires of every electrical service. An electrician drills a small hole and can install an outlet in a matter of minutes. This means that all outlets and partitions can be established after occupancy. The headaches this eliminates only an architect fully appreciates. All floor plans are flexible forever, which keeps buildings young and greatly increases the earning power of rental space.

See Q-Floor Fittings at any General Electric construction materials distributor's. For details, please write.

H. H. ROBERTSON CO.

2403 Farmers Bank Building
Pittsburgh 22, Pennsylvania

Offices in 50 Principal Cities
World-Wide Building Service

LETTERS

In view of the shocking nature of the misquote and its reflection on the responsibility of our profession, I feel that it is something that goes beyond the personal damage it has done to me, in spite of the *New York Times'* retraction.

HERMANN H. FIELD, A.I.A.
Cleveland College,
Cleveland, Ohio

COSTS PREFERRED

Forum:

One thing every purchaser likes to know is something about the cost of advertised products . . . I think many customers will be lost to advertisers who fail to indicate something about costs. Department stores know that it pays to advertise prices.

As a prospective builder of an addition to our bank building we are concerned about cost and one reason we haven't proceeded with our plans is because we had no gauge of prices . . . When construction bids vary 50 per cent — and this is not unusual when one reads the bids for private and public construction—there must be a need for a guide toward a fair price.

H. CLYDE HOLMES,
Executive Vice President
The Edgewater National Bank
Edgewater, N. J.

FOR THE RECORD

Forum:

We have found lately published books, publicity and propaganda that have been quite misleading in regard to the planning and building of Rockefeller Center. We thought it advisable not to fight publicity, but to establish the facts from the records in order to avoid continuous discussion which comes up with our fellow colleagues.

Here is a complete listing from the records for each building in Rockefeller Center.

On October 22, 1929, Reinhard & Hofmeister were selected as General Architects.

On July 1, 1930, a contract was signed for the services of —

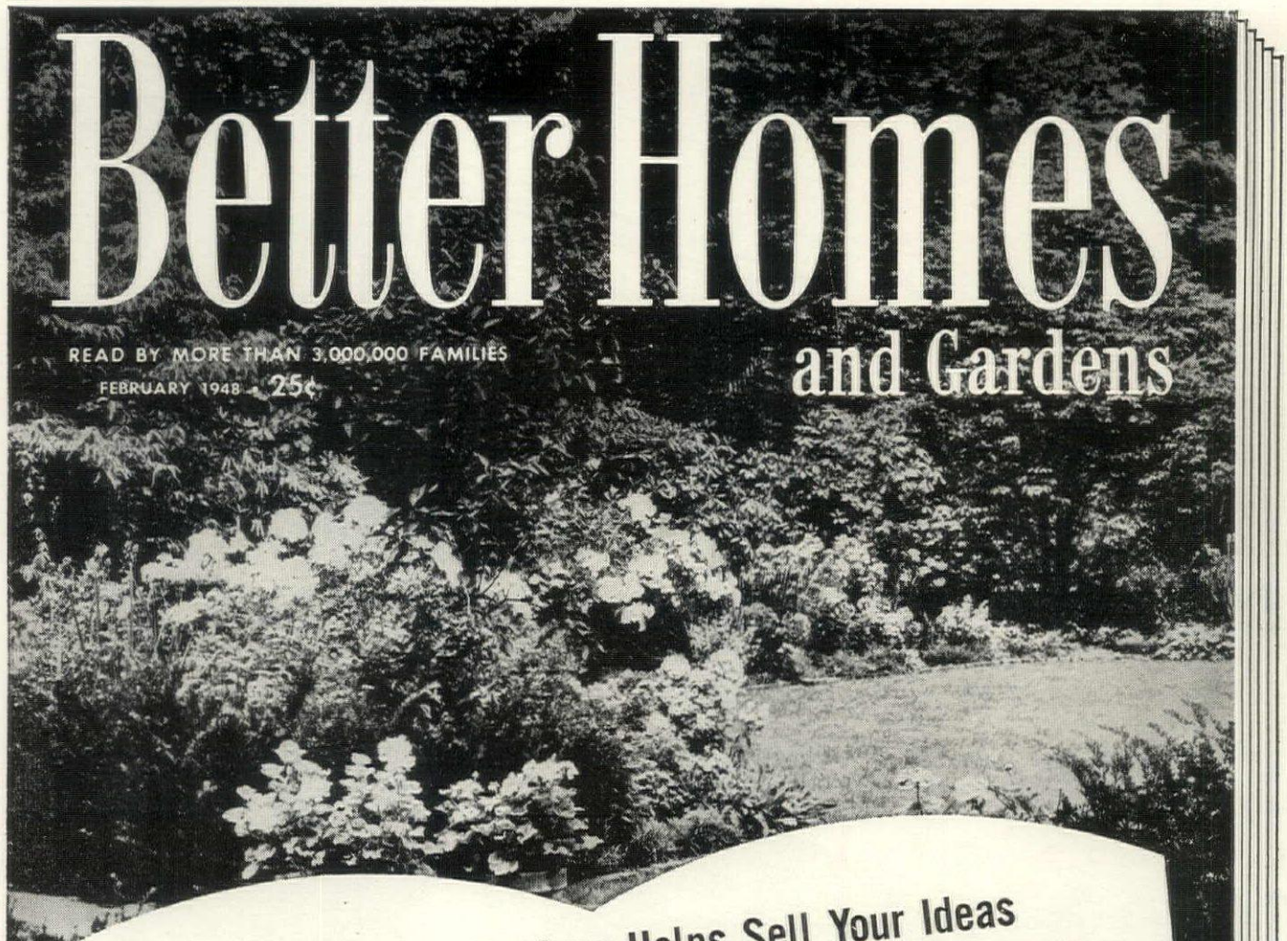
Reinhard & Hofmeister
Corbett, Harrison & MacMurray
Hood, Godley & Fouilhoux

This was the first contract signed for the group and in same we find the following clause:

"The primary inducement to the Owners for the making of this agreement is the desire to secure the personal services of L. Andrew Reinhard, Henry Hofmeister, Harvey W. Corbett, Wallace K. Harrison and Raymond Hood. . . ."

On June 1, 1935, the July 1, 1930 con-

(Continued on page 30)



Better Homes & Gardens Helps Sell Your Ideas

It's Better Homes & Gardens' job to keep over 3,000,000 families in the country intelligently informed about everything that makes homes better, easier to work in, more pleasant to live in, less trouble to keep up. We achieve our object by a month-in, month-out program of covering everything that's new and good in building, and by presenting ideas for houses that represent (for average families) the soundest and most usable of new trends in design and materials.

Drop around to see us — Normandie Lounge at the Stevens — during the National Association of Home Builders Convention in Chicago, February 22 to 26. We'd like to talk with you about the business that you and BH&G are in together: getting better houses for more people.

These advertisers have found BH&G a top medium for sales:

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Maytag Washer
Majestic Home Incinerator
Servel Refrigerator
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Tyler Harderfreez
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PLUMBING
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Crane Plumbing
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CIRCULATION OVER 3,000,000

America's First Service Magazine

THERE'S A NEW *Corner* ON THE MARKET

Now you can free your doorways of* BULKITIS *in the "door closer corner!"

NEW YALE COMPACT DOOR CLOSER ***has been voted the world's most beautiful closer***

You've always hated the door closer corner — for there has never been an *attractive* door closer. They've all had *bulkitis* — which means too big, too bulgy, too clumsy — ugly!

Now comes the Yale Compact Door Closer — the one that architects from coast to coast have voted the world's most beautiful door closer. A new operating structure — rotary piston checking — makes possible an equally powerful, yet 36% smaller door closer — without bulgy "hips". Closing is controlled over the full closing swing, two-speed adjustment at the latch.

It's a door closer to make any door proud. Brackets, too, are handsome. Priced no higher than ordinary closers with *bulkitis* — it is your answer to the door closer problem.

FREE: Data Sheets and 4-Page Folder illustrating simple operating method, leakproof feature, famous Yale workmanship, "hold-open" device, etc. "Quality Checking Chart" proves Yale Compact Door Closer leads all other makes on 17 quality points. Mail coupon now.

More Beauty . . . Smaller Size
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THE YALE & TOWNE MANUFACTURING COMPANY
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Please Send Me Free 4-Page Folder and Data Sheets on Yale Compact Door Closer.

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Company.....

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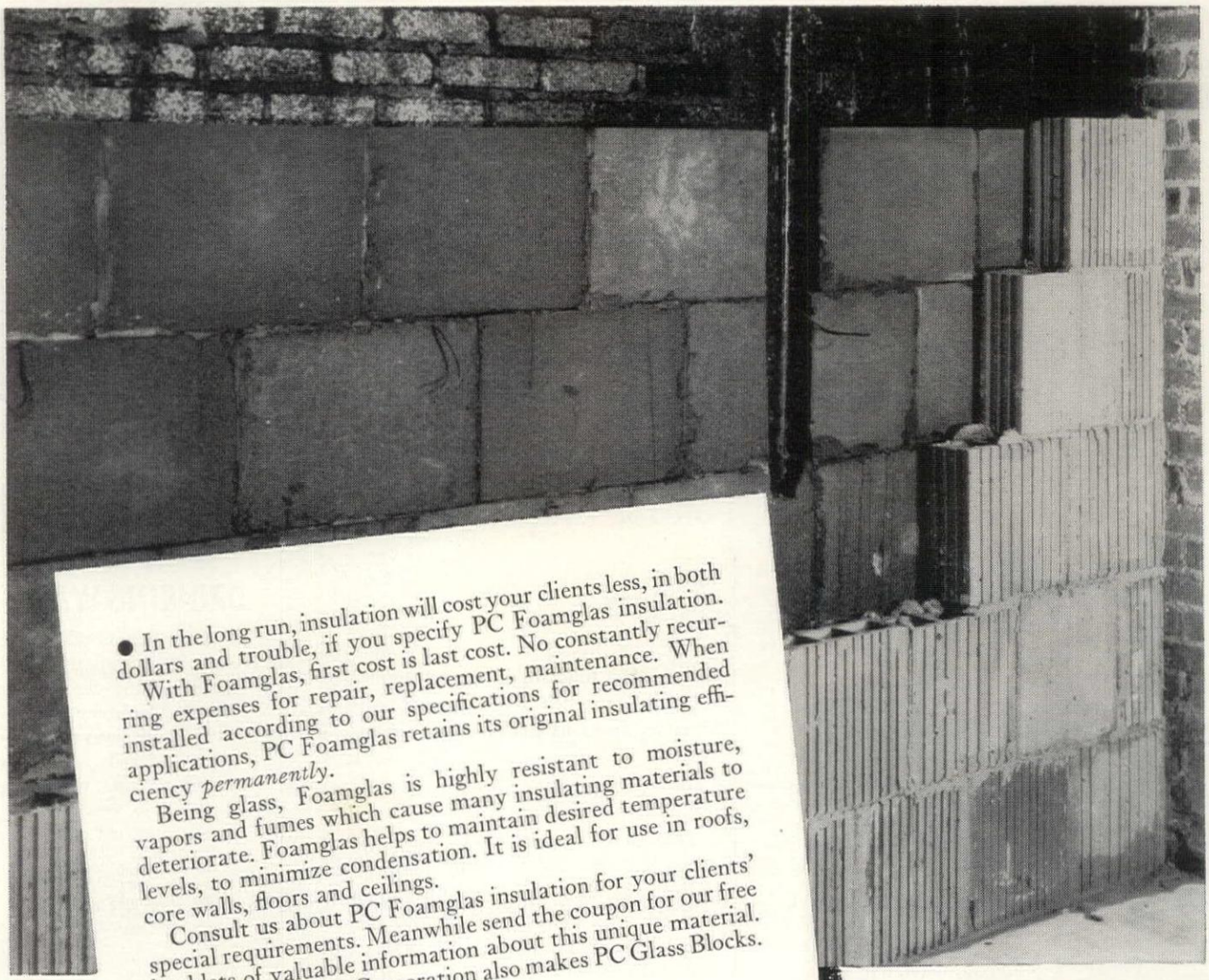
What's the long-term story on insulation costs?



● In the long run, insulation will cost your clients less, in both dollars and trouble, if you specify PC Foamglas insulation.

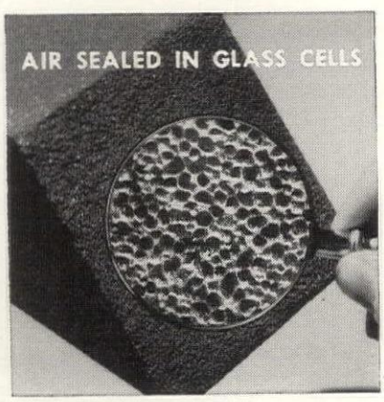
With Foamglas, first cost is last cost. No constantly recurring expenses for repair, replacement, maintenance. When installed according to our specifications for recommended applications, PC Foamglas retains its original insulating efficiency *permanently*.

Being glass, Foamglas is highly resistant to moisture, vapors and fumes which cause many insulating materials to deteriorate. Foamglas helps to maintain desired temperature levels, to minimize condensation. It is ideal for use in roofs, core walls, floors and ceilings.

Consult us about PC Foamglas insulation for your clients' special requirements. Meanwhile send the coupon for our free booklets of valuable information about this unique material. Pittsburgh Corning Corporation also makes PC Glass Blocks.

When you insulate with FOAMGLAS you insulate FOR GOOD.

WHEN WALLS ARE INSULATED with PC Foamglas, the material can be easily cut to fit around pipes, conduits and other obstructions. In core walls of all sorts of buildings, PC Foamglas minimizes condensation, reduces heat loss, eases the load on heating and air-conditioning equipment.



THE MAGNIFIED CROSS SECTION of PC Foamglas shows its cellular construction. It is literally a foam of glass, solidified into big, strong, rigid blocks. In the millions of minute cells of glass-enclosed air, lies the secret of its permanent insulating value.

Pittsburgh Corning Corporation
Room 410-8, 632 Duquesne Way
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Please send me without obligation, your free booklets on the use of PC Foamglas insulation for:

Roofs_____ Walls_____ Floors_____

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• FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS.

LETTERS

tract was cancelled and a new contract was signed due to the death of Raymond Hood and the retirement of Godley some time before. This takes you through to the beginning of the International Building — 1936.

The RCA Building, RKO Building, Music Hall, Center Theater, French and British Buildings, and International Building, had the Architects of Record listed as follows:

Reinhard & Hofmeister
Corbett, Harrison & MacMurray
Hood & Fouilhoux

The Time and Life Building and the Associated Press Building — Architects of Record:

Reinhard & Hofmeister
Corbett & MacMurray
Wallace K. Harrison
J. Andrew Fouilhoux

The Eastern Airlines and Center Garage and the U. S. Rubber Building—Architects of Record:

Reinhard & Hofmeister
Wallace K. Harrison
J. Andrew Fouilhoux

L. Andrew Reinhard

New York, N. Y.

GOLDEN MEAN

Forum:

It seems to me that in many ways architecture is a junction of art and engineering. At any rate, such a definition may render less incongruous the comment of an electrical engineer on the article about M. Le Corbusier's Modulor scale (Forum, June '47).

Each series of Modulor dimensions was designed to make the ratio between consecutive terms approximate the ratio of the lengths of segments of a line divided in "mean and extreme ratio." Although I luckily remember enough plane geometry to know the meaning of that terminology, it does not seem to be very suitable, principally because it is not at all descriptive and is not familiar even to many technically informed persons. Perhaps it would be helpful to say that this quantity, sometimes called the "Golden Mean," is numerically very nearly equal to 1.618. It may be derived very simply by solving the equation $x^2-x-1=0$, which expresses algebraically the "mean and extreme ratio" relationship.

It is instructive to plot the two series on semi-logarithmic paper. Each series conforms fairly well over most of its range to the ideal of a geometric progression with interval ratio equal to 1.618. Moreover, the "stagger" factor between the two series is very nearly $\sqrt{1.618}$ or 1.272; hence, standard dimensions are provided in geometric

(Continued on page 34)

LOOK ON THE *Bright Side*

Kindle a gleam of pride and satisfaction in clients' eyes. Specify Flintkote Asbestos Cement Sidings . . . either for new construction or remodeling.

Pride comes with the spic and span appearance this modern siding material gives a home. Satisfaction . . . with the modest price, the durability, the fire safety that come with it.

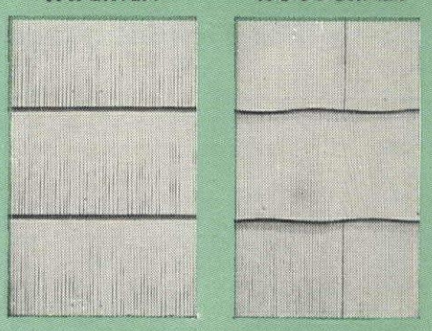
Truly, Flintkote Asbestos Cement Siding is the bright side of the siding problem. (For, once these sidings are applied they require no periodic painting to maintain their long life. Flintkote Asbestos Cement Sidings keep their beauty for years and years and give long years of carefree service.)

You can get these popular sidings in either the Straight-Edge Tapertex, or the Waveline Woodgrain pattern. Standard colors are silver gray, white and super white.

Don't fail to get complete specifications and data on this beautiful, durable building material. Your nearest Flintkote Sales Office or Dealer can supply you with full details and samples. Or, write direct to us.

Then . . . either for new construction or remodeling . . . look on the *bright side.* Specify Flintkote Asbestos Cement Sidings.

STRAIGHT-EDGE TAPERTEX | **WAVELINE WOODGRAIN**



The two patterns above are among the most popular in the Flintkote line of Asbestos-Cement Sidings. Specifications for both: Pieces per Square, 57; Approximate weight per Square, 185 lbs.; Exposure, 10⅛" x 24"; Headlap, 1½".

•

THE FLINTKOTE COMPANY, *Building Materials Division*

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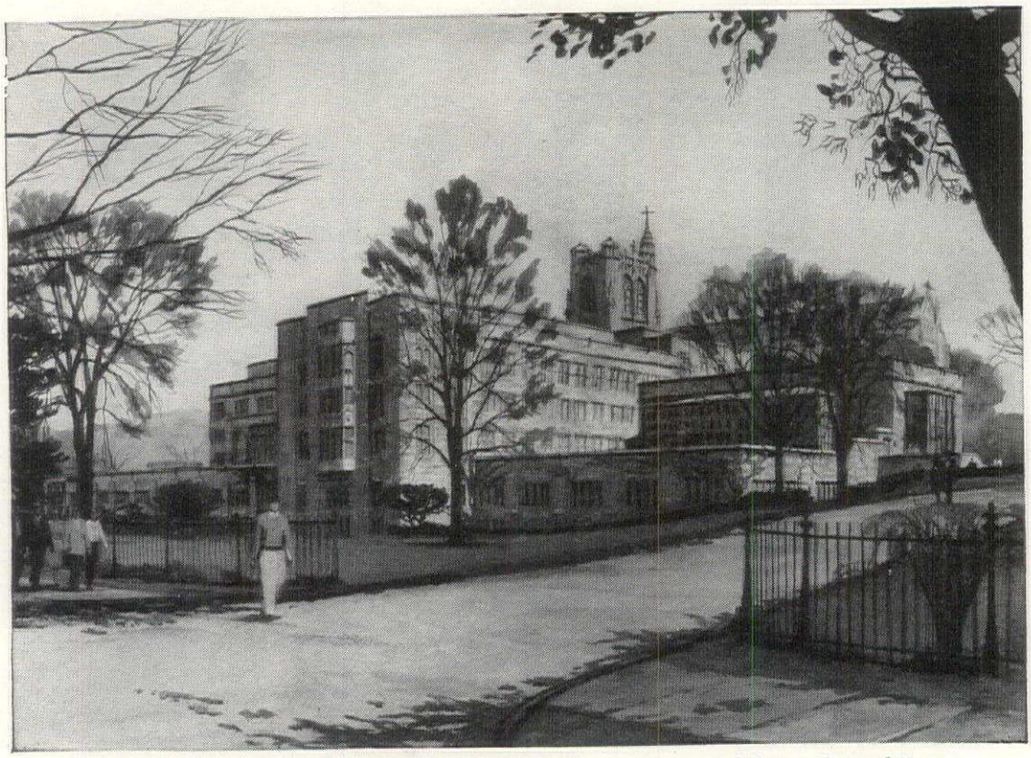
FLINTKOTE

the extra years of service cost no more!

G-E FIBERDUCT SYSTEM FOR WIRING FLEXIBILITY IN PRINCETON LIBRARY



Architects: O'Conner and Kilham, Jr. *Engineers:* Meyer, Strong and Jones. *General Contractors:* Turner Construction Co. *Electrical Contractors:* Ross Electric Construction Co.

For Flexibility and Economy

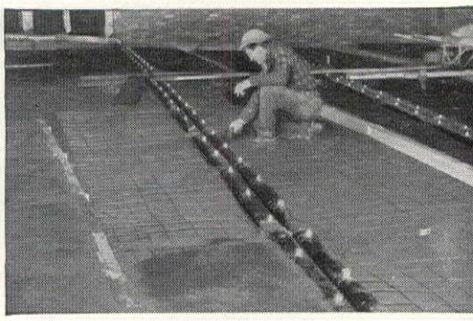
In the planning stage of any structure, look into the advantages of General Electric Fiberduct raceways . . . the adaptable underfloor system that permits the installation of new circuits and outlets at low cost, at any time, without ripping up floors.

When new outlets are needed, the Fiberduct raceway can be tapped and a new outlet installed in a few minutes.

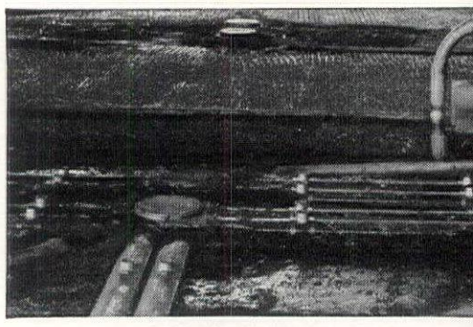
For advice on using Fiberduct, see your local General Electric underfloor specialist or merchandise distributor. For general information, write to Section C70 14, General Electric Company, Bridgeport 2, Connecticut.

General Electric Fiberduct underfloo raceways—nonmetallic, noncorrosiv underfloor ducts, designed for elec trical flexibility—will keep circuit readily available for changes at an time in Princeton University's Harve S. Firestone Memorial Library, nov under construction at Princeton, N. J Throughout the life of the building this Fiberduct system will keep i electrically young, by making possibl easy and fast changes in its electrica system.

Noncorrosive Fiberduct raceways laid in the concrete slab, are alway available for quick circuit change and relocation of outlets. In large an small buildings, they cut the expens and time involved in electrical change by eliminating the necessity of tearin up floors and laying new raceways.



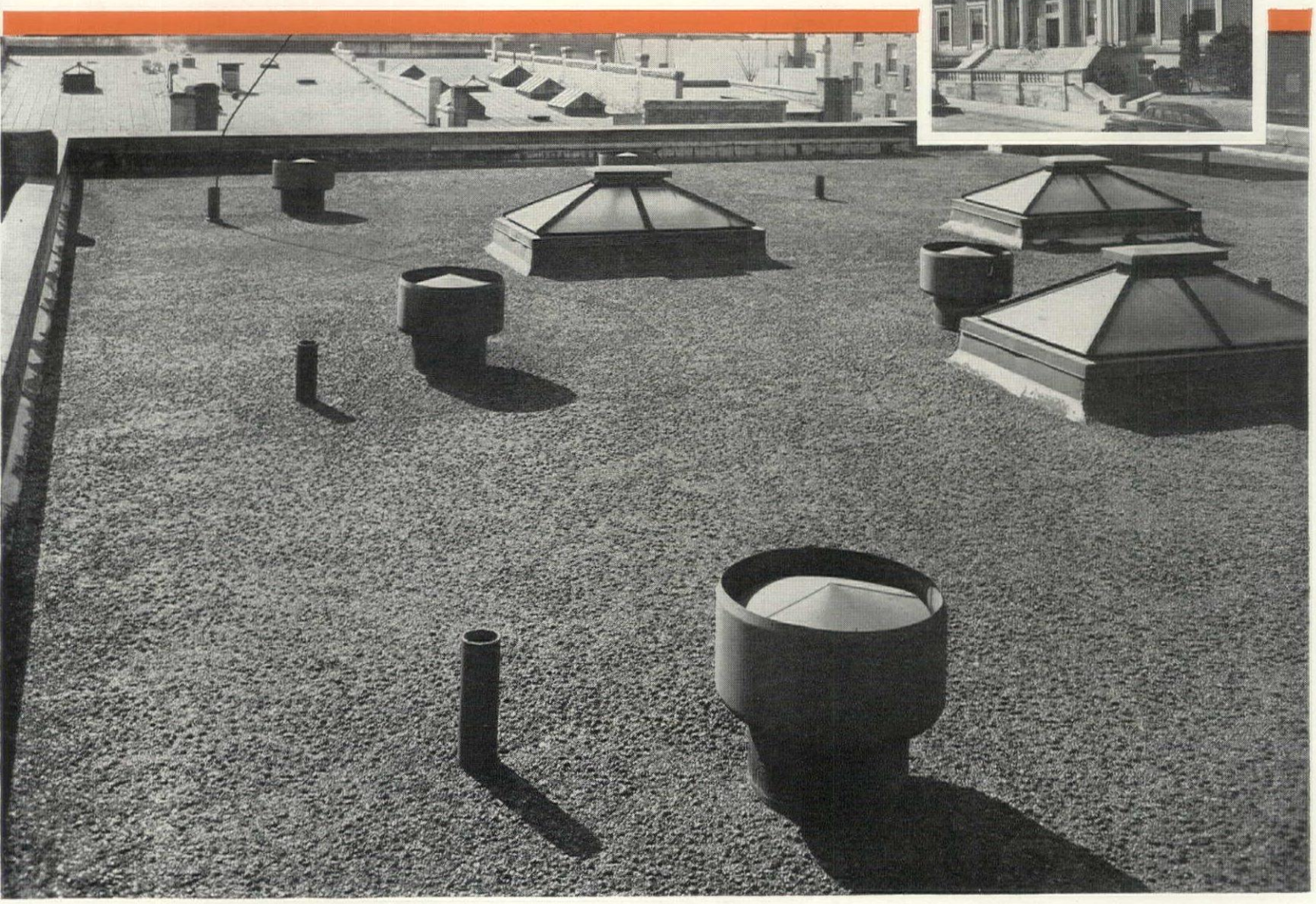
A typical double-grid, preset G-E Fiberdu installation is shown above.



Two double runs of G-E Fiberduct supply th needs of four different wiring systems.

GENERAL ELECTRIC

Under severest atmospheric conditions, for 20 years this roof remains in perfect condition



The extreme and continuous high temperatures that prevail in the South are the hardest conditions roofing materials must meet . . . yet this roof has a perfect record.

It was put on in 1928. Today, it looks like new. This is only one of many similar records. This year, Koppers is celebrating the beginning of its roof bonding 20 years ago. Many Koppers roofs go back beyond the first bond.

Specify Koppers Old Style Pitch and Approved Tarred Felt on your next roof.

"We have never spent any money on repairs," says the Mayor of Hendersonville, North Carolina, about this roof on the City Hall. "It has given perfect satisfaction, and I personally am happy to recommend this type of roof to anyone in the market."

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

K
KOPPERS

SPECIFY KOPPERS 1968 ROOF ON YOUR NEXT JOB

LETTERS

progression of about 1.272. All very good so far, but what is disturbing to a neophyte like me is that certain dimensions such as 1 in., which seem of important significance, are far off the curve and therefore out of line with most of the other Modulor dimensions. The following two series of dimensions in inches provide what appears to be a closer fit to the ideal ratio of 1.618 over their entire range, and are mutually staggered in manner similar to M. Le Corbusier's.

1st series: 1/4, 3/8, 5/8, 1, 1 5/8, 2 5/8, 4 1/4, 7, 11, 18, 29, 46, 74, 120

2nd series: 5/16, 1/2, 13/16, 1 1/4, 2, 3 3/8, 5 1/2, 8 1/2, 14, 23, 36 1/2, 58, 96

It is true that the above dimensions deviate from M. Le Corbusier's idealized dimensions of the human body, but the matter appears to have at best a precarious metaphysical significance of little practical importance.

Of far greater import is the analogy between the harmonies of spatial dimensions and of musical tones. It is interesting to note that the Golden Mean ratio of 1.618 is very close in per cent to the frequency ratio of musical notes g sharp to c, namely 8/5 in the chromatic scale and $2^{8/12} = 1.589$ in the equally tempered scale. Similarly, the square root of 1.618 = 1.272 closely approximates the ratio of e to c, namely 5/4 or 1.262. The history of music shows an increasing trend toward acceptance as harmonious of tone, intervals originally frowned upon as very dissonant indeed. Accordingly, especially since the psychology of both eye and ear are alike in many ways, it does not seem illogical to forecast a similar development of our concepts of harmony in spatial design. Moreover, the proposed Modulor scales may conceivably play no small part in the construction of a theory of spatial harmony comparable to present theories of musical harmony.

COURTLAND C. FLEMING

New York, N. Y.

Oh!—ED.

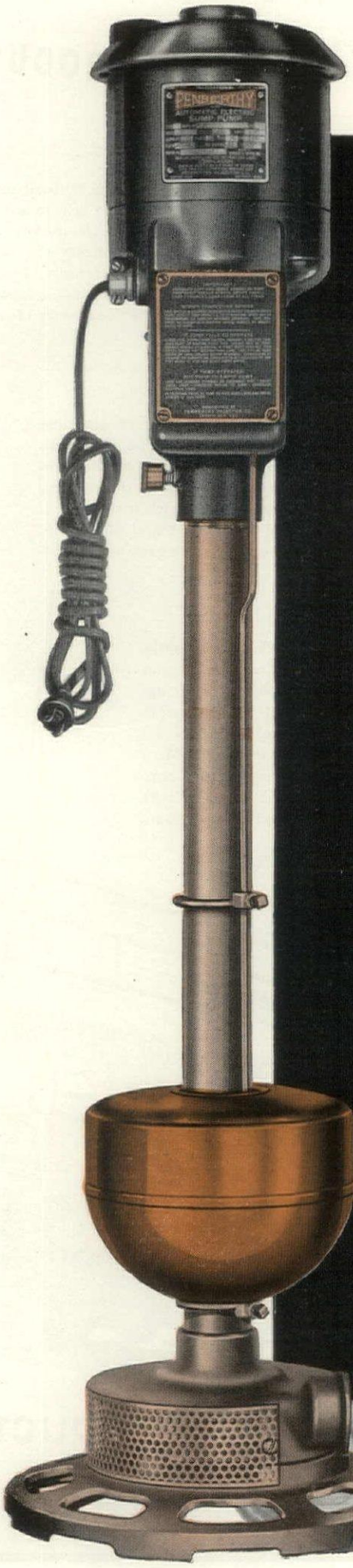
ARCHITECT BITES CLIENT

Forum:

Since September 1941 your magazine has published a great number of stores which we designed for Grayson-Robinson, Inc. I think, in fact, that no other chain can pride itself on a similar amount of publicity for the architectural features of their stores.

Having followed the development of this firm so closely, you will be interested to

(Continued on page 38)



PENBERTHY PRODUCTS TRADE MARK

A Distinguished Name...
A Distinguished Product

PENBERTHY
AUTOMATIC ELECTRIC
SUMP PUMPS

For sixty (60) years, the name "Penberthy" has been associated with products of the highest quality.

Wherever seepage water accumulates, Penberthy Automatic Electric Sump Pumps have established an outstanding reputation for dependability and long life. Made of copper and bronze throughout, they are immune to the attacks of corrosion. Penberthy Sump Pumps are available in three types; the Model M shown here is made for five different sump depths. They are preferred wherever quality is appreciated.

CONSTRUCTED OF COPPER AND BRONZE THROUGHOUT

PENBERTHY INJECTOR COMPANY
Manufacturers of Quality Products Since 1886
DETROIT 2, MICHIGAN
Canadian Plant—Windsor, Ontario

Where can you save time and money

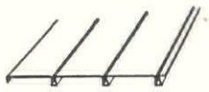
WITH STANDARDIZED BUILDING PRODUCTS?

In almost the entire outer enclosure—plus floors and partitions.

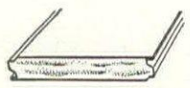
And you can do it without restricting the individuality of your building. The answer is found in standardized parts—windows, doors and metal building panels. Fenestra, America's oldest and largest steel window manufacturer, offers a group of steel building products designed *and sized* to co-ordinate with dimensions commonly used in modular construction. They help you meet today's problems of battling increased building costs.

Standardized sizes mean less trimming, less fitting, less wastage of both time and materials. You know beforehand that these elements will fit. Construction gets under cover faster—floors go down sooner—so other work can proceed.

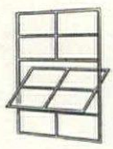
The standardized products shown and explained below are typical of the large family of Fenestra Building Products. There are many types and sizes to choose from. When may we discuss them with you and study their application to your needs?



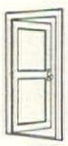
ROOFS. Holorib Roof Deck goes on fast, in any weather in which men can work. Steel sheets are reinforced by three integral ribs on 6″ centers. Provide flat surface for mopped application of insulation and roofing. Sheets 18″ wide, in lengths as required for purlin spacing. Gages 18 and 20 are standard.



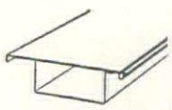
WALLS. Laid up in jig time with Fenestra Type C Panels. Composed of two metal members pressed together, with felt at each side to prevent metal-to-metal contact. Filled with insulation at the factory. Standardized in 3″ depth and 16″ width, in 18 gage painted steel or 16 B & S gage aluminum.



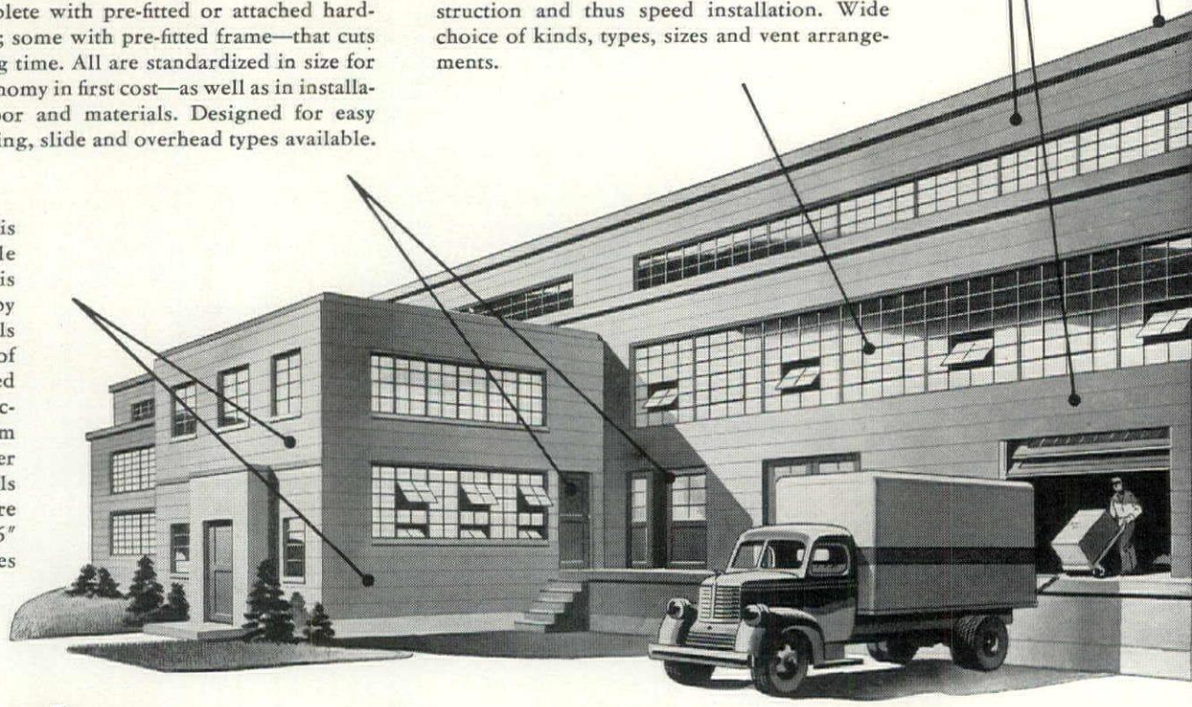
STEEL WINDOWS. For schools, hospitals, offices, factories, homes—any type of building. Fine appearance, rugged construction, easy operation and economy explain the fame of this line of windows. Most are standardized in sizes to fit modular construction and thus speed installation. Wide choice of kinds, types, sizes and vent arrangements.



DOORS. These standardized doors are real timesavers. For one thing, they come complete with pre-fitted or attached hardware; some with pre-fitted frame—that cuts fitting time. All are standardized in size for maximum economy in first cost—as well as in installation time, labor and materials. Designed for easy operation. Swing, slide and overhead types available.



FLOORS. This incombustible floor panel is quickly laid by two men, without special skills or special tools. The box beam of Types D and AD Panels is formed by welding together two steel sections. Side laps interlock to form a continuous flat surface. Cover plates are available for open cells to provide two flat surfaces, where desired. Standardized in 16″ width. Depth 1½″ to 9″. Gages 18 to 12.



Fenestra STANDARDIZED BUILDING PRODUCTS

Detroit Steel Products Company • Dept. AF-2, 2251 East Grand Blvd., Detroit 11, Michigan

IF YOU'RE A BUILDER OF SMALL HOMES

Something entirely new in Sales Promotion is being created exclusively for You by Rheem ...

SOON TO BE ANNOUNCED IN THIS MAGAZINE

Rheem Home Comfort Appliances

570 Lexington Avenue, New York 22, N. Y.

WATER HEATERS SOFT WATER APPLIANCES HEATING APPLIANCES COOLING APPLIANCES

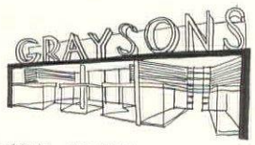
LETTERS

hear that we had to make the decision to withdraw our services for the time being. A decision which was the more difficult to make as we have uninterruptedly designed all work for Grayson's since 1940.

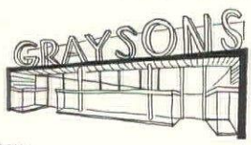
The reason for our decision was a discrepancy of opinion between the management of the firm and ourselves concerning the basic design and architectural concept of two stores for which we had completed plans. The changes which Grayson's demanded on these plans were such that we felt we would render a disservice to them, if we would give in.

I think that the story of these changes will interest you because they deal with principles of modern store design for which your magazine has campaigned for so many years, and to which we have always adhered.

The differences mainly concerned a new store building in the suburban Crenshaw Boulevard development in Los Angeles. Our design was based on the fact that this street, although an important automobile highway, would never have an appreciable amount of foot traffic, and that the main access to the store has to be provided from the rear parking lot. Accordingly, we proposed a simple, striking treatment of the street front with a shallow vestibule, and show windows designed primarily to catch the attention of the automobile public. Further, we proposed an open front treatment for the rear parking lot elevation, placing displays behind the glass windows and making visible the entire store's interior from the parking lot.



GRAYSON'S DESIGN:
DEEP ARCADES - CONFUSION FOR DRIVERS



G&K DESIGN:
SHALLOW VESTIBULE - EYE APPEAL FOR DRIVERS

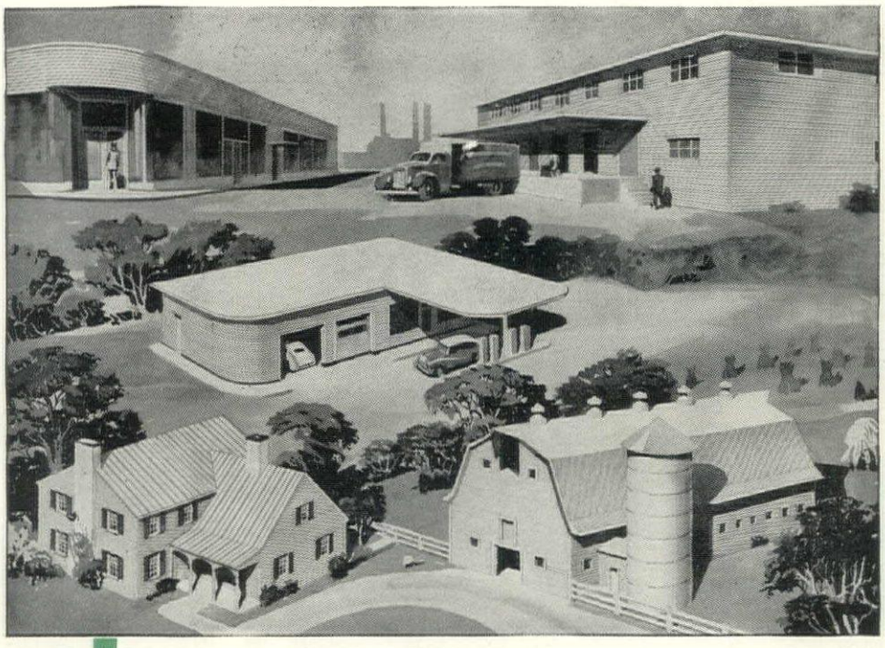
Grayson's insisted on as much show window area as possible along the street front and, as the store will have a children's department, they proposed to divide the rather impressive frontage of 75 ft. into two smaller arcades. Also, they proposed increasing the depth of these arcades and replacing the straight window lines which we featured with lines following some fancy angular floor plan.

Further, they want to arrange the service facilities for the store in the rear of the

(Continued on page 42)

REYNOLDS *Lifetime* ALUMINUM BUILDING PRODUCTS

for Home, Farm, Commerce and Industry . . .



DEMAND is solid and growing, in a multiple market... farm, commercial, industrial and residential. The building industry and the public know the advantages of rust-proof, fire-proof, rot-proof aluminum. They have tested and proved its exceptional insulation value... how its 95% radiant heat reflectivity takes off the summer sun load, cuts winter fuel bills. And with growing sales, the easier handling of lightweight aluminum increases profits. Look into the complete line! See Sweets or write for literature.

Reynolds Metals Company,
Building Products Div., Louisville 1, Ky.

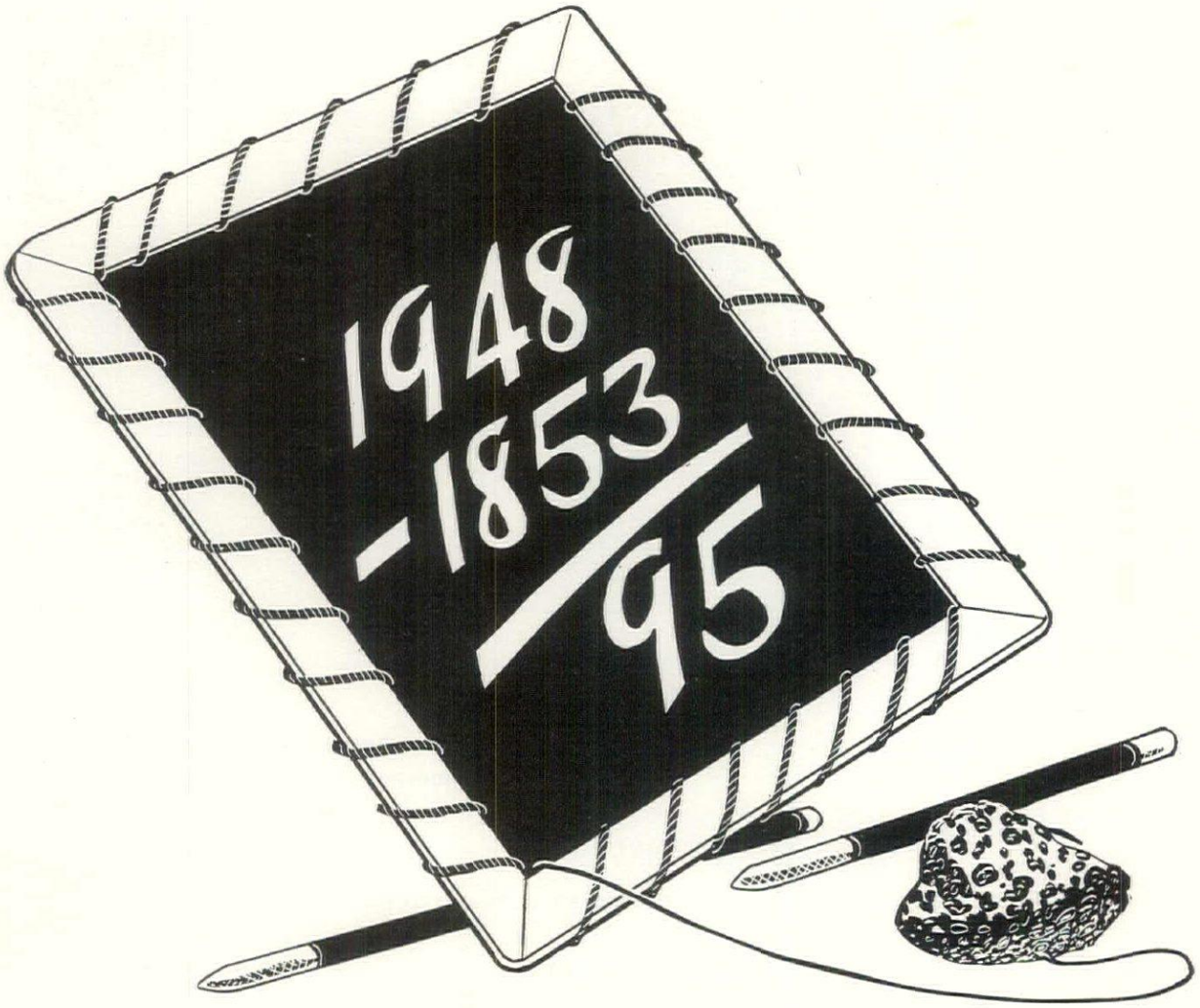
IF YOU SEE RUST YOU KNOW IT'S NOT ALUMINUM

REYNOLDS METAL

REYNOLDS *Lifetime* ALUMINUM BUILDING PRODUCTS

- **ROOFING**
  SHINGLES, "SNAP-SEAL," STANDING SEAM, CORRUGATED, 5-V CRIMP, BUILT-UP ROOFING, FLAT SEAM IN ROLLS
- **SIDING**
  CLAPBOARD, CORRUGATED, 5-V CRIMP, WEATHERBOARD
- **ACCESSORIES**
  RIDGE ROLL, RIDGE CAP, FORMED VALLEY, ROLL VALLEY, ROLL FLASHING
- **EAVES TROUGHS, CONDUCTOR PIPES** AND FITTINGS
- **CEILING PANEL** (ACOUSTICAL AND NON-ACOUSTICAL)
- **WALL TILE** (8 COLOR COMBINATIONS)
- **WINDOWS** RESIDENTIAL CASEMENT, PICTURE
- **STUDS**
- **TRUSSES**
- **REFLECTIVE INSULATION** (METALLATION)
- **ALUMI-DROME** (FARM & COMMERCIAL UTILITY BLDGS.)
- **GARAGE DOORS**

VISIT US AT NATIONAL ASSOCIATION OF HOME BUILDERS, FEB. 22-26, STEVENS HOTEL, CHICAGO, SPACE NO. 20.



95 years in business! Our old-fashioned slate also reminds us that anniversaries are good times to say "Thank You" to friends. This year we're doing it in a substantial way. With *production*—our 1948 program calls for still further increases in output. With *quality*—we're working to make Case plumbing fixtures even finer than before. With *service*—wherever you need it, coast to coast, there's a carefully selected Case distributor ready to do his best. And for your convenience, Case distributors are listed in Classified Telephone Directories.

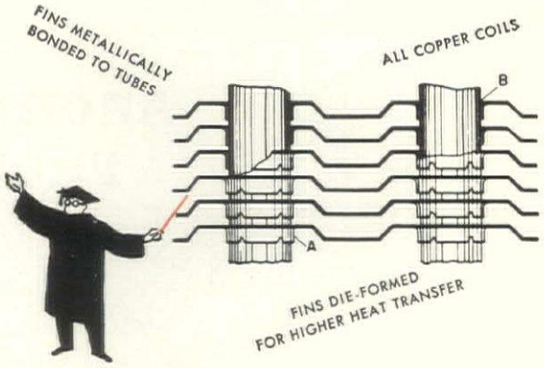
W. A. Case & Son Mfg. Co., Buffalo 3, New York. Founded 1853.

95 Years of Service

Case

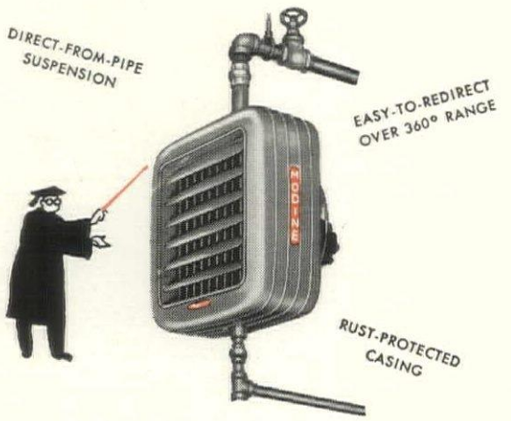
Vitreous China Plumbing Fixtures

Here's Today's Lesson on Tomorrow's Unit Heaters!

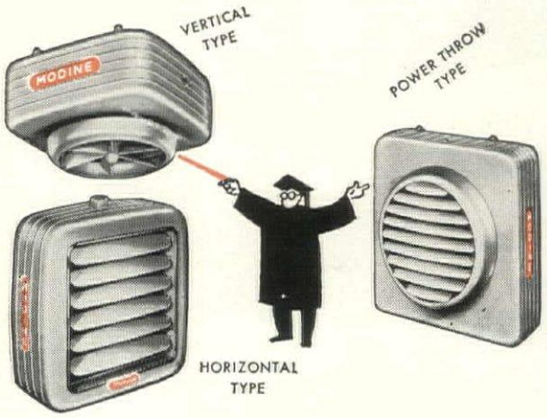


1. Consider construction—Modine gives you a metallic bond which permanently seals the flanged collars of fins (A) to tubes (B) . . . prevents corrosion . . . assures you extra years of high heat transfer efficiency, lasting performance satisfaction.

2. Take a peek at performance— Modine scientifically planned heat distribution gives you heat where and when you want it. You get the exact temperatures you want because Modine air velocities and air volumes are carefully related to your needs.



3. Remember suspension—Patented center supply and return connections mean you can suspend Modine Horizontal Units directly from the supply line with savings up to $10 per unit. Complete safety. No expensive supports. No extra labor costs.



4. Measure the need—Modine's integrated unit heater line gives you 3 types with 47 basic capacities. 1) Horizontal Type for general applications. 2) Vertical Type for overhead use. 3) Power Throw Type for special high velocities.

MORAL: Move Ahead with Modine Quality!

When you buy Modine, you buy the quality unit heater that's years ahead in engineering and design. Built to meet almost all the space heating requirements of modern industrial and commercial buildings, Modines give you modern beauty, plus the finest in modern performance and construction. Get all the facts from Modine's representative listed in the "Where-to-Buy-it" section of your phone book. Or send in coupon at right.

MODINE MANUFACTURING CO.
1507 Dekoven Ave.
Racine, Wisconsin

YES! I want all the facts about Modine's integrated Unit Heater Line. Please send me complete information.

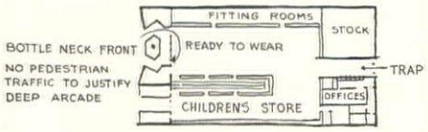
NAME .....

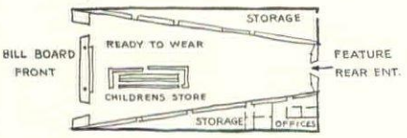
ADDRESS .....

CITY .....STATE .....

Modine UNIT HEATERS

building, eliminating the impressive parking lot entrance and replacing it with a pair of doors which would allow access to the main sales room only after negotiating a 30 ft. long corridor.





GRAYSON PLAN (above), G & K (below)

It is probably as amazing to you as it is to us that all our arguments, together with actual traffic figures . . . were to no avail.

You will understand that we had no other choice than to accept a heavy financial sacrifice and to resign from the project. This decision caused Grayson's to cancel all agreements for other projects which we had in work. Although these events result in the loss of an important client to us, we feel that we could not do otherwise, and we are hoping that Grayson-Robinson Stores Inc. will, at some later date, realize that we have acted with their interest at heart.

GRUEN & KRUMMECK ASSOCIATES
Hollywood, Calif.

LETTER FROM AUSTRALIA

Forum:

In Australia, since the end of the war, half the total amount of housing is being built by the government and half by private enterprise. The government half is essentially rental housing for lower income groups, of which the veterans gets a large proportion. In each state excepting Victoria there is an architects' panel, an elected group of architects who have been working since 1939 on this question of housing. They have done a great deal of research and gotten many good answers. . . .

We have a very interesting story that has no parallel in the U. S. In every state our government makes a provision for soldiers to be put on farm lands. After the last war the soldier had to pay back to the government whatever it cost the government to put him there. But this time the government is assuming the value of the property, taking particular care to purchase suitable lands for either sheep-growing, wheat-growing or fruit-growing, and putting the developments in before the farmer gets there — fences being located, farmhouse and

(Continued on page 46)

DECORATIVE MICARTA

Winner...

BY 10 IMPORTANT POINTS

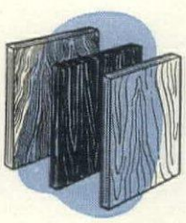
What puts Decorative Micarta* out in front? It's the only surfacing material that gives you *all 10* of these important advantages.

WON'T SCRATCH OR MAR under ordinary service conditions. Finished surface is hard and durable.

WILL NOT SPOT OR STAIN from spilled food, grease, alcohol, etc. Highly resistant to heat, moisture, mild acids and alkalies.

STRONG, DENSE MATERIAL . . . guaranteed not to warp, chip or crack under ordinary service conditions.

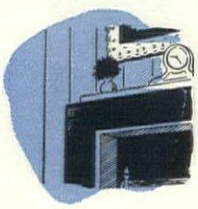
COLOR-FAST, PERMANENT FINISH. Unusually clear, lustrous colors and patterns won't fade or darken.



GENUINE WOOD VENEERS AVAILABLE. Truwood Micarta combines the beauty of such woods as primavera, mahogany and walnut with all the practical features of Decorative Micarta.

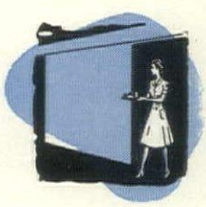
EXCLUSIVE "BEAUTY MASK" of tough Kraft paper protects the surface during shipping, machining and installation. Strips off easily when ready for use.

QUICKLY, EASILY CLEANED because of its permanently smooth surface.



OPTIONAL FINISHES. Brilliant *high-gloss* or lustrous *satin*.

AVAILABLE IN "CIGARETTE-PROOF" GRADE at slight extra cost. Even when cigarettes burn out on it, "cigarette-proof" Decorative Micarta remains unmarred.



LARGE 4 FT. BY 8 FT. SHEETS of Decorative Micarta are available for covering large surfaces quickly, and with a minimum of joints. Smaller sizes also available for table tops and similar applications.

Just about adds up to perfection, doesn't it? Get *all* these advantages when you buy a surfacing material. Specify Decorative Micarta . . . and be sure.

Use it for table-tops, counters, bar-tops, built-in booths, walls . . . anywhere at all when you want beauty, convenience and durability combined in one *practical* material.

Get complete information on Decorative Micarta. A variety of desirable colors and patterns is available now. Write:

UNITED STATES PLYWOOD CORPORATION
55 West 44th Street, New York 18, N.Y.

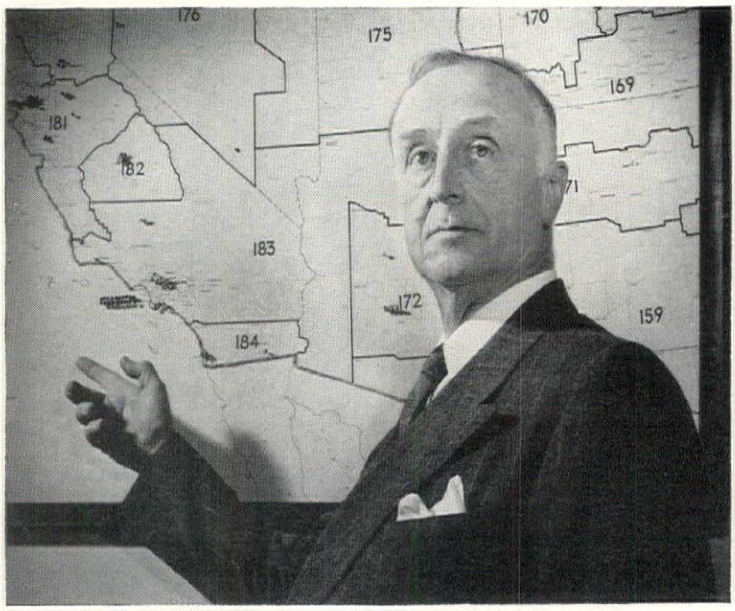
Weldwood** Hardwood Plywood	Flexmetl
Douglas Fir Weldwood	Weldwood Glue** and other Adhesives
Mengel Flush Doors	Weldrex** (patented striated plywood)
Douglas Fir Doors	Decorative Micarta*
Overhead Garage Doors	Flexwood**
Molded Plywood	Flexglass**
Armorply** (metal-faced plywood)	Firzite
Tekwood** (paper-faced plywood)	

*Manufactured by Westinghouse Electric Corporation. Reg. U. S. Pat. Off.
**Reg. U. S. Pat. Off. United States Plywood Corporation

What are your competitors doing about shortages?

A whale of a lot of them have converted to Kaiser Aluminum . . . and are *staying* converted.

But don't take our word for it. Read a few of their quotes, as reported by our men in the field.

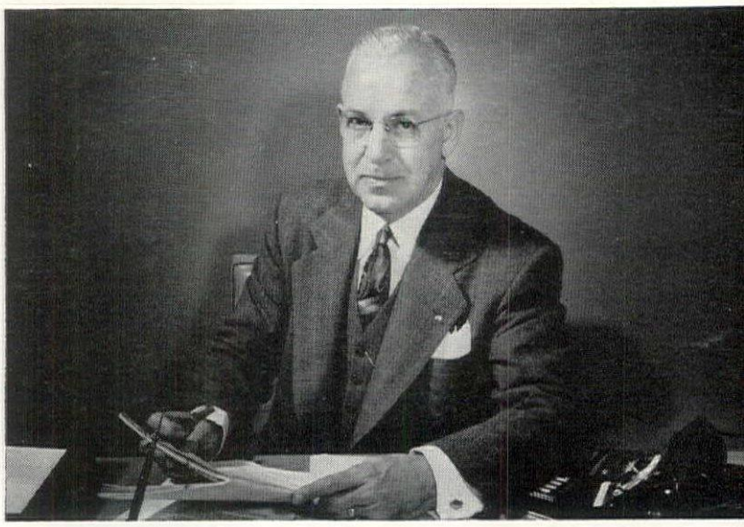


1. STOVE MANUFACTURERS SAID:

"When we converted to sheet aluminum for our gas range griddles, we were afraid consumers would object to its lightness. Turned out they preferred it because it's a better heat conductor and has a fine appearance. We're sticking with Kaiser Aluminum."

2. APPLIANCE MANUFACTURERS SAID:

"Nobody had to sell us on aluminum having plenty of customer appeal, but we were afraid of the cost. However, we found that on a unit cost basis, aluminum is just as cheap or cheaper than any other metal. Besides, we saved money on handling and shipping. We've converted to Kaiser Aluminum for keeps."



3. MANUFACTURERS OF HEATING AND VENTILATING EQUIPMENT SAID:

"When we switched to Kaiser Aluminum, our workers were enthu siastic. They liked its lightness, its cleanness, and above all, i workability. What's more, our customers found aluminum du work far more efficient. We wouldn't think of changing back."

Kaiser Aluminum

a Permanente Metals product

What about *you?*

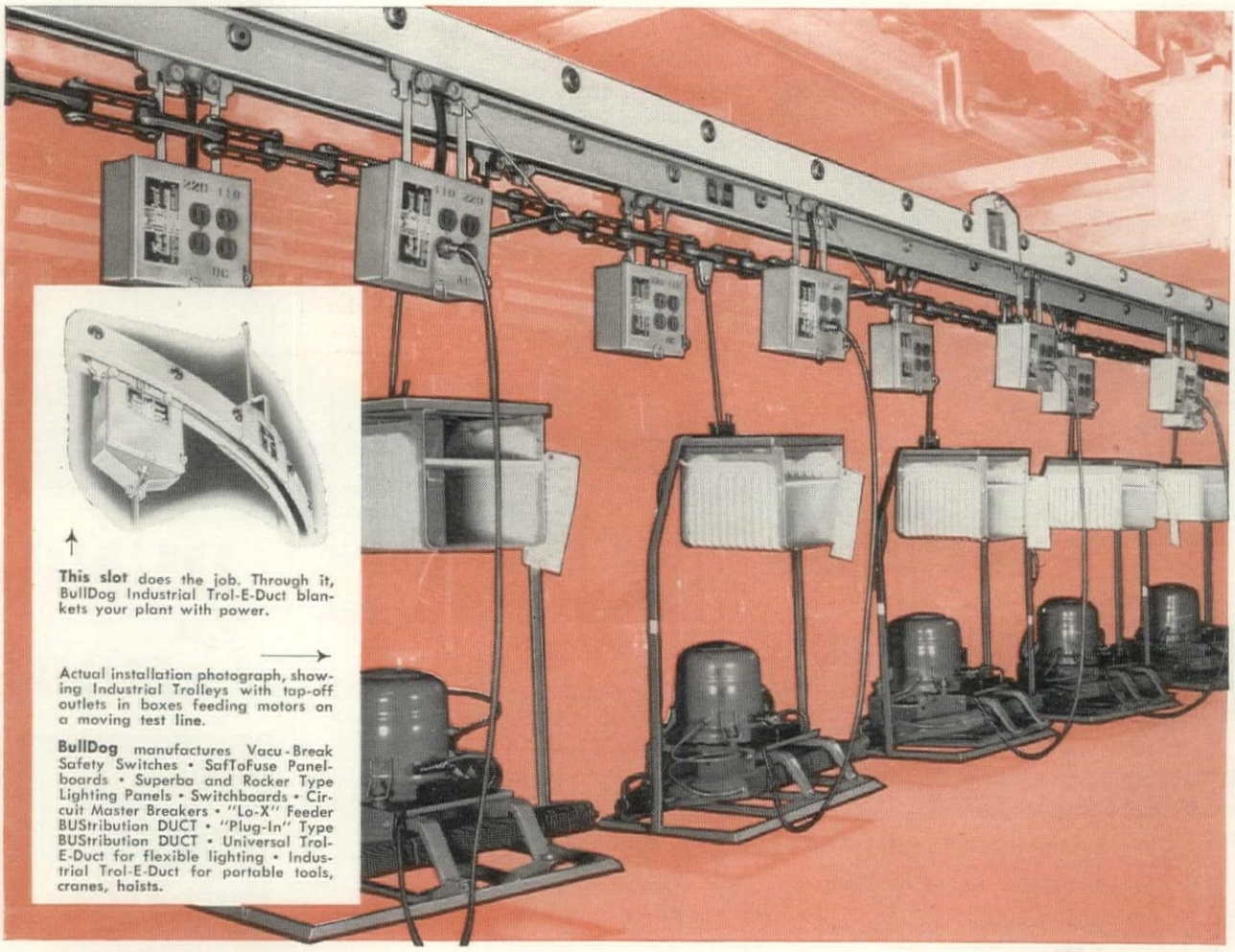
Why wait when there's a Kaiser Aluminum alloy to me almost every type of manufacturing operation? Why n join the more than 1,000 manufacturers who today a making more than 600 different products out of Kais Aluminum?

Simply call in a Permanente Metals' sales engineer a we'll be on the job, for *you!*

PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND 12, CALIFORNIA . . . WITH OFFICES IN

Seattle • Oakland • Los Angeles • Dallas • Wichita • Kansas City • St. Louis • Atlanta • Minneapolis • Milwaukee • Chicago • Cincinnati • Cleveland • Detro

Boston • Buffalo • New York City • Philadelphia • Washington, D. C.



This slot does the job. Through it, BullDog Industrial Trol-E-Duct blankets your plant with power.

Actual installation photograph, showing Industrial Trolleys with tap-off outlets in boxes feeding motors on a moving test line.

BullDog manufactures Vacu-Break Safety Switches • SafToFuse Panelboards • Superba and Rocker Type Lighting Panels • Switchboards • Circuit Master Breakers • "Lo-X" Feeder BUStribution DUCT • "Plug-In" Type BUStribution DUCT • Universal Trol-E-Duct for flexible lighting • Industrial Trol-E-Duct for portable tools, cranes, hoists.

Specify power that moves with the job

YOU DO right by your clients when you specify BullDog Industrial Trol-E-Duct, the system to give power *where* it's wanted, *when* it's wanted.

Ball-bearing trolleys travel in a continuous slotted duct, collecting current anywhere along the line. You give clients power that travels right along with cranes, hoists, assembly or test lines and portable tools like a well-trained pup.

For architects and clients alike, BullDog Industrial Trol-E-Duct is convenient beyond all possibilities of old style wiring systems. Prefabrication makes designing and installing easy. Lengthy, entangling extension cords are eliminated. Conductors are enclosed inside the sturdy duct casing. You can actually blanket a plant with power.

Takes changes in stride

New outlets can be added to BullDog Industrial Trol-E-Duct without additional wiring. Your client simply inserts another trolley in the duct to supply each new "load."

If the electrical distribution system must be moved, Industrial Trol-E-Duct can be taken down, moved and reinstalled with *no loss of parts.*

It's a mechanically strong and electrically superior system. Durable steel duct casing encloses and supports rigid bus bars to provide maximum strength. Movable trolley outlets and insulating materials that do not deteriorate ensure electrical superiority.

There's a BullDog Field Engineer near you, ready with all the facts on this remarkable power system. Call him anytime.

BullDog's Field Engineers welcome the chance to sit in on planning stages of a building project. Their knowledge of electrical distribution layout can mean savings in installation and maintenance costs, as well as highest efficiency and reliability in actual operation. Why not take advantage of this pre-building service?

BULLDOG ELECTRIC PRODUCTS COMPANY
DETROIT 32, MICHIGAN • OFFICES IN PRINCIPAL CITIES
IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO

BULLDOG

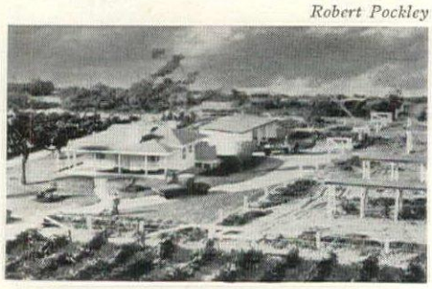
HEADQUARTERS FOR ELECTRICAL DISTRIBUTION

LETTERS

sheds built, fruit trees planted. The farmer walks on the property with everything ready. If the capital cost of putting him there is greater than the farm can produce to pay it off, the difference between annual productive value and cost is written off.

The enclosed model of a rural experimental farmhouse is for almost arid country not now being used, along the river Murray in the north of Victoria. The state is arranging the erection of such buildings through a statewide settlement commission. The first contract was let eight months ago.

Robert Pockley



MODEL FARM in Victoria

The one shown is on 30 acres for the growing of grapes, and the racks seen in the photograph are for drying grapes in the sun. It is a warm climate and Australian dried fruits are a big product. I believe that it is one of the most interesting experiments we have in Australia at the present time: an attempt to put war veterans into a sound business.

JOHN BUCHAN
Architect and Town Planner
Melbourne, Australia

FINNISH BOOK SHORTAGE

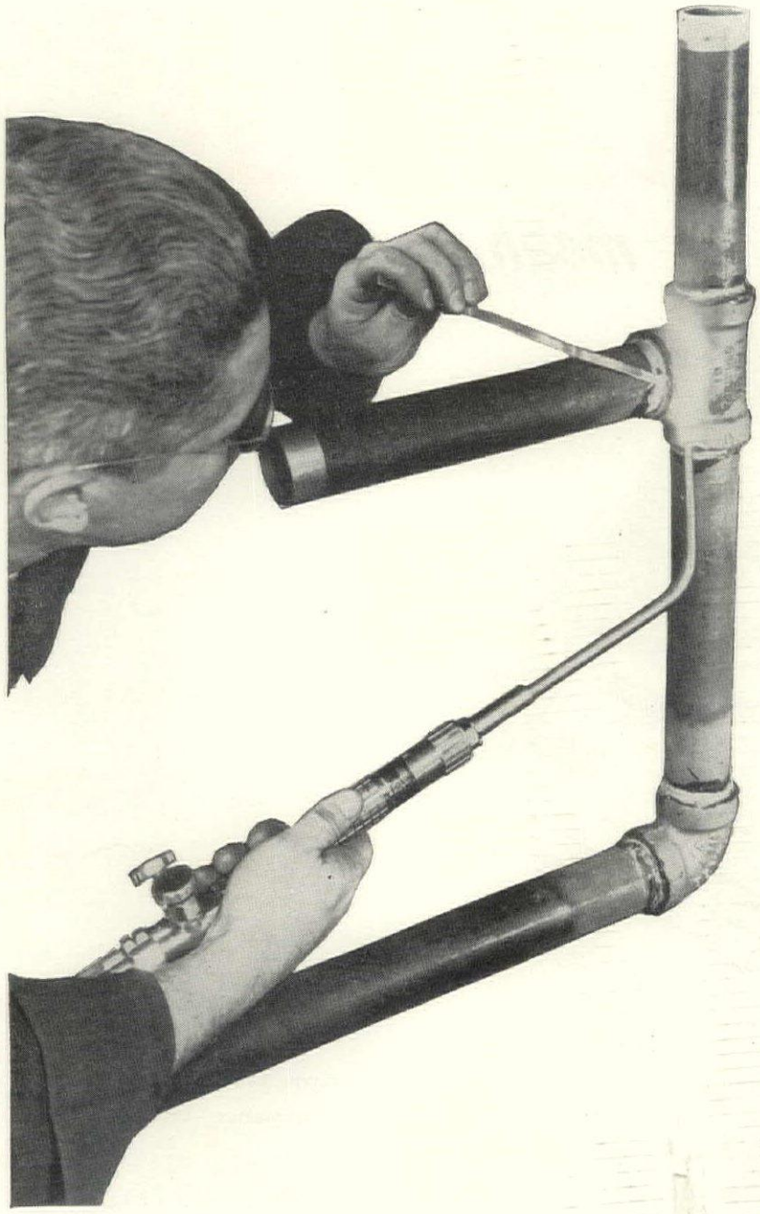
Forum:

During the war the library of Finland's excellent Institute of Technology was bombed by the Russians and totally destroyed.

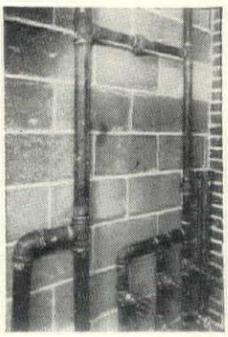
On my recent trip to Finland for the American Friends Service Committee, I discussed the situation with Dr. Martti Levon, Director of the Institute. He said he would welcome gifts of scientific and technical books and periodicals from America to take the place of those destroyed. In the remarkable efforts for recovery which the Finns are making, the lack of technical library facilities is a very serious handicap. It would be a practical act of friendship to a nation which holds America in high regard if Americans should contribute good technical books and periodicals to this library.

Any such gifts should be marked for the Institute of Technology, Helsinki, and sent to the Legation of Finland, 2144 Wyoming Ave., N. E., Washington, D. C.

ARTHUR E. MORGAN
Yellow Springs, Ohio



let *capillary action* do what strong-arm methods can't



FLAGG-FLOW *Threadless* Malleable Fittings make tough piping jobs easy. They can be positioned to face in any direction — precisely and accurately — then Capillary Action draws the Silver Brazing Alloy into the joint to make a perfect, permanent bond. You eliminate backing-off or taking-up to compensate for faulty threads or measurements; there is no distortion strain from manhandling a pipe wrench.

What is more, FLAGG-FLOW can be installed wherever pipe will go and a torch will reach—in tight spots around machinery, or in awkward corners that defy a wrench. Nor is special skill and experience required to make permanent, maintenance-free joints. Any competent pipefitter can make joints as strong as the pipe itself by observing the simple three-step rule: CLEAN — FLUX — HEAT.

Use FLAGG-FLOW *Threadless* Malleable Fittings wherever standard black steel or wrought iron pipe is applicable. Write today for Catalog giving full details.

FLAGG FF FLOW

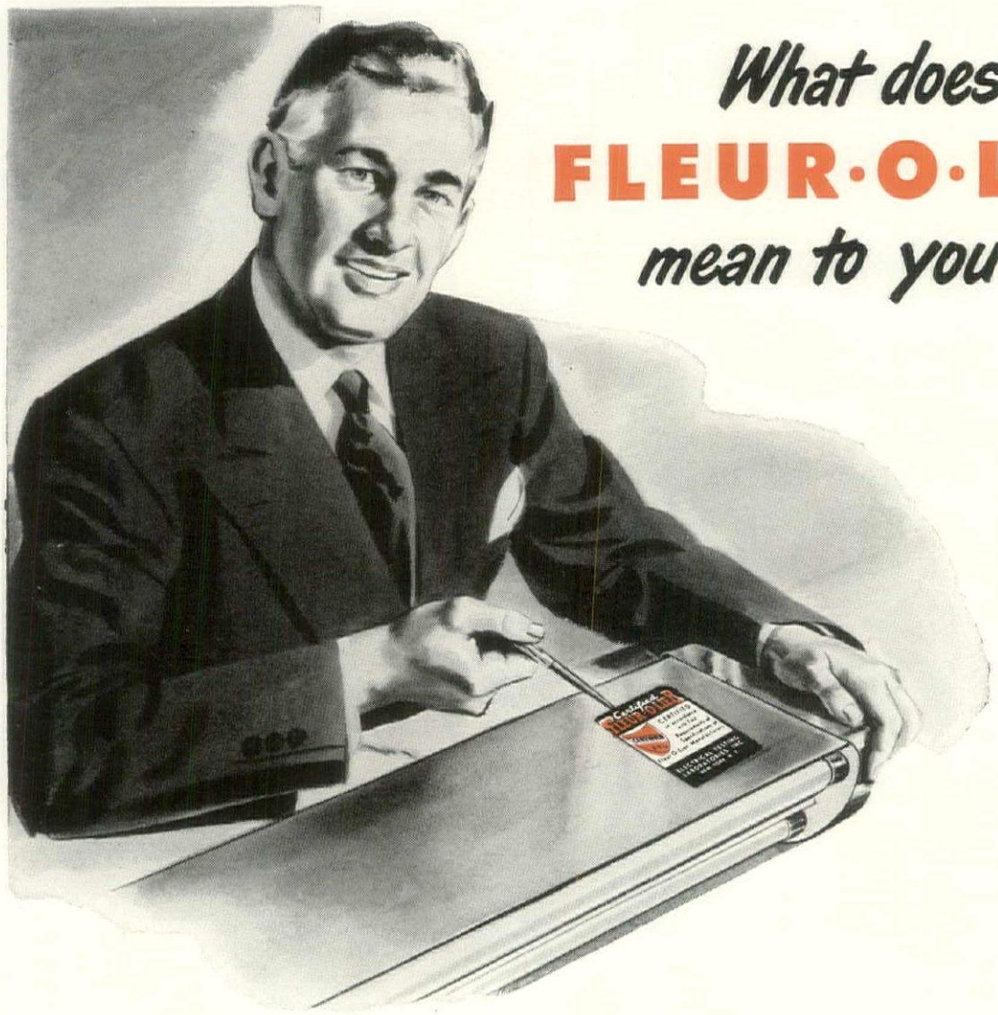
PIPE FITTINGS SINCE 1854

STANLEY G. FLAGG & CO., INC.

1421 Chestnut Street, Philadelphia 2, Pa.

MALLEABLE IRON FITTINGS, STD., EX. HVY. AND AAR • CAST IRON FITTINGS • DRAINAGE FITTINGS • FLANGE UNIONS • FLANGES

GROUND JOINT UNIONS • BRONZE THREADED FITTINGS • BRONZE SOLDER FITTINGS • UNDERGROUND TANK FITTINGS



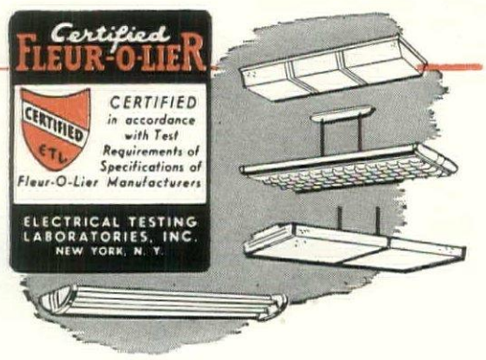
What does FLEUR·O·LIER mean to you?

Fleur-O-Lier fixtures are made to exacting specifications that cover performance, construction and safety. Then they are tested and certified by Electrical Testing Laboratories Inc., as meeting these specifications. A Fleur-O-Lier label on each fixture identifies them.

What's the value of this?

Fleur-O-Lier fixtures are insurance on your reputation. A Fleur-O-Lier installation assures customer satisfaction—freedom from complaints. With Fleur-O-Lier equipment you *know* the customer will get fine lighting performance—trouble-free operation.

Fleur-O-Lier is both a Product and a Program. Those rigid specifications, the careful checking, enable you to give the product unqualified endorsement. The promotional program develops the commercial fluorescent lighting market—and raises the standards of lighting to higher levels. You benefit—and the customer benefits.

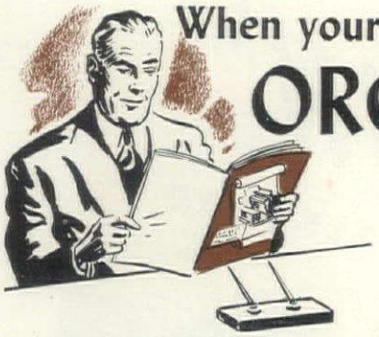


FLEUR·O·LIER

Manufacturers

2116 Keith Building • Cleveland 15, Ohio

Fleur-O-Lier is not the name of an individual manufacturer, but of a group of fixtures made by leading manufacturers. Participation in the Fleur-O-Lier program is open to any manufacturer who complies with Fleur-O-Lier requirements.



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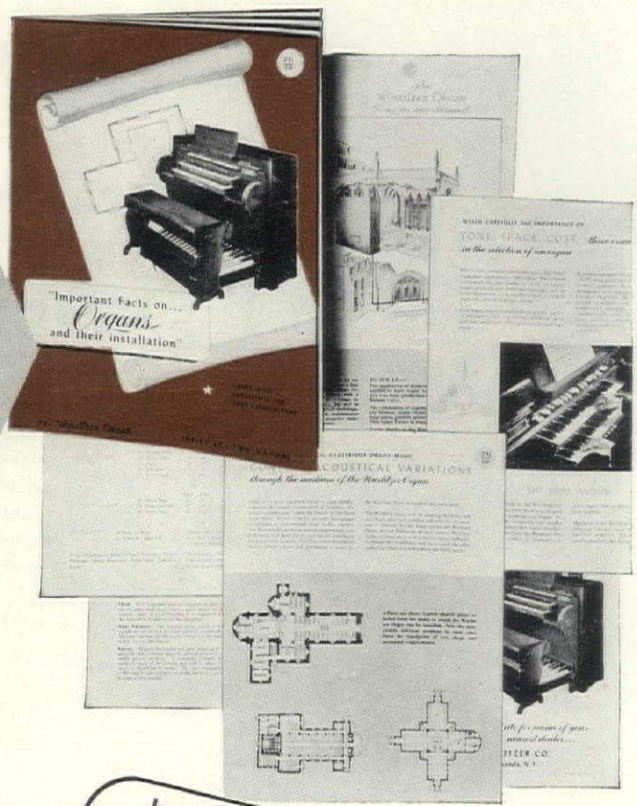

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MORE COMPLETE FACILITIES

because of space saved by a

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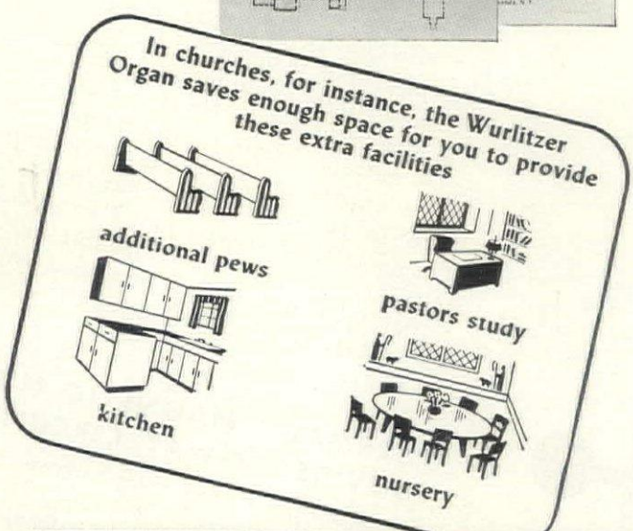

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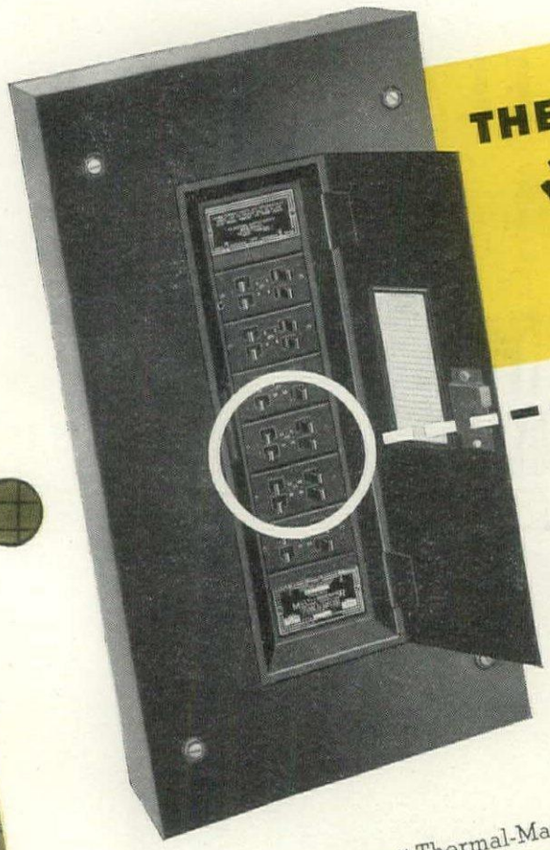

- ✓ Easy to Wire
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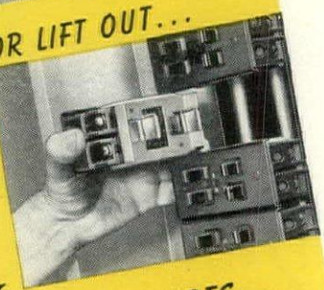
- ✓ Application—wherever large number of branch circuits for lights, appliances and business machines must be switched and protected.

1 SWING OUT...

2 OR LIFT OUT...



3 ATTACH WIRES...

4 "PLUG-IN"

Compact, 4-circuit Thermal-Magnetic (Coilless) Multi-breaker units, equipped with positive-pressure contact jaws, grip cylindrical silvered bus bars.

"Plug-in" feature permits easy removal and insertion of units for future changes in circuit ratings or additional circuits if space for expansion is planned.

Low heating, permitting small size, is achieved by exceptionally high silver content in breaker unit contacts, and elimination of bolted current carrying connections.

Smaller size greatly improves utilization of wall and column space. Yet panel has more gutter space (5½" in 15" box) because of compact Multi-breaker unit. Narrow column type has twice number of circuits previously available in cabinets of similar height.

NMO panelboards are furnished with 100 and 200 ampere mains, 120/240 Volt A.C. with 15, 20 and 30 ampere single and double-pole branch circuits.

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1. Thermal trip element holds harmless momentary overloads but trips if overload continues.
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ILLUSTRATED NMO *Bulletin* gives complete information on the new Panelboards. Address Square D Company, 6060 Rivard St., Detroit 11, Michigan.

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A photograph of the Jacob Riis Housing Project under construction in New York City. 19 buildings—each 12 stories high—are being built to rid the city of one of its worst slum areas.

15 million dollar project proves advantages of...

Kimpreg*+ Plywood Concrete Forms

KIMPREG* plastic surfacing is a tough, durable material fused to exterior grade plywood in manufacture. Carloads of KIMPREG+Plywood panels were supplied for the tremendous Jacob Riis construction job and here's why:

Lower Ultimate Cost. KIMPREG increases the strength—adds to the life of plywood. KIMPREG-surfaced plywood concrete forms—handled with reasonable care—can be re-used scores of times.

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Full Information For You. Time-saving, money-saving KIMPREG-surfaced plywood concrete forms are available through your local plywood jobber. They are also sold by individual plywood manufacturers under the trade names Laminex, Inderon and Westboard Industrial Plastic. For complete details write:

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FORUM

Behind the scenes with FORUM contributors

The new Chicago offices of the Container Corporation of America (p. 65) were a collaborative project worked out, in general scheme, by the company's own Design Department, directed by **EGBERT JACOBSON**. As head of plant and office design for Container Corp., Jacobson climaxes a career which began with study at the Art Students League, and has included jobs as art director of N. W. Ayer in Philadelphia, J. Walter Thompson in New York and Lord & Thomas in Chicago. From 1929 until 1935, he headed his own Chicago studio of advertising art and industrial design.

HERBERT BAYER, Austrian-born designer, shuttles between Chicago where he is design consultant for Container Corp. and Aspen, Colorado where he does the same job for the Aspen Development Co. For Container's new offices he was in charge of the color scheme of the general work area plus the entire design of the reception room and office of Walter Paepcke, Board Chairman. Bayer's career includes both study and teaching at Germany's Bauhaus and, in America since 1928, work as art director at John Wanamaker's, J. Walter Thompson and Dorland International. Exhibitions of his work, both painting and commercial art have been shown at leading museums throughout Europe and America.

MARIA BERGSON, another consultant to Container Corp., is an up-and-coming young designer who arrived in this country from Vienna shortly before the war. She managed to clamber into the competitive field of interior design by overhauling the offices of *Fortune* Magazine where she had been working as a secretary. For the Container job she worked out color scheme and furniture for most of the executive offices. **MORTON L. PEREIRA ASSOCIATES,** architects, designed the air-conditioning system, collaborated on the lighting and color schemes in both employe work space and executive offices, and acted as supervisors for the entire job.

ROBERT GRUEN ASSOCIATES, designers of the Parker Pen showroom (p. 84), is another husband-wife firm whose resemblance to the similar partnership of Gruen & Krummeck is purely coincidental. Robert Gruen, a graduate of Carnegie Institute of Technology, began his career as a New York theatrical designer, moved on to Hollywood for a short period and returned to Manhattan in 1940 to set up his own office of industrial and interior design. In 1944 he formed a partnership with his wife, Miriam, like her husband an industrial designer and member of the American Designers' Institute. Together they have specialized in product design (wood, metal, plastic and glass) plus packaging, display, lighting, furniture and commercial interiors. Glassware of Mr. Gruen's design has been produced in both the U. S. and Sweden and ten of his pieces were shown in the New York Metropolitan Museum exhibit of American Industrial Art of 1940.

JOHN B. PARKIN ASSOCIATES, designers of the Toronto bus shelters (p. 98), is a Canadian partnership whose work ranges from schools to washing machines. John Cresswell Parkin (left) studied at the University of Manitoba and the Harvard Graduate School of Design and worked in New York with Walter Dorwin Teague and Lester Tichy before becoming a partner in 1947. John Burnet Parkin (center) founded the firm in 1937 after graduating from the University of Toronto and doing industrial building in England and Europe. Edmund Thornton Parkin (right) is also a graduate of Toronto and Harvard, now specializing in both landscape architecture and construction specification.

(Continued on page 52)

A Beautiful Blonde joins a Famous Family

She's light . . . she's bright . . . she's beautiful. She has a warm, honey-colored complexion, and a *beautiful* figure . . . both stripe and some crossfire.

Her name is *Korina* . . . and she's the newest beauty in the famous family of Weldwood Hardwood Plywoods.

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Weldwood Plywood is made in both interior and exterior types, the former bonded with extended urea resins and other approved bonding agents; the latter with phenol formaldehyde synthetic resin.

FORUM

Behind the scenes with FORUM contributors

FRANCIS McCARTHY, West Coast architect for the San Francisco offices of J. Walter Thompson (p. 86), is a graduate of Stanford University and has worked in various firms including that of William Wurster. He set up his own practice in 1938, specializing in residential design and war housing; reopened it in 1945 after a year of government work in Brazil. Current jobs include commercial and industrial assignments as well as residential.

GRACE EVELYN MORIN and **THOMAS JEFFERSON BAIRD** are co-designers of Cornell's experimental farm tenant house shown in model form (p. 93). Miss Morin, since 1944 in charge of Rural Housing Research for N. Y. State, was formerly head of the Household Art Department in Cornell's College of Home Economics, a position she acquired in 1929. Before coming to Cornell she received her B.A. from the University of California, her M.A. from Columbia; worked as a draftsman in naval architecture, U. S. N, and for private offices in California; taught at Columbia Teachers' College. Mr. Baird, at present an assistant professor of architecture at Cornell, took his M.A. in regional planning at the same college, supplemented it with a 1940 fellowship at Cranbrook Academy of Art. He has worked in the office of Bryant Fleming and as landscape planner and architect for the Finger Lakes Park Commission.

THOMAS S. TWERDAHL and **ELMER L. ANDERSON** are, respectively, the architect and builder for the new row housing in suburban Chicago (p. 96). Twerdahl, a 1938 graduate of the University of Illinois, opened his own office of Barr & Twerdahl in 1942, but was interrupted by a 2½ year sojourn in the Corps of Engineers, stationed mainly at a drafting board in Persia. After discharge from the army in 1946, he reopened his own office and has since been retained as architect for Anderson's apartment projects. Anderson, an engineer by training at Northwestern University, found his first job as supervisor of the Chicago Daily News Building. For 15 years he acted as General Manager of Construction for the Kraft Cheese Co., designing and building plants in every State of the union. Since 1944 he has headed his own general contracting business in Chicago.

Macy's new branch store in Jamaica, Long Island (p. 100), is largely a company affair, based on the organization's merchandising experience plus suggestions from buyers, floorwalkers, janitors etc. **ROBERT D. KOHN,** consulting architect on Macy's main store additions since 1914, was called in again for this job. His particular assignment was the structural engineering and he is proud of the 60 ft. interior spans which allow a clear view through the entire floor area. Kohn's New York practice, established in 1897 after Beaux Arts training in Paris, has included the design and supervision of over 600 buildings. **DANIEL SCHWARTZMAN** was responsible for the counter arrangement and much of the interior design of the Jamaica shop. Also a Beaux Arts student, Schwartzman took graduate work at the Paris *Ecole* in 1933 after graduation from the University of Pennsylvania.. He opened his New York office in 1935 following a year with Buckler & Fenhagen in Baltimore. Extra office activities: Lecturer at Pratt Institute; Vice President of the N. Y. Chapter, A.I.A. **RICHARD BELCHER,** chief of staff in Macy's Architectural Department, acted as liaison architect utilizing his practical knowledge of store operation. Prior to concentrating all his energies on department store work, he maintained a general practice composed of school, church and residential design. He is a graduate of Cornell University.

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IT'S LIGHT IN WEIGHT—A square foot of Fiberglas Roof Insulation, 1″ thick, weighs only 1.2 pounds. This adds no significant load on the roof structure . . . permits easy handling during application.

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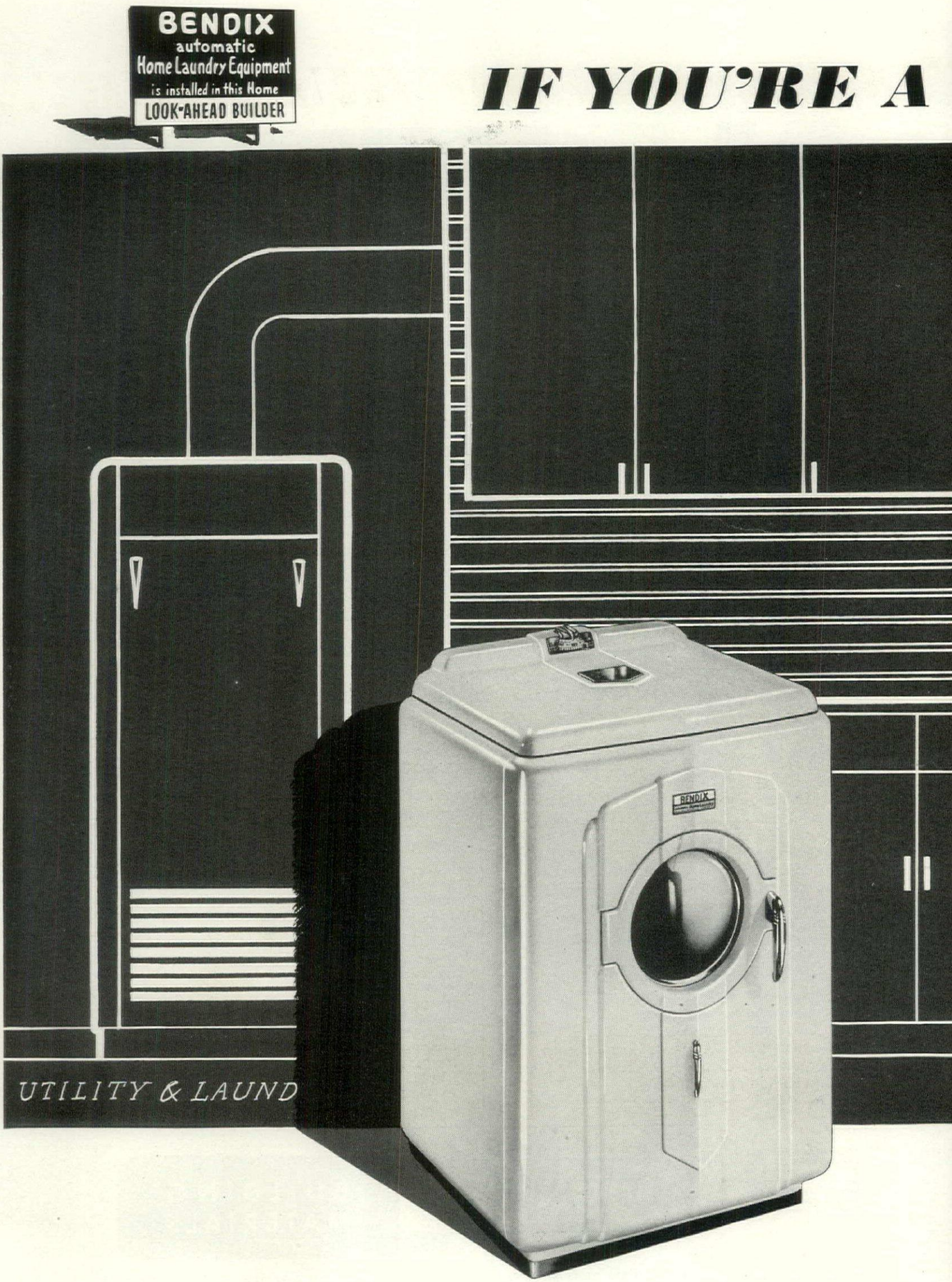
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You'll make Bendix Home Laundry equipment part of the blueprint now!

What's it worth to your customers?

Certainly it's worth a great deal to a home-buyer to know that the house is planned for better, easier living—and that it includes a planned laundry!

A Bendix automatic Washer already installed is a powerful urge to rent or buy. This is particularly true when the customer discovers that any or all Bendix equipment installed in the home can be bought on a package mortgage plan with only a small increase in monthly payments!

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Whether you build to rent or to sell—units are more desirable when Bendix-equipped. Any home that's planned for easier living makes a housewife's eyes light up! And Bendix takes the curse off the toughest home-making job of all—the weekly wash!

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And a look through a list of the progressive builders who install a Bendix *now*—even in a seller's market—proves that the "big guns" of building look ahead. They know that anything sells or rents today that keeps the rain off the customer's head.

But tomorrow is the time when a reputation for giving more for the money—in quality, in design, *and* in work-saving features—will keep them—and *you*—building and selling when the advantage-seekers of today are just a memory!

At the Home Builders Show come to BOOTH 15 for the Bendix profit story!

See the Bendix exhibit—hear the Bendix story—see how Bendix boosts builders' sales and profits! Come to Booth 15 at the National Home Builders Show—Chicago's Hotel Stevens—Feb. 22 to 26!

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Get your copy at Booth 15—or write to Bendix. Because here's a little book that does a big, big job! Gives complete layouts of labor-saving, sales-making home laundries. It's invaluable to builders!

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Fit companion to the Bendix automatic Washer—the amazing Bendix automatic Dryer! No more unsightly drying yards—no dependence on favorable weather conditions for drying! An essential part of modern home laundry planning!

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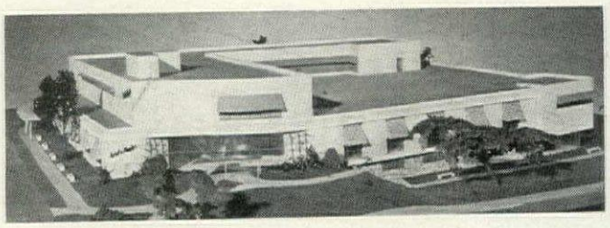
BUILDING PREVIEWS



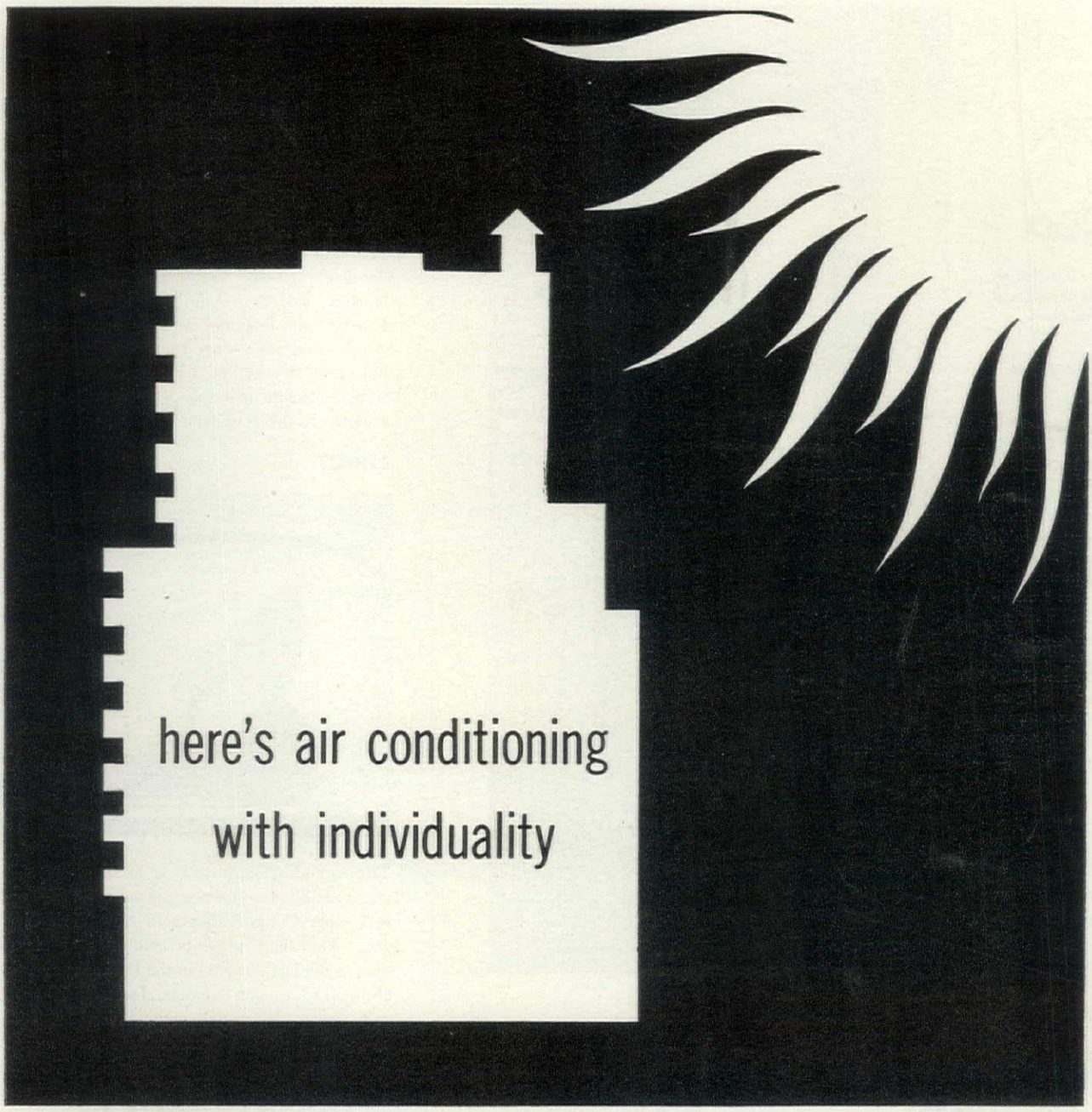
LORD & TAYLOR'S SUBURBAN DEPARTMENT STORE in Millburn, N. J. will be ready for opening in the fall of this year. Starrett & Van Vleck are architects; George Fuller & Co., builders. The design for this 2-story brick and fieldstone building takes advantage of a sloping site to provide entrances and parking areas on both levels. The plan includes modern features which have become almost standard equipment for new structures of this type: complete air conditioning; an open front instead of conventional show windows; a "flow" lay-out for aisles and showcases to replace the earlier grid plan. Office space is provided on the penthouse floor.

A GARDEN APARTMENT DEVELOPMENT in Washington, D. C. will provide 318 living units on a 13-acre wooded plot. Special study has been given by Architect Charles Goodman and Landscape Architect L. B. Voight to preserving as much as possible of the woodland area (there is only 19 per cent coverage), as well as to using it most effectively for adult and children's recreational space. Each of the 3-story buildings contains four 5-room and two 6-room units, which will rent for $17.50 per room under the provisions of its FHA financing.

A rather unusual building layout provides for two apartments on the first floor and four duplex apartments to share second and third floors. Each building is provided with its own laundry room. Construction is of concrete slab with brick and terra cotta facing; radiant heat is carried by copper tubing set in the plaster ceilings. All doors and frames as well as special storage space will be of factory fabricated metal products. Samuel Rodman and Harry Pollack are owners and builders of the project whose first units are scheduled for July completion.

FURNITURE DESIGN CONTEST

A $50,000 international competition, sponsored by the Museum of Modern Art, New York, and the Museum Design Project, Inc. is designed to stimulate interest in good design for low-cost, multi-use furniture. Two general categories are cited: seating units for one or more persons, and storage units for household or personal belongings. There is no restriction on the number of designs submitted. Three cash prizes ($5,000, $2,500 and $1,250) will be awarded for the three best designs in each group. The Simmons Co. has contributed a special prize of $5,000 *(Continued on page 58)*



Now it's possible to plan ideal indoor weather for every room in any multi-story building regardless of its location, variable occupancy, or alternate exposure to sun and shade. It may be exposed longer to the sun than others . . . may get the full blast of icy winter winds. Yet the Carrier Conduit Weathermaster System permits complete control of temperature and humidity in individual rooms at any season of the year. A turn of the individual knob gives the occupants *exactly* the kind of weather they want.

This revolutionary year-round system supplies outside air continuously. Use of small-diameter conduit instead of bulky supply and return ducts saves *rentable* floor space . . . and often a story height in new buildings.

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For years, Carrier engineers have teamed up with architects and their consulting engineers to provide the utmost in efficient and dependable air conditioning. Write for the booklet "Air Conditioning for Multi-Room Buildings." Carrier Corporation, Syracuse, New York.

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ANNOUNCEMENTS

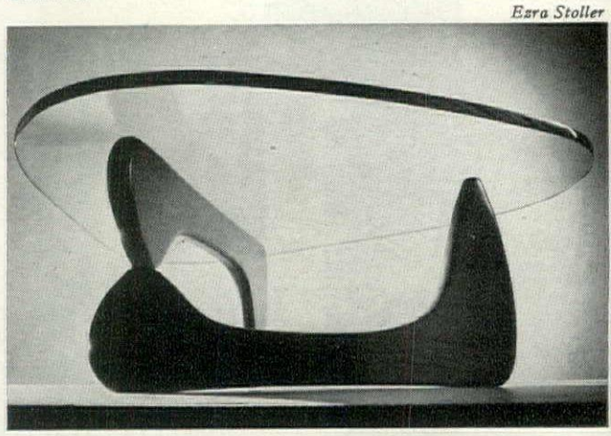
for a dual-purpose upholstered furniture unit adaptable for sleeping use. Also a part of the competition, is the research work done by six teams of designers who have been granted $5,000 each for collaborating on a project with technological laboratories. The team submitting the best report of its project will be awarded a special prize of $2,500.

The jury of eminent architect and design experts who will judge all entries includes Alfred Auerbach, Catherine Bauer, Luis de Florez, Rene d'Harnoncourt, Hugh Lawson, Ludwig Mies van der Rohe and Gordon Russell. The contest closes October 31, 1948. Winning entries will be exhibited by the Museum of Modern Art.

The Museum Design Project, co-sponsor of the contest, whose membership represents retail furniture stores in more than 160 cities throughout the country, will estimate possibilities of manufacture and sale of prize-winning designs, granting royalties to the designers.

EXHIBIT

Ezra Stoller



THE ART AND TECHNIQUE OF MODERN GLASS—from machine-made tumblers to finely engraved crystal—is being illustrated at Cooper Union Museum in New York City (Jan. 12-Mar. 20). The show presents examples of glasswork produced during the last 25 years in the U. S., France, Sweden, Finland, Holland, England, Austria, Italy, Belgium, Czechoslovakia and Mexico. A special section is devoted to demonstration of glass-making techniques and the uses of glass in modern decoration. These latter include glass block, glass fiber draperies, mirrors and tables, of which the most striking is that designed by sculptor Osamu Noguchi (photo above).

FELLOWSHIPS

THE LOWELL PALMER FELLOWSHIP in Architecture provides a year of advanced architectural study at Princeton (tuition, residence and $700 stipend) to college graduates under 27 years old on October 1, 1948. Application and scholastic records must be filed with the School of Architecture. Princeton University, Princeton, N. J. not later than March 1.

THE JOHN STEWARDSON MEMORIAL SCHOLARSHIP offers $1,000 towards a year's study of architecture in the U. S. or abroad for Pennsylvania residents between the ages of 22 and 32 who have four years of architectural training either in school or office. Application blanks should be returned to the Secretary, Henry Mirick, 12 S. 12th St., Philadelphia 7, Pa., before February 28.

NEW OFFICES

ROBERT HOYT, AIA, announces the opening of his office of architecture and planning consultation at 231 LaArcada Bldg., Santa Barbara, Calif.

(Continued on page 60)

Everybody's Pointing To Hotpoint

Today The Kitchen Is The Measure Of Value

30 Million People Know Hotpoint Means the Finest In Electric Kitchens

TODAY, the kitchen is the yardstick of value among home builders and buyers. That's because the tremendous impact of powerful advertising has made Americans thoroughly kitchen conscious. In fact, the kitchen is now the most talked about room in the modern home!

Within the past three years more than 2,000,000 persons have written to Hotpoint about All-Electric Kitchens. Pioneer of the electric kitchen, Hotpoint is recognized as the leader in modern kitchen planning.

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Hotpoint

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M. De Witt Grow, RA, is now in private practice at 4125 Monroe St., Toledo 6, Ohio.

Dan Palmer has opened an office of commercial and residential architecture at 3633 Carnation Ave., Los Angeles 26, Calif.

Morgan Stedman, Furber Libby and Dorothy Gray, registered architects, have formed a partnership with offices at 180 University Ave., Palo Alto, Calif.

Laitala & Nuechterlein, registered architects, announce the opening of offices at 620½ W. Saginaw St., Lansing, Mich.

Leslie Greenwald and Jules Mirot, architects, are now in practice at 127 N. Dearborn St., Chicago 2, Ill.

CHANGES OF ADDRESS

Neil Convery, AIA, announces the removal of his office to 1060 Broad St., Newark 2, N. J.

Carl Clark, AIA, announces that his new address is 625 James St., Syracuse 3, N. Y.

Raymond Sizemore, AIA, is now located at 16 South Hull St., Montgomery, Ala.

Fred Safran, RA, has moved his office of interior design and architecture to 350 Broadway, New York, N. Y.

George Dress, RA, is now located at the Manufacturers' Trust Co. Bldg., 205 E. 85th St., New York 28, N. Y.

Theodore Dominick, architect, is now at his new address in the Edmonds Bldg., 917—15th St., NW, Washington 5, D. C.

Cooper & Perry, architects and engineers, have moved to 211 W. Hill Ave., Knoxville, Tenn.

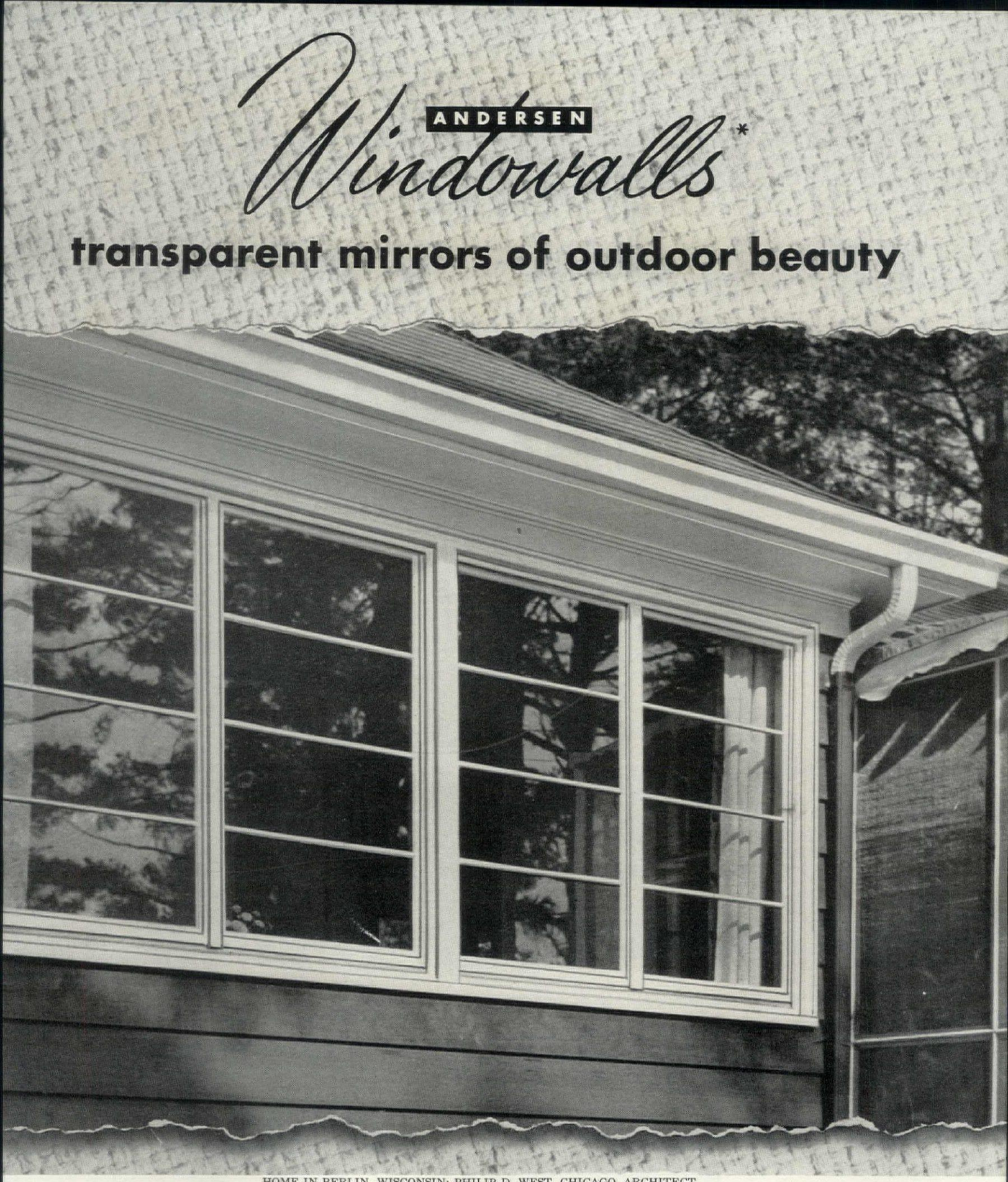
OMISSION

We regret that our story on the Bab-O plant in the December issue (pp. 89-92) did not give credit to the George Sollitt Construction Co., General Contractor for the building.

ANDERSEN

Windowalls*

transparent mirrors of outdoor beauty



HOME IN BERLIN, WISCONSIN; PHILIP D. WEST, CHICAGO, ARCHITECT

In the clear, even glass of these WINDOWALLS can be seen the reflection of the lovely trees outside this Wisconsin home. You can be certain the vista opened up by this wide expanse of windows is a stirring one, indeed.

And remember, too, that ANDERSEN WINDOWALLS can be opened in fine weather—to bring in an adequate amount of fresh air.

This WINDOWALL shows two standard ANDERSEN Gliding Window units with horizontal bars—also available in one-light glazing. Consult Sweet's Architectural File for complete details. For additional information, write direct to ANDERSEN.

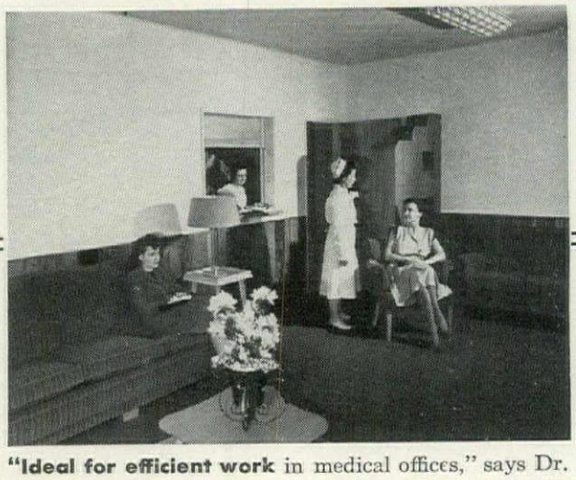
* TRADEMARK OF ANDERSEN CORPORATION

Andersen Corporation

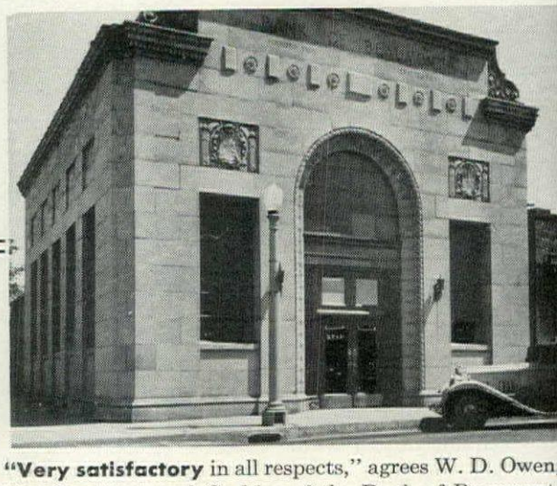
BAYPORT • MINNESOTA

Business and professional men

"We consider the Servel *All-Year* Gas Air Conditioner to be a worth-while investment, and do not hesitate to recommend it," says Sam Rubin, jeweler, of 323 De Siard St., Monroe, La. "Customers have been attracted to the conditioned space, and we have been able to keep our merchandise in better condition."



"Ideal for efficient work in medical offices," says Dr. Fred. L. Scott, of Huntington Park, Calif., about the temperature and humidity conditions maintained the year round in his offices by Servel.



"Very satisfactory in all respects," agrees W. D. Owen Vice President and Cashier of the Bank of Beaumont California, which is kept cool in summer, comfortably warm when needed, by the Servel unit.

praise all-year gas air conditioner

THEY SAY SERVEL *All-Year* GAS AIR CONDITIONER PROMOTES HEALTH, EFFICIENCY, BUILDS PROFITS

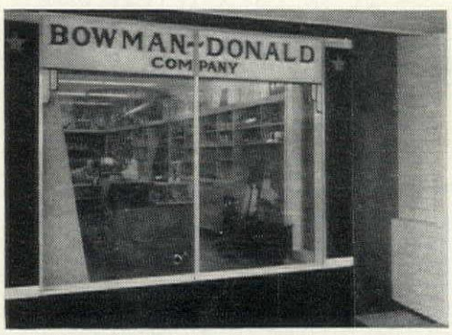
TYPICAL of hundreds of letters in our files from business and professional men all over the country are the testimonials on these two pages. Practically everyone who has a Servel *All-Year* Gas Air Conditioner is more than pleased with the results. In fact, as you'll see on the right, one enthusiastic user has installed *three* units—one in his home, one in his automobile agency, and one in a store he owns!

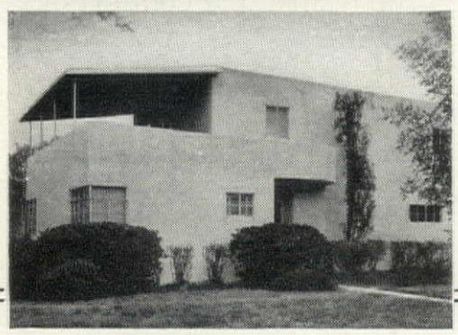
Everywhere, users agree that this wonderfully efficient year-round conditioner is worth every penny it costs. Some go so far as to declare it will actually pay for itself in a very few years! So you can recommend Servel *All-Year* Gas Air Conditioning to your clients with every assurance that it will perform up to expectations. And that your clients will be glad you brought Servel's advantages to their attention.

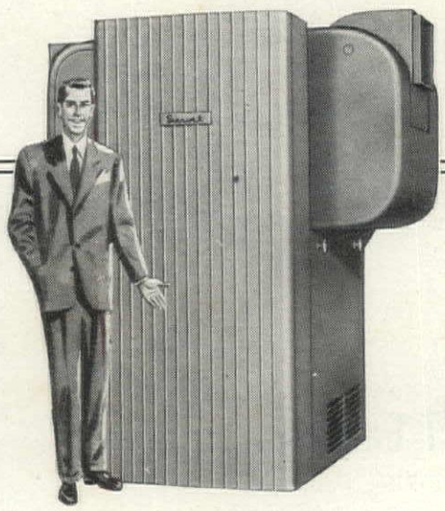
Complete in one unit, the Servel conditioner refrigerates and dehumidifies the air in summer. In winter, the same unit heats and humidifies the air. In between seasons, it offers independent air circulation at prevailing temperatures. Year-round, it filters dust, dirt, and irritating pollen from the air. A "flick of the finger" controls all operation.

Check your list of clients today. Determine which are logical prospects for Servel *All-Year* Gas Air Conditioning. Then ask your local gas company for more detailed information about these types of application. Or, write direct to Servel, Inc., for application data and names and addresses of satisfied users with comparable installations. Address Servel, Inc., 2802 Morton Ave., Evansville 20, Indiana.

"If I could find another place to install Servel *All-Year* Gas Air Conditioning, I would do it," says Frank M. Bowman, Alice, Texas, businessman. He already has three Servel units, one in his automobile agency (above), and one each in his store and home (below).







Servel

All-Year GAS AIR CONDITIONER

What good is a house without heat?

This winter is proving many modern houses to be obsolete, due to conditions no one thought possible one year ago.

They cannot be adequately heated because of shortages of certain fuels.

It is predicted that shortages in those fuels will exist for several years.

INVESTMENTS and loans on houses that may become "fuel orphans" are imperilled by inadequate provisions for heating just as the health and comfort of their occupants are endangered.

Now is the time that houses are being designed, loans on projects being discussed, investments in developments being considered.

To maintain the value of all new construction, provision should be made for the storage and use of anthracite (hard coal), the clean, smokeless, abundant, domestic fuel.

In following issues of this magazine, we shall bring you news of modern developments in heating with anthracite—information that you can use to give modern buildings modern heating.

ANTHRACITE INSTITUTE

101 PARK AVENUE · NEW YORK 17, NEW YORK

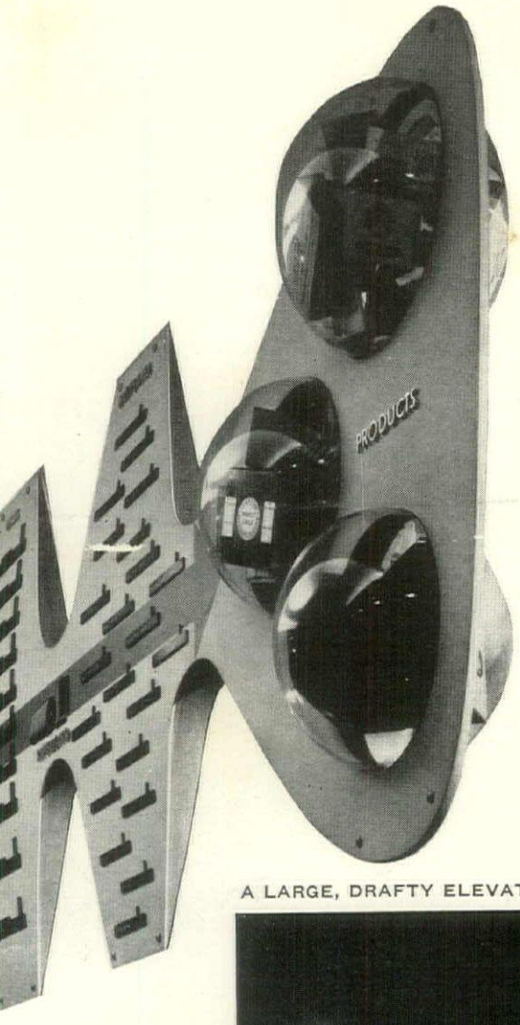
The Architectural **FORUM** Magazine of Building

Hedrich-Blessing Studio

PACKAGING COMPANY
USES OWN OFFICES
TO SHOW VALUE
OF GOOD DESIGN

COLOR and DESIGN conscious

packaging corporation gives a persuasive demonstration of its pet theories in this deft office reconstruction.



EGBERT JACOBSON, Design Department, Coordinator

HERBERT BAYER, Color

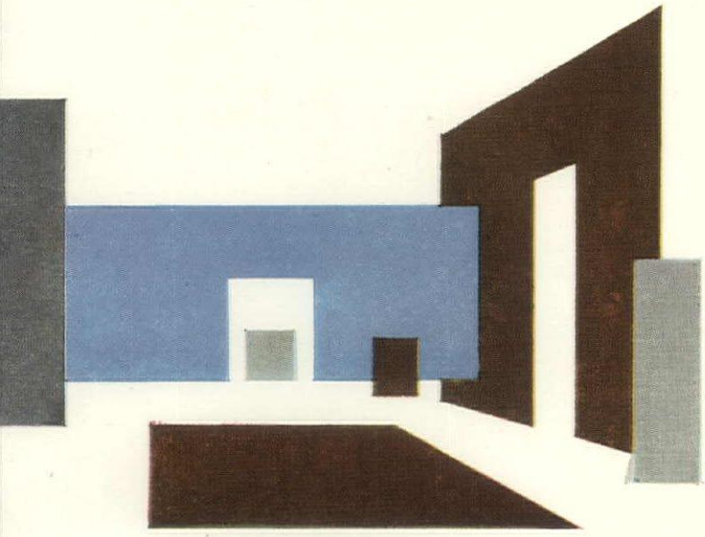
MARIA BERGSON, Furniture

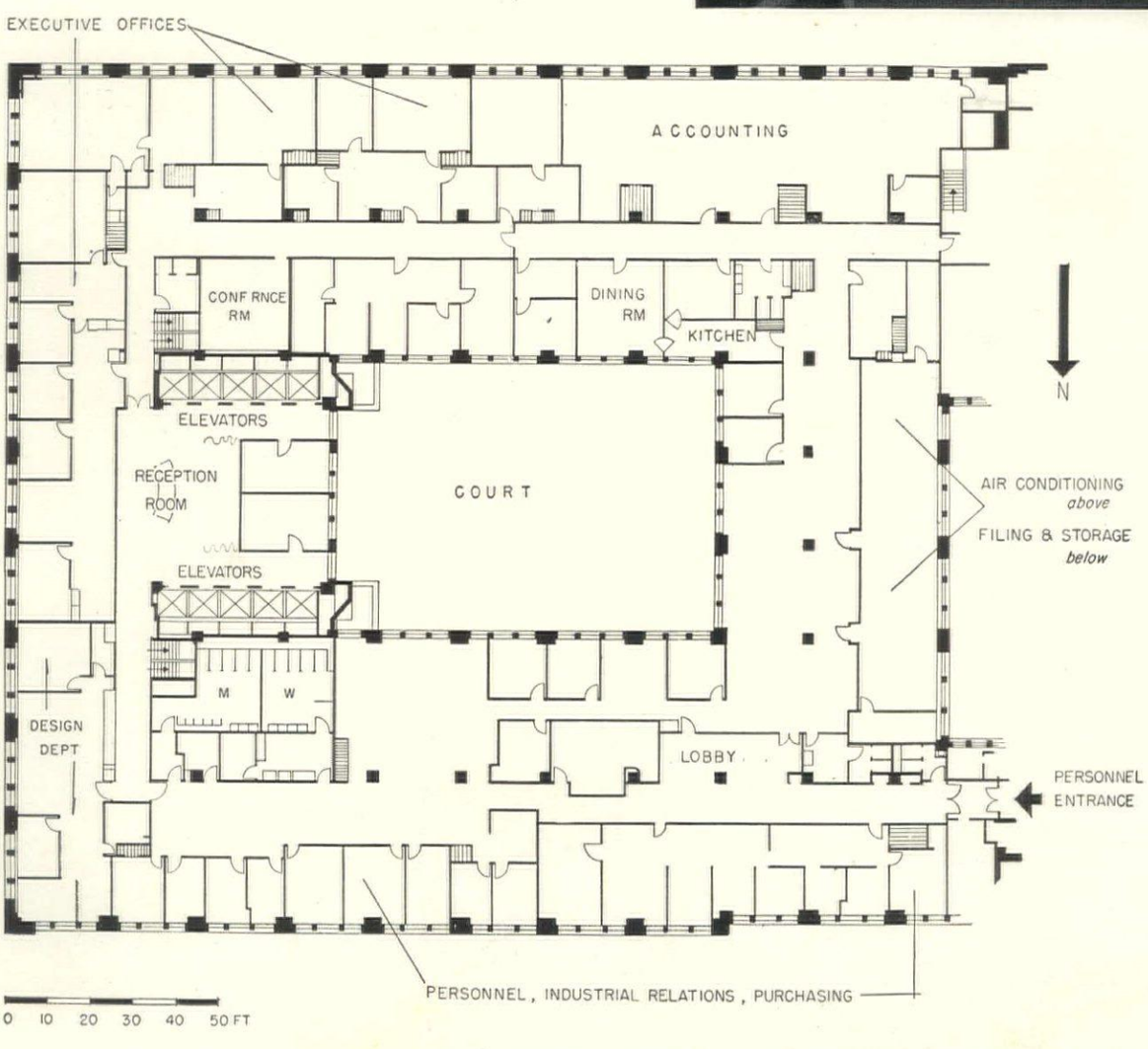
MORTON L. PEREIRA & ASSOCIATES, Architects and Engineers

Having long ago proved to its own satisfaction that topflight design is always a sound business investment, Container Corporation of America was merely using standard operating procedure when it put a group of topflight designers and colorists to work on its new Chicago offices. And once again the formula is successful—not only for the public who will see it but, even more importantly, for the people who work there. The entire project was conceived and supervised by the company's own Department of Design. And what it had to begin with was anything but glamorous: one entire floor of a highly respectable but elderly office building—a hollow rectangle of some 33,000 sq. ft., wrapped around a light well and served by an embarrassingly large number of elevators. The principal drawbacks to the floor were environmental. Located only five floors above some of Chicago's busiest intersections, it was noisy. In summertime, it was hot. The initial decision, therefore, was to seal all windows with secondary sash and completely air condition the entire area. (See p. 73). This necessitated a suspended ceiling which has been cannily used as an acoustical blanket, a light source and an important decorative feature. Basically, this was the heart of CCA's renovation program; the rest was a problem of relocating partitions, refinishing wall and floor surfaces, designing and installing appropriate furniture. That these latter details loom so large in the finished job is a tribute to the skill and plain good sense of the team of designers—both staff and free lance—which CCA turned loose on the job.

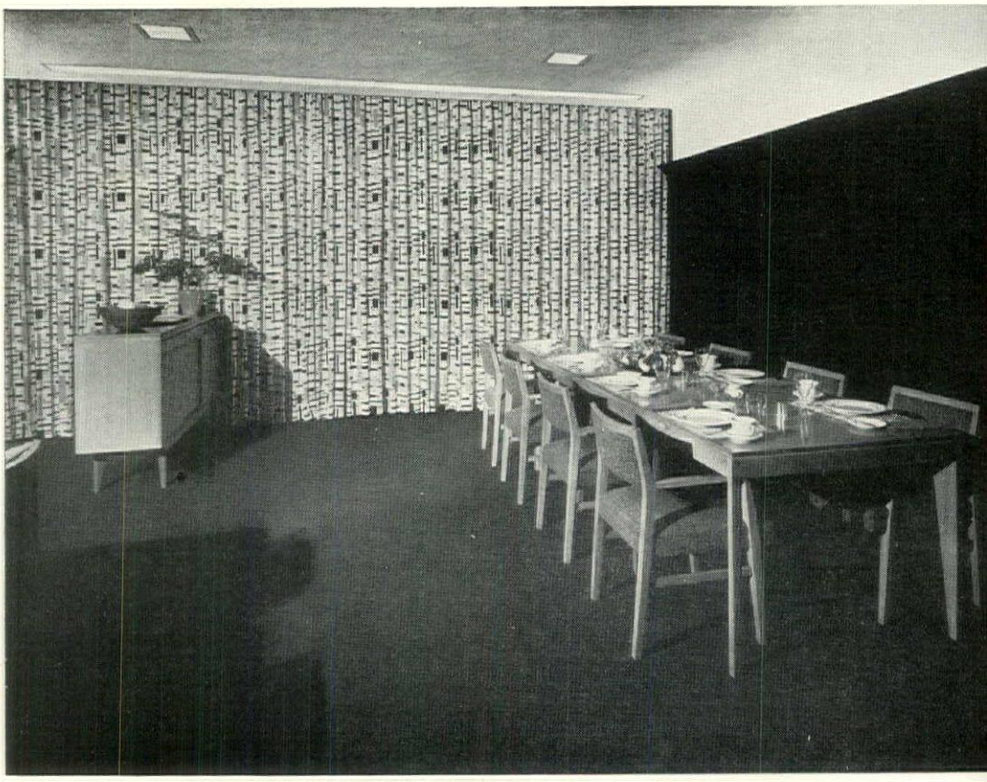
A LARGE, DRAFTY ELEVATOR LOBBY WAS CONVERTED INTO A PLEASANT RECEPTION AREA. NOTE USE OF FURRED CEILING

Torkel Korling




EXECUTIVE OFFICES
ACCOUNTING
CONF RNCE RM
DINING RM
KITCHEN
N
ELEVATORS
RECEPTION ROOM
COURT
AIR CONDITIONING
above
FILING & STORAGE
below
ELEVATORS
M
W
DESIGN DEPT
LOBBY
PERSONNEL ENTRANCE
PERSONNEL, INDUSTRIAL RELATIONS, PURCHASING
0 10 20 30 40 50 FT

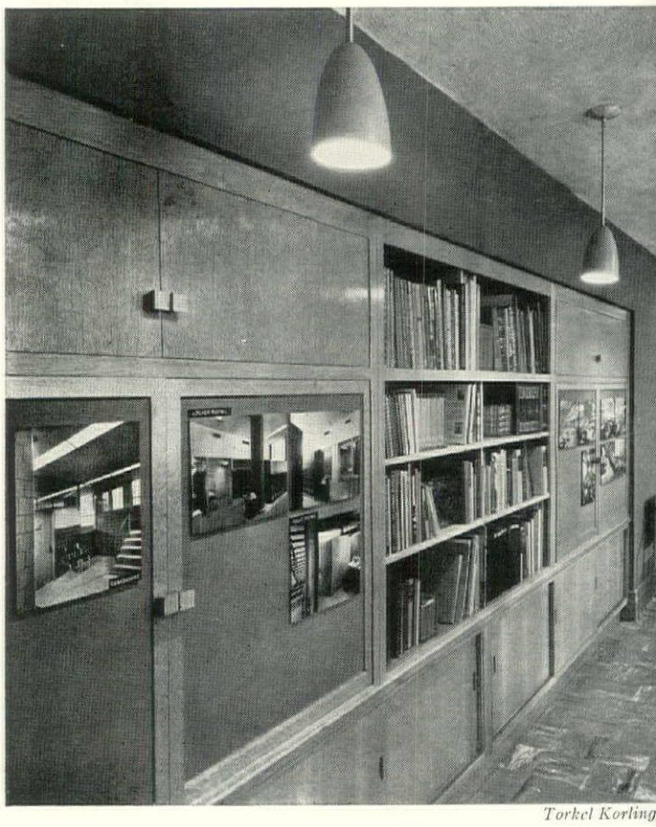
Hedrich-Blessing Studio



DINING ROOM AT RIGHT
FOLLOWS BASIC COLOR FORMULA OF CLEAR,
MEDIUM-WEIGHT COLORS OFFSET BY WHITES

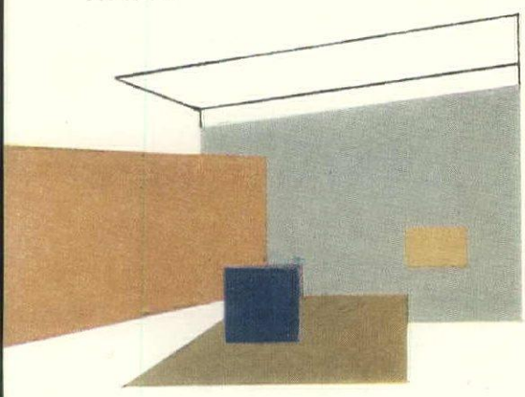
The light-hearted yet unobtrusive color scheme on the facing page is typical of Container Corporation's new Chicago offices. Its success is based on a straightforward, rational analysis of color—a subject about which, incidentally, CCA makes a point of being well-informed.* Herbert Bayer had several definite things in mind when he worked out this color scheme. He wanted all the offices to be cheerful, offering a pleasant transition as one moved from one area to the next. He wanted a colorful appearance without a disturbing overemphasis on the wall areas; and he wanted clear colors which, while light, would *not* be pastel. To accomplish this he followed several simple principles. Window walls and ceilings are always either white or light gray. Color areas are confined to one or two of the other walls. The main color is a shade of medium weight—if a second color is used it is usually the same weight of a complementary hue. Color for floor and upholstery fabrics are drawn from this same palette.

Since both fluorescent and incandescent light sources were used, each color was tested in the light under which it would actually be seen. Some 40 variations of 14 basic hues were employed—the walls being painted in calcimine because the plaster was not yet dry. Ultimately, the entire area will be repainted in oil.



Torkel Korling

* To be able "to talk color without high-style names and without misinterpretation," CCA's Color Laboratories, headed by Walter C. Granville, have developed one of the definitive color systems. This "dictionary of color," based on the Ostwald system, is called the Color Harmony Manual; the 1948 edition will carry 905 colors.



CONFERENCE ROOM AT RIGHT
USES WHITE CEILING, GRAY WALL,
AS FOIL FOR GOLDEN YELLOW WALL

Hedrich-Blessing Studio

MASTERFUL USE OF CLEAR COLORS—NOT TOO DARK
YET NEVER A PALLID PASTEL—MARKS BOTH THE OFFICE
OF THE DESIGN DIRECTOR (ABOVE) AND HIS DEPARTMENT (LEFT, ABOVE)

Hedrich-Blessing Studio

Hedrich-Blessing Studio

Suspended ceilings of cork-aggregate plaster have everywhere been converted into an important decorative feature. Made necessary by a new air conditioning system, the ceilings were one of the largest structural items in the entire project. In this executive office Herbert Bayer has used them to carry coves and down lights and to reflect shielded wall floods. Here as elsewhere there is a mixture of fluorescent and incandescent lamps. Double-sash windows have plastic curtains.

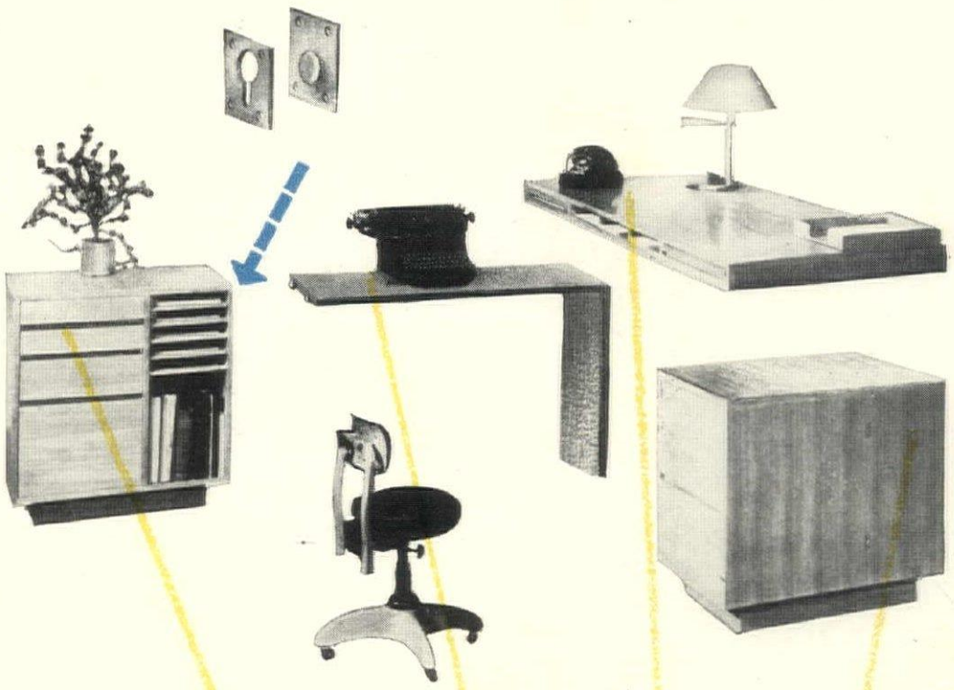
Bergson's office furniture consists of ten basic units. These combine in wide variety to meet most needs.

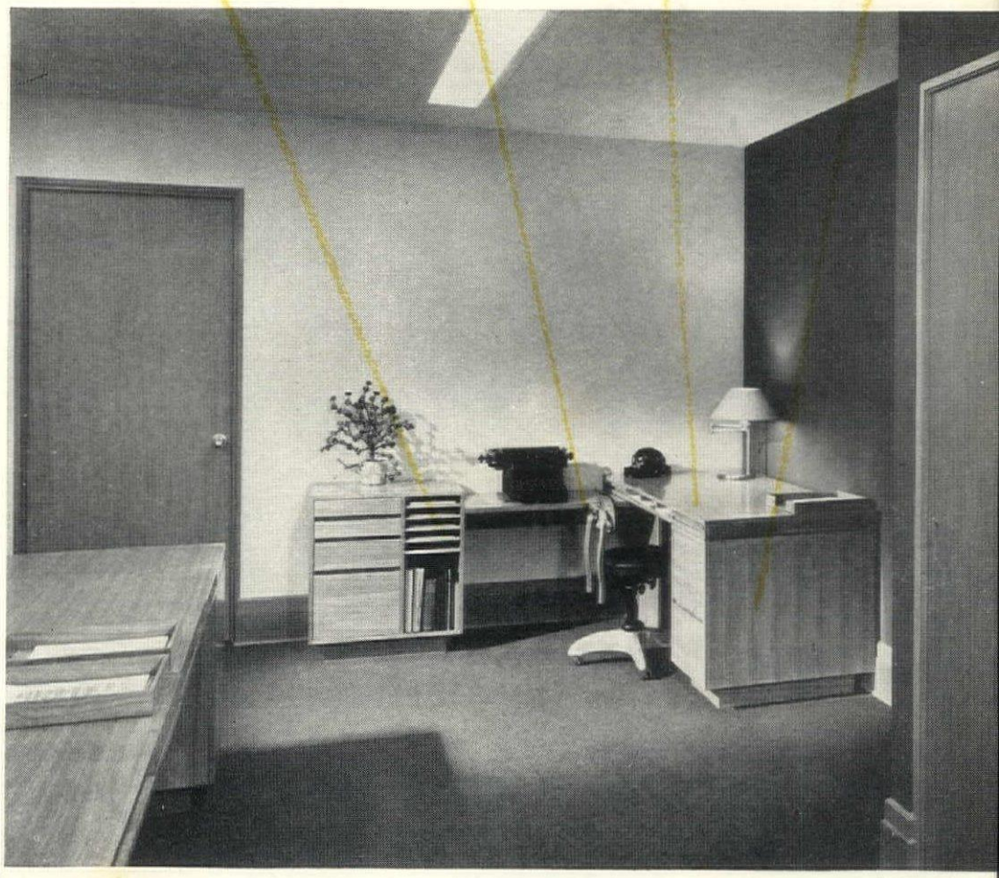
The furniture for most of the offices in Container Corporation's new Chicago home was designed by Maria Bergson. A comparative newcomer to this field, Miss Bergson's designs have the most pragmatic of origins—she herself was once a secretary. From this vantage point, she learned the great disparity between what office furniture should do and what it does. The flexible groups shown on this and the following pages are her contribution to narrowing this gap.

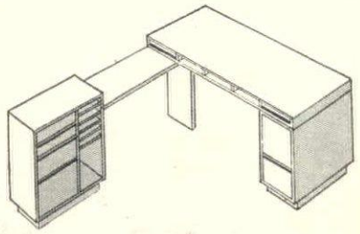
While it cannot be said that she has invented a new system (the concept of sectional furniture is very popular just now), Miss Bergson's sharp scrutiny has dissolved the old golden oak desk into a series of quite sensible component parts. And with equal skill she has reassembled them into some handsome and business like "work areas" for a lot of CCA's white collars. In line with current practice, her new furniture provides not mere drawer-and-shelf space but all sorts of specialized storage facilities. There is a place for everything—letterhead, pencils, files, even cigars —and if Miss Bergson has her way, everything will be in its place. Thus she has narrowed the depth of the desk top to 30 in. on the very plausible grounds that the back of most desks is used for clutter anyhow.

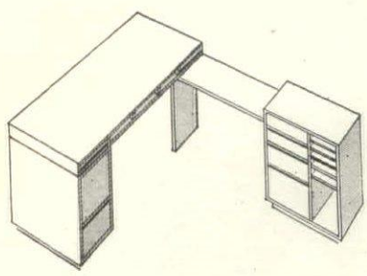
In the case of the CCA offices, Miss Bergson did not stop with the desk. She also designed several chairs—but only, as she puts it, "because I was forced to it. I scouted the market and found there was nothing but living room furniture—'flop-posture' design, too low, too relaxing." So she set about producing her own, remembering to keep them lightweight (as a secretary she had suffered from moving heavy chairs about) and equally comfortable for a 6 ft. 2 in. man or a 5 ft. 1 in. secretary. She is reasonably well pleased with the upholstered model pictured below, but her favorite is the webbed model shown, on the following pages.

Miss Bergson also handled the decoration of most of the private offices.







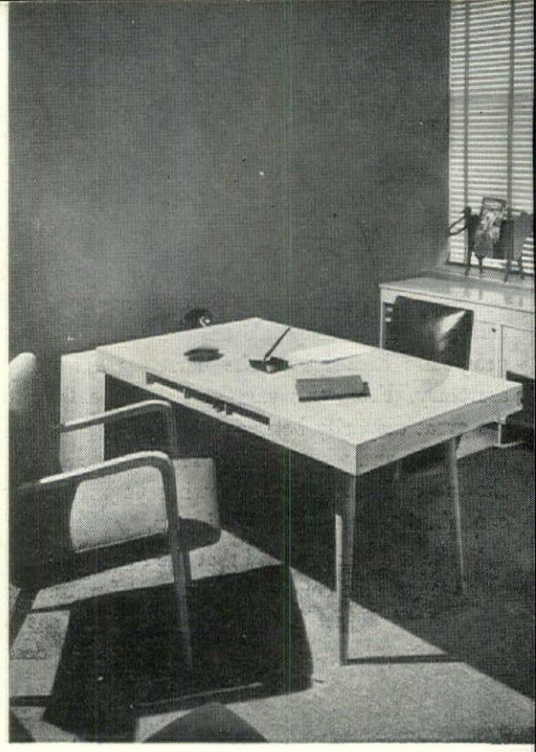


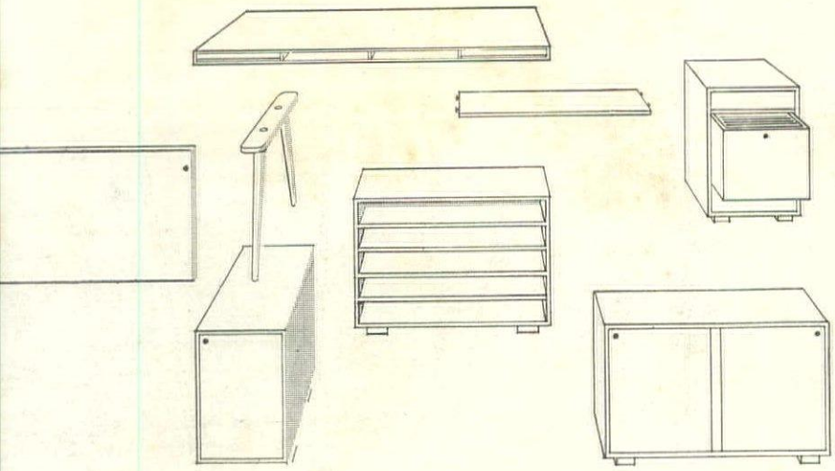
DIAGRAMS INDICATE HOW L-SHAPED WORK AREA MAY BE REVERSED. ONLY FOUR COMPONENTS ARE USED

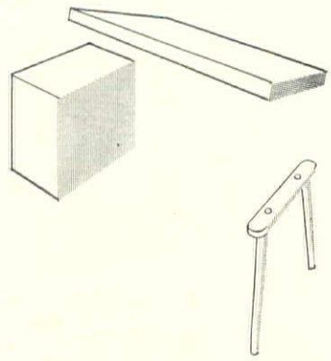
Even in jobs which the payroll department classifies as identical, there may be a very wide range in office work. One person needs more filing space, another more drawers while a third will need desk-top surface only. Since no single piece of furniture can more than approximate these widely varying needs, the end result is that the stock desk meets none of them well. By breaking the desk down into its component elements and then devising a method for easily connecting and disconnecting them, Miss Bergson has introduced sufficient flexibility to meet most office requirements—up to 95 per cent, she feels.

But to hold this business of flexibility within economical limits, she has held the total number of basic elements to ten. (Naturally, no one assembly is apt to use all ten components and only the eight most popular are shown below.) Four of the cabinets have countersunk fittings at each end to receive a typewriter board at proper height from floor.

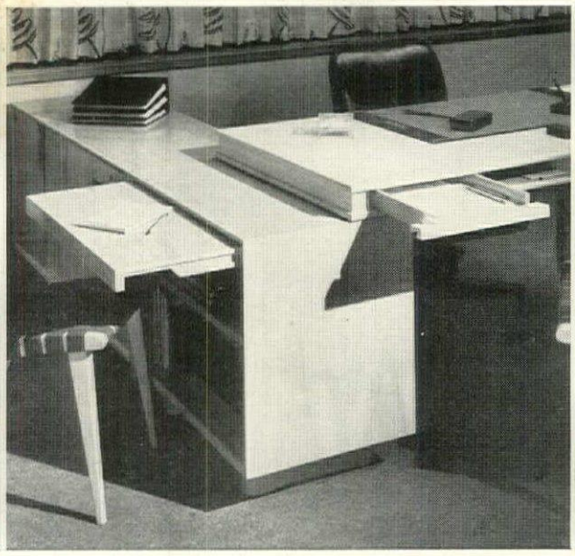
Miss Bergson relies upon the weight of the units to hold them in a stable group with only two exceptions—the paired legs are screwed to under side of desk top; and typewriter board uses a simple connector. Fabricated of oak- and walnut-veneered plywood on a solid wood frame, the unit's main drawback is cost—about $450 for the typical office assembly at Container Corp. Quantity production, Miss Bergson hopes, will get the price of a standard clerical desk down to around $150.

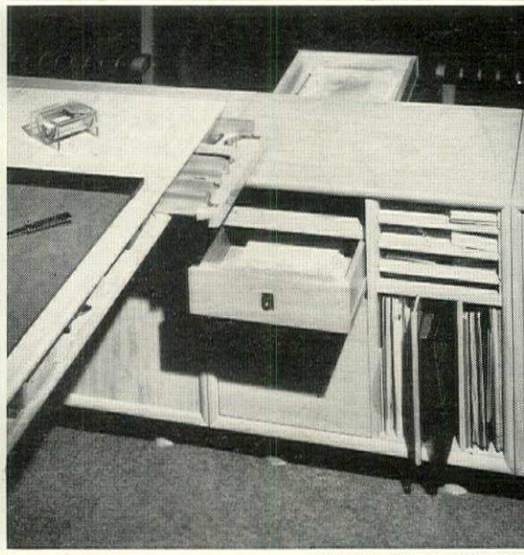




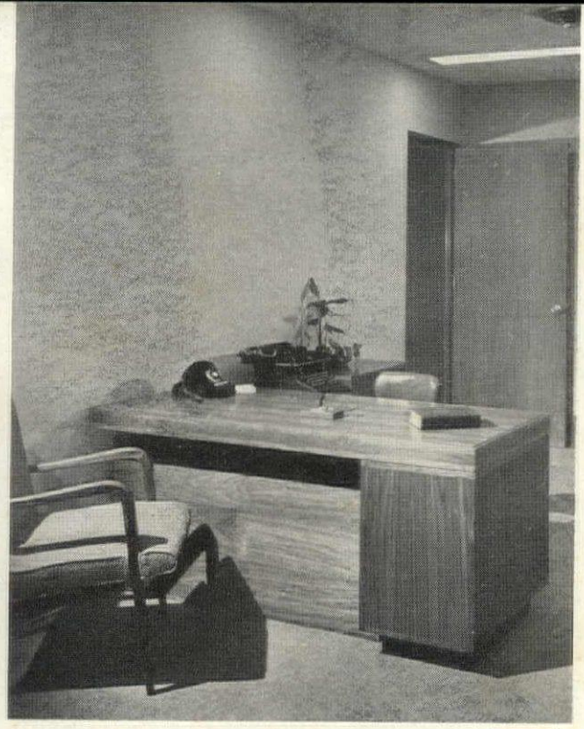


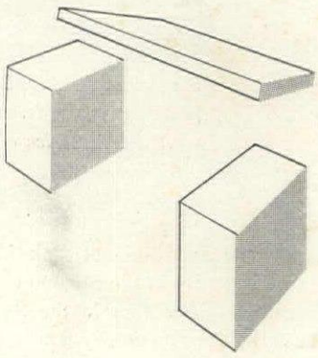
In this combination, a standard cellular desk top is supported by a pair of legs at one end and end-opening cabinet at the other . . .



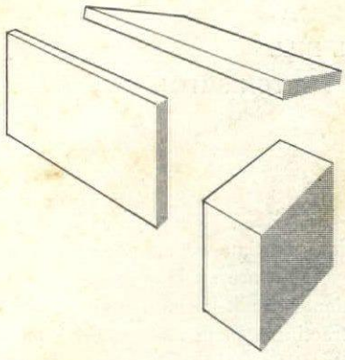


Hedrich-Blessing Studio



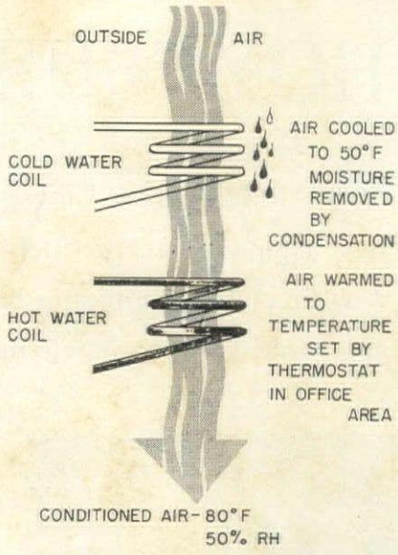


. . . while in this assembly requiring more storage space, top rests on two cabinets. Access may be from either or both sides . . .



Desk here consists of standard top (with pigeon holes opening only toward user) supported by a cabinet and a veneered vertical fin.

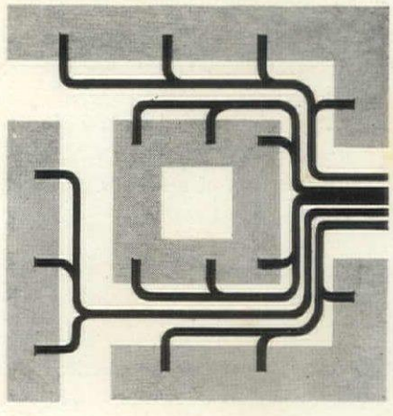
AIR CONDITIONING illustrates new approach to summer comfort.



UNEVEN COOLING AND HEATING LOADS on a floor with four exposures and a court led designers to split the air conditioning system into four independent zones. (See diagram below). Each has a set of controls designed to maintain summer conditions at 80° air temperature, 50 per cent relative humidity. While somewhat above the "comfort zone" recommended by A.S.H.V.E., the criterion taken here is a valid one—i.e., that summertime reduction of humidity is at least as important to human comfort as is cooler air. Increasingly, engineers are beginning to appreciate this fact.

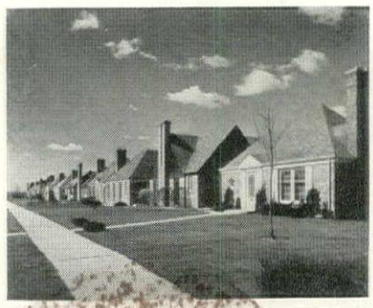
Equipment necessary to supply this conditioned air has been compressed into a neat package only 42 in. deep. Hung from the ceiling of the rear (west) bay, this package leaves 7 ft. headroom for filing and dead storage. In simplified form, the diagram above demonstrates the cooling side of the cycle. Electronically-filtered air is passed through coils filled with 50° F. water. Here its temperature is reduced to 58½° and; in the process, its moisture content greatly reduced. Then the air is passed over heating coils to bring it up to that temperature needed by the various zone thermostats for them to maintain the desired 80° F. and 50 per cent relative humidity in the office spaces. The system, according to its designers, is effective within plus or minus one degree.

SCHEMATIC LAYOUT OF DUCT WORK



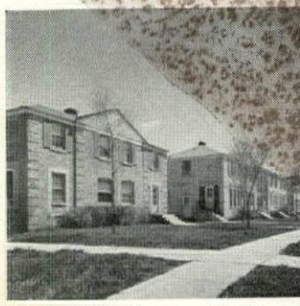
SLIDE-RULE HOMEBUILDING

Smith & Hill Inc., Chicago builders, have adapted mass production and new financing techniques to a comparatively small-scale operation.



Later construction at River Forest Manor utilized a staggered building line to minimize the similarity of homes.

First home building experience was at River Forest Manor, liquidating frozen land for Chicago Corp. during '30's



Standardized reversible floor plans were first developed to meet the war price ceiling.

MARCUS E. SMITH
KIMBALL HILL
BURTON SMITH

The success of Smith & Hill, Inc., one of Chicago's newest and fastest-growing home-building outfits, is based on an old-fashioned fact of business life: giving the customer something for his money. However, accomplishing this startling feat in the present bullish home market involves an approach to building which is scarcely reminiscent of the good old days.

Much criticism has been directed at the complex and archaic production methods which keep houses short in a shortage and prices out of reach even in a boom period. But the small operative builder, competing for lumber, labor and financing knows that he is caught between construction and the customer, very likely to go broke in the squeeze play.

The three associates of Smith & Hill have managed to beat the building game simply by removing, to a large extent, the speculative factor.

During the ten years they spent doing standard construction in the real estate mortgage field they had come to the conclusion that building as practiced made little sense. To bring order out of chaos, they believed that a minor revolution was called for in:

1) Modular design and standardization of homes.
2) Labor relations and the use of cost-saving, labor-saving machinery.
3) Procurement of materials.
4) Construction financing.
5) Mortgage financing.
6) Development of raw land.
7) Marketing.
8) Management.

Putting these ideas into practice has enabled the new company to cash in on a house-hungry market at a time when many of its established competitors are striking snags with the conventional credit formula, the inefficient subcontracting system and wasteful methods of construction and procurement. The Smith & Hill trade name, "Lockweld Engineering" describes the carefully integrated procedures of construction, management and finance by which they have produced a quality home at a substantially lower price than competitors of the hit-and-miss building tradition.

Although certainly not the first to streamline building operations, this company is almost unique in its application of mass production methods used by such large-scale builders as Levitt and Bohannon to an operation of much smaller scale. Rather than the 10,000 houses a year turned out by the big boys, they have set a goal of 200 houses as the minimum for an economic product and a profitable business. Even this is quite a jump from the 10 or less houses put up by the ordinary builder, but Smith & Hill have explored and overcome the very difficulties which keep the small operator from expanding his output.

At present they have two large developments underway and are turning out homes at the rate of 32 per month with a goal of 500 for the coming year. The first project, Oak Meadows, started in 1946 (FORUM, Apr. '47), is strictly for veterans and when finished will be a complete suburban community of 1,200 homes in the moderate ($10,500-$11,000) price bracket. The second, Park Ridge Manor, is a recently started 300 home subdivision catering to a slightly higher income group with homes at $13,500-$18,000. Comparable houses are now selling in the Chicago market at around $20,000 and those at Oak Meadows can be matched only in the $13,000 class.

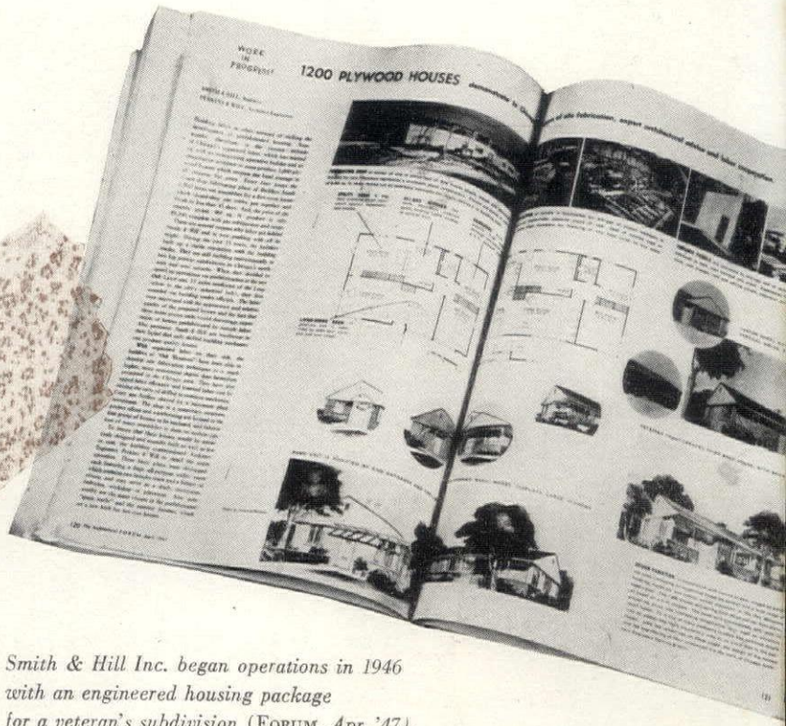
Perhaps most important in the Smith-Hill formula is the construction system, a compromise between prefabrication and conventional building. Their product is an "engineered house," most parts of which are pre-cut and prefabricated on the basis of a carefully worked out modular design. The firm maintains, however, that its house is not a true prefab, since it does not utilize sub-assembly of plumbing, electrical equipment, hardware and windows (the method used by Levitt, but which is outlawed by the Chicago building code and building trades unions).

The design was worked out by the Chicago architectural firm of Perkins & Will and is based on a dry-wall construction system using resorcinol plastic resins with stressed-skin plywood wall sections. All the parts for one house are fabricated at the same time from lumber of the same moisture content, thus minimizing the natural problems caused by swelling and contracting of wood. In practice the design has been constantly improved to eliminate cracking and warping of walls, opening of field joints and other drawbacks.

The basic unit is a 24 ft. x 40 ft. modular core, which allows great flexibility in construction. Rooms can be enlarged simply by adding 4 ft., 8 ft. or 12 ft. wall panels. An L-shaped combination of units can produce a luxury ranch house at $22,000 that would compete with a $30,000 standard home. In the Park Ridge Manor development they have used variations in garage-house combination and finish materials plus skillful site planning to provide a maximum contrast from one basic design. Smith & Hill feel that they have an

Des Plaines war housing, 1943. Kimball Hill had left the Chicago Corp. to start building as his own boss.

Row housing designed by Philip Will, Jr. to cut costs for Hill's developments.



Smith & Hill Inc. began operations in 1946 with an engineered housing package for a veteran's subdivision (FORUM, *Apr. '47).*

advantage over national prefabricators in that one company sees the house through to its erection and sale. Their subdivisions are real communities, laid out as a whole, with each house planned to harmonize with its neighbors.

For the work thus far, which includes production scheduling and site planning as well as the house design, Perkins & Will have garnered fees in excess of $50,000 or approximately $420 per house. This is an unusually high take for the architects since they are actually designing only one house with variations. It indicates the extremely detailed preliminary planning necessary to efficient large-scale building. For the builders it averages out to a low fee per house, although paid as a combination of royalty and straight time for all service. Royalties range from a maximum of $100 per house on the first 200 units to as low at $10 on more than 1,000. The straight time charged has accounted for the major part of the fee thus far.

The planned construction method developed by Smith & Hill is an answer to the second building booby trap: labor. Trade unions have long turned a jaundiced eye on either the importation of finished homes or the use of labor-saving devices in local building. With scheduled production going forward at a fast clip, Smith & Hill is able to give building mechanics, who normally lose a considerable number of work days a year, steady employment on its own payroll. This scotches union objections to the use of power machinery—and eliminates the special premiums, bonus payments and forced overtime which occur in open bidding for the labor market—all factors normally contributing to the high cost of housing.

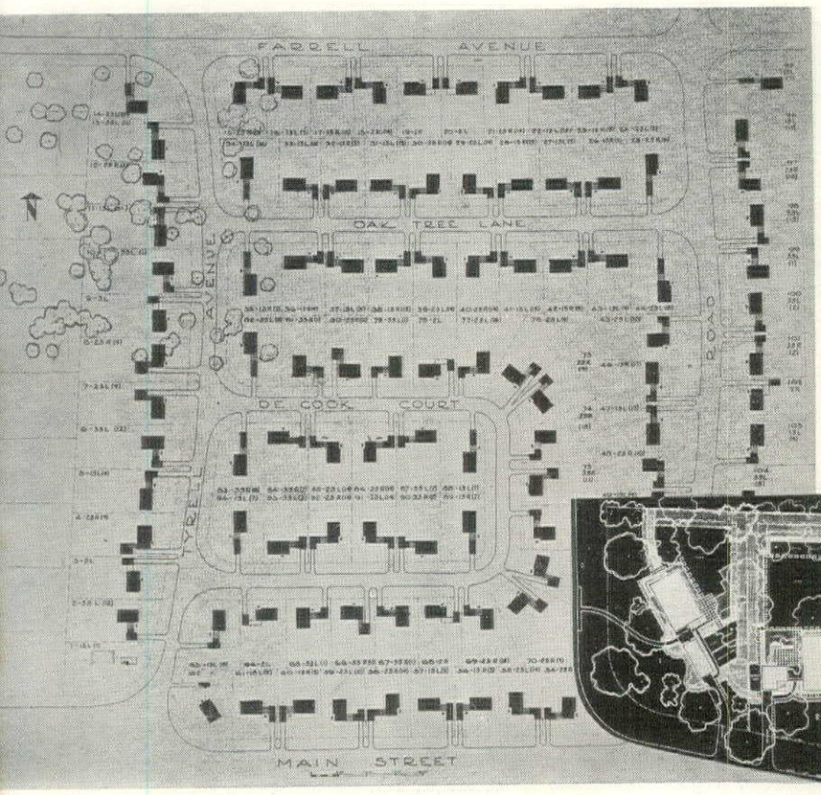
In dealing with subcontractors, planned construction also pays off. The company can give one subcontractor in plumbing, electrical work, etc., all the business he can efficiently handle. Thus assured of steady employment, the subcontractor can plan his buying, give suppliers definite schedules and make volume purchases where cost saving is involved. He wastes no time on competitive bidding for different contracts and needs add no allowance for risk and price or labor changes in his figuring.

Another cost-saver is the low management overhead achieved with planned production. Precutting for conventional construction often costs more for close supervision of work than is saved on standardization. By mass producing components, as Smith & Hill do, quality control is high, since the men become expert at their repetitive jobs. Finish carpenters, plumbers, etc. also repeat one operation, moving from house to house with relatively little supervision. Evidence of the economy under this system is the Smith & Hill payroll, consisting of 220 persons, with only 18 in the management or office force category. The rest are carpenters, laborers, cement gang workers, masons, plasterers and watchmen.

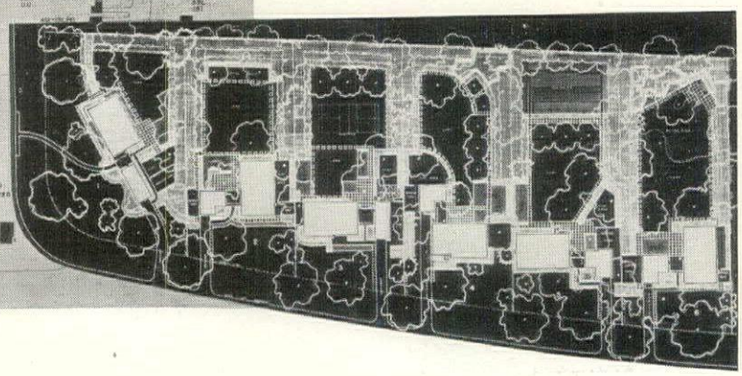
The third stumbling block for the speculative builder is financing. In this department Smith & Hill have made a particular contribution, since the three associates know the real estate mortgage business inside out and at first hand. Burton Smith, Marcus E. (Ed) Smith (no relation, but naturally known as the Smith brothers) and Kimball Hill all worked for the same Chicago mortgage company during the 'thirties. Their combined experience covers every job from that of title chaser on up. Thus, they are able to talk the language of lenders and devise practical schemes which attract the best building money.

For financing their own projects they have eschewed FHA mortgages, sticking instead to conventional financing and 10 per cent down payments—but with a twist. One angle is the packaged mortgage, which includes kitchen appliances and built-in furniture under the long-term loan. This plan is partly an added attraction to the home-buyer, partly investment insurance, since the elimination of high monthly appliance payments and the reduction of the amount of furniture which must be purchased automatically makes the home buyer a better risk. Large blanket construction mortgages for initial improvements have also been worked out with local home loan associations.

Even more important to over-all operation is the firm's practice of storing up materials for future building at least one month in advance. Under the usual system of financing, with banks advancing money only as materials are incorporated in the job, this would be impossible. But Smith & Hill has obtained open-line credit from a local Chicago bank without mortgaging materials or land, an arrangement which makes advance purchases feasible. This in turn allows the company to sell at firm prices, knowing that rising costs of materials cannot affect the immediate future. Which leads to a third practice: selling each house before construction is started, thus getting a down payment when it is needed for buying kitchen appliances under the packaged mortgage. This brings us full circle to the non-risk investment which persuades bankers to provide an open credit line. Smith & Hill have probably achieved the first practical



ON-SITE CONSTRUCTION. Stack of lumber ready for fabrication (left) and interior of new, portable roof truss plant (right). Overhead conveyors enable two or three workers to handle weight of trusses. Stockpiles of material are kept at a level high enough to permit carpenters to concentrate on inside truss work when bad weather makes outdoor erection of homes impossible.



SITE PLAN of Park Ridge Manor shows method of providing variety with same basic units. Shifts in orientation and different garage-house combinations are the key to harmonious block design.

application of perpetual motion to the building-financing business.

In offering a safe risk to attract the wartime savings of real estate investors, Smith & Hill have not overlooked any angle. Thus, even their advertising policy is closely linked to the search for safety and predictability in building.

Hill, who concentrates on publicity and advertising, dodges market surveys, feeling that the so-called "opinion" of prospective customers is unimportant. He long since decided that the best way to find out if a market exists in a specific location or price bracket is to try to sell it. The acid test is therefore a pre-construction news story placing all the facts —location, lot size, home size, prices, plans and renderings—before the public. If this brings a flood of applicants with cash on the line, Smith & Hill are convinced. The drawback to this type of publicity is that it often produces a volume of curiosity seekers rather that real buyers. Since the launching of the Park Ridge Manor project, therefore, Smith & Hill have also used display advertising angled to attract real buyers, weed out the curious. In addition, daily short classified ads are used to corral new prospects moving into the city and people who have just entered the market through marriage, etc.

Pressure is maintained on a project until sales reach a backlog of three or four months —long enough ahead to avoid waste in material commitments and not too far ahead to create inflationary risks. So far, advertising per home has been extremely modest, running less than $35. By bringing buyers direct to the project, fully informed, Smith & Hill can operate with a minimum number of trained salesmen.

However, even their combined know-how, fresh approach and cautious planning could not prevent a few errors when the company was getting underway. They took a loss on the first 50 houses erected at Oak Meadows and although hoping to complete half of the project during the first year, succeeded in building only 190 homes. In addition, the tentative price of $8,500 had to be jacked up to $9,200 for the first sale and is currently hitting above the $10,000 mark. These slips and shifts were due to the constantly rising cost of materials plus the problems of an expanding company: improvement of production methods, refinement of design, tightening of management controls and a refusal to overextend before they were financially able.

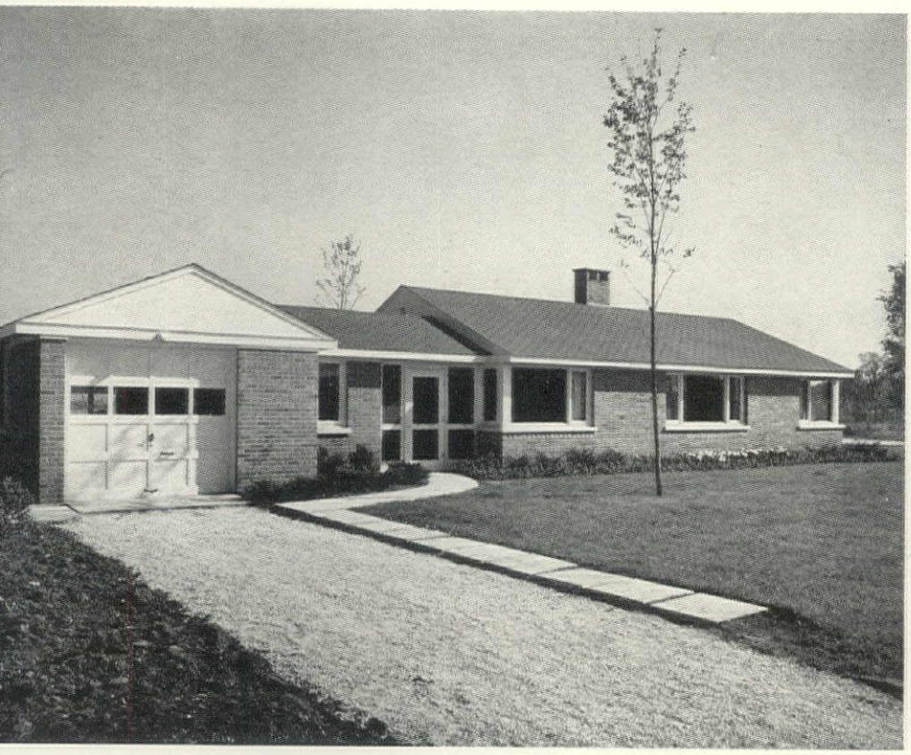
Currently the company is engaged in a thorough engineering and management study to gain the maximum simplicity in production methods. Time studies are constantly made on every operation. Monthly and weekly checks establish standards for every phase of work and permit more and more accurate estimates months in advance of completion. Overall average cost per home is worked out each month, and cost checks are carried out daily. Warehousing expenses have been held to a minimum since much of the material stockpile is housed in partly finished homes on the building sites. The company's plant, where precutting and fabricating is done, was relatively inexpensive, consisting of four engineered home shells put together.

With operations so strikingly under control, Smith & Hill feel almost ready to tackle another problem—the over $20,000 home. They are also making plans to tap the low-cost market with a $7,500 minimum unit. Thus, they will exploit demand at every level with their same basic design. The higher priced homes, which provide a larger profit margin, also create acceptance for engineered construction at the luxury level. The low-cost houses will be a safeguard against the tapering off of an emergency market.

Newest possibility is that the firm, together with architects Perkins & Will, may put the plan and certain trade secrets on the mass production of homes up for sale to other builders throughout the country. Standardization of specifications in a number of markets could reduce waste for all cooperating builders and open further economies through large-scale buying of housing components. Characteristically, however, Smith & Hill won't go ahead with this idea unless an overwhelming demand is demonstrated.

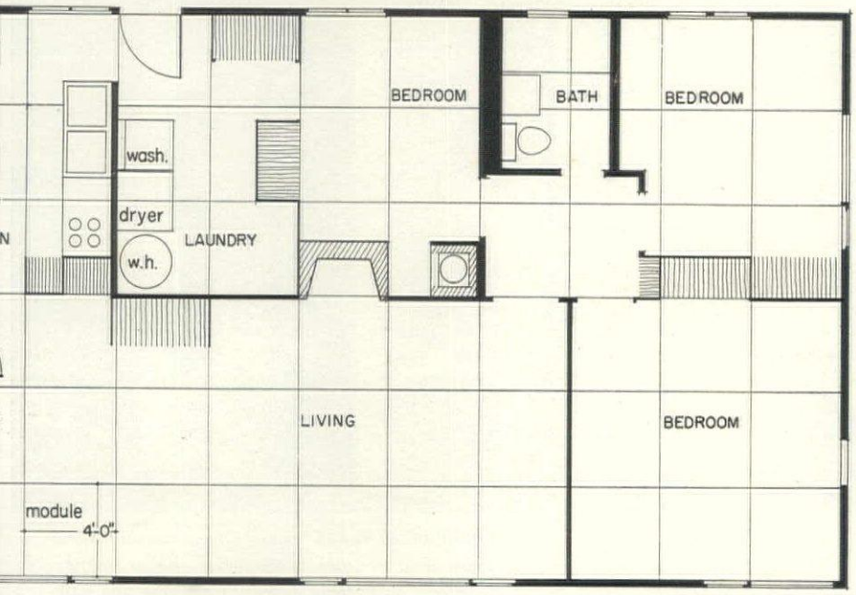
CONSTRUCTION OUTLINE

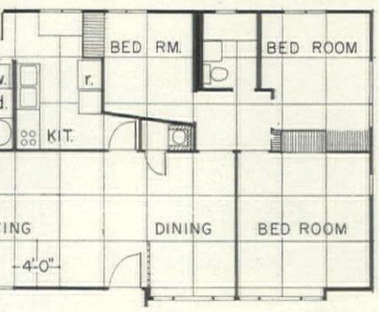
FOUNDATIONS—concrete. STRUCTURE: Exterior walls—framing, studs, exterior plywood and brick veneer. Inside—mahogany plywood. Floors—oak. Kitchen and baths—Tile-Tex, The Tile-Tex Co. ROOF—asphalt, Bird & Son, Inc. INSULATION—rockwool bats with Vaporseal sheathing, The Celotex Corp. WINDOWS: Sash —casement. Glass—double strength and crystal. Screens—Lumite Sales Corp. Div., Chicopee Mfg. Corp. WALL COVERINGS—(Wainscote) Marsh Wall Tile Co. PAINTS—U. S. Gypsum Co. and Ceraseal Co. ELECTRICAL EQUIPMENT: Circuit breakers—Square Co. KITCHEN EQUIPMENT—Cribben & Sexton, Servel, Inc., Norge Div., Borg-Warner Corp., Frigidaire Div., General Motors Corp. LAUNDRY EQUIPMENT—Bendix Homes Appliances, Inc. PLUMBING: Soil pipes—cast iron. Vent pipes—cast iron and galvanized. Heating: Gas warm air Mechanicore system, Mechanical Home Systems. Water heaters—Crane Co. and Rheem Mfg. Co.



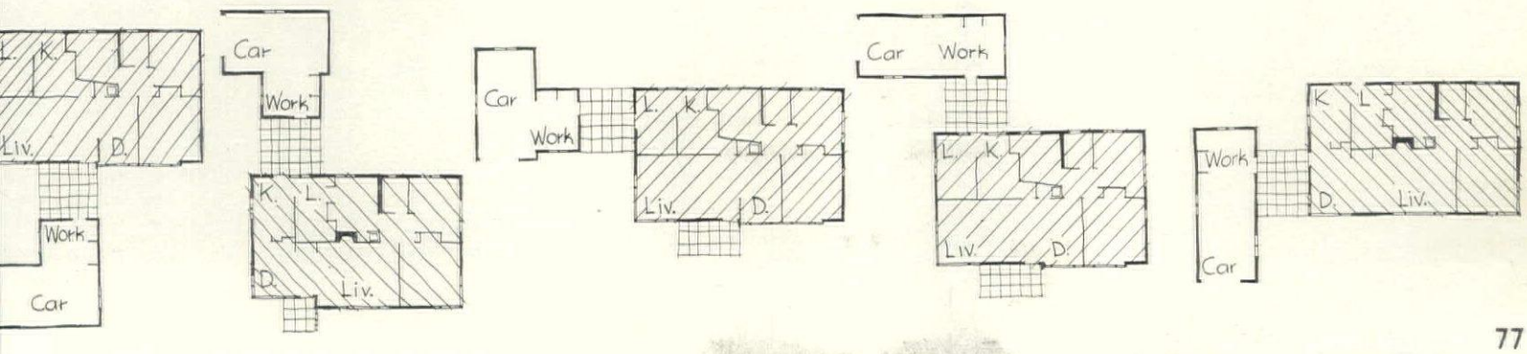
BASIC LOCKWELD STYLE AT PARK RIDGE MANOR FEATURES GARAGE ATTACHED TO HOUSE BY SCREENED BREEZEWAY ADJOINING TERRACE

Hedrich-Blessing Studio



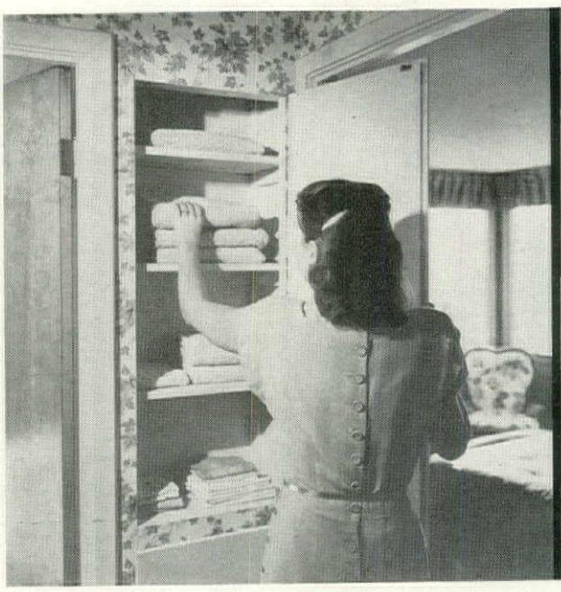


TRIM CONSERVATIVE HOME borrows large windows and open planning from purist contemporary design. Brick finish (above) is one of many choices including lannon stone, horizontal siding, vertical siding with lannon stone trim. Views of living-dining area (right) show popular sales features: wood-burning fireplace, mahogany panelling, picture windows. Standard plan and alternate are at left, different combinations of basic garage-living units below.

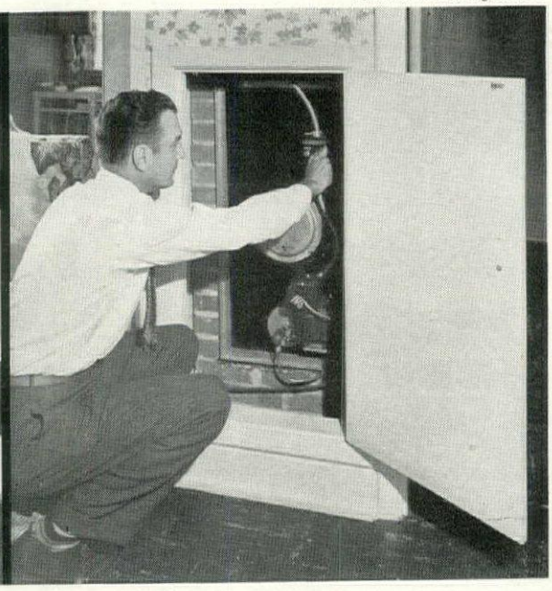


Smith & Hill's expertly designed house offers a number of extras not found in the ordinary builder-home.

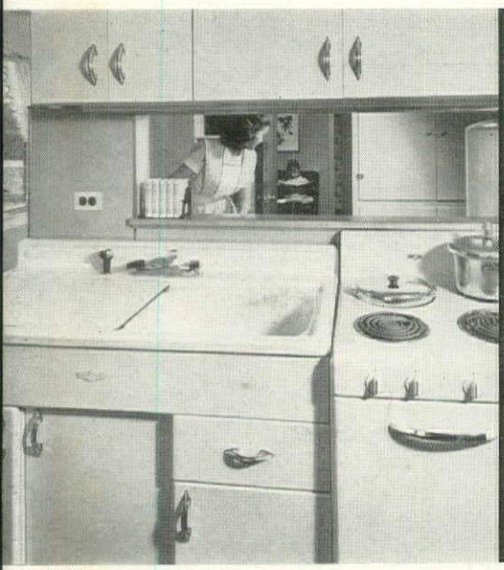
Hedrich-Blessing Studio



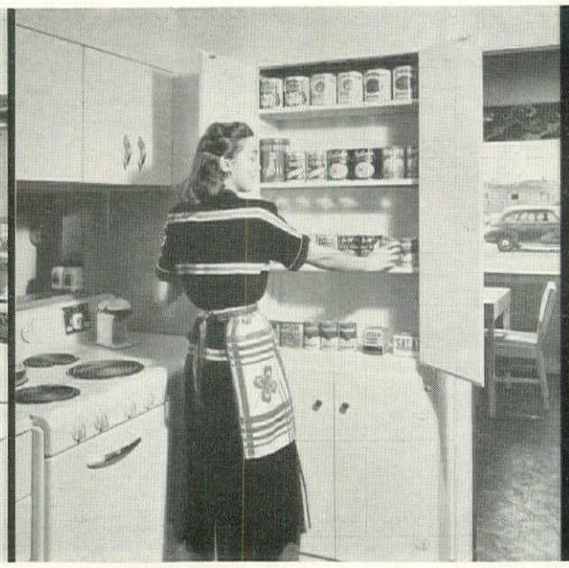
LINEN CLOSET with shallow shelves is part of the wall storage unit between main bedrooms. It opens into the hall, a central location convenient to all three bedrooms and bathroom.



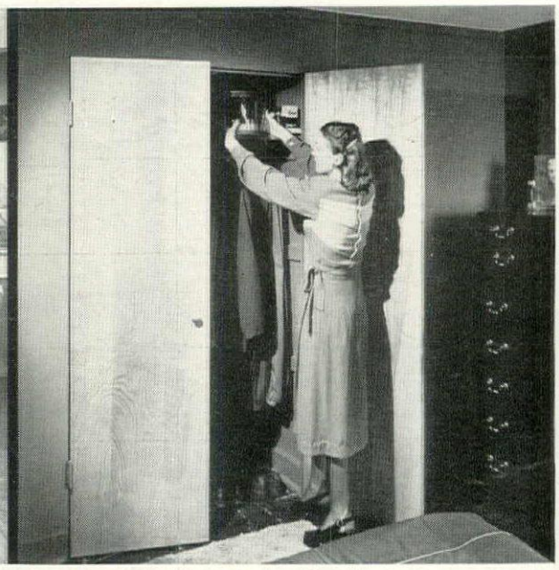
BUILT-IN FURNACE UNIT is so small and compact that it is fitted into chimney of living room fireplace. It serves a combination radiant-coil floor and standard warm air circulating system.



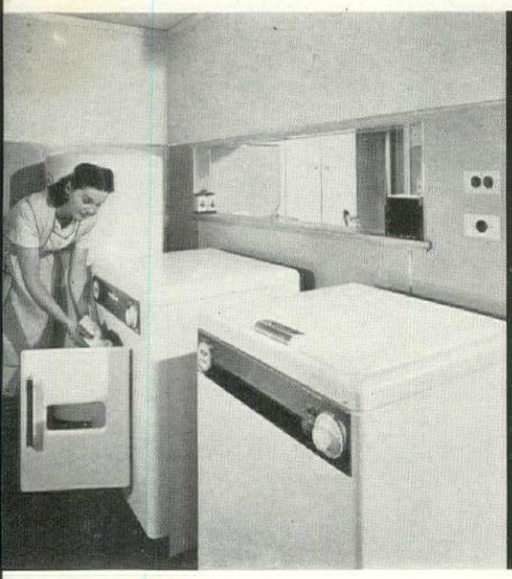
ELECTRICAL KITCHEN, laundry and heating equipment worth $1,000 is included in the firm price of the house, representing a current ultimate in packaged mortgages. View panel allows mother to keep an eye on children in adjoining room.

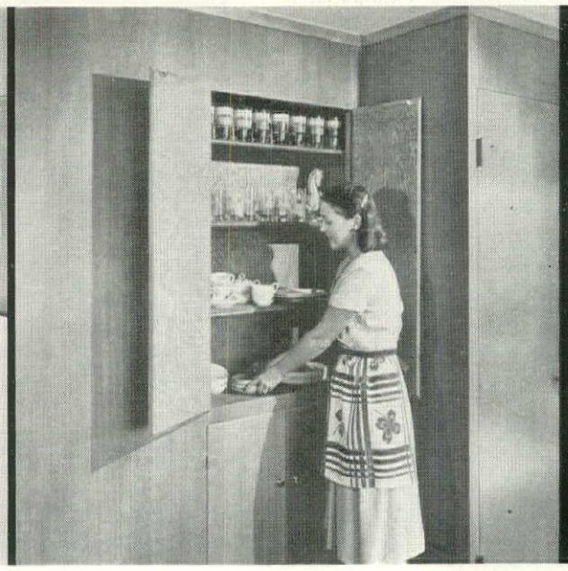


STORAGEWALL IDEA is utilized to provide planned storage throughout entire house, is also included in over-all price. Kitchen-dining arrangement opens on opposite sides to allow storage of cooking and dining equipment exactly where needed.



BEDROOM STORAGE includes large closets whose doors open to allow a complete view of clothes. Built-in "chifferobe" provides drawers and half-length closet for blouses, lingerie, shoes, etc., eliminating the necessity for a separate bureau.





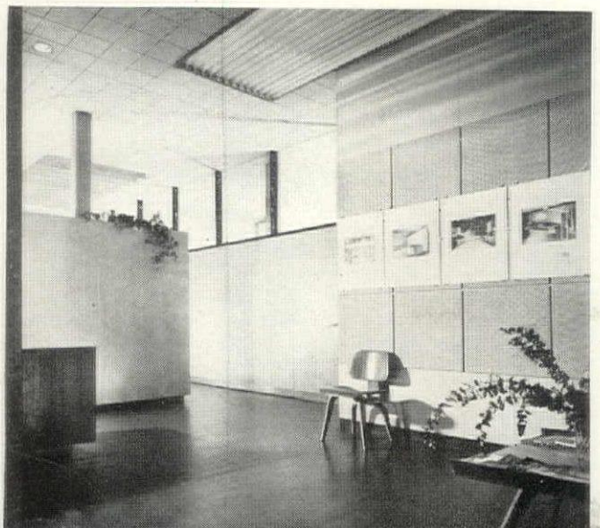
ARCHITECTS' OFFICES

An eminent example of the clean contemporary design and deft detailing for which this firm of designers is famous.

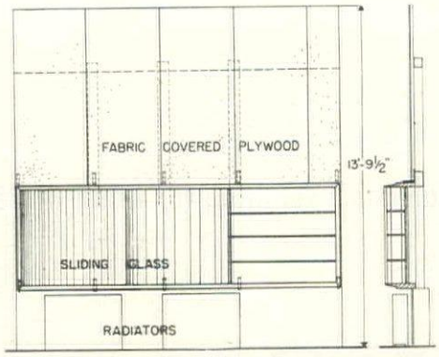
KETCHUM, GINA & SHARP, Architects-Owners
RICHTER & RATNER CO., General Contractor

Ezra Stoller, photos

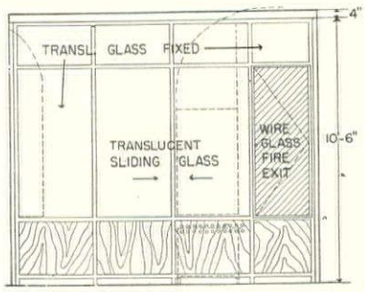
TOP FLOOR OF LOFT WAS PARTITIONED, RESURFACED, AND PAINTED WITH LITTLE PRETENSION, MUCH EFFECT



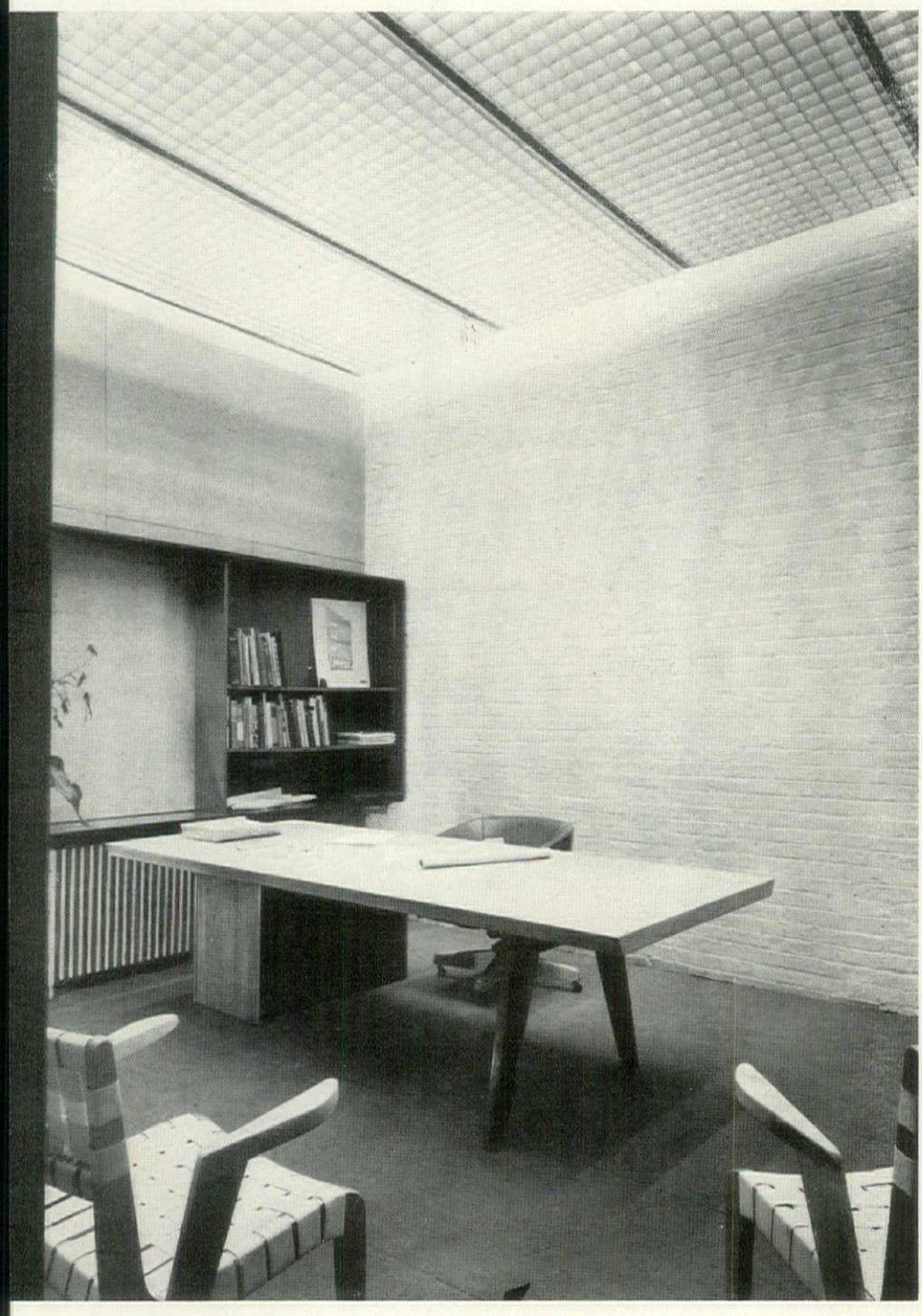
When architects meet the opportunity of designing their own offices, their initial delight is sometimes tempered by the feeling of uncertainty akin to the glee of a suddenly released prisoner. And often this uncontained feeling has produced nothing more thoughtful than fluorescent lamps in the drafting room. Here a simple conversion of an old space through minimum use of easily workable materials and lively colors gave the partners an excellent, economical design. Reception room, left, and manager's office opening off it, above, are a good introduction.



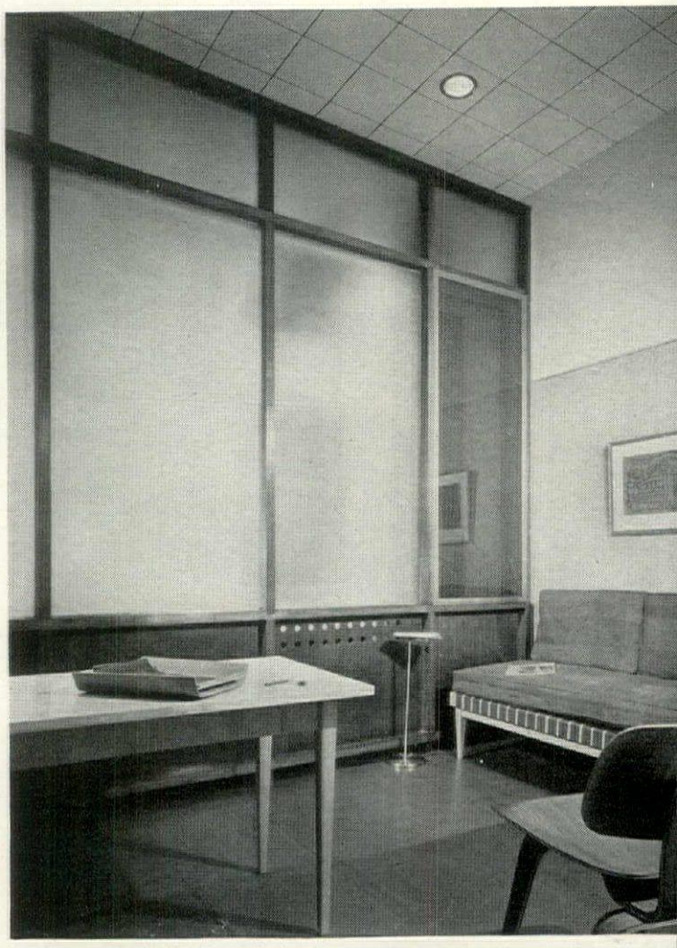
KETCHUM'S OFFICE

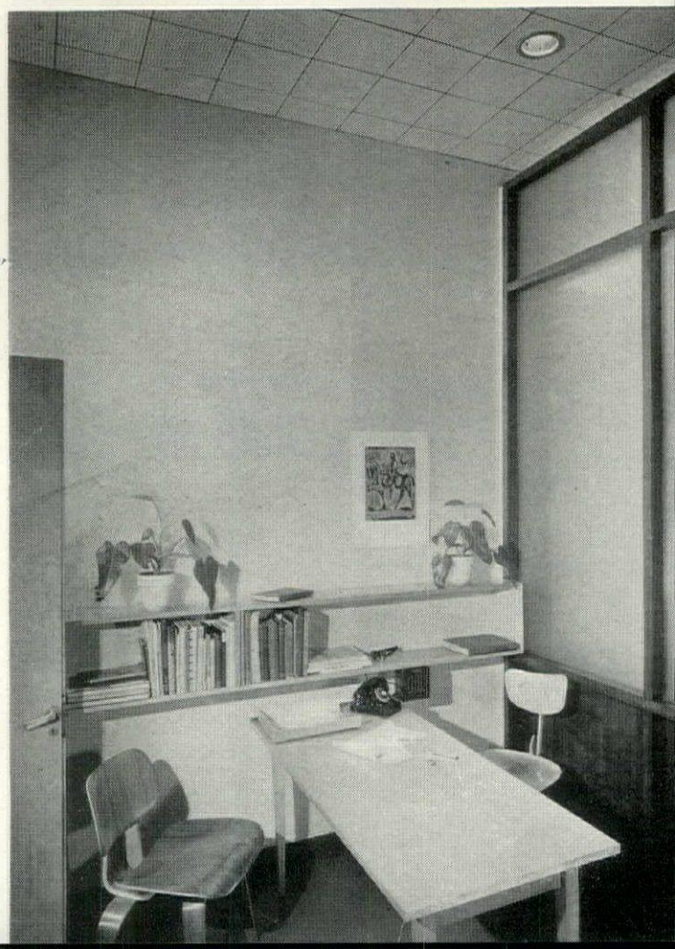


GINA'S OFFICE



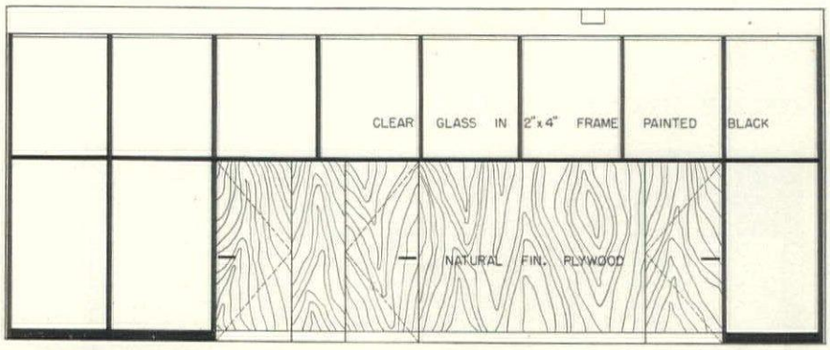
TEXTURE OF PAINTED BRICK WALL IS EMPHASIZED BY EGG CRATE LIGHTING



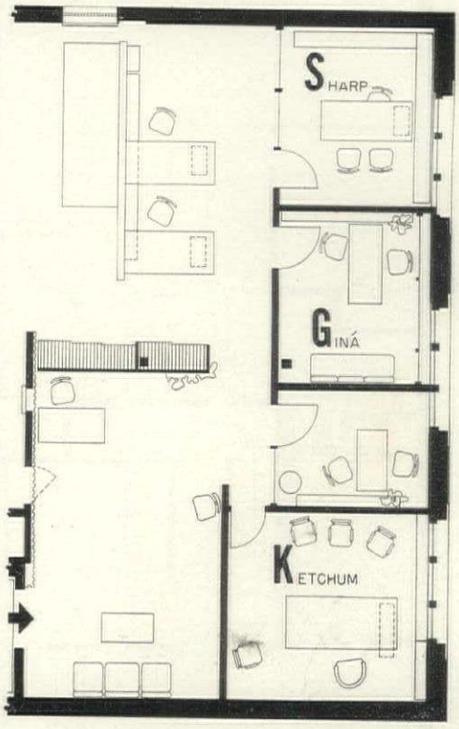


Morris Ketchum, Francis Gina, and Stanley Sharp each designed his own private office, with the screened window-wall the main plane of variance. Ketchum, whose office is also planned for use as a conference room, used a small sliding panel system in the curtain wall. Gina has large panels of etched glass except for one section at the wall end, which the building code forced into use as a fire door of wired glass. Sharp painted part of his wall, uses two window shades—one pulling up, the other down—for controlled light through the remainder.

SHARP'S OFFICE

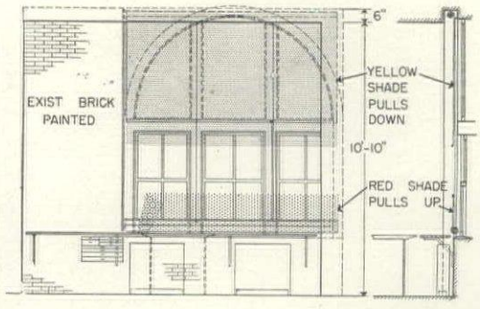


ELEVATION OF OFFICE PARTITION

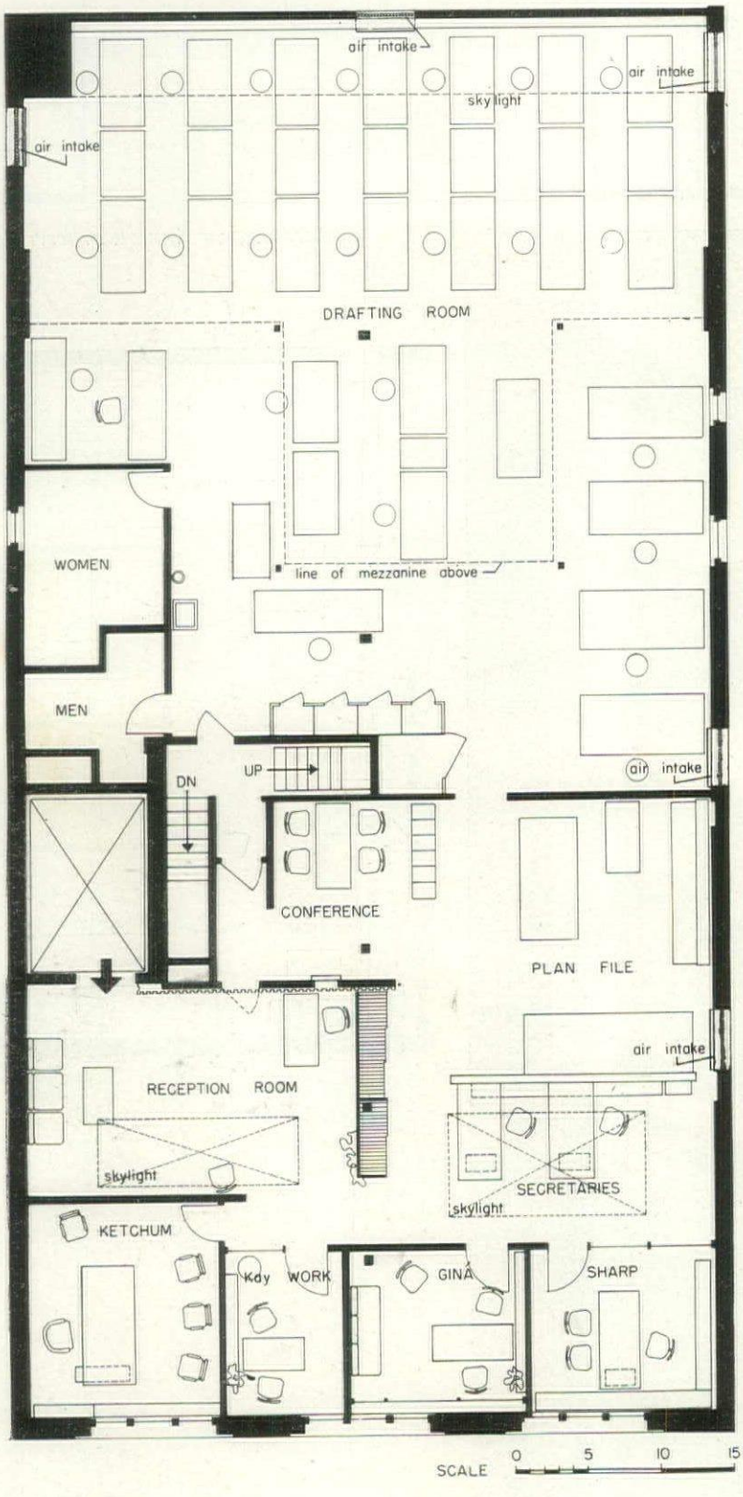


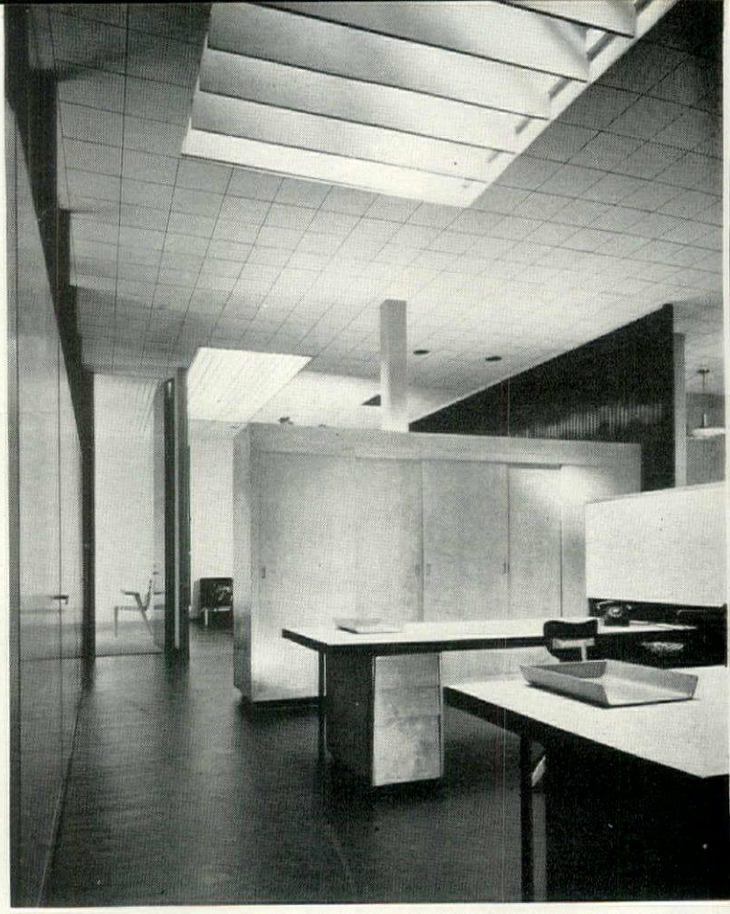
TROUGH RACK FOR PAPERS, HUNG NICELY BEFORE GLASS WALL, PROVIDES FINE TOUCH

Ezra Stoller, photos



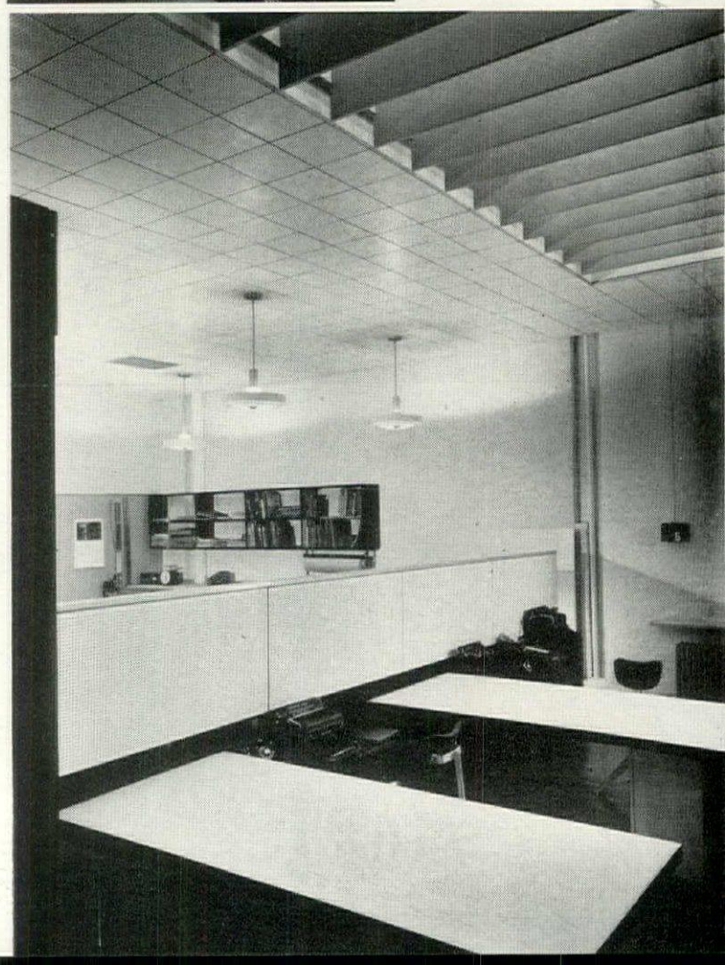
KETCHUM, GINA & SHARP OFFICES



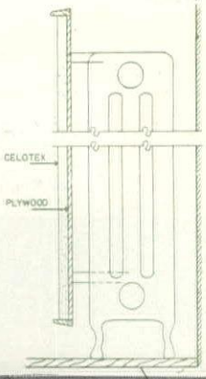


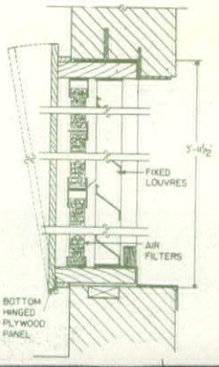
VERTICAL BOARDS MASK UPVIEW TO OLD UNSIGHTLY SKYLIGHT

LOW WALL DIVIDES GENERAL OFFICE SPACE (BELOW) FROM PLAN FILE SECTION (LEFT)



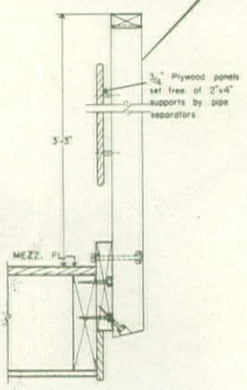
Play of color planes is important in this design, with walls of yellow, green, and white—and in the reception room, one of black enamel—a terra cotta linoleum floor, birch veneer, and white plastic table tops. A new skylight was built for the north exposure, to replace one used by former tenants of the building, who were tapestry and carpet repairers. The well-lit drafting room has space for more than 30 draftsmen on the main floor with room for expansion on the mezzanine, where also are the dead files, a storage room for samples, and a model-making shop.





Ezra Stoller, photos

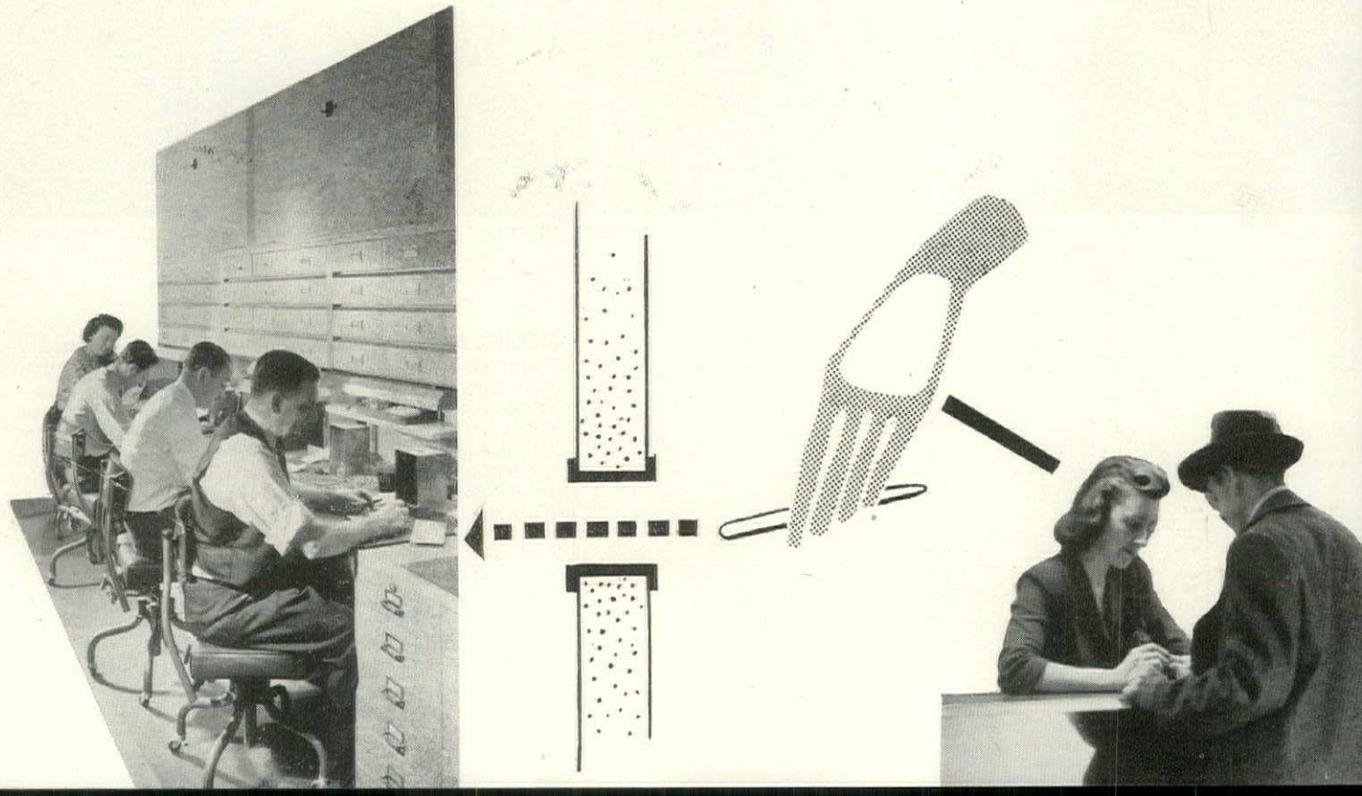
NORTH LIGHT STRIKES BLUE TIMBER COLUMNS IN DRAFTING ROOM; MEZZANINE RAIL IS UNPAINTED



FINISHES AND EQUIPMENT: Exterior walls—brick; interior—cabinet walls, Celotex, The Celotex Corp., Zourite, Kawneer Co. or Fabricona, Wiggins Co. Ceilings—(conference room)—eggcrate design; remainder—Acousti-Celotex, Celotex Corp. PAINTS—Sherwin-Williams Co. INSULATION—rockwool, Johns-Manville. FLOOR COVERINGS: Carpets—Bigelow Carpet Co. Linoleum—Armstrong Cork Co. FURNISHINGS: Chairs—Hans Knoll Associates, The Herman Miller Co. and Finsven, Inc. Desks—Jens Risom, Artek-Pascoe and architect designed. GLASS—Pittsburgh Plate Glass Co. and Blue Ridge Div., Libbey-Owens-Ford Glass Co. ELECTRICAL FIXTURES—Kurt Versen and General Lighting Co. PLUMBING FIXTURES—American Radiator-Standard Sanitary Corp. Ventilating Fans—American Blower Co.

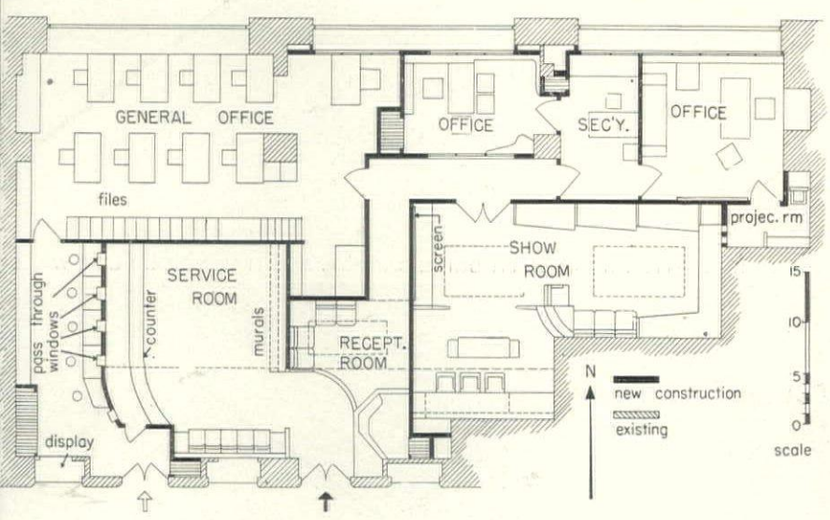
PEN COMPANY retains its product designers to execute complete division offices in New York.

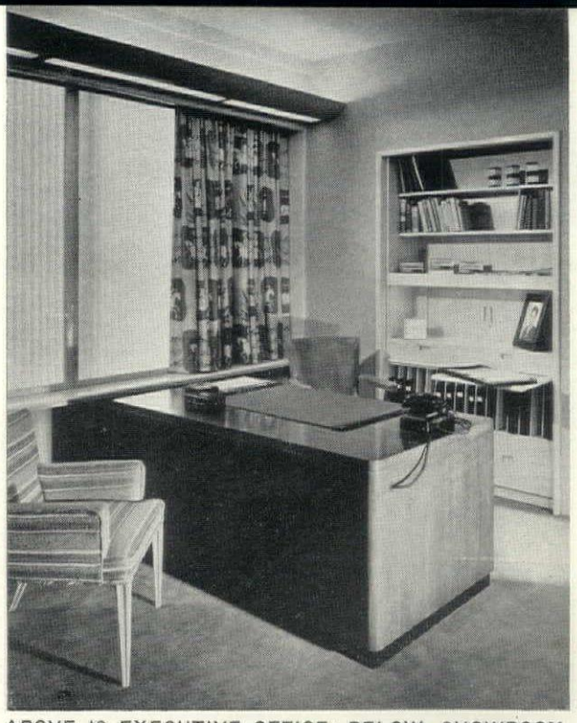
REPAIR CUSTOMERS ARE LEAD INTO THE SERVICE DEPARTMENT WHERE PENS ARE REGISTERED AND PASSED BACK TO WORK COUNTER



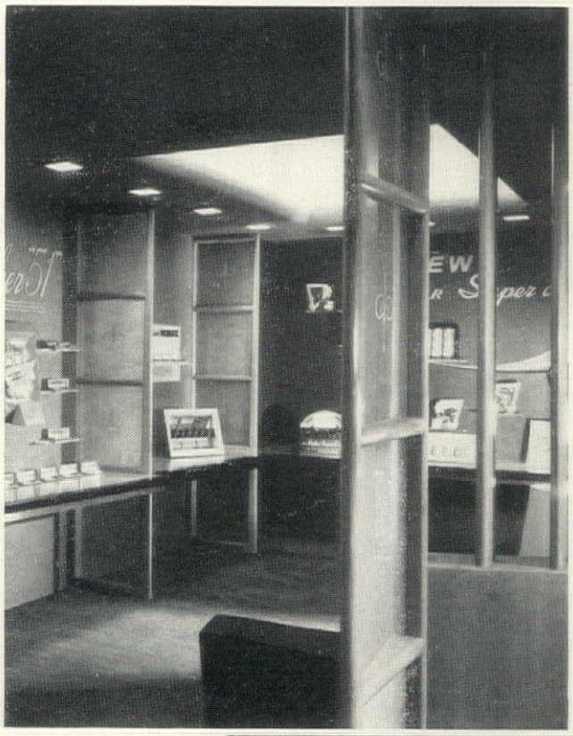
ROBERT GRUEN ASSOCIATES, Designers
JAMES KING & SON, INC., General Contractor
BARTOS COMPANY, CABINET WORK

A basic policy of this company is postsales care and maintenance of its pens, an important element in the prestige-building, consumer-relations, and advertising programs. This new branch, in a convenient location on the mezzanine at 30 Rockefeller Plaza, is dedicated largely to that end. Here Parker pen owners may bring their ailing emblems of civilization to a handy repair depot for quick rejuvenation—to be charged only for new parts. As many as 500 a day do, so the service room had to be planned to hold comfortably 50 customers. Besides this obvious function, which claims most of the traffic entering the area, there are two other sections. One is a salesmen's showroom, not open to the public, where sample displays are set up, new pens displayed to wholesaler buyers, and a one-week sales training course taught with the aid of a small moving picture projection set-up. The final division of the space is clerical and executive office room. To do the job, Parker tapped a design firm who previously had turned out pens, packages, ink bottles, and displays to their satisfaction.

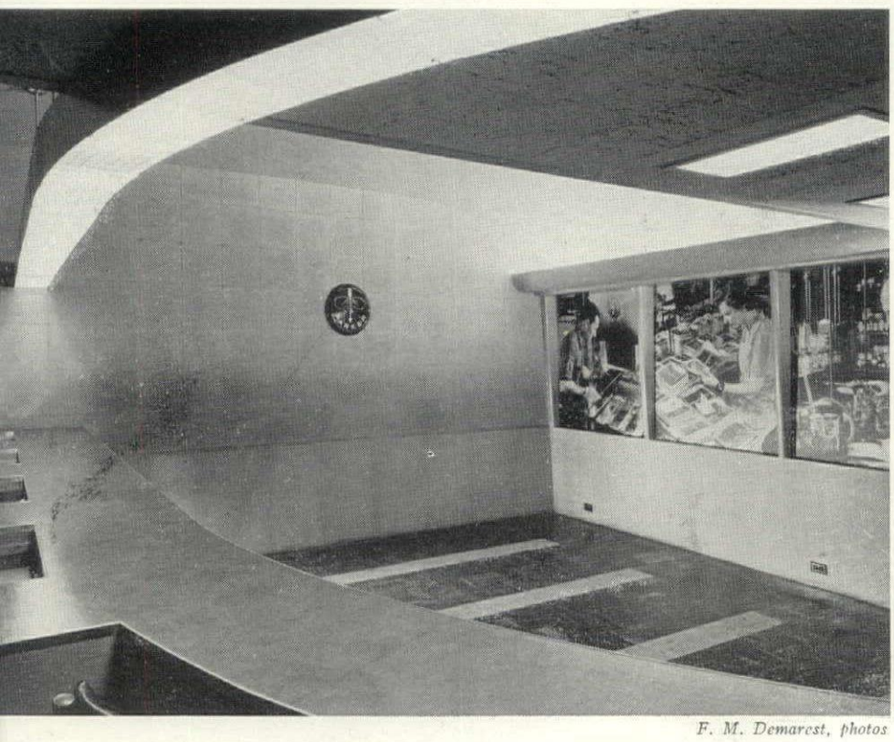




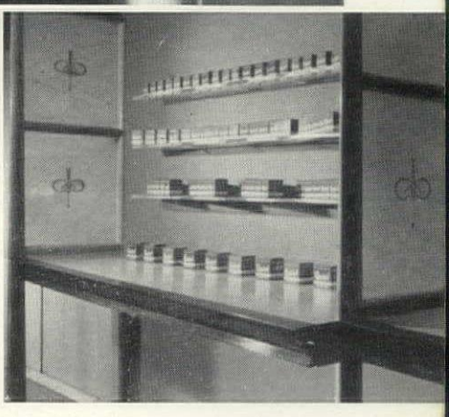
ABOVE IS EXECUTIVE OFFICE; BELOW, SHOWROOM



FLOOR STRIPES ARE INTENDED TO SUGGEST THAT CUSTOMERS FORM IN LINE



F. M. Demarest, photos



FINISHES AND EQUIPMENT: SOUND INSULATION—Permacoustic and Transite, Johns-Manville Corp. WINDOWS: Diffusing panels—Louvrex, Blue Ridge Sales Div., Libbey-Owens-Ford Glass Co. FLOOR COVERINGS: Asphalt tile—David E. Kennedy, Inc. WALL COVERINGS: Wallpaper—Laverne Originals. Photomural—Drix Duryea. Fabrics—Goodall Fabrics, Inc. FURNISHINGS—Yawman & Erbe, Macey Fowler, Inc., Regan Office Furniture Co., Artek-Pascoe, Hans Knoll Associates, Dan Cooper, Lehigh Furniture Corp., The Bartos Co. DOORS—fireproof, William Somerville, Inc. HARDWARE—Schlage Lock Co., Oscar C. Rixson Co., The Bartos Co. ELECTRICAL FIXTURES—Gotham Lighting Corp.

AD AGENCY design creates a fitting atmosphere of calm resourcefulness and efficiency.

FRANCIS J. McCARTHY, Architect
CHARLES A. VON BERGEN, Electrical Engineer
CAHILL BROTHERS, General Contractor

Uppermost in the architect's mind when he planned this loft floor layout for the busy San Francisco branch of J. Walter Thompson was the consciously complex nature of the advertising business. For no Adman is an Island—advertising agencies work largely by *group operation* with many members of the staff laboring together on each of the carefully nurtured accounts. Thus the entire space had to be subdivided deftly for easy logical flow among sections, rather than planned as a series of insulated offices pieced together on convenient corridors.

Lavish color is more important than structural decoration throughout the scheme, and is used neutrally on floor and ceiling to increase the overall unity of the entire office. Transoms run the length of partitions to spill light into the core of the almost square floor plan. In partitioning, structural columns were generally ignored until the most efficient layout had been reached, then those columns which had not been absorbed by partitions were used as causeways for vertical service ducts, furred out, and finished brilliantly with polished plaster in intense colors.

SHAPE OF BUILDING NECESSITATED LONG TRANSOMS FOR INTERIOR LIGHT

MUSTARD YELLOW POLISHED COLUMN DOMINATES THE UNCLUTTERED RECEPTION ROOM WITH BEIGE CARPET, BIRCH VENEER, BLUE WALL

Model Farm - Tenant house shows close study of a neglected type

GRACE MORIN and T. J. BAIRD, Designers

A sizeable portion of American building—that of the farm population—lies completely outside the normal area of architectural operations. But if farm building goes unnoticed by the profession, it is the subject of close, continuous and sympathetic attention on the part of many agencies —especially of the state universities and agricultural colleges. Typical of these is Cornell's College of Home Economics: here a Rural Housing Research Staff headed by Dr. Grace Morin is hard at work on a program for helping New York farmers with their housing problems.

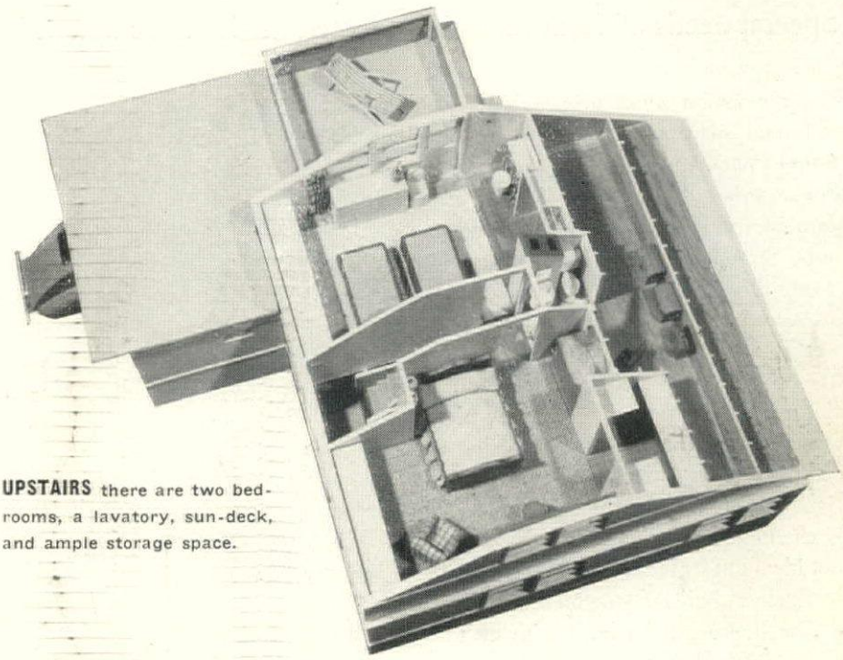
The model tenant house shown here is only one form of the Staff's activities. In addition to designing such prototypes, it maintains a consultant service for all sorts of rural building and remodeling problems. One of the big farmer's biggest headaches is the problem of how to get and keep good agricultural labor. Since a married man with family is nowadays considered more satisfactory than the old-fashioned "hired hand," the problem of getting good tenant farmers often resolves itself into a question of good tenant housing. The house shown here is the Research Staff's answer.

It is a minimal house, built for economy in a two-story cube; but it nonetheless manages to include many features which larger and more expensive farm houses often omit. Actually, most farmers would probably jump at the chance to live in it. More than 73 per cent of New York's rural families live in houses built before the Twentieth Century—a third of them before the Civil War! Minimal or not, the design shows a down-to-earth insistence on comfort and convenience which makes it worth study. The main entrance is the back door, as it is in most farm houses, flanked by a wash-up room for damp clothes or muddy shoes. Refrigerator and washing machine are electrical but the cookstove is an old-fashioned wood-or-coal burner. The living room faces south across a nicely paved terrace; but the kitchen windows are placed to command a view of the barn. And a downstairs bedroom may serve for overnight guests but is also equipped with everything needed for ironing and sewing.

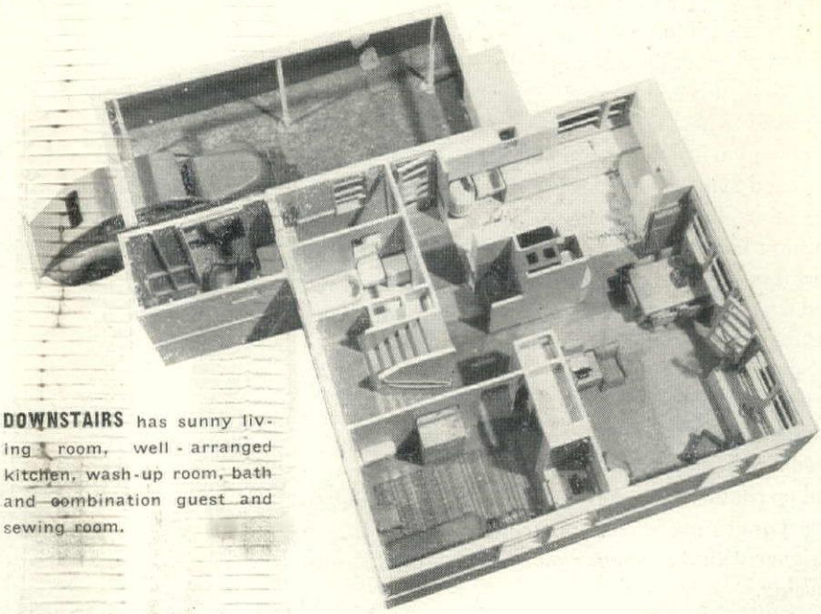
Designed for conventional wood framing, cinder block or plywood panel construction, the house was estimated to cost $6,200 in 1946. Dr. Morin thinks it would undoubtedly cost more now but points out that many farmers could supply much of their own lumber and labor. To make its erection as simple and economical as possible a bulletin has been prepared giving a complete bill of materials (including substitutes) to accompany plans and construction details. Equipped with this, the farmer can go to his local dealer and find out exactly what it would cost. Working drawings show him exactly how to build it, including the many ingenious features shown on the next two pages.

Werner Wolff

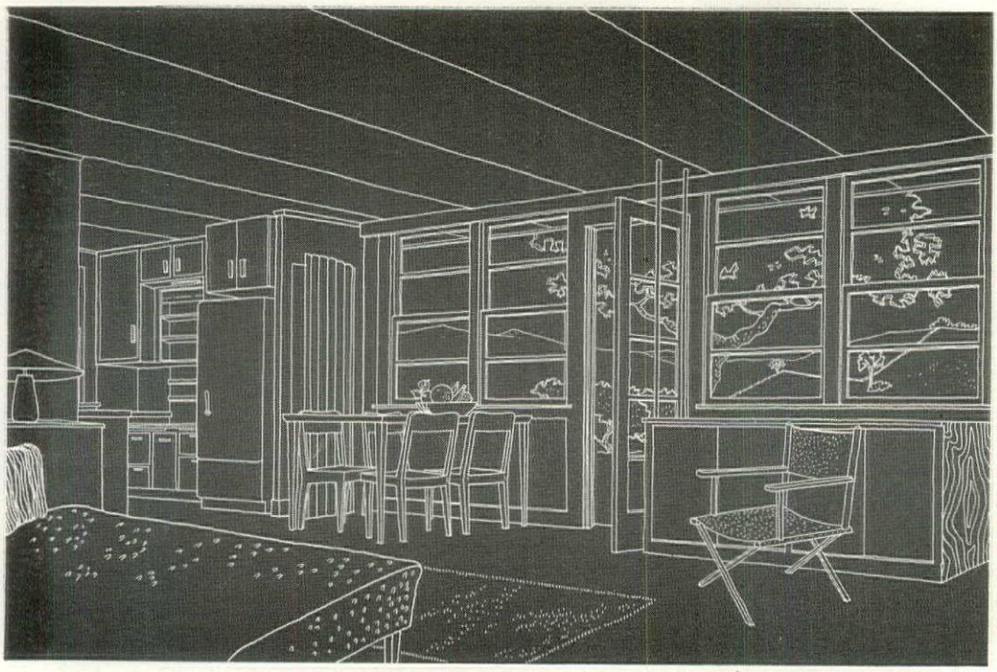
MINIMAL BUT COMPLETE, MANY FARMERS WOULD BE GLAD TO HAVE IT

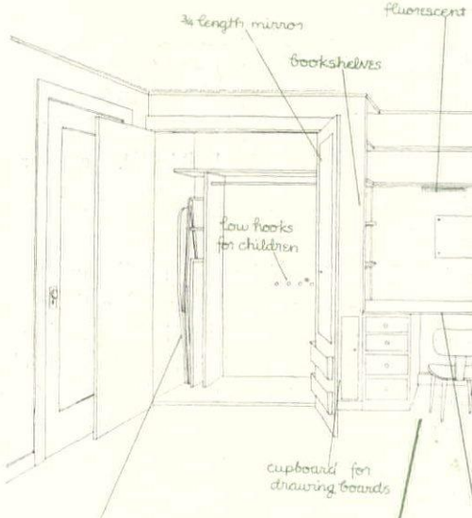


UPSTAIRS there are two bedrooms, a lavatory, sun-deck, and ample storage space.



DOWNSTAIRS has sunny living room, well-arranged kitchen, wash-up room, bath and combination guest and sewing room.





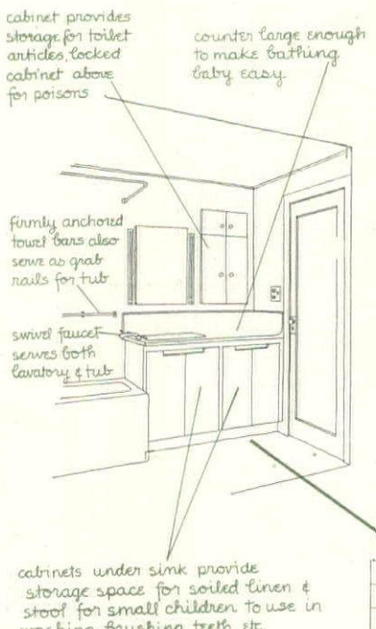
Special needs of farm families reflected in Cornell's tenant house design.

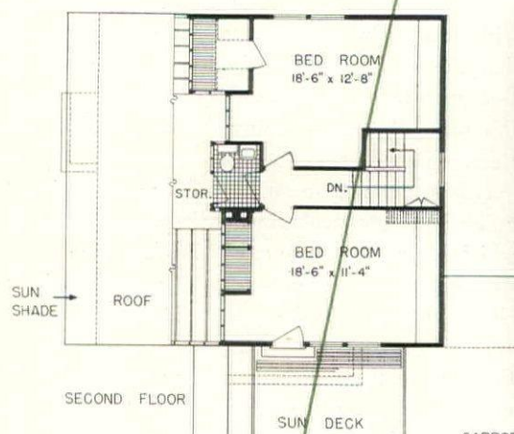
Many common sense proposals to compensate for scrimped space (26 ½ x 30 ½ ft., outside dimensions) mark Cornell's design for a tenant house. For instance, the carport gives cover to the *back* door in recognition of the fact that on most farms only "company" uses the front. Here, too, are stored fuel (for range and heater) and garden tools: in rainy weather, the children can play here or the washing be hung out. Just inside the door is a wash-up room, where muddy boots and sweaty work clothes can be parked. The central hall channels traffic around the kitchen so that its small area can be used with maximum effectiveness (see plan right). Laundry equipment is placed in corner of kitchen closest to door. The designers admit this is not ideal but feel that, even with a basement, laundry work should all be done on first floor level.

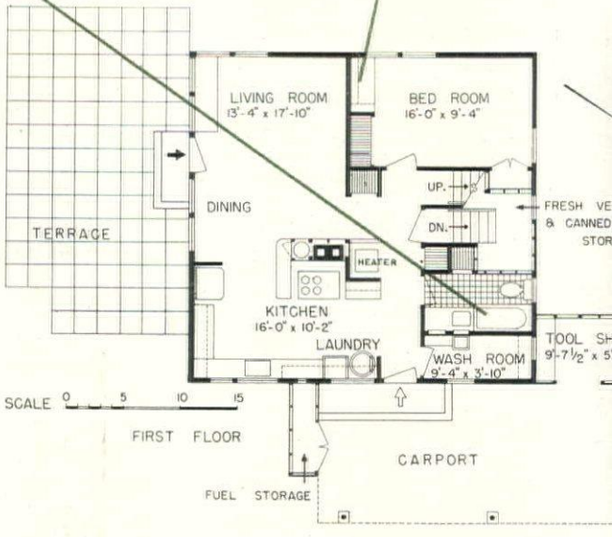
The house can be built with or without a basement. In the latter case, a cool room for vegetables and canned goods is provided under the stair landing, half a story below grade; and a hall coat closet is converted into an asbestos-lined niche for a space heater. The designers prefer a furnace, pointing out that, while cheaper, a heater could not be expected to heat the entire house effectively.

The plan shows many other ingenious features designed to make housekeeping easier: storage facilities in the downstairs bedroom (right above); baby-bathing facilities in the bathroom (right); an open deck for sunbathing or airing clothes and bedding; and a sort of rudimentary utility core around a low-cost chimney (facing page, bottom).

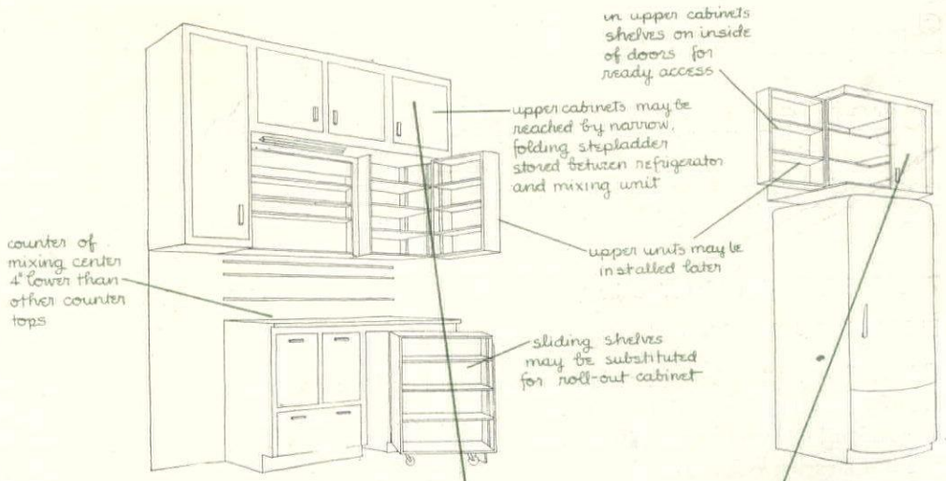
Some of the details of the Cornell house may strike professionals as a bit awkward. For example, it seems a pity that, while the upstairs bedrooms are good-sized, they have inadequate cross ventilation and no southern exposure. But in general the design incorporates many concepts which would help any designer with the knotty problems of low-cost rural housing.



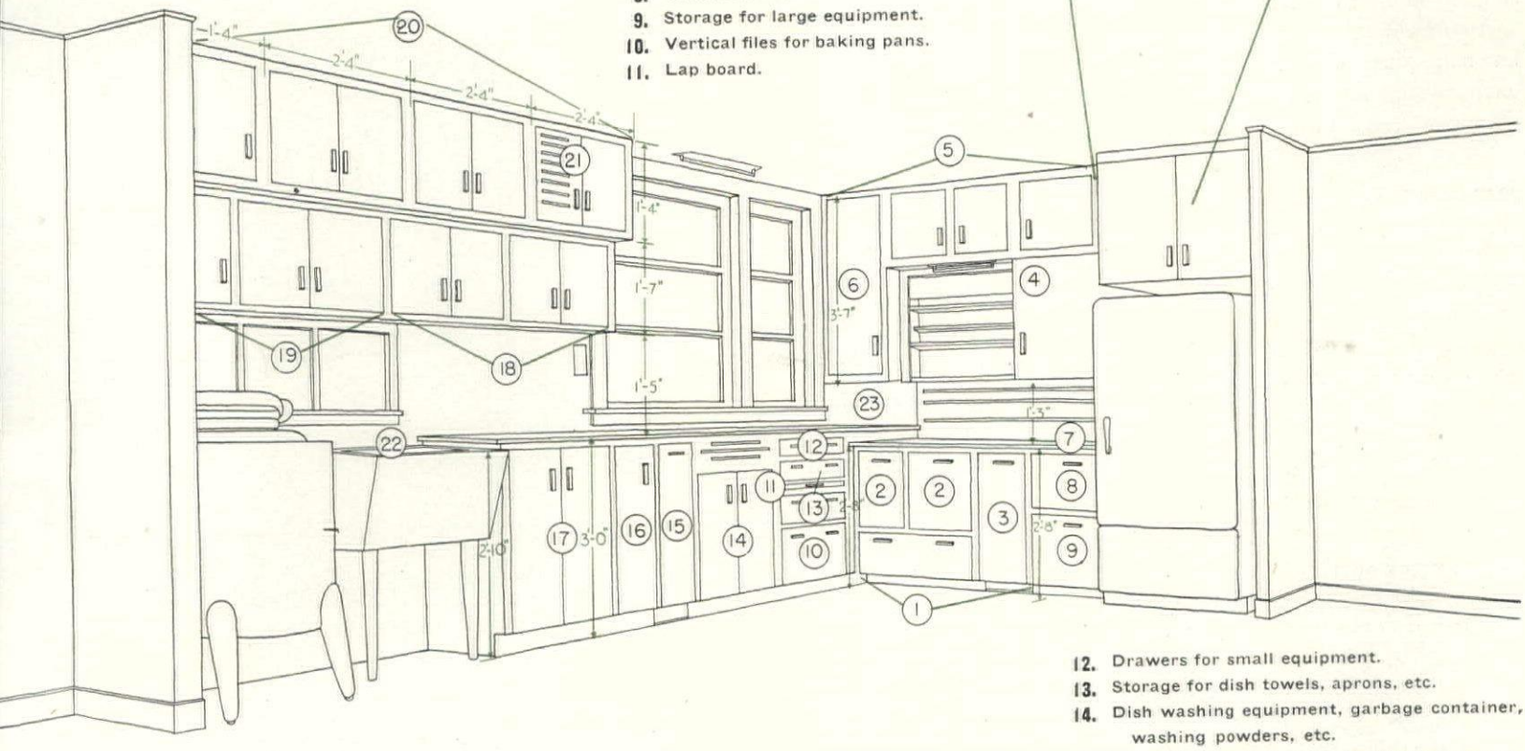




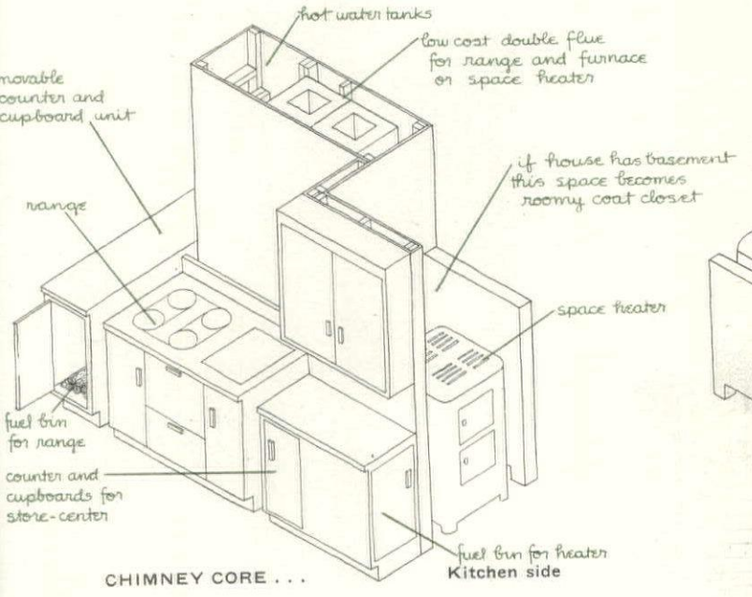
ESIGNED TO LIGHTEN the work of a hard-pressed farm ife, the room reflects the kitchen research of another air of Cornell economists, Heiner and Cullough (FORUM, eb., Mar., '46). The kitchen equipment is grouped in hree main centers—sink, mixing and range. (Because of pace limitations, laundry trays and washing machine, ith window and cupboards above, are placed in corner f kitchen nearest door.) Detailed provisions for use and torage of proper utensils are made at each center. Dimen- ions are all determined by easy visibility and access.



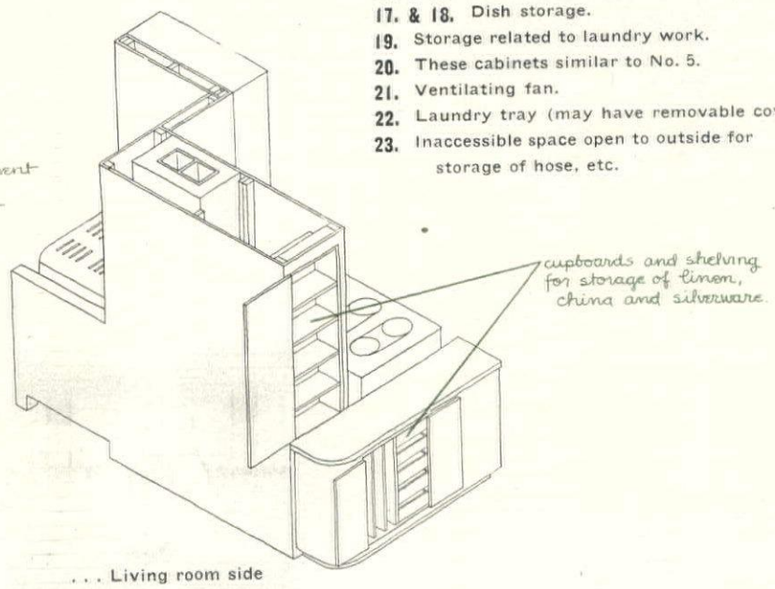
1. Mixing center.
2. Flour and sugar bins.
3. Storage for mixing equipment.
4. Roller shade.
5. Upper cabinets 13 in. deep and 18 in. high.
6. Storage for larger dishes.
7. Center for preparing lunches, etc.
8. Ventilated bread box.
9. Storage for large equipment.
10. Vertical files for baking pans.
11. Lap board.



12. Drawers for small equipment.
13. Storage for dish towels, aprons, etc.
14. Dish washing equipment, garbage container, washing powders, etc.
15. & 16. Storage for range and sink equipment.
17. & 18. Dish storage.
19. Storage related to laundry work.
20. These cabinets similar to No. 5.
21. Ventilating fan.
22. Laundry tray (may have removable cover).
23. Inaccessible space open to outside for storage of hose, etc.



CHIMNEY CORE . . . Kitchen side



. . . Living room side

Sun, air and moderate rent go together in row house apartment plan

THOMAS S. TWERDAHL, Architect

ELMER L. ANDERSON, Builder

This modest yet handsome row housing in suburban Chicago makes use of the well-known building gambit of cutting costs by duplicating one design in several units. The plan is simple and compact, a repetitive in-line scheme featuring five identical apartments on the top floor and four plus a public laundry at ground level. Access to all apartments, including those on the second story, is from the exterior, a device responsible for the dramatic appearance of the facade. Outside stairways at either end are protected from weather by handsome screens of glass block. A balcony leading to top floor apartments connects these two entrance areas. This method of access was chosen in order to leave the south facade free for continuous solar windows, to simplify interior circulation and eliminate the usual corridor.

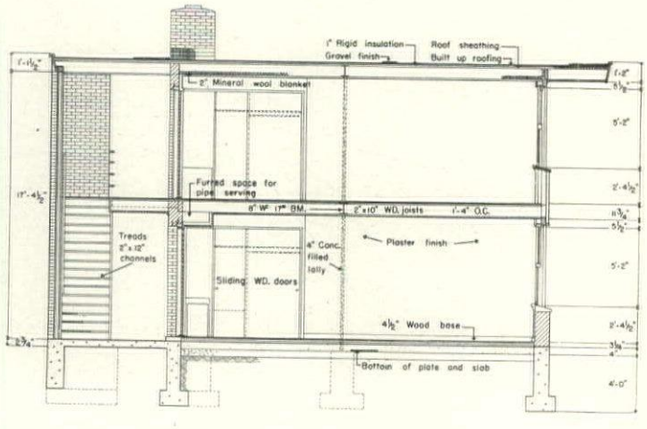
Apartments, which contain bedroom, living-dining room, kitchen and baths plus such amenities as garbage disposal units and individual temperature control, rent for $78 per month—a fair price in these days and a fair return on the investment of $56,000 per building.

COST CHART

Income (gross annually per building)	$8,420.00
Expenses	
Fuel (gas heat)	565.00
Water	30.00
Electricity	65.00
Painting and Decorating	280.00
Insurance	110.00
Taxes (estimated)	650.00
Scavenger service	108.00
Maintenance and gardening	200.00
Total Expenses	$2,008.00
Net Income per building	$6,412.00

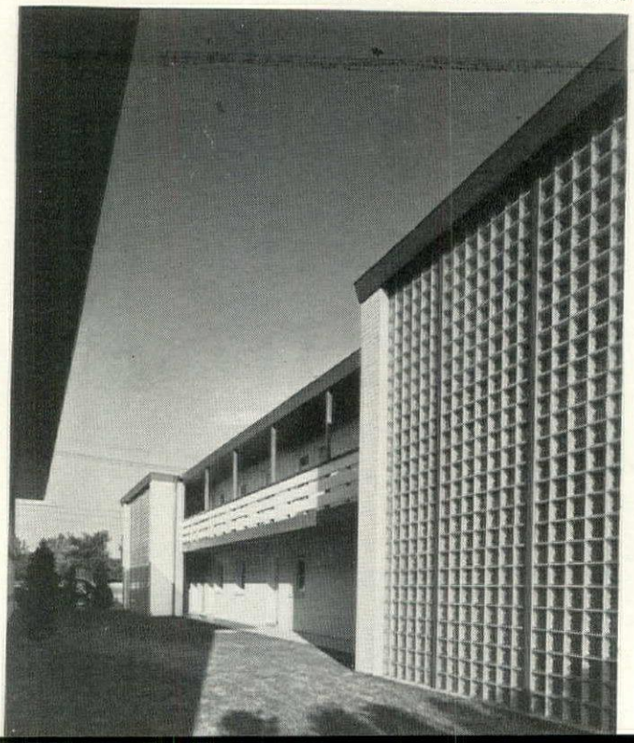
CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—12 in. brick, furring, gypsum lath and plaster. Interior partitions—clay tile and plaster. Columns—Lally Co. Floors—oak finish. SHEET METAL WORK—copper. INSULATION: Roofs—4 in. rockwool. WINDOWS: Sash—wood. Glass—crystal. Glass blocks—Owens-Illinois Glass Co. FLOOR COVERINGS: Kitchen and bathrooms—linoleum, Armstrong Cork Co. HARDWARE—Sargent & Co. PAINTS—The Glidden Co. ELECTRICAL SWITCHES—General Electric Co. Fixtures—Lightolier Co. PLUMBING FIXTURES—American Radiator-Standard Sanitary Corp. Kitchen equipment—General Electric Co. HEATING—circulating hot water system, Surface Combustion Co. Radiators—Trane Co. Thermostats—Minneapolis Honeywell Regulator Co. Water heater—Rudd Mfg. Co. Garbage disposal and clothes drier—General Electric Co. Washing machine—Bendix Home Appliances, Inc.

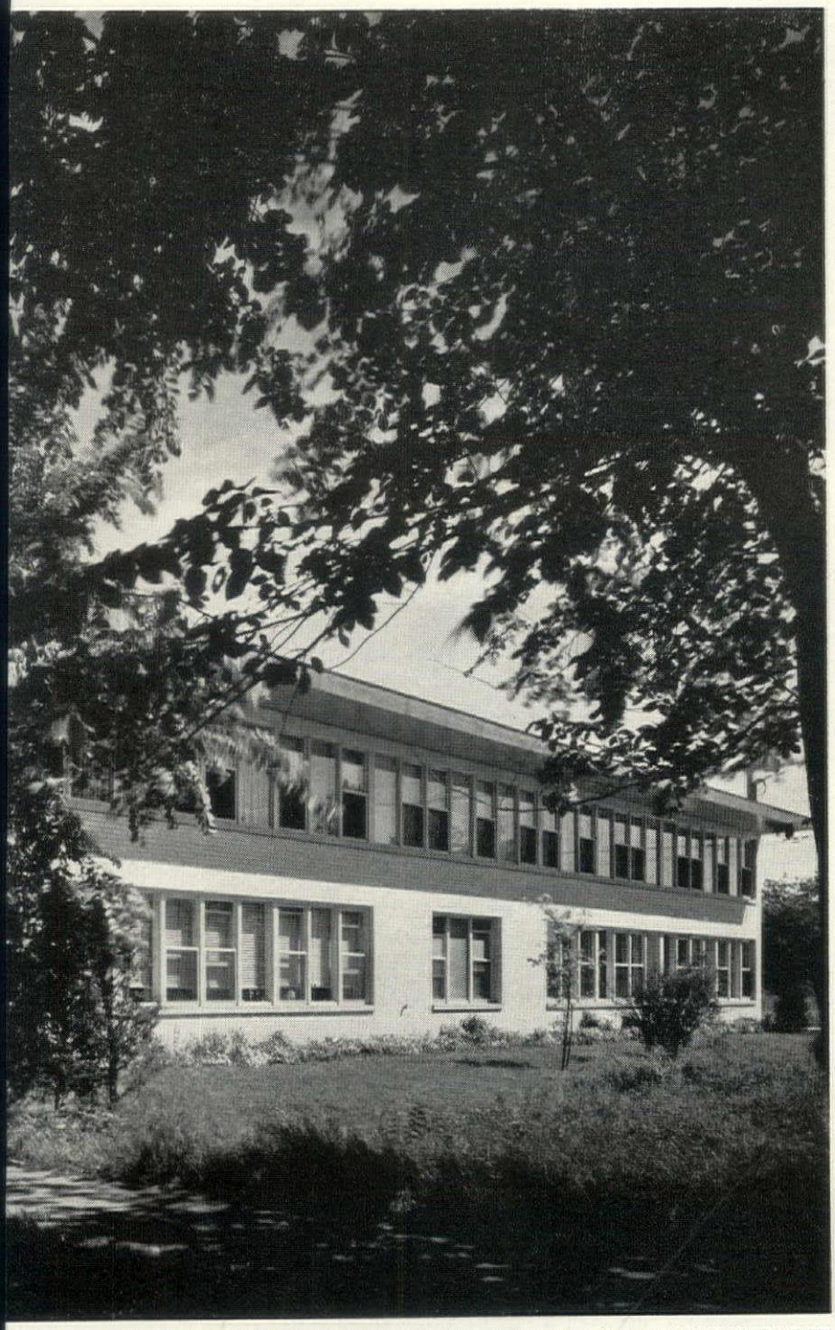


CROWDED SITING OF HOUSES IS QUESTIONABLE ECONOMY,

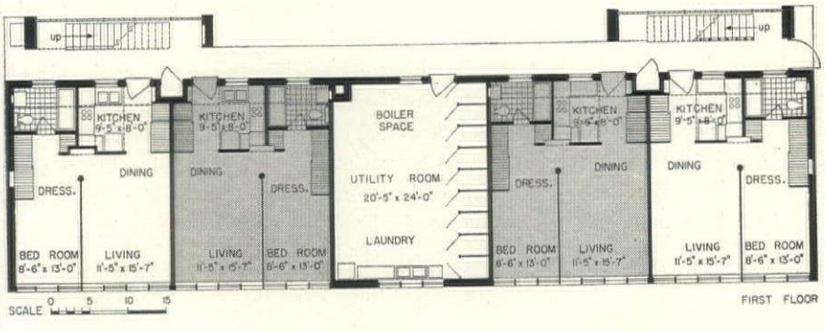
HANDSOME ENTRANCEWAYS ARE AT REAR OF BUILDING

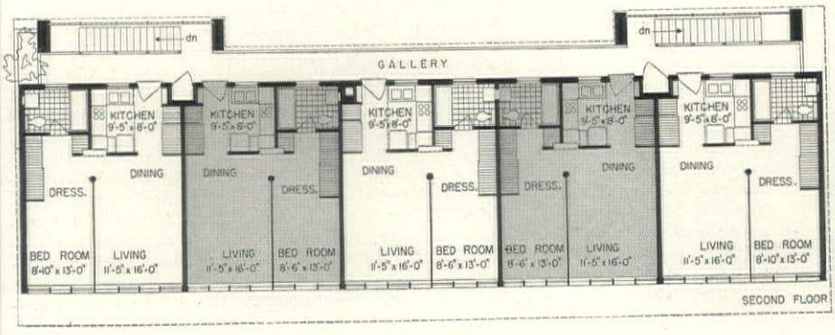


Hedrich-Blessing Studio

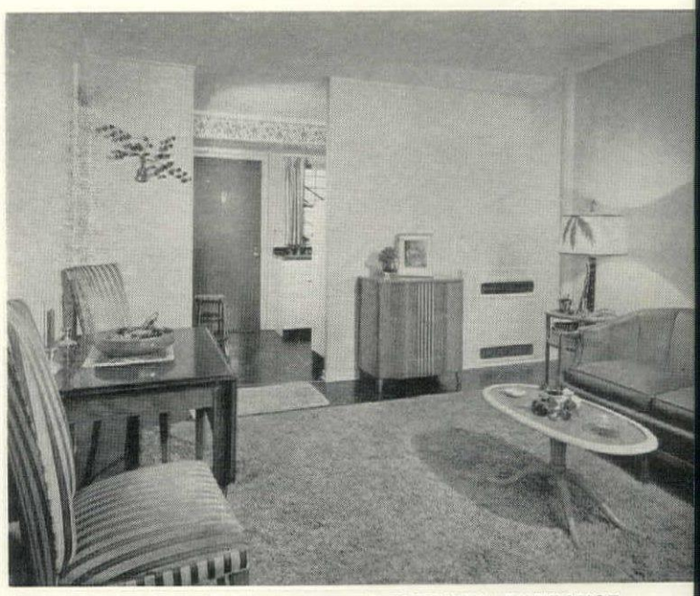


BUT STOCK WINDOWS FOR CONTINUOUS PANELS IS CLEVER COST-REDUCER



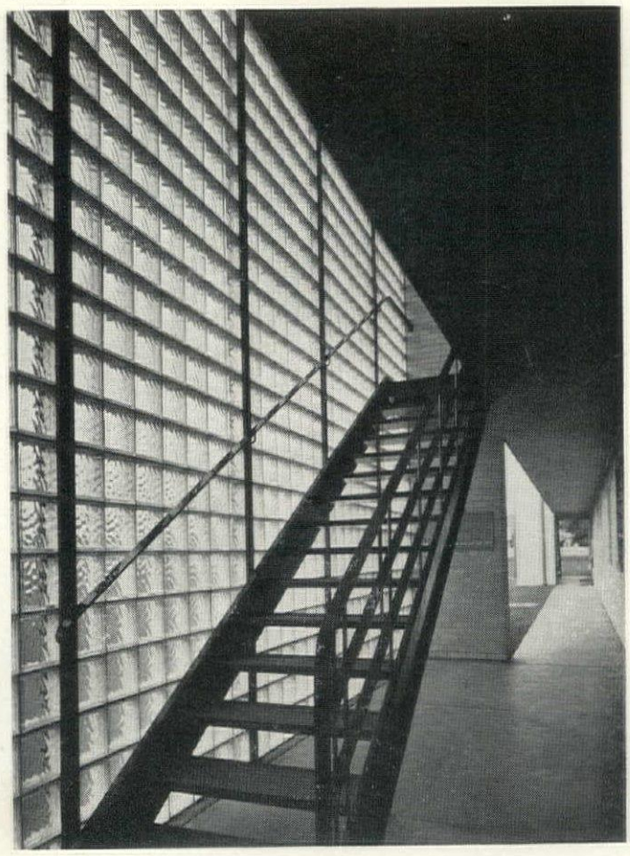


LALLY COLUMN IS TERMINAL OF NON-BEARING WALL



VIEW THROUGH LIVING ROOM TO KITCHEN ENTRANCE

WALL OF GLASS BLOCK DRAMATIZES ENTRANCE STAIR



NEW SHELTERS AND TERMINAL built by Toronto's municipally owned transport system, show public likes good design

JOHN B. PARKIN ASSOCIATES, Architects

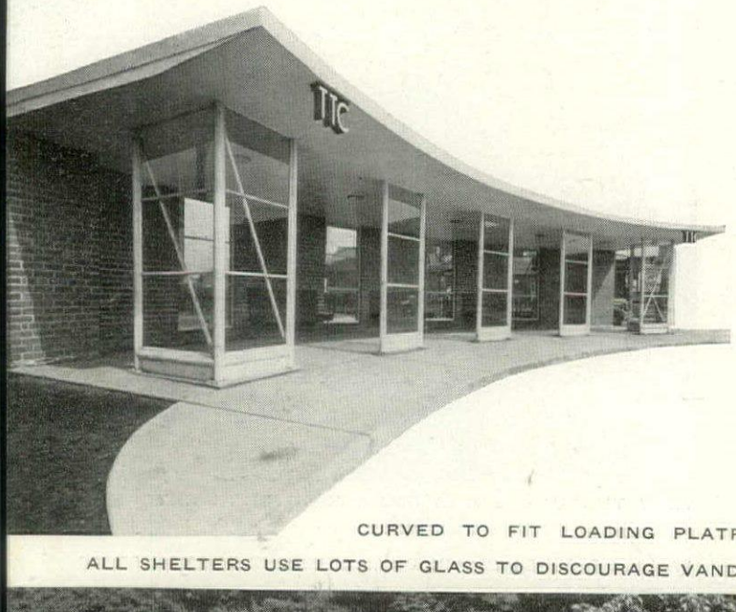
FRIED CONSTRUCTION CO., General Contractor

Most municipal authorities, in the so-called "temperate" climate of the U. S., apparently proceed on the assumption that bad weather is always an accident, an exception to the rule, something no one could have expected. The further north one goes, of course, the less tenable such municipal fictions become. In Toronto, apparently, the city fathers acknowledge the probability of bad weather. That, at least, is one conclusion to be drawn from the Transportation Commission's current transport improvement program.

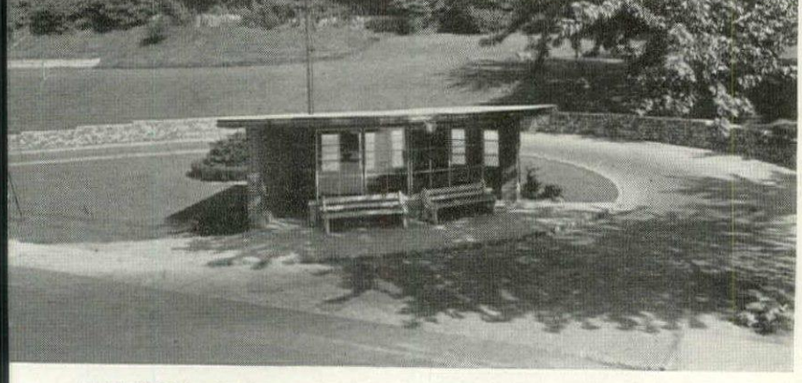
As a result of this program, increasing numbers of Toronto commuters are being cosily (and tastefully) protected from bad weather in TTC's new bus and trolley shelters. Four of them are shown here—a downtown terminal (facing page) for three express bus lines serving the west, north and northeast suburbs; and three end-of-the-line suburban shelters. In both architectural design and landscaping, the whole series is head and shoulders above the usual thing. And the public not only likes the new structures: to a surprising degree it takes care of them. It is often argued that the public would only abuse such accommodations. TTC's experience has been distinctly to the contrary. Although the fact that it is publicly-owned and brilliantly managed probably plays a part, the Commission believes that the design of the structures themselves is primarily responsible.

Built of durable materials—brick walls, concrete floor and roof slabs, steel columns—the shelters are notable for their free-form open planning, wide use of glass and brilliant lighting. This has had effect of discouraging vandalism. And when damage does occur, it is immediately repaired, on the theory that nothing breeds abuse like neglect.

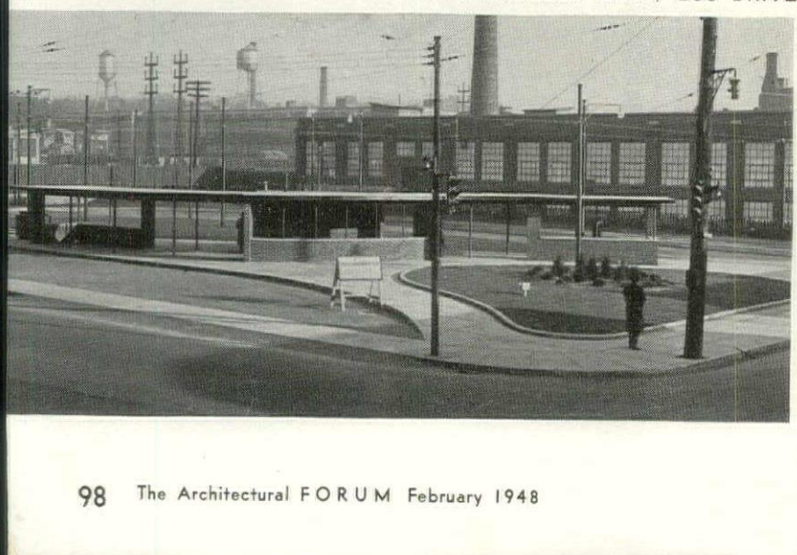
The downtown terminal (right) is designed to handle the simultaneous loading of 200 to 300 passengers onto 10 or 12 motor coaches. Aside from the canopied loading platforms with their stainless-steel sheathed columns, the station consists of a large waiting room with ticket and newsstand concession and washrooms for men and women in the basement. Sealed double-glazed walls extend from a radiantly-heating terrazzo floor to an acoustically-treated ceiling. A plant-box at one end and a colorful mural by (Toronto's own Sigmund Serafin) at the other, good lighting and sturdy simple furniture—all these combine to give the room the air of a nice hotel lobby. The site—located in the shadow of some of the tallest buildings in the British Empire—was necessarily constricted, but with a circular pool, a spiral scrap of lawn and a line of hedge and Lombardy poplars, the architects have managed to give the terminal almost the air of an oasis.



CURVED TO FIT LOADING PLATFORMS, ALL SHELTERS USE LOTS OF GLASS TO DISCOURAGE VANDALISM

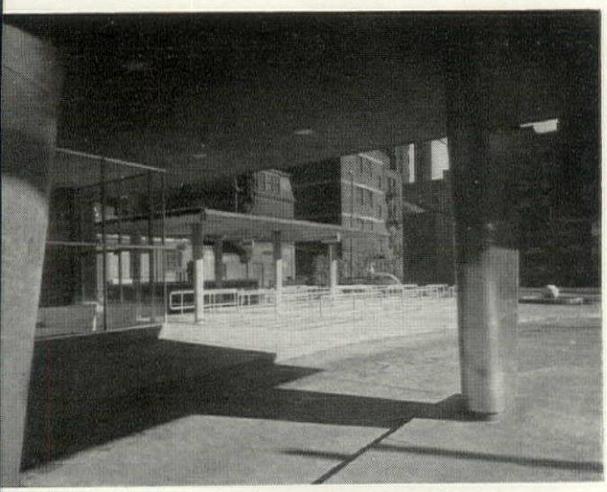


SHELTER'S SINUOUS CURVE LINKS TROLLEY LOOP, BUS DRIVE



CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—13 in. brick; inside—mineral wool, metal lath, plaster and hollow clay tile. Floors—reinforced concrete. ROOF—5-ply pitch and gravel. FLASHING—copper, Anaconda Brass Ltd. SOUND INSULATION—Mufflefone, Dominion Sound Equipment Co. (Celotex Corp.) GLASS—Hobbs Glass Co. (Libbey-Owens-Ford Glass Co.) and Pittsburgh Plate Glass Co. EXTERIOR DOORS—Herculite, Pittsburgh Plate Glass Co. PAINTS—Canada Paint Co. Ltd., Cement Enamel Co. Ltd., Neilson Co. Ltd., Glidden Co. Ltd., Sherwin-Williams Co. Ltd., HARDWARE—Oscar C. Rixson Co., Canadian Richards-Wilcox Co. Ltd. ELECTRICAL FIXTURES—Curtis Lighting of Canada Ltd., Amalgamated Electric Co., Holophane Co. Ltd., Benjamin Electric Co., Harvey Hubbell Inc. Switches—Canadian Westinghouse Co. Ltd. PLUMBING: Fixtures—Port Hope Potteries Div., Crane Co. of Canada, Ltd. HEATING—combined radiant and forced warm air, filtering and humidifying. Boiler and water heater—Airtemp Div., Chrysler Corp. Radiant coils—Grinnnell Co. of Canada, Page Hersey Tubes, Ltd. Radiators—Taylor-Forbes Co., Ltd. Grilles—Hart & Cooley and Barber-Colman Co. Valves—Jenkins Bros., Ltd. Thermostats—Minneapolis-Honeywell Regulator Co. Climate Changer—Trane Co. of Canada, Ltd. Hot water circulator—Taco Heaters of Canada.



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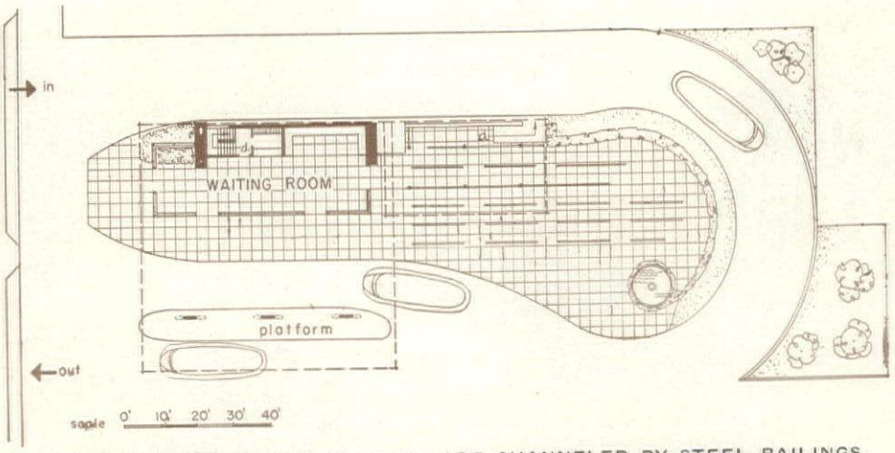
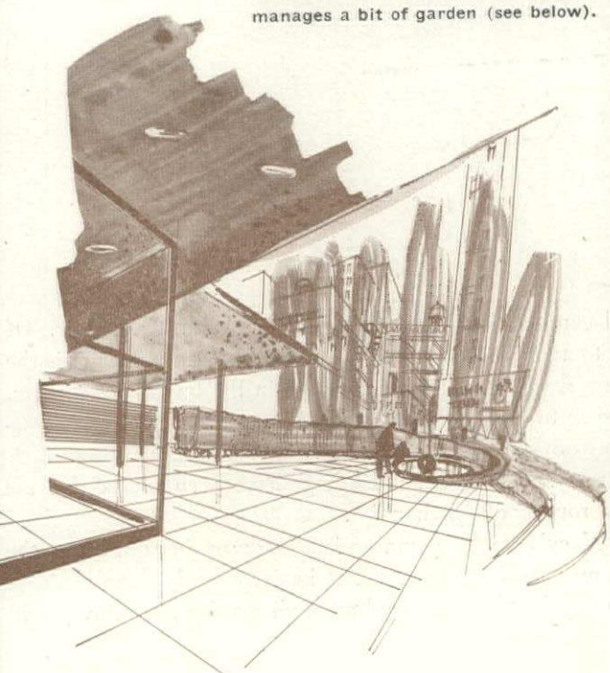


WAITING LINES FOR EACH ROUTE ARE CHANNELED BY STEEL RAILINGS

BRIGHTLY-LIT, like all the TTC shelters, Toronto's downtown bus terminal is a handsome, inviting building, neatly set in a plot that provides for smooth flow of passengers and still manages a bit of garden (see below).



Ben Schnall

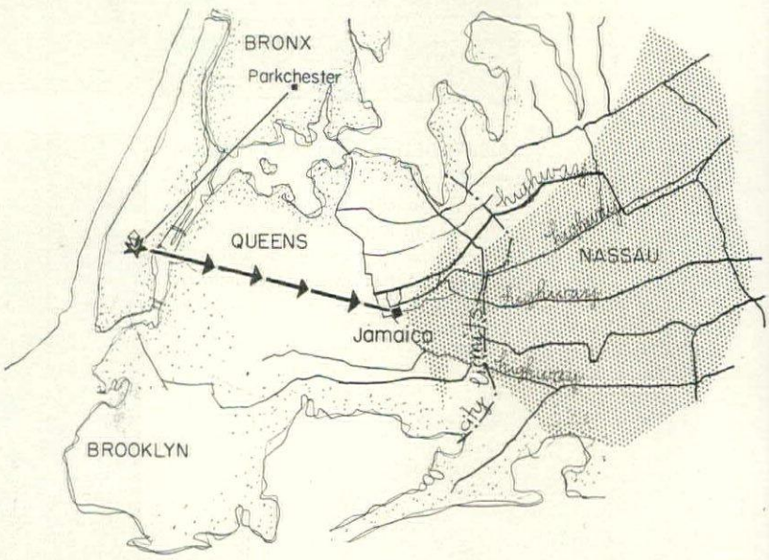
macy's—Jamaica is designed around merchandising methods.

ROBERT D. KOHN and JOHN J. KNIGHT, Architects
RICHARD G. BELCHER, Consultant Architect
DANIEL SCHWARTZMAN, Interior Architect
KENNETH WELCH, Interior Design Consultant

New York's R. H. Macy, the world's largest bazaar, has long played with the idea of branch department stores in key cities and suburban areas throughout the U. S. This new store in Jamaica, Long Island, is the first completed step in an extensive building program which was started to keep a firm grasp on decentralized customers. A Bronx branch, opened in 1941 for the famed Parkchester housing project, has been used as a proving ground for Macy's infiltration of the suburbs. Within the next two years other periphery stores will be opened in Brooklyn and White Plains.

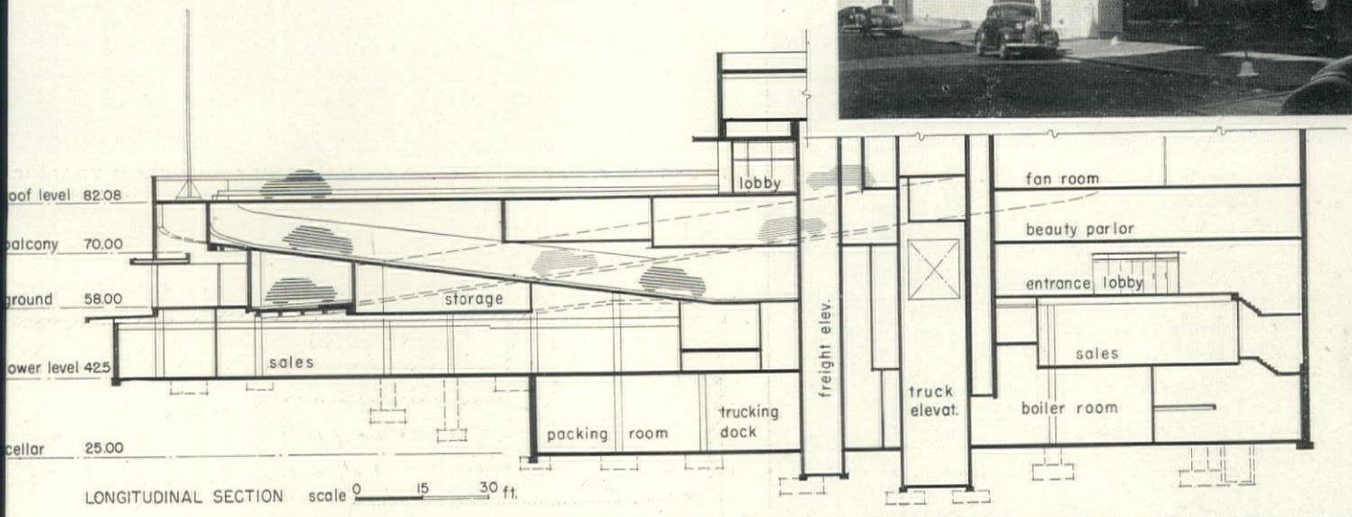
The size and layout of Macy's-Jamaica were determined by an elaborate merchandising plan which makes the new store mainly a glorified retail sales room. Overhead expenses such as executive personnel and their offices, have been kept to a minimum, since all buying, advertising and policy operations are carried out at the New York headquarters. Of a total of 157,500 sq. ft., the selling area was set at 92,000, a much larger percentage than the 50-50 ratio of sales to management customary in a self-sufficient store.

Although preliminary surveys had indicated two floors as a good starting sales risk, the new shop had to include a representative selection of the merchandise shown in the main store's ten floors, a task which meant careful departmental planning. The architects have solved this problem by the use of free form islands and peripheral wall counters laid out in terms of maximum traffic flow. Of importance to all suburban stores where land is at a premium is the roof parking, reached by ramps enclosed in the building structure. Rooftop access to the store is treated as a main entrance with escalators leading down to the mezzanine balcony. Truck elevators which allow off-street sub-basement unloading, have been placed for the most efficient routing of merchandise.



As usual Macy's careful planning is already paying off. Since the new store's opening last September it has reportedly done business half again over the take estimated as necessary for a healthy profit.

SIDE STREET ENTRANCE
FOR PEDESTRIANS IS NEAR
AUTOMOBILE RAMPS TO ROOF

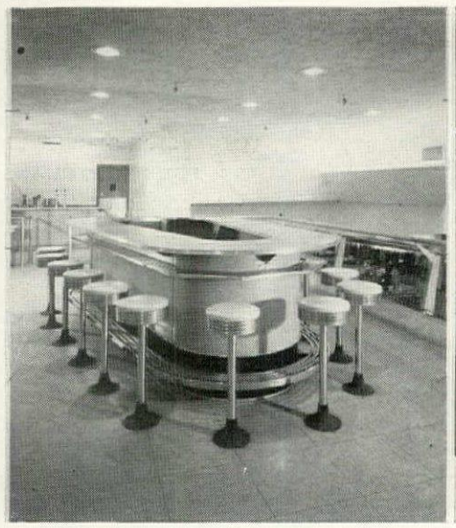


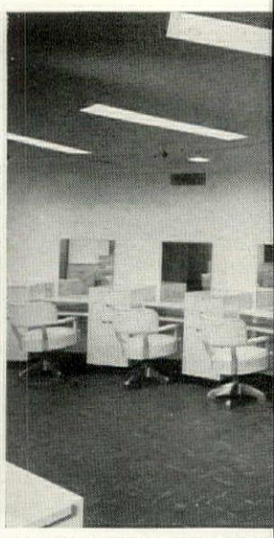
LONGITUDINAL SECTION scale 0 15 30 ft.

PARKING IS FREE FOR 1½ HOURS. AIR CONDITIONING EQUIPMENT, ESCALATORS, UP RAMPS ARE AT REAR, DOWN RAMPS RIGHT

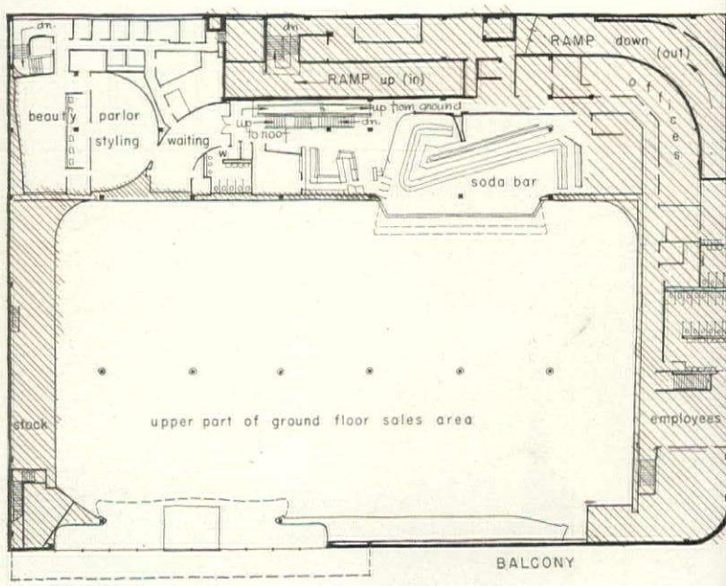
BALCONY DOUBLES AS DROPPED CEILING FOR SHOE DEPARTMENT

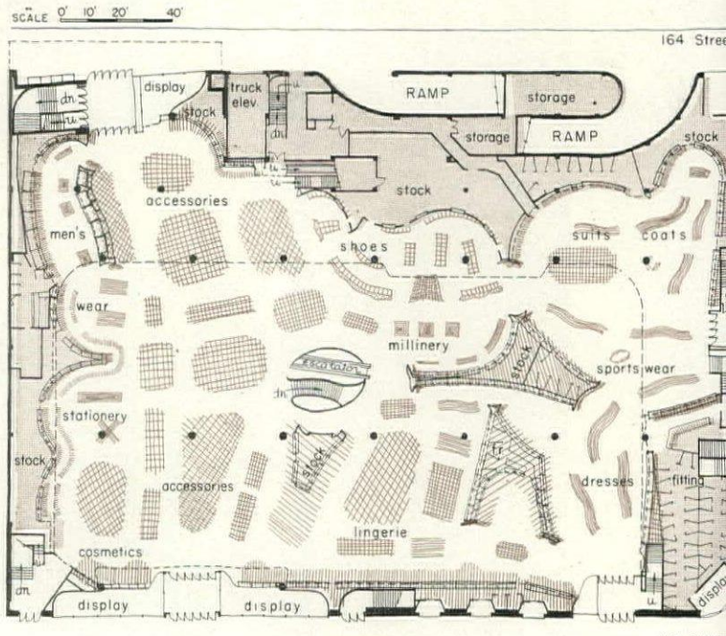
Ben Schnall





FOUNTAIN AND BEAUTY SHOP ON BALCONY AWAY FROM TRAFFIC





Macy's-Jamaica illustrates the architect's axiom that one can no longer build a box and fit a business inside. The freedom with which sales counters have been placed is due mainly to the 60 ft. spans between columns which allow full movement for seasonal and other changes in merchandising display. Each department was designed with special approaches to give customers the feeling of entering a different area when they move from one part of the selling floor to another, taking the place of the automatic process which occurs when customers go from floor to floor in a larger store. Flexibility of fixtures has been achieved by designing more than half of them on a module basis. Thus, a wall rack for women's coats can be seasonally converted into a sportswear section by fitting selling counters into the hanging wall fixtures. Fixtures designed to follow the curved areas of the building frame at the two north corners of the store were a special problem. In order to dimension them it was necessary to compute trigonometrically the building frame, plaster superstructure and fixtures themselves as compound curves (with the tangent point changing for each curve). A 6 ft. space in the ceiling provided by open-truss steelwork was utilized for air-conditioning ducts, water mains, electrical conduits and a sprinkler system.

CONSTRUCTION OUTLINE

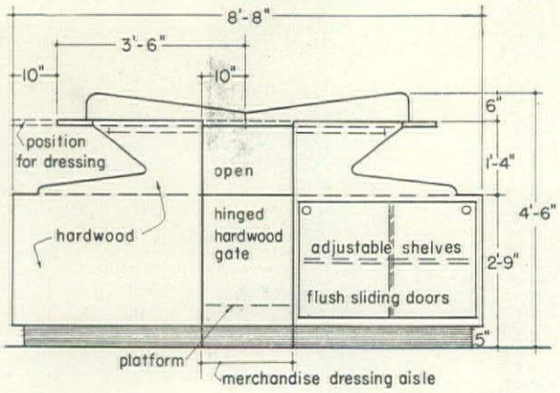
FOUNDATIONS—reinforced concrete. STRUCTURE: Exterior walls—limestone backed with 12 in. common brick. Interior partitions—terra cotta blocks, plaster finish. Base—polished granite. Framing—structural steel. Floors—terrazzo or cement. Ceilings—hung plaster. ROOFS—20-year bonded. SHEET METAL WORK: Flashing—copper. WINDOWS: Show windows—polished plate. DOORS—Herculite, Pittsburgh Plate Glass Co. FURNITURE—Thonet Bros., Inc., Hans Knoll Associates, Mallin Furniture Co. Covering—Hood Rubber Co. Fixtures—Grand Rapid Store Equipment Co. and Chase Bros. Soda fountain—Liquid Carbonic Co. Laminated plastic surfaces—Bandt, Inc. HARDWARE—bronze. ELEVATORS—two freight, escalators between floors.

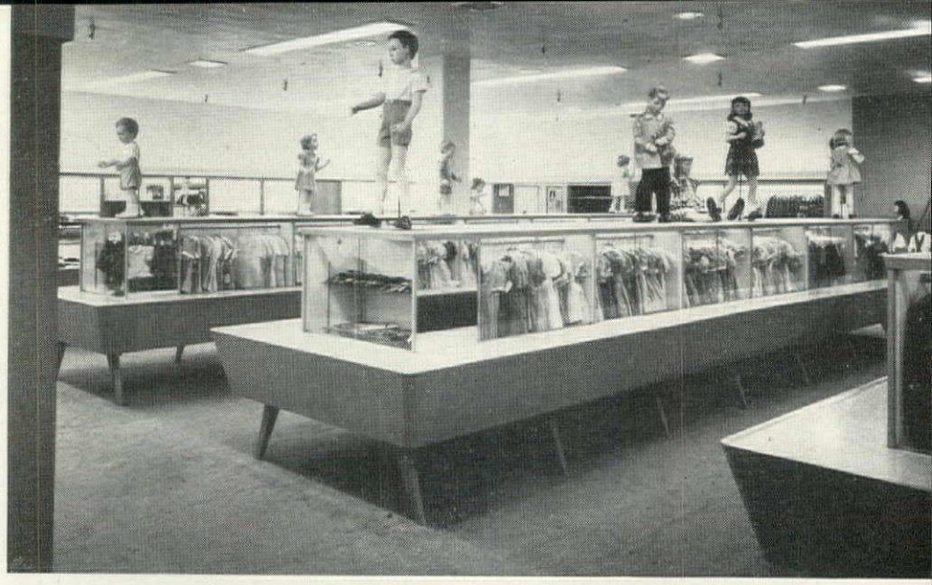
Gottscho-Schleisner

HOE SHOP IS NEAR STAIR FROM BALCONY AND ROOF. BASEMENT SHOWS FREE FLOW OF AISLES REPEATED IN LIGHTING

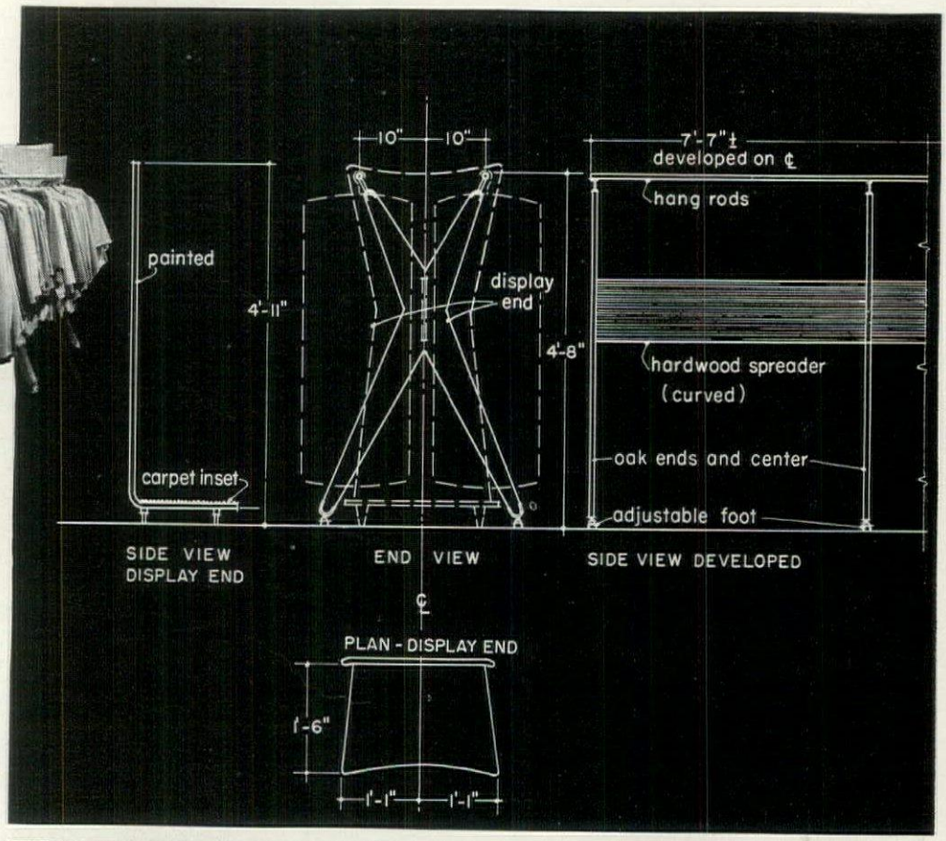
CENTRAL STAIRWELL RAILED IN BRONZE IS DISPLAY WINDOW FOR BASEMENT MERCHANDISE, ATTRACTS CUSTOMERS TO LOWER FLOOR

MACY'S JAMAICA STORE

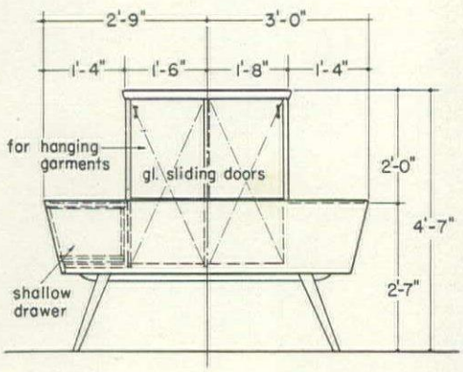




LOW COUNTERS ARE DESIGNED FOR CHILDREN TO SIT ON.



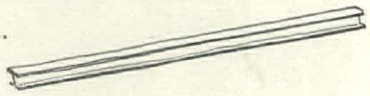
DESIGN OF FIXTURES IN THE YARD GOODS DEPARTMENT IS BASED ON SALES EXPERIENCE IN THE EASIEST WAY OF HANDLING BOLTS.

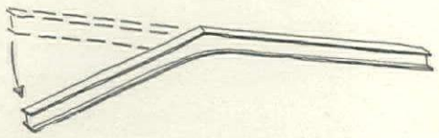


Gottscho-Schleisner, photos

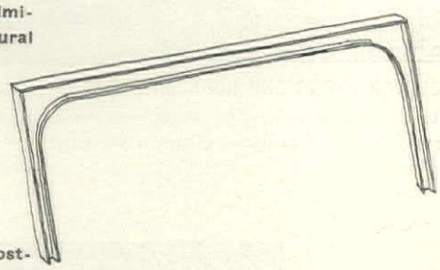
THE RIGID FRAMES and their close relatives, the arches—are handsome and efficient newcomers whose simple appearance belies their complicated engineering. A survey of their potentials for the building field.

A SIMPLE BEAM . . .

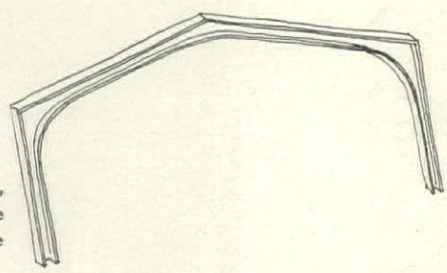




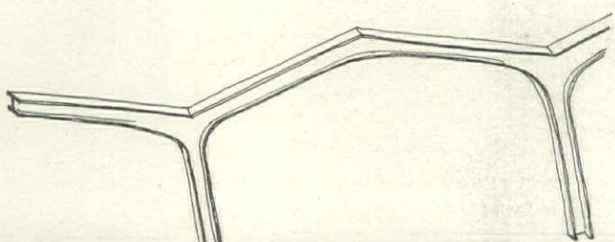
when bent, creates a primitive rigid frame—a structural unit of great efficiency.



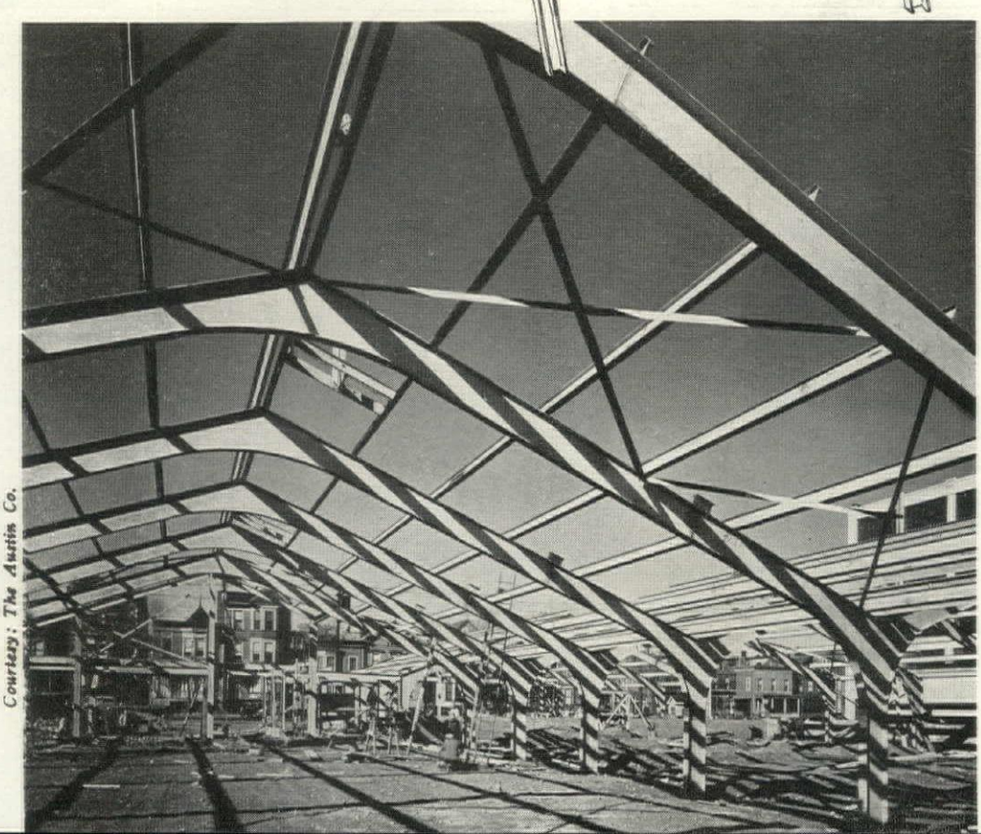
Though it looks like a post-and-lintel, the rigid frame is stronger, more efficient, handsomer . . .



Endless variations in pitch, height and span make the rigid frame a very flexible structural element . . .



which can be duplicated laterally or longitudinally to enclose great areas with minimum effort.



Courtesy: The Austin Co.

If you bolt an I-beam to two upright steel columns, you have one of man's oldest structural forms—the post-and-lintel. But if, instead, you take the same I-beam and bend both ends down to form two legs you have one of our newest structural units, the rigid frame. The difference between these two assemblies is often more apparent to the slide rule than to the naked eye. But there is a world of difference between the way the two perform under similar loads; and the bigger the span the more striking this difference becomes. For the beam—as its span is widened—becomes a truss whose depth must steadily and rapidly increase. In the rigid frame, on the other hand, no comparable thickening in its horizontal member occurs as its span increases. For example, a machine shop 65 ft. wide is spanned by a series of trusses 7 ft. 6 in. deep at the crown: yet they could be replaced by frames only 2 ft. deep at the same point!

What accounts for this remarkable difference? What, in fact, makes a bent beam into a rigid frame? According to Martin P. Korn, Detroit engineer, merely "the change in direction of its neutral axis and the addition of sufficient strengthening material at the bend to preserve its hegemony of internal resistance." This tells us *what* a rigid frame is: but it takes a little engineering to explain *why* it acts the way it does. In the post-and-lintel set-up, the horizontal member takes all the load while the columns take only the thrust imposed on them by the load. In the frame, however, the rigid connection permits the sharing of the load between all three elements *so that, combined, they do less work than the beam alone.* In short, the highly efficient principle of continuity has been introduced; instead of a series of disparate members, bolted or nailed together, the load is evenly transferred through one continuous element.

FRAME INTO ARCH. Recent experimentation with the rigid frame is producing increasingly daring and handsome forms. They tend more and more to leave the primitive rectangularity of the early rigid frames and approach the soaring curves of their close relative—the arches. So closely, in fact, that engineers themselves are in some doubt* as to where the frame leaves off and the arch takes over. The dividing line is apparently more one of degree than of kind. Dr. Jacob Feld of New York points out that "in a true arch every member is in compression (a necessity in stone) while a rigid frame has a knee that is always partly in tension." Rigid frames have two distinguishing characteristics, according to

* This doubt does not apply to the *three-hinged* arch, of course, since it is not, like the frame, an indeterminant structure.

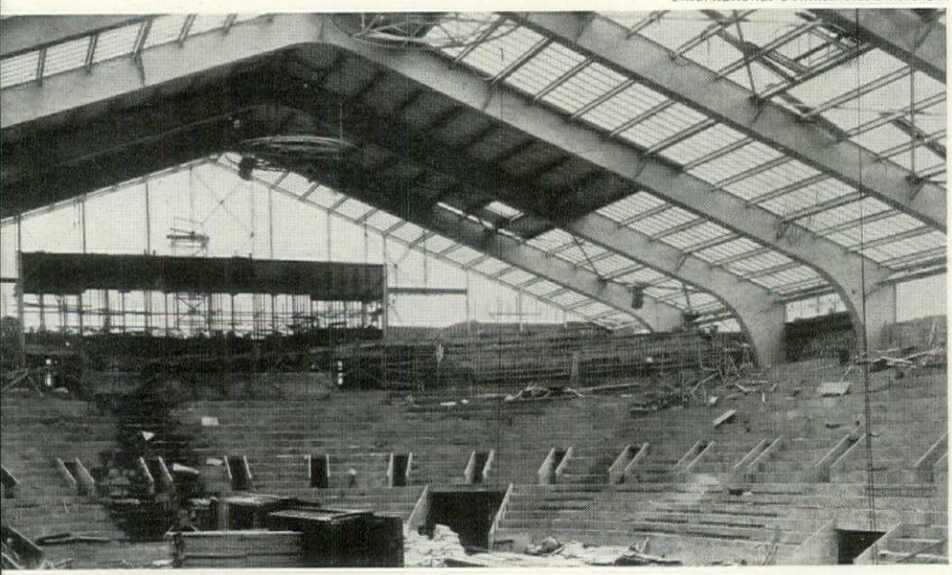
RIVETED RIGID FRAMES

Photos 1-4 Courtesy of American Institute of Steel Con

1. COMPLETELY RECTILINEAR. The rigid frame, shown here in its most elementary form, still represents a more efficient and economical solution than an adjacent subway where through girders rest on masonry.

2. CURVED TOP CHORD AND ROUNDED KNEES in these frames bring them pretty close to typical. Note how closely frames meet requirements of track clearance, total span and total height. Neither steel truss nor masonry arch can match it.

International Commercial Photo Co.



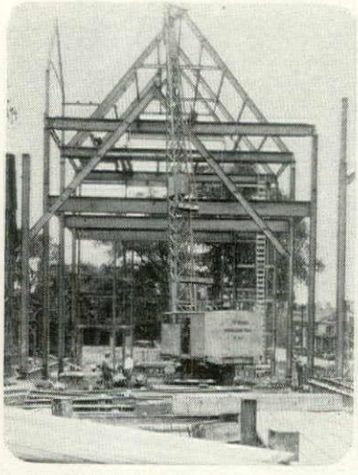
3. APPROACHING THE ARCH in their soaring line, these riveted steel frames span a huge arena without fuss. Their top chords are only a fraction as deep as would be a truss; and they give a neat-appearing ceiling, easy to look at and easier to paint and keep clean.

R. A. Wurge

4. THREE-DIRECTIONAL RIGID FRAMES make this railroad viaduct a handsome, stable structure. Maintenance and repair is lower than on most conventional framing.

The Austin Company

WELDED RIGID FRAMES



5. 1931 WELDED FRAME already shows neatness and simplicity of method compared to a riveted assembly.

6. "TREE-FORM" WELDED FRAMES are readily adaptable to a wide range of span and clearance problems in single-story construction. This interior shows how neatly they master daylighting

another engineer: "they tend to be very shallow and all reactions are at the base"; while Peter Lindstrom sees it more as a problem in mathematics: a rigid frame is "any two or three dimensional structure which cannot be analyzed by customary equilibrium equations."

Whatever the fine line between the arch and frame until 1929 it was the very devil to design mathematically. Prior to that time, an engineer might spend two or three weeks just figuring one out. Then Yale's Prof. Hardy Cross came up with his now-famous shortcut, the Moment Distribution Method, and reduced the time to two or three hours.* This new method removed the engineers' understandable coolness toward the rigid frame.

HANDSOME IS NOT ALL. As the pictures on these pages indicate, the rigid frame in all its forms is a very handsome object. Yet good looks alone can scarcely explain its growing popularity in a host of situations where looks are of the least importance. Actually, its popularity rests on several very practical considerations. It is, first of all, structurally very efficient. The great advantage of the rigid frame is, as Dr. Feld puts it, "that no surplus material need be used. At every section and point, each unit of material does the same work." Second merit is that the frame can span the same space as a conventional truss with a much narrower horizontal member. In the design of overpasses this factor is often of critical importance: clearances below and roadbed levels are often so tight that a truss or arch simply cannot be employed.

With architects, the rigid frame has another advantage: without reducing required headroom, it can perceptibly reduce the total volume of enclosed space (figs. 7 and 8). Moreover, the frame yields a much tidier ceiling surface. Where good looks are important conventional trusses—with their wilderness of braces, struts, purlins and bridging—must usually be concealed by suspended ceilings. Rigid frames, on the other hand, are usually an asset to the interior.

Obviously, the frame (and its cousins, the arches) is best adapted to single story buildings. There is no theoretical reason why simple rigid frames could not be used in multi-story construction. In fact, the principle of continuity implicit in the frame is already (timidly) used in multi-story structures with good results. But the frame shows to best advantage where long, high, unobstructed spans are a necessity. And where daylighting is a factor, the frame becomes an especially suitable structural element. (figs. 11, 17).

WHEN TO USE RIGID FRAMES. In such buildings as big gymnasia or airplane hangars, where a large span is mandatory, the truss involves roof framing of really great depth. (To span the 200 ft. wide arena of Manhattan's Madison Square Garden requires a truss 30 ft. deep.)

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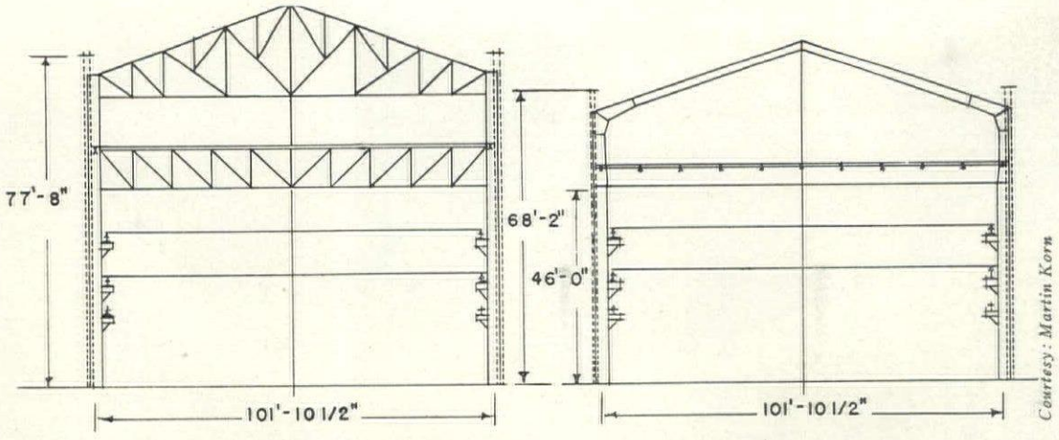
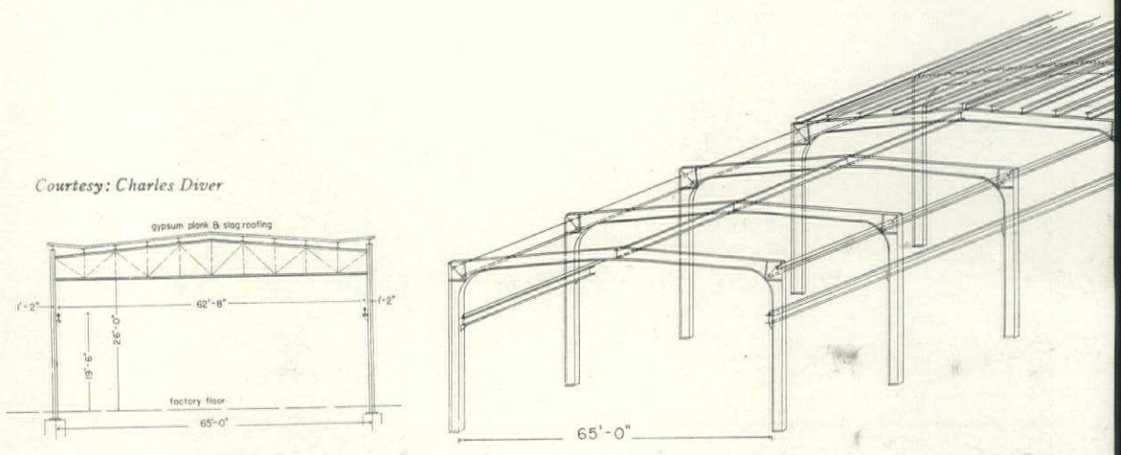
* Long before this, Arthur Hayden had been using rigid frames in bridge design. Mr. Hayden now has over 2,000 frames in concrete and steel, as well as the definitive book on the subject, to his credit.



Courtesy: Martin Korn

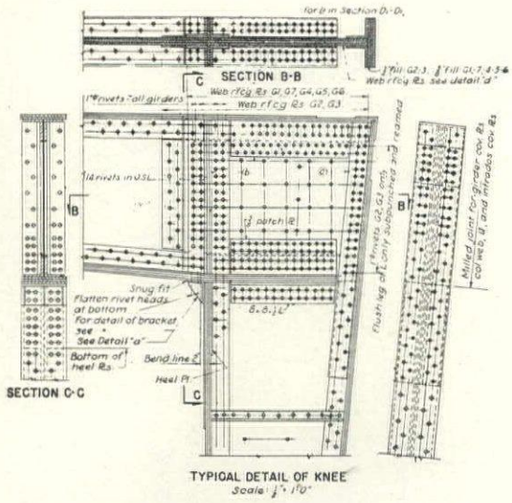
7. COMPARISON OF TRUSSES AND FRAME shows why U. S. Navy, for one, uses the latter. In addition to a saving of $14,000 (in 1939) the rigid frame "effected a reduction in the height of the entire building of 9½ ft. and a corresponding saving of future maintenance and heating."

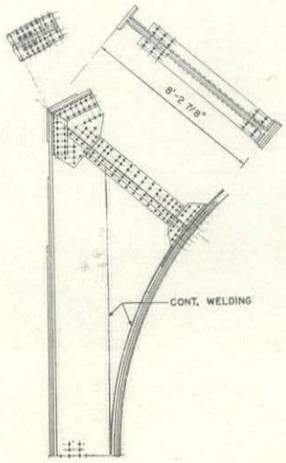
Courtesy: Charles Diver



8. FRAME SAVES 18% CUBAGE, while retaining same headroom, according to a detailed analysis by Charles Diver of an actual plant. While the frame actually weighs 6.9% more than conventional structure (left), it has increased available headroom 3 ft. 9 in. at the columns, 6 ft. 6 in. at the center. Hence frame uses 9.2% steel per cu. ft. of enclosed space less than truss. If headroom were held to same height, then frame would reduce enclosed volume by 18%.

Courtesy: Martin J. Korn

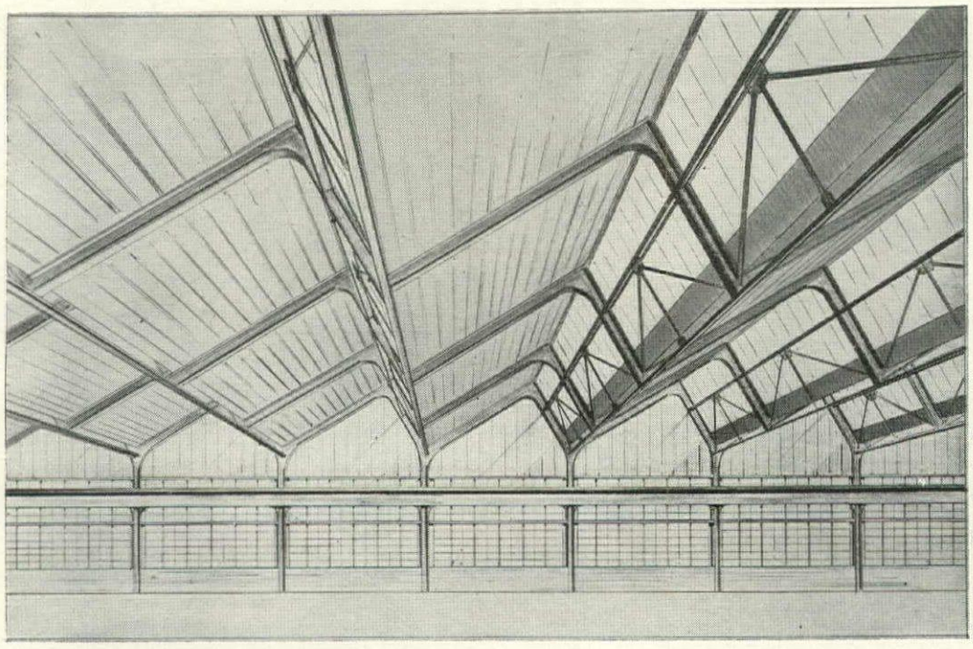




9. WELDING VS. RIVETING. To demonstrate fallacy of riveting in continuity structures like rigid frames, Engineer Martin Korn shows typical shop drawings for riveted designs. "Massed formations of splice and reinforcing plates and regiments of rivets" shellpock the knees at every point of stress. Contrast this with simplicity of the welded form (extreme left). Besides this, even riveted structures will often employ welds at their most critical points (above).

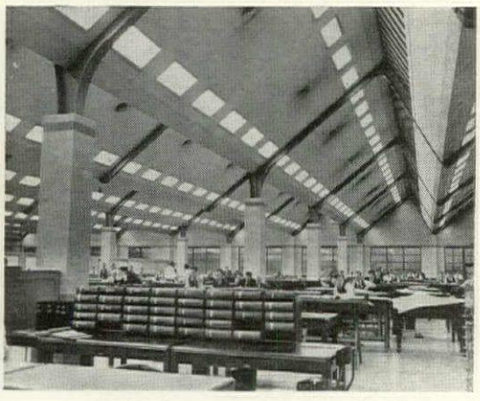
Courtesy: Lincoln Arc Welding Co.

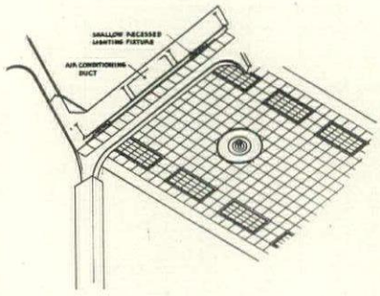
10. THE RIGID FRAMES ARE UNCHALLENGED WHERE BIG, CLEAR SPANS ARE DEMANDED

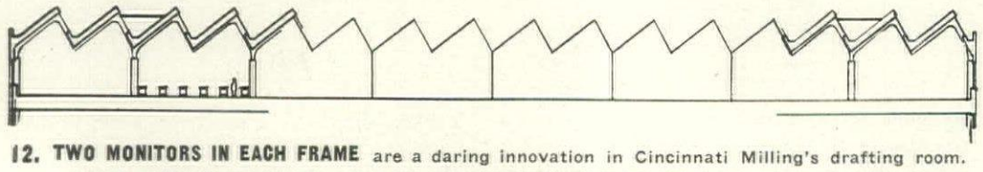


Courtesy: The Austin Co.

11. UNUSUAL USE OF RIGID FRAMES marks new plant of Cincinnati Milling Machine Co. In shops (above) Austin Co. designers have combined a parallel series of tree form frames to support transverse system of saw tooth bents and carrying trusses. Result: a continuously lighted aisle, 80 ft. wide, hundreds of feet long. Note that crane tracks are carried by separate line of rigid frames.







12. TWO MONITORS IN EACH FRAME are a daring innovation in Cincinnati Milling's drafting room. (above) Daylighting, artificial lighting, air conditioning and acoustics are combined with "double dip" roof monitors, two to each bay, but carried by a single, continuous welded frame.

Here the rigid frame has obvious and striking advantages. In its ability to span great areas, without fuss or confusion, the frame is very elastic. The Indiana Livestock Exposition is enclosed by frames with a clear span of 250 ft.; there are several with spans of 200 ft., while those of over 100 ft. are already commonplace. However, the arches have exactly the same advantages. Hence, one of the controlling factors in deciding which to use will be the soil conditions at the site. If foundation bearings are in solid rock or hardpan, attachment of the superstructure will ordinarily be fixed.* In most other soil conditions hinged connections will ordinarily be used between foundation and structure—usually with horizontal ties between the feet of the arch.

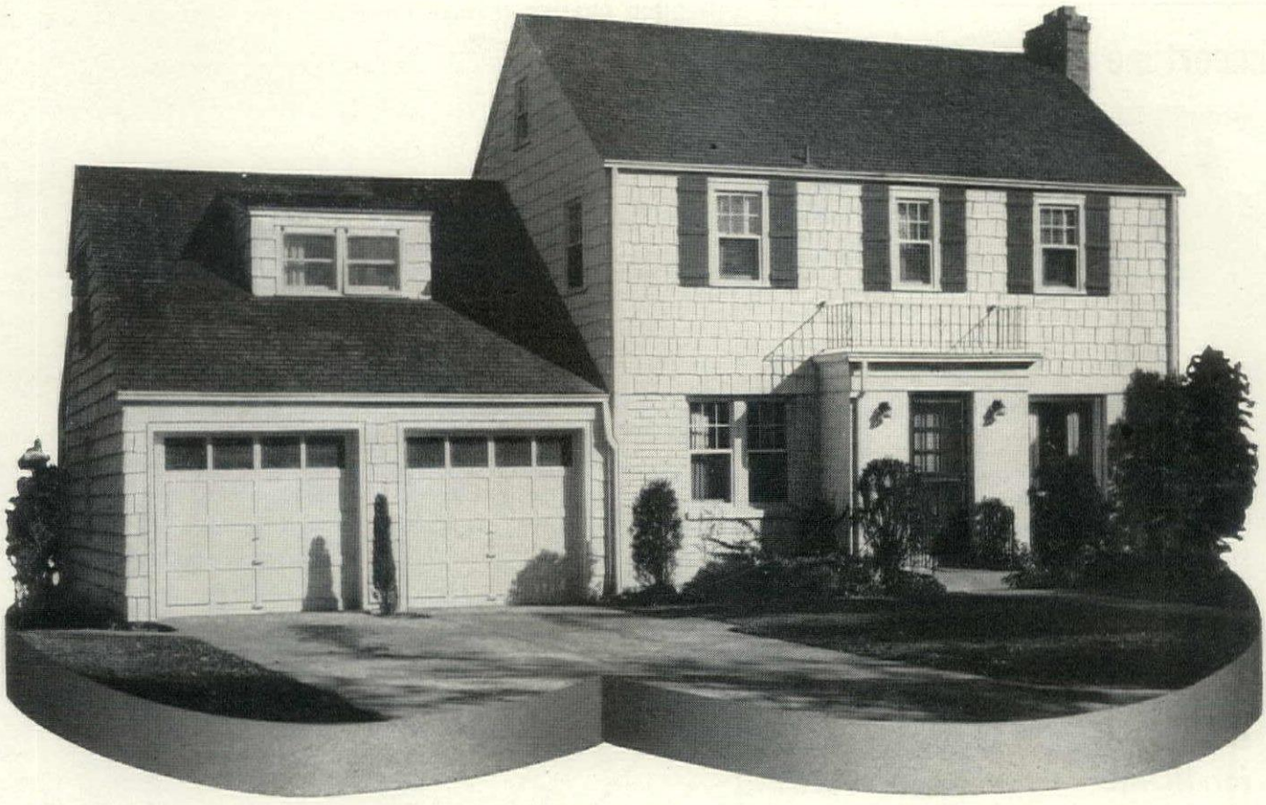
Whether to use frame or arch is to some extent also a problem of material. In steel, either form is quite practical. The same is true of concrete (fig. 17, p. 114)—though if the designer leaves the rigid frame, he is apt to go into ribbed vault construction rather than stop with mere arches supporting a non-continuous roof of some other material. But in laminated wood, a hinged arch is almost mandatory due to the fabrication process itself. (Forest Products Laboratory has records of only one actual rigid frame in wood—that used at the Great Lakes Exposition in the Thirties. This had a hollow, box section formed of timber and plywood.) Some of these laminated wood arches are among the century's handsomest structural forms (p. 118).

STEEL MOST POPULAR. Thus the rigid frame is adaptable to either steel or concrete, and the hinged arch and true arch to all three—steel, concrete or laminated wood. But in actual practice, steel seems to be the most popular material, especially since the perfection of electric arc welding has simplified both the design and fabrication of metal structures.

Steel frames are often more economical than conventional trusses but not in the absolute fashion which many designers have come to assume. In a sense, any rigid steel frame is a custom-made element. It has to be specially designed and—by means of cutting, welding and/or riveting—fabricated out of standard rolled shapes. Of course, even this process can be rationalized where identical frames are used serially. Moreover, since fabrication is done in the shop, the only site labor required is in erection and field joints.

Individual rigid frames may actually be heavier than the columns-and-girder they replace. Thus, in one of the case histories shown here (fig. 8), a rigid frame structure used 6.9 per cent more steel than the conventional framing. However, when the increased headroom is considered, the steel per cu. ft. of usable volume is 9.2 per cent less than the

* Whether you know it or not, in the words of Mr. Korn, "you change the behavior of the steel frame (when) you unite it with the footings. You change, likewise, the behavior of the footings. Briefly, you make your foundation an integral part of the frame, independent of the soil, the stresses in the structure depending entirely upon the extent and manner of its union with the foundation." *(Continued on page 110)*



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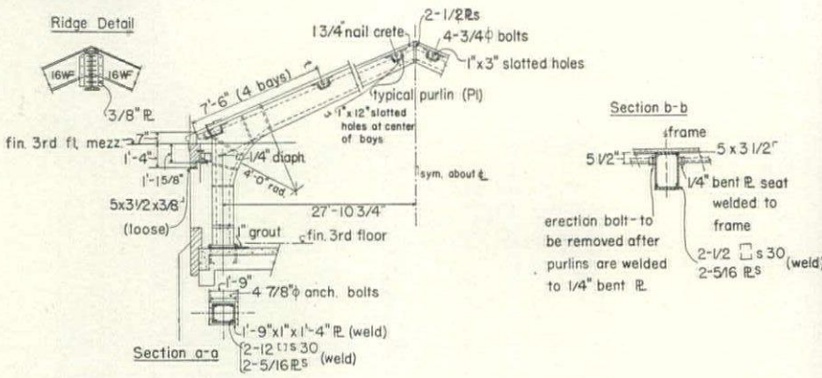
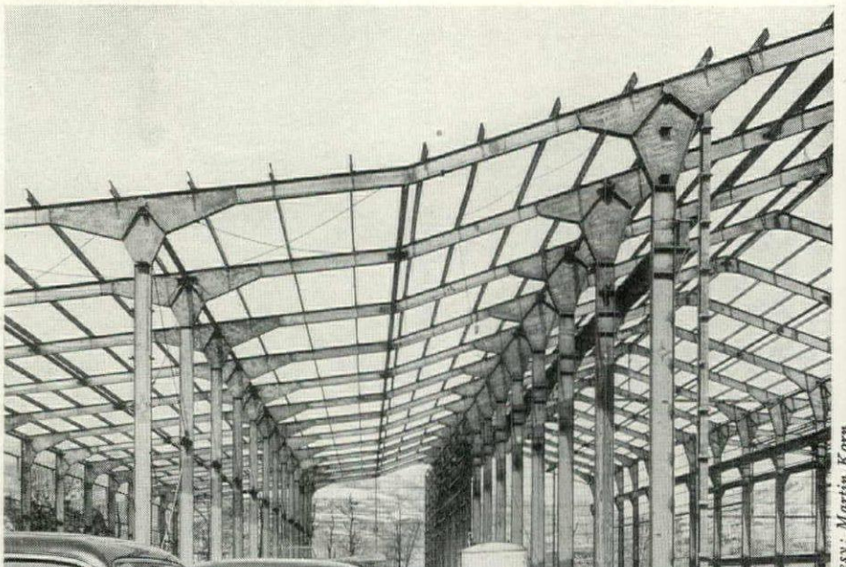
Rō-Way
OVERHEAD TYPE DOORS

RIGID FRAMES *(Continued from page 108)*

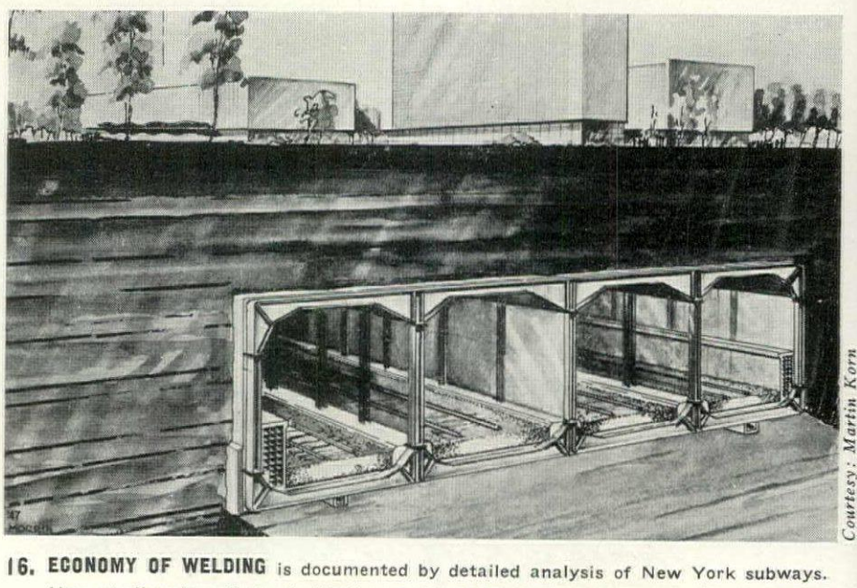


14. WELDING MAKES POSSIBLE all sorts of new variations in the detailing of rigid steel frames. Here, for instance, Fred Severud has welded standard rolled shapes into hollow box sections for both frames and purlins.



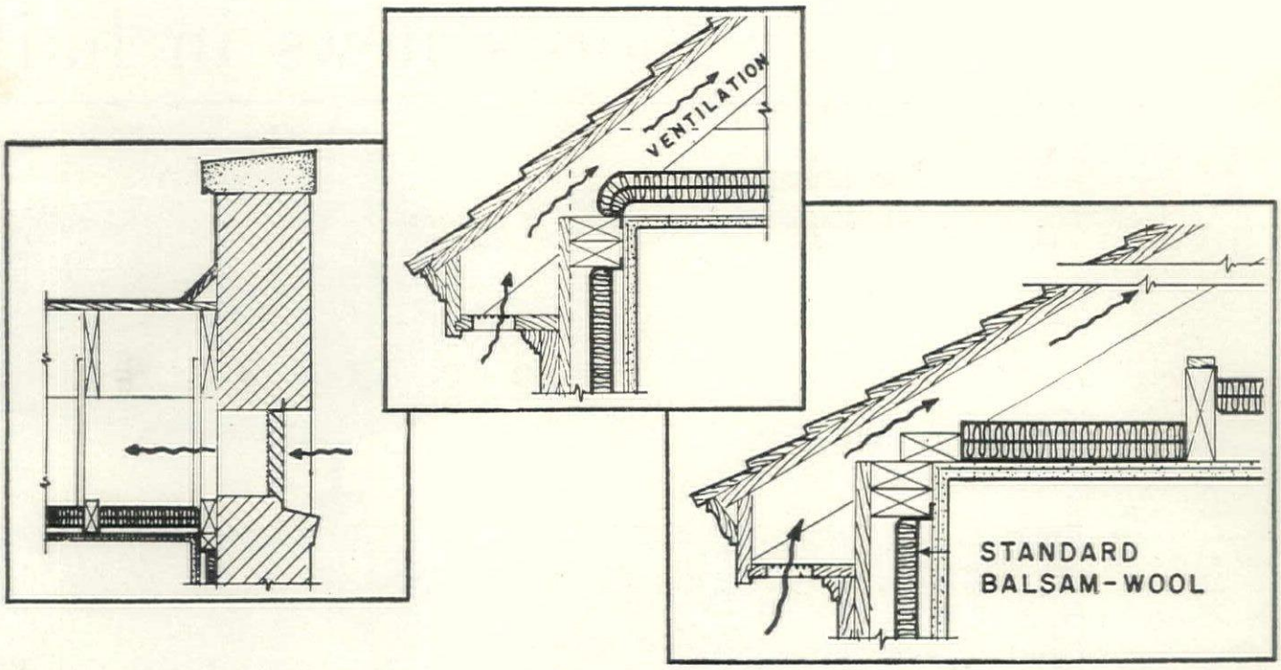
Courtesy: Martin Korn

15. WITHIN BROAD LIMITS, the rigid frame can meet almost any desired profile. Here five bays of varying height are accomplished by a continuous series of five frames.



Courtesy: Martin Korn

16. ECONOMY OF WELDING is documented by detailed analysis of New York subways. Here studies show that substitution of welded for riveted frames would reduce steel tonnage by 28.5%, reduce costs $103,500 per track mile. *(Continued on page 114)*



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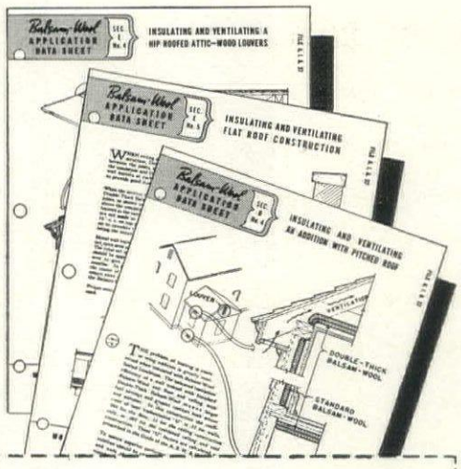

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IDEA HOUSE #2, built by the Walker Art Center in Minneapolis to demonstrate the latest advances in home planning and equipment. Featured in the January issue of McCall's Magazine, the house incorporates split-level planning, solar orientation. One of its main attractions is the "New Freedom Gas Kitchen."

4-IN-1 LIVING AREA gives family of 4 plenty of room for work and play. Note built-in storage units, all-purpose table, "conversation" groups. Automatic Gas air conditioner keeps indoor weather perfect 12 months of the year.

"PACKAGED" BATHROOM. Radically new, all-in-one prefabricated bathroom unit has swing-around washbowl, adjustable shower, handy cabinets. Trouble-free hot water service is supplied by an automatic Gas water heater.

"NEW FREEDOM GAS KITCHE
planned as part of the living
features up-to-the-minute appli
in a casual, charming setting.
matic Gas range built to "CP" s
ards makes light work of coo
roomy Servel Gas refrige
operates soundlessly, economi
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stairs supplies abundant hot

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.there's a

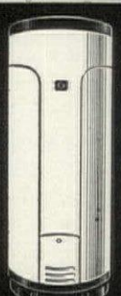
NEW FREEDOM GAS KITCHEN"

How you—the architect, the builder—
can use this great new selling tool

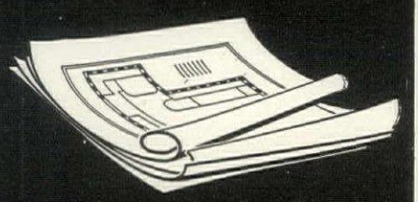
Sweeping national advertising has sold all America on the "New Freedom Gas Kitchen." Buyers know them, want them. All you have to do is give them these kitchens — and you cash in on a tremendous, ready-and-waiting market! It's simple as ABC. For your kitchen qualifies as a "New Freedom Gas Kitchen" if it meets these simple requirements:

1. It must have a Gas range built to "CP" standards (Gas is America's favorite cooking fuel . . . it "feeds" 91,000,000 people daily)

2. It must have an automatic Gas refrigerator (Servel refrigerators stand in the tip-top ranks of America's most-wanted makes)



3. It must have an automatic quick-recovery Gas water heater (an absolute necessity for dishwashers and the new automatic laundries)



4. It must be well-planned and efficient (and you'll take care of that, anyway —aren't American kitchens the finest in the world?)

Hear what bankers . . . architects . . . builders . . . and buyers have to say about the "New Freedom Gas Kitchen" Program

THE BANKER SAYS: *"The house with a completely equipped Gas kitchen is a better financing risk . . . results in fewer delinquencies."*

• • •

THE ARCHITECT SAYS: *"I like the flexibility of planning with modern Gas appliances; the combination of mass appeal with individuality of design."*

• • •

THE BUILDER SAYS: *"A kitchen that's ready to live in, one that bears a 'stamp of approval'* everybody *knows, is a big help in selling a house."*

• • •

THE BUYER SAYS: *"A completely equipped kitchen saves us the delay and inconvenience of installation. Our kitchen will* stay *modern, will give our house a higher re-sale value."*

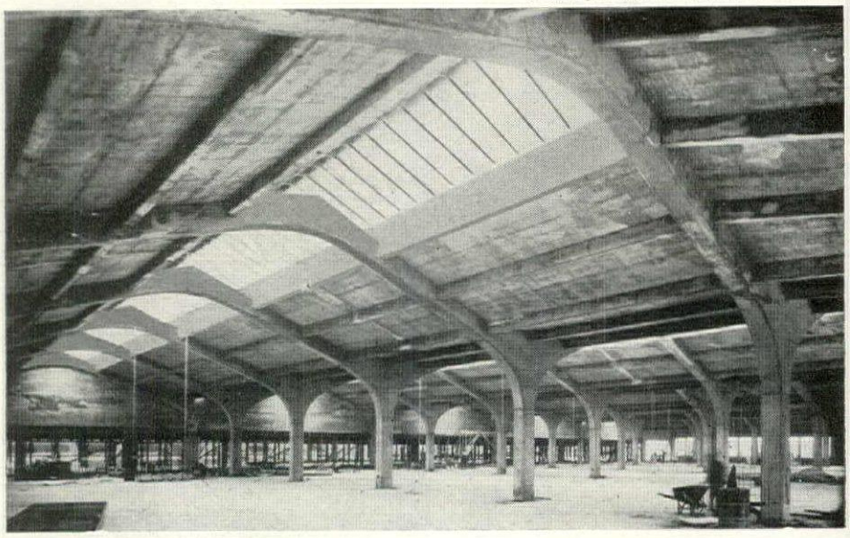
Free: Complete promotional material to help you tie in with this great program. See your local Gas Company or write

AMERICAN GAS ASSOCIATION

420 LEXINGTON AVENUE, NEW YORK 17, N. Y.

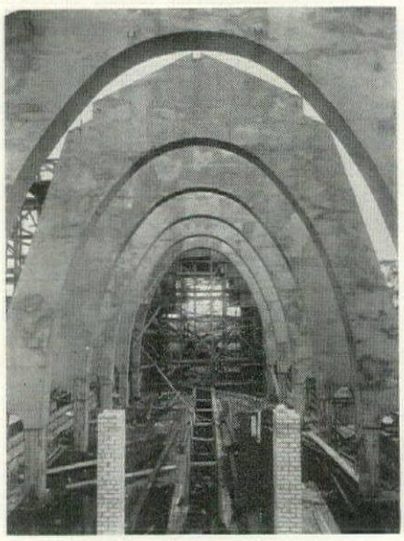
RIGID FRAMES *(Continued from page 110)*

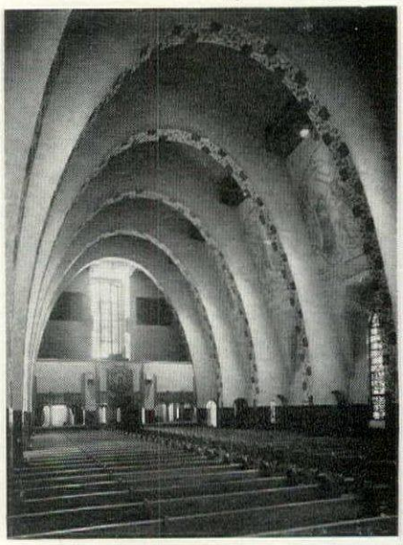
Courtesy: Portland Cement Association



17. & 18. Not only is concrete adaptable to both frames and arches but, with integral roof slabs, increased stability is achieved. Chicago Stockyards Hall (above); St. Bernadette Church, (below), Henry V. Murphy, architect.

Peyser & Patzig, photos





truss. Expressed another way, a rigid frame would yield the same headroom as the truss while *reducing building volume by 18 per cent.** Cubage reductions on this scale would be important not only in terms of construction costs, but of heating, lighting and painting as well.

RIVET OR WELD? Once the decision is made to use rigid steel frames, another question arises: should they be riveted or welded? Despite the fact that it is nowadays a more or less academic question, the welding vs. riveting problem can still generate quite a bit of heat in engineering circles. At the level of theory, there seems little doubt that the welded joint is the natural complement, if not indeed the prerequisite, to structural continuity. If today many an engineer still clings cautiously to rivets, it is largely due to a sneaking conviction that the rivet is stronger than the weld. Actually it would be hard to prove this. Few people have ever had the time or the inclination to sit down and figure out exactly what *does* happen to a riveted joint under a load. Mathematically, the problem is thorny and complex. As a result, the design of most riveted joints is largely a matter of common sense. Where theory is used, it is often based on tests made at Cornell in 1904, using small joints with a maximum of nine rivets and made of softer plate and rivet steel than now used!

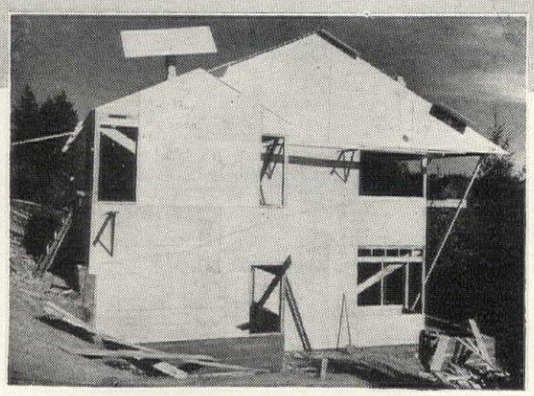
CHEAPER? For militant advocates of the welded joint—especially in continuity-structures like frames or arches—the use of rivets is a palpable absurdity from a strictly theoretical point of view. (fig. 10). But the enthusiasts go further than that: not only is welding stronger

(Continued on page 118)

* Paper No. 81 (Class J-1) by Chas. A. Diver; James F. Lincoln Foundation Award, 1947.

A "Behind the Scenes" Story of DOUGLAS FIR PLYWOOD Advantages

Built in '39—*Rigid and Tight Today!*



Wall sheathing—5/16" Plyscord, the sheathing grade of Interior-type Douglas fir plywood.

Panels of 3/8" Plyscord sheathed the roof, were covered with hand-split cedar shingles.

Subflooring—5/8" Plyscord. "No squeak or noticeable deflection," say the owners.

GENUINE -PLYSCORD- SHEATHING D.F.P.A. INSPECTED

"Plyscord... a wise investment in many ways..."

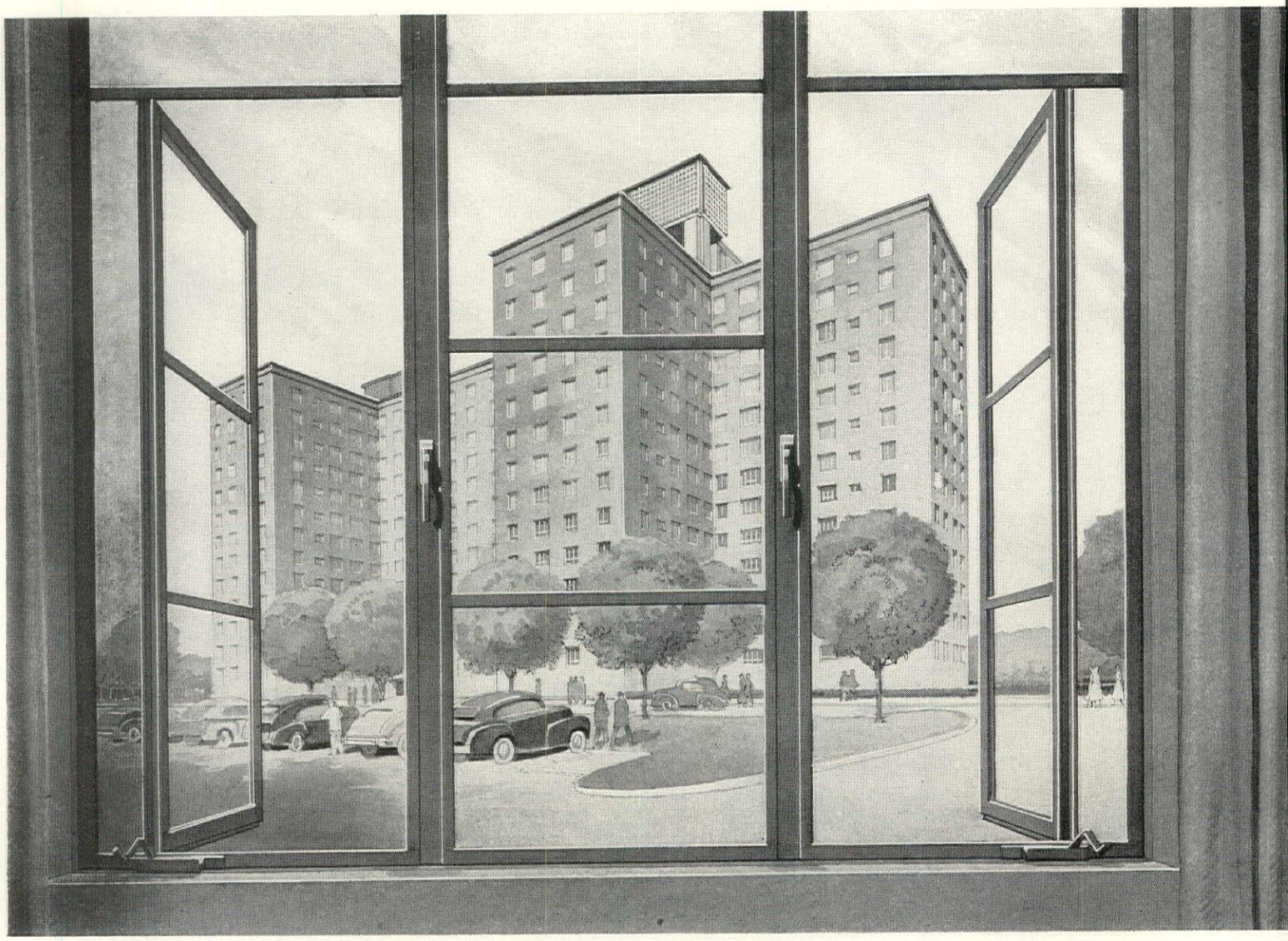
THIS attractive Portland, Oregon, home contains plenty of Douglas fir plywood, but it's mostly "behind the scenes"—in wall sheathing, in roof sheathing, in subflooring. Built on a hill-top lot with sweeping view, the house is subjected to sweeping winds as well. Kenneth Striker, the original owner, says: "In spite of the wracking action of the wind, the Plyscord sheathing kept the structure so rigid that after four-and-a-half years there were only four small plaster cracks, due to atmospheric conditions rather than structure. When I build again, Plyscord will be a 'must' in the specifications." The present owners, Mr. and Mrs. John Dierdorff, who purchased the house in 1944, say the house is still rigid and tight, and has required an absolute minimum of maintenance. Architect for the house was Richard Sundeleaf; builder was Julius Zink.

PLYWOOD'S MANY ADVANTAGES KEEP DEMANDS GREATER THAN SUPPLY

Plywood production is greater today than pre-war. But demand is unprecedented. That's why Douglas fir plywood may not always be readily available. Check your regular source of supply for price and delivery information. For technical data, write the Douglas Fir Plywood Association, Tacoma 2, Washington.

Douglas Fir PLYWOOD

LARGE, LIGHT, STRONG *Real Wood* **Panels**



Building No. 1 of the Fresh Meadows Residential Community at Flushing, L. I., owned and operated by the New York Life Insurance Company. Architects and Engineers: Voorhees, Walker, Foley and Smith, New York. Contractor: George A. Fuller Co., New York.

In planning the Fresh Meadows Residential Community, the New York Life Insurance Company gave first thought to supplying tenants with the very best of living accommodations. Lupton Metal Windows were selected to assure controlled, draft-free ventilation. Narrow frames and mullions allow maximum daylight, offering each dwelling unit all the benefits of a picturesque Long Island landscape. Metal frame screens are easily attached on the inside of the window. Economy, a vital feature of large-scale rental housing, is effected by the long life of Lupton Metal Windows. There is a Lupton Metal Window for every type of building. Write for our Catalog or see it in Sweet's.

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But don't take our word for it. Make your own tests—*see* the proof. Send handy coupon for FREE Varlar sample. Write on it, smudge it, even walk on it. Watch it come clean with plain soap and water. 90 gorgeous styles ... go up easily as wallpaper. Send coupon *now*.

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City ..... *Zone* ..... *State* .....

RIGID FRAMES *(Continued from page 114)*

and handsomer than riveting, it is cheaper too—saving metal, weight, and labor. Prosaic but impressive evidence along these lines comes from the New York City subway system: In a very detailed comparison between riveted and welded subway tunnels,* N. D. Brodkin shows that the welded frame not only saves steel (1,660 tons per mile or 28.5 per cent) but also costs less to build ($103,500 per mile of track) than the riveted frames used hitherto.

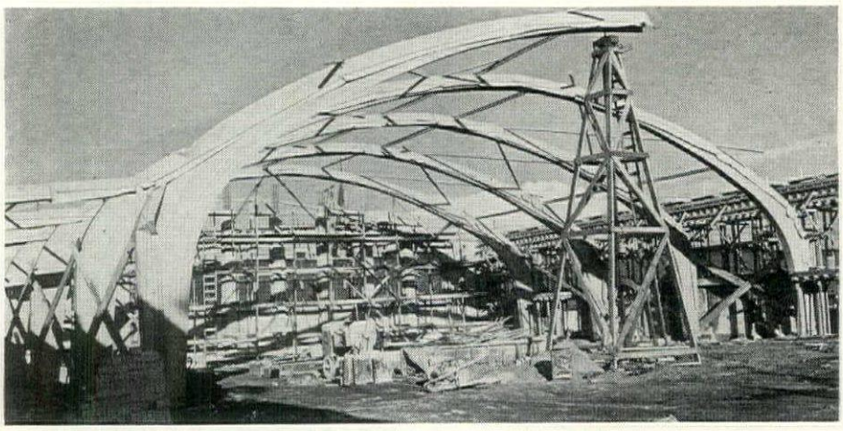
Questions of cost and strength aside, however, welding is a liberating influence in the design of frames and arches. It permits all sorts of innovations which would be difficult or impossible in any other medium. Unusual shapes and profiles are easy, while stiffening diaphragms and hollow sections introduce new design possibilities. (fig. 14, 15).

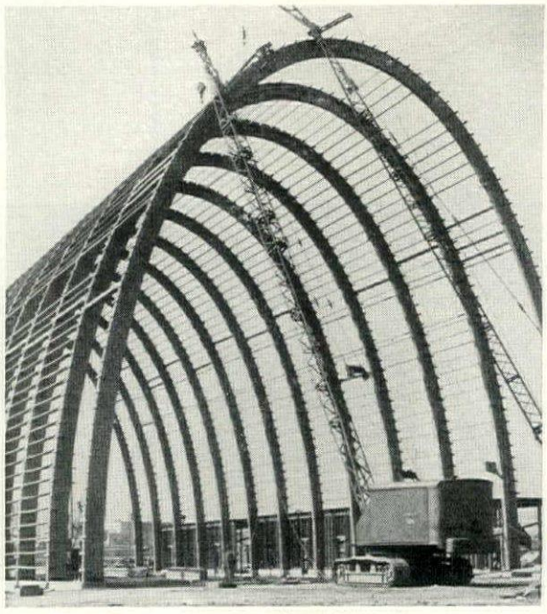
Whatever the fine points of the controversy, welded steel frames more and more dominate the field. And this is due in no small part to a full decade of missionary work by two Cleveland, Ohio, firms—the Lincoln Arc Welding Co. and the Austin Co. The latter first designed their all-welded "tree-form" columns in 1937 which, when paired, automatically formed handsome frames (fig. 11, 12).

CONCRETE AND CONTINUITY. By its very nature, concrete is a "natural" for the frames and the arches. Indeed, when integrally designed with purlins and roof slabs, the concrete frame probably offers the maximum in structural continuity. In this country, the concrete frame has been largely confined to very heavy construction —highways, railroads, port facilities—where need for great strength and stability offsets any other considerations. Chief deterrent to its use in architecture proper has probably been the complicated formwork required. Nevertheless, we have many outstanding concrete frames in this country (figs. 17 & 18) and with canny engineering, will undoubtedly see more.

* Paper No. 92 (Class J-2), James F. Lincoln Foundation Award, 1947.

Timber Structures, Inc.





19. HINGED arches in laminated wood yield handsome, highly efficient but expensive structural system.

20. PARABOLIC arches of laminated wood give us some of the century's most dramatic structures.

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"PRE-TESTED" QUALITY

built with REVERE COPPER AND COMMON SENSE!

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So Revere undertook a continuous research program covering every phase of sheet copper construction. Installations were made under conditions simulating those to which actual building installations are exposed. All types of design details and methods of installation were tested and compared, and the findings made available to you in the form of specific recommendations.

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**"Research Solves Problems of Stress Failures in Sheet Copper Construction."*

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for LASTING BEAUTY, specify

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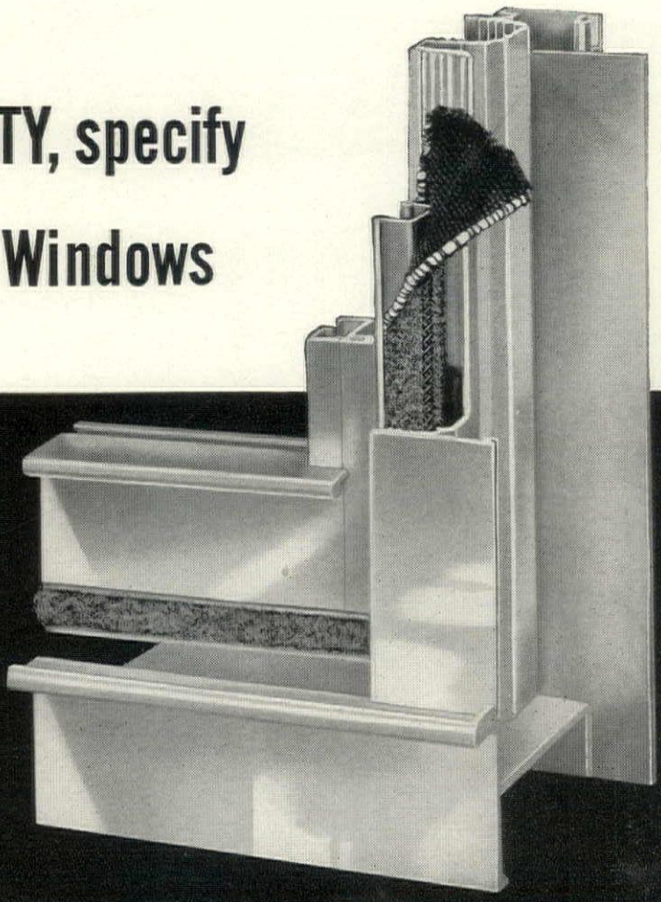

- **MINIMUM AIR INFILTRATION,** because of nonmetallic weather stripping and serrated guides
- **FINGERTIP CONTROL**
- **NO WARP, ROT, RATTLE,** stick or swell, ever
- **SOLID, LUSTROUS ALUMINUM** construction, requires no painting
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- **EASE OF INSTALLATION** is a dominant feature

Expertly designed for a lifetime of service, Adlake Aluminum Windows bring lasting beauty to *any* building, modern or traditional. Built of lustrous aluminum, they do away with the cost of painting and maintenance. You install them, you *forget* them! They look lovely and operate smoothly for years and years.

Only Adlake Windows combine woven-pile weather stripping and serrated guides to assure a minimum air infiltration and absolute fingertip control. And because of their construction (see diagram), Adlake Windows never warp, rot, rattle, stick or swell. Installation is phenomenally easy —*you can complete all exterior work first and then simply set the window in place!*

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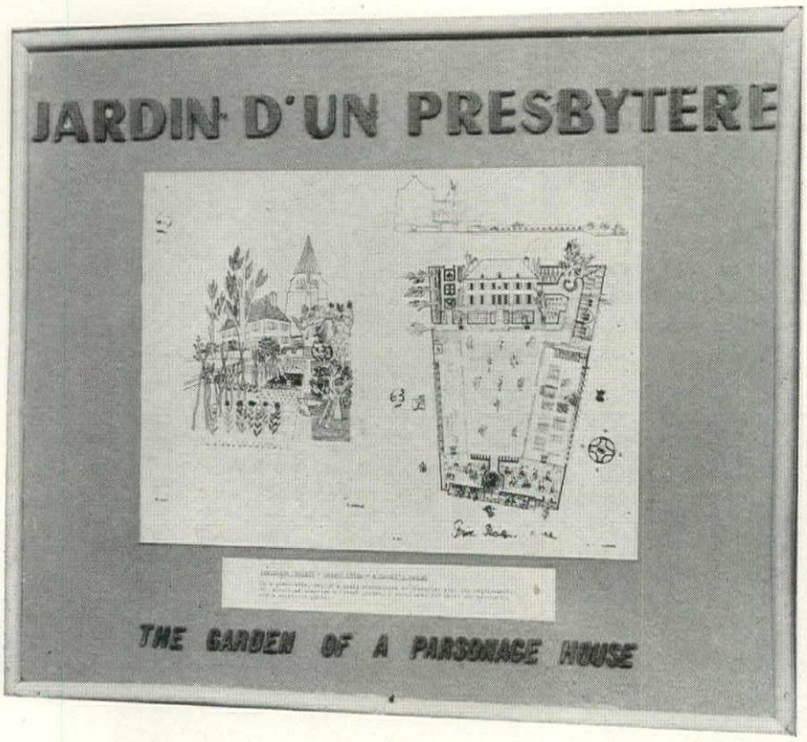
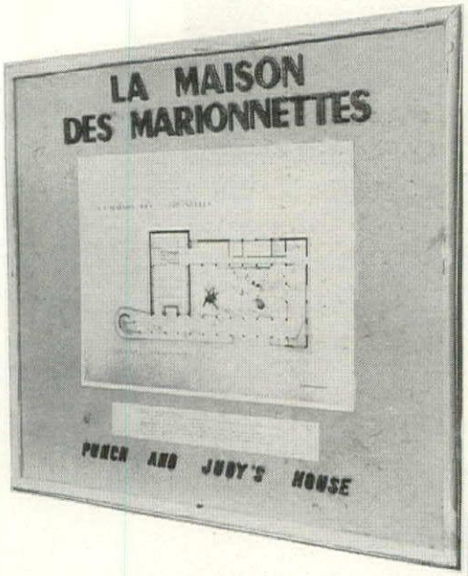
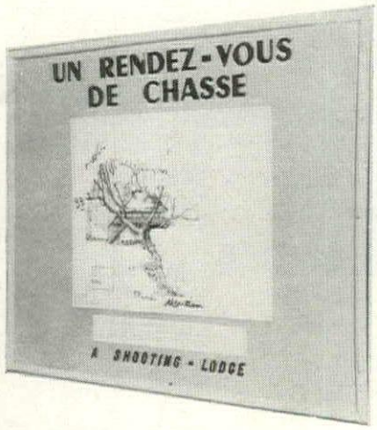
MEMBER, ALUMINUM WINDOW MANUFACTURERS ASSOCIATION



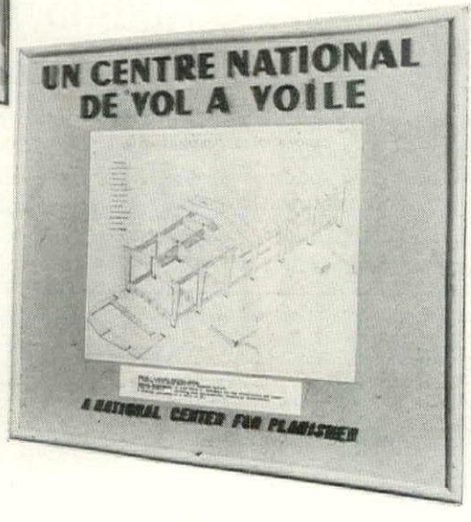
Premiated upper-class problems dealt with such weighty subjects as parsonage gardens. . . .



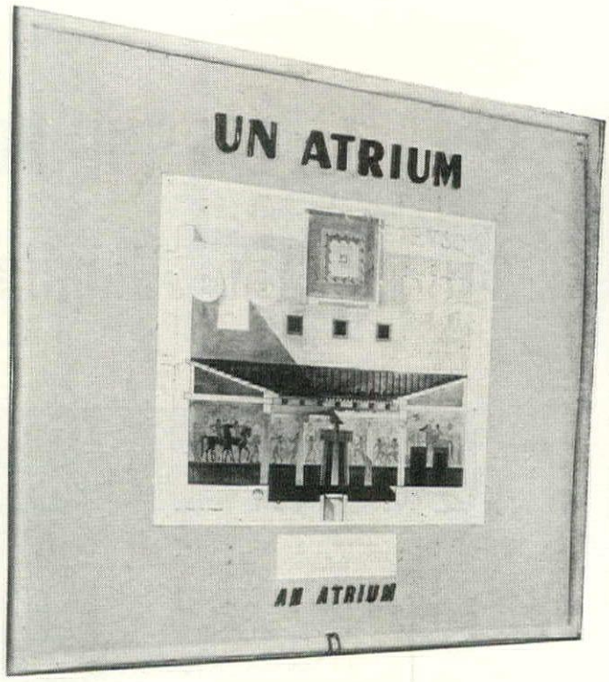
. . . and luxurious puppet theaters where hypothetical puppet troupes would practice between tours.



This hunting lodge perches operatically in a tree. Said one observer: "Think what it would cost to build the tree."



Few drawings displayed any concern with, or knowledge of, structural problems.



THE BEAUX ARTS INVIOLATE

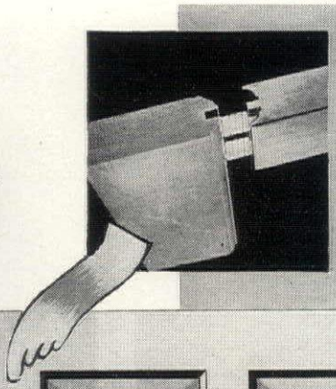
If the recent exhibition at the N. Y. Architectural League is any indication, European nations and governments are just so much tinder compared to the École des Beaux Arts and to the Empire for which it stands. Looking at 30 or 40 hand picked examples of student work, it was virtually impossible to judge whether in subject matter, style or technique they were executed in 1927 or 1947. Introduced to a small group of American professionals by French architect Robert Louard, all but a few of the sketches flatly belied his rosy account of the School's postwar curriculum and goal. Perhaps the Beaux Arts' avowed belief in the essentialness of classic forms and elements to basic education accounts for its incredible imperviousness to present day political, social and economic conditions in France (not to mention Europe and the rest of the world). But equally preposterous is the idea that the faculty, or patrons, who are ostensibly adults and supposedly intelligent, can sponsor problems of such irrelevance with any idea of equipping their students for contemporary or future demands that must inevitably be made of architects—particularly the European ones. To date England and America have furnished the majority of supervising talent for European reconstruction. Were there more architectural schools in France, effete doodling of the type shown at the League might be permissible for a happy few but, as Mr. Louard pointed out, the Beaux Arts turns out only 100 native students a year and the only other school recognized by the State is the École Speciale d'Architecture. Nor is it easy to understand how French students, traditionally hot blooded and easily inflamed by social and political as well as artistic questions, can content themselves today with the design of an atrium, a garden in Morocco, a center for puppeteers, a parsonage garden or a shooting box perched in a tree. As one observer remarked of the latter: "Think what it would cost to build the tree!"

In his speech, which was delivered in French, Mr. Louard elected, perhaps unwisely, to pick a bone with Le Corbusier. The particular quotation which he lifted from the latter's

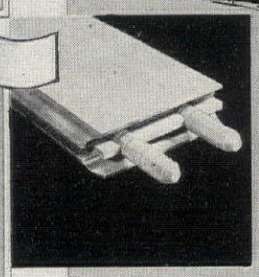
(Continued on page 126)

WHY BILT-WELL DOORS are preferred by so many

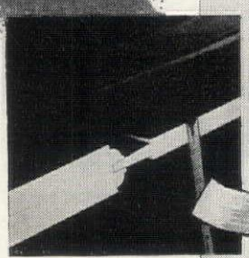
BILT-WELL WOOD WORK



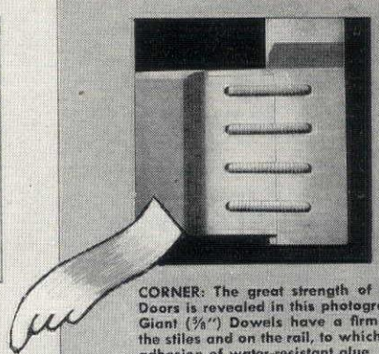
Extra strength is derived from engaging the moulded edges of the rail and the stile. The additional rigidity and prevention from twisting are the prime objectives.



Spiral-glue-cell Dowels . . . The glue on a plain, round dowel is forced from the surface because it has no place to lodge; whereas, in the case of the Bilt-Well Dowel the glue remains in the spiral glue cells when inserted into the boring.



A door can be no better than its panels. Bilt-Well is one of the few door manufacturers to adopt 9/16" raised panels. The moulding shown is the standard ovolo sticking used throughout Bilt-Well Doors.



CORNER: The great strength of Bilt-Well Doors is revealed in this photograph. The Giant (⅝") Dowels have a firm grip on the stiles and on the rail, to which add the adhesion of water-resistant glue.

Because extra care goes into making doors better to serve longer . . . because precise machining and careful assembling is done . . . because hardwood (⅝" dia.) spiral glue cell dowels securely grip stiles and rails forming strong, sturdy corners.

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The first floor contains eight large studios. Four will accommodate audiences of 350 people each. Four will be non-audience studios. In addition, there will be five small studios for newscasting and FM. There will also be about 70 offices and recreation rooms.

This new structure was designed by Claude Beelman, architect, and Herman Spackler, associate. Construction by Wm. Simpson Construction Company.

THE new $2,500,000 home of the Mutual-Don Lee Broadcasting System, now nearing completion in Hollywood, is a three-story-and-basement structure approximately 280 feet square with a floor area of about three acres. It is a building of beauty, strength and permanence because it is built with the modern, versatile structural material—architectural concrete.

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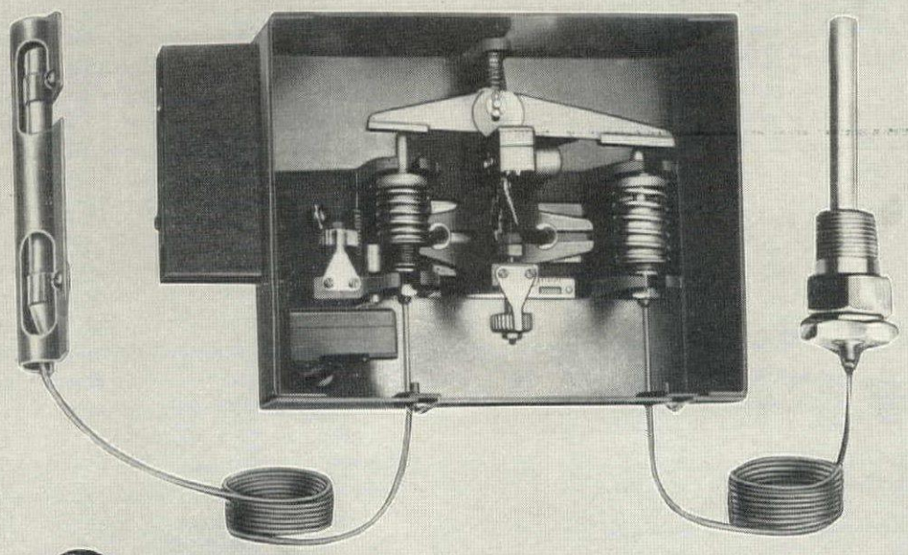

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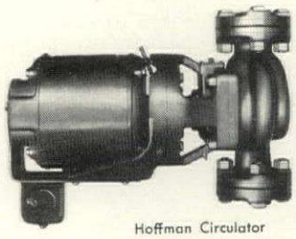

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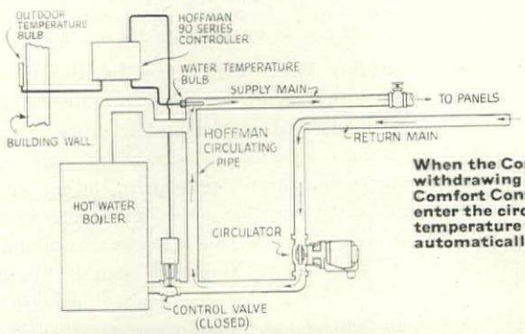

HOW THE HOFFMAN SERIES 90 CONTROLLER OPERATES

When the Control Valve is closed, continuously circulating water by-passes the boiler without withdrawing heat. When water has lost heat, as noted by the Water Temperature Bulb, the Comfort Controller slowly opens the Control Valve, permitting hot water from the boiler to enter the circulating stream. When sufficient hot water has been admitted to restore the proper temperature to the circulating water, the Valve is closed by the Controller. This cycle repeats automatically in anticipation of weather changes.

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writing was: "The reform lies in uprooting architecture from drawing: drawing is made in a room with docile tools. Lines determine forms which can be of two natures: a mere stenographic framing of an architectural thought determining spaces, ordering materials in their proper use, or a glittering display of stampings, colorings or chromos, a skillful '*mis en scène*' with a view to dazzle and divert the author as well as the observer from the realities in question. A sound and noble architecture must be expressed on paper by working drawings so naked that it needs an intense interior life to unveil its meaning. The paper is a means given to the architect who knows what he is going to do. Commercially speaking, it is worth nothing. Drawing is indeed the booby-trap of architecture." While stressing his basic agreement with Le Corbusier, Mr. Louard nevertheless emphasized the urgent need for the young architect "to know drawing, and know it so thoroughly that he not to be deluded by the numerous artifices of 'chromos and colorings,' but so that he can use his knowledge to explain to the layman the meaning of 'naked working drawings.'" Louard's statement listens well. However, one guess is as good as another in explaining the medieval tapestry effect used in the presentation of the *Parsonage Garden* or the preciousness of the arboreal *Shooting Box*. Be it student whimsy or the tenaciousness of tradition, the decadent bureaucracy of Imperial France appears as indestructible as its classic mimicry.

In American alumni, mention of the Beaux Arts seems to invoke a peculiar nostalgia. To offset such sentimentalism it seems pertinent to mention here the vivid contrast of the recent brochure, *Education of Architects and City Planners*, issued by the Massachusetts Institute of Technology which, in credo, states: "Understanding of men and a desire to serve their needs—the humanistic approach in one sense of that ambiguous word—are learnt through sympathy and experience, not through formal instruction . . . the Twentieth Century stigmatizes as academic the assumption of many earlier ages that absolute rules of art can be codified and students indoctrinated in the one and only true path . . . What raises architecture or planning to an art remains to a great extent a mystery, but toward art they must aspire . . . Higher education can never with impugnity fix very precise goals. It must rather offer ways and means and a sense of direction so that in the end each student may find his own integration. In doing so, with all the assistance the school can provide, he will learn to be an architect or a planner."

Apparently apprehensive of censure, Mr. Louard said: "L'Ecole des Beaux Arts may appear to the uninformed like an old lady more interested in preserving her ancient traditions and customs than in keeping up with current developments, but actually it is a living and young body whose aim is to preserve what is fundamental and absorbs from the present day that which allows its continual rejuvenation." Such a statement could not have been more happily and hopefully received than by the New York audience but unfortunately the executed work on exhibition failed to substantiate the claim. Some of the Beaux Arts sketches, such as the center for planishers, were both sound and utilitarian in content and presentation. Taken by and large, however, the work, specifically chosen to revivify the old Franco-American architectural relationship, indicates only that the sedate old École will have to be answered to before Communism can override La Belle France.—M.S.

BOOKS

FORM AND FUNCTION—Remarks on Art by Horatio Greenough. Edited by Harold A. Small. University of California Press, Berkeley and Los Angeles, Calif. 134 pp. 8 x 5½ in. $2.75.

On rereading these nine essays by Horatio Greenough it becomes more difficult than ever to understand the obscurity into which his writings fell a few years after his death in 1852. It may be that the succeeding generation could not countenance his shrewd perception, biting wit and ominous foresight, or, it may have been his untimely death coupled with his lack of success as a sculptor that minimized his value as a critic and author. Nevertheless, in the blinding enlightenment of the present day his thought and writing appear as keen and trenchant as that of our most esteemed contemporary critics; and in many instances it is a lot more readable.

(Continued on page 130)

Seven percent more living space in this Jacob Riis project was achieved through modern construction methods. This huge group of apartments now under way in lower Manhattan is one more major project using Gold Bond solid partitions of fireproof gypsum plaster and metal lath.

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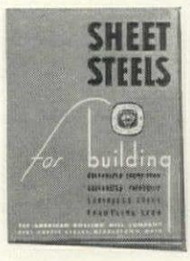

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The entire Greenough literary effort is contained in two volumes: *The Travels, Observations and Experience of a Yankee Stonecutter* and the posthumous *Memorial of Horatio Greenough* compiled by the Nineteenth Century art critic, Henry T. Tuckerman. *Form and Function* reintroduces nine essays from the latter which have been skillfully edited and amplified by footnotes.

The timeliness of Greenough's essays lies in the fact that almost a century ago, during the infancy of the new industrialization, he was able to grasp the significance of social, political and technical changes on design and realized earlier than anyone that a new esthetic standard would inevitably result. In his forthcoming book, *American Building, the Forces that Shape It*, James M. Fitch has drawn an interesting contrast between the Toryism of Ruskin and Greenough's unhampered and strong Democratic thinking. Dealing with basis for a new architecture (and this in the middle of th Nineteenth Century) Greenough says: "Instead of forcing th functions of every sort of building into one general forn adopting an outward shape for the sake of the eye of associ tion, without reference to the inner distribution, let us begi from the heart as the nucleus, and work outward. The mo convenient size and arrangement of the rooms that are constitute the building being fixed, the access of the light tha may, of the air that must be wanted, being provided for, w have the skeleton of our building. Nay, we have all exceptin the dress. The connection and order of parts, juxtaposed fo convenience, cannot fail to speak of their relation and use As a group of idlers on the quay, if they grasp a rope to hau a vessel to the pier, are united in harmonious action by th cord they seize, as the slowly yielding mass forms a thorough base to their livelier movement, so the unflinching adaptatio of a building to its position and use gives, as a sure product that adaptation, character and expression."

As Erle Loran points out in his introduction, "Greenoug is always aware of the distinction between purely monumenta structures 'addressed to the sympathies, the faith, or the tast of the people' and those more practical structures that 'may b classed as organic, formed to meet the wants of their occu pants.' In building of the latter group 'the laws of structur and apportionment, depending on definite wants, obey demonstrable rule. *They may be called machines.*' And thi was not Le Corbusier talking in 1930, but Greenough befor 1850!" What more is there to say?—M.S.

THE MATERIALS AND METHODS OF SCULPTURE. By Jac C. Rich. Oxford University Press, 114 Fifth Ave., New York N. Y. 358 pp. Illustrated 9½ x 6½ in. $7.50.

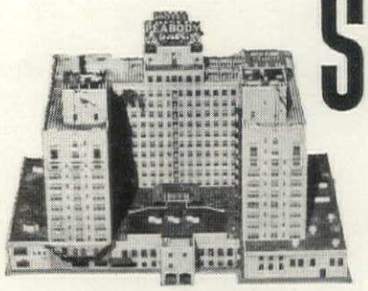
A wealth of literature has been published on the historica and esthetic facets of sculpture but, except for a few isolate essays its technical aspect has been completely ignored. Fo these reasons *The Materials and Methods of Sculptur* assumes unusual importance but no more than it merits i its own right. Mr. Rich, who is himself a sculptor, believe that a thorough "knowledge of materials is the foundatio upon which achievement is based." In the preparation of hi book he kept constantly in mind the needs of the studen sculptor and attempted to set forth a comprehensive pictur of the anatomy of sculpture with specific reference to appro priate materials, their properties and the methods to b employed in their use. The text also includes pertinent his torical notes and observations on contemporary trends.

From the technical side one finds that the author had to b an engineer, mathematician, chemist and archaeologist o sorts as well as an artist in order to turn out this opus. The content is thoroughly readable and well organized, and fo those who know, presents certain new terminology for the sake of clarity. For example, the subject of clay has been subdivided into two sections: Plastic Earths and Plastic Waxes. The first covers water-base earth-clays, the second embraces artificially compounded wax or oil-base modeling clays. If it is possible for a single volume to cover a field as vast as the technics of the sculptor's art, Mr. Rich has achieved it. He deserves the gratitude and congratulations of student and professional artists alike.—M.S.

PENCIL PICTURES. By Theodore Kautzky. Reinhold Publishing Co., 330 West 42nd St., New York, N. Y. 88 pp. Illustrated. 12¼ x 9 in. $5.

Artist Kautsky's second book, more or less of a sequel to *Pencil Broadsides*, is directed at readers who have already

(Continued on page 134)



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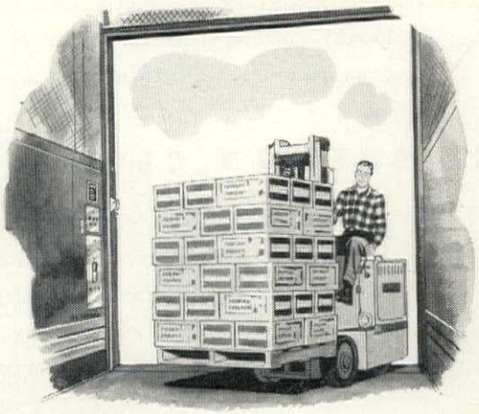

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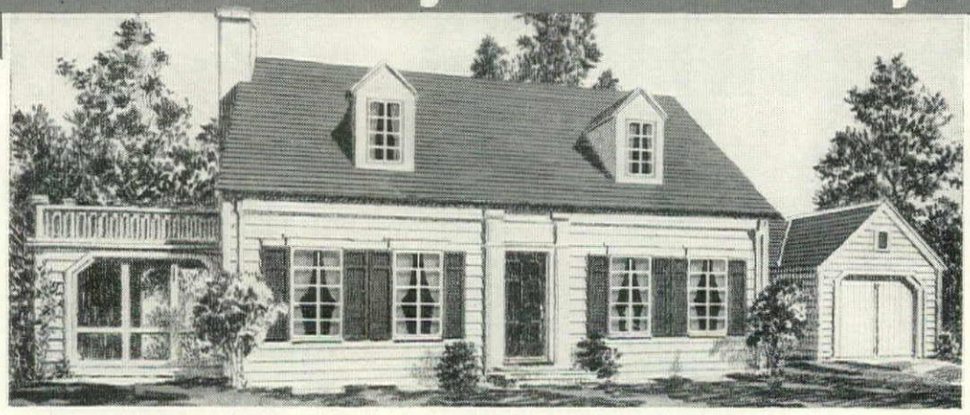

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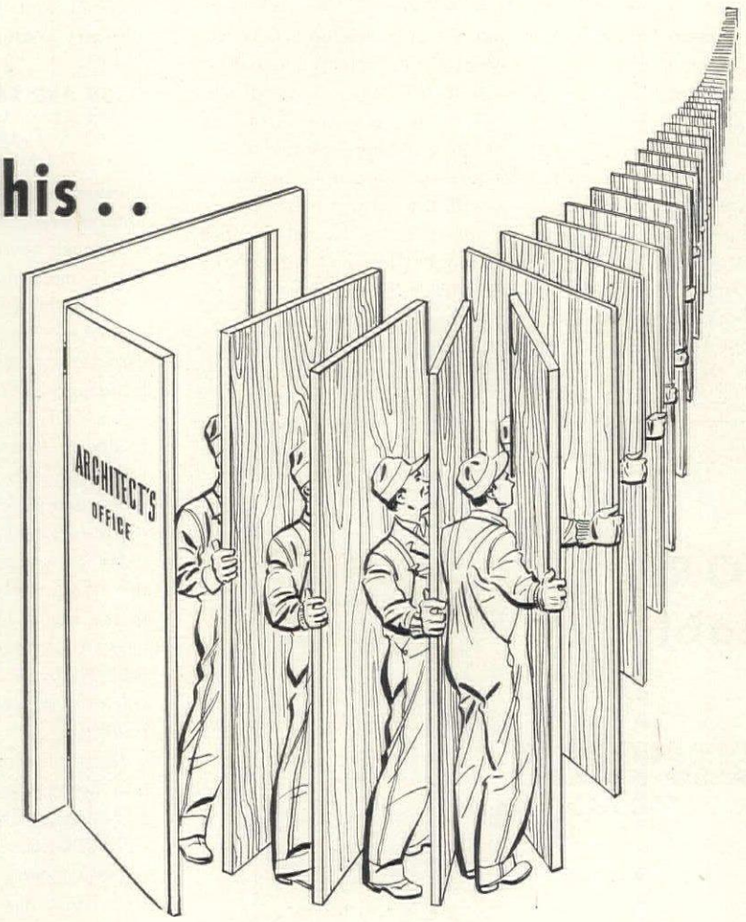

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attained a certain amount of skill in wielding a pencil. Instead of merely trying to teach them how to draw he tackles the very common difficulty encountered by would-be artists who, confronted with a blank piece of paper, attempt to conjure up a picture that really "satisfies their inherent sense of what is right." It is the author's desire to "free them from the limitations of reproductive art, to give them command over the arrangement of pattern of line and light and shadows so that they will know what to do with the subject matter nature provides . . ." Though in some circles Kautzky's technique is regarded as definitely old hat his drawing is based on a sound and useful working knowledge that is very easily taught and this book will certainly have something of value to offer to students as well as initiates who merely want to brush up on their sketching. The author, who is one of the most widely known and employed architectural illustrators has yet to be eclipsed by the newer, more simplified and abstract techniques of younger competitors.—M.S.

GOOD AND BAD MANNERS IN ARCHITECTURE. An Essay on the Social Aspects of Civic Design. By A. Trystan Edwards. John Tiranti Ltd., London. Transatlantic Arts, Inc., New York N. Y. 176 pp. Illustrated. 5 x 7½ in. $2.75.

Twenty years ago a man in England was in an interesting mental knot. He was disturbed by the increased perverting of historic *styles* of architecture, particularly by the fraudulently monumental character of new commercial buildings in his native country. The phenomenon of the skyscraper also disturbed him, for sound economic and sometimes sound esthetic reasons. He felt that the ingredient of good taste in building was slowly sifting away, that architecture was being vulgarized, somewhat as the pureness of his beloved Regency Street in London had been raped by Norman Shaw in the rebuilding. This man, Trystan Edwards, saw foolishness in using details of past architectural styles awkwardly in contemporary houses.

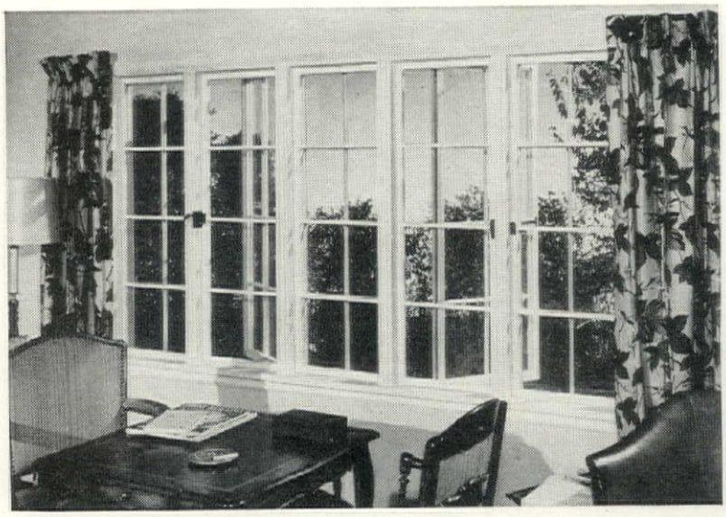
He opposed this disintegration of taste, the smudging of the standards of the past, the making of department stores in the image of cathedrals and railroad stations to the likeness of Roman baths. So he wrote a book called "Good and Bad Manners in Architecture" *dedicated to preventing the spirit of vulgarity from manifesting itself in the design of buildings.*

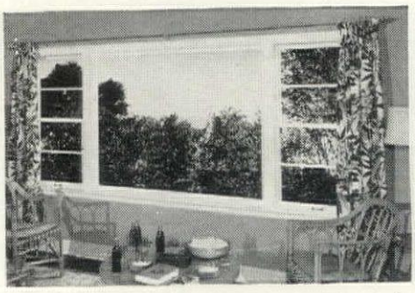
Despite his circular writing style ("In order that a building may become urban it must have urbanity") Edwards did find a good many faults well worth finding. He was usually on the right side in negative arguments. He never got very far into anything except Regency Street, however—his embryonic discussion of city planning goes no further than references to "the most mature of all architectural forms, namely the street." And he wastes many pages in breathing a strange Shetland pony-personality into buildings: ". . . the *selfish* building, the *pre-umptuous* building, and the *rude* building (as contrasted) with the POLITE and SOCIABLE building." Whenever he reaches a point in the book where he might look for something new in place of something he does not like, he pulls up and lets the Shetland ponies romp across a few pages of print, then changes the subject. Also confounding are some of his excursions into more general philosophy: ". . . I arranged the visual arts in what appeared to me to be their logical order of precedence. The first place was assigned to the art of the cultivation of human beauty, the second to the art of manners, the third to the art of dress and the fourth to architecture. At the end of the list came the 'secondary' arts of painting and sculpture."

Now, after 20 years, another edition of the book has been published, without change. "The major portion of the book," Mr. Edwards says in his preface, "is an exposition of principles of design which if they were valid 20 years ago are still valid today. . . ."

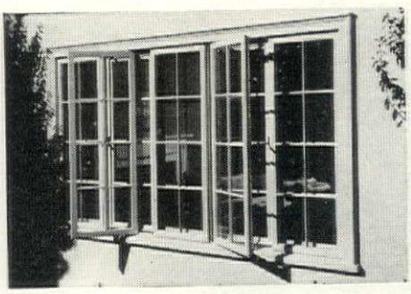
Valid or not, they are not principles of design, and never were. His book was an attempted defense of an indefensible position, a fight to keep an eclectic architectural style pure. Twenty years ago he and many other men could see no further than that position, could see no development of a new architecture to meet those new standards which were corrupting the old set of orders. They did not see that good taste will never restrain the vulgarization of a static architecture. It's too bad that after these 20 years, Mr. Edwards and so many of the others are still engaged principally in regretting the deterioration of the Old.—W. McQ.

From basement to attic... Curtis SILENTITE means *More Value!*

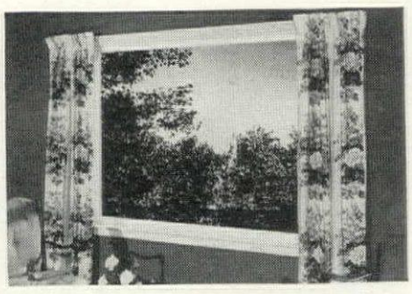




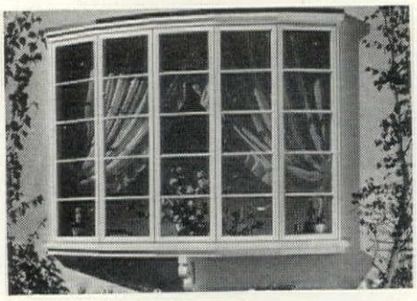
The new Curtis Silentite double-hung window unit is 20% more weather-tight than the famous original Silentite introduced in 1932. New construction includes floating weather-strips that press snugly against moving parts of window, yet permit easy operation. And, of course, Silentite has no weights or pulleys. Photo shows Silentite double-hung units flanking a Curtis picture window.



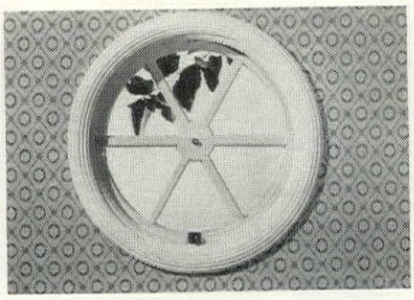
Silentite casements combine better appearance, easier and more dependable operation and greater weather-tightness than ordinary casements. They were developed after years of research and testing. The Silentite casement is a complete unit with all parts machined and prefitted. It is wood, of course, for lasting satisfaction. This is an exterior view of the large illustration above.



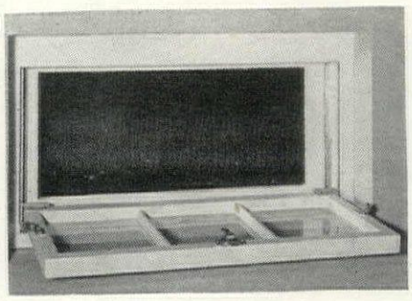
The popularity of the picture window is growing rapidly for both new work and remodeling. There are many possible combinations with Silentite windows flanking the stationary sash, or these sash are often used alone, as pictured above. This is Curtis Design C-2735 and is made in two sizes —5-0x4-6 and 6-0x4-6. This sash is shown on far left with double-hung Silentites on either side.



The new Curtis bow window is a complete unit made up of horizontal light casement sash, and may be used in any wall construction. Rough opening size—width 8′ 2″, height 5′ 8 1/16″. Two of sash may be arranged to open. Different style casement sash may be used, if desired. The Curtis dealer in your area will give you full information on this and other Curtis Woodwork. See him soon!



This full circle Curtis window may be opened for ventilation to half its area. It is fully weather-stripped. Fits any architectural style. Unit consists of frame, pre-fit circle window, screen and operating hardware. Sash opens from inside without disturbing screen. Special combined lock and fastener holds sash securely in a closed, half open or fully opened position. Over-all diameter is 2′-0″.



Silentite basement unit consists of frame, sash installed with all operating hardware and weather-strips applied, and pre-fit screen. No hardware visible on outside. Window operates from inside only with full control of sash without disturbing screen—opens to any degree up to entire opening area. No rattling or vibration. Made in commonly used sizes for any wall construction.

★ *Silentite WOOD windows are made by the manufacturers of Curtis Woodwork. Curtis has made windows and fine woodwork since 1866. When you specify or recommend "Curtis Silentite," you guarantee your clients and customers honest and lasting window satisfaction.*

1866 CURTIS WOODWORK
SILENTITE PRE-FIT
the "Insulated" window

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AF-2S Curtis Building, Clinton, Iowa
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Address.....

City.....State.....

I am ( ) Architect, ( ) Contractor, ( ) Prospective Home Builder, ( ) Student.
(Please check above)

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Localized control of temperature. Each room can be cooled or heated to individual taste.

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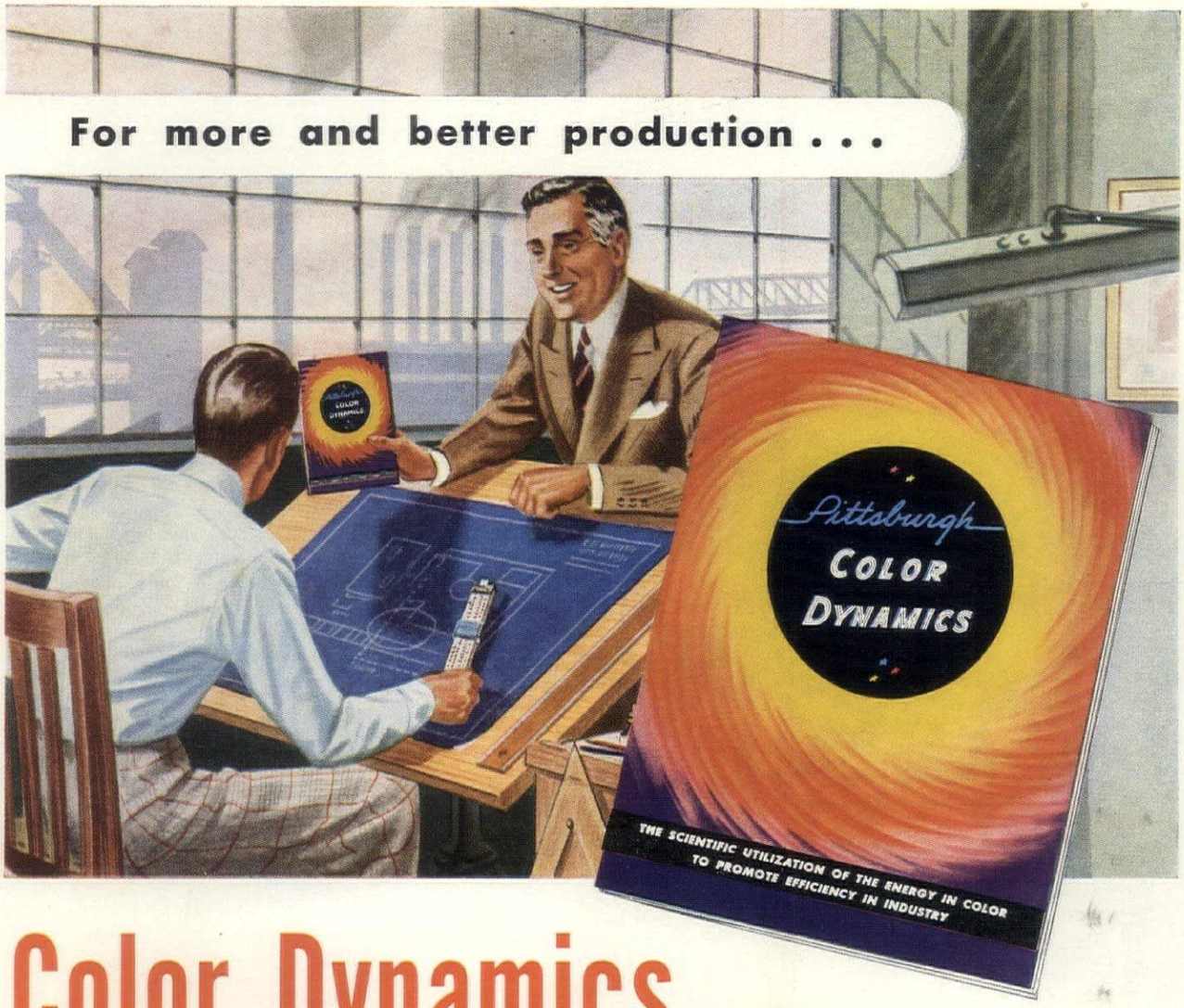

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Its principles are based upon physical and mental reactions of human beings to color.

Knowing this new method of utilizing *energy in color,* architects can specify confidently color arrangements that increase efficiency as well as enhance appearance. When they specify Pittsburgh Paints they recommend the best in paint protection. Being made with *"Vitolized Oils"* they are more easily applied, stay *live,* tough, elastic—and last indefinitely.

By the scientific selection of color, architectural features can be subdued or emphasized at wish. Rooms can be made to seem more spacious, halls wider and brighter, ceilings higher or lower.

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In schools, it stimulates and refreshes pupils and teachers alike. In hospitals, it speeds convalesence and increases efficiency of medical staffs.

How all these things are achieved is fascinatingly told in our book, COLOR DYNAMICS. Send for your free copy—today! Write Pittsburgh Plate Glass Company, Paint Division, AF-28, Pittsburgh 22, Pennsylvania.

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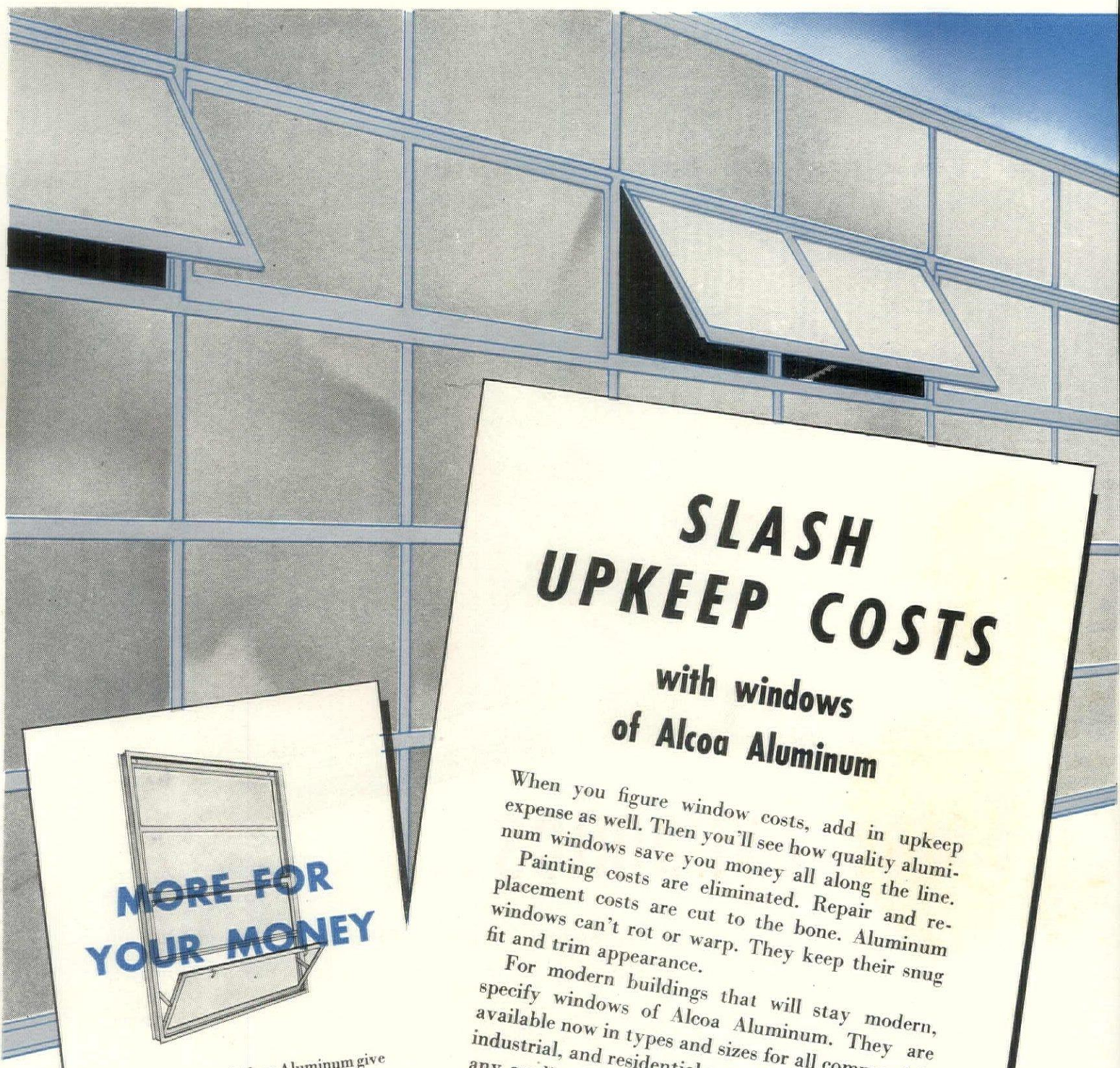

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When you figure window costs, add in upkeep expense as well. Then you'll see how quality aluminum windows save you money all along the line.

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For modern buildings that will stay modern, specify windows of Alcoa Aluminum. They are available now in types and sizes for all commercial, industrial, and residential uses. For information on any application of aluminum, write to ALUMINUM COMPANY OF AMERICA, 1866 Gulf Building, Pittsburgh 19, Pennsylvania.

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2. **Faucet mounted on backsplash eliminates dirt-catching ledge—permits larger sink bowl.**
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4. **Drawers glide on special nylon slides—silent, effortless.**
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6. **Extended counter tops permit continuous knee room for natural stance.**
7. **Flutes drain perfectly—yet prevent smallest glass from tipping.**
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9. **Doors equipped with double-action spring type hinges holding doors fully opened or closed.**
10. **Double-wall construction on all doors and drawers—insulated to deaden sound.**
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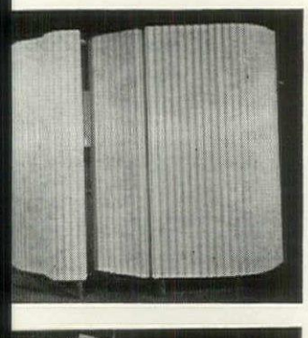
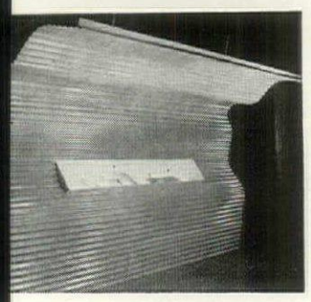




GLASS AND PLASTIC LAMINATE in colorful, corrugated panel form has structural and decorative advantages.

Rigid in one dimension yet flexible in the other, Prest-Glass is a light, strong, fireproof, plastic-impregnated glass fiber panel for building, decorating and display purposes. A textured material that can be had in translucent or opaque, dull or glossy finish, light or heavy weight and in a choice of 15 colors, it comes in corrugated panels 24 in. and 30 in. wide, in lengths up to 8 ft. Prest-Glass is entirely non-combustible. With high dimensional stability, it will not rot, mildew or fade, crack, split or splinter. It weighs only 5 oz. per sq. ft. (less than 7 lbs. per 20 sq. ft. panel), is extremely strong and can be cut with ordinary shears, nailed, stapled, punched, trimmed or cemented. While rigid in one direction, it can be readily formed or shaped to curved surfaces in the other. It will also, according to the manufacturer, snap back virtually 100 per cent to its original form after being struck, bent or distorted. Many uses are envisioned for the new material. These include: walls, ceilings, sliding and divider partitions for theater, restaurant and store interiors; window displays, etc. Price of Prest-Glass ranges from approximately 75¢ per sq. ft. for the 1/16 in. thick, 30 in. panel to $1.85 per sq. ft. for the ⅛ in. thick, 24 in. panel. For easy shipping, 20 panels can be nested in a cardboard carton only 1¾ in. thick.

Manufacturer: Prest-Glass Inc., 8 East 12th St., New York 3, N. Y.

NEW AGGREGATE yields lightweight, flexible plaster with insulating properties.

Dantore is a new material, composed of small glass globules, which is said to be exceptionally suitable for use as a lightweight plaster aggregate. Produced from raw perlite ore which has been popped by extreme heat, the small glass globules weigh only 12 lbs. per cu. ft. as compared with sand's weight of 85 lbs. per cu. ft. Thus when used in plaster to replace sand, Dantore achieves a great reduction in weight. Plaster containing the new aggregate is also reported to resist the checking and cracking of plaster common in houses which have settled even slightly. The glass globules and the gypsum, according to the manufacturer, are more flexible in adjustment to the stresses of settling. The fireproof, termiteproof building material is also said to offer a considerable degree of insulation against heat, cold and noise. At present the manufacturer is marketing three products using Dantore: lightweight plaster aggregate, acoustical plaster and ready-to-use hardwall plaster. Research is underway, however, to develop other uses for the material.

Manufacturer: Dant & Russell, 309 S.W. 6th Ave., Portland, Ore.

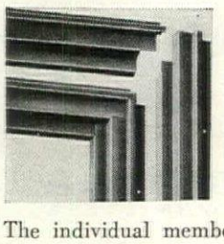
ALUMINUM CANOPY protects against rain, snow, sleet or sun, is strong and low cost.

Designed to protect doorways and windows from rain, snow sleet and sun, the Hollywood Canopy features sturdy, durable, all-aluminum construction at low cost. Its hardened aluminum brackets and spot-welded seams, which give a clapboard effect, are reported to support a dead weight of 235 lbs. The construction is also said to eliminate sagging, warping, rattling and flapping. Hollywood canopies come complete with stainless steel hardware for hanging, can be easily assembled and quickly installed. Rustproofed, they require no painting, measure 42 in. wide by 32 in. deep, weigh 10 lbs., retail for $13.95.

Manufacturer: Colgate Manufacturing Corp., Amityville, Long Island, N. Y.

FORMED STEEL SURROUNDS for use with residential steel casements provide molded trim appearance.

Truscon Formed Steel Surrounds for Residential Casements are designed for use where a wider and molded frame appearance is desired. Made of 18 gauge electro-galvanized steel, bonderized and shop-primed, surround members are formed to contours which are said to lend depth and character to the appearance of the window opening and, at the same time, facilitate installation and anchorage. The individual members—head, jambs and sill—are easily and quickly attached to the casements before the assembled unit is set in the wall. Corners are accurately coped to present neat joints and surround members are conveniently secured to the casement by self-tapping screws. Joints between the window frame and surround are sealed with mastic. An integrally rolled fin affords firm anchorage in the window opening whether of wood frame, brick veneer or solid masonry construction. Surround jamb members come in the four standard Residence Casement heights. Head and sill members are provided for single unit openings in the four standard casement widths and, in addition, in widths permitting combinations of units up to a total of six lights wide.



Manufacturer: Truscon Steel Co., Youngstown, Ohio.

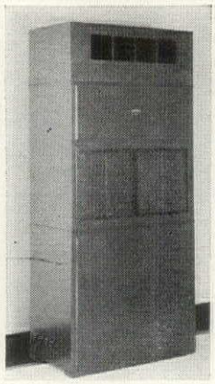
MASONRY WATER REPELLENT protects against moisture and water.

Raincheck is a colorless water repellent that penetrates into cement block, concrete, brick, tile and stucco and remains to give permanent protection against moisture and water. It guards against moisture working through basement walls and floors and prevents masonry disintegration from moisture accumulating and freezing below the surface. Raincheck also controls efflorescence and dusting of cement floors by binding together the tiny loose particles. Recommended as a base for subsequent painting of masonry, one or two coats of Raincheck brushed on the surface before painting is said to insure a clean, long-lasting paint job. Raincheck is available in quantities from 1 gal. to 55 gal. and in tank cars for large users.

Manufacturer: Protection Products Mfg. Co., Kalamazoo 99, Mich.

PACKAGED AIR CONDITIONER for stores and business establishments features low cost installation, portability.

This new 5 ton capacity air conditioner, occupying only 7½ sq. ft. of floor space, is a self-contained, packaged unit designed especially for cooling stores, restaurants and business establishments. (For winter operation, a heating coil can be added.) Used singly it is said to serve several office rooms or smaller sections of a floor. When installed in multiple, however, it can be used to air condition an entire building, or any large area. By employing a simple duct system it can be used from a remote position. Principal advantages claimed for the new unit are flexibility, low cost installation and portability. Installation can be made quickly and economically without major building alterations. All electrical, water and drain connections are grouped together near the floor for easy assembly, dismantling or repair. Operation of the unit, automatically controlled by a thermostat actuated by temperature of room air entering the conditioner, is also reported to be simple. A fan draws room air in through a *(Continued on page 142)*

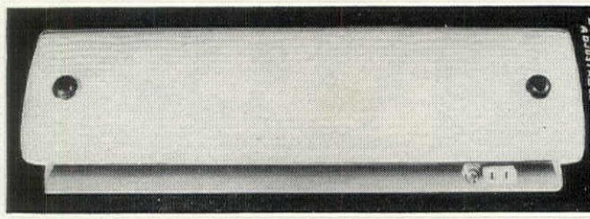


grille at the lower part of the air conditioning chamber. This air passes through two, 1 in. thick filters, then on and over the Multipath cooling unit. Conditioned air is discharged from four removable outlets at the top of the cabinet. According to the manufacturer, effective use of the entire cooling coil is made possible by the counterflow principle: air and refrigerant flowing in opposite directions. A staggered tube system sets up turbulence and affords better heat transfer. The blower discharge is created by a sound insulated 12 in. fan, powered by a ¾ h.p. motor. Fan speed has a 10-phase control. The refrigerating unit is powered by a 5 h.p., 3-phase, 220 v. motor, mounted on vibration-absorbing rubber pads in an insulated, virtually soundproof compartment.

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

BATHROOM FIXTURE is adjustable to aid seeing in mirro

Direct-O-Lite No. 100 is a simple, adjustable lighting fixtu 20 in. long by 5 in. wide, for mounting horizontally over vertically at each side of the bathroom mirror. It provid

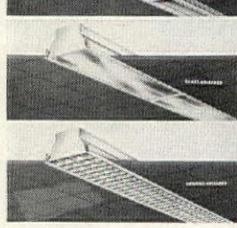


both glareless general illumination and directional lightin at the mirror, is attractive as well as functional. The fixtu consists primarily of a chrome-plated holder and an adjust ble, slightly curved, Temprex, shock-resistant glass shiel A special ball and socket mounting permits movement of t shade. Direct-O-Lite extends 3½ in. from the wall, takes tw 60-w. bulbs, comes with switch and convenience outlet.

Manufacturer: Appleman Art Glass Works, North Hacke sack, N. J.

FLUORESCENT TROFFER RECESSED LIGHTING SYSTE features flexibility and easy installation.

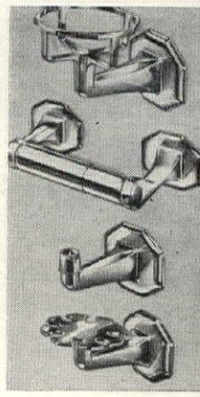
Mitchell's new Fluorescent Troffer is engineered for maximu illumination, appearance, easy installation and flexibility f a wide range of applications.



The heart of the system is a basic troffer unit, 45 in. long, 12 in. wide, 7⅜ in. deep; available in 2-40 w., 2-40 w. with Instant Start and 3-40 w. fluorescent lamps. Consisting of reflector and wireway channel, wired with latest standard ballasts and starters, the unit can be used as an open type or, by the addition of ingenious hinged frames, can be readily converted to either glas shielded or louvered type. In ceilings of tee-bar snap-in bloc construction, formed edges of the basic unit simply snap in place on the tee-bar. In other ceilings a minimum number accessory fittings are provided for easy installation. Un operates on 110/120 v., 60 cycle, AC, is U/L approved.

Manufacturer: Mitchell Manufacturing Co., 2525 Clybour Ave., Chicago, Ill.

BATHROOM ACCESSORY LINE provides appearance an durability.



Die-cast from non-rusting metal, finished in chrome, and featuring a standard octagonal design, Marsh's complete new line of bathroom accessories combines appearance and utility. The line includes: glass shelves and brackets; towel bars; tumbler, tooth-brush and soap holders; robe hooks; paper holders and a combination soap holder and grab rail. The fixtures are available for both flush or recessed mounting, installation is said to be simple.

Manufacturer: Marsh Wall Products, Inc., Dover, Ohio.

(Continued on page 14

DESIGNED TO HELP DESIGN A FLOOR!

New Architectural Equipment

This cabinet is now being installed in Kentile Dealer Showrooms—and it is actually a new and useful tool for architects and builders. On it a Kentile dealer—or *you*—can assemble a Kentile floor and see in miniature just how your pattern will look.

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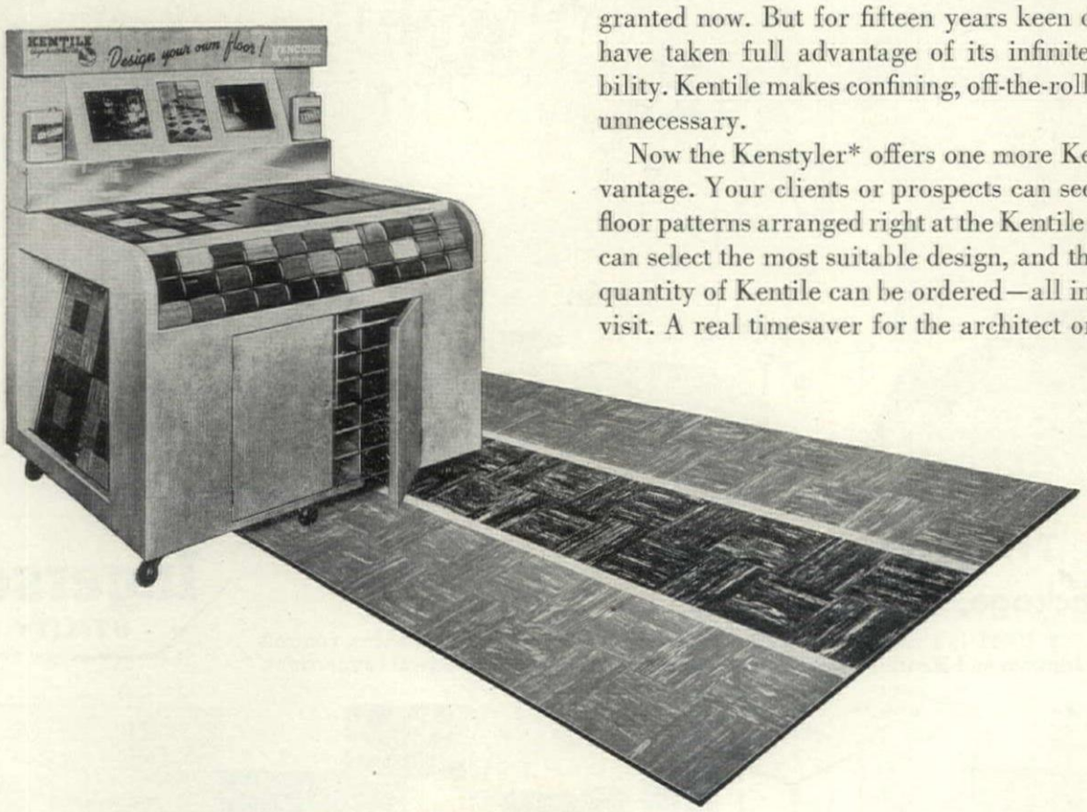

—a new source of satisfaction for his client or prospect. Look up your Kentile Dealer's name in the yellow pages of your telephone directory. If not listed, write your nearest Kennedy office.

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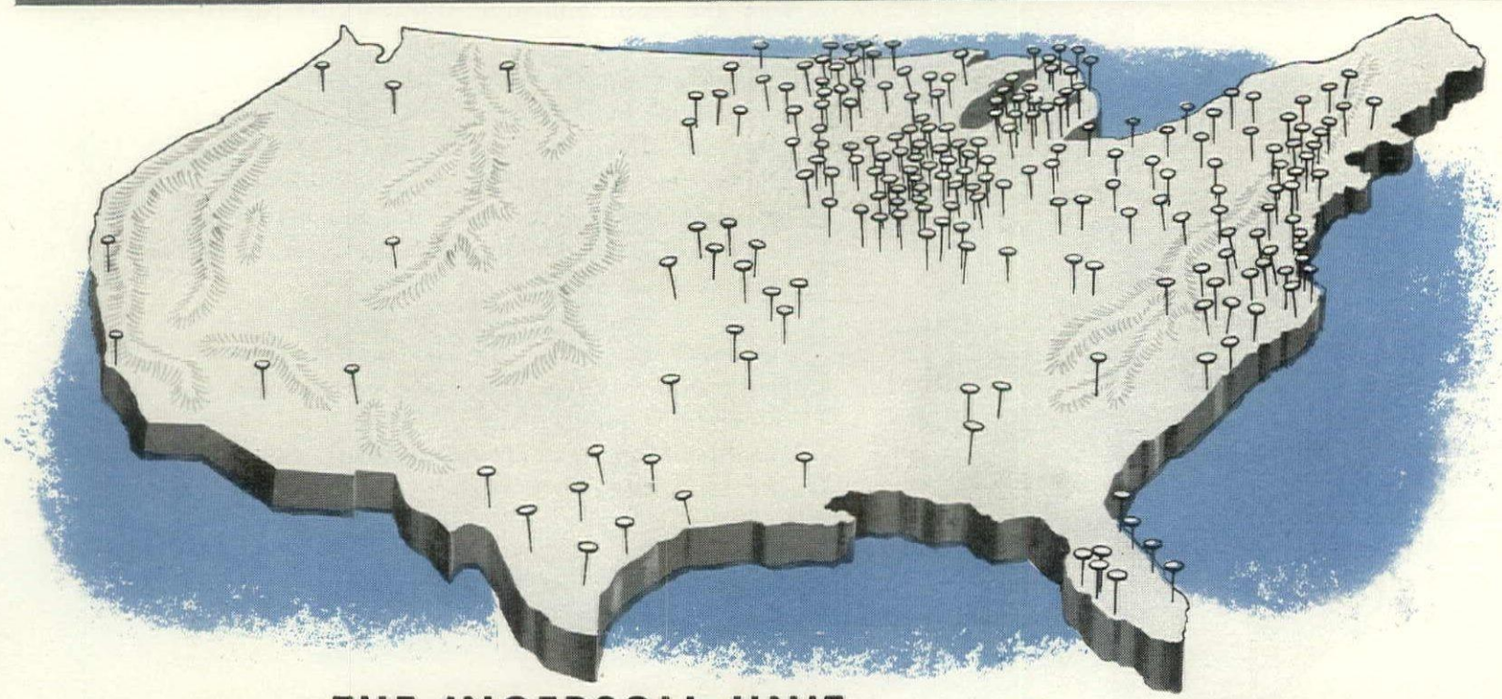
Established with Successful

in 211 Cities from Coast



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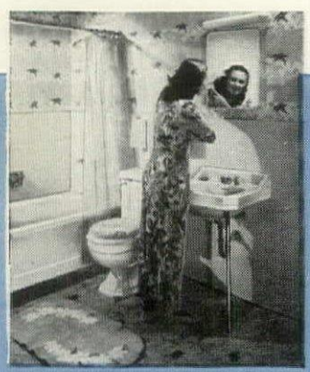
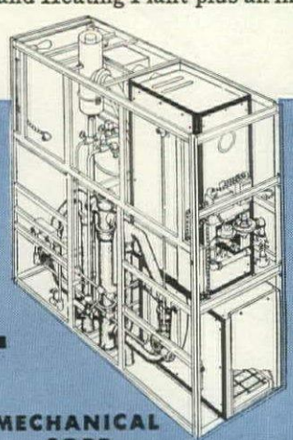
Ingersoll
UTILITY UNIT
TRADE MARK

The INGERSOLL UTILITY UNIT is a single, engineered assembly of the fixtures, appliances, controls and fittings of Kitchen, Bathroom and Heating Plant plus all interior plumbing and electrical connections.



BATH
Includes tub, combination shower, lavatory, water closet, medicine cabinet, all necessary fixtures and connections.

+

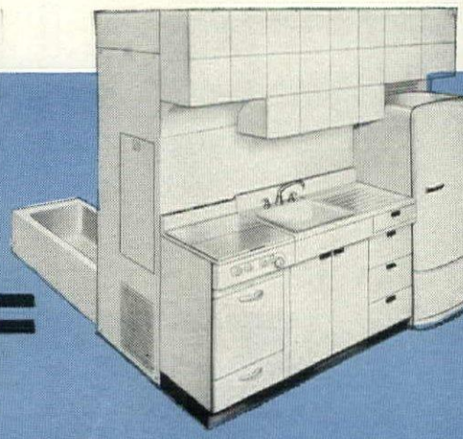


MECHANICAL CORE
Gas or oil furnace, water heater, complete electrical system, sewer stacks and vents.

+

KITCHEN
Electric refrigerator, porcelain-enamel sink, gas range, steel wall cabinets and drawers, fluorescent light, and all fixtures.

=



Firmly Installations to Coast!

You are Invited
to visit and inspect the
PERMANENT DISPLAY
in our new sales and
service headquarters, featuring
the complete
INGERSOLL UTILITY UNIT
See it at
321 PLYMOUTH COURT
Chicago
when you attend the
NATIONAL ASSOCIATION OF
HOME BUILDERS' CONVENTION
Stop in at Booths 23-24
at the Congress Hotel
February 22-26

INCREASED FACILITIES IN 1948 WILL MAKE UNIT MORE ADAPTABLE TO INDIVIDUAL PLANS AND REQUIREMENTS

Expansion and consolidation of facilities now make it possible to produce the Ingersoll Utility Unit more efficiently and to furnish it so that it is more adaptable to individual plans and needs. The improvements in manufacture allow the architect or builder to furnish expanded kitchens, to offer a choice of heating units and to better meet local building requirements.

Only a little over a year ago the Ingersoll unit was new and untried. Proved practical and economical in 211 cities during 1947, it has demonstrated its value in housing projects of every description. It is adaptable to a wide variety of plans in single home and multiple dwelling projects.

The Ingersoll Utility Unit is compact, requires less than 80 square feet of floor space and provides more living space for less money. Complete, it eliminates time-consuming specifications—everything comes with one purchase, from one source, right when it's needed. It cuts building time from three to four weeks and can be installed before, during or after construction of building framework.

It will pay you to check the many time and money saving features of the Ingersoll Utility Unit. Send for illustrated brochure and see for yourself how the Ingersoll Utility Unit can fit into your plans for better homes in housing projects, large or small.

Ingersoll
UTILITY UNIT
TRADE MARK

INGERSOLL UTILITY UNIT DIVISION of
Borg-Warner Corp., Dept. F-2
321 Plymouth Court, Chicago 4, Ill.

Please send me complete information of how the Ingersoll Utility Unit is now more adaptable to individual plans and requirements.

Name .....

Firm .....

Address .....

City ..... State .....

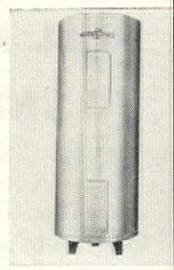
THREADLESS MALLEABLE FITTINGS for brazed pipe joints give one-piece security at low cost.

Flagg-Flow malleable pipe fittings, the first threadless malleable fittings made for brazed pipe joints, are said to give the strength and tightness of one-piece welded systems, at a cost no higher than ordinary screwed pipe installations. The new fitting is a black, malleable iron socket type fitting for brazing to standard black steel or wrought iron pipe. Its cup is reamed to accommodate the outside diameter of standard pipe and also to produce a stop for the pipe when it is inserted. Close tolerances in the machining of the cups insure rigid support and a thorough bond. The fittings, available in sizes up to and including 2 in., are applicable wherever 150 lb., standard weight, black, malleable, screwed fittings are now used, i.e.—for 150 lb. working steam pressure at 450° F., or 300 lbs., non-shock, oil, water or gas lines at 150° F. Conn tions are made with silver brazing alloys and an oxyacetyl torch. The silver alloy flows by capillary action to form seamless, permanently bonded joint that is stronger th either the pipe or fitting. According to the manufacturer, interior design of Flagg-Flow malleable fittings, which h the same internal diameter as the pipe, tends to reduce tur lence. Flagg-Flow also permits the utilization of the full w thickness, or the full strength of the pipe, since no meta lost by threading. Another feature of the fitting is that allows piping to be installed in confined spaces where it difficult, or even impossible to use a pipe wrench, or in t wall partitions and concrete floors where permanent secur is essential. Flagg-Flow fittings have also proven under t the ability of the joint to withstand much higher rates vibration than threaded joints.

Manufacturer: Stanley G. Flagg & Co., Inc., 1421 Chestn St., Philadelphia, Pa.

AUTOMATIC ELECTRIC WATER HEATER guarante against rust.

Because of an exclusive, patented process of applying inside protective "rocklining," the makers of this new Hot-R completely automatic electric water heater guarantee it against rust for a minimum of 20 years. This internal coating, ½ in. thick, is permanently bonded to the inside of the steel tank shell. Thus, there are actually two tanks, rock inside and steel outside. According to the manufacturer, ordinary tanks rust and corrode because of chemical action between the active molecules of water which contact the metal shell. In the new unit t rocklining material is said to trap these active molecules its microscopic pores and deactivate them, making them in to chemical action. Known as bound water, this conditi remains in the rocklining for the life of the tank to preve rusts, leaks or discoloration. Hot-Roc heaters fit into t kitchen, utility room or the basement, provide a constant su ply of hot water. They are completely automatic, are U./ approved.



Manufacturer: Ford Steel Products Corp., Tarrytown, N.

GAS AND ELECTRIC RANGE LINES incorporate new pe formance and styling features.

Designed to make cooking easier and cleaner, the 1948 Quali gas and electric ranges include automatic controls, ne styling and maintenance features. The gas range line includes seven models: automatic ranges built to CP standards, all-gas kitchen-heating ranges (B.R. 10/47) and combination kitchen-heating ranges which use coal, wood or oil for heating. To provide faster cooking these new models incorporate two large and two standard size burners. Most ranges have Uniflex simmer burners and all have easily removable, ind vidual porcelain enamel burner bowls. The models built CP standards are provided with automatic oven and broil lighting and Model A-4 has a Timer-Cook to automatical control the oven. A newly

(Continued on page 15(

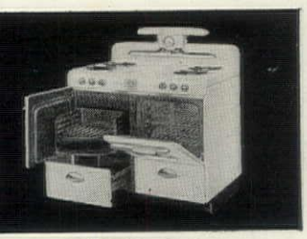
It's Brand New!

36" Wide
Series No. 700

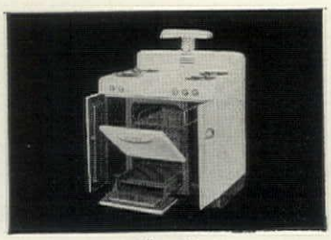
GREATEST *Magic Chef* YET!

Here's the BUILDERS' LINE that offers the widest possible selection and the greatest return on your investment. For details write American Stove Company, Advertising Dept., 1641 S. Kingshighway Blvd., St. Louis 10, Mo.

43" Wide—Series
No. 400 & 460

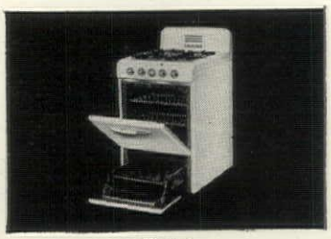


39" Wide—Series
No. 2400 & 1300



36" Wide
Series No. 1200

30" Wide
Series No. 600



20" Wide
Series No. 500

Window Insulation

FOR AIR CONDITIONED BUILDINGS

420 *Thermopane* units of Aklo heat absorbing glass were used in glazing this plant. The manager reports: "These units were installed in our steel sash wherever it was necessary to maintain a uniform year-round temperature to permit satisfactory baking conditions and processing. It has resulted in a saving in reduced operation cost of our air conditioning system and elimination of condensation on the room side." Architects: M. C. Haley and C. W. Watkins.

CUTAWAY VIEW OF THE THERMOPANE UNIT

● When manufacturing processes or employee operating efficiency depend on air conditioning, there's no need to restrict the use of larger window areas.

Thermopane, consisting of two panes of one-eighth inch glass separated by one-half inch air space, has a coefficient of heat transfer of .58 as compared with 1.16 for a single one-eighth inch pane. Thus, you can double glass area without increasing heat loss . . . without throwing excessive load on air conditioning equipment. Likewise, *Thermopane* permits greater use of glass in any building where heat loss, sound transmission and comfort are factors.

To make *Thermopane* more readily available and to effect important economies, *Thermopane* is made in more than 60 standard sizes—providing sizes for any building need. For insulation data, sizes and other pertinent information, see Sweet's Architectural File. Or write us for complete information, including Data Sheets by Don Graf. Libbey·Owens·Ford Glass Company, 2128 Nicholas Building, Toledo 3, Ohio.

*®

ONLY LIBBEY·OWENS·FORD MAKES *Thermopane*

L O F

LIBBEY·OWENS·FORD
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FOR GUTTER
DOWNSPOUT
CONDUCTOR PIPE
FLASHING

DO NOT DELAY construction of industrial buildings . . . Sharon Stainless Steel for your roof drainage specifications is available for immediate delivery. Architects and builders agree that stainless steel is the finest, most durable material known for gutter, downspout, conductor pipe and flashing.

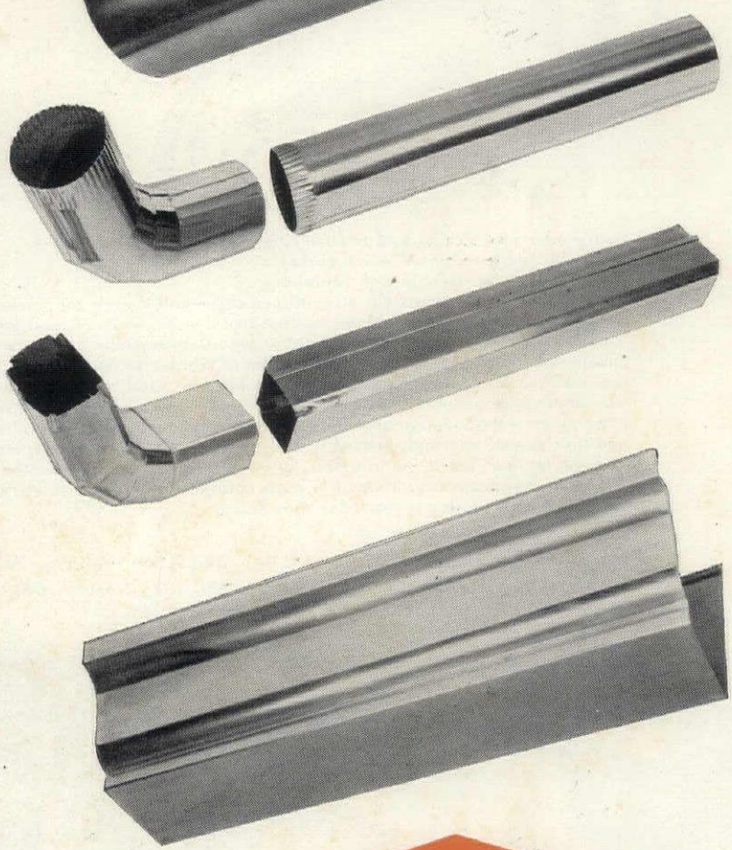
SHARON STAINLESS STEEL'S extra strength prevents sagging, buckling or cracking caused by heavy accumulations of ice and snow or by widely varying temperatures. A solid metal, Sharon Stainless has a tough, flake-proof, peel-proof surface that is virtually immune to wear from roof gravel, soot or other air-borne abrasives.

SHARON STAINLESS STEEL banishes costs of maintenance, painting and replacement even on structures under constant attack by corrosive industrial atmospheres. Since there is no surface reaction, Sharon Stainless cannot "bleed" . . . there is neither patina nor corrosion to discolor adjoining areas. Its permanent, neutral finish is appropriate for any type of construction. And 28-gage Sharon Stainless can be soldered and worked as easily as 26-gage galvanized sheet.

Remember, Sharon Stainless Steel lives up to its name—**forever.** Full details upon request to

SHARON STEEL CORPORATION

Sharon, Pennsylvania



SHARONSTEEL

PRODUCTS OF SHARON STEEL CORPORATION AND SUBSIDIARIES: THE NILES ROLLING MILL COMPANY, NILES, OHIO; DETROIT TUBE AND STEEL COMPANY, DETROIT, MICHIGAN; BRAINARD STEEL DIVISION, WARREN, OHIO; SHARONSTEEL PRODUCTS COMPANY, DETROIT, MICHIGAN, AND FARRELL, PENNSYLVANIA. Hot and Cold Rolled Stainless Strip Steel—Alloy Strip Steel—High Carbon Strip Steel—Galvanite Special Coated Products—Cooperage Hoop—Detroit Seamless Steel Tubing—Seamless Steel Tubing in Alloy and Carbon Grades for Mechanical, Pressure and Aircraft Applications—Electrical Steel Sheets—Hot Rolled Annealed and Deoxidized Sheets—Galvanized Sheets—Enameling Grade Steel—Welded Tubing—Galvanized and Fabricated Steel Strip—Steel Strapping, Tools and Accessories.

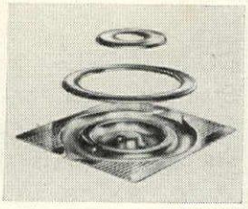
DISTRICT SALES OFFICES: Chicago, Ill., Cincinnati, O., Cleveland, O., Dayton, O., Detroit, Mich., Indianapolis, Ind., Milwaukee, Wis., New York, N.Y., Philadelphia, Pa., Rochester, N.Y., Los Angeles, Calif., San Francisco, Calif., St. Louis, Mo., Montreal, Que., Toronto, Ont.

developed 3-hour Minute Minder automatically controls the appliance outlet. The electric range line includes four models, two all electric ranges and two combination kitchen-heating ranges. A Timer-Cook automatically controls the oven, cooker and appliance outlet. A new Economiser broiler permits broiling with the oven door closed, features a cast aluminum broiler grill which may be preheated to broil most foods without turning. There are two large and two standard top cooking units and model AE-2 features a pressure cooker inserted in the "Up-r-down" unit. This unit, one of the two larger units, can be raised to the top of the range for cooking when the cooker is not in use. Both gas and electric range lines include Centra-Cook tops, streamlined back panels with chrome-trimmed lamp, chrome control panels and aluminum toe-space base. Most models are equipped with a Visador oven door.

Manuufacturer: Roberts & Mander Corp., Hatboro, Pa.

"WHIRLPOOL BROILER" PAN in new range line drains grease, eases cleaning.

Cribben & Sexton's new line of Universal Gas Ranges features a broiler pan designed to be smokeproof and fireproof through use of a patented grease drainage system. The pan is in three pieces, and presents 100 in. of circular drainage track, to allow the grease to retreat from the hot radiating surface down to a cool zone for storage. The cleaning operation is relatively simple, since the broiler pan may be lifted out, separated into its three parts, and sink-washed. The broiler draws its heat from a Monel wire mesh screen; other features of the new ranges include new insulation, thermostats, burner grates, instrument panel, and optional oven windows.



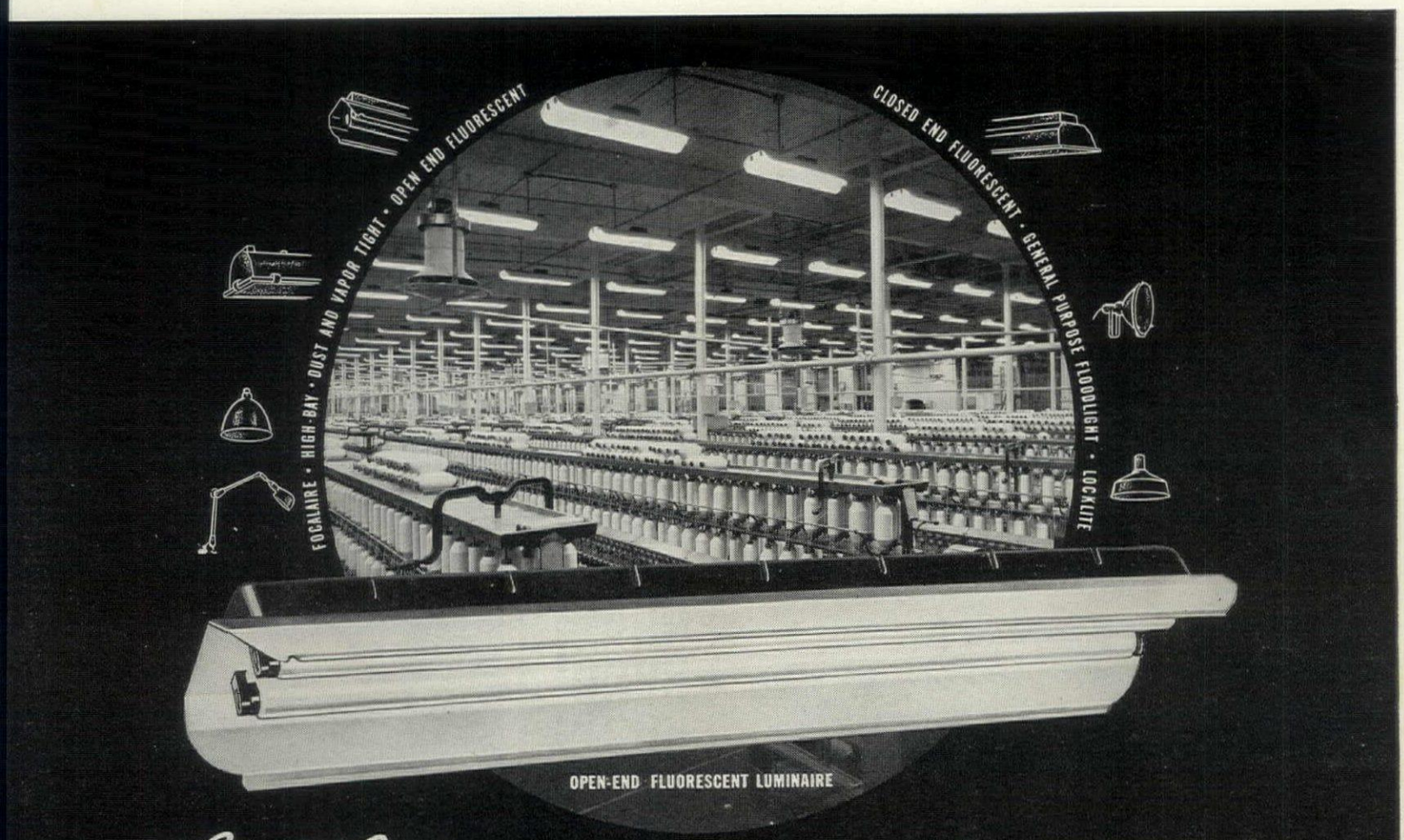
Manufacturer: Cribben & Sexton Co., 700 N. Sacramento Blvd., Chicago 12, Ill.

COMBINATION 8 CU. FT. REFRIGERATOR has frozen food and regular storage compartments.

A combination refrigerator and home freezer, this new 8 cu. ft. unit has two separately refrigerated, completely insulated compartments, each with its own door and control. The upper compartment of 1.5 cu. ft. maintains 0° F. for freezing foods and storage of frozen foods. It is refrigerated by a sealed-in-steel primary system and is insulated with 4 in. of glass wool. Ice is made in this compartment in four trays placed directly on the refrigerated shelves. Defrosting is said to be necessary only twice a year. The lower 6.7 cu. ft. refrigerator for storing normal fresh foods maintains a 38° F. temperature and high humidity. A hermetically sealed secondary system refrigerates the walls of this compartment. Other features include a butter conditioner, two 6 in. deep glass covered drawers, 3 in. of insulation in walls. NH-8 Combination Refrigerator is powered by the recently developed small refrigerating unit, thus it provides 8.2 cu. ft. of food storage space, 14.4 sq. ft. of shelf area, in a cabinet that occupies no more floor space than the usual 6 cu. ft. box. NH-8 is 30 in. wide by 63 in. high, retails for about $399.75.

Manufacturer: General Electric Co., Bridgeport 2, Conn.

(Continued on page 154)



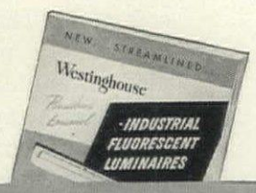
For Factories WESTINGHOUSE PLANNED LIGHTING PAYS

. . . WITH INCREASED PRODUCTION . . . LESS SPOILAGE AND REJECTS

HERE'S WHY. You get the right quality and quantity of light for every industrial task. The result: more production per worker . . . greater accuracy . . . better inspection . . . less spoilage and rejects . . . a safer plant and better labor conditions. No wonder Westinghouse *Planned Lighting* Pays.

THE RIGHT EQUIPMENT. Take a close look at the new Westinghouse Industrial Fluorescent: Built for long life . . . easy to install . . . easy to maintain . . . 9 mounting methods . . . enclosed hood protects ballast; improves appearance and rigidity . . . starters are easily, quickly accessible; readily identified . . . there is a complete line with open or closed ends; for individual or continuous strip mounting.

No matter what your lighting problem, you will find the answer in the wide range of Westinghouse fluorescent, incandescent and mercury-vapor equipment. A Lighting Sales Engineer will be glad to study your problems and help with a plan. For information call your nearest Westinghouse distributor, or send for a copy of B-3955. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna. J-04155



Your local power company and electrical contractor will be glad to help with your planning

Westinghouse
PLANTS IN 25 CITIES OFFICES EVERYWHERE
Westinghouse Electric Corporation • Lighting Division • Cleveland, Ohio
COMMERCIAL • INDUSTRIAL • FLOODLIGHTING • STREET • AVIATION

Services of a Lighting Sales Engineer are available through your near-by Westinghouse distributor

New 26-story addition to John Hancock Mutual Life Insurance Company, Boston, Mass. Cram & Ferguson, architects and engineers. Turner Construction Co., builders.

. . . because the pipe joints are SILBRAZ®

Owners, architects, and builders of new buildings are using all the latest building techniques at their command. That's why the brass and copper pipe runs of truly modern buildings are specified Silbraz—the modern way of joining brass or copper pipe or Type B copper tubing. Silbraz joints are silver brazed – not soldered or threaded – and form a joint that is 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.

Silbraz joints actually make the brass or copper pipe or tubing into "one-piece pipelines" that save you money by eliminating leaky connections, costly maintenance, and repairs.

Walseal® Valves and Fittings for Making Silbraz Joints

The Walworth Company produces a complete line of Walseal Valves, Fittings and Flanges for making Silbraz joints – the modern method of joining brass or copper piping. For further information, see your nearest Walworth distributor, or write for Circular 84B.

Make it a "one-piece pipe line" with Walseal

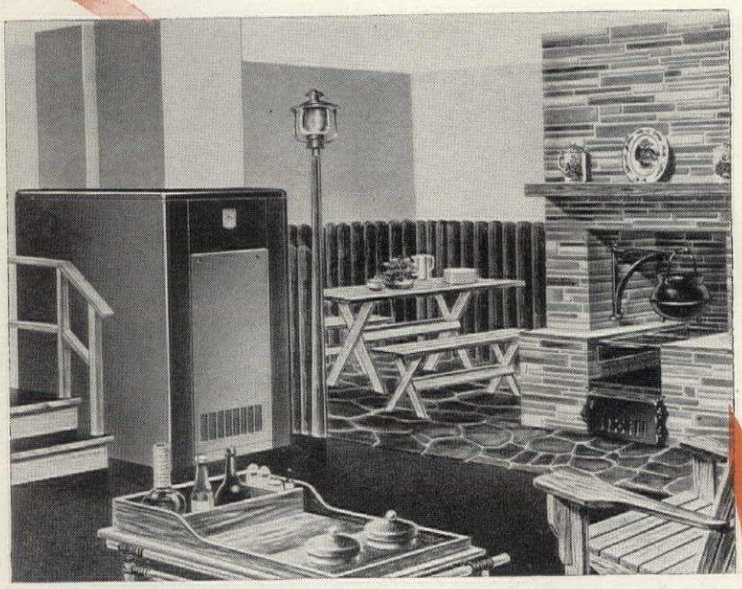
SEE OUR CATALOG IN SWEET'S

WALWORTH
valves and fittings
60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

FIRST in heating and plumbing

any way you judge them!



This downstairs grill proves that basements can be more than just places to put the furnace. With its inviting fireplace and dining alcove, the room fairly breathes hospitality. And such a room is made possible by installation of the colorful, compact **SARATOGA** Winter Air Conditioner. The oil fired Saratoga is from American-Standard's famous Sunbeam line of warm air furnaces and winter air conditioners for every type of home . . . and for every kind of fuel.

The **ROYAL HOSTESS** Sink in this smart combination kitchen and breakfast nook provides striking beauty with the latest labor-saving conveniences. Its deep, roomy sink compartment, drainboards, and back ledge for fittings are all one-piece constructed of rigid cast iron for long service, and finished with a heavy coating of acid-resisting enamel for lasting beauty. Fittings are finished in gleaming, non-tarnishing Chromard.

HOW do you judge heating equipment and plumbing fixtures? By good looks? Sound engineering? Sturdy construction? Any way you judge them, American-Standard products are first! Proof of their dependability and public acceptance is found in the fact that more American homes have heating and plumbing by American-Standard than by any other single company.

For details of the complete line, contact your Heating and Plumbing Contractor. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pennsylvania.

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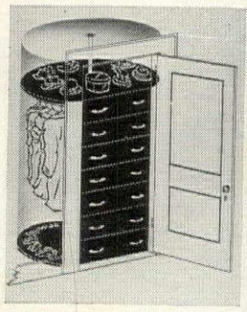
HEATING · PLUMBING

AMERICAN-Standard
First in Heating and Plumbing

LOOK FOR THE MARK OF MERIT—It identifies the world's largest line of Heating and Plumbing Products for every use . . . including Boilers, Warm Air Furnaces, Winter Air Conditioners, for all fuels—Water Heaters—Radiators, Convectors, Enclosures—Gas and Oil Burners—Heating Accessories—Bathtubs, Water Closets, Lavatories, Kitchen Sinks, Laundry Trays, Brass Trim—and specialized products for Hospitals, Hotels, Schools, Ships and Railroads.

ROTATING COMBINATION STORAGE UNIT provides drawers, shelves and hanging space in compact package.

Rotacloset is a new space-saving, rotating, combination clothes storage unit which can be installed in existing closets or placed in the corner of a room. Actually a combination of drawers, shelves and hanging space which rotates for easy use, it is available in a portable or room model for hotel use and in a built-in model for apartments, hotels and homes. The built-in model consists of a cylindrical container in which the combination chest of drawers, dressing shelf, hanging-space and shelves for hats and shoes, rotate. It fits into a clothes closet 7 ft. high, 42 in. wide and 36¼ in. deep. The unit is available in wood or metal in numerous finishes, comes with container knocked down, rotating unit assembled. The portable model, an assembled unit, incorporates a self contained turn-table base. Retail prices are: built-in model $164.50, portable model $94.50.



Manufacturer: Zibell Industries, 1734 Chandler Bldg., Atlanta, Ga.

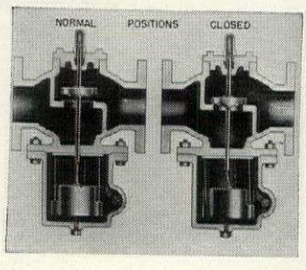
HOME BURGLAR ALARM with spring mechanism requires no wiring or costly installation, is low cost.

Burg-Larm is a simple, dependable, low cost, non-electrical burglar alarm that can be easily installed with two screws on any door or window. Featuring a spring mechanism to sound the alarm, it winds like a clock, gives a loud, 60 second ring when tripped. The unit measures about 4½ in. long, has a protruding arm at one end. It is attached to the door jamb or cross piece of a double hung window so that the bumper arm can register any movement. When the door or window is opened, the bumper arm trips the alarm which sounds a penetrating ring for 60 seconds. A feature of the all metal unit is that it may be set to operate on a window in any position, closed or partially opened from the bottom or top. When protection is not needed, free use of the door or window can be had by swinging the bumper arm to the opposite side. Burg-Larm is finished in ivory enamel, retails for $2.25.

Manufacturer: R. E. Robertson & Co., 228 N. La Salle St., Chicago, Ill.

AUTOMATIC EARTHQUAKE VALVE shuts off gas supply in case of earthquake to eliminate danger of explosion.

Said to be the only automatic valve manufactured for this specific purpose, the 4 in. Sentinel earthquake valve completely shuts off the flow of gas to a building if a damaging earthquake occurs. It is set to operate automatically only when the earth vibrations reach the middle range on the International Modified Mercalli Scale of Earthquake Intensities, then closes the gas line in ⅓ of a second. The basic mechanism of the valve is a Tri-Filar pendulum. As this type of pendulum does not tilt or rock, thus cannot be activated by any vibration except the horizontal earthquake motion, the valve setting is simple.

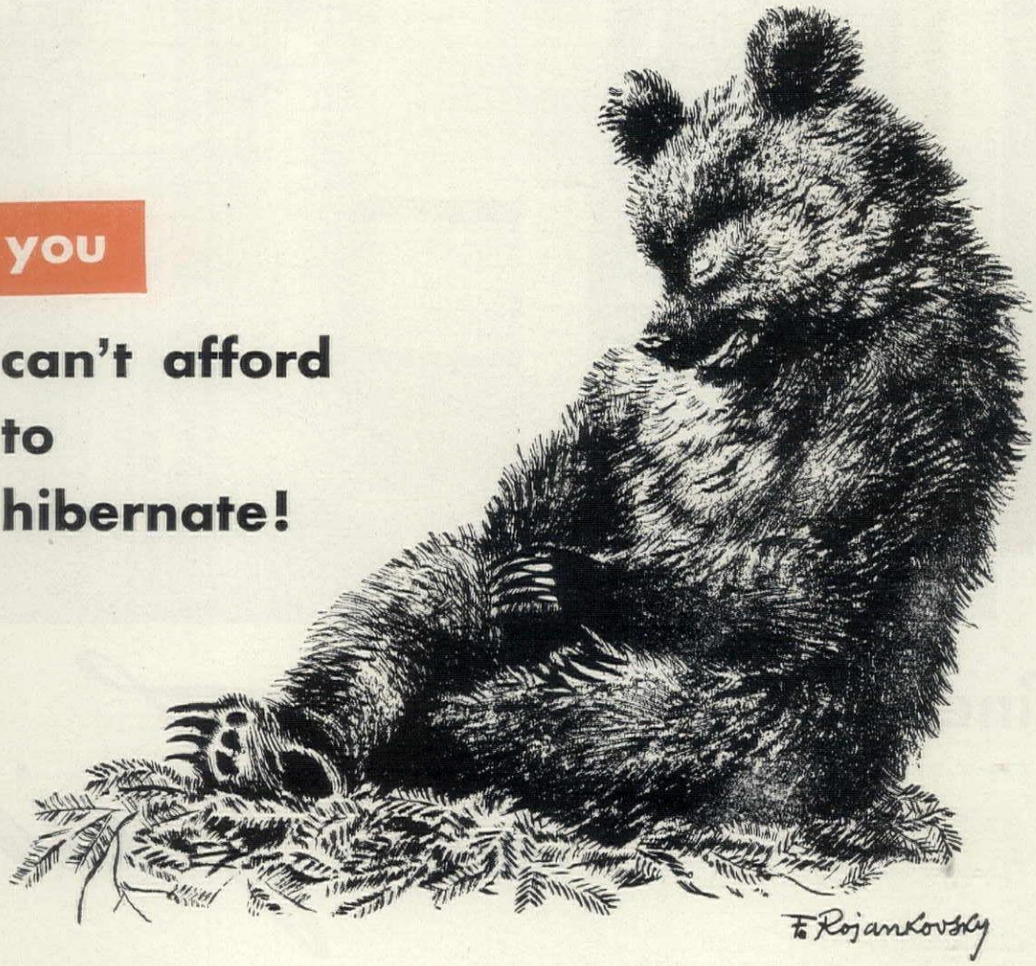


Manufacturer: Security Valve Co., 410 Fernando Road, Los Angeles, Calif.

(Technical Literature, page 158)

you

can't afford to hibernate!



Wide-awake home builders recognize home-buyer trends. Today the trend is to Electric Ranges. Another million American families switched to Electric cooking last year. Estimates indicate that this year over a million more Electric Ranges will be installed.

This is a definite trend that cannot be ignored. Progressive builders recognize this trend. Electricity is a "must" in any house, and it's simple and economical to include wiring for an Electric Range leading to a range outlet in the kitchen at the time of construction. This is assurance that the houses you build are not only modern today, but will *stay* modern for years to come!

Electric Range Section
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
155 East 44th Street
New York 17, N. Y.

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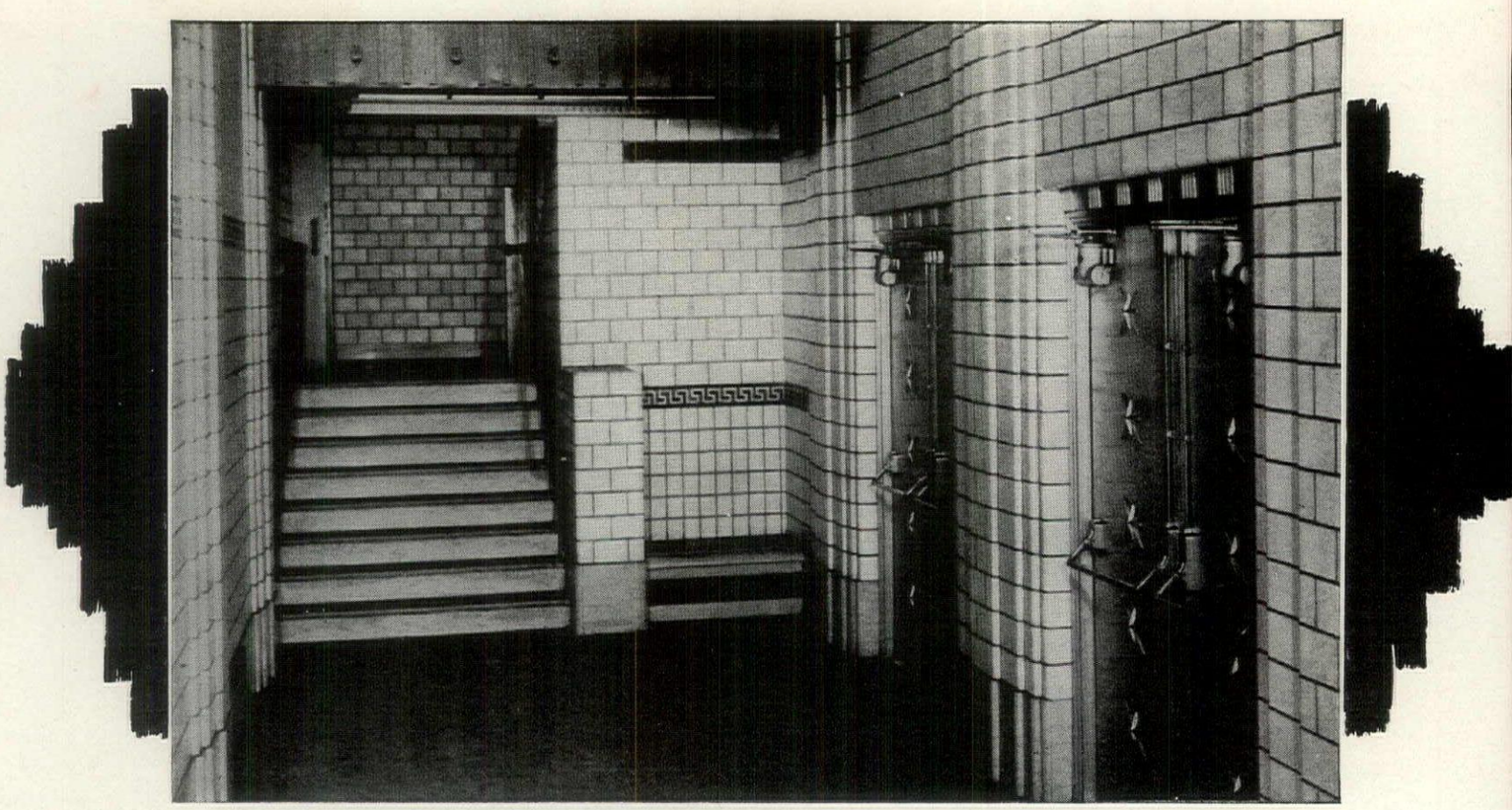
Follow the trend... **wire YOUR HOUSES FOR ELECTRIC RANGES**

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



For finer school interiors specify *Facing tile*

Check these advantages of Structural Clay Facing Tile . . . undoubtedly, you'll say they belong in every school you design or build.

- ✓ Bright, cheerful, colorful interiors
- ✓ Cleaner, more sanitary surroundings
- ✓ Freedom from costly maintenance and repair
- ✓ Strong structural walls and durable finishes
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- ✓ Maximum protection from fire

Facing Tile is available in a variety of light-reflecting colors —builds the wall and finish at the same time—will not crack, scratch or decay—does not harbor germs or dirt—cleans easily with soap and water—and now offers the economies and efficiencies of modular sizes.

NEW MODULAR FACING TILE HANDBOOK. Write to Desk AF-2 of the Institute for a copy of our new 90-page Modular Facing Tile Handbook showing methods of determining modular procedure. It's FREE to registered architects and engineers who write on their own letterheads. 50 cents to all others. See Sweet's or call on any Institute Member for more information.

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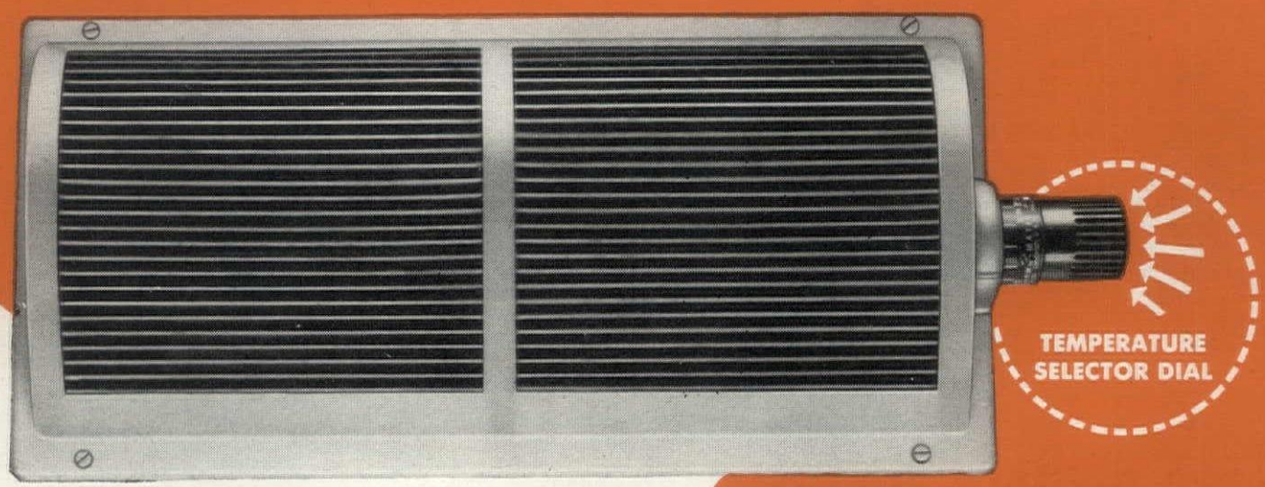
KNOCK-OUT NEWS

THE SENSATION OF THE NEW YORK HEATING SHOW



PATENTS PENDING

Individual Room Temperature Control—AUTOMATICALLY

The New **DOLE**

THERMO-MATIC

(REG. U. S. PAT. OFF.)

REGISTER

for Forced Warm Air Heating Systems

- Operates thermostatically from room air.
- Very sensitive: Modulating effect: Output is regulated to meet heat losses.
- Completely self-contained; no wires to run —no bulbs to locate—very simple to install.
- Simple setting of the thermo-dial assures room temperature control—as desired—corrects many unsatisfactory heating installations: Materially improves any forced warm air system.
- A zone control for every room.

DOLE manufactures AIR and VACUUM VALVES for heating systems and WATER MIXERS for domestic use

The Dole Valve Company
1933K Carroll Avenue
Chicago 12, Illinois

Please send me facts about the New Dole Thermo-Matic REGISTER for forced warm air heating systems.

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TECHNICAL LITERATURE

LIGHTING. IES Lighting Handbook. Illuminating Engineering Society, 51 Madison Avenue, New York 10, N. Y., 850 pp., 6 x 9 in. Price $7.50.

The IES Lighting Handbook is well subtitled The Standard Lighting Guide. It would be difficult—and ungrateful to the Illuminating Engineering Society—to attempt to picture a more complete volume on tried-and-true standard lighting. The reference division of this new book covers working theory from the excited mercury atom to heterochromatic visual photometry to the lumen method for calculating illumination; the application division has specific data and recommended illumination levels on installations from waterfall lighting to ultraviolet irradiation of poultry. Builders and architects can learn most from sections on Interior, Exterior, Sports, and Transportation Lighting, though many will be saddened by the examples of lighting fixtures the handbook editors have chosen as illustrations. This new reference is a clean, legible presentation, with that feature so weak in many other handbooks, a good index.

LIGHTING. Over-All Lighting by Wakefield, Catalog No. 48. The F. W. Wakefield Brass Co., Vermilion, Ohio. 32 pp. 8½ x 11 in.

Catalog No. 48 illustrates and describes Wakefield's fluorescent and incandescent lighting equipment for schools, offices, drafting rooms and stores. Among the new items included are luminous indirect equipment utilizing slimline lamps, the improved Grenadier fixture, the Grenadier IV and spotlight equipment for accenting in merchandising areas. Photometric data and layout information are given in complete form.

HOUSING RESEARCH. HHFA Technical Bulletin, No. 1. Housing and Home Finance Agency, Washington 25, D. C. 34 pp. 7⅞ x 10⅜ in.

Similar in purpose to the technical series issued during the war by the National Housing Agency, the HHFA Technical Bulletin is devoted to developments in the field of housing research. Major articles in the initial issue include: Lower Costs Through Better Codes, Housing Research, Insulation of Concrete Floors in Dwellings and Earth Constructions. The issue also carries a bibliography of recent books, bulletins and other materials available on housing experiments and techniques. Subsequent issues will be published at intervals.

SOLID AND FIBROUS PLASTERING by W. Verrall, C.R.P. The Technical Press Ltd., Gloucester Road, Kingston Hill, Surrey, England. 196 pp. 5½ x 9 in. Price 15/-net.

Plastering, in England or America, is still plastering, and while this British book may contain a few product names and paragraphs that are not entirely clear to U. S. readers, it does give a sound coverage of the trade.

CEILINGS. Nailock Method of Suspended Ceiling Construction. Nailock Steel Div., The Sanymetal Products Co., Inc., 1705 Urbana Road, Cleveland 12, Ohio. 12 pp. 8½ x 11⅛ in.

This catalog describes the Nailock Method of suspended ceiling construction which provides a means of mechanical fastening for acoustical ceiling materials, and for fastening other nailable materials to steel, concrete or masonry. Illustrating and explaining the four methods by which Nailock Nailing Channels may be attached to carrying members (by saddle wire tie, spring lock clip, lath welded or imbedded in concrete), it shows how a variety of finishing materials may be attached to the channels. Specifications, load tests and other features of the system are included. *(Continued on page 162)*

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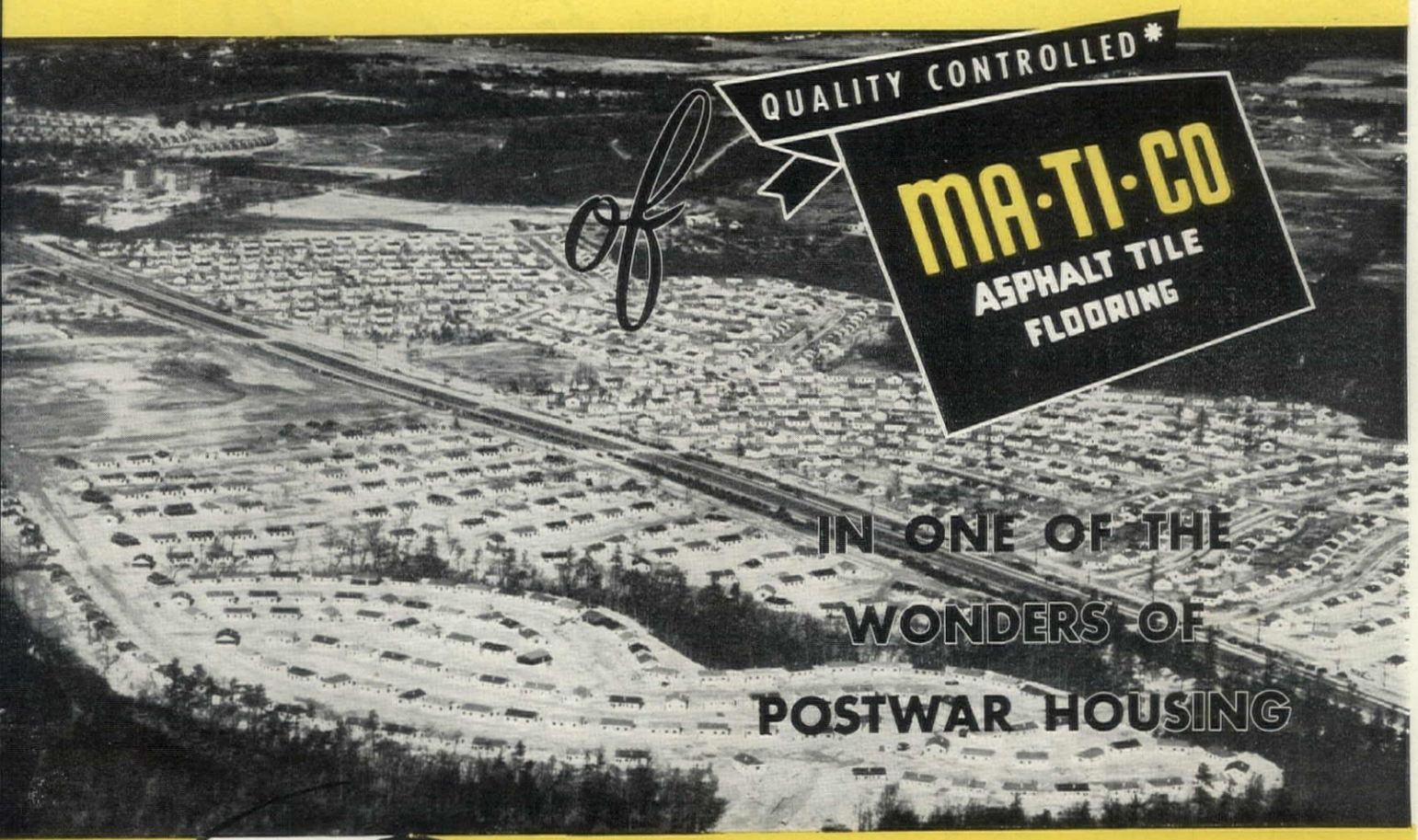

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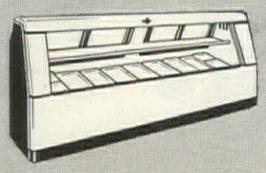

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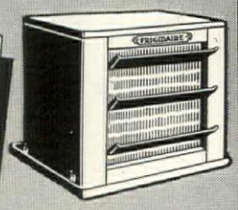

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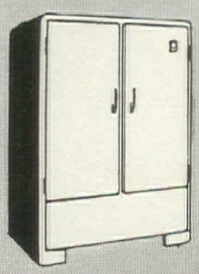

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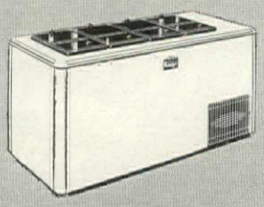

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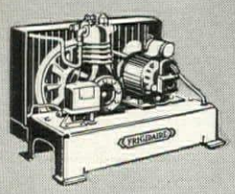
Depend on Frigidaire products for usefulness and quality, as a matter of course. But also—depend on Frigidaire's full line of commercial refrigeration and air conditioning equipment to meet your needs. Make Frigidaire your *first* source because it's your *dependable* source!



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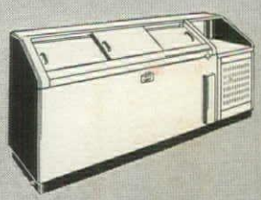

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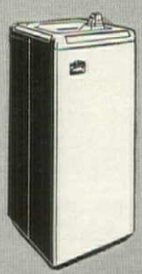
Dry or wet. Up to 910 12-oz. bottles.



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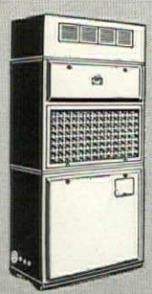
Bottle or pressure units. Also tank-type.



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Store conditioners, central systems, room coolers.

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STEELCRAFT STEEL CASEMENTS

ARE LIGHTER! . . . STRONGER! . . . BETTER!

This actual on-the-scene laboratory photo shows STEELCRAFT Type 2423 steel casement undergoing vertical deflection analysis in load-testing machine. Supports at bottom edges of casement allow deflection measurement at center of bottom as load is applied top center. Loads were up to equivalent of 600 lbs. per lineal foot.

Graphic Experiments by Independent Testing Laboratories Prove STEELCRAFT STEEL CASEMENTS Lead the Field in Structural Strength and Precision Construction!

CHECK THESE CONCLUSIVE RESULTS:

Load Pounds	Deflection in Inches: Casement No. 1	Casement No. 2	Casement No. 3	Steelcraft Casement
100	.018	.017	.025	.016
200	.045	.040	.056	.034
300	.072	.063	.086	.055
400	.094	.085	.119	.074
500	.115	.106	.148	.095
600	.135	.127	.175	.115
Permanent Set	.011	.010	.010	.006

Here it is . . . vivid, indisputable proof of the superiority of STEELCRAFT Steel Casements! When analyzed with the steel casements of three other leading manufacturers, STEELCRAFT showed 15% less pressure-induced deflection than the next strongest window, 34% less deflection than the weakest window tested. Results testify that STEELCRAFT is built to withstand from six to eight times the normal masonry load on openings of the width tested. To these advantages of engineered construction and durability add STEELCRAFT'S factor of *prompt delivery* . . . and you have the reasons why you should insist on STEELCRAFT Steel Casements—test-proved to satisfy you and the home owner.

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Please send me, without obligation, complete descriptive literature on STEELCRAFT Casement Windows.

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GRANITE. Color in Granite. H. E. Fletcher Co., West Chelmsford, Mass. 16 pp. 8½ x 11 in.

An interesting volume on the subject of color in granite, this bulletin illustrates many types of domestic and imported granites with accurate color reproductions. A brief paragraph accompanying each illustration outlines the predominant color characteristics of the stone, sources, outstanding installations, etc. Other features of the bulletin include a discussion of the advantages of both sand-rubbed and polished finishes, a chart of physical characteristics of Chelmsford Granite, a brief background of the Fletcher Co. and its services and supplementary notes on the general subject of color.

ASPHALT TILE. Simplified Practice Recommendation R225-47. U. S. Department of Commerce, Washington, D. C. 12 pp. 5⅞ x 9 1/16 in.

This booklet recommends—as a useful standard of practice in production, distribution and use—a simplified schedule of colors and dimensions for asphalt tile, and type, color and dimensions for cove base.

FIREPLACES. 100 Fireplace Ideas. Price Fireplace Heater Tank Corp., 11 Austin St., Buffalo, N. Y. 32 pp. 4 11/16 x 5⅞ in.

This work presents pictorially 100 fireplace designs in a variety of materials. Planned to promote the use of the Fyr-Place unit, a steel warm air circulating form for fireplaces, closing pages offer a discussion of its advantages, installation, available sizes, etc.

HEATING CONTROLS. Indoor-Outdoor Controls. Level Temp Temperature Regulation System. White-Rogers Electric Co., 1209 Cass Ave., St. Louis, Mo. 4 pp. each. 8½ in. x 11 in.

Indoor-Outdoor Controls presents the outstanding features of White-Rogers' hydraulic-action, indoor-outdoor heating control. The booklet discusses its applications, operation and installation, describes the two available types and procedure for adjusting. Dimensional and wiring diagrams illustrate installation. *Level Temp Temperature Regulation System* gives information on the company's control system composed of a specially designed, sensitive room thermostat and a primary Level Temp control, for forced warm air and hot water heating systems. Non-technical in style, it briefly tells what Level Temp is, how it works and lists its advantages. Schematic and wiring diagrams illustrate installation.

TERMITES. Low-Cost Housing Research, Engineering Experiment Station, Louisiana State University, Baton Rouge 3, La. 8 pp. 8½ x 11 in.

An informative treatise on Termites, this bulletin cites the damage done by the insects, advises how to find them, to get rid of them, and to keep them out of the new house.

REQUESTS FOR LITERATURE

J. E. Douglass, Jr., architectural student, 710 West 24th St., Austin, Tex.

Edwards Builders, Naseby Road, Bournemouth, England.

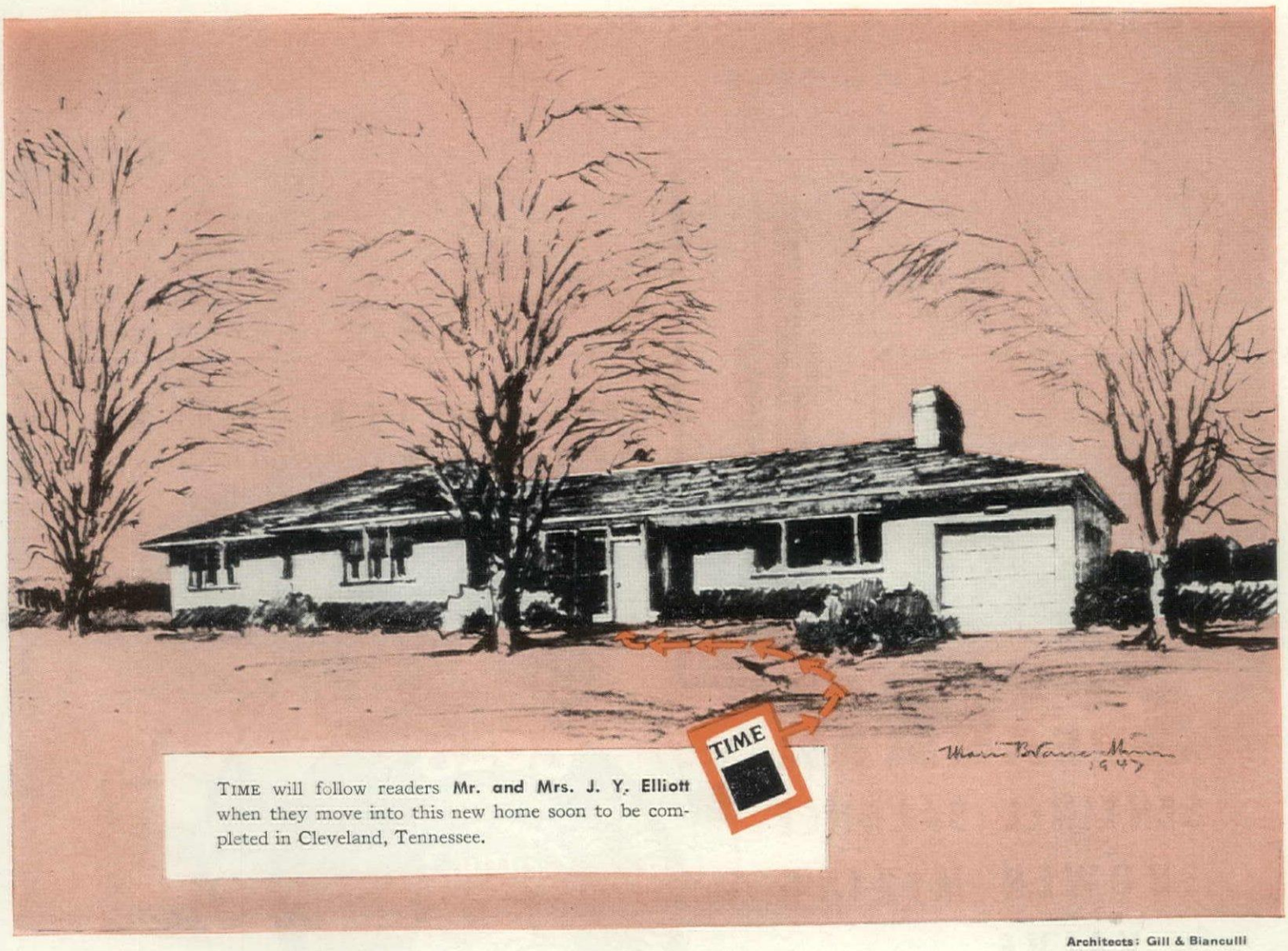
Bernard J. Friedman, architect, 1506 East Seneca, Tucson, Arizona.

A. H. Gabrielli, architect, Calle Montevideo 1984, Rosario, Argentina.

Robert A. Kennard, architectural student, 533 East Walnut Ave., Monrovia, Calif.

John Napier, architectural student, 2 Plasturton Gardens, Cardiff, Wales, England.

Edmond L. Royer, contractor, 401 Cumberland Hill Road, Woonsocket, R. I.



TIME will follow readers **Mr. and Mrs. J. Y. Elliott** when they move into this new home soon to be completed in Cleveland, Tennessee.

Architects: Gill & Bianculli

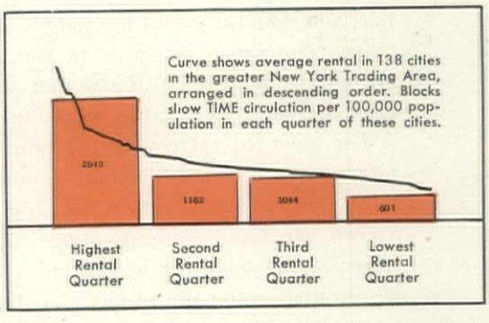
Presenting THE SHOW-ROOM HOMES *of the Nation*

ALL across the country, your best customers—and the best "salesmen" for your products outside your industry—are the kind of high-incomed people who use your products and show them off in "show-room" homes like this one.

They are people like the more than 3,000,000 readers of TIME—

For TIME's circulation masses among people with higher standards of living—is unusually high in high-rental areas, low in low-rental areas. (The graph at the right, for example, is the result of a recent study of the New York City trading area.*)

When you talk building materials and equipment in TIME you are reaching families who *can afford to buy*—who *do buy*—and who *can spread your name* among other prospects like themselves concentrated in the communities which mean most to your sales.



*If you would like a copy of the complete study, "The Selectivity of TIME's Circulation", write David Wallace, Research Director, TIME INC., 9 Rockefeller Plaza, New York, N. Y.

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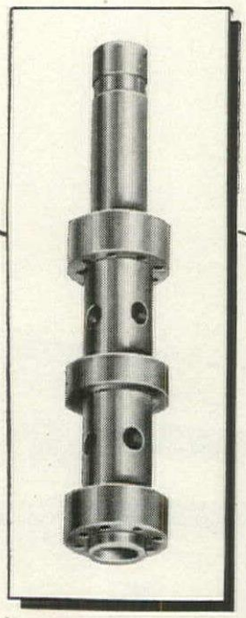
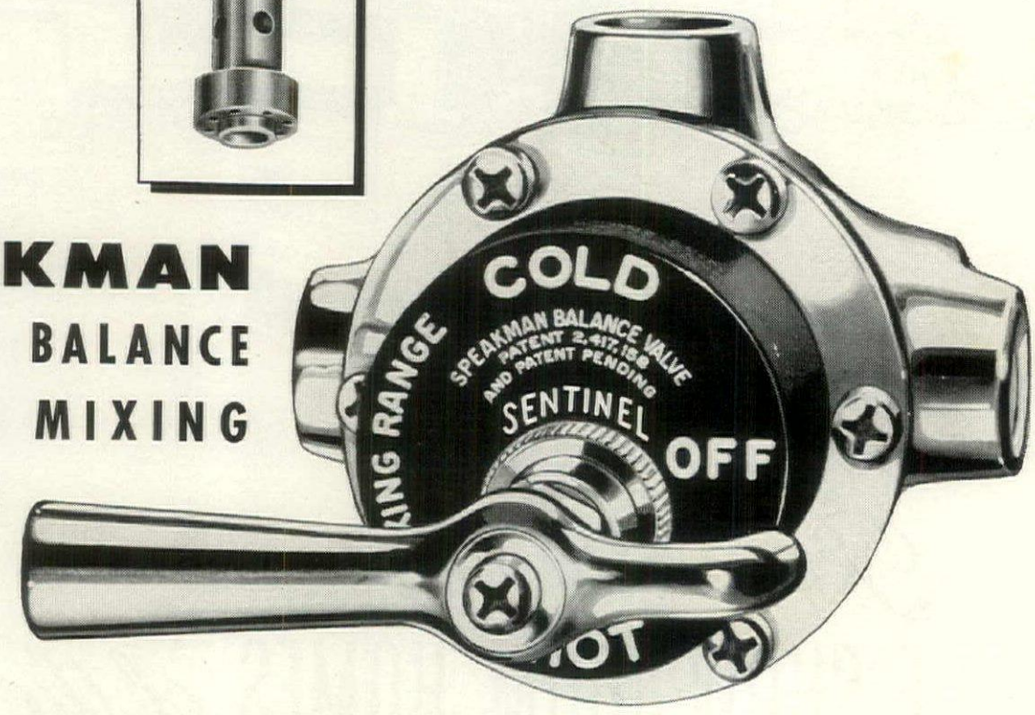


THE F-L-O-A-T-I-N-G SENTINEL

that holds shower temperature steady!

SPEAKMAN SENTINEL BALANCE SHOWER MIXING VALVE



For a long time everyone has wanted a shower that didn't change to scalding hot or freezing cold every time someone turned on the water "down the line."

Now Speakman brings it to you . . . with the *Sentinel Balance Mixing Valve* that positively maintains the water temperature set by the bather.

The patented valve with the removable f-l-o-a-t-i-n-g piston, readily accessible, automatically maintains original temperature by compensating for "down the line" water stealing. And the bather never knows anything is happening! In case of a severe drain upon the supply of either hot or cold water, the f-l-o-a-t-i-n-g *Sentinel* immediately cuts down the high pressure side flow port and opens up the low pressure port—thus maintaining the original temperature as set by bather. Thus, sudden chilling or scalding is impossible. When pressure returns, the *Sentinel* automatically restores the flow to the head . . . at the same temperature as before!

The f-l-o-a-t-i-n-g *Sentinel* has no thermostats, rockers, springs, or other gadgets likely to get out of order. It works on water pressure alone! If excessive alkali ever coats the f-l-o-a-t-i-n-g *Sentinel*, it can be cleaned readily by merely shutting off the *Sentinel* valve. . . . it is not necessary to shut off the Hot and Cold supply to the *Sentinel* Shower Valve. This is a great help where shut-off valves may be located at some distant point and perhaps control the whole bathroom.

We'd be pleased to send you complete detailed information on this new safety *Sentinel Balance Mixing Valve*. Write to Department BV.

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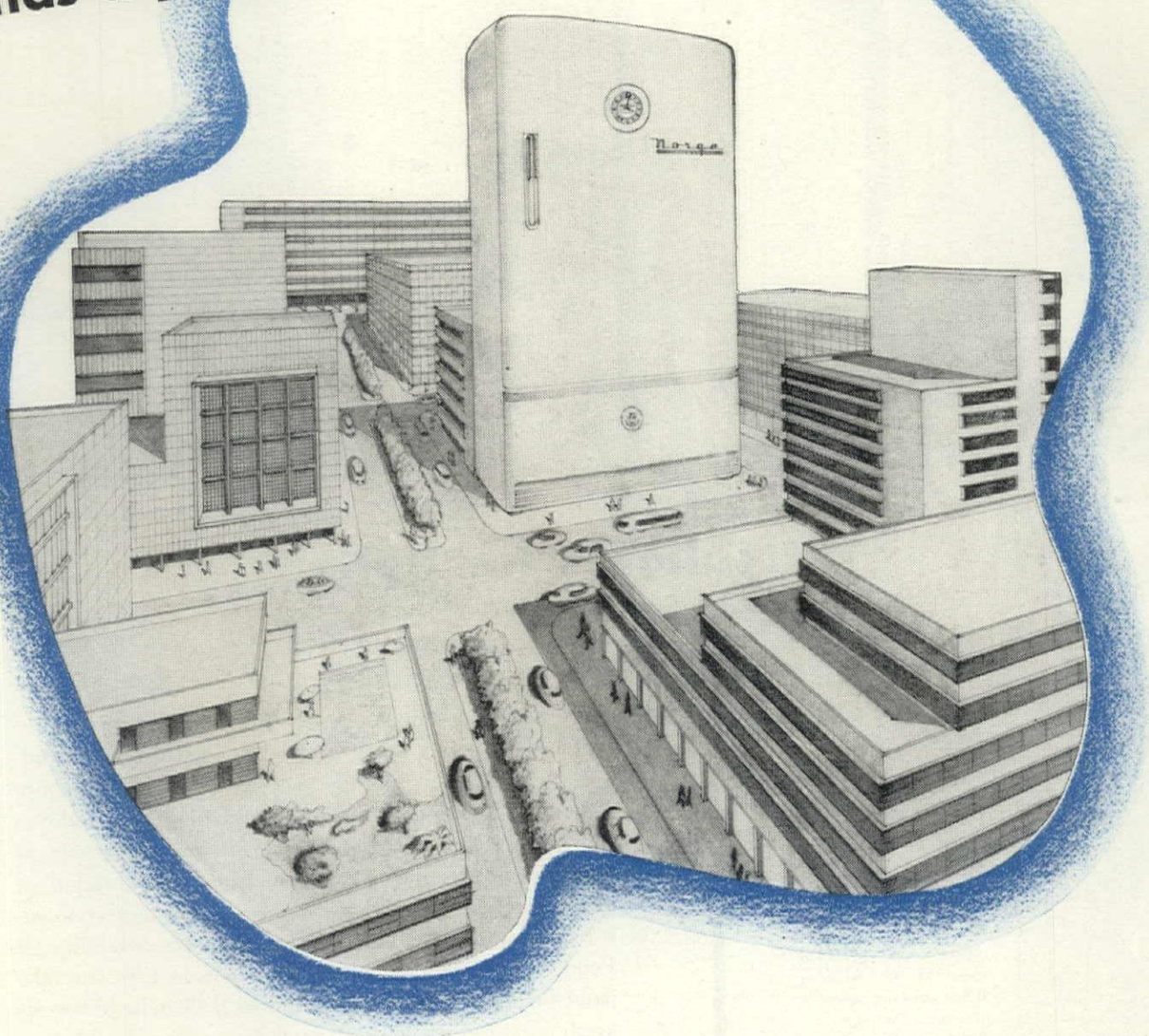
has a place in this picture!



Integrity of design means the same to the engineers who manufacture Norge appliances and to the architects who build America's most modern apartments . . . Utilizing all available space efficiently, designing a unit having all the beauty that symmetry demands, compactly arranging all functional parts for greatest convenience—these attributes are shared in common. NORGE DIVISION, Borg-Warner Corporation, Detroit 26, Mich. In Canada: Addison Industries, Ltd., Toronto, Ontario.

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Refrigerators • Electric Ranges • Water Coolers
Washers • Electric Water Heaters • Home Heaters
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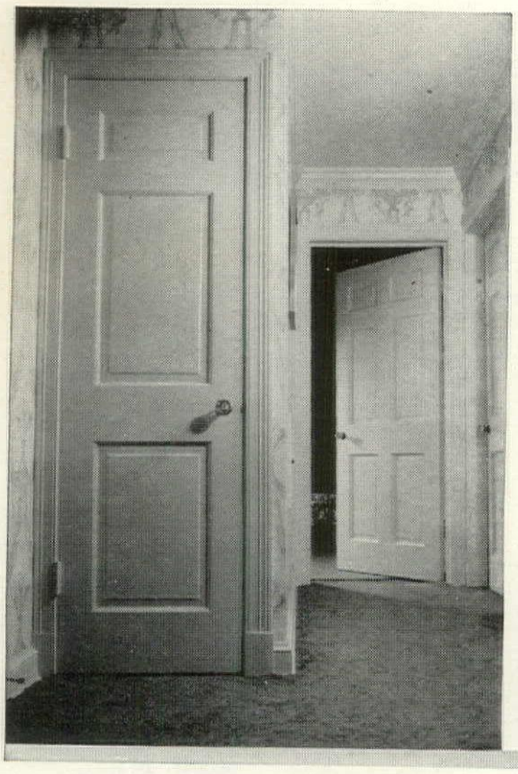
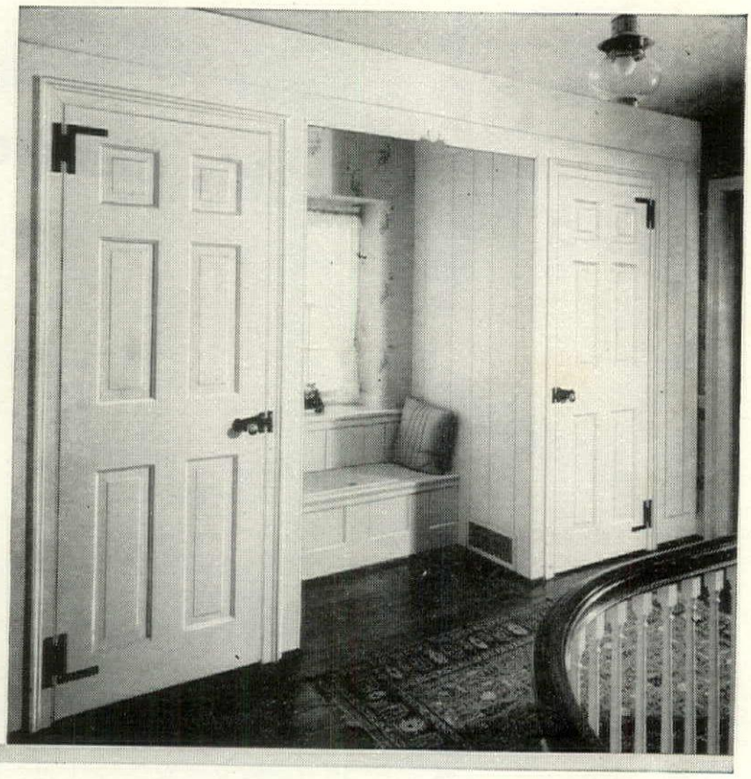
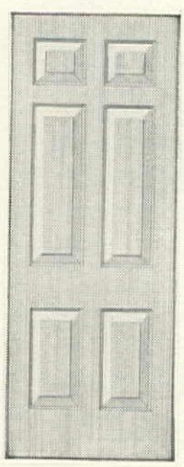




Highlights for Halls



This six-panel Ponderosa Pine door is "at home" in any room of a house. Like all Ponderosa Pine doors, it is made with machine accuracy and precision. Yet, thanks to volume stock production, costs can be held down. When sliding doors are desired, remember that sliding doors of Ponderosa Pine are available in a variety of styles.

More beauty for halls—more scope for your planning—and more economy for the owner! You get these three advantages when you specify stock design paneled doors of Ponderosa Pine. With their delicate shadow lines and correct proportions, Ponderosa Pine doors add a note of warmth and friendliness to any interior. A wide variety of designs enables you to choose doors which are architecturally appropriate. And the well-known durability of Ponderosa Pine—its ability to sand smoothly, to take paint or other finishes easily and to hold nails or screws firmly—assures economy through long years of use.

"Today's Idea House," 32-page Ponderosa Pine Woodwork booklet, contains illustrations of Ponderosa Pine stock design doors and windows, as well as many photographs. A copy will prove a valuable addition to your files—mail the coupon for it.

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City.....*Zone*.....*State*.....

What's your score?

(A three-minute test on the effective use of wiring materials)

1 Existing service entrance consists of 3/4-inch conduit, containing two No. 8 Type R wires. How can this installation be made suitable for an electric range, without tearing out the conduit?

A — *Install a second service entrance.*
B — *Run two No. 6 Type T wires and one bare No. 8 conductor in existing conduit.*
C — *Tap into the next door neighbor's circuits.*

2 An electric device that can be seen but not heard helps any builder or architect to sell good wiring to clients. What is it?

A — *Electronic toaster.*
B — *Mercury switch.*
C — *Piped light.*

3 Many new buildings going up today will need provision for future FM and television wiring. What is an easy way to plan for this wiring?

A — *Ask someone who has wired buildings for television.*
B — *Double the capacity of all circuits.*
C — *Provide flexible conduit raceways for lead-in wires.*

4 Even "cool" fluorescent lighting sometimes must withstand fairly high ambient temperatures. What would you choose to safeguard such installations?

A — *Air conditioning.*
B — *Cold cathode.*
C — *Deltabeston* fixture wire.*

Answers

1 Okay, if you chose *B*. And you'll be wise to make it General Electric thermoplastic every time you choose a building wire, because General Electric has always been a leader in the production and sale of thermoplastic insulated wire.

2 General Electric's silent mercury switch makes *B* the only correct answer for modern planners. It is now T-rated at 10 amperes, 125 volts, and is a beauty to look at in any installation. Lasts a whale of a long time, too.

3 Pick *C* for this one. Flexible conduit provides an economical and easily installed, permanent raceway. Wires can be fished through at any time that new circuits are needed.

If you picked *A*, you were on the right track, too, but you can do better by asking your supplier about G-E flex.

4 If you picked *C*, and specify it for your "hot" jobs, you won't go wrong. In fact, always say Deltabeston when heat is a problem in wiring installations.

We hope this little quiz was fun. And maybe it will give you a better picture of General Electric Construction Materials—the full line for all wiring needs. Each part of the line is made for ready use with other G-E wiring materials. It's a line that has been designed for convenience—in specifying—in installation—and in maintenance. And it is backed up by experienced men who are always ready to help you with engineering and application counsel on your every project. It's the kind of *one source, one complete line* service that makes it easy for you and your clients to do a top-notch wiring job. If you want information on any of our products, please write to Section K4-24, General Electric Company, Bridgeport 2, Connecticut.

*Trade-mark Reg. U. S. Pat. Off.

Construction Materials

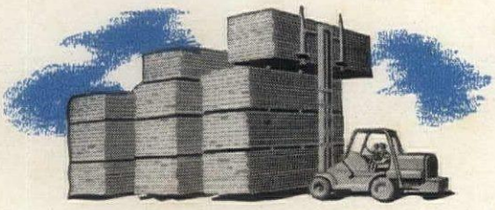
GENERAL ELECTRIC

SPECIFICATION AND BUYING INDE

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

IT'S NO SECRET...

Here's our formula for making Bruce Hardwood Floors the finest

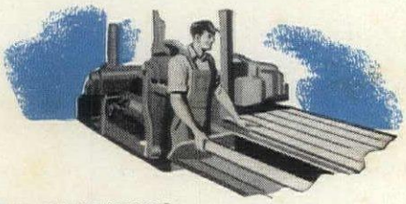


GOOD LUMBER

The quality of hardwood flooring starts with the selection of the lumber. Certain species of oak, for example, are far better than others for flooring. Through long experience Bruce inspectors know just about all there is to know about the species and grades of lumber for flooring. They can look at a board and judge the kind of flooring it will produce. There's no guesswork here.

PAINSTAKING DRYING

This is a hidden quality in flooring that is often overlooked, but so very important. The lumber for Bruce Flooring is first air dried for several months. It is then placed in dry kilns where moisture is further reduced to exactly the right content, neither too much nor too little. Every step in this process is carefully and scientifically checked by kiln drying experts.



PRECISION MACHINING

It takes both modern machines and skilled workmen to produce high quality flooring. The many different operations involved (ripping, surfacing, sidematching, end-matching, grading) all must be accurate within very fine limits. At the Bruce Plants a constant check is maintained on machine alignment, dimensions of flooring, fit of tongue and groove, and other details.

"SCRATCH-TEST" FINISHING

Even the finest flooring requires the right kind of finish to look and wear its best. Whether the flooring is finished at the factory or on the job, the Bruce penetrating seal method gives best results. This famous finish does not scratch, chip or peel like a surface coating—and will remain in perfect condition for years with little maintenance. It makes floors more beautiful, too.

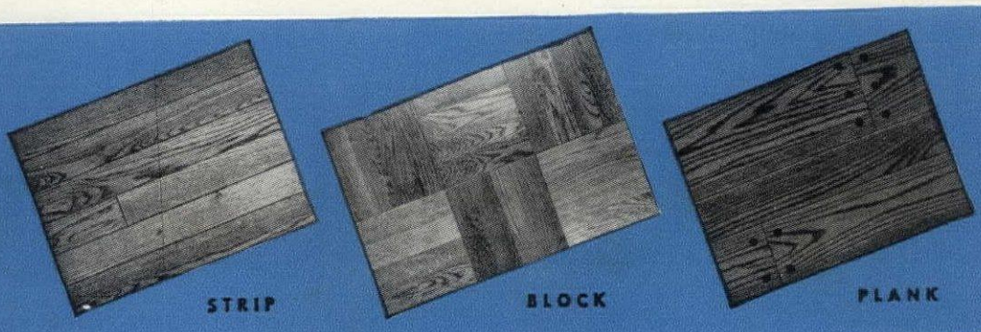
E. L. BRUCE CO., MEMPHIS, TENN.

World's Largest Maker of Hardwood Floors

BRUCE HARDWOOD FLOORS

BRUCE

Reg. U. S. Pat. Off.

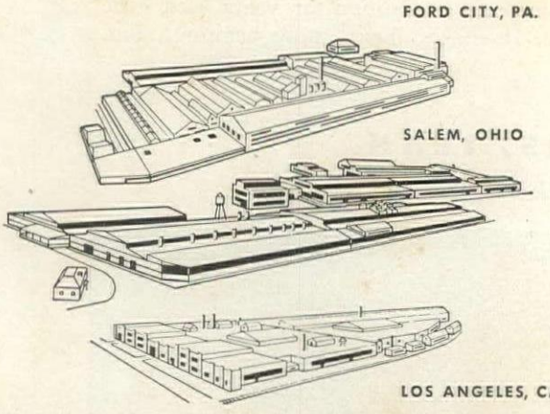


YOUR SUGGESTION WILL FIND QUICK ACCEPTANCE

...when you Specify

ELJER

Eljer's advertising in consumer magazines like The Saturday Evening Post will reach 75,000,000 people this year. Everywhere, people know Eljer. You can be sure that *your clients* appreciate the styling, superb quality and long life of Eljer's Fine Plumbing Fixtures.



PLUMBING FIXTURES ARE OUR EXCLUSIVE BUSINESS

...17 Acres of It!

AS ADVERTISED IN THE SATURDAY EVENING POST

ELJER PLUMBING FIXTURES

... Luxury without Extravagance

A fine bathroom is Luxury without Extravagance. When you buy Eljer Plumbing Fixtures, you invest in dependable, quality fixtures that are a joy to the entire family.

Eljer has been making plumbing fixtures exclusively for nearly half a century. In its complete line are bathroom, kitchen and laundry fixtures suitable for every purse and purpose.

Eljer bathtubs are made of rugged, rigid enameled cast iron in a variety of related styles and colors. The thick, glass-like surface is easy to clean and keep clean.

Vitreous china lavatories and closets by Eljer have the same velvet surface as your finest table dishes—yet with toughness to give trouble-free service for many years. They resist stains and the effect of all ordinary acids.

Ask your Plumbing Contractor about Eljer products today. Or send for Eljer's booklet "Fixtures of Beauty and Distinction". Eljer Co., General Offices, Ford City, Pa.

During many years of constant use, Eljer Fixtures have made remarkable records for durability and low maintenance costs in such buildings as the Netherlands-Plaza Hotel in Cincinnati and the Mayo Clinic in Rochester, Minn.

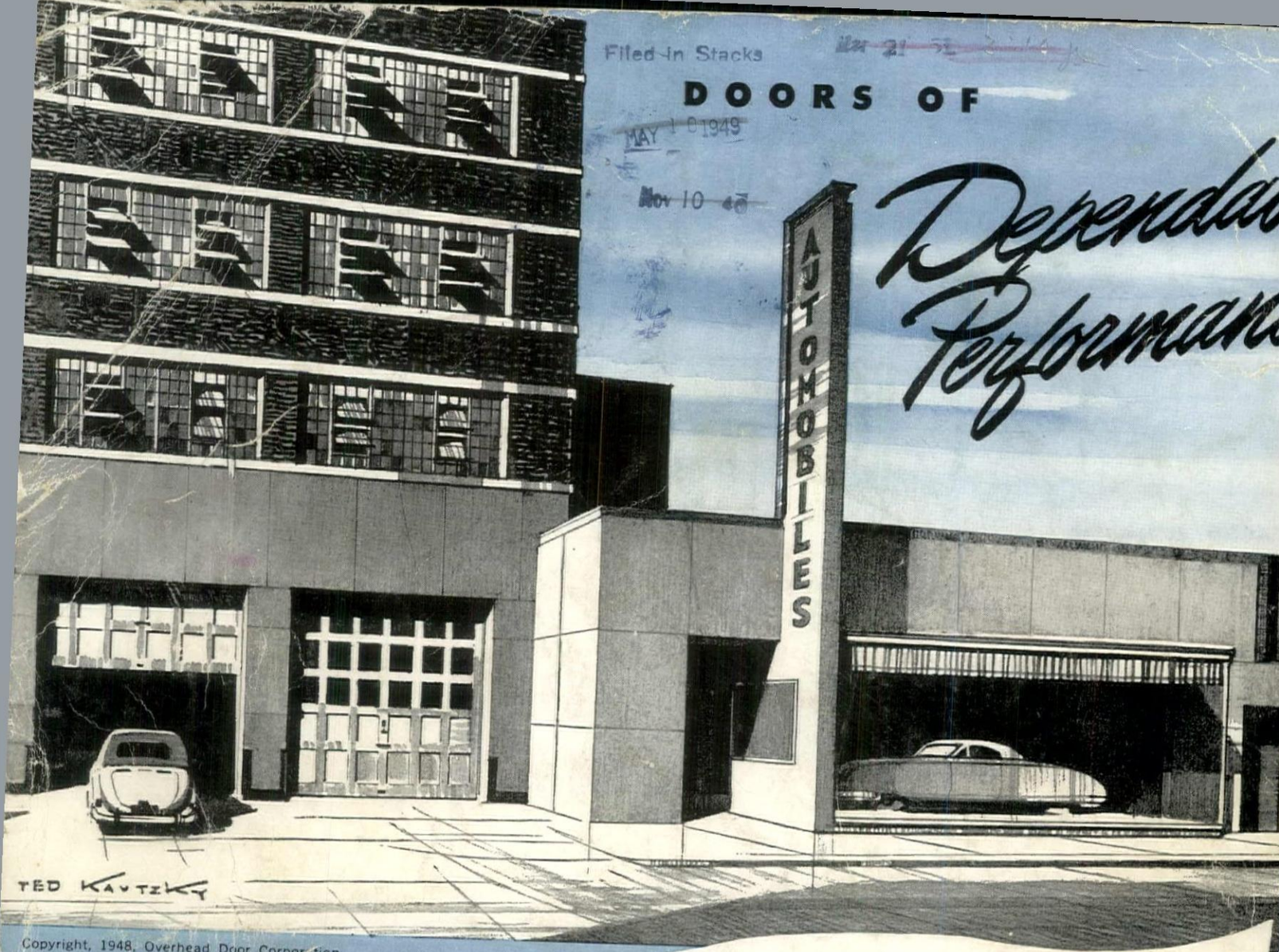
MANUFACTURERS OF FINE PLUMBING FIXTURES SINCE 1904

ELJER

Factories at Ford City, Pa., Salem, Ohio and Los Angeles

There are over Ten Million Eljer Fixtures in Use

DOORS OF *Dependable Performance*



● The "OVERHEAD DOOR" with the Miracle Wedge leads in selection where instant, uninterrupted service is essential. Millions of users have found this quality door dependable year in and year out in all weathers. Expert engineering and finest materials assure faultless operation. The "OVERHEAD DOOR" is built as a complete unit for industrial, commercial and residential structures and blends with any style of architecture.

TRACKS AND HARDWARE OF SALT SPRAY STEEL

● *Any "OVERHEAD DOOR" may be manually or electrically operated. Sold by Nation-Wide Sales—Installation—Service.*

The "OVERHEAD DOOR"
TRADE MARK
WITH THE
MIRACLE WEDGE

OVERHEAD DOOR CORPORATION – Hartford City, Indiana, U.S.