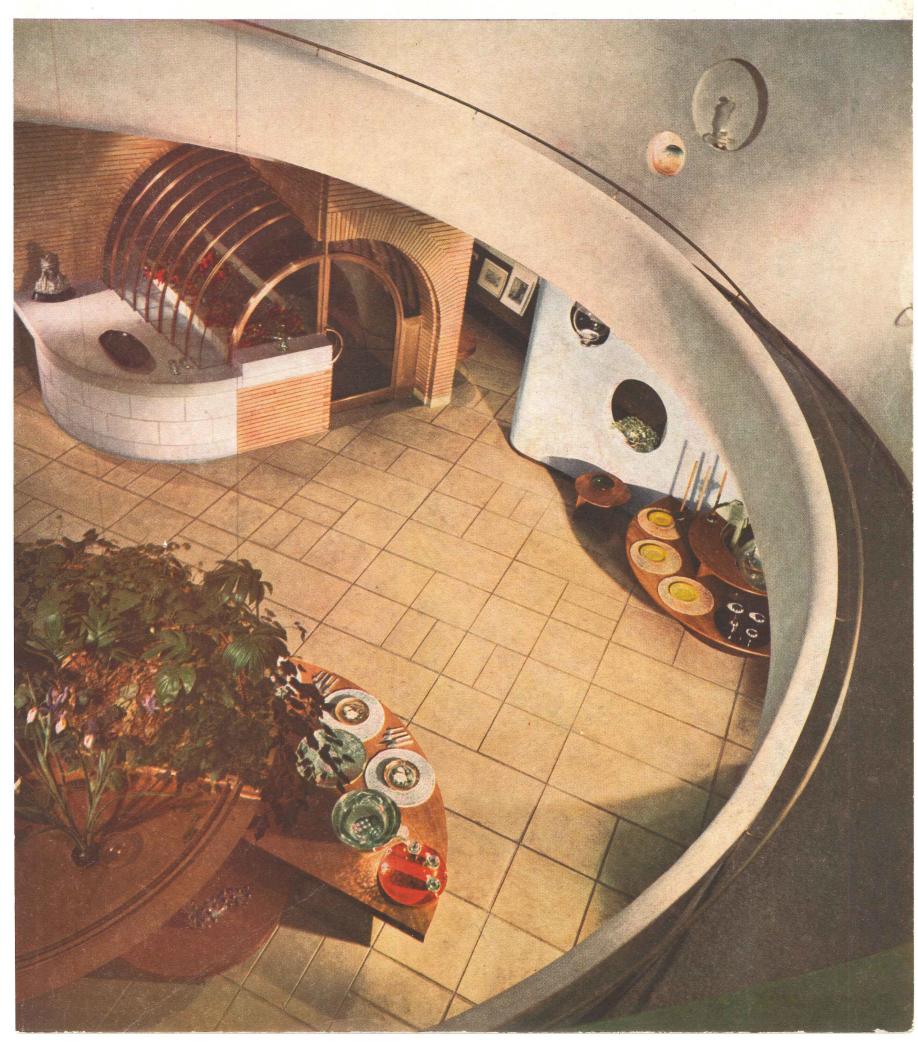
FEBRUARY 1950 ARCHITECTURAL FOLLOWING

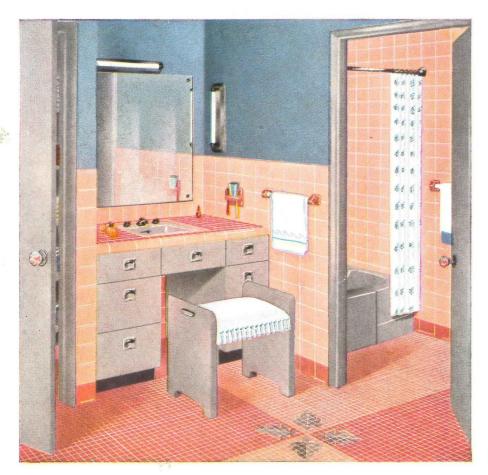
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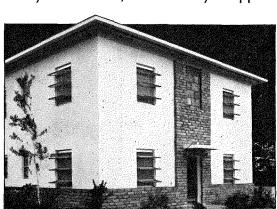
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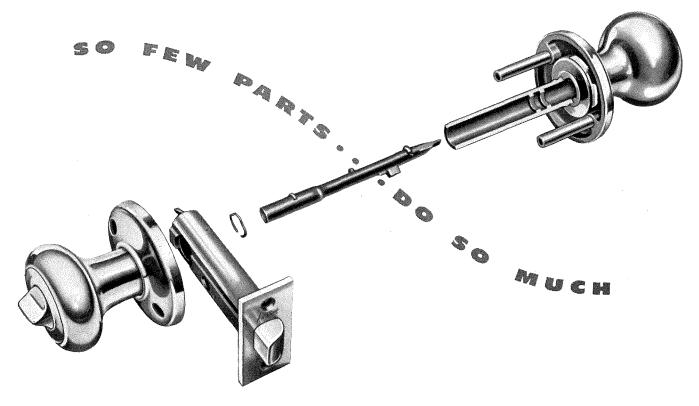
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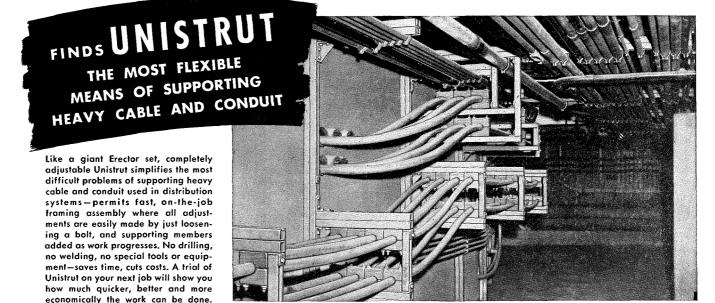
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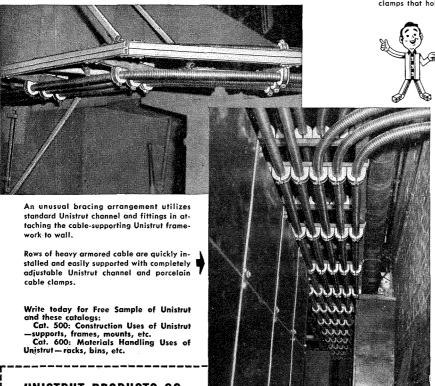
TECHNICAL LITERATURE

Cover: Gift Shop by Frank Lloyd Wright, Photo: Maynard Parker.

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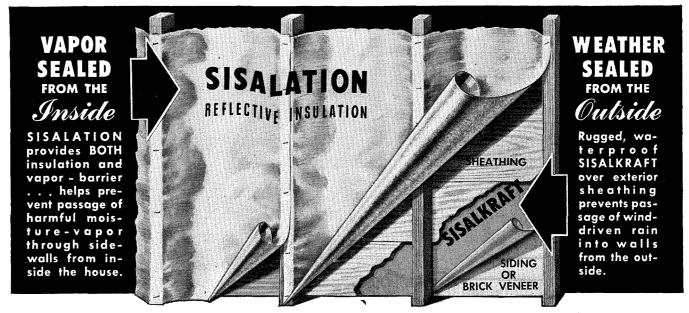
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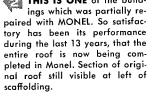
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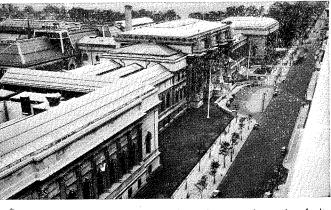
THIS IS ONE of the buildroof still visible at left





CHECKING MEASUREMENTS. With the exception
of a patented type of skylight
supplied by H. H. Robertson Co., supplied by N. H. Robertsull Co., Pittsburgh, Pa., all of the Monel sheet metal parts were prefabri-cated in the shop of Chrystie Cornice & Skylight Works, Inc.,

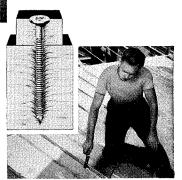
WORKER USES MONEL cleats and Monel "Anchorfast" nails to cleat down the pre-fabbed sections. (Inset) Note the annular grooves of the corrosion-resistant "Anchorfast" nail. These grooves give the hammer-driven "Anchorfast" the holding power

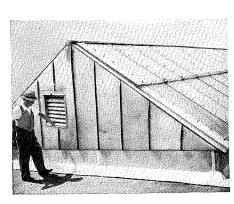


IN 1936, 120,000 square feet of Monel roofing parts at the Metropolitan. The old roof had pitted, eroded and fractured so badly that many priceless collections were endangered by leakage.



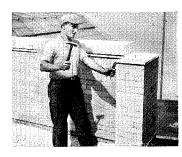
LOOKING DOWN at the LOOKING DOWN at the new installation. Monet Roofing Sheet, which fabricates readily, has been used for siding, base and coping flashing, flat and standing seam roofing, skylight frames, fastenings, gutters and snow guards.





CONTRACTOR EXAMINES adjustable Monel louver. Twice as rigid and strong as commonly-used materials, Monel permits thinner gauges to be used for standof crimped Monel sheet for base flash-ings made possible elimination of expansion joints.





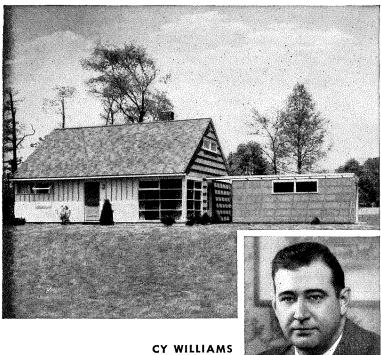
FINAL ADJUSTMENT of crimped, pre-formed Monel coping flashing. Strong, tough Monel resists stormy winds and heavy gusts that pry up flashings from masonry they are designed to protect. Through-wall and cap flashing at parapet base also Monel.

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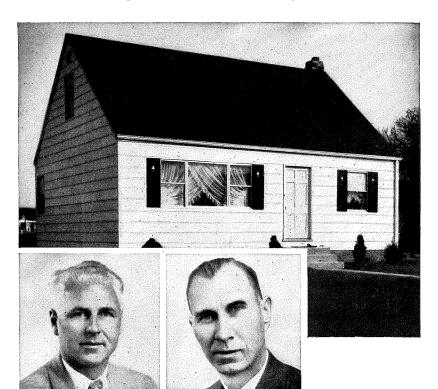
Architectural Section The International Nickel Company, Inc. 67 Wall Street, New York 5, N. Y.					
Please send me, without obligation, your bulletin that describes Monel Roofing Sheet's properties and characteristics, provides a sample specification wording and tells how to save money by reducing sheet metal thickness.					
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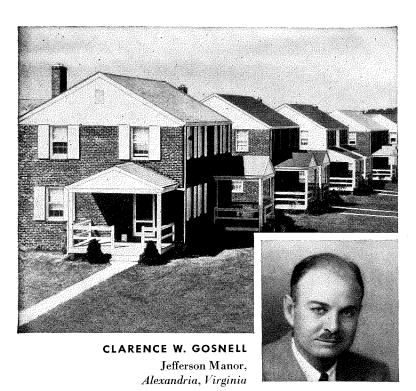
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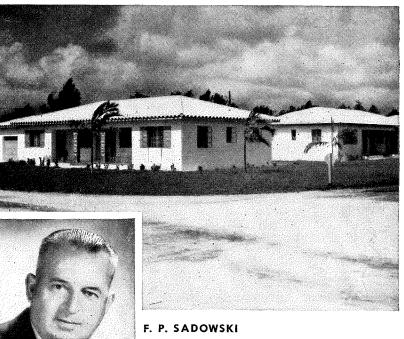


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BUILDING RE-ENTERS THE POLITICAL ARENA—last month proved that what some men say may be more important than what others do

An "expert" on the building industry scoffed last fall when asked if co-op housing legislation might loom large in 1950. "It won't amount to anything," he grunted. Today the administration's Cooperative Housing Amendment is a 50-50 bet to become law. Its prominence on Capitol hill was surely foreshadowed last October in St. Paul, when the AFL, in National Convention, passed a resolution favoring federally-financed co-ops. Were the words of other politically-potent people equally indicative of building's future? Last month builders listened carefully and wondered:

President Truman (State of the Union Message): "In a country such as ours . . decent homes should be within the reach of all . . . We have laid the groundwork for relieving the plight of lower income families. To aid the middle income families, I recommend . . . new legislation . . . to help cooperatives and other nonprofit groups building housing which these families can afford."

In Boston the Housing Authority issued eviction notices to 900 "over-income" families living in a public housing project.

"Rent control is still necessary to prevent hardship . . . I recommend, therefore, that rent control be continued for another year."

Rent control, ruled Federal Judge W. Calvin Chestnut in Baltimore, does not apply to federal housing projects. Residents in Uncle Sam's Greenbelt, Maryland, failed to win an injunction, had their rents raised 9 per cent.

President Truman (Economic Report to Congress): "Reduction of housing costs, through technical progress, better organization and improved financing is imperative. Aside from public, subsidized housing, further methods must be found to enlarge the flow of private capital into housing '

Graduated income taxes were taking as much as 82 per cent of the income of big earners . . . the traditional source of risk capital. The average income after taxes of all persons earning more than \$25,000 in 1928 was \$68,239. But in 1948, even with more people earning more than \$25,000, their average income after taxes was only \$27,623. And the insurance companies, big sources of private capital, are deterred by fears of anti-trust prosecution from creating a secondary mortgage market on the scale of the Federal National Mortgage Association.

President Truman (Budget Message): "I am recommending (for FNMA) an additional \$500 million in public debt authorizations in fiscal year 1950 and \$250 million in 1951 . . . The RFC also has spe-



cial authority to lend up to \$50 million to producers of prefabricated housing and largescale builders using advanced construction methods. I recommend an additional \$25 mil-

lion for these and related purposes."

Government-financed Lustron was a flop to the tune of \$37.5 million. Privatelyfinanced National Homes, started by two veterans with \$12,500 of borrowed capital, was booming along at a profit, and providing homes in the middle income price range.

Leon Keyserling (economist of the left and Acting Chairman of the President's Council of Economic Advisers): "The housing



Black Star

shortage is still acute ... Housing has failed to keep pace . . . construction of new nonfarm housing in 1949 showed a much smaller increase from the levels of the 1920's than in-

dustrial production or the purchases of automobiles . . . the objective over the next few years should be 11/2 million new residential units annually."

Wondered builders: how fast could \$55 a-week factory workers buy houses built by \$72 a-week building labor? And don't automobiles wear out faster than houses? Don't families want a second car when they hardly need a second house?

Senator Paul Douglas (Democrat from Illinois and economist of the Center): "I am fed up with people in the Executive Depart-



ment coming up to lay the law down to Congress. Why don't we just let these executive people take over and pass their own legislation?"

The Senator . . .

whose budget-balancing formula for the federal government has thus far been ignored . . . was worried about the cost of government: 18 per cent of the national income in 1939 but more than 30 per cent today, a public debt of more than a quarter trillion dollars . . . in effect a mortgage of \$1,740 owed by every man, woman and child (or \$8,700 for a family of five) in the U.S.

Miles Colean (economist of the Right): "The cooperative plan is very subtly drawn to give it the appearance of a normal banking operation, nevertheless its real character is plain. The initial capital is all government money . . . the prospect of repayment is extremely remote."

Would the beneficiaries of co-op housing legislation be content to restrict the benefits only to "middle income" families?

Richard Gray (President of the Building and Construction Trades Department, AFL): "We want a realistic, practical program and not one which would deny cooperative housing to all the members of a union local . . . simply because a few members have incomes slightly above or slightly below the so-called middle income level."

With the lowest income group neatly packaged into public housing projects and the middle income families collected into cooperatives, would the administration next dream up "workable stimuli" by which it could collectivize the few well-to-do families that might be left? Some critics thought so . . .

Rodney Lockwood (President of the National Association of Home Builders): "This collectivist housing plan may



appear to be only a political gesture made toward the middle income group in an election year. If this is a political gesture it is a very dangerous one because it is a substan-

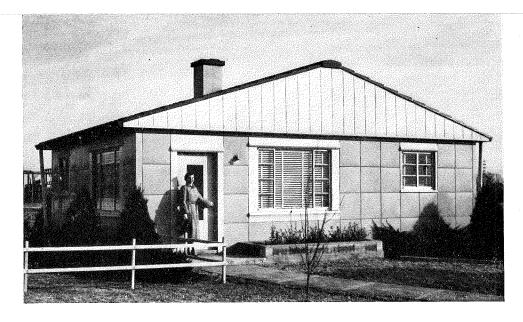
tial step toward nationalization of housing."

If Mr. Lockwood was right, the New Yorker poet would soon be singing:

The cooperative husband with cooperative spouse

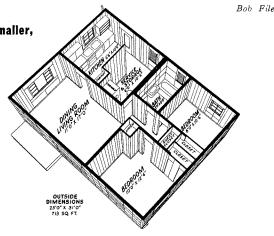
Can co-op 60 years in a cooperative house His taxes part-exempt, his interest 3 per cent when due

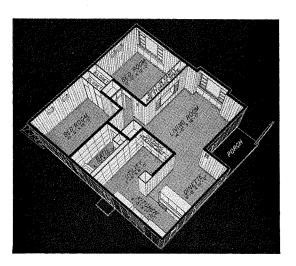
Let saps who live alone pay the Internal Revenue.

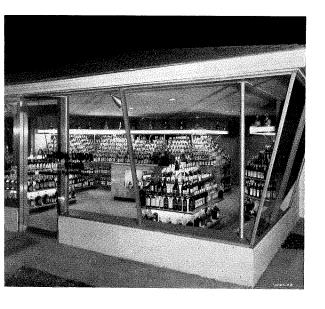


NEW LUSTRON HOUSE is smaller, cheaper

Working desperately to stall off foreclosure (see p. 11), Lustron brought out a stripped down, lower cost house last month. The 713 sq. ft. "Newport" (above and right top) is \$2,000 cheaper, 372 sq. ft. smaller than the old de-luxe model (right lower). The present model will be continued, but Lustron expects a sizeable market for the Newport, and five other new models it will also bring out. Some of the new models will have three bedrooms. All of them will, like the Newport, eliminate the following luxury features of Lustron's present house: built-in vanity and storage space, ceiling radiant heating (new models will have peripheral duct heating system, installed in floor), dining pass-through.







GLASS FRONTS on Kansas liquor stores skirt legislative restrictions

When the Kansas legislature reluctantly repealed its ancient dry law last year, it imposed rigid restrictions on liquor store dealers. One of them was the outlawing of window displays. The restriction produced a growth of openfront, glass-encased liquor stores throughout the state. The store owned by W. H. Hauptmann, in Topeka, (left) is typical. Brightly illuminated by cold cathode lighting and transluscent panels, the store skirted another restriction, which forbids exterior advertising, and the entire store became a display.

Masiingini

DIRECT LOANS AND CO-OPS will be Senate's big problem

The temperature in the Senate subcommittee room was just about as hot as it was during the interminable months of the hearings on the Public Housing Bill. And all the old familiar faces were there. Representatives of the industry, sharing the weary conviction that they had been through all this before, trouped in to combat the arguments of administration stalwarts that the federal government, having sheltered the "lowest third" of the nation's families. should now lift its cloak high enough to let in the "middle third." Organized labor, whose members fall in the middle income group, heatedly supported HHFAdministrator Raymond Foley's arguments. Just as heatedly, industry spokesman hacked them down. Inevitably, tempers clashed.

When Horace Russell, general counsel of the U. S. Savings & Loan League, stated that the co-op bill "is not only pure socialism to the extent of \$2 billion but the scheme is designed and intended to mislead," Senator Sparkman challenged the statement as "unfair and not correct." Russell hotly protested being called "a liar."

Favoritism. At the contention of NAHB President Rodney Lockwood that the bill would single out one group of citizens for favorite treatment, Sparkman snapped: "How about the free ride builders got under 608?" He said evidence presented to the committee indicated that apartment builders were getting as high as 120 per cent insured loans. Lockwood denied that builders had ever obtained such lavish financing. But he warned that even 120 per cent loans would be nothing to what would be generated under the proposed program.

At least one other committee member, however, was impressed with Lockwood's charges of favoritism. Senator Paul Douglas could see little fairness in federal permission for one group to borrow at 3 or 3.5 per cent,* while a man just out of the "middle income" bracket must pay $4\frac{1}{2}$ per cent plus $\frac{1}{2}$ per cent service charge. Why? he asked Foley.

If, when the bill comes up on the Senate floor (probably this month), other senators follow Douglas' lead and question the wis-

^{*} The exact rate would not be determined until after the program was put into operation. It would be based on the going Federal interest rate plus operating expenses.

dom of the government's setting up a preferred class of borrower, co-op's 50-50 chance of surviving will be whittled down substantially.

* * *

The co-op proposal (which is actually an amendment to the Sparkman "aid-to-private-enterprise" bill) is just one form of direct lending which the Senators will debate. Still on the calendar, incorporated in the Sparkman bill, is a proposal to grant direct government loans at 4 per cent to veterans who cannot get VA financing elsewhere. The House defeated a similar proposal last session. If the Senate passes it, the issue will have to be worked out in joint Senate-House conference.

Other proposed amendments would:

- ▶ Permit Section 608 to expire March 31, be replaced with a revitalized Section 207 (see below).
- ▶ Enable FHA to make an additional charge for appraisals, in the event of mortgage request cancellation after appraisal is made. (FHA loses about \$50 whenever a builder uses FHA appraisal, then switches to VA financing.)
- ▶ Make FHA Title I (loans for repair and modernization) permanent.

608 REPLACEMENT will offer only 85 per cent loans

Builders participating in FHA's rental housing bonanza got their first peek last month at the operating facts of life for the future. The hardest hitting fact of all was that if there had been any 120 per cent loans such as deplored by Sen. Sparkman (see above) they would now be a thing of the past.

Many builders had confidently expected Section 608 to be replaced with a revitalized Section 207 which would amount to the same thing: 90 per cent of "value". Administrator Foley had backed up that wistful expectation. But the Section 207 unwrapped by Congress last month indicated most mortgages would now average considerably below that. FHA would insure only 90 per cent on the first \$7,000 of value per dwelling unit. Above that it would insure on a 60 per cent ratio up to a total mortgage per unit of \$8,100. Thus, since the average cost is running slightly under \$8,500 per unit, mortgages under the new program would average a little under 85 per cent.

There was another gimmick: the bill would lower the amount of the maximum mortgage to \$7,500 per unit if the building averaged fewer than $4\frac{1}{2}$ rooms per unit,

thus permitting FHA to call an abrupt halt to the great rush of "efficiency" or onebedroom units it has been getting under 608.

LUSTRON FORECLOSURE is delayed by RFC

RFC was getting a lot of stage prompting in its Lustron soliloquy, "To foreclose or not to foreclose."

Despite Lustron's frantic last-ditch attempts to reorganize on a profit making basis (which included the introduction of a cheaper, smaller house; see pictures), RFC seemed about ready to call quits to its \$37.5 million venture. It refused the prefab's request for another \$5 million loan, snapped that Lustron's reorganization plan (which would bring in Chicago builder Philip Klutznick, and, through him, some outside capital) was unsatisfactory, because it would leave control right "where it is."

Then the Senate Banking Committee started talking things over. Chairman Fulbright said he didn't want to "override the judgment of the RFC," but he was nonetheless reluctant to see the Lustron experiment go under. Fulbright had been hoping RFC could find a private buyer for its Lustron loans. Now he was wondering if maybe HHFA wouldn't be interested in taking over Lustron, tying it in with its big research

program. "I would not be shocked," said Fulbright, "if RFC had to lose \$10 or even \$15 million in disposing of the Lustron venture." (Chances were that in any transferral, RFC would lose closer to \$30 million.)

Another interested Senator, Ralph Flanders of Vermont, was even more hopeful of Lustron's chances and even more reluctant to see RFC pull out. If Jesse Jones were still running things, insisted Flanders, "he would probably be enough of a business man to keep Lustron going a little longer...."

Then the National Security Resources Board stepped in with a word or two. NSRB carried no brief for Lustron, but it was acutely interested in seeing to it that the U. S. had some kind of mobile, easily-erected housing program ready in event of another war. Prefabs, thought NSRB, would best supply this "mobility" need, and it was afraid RFC would halt the progress of the entire industry if it pulled the stopper on Lustron.

With all this advice still ringing in its ears, RFC decided to hold off on fore-closure, perhaps try a new reorganization plan in which Lustron would ask for a receiver. One end-of-the-month guess was that the new receiver would be Klutznick, Lustron's own choice.

PRIVATE FANNY MAY is objective of Mortgage Bankers

When a national vice commander of the American Legion, in congressional hearings last fall, charged that the Federal National Mortgage Association is "direct lending in its most fierce aspect, because it provides a middleman who makes a profit," mortgage lenders began to squirm. It was a charge to which they had no suitable answer. When, a month later in annual convention, members of the Mortgage Bankers Association heard their Washington counsel warn that "continued use of the FNMA will bring about direct lend-(Forum, Sept. '49), they stopped squirming and began working seriously on a suitable alternative. Even after it became apparent that Congress might skirt the direct loan issue for the time being, MBA kept after its project, for, as one official said last month, "someone has got to start doing something to stop government encroachment."

Last month, as private lenders and Fair Dealers alike glanced apprehensively at Fanny May's bloated size (\$1.4 billion), MBA trotted out its alternate proposal for inspection: a privately-financed mortgage association to take over Fanny May's job. perhaps even buy Fanny May out. MBA was particularly eager to get the reactions of two major groups: the large "private investors" who would have to provide the capital, and Congress, which would have to give the legislative go-ahead.

\$6 Billion plan. MBA's plan, outlined last month by Philadelphia mortgage lender W. A. Clarke, would work like this: private investors would put up \$150 million in capital to form a private national mortgage association. The new association would then issue debentures up to 40 times its working capital, thus being able to handle \$6 billion in mortgages. The risk-free debentures, if they were given a Moody Triple A rating (and Clarke thinks they might well be), could sell for at least 3 per cent(perhaps 31/4 per cent if the interest rate on VA loans were raised), leaving the organization at least 1 per cent for profit and expenses.

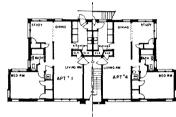
The new organization would be similar

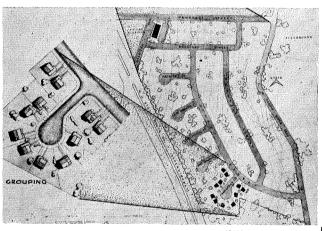
NEIGHBORHOOD SITE winners picked by Home Builders

Winners in the National Assn. of Home Builders' 1950 Neighborhood Development Contest, announced last month, reveal industry's growing concern with the proper site-planning of new residential developments. Judges (Architect Nathaniel Owings, Chicago; Builder John McC. Mowbray, Baltimore; Housing Consultant Earle S. Draper, Washington, D. C.; FHA Commissioner Franklin Richards) picked five winners; awards were based 70 per cent on site plans and 30 per cent on design of structures.

Builder William G. Farrington's Parkwood Terrace in Houston, comprised of four-unit buildings, (right) won first in rental housing group.







Zamore Builder Inc.'s Waldick, N. J., development, won first prize among large projects of large houses. Note that highway is screened by planting, that street pattern makes intelligent use of cul-de-sacs (left). For detailed study of Zamore's house (below), see FORUM, April, '49.





Complete Community Development winner was J. C. Nichols' "Prairie Village" in Kansas City, Mo. (left). Judges cited excellently planned shopping center, recreational areas and educational facilities. Other contest winners: Albert Balch, Seattle (for project of economy homes under 50 units); and William Blackfield, Lafayette, Calif. (economy homes over 50 units).

to Fanny May in some respects: it would be exempt from state and federal taxes. But it would also avoid Fanny May's mistakes; when it bought a mortgage, it would do so carefully—not taking just any old mortgage which happened to have a government guarantee—perhaps thus preventing FHA and VA from making unsound loans in the first place; when it sold a loan, it would not do in blocks, as Fanny May had, but would give the buyer a selective choice.

MBA hoped that its new organization wouldn't have to be nearly so active as Fanny May. If VA rates were upped, for instance (see below), the necessity for an FNMA or any substitute would dwindle sharply, for in these days of cheap money, the large life insurance companies which make up the formless private secondary market which already exists are buying up as many FHA's as they can; Fanny May is getting, for the most part, VA's.*

Brisk husiness still. Even so, Clarke believes the proposed National Mortgage Association could still do a brisk business—particularly in rural areas where banks and mortgage companies haven't the resources to handle many loans, and in the buying and selling of mortgages on older houses, which the private companies now tend to ignore.

By month's end, the "big investors" which Clarke had in mind were keeping mum on the MBA proposal. They would have to be assured for one thing that they would be safe from anti-trust prosecution. (MBA's counsel said he thought they would be.) But up on Capitol Hill, legislators and administrators, by now as conscious as any private lender that Fanny May had far outgrown its original purpose, were paying frank attention. Senator Sparkman invited Clarke to come back in about 60 days when Congress would be taking up the issue of more money for Fanny May.

^{*}The breakdown of FNMA's holding, to date are:

•				
FHA	Section	203	\$65	million
		603	316	million
		608	28	million
VA	Section	501		
		505-A	15	million
		502	200	thousand

STABILIZED RATE: Bankers want it on government mortgages

The Mortgage Bankers were at work on another ambitious scheme, one which would, if successful, eliminate the bizarre spectacle of the government doing business at differ-

ent rates at different windows.

MBA is well aware that the Veterans Administration is as opposed as it ever was to letting the interest rate on its guaranteed loans rise to $4\frac{1}{2}$ per cent. Perhaps, however, thought the bankers, it would not oppose a smaller increase, provided the rate on all other government-insured loans decreased accordingly.

MBA's proposal would standardize the interest rate on FHA and VA loans, and then permit that rate to fluctuate in accordance with the dictates of the money market. MBA suggested two possible formulas for determining the fixing point (although it admitted the weaknesses in each): the going rate on long-term, non-bank-eligible government bonds, and corporate bond yield averages.

A good place to fix the rate now, the bankers thought, might be $4\frac{1}{4}$ per cent. Thus, VA would be called upon to raise its rate only $\frac{1}{4}$ per cent, instead of the $\frac{1}{2}$ per cent it has steadily opposed. A stabilized rate made a great deal of sense to the housing industry. It would probably make sense to FHA and Congress. The only question was: would VA, standing patly on the myth that it had given the veterans an implied promise of 4 per cent loans,* be impressed with any plan making business sense or anything other than political sense in an election year?

PER

VIVIAN TRUMAN works hard, likes farming, Lustron and the FHA

Last month one of FHA's busiest midwest offices counted up the number of home loan applications it had processed during 1949: 5,500. FHA in Kansas City processes applications at the rate of 100 a week. Last year 2,000 new apartment units were added to Kansas City, with the help of FHA and its hard-working local administrator, J. Vivian Truman.

Administrator Truman, better-known as the brother of President Harry S. Truman, has many of the celebrated family traits. A farmer and early riser (he supervises the operation of his 540-acre farm near Grandview, Mo.), he unlocks the door of his modest office on the eleventh floor of Kansas City's Fidelity Building at 7:30 a.m., as he has each morning for the last 14 years.

THE OUTLOOK FOR HOUSING-1950 AND BEYOND

Excerpts from an address by Housing Economist Miles Colean before the Annual Convention of the Mutual Savings Bank Association.

We cannot blink the fact that an increasing proportion of the so-called private housing market—from about 35 per cent in 1948 to at least 40 per cent in 1949—is dependent upon mortgage insurance, guarantees, and purchases of mortgages by government. This year public housing will go close to 80,000 family units and, with FHA activity continuing at high steam and FNMA providing a forced draft for loans to veterans, the dependence of the market upon government aids will be greater than it was last year. Conservatively, 50 per cent of the 1950 total will be directly under government influence.

With the growth of federal dominance, private equity investment as a force in the mortgage market has all but disappeared. Even before the war, the down payment had ceased to be a serious factor in a home purchase. In the years since the war, rental housing has come under government influence to a greater extent than even sales housing. FHA activities accounted for 70 to 75 per cent of the apartment units started during 1949, and I doubt that anyone here will argue that equity investment was an important factor in a mortgage insured under Section 608. Despite the current restriction of this activity and the possibility-perhaps realthat it will not be continued after next March, there are still enough applications under examination, or committed on, to assure almost a duplication of 1949 performance. Moreover, if Section 608 is allowed to lapse, we are likely to get a resurrected and liberalized Section 207 backed by FNMA, or perhaps, the addition of direct, 100 per cent loans to cooperatives.

Under these conditions the equity becomes a figment of the administrative will-to-believe. And being otherwise non-existent, it can offer little resistence to administrative guidance. But amid the fantasy, the judgment of the lending institution is not likely to prove any more potent an influence than that of the now mythical equity holder. The institution will follow the official policy or find its function supplanted by FNMA or more direct methods. In fact, to no small degree it has already been supplanted.

Thus, more than any year in the past, the outlook for housing in 1950 will be overshadowed by questions of government policy, and the shadow falls far into the future. For a considerable period ahead, the housing market will feel the impact of political forces as much as—and perhaps



even more than—it will feel the impact of economic forces. This situation gives the market a peculiarly artificial and unpredictable quality and, in large part, no doubt, accounts for the uncertain feeling that people have toward the future. A market subject to a great deal of unpredictable central planning, as this has become, is one in which it is very difficult for the individual to do his planning.

For instance, who can be sure that Section 608 will or will not be extended beyond March or what new kind of economic benzadrine will be administered in its place, or whether the dose will come in time to affect spring building? What interest rate will be allowed on G. I. loans? How much competition will be offered by FNMA? When will rent control be terminated and what will be the effect on the rental market when it comes? How fast will the public housing program unfold? What influence —if any—on values, on investment, on city organization is to be expected from the government essay at urban redevelopment?

All such questions have a profound bearing on the business of the banker and the builder. They cannot plan definitely until they know the answers. Yet the answers are not economic answers but political answers. They are made in legislative hall or administrative offices, not in the market place. At worst, they reflect decisions as to what is politically expedient or politically feasible. At best, they reflect the conscientious judgments of politicians and their economic advisers as to what the people ought to have. But they are not the kind of direct decisions as to what individual borrowers want and what the lending institutions think is sound, upon which credit transactions have historically been carried on. The basic decision now may be made before the negotiation has begun.

^{*} The Veterans Housing Act, as every mortgage lender knows, did not specify that interest rates on VA-guaranteed loans be no more than 4 per cent. It stipulated they be at the "going rate," which at the time of the Act's passage was 4 per cent.

HOUSING STARTS 1945-1949 shows description of seasonal pattern

	1945	1946	1947	1948	1949
Jan	7,000	37,500	39,300	53,500	50,000
Feb	7,900	42,400	42,800	50,100	50,400
March	10,600	62,000	56,000	76,400	69,400
April	12,400	67,000	67,100	99,500	88,300
May	14,000	67,100	72,900	100,300	95,400
June	18,600	64,100	77,200	97,800	96,100
July	17,000	62,600	81,100	95,000	96,100
August	17,100	65,400	86,300	86,600	99,000
Sept	20,100	57,600	93,800	82,200	102,900
Oct	25,600	57,800	94,000	73,400	100,000*
Nov	29,300	47,700	79,700	63,600	93,000*
Dec	29,100	39,300	58,800	52,900	79,000*
	discourse of the second	***************************************		44	AL
TOTAL	209,300	670,500	849,000	931,300	1,019,600
					* Preliminary

In the postwar period, any repititive seasonal pattern that might once have been characteristic of residential construction has been thoroughly disrupted. Only consistent seasonal phenomenon is that activity in January and February has been lower than in other months. Distinctive political influence is evident since 1945: late peak in '45 could be explained by release of building from war-time limitation order. Early peak in '46, and sub-

sequent uncertainty reflects overstimulation of Veterans Housing Program, as the market was glutted with unfinished houses for which materials could not be obtained. Market recovered in '47, and renewal of FHA's Title VI late that summer sustained volume. Impending lapse of Title VI loans on individual houses prompted early peak in '48. Sustained high volume of '49 shows renewal of Title VI and liberalized FNMA purchases of GI loans.

BUILDER-LABOR agreement in New York: will it be renewed?



If anyone should detect a glower in the photograph (left), of James Cole, official of the AFL Ironworkers union in New York City. and Harry J. Stellman, vice-president of Starrett Bros. & Eken, general contractors, taken at a meeting of the N. Y. Building Trades Employers' Assn. (see p. 7), it would be dismissed as a friendly glower. Relations between Manhattan contractors and building labor are notoriously friendly-the result of an unprecedented five-year old agreement stabilizing wages and hours. But the agreement expires June 30, and building men else where, who have envied New York's cordial builder-labor relationship, wondered if it would be renewed. Negotiations for renewal still had not begun by last month.

SLUM FUNDS granted by Housing & Home Finance Agency

HHFAdministrator Raymond Foley last month signed over first batch of federal funds for slum clearance (see p. 16.) With Foley: HHFA Slum Clearance Director Nathaniel Kieth; Rep. Percy J. Priest (Tenn.); Rep. Eugene J. McCarthy (Tenn.); Sen. Hubert H. Humphrey (Minn.)



Vivian joined the FHA staff in 1935, one year after brother Harry went to Washington as the junior senator from Missouri. He was assistant administrator until 21 months ago when his boss went to work for RFC in Washington; Vivian then moved into top place. Promptly after last year's election, when Truman seemed a magic name, Vivian was offered a big job with FHA in Washington. He turned it down. saying, "I have no danged reason to go to Washington."

FHA considers Truman one if its best administrators, even though he has consistently

bucked the Washington office in his attempts to get liberal aid for the farmers who make up his 58-county district. He has always plugged strongly the Title I program which farmers like, for example, in the face of cool hostility from the Wash-



TRUMAN

ington office, which has always looked on Title I as something of a stepchild. (Truman easily admits his sympathetic ear to farmers' problems. Says he: "I guess I'm just a farmer myself at heart.")

Truman insists he has made no important changes since he took over, nonetheless he is proud of the work he has done. Says he: "I have fought hard for low cost housing. I believe many more small homes should be built at a much lower price than are being put on the market today. I believe in helping the fellow who needs help. I believe that the big fellow can take care of himself."

Truman is a firm believer in the benefits of prefabrication, thinks it is one of the ways to low cost housing. Lustron? Yes, even Lustron. "As far as I am concerned," he explains, "I think the Lustron home is one of the answers to the housing problem as it stands today. There are several homes of this type under construction in our area and I think they are here to stay."

Kansas City builders have found a sympathetic friend in Vivian Truman. E. L. Winn, partner of a construction company which is building a 370-unit apartment, considers Vivian one of the best administrators in any branch of the government. Says he: "I can always go to Vivian and get an answer, and that is what contractors want." Paul Hamilton, of Hamilton-Crawford, one of the biggest real estate firms in Kansas City, backs this up. "Mr. Truman," he says, "should be given a major share of the credit for breaking the housing jam in Kansas City."

RENT RISES shown in Wood's report based on incomplete figures

No sooner had Harry Truman warned Congress that rents would go sky-high, curtailing "the buying power of millions of consumers," if rent controls were removed, than OHExpediter Tighe Woods rushed in with the figures to prove it. But there was one trouble with his figures: at best they were incomplete; at worst they were distorted.

Woods had seized on a BLS report showing what had happened to rents in six locally decontrolled cities (Dallas, Houston, Topeka, Knoxville, Salt Lake City, Jacksonville). Before BLS had an opportunity to release the report, Woods broadcast it with his own interpretations. Limiting his figures to dwelling units for which rent rises had been reported, he was able to show an average rent increase ranging from 16.2 per cent to 41.3 per cent. (Even by his figures, however, rents in neither Dallas—35.4 per cent—nor Knoxville—26.8 per cent—had jumped 50 per cent, as Woods predicted last September.)

BLS' report, when it came out two days later, told a much different story. Taking a look at *all* rental units in the six cities, it charted an average increase ranging from 6.6 per cent to 16.7 per cent.

Realtors were indignant. Said NAREB President Robert Gerholz: "We think Mr. Woods should explain just what impelled him to place this distortion on the BLS survey"

Nor was Woods' alarming report likely to make much impression on congressmen, most of whose attitudes toward extending controls already ranged from apathy to outright opposition. The chairmen of both the Senate and House banking committees thought Congress would quietly bury Rent Control on June 30.

ARCHITECT CONTRACT INVALID, says Michigan court

The standard contract form issued by the American Institute of Architects—or any other contract drawn up by an architect—is invalid, a Michigan circuit court ruled last month. Drawing upon a general principle followed by the state supreme court, (and still applied to realtors in Michigan) that a layman may not practice law, the court dismissed a suit in which Royal Oak Architect Gordon A. Sheill attempted to re-

cover half a \$14,000 fee, which he claimed was still owed him.

Architects elsewhere, who have been using the A.I.A. form for years, watched with interest as the Michigan court, having reheard the case, decided whether to reverse its decision.

UNION ELECTIONS needn't be held on most construction jobs

Contractors who had been wondering what to do ever since the fact was laid bare that on most construction jobs no union shop election is held (FORUM, Jan., '49), got the nod last month to proceed as if nothing had happened. Robert Denham, general counsel of the National Labor Relations Board, said that until the machinery is set up to hold such elections on jobs with a rapid labor turnover, NLRB will honor existing labor conditions and assume that an election had been held and won by the bargaining union.

Counsel Denham had something else on his mind—the widening gulf between him and the rest of NLRB. It was fundamentally the difference between the old Wagner Act, which he described as "social legislation, designed and administered for the benefit of one branch of our labor-management economy at the expense of another," and the Taft-Hartley Act ("not social" but "balanced, regulating legislation") which replaced it.

Facing the banqueting members of the Building Trades Employers Association in New York City (see picture, p. 14), Denham unburdened himself. The Board, he felt, was unduly generous to labor unions, and for the building men in his audience, he

had examples (all of them recent Board decisions) to prove it:

- Pickets can be placed around a construction job receiving deliveries from a trucking concern which is in the bad graces of a union. "They won't be picketing you . . . they will just be picketing the trucking concern's truck, because . . . that is where the trucking company's place of business is."
- ▶ Pickets can be placed at a special gate used only by the employees of a contractor who is erecting a new building on the property of a struck industrial plant.
- ▶ The Taft-Hartley Act protects a contractor from a secondary boycott action arising from a refusal of his employees to handle "struck goods." But now he may sign away that protection in a contract with the union.

AIA DESIGN COMPETITION: residential, commercial, religious construction

For its second annual design competition, the American Institute of Architects will review residential, commercial, and religious buildings completed since 1944. Competition chairman Albert F. Heino last month made public the following facts about the 1950 National Honor Awards Program:

- ▶ All registered architects, practicing in the U. S., are eligible entrants.
- Entries may be buildings erected in the U.S. or abroad.
- ▶ Entries will not be judged in competition with other entries as to size or cost, but on the basis of the architect's solution to the problems presented him.
- ▶ Entries will be judged at the A.I.A. convention in Washington, May 10-13.

BUILDING BOOM continues—how far it will go depends on men, not money

Good news for building kept rolling in as 1950's first month ended. On Long Island, Builder Bill Levitt explained operations with purchase of another huge tract (1,200 acres) adjoining Levittown. In Houston, Cottonman Will Clayton was reported readying a \$30 million middle-income housing project. In Atlanta, Architect Henry Toombs bent over plans for several swank, new homes, all except one to cost more than \$50,000—and Ben Massell hustled to complete a \$4 million office building,

his 51st in three years. In St. Louis, Sidney Salmon, Jr. and New York's William Zeckendorff bought (for \$2.5 million) Hampton Village, planned to convert it into the nation's largest suburban drive-in shopping center at a cost of \$12 million.

The backlog of proposed construction, according to Engineering News-Record's mid-month count was up \$4 billion to \$47 billion. Most of the rise was in public building, 1,200 million; private unclassified, \$800 million; commercial buildings, \$700 million; and industrial buildings, \$500 million. Los Angeles seemed to be the bell-cow. On planning boards or build-

ing there were: two new hotels (\$30 million), a hospital (\$4.5 million), federal buildings for the civic center (\$30 million), a post office annex (\$6.8 million), five new schools opened in January, 27 more schools and two junior colleges on the way and a large new Bullock's store in suburban Westwood.

From Cleveland, New Orleans, Detroit, Houston and Pittsburgh came predictions that 1950 would be another banner homebuilding year. Was the market for high-priced apartments almost saturated? Then building would shift to single family units. Would public housing curtail private starts? "No" said Pittsburgh's William Tussey, "I predict that if builders determine more definitely where new homes are needed and what kind, home construction will continue strong."

Problem: meeting the market. Each market had its special problem, but one thing was certain: giving the home-buyer more for less money was the key to continuing the boom. Would the industry build cheaper houses or would it build houses more cheaply? There was a difference, and the customer would know it. In Miami cost of the average one-family home dropped \$212 in 1949 (from \$6,214 to \$6,002). But in Detroit costs were up sharply, as much as \$100 per house, one builder estimated. Engineering News-Record's January building cost index was almost 1 per cent above December (but still a fraction below the October 1948 top). Steel and labor were the principal factors in rising prices. Steel was 4.6 per cent above a year ago, cement about the same, lumber down 10.5 per cent, common brick 2 per cent higher, structural clay tile 1 per cent up. Copper was still at 181/2 cents, 5 cents below last year; lead was only 12 cents, compared to last year's 211/2, and zinc was 93/4 cents, down from last year's 17½. Tin had fallen from last year's \$1.03 to 75 cents.

High wages—low costs. Building, in 1950 could continue the boom if labor and enterprisers could master the secret of higher wages and lower costs. The answer, as both knew full well, was better management and more labor productivity. Both would be required. The market was there: America needed homes, schools, hospitals, stores, theaters, offices. The money was there: banks were bulging with it. How far the building boom would go depended on men, and their ability to see the problem and attack it rationally, rather than politically.

MATERNES

SCPI RESEARCH program will seek new uses for brick

The Structural Clay Products Institute last month sounded the starting gun for its



Taylor

\$1.25 million effort to reduce the cost and improve the quality of structures made with clay products. The program is the result of an industrial research firm's report that brick and tile are being outdistanced by develop-

ment of new building materials, and its recommendation that the clay products industry open up new markets for its products.

SCPI Research Director Robert B. Taylor, who formerly did reseach for the Owens-Corning Fiberglas Corp., believes one of the markets for which clay products are suited, but not being used, is roofing tile. Another: radiant floor heating ducts. He also thinks the industry might be able to

sell a higher quality brick, and a brick of larger size.

HOUSE DEMAND easing, but still strong; small unit continues favorite

Data from the recent housing census throw considerable light into two important areas of the housing market:

The demand from nonfarm families which are still doubled up has dropped considerably in the last two years, but still ranges from 1,000,000 to 1,850,000. (Total demand, including farm: 1,250,000—2,150,000.) Total demand is estimated on number of husband-wife families still living in other households (2,155,000, down 25 per cent since 1947).

House type most in demand will continue to be the small (two or three bedroom) unit. Although population has increased 12 per cent since 1940, the average size of the household has dropped to 3.4 persons (as compared with 3.7 in 1940 and 4.0 in 1930), and the number of households has increased 21 per cent since 1940.

PUBLIC HOUSING

PUBLIC HOUSING: do the voters usually defeat it in referendum?

As Seattle and several other cities moved last month to stage referendums to let their citizens decide whether they would have public housing, the National Association of Real Estate Boards was hard at work trying to sell the referendum idea wherever they

Clicking off the areas which have rejected public housing by vote (St. Paul, Grand Rapids, St. Petersburg, San Jose, and the state of New Jersey), outgoing NAREB President Herbert Maenner trumpeted: "When the voters have an opportunity to express themselves, they consistently reject socialized housing."

The Public Housing Administration pooh-poohed NAREB's arguments. The realtors, said PHA, plug for a referendum only in those places where they have put on a real drive and are confident of success. To dispute NAREB's claim, PHA pointed out that 227 cities have so far received the consent of their governing bodies to go ahead with public housing projects, and that twice that many have received program reservations.

(A review of the 468 cities which so far have received program reservations indicates that the impact of public housing will be forcibly felt in small towns and villages throughout the country. By last month, 164 cities with less than 10,000 population had received reservations. The breakdown:

164—less than 10,000 population

101-10,000-25,000

65-25,000-50,000

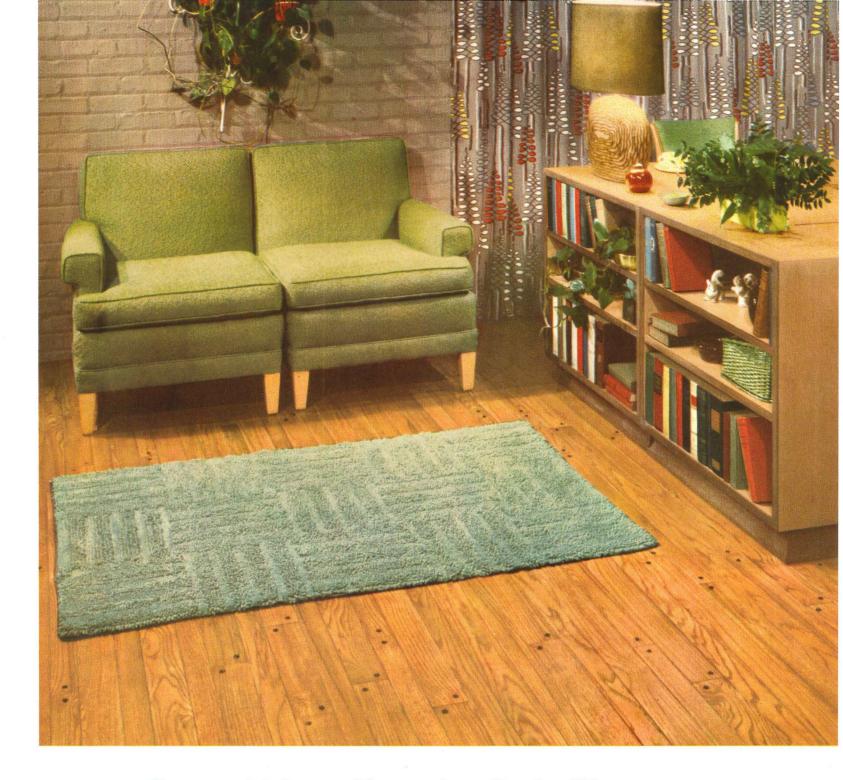
59-50,000-100,000

42—100,000-250,000

37—250,000 and over.)

In the matter of slum clearance, the realtors were trying to beat the government another way—by getting the job done first. As HHFA granted funds (more than \$5 million) to the first six cities to request them (Dallas; Nashville; St. Paul; Perth Amboy, N. J.; Albany, Ga.; Jackson, Tenn.), NAREB and its affiliate, the Urban Land Institute, called upon realtors to get behind enforcement of "local ordinances that outlaw the occupancy of dwellings that are unsafe or unsanitary."

Sixty-three real estate boards in 29 states said they would begin work this year on rehabilitation programs, starting with "pilot" demonstrations of neighborhood reclamation in their own communities. ULI began preparing a working guide to aid them.



Something New in Oak Floors

A pegged oak floor that's moderately priced and easily installed

This new floor has been developed by Bruce to bring the charm and individuality of pegged oak floors to homes in all price ranges . . . even those under \$10,000.

With alternate $2\frac{1}{4}$ " and $3\frac{1}{4}$ " widths, beveled edges, and walnut pegs, the Ranch Plank Floor looks very much like an expensive, custom-built random-width plank floor. It has informal beauty and enduring style.

Yet this floor is moderate in cost and has none of the installation complications of a wide plank floor; it is installed by blind nailing . . . just like regular strip flooring. It is pegged and completely finished and waxed at the factory.



It's pegged and finished at the factory

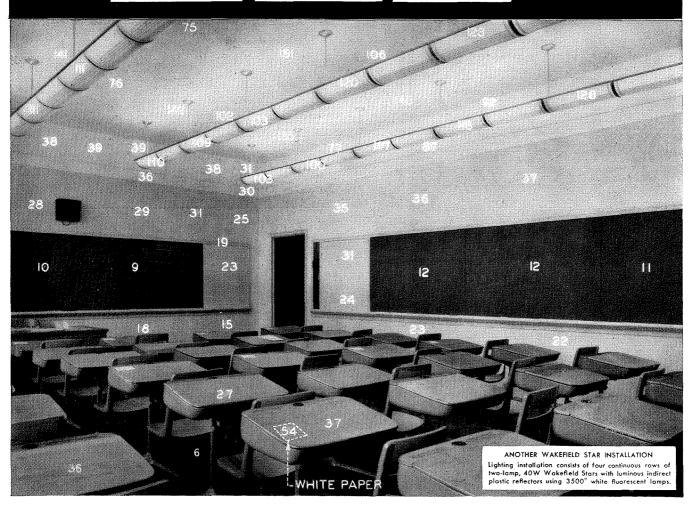
Architects and interior designers praise Bruce Ranch Plank Floor for modern and traditional interiors, and say the new "Decorator" Finish is perfect for all color schemes. Owners vote it one of the most admired features of their homes.

See our catalog in Sweet's 1950 File. For new booklet in color, write E. L. BRUCE CO., MEMPHIS 1, TENNESSEE.



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meeting or bettering all recommendations of <u>American Standard Practice</u>



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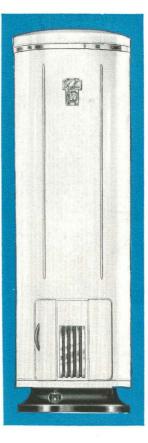
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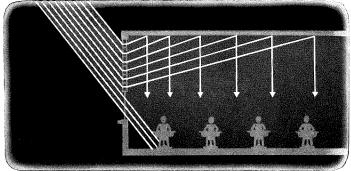
*Insulux Fenestration: Light-directing glass block above a clear glass vision strip.

THERE are many good reasons for specifying Insulux Fenestration for daylighting in school classrooms. Outstanding ones to jot down and remember:

- **a.** Prisms inside light-directing glass block bend the daylight up to the classroom ceiling which reflects it down onto the working surfaces.
- **b.** Because glass block directs the major portion of the light above the horizontal, its surface brightness is low, and shades over the panel are unnecessary.
- **c.** Light-directing glass block distributes daylight evenly and controls daylight illumination so that brightness ratios are low and seeing is made easy.
- **d.** Windows below light-directing glass block provide ample vision and ventilation.

Full information about light-directing glass block can be had by writing to the makers, American Structural Products Company, a subsidiary of Owens-Illinois Glass Company. Pioneers in daylighting, this company developed a light-directing glass block as early as 1937, and currently maintains a daylight research laboratory at the University of Michigan.

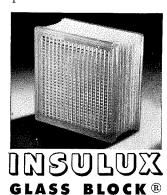
Address: American Structural Products Company Dept. G-101, P.O. Box 1035, Toledo 1, Ohio



Drawing shows how Insulux light-directing glass block bends incoming daylight to ceiling from where it is reflected to children's work surfaces. Daylight distribution is more uniform; contrasts throughout the room are lowered. Since most of the daylight is directed upward, the panel has a low surface brightness, and shades are not required.

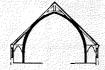


Photograph of light beam through Insulux light-directing glass block.

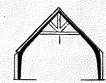








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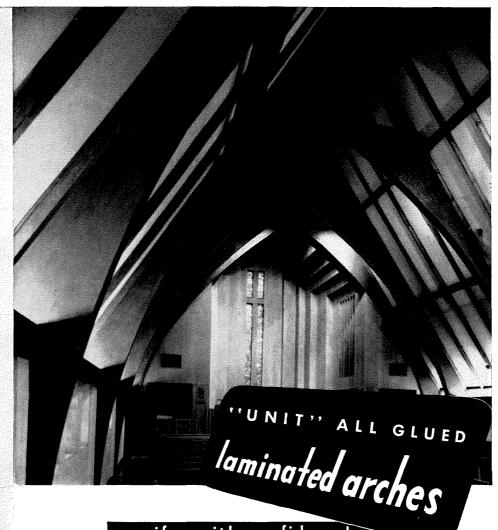


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Type G with spring line up near eaves level provides maximum clearance.





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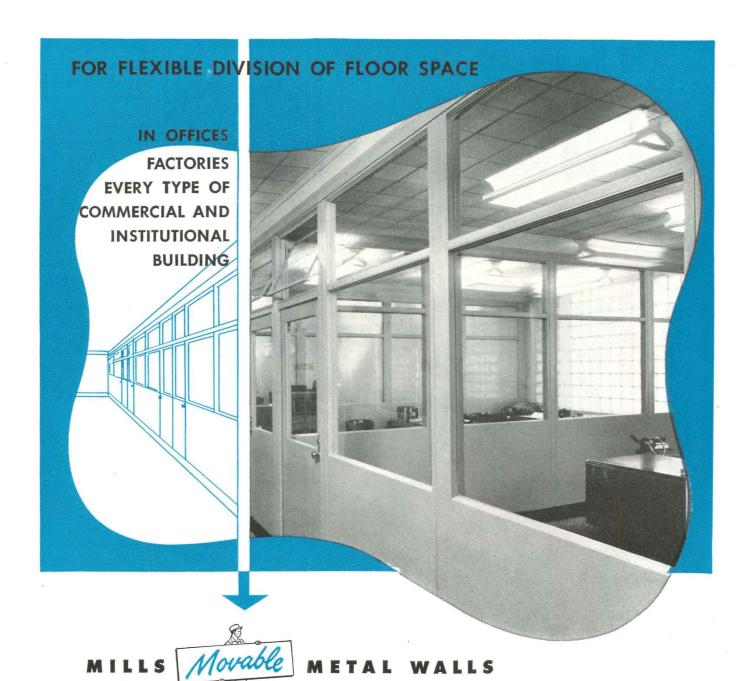
The laminating process (U. S. Patents No. 2177395 and No. 2172093) used in the construction of "Unit" all glued laminated arches permits shaping to any desired form resulting in greater stability than the use of natural sawn timbers . . . a structure that will not shrink, check or warp . . . a structure which offers unalimited decorative treatments and maximum fire resistance.

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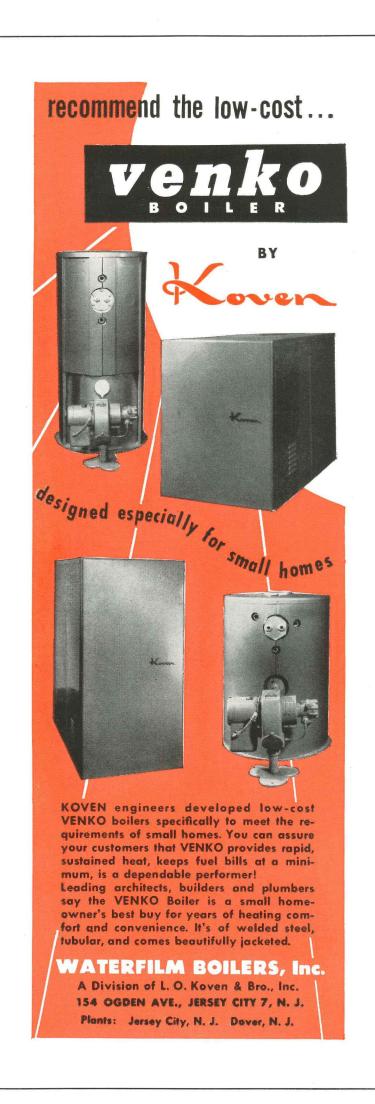
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CLARENCE KIVETT and RALPH E. MYERS are Kansas City architects in partnership since 1945. Kivett. the senior member, opened his first office in 1931. Myers is a 1941 graduate of the University of Illinois with at least five schol-

arships and awards to his credit. The firm's work has encompassed all building types. Roster of clients includes such merchandising giants as Macy's (p. 86), Woolworth's and J. C. Penney.



DANIEL SCHWARTZMAN is a native of Baltimore and a graduate of the University of Pennsylvania School of Architecture. A New York architect since 1935, his design portfolio bulges with commercial work, is peppered with some industrial and large scale residential projects. A store specialist (p. 86), Schwartzman feels that an effective merchandising design must reflect a "proper regard for circulation, efficiency of operation, sound structure, flexibility and appropriateness of materials."



ROBERT A. LITTLE, 34-year-old Cleveland architect, is a midwesterner of comparatively recent vintage. Until 1941, Little was a Bostonian, from birth (in nearby Brookline), through college (Harvard Graduate School of Design) and his first job, as designer in the Cambridge office of G. Holmes Perkins. After a wartime stint in uniform and in mufti with the Army, Navy and Air Force, he established his own office in Cleveland in 1946 (p. 94).



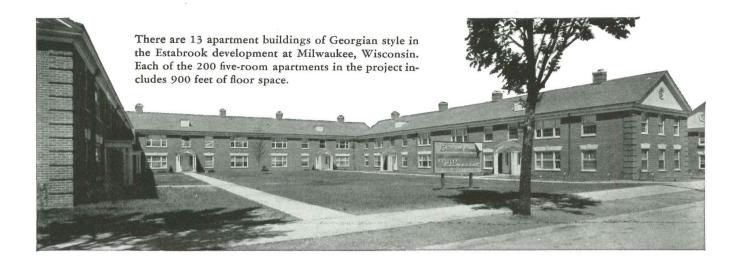
Texas-born MILTON RYAN was a business administration major at the state university, then a bookkeeper for a lumber company, finally a registered architect in 1938, after extensive "on the job" experience. Predominantly, though not exclusively, a residential designer in San Antonio, his most exciting discovery to date is the ample, untouched market in that conservative city for contemporary homes built for sale (p. 106).



ERIC STENGADE, 36-year-old Danish architect, is a product of the Royal Academy of Fine Arts in Copenhagen and a recipient of its coveted gold medal for the best newspaper building design in a recent competition. Stengade's numerous house designs (p. 111) have a charm and freedom from affectation that stem from his firm belief in "humanism." In his own words: "Architecture is only the frame of life . . . I am mainly interested in human beings."



ARTHUR S. HAINSWORTH is an alumnus of the University of Washington who stepped into housebuilding in 1921 with his father's advice and backing. From small homes he moved on to apartment house construction and ownership, finally hit bottom with all the other victims of 1929. Still a general contractor, his postwar projects include million dollar shopping centers, some merchant building, like Bow Lake (p. 114).

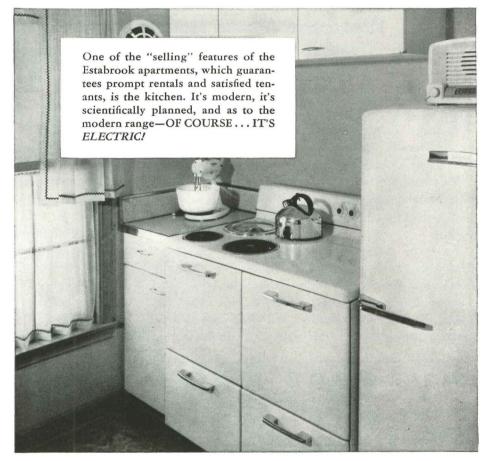


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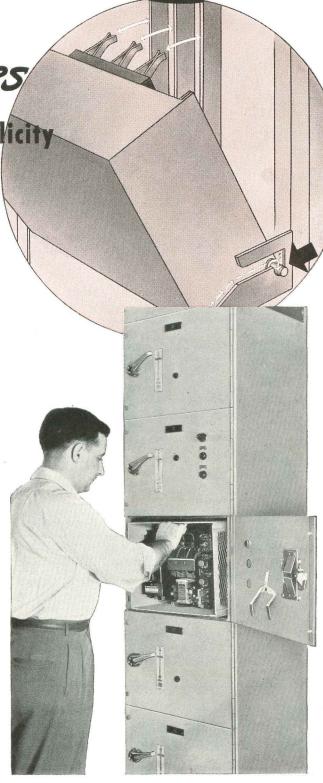
These new stab-type connectors simply "plug-in" to the power bus to eliminate the danger associated with working on "hot" lines. Their simple construction eliminates mechanical difficulty and the special silver plated, alloy copper retains spring pressure even under extreme temperature conditions.

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... for 20 years Sanacoustic* Ceilings have brought fire-safety and noisequieting to Johns-Manville customers

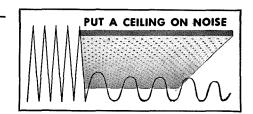
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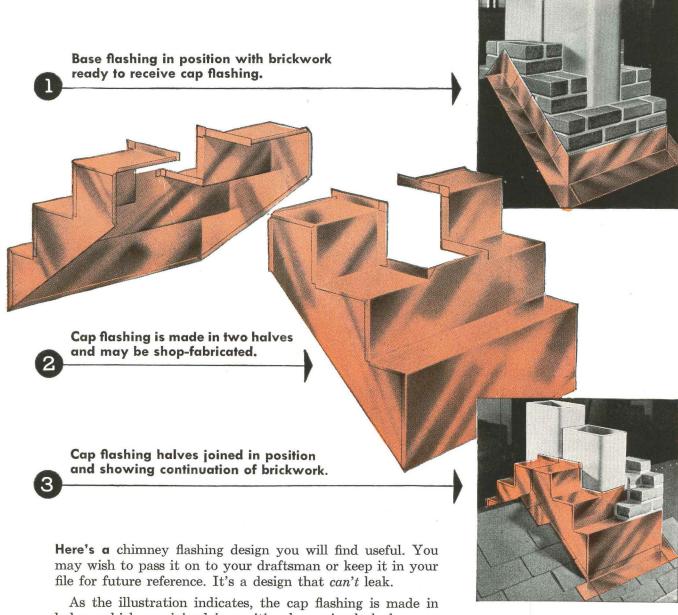


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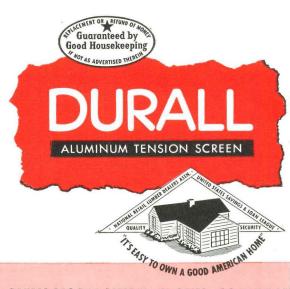


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DURALL is a revolutionary new product with advantages home owners and building men have never before enjoyed in a window screen. It's all-aluminum*—easily installed—snaps into place from inside—won't rust or stain—never needs painting—rolls up for storage... and costs so little (average retail cost, \$3.75)!

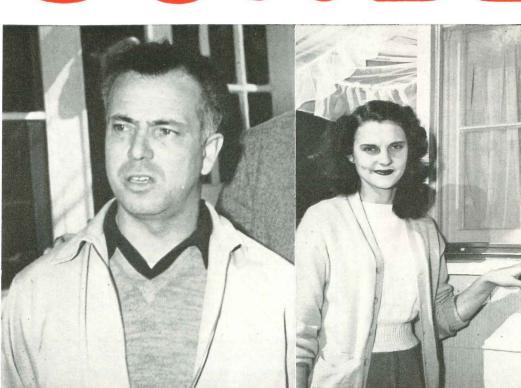
FREE BOOKLET! Get our special, free Durall booklet, showing complete specifications and prices — for your A. I. A. Files. Write today, Dept. AF-2. See Durall at your building supply dealer's.

*Made from The Aluminum Company of America's new weather-resistant ALCLAD wire.

West of the Rockies ask for Ry-Lock



SCREENS



"All the home owners I've talked to say they are wonderful. Durall screens simplify our work and cut our costs." J. Giacomo, Construction Sup't.

"I think Durall screens are wonderful. We are very pleased to be free of rust streaks and stains beneath our windows."

Lorraine Christensen, Home Owner

RIVER BENDASSOCIATES.

BUILDER

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Chester L. Siska, Builder

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- ...new Hall-Mack Crystalcrome jewel-like beauty brilliant solid chromed brass combined with crystal-clear Lucite accessories of the finest quality.
- ... Aristocrome Accessories classic styling—heavy, rich construction and appearance chromium plated solid brass—there's no finer accessory line.
- ...popular Coronado distinctive modern styling and luxurious looks for bathroom requirements in the "medium" price range.
- ... and Tempo Accessories solid quality at low cost simple, functional beauty and long life—for modest budgets.

You can put long-established Hall-Mack quality in every bath-room you build, regardless of the budget at hand. Include this recognized, wanted extra quality in the homes you design and build!

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You build a bathroom for a lifetime of use—make sure that the accessories you select have lasting Hall-Mack Quality in style and construction.

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ETTERS

CHURCHES

Forum:

... After viewing the special church portfolio in the December issue, I am happy indeed that my work was not included. In my opinion, the portfolio was atrocious!

HENRY V. MURPHY, Architect Brooklyn, N. Y.

• Reader Murphy was recently elected President of the New York State Association of Architects.—Ed.

Forum:

... The churches featured are out of this world. Two of the largest churches here in Hopkins-ville are drawing up plans for new buildings, and I would like very much to present them with a copy of FORUM, as I am sure they could get some excellent, progressive ideas from it.

Samuel C. Morton Hopkinsville, Ky.

Forum:

... You did a good job. ...

Thomas A. Kelly, Consultant Archdiocese of New York New York, N. Y.

Forum:

. . . It is just what the doctors should order, if I may paraphrase. . . .

Albert Christ-Janer University of Chicago Chicago, Ill.

Forum:

The irrational, superstitious thing that is the concept of the church and the logical directness of modern architecture are anachronistic.

ROBERT L. FIELDSTONE San Francisco, Calif.

Forum:

This whole question of church architecture has been a matter of very deep concern to me. I was born and reared on the plains of Kansas, where our meeting-houses were extremely simple both in design and equipment. Somehow, the elaborate Gothic cathedral has had the effect of dampening my religious spirit, rather than enhancing it. I never go into one of these so-called Gothic cathedrals, that I do not feel a sense of chill. The architecture itself contributes to the chill, and I often leave depressed rather than exalted. It seems to me that the whole thing needs restudy, and I believe that you have given it a shove in that direction.

Let me congratulate you on the venture, even though I might not agree with all of the ideas expressed.

ROY L. SMITH
The Methodist Publishing House
Chicago, Ill.

Forum:

I wish to congratulate your entire editorial staff on the excellence of the December issue.

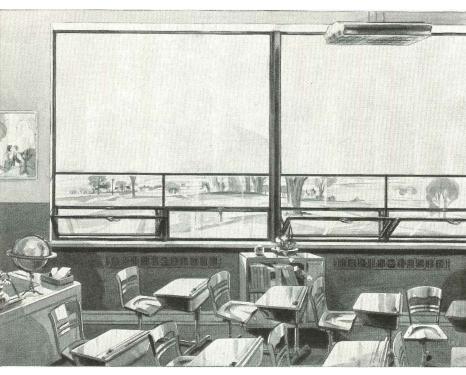
(Continued on page 40)





new daylight effectiveness...





new classroom efficiency

This is the newest development in Truscon light-and-ventilation engineering for classroom use! Point for point, the Truscon Classroom Intermediate Window offers greater flexibility, greater and more efficient use of Nature's free sunlight and fresh air, and greater simplicity of maintenance than any other type of classroom window. Note: Upper light of efficient diffusing pattern glass. Lower light clear. Alternate opportunities: insulating (double) glass, heat absorbing glass, or non-glare glass. Glass is installed from the interior side. Choice of glazing completely adaptable to geographical location, climatic conditions, degree of exposure. Ventilators can be installed in both lower and upper glass panels of vision strip if desired. Important feature is marked economy in original cost. Also superior maintenance from standpoint of window washing and glass replacement. Write for free illustrated literature giving complete details on this Truscon window innovation!



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Fire-Chex

Heat from flames causes asphalt coating on ordinary shingle to burn, melt and flow, thus allowing flames to eat through highly-combustible felt (this would expose roof deck to flames). Patented asbestos plastic compound coating on Fire-Chex resists burning, melting and flowing . . . actually "puffs up" to insulate felt from flames and prevent ignition.

Carey Fire-Chex asbestos-plastic shingles assure unmatched fire protection for valuable buildings and human lives ... enhance the value of your building projects. This fact is dramatically proven by the flaming brand test shown above ... a test you can easily demonstrate for your clients with the handy kit made available by Carey. Ask your Carey representative about it today.

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Whether your business is design or construction—insist on Carey Fire-Chex...the ultimate in fire-protection, beauty and durability...to help make any building a *safer* investment. (See Sweet's Architectural file for further information.)

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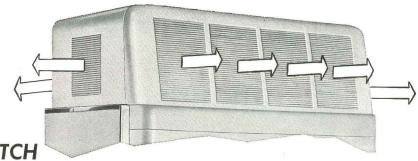


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Ask your Frigidaire Dealer to tell you about this feature and all the other advantages that make Frigidaire Air Conditioners your best choice. He'll give you full details about Frigidaire Room Conditioners and Central Systems, too. Look for his name in Classified Phone Book, under "Air Conditioning" or "Refrigeration Equipment."

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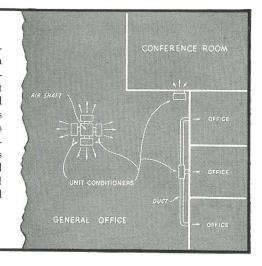


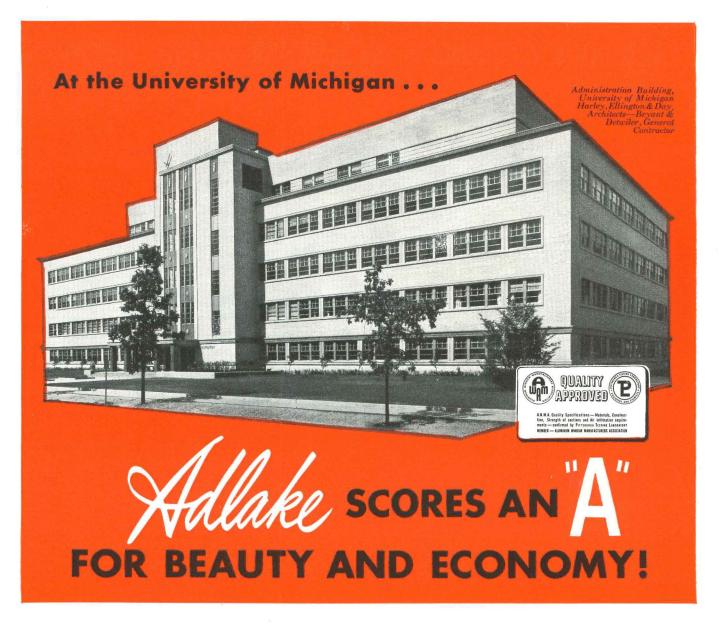
Over 400 Frigidaire commercial refrigeration and air conditioning products — most complete line in the industry.



FOR INDIVIDUAL ROOMS in homes, offices, hotels and hospitals, Frigidaire Window Conditioners supply the same kind of air conditioning as big, theater-size systems. They're compact, easily installed, powered by the famous Meter-Miser. Frigidaire also offers large capacity central system equipment.

Visit the Frigidaire Exhibit, Booths 6, 7, 8. National Home Builders Show, Stevens Hotel, Chicago, February 19 to 23. For air conditioning existing buildings—and new buildings, too—a Frigidaire Multiple-Unit Installation is fast and simple. Since it employs the compact, self-contained unit shown above, installation costs are low—for little duct work is needed and no major building alterations are required. Operating costs are equally low, for individual Frigidaire units can be turned off or on as needed—can be serviced without affecting other space.





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For full information on how Adlake Aluminum Windows can give you worry-free, no-maintenance service, drop a post card today to The Adams & Westlake Company, 1101 North Michigan Avenue, Elkhart, Indiana. No obligation, of course.

ADLAKE ALUMINUM WINDOWS Have these "PLUS" Features

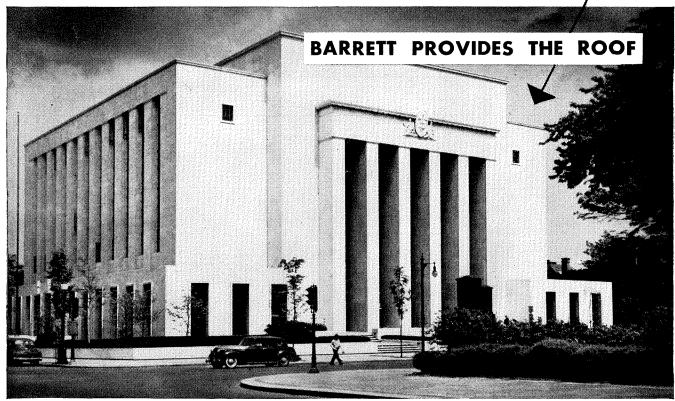
- Minimum Air Infiltration
- Finger-tip Control
- No Warp, Rot, Rattle, Stick
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- Ease of Installation

Adams & Westlake



Established 1857 • ELKHART, INDIANA • New York • Chicago

DAUPHIN COUNTY COURT HOUSE SHOWS CONTEMPORARY INFLUENCE



Arch.: Lawrie & Green, Harrisburg, Pa. Gen. Cont.: Wm. A. Berbusse, Jr., Inc., New York, N. Y. Roof. Cont.: LeRoy Roofing Co., Harrisburg, Pa.

MODERN LINES and classic dignity are blended in this new court house in Harrisburg, Pennsylvania. Like thousands of other fine public buildings, it is Barrett-roofed. Barrett Specification* roofs carry Fire Underwriters' Class "A" rating, and are the longest-lasting, best-value roofs that can be built—usually outlasting their 20-year guarantee by many years.

SEE BARRETT'S CATALOG IN "SWEET'S"



THE BARRETT DIVISION

ALLIED CHEMICAL & DYE CORPORATION 40 Rector Street, New York 6, N. Y.

36th St. & Gray's Ferry Ave., Philadelphia 46, Pa. 205 W. Wacker Drive, Chicago 6, III. 1327 Erie Street, Birmingham 8, Alabama

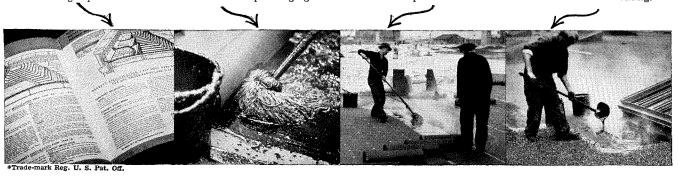
In Canada: The Barrett Company, Ltd., 5551 St. Hubert St., Montreal, P. Q.

Barrett Specification* roofs are applied by Barrett Approved Roofers according to rigid Barrett specifications developed through years of successful roofing experience.

2 They are built up of alternate layers of finest grade coal-tar pitch and felt. Pitch, the *life-blood* of the roof, is impervious to water and unexcelled as a waterproofing agent.

3 Top quality felt of Barrett's own manufacture holds the own manufacture noise the pitch in place and permits the use of greater quantities of this waterproofing than would otherwise be possible.

4 Final steps are a triple-thick coating of pitch—poured, not mopped—plus an armored surface of gravel or slag. Result is a roof that takes Fire Underwriters' Class "A" rating.





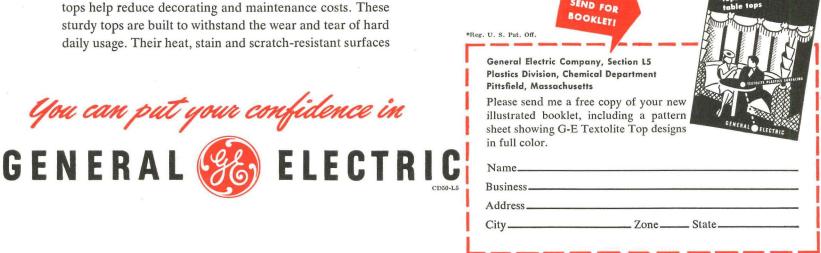
Here's a piece of wizardry of interest to every architect looking for a way to brighten up the appearance of a kitchen or dining room-in homes, apartments, restaurants, and institutions. General Electric Textolite* Plastics Tops -sparkling with color and customer-appeal-can add beauty along with sturdy utility.

It's amazing how many uses there are for G-E Textolite surfacing material. It's ideal for table tops, counters, soda fountains-even walls and decorative paneling. The wide variety of exclusive patterns makes the selection of color schemes an easy matter.

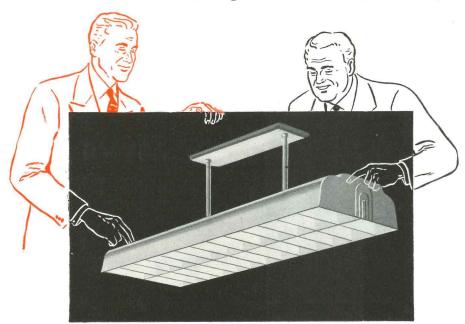
And it's remarkable how tough, rugged G-E Textolite

can be quickly and easily cleaned by simply wiping with a damp cloth. Architects can rely on these tops to satisfy clients.

For more details on how G-E Textolite Plastics Tops can fit into plans and specifications, write to Section L5, Chemical Department, General Electric Company, Pittsfield, Massachusetts, or use the coupon below.



Your DOUBLE DEFENSE against "unlucky lighting"

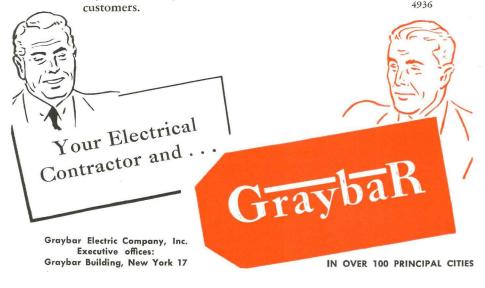


How to make sure the light will be right

Planning the best lighting system — picking the right lighting equipment — isn't easy. As the distributor with the nation's most complete selection of lighting and lamps, Graybar can help you in several ways: We will furnish complete information on sizes and specifications of units for any need. We will give you prompt and complete price quotations and delivery data. And we can furnish technical assistance, should difficult jobs require it.

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LETTERS

Our entire organization in general and myself, in particular, have been ardently following FORUM for many months and we have always been impressed with the timeliness in which FORUM has dealt with specific situations.

We, as advertisers, find that the policy adopted by Forum—that of featuring a particular subject—enables us to gear our advertising in a like manner, thus realizing a much greater reader interest than could be obtained normally.

... The ability which FORUM has of projecting thought-provoking ideas without being argumentative is truly refreshing.

B. A. Burnside

Product Development & Promotion Manager

Timber Structures, Inc.

Portland, Ore.

JOHNSON & VAN DER ROHE

Forum:

The glass house (Forum, Nov. '49) is brilliant, I know; but is Johnson a Mies van der Robot?

Maurice Breslaw
St. Paul, Minn.

BASTARDIZED CHICKEN COOPS

Forum

In re: "Bastardized Chicken Coops", a letter from John H. Dykstra, in your October issue—I am sending you some photos of an actual chicken house that I have converted into a modern home of 8 rooms, 2 baths and 2-car garage.



Chicken house, before and after

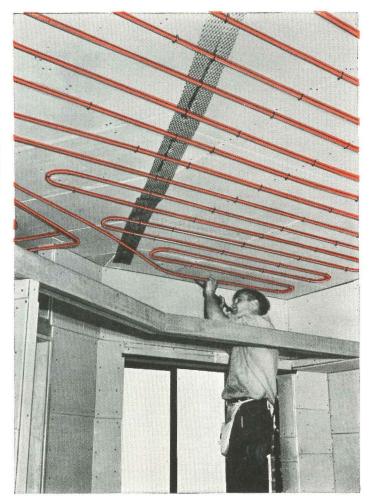


I wish reader Dykstra was able to see this b.c.c. for himself. But he has far too many followers, especially in our neighborhood and township. When word first got around that I was contemplating making living quarters out of a chicken house, I was besieged and badgered by the local Civic

(Continued on page 48)



This beautiful new home was recently built for Mr. C. L. Klingaman, of Gary, Indiana. Mr. Klingaman, a heating contractor, knows his heating systems. Because he knows heating systems, he chose to have his home heated by ceiling panel radiant heating coils. And because he knows materials, he specified Bundyweld Radiant Heating Tubing for these coils.



Better radiant heating in better homes with Bundyweld Tubing

lt's natural to find Bundyweld Tubing used more and more by builders, in radiant heating panel installations.

For no other tubing can match all the advantages Bundyweld offers.

Made by a patented process, Bundyweld is double-walled for extra strength and sturdiness. No more crushing or denting in installation; Bundyweld takes the slams and shocks right in stride. It's thinner walled, too, for maximum heat conductivity.

Soft soldering or brazing is easily accomplished right on the job. Lightweight Bundyweld grids can be positioned quickly by two men, and plastering and painting offer no headaches. You'll want Bundyweld Tubing for better radiant heating in your better homes. Check this miracle tubing before your next job. For further information, write: Bundy Tubing Company, Detroit 14, Michigan.



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Bundyweld's new Radiant Heating book, crammed with the latest, most complete information about Bundyweld radiant heating installation and applications. Write us, we'll be glad to send you a copy.

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DOUBLE-WALLED FROM A SINGLE STRIP

WHY BUNDYWELD IS BETTER TUBING



Bundyweld starts as a single strip of basic metal, coated with a bonding



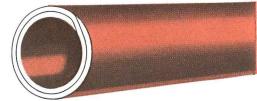
continuously rolled twice around laterally into a tube of uni-



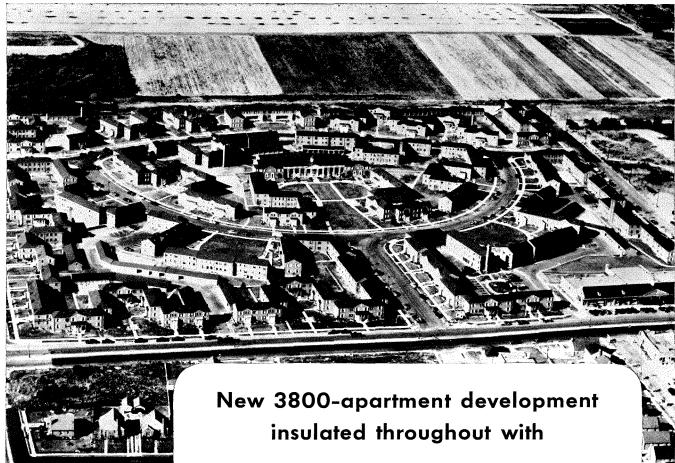
passed through a furnace. Bonding metal fuses with basic



Bundyweld...
double-walled an
brazed through 360



SIZES UP TO $\frac{5}{8}$ O.D.



Above, a section of Glen Oaks Village in Bellerose, Long Island, N. Y. Celotex Insulating Sheathing was used throughout in this beautiful garden-type development which comprises 3800 modern apartments. Built by Gross-Morton of Jamaica, L. I., N. Y. Architect: Benjamin Braunstein.

*

CELOTEX INSULATING SHEATHING

More and more architects and builders across the nation are specifying Celotex Insulating Sheathing, instead of ordinary sheathing. Because this strong rigid insulation enables you to build better, more salable homes at lower cost. No other gives you all these important advantages and economies:

First, Celotex Insulating Sheathing saves you money on both materials and labor, because it insulates, builds and moisture-proofs, all at one low cost! Quick and easy to apply. Negligible waste. No building paper needed.

Second, Celotex Insulating Sheathing seals out excessive heat in summer. In winter, it cuts heat leakage through sidewalls, where authorities say most heat loss occurs. Thus, it assures a home that's far thriftier to heat, far more comfortable the year 'round.

Third, Celotex Insulating Sheathing is the only sheathing made of long, remarkably strong Louisiana cane fibres. It is treated inside and asphalt-coated outside to make it double-waterproofed, yet it has more than twice the vapor permeability advocated by government agencies. And it is protected against dry rot, fungus and termites by the exclusive patented Ferox Process.

Yet to insulate and moisture-proof as you build with Celotex Insulating Sheathing costs no more than uninsulated construction! Send now for booklet giving full technical details.

NOTE. Celotex Double-Waterproofed Insulating Sheathing used in combination with Celotex Insulating Lath, the superior plaster base, is the thrifty way to build the "Ideal Wall" -astronger wall structure with BUILT-IN insulation! Write for details.

There's only one genuine **DOUBLE-WATERPROOFED INSULATING SHEATHING** Be sure you get the double-waterproofed boards with the yellow CELOTEX brand THE CELOTEX CORPORATION • CHICAGO 3, ILLINOIS

FREE! Send now for the informative new Celotex booklet, "How You Can Build Better Homes at Lower Cost." Gives complete technical details on Celotex Double-Waterproofed Insulating Sheathing.

At long last ... a L-O-N-c light



—a long lighting-fixture at a ''short'' price:

the new

Slimline VARSITY

in various one-piece lengths up to 8ft.



Long fixtures mean fewer fixtures required—fewer fixtures to buy, to install, to lamp, to re-lamp. And the LEADER Slimline VARSITY—a quality-built fixture—is priced to fit tight budgets. In every way, an economy buy!

SLIMLINE LAMP ADVANTAGES

Instant-starting . . . more light per watt . . . long life . . . handsome appearance . . . easier maintenance—single pin bases permit easy, quick relamping . . . Choice of brightness levels—more accurate light control.

• "40-60" LIGHT DISTRIBUTION

Due to its efficient design, the Slimline VARSITY illuminates directly and indirectly. 60% direct light is cast downward. 40% indirect light is cast upward . . . minimum shadow.

MODERN BEAUTY

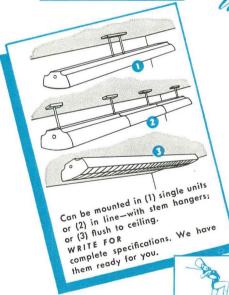
A streamlined, sleek avenue of light that shouts "up-to-date" in every way. A long, glossy, baked-enamel fixture—beautiful in its simplicity—at a beautifully low price.

No. V-280 Slimline VARSITY Specifications:

Fittings for two 75-watt Slimline lamps—available in various lengths up to 96". Instant-start, 100, 200, 300 and 425 milliampere operation. 18 gauge steel housing and channel. High-gloss baked enamel finish. 110-125 volts, 60 cycle A.C. Other voltages available.

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Sold and installed only by the better electrical whole-

salers and contractors.



N ambitious, nation-wide program to raise design and construction standards for small houses throughout the building industry is being conducted by the Revere Quality House Institute, an autonomous public service organization originally sponsored by Revere Copper & Brass Incorporated, and the Architectural Forum.

After more than a year of successful operation, the work is being carried forward on a greatly-expanded scale by the Revere Quality Division of the Southwest Research Institute, a non-profit organization, of San Antonio, Texas.

Several hundred of these representative houses have been built and more are being erected daily. Over 150,000 people inspected the original eight model homes, and another 100,000 wrote for details.

The Pittsburgh House is described as "a modern, two-level home with the beauty of a suburban home and the compactness of an apartment." Sponsored by the Junior Chamber of Commerce, the Kansas City House is styled "as a three-level dwelling, designed along modern lines."

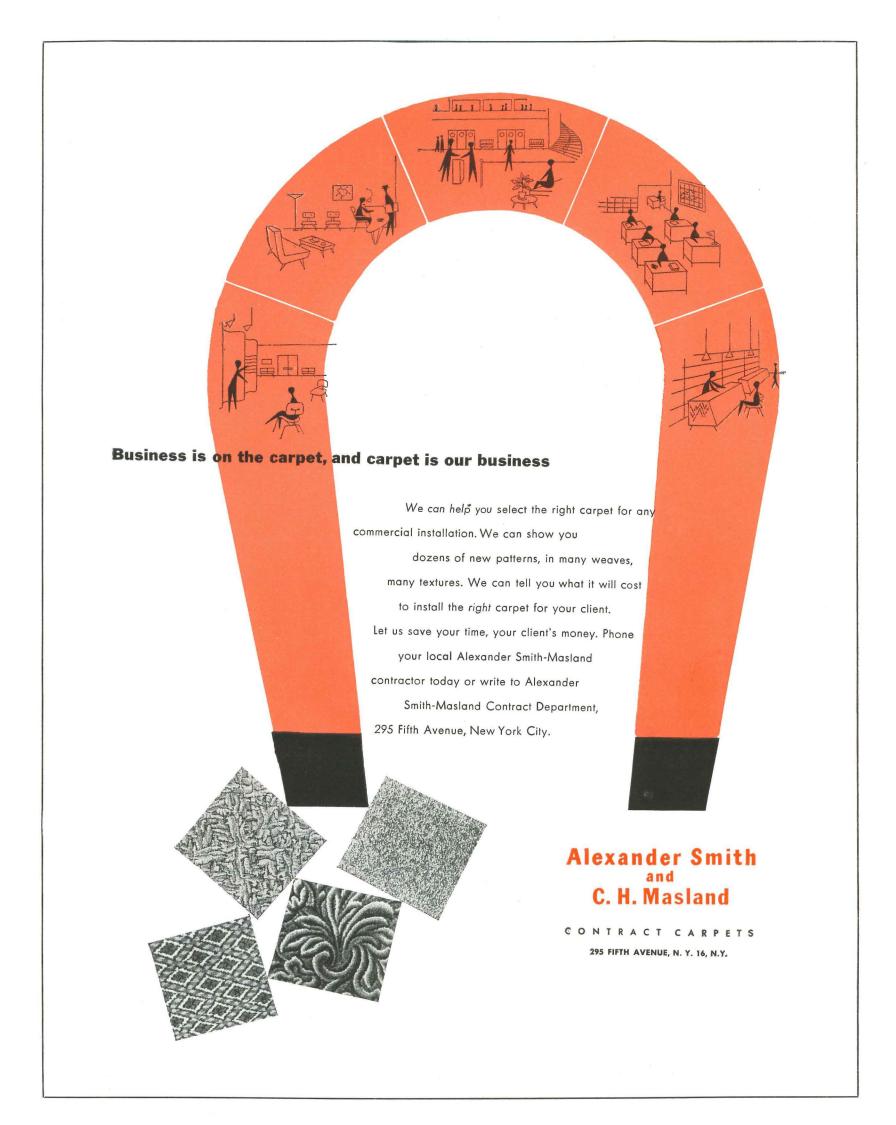
It is significant that Pratt & Lambert Paint and Varnish have been used in these two houses as well as in others in various parts of the country.

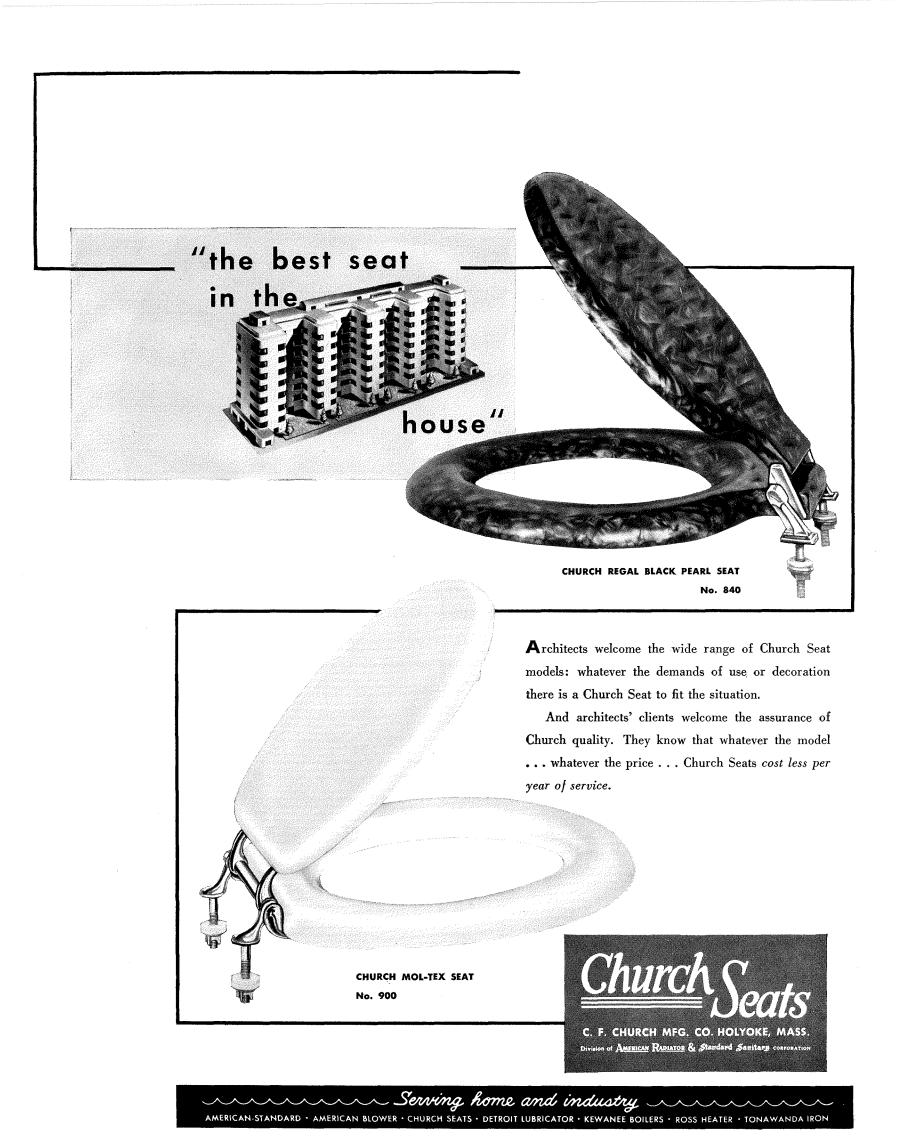
Practical assistance in planning authoritative decoration is available on request to the nearest Pratt & Lambert Architectural Service Department.

PRATT & LAMBERT-INC., Paint & Varnish Makers
NEW YORK · BUFFALO · CHICAGO · FORT ERIE, ONT.

Save the surface and you save all!







Raymond

MAKES 5 TYPES OF CONCRETE PILES



4. COMPOSITE. . . 5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning; borings and soil investigations; waterfront

construction and harbor and river improvements, also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

At left, completed Step-Taper Pile. Center, filling the permanent steel shell with concrete after internal inspection. Right, driving the pile with rigid core. 2. STEP-TAPER PILES

FOR long lengths
WITH
heavy loads

Raymond Step-Taper Concrete Piles driven with rigid steel cores and heavy hammers are designed to develop high load-carrying capacities at depths to 80 feet. The permanent steel shell maintains the resistance developed during driving. After the shell is inspected internally, it is filled with concrete and cut off at the specified elevation.

DIMENSIONS FOR RAYMOND STEP.TAPER PILES WITH 8½-INCH POINTS

You are invited to discuss with our engineers the efficiencies and savings made possible by Raymond's exclusive, original concrete pile designs.

RAYMOND PILES MAINTAIN DRIVING RESISTANCE



CONCRETE PILE CO.

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BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.







• Why is beauty—an important factor in home designing—neglected below grade? All too frequently basements, representing 20% or more of the home area, are left unfinished. Basements are

highly valued by home owners for laundries, workshops, recreation and play rooms. Why, then, should they be left unfinished . . . particularly when it costs so little to decorate with Medusa Paints!

With colorful Medusa Paints, you transform dull unfinished basements into bright, livable areas. On walls Medusa Portland Cement Paint actually protects the construction . . . sealing out mild dampness, while Medusa Rubber Base Coating gives concrete floors a super-tough finish. Specify these long lasting paints for basements, utility rooms, garages, breezeways, stucco and concrete block homes. To help you specify harmonizing color schemes, we have prepared color chip folders. Write for them.

MEDUSA PRODUCTS DIVISION of Medusa Portland Cement Co.

1013-1 Midland Building • Cleveland 15, Ohio







IFTTERS

Club, Garden Club, Zoning Board, Planning Commission, S.P.C.A., D.A.R., and assorted other groups. Last spring when work got underway, neighbors within 5,000 yards, were petitioned and tried to get an injunction against me There being no law on the books to prevent me, and thanks to my lawyer's vigilance, the house became a fact.

There is now a steady parade of sight-seers who come to view the house and many who were against me are now becoming converts; and I find that the famous beatitude still holds true: "Blessed are ye when men shall revile you and persecute you, and shall say all manner of evil against you;-rejoice and be exceeding glad, for great is thy reward in Heaven." But my reward has been more than just out of this world. I have just sold the 'coop' for \$25,000 and have done a world of good for the cause of modern contemporary architecture, in our locality. I have given the timid a shot in the arm. Moreover, the local bank has appraised it for upwards of \$20,000 and is lending 75 per cent of that sum, an event, heretofore, unheard of in view of what was considered a risky venture.

WILLIAM KRYSKILL Hyeholde Builders Coraopolis, Pa.

 $P.\ S.$: The solid south wall of windows on both floors is a revelation. One morning, at 8 A.M. the outside temperature was $13\frac{1}{2}^{\circ}$; at 11:30, with the sun shining but the furnace not being connected as yet, the inside thermometer read 67°; had the windows been washed, it would probably be 2° or 3° higher. Even on cloudy days enough sun breaks through to raise the inside temperature 20° to 30°.

OPEN MARKET

Forum:

Your open end mortgage plan has, I believe, started a movement which will open tremendous markets for building material dealers, manufacturers and lenders.

C. B. Sweet, President National Retail Lumber Dealers Assn. Washington, D. C.

LENDER'S PLEA

Forum:

There are many occasions, while working on mortgage loan applications for larger type buildings, on which we have been impressed with the fact that architects never indicate on the plans the total number of gross square feet in a given floor or other pertinent data which has to be computed in order to analyze the project for mortgage loan purposes.

Separate computations have to be made by many agencies who process these plans for one reason or another which in the aggregate must amount to a great deal of wasted time, both on the part of contractors and loaning institutions. This could be eliminated, providing the architects (Continued on page 56)



HOW'S YOUR LANGUAGE IN FRONT OF ladies?

We don't have to tell you that a house with a kitchen and bathroom that pleases Mrs. Homemaker is a house half sold.

Colorful durable Formica surfaces in these two all important rooms speak a language of their own—lady talk that sells fast and sure.

The Formica Vanitory, combination lavatory and dressing table, is fast climbing to the top of home buyers "must have" list. National advertising has them looking for the famous Formica Label.

Formica is ideal for bathrooms, not alone for its beauty, but for its resistance to alcohol, boiling water, non-bleaching cosmetics, and ordinary mild acids and cleaning alkalies.

You owe it to yourself to send for Formica's full color idea folder "What's New in the Bathroom".

A free copy is yours for the asking. Write Formica, 4631 Spring Grove Ave., Cincinnati 32, O.



"Just as good" is a fable. Look for the label.
Insist on genuine Beauty Bonded Formica.

Johns-Manville Terraflex

NEW FLOORING!



PLASTIC-ASBESTOS Floor Tile!

Has clearer, brighter colors . . . lasts twice as long . . . is extremely resilient

... unaffected by greases, oils, alkaline moisture.

• For the first time, an all-purpose flooring that combines in one material practically all the advantages that could be desired in the ideal floor! TERRAFLEX is plastic-asbestos tile-an entirely new type of decora-

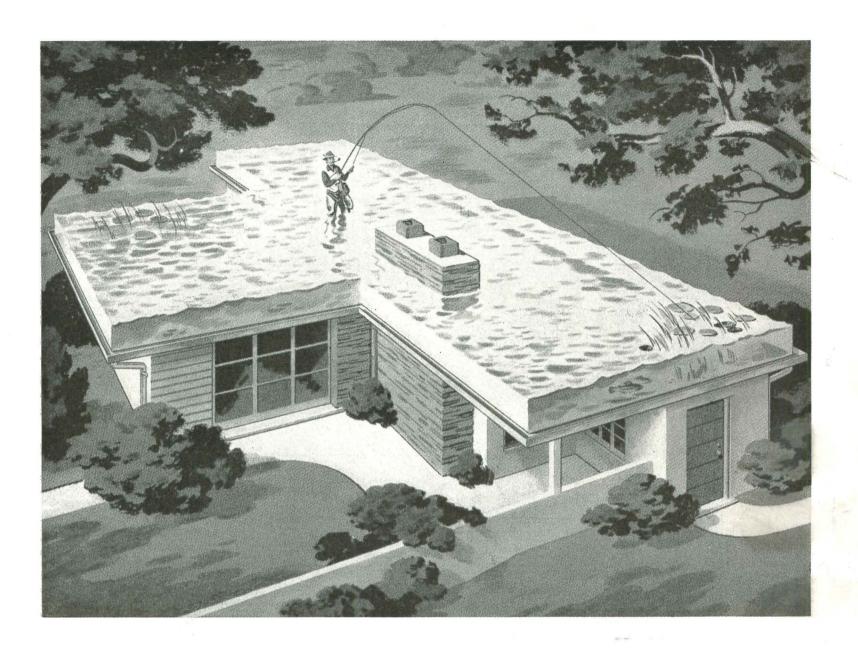
tive floor covering, pioneered and developed by Johns-Manville.

Terraflex is unaffected by greases, oils, alkaline moisture, and mild acid solutions . . . Is remarkably resilient under foot, yet will outwear other types of decorative flooring two to one . . . Tile-like units come in clearer colors, more stable than ever before obtained in resilient flooring...Can be safely used on concrete floors in direct contact with the ground . . . Flexibility permits Terraflex to withstand normal movement of wood floors without breaking.

See your J-M Approved Flooring Contractor, who will gladly tell you more about J-M Decorative Floorings (Terraflex and Asphalt Tile). Write for our new Terraflex brochure. Johns-Manville, Box 290, New York 16, N. Y.

Johns-Manville TERRAFLEX

*Reg. U. S. Pat. Off.



How to drain a lake on a roof

You may think this is a fantastic picture. But enough rain and snow fall on the average roof in a year to make a lake nearly two and a half feet deep.

This helps explain how important it is to have a strong, tight and durable roof-drainage system. You can be sure of this when you specify the modern metal of many uses . . . Armco Stainless Steel.

Armco Stainless in gutters, downspouts and flashing defies corrosion and wear . . . is as permanent as the house itself. Because of its great strength, this rustless metal will not buckle under heavy loads of ice or snow, will not crack under sharp changes in temperature.

The soft, silvery finish of Armco Stainless Steel blends with any color scheme or architectural style.

Yet Armco Stainless Steel is comparable in cost with other quality roof-drainage materials. And over-all it costs less than common materials because it will outlast them several times to one. Replacing less permanent materials often involves tearing up roofing and other construction — an expensive process.

Armco Stainless Steel has many other architectural uses. Consider it on your projects. Specify it for building entrances, cornices, decorative trim and molding, door jambs, grilles, kick plates, marquees, spandrels, standing seam roofing and storefronts. Armco Stainless sheets, strip, plates, bars, wire and angles are supplied by distributors in all principal cities. See your Sweet's Catalog for specifications and other useful information.

ARMCO STEEL CORPORATION

60 CURTIS STREET, MIDDLETOWN, OHIO . PLANTS AND SALES OFFICES FROM COAST TO COAST . THE ARMCO INTERNATIONAL CORPORATION, WORLD-WIDE

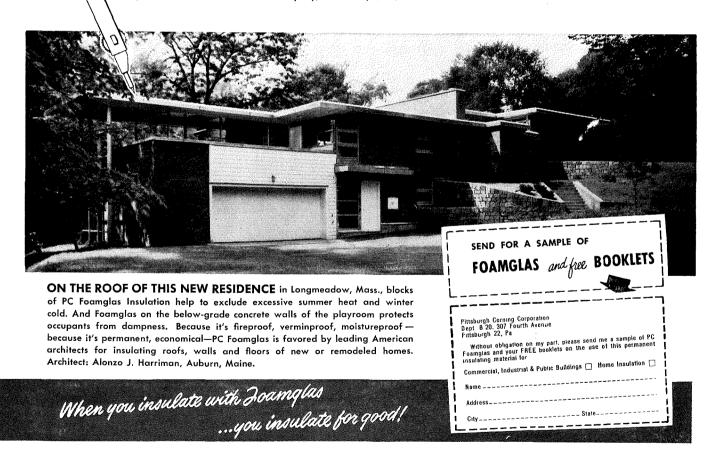




the four-way protection of PC Foamglas Insulation



AT THIS LAMINATED PLASTICS PLANT of the General Electric Company, Coshocton, Ohio. PC Foamglas was used in the core walls of storage and processing rooms to help control temperature and humidity. Being a true glass in cellular form, Foamglas is unaffected by moisture . . . is vaporproof. Engineers & Builders: The Austin Company, Cleveland, Ohio.



GENERAL ELECTRIC A BRIGHT NEW

Two new General Electric white fluorescent lamps show full beauty of all colors



Colors take on new life

YOU'LL see colors come to life . . . fabrics and decorations take on new charm . . . complexions glow with new warmth . . . better than fluorescent lamps could ever show them before.

The secret is a revolutionary new phosphor, "D-R", which, in the inside coating of two new General Electric

fluorescent lamps, transforms the effect of the white

light they give. With these new lamps—1) DE LUXE COOL and 2) DE LUXE WARM WHITE—excellent color rendition is achieved, and at the same time you are given a choice of cool or warm atmosphere.



Complexions flattered



Fabrics look their best

Cool effect or warm?

Now you can plan lighting to help create either a cool or a warm atmosphere—give clients the right light for their needs—with G.E.'s two new lamps. For cool, crisp atmosphere, choose DE LUXE COOL WHITE. For warm, friendly, intimate surroundings, select DE LUXE WARM WHITE. By planning interior decorations with these lamps in mind, you open the door to new color effects and new beauty never before possible with fluorescent.

Secret is new "D-R" phosphor

It took years of research to develop the phosphor, "D-R", that made General Electric's new color triumph possible. "D-R" is the first successful "deep red" phosphor ever known.

These two new lamps are one of the greatest advances in fluorescent lighting since General Electric introduced the first fluorescent lamp in 1938. The DE LUXE COOL WHITE and DE LUXE WARM WHITE lamps will both be introduced early in 1950 in the 40-watt size, later in all other popular sizes of G-E fluorescent lamps.



For business, DE LUXE COOL



For intimacy, DE LUXE WARM

BRINGS YOU WORLD OF COLOR



Four G-E fluorescent lamps—the two above, plus a Standard Cool White and Warm White—now meet practically all fluorescent lighting needs.

New white lamp line makes selection easy

The whole question of which "white fluorescent lamp" to use is now simplified. The two new lamps—plus two "high efficiency" lamps—create a line of four G-E white fluorescent lamps that fills practically all fluorescent lighting needs.

STANDARD COOL WHITE (formerly 4500 white) for high efficiency, reasonable color rendition. Preferred for working and selling areas—offices, factories, some stores, schools.

NEW DE LUXE COOL WHITE for

areas where the best color rendition is desired and maximum light output per watt isn't so important.

STANDARD WARM WHITE (formerly Warm Tint) for high efficiency combined with the color impression of incandescent lighting.

NEW DE LUXE WARM WHITE for use where a warm environment with excellent color rendition is more desirable than maximum light output per watt.

FREE SELECTOR GUIDE



Shows which lamp you need to meet your lighting requirements. Write General Electric, Div. 166-AF-2 Nela Park, Cleveland 22, Ohio.

You can put your confidence in—





WINDOWALLS in White Bear Lake, Minnesota, home. Norman Johnson, architect.

Mindowalls*



RIGHT FROM STOCK, these two Andersen WINDOWALLS open more than 36 feet of a 41-foot wall to a superb lake view. Because they are stock Andersen Gliding and Casement Window Units, they spared the architect special detailing, spared the home owner the extra cost of special window construction; yet they achieve the effect of one continuous picture window!

As windows, these windowalls invite "living at the lake" right into the house, open up to cooling breezes. As walls, they provide a weathertight barrier to driving rain

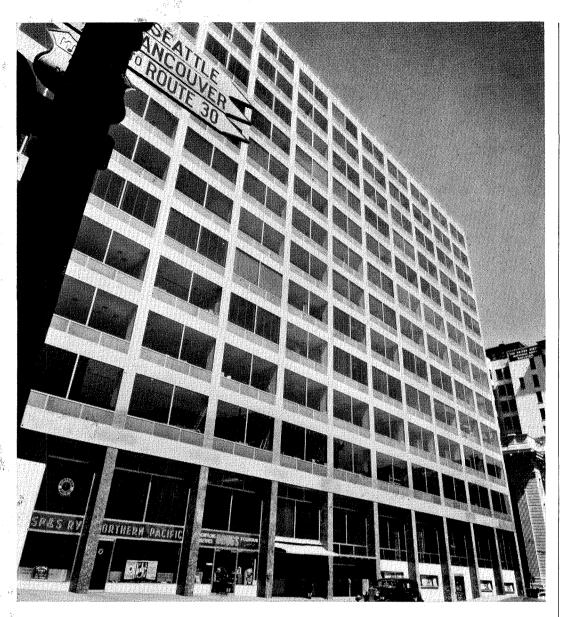
and the winter's cold. Their insulating wood construction helps the windows handle a difficult climate with ease.

Specification data on Andersen WINDOWALLS is in Sweet's Architectural and Builders' Catalogs, or will be sent by us upon request. See your local lumber or millwork dealer for further information.

The new Andersen WINDOWALL Tracing Detail File will be sent at no charge to architects and designers making request for it.

*TRADEMARK OF ANDERSEN CORPORATION

Andersen Corporation . BAYPORT . MINNESOTA



NOW THEY PUMP WEATHER OUT OF A WELL!

There's a unique air conditioning system in the huge new Equitable Building,* Portland, Oregon. In the summer this system pumps heat into a well, and in winter this same well is used as a source of heat for the building!

It's the old heat pump idea with modern twists—one of the largest installations of its kind in the world. It works like a charm, with its Trane compressors functioning as heat pumps, and other Trane equipment playing a vital role in making this air conditioning dream come true.

The result is office space that's a joy to work in, easy to lease and economical to maintain. So another problem was solved by equipment from the "House of Weather Magic"—equipment that makes air more comfortable, more usable, more efficient, in thousands of offices, stores, plants and homes.

If you have a problem with air—where you work, or where you live—remember that Trane engineers *know* air. How to dry it, humidify it, warm it, cool it, clean it, or move it. Your local Trane office will be glad to work closely with you on any of your projects.

*Owners: Equitable Savings & Loan, Portland, Oregon. Architect: Pietro Belluschi. Mechanical Engineer: J. Donald Kroeker.

THE TRANE COMPANY, LA CROSSE, WISCONSIN EASTERN MFG. DIVISION SCRANTON, PA. TRANE COMPANY OF CANADA, LTD. TORONTO



were to make a summary on the first page of the plans with some of the following information:

- a. The total number of gross square feet of each of the floors.
- b. The net rentable square feet of each of the individual floors
- c. The total of both the net rentable and gross square feet for the entire building.
- d. Cubical contents of the basement area, the main structure and the roof buildings such as elevator penthouse, etc.
- e. Possibly in store buildings, the number of front feet of store space. . . .

JOHN P. FOOTE

Mortgage Loan Appraiser

The Prudential Insurance Co. of America
Los Angeles, Calif.

KUDOS

Forum:

I read FORUM regularly to keep abreast of the latest architectural developments. I find its articles to be both interesting and enlightening.

R. S. Means, Architectural Engineer Duxbury, Mass.

MISSING PYLON

Forum:

The main feature of the Florence Memorial (FORUM, Dec. '49, p. 100) designed by our firm is a pylon. To represent our design you have chosen to photograph an early study model, from which someone eliminated the pylon.

You have chosen to photograph the model from above at an angle from which the Memorial could never be seen by anyone on the ground.

This is an inspiring but difficult site (whose conditions) ... practically dictated this solution. Summers in Italy, when Americans are most likely to visit this cemetery, are very hot; so it was necessary to provide shade for all approaches, and for the main portions of the Memorial itself.

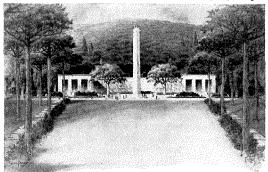
If you were trying to make an incomplete and prejudicial presentation of this design, you could hardly have done better.

JAMES KELLUM SMITH, Architect McKim, Mead & White New York, N. Y.

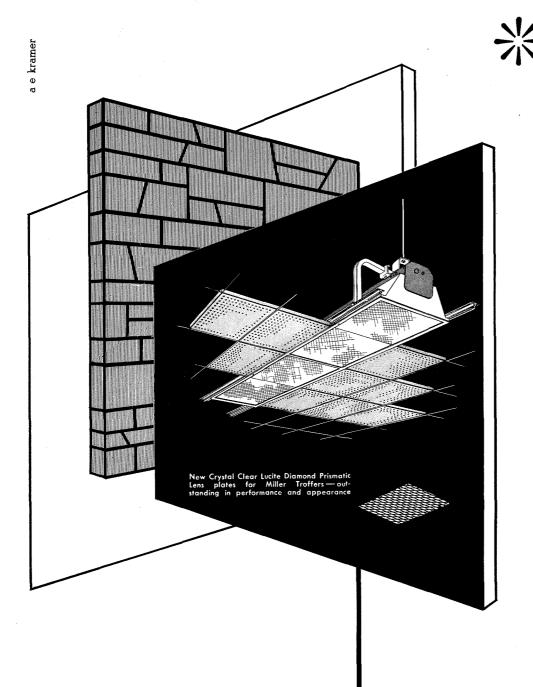
• FORUM, whose original picture (without pylon) was supplied by the organization which sponsored the exhibition of new war memorials, is pleased to show that the Florence Memorial has, indeed, a pylon as its main feature (see cut).—Ed.

(Continued on page 64)

Louis H. Dreyer



Florence Memorial with pylon



adapted from "TRANSFLUENT LINES" by I. Rice Pereira

Lighting becomes a structural element with MILLER FLUORESCENT TROFFER LIGHTING SYSTEMS. Their high lighting efficiency and flexibility of application gives the architect limitless opportunity for ceiling design — CEILINGS UNLIMITED* to achieve architectural harmony and individual distinction of interiors. A BIG PLUS VALUE in lighting! And there's the ease of installation — and the low maintenance cost - which contribute to the low over-all cost of Miller Troffers. It all adds up to COMPLETE LIGHTING SATISFACTION. Satisfaction with performance. Satisfaction with appearance. Satisfaction with lighting dollars wisely invested.

Miller Lighting Service is nation-wide. Miller engineers and distributors are conveniently located.
Write for our brochure —
"CEILINGS UNLIMITED".

Lighting becomes a structural element



A painting illustrated in
"PAINTING TOWARD ARCHITECTURE"
the book about THE MILLER COMPANY'S
collection of abstract paintings
related to Architecture.
Available at leading book stores

*Reg. U.S. Pat. Off.





at little or no extra cost!

TODAY, everyone wants the convenience and comfort provided by Servel All-Year Air Conditioning in their homes. You can provide your clients with this modern unit simply by planning your homes around a Servel Air Conditioner. Recent studies and cost estimates have indicated that you can do it without increasing the total price. The reason for this is that, by planning around a Servel unit, you gain certain structural economies which offset the price of the Air Conditioning.

For instance, a house designed for Servel All-Year Air Conditioning needs no fireplace. It needs no porch. Outside doors and windows can be kept closed and many windows need never be opened at all. That means a big saving on screens and storm sashes. In most parts of the country the total savings would more than offset the cost of the Air Conditioning.

Keep that in mind when your clients ask you about Servel All-Year Air Conditioning. Keep in mind, too, that Servel provides them with year-round comfort . . . refreshing cooling in summer and instant heat in winter. And changeover is accomplished by a mere flick of a switch.

Keep in mind, also, that the use of Servel All-Year Air Conditioning is not confined just to one type of architecture. It can be easily adapted to any type, style, size, or shape of home your client wants. Remember, by including the Servel unit in the original plans, you can provide it for your client at little or no extra cost. For full facts, ask your local Gas Company, or write direct to Servel, Inc., 2002 Morton Ave., Evansville 20, Indiana.



As <u>practical</u> as it is beautiful...

That's why U·S·S Stainless Steel deserves your consideration for purely construction applications, too.

Stainless steel has so many virtues as a decorative medium that it is easy to overlook the unique combination of desirable properties that fits it perfectly for applications in which structural permanence is the prime requirement.

Consider these facts. Stainless Steel provides the highest strength-to-weight ratio of any structural material. It remains virtually unaffected by corrosive attack, by extremes of heat or cold. It offers unsurpassed resistance to abrasion, wear and severe service. It is incombustible. It is easy to clean. It does not bleed or discolor adjacent areas. It retains its lustrous good looks and superior strength indefinitely with the minimum of care and maintenance. With Stainless Steel, first cost is virtually last cost.

In U·S·S Stainless Steel-a perfected, servicetested stainless-all these advantages are available in material form in sheets, plates, strip, bars, wire, tubing and piping of practically any dimension; in structural sections and special shapes of great variety; and in all the standard architectural surface finishes.

Thus with U·S·S Stainless Steel, the architect and design engineer can produce structural forms of outstanding beauty, permanence and lifelong economy, as for example, Stainless-faced fully-insulated sidewall panels. These weigh only a fraction of conventional brick and tile construction, can be quickly erected in any weather and provide important economies by decreasing the load on foundations and building framework

Or he can take advantage of its light-reflecting properties to use U·S·S Stainless in combination with artificial lighting to provide interior wall surfaces of quickly-changed color. He will find it ideal for curtain wall construction or in panel frames for radiant heating and cooling of rooms. In fact its uses are limited only by the user's ingenuity. The long list of architectural applications shown below are only a few of the many ways in which U·S·S Stainless Steel can be used to insure lasting beauty and outstanding utility.





AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

E D U



A little Micarta sells a lot of house

She walks into the kitchen . . . she thrills . . . and the stage is set for a sale. Those Micarta sink and counter tops say "This house is modern! Luxurious!"

Yet the cost is moderate and the advantages are many:

- Micarta means GLAMOUR smooth, lustrous, colorful surfaces in interesting patterns or solids. And they stay that way!
- ${\bf Micarta\ means\ CLEANLINESS-no\ kind\ of\ cooking\ grease,\ condiment,\ household}$ cleanser, detergent, dilute acid, fruit juice can stain Micarta.
- Micarta means LIFE-TIME WEAR resists scratching, denting or chipping is undamaged by cups, silverware, or even pots and pans.

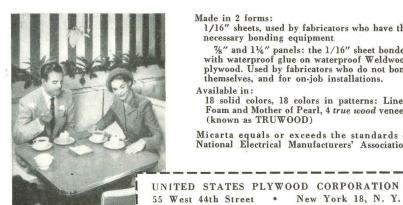
Any wonder everyone wants Micarta on utility surfaces everywhere?

Micarta is the miracle plastic surface every-body sees on soda foun-tains, lunch counters, restaurant tables and bars. Now smart builders are using it to glamourize kitchens, bathrooms and play



MICARTA is manufactured by WESTINGHOUSE and sold for decorative purposes only, by UNITED STATES PLYWOOD CORPORA-TION

Check MICA



Made in 2 forms: 1/16" sheets, used by fabricators who have the necessary bonding equipment.

7%" and 1½" panels: the 1/16" sheet bonded with waterproof glue on waterproof Weldwood plywood. Used by fabricators who do not bond themselves, and for on-job installations.

Available in:

18 solid colors, 18 colors in patterns: Linen,
Foam and Mother of Pearl, 4 true wood veneers
(known as TRUWOOD)

Micarta equals or exceeds the standards of National Electrical Manufacturers' Association.

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COMPANY	
ADDRESS	

RTA today A. F. 2-50

61

Designed and Engineered



HERE'S HEATING COMFORT . . . AND WORKING COMFORT, TOO. The trim gas-fired Mohawk Winter Air Conditioner with its Forge Red jacket, actually complements the furnishings of this basement workroom. Engineered to give long, trouble-free service, the Mohawk operates quietly, efficiently, as smooth as clockwork. And that's true of all American-Standard Heating Equipment. The complete line covers every type of fuel—and includes boilers, radiators, convectors and baseboard radiant panels, plus warm air furnaces and winter air conditioners.

THE MOST RIGID HOSPITAL REQUIREMENTS ARE MET by American-Standard Plumbing Fixtures. They are built for greatest convenience in use, durability and easy cleaning. And they are designed to fit the specialized hospital needs for treatment rooms, operating rooms and laboratories as well as patients' rooms and all general purposes. The genuine vitreous china Scrub-up Sinks, illustrated, are in the Sid Peterson Memorial Hospital, Kerrville, Texas. Architect: Addis E. Noonan, San Antonio, Texas.



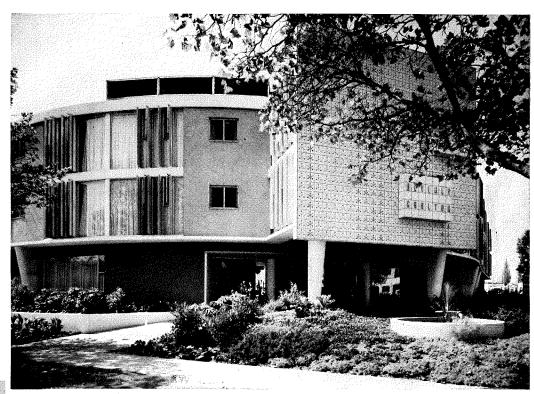


for every kind of job

 Look over the new construction jobs that are going up today and you'll find more and more of them with heating equipment and plumbing fixtures by American-Standard. This isn't surprising when you remember that the American-Standard line is the most complete in the industry, and includes products for even the most specialized needs.

This variety of products offers the widest flexibility in designing and styling for structures of almost every size and type . . . whether for houses, hotels, schools, hospitals, or large industrial buildings.

In design and in performance, you can rely on American-Standard Heating Equipment and Plumbing Fixtures to do the job right. Your Heating and Plumbing Contractor will be glad to give you up-to-date information on the complete line. American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

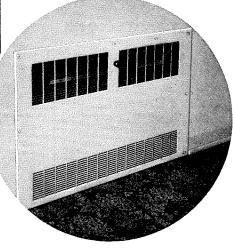


DISTINCTIVE BATHROOMS FOR A DISTINCTIVE HOTEL! The bathrooms of the

FILE

ultra-modern Beverly-Carlton Hotel in Beverly Hills, California, are equipped with American-Standard Plumbing Fixtures. These quality fixtures, which add so much to the convenience and comfort of hotel guests, fit right in with any type of construction... they'll add much to the appearance of any building you design. Architect: Sam Reisbord, Los Angeles, California.

THE RUGGED SERVICE CONDITIONS encountered in schools provide a real test for plumbing fixtures. American-Standard products are popular with school authorities because they will take a lot of rough treatment... they're hard to mar, easy to keep clean. These Chinal Urinals and Lucerne Lavatories are located in the St. Athanasius School, Evanston, Illinois. Architects: Meyer & Cook, Chicago, Illinois.



SPACE SAVING IS AN IMPOR-TANT CONSIDERATION in tour-ist courts. And this Arco Mul-tifin Convector, installed in the Bucking Horse Tourist Court in Rawlins, Wyoming, not only saves space but, with the Ameri-can Engloyure, makes an attracan can Enclosure, makes an attrac-tive installation. It provides effi-cient heating throughout the room. Architects: Kellogg and Kellogg, Cheyenne, Wyoming.

American-Standard

First in heating ... first in plumbing

Serving home and industry

AMERICAN-STANDARD · AMERICAN BLOWER · CHURCH SEATS · DETROIT LUBRICATOR · KEWANEE BOILERS · ROSS HEATER · TONAWANDA IRON



Public Buildings, Factories, Institutions

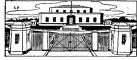
Mosler offers a complete line of internationally known and respected burglary-and-fire resistive equipment—from wall safes to Mosler's new money-saving non-grout vault doors. For valuable, detailed information, mail the coupon below, today!

to fit any requirement.

The Mosler Safe Co.

Main Office: 320 Fifth Avenue New York 1, N. Y.

Dealers in principal cities
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Largest Builders of Safes
and Vaults in the World



Builders of the U. S. Gold Storage Vault Doors at Fort Knox, Ky.

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	osler Safe Co., Dept. AF th Ave., New York 1, N.	Υ.
Please sen	d me your free booklet "Mosler Sa	ifes and Vaults'
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Business Address		
City	Zama State	
Cuy		

ALLEN & EINSTEIN

Forum:

I can ill afford the time to write you a letter as I am checking Doctor Einstein's new equations on the nature of gravity. Up to now the only feeling I had about gravity was a wistful desire to remove a little, but that was the old Allen. The new Allen is going to take a keen interest in great social problems such as whatever happened to free suspenders with each pair of pants, the New York water shortage and all like that. I am not sure who first detected the water shortage in New York but it is safe to assume it was not a convention delegate.

The question of the nature of gravity should engage our brightest intellects, and it is: Doc Einstein's and mine. Look at it this way: if anything happens to gravity you are going to look pretty silly if every building you design floats around in the air 5 ft. above the foundations. Imagine having buildings up in the air, as well as clients. This could be a crisis. However, there would be compensation. Elevator maintenance would be cut sharply as it would be cheaper to have the elevator hold still while the building went up and down. Elevators are a sensitive point with me at present as the owner of the building in which I have my office is putting in four new ones. The tenants regard this move with justifiable suspicion as the time for new leases is approaching. As I pointed out to my colleagues, it would be a new switch if the landlord raised the tenants as fast as he does their rent. (If my landlord subscribes to Forum, tell him this issue was lost in the Johnstown flood.)

You will be pleased to hear that all is well in my native city and the population is multiplying rapidly, although not to such an extent that they are planning to change the name to Grand Rabbits. I have tried this witticism before, locally, and it was invariably greeted with an outburst of apathy. You too, huh? Well, I will go back to gravity.

I understand everything about the Einstein equation except what the h--l it means (I write a column for the Grand Rapids Press and in the Grand Rapids Press it always comes out h--l. I also do a broadcast every Sunday on the CBS station-WJEF, to be exact-it always comes out "heck." I suppose in Forum it just comes out.) But the general idea seems to be that we have been mistaken about gravity all this time. It seems gravity has something to do with electrodynamics, or it might be electroplating. I hope it was electroplating because, if it was electrodynamics, there will be a union jurisdictional debate and in no time it will be illegal to have an apple fall off a tree and hit Isaac Newton on the head unless a stand-by electrician is employed. At this thought I resemble Doctor Einstein more than ever; my hair is standing on end, too.

ROGER ALLEN, Architect Grand Rapids, Mich.

(Continued on page 70)





There's no reason at all why floors shouldn't carry out... even enhance decorative schemes. Especially when you're working with Tile-Tex* Asphalt Tile. For here's versatility that's hard to beat.

Tile-at-a-time installation gives you almost unlimited pattern possibilities. Checkerboard, plaid, basket weave ... it's almost a matter of "name it, and you can have it." You can even design custom-cut inserts which are fabricated to your specifications.

An unusually wide range of color adds even more mood-matching versatility. Take your choice from 33 sharp, rich colors in the Tile-Tex

sharp, rich colors in the Tile-Tex line, to get just the decorative effect you need...bright or subdued; carefree or dignified.

And with all that decorative versatility you get these extremely important material advantages.

Exceptional durability. Tile-Tex floors have been in service for many years . . . without visible signs of wear.

Minimized maintenance. Just follow this simple formula: daily sweeping to remove loose dirt, periodic washing, water-waxing (if desired).

Maximum economy. Low material cost... fast, economical installation... and, long service life combine to give you astonishingly low cost-per-square-foot-per-year. Add the trim attractive appearance of Tile-Tex Asphalt Tile, and the result is maximum flooring value at minimum cost.

Plan on Tile Tex for your flooring needs. Compre-

hensive literature and specifications are yours for the asking. Just write: THETILE-TEX DIVISION, The Flintkote Company, Dept. HA, 1234 McKinley Street, Chicago Heights, Illinois.

FLOORS AND WALLS

*REGISTERED TRADEMARK, THE FLINTKOTE COMPANY

OUR BUSINESS IS IMPROVING YOUR BUSINESS

HERE'S HOW WE DO IT...

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

"See Your Architect, Engineer, Contractor, First" York believes in channeling contract work through You... and York gives you unequaled support in providing the owner with the finest central station system possible.

- a complete line of equipment
- competitive prices
- accurate, dependable product ratings
- technical assistance based on "case histories"
- cooperation with architects, engineers, and contractors
- practical help from York-Trained Engineers
- a national organization
- continuous product research and development
- certified maintenance

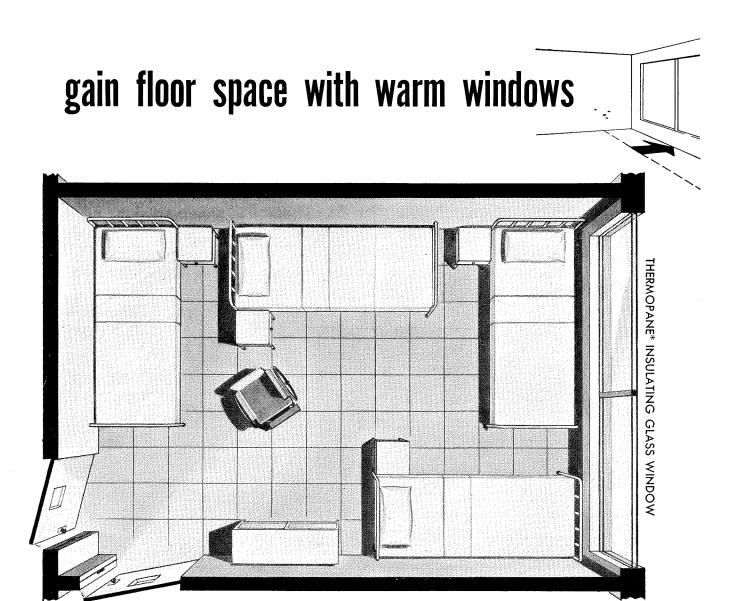
York engineers have at their command an inexhaustible supply of practical information gathered from thousands of successful York-equipped installations. This information and their services are at *your* disposal. If you are "planning" any work involving air conditioning or refrigeration, call your nearest York Office. You get impartial, experienced help from the start. Or write York Corporation, York, Pennsylvania.



PIONEERS IN INVENTION AND DEVELOPMENT SINCE 1874

Refrigeration and Air Conditioning

HEADQUARTERS FOR MECHANICAL COOLING SINCE 1885



The floor space immediately next to a window is more comfortable in winter if the window is *Thermopane** insulating glass. That's a basic principle no matter what kind of building you apply it to. The half inch of dry air, sealed between two panes of plate glass, creates an insulated wall. Therefore, with *Thermopane*, your comfort zone moves right up to the glass, as it does to any other insulated wall.

Principle Applied to Hospitals

Warmer windows in a hospital increase usable floor space. Beds can be pushed closer to the windows. Patients get greater enjoyment by seeing more of the outdoors.

More of the floor space can be cleared for temporary activities. Or extra beds can be put into a small room, if needed. This is equally true for desks in the administrative area, or buildings other than hospitals.

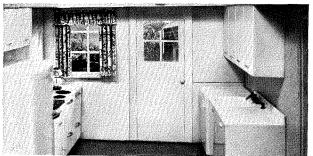
Furthermore, heating and air-conditioning expenses are substantially reduced by *Thermopane* windows.

The higher the cost of the floor space in any building, the greater is the economy of *Thermopane*. Thermopane is made in over 80 standard sizes to give you ample design flexibility as well as building economy. For complete details, write for our Thermopane literature.



Make your projects pay off these successful

Cash in on the sales success of these building projects! Equip your homes with the timesaving, worksaving, moneysaving advantages of the General Electric Complete Kitchen Package. Your houses will sell faster and you'll gain more prestige—as these delighted builders will tell you!!!



"Everything for approximately \$65.00 a month — includes taxes, interest, and principal." That's what attracted and sold prospects who saw this Oman' & Sons home equipped with a complete General Electric Kitchen-Laundry!

____ "Sold 125 houses in 10 days!"

arthur H. Oman

• Mr. Arthur H. Oman of ARTHUR OMAN and SONS, Brockton, Massachusetts, says:

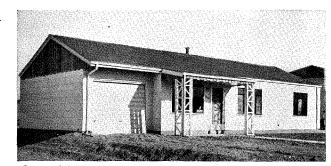
"We sold all the houses in ten days, due to the right combination of houses and appliances. Tens of thousands went through the Model Home . . . were favorably impressed with the complete line of General Electric appliances."

"We sold 54 the first week end!"

• Mr. J. J. Carey of Hutchinson and Carey, Denver, Colorado, says:

"We offered three bedroom houses for \$9850. The first week end we sold 54 and they have been moving steadily ever since.

"We feel that General Electric equipment contributed in a great measure to this successful operation."



General Electric range, refrigerator, automatic washer and steel cabinets are included in the \$9850 Hutchinson and Carey homes. Today any home buyer can afford a G-E Kitchen-Laundry.



"A low-cost luxury home with fully equipped General Electric Kitchen worthy of a \$30,000 home!" That's how Kensington advertised and sold 250 \$9990 to \$10,990 houses in 10 days!

"Sold 250 houses in 10 days!"

Northan Brisker President of KENSINGTON

Output

Outp

 Nathan Brisker, President of KENSINGTON ESTATES, INC., Brentwood, Maryland, says:

"The phenomenal success of our project, in our opinion, is due to a soundly built house well planned, good financing, and the complete General Electric Kitchen. The public deserves better living in the lower-priced home!"

jest as builders do!!



"Sold our 67 houses the first Sunday!"

Caladain

• Mr. E. A. Ballin of Hewlett Harbor Construction, Inc., East Rockaway, L. I., N. Y., says:

"Our model house was featured in national magazines and thousands visited it. The item which caused the greatest comment was the G-E Kitchen. We sold the entire development—67 houses—the first Sunday!"



In the Ballin Houses there are complete General Electric Kitchens! Today it's possible for you to offer General Electric Kitchens at a price any homeowner can afford!



The buyer of this Spurr Home saves on operation and maintenance of efficient General Electric appliances...often enough to cover the slight increase in monthly payments.

"Sold not only the 40 houses, but 37 additional!"

Many & Wagner

Mr. Mark S. Waggener, President of SPURR HOMES, INC., Denver, Colorado, says:

"We held open house for 3 days . . . sold not only the 40 houses under construction, but 37 additional on the basis of many factors in the house, particularly the General Electric Kitchen!"

"Sold 44 houses from 1 sample in 1 day!"



Mr. Ralph Talbott, President of the Talbott Building Co., Baltimore, Maryland, says:

"We produced a sample home here with complete General Electric Kitchen... advertised it one Sunday. At the close of business we sold 44 houses to be built at Lochearn." (A week later a total of 71 houses were sold!)



Included in each of the 160 Talbott homes are the following: General Electric dishwasher and sink, 52-gallon electric water heater, electric range, Disposall® and cabinets!

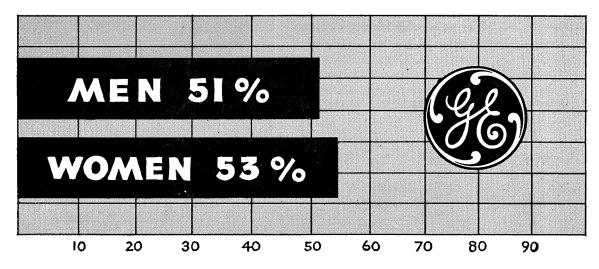


To help <u>you</u> sell more houses...

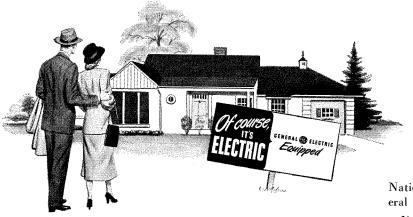


General Electric offers you merchandising

High national acceptance for General Electric equipment means faster turnover for your homes!



People prefer General Electric appliances to all other brand names combined!



Join in . . . make the #1 winner work for you!

National surveys show that your prospects prefer General Electric appliances over all other brand names!

You owe it to yourself to take advantage of this high consumer preference . . . a preference that helps presell your houses.

a <u>GOMPAGE</u> program!!

2

Include electrical living for as little as \$4.80 a month!

You offer your prospects the added advantage of complete electrical living when you include the G-E Kitchen Package in the long-term realty mortgage.

Everyone who can afford a home can afford an extra few dollars a month for a General Electric Kitchen! Further, the economical operation, low maintenance and long life of General Electric appliances may offset the slight increase in monthly payments!

3

Tested builder advertising and promotion plans!

Your General Electric distributor is ready to offer you a complete merchandising program, supported by tested builder advertising and promotional material . . . all designed to help you sell your homes faster.

Make the most of these tested plans that have helped so many builders throughout the country. Contact the General Electric distributor in your area.

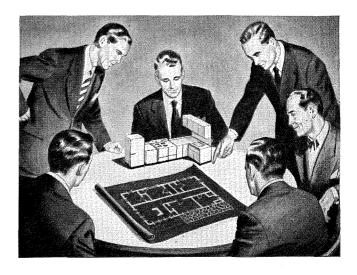


Architectural Consulting Service for you!

Visit the General Electric Home Bureau in Booths No. 74 and 75, and sit down with us at our roundtable. There will be General Electric planning experts there to talk with you about your 1950 projects.

Our Architectural Consulting Service, we believe, can be of great assistance to you in designing and improving kitchens and layouts for *your* houses!

You've all to gain by bringing your house plans to Chicago. However, if you can't be at the Convention, contact your G-E distributor, or just address a note to us and we'll see that you receive all the facts you need. Home Bureau, General Electric Company, Bridgeport 2, Connecticut.



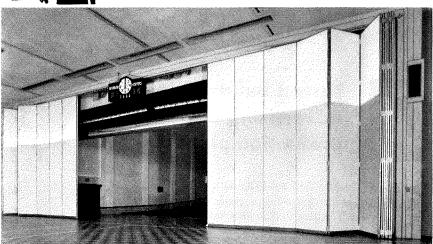
You can put your confidence in-





Quick Change"... Three-R Style

R-W DeLuxe FoldeR-Way Partition FULLY AUTOMATIC—ELECTRICALLY OPERATED



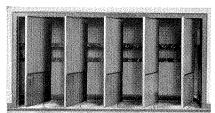
R-W DeLuxe FoldeR-Way Partition, bi-parting, 64' x 22' opening

Just a turn of the switch key and the R-W DeLuxe FoldeR-Way Partition goes into operation silently and swift-.. locking and unlocking, opening and closing automatically! Designed specifically for school gymnasiums, auditoriums, stages and other high or wide openings-no matter how large to be closed against light and sound, electrically operated FoldeR-Way Partitions are the answer to presentday problems of economy in space and expenditure. They transform any large indoor area into two smaller

ones-a quick change made entirely without manual effort.

Yes, you turn the switch key and R-W does the rest! DeLuxe FoldeR-Way locks to the floor without floor bolts, keepers, guides, tracks or manually operated sealing strips, pressuresealing itself to the floor for complete soundproofing. When bi-parting partitions are installed, both halves are synchronized to operate simultaneously—all sections are full-size, equal width doors folding in accordion fashion into jamb or pocket.

R-W Offers a Complete Line of Single and Multiple Action Classroom Wardrobes



R-W No. 833 Multiple Action-Master Control Door Wardrobe

Richards-Wilcox Classroom Wardrobes are outstandingly popular because they are designed to give maximum space for pupils' wraps without overcrowding-because simplicity of design and installation in wall recess means low cost. Wardrobes are available in Single or Multiple Action-Master Control Door units with mounted slate or cork boards. Each door opening accommodates eight to ten pupils.

Also...

Uninterrupted R-W Service to HOME, INDUSTRY and FARM

Since 1880

- industry, conveyor systems to solve any verhead handling problem.
- In the home, R-W Silver Streak Vanishing Door Hangers and Aluminum Track afford quick, economical conversion to space-saving Disappearing Doors. Complete hardware for modern overhead garage doors.
- For the farm, barn door hardware up to any size, gable door fixtures, stay rollers, latches, etc., that perform up to par year after year.

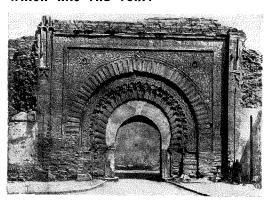
Get all the facts about Richards-Wilcon cost-cutting, space-saving FoldeR-Way Partitions and Classroom Wardrobes now write today or call your nearby branch office for complete information without obligation.





1950

WHICH HAS THE TONI?



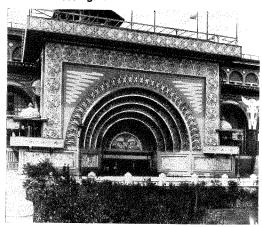
Morocco's Twelfth Century gate

Forum:

Relative to the Forum's recent interest in Louis Sullivan ("Genius and the Mobocracy"—FORUM, Aug. '49), I thought that you might find this picture of a Twelfth Century Gate in Marrakech. Morocco, of interest. When compared with a photograph of Sullivan's famous Transportation Building at the Chicago Fair of 1893, the reaction might well be "which building has the Toni?"

> GEORGE SMITH, Architect Springfield, N. Y.

Sullivan's 1893 "gate"



TICKETS FOR FURNACES

Forum:

On page 160 of your November issue you list United Air, Inc., Seattle, Wash., as the manufacturer of various new domestic air heaters. Assuming this to be correct, I wrote for informa-

United Air Lines replied: "We are in the airline business, and we would be glad to sell you a ticket any place that you would like to go, but we do not make furnaces. . . . "

Can you clarify this for me?

C. D. AMANN, Builder Stockholm, N. J.

• FORUM apologizes to United Air Lines, United Air Heaters, Inc., of Seattle and to FORUM's misguided readers.-ED.

(Continued on page 74)

Who lives in the penthouse?



RING OFFICE BUILDING, Washington, D. C. Architect, Ring Engineering Co., Inc. Designer, Francis L. Koenig. Engineer, Karsunky, Weller and Gooch, Washington, D. C. Contractor, Mehring & Hanson Company, Arlington, Va.

Air conditioning does. In the new Ring Office Building, Washington, D. C., all of the mechanical elements of the Carrier systems are located in a penthouse on the roof. This novel design provides extra office space in the basement, all but eliminates condenser water mains.

The Carrier Conduit Weathermaster System saves space, too. Small-diameter conduits take the place of bulky ducts, require only about 15% of the space. Another Conduit advantage is that the tenant may dial the climate he prefers.

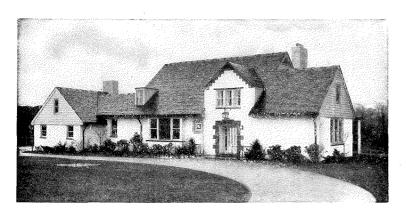
Does this advantage draw tenants? Does it pay off? The Ring Engineering Company say "Yes," and have ten years of experience to back them up. Because the first Carrier Conduit Weathermaster System to be installed in an apartment building went into their Marlyn Apartments in 1938.

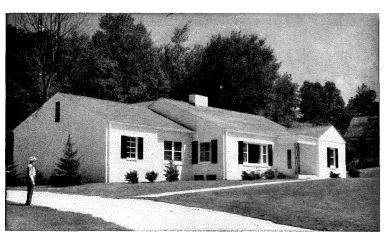
Now, in the Ring Office Building, they're getting a "second helping." And that is pretty good evidence that Ring Engineering Company thinks that Carrier is their best investment. Carrier Corporation, Syracuse, New York.



AIR CONDITIONING . REFRIGERATION . INDUSTRIAL HEATING







The Cycle of Contentment in Our Surroundings is Ever Changing

In widely-separated areas of the United States, these modern homes testify to the substantial quality and beauty offered the owner when THOROSEAL is used for exterior masonry protection.

THOROSEAL, to fill and seal masonry surfaces of brick, tile, manufactured block, stucco, adobe or poured concrete,

QUICKSEAL, in many beautiful tints, to finish off the surface.

The attractiveness of home, office, factory, warehouse, farm or commercial structure of any type is in its adaptability to change. QUICKSEAL (finish coat), in selected color tints, offers many desirable changes.

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

For The THORO System Guide, for the designer and specification writer, consult WATERPROOFING section of 1950 Sweet's Architectural Catalog, 9a/18,

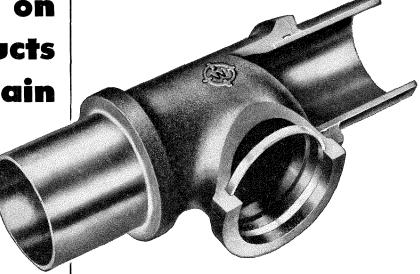
Write for our 20 page brochure, pictorially describing masonry problems, and specification writer's wall chart.



Standard Dry Wall Products BOX X. NEW EAGLE . PENNA.

DON'T BE SATISFIED WITH HALF-WAY MEASURES...

insist on Walseal® products and be certain



- the **FACTORY INSERTED** Ring insures FULL PENETRATION of the Silver Alloy...a perfect joint

Today, contractors... builders... architects are using brazed connections, in ever increasing numbers on their brass and copper pipe runs. However, they must be certain that the correct brazing alloy is used; that the joint has penetration of alloy up the shoulder of the fitting.

That's why more and more are turning to Silbraz® joints made with Walseal valves, fittings and flanges which assure the proper amount of alloy with no waste. They know that the finished joint not only will withstand hydrostatic pressure, but it will also withstand terrific impact and vibration — in fact, no correctly made Silbraz joint has ever been known to creep or pull apart under any pressure,

shock, vibration or temperature which the pipe itself can withstand.

Furthermore, it is a relatively simple operation to make a Silbraz joint — no heavy scaffolding need be erected . . . just cut the pipe, flux, assemble, then braze, following the technique recommended by the Walworth Company. A silver brazing alloy — FACTORY INSERTED — in each port flows out when heated with the oxyacetylene torch, making a joint that is stronger than the pipe itself . . . a one-hand operation, with the mechanic out of the path of the deflected heat — at all times.

For full information about Silbraz joints made with Walseal products, write for Circular 84

WALWORTH

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

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD



The smooth, glass hard, vitreous porcelain interior surfaces of the Admiral Shower provide the ultimate in cleanliness and sanitation, they remain white and impervious to wear for a lifetime. Exterior of side and back panels are regularly finished with vitreous porcelain enamel ground coat, but can be furnished to match interior at small extra cost. Front stiles and head rail, bonderized, galvanized steel finished in white synthetic baked-on enamel. Receptor, deep type terrazzo made of black and white marble chips and white cement. Sizes $36" \times 36" \times 80"$ and $40" \times 40" \times 80"$. Illustration shows this shower equipped with a Fiat Dolphin heavily chromium plated glass door. The Admiral shower is suitable for high grade residential and institution installations.



Complete specifications in Sweets' Architectural Catalog File, or write any of the three Fiat plants for catalog.

FIAT METAL MANUFACTURING CO.

Long Island City 1, N. Y. Los Angeles 33. Calif.

ers are made by Porcelain and Metal Products, Ltd. Orillia, Ontario

SCHOOLS

Forum:

The October issue of FORUM is a tough job well done. Our hats are off to you for calling a spade a spade and showing actual examples of the monumental monstrosities that many school boards are building all over the country. I think that Bill Caudill did a good job on school site location in the community and only wish that the importance of that item could be stressed more and more.

Schools located on highways, thoroughfares, etc., for "easy access" are poorly planned schools in my opinion, even though they incorporate the latest in lighting, ventilation, etc. I think the importance of the relationship of the building to its environments and proper placement in the community is a phase that has been too long neglected. Perhaps it may be argued that this gets into city planning, but after all, architecture should be part of city planning and vice versa.

> CHARLES GRANGER, Architect Austin, Texas

Forum:

I was pleased, indeed, to find the entire October issue given over to schools.

Although our business is school art supplies (Crayolas), I think that the greatest art service that can be rendered the schools of today is promotion of more practical buildings.

I would like to pass the good gospel on to the many school people I meet in my Middle West territory and hope you printed a generous stack of this special reference issue which should go to every school superintendent in the nation.

> SIGRID RASMUSSEN, Art Consultant BINNEY & SMITH CO. Menomonie, Wis.

 \bullet A limited number of extra copies are available at \$2 each.—Ed.

Forum:

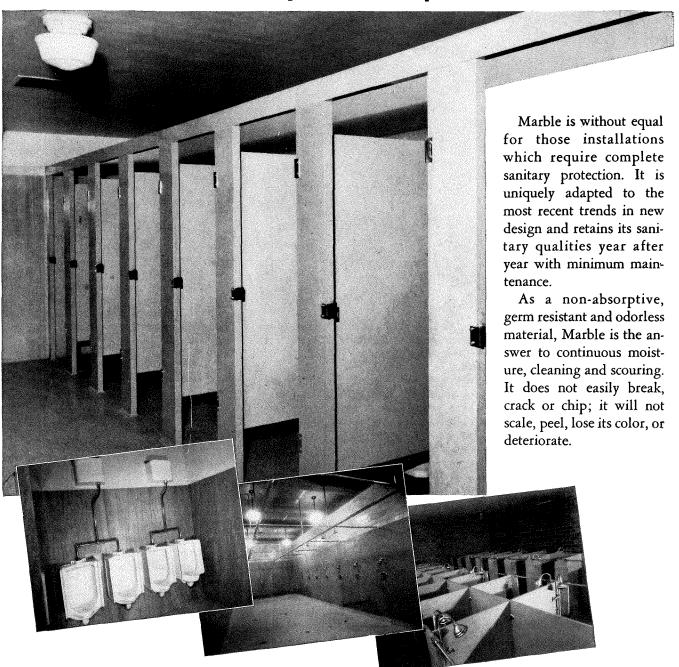
Shame, shame on FORUM.... The October cover quickly caught my eye and also a very obvious mistake. Why in heavens name does the light from the windows come from the right of the students? Has it not been accepted that the light should enter a classroom from the left so the shadows cast do not interfere when the student is writing? And if the FORUM answers, "There are also windows on the left of the students," then will not two shadows be cast upon an object on a flat surface?...

> EDWARD W. BETTKE $Chicago, \ Ill.$

• Forum's symbolic cover classroom was lighted trilaterally, which cuts down shadows even more than bilateral lighting. If the room had only the one window wall shown, the desks would have faced the opposite direction.--En.

marble

is a sanitary cloak of protection ...



Write for latest literature on foreign and domestic marbles.



Marble Institute of America, inc.

108 FORSTER AVENUE, MOUNT VERNON, N. Y.

Command Performance



t was midnight some 175 years ago that a man rode through the countryside calling his neighbors to arms.

Freedom was at stake.

History with deadly finality records the outcome of the struggle set off by that ride-a struggle that ended in freedom for all the people of this country—a freedom we take too lightly today.

Maybe it's because 175 years is a long time and none of us can remember that far backmaybe it's because we have gotten used to this thing called freedom-maybe it's because we have had it so long we can't imagine life without it-maybe we believe we just cannot lose it.

But we can!

Today, the threat against the freedom of the American people is as great as it was that memorable night 175 years ago. In some sense greater. Guns do not threaten us-not yet at least-but an idea, a plan, artfully disguised, promises us the "secure" life.

What will it cost? Not much-just our freedom.

Now, let's forego all the high sounding language and get down to cases. What threatens our freedom?

The threat is two-fold . . . from the outside and from within. It isn't hard to identify the danger from the outside. Some twenty years ago, the leaders of Communism and Socialism brought their threats into sharp focus when they declared their operating policies for the future. Both contained a simple philosophy. Bore from withintake a little at a time. Usurp high office-guide the evolution until it becomes complete.

Has any of that happened?

The Communist trials in our country have been most revealing. Every day the press and radio tell us of new infiltration into high places. Nor have the ranks of labor escaped.

What about the inside?

That can easily be answered by another question. Do the American people have as much freedom of use of the money they earn as they did ten years ago? They do not! More people surrender a larger part of their money for tax use than ever before in history. More restrictions curb more people than ever before. More compulsion over the entire populace is advocated. It is a mounting trend becoming more inclusive every year. All of this is offered under the glib promise of liberating man from economic servitude-of a planned life-a total welfare.

So, we have the two threats...one from the outside and one from within.

It is doubtful that the American people are fearful that Communism will take over our country in the foreseeable future. It is doubtful too that they are unduly alarmed that Socialism as a method of government will replace our govern-

But, what they do not understand is that a creeping Socialistic pattern is spreading itself from within-that it can advance to a point from which there can be no retreat. Because this Socialistic pattern moves forward a little at a time, it is not spectacular enough to be recognized for the dangerous thing it is. It is so easy to accept glittering promises-broad generalities, that mask the eventual result.

So, what is to be done about it?

We believe the state of the nation calls for a Command Performance from Business-a performance to stop this creeping Socialistic pattern which threatens the freedom of all.

Why does business get the call? There are two reasons.

First, business should do this job because of its obligation to people. That is not a new contention at Ceco. For three years, Ceco has been advancing the thought that the prosperity and security of our nation are tied unremittingly to a four letter word W-O-R-K. Ceco has said and still says management must work more at managing. We believe this job is the most important task in the over-all concept of management. It is

for American Business

up to alert management to provide real security in the present, as well as the future, to prove that responsibility for economic welfare belongs in private, not in public hands.

The second reason is that business—business men—are the best qualified for the job because American business knows most about selling. Businesses grow because business men sell their product. Is merchandise more important than the system which produced it? Isn't the system worthy of our best selling talents too? Yes... Business must and should sell the idea that real security and freedom for all are possible only under a virile free enterprise system.

Business must expose the alluring misrepresentations that spawn the myth "you can get something for nothing." It must boldly proclaim the simple truism that welfare projects cost money-cost the people their own money. For government has no money except that which is given it by the people through taxes. It must show that excessive taxation is creating a competition to industry which is challenging its right to lead-its right to guarantee economic freedom to people. It must question the cost which could be more than money. Unchecked, taxes can bankrupt the people, bankrupt business, thus making it impossible for individuals acting in private capacities—for business, through free enterprise management-to provide jobs. improve working conditions, assure real security.

It was protest against excessive taxation that occasioned the midnight ride 175 years ago. Now, as then, the same danger threatens.

Yes, freedom is at stake!

Business must create a crusading attitude toward free enterprise. Here the problem is not simple. For lately, the people are taking lightly our system of private endeavor which has had a moving influence on life around the world and given us the highest living standards ever. They are "going along" thinking little of where it leads. They are not yet alarmed. Therefore, unreserved belief in that which we so casually call the American Way of Life must practically be revived. New vigor must fire appreciation of the system of individual effort and reward. There must be reaffirmation of faith in the dignity of man, in the real security to be found only in the individual acting in self-interest guided by conscience and a sense of fair play. All the people must be awakened. There must be 150 million individual crusades in this country, acting in concert, to keep the American Way of Life vital.

Business men must light the fire of a passionate belief within all the people—a belief in our way of life that burns brighter than any fanatical faith in the destiny of any other system.

Once the people know the danger, once their enthusiasm for incentive living reaches crusading fervor, they will know how to act. They will see through the will-o'-the-wisp promises of an inexhaustible public purse. They will recognize the fallacy of "something for nothing." Their "horse-sense" will renounce it. But to bring all this about, business men must become vocal. Each business must inform its own people. From little companies employing only a few, to big corporations employing many thousands. This program can succeed. The drift toward public dependency can be stopped but business men must be articulate and act decisively.

Mr. Chairman of the Board, Mr. President of Industry, Vice Presidents, Managers, yes—all of us—must get off of our pants and into the plants. We must meet with the people...talk with the people...work with the people. This isn't something that can be done by writing a check!

Let's accept this call for a Command Performance now! Today!! This very minute!!!



STEEL WINDOWS AND DOORS • METAL SCREENS • ALUMINUM STORM WINDOWS • COMBINATION WINDOWS AND DOORS • METAL LATH • STEELFORMS • REINFORCING STEEL • STEEL JOISTS AND ROOF DECK • ROOFING PRODUCTS

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Get complete information on the latest Flintkote developments in these popular products for interior finishes. Write: The Flintkote Company, Building Materials Division, 30 Rockefeller Plaza, New York 20, N. Y.



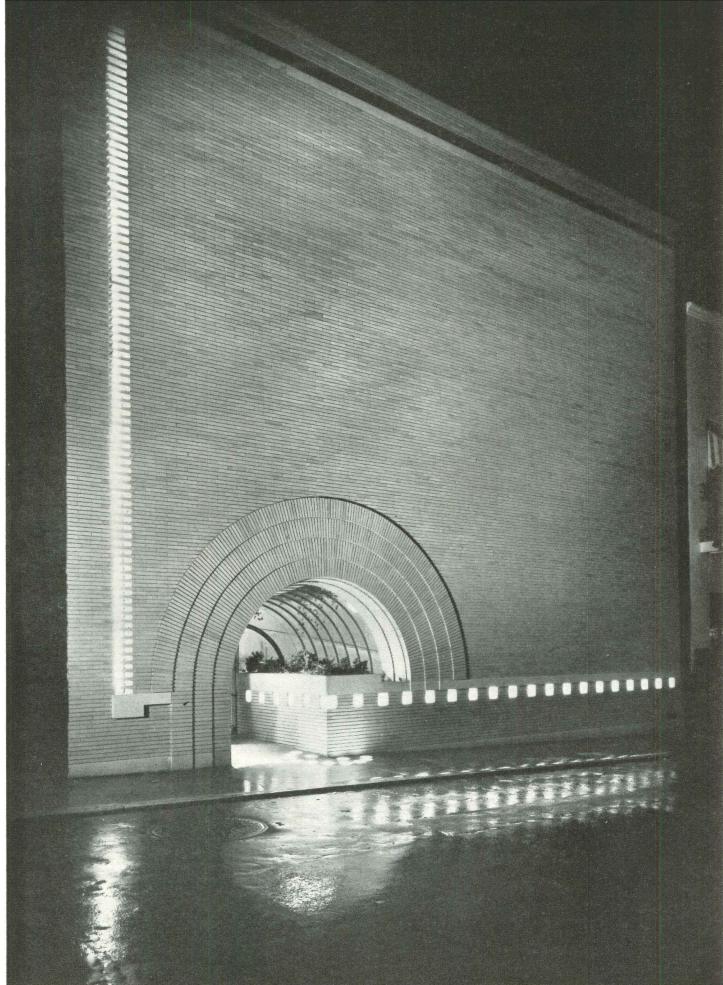
FLINTKOTE BUILDING BOARD is an economical insulating and structural board 4' wide, available in a number of lengths. The factory-finished White surface can be painted without priming, or installed without further treatment. Flame resistant surface finish conforms to U. S. Dept. of Commerce Commercial Standard CS42-49 Class F.





In addition to the same colors as the Tile (above), FLINTKOTE INSULATION BOARD PLANK is available in the new Gray-tex and Green-tex finishes. Widths are 8", 10", 12" and 16"; lengths: 8', 10' and 12'. Flame resistant surface finish conforms to U. S. Dept. of Commerce Commercial Standard CS42-49 Class F.





Photos: Maynard Parker

CHINA AND GIFT SHOP BY FRANK LLOYD WRIGHT FOR V. C. MORRIS, MAIDEN LANE, SAN FRANCISCO, CALIFORNIA

THE ENTRY ARCH (BELOW) IS HALF GLASS AND OPENS TO A CIRCULAR SPACE DEFINED BY SPIRAL RAMP TO A MEZZANINE.

World-wide repercussions followed the opening of Frank Lloyd Wright's brick-front, circular-roomed, spiral-ramped San Francisco store. This many-sided impact is conveyed in the words of a front-rank architectural observer, of the owners, of the plastic consultant, finally the architect.

Said the observer of architecture:

"After doing everything but stores for 40 years, Frank Lloyd Wright emerges with this iconoclastic shop for V. C. Morris, San Francisco dealers in modern silver, glass, china and linen. "Today every freshman architect, every Main Street merchant, knows that a modern store has an open front and a free-flow plan. Frank Lloyd Wright knows these things too. He might even be said to have invented them. And it is in full and happy consciousness of heresy that he has chosen to ignore them, along with all the other clichés of contemporary store design. "Instead of the conventional open front, his shop presents to its narrow street a big blank wall of golden yellow brick.

"Instead of the conventionally open plan, there is a great spiral ramp modeling the interior into sharply defined sales areas. "Instead of conventionally correct 'scientific' lighting, illumination is here that is indefinable, atmospheric.

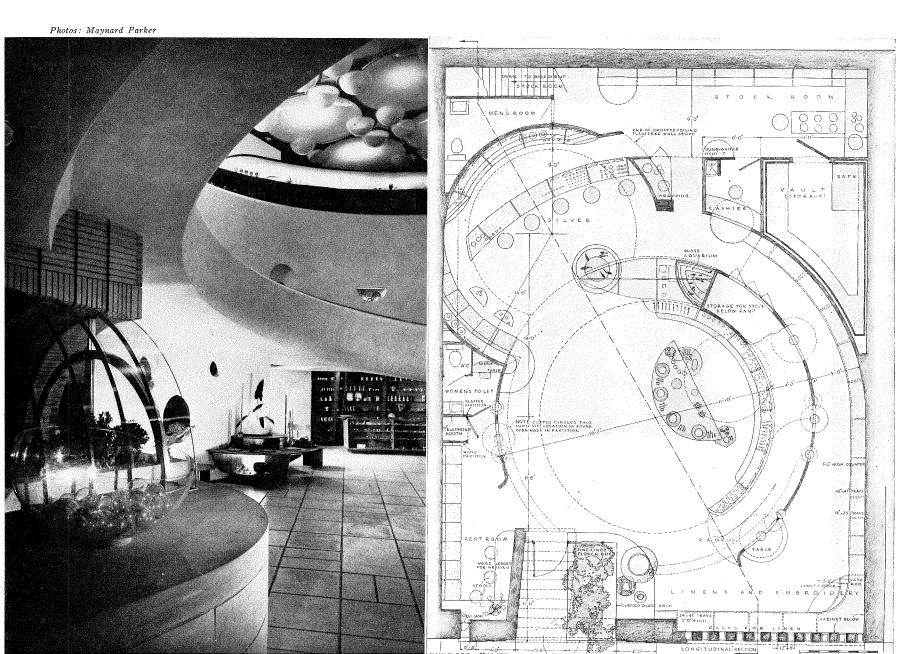
"Even the display technique is unorthodox, for most repetitious articles are stored out of sight, and visible merchandise is treated as part of the architecture.

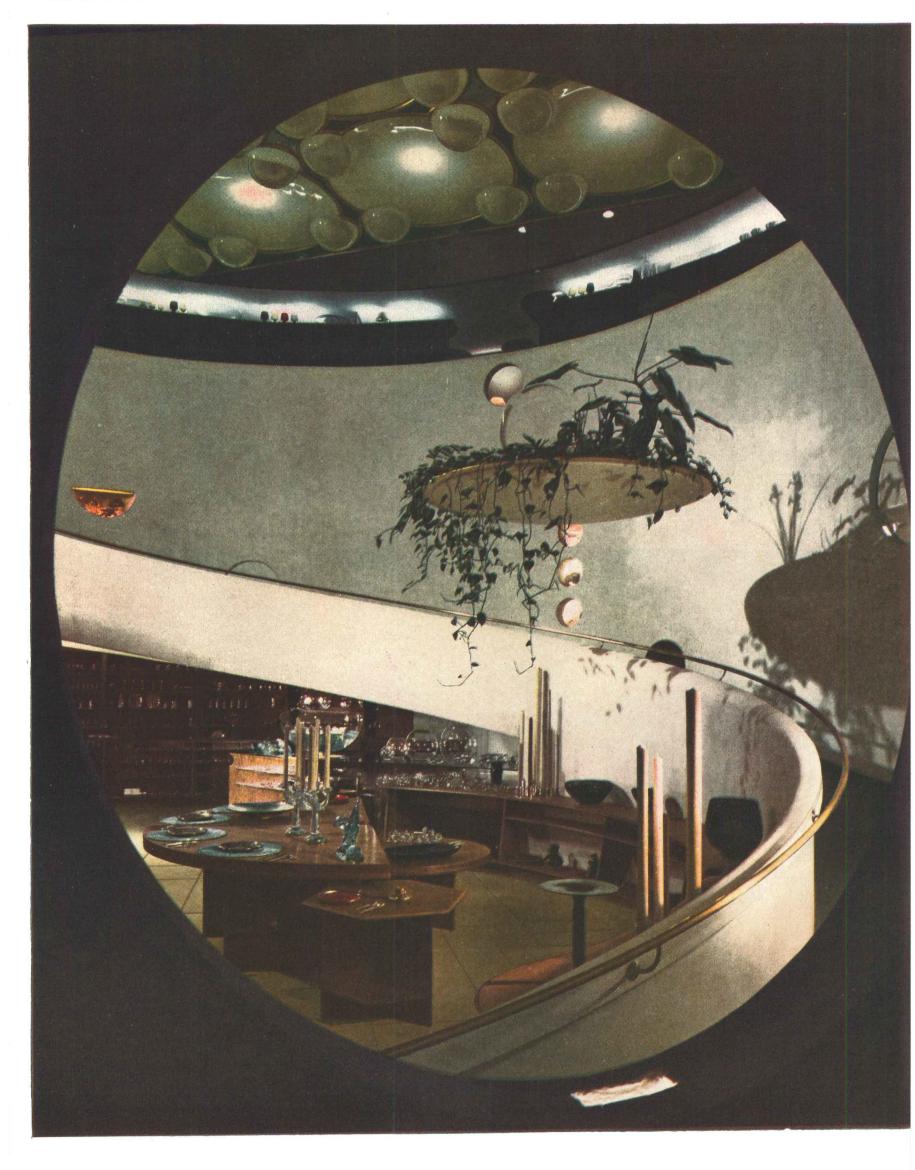
"The architect has flouted every 'rule' of modern merchandis-

ing, yet everyone must admit that the store works at least as well as its stereotyped contemporaries. Are the rules too simple? Or does it take a master architect to play the game his own way and still come out ahead?

"Consider the facade. It is not open, nor is it truly shut, for the wall is negated as snobbish barrier by the compelling invitation of the funneled archway and negated as awesome mass by the paradoxical brick-into-glass entrance vault that reveals the brickwork as a thin veneer. The passerby is arrested by the bold bare wall, quiet, urbane, elegant among its vociferous neighbors, and is tantalized by his glimpse of the interior. Anticipating delight through surprise (an emotional sequence generally overlooked), he tends to accept the invitation of the flaring arches.

"Inside he finds release in a world of undreamed fantasy, all gold and gray and white, dominated by a ramp that spirals up like Jacob's ladder—or a wave checked in its break—toward light that filters through a translucent screen of plastic disks and half-bubbles, clustered in brass tubing and suspended beneath skylights. The circular spiral of the ramp is the pervading theme, developed in endless variation: reduced to disk or hole, elongated as cylinder or tube, blown into domes and spheres. Shapes of mass and void become complex, involute, as these basic forms cut through each other in space and light, yet it is all so vigorously organized that the total effect is one of singleness, breadth and peace.





RAMP EMERGES UNDER A LUMINOUS PLASTIC BUBBLE CEILING WHOSE BUOYANT OPALESCENCE HAS DEFIED PHOTOGRAPHY.

"The visitor tends to extend his pleasure from the building to the wares displayed in the satiny black walnut cases and the circular wall niches. His transformation into a customer is accomplished with dignity and dispatch.

"The shop is in a way an autobiographical sketch of its architect, from the arch-pierced masonry wall in the grand tradition of Richardson and Sullivan to the spiral ramp of the museum for New York. Yet its glance is not behind but ahead. And if Frank Lloyd Wright is as prophetic here as he has been in the past, we may confidently expect a revival of that half-forgotten, half-remembered element of architecture—the Wall."—Elizabeth B. Mock

Said the owners:

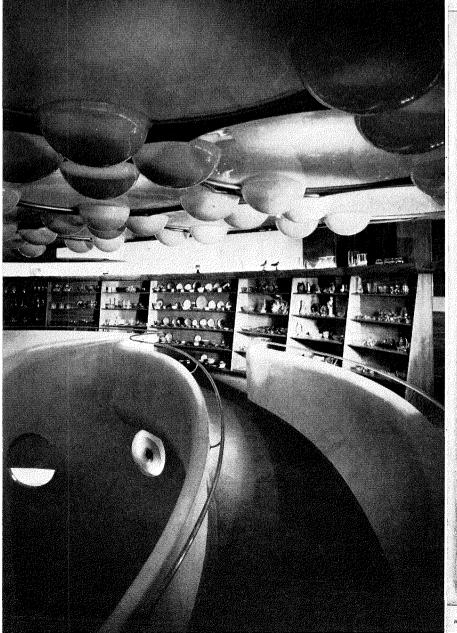
"As visitors (from the world over) enter through the arch they stand for a moment to gaze at the rhythmic spiral forms of the central ramp, on and up to the patterned fantasy of the hanging screen with its groups of luminous opalescent bubbles appearing to ascend in clusters through the ceiling. It is for them a breathless moment. . . .

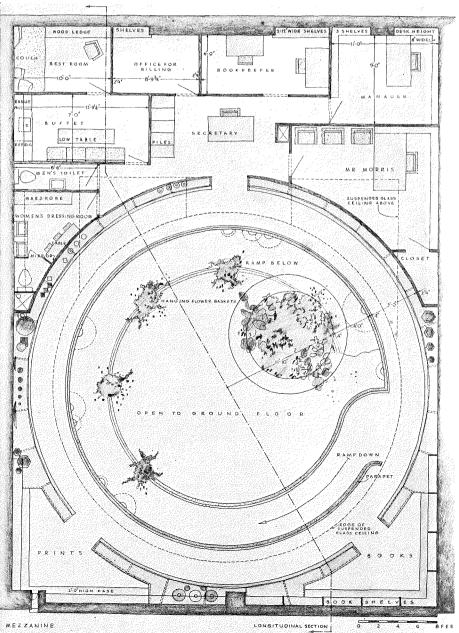
"Our needs were practical as well as esthetic: an architectural setting for the display of glass and silver, china, linens and art objects for the contemporary home, and a place where combinations of these accessories can be leisurely assembled and chosen. Low comfortable benches are needed where one

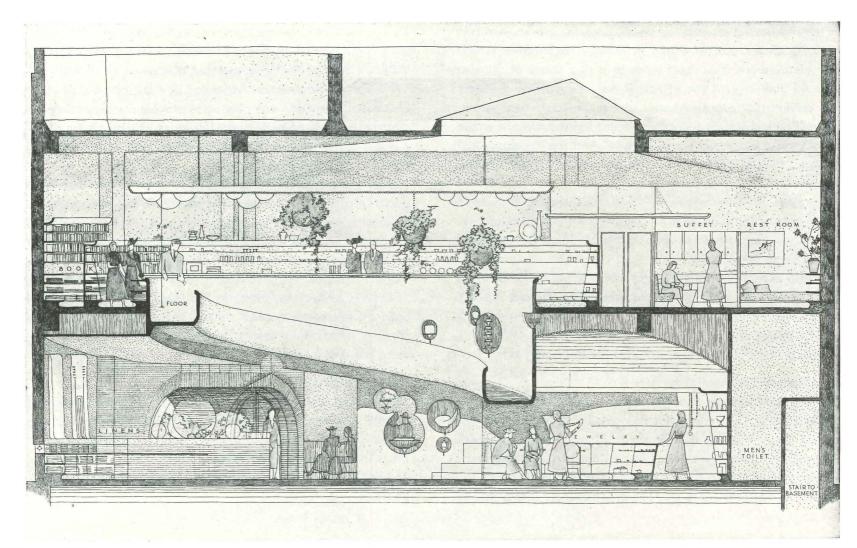
may experiment with combinations of silver, glass and china, or may consider and study an object of art in relation to one's home or as a suitable gift. Without sacrificing spaciousness, drawers and shelves are conveniently incorporated. . . .

"We were scared to death to ask so great an architect to help us, but he said we need not be, it would be a pleasure. Instantly he decided that we would use a ramp: a staircase would be too tight, an elevator would want more height. We had thought of the ramp as straight but here it came, the easiest shape to negotiate. We have had old people walk up the ramp who could never have climbed stairs—one of them old Joe Magnin, about 89, who said he never would have missed it, the ramp is as easy as the San Francisco hills. . . . An architect from Melbourne said: 'You have accomplished the ultimate in free movement. Instead of going here and there to buy this or that, one naturally follows the circle to see things and makes up one's own mind. Most stores are confusing and distracting. Here you can find everything. . . . '

"The ceiling was a victory snatched from defeat. To mask two skylights, 30×15 ft., the architect intended a so-called "mosaic screen" of flash glass which building regulations rendered difficult. We had found a little man in the city who had already made for us models in plastic of the little windows for the front. They were inexpensive, Mr. Wright thought them wonderful, said we must have the same material for the ceiling. He called









FROM ABOVE, CUSTOMER LOOKS DOWN ON TRY-OUT TABLE WHERE PURCHASES CAN BE SEEN IN COMBINATION. AROUND THE PERI-

in the plastics representative, worked out the screen, which is a 40 ft. square, cut off at the corners by the circular screen wall of the room. You don't think of it as a shape at all, you look up and it gives the effect of New Year's Eve. Sunlight and daylight constantly change the opalescent color; sometimes it is sky blue. At night fluorescent lights make the whole ceiling glow, but they are not evident. And the necessary evil of the sprinkler system is turned to account as part of the design. . . .

"A surprising experience has been that the integrity and beauty of the building, silently and insistently discarding anything unworthy, demands of each article shown the same inherent beauty and integrity.

"Some 500 to 1,500 people a day come to see us. One in ten buys. We are learning to navigate the place, to take care of these great numbers; we are doing very well, and we have a more national business than we ever had before. We don't know whether publication will do us good or swamp us."

Said the plastics representative:

"A local firm working closely with the architect fabricated the plastics parts. The ceiling was composed of 24 large concave domes, 6 ft. 8 in. in diameter plus flange, and 96 convex domes, 22 in. in diameter plus flange. Domes in both sizes were formed from 3/16-in. thick sheets of acrylic plastic.

"The smaller domes were free blown. The larger domes had to

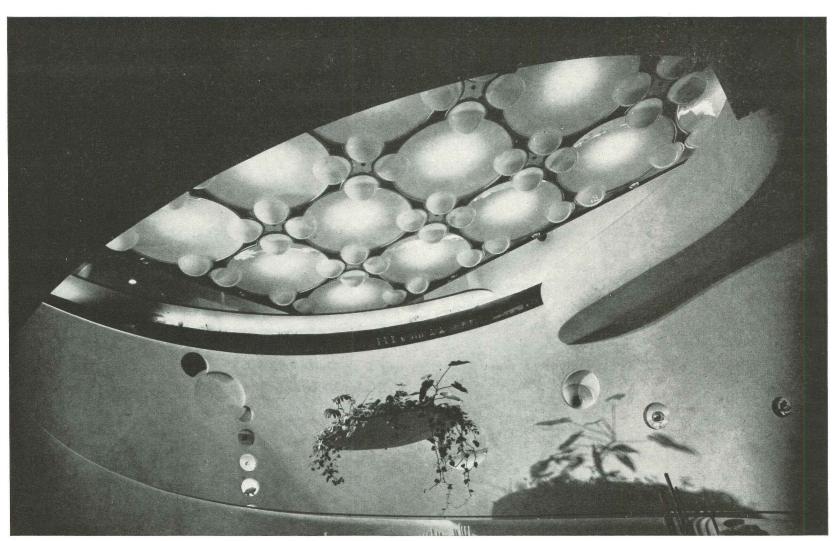
be formed from four sections, cemented together. All plastic parts were waxed with an anti-static coating to neutralize static electricity which might attract dust particles from the air. "The plastic domes were suspended in a lattice work of steel. Flexible construction was needed to provide for expansion and contraction of the plastic material, which also had to be firmly enough attached to withstand vibration from heavy passing traffic or possible earth tremors.

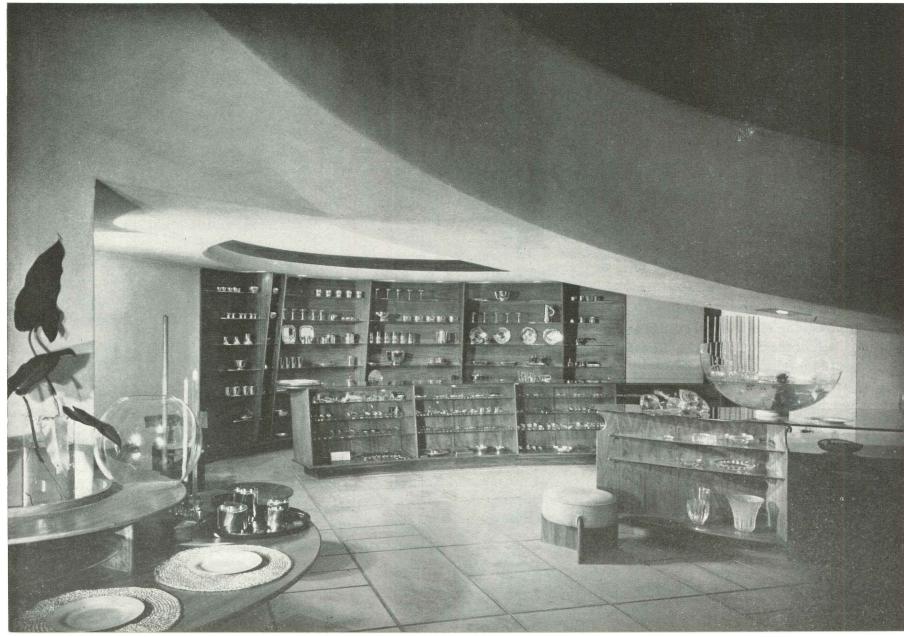
"Other plastic installations were shelves of 3/4-in. thick clear acrylic plastic which rest on solid spheres of the same material imbedded in bronze. The spheres are lathe-turned from acrylic blocks of 7 in. cube. A 38 in. hemispheric bowl of clear plastic holds aquatic plants and fish; a 4 ft. globe holds flowers. This, like the fish bowl, is free blown of two hemispheres, cemented. "Forming perfect hemispheres by the free-blowing method calls for extremely careful control of heat and air pressure. Making functionally strong and decoratively acceptable cement joints is a painstaking process of hand skill."

Said the architect:

"Untrue to say that any store I have done or might do either 'upsets' any 'rules' of 'commercial architecture' or sets up new ones of its own. Correct to say, that what unfailingly interests me is the exception, as necessary to prove any rule both useful and useless. In organic architecture every opportunity stands alone."







MACY'S KANSAS CITY STORE packs a merchandising wallop

through unified design of three buildings and complete interior flexibility

Architects: KIVETT & MYERS, Kansas City DANIEL SCHWARTZMAN, New York GRUEN & KRUMMECK, Los Angeles PFUHL & SHEIDLER, Structural Engineer
WILLIAM CASSELL, Mechanical Engineer
WINN-SENTER CONSTRUCTION CO., General Contractor

In Kansas City now, when they take you around to see the sights, they point out the Art Institute, the War Memorial, the hotel where the President stays—and the new Macy store. This \$7 million bid for the Southwest's shopping dollars is the first big piece of "modern" architecture Kansas City's 800,000 inhabitants have ever seen. It is also the first real chance "modern" architects have had anywhere in the U. S. to show what they can do for the big downtown department store.

Last Christmas when some 45,000 shoppers a day pushed through the glittering glass arc of entrance doors, president Richard Roth knew that his new building was already paying off handsomely. He had counted on this investment to help run the little business which Macy's bought in 1946 up to three or four times the old store's volume. By Christmas, sales in the new store were already running close to three times the year before and the store's design—from the handsome windowless facade to the skylighted garden tearoom on the top floor—was the talk of Kansas City. It will be the talk of informed circles in a good many other places for some time to come.

Most of the nation's best store architects had had a hand in planning this first big building move in R. H. Macy & Co's postwar "we belong to the nation" program. Gruen & Krummeck planned three floors, Daniel Schwartzman planned four floors, a young firm already tops in Kansas City, Kivett & Myers,* planned the building as a whole and the main shoping floor. Back of these firms were the contributions of many others: Ketchum, Gina & Sharp as consulting architects on interior design for all Macy stores, Ernest Born for experimental work on the "flexible" ceiling, Voorhees, Walker, Foley & Smith as consultant on the building, Richard Belcher, Macy's staff architect, and J. Buckley Bryan, Macy's corporate engineer. President Roth knew how to give his architects both a free hand and the full benefit of his own astute merchandising sense, and from this combination he got what may well be the most efficient selling tool yet developed in the department store field. Architects and store owners all over the country will do well to study it before they commit themselves to any plan which does not take into account such developments as:

A flexible dry-built acoustical ceiling which makes possible overnight changes in lighting plan and yet costs less than a conventional plaster job.

A flexible system of aluminum partitions and curtain walls which can be shifted at will to enlarge or contract depart-

ments overnight as selling seasons alternate.

Flexible sales fixtures which display up to 250 per cent more merchandise than the conventional table or counter.

A 30 ft. entrance setback which Roth calls "the most exciting surprise I got from the finished store."

The highest ratio (67 per cent) of direct selling area yet produced in department store planning (55 per cent is the usual ratio).

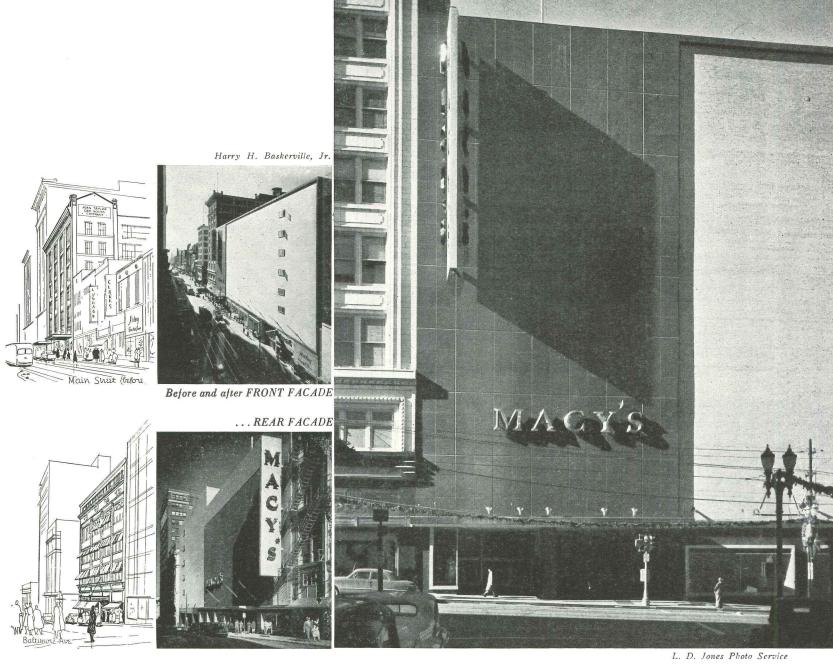
If the Kansas City store meets the store operator's dream of complete flexibility, it can also be said to meet the shopper's dream of complete intelligibility. It is a store where the shopper can not only see more merchandise openly displayed than she ever saw before; she can also see her way around. Back of this intelligibility are many devices: shaping and disposition of fixtures and partitions, changes in fixture levels, color used architecturally (that is, to define space or to set direction.) But the visual accessibility of the store and its merchandise is due less to these specifics than to that intangible which can only be described as "design sense", the faculty for integrating all the specifics and the findings of a dozen research projects into an effective whole.

Careful research set the pattern for the inexpensive display fixtures by Kivett & Myers on the main sales floor (manufactured by Grand Rapids at 15 per cent less than the cost of stock items) and for the myriad ingenious devices for the display of kitchenware, rugs and what not on the Schwartzman floors. But nothing less than design sense could have made the merchandise not only a magnet for the shopper's eye, but the important element in a visually satisfying pattern.

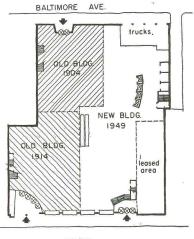
Eli Tash, vice-president in charge of merchandising, put the whole matter in simple operating language: "We wanted a store that would work well and look good. We knew we couldn't get both the efficiency factor and the esthetic factor except from skilled modern designers."

A logical cultural and economic center for the expanding Southwest, Kansas City has long been a "sleeper" town for department stores. Macy's recognized this invitation to its own particular genius for running the big, the dominant department store and outbid Federated's Fred Lazarus for the city's No. 1 shopping location, the old family-owned John Taylor store. Primarily a women's specialty shop, John Taylor was running about fourth in the city, topped by such competitors as a Scruggs-Vandervoort Barney store, an Allied store and a store owned by the Mercantile chain (none of which had undertaken any new building or extensive remodeling). Unlike most

^{*} Macy's policy is to select local architects for all branch stores.





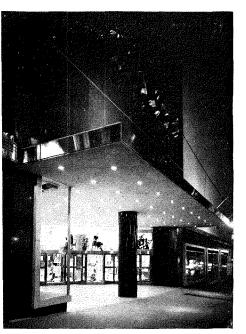


MAIN STREET

th ST.

prime shopping locations, Taylor's was not on a corner, but near the middle of the block—but its entrance faced right on Kansas City's best shopping street: 11th Street, or "Petticoat Lane". Dizzy with awareness of how easy it would be to suck practically all 11th Street shopping traffic right into the store, Macy's signed a lease with the Taylor family.

Thus, while acquiring the best shopping location in town, Macy's also acquired some formidable building problems. The John Taylor store amounted to only 166,774 sq. ft.; Macy's planned to do a business that would eventually require three times that much space. The existing six-story building consisted of one part built in 1904, with an iron frame which would not support further construction, and a second part added in 1914, with a fireproof steel frame designed to support five additional floors to a total height of 11 stories. This building ran through the block from Main Street to Baltimore Avenue at the rear. To get enough space, Macy's was obliged to lease three adjoining lots, only one of which belonged to the Taylor family. These parcels were occupied by three small retail shoe stores and two of them were further encumbered by leas-



ing agreements which required that columns be located at the lot line. The program called for complete renovation of the existing building and the construction of a seven-story adjoining building capable of expansion to 11 stories.

The first big decision Macy's made was to look at the job as the creation of a new and unified store. That is, they avoided the mistake they made on a simultaneous store building job in San Francisco—to try to match the new building to the old. This decision launched them on certain expenditures (complete refacing of the old building, tearing out the old elevators and installing a new bank in the right place are examples)

which might have frightened a more conservative client. But at every step architects Kivett & Myers were able to show how doing the right thing for the building as a whole would in the long run be far less costly than a series of piece-meal adjustments to the old building. Macy's readiness to accept this point of view enabled the architects to carry out their scheme for the building as a huge structural shell, with as little as possible fixed within that shell—and so meet the prime requirement of operating flexibility for a business which changes with the weather, the season and every new fashion.

The next decision which shaped the building plan was president Roth's requirement of peripheral stock storage space on each floor. Customer traffic, Roth says, moves in an oval, which means that a rectangular store will have four dead corners. Utilizing these dead corners for storage gives immediate access to floor stock replacement.* Since a dominant store gains its position by having 500 size 40 house dresses as against its competitors' 50, ample and accessible stock storage is a major requirement.

WINDOWLESS BUILDING. Initially Roth had hoped to avoid the expense of a new facade for the old building frontage on Baltimore Avenue—especially since this 1902 portion would eventually have to be torn down to make way for further vertical expansion. But Kivett and Myers urged complete refacing of both sides of the old building. Macy's wanted every square inch of the store air-conditioned and the architects used this requirement to demonstrate that the saving in air conditioning and heating cost would pay for complete new facades on both streets-if the facades were kept windowless above the first floor. A completely windowless building, they estimated, would reduce air-conditioning tonnage by 90 tons a year with an initial saving of \$49,000 and an annual operating saving of \$1,800. Required radiation would also be reduced by 3,400 sq. ft.: an initial saving of \$10,200 and an annual steam saving of \$650. Thus the total initial saving made by a windowless building would be \$59,200, while total operating saving, figured over a 20-year period, would amount to \$49,000. Nor did this analysis count on saving the cost of sun-faded merchandise and spoilage, by dust seepage, which department stores have found to be substantial.

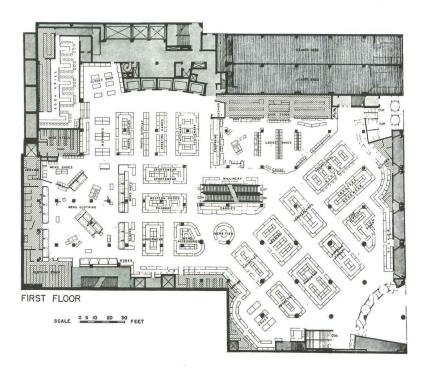
Macy's naturally decided for a windowless building, whereupon the architects came up with a brilliant solution for refacing the old building frontage on Baltimore Avenue: a solution which would be applicable to the needs of many smaller store owners with limited remodeling budgets. Not only did it seem inadvisable to spend any large sum for refacing the 1902 building which would eventually have to be torn down to make way for future vertical expansion, but the old iron framework of this building would not support any heavy facing material. The architects decided to use an insulated fluted steel panel material which, put up vertically above the display windows on the Baltimore side and painted a rich dark red, provided an extremely handsome facade (see cut, p. 87) at a cost of only \$32,728. The permanent facade on the Main Street (and main entrance) side, which enclosed the 1914 steel-framed building with red granite and buff brick, cost \$77,272.

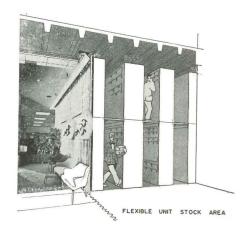
ENTRANCE MAGNET. Some 85 per cent of the customers were expected to enter the store from the front, or Main Street, side. Kivett & Myers held the main entrance to its old location directly opposite 11th Street and thus at a corner of the whole building. When they proposed to set it back 30 ft. from the building line as an exterior lobby with the entrance doors set on an arc and flanked by a huge display window, president Roth registered some dismay at this lavish use of valuable first floor selling space. Now that the building is finished, he is more than happy that he deferred to his architects' advice. Says president Roth, one of the most enthusiastic building clients this magazine has encountered in a long time: "Coming down 11th Street two blocks away, you can see nothing but the light and brilliance from this great glass area surrounded by display. The thing pulls customers in like a magnet." (A secondary entrance, required by fire laws, is located at the other end of the Main Street frontage. Here a 6 ft. 3 in. grade down has been exploited to provide split-level stair access to both main and basement floors.)

DIAGONAL TRAFFIC FLOW. The architects exploited their corner entrance and set the main traffic pattern of the store interior by placing their set-back revolving doors as an arc. Passing through any one of these doors, the customer is headed towards four diagonal aisles, any one of which will shunt him to the electric stairs located in the direct center of the store. Thus instead of the conventional one or two main traffic aisles, Macy's gets maximum exposure of impulse merchandise along four diagonal aisles. Layout of the other shopping floors was also shaped by the central electric stairs, from which the various departments radiate like spokes in a wheel.

^{*} Peripheral stock storage was also employed in the Federated-owned Foley store in Houston, and this space was provided with elevators and other mechanical equipment for handling merchandise. Recent reports are that much of this mechanical equipment is not being used. Stock in the peripheral storage areas in the Macy store is replenished from the freight elevator core before and after shopping hours.







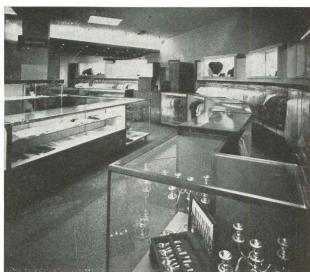
FIXTURES for maximum merchandise display

This 70 ft. long shirt counter (below) is probably the longest unbroken display in any U. S. department store. Kivett & Myers designed fixtures with shelves cantilevered from back, eliminating end partitions. The continuous shelf greatly increases the number of shirts which can be stocked on floor, while the unbroken expanse makes the merchandise itself an element of real decorative value. Another space multiplication device is the double-decked cellular steel-floored stock room (above) used in the first floor shoe department. Additional sales area can be taken from stock room by resetting Ben Rose drapery which forms the only partition. Small shoe displays against the drapery are bolted to steel stock shelving and easily removed.

Photos: Harry H. Baskerville, Jr.







Open-front of first floor display counters is especially effective in diagonal aisle pattern. Kivett & Myers fixtures were manufactured by Grand Rapids at a cost 15 per cent less than stock items and a similar design is now being put on the market as a standard product (see p. 132).

VERTICAL TRANSPORTATION. The central electric stair was planned to move 85 per cent of the customer traffic through the five shopping floors, and the elevator bank was given a secondary location—on the same diagonal as the main entrance but considerably behind the electric stair. The five-car elevator bank is intended principally to serve the sixth floor (stock marking, accounts and general offices) and the seventh floor (tearoom and executive offices).

The Macy electric stair is the only such department store installation in Kansas City. Way back in 1910, the old John Taylor store had put in the first electric stair ever used in Kansas City. But the ladies refused to use it and Taylor's had to tear it out and sell it to the Kresge store, where customers were evidently bolder. Although both owner and architect had some worries, this time Kansas ladies showed no hesitation, found firm footing between the cold-cathode illuminated sides of the new Macy installation.

When Macy's heard that the Kansas City building code required that an electric stair be enclosed by masonry walls and fire doors, they were dismayed at the loss of display value. Kivett & Myers quickly presented local code officials with the down-draft system worked out for a similar installation in the Bond Store in Cincinnati as shown in the FORUM (July, '47) and got a go-ahead. They worked out a more economic adaptation of this system which had involved the construction of an exhaust duct integral with the stair well. They provided a water curtain around the stair well; fresh air intake at the top of the stair run and an exhaust fan to create a down-draft in case of fire; but simply made use of one of the no-longer-used elevator shafts in the old building (at a distance of 85 ft, from the stair well) for the smoke exhaust duct.

SERVICE CORE. The service scheme located an off-street sixplace truck dock at the rear of the building. Since the site graded up 16 ft., 3 in. from front to rear, entry was at the second floor level. This released valuable first floor space for selling and also had the advantage of access from a one-way street which was of lesser importance both for city traffic and as a shopping street. Immediately back of this dock is located the service core, containing three freight elevators with provision for two future freight elevators. The majority of stock receiving and marking is done on the sixth floor, served by these elevators. A fire stair tower, trash chute, package chute, dumb-waiter and mechanical service shaft are also integrated in this area.

FLEXIBLE CEILING. In the conventional department store, changes in department layout or even in merchandise display can only be made within rigid walls and at great expense. Where a plaster ceiling has been used, a simple change in lighting to spotlight a display may mean calling in three building trades, waiting two weeks for the plaster to dry, meantime losing valuable sales space. This well-known operating dilemma naturally led to consideration of a flexible ceiling, which would incorporate easily removable lighting fixtures in a dry-built panel system hung from a metal grid. Kivett & Myers made careful cost studies which showed that the initial cost of such a dry-built ceiling using any one of several available materials would actually be less than the cost of a standard plaster ceiling. Their analysis:

Area adaptable to flexible ceiling—262,105 sq. ft. Rigid ceiling

Cost of plaster and paint at \$.66 a sq. ft. or.......... \$172,989.30 Flexible ceiling

Metal grid—262,105 sq. ft. at \$.172 or..... \$ 45,082.06 Panel area—224,138 sq. ft. at \$.521 or..... 116,775.90

(excludes light fixtures)

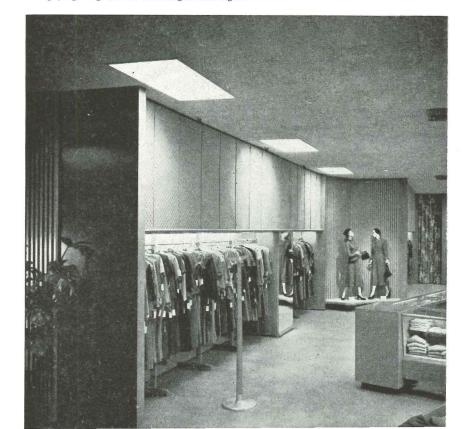
(excludes light fixtures) — \$161,857.96

This analysis, of course, did not include the formidable cost of any future changes in a rigid plaster ceiling as compared to the screw-driver changes and nearly 100 per cent material salvage promised by the dry-built ceiling. Nor did it count the \$25,000 in overscale premiums Macy's would have been obliged to pay to get enough plasterers to do this huge ceiling job.

FLEXIBLE WALLS. Wherever major changes in departments might be expected, all the Macy architects introduced lightweight, easily movable partitions and curtain walls. Gruen & Krummeck, who had the problem of creating small shop atmosphere on the woman's and children's apparel floors, made especially successful use of a half-dozen kinds of aluminum siding for this purpose. These metal walls were installed both in floor-to-ceiling heights and in sec-



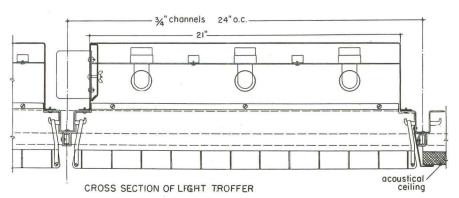
WOMEN'S APPAREL FLOOR by Gruen & Krummeck shows advantage of flexible lighting system over conventional rigid lighting pattern which gives same quality of light to all departments. In view above lighting fixtures have been massed to draw customers into better-dress shop enclosure. For future display change, lighting can be rearranged overnight.

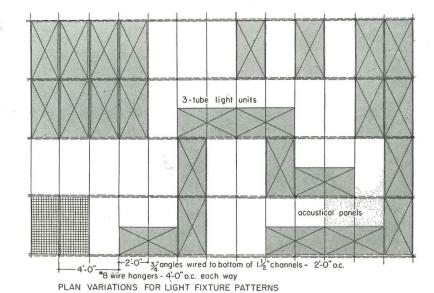






FIRST BIG INSTALLATION of a dry-built ceiling integrated with flexible lighting and metal screen walls proves economic in assembly









The long-sought goal of department store architects-an economic system of interior lighting and partitioning-was completely realized for the first time in this store by means of a carefully detailed dry-built ceiling. Kivett & Myers designed the ceiling and lighting installation, using 1 x 2 ft. acoustic panels hung from a 2×4 ft. metal grid. A special attaching clip was devised to leave the opening for the lighting insert completely free for future changes. The basic lighting unit is a 3 tube, 2 x 4 ft. fluorescent trough with egg-crate louver (specially designed to the module but manufactured at about the cost of a stock fixture). This unit was used to create 4 x 4 ft. squares of light above main sales areas, lined up for strip lighting over special counters, multiplied by Gruen for a complete luminous ceiling in the beauty shop. Units are easily replaced at any time by spot lighting or any other wanted incandescent type. The dry panels also provide instant access to all mechanical work.

This ceiling is also an excellent example of close coordination between all the architectural firms on the job. On the women's apparel floors, Gruen & Krummeck designed their aluminum screen walls to clip to the basic ceiling grid. These ceiling high partitions proved a remarkably handsome solution for the problem of creating "shop atmosphere" within a large sales floor. Replacing the usual 7 ft. partition, they create an enclosure where special color and lighting can have maximum effect. Gruen used many types of aluminum material and created a rich variety of texture with special paint (plastic pellets added for additional dulling). Such partitions can be demounted and re-assembled overnight.

Contractors doubted that a dry-built ceiling on this scale could be held to the necessary close tolerances, and predicted that the units would end up far out of line. The architects made the concession of redesigning for 1/4 in. tolerance as against their original 1/8 in. When the job began, they appeared personally to talk to lathers and carpenters on the importance of complete accuracy. In actual installation, 85 per cent of the work proved to be dead accurate. The general contractor estimated that this dry-built ceiling cut total construction time by at least four months, and was a major element in meeting the 18-month construction time-table set by Macy's.

Photos: Harry H. Baskerville, Jr., David Royter, L. D. Jones Photo Service, Schnall & Krug Associates.

tions from the top of display fixtures to the ceiling. Since they were metal, they were approved for fire-safety by the Kansas City building commissioner.

These metal screening walls are hung from the same metal grid which supports the dry ceiling, and can be moved overnight for a new floor layout. Initial cost was more than the cost of a rigid plaster wall, but the additional cost of moving a rigid wall at any time in the future (counting loss of sales space while alterations are made) would be many times this difference. Here is a sample cost breakdown, calculated for a typical aluminum installation from ceiling to top of display case:

Cost of attaching angles at case top and ceiling—18 cents per sq. ft. Cost of aluminum material—55 cents per sq. ft.

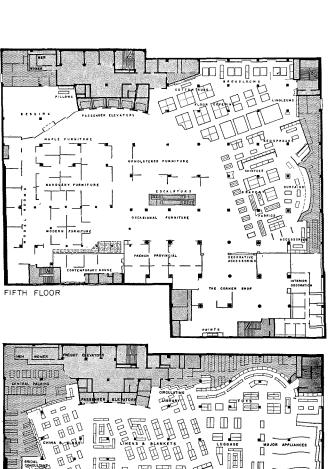
Cost of labor-40 cents per sq. ft.

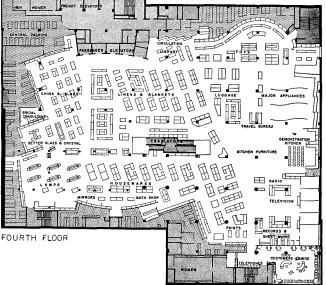
Total cost of aluminum wall section at \$1.18 per sq. ft. compares with 78 cents per sq. ft. for a conventional plaster wall. In cases where the curtain walls ran from floor to ceiling, additional labor time was required, in some cases, to install horizontal bracing, and costs ran as high as \$1.88 per sq. ft.

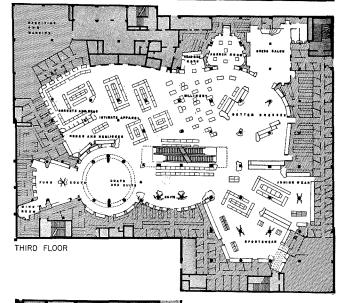
FLEXIBLE FIXTURES. Macy's expectation of dollar sales per square foot of selling space in the Kansas City store is probably higher than that of any comparable store. One big key to the intensive use of sales space was fixture design. The multitude of specially designed fixtures produced by all the architects involved in the job threw out many of the conventional yardsticks of required square footage.

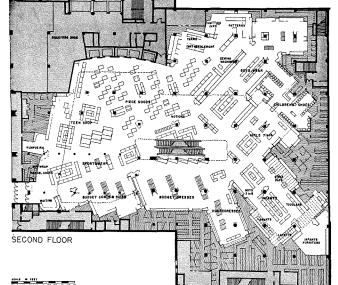
This kind of space reduction was particularly marked on the Schwartzman floors, where such bulky merchandise as rugs, lamps, kitchenware, draperies, etc. had to be dealt with. Schwartzman designed many ingenious vertical displays which not only automatically changed the conventional requirements for selling space, but also added great decorative value to the department (see cuts opposite). The importance of such efficient fixturing can be measured by this statistic: every square foot added to sales space will add \$100, on the average, to the store's annual business.

SPACE ALLOCATION. In this store, the delicate matter of alloting space to the various departments showed the closest coordination between the store management and the architects. Given a flat requirement of so many sq. ft. per department, the architect is unable to bring space economies into realistic relation to the store's problem. Macy's, on the other hand, started with the annual dollar volume of sales they expected to produce in the various departments. Schwartzman made a preliminary store-wide space allocation study, using these anticipated gross sales figures in combination with the sales per square foot averages reported by other Macy stores and the national averages reported by the National Association of Department Stores. This provided what might have been considered a final space allotment by other stores, but to Macy's it was only the beginning. They encouraged each architect to go to work on such space economies as the fixtures described above and then revised their estimates accordingly. Another good example of space economy is the women's shoe department which, because of keen competition from the large number of shoe stores in Kansas City, was placed on the first floor off one of the diagonal aisles leading to the moving stairway. Macy's outlined certain requirements: enough chairs to seat at least 100 customers at one time; grouping of chairs into three sections (salon, medium-priced and budget shoes); enough storage space for 24,000 pairs of shoes. All this, Macy's figured would require at least 6,000 sq. ft. of space. By using a double-deck arrangement of steel shelving and flooring, Kivett & Myers cut the space required for shoe storage in half and reduced the whole department to 3,800 sq. ft.



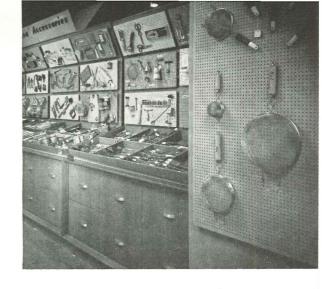












SALES SPACE was multiplied by architects

Daniel Schwartzman developed a great variety of fixtures which greatly reduced the space ordinarily required for the bulk merchandise sold on the home equipment floors. The 4 ft. high table above has movable shelves, holds 250 per cent more than the usual table and at the most desirable visual height. Instead of showing carpet and linoleum by roll, Schwartzman mounted samples on 3 ft. squares to be pulled out for viewing. Simple vertical rack for small rugs is shown (r.). He also made considerable use of perforated metal screens with movable plaques. Note that top of screen display (upper r.) is tilted for better view.

Gruen & Krummeck's flexi-case fixture (below) has back and top formed from pressed steel panel, finished with baked enamel colors. Concealed ratchet strips are built into posts and equipped with special hardware permitting installation of hanging cabinets, glass shelves, other special inserts. These can be assembled to any desired length with no tool but a screw driver. Metal backs nest for storage.







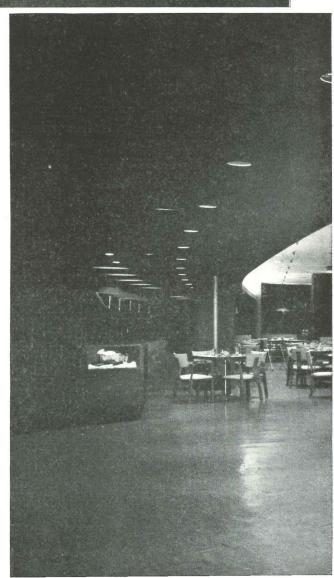


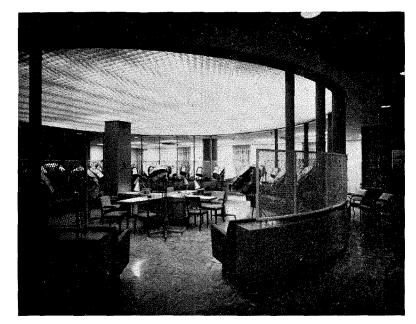


GARDEN TEA ROOM by Gruen & Krummeck is described by president Roth as "beyond all our expectations" and is important part of store's impact on style-conscious Kansas City women. Three $large\ bay\ windows\ are\ skylighted\ from\ above\ and\ are\ richly\ planted\ around\ large\ trees,\ which\ seem$ to grow right through the roof. Partitions are made from local over-sized tile of excellent color. Chartreuse benches, yellow and white striped chairs and turquoise table tops compose a more dramatic color scheme than that possible in any sales department, while subdued lighting (Gruen designed fixture) contrasts with brilliant sales lighting.

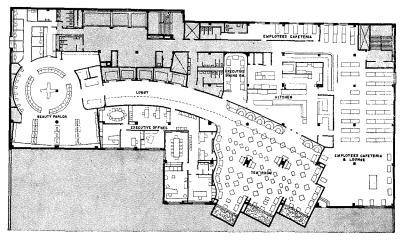
Photos: Harry H. Baskerville, Jr.







GRUEN & KRUMMECK beauty shop on seventh floor has circular egg-crated ceiling lighting surmounting hair-drying and manicuring ring. Executive offices and employees' lounge were also designed by Gruen & Krummeck.



125 FT. MURAL shows city's agriculture, stockyards, oil wells, mines, folk dances, other arts, is by Kansas City painter Arthur Kraft. Gruen & Krummeck, designed wall for best showing of mural.



CONSTRUCTION OUTLINE: waterproofingmembrane, Philip Carey Mfg. Co. Exterior wallsface brick, Acme Brick Co. Granite—the Granux Corp. "Q-sections"-H. H. Robertson Co. Interior-metal curtain wall over Stran-Steel studs, Stran-Steel Div., Great Lakes Steel Corp.: facings by Truss-Panel Corp., Kawneer Co. and Koolvent Metal Awning Co. Concrete and gypsum block, lath, accessories, etc.—Concrete Building Units Co., National Fireproofing Co., U. S. Gypsum Co., Inland Steel Co., Certain-Teed Products Corp., E. F. Hauserman Co. Henry Weis Mfg. Co., Horn Bros. Co. Structural steel-American Bridge Co. Floors-reinforced concrete, Adjustable Forms, Inc. ROOF-ING-Philip Carey Mfg. Co. SHEET METAL WORK: Flashings, etc.-copper, Chase Brass & Copper Co. Ducts-galvanized sheets, Wheeling Corrugating Co. INSULATION: Roof-Temlock, Armstrong Cork Co. Sound insulation-sprayed asbestos, Acoustics, Inc. WINDOWS: Sashsteel, Hope's Windows, Inc. Display windows— Kawneer Co. Glass-Libbey-Owens-Ford Glass Co. STAIRS-International Terrazzo Co., and Southwest Ornamental Iron Co. Treads-Norton Co. ELEVATORS, ESCALATORS, and DUMBWAITERS-Otis Elevator Co. FLOOR COVERINGS-International Terrazzo Co., David E. Kennedy, Inc., Armstrong Cork Co., American Tile & Rubber Co., Sloane-Blabon Corp., The Paraffine Co.'s, H. H. Robertson Co., Mohawk Carpet Co., Bigelow-Sanford Carpet Co., Alexander Smith & Sons, C. H. Masland and Boyles Rug Co. FURNITURE, FABRICS, WALL COV-ERINGS, etc-Kansas City Marble & Tile Co., U. S. Plywood Corp., Pantasote Co., B. F. Goodrich Rubber Co., Katzenbach & Warren, Goodall Fabrics, Inc., Harris Dalton, Walter & Co., Laverne Originals, Schumacher & Co., Angelo Testa, Stroheim & Romann, Knoll Associates, Ben Rose, Carrol Sagar Co., Webber Showcase Co., Lightfoot Studio, Thonet Bros., Royal Metal Mfg. Co., Hinzmann & Waldman, Sheridan Store Equipment Co., Grand Rapids Store Equipment Co., A. J. Stephens & Co., Garden City Mfg. Co., W. L. Stensgaard Co., Display Studios. HARD-WARE—The Stanley Works, Schlage Lock Co., Vonnegut Hardware Co., LCN Door Closer Co., Oscar C. Rixson Co., Glenn Johnson Co., Garden City Plating & Mfg. Co. PAINTS-E. I. Du Pont de Nemours & Co., Cook Paint & Varnish Co., Pittsburgh Plate Glass Co., National Lead Co., U. S. Gynsum Co., U. S. Gutta Percha Paint Co. LIGHTING FIXTURES—Century Lighting Co., Garden City Mfg. Co., Gotham Lighting Co. and Summerour & Devine, Inc. Conduit and wiring-Triangle Conduit & Cable Co. and Paranite Wire & Cable Co. Panelboards; etc-Westinghouse Electric Co. PLUMBING FIXTURES-American -Radiator-Standard Sanitary Corp. Pipes-Alabama Pipe Co., Republic Steel Corp. and Chase Brass & Copper Co. Accessories and fittings-Grinnell Co., Zurn Mfg. Co. and Josam Mfg. Co. KITCHEN EQUIPMENT — Greenwood's, Inc. HEATING AND AIR CONDITIONING-year round system. Compressors—Worthington Pump & Machinery Corp. Cooling tower-The Marley Co. Blowers-American Blower Co. Filters-Farr Co. and Air-Maze Corp. Coils-Silco Products, Inc. Convectors-Modine Mfg. Co. Diffusers -Air Devices Corp. Registers and grilles-A. J. Mfg. Co. Boiler-Kewanee Boiler Corp. Pumps -Fairbanks-Morse Co. Valves-Crane Co., Walworth Co. and Stockham Pipe & Fittings Co. Dampers, etc.-Powers Regulator Co. Refrigeration-York Corp. SPECIAL EQUIPMENT: Television system-Intra-Video Corp. Public address system-Hanson-Weis Electronics, Recording door lock and time control system utilizing electronic principle—International Business Machines Conveyors, etc.—Standard Conveyor Co. Sprinkler system-Grinnell Co. Incinerator-Kellogg-Mann Corp. Pneumatic tube system-Lam-Corp. Lockers, etc.-Berger Mfg. Div., Republic Steel Corp. and Lyon Metal Products.

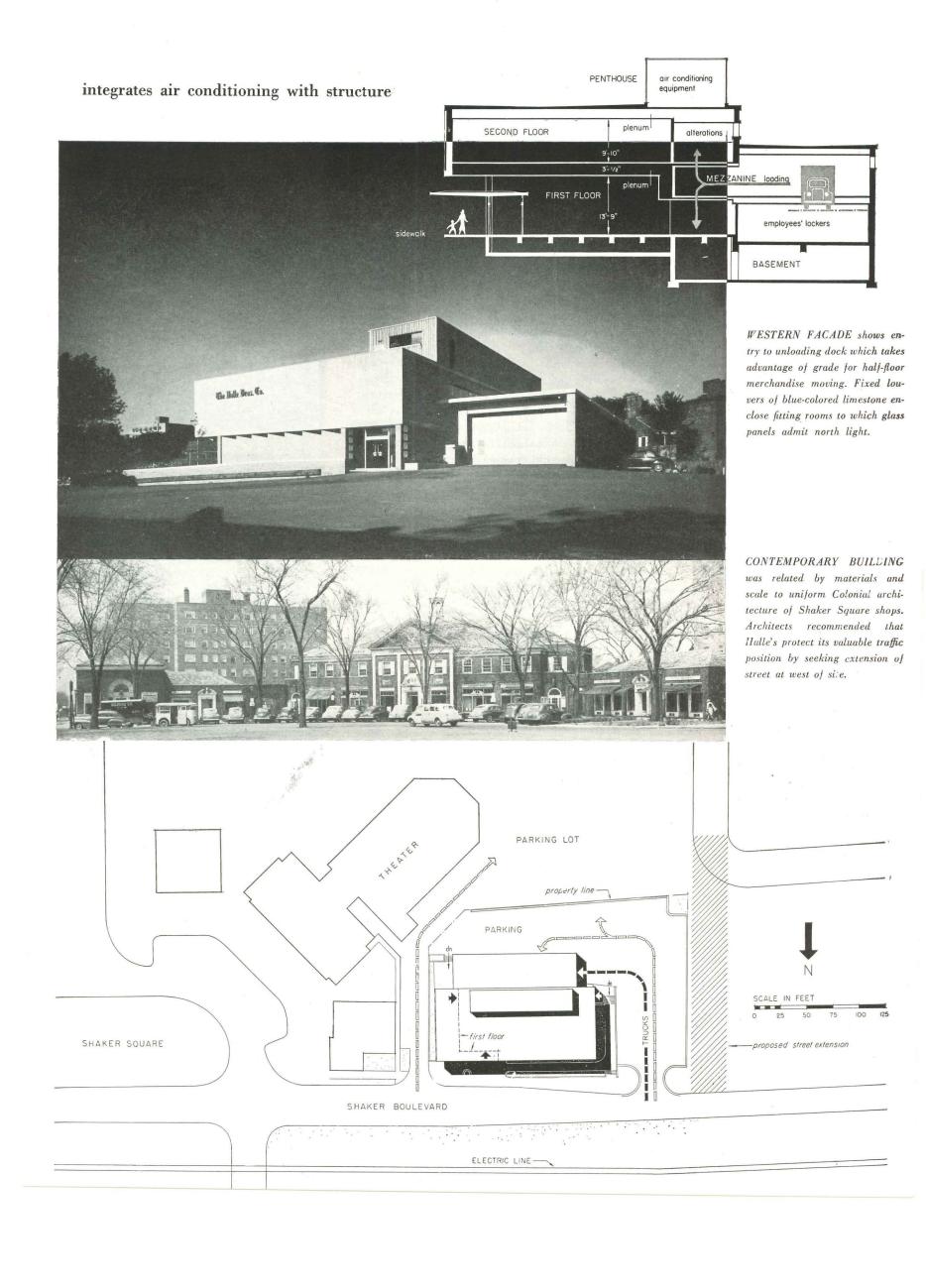
BRANCH STORE breaks modern design blockade in Cleveland,

CONRAD, HAYS, SIMPSON & RUTH, and ROBERT A. LITTLE, Architects CLEVELAND CONSTRUCTION CO., General Contractor

First big Cleveland department store to move out to meet the suburban market with a branch location, the old (1891) Halle Bros. Co. is also the first merchant in the city to build top-quality contemporary design. For its first suburban investment, the Halle Bros. Co. got a handsome two-story brick and glass building, whose plan was based on exploitation of existing traffic patterns in a thriving suburban commercial center. The architects made the building plan only after the most careful analysis of a traffic complex involving a main stop on an electric transit system, a parallel automobile expressway, a neighboring theater and a rear parking lot operated for the merchants of the area. These existing elements had set up a natural pattern of pedestrian movement in and through the Halle site, and the architects exploited this to increase the store's display frontage and to draw pedestrian traffic into the store itself. They also met the critical requirement of interior operating flexibility with these provisions:

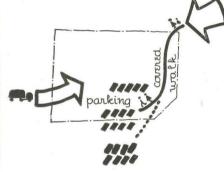
- A sales area uninterrupted by structural columns through use of open bar joists spanning 43 ft.
- A dry-built modular ceiling.
- A plenum ceiling air conditioning installation which delivers air through the perforations in the acoustical tile, thus providing complete freedom for future partition changes.
- Partitions hung from ceiling joists for easy removal. An unusually handsome system of flexible fixturing. Little won freedom to do all of these things by convincing the store owners that the only way to bring customers into the most profitable contact with merchandise and display was to use the methods of "modern design"-or, more accurately, a planning approach unhandicapped by any rigid notions about





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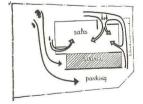
Architect used this diagram to show owner pattern of auto and pedestrian movement through his site.



This showed how opening eastern end of building as covered walk would separate foot, auto and truck traffic.



Section showed client difference in grade as additional reason for location of trucking dock.



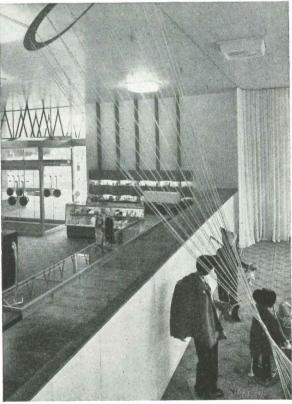
Final building scheme shows main lines of customer entry which set location of sales departments.

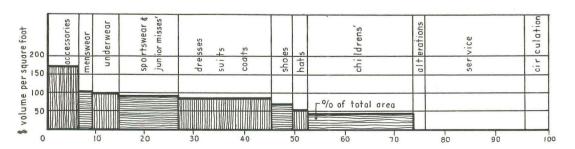
what the new building should look like. (He started by pointing out that curved brick arches like those in adjoining buildings would cut down the cash value of display windows.) His victory was the more remarkable in view of the conditions which surrounded this leased site.

Halle's had long had its eye on this location, one of the choicest in the Cleveland area: a site on Shaker Square. Shaker Square is six miles east of downtown Cleveland and the gateway to the famous Shaker Heights development-some 30 square miles converted in the Twenties by the Van Sweringen brothers from Shaker farm holdings to a residential suburb which now numbers 10,000 homes, ranging in price from \$10,000 to \$250,000. Shaker Square is a shopping center developed by the Van Sweringen's at a main stop on the electric transit system which they built to open up their farm acreage for suburban expansion. Like all the other land in Shaker Heights, it is covered by a deed restriction prescribing a certain architectural style -in this case red brick, white trimmed Colonial-with approval of building plans up to Van Sweringen Co. officials. The architects used red brick, framed it with white limestone, handled the main elevation in the same scale as an adjacent building, and amazed the client by securing Van Sweringen approval for the first departure from traditional style in 30 miles. The successful relation of this building to its neighbors was also recognized by the Cleveland Chamber of Commerce, which awarded it a medal as the best store building of 1948. Another first medal came from the Ohio Society of Architects.

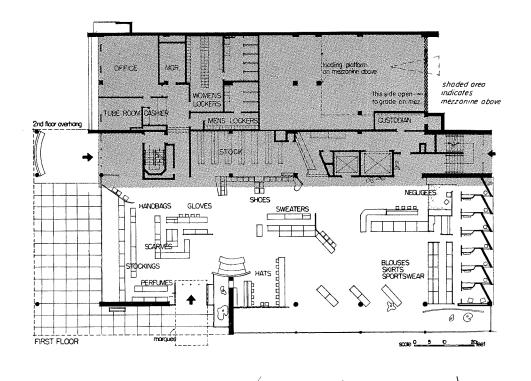
The architects' analysis of the site showed one of the main pedestrian pathways to be through an alley on the east of the Halle site to the parking lot at the rear. This is a place to which suburbanites drive their cars, park them and take the rapid transit to downtown Cleveland. The lot also, of course, provides parking for patrons of the specialty store, drug store and theater in the block adjoining the Halle site. To separate the people on foot from the cars entering this parking lot meant a better chance of getting them into the store. Accordingly, the eastern side of the building was opened as an areaway for pedestrian access to the rear parking lot. This covered areaway actually increased the frontage of the store building and was lined with display windows. The same analysis showed the least valuable building frontage to be at the southwestern corner of the site, and this suggested the logical point for service access. (The architects took their clients through every step of their analysis with diagrams like those shown at left). Since the site graded up 6 ft. from front to back, the trucking dock at the rear has the advantage of location at

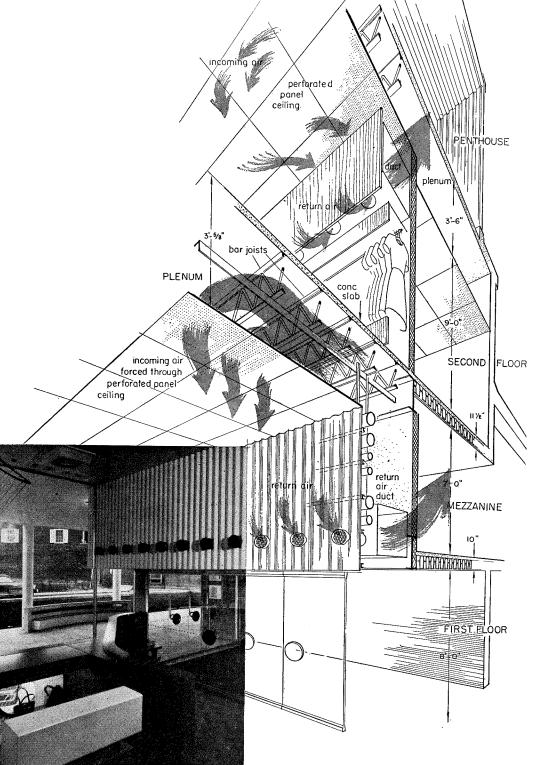






Architect's first step in alloting space to various departments was to convert figures supplied by Halle's into this chart. Vertical scale is dollar sales per square foot expected by Halle's; horizontal scale is percentage of total store space to be alloted to specific departments.

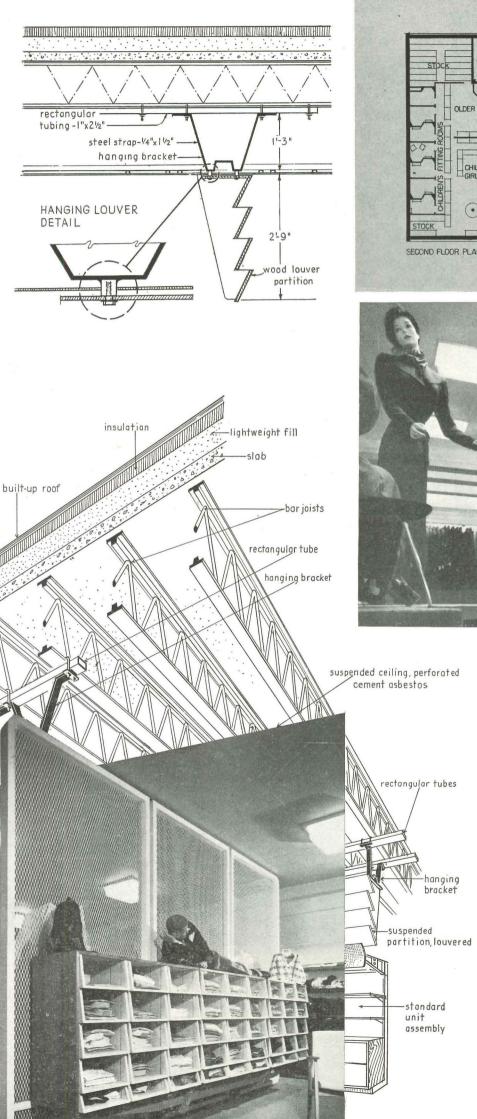


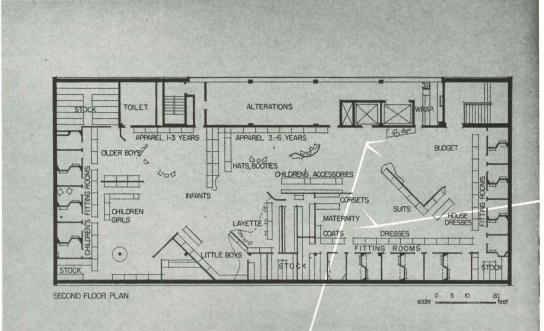






View left shows entry from covered outdoor walk at east of building and air conditioning system integrated with structure over main sales area. Mezzanine floor and ceiling construction is lightweight cellular steel.





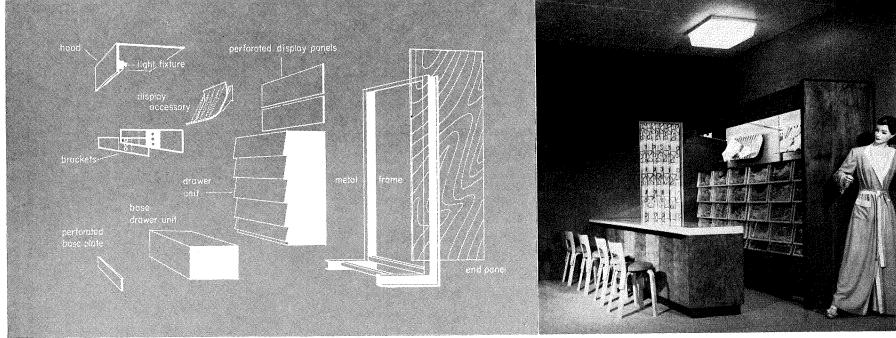


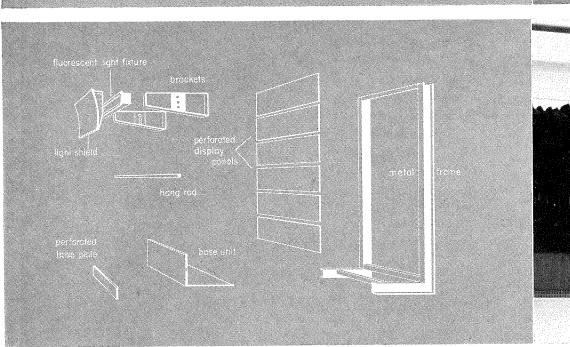
at intermediate level, with only a half floor of moving to reach either the upper or lower selling floor.

The ceiling used in this store is worth careful study. It does not, like the Macy's Kansas City ceiling (see p. 91), incorporate flexible lighting, but it does go a step farther in making the air conditioning system an integral part of the ceiling construction. That is, the space around the open joist trusswork is utilized as a plenum chamber and faced with perforated panels, through which the cooled air leaks to the sales floor below. Air exhaust ducts are frankly handled as a decorative element, lined up in a long row against the corrugated cement asbestos facing of the mezzanine and painted bright blue.

Mechanical equipment is housed in a small penthouse faced with fluted steel paneling which, selected for economy and lightweight, provides an interesting textural contrast with the brick of the main building mass.

Lighting, designed by Abe Feder, is by incandescent fixtures projecting below the ceiling. This is a fixed rather than flexible installation but the 2 x 2 ft. size of the fixtures fits into the module established by the 2 x 2 ft. ceiling panels. The architect had hoped to use a flexible industrial lighting system—a trolley duct along which lighting fixtures can slide to any desired point—but was over-ruled by his client.

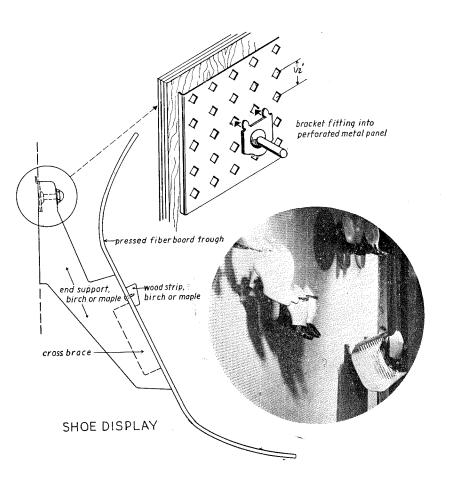




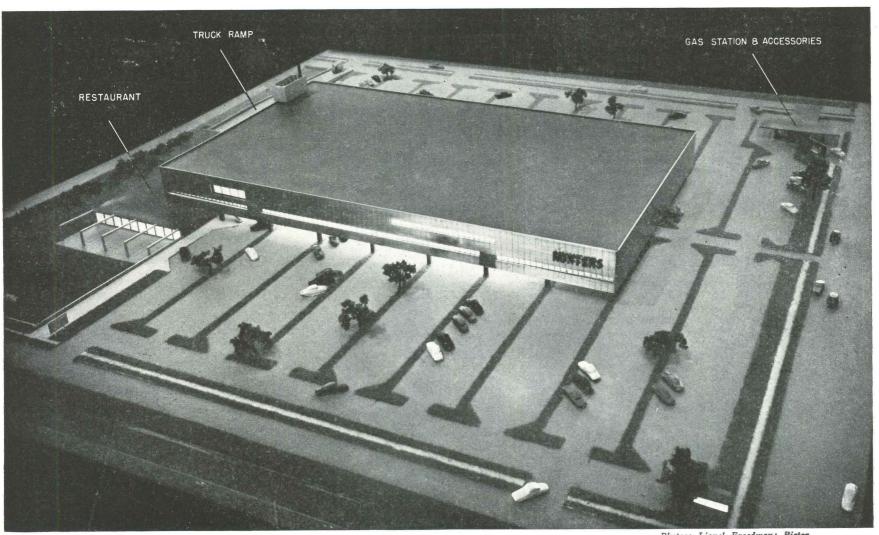


Flexible fixtures are based on L-shaped metal frame into which can be fitted various drawer, hanging rod and display elements, also light fixtures and perforated metal light shields.

CONSTRUCTION OUTLINE: Foundations—reinforced concrete, Master Builders Co. Waterproofing—A. C. Horn Co. Exterior walls—face brick and or limestone Colocrete, Colocrete Industries, Inc., Interior—Colocrete block, plaster, Colocrete industries, Inc., Interior—Colocrete slab with monolithic finish, Haydite Co. over Truscon Corcrete slab with monolithic finish, Haydite Co. over Truscon Development of the control of th



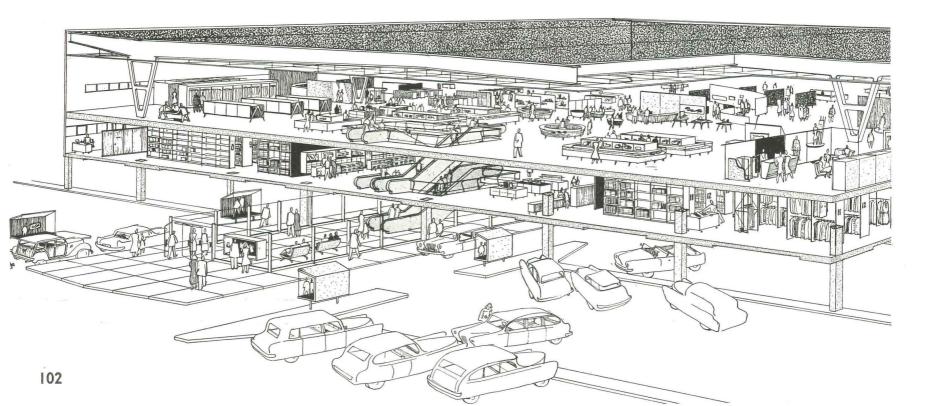
STORE-ON-STILTS turns a design concept upside down.



Photos: Lionel Freedman: Pictor

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Columns forming 32×48 ft. bays carry the building over its parking lot; huge steel rigid frames carry the roof over the top sales floor. The intermediate level is a stock floor.



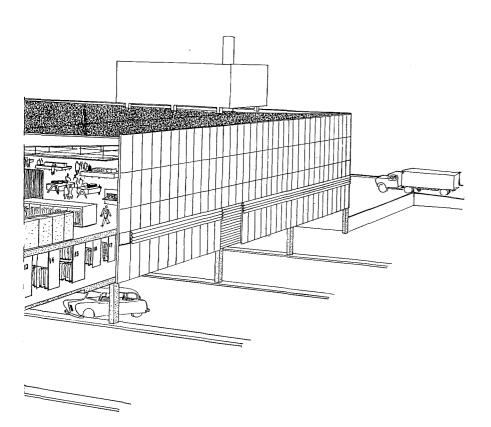
Parking on the ground floor saves 25 per cent in land costs and improves on current merchandising methods

KETCHUM, GINA & SHARP, Architects; SEVERUD-ELSTAD-KRUEGER, Structural Engineers.

Here is a project that may revolutionize thinking about self-contained suburban department stores. It will be built in the air—on stilts so that practically the entire lot may be used for parking, thereby requiring one-fourth less land than to-day's stores of comparable size. Customers will get out of their cars right under the store and ride up an electric stairway to the center of the sales floor two stories above.

The store will have enough other notable features to make a merchant's mouth water: an intermediate floor from which stock is fed up to the sales floor by mechanical dumb-waiters, no need for the usual freight elevators, 160 ft. clear spans on the sales floor—the biggest ever used in a store, a single customer entry, steel wall panels which may be interchanged with glass to create windows anywhere and any time, and an ideal location of the restaurant on the ground floor—all for an average building construction cost of only \$14 per sq. ft. including a \$2.80 per sq. ft. allowance for air conditioning and assuming that the steel walls can be had for about the same cost as masonry.

Recognizing the all-importance of the automobile in today's shopping, progressive merchants have long surrounded their new buildings with big parking lots (the current rule-of-thumb is three times as much outdoor parking space as indoor sales area). Some, like Milliron's in Los Angeles (FORUM, June '49), have gone further and converted the roof into a parking



lot. Dissatisfied with these adaptations of the conventional store to modern problems, famed store architects Ketchum, Gina & Sharp have embodied in their store-on-stilts an entirely new design concept of the suburban department store—a concept geared from top to bottom to the automobile as well as to modern merchandising methods.

GROUND FLOOR

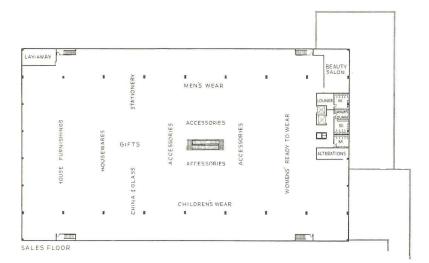
Except for 10 per cent of the land occupied by the store entry, a service station, a small truck ramp and the restaurant (which because of its outside location may remain open after the store is closed), the entire site will be available for parking. More than 20 per cent of this parking space, or enough for 180 cars, will be protected from the weather on the building's open "ground floor." This should be sufficient for a large part of the daily crowds. The unprotected parking space on three sides of the building (880 cars) will accommodate Saturday and holiday peak loads.

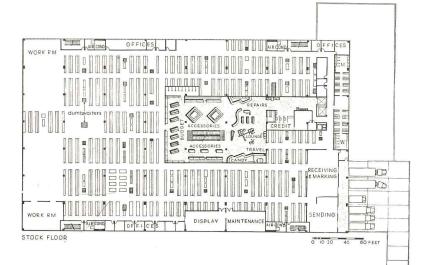
Once the shopper has parked, he walks under the building, unmolested by rain, snow and bustling street crowds, past lighted free-standing display cases (which take the place of customary show windows) to the store's sole entry, the centrally located electric stairs.

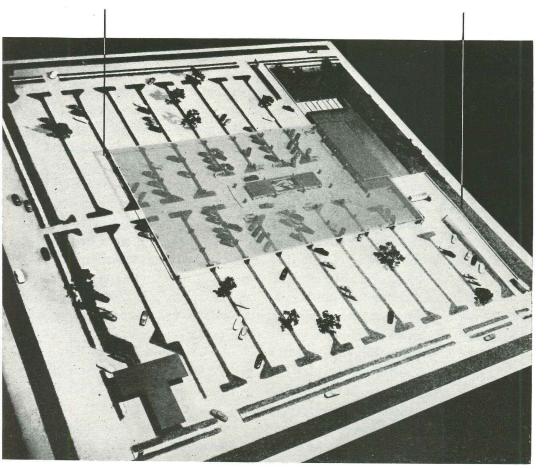
STOCK FLOOR

Sandwiched between the parking and sales floors will be a stock and service floor, 10 ft. above grade, to contain all behind-the-scenes activities. Designed with a warehouse load of 300 lbs. per sq. ft., it will carry mechanical equipment, maintenance department, wrapping and crating, personnel and payroll divisions, display workshops, employee facilities, advertising and administrative offices and, most important, reserve stock storage and handling. Merchandise is received from trucks (which drive up a 6 ft. high ramp until their tail gates are level with the stock floor loading platform), is then transported by fork lifts to positions beneath the point of use and "up-fed" to the sales floor as needed via 20 mechanical dumb-waiters of various sizes—one for every two departments and some of them big enough to handle complete display racks. (The shipping operation is, of course, the same — but in reverse.) The sales floor will be constructed of removable precast concrete panels so that dumb-waiters may be shifted as departments move or expand.

Screening these general service activities from the customer's view as he travels the electric stairs through this level of the store will be such customer services as lounges, repair departments, credit offices, a lending library and the small "budget" sales departments which are normally put in the basement. This floor will be air-conditioned second-handedly in that conditioned air from the sales floor above will be forced







Plot plan's shaded area represents portion of parking lot covered by store-onstilts. T-shaped building in foreground is a service station; dark rectangle at top is a landscaped restaurant; ramp at right brings trucks up to stockfloor level. The only portion of the store proper on this level is the electric stairway vestibule at the center of the covered parking area.

through the stock floor space which will thus serve as a plenum in the return air system.

SALES FLOOR

As the customer rides further up the electric stairs, he is deposited smack in the center of the sales floor, completely surrounded by merchandise. This single central point of entry will eliminate the manager's usual guesswork in determining from whence the customers will come, and it should ceate a highly intense merchandising impact on the customers. Radiating out from the central stair, every department in the store can be seen, thanks to 160 ft. clear span of this floor's rigid frame construction. It permits an attractive, efficient arrangement of displays and allows unlimited flexibility of floor layout. The architects believe that the advantages of this long span construction outweigh the 15 per cent it will add to the cost of conventional framing for this floor. Those sales departments which need daylight (ready-to-wear clothes, piece goods, outdoor furniture, etc.) will have windows and, if it is necessary to move these departments, their windows go with them. The exterior wall panels of stainless steel will be interchangeable with windows.

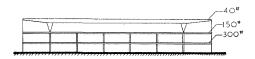
COMPARISON

To compare their store-on-stilts with the more conventional varieties, the architects prepared the schematic sketches shown on the opposite page. Based on the space distribution (tabulated below) of the store-on-stilts pictured on these pages, the sketches show the ground areas occupied by six kinds of stores (small rectangles) and the sizes of lots they require to accommodate the same number of cars (large rectangles). Since the vertical dimensions of each set of rectangles are identical, the sketches may be read as a graph, dramatizing some of the advantages of the store-on-stilts.

SPACE DISTRIBUTION-STORE ON STILTS

0	Selling space	Nonselling space
Ground level of store		
Service station	8,500 sq. ft.	
Restaurant	8,600	
Service areas & ramp		9,600 sq. ft.
Employees' facilities.		8,700
Customers' entry		7,700
		-
13	7,100 sq. ft.	26,000 sq. ft.
Intermediate level		
Customer service depts. 1	0,000	
Stock, utilities, offices		76,000
Sales level		
Sales depts 8	0,700	
Miscellaneous		5,300
		-
TOTAL BUILDING SPACE 107	1.800 sg. ft.*	107,300 sq. ft.*
Covered parking (180 cars)	A CONTRACTOR OF THE PERSON OF	70,000
Uncovered parking (770 cars	s)	254,464
Landscaping		57,700
TOTAL LOT AREA		425,264 sq. ft.

* While a 40-60 ratio of selling to nonselling space is considered adequate for branch suburban stores, this 50-50 ratio is required for a self-contained department store.



700 600 500 400 300 200 100 FT.

BLDG

BIDG

BLDG

BLDG

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PLOT

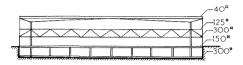
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BLDG

2-STORIES ON STILTS over ground parking

Description: Two 86,000 sq. ft. floors on stilts sheltering 70,000 sq. ft. of the parking area. Restaurant, entry, truck ramp and service station cover only 43,100 sq. ft. of ground.

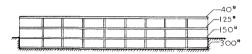
Cost per sq. ft. for three floors: \$14.



2-STORIES & BASEMENT (long span)

Description: Two 54,000 sq. ft. sales floors of long-span steel construction above a full basement stock area. (Deep truss space between floors accommodates some stock.) All parking on surrounding lot.

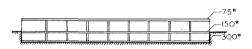
Cost per sq. ft.: \$17.



2-STORIES & BASEMENT (conventional)

Description: Two 72,000 sq. ft. sales floors (each including 18,100 sq. ft. of forward stock area) of conventional short-span construction above a full basement stock area. All parking on surrounding lot.

Cost per sq. ft.: \$12.50.



1-STORY & BASEMENT WITH ROOF PARKING

Description: Roof-top parking lot, requiring 4,000 sq. ft. of ramp construction, and one sales floor above a full basement stock and sales area.

Cost per sq. ft.: \$13.50.

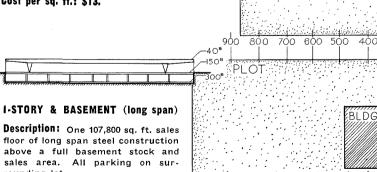


Description: Roof-top parking lot, requiring 4,000 sq. ft. ramp, over a 107,800 sq. ft. sales floor flanked by double-decked stock and service areas of 55,600 sq. ft. each. No basement.

Cost per sq. ft.: \$13.

rounding lot.

Cost per sq. ft.: \$13.75.



Advantages: Covered parking, covered entry, minimum snow removal problem, short car-to-entry distances, optimum circulation control due to single customer entry, efficient single floor sales area, minimum columns on sales floor, easy up-feed distribution of merchandise from stock to sales areas, ideal receiving and shipping facilities, minimum mechanical ventilation and artificial lighting required for above-grade stock floor, ideal restaurant location on ground floor permitted by efficient land use, expensive elevators required only for moving big stock and display items, minimum lot size (424,264 sq. ft.), minimum land coverage (43,100 sq. ft.), high advertising value of distinctive design, low construction cost.

Disadvantages: Mechanical ventilation (to handle automobile exhaust fumes) and artificial lighting required under building.

Advantages: Short car-to-entry distances, minimum columns on sales floors, easy up-feed distribution of merchandise to sales floors from basement and truss space stock areas, small lot size (431,262 sq. ft.), low land coverage (54,000 sq. ft.).

Disadvantages: Uncovered parking, complex circulation control due to multiple entries, inefficient splitting of sales area between two floors, inefficient splitting of stock area between basement and deep truss space, costly snow removal problem in cold climates, highest construction cost.

Advantages: Economical structural system, lowest unit construction cost, small lot size (451,220 sq. ft.), medium land coverage (72,000 sq. ft.).

Disadvantages: Uncovered parking, complex circulation control due to multiple entries, inefficient splitting of sales area between two levels, conventional column spacing on sales floors, inefficient merchandise distribution by elevator from stock to sales floors, costly snow removal in colder climates.

Advantages: Short car-to-entry distances, efficient single-floor sales area, easy up-feed distribution of merchandise from stock to sales areas, ideal shipping and receiving facilities.

Disadvantages: Uncovered parking, complex circulation control due to multiple entries, conventional column spacing on sales floors, reduced highway recognition (advertising value) due to low one-story design, artificial ventilation and lighting required for basement stock area, expensive snow removal in colder climates, large lot size (503,374 sq. ft.), high land coverage (111,800 sq. ft.), high construction cost.

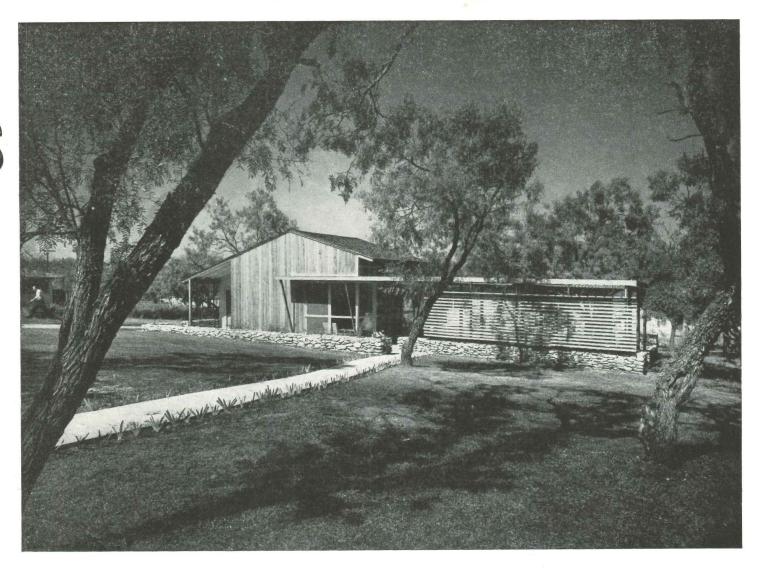
Advantages: Short car-to-entry distances, efficient single-floor sales area, easy down-feed distribution from mezzanine stock to sales area, ideal shipping and receiving facilities, minimum artificial ventilation and lighting required for above-grade stock mezzanine, economical structural system, low construction cost.

Disadvantages: Uncovered parking, complex circulation control due to multiple customer entries, minimum column spacing on sales floor, reduced highway recognition (advertising value) due to low one-and-one-half story design, expensive snow removal in colder climates, large lot size (502,800 sq. ft.), highest land coverage (168,450 sq. ft.).

Advantages: Efficient single-floor sales area, easy up-feed distribution of merchandise from stock to sales areas, minimum columns on sales floor, ideal receiving and shipping facilities, expensive elevators required only for big items.

Disadvantages: Uncovered parking, great car-to-entry distances, complex circulation control due to number of entries, artificial lighting and ventilation required for basement stock area, reduced highway recognition (advertising value) due to low onestory design, expensive snow removal in colder climates, largest lot size (615,174 sq. ft.), high land coverage (107,800 sq. ft.), high construction cost.

HOUSES



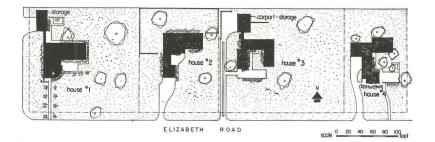
Texas development is designed to the local climate

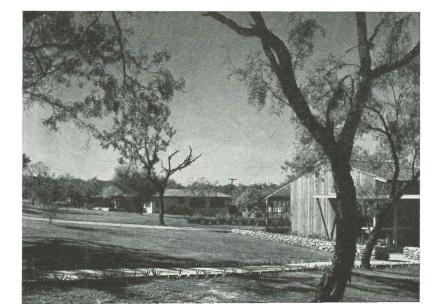
MILTON A. RYAN, Architect and Builder

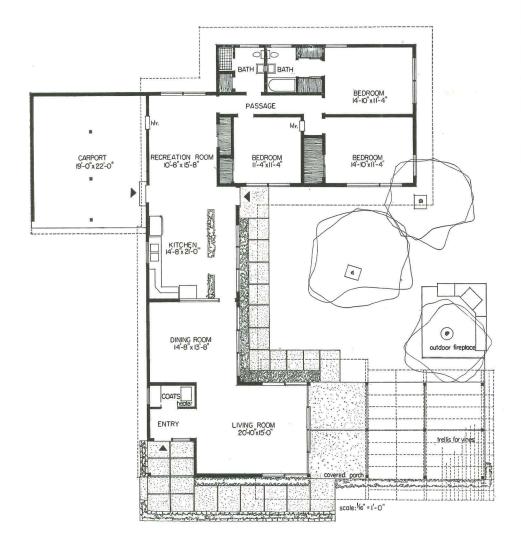
Styled to San Antonio's weather, which is hot in summer but benefits from a southerly breeze, this house is one of four in a growing suburban development—three of which are presented on these and the following pages. The project began when Architect Ryan built a house for himself. He sold it as soon as it was finished to one of the many people who liked its contemporary design, made him offers and, incidentally, disproved the widely held belief that modern houses are appreciated only by a very small and select group. So Ryan built himself another house nearby (No. 1 on the site plan-rightand pictured on page 108). Encouraged by the combined appearance of the houses standing side by side, reinforcing each other's individual merits, he decided to build two more on speculation (above and page 110). Considered as a group, the four houses have the harmony of a quartet, yet each gives its owner individualism such as he could not obtain in the usual subdivision where monotony of design is frequently mistaken for harmony. Spurred by the public reception given these houses, Ryan has recently started nearby a group of similarly designed but smaller units which have earned the endorsement of the Revere Quality House Division of the Southwest Research Institute.

Like all the houses in the initial group, the one pictured above is closed to the hot western sun but open to the southern summer breeze. Since the street is also to the south, the outdoor living areas are screened by a horizontally louvered fence. As in the others, the living and sleeping quarters are widely separated for the privacy of the latter (in this case, by a big kitchen-recreation room) and are marked by entirely different kinds of planning. While the bedrooms and baths are compactly grouped in a tight rectangle, the other rooms

are open-planned for flexible indoor living and easy enjoyment of the out-of-doors. It sold for \$24,000, including land, landscaping and architect's fee.





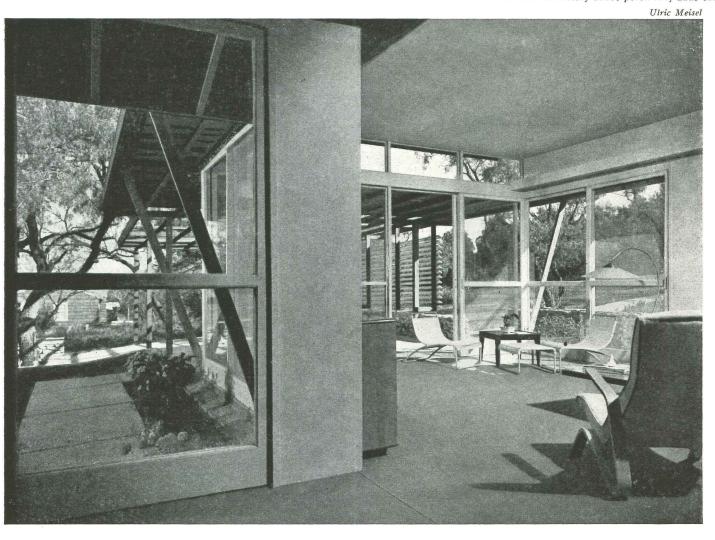




Trellis-covered terrace off east end of living room is shaded in summer by overhead vines and protected from street view by louvered screen (picture, opposite page), which permits passage of breeze.



Sliding glass panels open fully carpeted living and dining rooms to terrace. Clerestory above porch roof adds east light to living room.

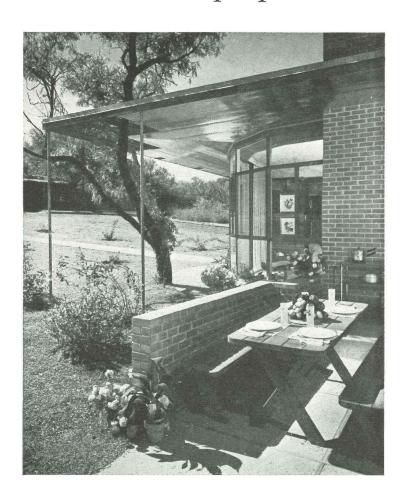




Architect-builder's own house has Texas-sized multi-purpose room

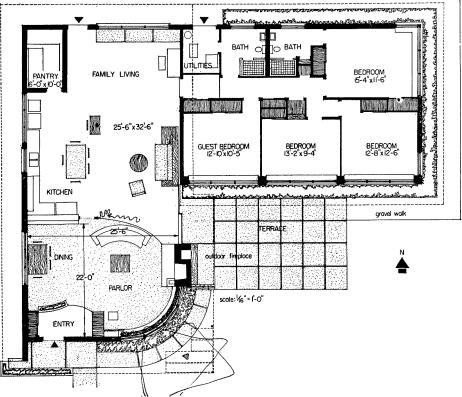
While the compartmented bedroom wing of Ryan's own house is as private as it is conventional, the other wing is a single room 25 ft. wide, 54 ft. long. Its various parts may be used individually for polite or informal conversation, quiet or noisy play and company or family dining—or they may all be thrown together to accommodate a square dance or the Texas version of baronial entertaining (with the overflow accommodated on the barbecue terrace—photo right). Each of four areas of this big room is defined only by the arrangement of its furniture; however, a flexible screen anchored to one of the interior columns may be wrapped around the self-styled "parlor" area to give it privacy or may be pulled across the kitchen area to hide the dirty dishes. In keeping with the purpose of the areas, most of them are floored with asphalt tile—only the "parlor" is carpeted. Cemented to the floor, this wall-to-wall carpeting, as in the neighboring houses, is treated as an interior finish material.

Exterior design of the house features clean brickwork, narrow window mullions and a wafer-thin flat roof whose wide overhang is faced with aluminum panels and supported by slim pipes (photo right).



Cost breakdown

COSI BICANDONII			
Clearing & grading site	\$209	Electrical work	576
Leveling & filling lot	678	Exhaust fans	174
Foundation excavation	307	Iron work	88
Foundation & slab	2,133	Painting	735
Slab fill	239	Tiling in baths	75 3
Masonry	2,001	Glass shower enclosure	299
Insulation	140	Venetian blinds & curtains	532
Lumber & millwork	2,110	Floor coverings	1,340
Carpenter labor	1,703 978	Walks, terraces & drives.	507
Roof slab	978 787	•	76
Roofing & sheet metal	624	Subdrainage	66
Steel sash	366	Cleaning	
Glass & glazing	1,591	Overhead	1,200
Hardware	254	Title, survey & closing	
Plumbing	1.510	costs	225
Heating	1,429	Total (excluding land,	
Appliances	700	landscaping, pool,	
Kitchen cabinets	575	sprinkler system and	
Utility connections	125	architect's fee)\$	25,030

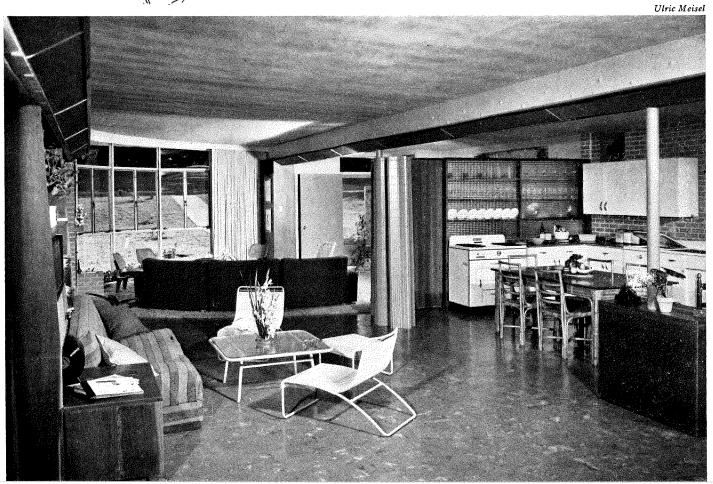




Small swimming pool, which cost \$7,300 is adjacent to garage at rear of house (No. 1 on site plan, page 106) and protected by vertically lowered screen.



Fireplace flanked by glass is focal point of "parlor" which may be enclosed by folding screen (above) or opened to the family living area (below).



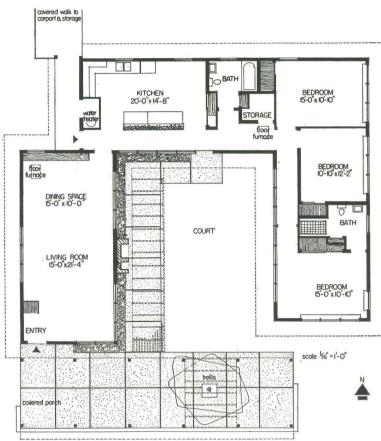


Redwood trellis, partially covered with aluminum sheeting, runs across open end of court and along living-room wings.



Above, view from street. Below, living area features built-in cabinets, floor-to-ceiling windows, wall-to-wall carpet.

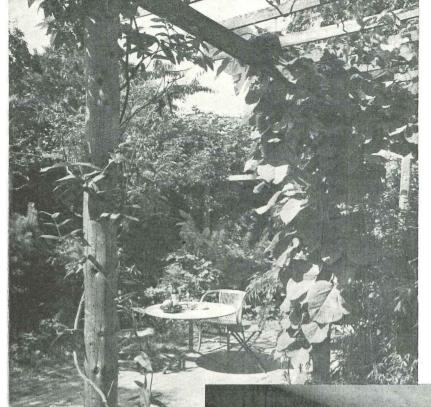




U-shaped house faces its court to street to catch Texas breeze

In this house (No. 3 on the site plan, p. 106) Architect Ryan comes up with a different—and forthright—solution to the orientation problem presented by his south-facing lots. The rooms are grouped around a court which is open on the street side so that it gets the full advantage of the southerly breezes. The difficulty presented in this solution is, of course, that of preserving the privacy of the court despite its openness to the street. Ryan has provided for this by setting the house back 60 ft. from the street and by running a wall and a trellis, with supplementary trees and planting, across the open end of the court. The interior layout of the house features open planning in the living area and privacy in the sleeping area which also mark the other houses in the group. The connecting wing between these two areas is given over largely to kitchen, bath and storage with the carport located in the rear. This house was built on speculation and sold for \$29,050, including the double lot.

CONSTRUCTION OUTLINE: Foundation — reinforced concrete. Exterior walls—1 in. cement stucco on metal lath, studs, 4 in. rockwool and plaster. Floors—concrete slab. Ceilings—metal lath and plaster. ROOFING—cedar shingles. Carport—corrugated aluminum, Vermiculite concrete slab, Zonolite Co. and built-up roofing. SHEET METAL WORK: Flashing and gutters—26 gauge galvanized iron. WINDOWS: Sash—steel casement, Fenestra, Detroit Steel Products Co. Glass—double strength, quality B. FINISH FLOORING: Main rooms—Cali-wool carpets, Oriental Rug Cushion Co. Kitchen—asphalt tile, Armstrong Cork Co. Bathrooms—Monarch Tile Co. PAINTS—Lowe Bros. Co. DOORS—Roddis Lumber & Veneer Co. HARD-WARE—Sargent & Co. ELECTRICAL SWITCHES—Mercury, General Electric Co. KITCHEN EQUIPMENT: Sink and cabinets—Youngstown Kitchen Div., Mullins Mfg. Corp. BATHROOM FIXTURES—Eljer Co. Wall heaters—Day & Night Mfg. Co. HEATING—two floor furnaces, American Radiator-Standard Sanitary Corp. Controls—Minneapolis-Honeywell Regulator Co. Water heater—Hoyt Heater Co. Exhaust fan—Hunter Fan & Ventilating Co.

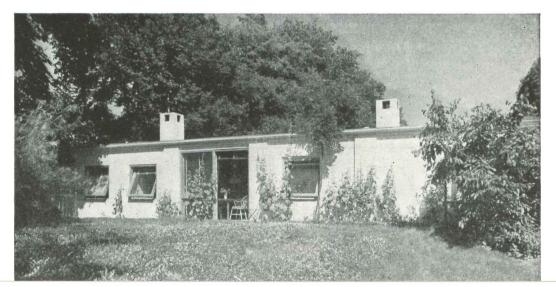


Danish house is attractively integrated with its gardens

Thoughtful planning and nice detailing blend comfortable living quarters with natural beauty—despite an austerity of budget and materials

ERIC STENGADE, Architect

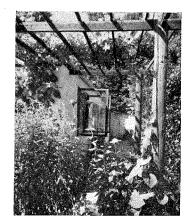




Viewed from study-bedroom, living and dining areas are divided simply, informally and flexibly by an upright piano painted to blend with the room's decor. Ceiling is covered with striated acoustical tile. Windows and door open upon the rear yard (left). Panel in wall at right slides sideways to open a pass-through to the kitchen (next page).

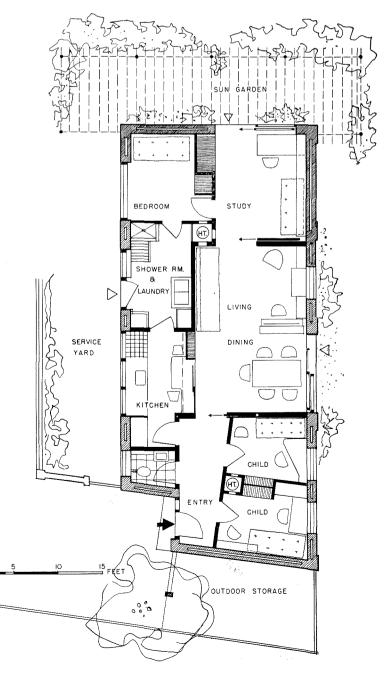
Danish architect's home counts on the out-of-doors to off-set its minimal dimensions

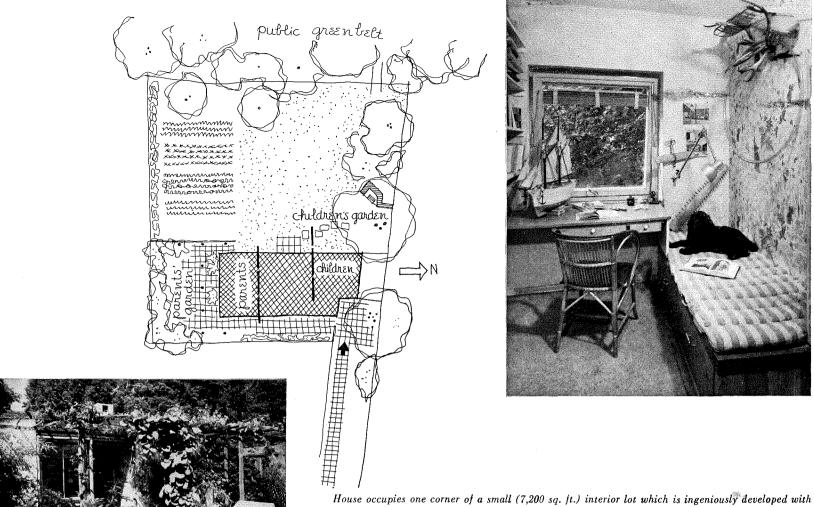
Sliding panel in partition between kitchen and dining area converts kitchen breakfast table into a pass-through counter and opens the back of the kitchen cabinets so that china may be transferred directly to the dining room table. Splayed face of cabinet increases depth of storage shelves near ceiling where head room is not important. Below: A view across sun garden down narrow front service yard showing use of trellis and informal floral planting to achieve mellow otmosphere which compliments the house's simple design.



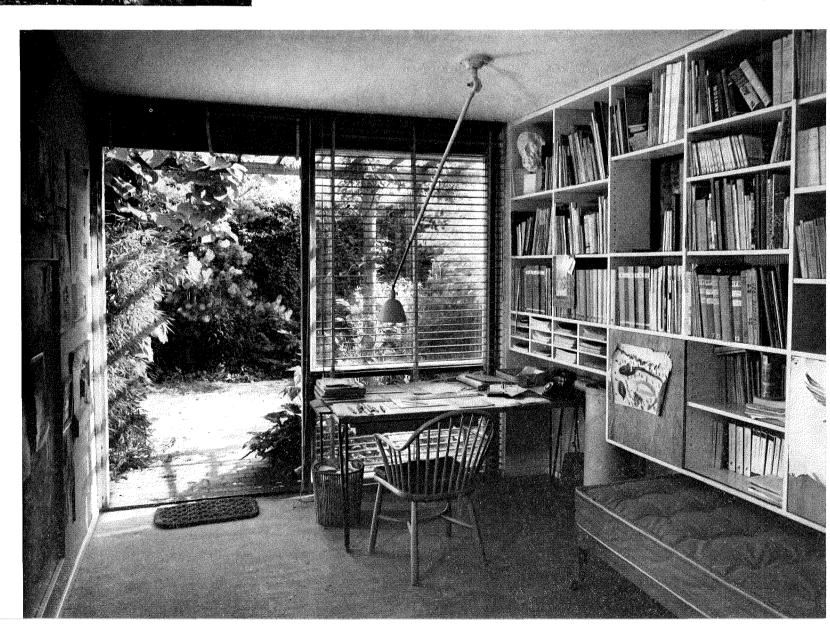
Although its floor plan (with bedrooms at either end of the living area and a single lavatory a long walk from the master suite) seems unworkable when measured against U. S. standards, this small Danish house contains several design ideas which make good sense in any country: 1) Through the use of large windows, sliding glass doors, trellises and small private gardens, the size of the small rooms is magnified. 2) Built-in furniture, scaled to the room's dimensions, makes the most of the meager floor area—the kitchen breakfast table (left), for instance, doubles as a work counter and a serving table for the dining room. 3) Fostered by government restrictions on Danish building, both construction and design are extremely simple and economical, yet both exteriors and interiors are extremely attractive—thanks to the architect's deft detailing and his use of nature to the utmost.

This house was designed for his own family by one of Denmark's top-flight younger architects, Eric Stengade, creator of the Danish Pavillion at the 1939 World's Fair, recent winner of the Gold Medal of the Royal Academy of Fine Arts in Copenhagen, now visiting contemporary U. S., buildings preparatory to designing the Bernadotte International School in Denmark.





House occupies one corner of a small (7,200 sq. ft.) interior lot which is ingeniously developed with separate gardens for parents and children, a vegetable garden, a lawn and a small front service yard. Aside from chairs and mobile beds, most of the furniture is built-in to make the most of the small rooms (note table and bunk in child's 7 x 10 ft. room above, and wall-hung bookcase in 10 x 12 ft. study-bedroom, below). Practically hiding the south end of the house, the vine-covered trellis (left) eases the transition between indoors and garden.



Two merchant builder houses feature unusual roof framing system that cuts costs for builder, provides more living space for buyer

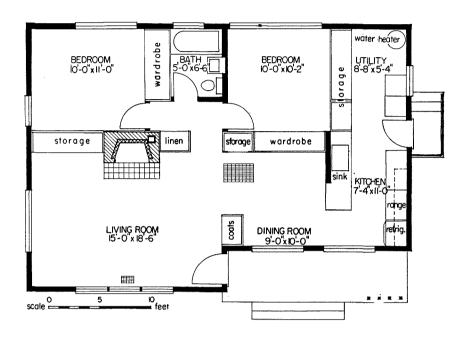
LOCATION: Bow Lake, Wash. BLISS MOORE, JR. & ASSOCIATES, Architects HAINSWORTH CONSTRUCTION CO., Builder

A roof framing system which results in construction economies for the builder and more interior space for the buyer marks these two small houses. They are handsome prototypes for 40 units now being built at Bow Lake Subdivision near Seattle.

Architect Moore has modified an orthodox rafterand-ridgepole roof with a prefabricated Howe truss which spans most of the house lengthwise. (See diagram, right). The result is to minimize framing, eliminate most interior load-bearing partitions. Freestanding storage units are used to partition most of the house. Builder Art Hainsworth estimates that this added storage space restores to active use about 4 per cent of the floor area normally occupied by load-bearing walls.

In addition to providing amenities which boost sales, the unusual roof framing system is said to pay off beforehand in construction economies. (Cost per sq. ft.: \$9). It permits rapid enclosure of the house, and greater freedom in plastering walls and ceiling, installing floor. The prefabricated wardrobes, closets and storage cabinets are not put in place until all other interior work is completed. These units are fabricated in the builder's own shop at a cost considerably less than that of interior partitions.

Despite these advantages, this type of construction has provided some financing headaches for Hainsworth. FHA would not give him a full mortgage commitment partly because of its misgivings about the roof framing system. The local office granted only \$6,650 form the small house, \$7,100 for the larger one-about \$2,000 less than their sales prices. Since he knew that his prospective buyers could not make up this difference in down payments, Hainsworth worked out other arrangements. He sold the houses on contract, \$500 down and \$75 a month, with the provision that the purchaser assume the mortgage in four years. By that time, the relatively high monthly charges will have reduced the contract to the amount of the mortgage, and these charges will be reduced to the FHAinsured level. This roundabout financing has not materially affected sales, according to Hainsworth, although he has applied to FHA for a higher commitment on the 25 houses he is building this year.



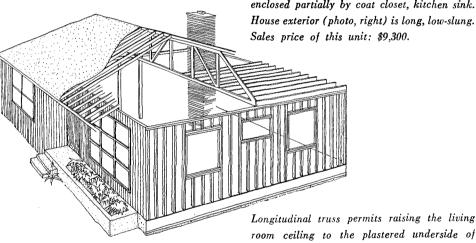
Large house (plan, above) features dining room enclosed partially by coat closet, kitchen sink. House exterior (photo, right) is long, low-slung. Sales price of this unit: \$9,300.

sloping roof. Result: welcome relief from the

cramped feeling common to living areas in

small houses. Ceilings in all other rooms are

furred down.

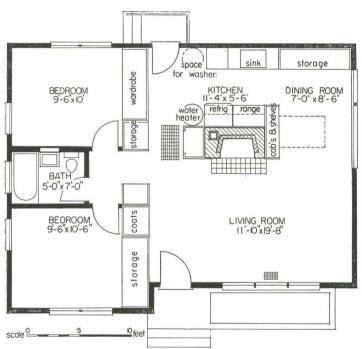


Cost breakdown

Site preparation and groundwork	266
Concrete footings	448
Framing lumber	713
Exterior and interior wall boarding	306
Brickwork	267
Composition roofing and sheet metal	242
Roof insulation	58
Steel sash and glass	195
Plastering	368
Millwork (including wall partitions)	809
Hardware—rough and finish	59
Carpenter labor—framing and finishing	910
Plumbing and sewer	964
Heating unit	151
Electric work and lighting fixtures	209
Floors—oak and fir	310
Painting and decorating	340
Linoleum floors and drainboards	82
Window shades	32
Permits, cleanup and incidentals	75
State taxes	220
TOTAL (excluding land, financing,-	
sales expense, overhead and profit)	7,024

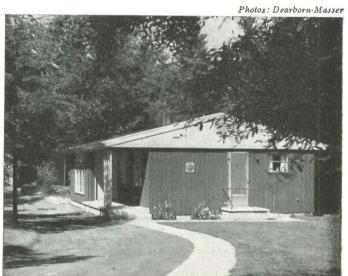
CONSTRUCTION OUTLINE: Exterior walls -fir striated vertical boarding, 15 lb. paper, 1 in. shiplap sheathing, studs, Rocklath and plaster, U. S. Gypsum Co. Floors-oak. ROOFING-built-up. FIREPLACE: Damper -Tristop Damper Co. WINDOWS: Sashmetal Trimset, Fentron Steel Works. Glassdouble strength, quality B, Libbey-Owens-Ford Glass Co. FLOOR COVERINGS: Kitchen and bathrooms-linoleum, Armstrong Cork Co. WALL COVERINGS: Living roomfir. Bedrooms and halls-plaster. All interior walls formed by storage cabinets, etc. ELEC-TRICAL INSTALLATION: Switches—Arrow-Hart & Hegeman Electric Co. Fixtures-Seattle Lighting & Fixture Co. BATHROOM FIXTURES - American Radiator-Standard Sanitary Corp. HEATING-oil burning floor furnaces, Meade & Co.





Smaller house's floor plan (above) achieves high degree of openness in living area. Exterior photo below points up clean, simple details which characterize this \$8,600 house.









TOMORROW'S HOSPITAL MUST BE DIFFERENT

A report on changes in medical and nursing practice that will call for changes in hospital design—by ROBERT M. CUNNINGHAM, JR.*

New medicines, new treatments and new administrative economies call for a new architecture in hospitals.

Early ambulation requires more toilets, wider corridors, new recreations rooms, bigger visiting rooms, perhaps central dining rooms. The doctor's need for expensive diagnostic equipment is moving his office to the hospital. And the introduction of antibiotic drugs is moving the drug store in the same direction. More complicated nursing requirements and higher nursing costs demand more efficient floor plans which permit closer nurse supervision, patient self-help, smaller rooms, relocated utility rooms, fewer bed rooms per nursing unit, decentralization of the nursery.

Hospital insurance programs and the control of hospital operating costs suggest more space for administrative functions. Other changes in hospital medicine, methods and economy call for semi-private accommodations to replace the wards, a new "plumbing" system to carry oxygen, double-corridor buildings to cut building and operating costs, new wings to house mental and chronic disease cases. And, today's hospital must anticipate the medical implications of such scientific wonders as television and the atom.

These and a host of other new developments affecting hospital design are the subject of the accompanying article.

*Managing Editor, The Modern Hospital.

Hospitalization is both a medical and a fiscal experience. What happens to hospitals, therefore, emerges inevitably from what is happening in medicine and in the turbulent field of medical economics. In recent years, so many things have been happening in medicine and medical economics that today's hospitals are as different from those of a few years ago as a betatron is from the original roentgen tube. Moreover, in a period when portentous scientific discoveries crowd one another for space in the pages of the medical journals and any congressmen's opinion about health insurance will make headlines in the papers, a hospital can easily become obsolete in the time it takes to build it. With an estimated \$12 billion in hospital construction still needed to meet the nation's bed requirements, however, architects and builders are understandably willing to take the risk.

Today's hospitals, to name the most obvious and possibly the most significant of the changes that have taken place in medicine, are for the walking as well as the prostrate sick. Diagnostics is supplanting surgery as the hospital's major function, not so much because the doctor wants to transfer his practice from the office to the hospital as because the onrush of medical science leaves him no choice in the matter; you cannot put a basal metabolism machine in a black bag, and the average home is poorly equipped and staffed to give penicillin injections every three hours around the clock. With hospitals thus absorbing, or at any rate housing, more and more of the doctor's functions, the operating-room-with-attachments of a generation ago has vanished, and even the small c mmunity hospital is a real medical center by comparison today. In addition to providing the space and equipment and service facilities that are necessary for a constantly increasing number of outpatients, many hospital planners today are adding office space for staff physicians. Already in operation in a number of up-to-date hospitals, the staff office plan is an economy for the whole community; spared the weary shuttle from hospital to office and back again, the doctor has that much more time and energy for his patients. (See p. 126).

More room for early ambulation

If there is new activity at the hospital door as outpatients come and go for examination and treatment, the change on the floors is even more noticeable. A result of the war-born discovery that postoperative patients benefit from exercise, the technic of early ambulation makes today's surgical and obstetrical corridors look like a department store aisle during the Christmas rush. In contrast to the prewar standard which called for a week or ten days of supine and, as it has turned out, mistaken fear of the surgical incision, many patients today sit or stand up on the first postoperative day, totter to the bathroom on the second day, and walk to the sunroom on the third day. After that, they are likely to promenade at all hours until it is time to go home—an event which

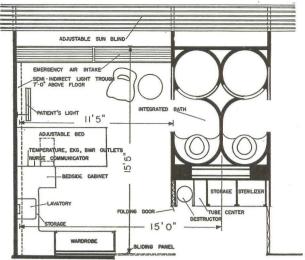
occurs at about the time the patient used to raise his head weakly off the pillow to take soup through a glass tube.

The chief architectural result of early ambulation has been to put a bathroom between every pair of patient's rooms; in some modern hospitals there is a toilet for every room. Peripatetic patients also require more visiting and recreation space; they may walk to X-ray, physical therapy and other departments, where provision for altered traffic must be made. Some of them may wish to eat in a central dining room instead of in bed, a preference which may eventually affect the design of food service departments and facilities if the practice continues to grow.

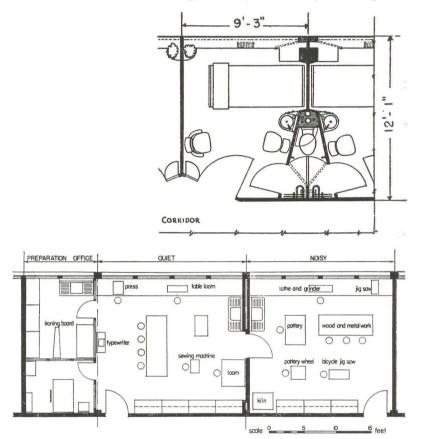
Rehabilitation—a new department

In many hospitals, the sequel to early ambulation has been rehabilitation, another outgrowth of the war. The military hospital must keep its patients until they are fit to fight again, and medical economy thus requires that everything possible be done to hasten the result. During the war, spectacular results in returning sick and wounded personnel to duty were achieved by Col. Howard A. Rusk of the Army Air Forces. As director of the Baruch-endowed Institute of Physical Medicine and Rehabilitation at New York University-Bellevue Medical Center since the war ended, Dr. Rusk has been bringing his concept of the rehabilitation function to civilian hospitals. The effectiveness of his program is demonstrated by the fact that rehabilitation departments are included in the plans for many new hospitals, while doctors and administrators who are resigned to carrying on in old buildings are dusting off the blueprints in an effort to find space enough, at least, for a Hubbard tank, a vaulting horse and a ping-pong table.

Changes such as early ambulation and rehabilitation, however, may take years to gain acceptance throughout the rank and file of the nation's 140,000 practicing physicians. Not so the most dramatic of all the recent medical discoveries the antibiotic drugs. First the sulfonamides, then penicillin, next streptomycin, and now aureomycin have swept into the practice of medicine and, like an offshore wind in a fog, brightened up the whole outlook immediately. In less than ten years, the antibiotics have virtually eliminated whole diseases, reduced previously grave infections to the status of a light cold, and taken most of the terror out of many postoperative and postpartum complications. The effects of these epic events on hospital design are just beginning to take hold. Vastly increased space must be provided, for example, to store the huge quantities of drugs that must be kept on hand all the time. In addition to the antibiotics, new anestheic agents and increasing use of parenteral solutions, blood and blood fractions have also pushed back the walls of the hospital pharmacy, which has been transformed from a hole-inthe-corner drug closet to a pharmaceutical manufacturing and distributing center of substantial professional, financial and



"... A bathroom between every pair of patients' rooms or a toilet for every room ..." Above, projected hospital room of the future by Architect Alfred L. Aydelott. Below, minimal room for Peter Bent Brigham Hospital, Hartford, Conn., by Designers Markus & Nocka (FORUM, Aug. '49).



"... Rehabilitation departments are included in the plans for many hospitals..." Above, suggested plan for rehabilitation department in 200bed general hospital by Architect Isadore Rosenfield. Below, occupational therapy loom at Grace Hospital. Detroit.



architectural proportions. Inhalation therapy, too, is making its mark on the hospital architect's drawing board as more and more doctors order oxygen to support treatment. With heart and cardiovascular disorders on the increase, for which many doctors now use oxygen routinely, additional storage space must be found for oxygen tanks, and provision must be made for handling and transporting them around the hospital. Because of the noise, inconvenience, cost and hazard of trucking the tanks through hospital corridors, and the frequent need for oxygen to be available swiftly in an emergency, some hospital designers are including a central oxygen system in their plans, providing for the gas to be piped from a central source of supply directly to the bedside.

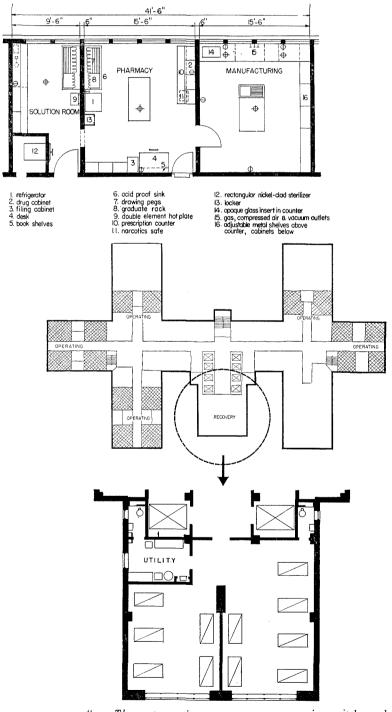
Design to help the nurse

Provision of storage and handling space and the other facilities made necessary by the new drugs and treatment technics has been their immediate effect on design. It is likely, however, that the long term changes produced by these developments will be even more profound. Inevitably, they are changing the character of nursing service, and it is around nursing service, essentially, that any hospital must be built. Obviously, the patient who is geting penicillin or streptomycin or oxygen or intravenous glucose needs the closest kind of nursing supervision. Their administration is time-consuming, the materials must be sterilized, and the patient must of course be watched and checked closely throughout each procedure. Thus the intensity of nursing service mounts with the increasing use of these methods. As nursing intensity rises, the number of patients a nurse can care for, and the number of beds in a nursing unit, must fall accordingly. So far, these effects have been neatly offset by other factors—early ambulation, the larger proportion of diagnostic patients, and the stark economic fact of the nurse shortage. Also helping the nurse as she runs faster and faster to stay in the same place is the architect, who now puts a sub-utility room between each pair of patient's rooms, instead of at the end of the hall, and who makes the rooms themselves smaller and places bedside equipment for maximum self-service by the patient. Another development that has emerged directly from the new medical technics is the postoperative recovery room, a nursing unit located adjacent to the surgical department and specially designed for the high intensity nursing that is required during the first 24 hours following surgery. Some planners have envisioned a hospital in which the recovery room concept is carried on to its logical conclusion and nursing units are stacked in the structure according to the intensity of the service required. The full flowering of this idea would mean, however, that a single patient would have to be moved along successively to units of lesser nursing intensities as he recovered from his illness—a procedure nicely calculated to make him feel even more like an inanimate object on an assembly line than he does now.



Piage

"... A pharmaceutical manufacturing and distributing center of substantial proportions..." Above, new pharmacy at St. Mary's Hospital, Rochester, Minn. Below, suggested plan for pharmacy in a 200-bed hospital by U. S. Public Health Service.



"... The postoperative recovery room—a nursing unit located adjacent to the surgical department..." Above, postoperative recovery room at center of 16-operating room floor of the 1,000-bed Hartford Hospital, Hartford, Conn., by Architects Coolidge, Shepley, Bulfinch & Abbott.

The fact is that doctors are aware of the assembly line feeling and are doing everything they can to combat it, needled by the comparatively recent knowledge that no great purpose is served by curing the patient's body at the expense of his psyche. The results have been startling. In place of the aseptic whites and utilitarian tans of a few years ago, the hospital room today is militantly merry, with colorful chintzes and prints abounding among the furnishings and pastels mandatory for the walls. Beset by this determination to make him feel at home or else, the patient can distinguish his hospital environment from a New England tea room only by the acoustical tile on the ceiling. In this day of public relations rampant, even the paper doily on his tray, like as not, carries a jolly little message from the management.

Decentralization comes to the nursery

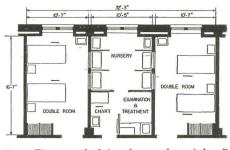
Whether the adult patient has gained or lost from this sudden concern for his psychic needs is thus a matter of taste, but there is less room for questioning the new deal for the newborn infant. The mechanical routines of the big, central nursery are ill-suited to the actual needs of the individual organism, according to the latest scientific view; one baby's milk is another's poison. So that babies can be fed and fondled by their own mothers according to their own needs, instead of only by nurse and by clock, the decentralized nursery or rooming-in plan has been evolved, with bassinet kept in cubicles adjacent to the mother's rooms or, at most, in nursery units designed for six or eight babies. Like any radical change, the rooming-in plan is meeting stiff resistance among doctors, hospital administrators and architects, who can die as hard as the next man. But the method is spreading as reports of its beneficent effects on mothers as well as babies pile up evidence in its favor, and there can be little doubt that rooming-in is the shape of things to come on obstetrical floors.

The knife gives way to drugs

In whatever pattern, obstetrical floors and nurseries are here to stay; it is unlikely that medical science will ever develop a satisfactory substitute for childbirth. In some of its other aspects, however, medicine is outsmarting itself at a rate which makes the continued existence of some previously important activities doubtful. What is happening in the ear, nose and throat department, for example, should not happen to a doctor who has to pay income tax. Preventive immunizations have all but wiped out many of the communicable infections affecting the upper respiratory tract. Drug therapy checks others before serious complications can develop; the old familiar sequence of measles or scarlet fever to middle ear infection to mastoiditis to surgery is practically unheard of today. Many presumed sinus infections have turned out to be allergies and are responding nicely to treatment with



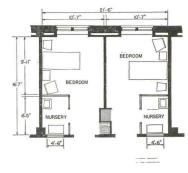


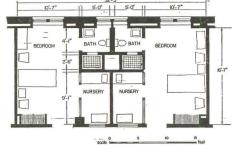




"... The new deal for the new-born infant."
Rooming-in nursery units at the George Washington University Hospital, Washington, D. C., by Architect Slocum Kingsbury. Infants rest in plastic baskets atop wheeled tables which are moved back and forth between mother's bedside and adjacent glass-enclosed nursery. Pictures above are of semi-private nursery-bedroom suite. Plans below show two varieties of private accommodations.

Photos: Davis-Studio, Blakeslee-Lane, Federal Works Agency





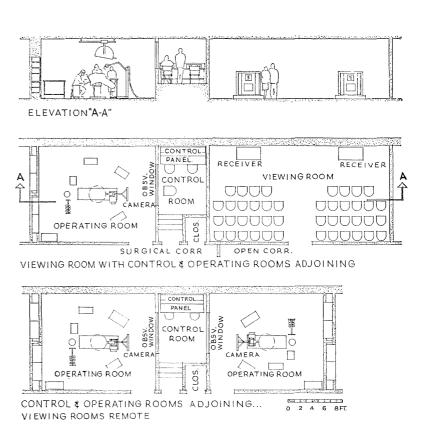
the new antihistaminics; separated septums are thus becoming a rarity in the operating room sink, where they used to be stacked up like turkey bones after Thanksgiving dinner. A ten-year-old with tonsils had become almost a medical freak until the tide was turned a few years ago—again by the drugs which killed the infections which resulted in hypertrophied, and hence removable, tonsils and adenoids. Operation T & A is still high on the surgical schedule, but the queue at the hospital door during school vacations is getting shorter.

Enter television and the atom

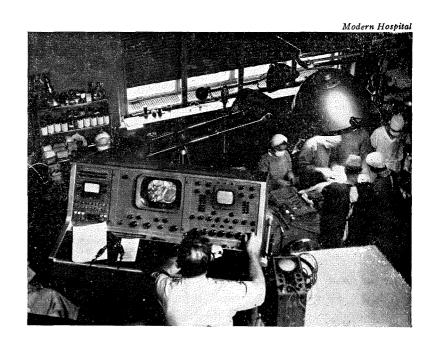
Otolaryngologists who are discerning and skillful and energetic and young enough are scanning the medical school catalogues for postgraduate courses in allergy, cancer and other related subjects to take up the anticipated slack in their practices. At the same time, long-headed hospital planners are studying the statistics of surgery in an attempt to unveil the proportion of operating rooms to beds that will be needed day after tomorrow. This is uphill work, not only because it is difficult to gauge the future course and pace of the changes that are already under way, but chiefly because it is impossible to foretell what medical miracles may be lurking behind the next leaf on the calendar. The use of atomic materials in medicine, for example, appears to hold considerable promise for the development of a successful nonsurgical treatment for cancer. The effect of any such method on the demand for hospital facilities would be immediate and drastic, but no one can say whether it will come next month, next year, ten years from now or never. At least one architect, however, has planned a hospital with 25 per cent less operating room space than today's standard, and with a lead-lined core which provides for an atomic treatment room on every floor. And, whatever its size and number, the operating room will no longer be at the bottom of a pit or amphitheater whose sides rise steeply in tiers of viewing stands for students and visiting medical dignitaries. They can see and learn better, it is plain today, watching the operation on television.

. . . and the Blue Cross

Unhappily, the onward movement of science has necessarily damaged the hospital patient's pocket as much as it has aided his body. The antibiotics are murderously expensive. So are sterile solutions; so is oxygen; so is the high intensity nursing service that must accompany these technics; so, in an inflationary economy, are all the other talent and help needed to make up today's ratio of one-and-a-half to two employees for every hospital patient. Apologists for the voluntary hospital system are fond of pointing out that whereas the daily costs of hospital care are higher than they used to be, hospital stays are much shorter, so the cost per case is about the same. This is perfectly true, but it is dim comfort to tell a man who has



"... They can see and learn better watching the operation on television..." Suggested floor plans for accommodating television equipment and audience adjacent to operating room in Chicago's St. Luke's Hospital. Below, experimental telecast of an operation at this hospital.

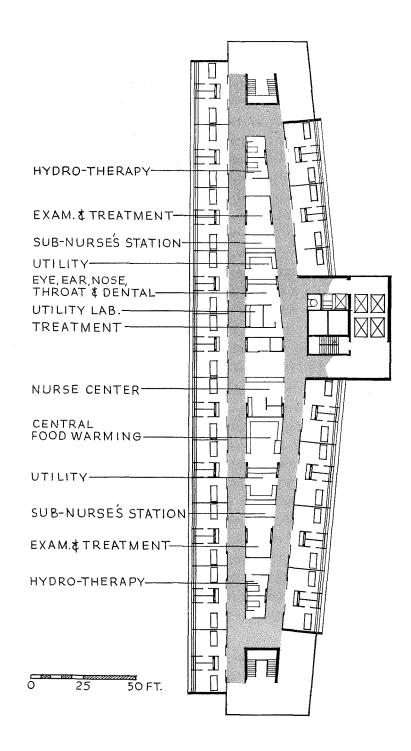


to pay a \$25 a day hospital bill that he should be thankful because his grandfather might have died from the same disease.

Fortunately, as hospital costs have spiraled upward during the last ten years, hospitals have offered something more than conversation to help their patients fight off insolvency. Better business methods have helped keep costs in sight, if not under control, and Blue Cross has helped millions of patients to pay what had to be paid. Both elements have affected design. After generations in which hospitals were run by humanitarians who considered it beneath their dignity to look a deficit in the face and call it by name, the economic pinch of depression and war have forced the discovery that charity and good cost accounting can live together amicably, if not without occasional argument, under the same roof. Accounting soon revealed that 60 to 70 cents of the hospital dollar was paid out in salaries and wages. Together with the acute personnel shortage that developed during the war, this fact brought recognition of the basic economic truth, long known to industry, that things are cheaper than people. It costs thousands of dollars to put those sub-utility rooms alongside the patients' rooms, but it saves steps for nurses and pays off in the long run. It costs money, too, to provide recreation space for hospital employees and to build bigger and pleasanter service areas for them to work in, but it cuts down labor turnover and avoidable turnover is the ultimate extravagance. The new hospitals have more space for administrative offices and functions because the new hospitals have better administration; you can afford to spend a thousand dollars providing a room for supervisory training demonstrations when you can save a thousand dollars a year on better trained supervisors. The double-corridor plan, with service facilities joining two parallel rows of patients' rooms, is another new concept based on the economy of spending money to save steps.

The ward becomes semi-private

More than any other pressure of economic circumstance, however, Blue Cross, the hospitalization prepayment plan that has enrolled 30 million people in the last ten years, has changed the shape of the hospital. The open ward for 16 or 20 or more patients is a thing of the past in America. Inherited in the first place from Europe, where the hospital is for the sick poor and the well-to-do are cared for at home, the ward has ceased to exist here except in the largest hospitals and in those operated by various branches of government to care for indigent public charges. Elsewhere, the four-or-six-bed ward is the cheapest accommodation and the two-bed and small private room are in greatest demand. Armed with his Blue Cross card, which will pay the whole cost of semiprivate (two or four beds) and the greater part of private room care, today's patient is in no mood to share his miseries and embarrassments with the general population in a large ward. Give him some privacy, it says here on his card—a message the architect has had to heed. (Continued, next page.)



"The double-corridor plan with service facilities joining two parallel rows of patients' rooms is ... based on the economy of spending money to save steps ..." Typical double-corridor floor plan for Architect Alfred L. Aydelott's projected hospital of the future (for room plan see p. 117).

It may be, however, that factors outside the hospital economy as such will once again open the ward that Blue Cross and wartime prosperity closed. If we should get government health insurance, for example—a possibility that is melancholy to contemplate but foolhardy to ignore—the tendency for hospital service to move toward the lower payment levels would probably be irresistible and lower payment levels would mean larger wards again. Short of compulsory insurance, some kind of government subsidy for hospitals, at least enough to put a floor under indigent care, is believed to be inevitable by many authorities who have watched philanthropy languish while costs soared. To the extent that hospitals must look to the government for support, they will unquestionably have to operate on a how-much-for-\$5 instead of a good-care-at-whatever-cost basis. The same shift in emphasis, as a matter of fact, would undoubtedly develop in a period of extreme inflation or depression, regardless of government action. In any case, farsighted planners know which partitions could come out to make wards and which private rooms could be converted to two- or three-bed units.

It is a little-known fact that roughly half the hospital beds in the country are occupied by patients with mental disease. State mental hospital systems are already desperately overcrowded and the admission rate is going up instead of down. Necessarily, therefore, pressure has developed on general hospitals to accept these patients and many are planning or building psychiatric units or converting other space to this use today. Another long-time state responsibility, however, tuberculosis, is likely to diminish in size as present methods of case-finding and treatment are more widely applied. One architect who is planning a tuberculosis hospital now is arranging in advance for its conversion to general use when tuberculosis disappears—within 25 years, as he thinks.

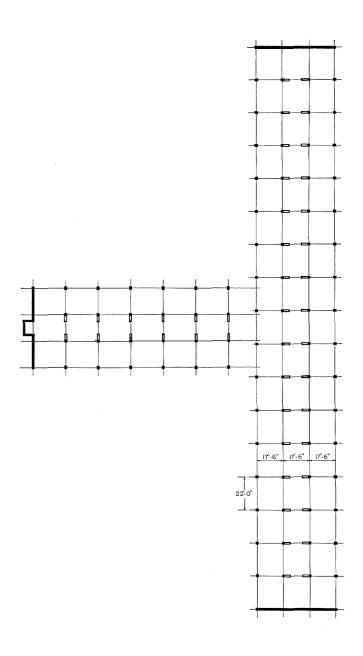
The next great hospital problem

Medically as well as economically, the next great problem in health and hospital care is chronic disease. With the help of penicillin, grandmother has survived pneumonia, to live another ten years—possibly suffering from arthritis or arteriosclerosis, perhaps to die of cancer. Occupying a bed in a general hospital, she is using more hospital care than she needs and costing more than she or society can afford to pay. In a special facility she would be removed from the medical or surgical skill that she is likely to need at any time and, besides, who is going to build the facility? The first groping steps toward an answer may be seen in the general hospital with a special geriatric floor or in the nurses' home converted into a chronic diease unit. However difficult the chronic disease problem may become for doctors and hospital planners, though, they can be fairly certain that grandmother herself is grateful for those ten years of added life, or if grandmother isn't, God is. That is the rewarding thing about hospital work.

MODULAR

paid for by new design economies:

- 1. Repetition of identical $17 \frac{1}{2} \times 22$ ft. framing bays throughout to simplify construction.
- 2. Loft construction with exposed concrete frame and cavity masonry fillers laid without scaffolds.
- 3. A new type, low cost air conditioning system to save space and avoid cross-contamination.
- 4. Double glazing in continuous windows to lower the air conditioning load and add a foot of usable space to each room.
- 5. Separate toilet facilities for each semi-private room at a cost less than some recent hospitals have spent for lavatories alone.





PACE ASSOCIATES, Architects; W. H. Binford in charge of design

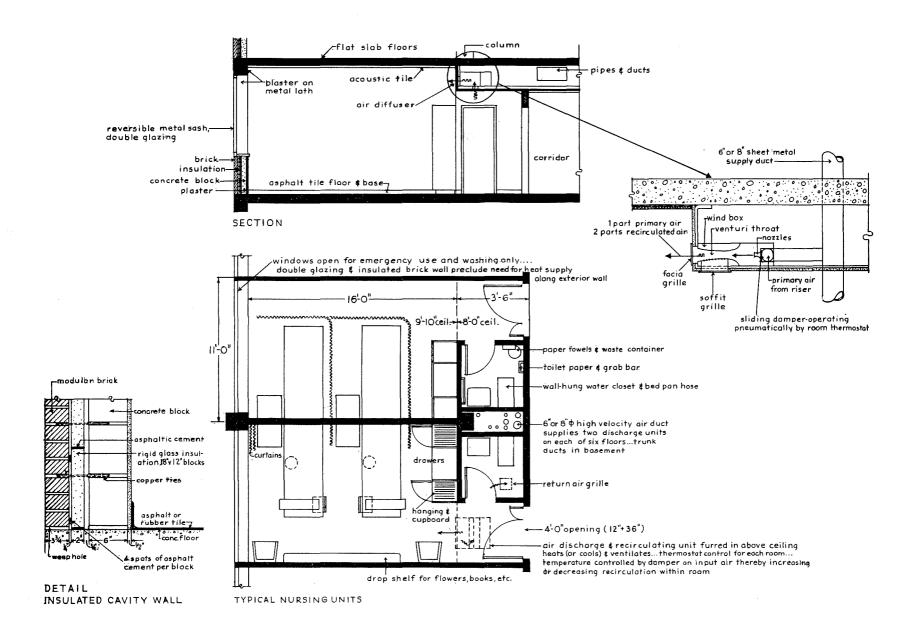
All the essentials of space and structure in this hospital have been pared to a very economical minimum to make room in a median building budget for such out-and-out amenities as a private toilet for each sickroom, wall insulation, acoustical ceilings, continuous windows of double insulating glass and, most important, a new and simple kind of air conditioning which achieves very low cost and yet avoids cross-contamina-

This 400 bed building was planned by Pace Associates to give the 600 physicians and surgeons on the Chicago teaching staff of the University of Illinois a private hospital for their private patients, including generous facilities for research in geriatrics (the diseases of old age). Whether or not it is ever built for them, it embodies progressive solutions to many planning and construction problems which are well worth study by anyone thinking of building a hospitalor, to a lesser extent, a hotel or an apartment project.

How money was saved . . .

The extra cost of the amenities planned will be paid for by the savings realized on the economical construction of this building, and Pace Associates have devised a half dozen important ways to cut these construction costs:

- ▶ Key to most of them is the repetitive use of uniform 171/2 x 22 ft. column bays throughout the 52½ ft. wide building, see plan, left. As shown on pages 126 and 127, the architects proved that this standard bay can accommodate handily any type of hospital facility-bedrooms, operating rooms, delivery rooms, research rooms, waiting rooms, classrooms, flower rooms, dining rooms, sunrooms, etc.
- The $17\frac{1}{2}$ x 22 ft. bays are small enough to permit flat slab floor construction (8 in. thick) with no projecting ceiling beams to complicate forming or interfere with pipes and ducts. The flat ceiling requires no expensive plaster corners and offers an easy surface for acoustic tile. Moreover, with steel deck forms costing only 30 cents per sq. ft. in Chicago, this type of floor costs less than beam and slab or pan joist construction, despite its greater consumption of concrete. And the greater thickness of the flat slab carries electrical conduit easily and permits the forming of shallow depressions for small areas of tile and terrazzo flooring-many of which are required in a hospital.
- Since all spans are uniformly $17\frac{1}{2}$ and 22 ft., column sizes were limited to two: 16 x 16 in. on the interior, 16 x 20



in. on the outside. This will simplify column forming.

▶ Borrowing an economy technique from the lowly loft building, Pace Associates have exposed the hospital's concrete frame to the exterior (as did Architect Mies van der Rohe in his Promotory Apartments—Forum, Jan. '50). The opening under the windows is filled with an inexpensive nonbearing wall of 4 in. of brick, 2 in. of foam glass and 6 in. of concrete block plastered on the inside (see detail above). This filler wall can be laid inexpensively on the concrete lintel beam without angles by masons working without scaffolding. ▶ All plumbing is concentrated in vertical pipe stacks close to each interior column, thus eliminating offsets and knocking an estimated 15 per cent off the conventional plumbing budget.

Interior columns are concealed inside the plumbing stack enclosures where they require no plaster finish, occupy no useful floor space.

. . . through modular framing . . .

Behind all of these construction economies is the $17\frac{1}{2} \times 22$ ft. framing module on which the entire building is based. Forming a uniform structure $52\frac{1}{2}$ ft. wide with columns spaced $17\frac{1}{2}$ ft. on centers across the building and 22 ft. on centers along its length, this pattern was evolved only after considerable study of hospital requirements.

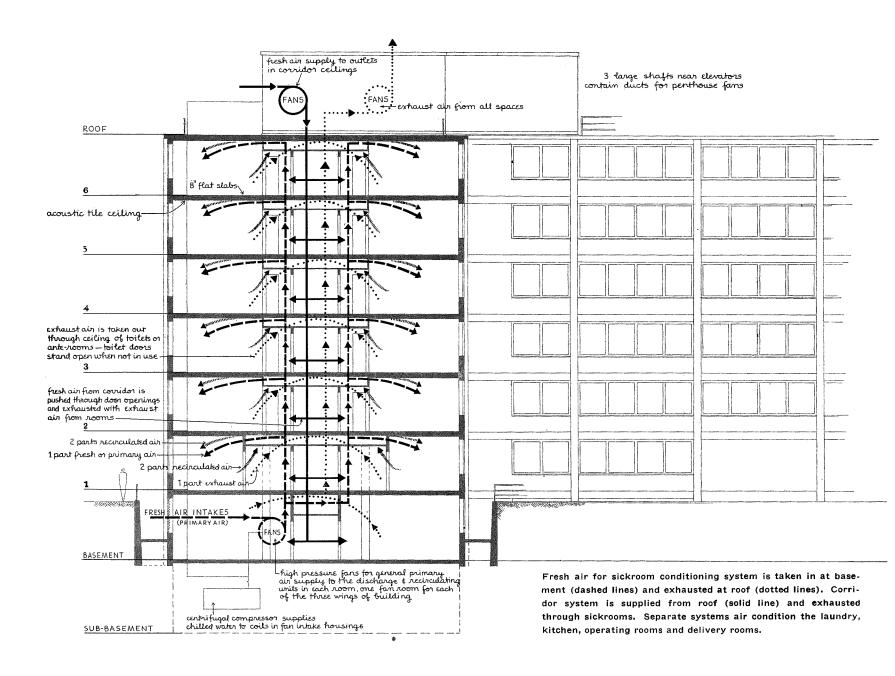
Subdivision of the building's width into three equal 17½ ft. bays achieves more than economical standardization; it removes the interior columns completely from the sickrooms. While the conventional building has interior columns projecting into the sickrooms on

either side of a narrow corridor, the Pace design puts the toilets as well as the corridor and all interior columns within the wide central bay. The resultant sickroom is a clean rectangle 16 ft. long, unobstructed by column projections, into which is fitted a prefabricated bureau-wardrobe 2 ft. deep (see plan above).

The longer 22 ft. dimension evolved from a space study of the basic semi-private sickroom, two of which are fitted into each bay. While a 12 ft. room width is necessary in conventional framing to permit the outer bed to be moved around and through the door without disturbing the inner bed, the removal of column projections from the room permits this operation to be performed in 11 ft. (Sickroom space was also saved by the use of insulation—see below—and by splitting the required 4 ft. door into two pieces—a regular 3 ft. door plus a 1 ft. hinged panel—which together require less swing area than a 4 ft. door and are much more easily opened.)

. . . to pay for such hospital amenities as . . .

So closely dovetailed are the economies and amenities in this hospital that it is hard to say where one leaves off and the other begins. An individual toilet for each room is certainly an amenity—but it is carefully integrated with the economy effort. Placement of toilet rooms back to back at the end of adjacent sickrooms provides a strategic, concealed location for the interior columns. Moreover, the architects claim that the piping required for their two independent toilet rooms will cost no more than that for one intercommunicating water closet compartment with independent bedroom lavatories. And



their six-story pipe stack (serving 12 lavatories and 12 water closets) will cost less than the six-story piping in a recent veterans' hospital for 12 lavatories alone. (In this expensive but common installation, a separate pipe stack with branch piping on each floor was required for each tier of six lavatories.) Since piping normally accounts for about 80 per cent of the cost per plmubing fixture, the economical concentration of piping in the Pace hospital will offset the extra cost of the added fixtures.

The generous provision of toilet facilities fits in, of course, with the modern therapeutic theory of early ambulation and is a precaution against cross-contamination. It also simplifies the nursing care needed by most patients and shortens the distance nurses must travel between patients and sub-utility facilities (each toilet will be equipped with a bedpan hose). Moreover, this hospital with its geriatric research program has a special need for individual facilities.

Double insulating glass used throughout the hospital might seem another instance of hang-the-expense luxury. Integrated, however, with the heating and cooling system (see details above, text right), use of this type of glass is actually expected to save money and to make it possible to place beds nearer the window than would be possible with uninsulated glass. Without double glazing it would have been necessary either to circulate air at excessive temperature or in 50 per cent greater volume. In the latter case larger fans, ducts and more fuel would be required—space-consuming and expensive items. Moreover, cold down drafts from single glazing would necessitate radiators

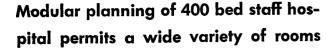
(Continued on page 136)

. . . and a new low cost air conditioning system

To solve the high cost of hospital air conditioning, Pace Associates and their mechanical engineer, Norman Bueter, hope to make this the first building of any kind anywhere to install a new type of high velocity system on which four important air conditioning suppliers are working. It utilizes a new type of induction outlet which provides individual thermostatic control in every room without requiring any chilled water distribution.

The new unit is a simple sheet metal box 7 in. high, 18 in. wide, 24 in. deep which would be set above the furred ceiling over each sick room entry (see drawings opposite page). Primary air, piped at 4,000 ft, a minute from basement fans (see diagram above) is discharged into the box through some 40 nozzles. Passing through a venturi chamber, this current would draw up room air through a soffit grille to be mixed with the primary air at a maximum ratio of two-to-one and discharged into the room through another grille in the facia of the furred ceiling. To reduce the intake of primary air a thermostatically controlled damper will close some of the nozzles. The important new principle worked out for these units is this: with the high velocity air exerting a pressure of about 1 in. at the nozzles, any reduction in the number of open nozzles would increase the velocity of the air while reducing its quantity. The increase in the velocity of primary air passing through the nozzles would increase the induction effect, thereby keeping the total quantity of air passing through the second grille almost constant.

(Continued on page 140)



The basic idea on which the proposed University of Illinois Staff Hospital is based is the proposition that any kind of hospital room—from lavatory to laboratory—can be fitted into a building structure comprised of $17\frac{1}{2} \times 22$ ft. column bays. The floor plans on these pages prove the validity of this proposition and demonstrate the amazing flexibility of the basic $17\frac{1}{2} \times 22$ ft. module. In the basement it is multiplied many times to allow for large kitchen, dining, storage and laundry areas. On the ground level it is used for general administration quarters (which cluster around the



MAIN ENTRAÑOS

CONFE

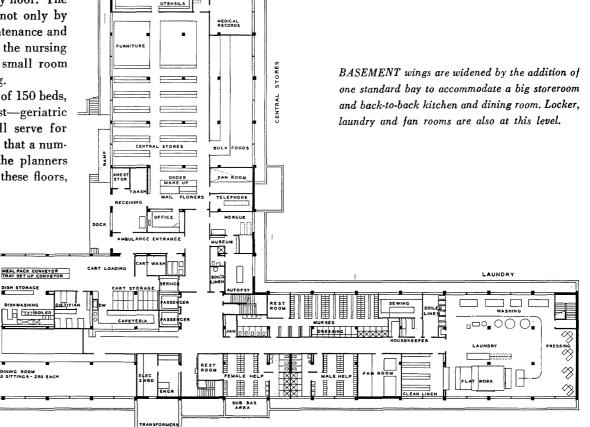
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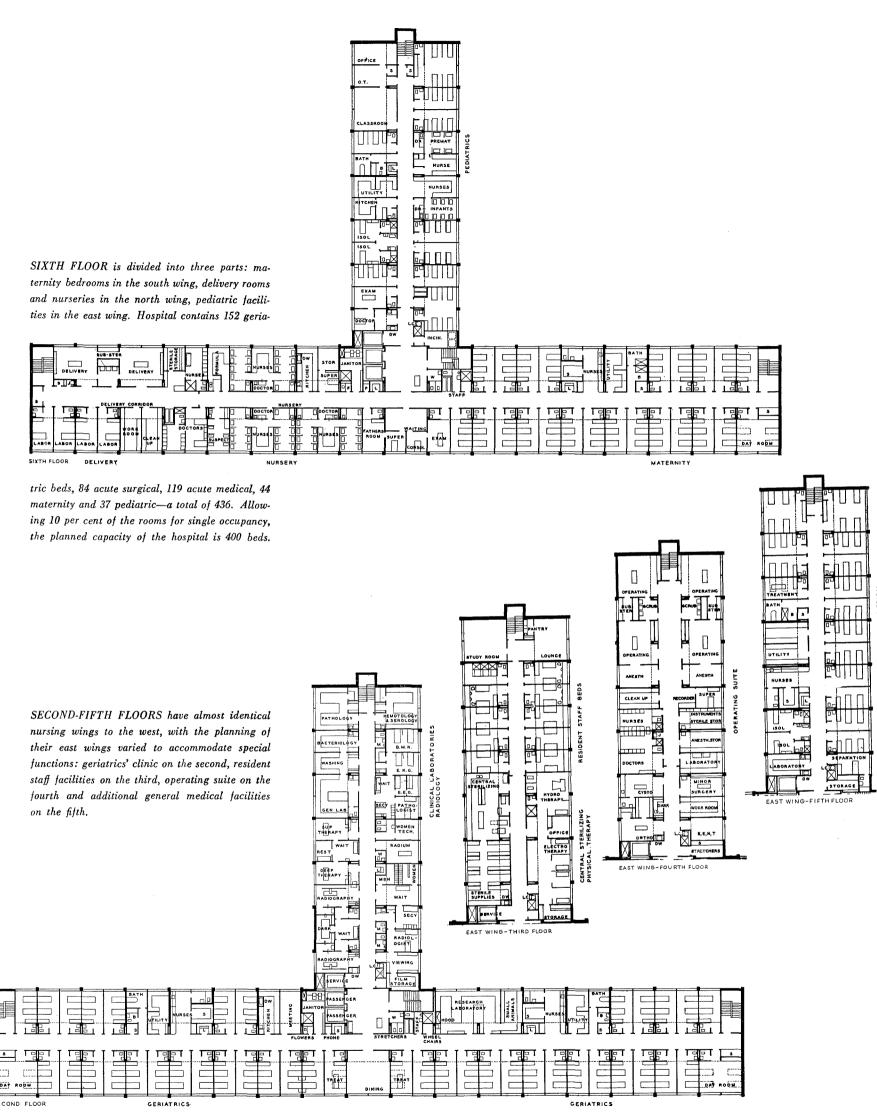
main entrance) as well as for individual doctors' offices in the long west wing. Each of these has its own waiting, consultation and examination rooms. From the main floor on up the utility stacks next to the interior columns are clearly visible.

An identical nursing wing layout, with the compact pairs of semi-private rooms described on page 124, recurs on all levels except the top maternity floor. The smallness of all these rooms is justified not only by economy but because it cuts down on maintenance and decreases the distances to be traversed by the nursing staff. The large window areas offset the small room sizes and avoid any possible shut-in feeling.

The second and third floors, with a total of 150 beds, are devoted to the hospital's special interest—geriatric patients; laboratories on these floors will serve for research in that field. Recognizing the fact that a number of these patients will be ambulant, the planners have provided day rooms at each end of these floors, as well as a small dining room.

FIRST FLOOR accommodates administrative facilities and doctors' offices with attendant waiting, laboratory and examination-treatment rooms. The long facade containing the employees' entry faces west; the patients and visitors' entry is on the southside of the stem of the T.





BUILDING REPORTER

—a quick look at some new buildings, from the top of the Empire State to the Emperor's palace in Tokyo

Los Angeles



Tokyo



Photos: Spence Air Photo Rothschild Photo, Juliu: Shulman, Chicago Architec tural Photography Co.

West Coast volcanoes

A volcanic eruption of skylines in Los Angeles and San Francisco during recent months marked emergence of California as the Union's No. 2 state in population (next only to New York) and No. 1 state in volume and energy of building, with ensuing congestion. (One of every ten dwelling units built in the U.S. during the past two years sprang up within 25 miles of the Los Angeles Civic Center.) Eighteen new 13story apartments of 650 rooms each, rising behind the Prudential Building in Los Angeles at Parklabrea, and 11 similar towers rising through the mists of Parkmerced in San Francisco promised to some 20,000 Californians vertical living.

Superficially the two big Metropolitan Life projects were direct New York importations, designed by New York architect Leonard Schultze & Associates. The individual units broadly resembled New York's Stuyvesant Town. But there the resemblance ceased. Intended to be the best apartments in California, these could scarcely rent for less than \$50 per room. Land coverage was a mere 17 per cent (24 in New York). A cumning all-concrete earthquake-proof construction was engineered by Bowen Rule & Bowen in Los Angeles, John Gould in San Francisco; and huge olive trees were planted by landscape architects Thomas Church, (S. F.), Thompson (L. A.).

While Californians hotly debated the merits and demerits of vertical living, one thing was sure: Metropolitan had invested \$60,000,000 in it, others were following suit. In San Francisco the fabulous Stoneson brothers were completing a string of four similar towers and in January announced a \$30,000,000 shopping center in conjunction, designed by Welton Becket of Los Angeles. David Bohannon's early plans were still in abeyance. Meanwhile in Portland, Ore., the King Tower, 12-story, \$2 million, 212-unit FHA propect was half up, and a \$3 million, 314-unit, 15-story, full-block structure had been announced (by Republic Construction Co. of Los Angeles); in Seattle too the volcano was beginning to erupt.

Westward to the Orient

Biggest plum of the month, architecturally, fell to Welton Becket of Los Angeles when Prime Minister Shigeru Yoshida of Japan announced a \$100 million privately financed construction program of tourist facilities as a "most decisive step towards self-support" (and the creation of dollar balances), every bit of the program to be under Becket's supervision.* Actually Becket had quietly flown to Japan as early as October, '48 to make preliminary surveys for sites, had submitted a report covering labor, construction methods and materials, and cost analyses of the hotel operations involved. What delighted his clients was his proposal that the nucleus should be, not small resort hotels overlooking mountain waterfalls, but a 1,000 room American style hotel-and this on park land which the emperor had signed over to the government in payment of taxes, and which overlooked the Palace grounds themselves. The hotel is to have its dining terrace on the bank of one of the ancient moats, and a subterranean garden arcade lined with shops, banks, art galleries.

Also in Tokyo: a double theater (with single stage serving two 2,500-seat auditoriums), department store, three office buildings, a 200-unit apartment house, museum, art gallery, shops. For Osaka: an almost identical cultural center. For Yokohama and Kobe: trade centers adding warehouses and a 500-room hotel to the list of office buildings, large apartment houses, shops, theaters. Later: three 200-room hotels and ten 75-room resort hotels in other Japanese towns and cities. Combining Japanese wage and cost scales with his own U. S.

^{*} Late January it developed that Albert Mayer, of Mayer & Whittlesey in New York, was to have an even bigger assignment: planning a new capital for India's province of East Punjab-the unparalleled chance to design a city of 500,000 from scratch. (Others, from scratch, Washington, D. C., Oak Ridge, Tenn.)

construction techniques Becket hopes to halve the U. S. cost. (For the hotel, \$10,000,000.) And using Japanese draftsmen in Japan would compensate for the resultant halved fees.

Chief American investors in the Japan Development Corp. of America were Exporter George J. Strauss, Hotelman Conrad Hilton, President George Killion of American President Lines, Los Angeles Lawyer Brodie Ahlport who served as initial contact.

Meanwhile construction began on Tony Raymond's unique two-story office building, also in Tokyo, with novel earth-quake-proofing and heat pump, for *Reader's Digest*, whose present Japanese language circulation is already 1,313,877, might soon hit three or four million.

Four-way movie for autocine's parkers

Architect Lewis Eugene Wilson has magnetized the amusement industry with his new (copyrighted) four way drive in, with a screen at each corner of a rectangular plot and a whizmabang three-level concession building at the center. This has a control tower for the manager at the top, the four projection machines at the second level, and a brightly lit emporium at ground level where gadding mothers can park the children (in a kiddies' play area), have their laundry done, their hair set, the family shoes half soled, the car greased, hardly ever taking their eyes off the picture. There is, indeed, the almost frightening possibility of seeing three or four different shows in rotation (though paying a new admission each time).

Architect Wilson (whose ingenuity is portrayed in his Baldwin Hills movie shown in Forum for September) at last accounts was doing a land-office business: the Twin-View Theater (on the four-way principle, and expansible) in Los Angeles brought orders for four theaters for Eddie Silverman of Chicago, one for Harry Arthur of St. Louis, for spring construction. For winter, in the eastern states: ice skating. For traffic ease: a 100 per cent holdout space for waiting cars, demanded by state traffic engineers; also, staggered schedules in the four separate shows. Economies: only four projectors (rotating film), few operators; less grading (only 300 cars per show); overhead wire to central booth instead of tunnels. Cost estimate of the architect, \$100 per car. Concessions to be run at cost to attract trade to the box office.

New height record for New York

New York's skyline was to be raised 199 ft. by the addition of a steel mast atop the Empire State Building. It will support antennas of four television transmitters suited to color television. Financed by the building owners, the mast will be tested, dismantled, carried up in elevators.

"Hospital hotel"

What makes a hospital room so frightfully expensive in the conventional hospital is that every room is equipped for every emergency. But, reasoned Dr. Lowell T. Coggeshall, Dean of the School of Medicine of the University of Chicago, noncritical patients who might come to the Billings Hospital Clinic would need only routine care. In providing for a 252room expansion (for 500 patients) Architect Alfred Shaw worked out a "hospital hotel" based on a typical room with two hotel beds, a bath, clothes closet, dresser space for two, small writing desk, two chairs. On six typical floors, 36 rooms facing east and west for sun could be staffed by a clerk; entire floors could be converted into wards by replacing the clerk with a nurse, converting kitchen to diet kitchen. A basement tunnel would lead to elevators of the main hospital. Cost of the 1,100,000 cu. ft., furnished, but without architect's fee, was estimated at \$2,207,000, or roughly \$8,-760 per room, permitting rates "less than two thirds of regular hospital rates."



Yokohama



Auto movie

"Doll house"

There was plenty of evidence in recent buildings that a tough traditionalism persists undaunted. J. C. Penney Co., opening a new 30,000 sq. ft. store in Hampton Village Plaza, St. Louis, got a straight Williamsburg plan from Preston Bradshaw & Associates, boldly installed in it their first modern "spider web" floor layout. lifted their combined air conditioning and winter heating equipment up behind the third floor dormers to clear the basement, cheerfully announced that, despite widow's walk and cupola, "a future additional floor could be erected." Momentarily confusing was the headline (on the reverse side of the same newspaper clipping) "Looks Just Like a Doll House."



Hotel hospital



EXPLOSIONS IN OPERATING ROOMS

there are structural solutions to the problem

A vivid, frightening danger during surgical operations in hospitals is the possibility that the highly volatile anesthetics in use will explode.

This has not always been so—but as the physical effects of anesthetics have been advanced and new substances like the ethylene and cyclopropane gases have been demonstrated to have many advantages over ether, this danger has increased. While a mixture of ether and oxygen is not difficult to control with simple devices, cyclopropane and ethylene vapors have an explosion wave of such velocity that elaborate precautions are necessary to use them safely. Since cyclopropane is considered the best general anesthetic now available, the problem is pressing.

Explosions are usually dangerous only to the patient. It is not a matter of blowing out rooms; rarely is there that big a dense accumulation of dangerous vapor. The walls containing the explosion are usually the walls of the patient's respiratory tract or the mask of the anesthesia machine. Sometimes, however, the flashback has reached the anesthesia machine, endangering everyone in the room.

Numerically, casualties are not high, although there is no complete tabulation and nearly all hospital authorities admit that most such incidents are not published. An engineer in one big New York hospital estimates an explosion roughly once in every 50,000 operations over the country, and many estimates are much higher.

It is a problem for architects and builders, since many of the precautions against operating room explosions are, or should be, built into the hospital structure. Static electricity is usually the killer that sets off the explosion, and it can be controlled.

A new set of National Fire Protection Association Recommendations* redefines the dangers and replaces earlier advice of a 1944 code now considered obsolete. This comparatively recent concentration on the problem is due not only to increased use of the more efficient, more dangerous anesthetics, and to the American Hospital Association's postwar attention to planning and plant operation, but also to the work done on a somewhat similar problem in wartime munitions plants. Static electricity caused explosions there too and preventative measures got prompt attention.

What does it take to set off an explosion of cyclopropane vapor? A nearly invisible spark which can be discerned only in a darkened room will do it. Tests on an electrostatic voltmeter indicate that an energy of 2 x 10—5 joule (operating an ordinary 3-volt flashlight for one second requires an energy of one joule) sparking over a gap of .002 in. at 450 volts produces explosions consistently. Last year investigation of an operating room death by explosion indicated that static electricity generated by the woolen trousers worn by the surgeon was responsible.

OPERATIONAL CAUTION IS NOT ENOUGH

Hospital staffs are aware of the problem and few such incidents as that of the wool trousers occur. Various methods are used in most operating rooms to control static electricity. An awkward device called an intercoupler, a metal chain or wire which connects all members of the surgical team, usually manacled wrist to wrist, has even been in considerable use. This was designed to "ground" all people in the room. But all operational care to avoid generating static electricity (or sparks produced by other means) is not sure enough prevention. The structure of the operating room itself must be designed to carry off static electricity.

The new recommendations of the National Fire Prevention Association are based on a point which de-emphasizes certain of the 1944 code's most expensive requirements to avoid sparks by other than static electricity. The actual danger area for sparking an explosion is defined as being within a perimeter of 2 ft. from a point of leak involving the quantities of anesthetics used in anesthesia procedures. This definition greatly shrinks the danger area, concentrating it around the patient's head or the anesthesia machine: ". . . mixtures are diluted by air to a nonflammable range before reaching a point 2 ft. distant from a point of leak."

However, because the liquid character of some anesthetics permits spillage, fumes may also collect near the floor. The NFPA's factor of safety in this regard sets a 5 ft. level above the floor as the minimum for placing permanent electrical installations. (This is a drop from the level of 7 ft. previously recommended.) Above this level room electric switches need not be explosion proof.

Two of the greatest money savers in the

new code stem from the 2 ft. danger area definition. First is the operating lamp, which, under the 1944 recommendations, had to be explosion proof. These lamps are very expensive. The second saving is in ventilation. The 1944 code called for frequent air changes specifically to remove dangerous concentrations of explosive vapor—a minimum of 12 changes per hour. This provision is regarded now as essentially useless—the small area of dangerous concentration cannot be diminished by general ventilation.

But the problem of static electricity itself is re-emphasized in new code.

The most important structural measure in an operating room to avoid dangerous concentrations of static electricity is the building of an electro-conductive floor. The new NFPA recommendations call for a floor which "shall provide a path of moderate electrical conductivity between all persons and equipment making contact with the floor."

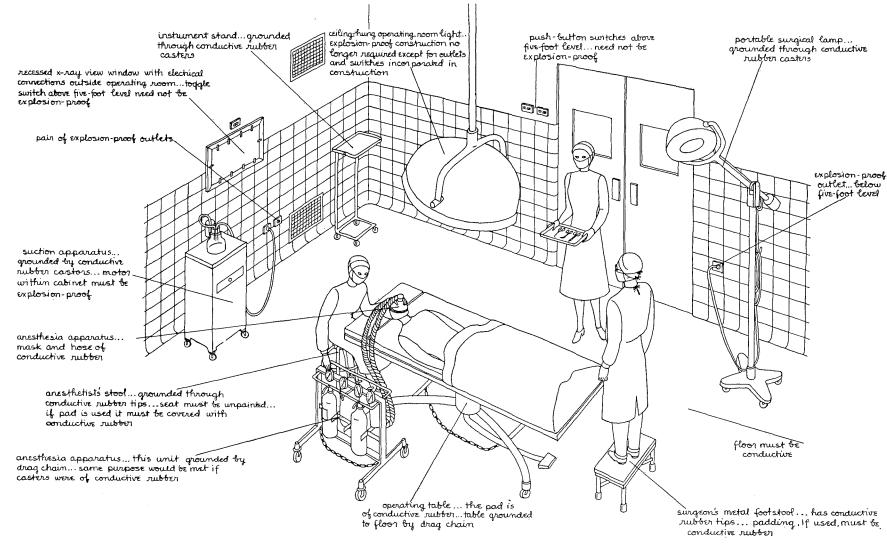
Maximum resistance must be less than 500,000 ohms as measured between two electrodes placed 3 ft. apart at any points on the floor. But the floor cannot be too conductive, either; this might result in electric shock from accidental contact with defective equipment, an open wire, or some types of low voltage surgical lights. Minimum resistance recommended is 25,000 ohms, as measured between a ground connection and an electrode placed at any point on the floor, and also as measured between two electrodes placed 3 ft. apart at any points on the floor. The ordinary terrazzo floor placed in many operating rooms does not meet these requirements.

CONDUCTIVE FLOORS

According to a member of the committee which worked out the recommendations, acceptable floor materials include a properly installed terrazzo floor containing acetylene black, a terrazzo-type floor containing magnesium oxychloride, a plastic floor, and floor coverings made of conductive rubber, conductive linoleum and conductive asphalt tile.

In selection of an operating room floor qualities of hardness and durability are also especially important, and complicate the choice, particularly where plaster work is done (plaster dust and other dirt is ground into the surface of all but the hardest floors).

^{*} Available from National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.; 31 pages, 25 cents.



Sketch points out some of many hazards in operating suites, and notes control recommendations

In the electrical considerations, durability of the conductive properties of all these floors is considered by many to be a moot point and one which can be settled only by frequent testing of each individual installation. The powerful detergents used in hospitals will sometimes flush out conductive aggregate from the toughest porous floor, in time, and form a nonconductive skin at the surface.

Another reason for lack of confidence in many reputedly conductive floor materials is the fact that they have not been submitted for Underwriters' Laboratories approval, nor are they bonded. Surprisingly enough this does not hold just for the floors in operating rooms, however. Even some mechanical equipment such as anesthesia machines have never been exposed to the Underwriters' test. Under the new standard, the conductive floor of the operating room (and related areas) does not need any specific grounding.

Another section in the NFPA recommendations calls for an isolating transformer for the operating room (wired with alternating current) to segregate the circuits electrically from the main feeder and from the other circuits in the building. This circuit is not grounded, in order to prevent electrical arcs due to insulation failures and also to guard against shock due to failure of insulation on wires. The recommendation

is more complicated for hospitals operating on direct current.

Electrical wiring and fixed equipment is split in type by the 5 ft. danger demarcation line above the floor. Above 5 ft., standards of the National Electric Code for ordinary locations are the minimum requirements. Below, plugs must be explosionproof, ie., they must receive three-wire appliance cords (one a ground wire) and be locked in place while the current is on. Use of television in operating rooms poses new electrical problems, of course, and is regarded with considerable worry by the code-writers.

THE GROUND

All equipment in operating rooms must be grounded to the floor and so must people. Drag chains, or conductive rubber casters, are standard on equipment. People should wear conductive shoes and also observe other standards of dress, avoiding such materials as nylon, rayon, and wool. The most careful hospitals have ohm-meters in their operating suites, so participants in operations can be tested for dangerous accumulations of static electricity.

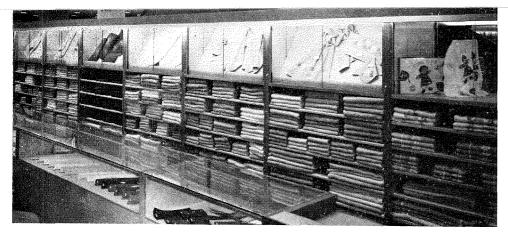
A basic planning improvement in operating rooms urged by some authorities is the grouping of all electrical connections in one corner of the operating room with switches above the 5 ft. level, possibly with a sec-

ondary transformer at the same spot.

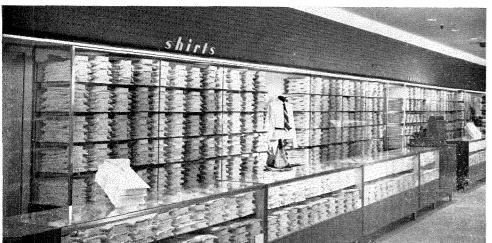
Other matters up for discussion at the next meeting of the committee which formed these new recommendations are the use of low voltage equipment and chemical conductors. This latter is a particularly interesting lead toward easy solution of the problem of static electricity in anesthesia locations. Amines and quarternary ammonium compounds are being tested now which may in the future function as satisfactory anti-static coatings not only on floors and equipment, but even when washed into aprons, sheets, and doctors' and nurses' uniforms.

The new NFPA recommendations, the biggest step so far in defining dangers and presenting solutions to this problem, have no legal compulsion behind them unless they are adopted into local building codes or ordinances. Whether or not they have been adopted locally, however, ignoring them would precipitate an interesting legal problem in the case of an accident and a resulting damage suit by the patient or his survivors. (As yet, the legal responsibilities in such cases have not been determined.)

Since these standards have been adopted as part of the National Electrical Code by reference, their very existence imposes a strong influence on hospitals and on architects to pay new attention to this explosive problem.



Difference in stacking is shown in two photos from Macy Store in Kansas City. Note large gaps between some stacks on standard shelves above. Cantilevered shelves below have no partitions so there is much more flexibility in adapting merchandise of various widths.

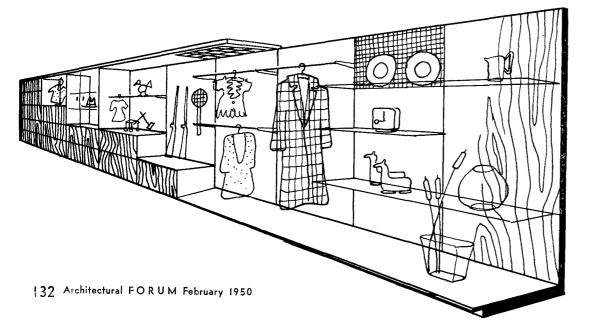


Photos: Harry H. Baskerville, Jr





Sketches emphasize greater capacity of partitionless shelves . . . more stacks can be held on same length. Below is sketch showing versatility of wall, used with various inserts.



NEW STORE FIXTURES

use cantilever for flexibility

A new merchandise display fixture line with no vertical partitions is previewed in the Macy's Kansas City store (see page 86) and has now gone into mass production. Shelves are cantilevered from movable studs and allow new flexibility in merchandise storage and display. In this sytsem, stacking of merchandise is much less restricted than in the vertically framed cases, which divide the runs of shelve in arbitrary modules, into which all stacks may not fit economically. Less space is thus lost in intervals between stacks (see photos).

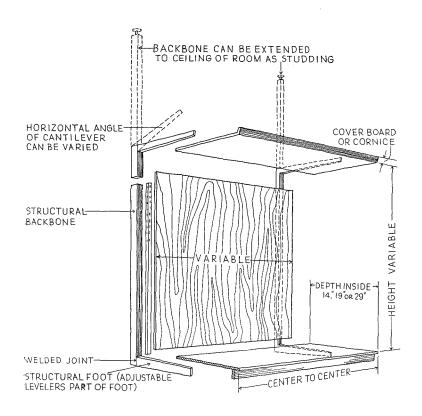
Original cases were designed in wood by Kivett & Myers for Macy's and have now gone into production as part of a new metal framed line by the Grand Rapids Store Equipment Co. The new convertible line of metal chassis is tradenamed Flextures. Their flexibility lies in the considerable number of basic chassis parts which can be interchanged by unskilled personnel to facilitate the frequent changes needed for versatile display work in stores. The frames are built to hold various combinations of standardized racks and cabinets.

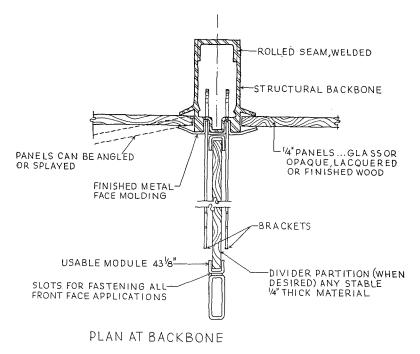
The steel frames, locking devices, and inserts are the product of the assembly line, but the finish of the cabinets can be varied considerably by store designers.

The system is broken down into Wall-line, Center-line, Mobile-line and Counter-line structures, for various parts of the display and sales space. Innumerable inserts such as drawer and tray sections, bins, shelves of all kinds, self selection units of a new design, hanging rods, display plaques and the "insert applications" such as sliding glass or panel doors, and glass uplift disappearing doors are nearly all interchangeable in these various structures.

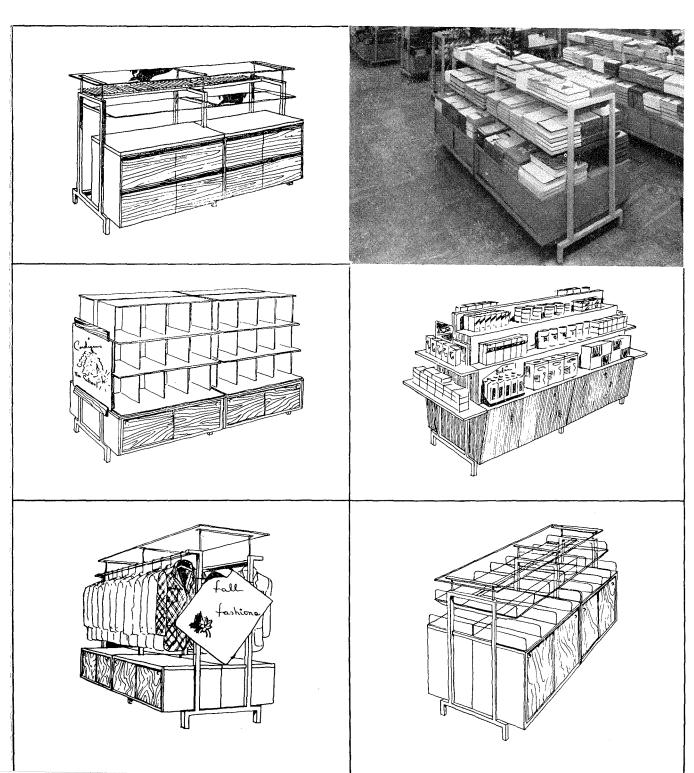
The structures vary in the dimensions of their structural parts which, when added to the basic merchandise module, (43 in. long x 11½ in. high x 14, 19 or 29 in. deep) change the center to center dimensions.

In height the base and any cornice or valance must be considered. The minimum base for the Wall-line and Center-line is 33 in.—for cornice 2\% in. A height of six and a third basic modules is a minimum for women's and children's apparel and arch and door clearance, while seven modules in height are required to hang two rows of men's suits, one over another. For center of the floor visibility, four modules high is about right, although this can be reduced by using three and a fraction modules and varying the base.

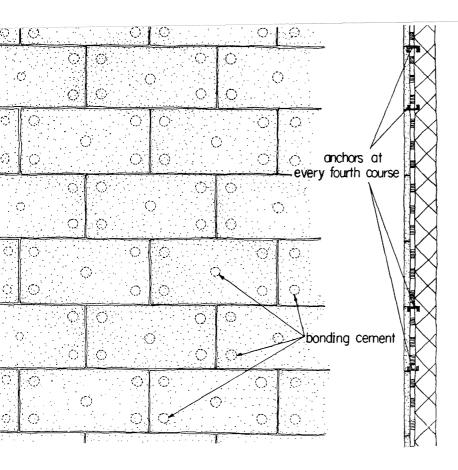




Left is exploded view of stud and bracket construction of cantilever display wall, with detail of stud connection above.



Other members of the new fixture line: basic frames may be varied with numerous inserts and used to display different merchandise. Patents are pending on all fixtures.





SETTING EXTERIOR MARBLE VENEER with an adhesive: new method of applying an honored old material

In the new methods marble setters are investigating for handling their handsome slabs, one of the most interesting is replacement of ties and plaster of Paris "spots" by a bonding cement made on a plasticized synthetic resin base.

In use of such a bonding cement, damage to wall backing and expense and spoilage in drilling marble are eliminated, since normally no wire anchors are necessary in setting thin vertical marble. The cement is useful when setting space is tight or at points where anchoring is difficult, and yet has body enough not to sag in a setting space up to about 5% in between the marble veneer and back-up wall.

The Marble Institute of America sets up a tough specification for this "Plasticized Synthetic Resin bonding material"—"impervious to moisture, not affected by normal heat or cold . . . adheres with a strong suction to all clean surfaces without sagging . . . sets to a stiff plastic state, not brittle, not hard, but capable of absorbing moderate shock or settlement . . . no bleeding through a stain on $\frac{7}{8}$ in. marble."

Bonding cement which succeeds in meeting the above specifications also eliminates the hollow sound in marble slabs; it bonds strongly to dampproofed marble (but not to asphalt types of waterproofing); its strength improves with age, and damp

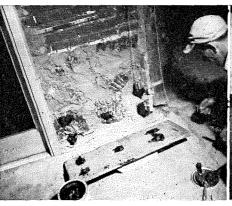
stains, which sometimes occur with the use of plaster of Paris spots, do not appear.

Care must be taken however, not to allow bonding cement to get on the finished face of light marble. It will stain unless it is immediately removed and the surface washed with solvent. If the slab is less than the usual $\frac{7}{8}$ in. thickness, it should be dampproofed to insure against stains coming through to the surface.

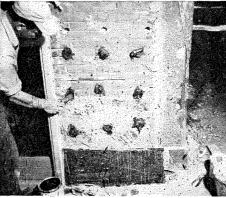
Bonding cement will not set hard enough to hold marble slabs against vertical, horizontal or torsional shear, as marble installed with this material needs vertical support. Angles every fourth course are usually adequate.



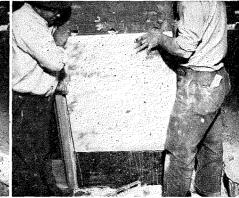
Spotting granite base slab with plasticized resin bonding cement.



Slab in position to be placed after similar spotting of wall.



Spotting wall to receive ashlar slab, after placing of base slab.



First white ashlar marble slab being put in place.

Old Man Winter

never bothers

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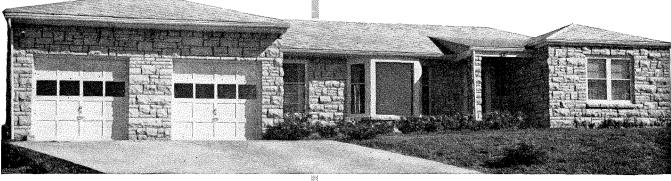
Wind's no hazard. Huff or puff, wind can't blow open a Ro-Way Door—or bang it shut.

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There's a Rollay for every Doorway!

MODULAR HOSPITAL

(Continued from page 125)

under each window, and beds would have to be placed further back in the room. The architects estimate that use of double glass adds the equivalent of 1 ft. of useful space to the room's longer dimension, so the length of these rooms from wardrobe to window is only 14 ft.—again a foot under the generally accepted minimum.

The continuous windows 6 ft. high and 11 ft. long will usually be locked shut. They can be opened in emergencies, however, and completely reversed for washing from the inside. (For a detailed description, see FORUM, Nov. '49, p. 102.)

Serving much the same purpose as the double glazing, glass wall insulation inside the cavity masonry construction is expected to pay for itself by lightening the heating load. The U-factor for the proposed wall is 0.113, compared with 0.35 for a 12 in. wall of brick veneered block with furred lath and plaster. The initial cost is about the same.

The money that will be saved by eliminating plaster from the smooth flat slab concrete ceilings will be invested in acoustical ceiling tile for corridors and rooms.

Finally, some of the construction savings will be spent on a new low cost system of air conditioning whose details and advantages are described on page 125.

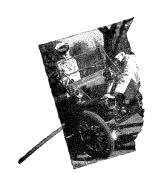
. . . all for a cost of \$10,192 per bed

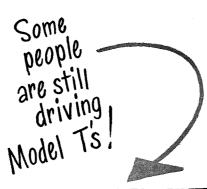
The \$4,500,000 construction estimate for this hospital represents a careful balance between progress and economy. The rates per cubic and square foot (\$1.95 and \$21.50 respectively) are not low by ordinary standards-but this is no ordinary hospital. The per bed cost of \$10,192 is low—but the proportion of expensive surgical equipment per bed in this research institution is not as high as that in a general hospital. Pace Associates point out, however, that their basic structural ideas could produce a hospital for \$1,000 less per bed, were a lower scale of amenities substituted (fewer toilets, conventional heating, no air conditioning, single pane glass).

Their design stands on its own as a handsome achievement in the hospital fieldthe skillful balance of a building budget.

In hospital techniques as in design techniques, this new hospital will be fully up to date. Its proposed location in the heart of Chicago's large and growing medical center will make varied and extensive research equipment widely available. Doctors' offices for rent on its first floor will bring down the hospital's overhead costs and increase the supply of staff doctors on the campus. These offices will also save the time that doctors must now spend travelling between their present far-flung offices and hospitals. Finally, the hospital will put at their service a pool of equipment which no individual doctor could afford on his own.

Thus will Pace Associates' proposed staff hospital for the University of Illinois approach the design and medical measurements for tomorrow's hospital.







Others prefer the convenience and economy of later models



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Mohawk, the mill making all popular loomed carpet weaves, from luxurious Wool Chenilles through fashion-right Wiltons, sturdy Axminsters, and Velvets, has the answer to every carpet problem that can be put up to an experienced and resourceful contract department.

Shown here: Grey walls and Mohawk's grey Peerage carpet provide a soft background for the oak furniture of celadon green, mulberry and gold frieze, in the women's lounge on the fourth floor. Mohawk's Peerage will wear and wear.

Mohawk's luxurious Shuttleworth and Chenille carpets are in an alcove in the floor covering department (fifth floor), where customers may review these exclusive weaves in comparative privacy.

Designed by Daniel Schwartzman.



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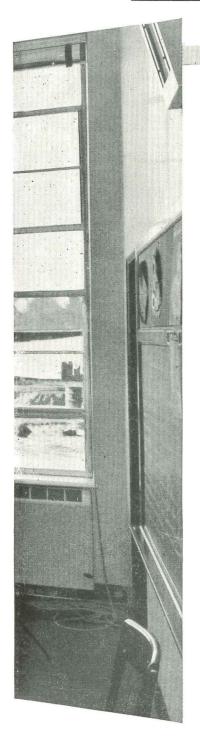
- Large areas for more daylight
- 2 Controllable fresh-air ventilation
- 3 Quality appearance
- 4 Low cost ... installed



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Fenestra's Standard Intermediate Steel Windows combine to form window walls. The slim steel frames, muntins and mullions allow more glass per opening—hence more daylight.

Ventilator arrangements can be selected to fit the needs of your proposed building (note Fenestra Projected-type Intermediate Windows pictured at left). Open-in vents deflect air upward, shed rain outside; open-out vents form weather-protecting canopies.

Fenestra Intermediate Steel Windows are made from rolled casement sections of advanced design. Quality hardware is used throughout. Workmanship is by skilled craftsmen in the plants of America's oldest and largest steel window manufacturer.

Three important economies: Low first cost—the result of standardization of types and sizes produced in volume. Low installation cost—modular sizes provide coordination of windows with other materials in the wall. Low maintenance cost—resulting from precise fabrication using strong, high-quality materials.

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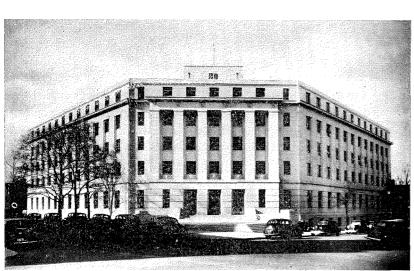
Windows · Panels · Doors

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Please send immediately your free new booklet on Better Classroom Daylighting.	The state of the s
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Company	
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MODULAR HOSPITAL—air conditioning

(Continued from page 125)

Local variations in the heat load are met simply by varying the quantity of primary air introduced into the room, chilled in summer, heated in winter. And the new induction outlets are expected to meet the old problem of how to get uniform air distribution throughout the room despite quantity changes in the primary air. They do this by automatically increasing their recirculation of room air as the supply of primary air is reduced (and vice versa) so that their total discharge remains constant. Bueter and Binford believe this new system will prove so economical that its estimated cost of \$170,000 for winter heating plus year-round ventilation will be no more than the cost of a hot water radiator system with furred-in pipes. Thus, ventilation will be a free dividend. The refrigerating cycle for summer cooling will cost about \$130,000. The combined installation cost of \$300,000 is less than \$2 per sq. ft. for the space involved (90 per cent of six floors) or \$750 per bed.



EDUCATIONAL BUILDING
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NORTHRUP AND O'BRIEN, Architects
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NORTH CAROLINA GRANITE CORPORATION

MOUNT AIRY, NORTH CAROLINA

The anticipated cost of the new outlets is \$20, to which must be added about \$45 for the thermostat and the damper mechanism and its individual motor. The total cost of \$65 is about one-third the cost of present induction units with chilled water coils, and the whole cost of the insulated chilled water pipes would also be saved.

The new system recirculates air within each room—but not from one room to another — thus avoiding cross-contamination. In this respect it is similar to existing types of induction systems, but it differs from them in two important respects—it requires no chilled water piping and operates at a higher ratio of fresh to recirculated air.

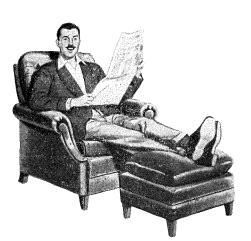
The entire primary air system will be divided in the basement fan rooms into six zones, for each of which the air temperature will be controlled by indoor-outdoor thermostats. Under average conditions, the temperature of primary air distributed to each room will be designed to maintain the desired room temperature with 100 c.f.m., or a little less than ½ c.f.m. per sq. ft. of the room and toilet area. The local thermostats can increase or decrease this quantity by approximately 20 per cent to meet changing room conditions.

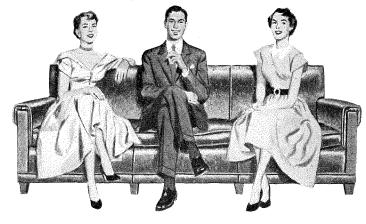
When the outside temperature is minus 10°, the primary air would be circulated at 104°; when the outside temperature is 32°, the primary air would be circulated at 90°. At around 65° the system would just carry outside air not heated at all. And in summer, with the outside temperature in the 90's, the air would be circulated at around 50°.

All these temperatures would, of course, be modified up and down for each of the building's six zones to meet different sun and wind conditions.

Especially with 100 per cent fresh air, a primary air distribution of 100 c.f.m. to each room is so much more than is needed for satisfactory ventilation that the plus or minus 20 per cent variation in primary will create no problem.

The architects propose to take advantage of the pipe shaft at every interior column to run the high velocity ducts vertically to each pair of rooms. Room air would be exhausted at a grille in each toilet room ceiling, through horizontal ducts over the corridors to a central vertical stack to the penthouse. A conventional system supplied from the roof would air condition the corridors. This would exhaust through the bedrooms via grilles near each door and create a pressure there to keep contaminated bedroom air from getting into the halls.

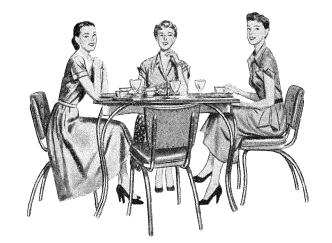


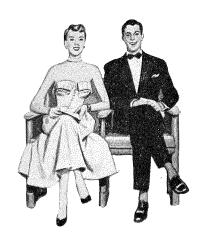




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- 2. Boltaflex, available in 60 one- or two-tone shades and many popular patterns, offers the widest variety of decorator and utilitarian colors on the market.
- 3. Boltaflex is warm and pleasant to the touch as contrasted to the cold, hard feel of many competitive covering materials.
- 4. Boltaflex is supple and pliable, with a high tensile strength. Its stitch-tear resistance will delight manufacturers and decorators.
- 5. Furthermore, Boltaflex will not wrinkle, no matter how many times it is flexed or how roughly it is handled.

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These are reasons why architects, decorators and retailers as well as manufacturers of furniture, seat covers, toys and novelties are turning to Boltaflex. (Boltaflex is also available in SEALTUFT, the stitchless, quilted plastic.) It's the wonder covering material with a thousand uses. If you haven't all the facts on Boltaflex, be sure to write for them. They'll amaze you.

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Boltaflex means Covered with Beauty



Taking the guesswork out of the design and application of copper for roofing

This is the story of the successful conclusion of a Revere Research project, as a result of which new information was uncovered concerning an old application of sheet copper—roofing. For centuries this traditional metal was applied by rule-of-thumb methods; now, for the first time the engineering principles that must be followed have been uncovered and published for all to use. Today it is possible for any ordinarily-skilled designer and sheet-metal worker to be certain that copper roofs, flashings and gutters are strong enough. In other words, you can be sure that the copper is not so thick as to be wasteful of metal, nor so thin as to be too weak for the job it has to do. You can also know that such design details as seams, stiffening members, and expansion joints are right from an engineering point of view.

True Economy

In these days of high costs it is as important not to overdesign as it is not to under-design, though probably in the recent past it has been under-design that has been of most concern. Copper has been recognized universally as the prime roofing material. The metal is so highly resistant to atmospheric corrosion, and hence so confidently relied upon, that there has been a constant tendency to cut down on thickness, until in some instances a mere veneer a few thousandths of an inch thick has been applied. Since modern manufacturing methods have made wide sheets of copper economically available at gauges much lighter than were produced for early copper construction, it became essential to determine the minimum thicknesses of copper that could be used without introducing the danger of mechanical failure of the metal under the structural loads that would be applied to it in service.

Roof Walkers

As the first step in this project, a number of qualified Revere metal research workers were sent out into the field. They checked every copper roof they could see. Such records as were available were studied. In addition, these men clambered over roofs to examine gauges, tempers, sheet lengths, methods of making joints, provisions for allowing for expansion and contraction, and the kind of underlying materials.

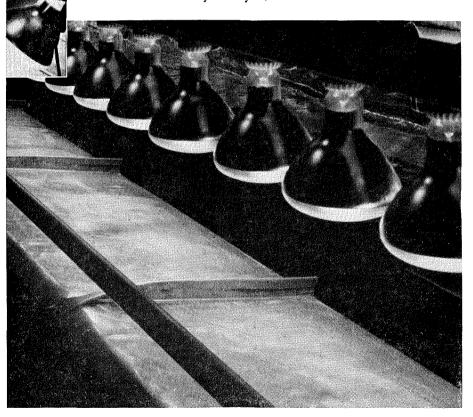
It quickly became evident that complete provision must be made for the expansion and contraction of the metal with changes in temperature. If the copper was not free and able to transmit forces to the expansion joints, buckles would form, and in time repeated flexing of the metal could produce cracks.

Roofing Must Move

The fundamental ideas brought back from the field were these: copper on a roof must be stiff enough to transmit movement; its movement must not be restricted by adherent underlying substances; expansion joints must be properly spaced. These, however, were general conclusions. It was necessary to confirm them, and translate them into working specifications. Laboratory work then began. Full-scale replicas of actual installations were built indoors, and subjected to conditions approximating those that had to be met outdoors. To duplicate the summer sun, batteries of infra-red lamps were used. After the metal had been heated, the lamps were turned off, and a cold "rain" of frigid river water was poured upon it. Thus a temperature change of 140° was produced in a few minutes. Various installations up to 65 feet in length were given this severe treatment six times an hour.

The Speed-Up

These tests were spectacular because of the speed with which things happened. You could see the metal move before your eyes, see where stresses were con-



Getting the proof. A standing-seam parapet wall coping cover, installed in the laboratory according to Revere specifications. Withstood 500 cycles of heat and cold, without injury, equivalent to several times the life of an average building.

centrated and where buckling developed. The action was so pronounced that it was easy to record it in motion pictures, as well as make accurate measurements. Sheet copper thus tested ranged from 16-oz. soft, which had become virtually standard in recent years, to 32-oz. cold rolled, such as was installed in 1873 on the State Capitol in Albany, N. Y., one of many outstandingly successful jobs.

Strength Needed

At this point it would have been all too easy to say that the tests showed that heavier copper was desirable. That was too easy an answer. It gave no help to the many people who want to use the world's finest roofing material without buying too much of it. So the matter of strength was investigated. Quantitative stress analyses indicated that copper roofs, gutters and flashings must be considered from the structural point of view rather than regarded as mere weatherproofing veneers. The columnar strength of formed sheet copper sections was found to be of particular importance, because such strength is required to transmit movement.

Eventually, after much mathematical work and confirmatory laboratory tests, it became possible to draw up completely new specifications for copper roofings, gutters and flashings of adequate strength and minimum metal. All this information has been printed. It is widely distributed among architects, designers, builders and contractors, roofers and sheet metal workers. This was the first authoritative work of its kind.

A Caution

Such enthusiasm has been aroused by this new, practical approach that attempts have been made to apply the Revere designs and specifications to other materials. It is a fact, however, that each material has individual characteristics which must be taken into account independently. The Revere specifications apply to copper only, and cannot be safely applied to other materials.

Only the size and universal scope of this project differentiate it from our daily collaboration with individual customers. On a private and confidential basis the Revere Technical Advisory Service collaborates with engineers and production men, making a joint attack upon problems associated with such things as choice of materials, cost reduction, process improvement, production rates, product betterment. Will you allow us to study such matters with you?

REVERE

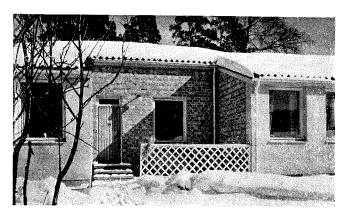
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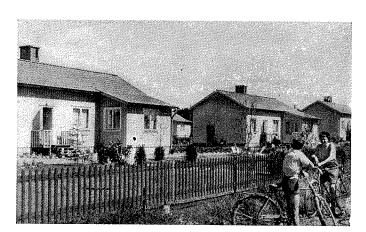
Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere.

Apartment house at Goteberg, built in 1942 (above) shows skillful Swedish use of balconies.

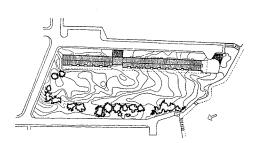
One-story row houses in Gustavsberg (below) are fitted with a typically thoughtful detail, front steps with a built-in foot-scraping panel.

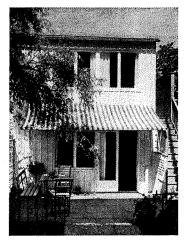






The single-family houses in Alvënas (above) were built in 1942; the project was later expanded in 1948.





Above: one of Stockholm's early units, 1932.

SWEDISH COOPERATIVE UNION AND WHOLE-SALE SOCIETY'S ARCHITECT'S OFFICE: 1925-

1949. 2 Vols. Koopertiva Forbundets Bokforlag, Stockholm, Sweden. Swedish or English text. 81/4 x 111/4. 351 pp. Each Vol., 12:50 Kronor.

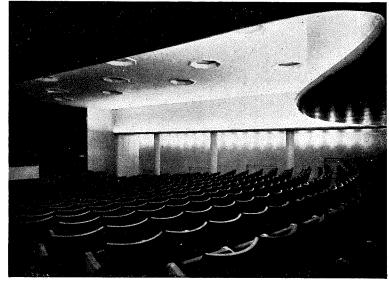
Cooperative housing continues to recommend itself as at least a partial cure for the current U. S. shortage. The merits of this plan are certainly reinforced by a two-volume report just published in Sweden on the cooperative building activities there during the last 25 years. One volume describes the broad variety of dwellings designed by the Society's own architectural office; the other, its buildings of many other types—stores, restaurants, factories, even a community theater or two.

Most significant feature of these designs (whose total investment runs to almost a billion dollars) is the broad and high everyday standard they confirm. Although many of the buildings were hampered by war and postwar shortages their effortless integration of plan, site and detail gives them a distinction but rarely found in projects of the same modest economic bracket.

Perhaps the greatest single pointer they can give to U. S. counterparts is their fine sense of texture in building. Even the simplest units have an interest and distinction that arises from knowing combinations of material.

This achievement, moreover, has been a conscious, not an accidental one. Its summary is characteristically thoughtful and humane:

(Continued on page 146)



The striking theater interior above is located in the Union Center at Gävle, was designed for them by the Cooperative's Architectural office.



Over 7,000 cooperative stores are found in Sweden. Most fit snugly into the landscape like that at Dalby (left).

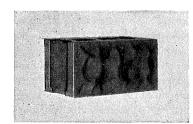
50 Years of Progress in Concrete Masonry

Nowhere in the construction industry has greater progress been shown in the past 50 years than in concrete masonry.

In this time, the uses have increased from a few minor hut-like buildings to a full range of the most important structures including residences, apartments, stores, schools, hospitals, and office and public buildings in all sections of the country.

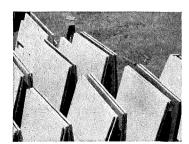
And with good reason, for practically a whole new science has been developed in the making of concrete in the last half-century. New machinery has been created for high quality, high speed production. Architectural design and engineering developments have kept pace.

Similar advances are found in the production of materials—aggregates and Trinity White cement.



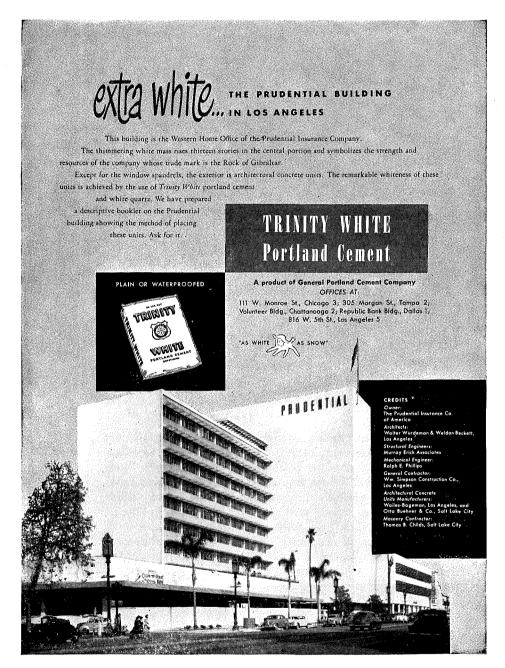
"Imitation rock-face" Block was the Fore-runner of MODERN CONCRETE MASONRY

The beginnings were humble—imitation rock-faced block were made of unwashed sand and gravel and sun cured. A startling contrast with today's widely used concrete units made with full benefit of modern technology. Trinity—the whitest white—is ideal for white or colored finishes for concrete masonry. May be used either as portland cement stucco or in cement paint form.



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The finest structures such as the Prudential Building, Los Angeles, use architectural concrete units made with Trinity White—a true portland cement. In addition to its fine appearance, architectural concrete units contribute uniquely to structural economies. Trinity white is recommended for use in terrazzo. Its extra whiteness gives an extra whiteness to the matrix, or, with colors added, a purer color tone.





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"When the cultural life of a society has not provided any definite and unified foundation to build on, the technical possibilities and carefully mapped needs have been taken as a source of inspiration . . . But if those things, exclusively and in all respects, are allowed to determine form, there is a risk of ending up in absurdities . . . One cannot with impunity overlook the need, very deeply rooted in the human being, of beautiful and agreeable surroundings."

This galaxy of buildings by the Swedish Cooperative Union makes a heartwarming contribution towards filling that need.—S.K.

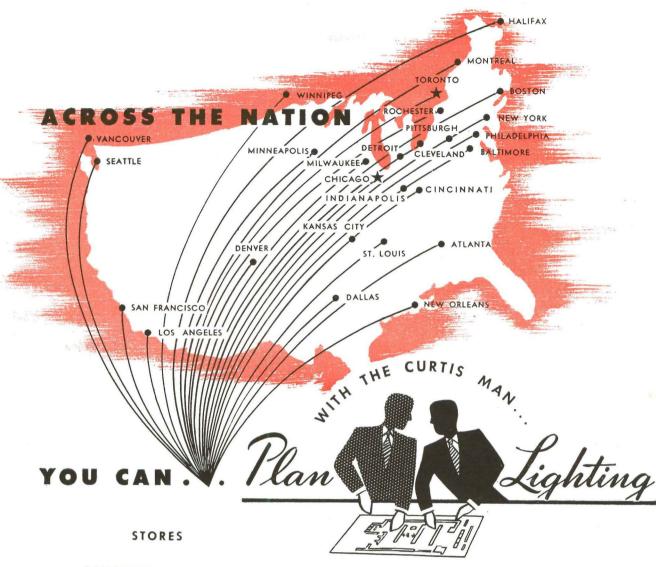
FARM HOUSING IN THE NORTHEAST. By Glenn H. Beyer. Cornell University Press, Ithaca, N. Y. 458 pp. Charts. $6\frac{1}{4} \times 9\frac{3}{4}$. \$4.50.

"How're you going to keep them down on the farm?" is a question to which sociologists have been giving quite a bit of worried thought. One of the answers which recurs most consistently is —better farmhouses. To document this claim the agricultural stations of 12 northeastern states have recently surveyed the farmhouses in their territory. The book is a far from sprightly work, fitted out as it is with weighting and balancing estimates. Its conclusions, however, certainly confirm some of the unflattering conjectures made about farm dwellings. They also add several new touches to the picture.

To begin with—the average age of farmhouses in New England and the east central states is found to be 78.9 years. More than 44 per cent of the total number are over 100 years old. Only 22 per cent are under 50—and most of these belong to the poorest economic groups! Another figure which proves as ominous on second thought as it is encouraging on the first: farmhouses, as they now stand, are by no means overcrowded. Of the 91.1 per cent with more than five rooms, almost all have one or more unused bedrooms.

The age of most of these dwellings prevents them from giving an accurate picture of the needs of present occupants. For what they are worth, however, here are some over-all findings. The great majority of houses are two and two and a half stories high except in northern New England and New York where heating difficulties (presumably) make one and a half stories the ffavorite height. For storage space, 92 per cent have basements or cellars; 65 per cent have attics. Less than 46 per cent boast furnaces; 52 per cent rely on stoves and space heaters. Poor sanitary facilities on U.S. farms have long been a puzzle to those who credit Americans with a unique gift for plumbing. Only 58.3 per cent of these farms have baths-a fact which becomes even more surprising when one finds that among the same households 94 per cent have washing machines; 92 per cent have sewing machines; 67 per cent have electric refrigerators and 63.8 per cent have vacuum cleaners. The bitterest thought is that the "cold north" section is the poorest

(Continued on page 150)



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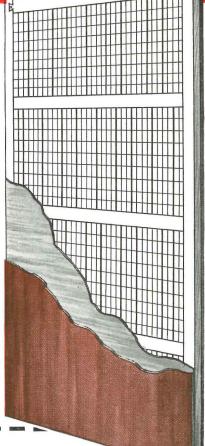
HIGH

Wood expands under hu midity, but expansion i. absorbed by deep slots cu both with and across the grain. Note how the ex pansion of the solid wood has closed the slots.



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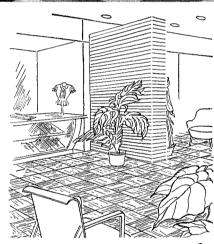
Kentile's 23 colors . . . plus feature strips and special inserts . . . give wide latitude for design effects. This floor blends with any type of interior . . . and lends itself particularly well to open front store design.

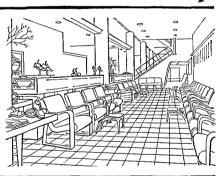
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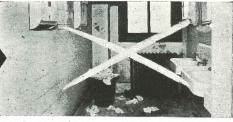
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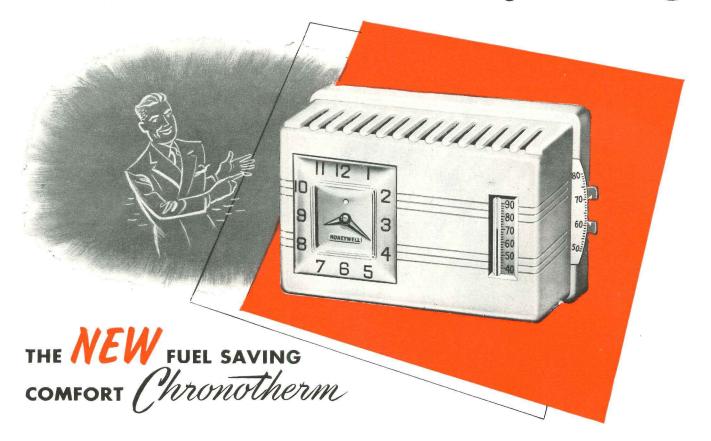
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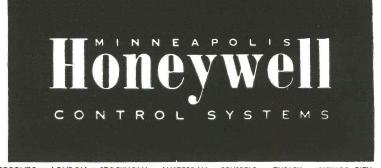
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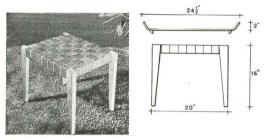


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REVIEWS



From Modern Furniture (see review at right).

equipped with indoor bathrooms (only 44.9 per cent)!

This present volume is regarded by its compositors as but the first step towards their goalthe knowledge of what a desirable farmhouse should be. It certainly provides some thoughtprovoking facts for architects. These, however, are wedged in with a sociologist's treasure trove of the number of yeast buns baked each month and the number of suits of summer and winter underwear owned by farmers-per capita.-S.K. MODERN FURNITURE—its design and construction. By Mario Dal Fabbro. Reinhold Publishing Co., 330 W. 42nd St., New York, N.Y., 174 pp. IIIus. 83/4 x 12. \$5.

In his Introduction to Mario Dal Fabbro's book Morris Ketchum has this strong statement to make about the design of furniture: "Today the design of equipment is again as important and just as much a part of the planning of a house as spatial arrangement, structure, materials and enclosing walls . . . It is as necessary . . . to master the design of a sofa as to know the basic engineering principles for a reinforced concrete structure. The design of storage units becomes as important as the design of a door or window." Since building men of all degrees are agreeing more and more with the truth of this proposition. (remember the movable storage wall in Levittown?) an increased knowledge of furniture seems indeed a design essential.

The subtitle of the book is, however, somewhat misleading. In spite of its brief how-to-do-it section, Modern Furniture does not consider primarily "design and construction." It works on a level which is just as useful to the average designer-furniture's dimensions and operation. Dal Fabbro stresses "special ideas and solutions" -notably stacking and folding pieces as well as those that are adaptable for several uses. Their workings are illustrated both by photographs and simplified drawings, with enlarged details of operational joints and hinges. Stools, benches. chairs, tables, sofas, sleeping and storage units are included-with all the variations and combinations that make them suitable for today's compact rooms. Dal Fabbro's own training as a European designer of note guards against his inclusion of pieces that are merely tricky. From the well-known combination of kitchen stool and stepladder through versatile seating and sleeping units all the designs here are practical and straightforward. (They are also somewhat arbitrarily chosen; there is no pretense of thoroughly covering the field.)

Some of the space-saving devices shown, unfortunately, work on a law of diminishing returns. The expense of constructing them will probably outweigh the space economies they achieve-but this is an old problem. There is little doubt that Dal Fabbro's manual will be a useful rule-of-thumb both to gauge furniture now on the market and to suggest possible solutions for individual design problems.—S.K.

FREDERICK CATHERWOOD ARCHT. By Victor Wolfgang von Hagan. Introduction by Aldous Huxley. Oxford University Press, 114 Fifth Ave., New York, N. Y. 177 pp. IIIus. 61/4 x 91/2. \$5.

Aldous Huxley introduces the biography of this almost unknown pioneer with an illuminating analysis of his special contribution. Catherwood was a practitioner of that art (half architecture, half painting) whose goal was-"the rendering of great monuments in their totality." His now-(Continued on page 152)



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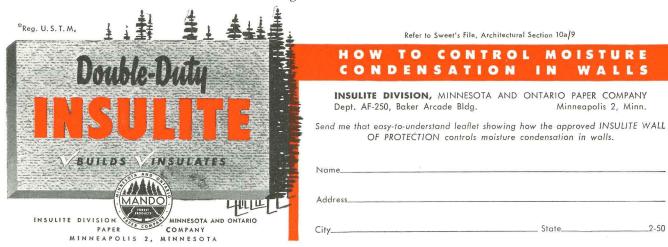
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Catherwood depicts (above) the entrance to a ruined Mayan temple still lavishly decorated with symbols of Itzamma, the snouted rain god.

REVIEWS

extinct craft could combine the over-all drama and precise detail which today's camera can achieve only by multiple views.

Frederick Catherwood, who signed himself proudly "Archt." was primarily a draftsman and explorer—but he raised the amalgam of his three professions to a level of fine art. Born in England at the beginning of the 19th century, he faced a period when architecture had degenerated into a squabble between Greek and Gothic copyists. The

more enterprising spirits of the day sought to broaden the field of combat—as did Catherwood in his own way. He started by sailing down the Nile and instigating the first thorough study of ancient Thebes, Karnak and Luxor. Later he turned to Mohammedan culture and, at the risk of certain death if discovered, was the first to measure and draw the interior of Jerusalem's great Mosque of Omar. When he was nearing 40 he set out for the New World, and soon was busy recreating the great Mayan cities in Central American jungles.

Catherwood's success was due to heroism and perseverance as well as draftsmanship. "This conscientiously precise and careful observer... self-chained to his campstool... was exposed to all the winged and crawling malice of tropical nature... Itching, swollen, burning or shuddering with fever, he filled whole portfolios with measured plans and elevations."

His most lasting contribution was in uncovering the great Mayan centers of Uxmal, Copan and Palenque. He replotted these cities whose great plazas, artificial mountains and valleys, walls and palaces were formed of 30-ton slabs of rock, transported from the hills on wooden rollers. He brought to light a school of forgotten artists who, using only stone tools, carved 22 ft. monoliths "as a Chinese craftsman might treat a piece of ivory." Scholars still regard with awe Catherwood's dramatic panoramas—productions so accurate that the picture writing on the walls (a language Catherwood did not understand) can now be deciphered from his drawings.

This book effects a fascinating resurrection from the little-known architectural past—both of 19th Century research and of thousand-year-old design. Its very appealing narrative is concluded by the reproduction of Catherwood's dramatic portfolio on Mayan architecture.—S.K.

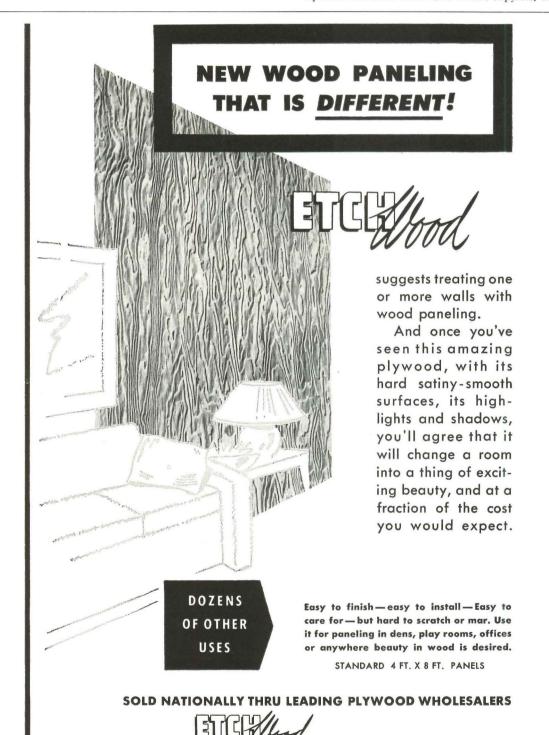
MUSIC ROOMS AND EQUIPMENT. By Clarence J. Best, PH. D. Music Educators National Conference, 64 E. Jackson Blvd., Chicago 4, III. 112 pp. III. 6 x 9. \$1.50.

As to the question of music rooms, did you realize:

- ▶ That the players must be able to see the notes, words and conductor simultaneously?
- ▶ That playing an instrument is heavy exercise, for which ventilation must be adequate?
- That a band needs more cubic feet per player than an orchestra's desirable allotment of 260 cu ft.?
- ▶ That sheet music is expensive and unless a library is adjacent to practice rooms the supply will soon dwindle through lost and torn copies?
- ▶ That musical instruments are delicate and should not be carried through crowded school halls?

Such commonsense factors—too often forgotten or unrealized—make this booklet by the Music Education Research Council a valuable reference

(Continued on page 158)



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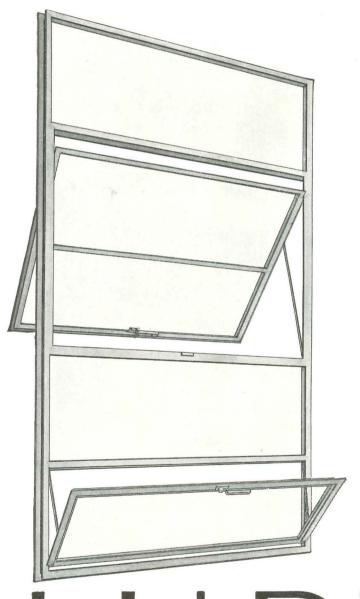
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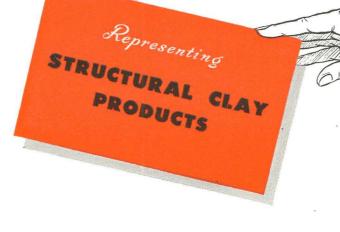
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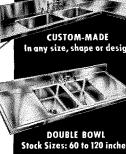
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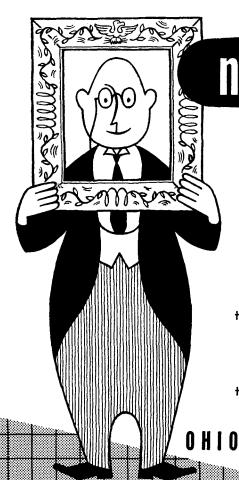
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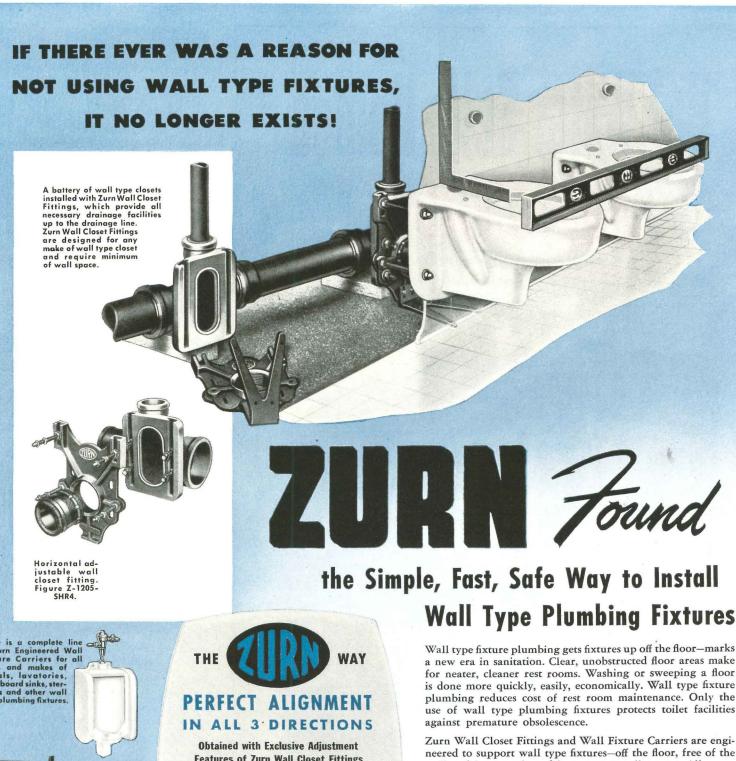
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REVIEWS

guide. Its authors have been troubled that so many school and municipal music departments are almost unusable, certainly inadequate, because of their insufficient size and surfacing, and because of faulty insulation. Such a department, they advise, should be set in its own building; if this is impossible, in its own wing; at very least, it should be located on a floor above other types of study rooms

Photographs, plans and textual advice round out these suggestions and warnings on space allotment and furnishings. A section at the end is devoted to several satisfactory groupings of the practice, rehearsal, storage and administration rooms, which are needed to make up an adequate music department. One of the best designs in its particular field—combining practicality, good design and economy-is an open-air bandshell of poured concrete by Henry Kamphoefner. This auditorium seats an audience of 3,000 people and an orchestra of 50 for an estimated cost of \$12,000!—S.K.

HISTORY OF THE DEVELOPMENT OF BUILD-ING CONSTRUCTION IN CHICAGO. By Frank A. Randall. University of Illinois Press, Urbana, Ill. 385 pp. 63/4 x 101/4. Illus. \$3.

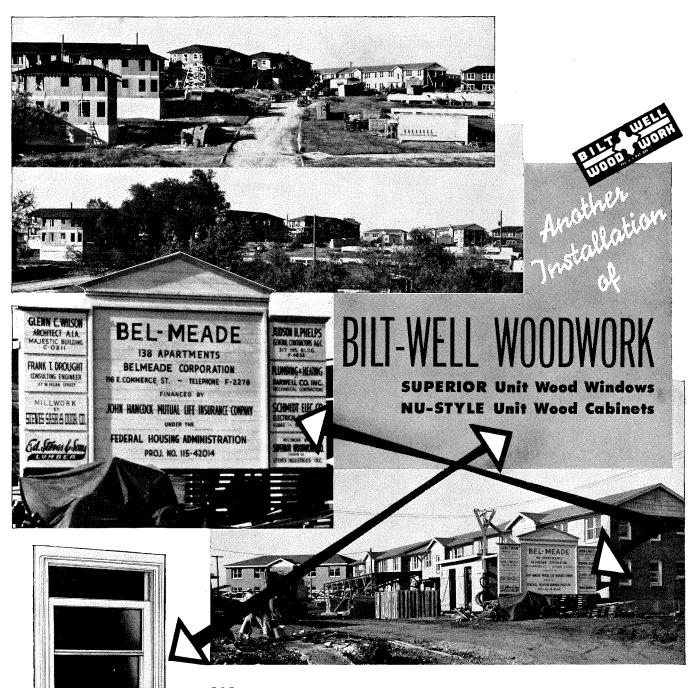
This is not a history, in spite of the title. It is the bare bony skeleton of a history-but an excellent specimen of its kind. Building by building, block by block, it lists the structures that now stand in central Chicago, giving basic facts on each, listing references where greater detail may be found. Chicago of the late nineteenth century was a center of historic and heroic construction: "The history of building foundations in Chicago between 1871, the year of the great fire, and 1915, epitomizes the development of foundation engineering throughout the world."

The city's economic growth, its absolute need to replace the 18,000 buildings burned to the ground and the conviction that more fireproof methods were necessary brought on an era of most fruitful experiment. The essentials of skyscraper construction—the skeleton frame isolated pier foundations and the use of caissons-all found their testing ground in Chicago. Moreover, firms of gifted and enterprising architects were on hand to give form to these new methods: William LeBaron Jenney, Burnham & Root, Holabird & Roche and, most lastingly admired, Adler & Sullivan.

All the bones of history are provided in this volume - dates, foundation and construction methods, costs, sites, interior fittings—as well as brief accounts of the builders. There is also a thorough supply of references to more detailed technical and biographical accounts.

Although the History of the Development of Building Construction in Chicago never really brings its subject to life, it does reveal that a great city personality was at work in shaping these structures

(Continued on page 162)



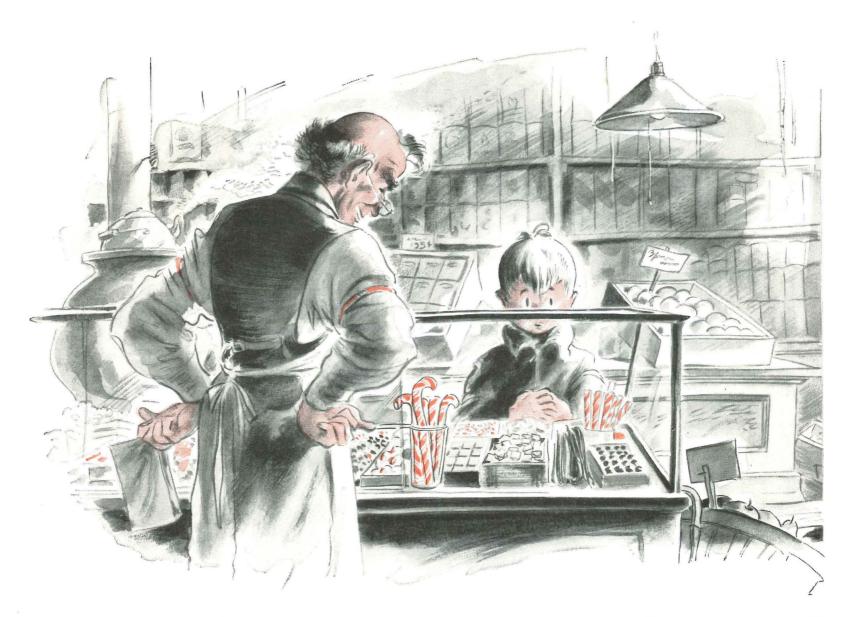
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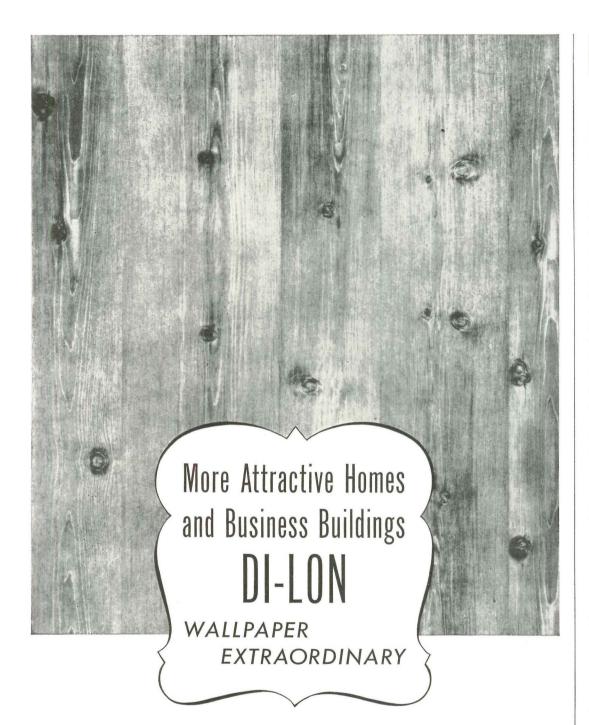
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MEDIEVAL MONASTERIES AND MINSTERS.
By H. Ernest Roberts. MacMillan Co., 60 Fifth Ave.,
New York, N. Y., 160 pp. Illus. 534 x 81/4. \$2.50.

PORTRAIT OF CANTERBURY CATHEDRAL.

By G. H. Cook. Chanticleer Press, 41 East 50th St.,

New York 22, N. Y. 64 pp. IIIus. 83/4 x 111/4. \$3.50.

Without waste pages this almost pocket-sized book, *Medieval Monasteries*, traverses the 846 monastic buildings of England and Wales, providing dates, dimensions and main historical events enroute. Since these religious establishments include much of the finest building in every generation from Saxon to Tudor times, they serve as a valuable index to this chapter of architectural history. Its photographs are well and generously chosen.

The Portrait of Canterbury Cathedral is a dramatic pictorial study of one of the buildings surveyed in the handbook above. Its noble and curious amalgam of the great "perpendicular" Gothic fringed by older Norman turrets and Victorian restorations is handsomely explored by G. H. Cook's camera. The well-written text presents Canterbury's varied story and its long associations with history and literature. This volume is the second in a series on famous England Cathedrals—Durham was the first.

L'ARREDAMENTO MODERNO. Quarta Serie. Modern Furniture and Interior Decoration. Editore Ulrico Hoepli Milano (Italy). Paper-bound. Lire 4,500.

The flowery vitality of an Italian re-renaissance blossoms forth in this recent book on arts and crafts. Whether or not one can read Italian (the book is captioned in that language), the 820 plates prove that good design is flourishing again in Europe and the U. S. The pictures show glassware, ceramics, metal ware, lighting fixtures, textiles, furniture and room interiors of many countries—most of the examples original in design and gracefully executed.

To be sure, there are a few omissions (for instance, the excellent little \$15 Italian rush-seated black chair designed by Enrico Delmonte). But there are enough good new designs for any-body's taste.—E.B.

AMERICAN PLANNING AND CIVIC ANNUAL, 1948-1949, edited by Harlean James. American Planning and Civic Association, 901 Union Trust Bldg., Washington, D. C. 180 pp. $6 \times 9\frac{1}{4}$. \$3.

This summary sets its sight even wider than most planning reports and its continuing enthusiasm speaks hopefully for the growing awareness of U. S. leaders. It ranges through planning on all levels high and low. Robert Wagner speaks on New York City; Oscar Stonorov on his Philadelphia "Yardville" project; Kenneth Welch on shopping centers. The fiery ex-editor of the Louisville 'Times, Tom Wallace, brings oldtime fervor to a new-time problem—"It is time to rescue fro mits despoilers the land which the Lord, thy God, giveth thee'. . . It is time to create a Department of Natural Resources!"

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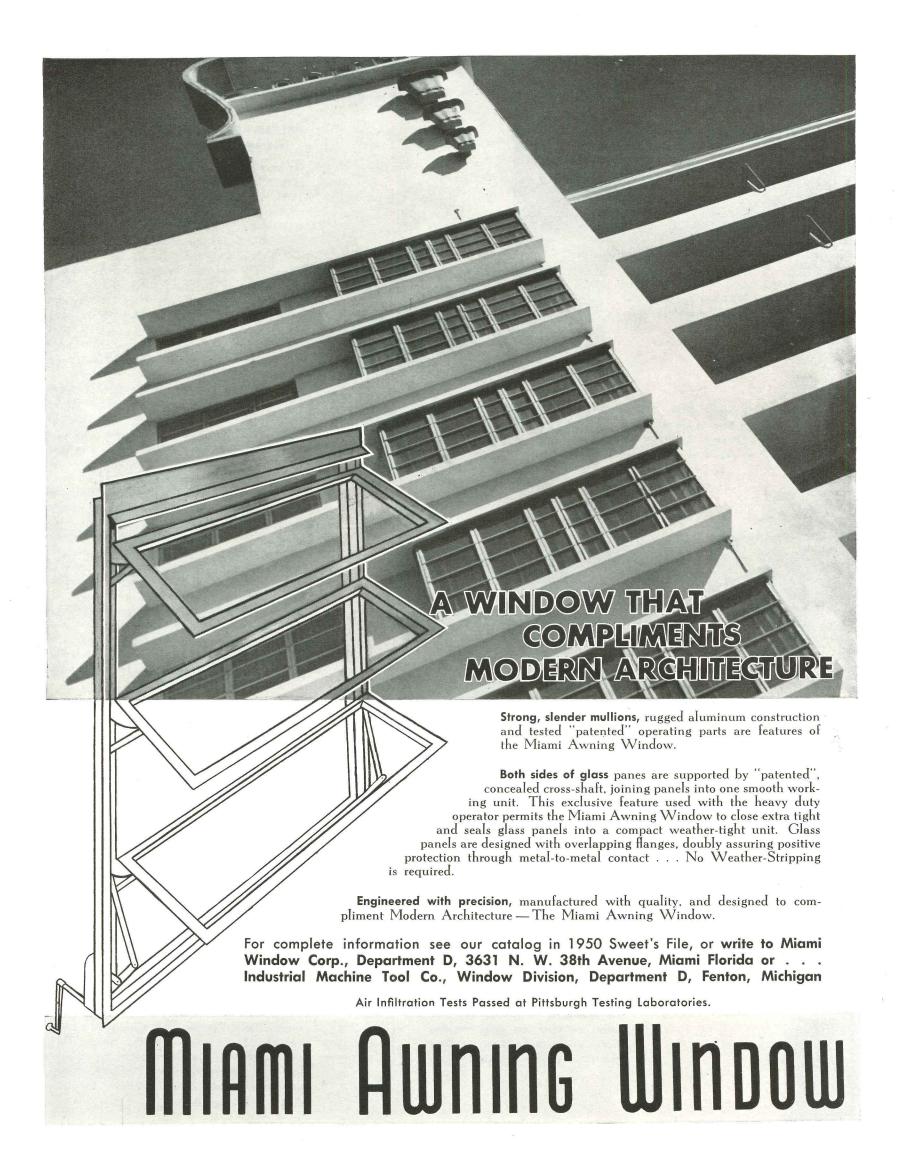
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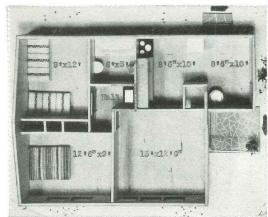


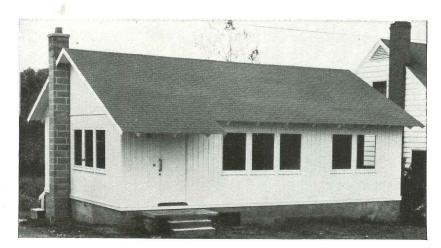
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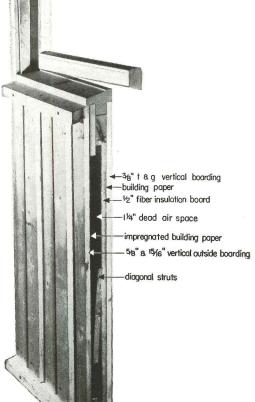


Containing about 660 sq. ft. of living space, the T-189 frame in unassembled panel form costs under \$2.65 per sq. ft.

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PRODUCT NEWS

PREFAB HOUSE FRAMES imported from Finland are good-looking, inexpensive.

Vertical boarding and battens serve as the decorative element on these well built Finnish imports, and prices for the pictured models are as unpretentious as their architecture. The smaller, type T-189, sells for \$1,736.25; the T-190 is \$1,892.88. Prices are f.o.b. North Atlantic port and include duty and ocean freight. Shipment of two of these units—weighing about 19 tons—from Baltimore to Cincinnati costs about \$465. The unit price of each house covers Norway pine panel walls with doors and sash hung and hardware applied, floor joists and roof truss work cut to size for assembly on the site, and bundled tongue and groove flooring and roof sheathing. Exterior wall panels contain ½ in. fiberboard.

Finland's State Technical Research Institute conducts tests regularly on all phases of the assembly and materials that go into these and other precut, panel and cell system structures prefabricated by Timber Houses, Ltd. The number of units created for different climatic conditions, national patterns and individual purposes that have been exported by this firm exceeds the total of residential dwellings in Finland's cities. Roughly 30,000,000 sq. ft. of these timber structures are in use all over the world. Although current models are designed on a metric modular system, future shipments to the U. S. will be manufactured on a 4 ft. module to simplify foundation work and roofing applications.

To give an idea of what a single complete job might run, importers Musssman & Shafer cite a model T-189 erected at Lake Hopatcong, N. J. which cost all told—with foundation, painting, nails, roofing, plumbing, heating, electrical work, lot and landscaping—\$5,500.

Importer: Mussman & Shafer, Inc., 15 E. Third St., Cincinnati 2, Ohio.

THREE ACOUSTICAL MATERIALS added to Gold Bond line.

Three new products have been added to National Gypsum's Gold Bond line of acoustic materials: Thermacoustic, a sprayed mineral wool product; Travacoustic, a mineral tile; and Acoustifibre, a drilled wood fibre tile. The first, fabricated from incombustible rockwool, was developed to be sprayed on ceilings and arches. It may be applied in any desired thickness—usually from ½ to 1½ in.—to finished solid surfaces or to suspended ceilings of metal lath and channel grillage. Cost to the consumer for Thermacoustic ranges from 35 to 90 cents per sq. ft., depending on the size and design of the job. Not only is it effective for noise reduction but for thermal insulation as well.

Also made of fireproof mineral wool, Travacoustic tiles are precut into 6×12 in., 12×12 in., and 12×24 in. sizes in two thicknesses. Their factory-applied white coating can be cleaned; however, if desired, they may be repainted without imparing acoustical efficiency. The tiles,

(Continued on page 172)

for the people

For the people is this handsome Memorial Auditorium with its attractive terrazzo floors and stairs. For the people also is the permanent, non-slip protection given these floors and stairs by the use of ALUNDUM terrazzo aggregate.

ALUNDUM terrazzo aggregate will give any terrazzo floor or stairway two added advantages: positive, permanent, non-slip protection even when wet, and greatly increased wear resistance.

For the people are the non-resonant and comfortable walking qualities of ALUN-DUM terrazzo floors. Available in a wide variety of colors, ALUNDUM terrazzo aggregate combines attractiveness with its non-slip protection and wear resistance.

For lobbies, foyers and entrances, and for ramps and precast stair treads, you can combine common-sense with good taste and add safety to attractiveness by using ALUNDUM terrazzo aggregate.

See our catalog in Sweet's (SA and SE) or write for our free catalog, number 1935





Other Norton non-slip floor products are Alundum aggregate for cement floors, Alundum stair and floor tile, and Alundum ceramic mosaic tile. All of these serve the public by making your floors, ramps or stairs permanently non-slip.

NORTON COMPANY Worcester 6, Massachusetts



Equipped with NORGE Appliances

Home buyers are more choosy now. They want more for their money. And they want a "packaged mortgage" so that they can pay the cost of necessary home appliances over a long period of time...the duration of their ances over a long period of time everywhere find appliance house mortgage. Builders everywhere find appliance equipped homes sell faster, easier.

WISE BUILDERS INSTALL NORGE! and with Good Reason!

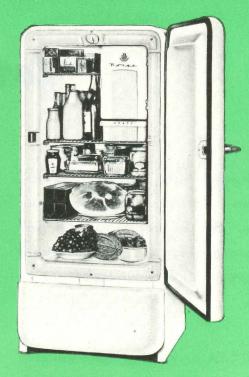
You know that in practically every case it's the woman who chooses the home. You know that the kitchen is the big selling point. And the kitchen equipped with Norge appliances is a sure winner.

First, because Norge is a famous national brand. Every woman knows the Norge name. Every woman recognizes the value. And the husband knows that "Borg-Warner" stands for the best in engineering.

Second, individual Norge appliances sell themselves...and your house along with them. Their beauty lends glamour and drama. And each appliance is jam-packed with the features every homemaker wants.

And the builder himself finds that the Norge price is right.

So when you install Norge appliances, you add much more to the value of your house than the price of the appliances themselves. You assure yourself of faster-moving units...and greater profits.



NORGE REFRIGERATOR: One-piece, seamless, porcelain-lined interior. Recessed floor. Extra package shelf for small items and leftovers. Side freezer holds up to 17 lbs. of frozen foods. Glass fiber insulation. Adjustable leveling guides.

NORGE ELECTRIC RANGE: One 8" 2100-watt surface unit, two 6" 1250-watt surface units, plus deep-well cooker. Each unit is made up of two elements. Controlled by 7-speed switches. Glass fiber insulation. Family size oven. Stain-and-acid resisting Titanium porcelain. Appliance outlet.



For Detailed Information SEND COUPON TODAY!

NORGE Division,	Borg-Warner	Corporation,	Dept.	AF-2
Detroit 26, Michie	aan			

Att.: Mr. S. J. McCarthy, Director of Contract Sales.

Please send me more information on the following appliances:

Refrigerator

Water Heaters

Automatic Washer

Gas Range

Electric Range

Home Heaters



AMERICA'S FINEST HOME APPLIANCES - ENGINEERED BY BORG-WARNER



Type 101 Gravity Furnace — Steel. 90,000, 135,000 Btu input.



Type 108 Winter Air Conditioner — Cast iron. Five sizes, 67,-000-157,500 Btu input, in increments of 22,-





Type 110 Winter Air Conditioner — Steel. 60,000-100,000 Btu.



Type III Gravity Furnace—Steel. One size, 90,-000 Btu input.



Type 155 (Attic) Furnace
— Steel. Forced-air. 60,000, 90,000 Btu input.



Type 105 Winter Air Conditioner—Steel. Two sizes, 100,000, 150,000 Btu input.





Type 10 Boiler—Nine sizes, from 54,000 to 378,000 Btu input, in increments of 27,-000 Btu.



Type 20 Boiler Forty-one siz 315,000-3,780, Btu input, in increments of 000 capacity.





FOR OIL



Type 50 Winter Air Conditioner — Steel. Pressure-atomizing burner, Four sizes, 100,000, 150,-000, 200,000, and 225,000,



Type 201 Gravity Furnace — Steel. Pressure - atomizing or vaporizing burn-er. Two sizes, 90,-000, 135,000 Btu



Type 202 Winter Air Conditioner — Steel. Type 201 plus circu-lating and filter unit. 100,000, 250,000 Btu



Type 209 Winter Air Conditioner— Steel. Vertical in-stallation. Two sizes, 100,000, 135,000 Btu input.





FOR COAL



Type "F" Gravity Furnace—Cast iron. Five sizes — from 20" to 30" firepots. 93,000-177,000 Btu



Type "FB" Winter Air Conditioner — Cast iron. Type F and blower-filter unit com-bined. Five sizes — 108,700-234,000 Btu





Type 702 Winter Air Conditioner — Steel. Type 701 and blow-er-filter combined. 109,000, 210,000 Btu



Type"WG" Gravity Furnace—Cast iron. One size—42,000 Btu output at register.



Type "WR-72" Forced Air Furnace—Cast iron. Type "WG" plus forced-air circulating unit. 72,000 Btu output at bonnet.

Mueller Climatrol

fuel-thrifty comfort

The heating line to use for complete satisfaction in every home you build

Insure the success of every job you deliver by a wise choice of heating equipment — fuel-thrifty Mueller Climatrol. More than 93 years of outstanding leadership justify your choice. And you have a complete line to choose from — for every size home, every type of heat, any of the three popular fuels. Standardize on Mueller Climatrol for all your jobs, and you're sure of satisfied customers. Write for complete details. L. J. Mueller Furnace Company, 2107 West Oklahoma Avenue, Milwaukee 15, Wisconsin.

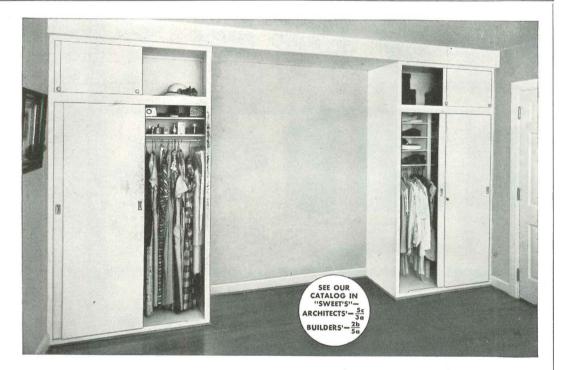
Lican Fin

THE MOST COMPLETE LINE IN THE INDU









Save <u>space</u> and <u>money</u> with MENGEL WALL CLOSETS!

MENGEL prefabricated wood Wall Closets offer you tremendous space and money-saving advantages. They enable you to give your clients greater storage space for the same cost as conventional closets, or equal space at lower cost. They use 25-40% less floor space than conventional closets, and their efficient sliding doors permit greater utilization of floor space outside the closet. . . . They are shipped K.D. with front frames and doors assembled, all parts completely

fabricated and hardware included. They can be assembled and installed in a half hour or less!

Equally important, Mengel Wall Closets are made in three widths, each with several choices in interior arrangement. Units can be combined to fit the special requirements of any job!

The coupon will bring you complete information including specifications and installation data for Mengel Wall Closets. *Mail it today!*



THE MENGEL COMPANY
Cabinet Division
1120 Dumesnil St., Louisville 1, Ky.
Gentlemen: Please send me complete information about Mengel Wall Closets.
Name
Firm
Street
CityState

PRODUCT NEWS

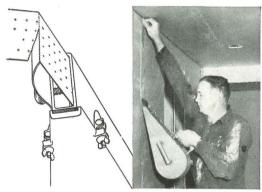
costing from 40 to 70 cents per sq. ft., have the decorative quality somewhat the same as travertine stone.

Acoustifibre is an improved wood fiber tile perforated to deaden noise. It comes in three thicknesses and may be cemented to a solid surface or suspended on a hung ceiling system. Acoustifibre is said to offer more sound absorption per square foot than earlier tiles of this type. It, too, can be repainted many times without loss of its acoustical value. Price range is from 25 to 50 cents installed.

Manufacturer: National Gypsum Co., Buffalo 2, N. Y.

LIGHTWEIGHT TAPING MACHINE speeds drywall construction.

Cement and tape are uniformly applied over dry-wall seams, angles—even outside corners—with the Superior applicator. Easy to maneuver and operate, the magnesium device weighs less than 8 lbs., fully loaded with tape and joint cement. To prevent the cement inside from setting, a rubber gasket tightly seals the machine. Tape may be used several hours after placement in the applicator. A twist of the wrist automatically cuts off the tape at any desired spot. Ac-



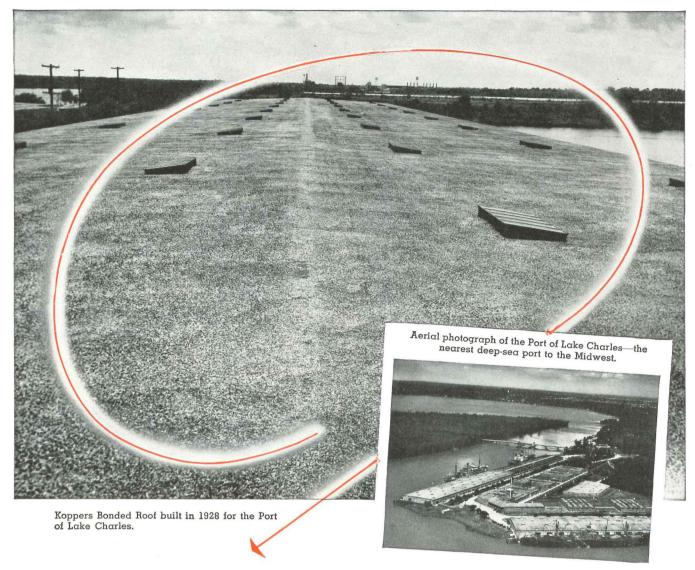
cording to its manufacturer, the Superior applicator enables one man to do the work of five. The machine handles any standard size tape up to $2\frac{1}{8}$ in. wide. It retails at \$40, f.o.b. Wichita, Kans.

Manufacturer: Superior Drywall Applicator Co., Wichita, Kans.

PACKAGED STEEL KITCHEN CABINETS are attractive, low priced.

Simplified construction of Midwest steel cabinets not only enhances their appearance but lowers the cost. Designed for the budget home builders' market by the makers of the Kitchen Kraft line, they are in the price range of ordinary wood cabinets yet offer features of more expensive storage units. Some of these attractions are: welded steel construction, baked refrigerator finish throughout, sound deadened doors and drawers, semi concealed chrome plated hinges, rubber bumpers on doors and drawer fronts, removable shelves, porcelain enameled sink bowls, a single recessed bottom. Door pulls have been succeeded by indented hand pulls. Linoleum covered counter tops are obtainable in solid

(Continued on page 178)



"AFTER 20 YEARS' cost-free service— this Koppers Roof is still in excellent condition,"

• says the Executive Assistant of the Port of Lake Charles, Lake Charles, La.

AND the Port of Lake Charles goes even further in paying compliments to Koppers—"from all outward appearance, this Koppers Roof looks like it is good for another twenty years."

That's whole-hearted praise—and judg-

Case Histories—there's more than an even chance that this Koppers Bonded* Roof will give good service for another twenty years.

Koppers Coal Tar Pitch and Tarred Felt Roofs are built to last. They resist prolonged contact with water. They have unusual tensile strength. They are "self-sealing" if small breaks occur. And when gravel or slag is embedded in a heavy pouring of Koppers Pitch, the roof surface is armored against the elements.

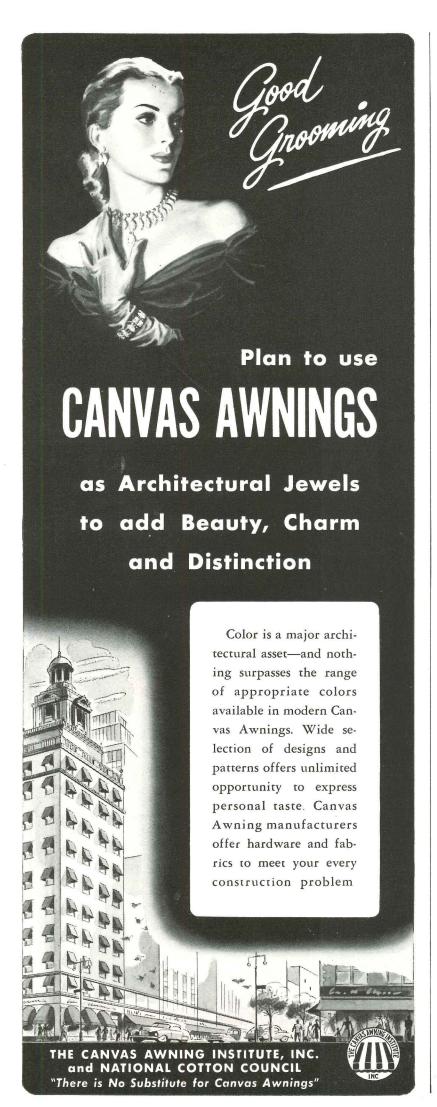
Why not learn all the advantages of using Koppers Roofing Materials — the materials which make roofs last longer. Write for further information, or see our catalog in Sweet's Architectural File.

*Koppers Roof Guarantee Bonds indemnify owners against the cost of roofing repairs for 10, 15 or 20 years according to the type of roof applied. These Bonds are issued in such sections of the United States as are covered by Koppers inspection service.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.



SPECIFY KOPPERS FOR LONG-LIFE ROOFING









Using aircraft construction techniques developed during the war, Crawford has produced the STYLIST—the first flush surface garage door ever built by mass production methods.

There is almost no limit to the opportunity for self-expression offered by the Crawford Marvel-Lift STYLIST. The flush surface of fine hardwood may be left absolutely unadorned, or, it may be decorated with applied moldings, panels and colors in any design you or your client may desire.

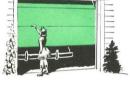
It may repeat the motif of any architectural style, traditional or modern; it may be handsomely monogrammed, or emblazoned with a coat-of-arms; it may reflect a hobby or it may be decorated in some favorite pattern or color treatment that appeals to your client, strikes an original note, or contributes to the individuality of your design. Windows are available—round, square, oblong, diamond shaped.

This doesn't affect the efficiency of the door. It is still the good Crawford sectional door with the famous Marvel-Lift Mechanism which gives finger-tip operation to half a million Crawford Doors all over America and Canada.

Only the construction is different—beautiful hardwoods laminated to a unique molded plywood core produce incredible strength and rigidity with lightness—a truly modern door born of the newest structural techniques and materials.

Your local Crawford Door Sales Company, listed in the Yellow Pages, can give you complete information. Call them for quick action or write us direct.

Visit Booth 39 NAHB Show at the Hotel Stevens



The STYLIST slides up inside the garage, safe from wind, rain, snow and ice.



20th

PATENTED HERCULEX CORE OF 3-PLY HARD-WOOD is laminated and molded to shape under 300,000 lbs. pressure at high temperature producing permanent waterproof bond. Blocks are built in for locks on either side.

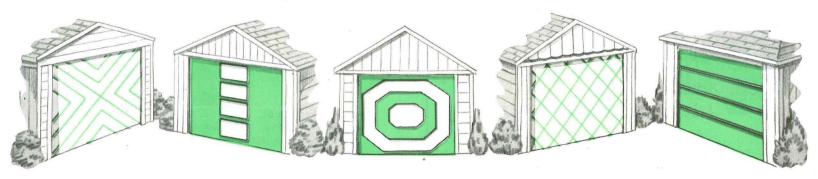
Crawford Door Company

Main Plant: 3-401 St. Jean Ave., Detroit 14, Mich.

FABRICATING PLANTS in Portland, Tacoma, Los Angeles, San Francisco, Dallas, Kansas City, Chattanooga, Milwaukee, Hudson, Mass., Cadillac, Ottawa, Canada.

DISTRIBUTING WAREHOUSES in 67 major cities.

SALES AND SERVICE companies everywhere.





Kitchen Maid Cabinets of friendly wood now available in four soft colors and white, with many new features, are frequently the "clincher" in selling a house. Women prefer their beauty and livability, their durability and cleanliness - qualities that recommend them also to you. Modern, Flo-Line styling, quiet Resinite doors, aluminum drawers, permanent shelves, a broad line to simplify planning-these are other features that you will approve. Decide now to include Kitchen Maid in your future building plans. Write for valuable planning booklet sent free to architects and builders.



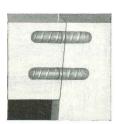
NEW SWING SHELF BASE

Quiet, ingenious swing-out corner unit utilizes dead space, brings con-tents within easy reach. Especially designed for easy cleaning.



QUIET ALUMINUM DRAWERS

Kitchen Maid aluminum drawers are quiet, will not rust or chip. Always slide easily on oil im-pregnated hardwood guides and slides.



FINE FURNITURE CONSTRUCTION

Wood is by all odds the favorite of women for kitchen cabinets. Kitchen Maid Cabinets — built like fine furniture — exemplify wood at its best.



THE KITCHEN MAID CORP.
602 Snowden St., Andrews, Ind.
Please send new booklet containing
10 practical kitchens with details. I am
an
Architect,
Builder,
Dealer.

Address_

Look for this sign on your dealer's window. It signifies his skill as a member of the nation's oldest kitchen planning organization.

FLUSH Radios BUILT IN THE WALL!

Dealers

Architects

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Dealer Ivory White Royal Blue Mandarin Red • Panel sixe 7-13/16" x 11-7/16".

The Radio for every

room in the HOMES OF 1950.

An "extra" that sells.

LOW COST-Installed for the price of a regular outlet Retail price only \$34.95

Trade net prices on request Plastic colors \$4.45





RADIO COMPANY ! I WEST PARK STREET NEWARK 2, NEW JERSEY

GUARD AGAINST

STATIC SPARK **EXPLOSIONS**

Specify for your hospital operating suites our Conductive Staticproof Plastic Flooring which has successfully passed tests proving that it meets the new

SAFETY STANDARDS of THE NATIONAL FIRE PROTECTION ASSOCIATION and THE NATIONAL BOARD OF FIRE UNDERWRITERS

In addition to being used in new construction our conductive flooring is laid by our trained mechanics over existing terrazzo and ceramic tile and in place of existing linoleum. Under frequent daily washings our conductive flooring retains its electrical properties and is not damaged by the washing fluids.

As part of our conductive flooring project we install the hospital operating room wall ohmmeter of our affiliate, Conductive Hospital Accessories Corporation, Boston 18, Mass., in order that Hospital Administrators can comply with the new safety standards which require daily testing of conductive footwear on the wearer and monthly testing of flooring and equipment.

Specialists in the design and installation of conductive installation of conductive staticproof flooring for hospitals and industrials.

FEDERAL FLOORING CORPORATION

*82 West Dedham St., Boston 18, Mass., COmmonwealth 6-4100 441 Lexington Ave., New York 17, N. Y., MUrray Hill 7-8270 Transportation Bldg., Washington, D. C., National 5770 *Kindly address mail communications to our Boston Office.



built like a bridge



"The Monroe
96" T-12 SLIMLINE and
STANDARD 40-WATT

LUMINAIRES

Framed-plastic, aluminum or steel side-panels; designed for quick and easy surface or pendant mounting, individually or in continuous row.



BUILDING FOOT-CANDLE LEVELS

This actual photograph of a pendant mounted "Monroe" Slimline Luminaire proves our point that it's "built like a bridge." The "Monroe" is not recommended for heavy foot-traffic, but its bridge-like construction provides for perfect alignment on continuous runs with hangers spaced only at every 8 feet. This minimum of hangers and the unit's rugged construction mean reduced installation costs and improved appearance.

In design, in construction, in flexibility of use—the new "Monroe" is the ideal fluorescent unit. Its efficiencies of up to 83% with $25/35^{\circ}$ shielding; its low initial cost; its long service life add up to good lighting at economical cost.

WRITE TODAY for complete information on the "Monroe" and other Fluorescent Luminaires in the Pittsburgh Permaflector Presidential Series.

PITTSBURGH REFLECTOR COMPANY

401 OLIVER BUILDING . PITTSBURGH 22, PENNSYLVANIA

Permaflector Lighting Engineers in All Principal Cities

PITTSBURGH PERMAFLECTORS ARE DISTRIBUTED BY BETTER ELECTRICAL WHOLESALERS EVERYWHERE



PRODUCT NEWS

black and in a black, red or vellow marble pattern. The pictured unit measures 72 in. wide and carries a suggested retail price of \$200.

Manufacturer: Midwest Mfg. Co., Galesburg, Ill.

BATHROOM CABINET has side mirror wings.

This bathroom cabinet is manufactured with adjustable side mirrors which permit profile and rear views. It is constructed of cold rolled steel and has frames of polished stainless steel. Plate glass mirrors measure 16 x 24 in. for the door

section and 8 x 20 in. for the side panels. Both door and wings are mounted with chrome plated piano hinges. The cabinet contains three shelves. Its interior is finished in a baked white enamel. The model 1250 L has, as standard equipment,

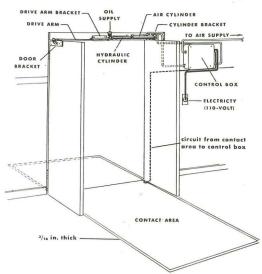


a 15 w. fluorescent lighting fixture over the center section, chromed toothbrush holder and a plug in outlet for electrical accessories. Retail price for the unit is \$45.

Manufacturer: Standard Steel Cabinet Co., 3701 Milwaukee Ave., Chicago, Ill.

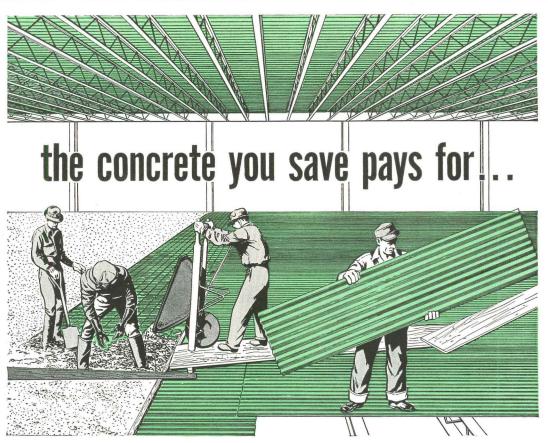
AUTOMATIC DOOR OPENER is installed without remodeling doors, walls or floors.

Astra's new door opening and closing device is suitable for hospital and many industrial purposes. Air operated and hydraulically controlled, it has no extensive wiring, gears, motor, relays or other parts which are difficult to install and maintain. Opening is initiated electrically by stepping on the contact area on either side of the door. Floor plate on this area is 3/16 in. thick and has beveled rising edges to provide a safe smooth approach. Air power is supplied either by the building's air pressure system or, if this is not available, from a small compressor. Electricity is



furnished from a 110 v. wall outlet. In case of power failure in the building, doors may be operated manually. Retail price, not including installation, is \$395 for the single door unit. A double door opener is \$495.

Manufacturer: Astra Engineering Co., 933 S. Fair Oaks, Pasadena, Calif. (Continued on page 182)



Corruform

100,000 pounds per square inch.

Tough-tempered. High-strength. Steel base for concrete in joist construction.

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

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

Specify CORRUFORM by name

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

GRANITE CITY STEEL COMPANY



Granite City, Illinois

for the first time
...low cost double
window protection
with built-in
controlled ventilation



THE ONLY READY-TO-INSTALL METAL UNIT COMBINING GLASS, SCREEN, WEATHER STRIPPING, INSULATING SASH AND METAL OR WOOD SURROUND

Now—for the first time, you can specify and use a truly complete window unit that follows through on your heating and insulating specifications—has "built-in" year 'round service ... that is proved durable and trouble-free ... that provides many tangible benefits in economy, safety, convenience and comfort for you and the home buyer. It costs no more than you're paying now.

PROVED PRACTICAL BY 14 YEARS EXPERIENCE . . .

Over 5,000,000 installations of the famous Rusco Self-Storing Combination Window prove the acceptance of the Rusco principle of window conditioning. The Prime Window is an adaptation of these basic engineering principles to bring you the same advantages for new building construction.

WRITE FOR CATALOG

THE F. C. RUSSELL COMPANY

DEPARTMENT 7-AF20

CLEVELAND 1, OHIO



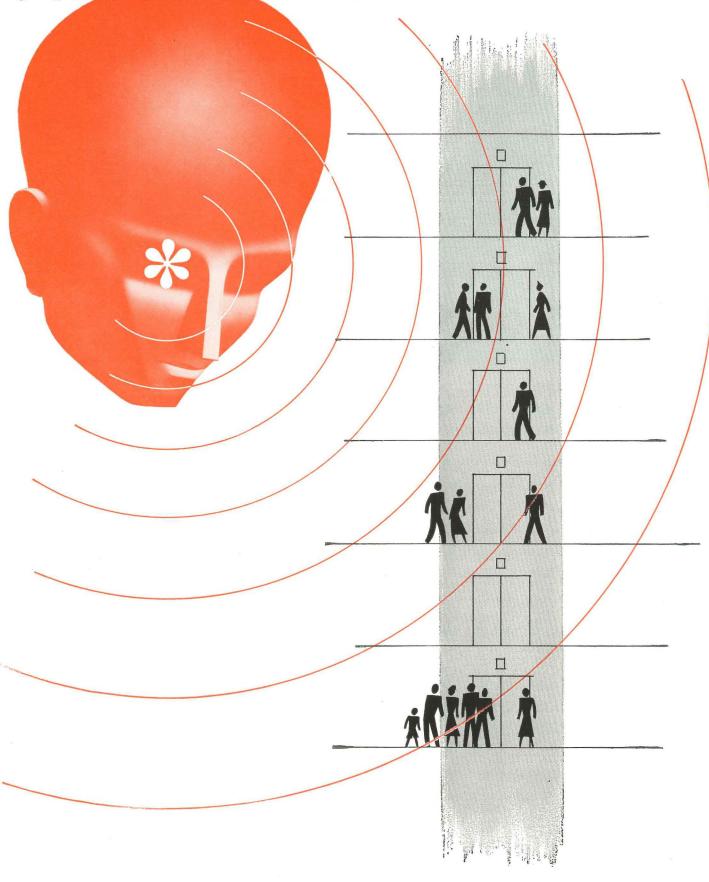
ONLY RUSCO OFFERS THESE DESIGN AND CONSTRUCTION FEATURES . . .

All working parts of tubular, hot-dipped galvanized Armco Ingot Iron Zincgrip . . . Bonderized and finished with baked-on out-door aluminum enamel • No field painting • Simple installation further reduces costs • All wood installation members are toxic-treated • Waterproof felt weather stripping • All glass and screen panels removable from inside • No weights, balances or cords • Smooth operation • Automatic, prowler-proof locking in closed and ventilating positions • Easier window cleaning • Available with or without self-contained insulating sash • Complete unit offers all advantages of windows, screens, storm sash and weather stripping.

THE F. C. RUSSELL (Department 7-AF20		Dhio	
Gentlemen: Please sen on Rusco Prime Window	-	formative do	ata and specifications
(please check) I am	Architect		Building Contractor
	Building Su	pply Dealer	
Name			
Company		Title	
Address			-
City	Zone	State_	
Openings for di	stributors are avail	able in select	ed territories.

179

Selectomatic Elevators



HAVE AN "EYE" FOR BALANCING ELEVATOR SERVICE WITH DEMAND

Green, red, red and green . . . up, down and in between. Heavy, light, light and heavy . . . calls scarce or by the bevy. Selectomatic's "eye" reflects any traffic pattern the people make. Then, <u>instantly and automatically</u>, its electrical brain balances the movement of the cars with the size of the demand.

Selectomatic has charted a complete new era for elevators. No longer does the elevator service in your building have to depend on a "starter's" blind guess at when to dispatch which cars where.

With Westinghouse Selectomatic on the watch, our good friend, the starter, can relax. Spend all his time looking after his most important job . . . directing traffic.

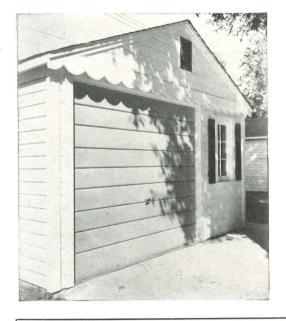
Selectomatic is the <u>only</u> elevator system that <u>automatically</u> regulates an entire elevator bank and matches the service to the demand—under any traffic conditions.

Selectomatic, an exclusive Westinghouse development, completely supersedes the previous accepted elevator standard—signal control.

Send for Book B-3597 and get the complete story of Westinghouse Selectomatic—science's greatest achievement in elevator transportation. Elevator Division, Dept. F-I, Westinghouse Electric Corporation, Jersey City, N. J.

J-98567





PRODUCT NEWS

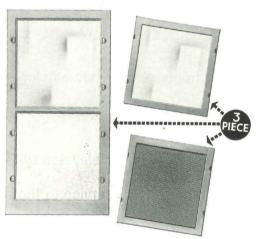
STEEL GARAGE DOOR on ball-bearing rollers sells for less than \$45.

Priced competitively with wood overhead-type garage doors, the Berry steel door is made in one piece, electronically plated with zinc and prime coated at the factory for rust protection. All stress points are riveted. Fully recessing, the door is easily lifted and sent up into the garage by means of balanced oversize springs and heavy ball-bearing rollers. Double lock latches fasten the door securely and prevent rattling. Horizontal grooving gives the Berry garage door an attractive architectural appearance.

Manufacturer: Aluminum Products Corp., 371 S. Paddock St., Pontiac, Mich.

SEGMENTED COMBINATION WINDOW costs less than separate storm and screen units.

Besides its very reasonable price of about \$7.50 per unit, the Jiffy storm and screen combination wood window has several attractive features for the builder and homeowner. Three pre-fitted pieces comprise the unit: an upper storm sash built into the frame and separate lower storm and screen sections. The slim but sturdy pine frames are toxic treated and smoothly sanded, ready for painting. Jiffy windows may be hung with regular storm sash hardware or may be attached permanently with wood screws. While the screen is in use the lower storm sash is stored in the upper half; when both storm panels are in use the rustproof bronze screen is stored above. Ouick changeover is accomplished from the inside with a screwdriver. Four unique butterfly devices keep the interchangeable units locked in



place, eliminating all noticeable vibration and making the unit tamperproof from the outside. The windows are available through lumber and building supply dealers.

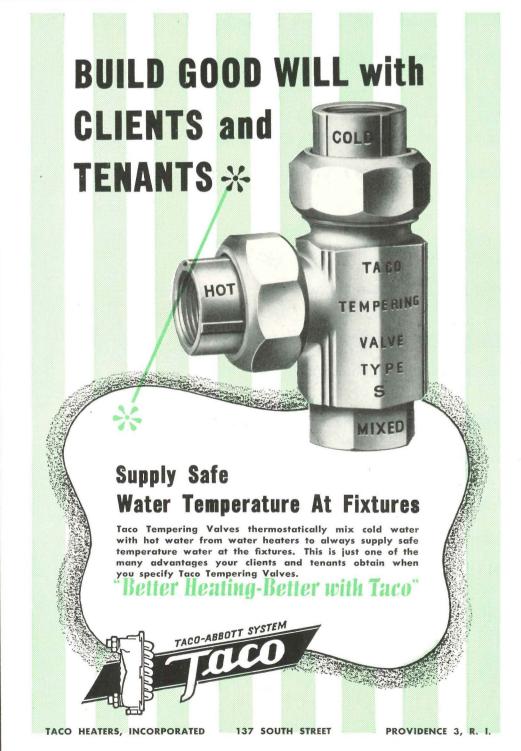
Manufacturer: Angel Novelty Co., 340 Broad St., Fitchburg, Mass.

SPIRAL SASH BALANCE can be installed while sash is in or out of frame.

A flat spiral carbon steel spring, the Spirex sash balance has a strong and lasting lifting power. Because of the simple way it is set in either round or square standard size grooves, installed cost is said to be less than half that of cord and pulleys. Only one sash run is required for the top sash, further reducing installation time. After the balance is attached, tension is regulated by a few turns with an adjusting tool. Rust pre-ventative coating on the entire mechanism eliminates friction and assures quiet operation.

Manufacturer: Caldwell Mfg. Co., 56 Industrial St., Rochester 4, N. Y.

(Continued on page 188)



DETROIT CERTIFIED CONTROLS



brings your customers comfort they never dreamed possible!

The demands of modern living place an increasing emphasis on comfort—and the basic factor in comfort is temperature control. Here it is in its most advanced form. Timed Cycling thermostats eliminate the discomforts of over and under heating by holding room temperature constant, within a fraction of a degree, regardless of any outside influence. Pioneered and perfected by the foremost engineers in the industry, Timed Cycling thermostats

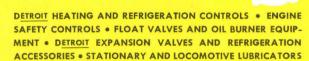
guarantee your clients comfort they never dreamed possible. Moreover, like all Detroit Controls, Timed Cycling thermostats are certified, giving you the added assurance that this remarkable development will perform as specified. For more detailed information contact your Detroit wholesaler or write the factory direct.



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No. V-574-FW "Bi-flex" Gas Valve—An electrically operated valve with mechanical limit control which is independent of electrical circuit. Valve closes automatically if furnace or boiler temperature exceeds limit setting of valve. Stepopening feature assures quiet ignition. Controlled by No. 411 "Timed Cycling" Thermostat. Available for steam, hot water and warm air systems.



Serving home and industry, American-standard • American blower • Church seats • Detroit Lubricator • Kewanee Boilers • Ross Heater • Tonawanda Iron



Wouldn't you like an office like this?

You can have Hauserman Movable Steel Interiors like these in old buildings or new ones. You'll like their pleasant atmosphere and their welcome quietness that permit concentration, speed work and reduce errors. And you'll also like the variety of Hauserman types that are available to meet every operating and construction requirement.

Hauserman Steel Partitions can be easily moved to assure efficient use of all floor areas throughout the life of the building. What's more, Hauserman engineers and erection

crews are at your beck and call whenever alterations or additions are desirable.

A Hauserman representative will be glad to discuss these and all the other advantages of Hauserman *Movable* Steel Interiors with you, your architect and your contractor.

Just call the Hauserman office or representative nearby or contact *The E. F. Hauserman Company*, 6759 *Grant Avenue*, Cleveland 5, Ohio. Or, if you prefer, we'll send you our fully illustrated 60 page catalog.



Organized for Service Nationally Since 1913



Partitions • Wainscot
Railings • Acoustical Ceilings
Complete Accessories

NOW... another exclusive CURTIS achievement

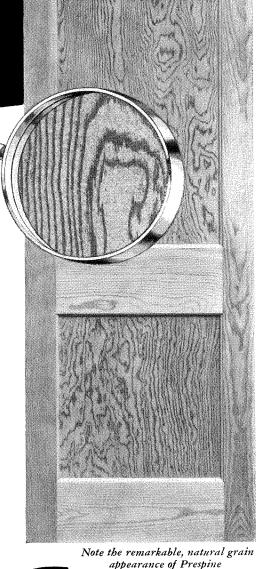
the NEW PRESPINE

Now Curtis adds another major advantage to Prespine-the all-wood panel material that provides new value in Curtis doors, cabinets and other woodwork! Today, by an exclusive Curtis process, the beautiful natural grain of ponderosa pine is accurately reproduced on Prespine. Here is another example of the way Curtis research constantly enhances woodwork beauty and utility.

Remember, Prespine is available only as used in the production of Curtis Woodwork ... and at no extra cost. Read about its advantages below—then mail the coupon for additional information.

Here's What's New About Prespine!

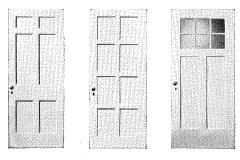
- 1. Made by an exclusive Curtis process that duplicates the natural grain of ponderosa pine on Prespine.
- 2. Prespine can be lightly sanded before finishing, if necessary.
- 3. Prespine can be painted, stained, shellacked, waxed, lacquered, varnished, enameled or blonded.
- 4. Prespine can be cleaned or washed after
- 5. Prespine is fadeproof and lightproof. It has been subjected to rigid tests which prove its lasting durability.
- 6. Prespine, when it is finished, is weather-
- resistant—withstands rain, snow, excessive humidity or sharp changes in temperature.
- 7. Prespine can be quickly and economically finished by skilled or semi-skilled labor.
- 8. Because of the nature of Prespine, there can be no grain raising or consequent checking or blistering of the finish.
- 9. Prespine door panels can be replaced as easily as ordinary door panels.
- 10. All exterior Curtis Prespine doors are treated with toxic-water repellent solutions to resist termites and decay.



appearance of Prespine

these famous Prespine features

Made of finely divided wood by an exclusive Curtis process. Prespine panels withstand warping, shrinking and swelling. Prespine resists heavy impact blows . . . won't mar, dent or scratch readily . . . won't splinter or chip. It has superior rigidity . . . provides an ideal bond for paint or stain.



Prespine is used in most Curtis flat panel door models, including interior, exterior and garage designs.

CURTIS
PRESPINE

Curtis Companies Service Bureau AF-2P Curtis Building, Clinton, Iowa
Gentlemen: I want to know more about Prespine a used in Curtis Woodwork. Please send additional information.
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Today home buyers and tenants are more demanding and builders are competing more keenly. So it is just good business to give those "first impression" areas—walls and ceilings—the luxurious, enduring beauty of Wall-Tex.

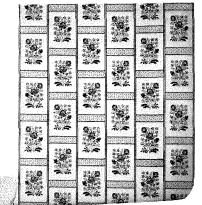
Your prospects will spark immediately when nationally advertised Wall-Tex is mentioned. They are pre-sold on its plaster crack protection and its durable finishes that are safely, repeatedly washable. They know Wall-Tex gives them extra value.

Consider Wall-Tex for the homes you are planning and the rental units you are building or modernizing. Recommend or specify Wall-Tex for hotels, schools, hospitals and other public projects.

New File Folder, Color Swatches . . . Architects' File Folder supplies full details about finishes, number rolls needed for specified areas, costs and application instructions. Pattern and color swatches are included so you can test the strong fabric base and the washable finishes. Just mail the coupon.

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So beautiful . . . yet so inexpensive! So light in weight . . . yet so strong! A smooth, lustrous enamel finish in 14 decorator colors, permanently bonded to sturdy aircraft aluminum. Ideally suited for use in homes, institutions . . . for in or on business buildings and theatres.

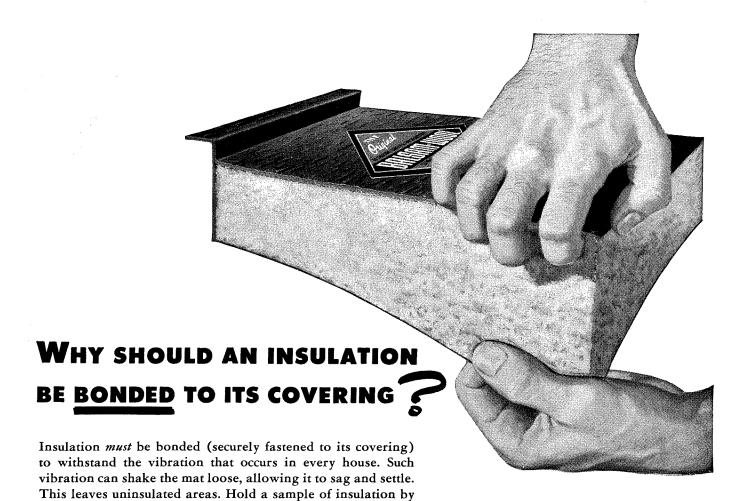
FIREPROOF . RUSTPROOF WATERPROOF

EASY TO CLEAN. WILL NOT CRACK, PEEL OR CHIP.

NASTINGS alumitile Permits modernization of old buildings without introducing structural stress problems. Easy to apply, with a decided saving in labor hours. Complete information on request.

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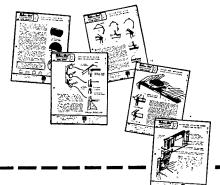
Balsam-Wool, the insulation that can't pack or settle down, offers EXTRA protection against uninsulated areas. The felted wood fibers of Balsam-Wool are bonded together to form a homogeneous insulating mat, firmly cemented to the liner...it is DOUBLE BONDED! In addition, the Balsam-Wool blanket is securely fastened in place, when applied, by its sturdy spacer flanges.

the edges and shake vigorously . . . if the mat and liner part

company, the insulation has failed one test of quality.

Combining advanced design and engineering, Balsam-Wool embodies the latest scientific developments

You'll find the answers to many insulation application problems in a complete set of Balsam-Wool Data Sheets designed for you. They're yours for the asking, mail the coupon!



such as:

- Continuous, Integral Vapor Barrier
- Sturdy Wind Barriers
- Double Air Spaces
- Special Spacer Flanges
- Rot and Termite Treatment
- Highly Fire Retardant
- Rigid Quality Control

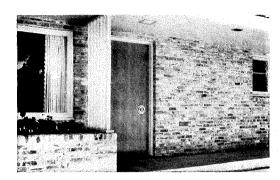
SEALED INSULATION

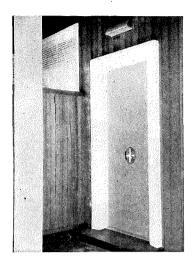
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Please send me a set of Balsam-Wool Application Data Sheets.
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"What do you expect... concrete to wear like granite?"

You can expect just that! When you treat a floor with Sonneborn's Lapidolith, that's what you get!

A Lapidolith-treated floor stands up to heavy trucking and traffic as no untreated floor can. You actually 'case harden' a floor with a deep layer as hard as granite ... up to 10 times as hard as the original concrete! Yet the entire treatment is as fast as mopping the floor . . . the material cost is under \$20 for 1000 square feet of concrete or terrazzo . . . and you can use the floor even while it's being treated. You can apply Lapidolith yourself, or if you prefer, we can arrange to have it applied for you.

If you have a tough problem involving concrete treatment, dampproofing or protective painting, call on your Sonneborn Man. Chances are, he has the answers, or can get them for you. If you don't have his name, write your problem direct.

L. SONNEBORN SONS, INC.

BUILDING PRODUCTS DIVISION

80 EIGHTH AVENUE, NEW YORK 11, N.Y.

LOCK LINK permits placement of knobs away from conventional position at door edge.

An exclusive Schlage feature is the backset link. Very simply attached to any of the manufacturer's general use and heavy duty locks of the A, C or D series, this device allows knobs and escutcheons to be set 5 in. back from the edge of the door. In no way, however, does it complicate the simple installation of these cylindrical locks: two holes are bored and the lock (with

connected backset link) and latch unit are inserted. Not only is this arrangement designed to



save door surfaces from excessive finger smudges—obvious on many flush panel doors—it also creates opportunity for new decorative treatments. In conjunction with the backset, Schlage produces unusual rose and escutcheon plates. Two of these are the Astra, a starlike rose, and the Pantheon, an oversized disc with raised edge. The latter is applicable in schools and other institutions where doors receiving heavy use often have black circles painted around the knob to mask dirt streaks. For designs calling for knobs in the center of a door, links up to 24 in. long are available on special order.

Manufacturer: Schlage Lock Co., Bayshore Blvd., Box 3324, San Francisco 19, Calif.

HYDRAULIC LADDER ATTACHMENT levels ladder on uneven bases.

Engineered to meet the ladder user's need for a strong lightweight automatic equalizer which would operate under all conditions, the Hydralizer provides a high degree of convenience and safety. As the top of the ladder is leveled to the desired position, the legs balance the load by displacement of oil from one side to the other. A foot operated valve stops the oil flow, thereby

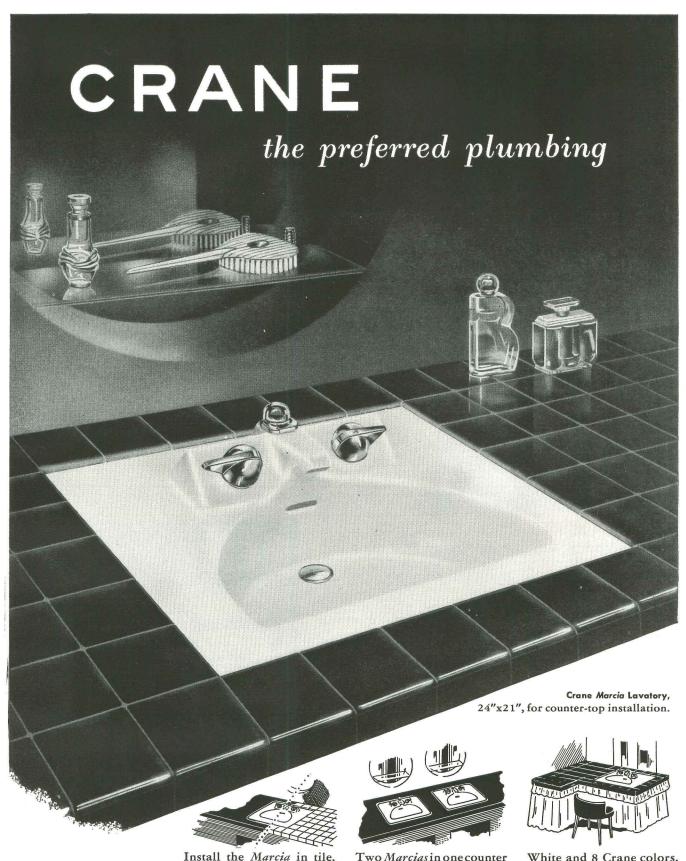
locking the ladder in place. Pronged attachments on the ball and socket shoes permit the user to flip the discs on end for use on ice or slippery terrain. The attachment may be used on ladders of different dimensions. It is easily connected to wood or metal ladders having straight or flared bases. Telescopic tubing ad-



justs to the proper width. Constructed entirely of steel for working loads over 500 lbs. and up to 1,000 lbs., the Hydra-lizer itself weighs only 6 lbs. List price is \$24.75, f.o.b., Tulare, Calif. An industrial discount of 15 per cent is allowed on orders of three or more units.

Manufacturer: Anderson Products Co., Tulare 11, Calif.

(Continued on page 194)



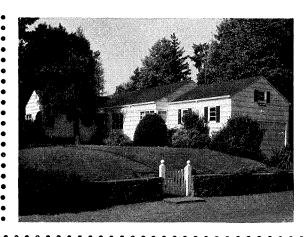
Install the Marcia in tile, linoleum, glass, or composition.

Two Marcias in one counter double usefulness of the bathroom.

White and 8 Crane colors. Consult your Crane Branch or Crane Wholesaler.

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Style at a saving with **ECONOMY SIDINGS**





Architects! Builders! Specify and use Western Pine ECONOMY SIDINGS for attractive exteriors at low cost. This economy lumber, of sound knotted grades, provides sturdy, effective sidewalls when low initial cost and maintenance are important considerations. It is carefully milled, in a variety of pleasing patterns, and lends itself to modern as well as traditional home designs. Knots do not bleed when treated with Knot Sealer WP-578 before painting (see below).

Wood siding continues to be the favorite material for American home exteriors. Western Pine Econ-OMY SIDINGS are weather and wear resistant. Beauty and good taste are inherent in their rich textures and smooth, paint-receptive surfaces. Home builders find them easily adaptable to a variety of architectural styles, derive real satisfaction and pride from the smart effects achieved at moderate cost.

For helpful FREE literature on ECONOMY SIDINGS write Western Pine Association, Dept. 308-V, Yeon Bldg., Portland 4, Oregon.

KNOTS ARE NO PAINT PROBLEM—when Knot Sealer WP-578 is used! Developed by Western Pine Association to seal knots for prevention of paint discoloration, WP-578 has consistently outperformed all other sealers. It's made and distributed by 82 manufacturers, from coast to coast. If your dealer does not have it, write Western Pine Association.

THESE ARE THE WESTERN PINES

*IDAHO WHITE PINE *PONDEROSA PINE *SUGAR PINE

These are the Associated Woods Spruce • Cedar • Lodgepole Pine

ADD STRENGTH OF STEEL ERY MASONRY WA

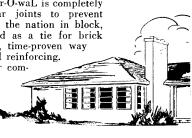
try are watching for the Dur-O-waL sign of wise con-struction,

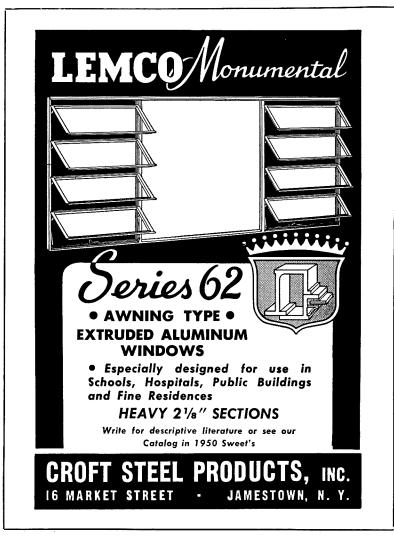
"DOLLAR-WISE" CONSTRUCTION

o-wise Builders have Proved its Advantages on the Job for You

Dur-O-waL is the patented

Dur-O-waL is the patented reinforcing that gives masonry walls a backbone of steel. Made of high tensile steel. Dur-O-waL is designed to work fast on the job. Dur-O-waL is completely enbedded in the mortar joints to prevent cracks. Used throughout the nation in block, brick, and tile walls and as a tie for brick facing. It's the low-cost, time-proven way to add dependable lateral reinforcing. Write, wire or phone for complete information. Dur-O-waL Division, Cedar Rapids Block Co., 688 Twelfth Ave., SW Cedar Rapids, Ia.







LUCKY KIDS . . . up to now

Are the school children in your neighborhood actually protected against the dangers of fire? Or have they just been lucky up to now?

When you stop to realize that year in and year out there is an average of five school fires each day-all too many of which spell tragedy—you'll be inclined to agree that it may be luck. And that now's the time to check their protection before that luck runs out.

Almost all schools have efficient, periodic fire drills . . . and that is of prime importance. So is "fireproof" construction. Yet how can they be deemed adequate protection when interiors are often like tinder . . . when basement-ignited fire can eat its way through walls to break out unexpectedly or "flash" upward through vents and stair-wells to demoralize orderly retreat, seal off escape, spread destruction and death?

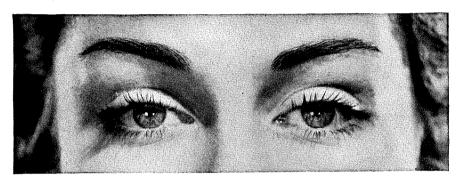
No, by the time fire "breaks out" in a school, it is generally too late. Here, if ever, is the place where it is absolutely imperative to control fire at its start, with automatic certainty!

Fires that start in schools can be controlled wherever and whenever they start, and with automatic certainty, by a Grinnell Automatic Sprinkler System. Seventyfive years experience shows that practically 100% of fires starting in buildings protected by Grinnell Automatic Sprinkler Systems are extinguished before doing material damage.

SEE THAT GRINNELL SPRINKLER HEADS ARE ON GUARD In schools, as well as in hospitals, hotels, theaters and factories, there is a moral obligation upon management for the utmost in protection of life and property. For your own sake be sure the schools, the hospitals, the hotels, and the plants for which you are responsible are protected with the famous Grinnell Automatic Sprinkler heads-your assurance of positive, automatic protection against fire. Grinnell Company, Inc., Providence, Rhode Island.

FIRE PROTECTION SYSTEMS

How will they look to 400 a few years from now?



Your wife's eyes: What will you read in hers when she asks whether you can afford that modest cottage that's for sale?



Your boy's eyes: What will you see in his eyes the day he asks whether you can afford to send him to college?



Your own eyes: What will the mirror tell you about them when it's time to retire, and take things easier?

There's no beffer time than right now to sit back and think what you will see in your family's eyes a few years from now.

Whether they glow with happiness or turn aside with disappointment depends, to a very large extent, upon what you do now.

So plan *now* for that home you plan to buy eventually... set aside money *now* for his college education... plan *now* for the day you can retire.

Decide now to put part of your salary week after week, year after year in U.S. Savings Bonds,

so that you will have the money for the *important* things you and your family want.

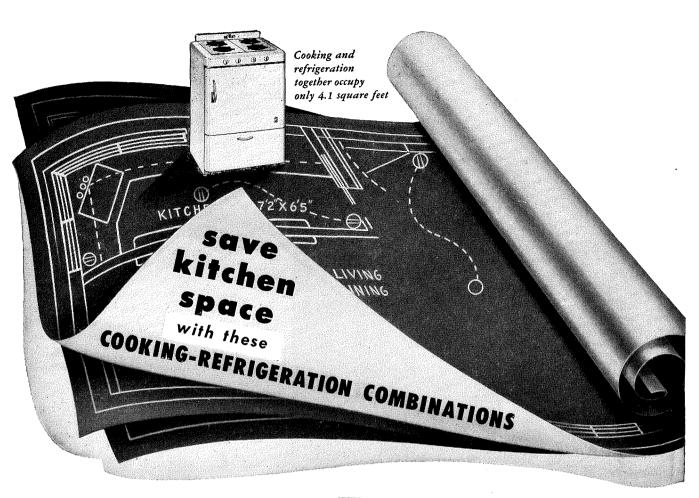
Insure your future by signing up on the Payroll Savings Plan where you work, or the Bond-A-Month Plan where you have a checking account. Chances are you won't miss the money now, but you certainly will a few short years from now if you haven't got it!!

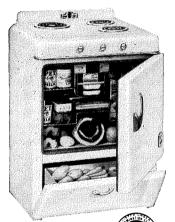
P.S. Remember, too, that every \$3 you invest now in U.S. Savings Bonds returns \$4 to you in just ten short years.

Automatic saving is sure saving — U.S. SAVINGS BONDS



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ALL-ELECTRIC GENERAL CHEF

Four cubic foot General refrigerator with vegetable bin, and three-burner elecbin, and three-burner electric cooking combination. This is the 220-volt model, with one 2150-watt and two 1000-watt burners. Also available in 115-volt model, with two 850-watt burners, to plug into any household line—one plug for range and refrigerator. for range and refrigerator both. All burners are solid closed T-K units. The top removes for easy cleaning on both models. Dimen-sions: 39" height; 27-1/2" width; 23" depth over handle.

General Chef combinations make kitchens practicable in small space...at low cost.

New flexibility for the architect and builder is provided by General Chef cooking-refrigeration combinations—for motels, hotels, apartments, resorts, cabins, small homes, guest houses, bars, offices, hospitals, etc.

General Chef quality and performance are first class. Thousands have been produced—all well-made, attractive units with triple chromeplated hardware, hermetically sealed Tecumseh compressors, 7-station temperature control, and high-quality burners.

> Builders of America's Finest Budget-Priced Refrigerators



GAS-ELECTRIC GENERAL CHEF

Four cubic foot General refrigerator with vegetable bin, and four-burner gas cooking combination. The full-size Lincoln Brass burners use natural, manufactured, or L-P gases, and are easily removable for cleaning. Dimensions: 39" height to top of grates; 27-1/2" width; 23" depth over handle. over handle.

Also available—the four cubic foot General refrig-erator with Formica table top, or without table top for built-in installations.

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COMPLETE INFORMATION AVAILABLE IMMEDIATELY

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GENERAL AIR CONDITIONING CORPORATION 4542 East Dunham St. • Los Angeles 23, Calif.

Please send me your data file on General Chef cookingrefrigeration combinations. Include specification data on the complete line of General refrigerators.

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Johnson & Johnson



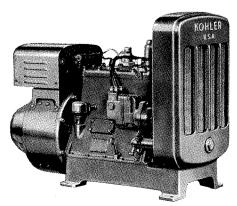


KOHLER

Electric Plants

When storms or accidents interrupt central station electricity, stand-by Kohler Electric Plants can save your clients thousands of dollars in damage or loss, prevent mortality, injuries, costly disturbance.

Lives of patients may be endangered in hospitals and sanitariums if lights go out in operating rooms—and if steri-



Model 3A21, 3KW, 115 volt AC. Automatic start and stop. Length 41°, width 16°, height 27¼°. Other sizes range from 350 watts to 10KW.

lizers, x-ray machines, and other equipment stop functioning. Panic, injuries, theft, could follow sudden darkness in stores, schools, auditoriums. In theatres, refunds would be necessary. Industrial plants could suffer heavy losses from stoppage of processing equipment. In homes, illness or damage might be caused by lack of automatic heat, water and refrigeration.

Kohler Electric Plants take over the load instantly, without human attention, providing current as long as regular service is cut off. Safeguard your clients' interests with this important protection. Write for folder K-15. Kohler Co., Kohler, Wisconsin.

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PLUMBING FIXTURES • HEATING EQUIPMENT ELECTRIC PLANTS • AIR-COOLED ENGINES

LRIDII = VEVS

CORDLESS TRAVERSE opens and closes drapes in equal folds, turns corners smoothly.

Having no cords to bind or sag, the Bradley Rotor Traverse distributes the fullness of curtains equally during all stages of movement. Closure may be synchronized so that one panel covers 3 ft. while the other moves across 7 ft., or any other combination of areas. Kept partially open, the drapes hang in equal folds without the customary bunching at one end or the other.

Because of the angular setting of the shafts in ball type rollers, the ingeniously devised carriers are activated by rotation of the tube (turned by hand powered loop pull or by motor powered sprocket and chain). When the tube is turned clockwise, carriers move towards center; counter-clockwise, toward the ends. Twelve precisioned variations of the angulation of the shafts permit the carriers to be moved in either direction at twelve proportionate speeds, thereby achieving equal distance between them and equal folds of the drapery they suspend. To eliminate



installation mix-up, relative speed and direction are clearly marked on each carrier. A set of 12 usually accommodates a 5 ft. width, but for larger spans the carriers may be used in multiples such as three 1L's, three 2L's and so forth. For short traverses an arrangement such as 2R, 4R, 6R, etc. may be utilized. ("R" and "L" stand for right and left.)

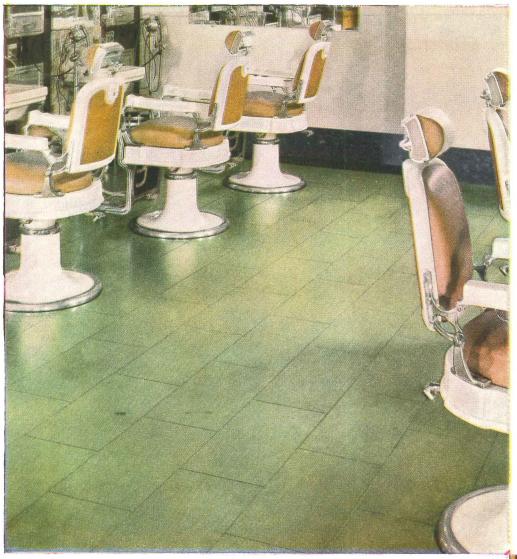
A flexible spring coupling makes it possible to send drapes around corners easily and smoothly. Carriers pass by the supports on each side of the flexible section and over the curve without breaking fluidity of movement. For longer curved distances, a similar ball-bearing internal support is set at the desired arc.

Once the principle is comprehended, the installation is relatively simple. The rod is dropped in slotted brackets like a shade roller. Carriers are placed on this tube in numerical sequence—the lowest (slowest moving) next to the bracket, the highest (moving fastest in ratio sequence) nearest the center. For hand operation, a loop pull is placed over the pulley and through the idlers. For electric control, a motor is mounted behind the first pleat of drapery. The switch is placed nearby or at a remote location. Auditorium curtains may be operated from a single offstage switch. Schoolroom curtains may be opened by the teacher seated at her desk, bedroom drapes drawn from bedside.

Cost, on special order basis to the trade, is about \$40 for the light-duty, reversible motor and controls; \$65 for the heavy-duty with controls. Price of 20 ft. of straight tubing, complete with carriers, coupling, adapters and brackets, would be approximately \$2.35 per ft.

Manufacturer: Bradley Rotor Traverse Co., Inc., 92 Jewett Ave., Port Richmond, S. I., N. Y.

(Continued on page 200)





Will Your Floors Look Like These After 13 Years?

In 13 years . . . these VINYLITE Plastic floors have been walked on by 676,000 customers! They have cushioned millions of steps of barbers and beauticians. They have taken nearly 700 washings and waxings!

Yet no wear is apparent and the floors virtually look like new!

They were laid experimentally in 1936 in a New York City barber and beauty shop. Made of VINYLITE Brand Plastic, these flexible tiles have supported the wheels or feet of chairs, tables, vibrators, sun lamps and dryers—without injury.

Cigarettes, dropped on it by the thousands, have left no marks. Neither have hair tonics, nail polish, nail polish removers, oils, hair dyes, bleaches, alcohols. Its beauty is un-

blemished. Foot and leg weariness of barbers has been vastly reduced.

Technical men believe it comparable to an achievement at the Chicago World's Fair in 1933. Then, a similar VINYLITE Plastic floor was walked upon by between 19 and 20 millions of people—without appreciable wear!

It shows dramatically why so many architects today choose tile and continuous flooring of VINYLITE Plastic for schools, homes, cafeterias, lobbies, kitchens, stores, public buildings and institutions.

Remember, it comes in a wide range of fast colors—the clearest ever available in flexible flooring.

Write Department HA-14 for information—and a list of representative suppliers.



BAKELITE DIVISION

Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y.



Vodernfold doors save space ... and do it beautifully!



In these days when high costs dictate smaller houses and smaller rooms, space-saving devices are especially welcome to architects. And when they enhance the beauty of the house-well, it's just what you ordered. Modernfold accordion-type doors save space which is wasted with swinging doors. Modernfold Doors save up to six square feet per opening-make rooms that much larger.

With larger Modernfold Doors, rooms can be convertible. Open, they make one larger room; closed, two small private rooms. Do not confuse Modernfold Doors with curtains. They have sturdy metal frames covered by eye-appealing, plastic-covered fabrics. These come in a variety of popular colors that blend perfectly with any general color scheme.

Specify these folding doors for both residential and commercial clients. They solve closure or partition problems-both from a decorative and a practical viewpoint. Remember, they're fabric-covered for beauty-metal-framed for rigidity and strength. Mail coupon for full details.

Modernfold Doors are priced from \$26.00 (F.O.B. New Castle) and up.

Look in your telephone book under "doors" for the name of our installing distributor. like an accordion NEW CASTLE PRODUCTS New Castle, Indian moder<u>nfold</u> New Castle Products P. O. Box 800, New Castle, Ind. Gentlemen: Please send me your Architect's Catalog, giving full details on Modernfold Doors.

First Ventilator with **Certified Capacity Ratings!**



The Revolutionary Improvement in Roof Ventilators and Chimney Tops

Only the Breidert Air-X-Hauster offers certified capacity ratings based on tests* made with wind blowing in all directions as shown above. Only such tests can guarantee the capacities a ventilator will deliver under actual operating conditions! No matter which way the wind blows, barring interior negative pressures, the Breidert provides safe, sure ventilation.

* By Smith, Emery & Co. of San Francisco, Pacific Coast Branch

By Smith, Emery & Co. of San Francisco, Pacific Coast Branch of the Pittsburgh Testing Laboratory.



For Chimney Tops . . . the Breidert Air-X-Hauster stops down-draft, exhausts smoke and fumes, completely overcomes sluggishness caused by down-draft. Thousands of Breiderts are in use all over the

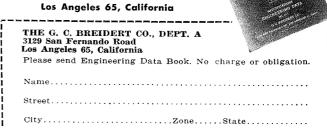
For Vent Flues . . . the Breidert succeeds when conventional ventilators fail because it completely eliminates back-draft where no interior negative pressure exists. Positive flue action is assured regardless of wind direction. The Breidert is more compact and neat in appearance.

For Roof Ventilating... the Breidert is unsurpassed in efficiency, economy and appearance for use on residence, commercial and industrial buildings of all types. Stationary... no moving parts ... nothing to jam or get out of order.

Send for Free Engineering Data Book... use the coupon for complete information on the Breidert Air-X-Hauster, including certified capacity ratings.

THE G. C. BREIDERT CO.

3129 San Fernando Road







Eye-rest Green is used to give this lobby a restful, dignified appear ance and to provide an effective background for the decorative mural

Now You Can Use **COLOR** for Functional as well as **Decorative Purposes**—with Scientific Accuracy!

Experience has shown that industrial workers whose surroundings and equipment are painted according to Pittsburgh's system of COLOR DYNAMICS benefit in many ways. Why not have office workers enjoy similar advantages?

- There is no longer any reason for the drab, depressing monotones so often found in public or private office buildings when they can be transformed so simply and easily into pleasant and efficient places in which to work.
- **COLOR DYNAMICS** is based upon the simple psychological laws which

govern the reactions of human beings to the *energy in color*. Color arrangements chosen according to its principles can lessen or prevent eye fatigue which frequently leads to nervous tension and physical fatigue. Reduce eye fatigue and you increase efficiency and often create a better spirit among employees.

• With this new painting method, architects, builders and painting contractors can now specify color plans which are not only pleasing to the eye but which also actually improve working conditions.

How you can get a COLOR DYNAMICS Engineering study—FREE!

Try COLOR DYNAMICS in a suite or in a few rooms of buildings you are planning or erecting and see the difference it makes! We'll be glad to make a scientific color engineering study for you FREE and without obligation.

There's a trained color expert at each of our offices located in all principal cities. Call your nearest Pittsburgh Plate Glass branch and arrange to have our COLOR DYNAMICS representative see you at your convenience. Or send the coupon below.

SEND FOR A COPY OF THIS BOOK!



PITTSBURGH PAINTS
PAINTS - GLASS - CHEMICALS - BRUSHES - PLASTICS



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COMPACT UTILITY FURNACE has interchangeable drawer type burner assembly.

For the small or moderate size home, Majestic's Model UF-26 introduces some desirable features in automatic forced air heating equipment. Requiring less floor space than a refrigerator, this low priced unit has a bonnet rating of 100,000 Btu. It may be used with either the conventional up-flow forced air heating systems or, by a simple blower adjustment, in the newer perimeter type heating which calls for down-flow circulation. Its drawer-like burner assembly permits easy installation of oil or gas burner, and allows for later conversion by merely changing the assembly. Manufactured ready to attach fuel and power lines and thermostat, the furnace retails at \$297. Cold air return is available at either side or bottom. Ease of placement of the furnace is further facilitated by the location of the burner, smoke burner and smoke pipe on the front so that the unit may be set in a corner close to the wall. Other features are: channeled air circulating type of casing, suspended blower, large combustion chamber and oversize secondary heat transfer unit.

Manufacturer: Majestic Co., Huntington, Ind.

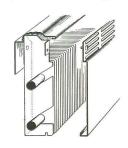


Isolated by its height, the promenade roof atop the towering new United Nations Secretariat Building will appear to visitors like a veritable "platform in the sky." And it will be a beautiful, enduring "platform" paved with-

RADIANT BASEBOARD WITH SUSPENDED COILS is easily installed.

By standardizing the basic parts in their new radiant baseboard, Kritzer has eliminated costly fittings and cut installation down to three simple steps. The system's components are a steel backplate, radiant coils, filler plates and interchangeable end posts. The installer first fastens the backplate against the wall on the finished floor level, using felt sealing strips to compensate for uneven surfaces and to prevent smudging above the baseboard from air currents. Then the coils, 10 ft. sections of 2 x $5\frac{1}{2}$ in. aluminum fins bonded to two 3 in. center copper tubes, are suspended on hanging clips attached to the backplate. This "floating" of the coils leaves room for circulation of cold air behind them and keeps the backplate cool, thus eliminating re-

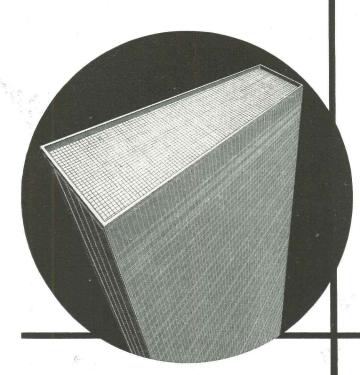




verse heat losses and insulation. As two sections of the coil are brought together, the end of one section is belled, the end of the other inserted and a solder ring melted between the two. A front coverplate is then hooked into notches in the bottom of the hangers and snapped into place. Cost to the installing contractor for this standard model, having a half backplate, is about \$2.45 per lin. ft. In the deluxe baseboard the fins are fused in front to form an integral coverplate with a striated surface. This model has a full backplate and transmits heat very efficiently, directly from the fins. Price of the unit, including optional ornamental grille, is about \$3.35 per lin. ft. Both baseboard models may be painted to blend with room interior. Overall size for each is $2\frac{1}{4}$ in. deep x 9 in. high.

Manufacturer: Kritzer Radiant Coils, Inc., 2901 Lawrence Ave., Chicago, Ill.

(Continued on page 202)

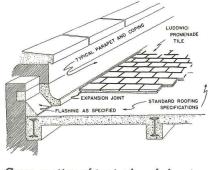


LUDOWICI PROMENADE TILE

Installed on top of the regular roofing, this highly vitreous tile provides not only a strong protective surface, but an inviting and colorful floor as well.

Ludowici Promenade Tile can convert any area on the roof or ground into an attractive promenade, court or terrace. Let us show you how it can add satisfying beauty to your future plans for terraced areas. We'll gladly submit samples and specifications on request.

We also make all types of roofing tile. See our catalog in Sweet's File, $\frac{8b}{11}$



Cross-section of typical roof showing method of promenade construction.

LUDOWICI-CELADON CO. 104 So. Michigan Ave., Chicago 3, III.

New York 17, N.Y.





SPRINKLER SYSTEMS

Protect from Fire Loss due to Human Failure

When you specify the installation of a Viking Engineered Sprinkler System you specify two-way protection. On guard night and day, Viking Sprinkler Systems, like a crew of firemen, take immediate action to control and extinguish fire when it occurs. In addition, Viking systems are completely self-supervisory — engineered so completely that even the factor of "human failure" is prevented from interfering in the protection the system gives from liability and loss due to fire.

Viking's unexcelled reputation as the developer of

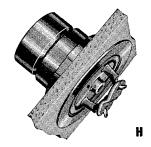
new methods and the improver of old methods of fire control offers the last word in dependable, efficient protection. Viking Sprinkler Systems also offer the tangible benefit of amortizing their initial cost quickly through reduced insurance rates.

Viking engineers systems for all types of hazards and installations. A conveniently located engineer will work with you to survey requirements of the installation for your specifications without obligation. Write for free bulletin.

OFFICES IN PRINCIPAL CITIES

PIONEERS IN MODERN SPRINKLER PROTECTION

The new Viking Flush Type Sprinkler Head which helps the architect preserve the lines of modern design was developed exclusively by Viking. It is ideal when a semi-invisible sprinkler head is desired to prevent the disturbance of clean, modern lines and surfaces. This, like all Viking equipment, is fully approved by Underwriters' Laboratories and Factory Mutual Laboratories.

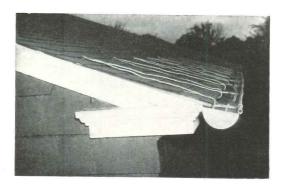


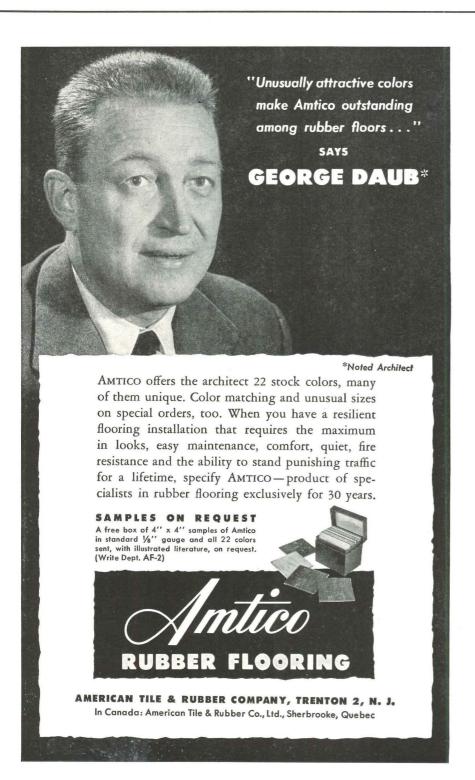
THE CORPORATION

ASTINGS, MICHIGAN

PRODUCTIVENS







ELECTRIC HEATING CABLE for snow melting comes in ready-to-install kit.

By melting channels through snow on roofs, Rockbestos' electric heating wire allows water to drain away before it can form ice dams and cause damage. Lead sheathing 3/64 in. thick and plastic impregnated asbestos form protection for the 60 ft. heating element. A vinyl plastic plug is molded directly to the sheath. In installation, the cable is looped along the edge of the roof on top of the shingles and attached with special clamps provided in the De-icing Kit. The clamps slide up under the shingles and bend over the cable at the top of the loops. Only 1/4 in. in diameter, the lead covered wire detracts very little from the appearance of the roof. Each LB60 Roof De-icing Kit will protect from 18 to 20 ft. of roof. It is rated at 460 watts and may be operated at 110-120 v. Kits are obtainable through electrical supply and roofing dealers; they also may be purchased direct from the factory at \$9.85 each plus postage.

Manufacturer: Rockbestos Products Corp., New Haven 4, Conn.

SMALL ALUMINUM VENTILATORS prevent condensation, fungus growth.

A well designed hole in the wall, the Midget louver forestalls deleterious effects of moisture on wood construction by allowing for proper ventilation. A built-in screen keeps out insects, deflectors keep out rain. Designed to fit openings made by standard 1, 2, 2½, 3 and 4 in. hole saws, the louvers are tapped into place. They are slotted and wedged for tight anchorage; no nails or screws are required.

Installed appearance is neat, unobtrusive. The Midgets are ideal for structures affected by fungus, dry rot, destructive insects or where paint is blistering from moisture. They may be set under flat or peaked



roofs, over unexcavated areas, on interior walls of finished basements—wherever a controlled circulation of fresh air is desired. Prices range from \$4 per dozen for the 1 in. louver to \$10 per dozen for the 4 in. size.

Manufacturer: Midget Louver Co., 8 Wall St., Norwalk, Conn.

INSULATING ROLL BLANKET is inexpensive.

An open faced roll of 1½ in. thickness of glass fiber with attached vapor barrier, Flintkote's Economy Roll Blanket provides effective insulation at a reasonable price. Sufficient material to protect a 1,000 sq. ft. area retails for about \$43, thereby fitting adequate insulation into the budgets of low cost housing developments.

Manufacturer: Flintkote Co., 30 Rockefeller Plaza, New York 20, N. Y.

(Technical Literature, page 204)

Nothing heats better than Modine Convector

Padiation . . . Nothing looks more beautiful in a beautiful room



To find out why the new Modine Convector is the better way to heat apartments, homes, schools, offices or hospitals, call your Modine Representative. He's listed in the "Where-to-Buy-it" section of your phone book. Ask to see a sample, or write direct. Modine Mfg. Co., 1507

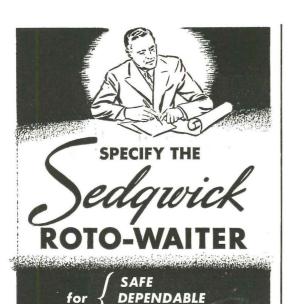
Dekoven Avenue, Racine, Wisconsin.

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772001120 CONVECTORS

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ECONOMICAL TWO-STOP ELECTRIC **DUMB WAITER SERVICE**

Fully Automatic Roto - Waiters . . .

- Never overtravel
- Are completely factory assembled and tested
- Operate automatically, safely with push-button control and doors interlocked
- Require only minimum clearances
- Have an overload safety device for safe operation
- Cut costs with simplified motor and control equipment
- Require no heavy load-bearing supports, except at bottom
- Are easy to install

COMPLETE SEDGWICK LINE MEETS EVERY REQUIREMENT

In addition to the Sedgwick Roto-Waiter, Sedgwick also builds Multi-Stop Electric Traction Dumb Waiters for three or more landings—with a wide selection of specially engineered control equipment and signal systems to suit individual needs. Other Sedgwick Dumb Waiters—including both electrically and manually operated types—are likewise available in a wide rand es and capacities. Specify, too, Sedgwick Steel
Waiter Doors for complete satisfaction.

Write for Illustrated Booklet AF1



TECHNICAL LITERATURE

CONDENSATION, Condensation Control in Dwelling Construction. Housing & Home Finance Agency, Office of the Administrator, Washington 25, D. C. 73 pp. 6 x 9 in. 20 cents.

In exceptionally clear text and diagrammatic views, this pamphlet describes how condensation may be controlled by means of vapor barriers and proper ventilation. Because in many instances thermal treatment and vapor barriers are used in combination, the subject of good insulation practices is also explored. Illustrations are based on many years of observation and studies by the Forest Products Laboratory and the Housing & Home Finance Agency. A brief glossary of condensation and housing terms makes this book informative and practical for the layman as well as the professional.

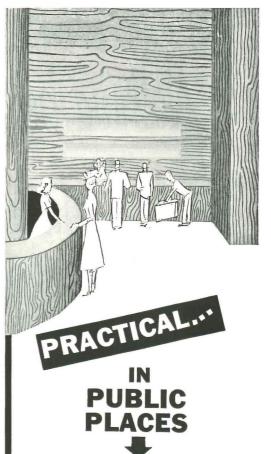
HEATING. Radiant Heating (Second Edition) by T. Napier Adlam. The Industrial Press, 148 Lafayette St., New York 13, N. Y. 504 pp. 6 x 9 in. \$6. An expansion of the 1947 volume, this edition includes recent improvements in radiant heating. Material added to the chapter on ceiling panels now covers forced warm air panels and enclosed convector panels. The chapter dealing with walls, metal panels and electrical conductors includes developments in electrical rubber panels, portable electric screens and radiant glass panels as well as instructions for embedding electrical conductors in the ceiling and wall plaster to form heating panels. Research on the physiological aspects of heated floors and data on chicken brooder houses are covered in the floor panel section.

Because of growing interest, the author's treatment of snow melting now includes practical details on planning such systems for anything from a footpath to an airplane runway. Radiant cooling-whereby chilled walls absorb excess body heat-is also explained and illustrated. Emphasis throughout the book is on solving actual heating problems rather than on complex physics. Charts and data simplify the step-by-step procedure in radiant panel design. The heating engineer, the contractor and the student all will find the book intelligible and worthwhile.

HEAT CONVECTORS. Fast Heating Action with National Art Convectors. Catalogue No. 555. National Radiator Co., Johnstown, Pa. 15 pp. 81/2 x

Details concerning the construction, installation and operation of the manufacturer's convectors are assembled in this booklet. The copper tubealuminum fin-cast iron header heating element and the reinforced sheet steel enclosures for free standing, semi-recessed or wall-hung convector installations are described completely. Dampers and air chambers available for use with these nonferrous convectors are pictured and their advantages outlined. Of interest to architects, builders and heating contractors are the roughing-in charts, steam and hot water ratings, ordering instructions, and sizing methods.

(Continued on page 206)



CABOT'S STAIN WAX

stores, restaurants and office buildings, Cabot's Stain Wax gives an attractive, durable finish for plywood paneling, woodwork, molding and trim. Inexpensive to apply . . . wearresistant . . . easy to keep clean and maintain.

Cabot's Stain Wax produces the rich color of an interior stain plus the soft lustre of a wax finish — all in one application. Keeps interior decoration costs low.

Complete range of colors, including White, Silver Gray, lvory and other unusual blond shades.

WRITE TODAY for color card and complete information.

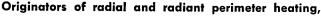
Samuel Cabot, Inc.

223 Oliver Building Boston 9, Massachusetts

1,000,000 NEW HOMES FOR 1950 ... NEED BETTER HEATING EQUIPMENT!

Payolutionary New Low Cost Way

of Providing Warm Floors by Radiant Heat
plus Circulated Warm Air
with the New International
Oil and Gas Furnaces



International engineers have now developed new low cost furnaces for oil as well as gas to provide what the building industry has been seeking! Heat that is delivered into the ficors provides warm floors, with a blanket of heat at outside walls. Closest floor to ceiling uniformity. Minimum ducting and installation expense. Low cost operation. Exclusive patented spring-suspension provides absolute quietness of operation. Compactly engineered; requires less than four square feet of floor space. Heats up to 8 rooms.

Home builders throughout the nation are finding the terrific sales advantage of furnishing this amazing new method of heating, which saves them money!

Smith-Hill, Chicago; Place & Co., South Bend; General Industries, Fort Wayne; Cottage Homes of Norfolk; Midwest

Housing, Janesville, Wisconsin; and New Century Homes, Clinton, Indiana are just a few of the nationally known builders who have adopted this International equipment for their houses.

Whether you are planning one — or a thousand or more homes — these new furnaces are designed to solve your heating problem.

Fill out and mail coupon for complete brochure on how the above and other national builders are helping to sell their homes this new way!

SAINT LOUIS



SMITH-HILL HOMES, Park Ridge, III.
Prize-winning community. "Pleasant heating
uniformity and low cost operation. Inter-



PLACE & CO., South Bend, Ind. August "Architectural Forum" feature. "Low cost heating installation with even distribution of heat. International M 7 helps sell houses."



GENERAL INDUSTRIES, Ft. Wayne, Ind. February "Living" magazine featured article. "Sensational heating with floor-to-ceiling uniformity of temperature".

SEE THE NEW International furnaces at the Nahb show. Hotel stevens, Chicago!

Send this Coupon	To Furnace Division INTERNATIONAL OIL BURNER CO. 3828 Park Ave., St. Louis 10, Mo. Send your brochure showing how nationally known builders are solving their heating problems at low cost with International equipment.
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a sofa to the left . . . a sofa to the right . . . and a "Public Room Lawson" all admirably simple and exceptionally useful. MODERN INTERIORS - Send 25 cents for this profusely illustrated booklet packed with modern decorating ideas. DUNBAR UNBAR FURNITURE MANUFACTURING CO. . BERNE, INDIAN CHICAGO: 1638 Merchandise Mart

TECHNICAL LITERATURE

CHIMNEYS. Performance of Masonry Chimneys for Houses. Technical Paper No. 13. Housing & Home Finance Agency, Office of the Administrator, Washington 25, D. C. 46 pp. 8½ x 11 in.

Better residential chimneys are sorely needed to keep pace with improvements in house heating equipment. Based on research data compiled by the Housing & Home Finance Agency and the National Bureau of Standards, the paper presents some eye-opening facts on present practice in masonry chimney design and construction and recommends essential improvements for safety as well as efficiency. The scope of the study covers: 1) temperatures to which a chimney may be subjected in normal operation and still function properly as a draft producer; 2) above-normal temperatures, and the chimney as a fire hazard; 3) condensation within the flue because of low flue gas temperatures. Test results include chimney capacities in terms of flue gas volume and velocity, effect of heat on the chimney structures, and time lag in heating up and cooling off.

AIR DIFFUSION. A Multi-Vent Story. Bulletin 395. Pyle National Co., Multi-Vent Div., 1334 N. Kostner Ave., Chicago 51, III. 6 pp. $81/2 \times 11$ in.

The folder explains the use of Multi-Vent ceiling panels—engineered for air diffusion in heating, ventilating and air-conditioning systems—in large office areas, stores, auditoriums, etc. It portrays photographically how these panels, concealed behind metal acoustical ceilings, handle both supply and return air without perceptible outlets. In addition to eliminating protruding outlet fixtures and grilles, advantages claimed for this low velocity system are uniformity of temperature and absence of strong air streams. A picture of an office shows how a perforated acoustical ceiling may be combined with plaster light coves for an effective interior design.

GEILINGS. Application of the Smooth Ceilings System of Flat Slab Construction. Smooth Ceilings Systems, 802 Metropolitan Life Bldg., Minneapolis, Minn. 8 pp. 8½ x 11 in.

After a brief description of steel grillages fabricated for use with reinforced concrete, structural steel, steel, or cast iron pipe construction, the brochure illustrates several actual applications of the system in school, office and apartment buildings. Replacing the usual flared column caps these grillages are said to lower construction costs by reducing cement form work and story heights and by simplifying equipment installation. The bulletin also gives results of load tests on slabs.

FLOORING. Rulon Industrial Floorings and Acid-proof Construction. Ralph V. Rulon, Inc., 3900 N. Second St., Philadelphia 40, Pa. 8 pp. $8\frac{1}{2} \times 11$.

The acid resisting, waterproof, slipproof and long wearing qualities of asphalt mastic industrial flooring are described in this brochure. This durable flooring, adaptable to most industrial purposes, is pictured and specifications given for its installation. (Continued on page 208)

For Lawns of Outstanding Beauty

SPECIFY



Since 1870 Scotts Seed has earned a reputation for quality, and today over a million beautiful, weedfree lawns from Maine to California owe their sparkle and clean velvety texture to Scotts Lawn Care Products. Assure your clients equally outstanding lawns, easier and at less cost, by recommending Scotts Lawn Seed and Turf Builder . . . use it on your lawn too, along with Weed & Feed, Pest Control . . . a Scotts Spreader is handy for quick, even application. For lawns everyone admires, always specify Scotts Lawn Care Prod-



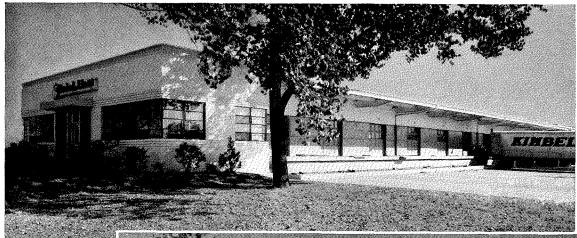
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to help you with all lawn building and seasonal maintenance problems. Write today for your FREE two year subscription. Our Soil and Turf research technicians are also at your disposal. No obligation of course.

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wo truck terminals in Memphis. Hulsey and Hall, architects; H. B. Hunter, structural engineer.

Upper photo:
Office and
warehouse,
Kimbel Lines;
Building
Constructors,
Inc., contractor.

Lower photo:
Office and
maintenance
shops of Dealers
Transport Company. B. E.
Buffaloe,
contractor.





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Adds Distinction to Commercial Structures

The two truck terminals illustrated above are excellent examples of the distinction and beauty of modern architectural concrete when used in commercial structures. These buildings demonstrate the individuality and versatility that is possible with architectural concrete.

Architectural concrete is the ideal construction material for buildings of any kind, size or style. Schools, hospitals, apartments, factories or office buildings can be imposing as well as functional when designed in architectural concrete.

Architectural concrete has great strength and durability, yet can be molded economically into delicate ornamentation of any period or design.

Architectural concrete also meets every other essential structural requirement. It's firesafe. Its maintenance cost is low. It has long life. This results in dependable service and low annual cost.

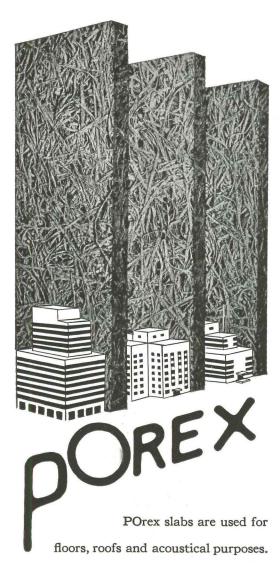
When architects apply the time-tested principles of quality concrete construction, they can design architectural concrete buildings with every assurance of lasting satisfaction to client and designer alike.

Write today for free, illustrated 70-page booklet, "Design and Control of Concrete Mixtures." This manual will be especially helpful in obtaining quality concrete structures. Distribution is made only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. 2-7, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work



They are especially recommended for furring and insulating walls. They save so much fuel that the reduced heating plant cost will practically pay for their installation. After this the fuel bill is reduced by one third or more.

POrex has the following distinguishing features:

- Lightweight 28 lbs. per cu. ft.
- Practically Incombustible
- Moisture Proof
- Frost Proof
- Good Heat Insulation

POrex slabs are made in sizes 24" wide x 96" long x 1", 134", 3" and 4".

TECHNICAL LITERATURE

SHELLAG. Standard Specifications for the Reference of Architects on the Use and Application of Shellac. Shellac Information Bureau, 65 Pine St., New York, N. Y. 12 pp. 91/2 x 11 in.

That long used and abused finish, shellac, is described here from a practical architectural viewpoint. General specifications for its mixture and application are based on information obtained from craftsmen, and research tests conducted by consultant chemists. Proper finishing of floors and woodwork with shellac, and use of this versatile coating as a wall primer are also explained concisely.

FASTENERS. Handbook on Fastening Specialties. South Chester Corp., Finance Bldg., Philadelphia 2, Pa. 28 pp. 81/2 x 11 in.

The manual features full descriptive data on the manufacturer's broad range of rivets, anchor nuts, screw type fasteners and door retaining springs. Many of the various fasteners are illustrated in numerous applications, attaching metal to metal, and metal to plywood or ply metal.

INSULATION. Fiberglas Thermal Insulation. Owens-Corning Fiberglas Corp., Toledo 1, Ohio. 16 pp. 81/2 x 11 in.

All forms of Fiberglas thermal insulations-from wool and board to membrane fabric-for industrial and building applications are described fully in this booklet. Data on thermal conductivity and sound absorption properties are covered and numerous photographs illustrate the text.

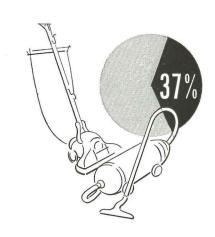
WINDOWS AND DOORS. Lupton Metal Windows and Doors, 1950 Catalogue. Michael Flynn Mfg. Co., 700 E. Godfrey Ave., Philadelphia 24, Pa. 33 pp.

Incorporated in the Lupton catalogue are specifications and illustrations of the manufacturer's steel and aluminum windows and doors for commercial and home construction. Residential units include casement doors and windows, pivoted and projected windows, basement and utility windows. Pictured for industry are pivoted and projected windows, security windows, doors, continuous windows, and mechanical operators. Screens, and picture window frames are also described.

WINDOWS. Quality Approved Aluminum Windows. Aluminum Window Manufacturers Assn., 209 Cedar Ave., Takoma Park, Washington 12, D. C. 16 pp. 81/2 x 11.

Revised specifications covering double hung, casement and projected aluminum windows are presented in this booklet. The standards and testing procedures were established by the Aluminum Window Manufacturers Assn., together with the Pittsburgh Testing Laboratory, and include quality of materials, construction, strength of sections and minimum air infiltration. Members of the association and any other window manufacturers whose products meet these minimum requirements qualify for their "Quality Approved" seal.

(Continued on page 210)



37% of all **VACUUM CLEANERS** bought in the U. S. in six months were bought by LIFE families



(From a study by the Market Research Company of America)



For quality features, style, performance...specify the

Case Wilmington Lavatory

New and remodeled homes for which bathroom equipment must be carefully budgeted can have the style, beauty and utility of this handsome Case lavatory.

Made of the finest quality vitreous china, the Wilmington has a raised back with recessed fittings and dry shelf space that give it a distinctive character of luxury.

Its square basin conceals a front overflow, and there is a soap dish for added usefulness. The metal spout has a special stream regulator that prevents splashing.

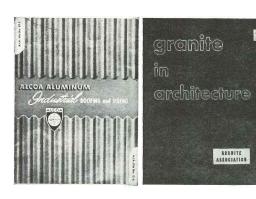
Renewable valve seats, swivel discs and encased long-wearing washers are among the features that value-conscious home owners are sure to appreciate. The Wilmington

lavatory comes in the popular 22" x 18" size—it is available wall hung or with chrome-plated legs, with or without towel bars. In white and colors. Now is a good time to renew your acquaintance with Case plumbing fixtures. See the Wilmington and other leading Case designs at your Case distributor's showroom. His name is listed in Classified Telephone Directories of major cities; or write W.A. Case & Son Mfg. Co., Buffalo 3, N. Y. Founded 1853.



Vitreous China Plumbing Fixtures

TECHNICAL LITERATURE



GRANITE. Granite in Architecture. National Building Granite Quarries Assn., Inc. 114 E. 40th St., New York 16, N. Y. 7 pp. 81/2 x 11.

This new brochure contains standard specifications for granite as developed by the association. A classification chart provides a quick reference to the colors and textures of American granite.

ROOFING. Alcoa Aluminum Industrial Roofing and Siding. Aluminum Co. of America, Pittsburgh 19, Pa. 18 pp. 81/2 x 11 in.

How to plan for and apply corrugated aluminum

roofing and siding is the subject of this illustrated brochure prepared for industrial architects, engineers and builders. Giving convincing arguments for using aluminum as an industrial building material, the pamphlet presents clear installation diagrams and explicit directions.

FLOORING. The Masterplate Iron Clad Concrete Floor. The Master Builders Co., 7016 Euclid Ave., Cleveland 3, Ohio. 36 pp. 81/2 x 11 in.

Suitable for industrial, commercial and institutional use, the concrete flooring described in this booklet has metallic aggregate embedded in its 1/8 in. surface. This thin top layer is said to wear five times longer than ordinary concrete. Besides its durability and nondusting qualities, merits claimed for the flooring are corrosion and spark resistance, static dissemination and easy maintenance. Eight color swatches show the attractive integral tones in which the flooring is obtainable. Installation details are given for new construction and for resurfacing old floors.

KITCHENS. Modern Designs for Kitchens and Laundries. New Freedom Gas Kitchen Bureau, American Gas Assn., 420 Lexington Ave., New York 17, N. Y. 11 pp. 81/2 x 11 in. 10 cents.

Floor plans, renderings and suggested color schemes are shown for kitchens of ten different sizes and shapes. The basic ingredient in the publication's recipe for an efficient kitchen is an up-to-date cooking center. To this it adds a well planned storage and serving area, a preparation and clean up space, and organizes them into a functional framework.

OUTDOOR SIGNS, Plexiglas, the Outdoor Plastic for Signs. Rohm & Haas Co., Plastics Dept., Washington Square, Philadelphia 5, Pa. 20 pp. 81/2 x 11.

As an indication of the wide variety of outdoor sign treatments possible with acrylic plastic, this three-color booklet pictures 30 recent installations. Illustrated uses range from small formed letters to broad store fronts. Properties of the material and ranges of forms, sizes and thicknesses are listed.

SOLDERING. Wall Superior Products. Catalogue No. 85. P. Wall Mfg. Co., 237 Erie Street, Grove City, Pa. 24 pp. 81/2 x 11.

The manufacturer's complete line of soldering products is presented in this new catalogue. Items described include gasoline and kerosene blow torches, self generating alcohol blow torches, electric soldering irons and furnaces.

METAL LETTERS. Knight Metal Letters and Figures. Catalogue No. 28. H. W. Knight & Son, Inc., Seneca Falls, N. Y. 18 pp. 81/2 x 11 in.

The first to be issued since the war, this Knight catalogue covers 56 alphabet styles, many of which have architectural applications for building exteriors and interiors. Sizes, available metals, and width of each style of letter are listed.

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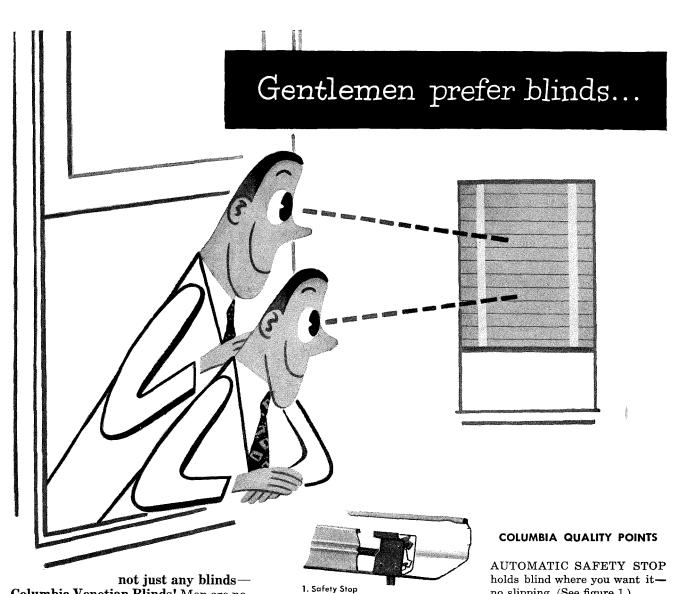
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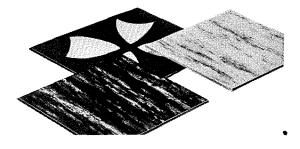
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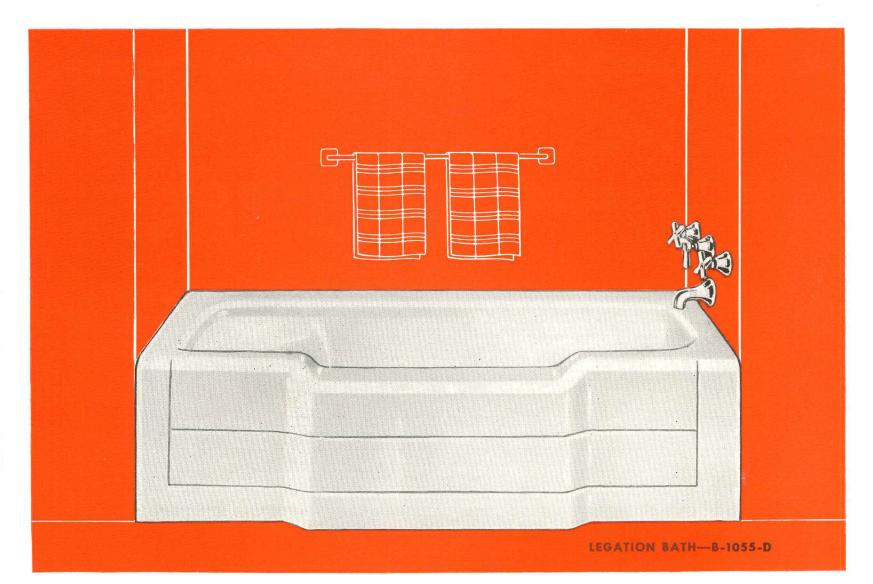
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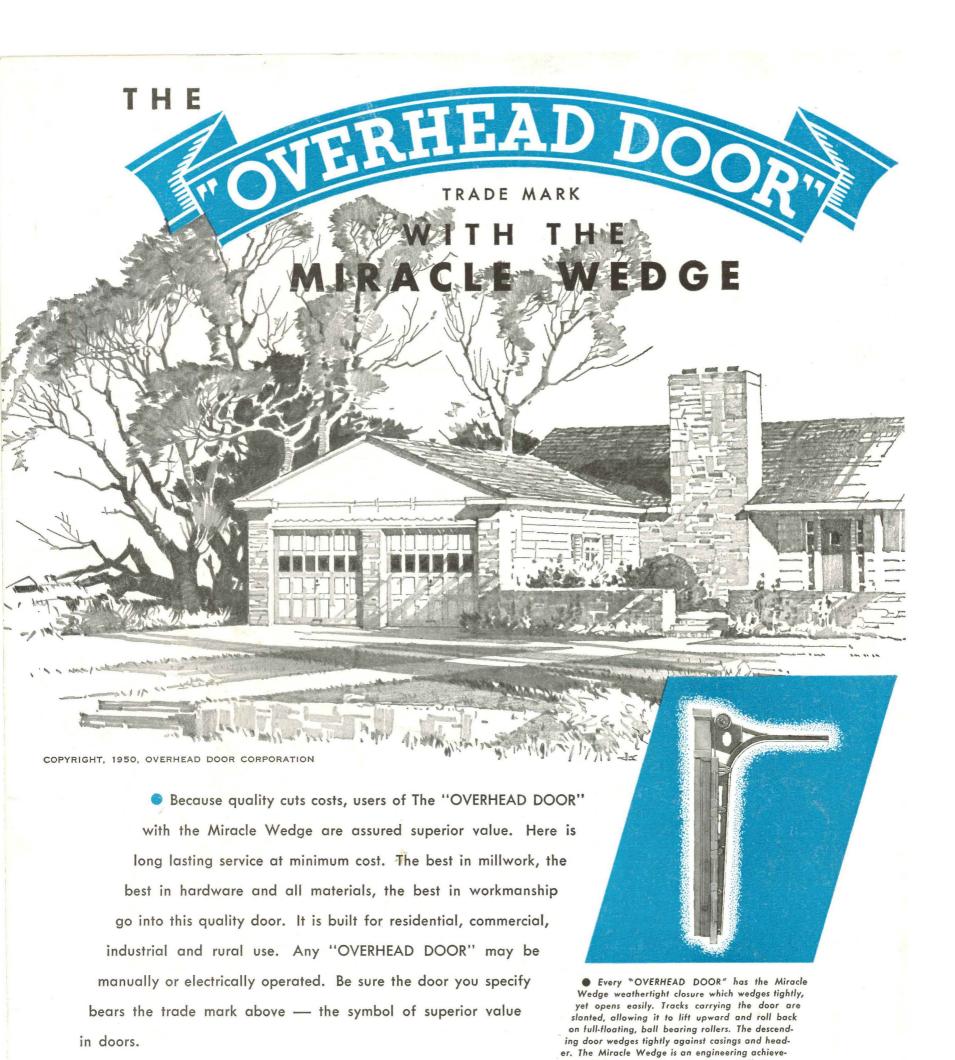
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