

August 1953

house + home

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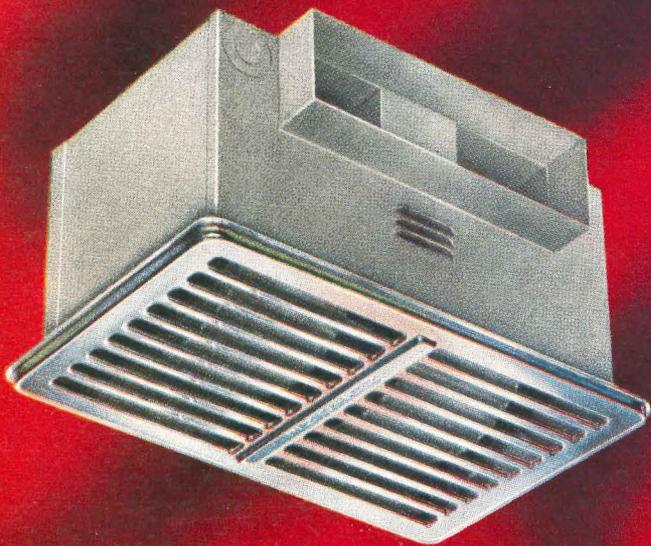
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Does tomorrow's house really need a ground floor? (p. 75 & below)



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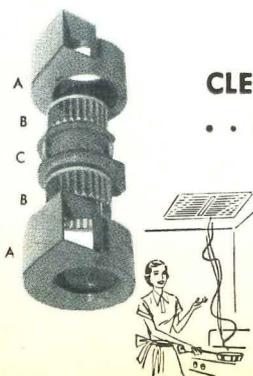
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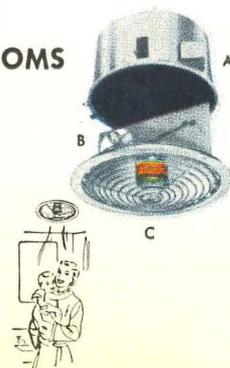
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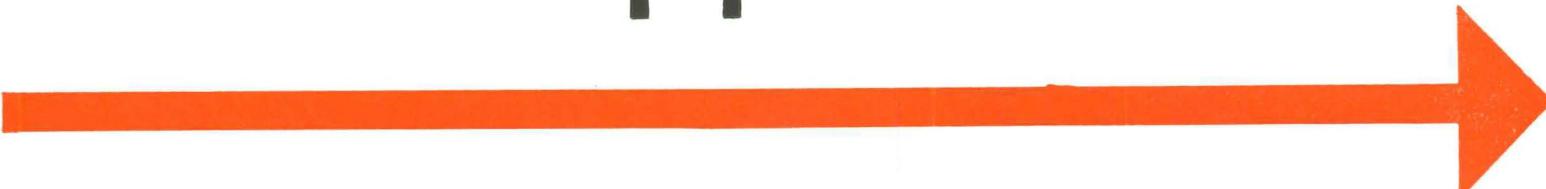
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VOLUME IV, NUMBER 2



Cover: House by Mark Mills, architect, near Carmel, Calif. Photo by Morley Baer

A New Approach to



Modern



Kitchens



Builders rally from mortgage crisis; higher FHA rates urged

In other summers homebuilding has suffered from labor and material shortages, skyrocketing prices, defense restrictions, credit controls. This summer it suffered again, with mortgage troubles. But this time they were mainly "free economy" difficulties; homebuilders have had to scramble for financing in sharp, free-for-all competition against many other money-market shoppers.

But at month's end 1953's "crisis" seemed to be passing. The industry would come through, shaken and bruised perhaps, but without any lasting injuries.

Encouraging factors. While the industry still suffered considerable discomfort in various areas, there were many items to dispel its dejection:

▶ HHF Administrator Albert M. Cole insisted he would follow policies to maintain production of 1 million new units a year.

▶ He cited FHA down-payment and amortization liberalizations that could be instituted under the new housing act if necessary. And if FHA's 4½% interest ceiling is too low, he said, an increase might be "requested." But he would give no formal commitment for another increase, and he was definitely opposed to "free," uncontrolled rates for FHA-insured loans.

▶ Despite the temporary chaos ruling the mortgage market (see table, p. 36), experts reported a gradual firming tendency and anticipated easier, more stabilized conditions about two months hence. As their forward commitments run out, lenders will have to start making loans again to put steadily incoming funds to work.

Sales and spirits rise. Perhaps most encouraging of all, many homebuilders reported improved sales and a better construction outlook. HOUSE & HOME re-surveyed most of the builders it had checked in June on effects of the then-mounting crisis (H&H, July '53). Last month it asked them if there had been any improvement under the new housing act and removal of the ban on VA mortgage "warehousing." Their replies:

▶ Almost invariably they reported "increased optimism," "slightly easier conditions," and in several instances a July pickup in sales.

▶ Most said it was too soon to feel any direct effects of the new housing law. In Denver, however, Burns Construction Co. said it caused them to cancel a curtailment of their original schedules, and F & S Construction Co. (Sam Hoffman of Phoenix) said it intended to start work again on a whole new town just north of Denver. This job had previously been shelved.

▶ Texas was still hard hit for homebuilding money, but R. G. Hughes of Pampa, NAHB's first vice president, modified his earlier prediction. With the ban of VA "warehousing" ended, Texas production would drop only 40%, not 50%, by the end of this month. Beyond this month: no forecast.

▶ In Phoenix Sam Hoffman said he had obtained commitments for \$4.5 million from New York banks that "put him back in business again" with his scattered projects in Phoenix, Denver, Salt Lake City, Las Vegas. Other Phoenix builders reported sales edging up a trifle, but so far mostly a "psychological lift" rather than any more tangible benefits from the new housing act.

Discounts vs. rate hike. The worst of the mortgage market difficulties were centered in the FHA and VA fields, with their fixed interest rates and fluctuating discount situations. Conventional financing, at flexible, unrestricted interest rates, was relatively undisturbed, was transacting a steadily growing percentage of business.

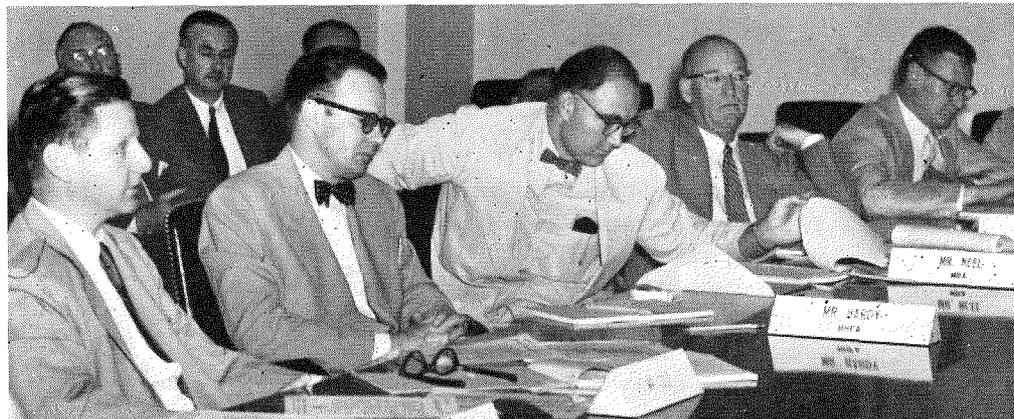
Perhaps with this in mind, MBA President Brown Whatley advocated another increase in FHA and VA rates as "the sound approach to restoring a satisfactory

mortgage market . . . rather than the questionable expediency of unlimited discounts. . . . Reliance upon discounts will probably result in higher cost of money than would be the case if marketable interest rates were permitted." He said a 5% FHA and VA rate would probably eliminate discounts in all but a few areas.

Replied FHA Commissioner Guy T. O. Hollyday (who was MBA president in 1946): "If anybody is thinking about getting another rate increase from FHA, he had better think again. . . . In my opinion, present interest rates are adequate."

One-for-one dud. At month's end Fanny May announced the terms of its one-for-one plan to give advance commitments for new FHA and VA 4½% mortgages to anyone who will relieve it of old 4 and 4¼% paper. It would take 4½'s at par in exchange for its VA 4's at 96 and FHA 4¼'s at 97¾—but also charge fees totaling 1½% to complete a swap.

These terms would increase Fanny May income about 10% on any VA 4's it could roll over for 4½'s. Almost any private institution might offer the same or more attractive terms on the same sort of arrangement. Fanny May swaps would be few.



SECOND SESSION of HHF Administrator Cole's "shirt-sleeve" conferences on July 8 heard housing policy recommendations from mortgage and architecture leaders. Participants (l to r) included Cole and Asst. Administrator Neal J. Hardy; Sam Neel and Brown Whatley, general counsel and president of MBA, and Edmund R. Purves, executive director of AIA.

Cole deluged with proposals for new housing policies; trade group wants free FHA rates

In Washington's July heat HHF Administrator Albert M. Cole conducted a series of "shirt-sleeve" conferences with industry groups and public interest organization spokesmen. Purpose: To obtain all viewpoints and suggestions that might help him formulate the new housing policy recommendations he hopes to have ready for Congress in the cold of next January.

Ideas for revising government programs and reorganizing HHFA are a dime a dozen, Cole learned. But he refused to

disclose specific recommendations of any conference participants, and he barred the press so everyone might speak more freely. He was conducting his "explorations" with an open mind, he declared, and he reiterated a statement that he will not hesitate to recommend abolition of his own job if his studies point to that.

Chamber proposals. Volunteering special assistance, the construction and civic development department of the US Cham-

ber of Commerce called its own conference of ten trade groups whose members make or use mortgage loans. Objective: to prepare recommendations for Cole on the government's mortgage policies and new hard-money program.

Simultaneously, the chamber's July *Construction Markets* news letter said government efforts to regulate housing credit on the basis of social or welfare considerations often boomeranged against the people it sought to help most. "When . . . investment is diverted from mortgage lending by an interest rate frozen at sub-

market level, it is the great mass of small-income home buyers concentrated in metropolitan areas that is most adversely affected."

Its principal recommendation:

"The effort to control interest rates should be abandoned and all such regulation left to the usury laws of the states. This would make possible the operation of the guaranteed-insured programs at all times in competition with other types of investment . . . greatly stimulate flow of funds into remote and underserved areas. Reliance may be placed on the inherent advantages of the government guarantee to keep rates on these loans in favorable relationship to conventional loans."

Marked upturn in volume expected from \$1,000 higher ceiling on Sec. 8 mortgages

Since January FHA's bargain basement or little-house-big-mortgage program has been liberalized three times. This is the Sec. 8, Title I program for new houses that can be erected on plots that do not have to conform to FHA's strictest subdivision and site improvement requirements, and can be sold with the painting, final trim and landscaping to be paid for with "sweat equity"—the purchaser's own labor.

Biggest boost for the program came in the new housing law enacted June 30, which raised the ceiling on Sec. 8 high-ratio, 95% mortgages from \$4,750 to \$5,700. This will allow the sale of a \$6,000 house for only \$300 cash. And this part of the new law became effective immediately, did not require the presidential order for liberalizing Title II terms.

In May the interest ceiling on Sec. 8

loans was raised from 4¼ to 4½%, and earlier, in January, FHA authorized lenders to charge a ½% service fee on these smaller mortgages to compensate for their relatively higher handling charges.

Last year, before any of these changes, FHA insured 5,600 units. Now, with the \$1,000 higher mortgage ceiling, some industry observers expect volume may soar to 25,000 a year or better.

FHA will brook no compromising with structural standards for Sec. 8 houses. By waiving some amenities and neighborhood standards, however, this program permits construction of decent houses for lower income and minority groups in older sections of cities that FHA normally would shun, and in outlying and semirural areas beyond city paving and utilities.

BLS to revise "starts" data

Congress voted an extra \$95,000 to the Bureau of Labor Statistics last month to improve its "housing starts" reports. Now the agency will be able to transfer certain sampling studies to new areas, based on 1950 instead of 1940 census data (before great population shifts occurred).

HOUSING STATISTICS: private starts exceed '52's; chaos rules mortgage prices

It is not often that curtailed public housing has worried homebuilders. But detailed BLS data indicate that was the cause of the April-May contra-seasonal decline in housing starts that upset them a month ago, as well as a small 500-unit June dip (see chart).

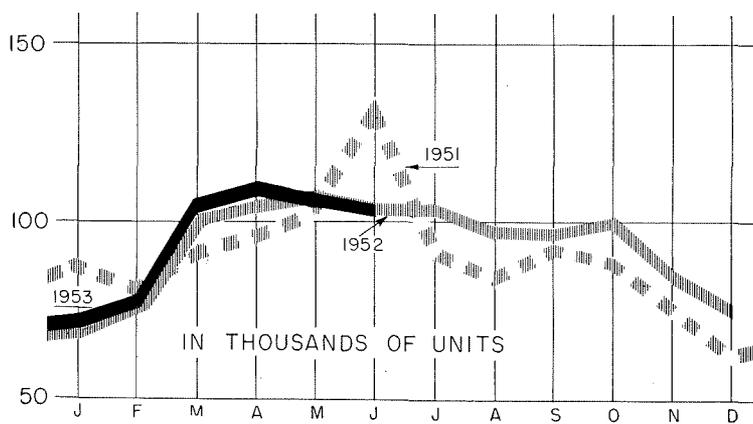
The April-May 3,000-unit decline, from 110,000 to 107,000, came from a 5,800 decrease in public housing starts this May compared with May, 1952. The 500-unit fall in total starts this June, compared with June 1952, was caused by a 4,000 drop in public housing starts. Private starts went up 3,500. For the first six months of this year homebuilders could take credit for starting 27,500 (5%) more private dwelling units than in the same period last year.

Mortgage industry leaders, however, could really complain that their markets were demoralized. Checking with leading lenders and brokers, HOUSE & HOME compiled the "table" below, more as an index of the "current chaos" than a guide to "prevailing prices." Typical of conditions in several unlisted cities was a report by Philadelphia's William A. Clarke: although everything was unsettled there were some transactions. In fact, he had been offered some VA 4½'s at 95—"but you can hardly call that a 'market.'"

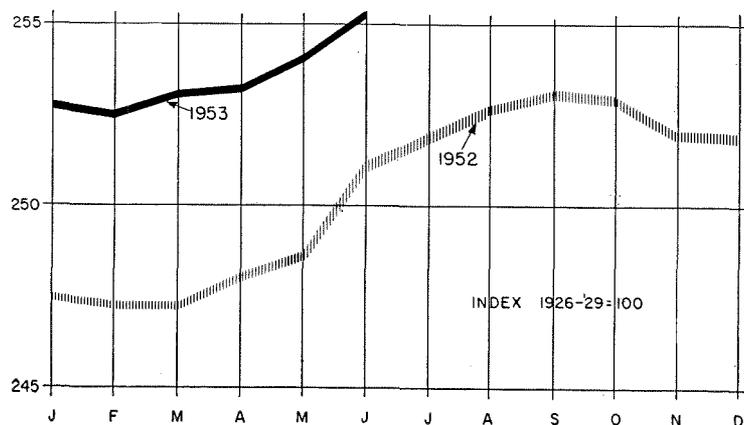
MORTGAGE MARKET QUOTATIONS

CITY	FHA 4½'s		VA 4½'s		FHA 4¼'s	VA 4s
	builder	market	builder	market		
Houston	98-par	a	96-98	a	96-97	94-95
Boston	a	96-97½ ^b	a	a	95-95½ ^b	93-93½ ^b
Seattle, Portland	a	a	a	a	94½	90-92
Denver	97	a	97	a	a	a
Kansas City	97	97-99	97	97-99	—	—
San Francisco	95-97 ^e	par	95-97 ^e	par	94-95	91-93
			(well-seasoned 98)			96-97)
Chicago	97	97	97	97	—	—
New York	98-99	99	97½-98	98-99	98	a

^a No market, or market too unsettled to record stable quotations.
^b Local prices for out-of-state business.
^e Estimate—very little activity.



HOUSING STARTS as estimated by the Bureau of Labor Statistics were 103,000 during June, only 500 fewer than in June, 1952 (see text).



BUILDING COSTS for residences as measured by E. H. Boeckh & Associates have started to reflect this spring's upturn in materials prices and wage rates. From April to May they rose from 253.2 to 254.0, from May to June advanced again, to 255.4—a 1% increase in 60 days.

California designer wins \$50,000 settlement of threatened suit for prize plan piracy

Can architects and designers get the same kind of protection for their creative work as authors and songwriters? Federal copyright laws protect only the plan on paper and not the building ideas it depicts. So courts have held that copying a building is no infringement of copyright protection. The result, as builders know, is widespread piracy of successful design ideas—sometimes covert and sometimes as deliberately open as the Syosset copy of Bill Levitt's Landia house (H&H, May '52, News).

Last month, legal efforts by California Designers Cliff May and Chris Choate dropped a precedent-shattering roadblock in front of design-stealing. From Alcap Investment Co. (run by Builder Sam Caplan), May and Choate won a \$50,000 out-of-court settlement of a threatened suit for copying the \$7,500 May house that won a 1953 NAHB award (H&H, July '53). Involved was a 100-unit project near Fresno, Calif. Last year, reported Howard Nicholas, May's attorney, Caplan asked to build the May house, offered \$5 apiece. May replied his price was 3% for the first 50 houses, 2½% for the next 50. Caplan balked, announced he would build a reasonable facsimile anyway. May replied by preparing a suit charging unfair competition and damage to his professional reputation. (Caplan had told the Fresno planning commission he was building the Cliff May prize winner.)

Eying the threat of bad publicity, Caplan's mortgage financier and joint venturer, Capitol Co., a Transamerica subsidiary, insisted that Alcap settle out of court. Explained Capitol Secretary Sam Flint: "We are not going to be in the public eye to that extent." Alcap settled by paying the architectural fees on the 50 homes already sold and the others planned.

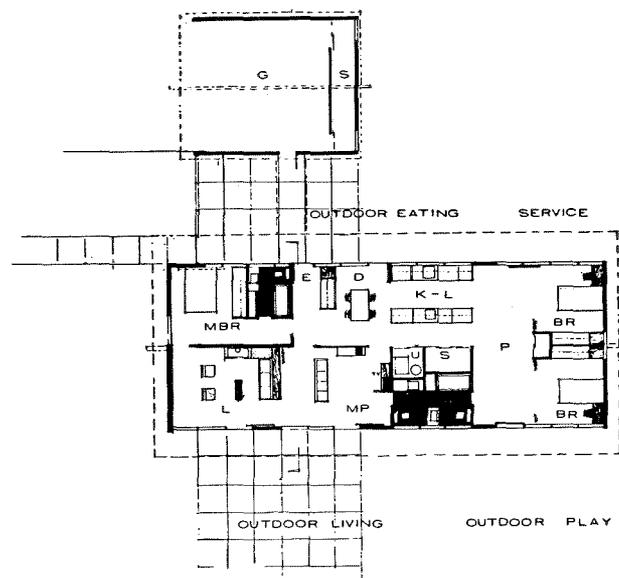
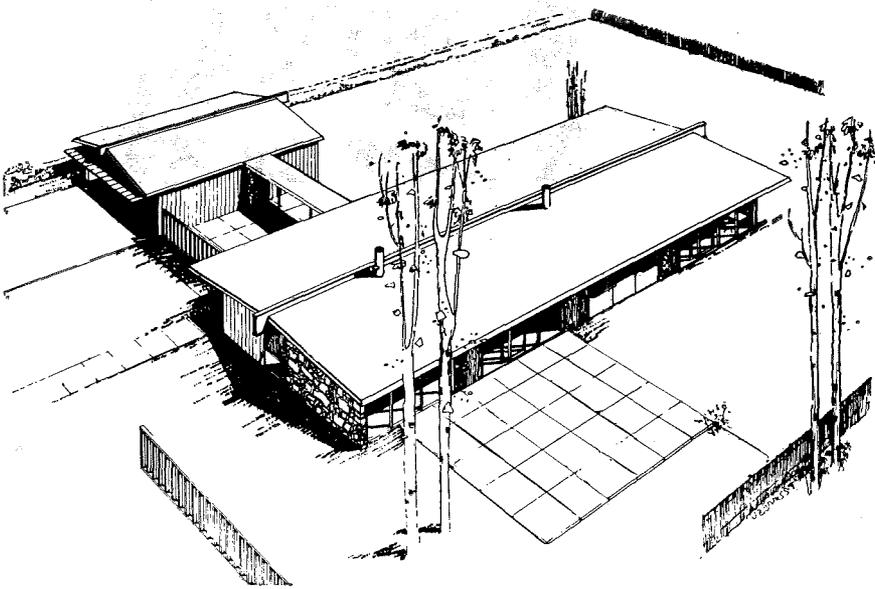
Will copyright protect? The May-Alcap settlement did not involve copyright laws at all. But while pressing their case, and preparing to take similar action against two other subdividers and their architects, May & Choate hired Attorney Arthur S. Katz, movie lawyer known for his sleuthing on cinema and song titles, to look into the possibilities of invoking them. In a six-page memorandum (which he duly copyrighted), Katz outlined a still-untested basis for legal action. Under common law copyright in each state, noted Katz, an architect's work is protected against infringement until it is "published." The definition of publication is vague and varies from state to state. Showing a plan to prospective clients is "most probably" not a publication which destroys common law copyright, said Katz. But an old New York case held that filing a plan in a government office destroyed the common law protection. In Missouri, courts have held that building a house destroys a common law copyright.

To avoid losing copyright protection, advised Katz, architects can note copyright on the face of each drawing, file their plans in Washington. Such statutory copyrighting still gives protection only against copying the plans, not the ideas. Katz offered a challenging theory: "In building the structure described in the copyrighted plan there *must* have been an unauthorized copying of the plan itself." Reason: no building permits are issued, no mortgage loans closed, without some kind of plans. Even if the plans are copied from memory, or from measurements of a completed house, argued Katz, as soon as the features are put on paper, the copyright law has been violated.

A second suit. Almost immediately, some of Katz' theories headed for a court test. On June 9, Architect Ed Fickett filed suit in a California superior court against the G. M. B. Corp. for its "Coronation House" exhibited at Los Angeles' home show. The complaint was based on common law copyright. Fickett asserted G. M. B. asked him to design a house, borrowed the resulting plans, rejected them after looking at them a fortnight, then built a house markedly similar to Fickett's conception. Fickett asked \$75,000 for breach of contract, charged breach of trust and misappropriation of intellectual production.

Last month G. M. B. entered a cross complaint against Fickett for \$75,000 for slander. It filed no demurrer to Fickett's original suit, thus left the way open for that to proceed to trial.

The homebuilding industry would await the outcome with mounting interest.



Open plan house wins first prize in 1954 Ideal Home competition of Detroit builders

First prize (\$800) in the 1954 Ideal Home design competition of the Builders Assn. of Metropolitan Detroit for Michigan architectural students was awarded for this entry by Louis F. Pacheco of Wayne University. The jury, headed by Detroit's Clair W. Ditchy, new AIA president, noted that the plan: "provides a play area for children in proximity to their bedrooms and also within viewing distance of the busy house mother in the kitchen . . . a multipurpose room for varying activities of adults . . . has been so freely conceived that it is very flexible and susceptible to expansion.

The house will frame well, should be economical to construct . . . [the design] will wear well and require a minimum of upkeep. The use of the lot provides for outdoor living, playing and eating with a maximum of privacy." The jury also said the plan "lends itself very admirably" to effective exhibition inspection by crowds, one of the contest conditions.

Last month, however, the association found the house unsuited for the site of its next exhibit home. It will erect another of "contemporary design" by John T. Yanick, Lawrence Institute of Technology, fourth prize.



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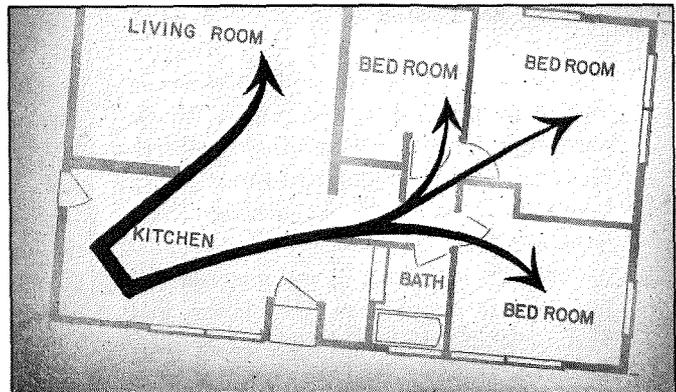
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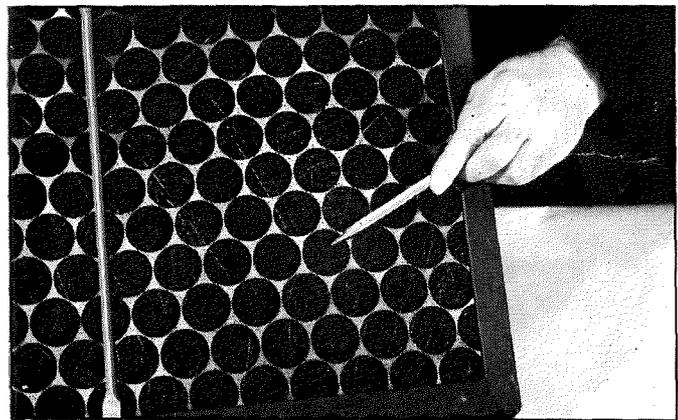
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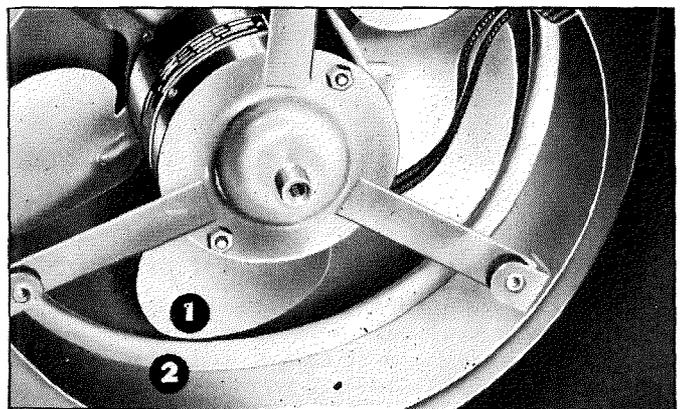
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John Zimmerman

AEC is distracted with housing woes again, criticized for muddles at Savannah River

To the Atomic Energy Commission it must seem that housing, like women, is something it can do neither with nor without. The Commission has tried both ways, and bears scars from each.

Between 1947 and 1950, it was the agency's "government towns" at Oak Ridge, Los Alamos and Hanford that got it into trouble with Congress. By 1950, with a vast "cold war" expansion program on its drawing boards, AEC was eager to get out of the "distracting" housing business. In November that year it announced it was definitely *not* going to build another government town at its largest installation, the \$1.5 billion plant for the production of the H-bomb along the Savannah River in South Carolina.

Under fire again. Now, nearly three years later, the results of AEC's new approach to housing are in hand—and AEC is being "distracted" with agonizing frequency by charges that its role in Savannah River housing is a multimillion dollar fiasco. Despite its original wishes, AEC was indeed in the housing business again up to its ears. The agency was simply not able to build "the largest construction project ever undertaken by man," bring an "impact of 150,000 new people" into a remote and rural area of the Black Belt and still take no direct responsibility for sheltering its huge construction crews and permanent workers.

Last month it found itself in federal court in Columbia, S.C. with the Justice Department defending it in a million-dollar suit brought by a housing subcontractor, Lyles & Lang Construction Co. of Columbia. Under contract from du Pont, the prime contractor for the project, Lyles & Lang, had built bachelor barracks that were barely one-third rented at the peak of AEC construction employment. Inasmuch as AEC had guaranteed full occupancy, the agency was in court on the question of paying a bill that may cost the taxpayers a total of about \$2.5 million.

Levitt prophecy. The suit also underscored a prophecy made in 1951 by Builder William J. Levitt, who wanted an exclusive assignment to build the Savannah River housing. When AEC stepped out of the housing business, it left a vacuum that many think has been filled, as Levitt warned HHF Administrator Raymond M. Foley, by "the speculation of individual land owners and local builders, the petty and provincial tactics of local officials, the use and indulgence of antiquated hand-to-mouth building procedures."

Undetermined liability. AEC's government town at Oak Ridge, Tenn. cost US taxpayers \$93 million. The taxpayers' stake in Savannah River area defense housing, erected by private construction, is not easy to calculate precisely. A figure of \$80 million is in common use (equal to 5.3% of the \$1.5 billion cost of the H-bomb plant), but this must be qualified.

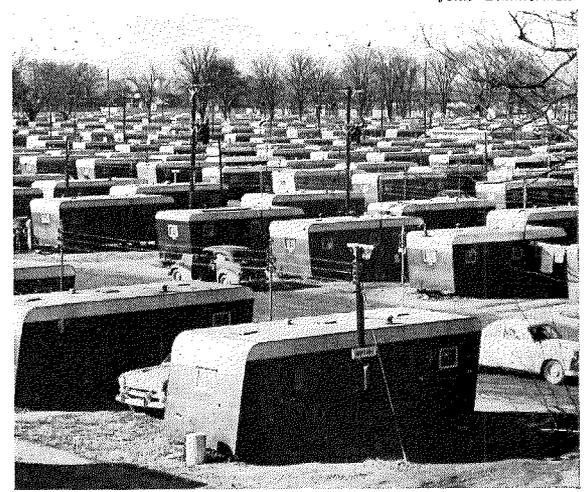
This \$80 million figure includes FHA defense housing mortgage guarantees totaling \$55 million. But there could hardly be any total loss on this. In the worst kind of depression FHA net foreclosure losses on this would not be likely to run over 30%, or \$16.5 million.

Another \$15 million in federal grants has been allocated to help offset the costs of new community facilities required in defense-expanded towns. These will provide water, sewage plants, schools, etc., which have lasting value even though they might stand idle for some years if the area's population declines for a period after H-bomb plant-construction employment has passed its peak.

The remaining \$10 million represents subsidies or contract settlement payments expected to be made on AEC-sponsored temporary housing projects.

Urban nonentities. The main criticisms of AEC this time seem to center on the locations chosen for defense housing and new community facilities. Adopting AEC's "existing population center" concept, HFFA authorized defense housing and community facilities in seven widely dispersed towns. These were Allendale, Williston, Barnwell and Blackville, S.C., which AEC insisted on regarding as urban entities, although they were scarcely more than hamlets; the small towns of Aiken and North Augusta, S.C., and the city of Augusta, Ga.

Two years ago Foley had testified such dispersal would be a mistake: "If housing [is] to be scattered all over the area it would be extremely difficult and costly to provide even minimum community facilities . . . [or] to provide the kind of community necessary to attract and hold the permanent labor force."



SECTION OF A SAVANNAH RIVER TRAILER CAMP

ties . . . [or] to provide the kind of community necessary to attract and hold the permanent labor force."

Smaller towns unpopular. This summer AEC's "permanent" workers were underscoring Foley's words, proving people will live where they please if they have a choice. And around the Savannah River plant it pleased most AEC "permanent" workers to live only in two of these seven towns—in North Augusta and Aiken.

According to an AEC report there were 956 "permanent" AEC families in the 3,100 completed units of Savannah River Title IX defense housing last month. Of these, 623 families were concentrated in Aiken and 197 in North Augusta. There were only 88 in the 779 Title IX units in Augusta, and the remaining 48 were scattered in the 631 Title IX units in Allendale, Barnwell, Blackville and Williston.

But this did not mean hundreds of Title IX houses were vacant. Far from it. More than 1,200 additional units were occupied by "temporary" AEC workers, and 310 units outside Augusta by Camp Gordon soldiers.

The area's defense housing score July 10 was as follows:

Total units programmed	3,225
Units completed	3,172
Units under construction	53

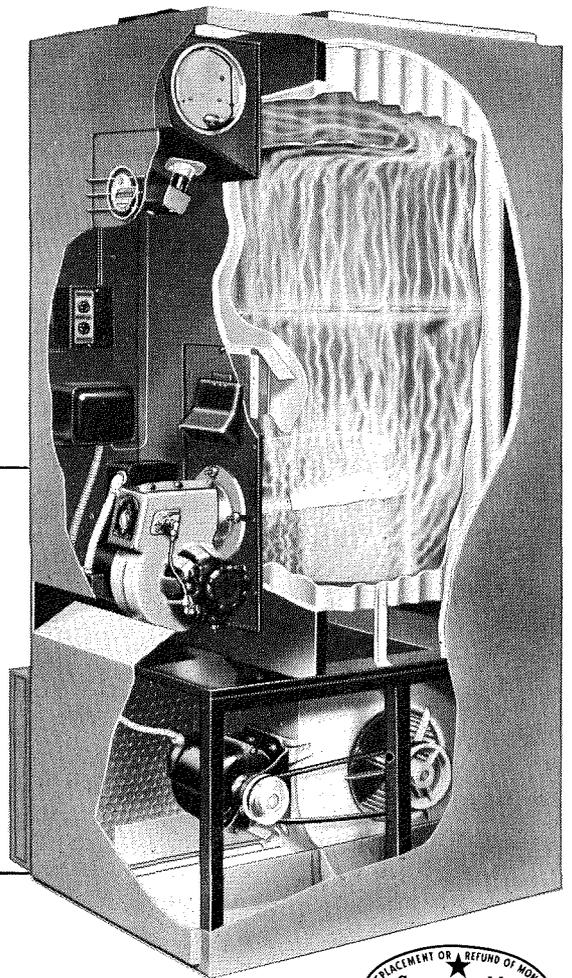
Occupancy of the completed 3,172

SINGLE-FAMILY HOUSES ERECTED FOR AEC WORKERS IN AIKEN, S. C. BY GROSS-MORTON



Jack Holmes

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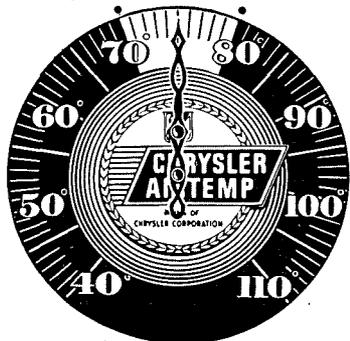
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throughout the area was as follows:

Rented to permanent and temporary AEC workers, and military personnel	2,606
Leased to AEC for arriving personnel	117
Not rented or assigned (included 19 finished previous week)	20
Removed from AEC market to general housing market	429

Blues in advance. Next year the H-bomb plant is scheduled for completion, so some observers fear great vacancies when the "temporary" workers move away. But still to be hired are 2,400 more of the plant's 7,100 permanent operating staff, and whatever the transition may bring, sale or rental of all units continues highly favorable, and FHA has not yet foreclosed a single Title IX unit in the entire area.

In Aiken all 437 Title IX rental units in the attractive Gross-Morton Crosland Park (H&H, May '52) are full, and the local agent says at least 100 occupants have applied to buy the houses they are renting. Some young engineers are moving out, but only to other new houses they are building (or remodeling) themselves—elsewhere in Aiken.

No expectation that distress sale or rental units in the area will undermine the market in another year deters busy Aiken builders. Developer Robert Penland, who has just completed 48 houses from \$15,000 to \$20,000 and has sold all but seven of the 81 lots in his Dunbarton Oaks subdivision, is ready to launch a new \$12,000 house colony. "Aiken stands for pleasant life, and has become the center of community activities for permanent project workers," he says.

Demoralizing delays. AEC announced its H-bomb plant site on Nov. 28, 1950, five months after the Korean war started. But it was Nov., 1951, before the defense housing bill, which had finally been enacted in October, became operative. (Realtor and homebuilder organizations had both contributed to the delay while they fought public housing provisions in the bill and held out for virtually no-investment mortgage terms.) In the long interim, AEC, other agencies, and the communities being swamped with construction workers were all kept in a pickle.

It was during this period that rumors of unholy alliances between politicians and builders grew, reports that have never been put down. Early in 1952 "Judge" H. E. Bailey, South Carolina FHA director, resigned after a headquarters investigation (H&H, March '52). Senator Burnet Maybank (D, S.C.) has vainly asked Attorney General Herbert Brownell to investigate "innuendos" in this situation. HHFA contents itself by saying that there is "no evidence of wrongdoing" in Bailey's file.



SCARCELY SLEPT-IN BACHELORS' BARRACKS IN BARNWELL, S. C. THAT HAD AEC RENTAL GUARANTEE

Could not wait forever. But whatever the politicians were doing or not doing, including those in Washington, AEC reached the point where it could idly wait no longer for housing—in June, 1951 it was threatening "drastic action" unless something was done.

The same month HHFA sent McClellan Ratchford, former Alabama banker, to the area as its local coordinator. Even though the defense housing bill was four months in the future, "AEC put the heat on Ratchford to produce a permanent housing program out of his hat, with no authority, and no money" according to one authority familiar with the facts.

Ratchford tried, but the program was inevitably an improvisation. "Whatever you say, don't put the blame on HHFA," stated an informed person. If HHFA made any mistake, it was in swallowing AEC's "existing population center" theory, and in not clearing the atmosphere of the more serious charges of political corruption which were so widely believed that many reputable builders refused to venture into the area.

Indirect AEC measures. Just as sure to be criticized for too little housing as for too much, AEC itself took a hand in July, 1951 in the emergency job of providing temporary housing—not directly, but in a roundabout way. It asked du Pont, its prime contractor, to advertise for bids for barracks with 7,500 beds for single construction workers, and 4,000 trailers for married workers.

Lyles & Lang received the barracks job, with a guarantee of 100% occupancy for two years at minimum rents. The J. A. Robbins Co. of Philadelphia received the trailer contract, with a four-year 90% occupancy guarantee.

The trailer deal soured after occupancy began to slide this spring, and was renegotiated on terms which critics charge may cost federal taxpayers an \$8 million loss.

With the barracks it was also a Sad Sack

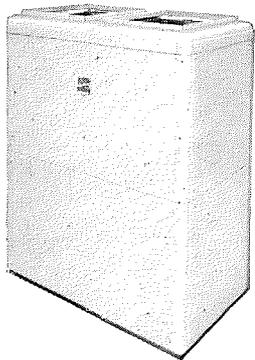
story. Buildings for only 4,500 beds were erected, at Barnwell, and occupancy reached only 1,200 at AEC's brief construction peak. When this declined rapidly to 400, and AEC was paying virtually a 100% subsidy it closed down the barracks entirely, hardly a year after the contract had started to run.

Altogether AEC paid Lyles & Lang \$1,826,237 and then balked at the contractors' claims for \$1,290,000 more. But Lyles & Lang insisted they were entitled to more. So they sued du Pont, and soon AEC found it was in court.

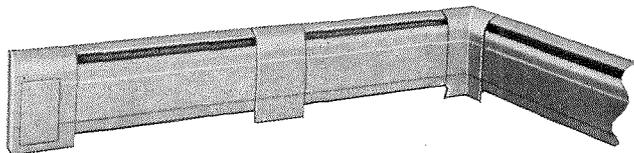
Too many cooks. Among the charges and countercharges of the litigation was one made by the Justice Department that Lyles & Lang had entered into a "joint venture agreement" with other principals not disclosed to the government at the time the contract was signed, and a broader allegation that these principals were guilty of "self-dealing" involving land sales, legal and engineering fees and other overhead items.

The alleged joint venturers included members of the architectural firm of Lyles, Carlisle, Bisset & Wolff, a firm which has drawn the plans for many Savannah River housing projects; members of the legal firm of Fulmer & Barnes, which has represented many area builders; and members of the Barnwell Supply Co., which has received FHA Title IX certificates. At a pretrial conference, a government attorney disclosed that the FBI had launched a full investigation into all the housing activities of all the joint venturers.

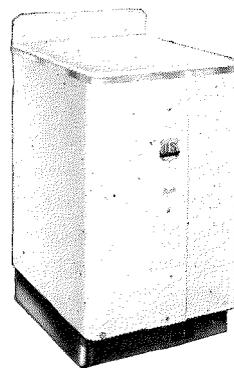
Lyles & Lang pressed a point of its own. Seeking Judge George Bell Timmerman's help in getting AEC and du Pont inter-office memos, the Lyles & Lang counsel hinted by his curiosity that he thought du Pont might have settled the cost dispute, and that AEC would have approved the settlement, except for this fact: that the failure of the project as housing, and the attendant bad publicity, put AEC into such



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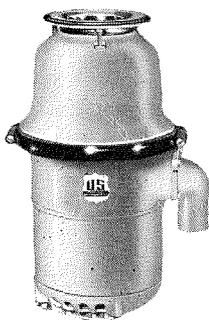
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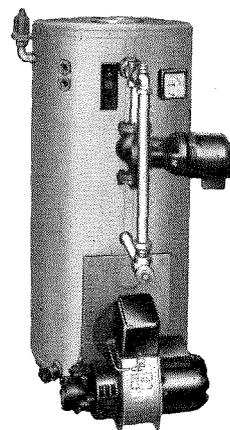
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U. S. heating and cooling equipment is designed with an eye for minimum space and easy installation. Take the U. S. Super-Pak Steel Boiler shown at right, for example. Only 49" high and 22" in diameter, it's shipped preassembled and complete with oil burner, pump and all necessary controls and accessories. Workmen can install it quickly and place it anywhere: basement, utility room, kitchen or closet.

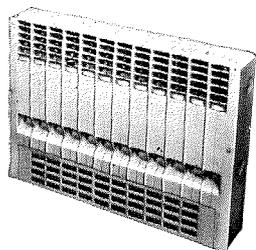
Maybe you're looking for the same kind of speed and easy handling on *your* jobs. If you need information on the Super-Pak or any other products shown, just check the box next to each product and fill in the coupon. You'll get your catalogs by return mail — no obligation, of course.



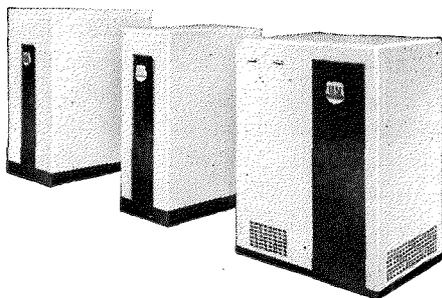
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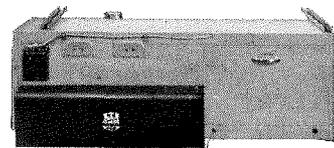
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an awkward position it felt it must fight.

Did AEC have to go to the extremes it did to please Congress? Or was it unable to cope with entrenched local interests for the sake of the taxpayer? It is hard to know. The agency itself tends to claim its understandings were reached at "executive sessions" of congressional committees. Some outside observers, however, feel AEC has become too sensitive to criticism, is spoiled by too-frequent use of the "security" blanket, and sometimes uses that to cover administrative mistakes.

Final evaluation of Savannah River housing, however, must await completion of the H-bomb plant, and adjustment of the area to a normal existence.

US financing used for about half of all new housing sales, 75% of middle-income units

Federal credit aids for private housebuilding, now only 17 years old, "have profoundly affected not only the structure of the housebuilding industry and the sources, amount, and cost of residential mortgage funds, but even the character of the housing." They have also "caused the emergence of the large-scale 'merchant' builder." Such are the conclusions of a study* by Dr. Leo Grebler of Columbia University's Institute for Urban Land Use and Housing Studies.

Two striking facts are developed in Dr. Grebler's study: 1) FHA and VA financing was used for a whopping 40% of the sales of all new dwelling units erected between 1935 and 1951, for about half of all the units produced in the peak years 1947-51, and 2) in the market between \$6,000 and \$12,000 FHA and VA financed about 70 to 75% of all new house sales during 1949-50. In those years only 4% of government-supported loans covered houses under \$6,000, only 14%, new dwellings over \$12,000.

From FHA data and Bureau of the Census sampling material obtained in the 1950 Census of Housing, Dr. Grebler compiled these tables:

	% of all units			% of units for owner-occupancy			% of rental units
	FHA	VA	Com-bined	FHA	VA	Com-bined	
1935.....	6	—	—	7	—	—	3
1936.....	16	—	—	19	—	—	1
1937.....	18	—	—	20	—	—	6
1938.....	30	—	—	32	—	—	18
1939.....	35	—	—	37	—	—	20
1940.....	34	—	—	37	—	—	6
1941.....	36	—	—	39	—	—	6
1942.....	55	—	—	59	—	—	18
1943.....	79	—	—	82	—	—	67
1944.....	67	—	—	67	—	—	69
1945.....	20	3	23	20	3	23	15
1946.....	10	13	23	11	13	24	4
1947.....	27	25	52	23	27	50	71
1948.....	32	11	43	26	13	39	75
1949.....	36	11	47	30	13	43	69
1950.....	36	15	51	27	17	44	99
1951.....	26	15	41	20	16	36	89

* The Role of Federal Credit Aids in Residential Construction, 76 pp. National Bureau of Economic Research, 1819 Broadway, N. Y. 23, N. Y., \$1

PEOPLE: Walter Williams McAllister heads Home Loan Bank Board; Miss National Home Week owns a white colonial

President Eisenhower named a leading savings and loan executive to the Home Loan Bank Board last month. For a full four-year term beginning July 1 he appointed **Walter Williams McAllister**, 64, of San Antonio, and also designated him as chairman in place of Democrat **William K. Divers**, who remains as a member of the board. McAllister, 1947 president of the US Savings & Loan League and 1924-25 president of the Texas League, replaced Democrat **Kenneth G. Heisler**, whose term expired. Still to be appointed, a third

member of the board to serve until next June 30 in place of Republican **J. Alston Adams**, who resigned to become president of the San Francisco Home Loan Bank.

Also appointed last month to a top Washington post concerned with housing: **Harvey V. (Doc) Higley** of Marinette, Wis. as administrator of Veterans Affairs, succeeding **Carl R. Gray, Jr.**, resigned.

NAHB's publicity department winced last month. It had announced that **Dorothy Shay**, fashionable supper club singer and "Park Avenue Hillbillie," will be Miss National Home Week 1953: Then someone asked: What sort of house does Miss Home Week own, or live in? With trepidation it started to check this hitherto overlooked point, but to its immense relief discovered that she also was an ideal example of advantages of home own-

W. Kirkland



SHAY

ership. Originally she had been named only to typify the "glamour" of '53 houses.

Miss Shay's home is a 15-year-old split-level white Colonial type Los Angeles house in Westwood Village near the UCLA campus. She bought it in 1949 with the adjoining vacant corner lot, which she uses as a garden, but for which she has rejected 12 offers from builders who want it as an apartment house site. The house also has four bedrooms, a barbecue patio, has green shutters, is half covered with ivy—and has a mortgage.

Eight more district office FHA directors were named last month by Commissioner **Guy T. O. Hollyday**. Homebuilder **James C. Moreland** of Chicago was named Chicago area director, with Acting Director **Joseph T. Lyons** resuming his former post as assistant director. Other appointments: eastern Missouri (St. Louis), **Alan T. Smith**, FHA employee since 1940; North Carolina, Appraiser and Realtor **Roy B. Millikan** of Greensboro; South Carolina, **W. Edward Moore** of Sumter; eastern Oklahoma (Tulsa), Realtor **Hugh M. Prather**, former homebuilder and savings and loan manager; Lubbock, Tex., Mortgage Executive **J. F. Matchett** of Seagraves; Nebraska, **Robert C. Hastings**, former president of the Omaha Real Estate Board and state Appraisal Institute chapter; Montana, Builder **Harry O. Duell**, chief VA appraiser for the state.

FHA and VA Financing by Price Ranges, 1949-50

Purchase price class	FHA and VA 1st mortgages		Conventional 1st mortgages		FHA and VA as % of total in each price class ^b
	Number	%	Number	%	
Less than \$4,000	4,000	1	54,000	17	7
\$4-\$5,999	13,000	3	43,000	14	23
\$6-\$7,999	126,000	31	46,000	15	73
\$8-\$9,999	139,000	34	42,000	13	77
\$10-\$11,999	73,000	18	39,000	13	65
\$12-\$13,999	27,000	7	25,000	8	52
\$14,000 or more	27,000	7	64,000	21	30
Total reporting	407,000	100 ^a	312,000	100	57

^a Components do not add up to 100 because of rounding.
^b Column 2 as a per cent of the sum of columns 2 and 4.

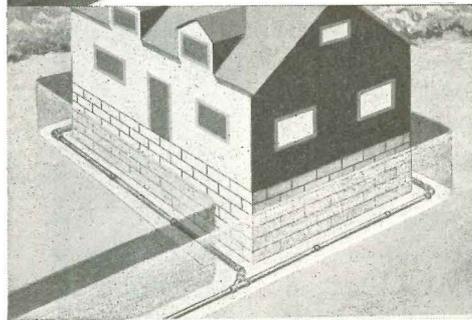
Dr. Grebler points out that there is no way of estimating how much construction would have occurred without these federal insurance programs, but it certainly would be erroneous to state that they lifted production by the number of units they covered.

He also notes how these programs were started with their emphasis on encouraging "mortgage lenders to lend," but gradually were reoriented to encouraging "consumers to borrow." They also were regulated to serve particular price and rental groups "on the basis of social needs rather than mortgage loan risks," he adds—a shift that last month drew a sharp attack from the US Chamber of Commerce (see p. 35).

Northwest's first gypsum mill slated for Seattle

The Pacific Northwest, long isolated from supplies of gypsum products, will be the site of a new \$4 million gypsum board plant and plaster mill of the Kaiser Gypsum Co., it was announced last month. Kaiser Gypsum, a subsidiary of Permanente Cement, will build the plant on a 9½ acre site on East Marginal Bay, Seattle—800 miles from the nearest similar facility. Providing the area with a brand new industry, the plant will have a capacity of 100,000,000 sq. ft. of gypsum board products when completed next year.

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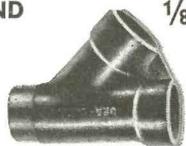
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2. Orangeburg Root-Proof Sewer Pipe



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1/8 BEND



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LETTERS

The article, "Let's include everybody in" (*H&H*, June '53), has aroused an unprecedented response—almost all favorable—from our readers. As these columns went to press, excellent letters were still arriving and more will appear in the September issue of *HOUSE & HOME*.

Sirs:

CONGRATULATIONS ON YOUR HEALTHY, HONEST AND COURAGEOUS REBUTTAL TO THE NONSENSE IN *HOUSE BEAUTIFUL*.

CAMPBELL & WONG
San Francisco

Sirs:

The general response to Miss Gordon's article is really shocking, whether in fury for or against. A nation that can take such nonsense seriously has come to a dangerous psychological pass. A sane admonition followed by a hearty laugh from a "Trade Journal" was called for and forthcoming, thanks to you.

GEORGE HOWE, chairman
Yale University
Department of Architecture
New Haven

Sirs:

I have heard the ugly noises, noticed the confusion and the false prophets of late with growing alarm.

I am glad that *HOUSE & HOME*, with courage and insight, picked up the challenge and set the situation straight.

Mrs. E. G. in her sudden discovery of the "threat" to America forgot the fact that it was largely the imported yeast that made the cake she is enjoying so much.

Hope you spoiled her appetite.

Thank you, indeed, and more power to you.

J. R. DAVIDSON, designer
Los Angeles

Sirs:

It is difficult to assess the current trend in the arts. Our current social organization is fluid. We are passing through a social revolution, reflected in the arts. As part of it, our basic democratic educational methods encourage the free spirit, personal liberty and individuality, and the inquiring mind. It follows that we are in the greatest renaissance in architecture the world has seen.

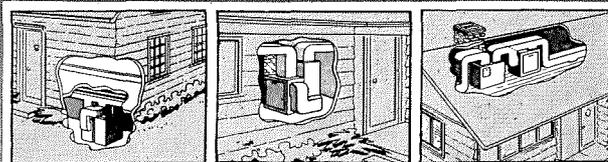
All building today is modern building, and can be classified as good or bad. It is so now and always has been in other great construction periods. Building design and construction are concerned with the social organization of the future, not with past human needs. Judgment of the buildings of today should be in the hands of the sensitive artist or historian or architect, and must be concerned with the whole organism.

We recognize the right of free speech and we cannot deny that right to anyone. That which gives the lesser voice speech also gives us ours. So we look and listen carefully sometimes, and more often do not pay too much attention; it depends upon who does the talk-

continued on p. 46



Today you can add the potent sales-appeal of air conditioning to any home you build. Here Air-O-Matic (left) is combined with Oil-O-Matic forced warm-air heating. This beautifully-integrated team makes it possible for you to offer even moderate-priced homes equipped with heating *and* cooling.



Design the house as you please—EW's versatile, compact heating-cooling equipment can be installed in basement (left), utility room or attic. The Air-O-Matic unit is available in 3 sizes, to fit the air conditioning needs of both large and small homes.



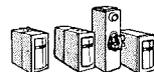
Put your heating-cooling problems into the capable hands of the Eureka Williams dealer. Chosen with care and then factory-trained, the EW dealer "takes over" and solves all the problems of year 'round air conditioning.

Why sales-minded builders choose Eureka Williams heating and year 'round air conditioning!

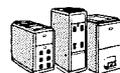
There are sound reasons behind the progressive builder's choice of new Air-O-Matic home cooling in combination with its famous "sister" units, Oil-O-Matic or Gas-O-Matic home heating. On top of the "reasons why" list is a well-known fact: *it is air conditioning that is selling homes today.* And the builder has found the air conditioning offered by EW products can and does sell *every* house he builds—whether large or small, with or without basement.

You can see why many builders are finding Eureka Williams the perfect answer when you study the completeness of the line, and the flexibility it offers. For while Oil-O-Matic and Gas-O-Matic heating, and Air-O-Matic cooling are individual units, they are beautifully integrated to work as a team. This means (1) you can buy both heating and cooling from one source; (2) you have your choice of combining the air conditioning with either oil heat or gas heat; and (3) you can install the heating system at time of building *and add Air-O-Matic at a later date*—important selling feature to budget-limited potential home-buyers who want someday to own air conditioning.

Sales-minded builders also appreciate the appeal added by a nationally-known and respected name, and the complete reliability of the EW dealer. Mail us the coupon—soon—for complete story on products and how we might help you.



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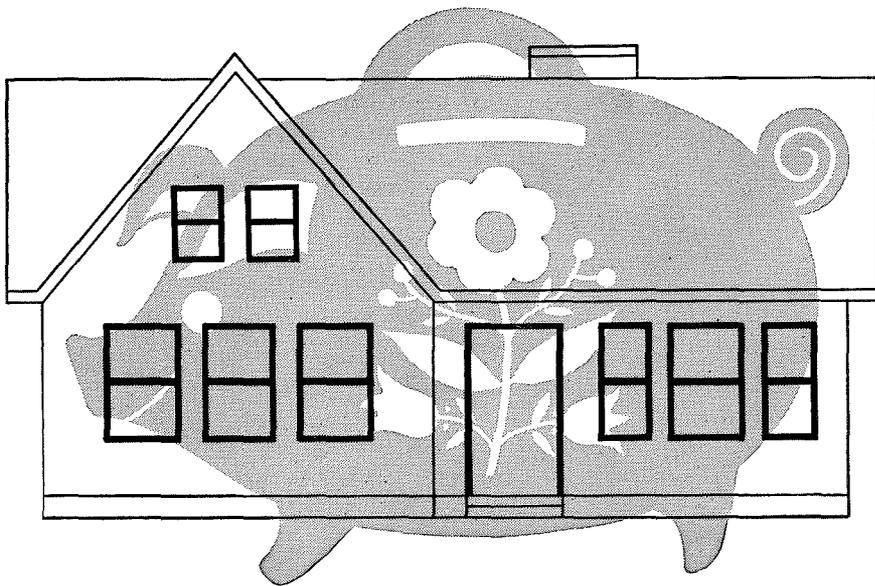
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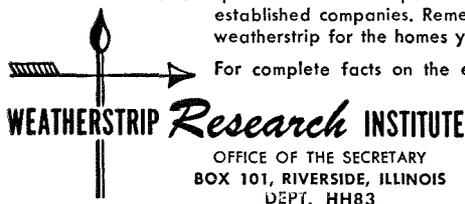


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LETTERS *continued*

ing, and all good architects talk more eloquently with their works than their words. Their works are their words.

I am for the literature of looking and feeling and living.

GEORGE FRED KECK, *architect*
Chicago

Sirs:

The commotion stirred up by Elizabeth Gordon's article is a significant phase in a revolutionary change but, like growing pains, essentially unimportant. When a bold spirit expresses a new point of view he shocks the staid and stodgy. In this age of new ideas reaction is the natural counter-action.

House Beautiful has long stood as the Queen of Gadgeteers. This magazine's acknowledgment that the horse and buggy have passed, that America is over the threshold of a new cultural development is a belated but gratifying action. The reaction expressed in "The Threat to the Next America" is natural. Miss Gordon's advertising public demands it. Why should deep-breathing souls be aroused over a question that, it seems to me, was settled many years ago? Architecture has always expressed the culture and thought of an age. Let us not be disturbed by lack of thought. It too is human, natural and, after all, life is fun. Neither our architecture or culture is yet of age, as all this hubbub over a publicity stunt demonstrates too well.

RALPH S. TWITCHELL, *architect*
Sarasota

Sirs:

Your reply to the pretty lady on the soap-box beautiful is a masterpiece. It would have been easy to be destructive about the *House Beautiful* article. Your reply is more effective because it is constructive—and also perceptive, accurate, adroit and kind. I wish there were more chance for *House Beautiful* readers to see your editorial.

ELIOT NOYES, *AIA*
New Canaan

Sirs:

HOUSE BEAUTIFUL SURE TWISTED THE FACTS, BUT YOU CUT THE GORDON KNOT. JUST RETURNED FROM EUROPE WHERE I FOUND THAT AMERICAN ARCHITECTURE IS GREATLY ADMIRERD AND SERVES AS AN INSPIRATION. WHEN EUROPEANS SAY "AMERICAN ARCHITECTURE" THEY MEAN MORE OFTEN THAN NOT THE WORKS OF THOSE MEN WHOM HOUSE BEAUTIFUL SEEMS TO DISLIKE SO THOROUGHLY.

VICTOR GRUEN, *architect*
Hollywood

Sirs:

I am aware of the somewhat hysterical blasts that occasioned your article. Of course I agree with you.

Modern architecture must have begun to grow up. How can there be any criticism of various schools of thought in the art of architecture? Certainly the painters of France experimented with many techniques—even

continued on p. 52

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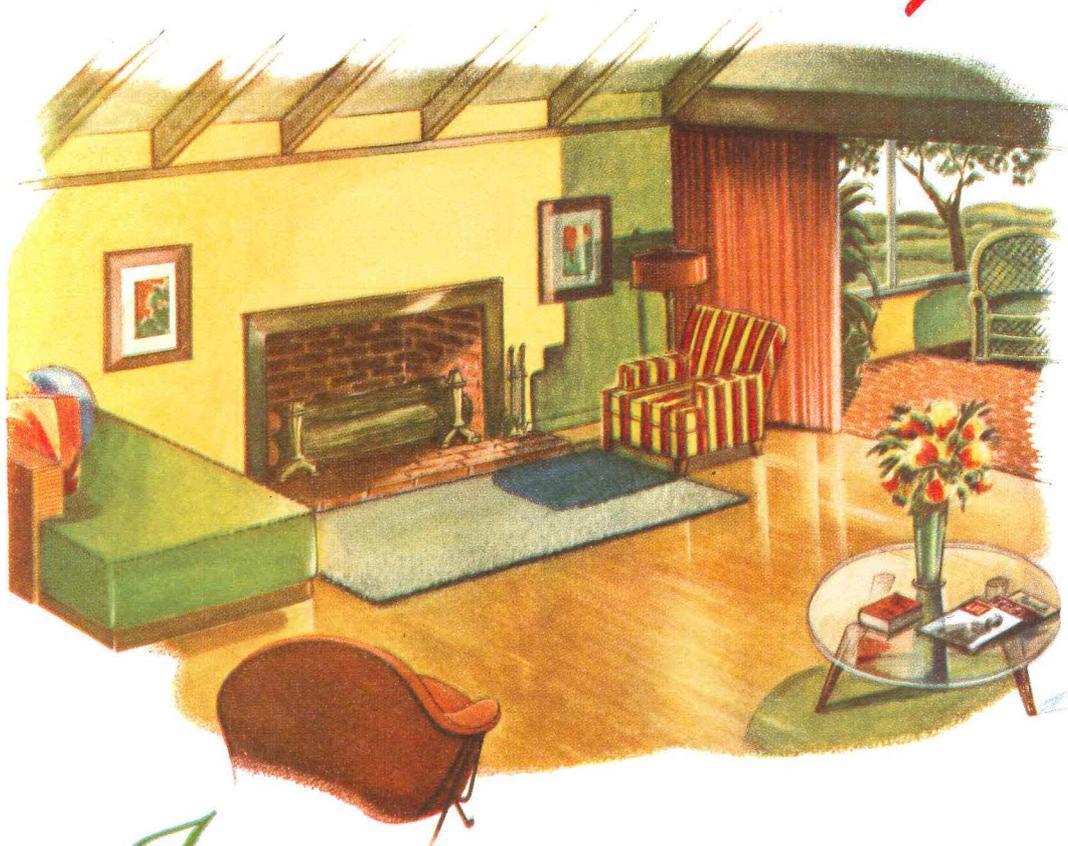
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LETTERS *continued*

grouped themselves together under odd names. And modern painting received a much-needed shot in the arm, still being felt today.

ROBERT CARSON, *architect*
New York

Sirs:

To my mind the necessity of marking out or delineating a pattern of architecture as *the one* is a dead giveaway of the lack of capacity to think individually and evidence of a lack of individual principle. One pitfall, dug deep by the architectural magazines, that lies in wait for the young practitioner is this deification and this marking of a *trend*.

You have staked out your share of guilt. What's more, you've added glitter and wrapped it in cellophane. In the face of all this, it takes a hardy individual indeed to go his own way and turn out a building that is neither Mies nor Wright nor Gropius.

And isn't that exactly what is necessary? And do you have no faith that the capacity is there?

He would be a fool who denied the influence of the architectural greats in any time but where is the necessity to take sides if one is working on a side of his own even clumsily?

Of course it's easier with a standard, a ruler by which to measure. It fits, it's a "Mies" or a "Wright," it's in the *trend*—so it's good. You don't have to know, you don't have to think, just measure it, apply the standard and we'll all go fishing. It's obvious that some part of the public prefers this, along with the *Good Housekeeping* Seal of Approval. Is this your audience?

What about those others, who are quite willing to grant the laurel wreaths where they are due, who draw help and inspiration from the great but resist the overloaded band wagon, and insist on the beautiful prerogative of taking their own lick at the target?

And so for "both your houses"—this profession will outlast all such in spite of trends and magazines, mostly on account of the inherent orneriness of the human race, for which thank God, amen.

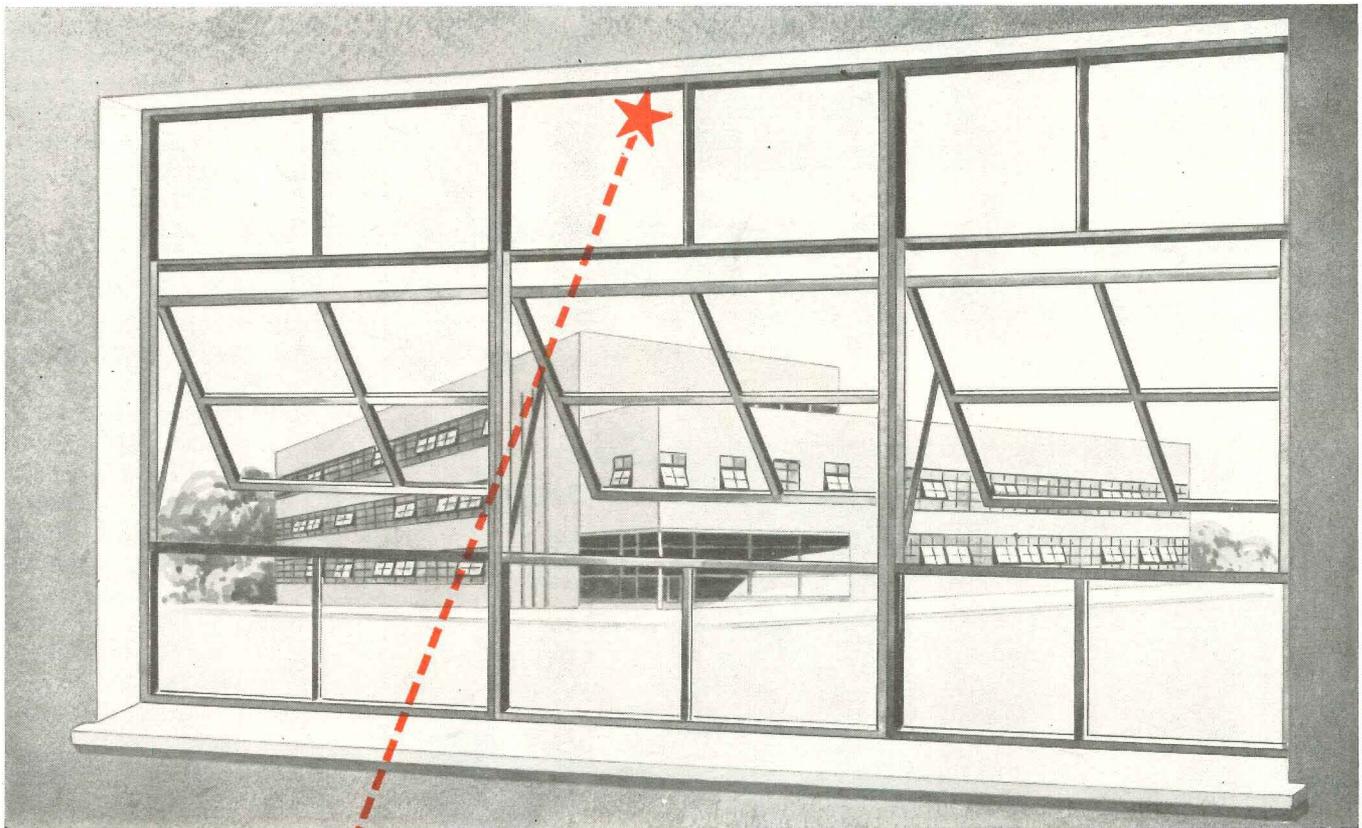
In all, you do serve up a whale of a lot of good solid matter but must the trumpets always blare at your entry? Can we have our eggs without the hot sauce? Perhaps the spotlight with a few lumens? Your magazine is valuable to me for the ideas it brings, for the news it tells, for the arguments it provokes. I'll get in my shockproof suit, settle down in a bath of cool water, stuff my ears against the drum-beating, and shred the thing for its many worth-while helps.

DON BARTHELME, *architect*
Houston

In its first year *House & Home* published no house by Mies, one house by Frank Lloyd Wright, one by Gropius and his associates, 77 by other US architects.—Ed.

continued on p. 54

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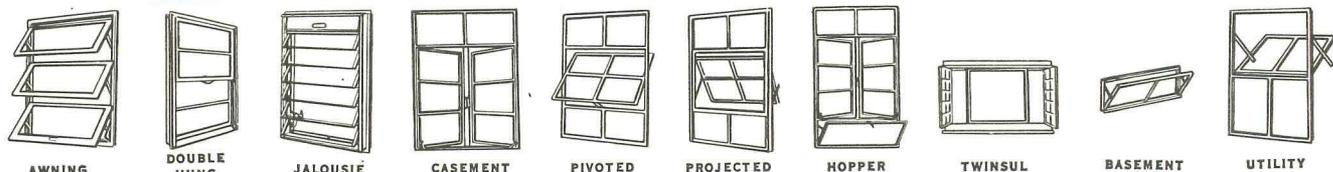
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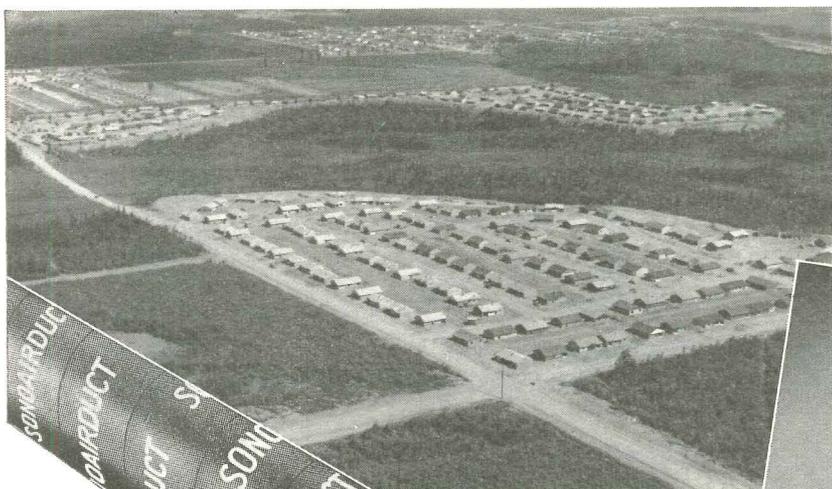
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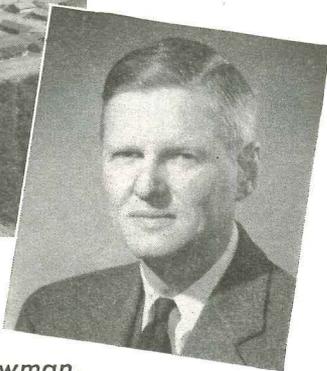
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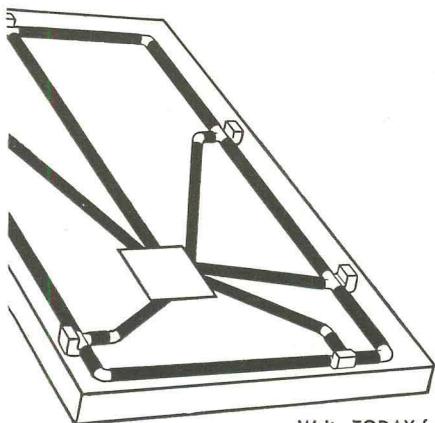


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LETTERS *continued*

Sirs:

Wright is not a refuge for the unsure nor is it fashionable or intelligent to question the leadership of Mies despite the invincibly ignorant *House Beautiful*. The fact that architecture and man are a unity of emotion (imagination) and reason is not a new gospel and it is trying to have it advanced as such. It should be clarified that emotional reaction is individual. You're either "sent" or you're not. Put our emotions and intelligence to work and we might produce some architecture.

WILLIAM A. GANSTER, *architect*
Waukegan

Sirs:

I doubt that the editor of *House Beautiful* has the personal stake in organic architecture that I have (a \$130,000 house by Frank Lloyd Wright's disciple, Abram Bombar), yet I would hesitate to label organic "all good," or international "all bad." I love my house and would have no other, but there are many FLLW houses which offend my eye, and I can think of no more delightful sight than Mies van der Rohe's twin towers on Lake Shore Drive in Chicago.

For my personal use and happiness, "organic" fits the bill, but many people feel that way about the so-called "international" school. The truth is the perfect house has yet to be built.

Congratulations on a tolerant, understanding article.

MRS. BETTY E. BENJAMIN
Cincinnati

Sirs:

I think you have handled the subject with perception and restraint. Also, you have struck the heart of the matter with: "nobody can tell [the American home owner] that one kind of architecture is subversive and another kind is 'loyal,' that one kind of architecture is a threat to our way of life, and another kind is 'American.'"

I find it difficult to comprehend a public pronouncement that my taste is better than yours, my judgment more profound than yours, and that freedom of expression and action can be had only by joining my club.

It is extraordinary that an article such as yours in *HOUSE & HOME* should have had to be written. It is more extraordinary that a lay critic of current American architecture should not have perceived and digested the same basic principles which you have so clearly set forward. Your article undoubtedly does a great service to the profession.

HUGO NEUHAUS JR., *architect*
Houston

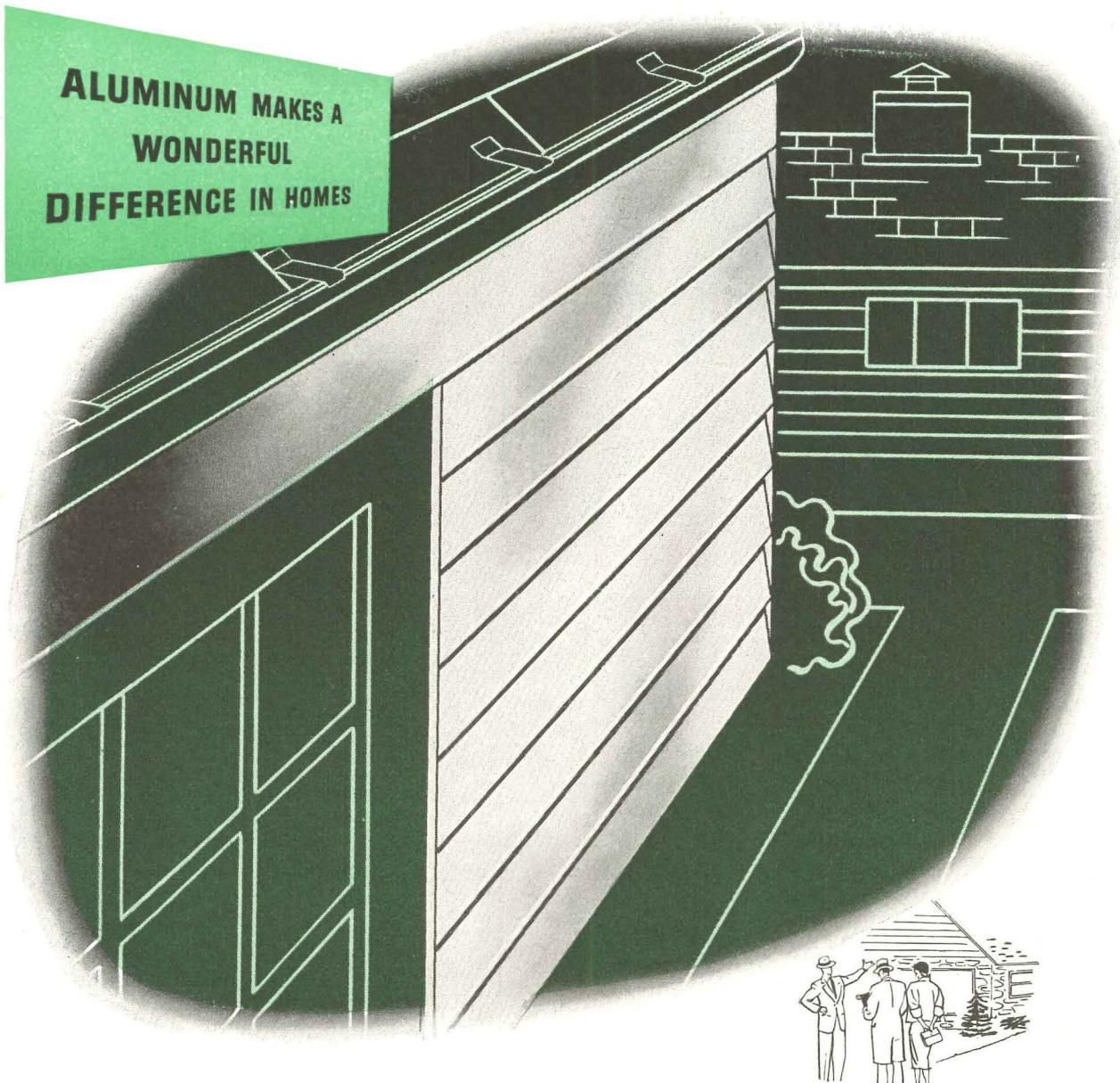
Sirs:

Congratulations on your very timely article. I agree with virtually everything in it. . . .

The editor of *House Beautiful* seems to feel that there is a danger of the American public of being dictated to by certain architects with "foreign" ideas. No architect, in

continued on p. 56

**ALUMINUM MAKES A
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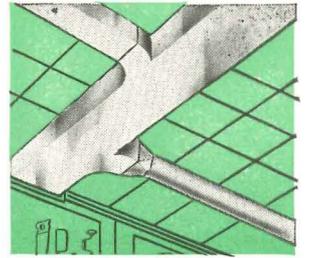
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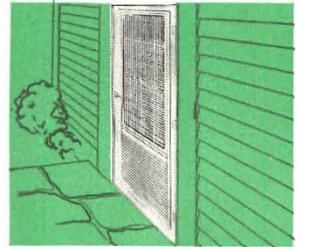
for a board and batten effect . . . some with baked on finish, others plain or stipple embossed for finishing as desired.

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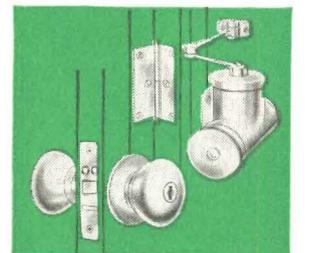
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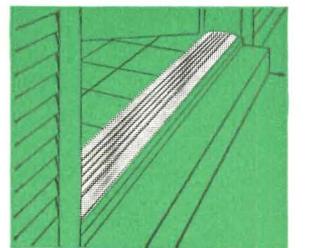
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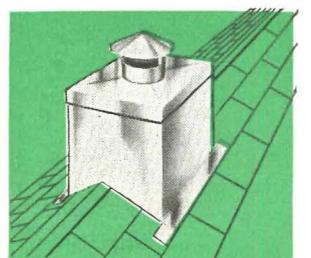
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LETTERS *continued*

my opinion, dictates public taste. No one should.

Peculiarly enough, it is *House Beautiful* itself that has been attempting to dictate to the American public. Under the cloak of "Americanism" it has been trying to sell its personally selected, rigid architectural standards as the only way. This is the American public's real danger.

GEORGE NEMENY, *architect*
New York

Sirs:

I wish to express my admiration and appreciation for "Let's include everybody in." It is competent, objective, tactful, warm, and it is civilized.

It is American.

It is excellent service to my profession, to my country, to people everywhere.

FRANK F. EHRENTAL, *architect*
San Francisco

Sirs:

You point out that there is not anything "strange or wonderful" about an architect's work that has not been produced somewhere, sometime before. Splendid!

I have just read the article on Frank Lloyd Wright's spiral house in the desert (H&H, June '53) which you describe as "strange and wonderful."

Comparing the *present* to the *past*, I suggest that you turn to the July '53 issue of *The National Geographic Magazine*, p. 15, and note the illustration of Samarra's Castle built in the Ninth Century. This is identical in design and materials to Uncle Frank's house—circular in plan, built of bricks with a spiral ramp. The chief difference is that Builder-Caliph Mutawakkil probably spiraled up his ramp on a Camel instead of in a Cadillac. In the ninth century I am sure they did not refer to this building as "strange and wonderful" as they admittedly copied the design from Babylonian structures built as early as the First Century.

GARDNER A. DAILEY, *architect*
San Francisco

Sirs:

I think the editorial is to the point. Different expressions in design should be accepted and given recognition in such publications as yours. The merging of these different conceptions, the influence of one on another, their very divergencies bring about unexpected interpretations and lead to experiment, variety and fresh interest. Hasn't that always been true?

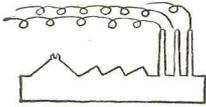
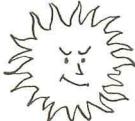
Opinions of the individual architect and critic must be judged and screened through their human reactions. Arbitrary conclusions are certainly dangerous at best, particularly when they apply to creative efforts.

JOHN ROOT—
HOLABIRD, ROOT & BURGEE,
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Architects, engineers, consultants
Chicago

continued on p. 58



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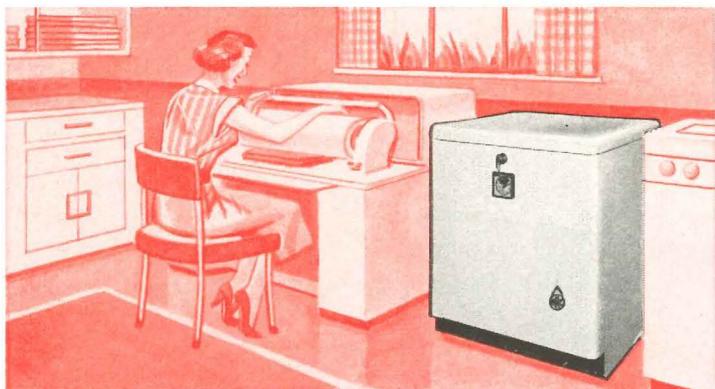
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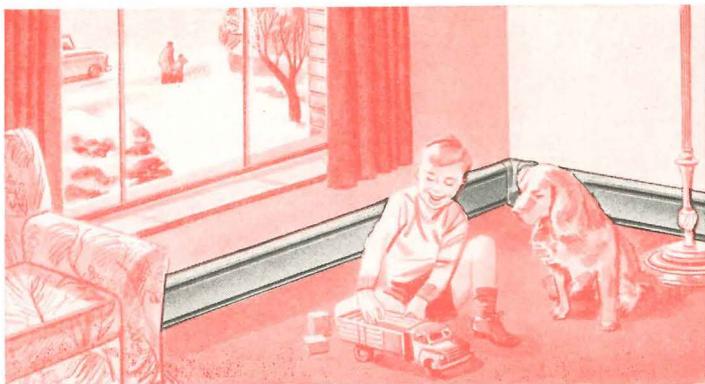
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LETTERS *continued*

Sirs:

Your editorial touches a very sensitive spot with me and elicits an answer not entirely free from emotion.

No one knows who designed the Piazza of St. Mark's, but everybody knows that it is a great achievement and is not dependent upon the name of the architect.

I assume your editorial is directed toward Elizabeth Gordon's editorials about Mies van der Rohe. I think you have a perfect right as a magazine to say whatever you believe. I also think she had a right to say whatever she believed. I think the general end result is beneficial to all concerned. It suggests and gives full expression to the theory of free speech and free press.

I personally would welcome more outspoken, frank articles on architectural design and building. I feel that the present vogue of slanting practically all architectural subjects toward a few individuals is the same kind of blind hero worship in reverse that those individuals experienced during their so-called unpopular period. There are architects in this country besides these few famous names, and it is those other architects who are carrying the burden of responsibility to the country and to the world.

While these quibblings proceed buildings are being built in this country that are a substantial, fundamental part of our national philosophy, economy, and a basic contribution to art. It would be quite refreshing to be able to pick up a magazine with a new idea in it in connection with the real contributors to the architecture of this country.

N. A. OWINGS—SKIDMORE,
OWINGS & MERRILL, *architects*
Chicago

Sirs:

An inspiring statement of democratic faith.

I for one am willing to listen to the mobsters and to the retrogressives as long as I am assured that the progressives will have an equal opportunity to be heard. The creative spirit of man is infinite. The great majority will discern good from evil and choose the joy of living in sunshine in preference to the dingy past.

ISADORE ROSENFELD, *architect*
New York

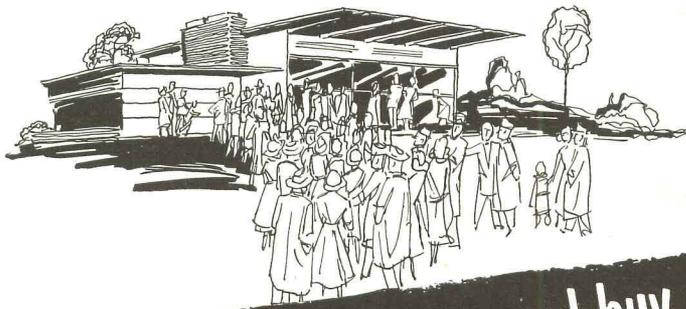
Sirs:

Your comparative illustrations are wonderful and point up the fact that perhaps the only original architect is one who has a book no one else has.

I like what you had to say and thoroughly agree that perhaps in no other land than our own is such freedom allowed and not only tolerated but sought after.

What I don't like is what I see in the way of architecture as a direct result of the influence of European architects (who so alertly first recognized the genius of FLLW), but now perpetrate upon our countryside a rash

continued on p. 60



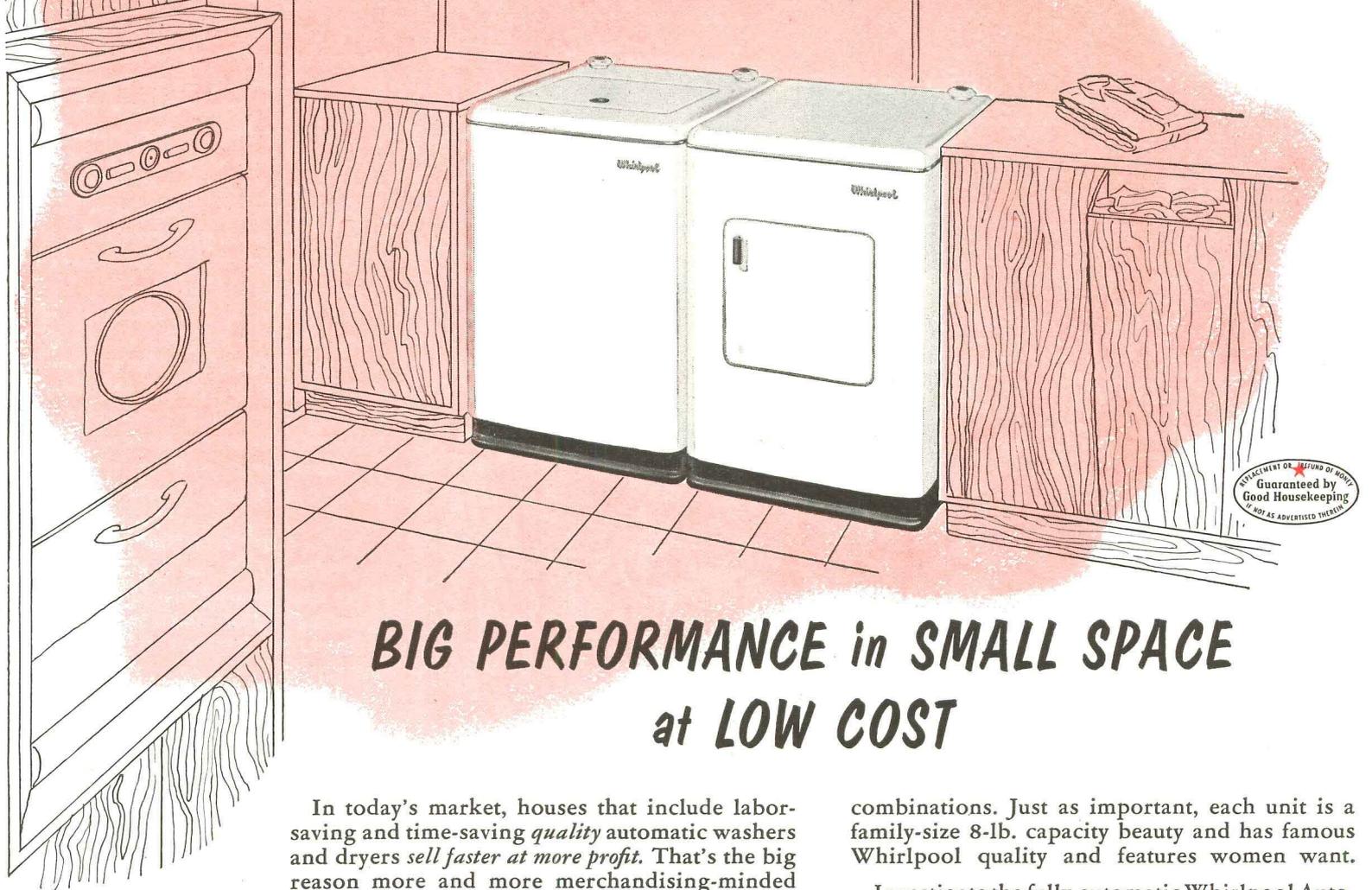
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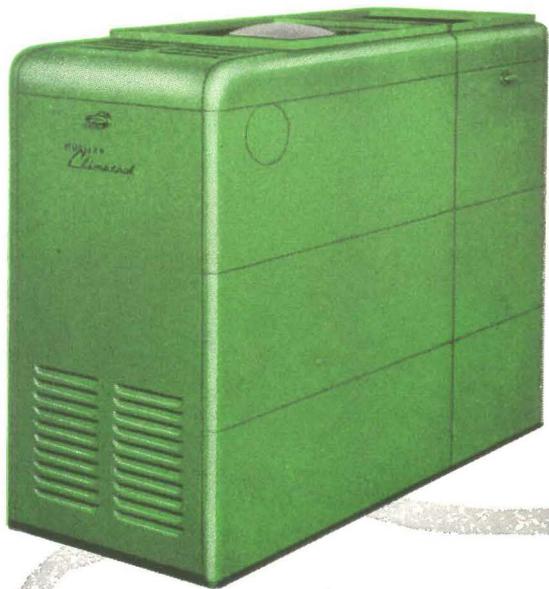
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LETTERS *continued*

of steel, wood, and glass boxes. As free men in our country, they have a perfect right to design as they wish, but I am continually amazed that so many Americans fall for their flat and shallow mediocre solutions.

I guess Barnum was right when he said that a sucker was born every minute. My worry is: where are they all coming from—the clients of the fast multiplying "less-is-more" cliché?

I still say that Gordon did a good job in April—look what she started!

KARL KAMRATH, *architect*
Houston

Sirs:

I think that Dr. Gropius and Mies van der Rohe are great architects; they have pioneered an architectural revolution and won but that doesn't mean we have to subsist on abstract architecture the rest of our lives.

Lately the disciples have been copying the master and the copyists have been copying them and some of the results have been just plain awful. Some of the latter do not know any more about true modern architecture than the Vestal Virgins knew about the Kinsey Report.

As the leading architectural periodical, your job is to publish the best of what is new and interesting. You've done a wonderful job of it and I don't blame you for banging the cymbals about many good contemporary houses but can't understand bowing down to one particular cult as to a little tin god and saying, "Praise be to Allah, this is it."

Again I think architects should stick to architecture and not to a new way of life. What started that I don't know but let's not be regimented into anything.

Personally, I believe in freedom of living and freedom of choice. I don't believe that all architecture of past was good but I'm damn sure it wasn't all bad. I believe that architecture is a fluid and changing thing and I hope it improves as it goes along. But we all know that what looks wonderful today will be awfully old hat tomorrow.

ROYAL BARRY WILLS, *architect*
Boston

Sirs:

After reading a recent edition of a "Women's Magazine" I stifled a yawn—such inaccurate, hypocritical reporting, and half truths are deserving of little more—and then I picked up your magazine. Thanks to your efforts a new form of architectural McCarthyism has been revealed.

JOHN REX, *architect*
Los Angeles

Sirs:

As a whole, I agree with your editorial and would like to offer only one comment or, if you please, a suggestion:

Not to be captured by any of the new "styles" is commendable and proper. I feel,

continued on p. 62



Beauty
INSIDE

PLAN for LIGHT



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LETTERS *continued*

however, that these "styles" (with lower-case s), to stick to the terminology established in your editorial, should be not only presented but also evaluated and measured by the standards common to all Styles (with capital S) because, indeed, there are universal principles that are eternal and common to all great periods of architecture. Such evaluation would be a warning to young and immature followers of "styles" (lower-case s). They would, for instance, realize that Frank Lloyd Wright's work of recent years is surviving with flying colors, in spite of its shortcomings, due to his remarkable creative genius which his followers don't possess. Thus the followers of "styles" would be inspired by the creative approach, would learn from the actual achievements, but would not get under the spell of purely personal likes and dislikes which are only too often the manifestation not of greatness but of human weakness.

L. L. RADO, *architect*
New York

Sirs:

In my opinion you are on the right track. As to your reference to "styles" and "Style," I would like to quote Whitehead:

"The most austere of all mental qualities . . . the sense for style . . . is an esthetic sense, based on admiration for the direct attainment of a foreseen end, simply and without waste. Style in art, style in literature, style in science, style in logic, style in practical execution have fundamentally the same esthetic qualities, namely attainment and restraint.

"Style, in its finest sense, is the last acquirement of the educated mind; it is also the most useful. It pervades the whole being. The administrator with a sense of style hates waste; the engineer with a sense of style economizes his material; the artisan with a sense of style prefers good work. Style is the ultimate morality of mind."

FRED BASSETTI
BASSETTI & MORSE, *architects*
Seattle

Sirs:

Of course, individuals and schools of individuals rise and ebb as do the tides. Rising and falling is part of the scheme of things—basic, inherent and terribly human.

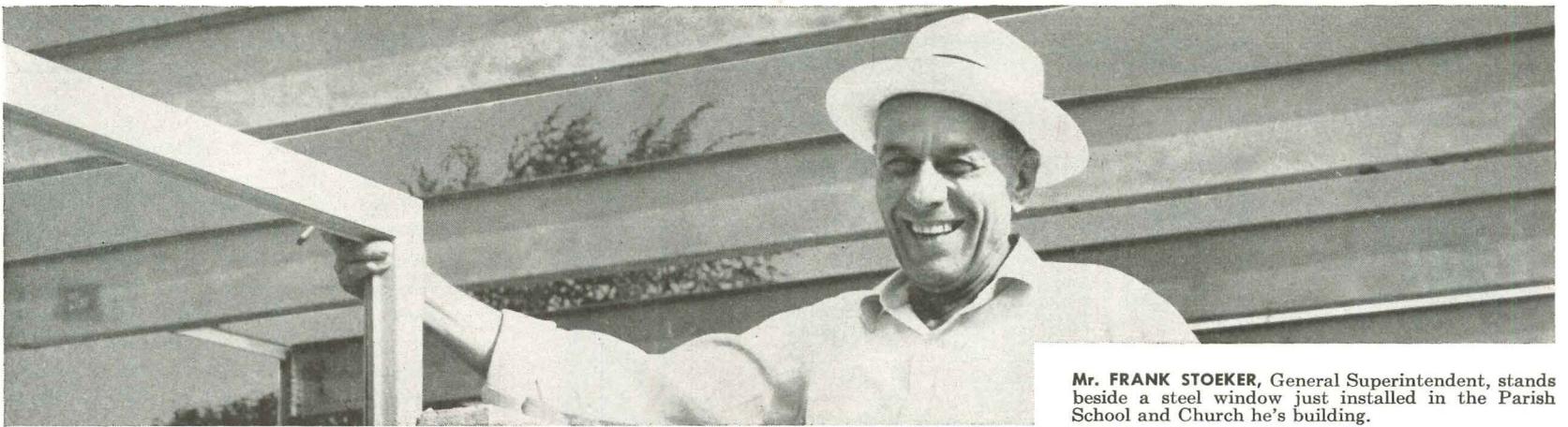
It seems to me that the real master is he who stands as a solid rock amidst this ebb and flow—part and parcel of the struggle—surrounded but never engulfed by these elements. Such a man, I believe, is Wright. There must be others that will arise but the names we hear today seem to be lost in the vast murmur of movement itself.

ROBERT ALLAN JACOBS, *architect*
New York

Sirs:

The shrill notes recently heard seem to center on the "box" although "boxes" such

continued on p. 64



Mr. FRANK STOEKER, General Superintendent, stands beside a steel window just installed in the Parish School and Church he's building.

"Steel windows have been my choice for 25 years,"

says Frank Stoeker, of Roediger Construction Inc., Contractors

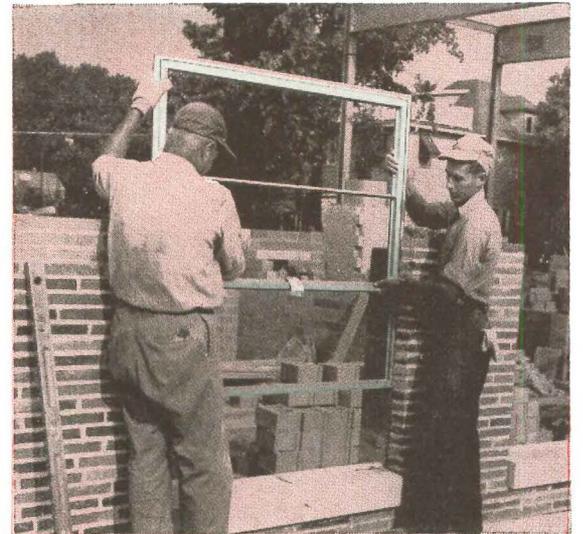
● "I used steel windows for the first time in 1925, and I've been installing them in buildings of all kinds ever since," says Mr. Stoeker. "With steel windows your building schedule can be much more flexible. That's because steel windows can be installed as the masonry work is begun . . . or you can put them in when you build the jambs up to the top of the windows. In other words, your work doesn't need to be interrupted at any special time to put in windows.

"Then, too, steel windows don't need as much protection from weather or exposure as some other kinds. If you forget to cover them, they won't warp or shrink from moisture and drying. And steel windows

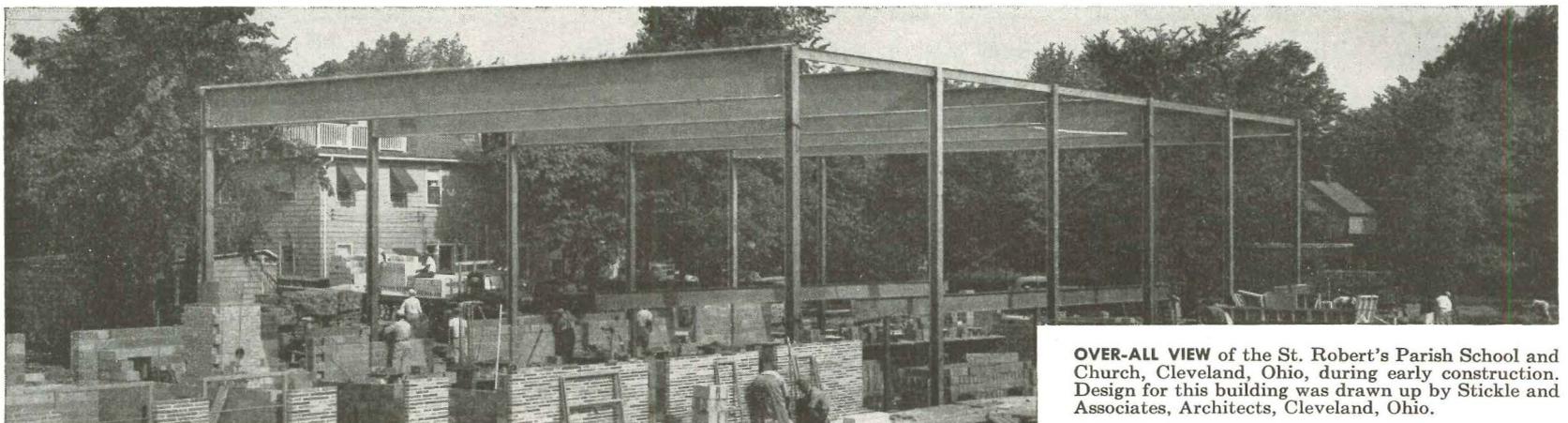
are so rugged they don't require any special attention or kid-glove handling."

Mr. Stoeker speaks from first-hand knowledge. He's spent 35 years building in Cleveland, Detroit, Chicago and the entire Great Lakes area. He knows what he's talking about when he says he prefers steel windows to any other kind. And hundreds of builders all over the country say the same.

For more than 40 years United States Steel has been supplying window manufacturers with special rolled section high-grade open-hearth steel.



NOTICE how easily a steel window frame slides into the space between cement block backup and brick facing. It helps to speed up construction.



OVER-ALL VIEW of the St. Robert's Parish School and Church, Cleveland, Ohio, during early construction. Design for this building was drawn up by Stickle and Associates, Architects, Cleveland, Ohio.

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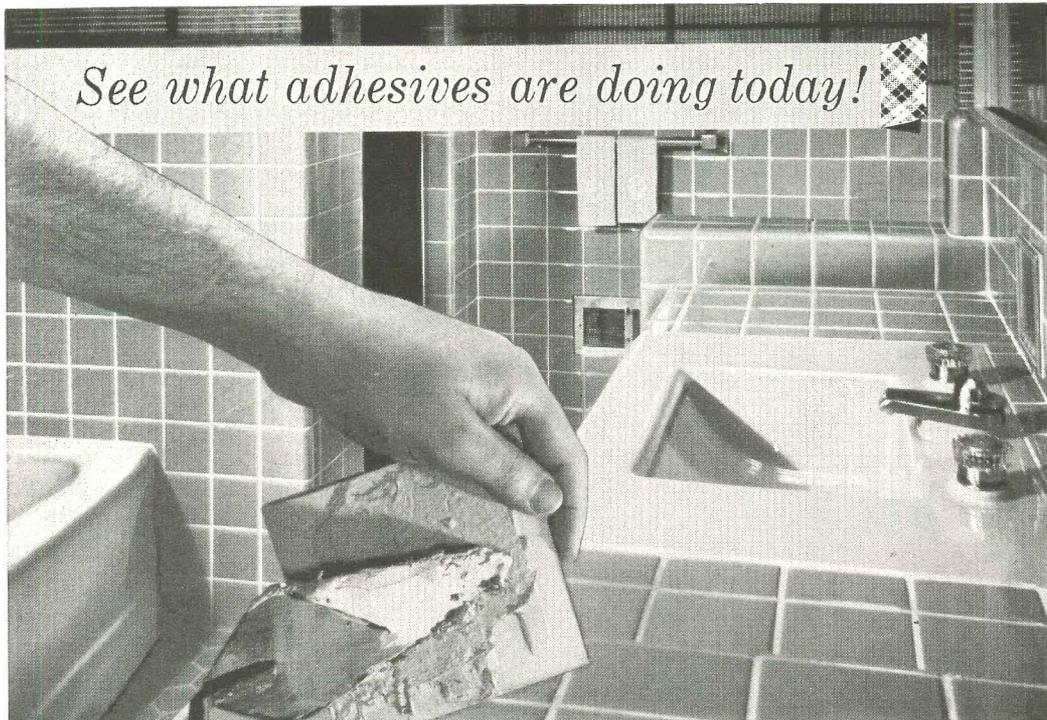


U·S·S STEEL FOR WINDOWS

Steel windows aren't new to the architect, the mortgage holder, the realtor or the home owner, either. For many, many years all these people have been appreciating the extra advantages steel windows bring to buildings and homes of all sizes. They're smart, neat looking . . . they require almost no maintenance or upkeep . . . and stay rigid, true to size, easy to open and close for the life of the building.

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See what adhesives can do for you . . .

Why not look into 3M's Ceramic Tile Adhesive for your tiling jobs? It's ready to use as you buy it . . . requires no pre-mixing. And it's sold by leading tile supply companies. Buy it and try it—today! For further information or a free booklet on this remarkable adhesive, write to 3M, Dept. 128, 411 Piquette Ave., Detroit 2, Michigan.



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LETTERS *continued*

as the Parthenon have intrigued and nursed man's spirit for years. When people attack the "box," they are really attacking the idea of form itself and the notion that the whole is more important than any individual part.

Gropius once explained the three ways we actually see a building and thereby perceive form: 1) from a great distance or when quickly passing, the form must be strong and simple if we are to remember that building; 2) as one approaches by foot, additional interest must be introduced such as the play of light and shadow, plasticity, textures, colors; 3) if one walks through the building, various spatial qualities and interest of detail must be presented.

Form is affected by 1) the activities that are to take place within, 2) by the climate, and 3) by the materials which are used. Much of our residential building is of timbers and sheet materials. Using these materials rectangles are easily constructed and are often their logical outgrowth. All too often a feeling for plasticity is lacking, but this is not inherent in the concept of the enveloping form. The Villa Savoye proved that many years ago. Even HOUSE & HOME states in its article on Wright's coil of concrete block (June '53) that you can understand the "box" at first glance.

Anyone who has ever walked up the ramp of the Villa Savoye and experienced its unfolding qualities and changing vistas would disagree. The similarity between Wright's coil of the Fifties and Le Corbusier's Villa Savoye of the Twenties is striking. I'll take mine without the lace around the panties. The enveloping form as used from the pyramids to Buckminster Fuller's dome is still a valid concept. Mr. Wright may want to destroy his corners, which is all right, but that is certainly not the only spatial concept possible.

PAUL RUDOLPH, *architect*
Sarasota

Sirs:

CONGRATULATIONS ON YOUR HISTORY OF CONTEMPORARY HOUSE DESIGN. PLEASE INCLUDE US IN YOUR SUPPORT OF THE IDEALS FOR FREEDOM IN ARCHITECTURE.

CLARK, FREY & CHAMBERS, *architects*
Palm Springs

CORRECTION

Sirs:

In the Carrier Air Conditioned Competition story (H&H, June '53) our caption was not adjacent to our illustration, it was confused with the house by Tom Bear of St. Louis, shown on the same page.

FRED DINGER
FRANK GOLDBERG
Los Angeles

H&H regrets that the captions on p. 159 were reversed. The Tom Bear design is at the top; the Dinger-Goldberg house below.—Ed.

MODERN MORTGAGES

A monthly report on important developments in the modernization of mortgage credit, with particular emphasis on the expanding potential of the package mortgage, the open-end mortgage and the expandable mortgage.

Can the Texas open-end log jam be broken?

Texas lawyers and lenders doubt it . . .

US Savings & Loan League counsel says yes

Texas lawyers and lenders are as one in believing that open-end mortgages are neither legal nor practical in their state. They cite the Texas constitution and the homestead statutes* as the major blocks. "Not so," says Horace Russell, general counsel of the US Savings & Loan League. "An open-end mortgage can be written on a homestead and future optional advances made under an open-end provision." As general counsel of HOLC Mr. Russell in effect open-ended mortgages in Texas just as he did in every other state of the union.

Texas law has not stopped a good many Texas lenders from helping owners keep their homesteads up-to-date and in good repair. This is done by a mechanic's lien.

Here is an explanation of how this open-end variant works, by E. Y. Boynton of Waco, chairman of William Cameron & Co., one of the South's largest lumber chains.

Using the mechanic's lien. "It is perfectly legal to create a lien to make repairs or modernize a homestead," says Mr. Boynton. "And if the original mortgagee is willing to advance money for repairs or modernization, there is no legal reason why, after the lien is made and filed, the first lien and mechanic's lien cannot be combined into one first lien—provided, of course, there is no other valid intervening lien."

This procedure, says Mr. Boynton, is like the procedure and cost involved in making an original loan. A typical example is cited by Newman Wells, secretary of First Federal S&L of Marshall, Tex.: "We make an appraisal of the property to see if it is worth improving. Cost: \$6. An attorney draws up the mechanic's lien; cost: \$15. Cost for an abstract of title: \$10. Filing fee: \$8.25. Total amount: \$39.25."

Cost is not affected by the amount of the loan, would amount to about \$13.10 per \$1,000 additional advance.

Cost in bigger cities like Dallas where title insurance rather than title abstracts are used may be higher for two reasons: attorney's fees are higher; title insurance, set by the state insurance commission, starts at \$25 for \$750, is \$82 for \$10,000 coverage. To bring a \$14,000 mortgage up to

a total indebtedness of \$17,000, for instance, would cost about \$29.29 per \$1,000 (a 30% credit is given on the unpaid balance of a mortgagee's policy when a lien already covered is renewed or extended).

Costly and unwieldy as the procedure is, it does permit a home owner to spread the cost of improvements over a longer term than is permitted by a 3-year FHA Title I loan.

K. T. Thomas, president of First Federal S&L of Lubbock, would like to see the open end used instead of the mechanic's lien folderol says it would save borrowers at least \$15 because lenders would be saved time and trouble in examining each deal to see if it is in conflict with homestead law.

Aubrey M. Costa, president of Southern Trust & Mortgage Co., Dallas, and ex-president of MBA, doubts if open-end mortgages can be written without legislative changes.

Open-ending Texas. Horace Russell, one of the foremost legal experts on the use of the open-end and package mortgages, says:

"It is my opinion that under Texas law a trust deed may secure advances made at the time the trust deed is created and this trust deed may expressly provide for the securing of optional additional advances also to be made in the future. In both

** The Texas constitution protects a homestead (house where a family makes its home, not rental units) from forced sale except for purchase money, taxes or work and materials spent on improvements—and for improvements only when a lien consented to by a wife is given in the same manner as when selling or conveying a homestead.*

cases, if the property is homestead, a mechanic's lien must be assigned to the lender.

"Texas courts have upheld the optional additional advance in many cases, have even gone beyond most other states in upholding such advances even when no actual notice was given of such advances.

"The same procedure would apply to the making of the optional future advances as was used in the making of the original advance for construction of a homestead, that is, the lender would take a transfer of a mechanic's lien for the improvement in both cases.

"A maximum amount should be specified in the trust deed to give the world notice as to just how much the mortgage secures.

"There is no necessity for further title examination or title insurance if the original title policy covers the actual amount in the open-end mortgage.

"The only difference between an open-end in New York and Texas is that in Texas a lender would have to take transfer of the lien for improvement.

"On both the open-end and package mortgages there has been much horseback opinion, little real legal opinion. Almost everyone has believed what others have told him instead of paying to get some expert legal opinion."



The case of the **Missing ground floor**

To get around today's higher costs, people who build houses have tried leaving out a lot of things. Some sacrificed the floor space of the old-fashioned house by making each room a little smaller, or by leaving out the old second floor, the attic, the basement.

In the one-level house on a slab, all three of the once-familiar "extra" floors have been declared nonessential. For the owners this has meant convenient indoor-outdoor living with no stairs to climb.

But in some one-level houses it has also meant stretching out the foundation and the roof, both of which can be expensive to build and maintain—to make this single ground floor long enough to fit in all the floor space a normal family requires.

Here are three houses with a different approach.

They leave out the ground floor instead. In effect, they are made up of the very floors that the one-level slab house discarded:

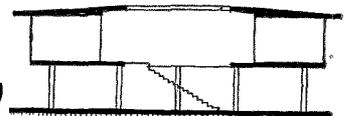
1. An attic on a basement wall (pp. 76-79)



2. An attic on a half-sunken basement (pp. 80-85)



3. A second story on pier foundations (pp. 86-91)



In these houses the attic roof, the basement foundations and the second story are cheaper than the ground floor, considering the amount of space they enclose. They are handled so that they do their own accustomed work, plus a good part of the work of conventional sidewalls as well.

To see how they enclose more space and more livability with less structure, turn the page.

Photos: Morley Baer



The case of the missing ground floor



1. Attic on a slab —by playing up the

sheltering roof and the solid foundations,

it gets rid of the walls in between

Here is a house that turned out better because the architect left out basement, main floor and second floor and built nothing but the attic.

It turned out better 1) because it is surrounded by dense, tall trees and so gets better sunlight for all rooms through the roof; 2) because it is close to the road and gets better privacy from not having conventional front windows, and 3) because its simplified construction—just roof and foundations—provided a lot more house for the money.

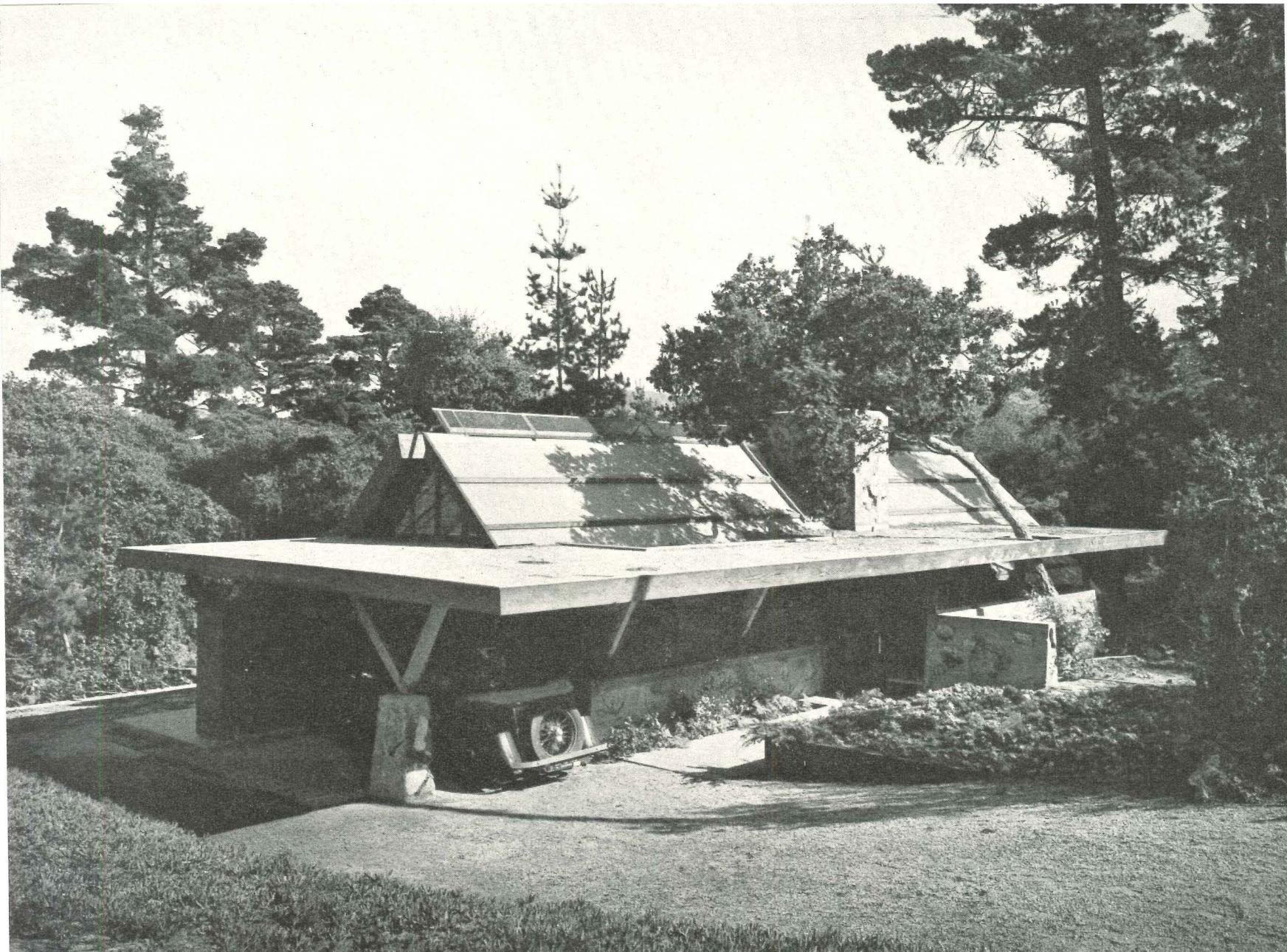
The windows of this house are not on the sides, but at the ends and on top: the two gables filled with glass, a ribbon skylight running the length of the ridge, two smaller skylights flanking the chimney. These unorthodox windows make sense: fronting a busy street and glaring afternoon sun on the west, the house would have suffered more than it gained from front windows. So, since windows were not desirable, why build walls to contain them? Instead, the roof comes right down almost to the ground and effectively shuts out heat, noise and passers-by. The heavy thrust of the roof rafters is carried directly to the 3' high foundations, so no tie beams, trusses or buttresses were needed.

Much of the success of the churchlike roof structure is due to its being open at the top. The ridge skylight (see detail p. 79) throws warm sunlight on what might have been a dark, cobwebbed place, displays the structure in silhouette and makes the roof seem less heavy and oppressive by accenting its two separate planes.

LOCATION: Carmel, Calif.
MARK E. MILLS, designer
EINER HANSEN, contractor
ROBERT M. KASPER, furnishings
AREA: 970 sq. ft., excl. carport, terraces
COST: \$13,900 excl. land, design fee



Big tent of wood and glass shuts out the busy street and hot sun on the west, right, opens up the living room to the south through a gable end of glass. The long skylight at the ridge allows the whole house to reach up for overhead light from its dense woodland site. Foundations are of cast concrete masonry—big rocks placed in the forms during pouring. This wall was continued 3' above the ground to buttress the outward thrust of the roof deck, which is bent up to give headroom for an entry hall (right). Floor is a 3" concrete slab, integrally colored and polished to a smooth finish.



Street side: carport and bedrooms at north end, entry at right

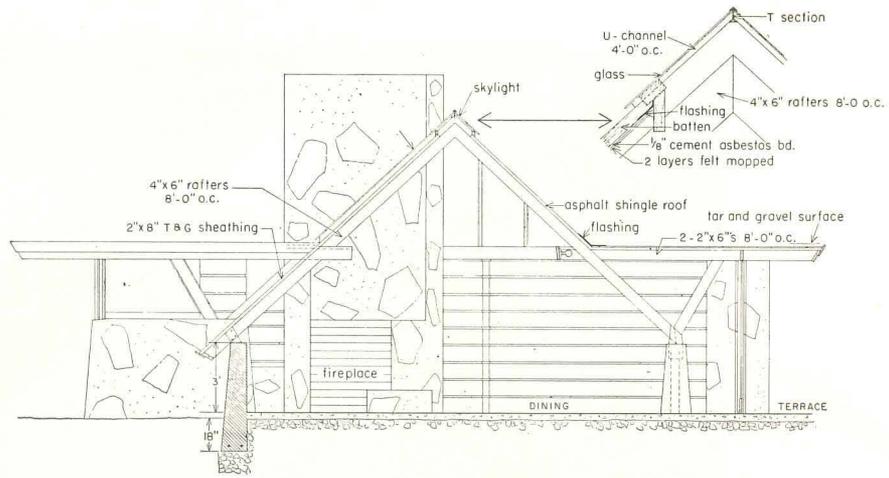
All roof and no walls



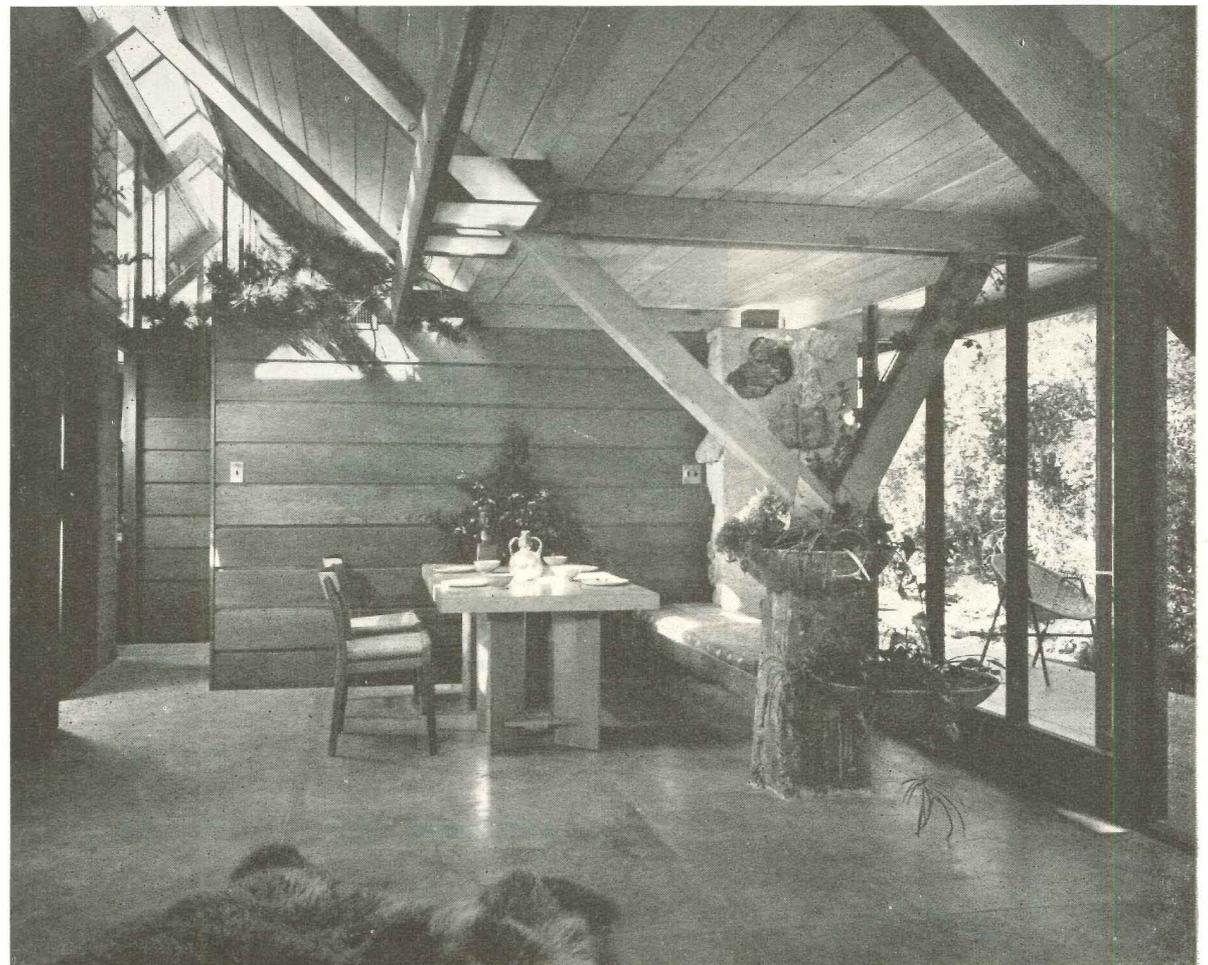
Entry walk is sheltered by a deck canopy cantilevered out from the roof structure. Path is merely an extension of the floor slab inside.

If some houses are "tents," and others "caves," then this one has some of the virtues of both. It is a tent on top of a cave, with the security of a cave in its encircling battlement of masonry, the airy freedom of an open-ended tent in its superstructure above. Its designer, Mark Mills, spent 4 years with Frank Lloyd Wright, and many of the principles taught at Taliesin can be seen here: in the long, horizontal lines that adhere to the ground; in the ceiling that soars upward, liberating the inside space, proudly showing its struts and beams to the inside; in the wood siding left beautifully unpainted with joints made wide for emphasis; in the polished concrete floor flowing out onto terraces on all sides and scored into a broad grid pattern that expresses the house's 4' module; in the dominating fireplace, the prowlike gable ends patterned with mullions and glass, the skylighted interior kitchen; in the low, freestanding partitions that divide the interior subtly into rooms; even in the job-built furniture and light fixtures that help mold house and contents into a single, strong design.

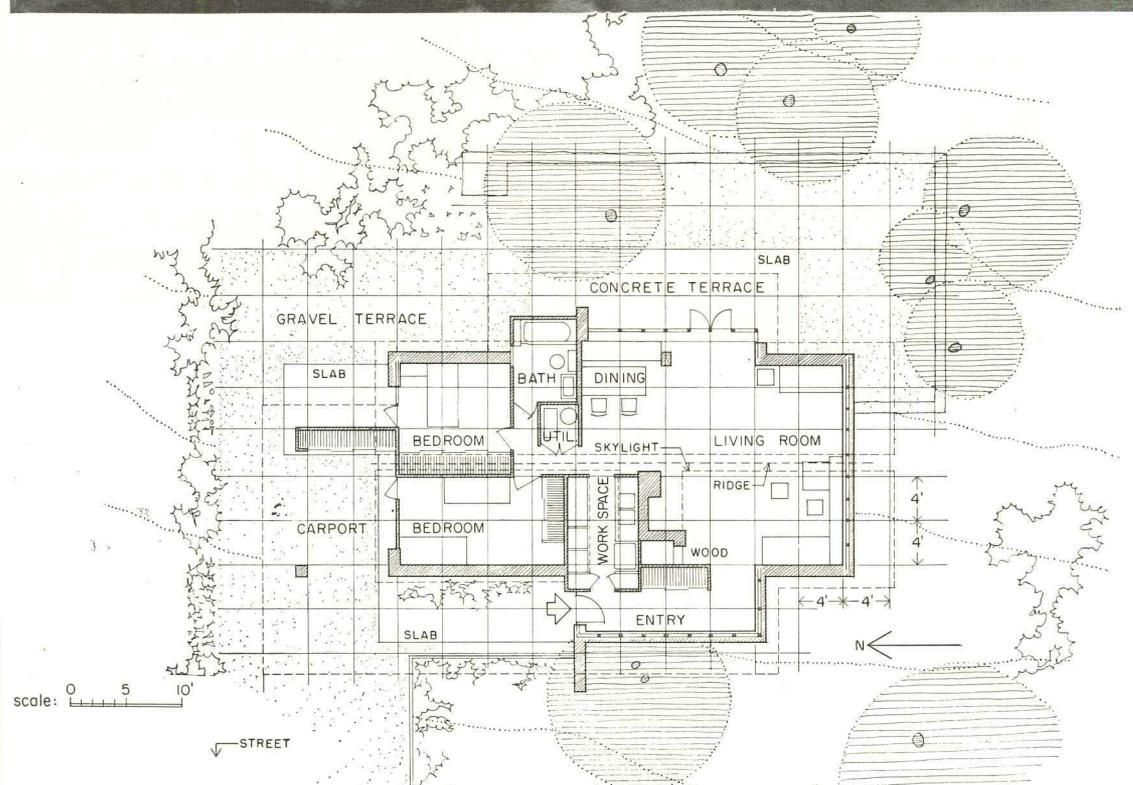
Section through living room (corresponding with photo below) shows how the simple roof structure is bent up to form an entry on the left, dining corner and window wall opening onto a concrete-paved terrace at the right.



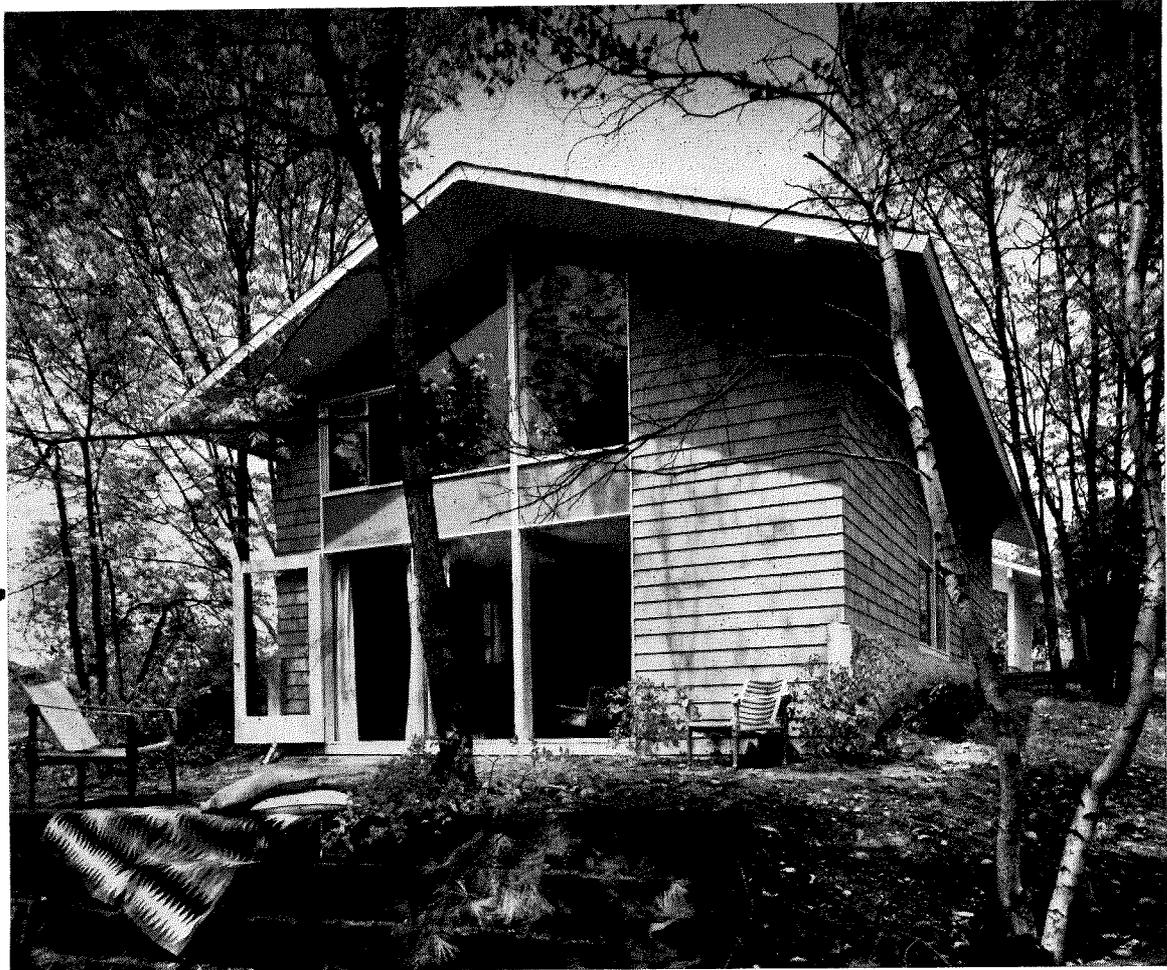
Partitions are open at the top or filled in with glass, creating a free play of space throughout the house. Note how the light boxes are integrated with the structure. Wide joints give the natural wood siding a strong horizontal pattern.



A massive fireplace is the focal point of the living room. A skylight behind it lights the kitchen, which can be closed off by folding doors when necessary.



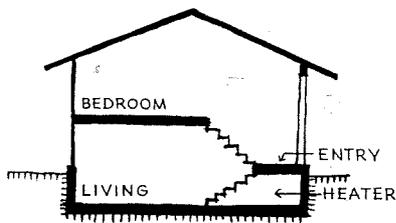
\$ ✓ 7.25 / sq. ft.



The case of the missing ground floor **2. Attic on a basement**

—careful space planning, plus prefabrication,

puts good design on the mass market at only \$7.25 per sq. ft.



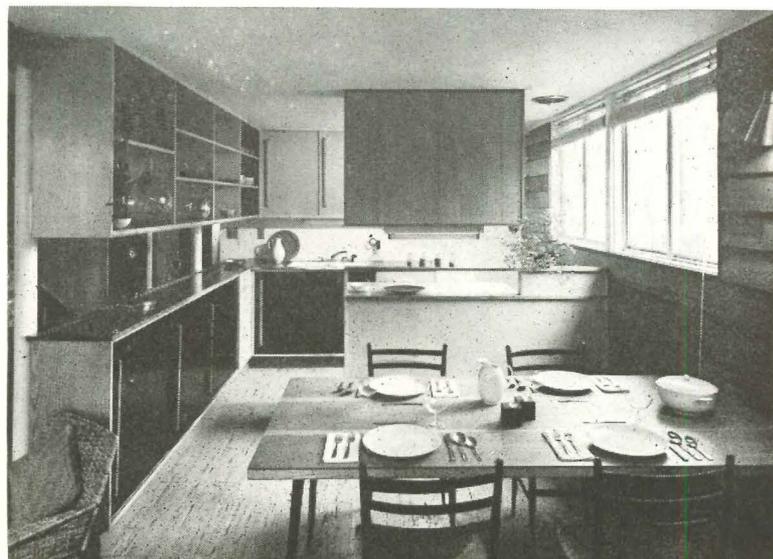
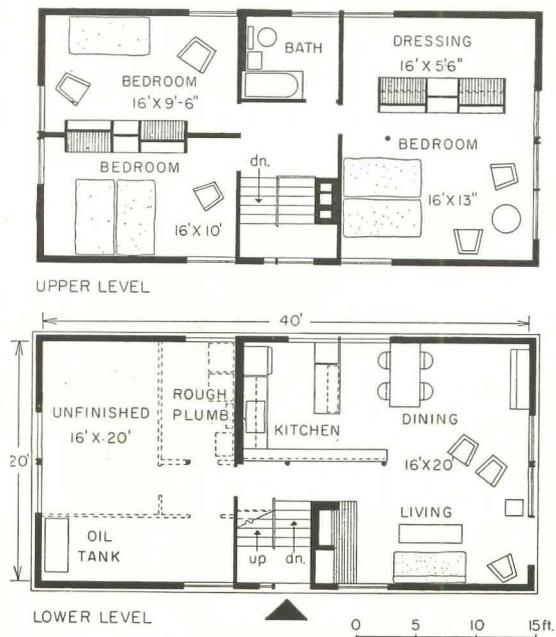
LOCATION: West Concord, Mass.
 CARL KOCH & ASSOCIATES, architects
 TECHBUILT, INC., builders

When the ground floor disappeared from this house, it took a lot of the high cost of building with it. So much, in fact, that the builders can offer good living and good looks at a price substantially lower than anything else in New England: \$7.25 per sq. ft., compared with \$14-\$16 for a custom house, around \$10 for a builder's model.

The buyers of this house are paying \$12,500 (plus carport and land) for 1,725 sq. ft. of very livable floor space—and getting delivery in two months from the start of excavation. Its builders are able to get their houses under roof in less than two days, finish out quickly and get their money back with a normal profit and a minimum of delay.

Only tight designing, drawn from Architect-Builder Koch's experience in mass housing and prefabrication, made this bargain possible. Basically, there were three steps (explored more fully on the following pages):

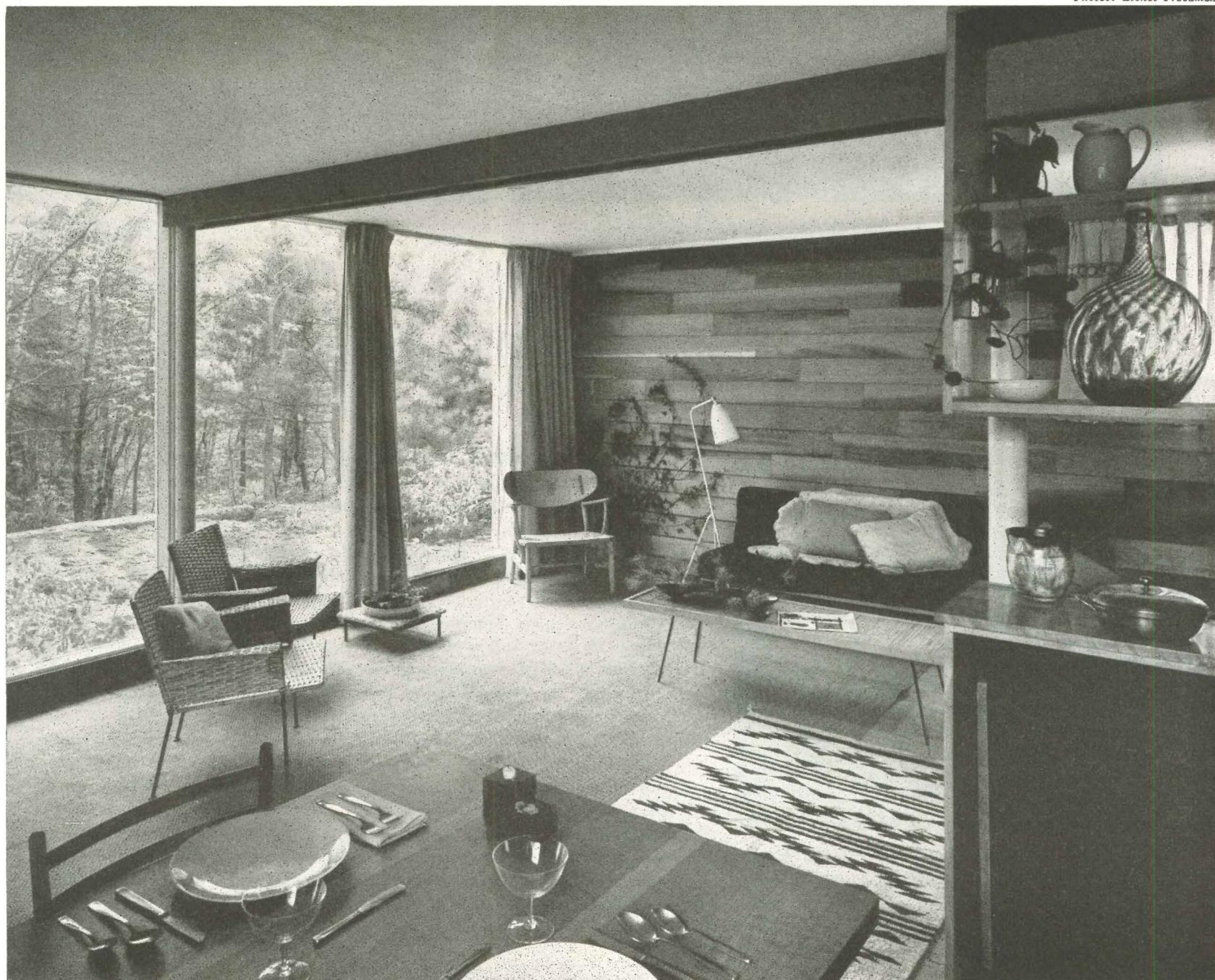
- 1. Reducing the total outside wall area** to a minimum by using a rectangular floor plan, putting two floors under one roof, and pushing the whole house down into the ground to give it as little wall height as possible.
- 2. "Panelizing" the whole structure** into big modular sections: one type for windows, another for solid walls, a third for floors, a fourth for the roof.
- 3. Prefabricating these sections** in local shops.

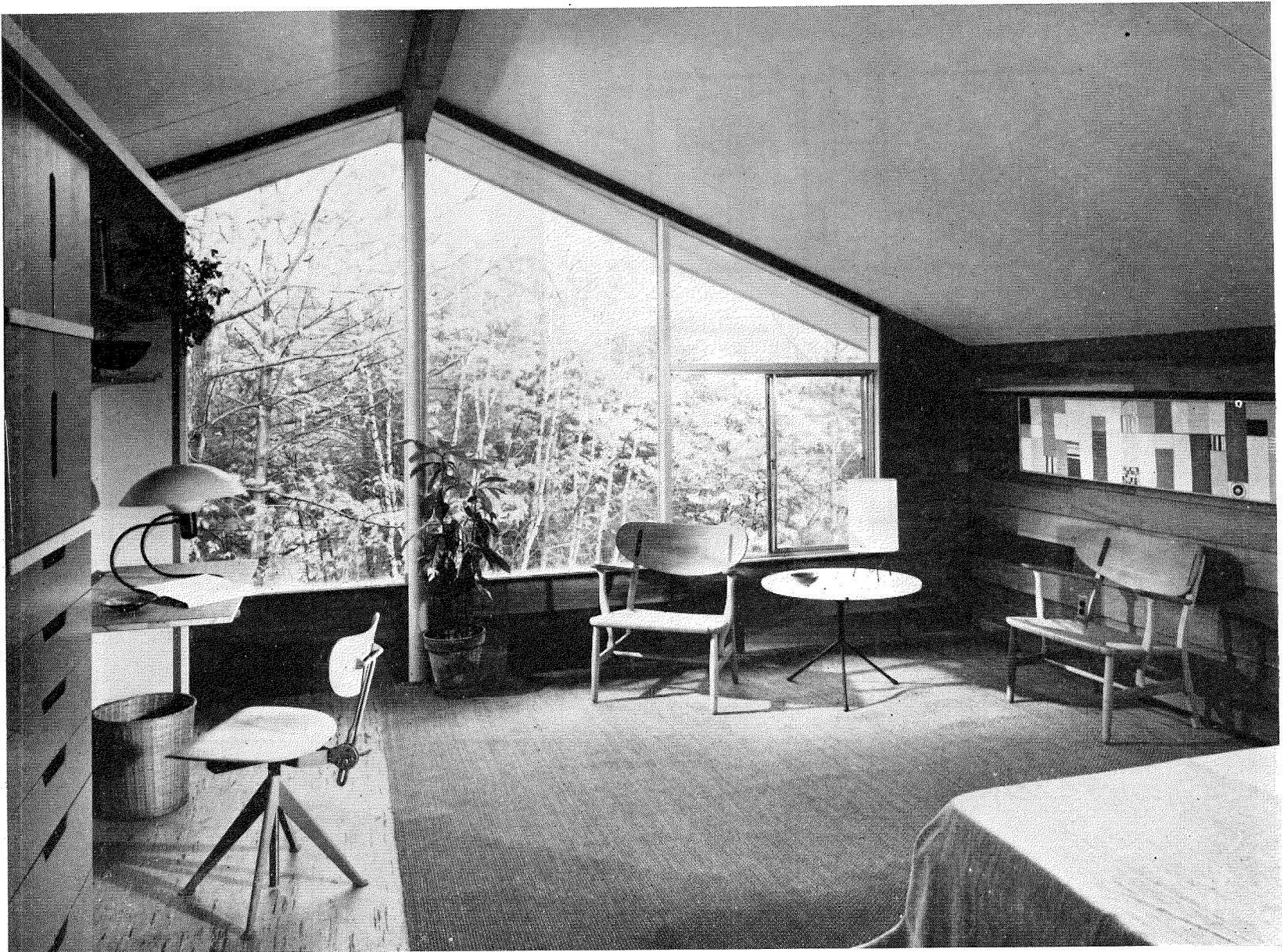


Hanging cabinets separate dining and kitchen areas from each other, and from entry hall at left. Range is hidden by counter-top baffle at right, vented by exhaust fan directly above. The windows are sliding aluminum sash.

Natural cedar clapboards, below, used throughout interiors, give a warm, varied texture at about the same cost as wallboard. Pipe columns and beam carry stressed-skin floor panels above, allowing 12' of glass at south end of room.

Photos: Lionel Freedman





Glass gable end lights the spacious (20' x 16') master bedroom, lets in summer breeze from the south. Area behind freestanding storage wall at left is used as a dressing room or study. Roof panels resting on ridge beam and pipe columns are 4' x 14', with plywood on ceiling side prime-coated at the factory.

Interiors: Charles Mansfield

Photos: Lionel Freedman



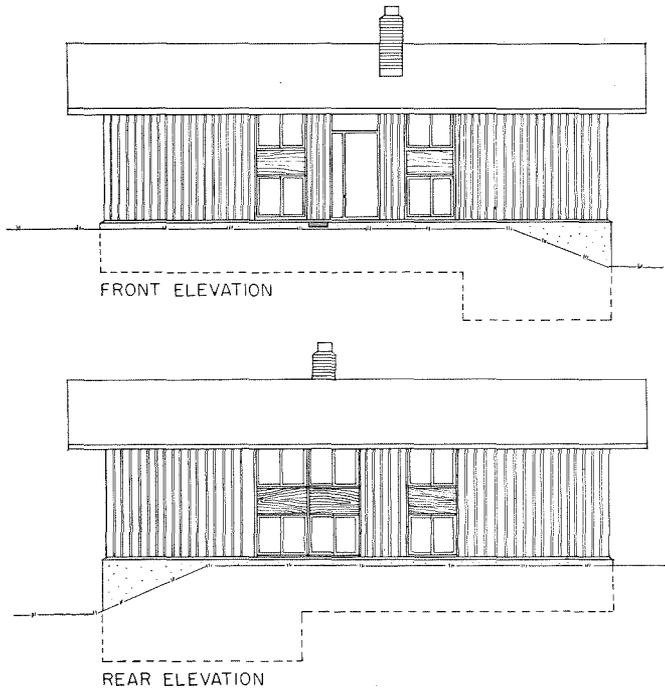
At north end of house are two smaller bedrooms. In later designs closets and chests of drawers are built into far corner, instead of in center partition, to make room wider.

Step No. 1—getting more space inside less structure: Koch held his floor plan to a simple rectangle to get the most floor area within the least perimeter, then stacked his total living space on two floors to get it under the least amount of roof. Then he went to work on the outside wall.

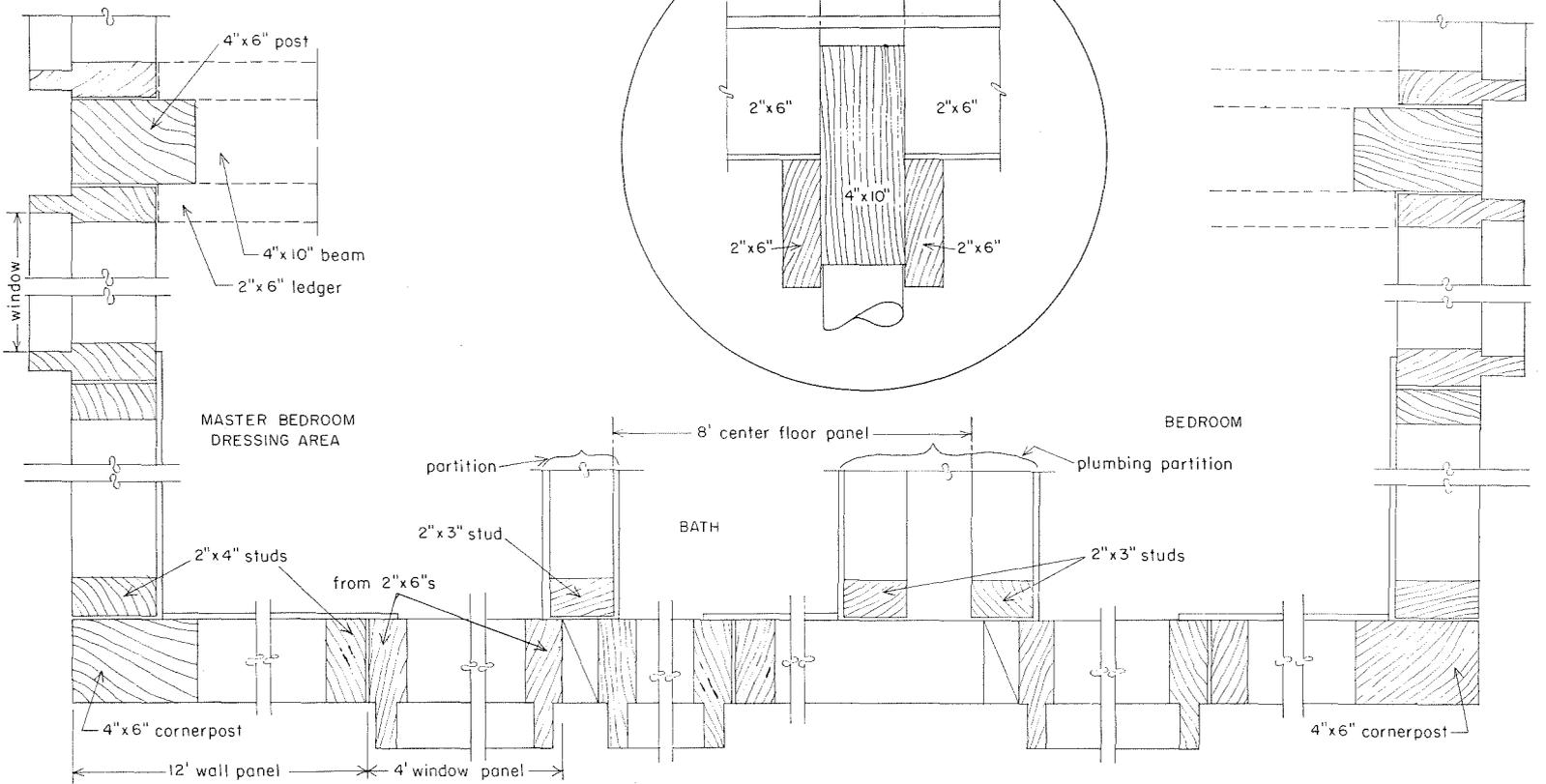
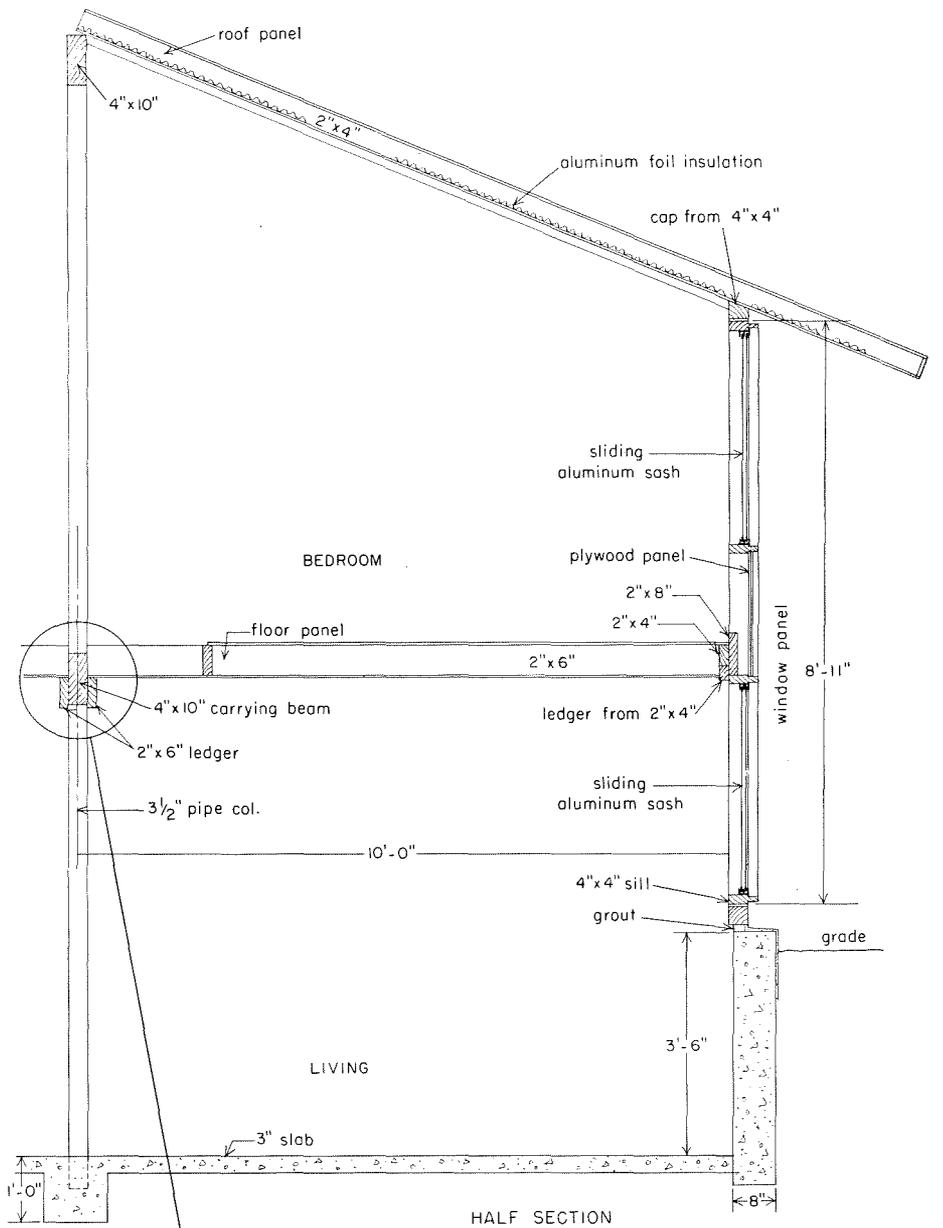
First he cut out 4' of wall height under the first-floor windows. Since local codes require a 4' deep foundation against frost, Koch decided to drop his lower floor 4' into the ground, too, and use the area inside the foundations as actual living space. Thus the foundation wall, amply waterproofed, does double duty as the lower half of the living-room wall. On New England's many sloping sites, this 4' of excavation can be easily done with a bulldozer, pushing the earth out of the low open end of the house and compacting it to make a level, south-facing terrace directly outside the living room.

He also eliminated 3' of wall under the eaves. On the upper floor, the side-walls are only 5' high, as in many attic bedrooms. But this attic, unlike most, has no expensive dormers: the windows are in the low sidewall and at the gable ends of the house.

Having thus reduced the height of the outside wall by a total of 7', Koch was able to enclose two stories with a wall only one story (9') high. (In fact, some visitors to the model house actually thought they were looking at a one-story house until they walked inside.)



Sidewalls (above) are made up of solid-wall panels 12', 4' and 2' wide, window and door panels 4' wide. Foundation line drops to 8' at low end of house where living room opens onto terrace. Roof and floor panels (section, right) are shop-built of light lumber glue-bonded to plywood sheets: $\frac{3}{8}$ " thick for roof surfaces, $\frac{3}{8}$ " for floors, $\frac{1}{4}$ " for ceilings. All window framing (below) is done with double-rabbeted 2 x 6's. Time required to trim out the house was drastically reduced by eliminating all outside trim except fascia board, using only a plain $\frac{3}{4}$ " x $\frac{3}{4}$ " redwood plaster ground for all interior trim.



**Design cuts costs,
prefabrication speeds erection**

Step No. 2—"panelizing" walls, roof and floor: windows for both stories are lined up vertically in 4' wide frames extending from foundations to eaves. Where windows are not necessary, standard stud walls go from ground to roof, uninterrupted by window construction. The floor was designed to be broken down into 8' wide panels, the roof into 4' wide sections. Then came:

Step No. 3—prefabricating these panels in local shops. Window and wall panels, both simplified standard construction, are assembled off site in the carpentry subcontractor's shop, insulated and finished after erection. Roof and floor sections, made in Acorn Houses, Inc.'s nearby factory, are stressed-skin plywood panels, insulated and spray-painted with a primer coat before shipment by truck. All cabinetwork, stairs and doors are completely shop-assembled, leaving only the interior partitions and closets to be done on site. With most of the carpentry in the house done under controlled assembly-line conditions, there are few problems of tangled schedules, materials storage, rehandling, waste and site clean-up.

Techbuilt, Inc., formed by Koch to insure the proper erection and sales of the house, has in four months built five homes out of a dozen contracts signed so far in the Boston area (another dozen are under negotiation). Seven are on owners' lots, at an additional charge of \$500 to cover special situations and contingencies. All are receiving maximum mortgage money from four local banks; four are under VA guarantees.

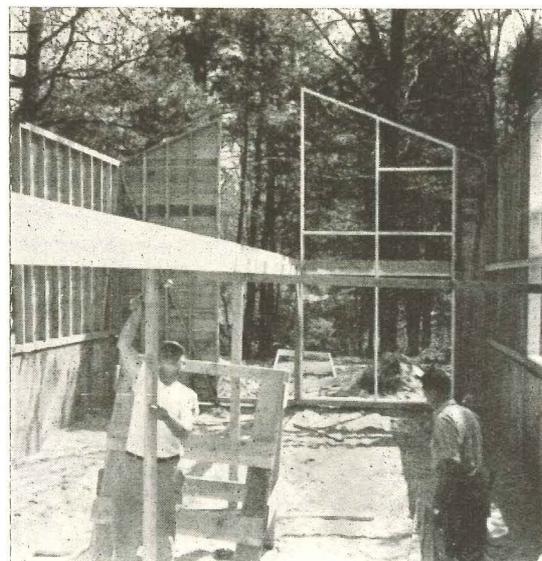
Buyers receive partial architectural service: consultation with the architect, help in locating a lot and getting a building permit, a site plan that orients the house properly, assistance in obtaining financing. Choice of tile and paint colors is offered, and the owner may deduct various allowances from the sales price if he wishes to finish the interiors himself. A single-carport at \$450 or a double-carport at \$850 may be included in the contract or added later.

Two other house plans are available: one 8' longer for \$14,650 (three have been sold), another 8' shorter for \$10,450 (one sold). Although held up temporarily by lack of development land, Techbuilt is now building another handful of houses on speculation, has preliminary drawings of new house types, including one designed specifically for flat sites.

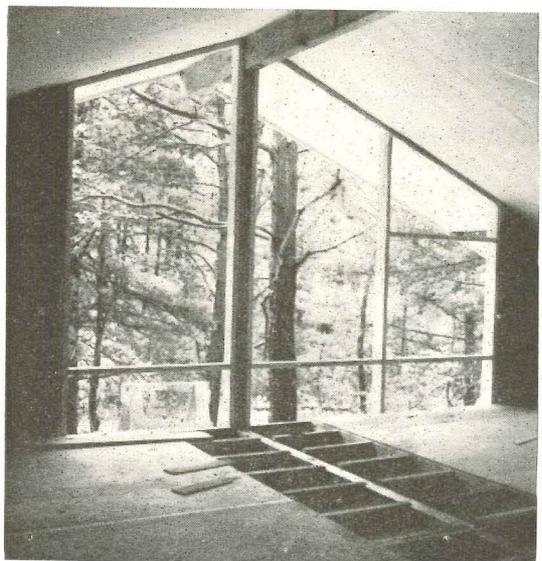
The Techbuilt combination of ideas evolved over five years of experimentation in designing custom houses, development housing and prefabricated structures. The present model is the work of a team headed by Koch, including: Edward Diehl, a Koch associate and general manager of Techbuilt; Albert Dietz, head of MIT's department of Building Engineering and Construction; John Bemis, general manager of Acorn Houses, Inc., and James Potts, Boston builder in charge of Techbuilt's carpentry subcontract.



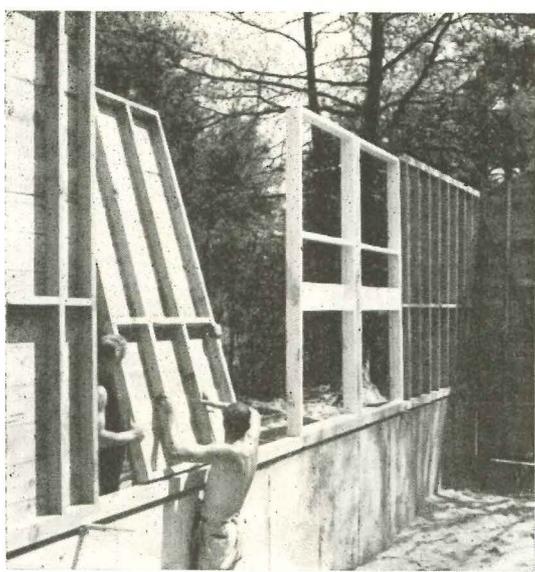
1. Preassembled panels are trucked to site as soon as the foundations are ready. Techbuilt, Inc. currently ships and builds within a 20-mile radius of Boston.



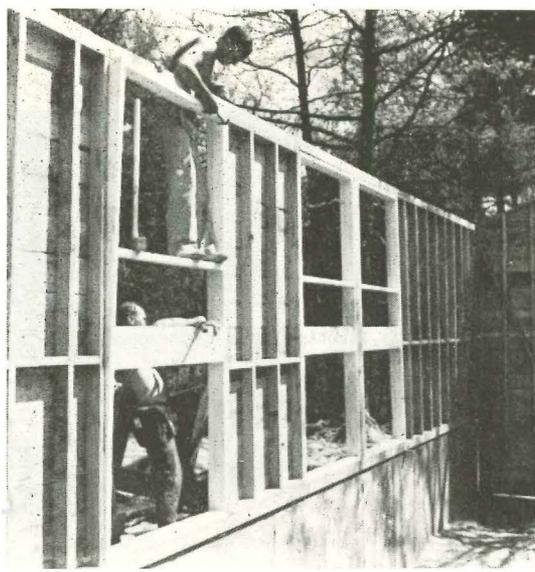
4. Center posts or pipe columns are set on pier foundations to carry 4 x 10 beam. The gable-high window sections for living room-master bedroom end are in place.



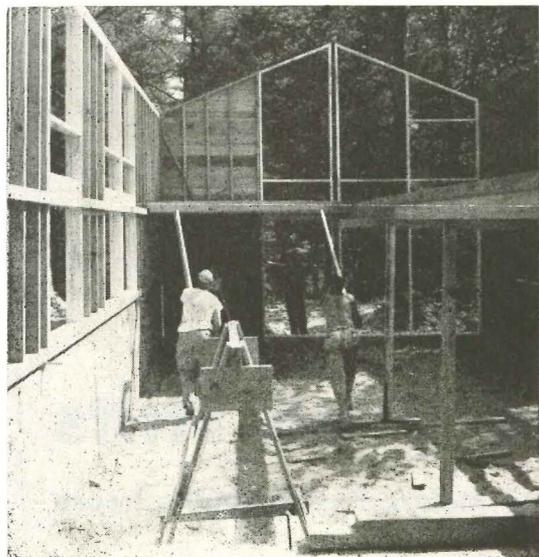
7. Roof panels, 4' x 14' to allow a protective overhang outside, are set in place, strapped together at ridge beam. Plywood ceiling is prime coated at factory.



2. A 4' wall section is tilted into place on top of the sill near typical window-frame sections. Larger wall panels adjacent come with the sill already built in.



3. Top plate is nailed across the panels. In this pilot house horizontal board sheathing was used; in subsequent houses it has been replaced by plywood sheathing.



5. Ledger boards are spiked to sidewalls and center beam and coated with grease. Then the floor panels are unloaded directly off truck and slid into place.



6. Open strip, 2' wide on top of plywood floor panels, speeds plumbing and wiring, is filled in later with the cut-out piece. Note similar open strip in outside wall.

Photos: (below) Lionel Freedman; (others) Fred Stone



8. Uphill end of house, through which building materials have been unloaded, is closed in last. It has taken a six-man crew only 1½ days to get the house under roof.



9. Roofing and siding are applied, windows glazed and fitted with plywood panels, walls insulated and interiors finished out. Note roof strip connecting carport, right.

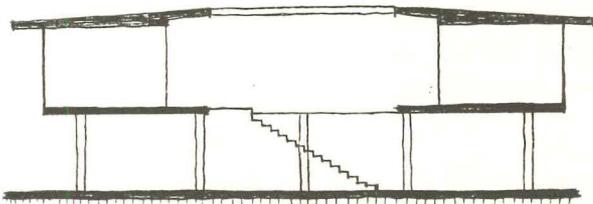
Photos: J. Alex Langley



The case of the missing ground floor

3. Second story on stilts

— a patio plan in the air makes a very livable house



It cost the owner of this house just 10% more to leave out the ground floor and put the rooms upstairs around a court, but he got nearly 100% more comfort and livability out of it. By using a patio plan, and going up in the air at the same time, his architect gave him:

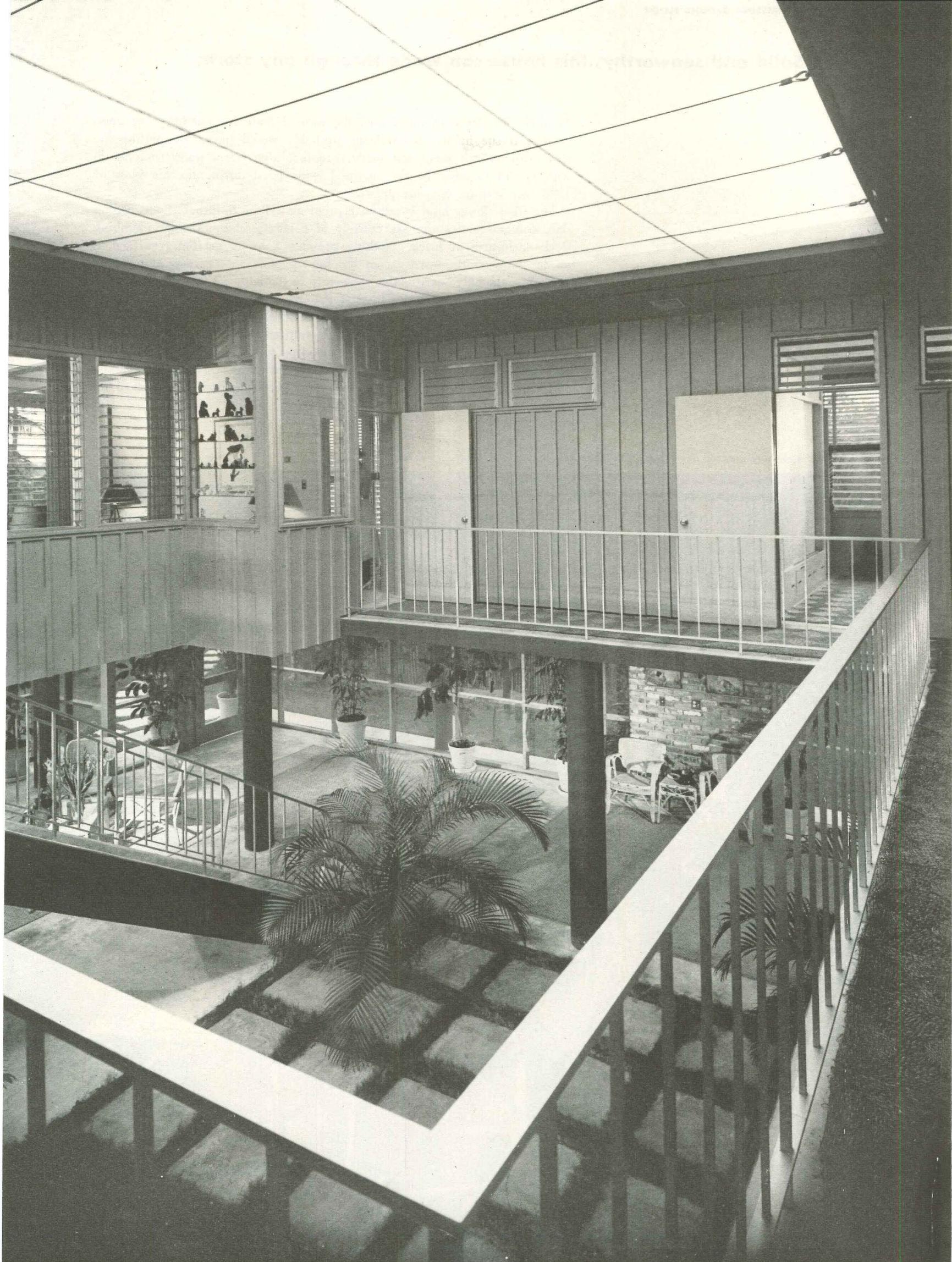
1. More living space: some 2,600 sq. ft. of cheap, unwalled area underneath the house, sheltered from rain and hot sun yet wide open to the welcome breeze. Part of this is a good place to keep cars under roof; part is handy for storage and utility rooms, part for walking around under cover. But the real bargain is a huge outdoor living room, made even cooler, lighter and bigger-looking by an adjoining garden court open to the sky. Inexpensive screening over the light well and around the outside keeps mosquitoes out of the whole house.

2. More natural ventilation, especially vital in weather as hot as a Florida summer. The cooling sea wind can enter the upstairs quarters freely, uninterrupted by houses, foliage and other ground-level obstacles. The whole floor plan is only room thick, so every room gets through-ventilation, even better ventilation because it is up on stilts; whereas an inner-court plan on the ground might have enclosed nothing but hot, dead air, this scheme sucks the air up through the "hole in the doughnut" with a noticeable flue effect.

3. More privacy, light and view. With all rooms upstairs, windows can be floor-to-ceiling and still be above the eye level of passers-by, high enough to discourage uninvited guests (including termites). Each room is well lighted from both sides and can look out over treetops and roofs to the bay view.

LOCATION: Coconut Grove, Fla.
MARION I. MANLEY, architect
NORMAN J. DIGNUM, structural engineer

Living room and bedroom gallery face a court enclosed by insect screening →



Solid and seaworthy, this house can wade through any storm

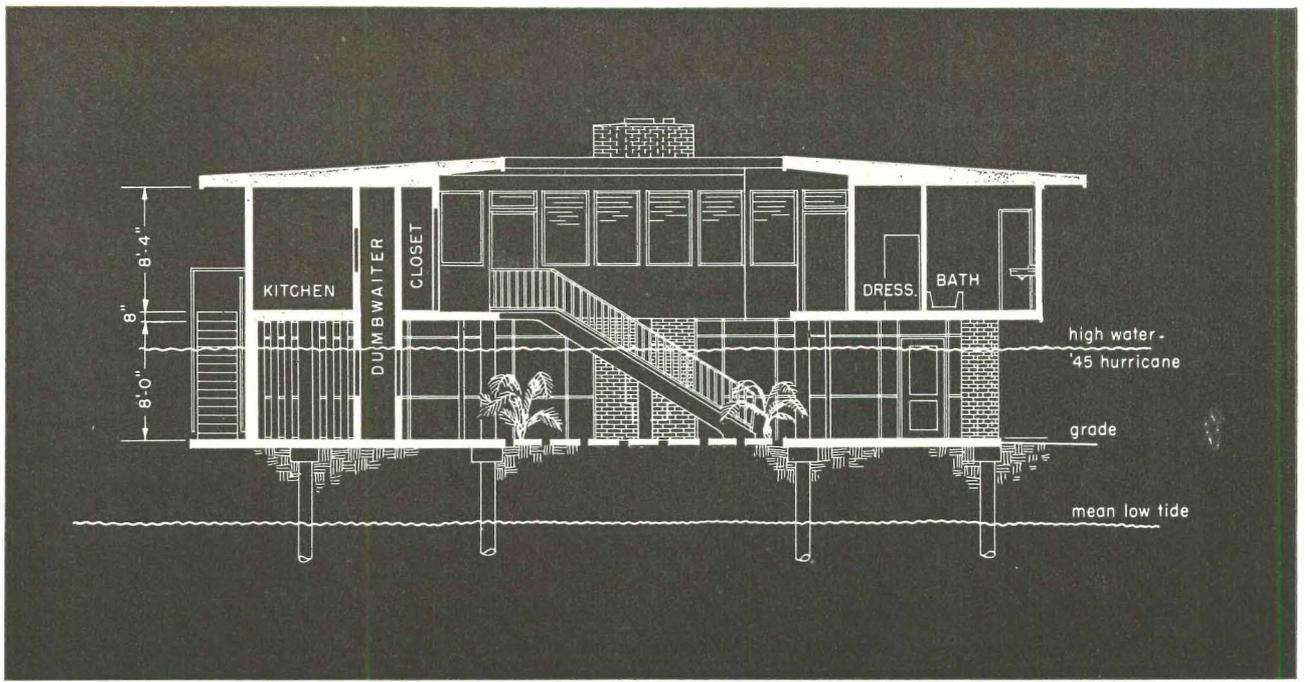
Architect Manley also eliminated the ground floor for another very good reason: if she hadn't, a hurricane probably would have. By putting the rooms up on stilt piers, she made sure that high storm water couldn't do what it did to other houses on the Florida coast during the big blow of 1945 (see section, opposite page).

The whole lower level is salt-waterproof as well as fireproof: floor, ceiling slab, columns and stairs are entirely of concrete, chimneys and plumbing stack enclosures of brick. Nothing presents a broad or flimsy surface to an incoming storm wave except the light outside wall frames and plastic screening, the only "expendable" structure in the house. Even the stair risers were omitted, allowing water to wash through without damage.

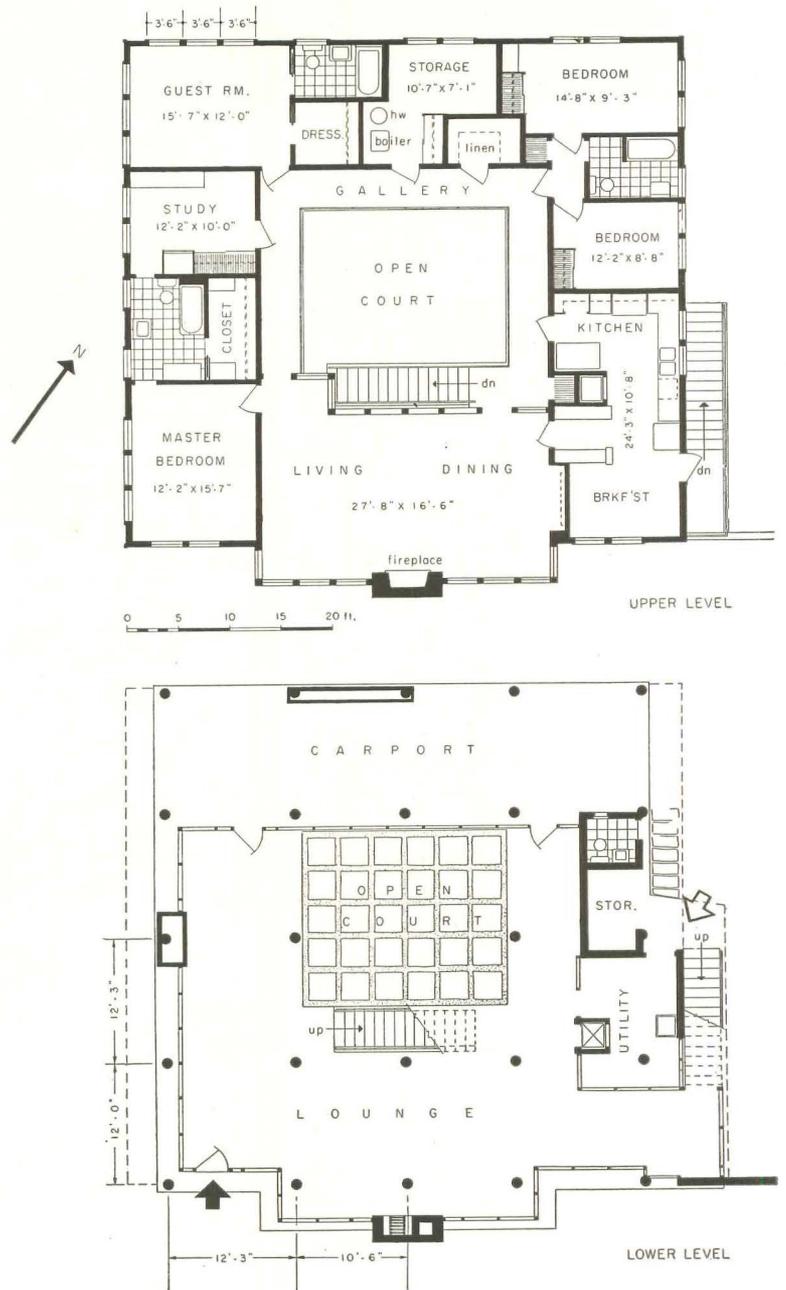
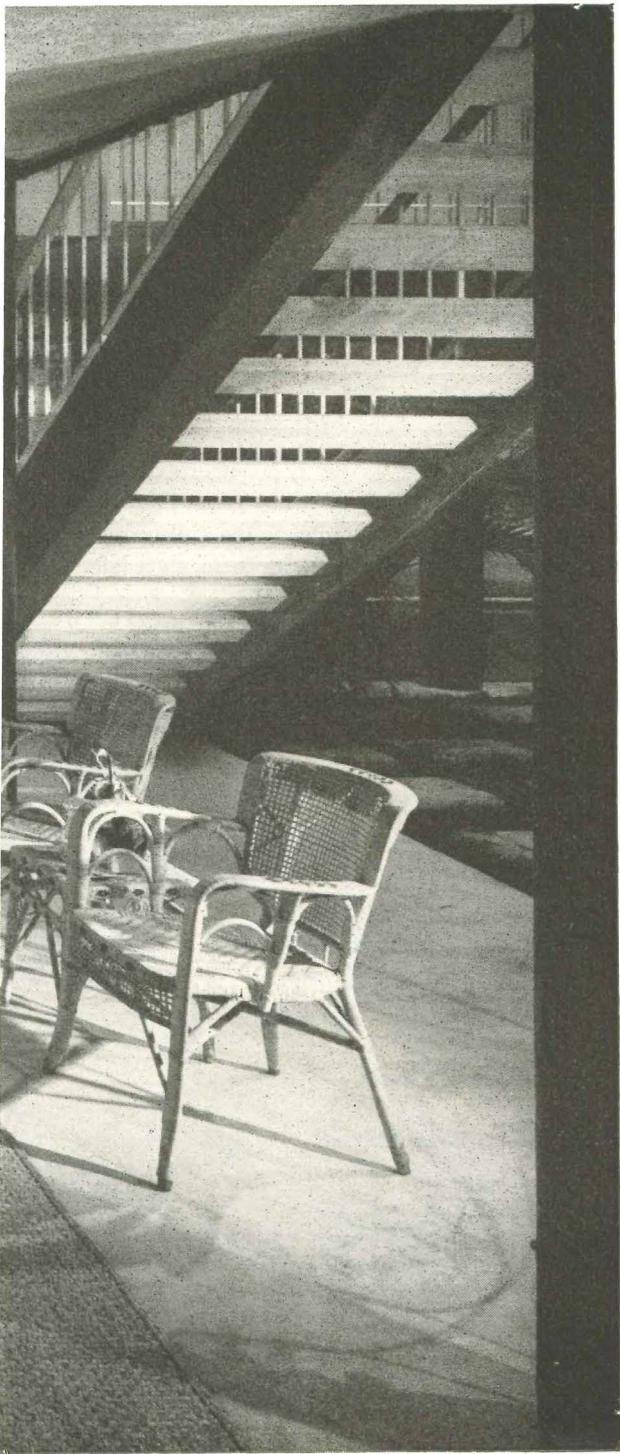
The upper floor is weather-tight and durable, too. Outside walls are of corrugated cement asbestos board, tough, rotproof and requiring no painting or maintenance. The owners normally occupy the house from November 15 to May 15; while they are away during the hurricane season, all downstairs furniture is stored upstairs and the second-floor windows are buttoned up with big sheets of hardboard.

Downstairs is one big outdoor living room for barbecues, parties and shaded relaxation





All rooms are upstairs where storm water cannot reach them. Dumbwaiter in kitchen brings food up from service entrance, lowers it for serving in downstairs lounge. Concrete piers rest on wooden piles which go 26' below grade.

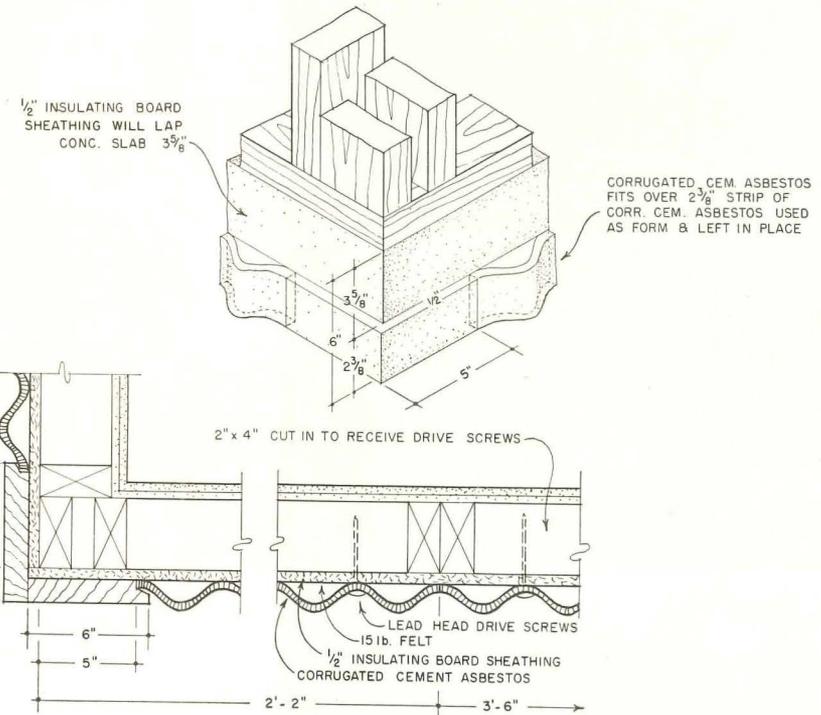
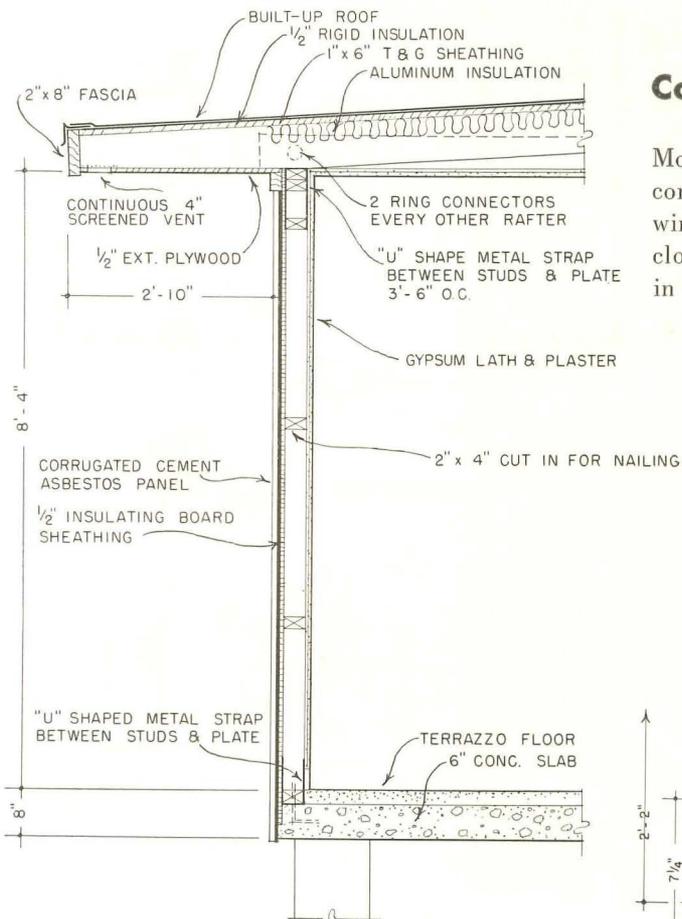




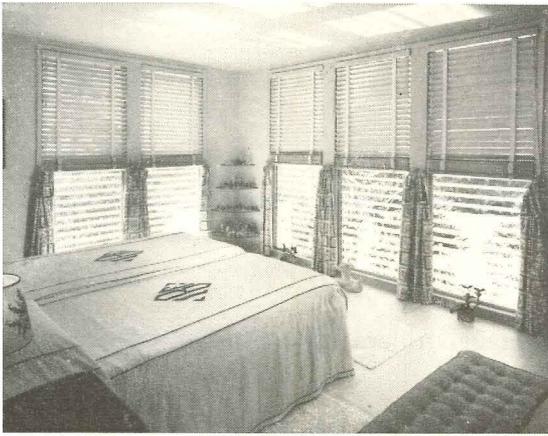
On the entrance side, living room and master bedroom face south-east to the prevailing breeze and an unobstructed view of the bay.

Cool, durable and insectproof

Modular construction of the upper floor is based on the 3'-6" width of the corrugated cement asbestos board panels and the 3'-2" wide glass jalousie windows. To keep out insects, corrugations at the bottom of the siding are closed by a narrow strip of the same siding used as a concrete form, then left in place (see details below).



Sun heat is dissipated by an air wash which enters roof through continuous vents in soffits around outside and court side (see photo above).



Privacy is assured for master bedroom, and all other rooms in house, by putting them up at second-story level. Only bottom half of windows need be curtained.



Family dining room is upstairs between kitchen, left, and the living room, right. Built-in bar and buffet has a long mirror back of its counter, sliding doors above and below.



Jalousie windows, seen here in living room, give floor-to-ceiling ventilation, can be adjusted closely for amount of breeze desired, even left open during rain. Insect screening is fitted to inside of windows. Upstairs floors are terrazzo.

The men and the boys—or how many houses next year?

Now comes the test for homebuilding and the homebuilders—the test that will separate the men from the boys.

Homebuilding has had seven good years to prepare for the test—seven good years when war-born shortages, record family formation, rapid inflation and easy payments all worked together to make buyers careless about values and assured the sale of every new house—good, bad or indifferent.

Those seven boom years of homebuilding may well have spawned more millionaires and more new Cadillacs than Texas oil. Sales came so easy that many builders did not bother about such proven economies as truss framing, tilt-up walls, one-big-room finishing—proven economies that could have cut their costs 10% to 30%. Sales came so easy they tolerated the waste of perhaps \$1,000 a house for code provisions whose only purpose was to make useless work for local labor and block the coast-to-coast use of standard parts. Sales came so easy they could pack their houses together like sardines to squeeze the last \$100 profit out of farm acreage. Sales came so easy many builders thought they could “economize” on design and save the trifling cost of a good architect’s help to plan better value and better living into their houses.

The free enterprise way. For seven years everyone knew these easy times could not last forever, that sooner or later competition would return, sooner or later the public would begin to pick and choose, sooner or later profit margins would be squeezed, sooner or later the builders who could not offer better values would be driven out. That is the free enterprise way, and homebuilding, for all its faults, is today’s outstanding example of free enterprise among thousands of competitors.

Meanwhile, for all its faults, homebuilding ran up a record of achievement of which any industry could be proud:

1. It ended the housing shortage by building 7,000,000 new homes in seven years;
2. It built those 7,000,000 homes to higher average standards than ever before;
3. It entered at long last the industrial revolution and set the pattern for an integrated industry capable of offering far better values than the old handicraft homebuilding of prewar days.

Specifically, this biggest, most dynamic, most explosive of all America’s new industries developed and adopted assembly-line methods. It learned (though it often neglected) new construction techniques which promise great economies. It began training architects to think like product designers. It moved a long way toward the standardization of sizes, which is the first step toward the great economy of assembling standard parts—“a national industry with local assembly lines.” It helped sweat out national code standards any waste-weary community can now adopt quickly by reference. It developed a new mortgage pattern which will permit the sale of quality homes cheaper than rent, with all the necessary labor-saving equipment covered in the package.

The homebuilding team. Most important of all, it learned and began to practice the kind of teamwork that offers the one best hope of better housing—teamwork with the developer who must plan the neighborhood, with the architect who must work out the design for better living, the supplier who must provide the standard parts, the lender who must put up the money, the real estate man who must understand the better product he is selling.

Now the time has come to separate the men and the boys. Competition is back, and in that competition many a building team will drop out of the league while other building teams forge ahead to bigger sales than ever.

But let there be no foolish misunderstanding about the size of the market.

At least 1,200,000 homes a year. The market is now competitive and selective, but it is still enormous. For the next ten years we will still need at least 700,000 new homes just to keep pace with family formation. We will need at least 250,000 good new homes a year to replace the 3,000,000 occupied homes which are now past all hope of rehabilitation, and perhaps 200,000 more each year to relieve the tragic overcrowding which fastens slums upon our cities.

That makes a minimum need for 1,200,000 new homes a year just to keep up with the population growth and check the spread of blight.

Does that mean the homebuilders will sell 1,200,000 houses next year?

Not unless they really go after sales as they have never gone after sales before, squeezing out every possible waste and squeezing in every possible planning and construction value.

But never forget that the homebuilders sold 1,396,000 dwellings in 1950 without half trying and with handsome profits for everybody. When and if the builders really get down to the business of selling, all today's talk of curtailment will sound as silly as yesterday's forecasts that 1,000,000 new cars a year would soon saturate the auto market.

To raise our standards. The American standard of housing is still far lower than the American standard of living. We still have far more cars on the road than bathtubs in our houses. This year 4,500,000 American families are buying new cars. Is a good home so much less important than a new car that the market for new homes is only one-fourth as big at only one-fourth the amortization? * If Americans prefer to spend so much more of their income for new cars than for new homes it can only mean that the homebuilders are not yet merchandising values as attractive as the car makers'.

* On a \$2,400 car the buyer must put up \$800 cash, usually has to pay off more than \$750 the first year. On a \$10,000 house Congress has authorized a down payment of only \$500, with only \$210.71 to pay off the first year!

Tomorrow's competitive market will separate the men and the boys. But its size will be limited only by how much credit the government will let the homebuilders use and by how hard the men on the homebuilding team—builders, subcontractors, architects, lenders, realtors and suppliers—are willing to work together to create better values and sell them.

2,071 sq. ft. under roof for \$10,500!

Seattle builders show how to stretch a house by leaving plenty of expandable area under a big roof

Nothing can beat a big roof with wide overhangs for making a house look long, low and expensive, many an expert believes. Two Seattle builders are persuasively demonstrating the attractiveness of a roof big enough for the Paul Bunyan country. On a 984 sq. ft. chassis Al LaPierre and Jack Peterson have built the biggest roof any merchant builder ever offered for \$10,500. Including overhangs, it is 72⁵/₈' long and 29¹/₂' wide.*

UNDER this enormous roof is a two-bedroom house of 840 sq. ft. plus a 144 sq. ft. "coach room" separated from the rest of the house. This very flexible multipurpose space can be used as a third bedroom, for TV, parties, as playroom or for storage.

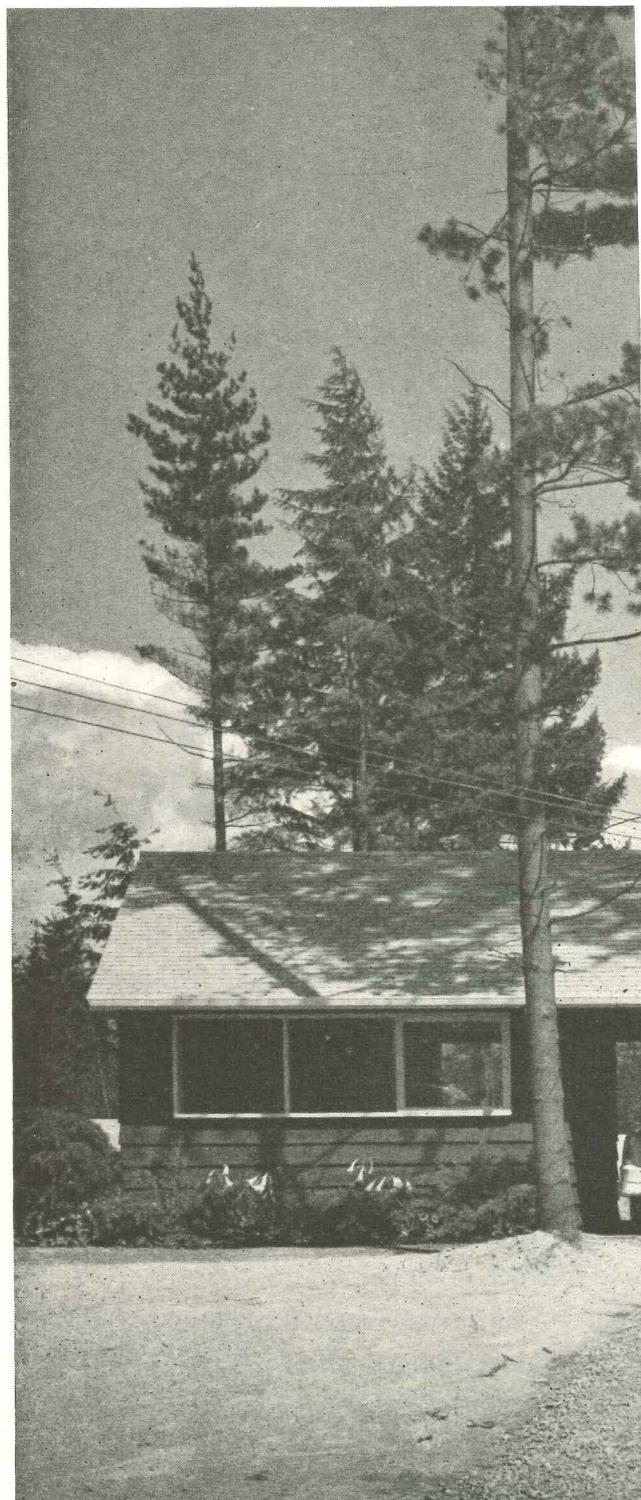
The big roof works well and in a variety of ways.

1. It provides 30" of overhang front and back, 12" to 18" at ends.
2. It covers 643 sq. ft. of paved area: car porch, entryway, outdoor terrace behind the coach room.
3. It makes future expansion cheap and easy.

"Once you have a slab and a roof," says LaPierre, "any palooka or piano player can add a room." An owner handy with tools could enclose space for a fourth bedroom and put up walls for a second bath. The builders estimate a bedroom would cost some \$600, a bath about \$500.

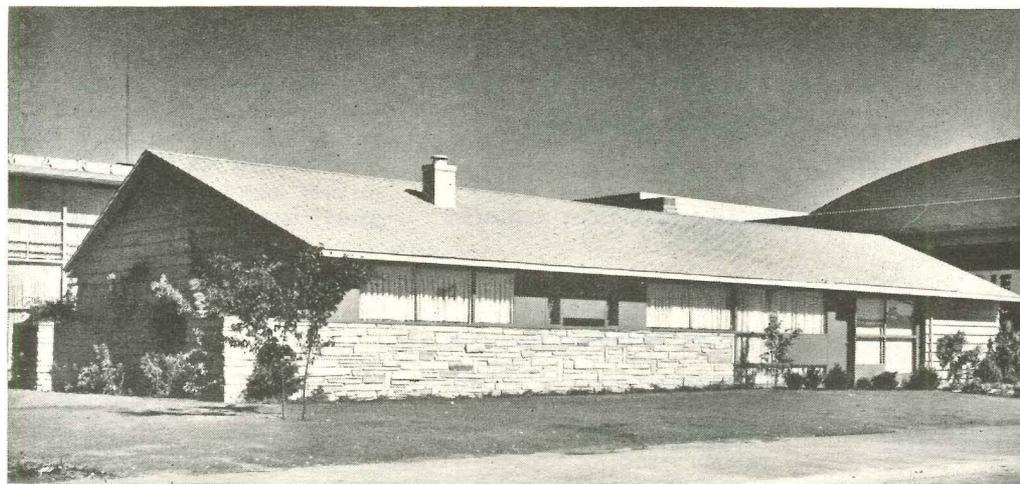
The fact that the roof is already up and a design pattern established for solid walls and windows eliminates the greatest worry builders have over home-made expansion: the eyesore addition. Using the coach room as a bedroom and building around it, a family could have a four-bedroom, two-bath house at a total cost of \$12,000, without changing the design radically.

* Including those at HOUSE & HOME'S Round Table on tomorrow's best-selling house, reported in H&H, May '53.



Monroe & Akins

Richards



Season Master, left, greatly influenced new design above. Omitted in new house are continuous windows, floor-to-ceiling windows, expensive stone front.



LOCATION: Seattle, Wash.
PETERSON HOMES CO., builders
GEORGE W. HEIDEMAN, designer

70' length of the new LaPierre-Peterson house makes it look far more expensive than its \$10,500 price tag. Although the coach room, at left end, is only 12' x 12', it gives a solid appearance and serves many purposes. Unique feature of this house is its expandability, as more than 600 sq. ft. outdoors are paved and roofed. The double carport, and what is now a covered porch behind the coach room, can be enclosed. Only exterior door in main part of house is in the middle, off the carport. Great asset is the trees, which the builders take great care to save. Their natural beauty is further enhanced by the fact that every family must agree to spend \$150 on landscaping its 100' wide lot.

One door, many built-ins

Is one door enough? The house has only one exterior door, on the side facing the carport. Its location was suggested by FHA after LaPierre and FHA architects had tried Metropolitan Life Insurance cutout furniture patterns in all possible positions in the living room. The corner door leaves three walls free for furniture. It also gives a straight run from the front door to the dining-kitchen area, and keeps traffic to bath and bedrooms along one wall.

Biggest advantage reported by the builders is that the door location makes it easy for them to put the living room in either the front or rear. Since the door is approximately in the middle of one side, it works equally well whether the living room is in front or back and when the carport is enclosed, as the 4' entranceway remains open.

Another major advantage, according to LaPierre, is that a side door makes the architect's job of designing a good-looking front elevation easier. To make the side door practical, the builders and Designer George W. Heideman planned part of the roofed area as a covered entrance 4' wide. By omitting the usual back door the builders saved its cost and were able to utilize all the wall space of the U-shaped kitchen.

Plenty of built-ins. Built-in furniture has many advantages (as outlined in H&H's May Round Table). LaPierre and Peterson have been quick to seize on the merchandising advantages for young couples who do not have much furniture and like the efficient storage that built-ins provide, and who know that built-ins for the family are financed over the life of the mortgage.

In the living room is a built-in bookcase that also screens the oil-burning heater from sight. In the bath is a counter-top wash basin with an array of well-planned shelves to the floor, protected by sliding doors.

Bedrooms include a built-in dressing table, drawers and special-purpose shelves in the closets (see p. 99). Storage walls are ceiling height, over 7' wide. LaPierre is considering built-in beds with storage drawers beneath.

The builders capitalize on this equipment in their newspaper ads, one of which reads: "A chair . . . a bed . . . and presto, your bedrooms are completely furnished. It's economy plus! It's convenience plus! There's a charming cabinetized bath, too . . . with a king-sized medicine cabinet with a full mirror."

No mechanical equipment comes with the house except the oil-burning space heater (without ducts) and the water heater. Buyers who want a stove, refrigerator, laundry machine or dryer may buy each one at \$200 cash or \$1 more per month on the mortgage. Families buy an average of about 2½ items.

Changes from the famous Season Master. In many ways the new model is reminiscent of LaPierre's \$12,000 to \$16,000 Season Master (see photo, p. 94), but it drops three of the Season Master features:

1. It has no floor-to-ceiling windows—too many people found it hard to arrange their furniture when they could not put a sofa under the big window.
2. It has no millwork storage walls. LaPierre found it took too long to fit anything so precise into anything as unprecise as a house.
3. It has gone back to conventional window framing using 2' x 8's, and has abandoned the very handsome detail under which the wall used to stop at the sill line above which a continuous line of mullions 42" o.c. supported the roof. Reason: the mullions were not strong enough and bowed under the weight.

But from his older house he has carried on other features. It was in the Season Master that he first saw the attractiveness of a great, uninterrupted roof, long horizontal lines and overhangs. There too he roofed over a double garage, which he enclosed, using one-half as a handsome play or party room.



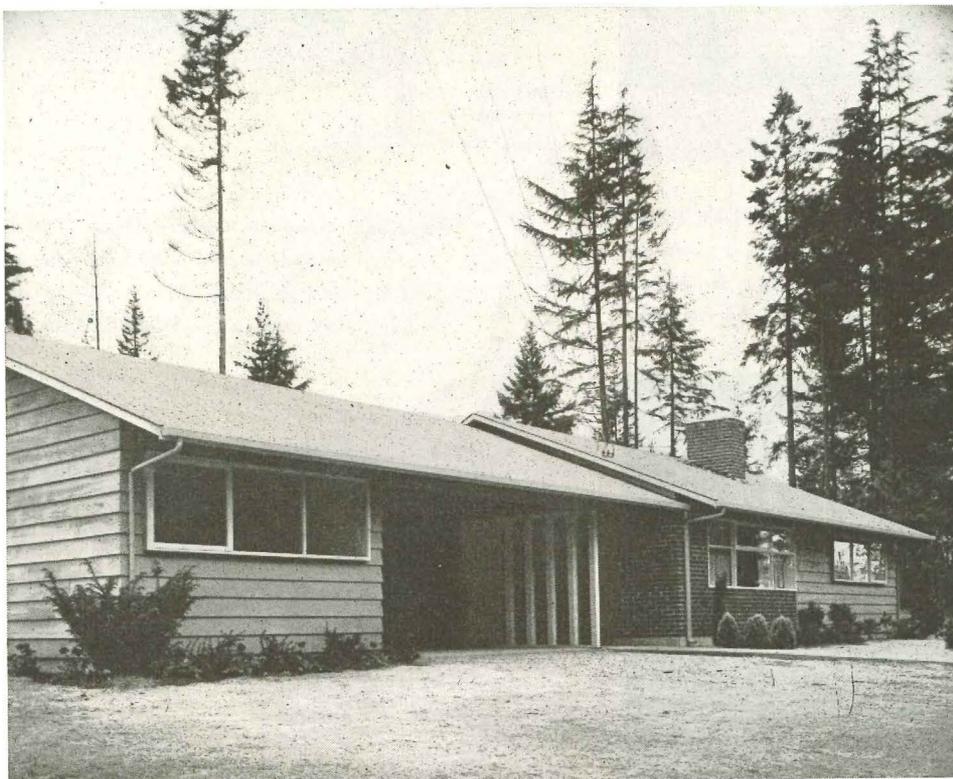
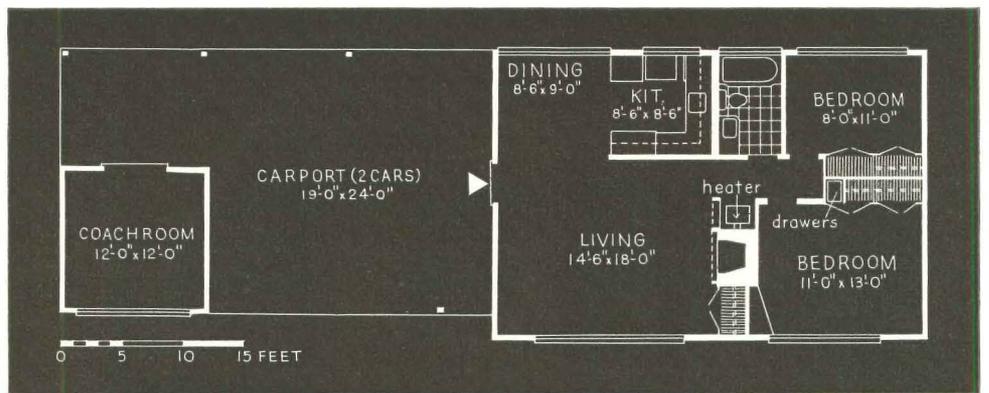
Outdoor living and entertaining space for the whole family is provided by the roofed car porch and paved terrace (considerably extended as an extra in this model house). Paved slab makes a fine place for roller skating. The double-doored coach room, right, is usable for a third bedroom, for TV or parties. Carport and porch ceilings are open to roof, but main house has a storage attic. Only exterior door in the main house is seen at left of carport.



Photos: Richards Studio



Coach room makes bold show from street, has open porch at rear



Side door opens directly into living-dining area, makes the traffic pattern to bath and bedrooms divide the otherwise large open space. Kitchen does not have a separate door.

Cedar siding is standard exterior, although some houses (see left) have brick trim. Plan above shows location of entrance door and open plan. Oil-burning space heater next to fireplace has no ducts, is open to hall.

Selling ways and means

Multiple brokers and steady advertising. Although Al LaPierre has formed his own realty company to handle sales for this Mountlake Terrace development, he also works in close cooperation with four of Seattle's largest real estate brokers. Every day these affiliated brokers are notified of listings and current sales of new and old property in the 1,400 house project. A 5% commission is paid by the building company to sales agencies.

LaPierre has taken the lead in getting several builders who operate in Seattle's North End (where Mountlake Terrace is located) to publish cooperative advertisements in the Sunday newspapers, promoting the convenience and other advantages of the area. Although he formerly used radio and billboards as well as newspaper advertising, LaPierre now concentrates on the latter. He uses half-page ads on Sunday that carry a provocative headline such as: "A Year Ahead, . . ." or "Years Ahead Again, . . ." which stress the "1954 look," the built-in furniture, step-saving kitchens, three-wall living room, "cathedral ceilings" and other features. He also uses some classified advertising, specifying top-of-the-column locations.

Two exhibit houses are furnished and left open for visitors. Located between the two model houses is the sales office, where salesmen on duty can answer detailed questions and also keep an eye on the open houses.

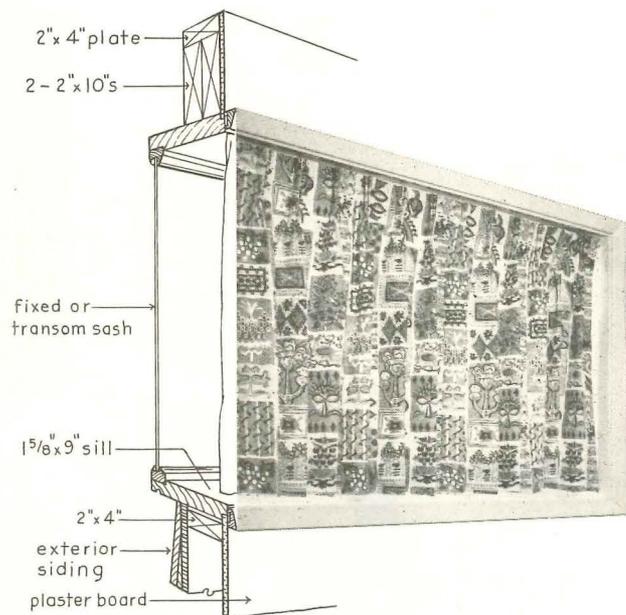
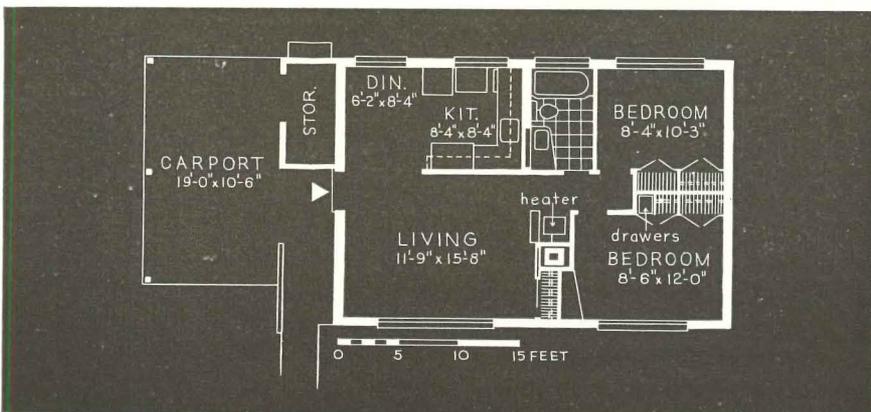
By late fall Peterson and LaPierre will have four houses on the market: two two-bedroom models at \$8,500 and \$9,500; the \$10,500 house described in this article; and a new three-bedroom house at \$12,600, which the builders say will be the best they have ever built.



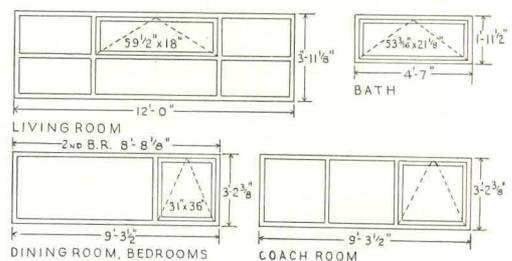
U-shaped kitchen, open to dining room, has no door. Builders provide no mechanical equipment but sell it to home buyers at \$200 per item, install it free. Average family buys 2½ units



Builders expect to sell twice as many of the \$8,000 house, below, as of their larger house. While this is less spectacular, it has much in common with \$10,500 house. It has 704 sq. ft. of enclosed space, carport that could be enclosed.

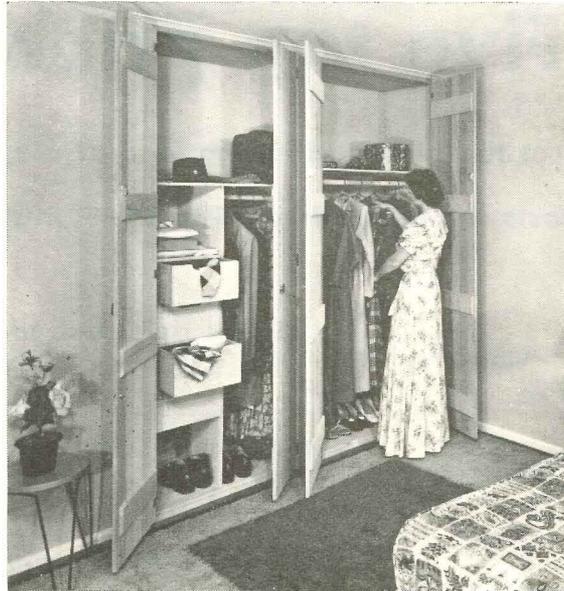


Bedroom window, above, shows how frame projects beyond exterior wall and how curtains and hardware fit inside. Below are four standard window sizes used in the \$10,500 houses.





Built-in dressing table in each bedroom saves buyers cost of furniture. This and other built-ins, made in builders' own millshop, are played up in their newspaper advertising.



"His" and "her" closet has higher clothes pole on the woman's side, four drawers for shirts and other clothing plus useful open shelves on the man's side. Hinged doors may be replaced by sliding doors in future houses.

Heater is screened from sight by bookcase, below. Guest closet is in corner



Five top priorities for designing

The right design will cut the air-conditioning load of a 1,000 sq. ft. house down to 1 ton!

Cooling costs can be slashed 25 to 50% in all houses, even in Texas

This article was written
by HOUSE & HOME staff engineer A. M. Watkins
in consultation with Charles S. Leopold,
past president of
the American Society of Refrigerating Engineers

Let's get right down to dollars and cents on design for air conditioning.

Every time you cut the peak heat load on the compressor by 1,000 Btu's an hour you cut the installed cost for cooling roughly \$50, the operating cost \$3 to \$5 a summer (depending on local water and power costs).

But what design changes pay off? Which will cost more than they save?

Almost every change in design will have *some* effect on how much heat the cooler must pump out of the house. At one time or another, therefore, architects have been advised to change virtually everything for the benefit of the compressor. Some of these changes will indeed save hundreds of dollars. Some are little better than poppycock. For example:

Should an air-conditioned house be sealed tight? Plain silly. A 1,000 sq. ft. house needs around 5,000 cu. ft. of fresh air an hour and a little infiltration is the cheapest way to get it. By all means weatherstrip, but let it go at that. The only advantage of sealed windows is that they are cheaper.

Do east windows add much less to the cooling load than west? A fallacy.

Should you plan your houses square for easier cooling? Hokum. Squaring the house makes no more sense than squaring the cooling unit. A square 1,000 sq. ft. house has only 3½' less perimeter than the normal 25' x 40'.

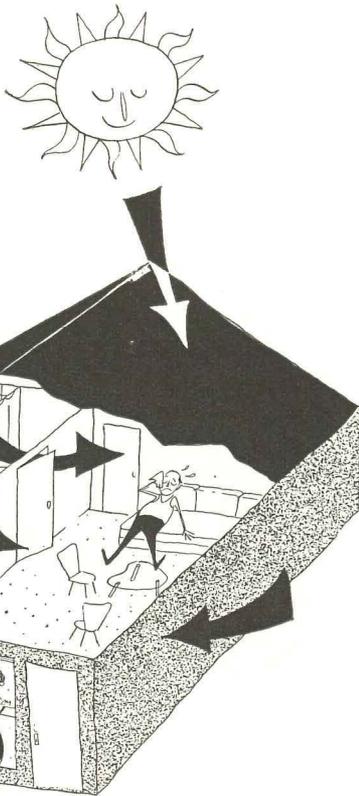
On the other hand:

- ▶ A slab house is much easier to cool than a crawl-space house.
- ▶ White paint is one of the cheapest ways of all to cut cooling costs.
- ▶ A flat top is harder to cool than an attic house—a cathedral ceiling one of the hardest of all.
- ▶ Old-fashioned shutters are hard to beat for shielding east or west windows.
- ▶ A house in a treeless tract must handle about twice as big a heat load as the same house in the woods.
- ▶ A house in Milwaukee needs a much wider south overhang than one in Dallas.

Here for the first time are the up-to-date facts you need to plan for air conditioning. Some of them are just long-overdue common sense. Some of them reflect an enormous amount of new research tracked down by the University of Illinois, the National Warm Air Heating & Air Conditioning Assn., and by leading manufacturers.

Before we start studying the economics of cooler design vs. less cooling, let's get straight on a few points:

1. Every good idea for making it easier to cool a house *with* air conditioning will also make it easier to keep the house cool *without* air conditioning; i.e., every idea detailed on these pages is good for any and every house.
2. Home cooling should be designed for an indoor temperature of 75° (and 50% relative humidity). Too many architects and builders have learned the hard way they get nothing but grief from clients when the indoor temperature climbs to 80°.
3. It costs five times as much to cool a house in summer as to heat it in winter. At average installed prices of \$600 a ton (12,000 Btuh) over the price of heating, each Btu of cooling capacity costs a flat 5¢, not including the additional cost for operation. Heating runs about ¾-1¢ a Btu. So all the good winter reasons for insulation might be multiplied at least fivefold for air conditioning.



an air-conditioned house

Where does the heat come from?

A glossary of air-conditioning terms

Btu. British thermal unit—the quantity of heat required to raise the temperature of 1 lb. of water 1° F.

Btuh. British thermal units per hour.

Conducted heat. The movement of heat from one substance to another by direct contact; e.g., hot outside air in contact with a wall. Heat from the air also goes through the wall by conduction.

Convection. Transfer of heat by the actual flow of a fluid from one place to another. Example: air passing over a hot surface is warmed and passes on, carrying the heat it has absorbed.

Fly-wheel action. As the outside temperature rises during the day there is not an immediate rise in indoor temperature. A time lag of 2 to 4 hours may occur due to storage effect. This time lag is called fly-wheel action.

Latent heat. That portion of the heat energy of air due to moisture content only.

Radiated heat. Transfer of heat by waves of energy as from the sun or from any hot substance. Example: 50-80% of the heat on the underside of a roof is radiated to the ceiling.

Sensible heat. That portion of the heat energy of air which when added or removed causes a temperature change only, does not affect the absolute humidity.

Storage effect. When cooled overnight, an entire house and all furnishings will store up "coolness." When the sun comes out the next morning this stored-up coolness (storage effect) is slowly released to help the compressor keep the house cool.

Ton of refrigeration. Heat removed at a rate of 12,000 Btuh. This is equivalent to the hourly cooling effect from 1 ton of ice melting over a 24-hour period. Water-cooled units produce approximately 1 ton of capacity per h.p.

U, coefficient of heat transmission. The rate of heat flow through building materials in Btuh per sq. ft. per 1° F. difference. The lower the U, the slower heat will flow through a wall, ceiling, etc. An uninsulated frame wall has a U of about .30; adding 2" of insulation will reduce the U to .10. The acid test for houses is not how many inches of insulation are used, it is the over-all U factor of wall or roof.

Before you can figure the dollars-and-cents saving offered by this or that way to cut the heat load, the first thing needed is some good Btu figures on where the heat comes from.

The maximum heat load on a small \$10,000 house might hit 250,000 Btu's in a single hour. One way or another the house itself will have to get rid of most of this heat. If it is detailed right the structure will squelch 95% of the heat gain. If it is not detailed right it will throw three to five times as much work on the cooling unit and your air-conditioning costs will soar like a balloon.

How much of the heat load comes from the hot outside air? How much is created inside the house by cooking, lighting, clothes driers and other appliances? How much is excess humidity? How much comes from the hot sun shining on roof and walls? How much of it pours unchecked through the window glass?

Perhaps the best answer would be to count the actual Btu's a typical 1,000 sq. ft. ranch house has to cope with on a 95° day—a house 25' x 40' with 8' ceiling and 250 sq. ft. of windows in its 1,040 sq. ft. of wall. The house is oriented with its long (40') axis east to west and 50 sq. ft. of glass on the west. Assume the house is *uninsulated* (as many are, especially in the South), and assume the architect and builder did *not* take advantage of any design features to reduce the heat load.

In Col. **A** below are the peak heat loads on this house. Almost any house would cut even these loads to those in Col. **B**. The right house would level the loads to those in Col. **C**.

Fortunately a house cannot pick up heat from all these sources at one time. For instance, when the noon sun pours straight down on the roof it cannot be shining through a big west window. Nor is the range liable to be cooking a big meal on all burners at noon of a hot day. So the Btu's in Col. **A** should be taken only as separate maxima. Adding up this column will only confuse you.

If you added up Col. **B**, however, you would see that an average 1,000 sq. ft. house might need a 7-ton (84,000 Btu.) cooling unit at a cost of up to \$4,000. With the right house, Col. **C**, you could safely specify a 1-ton system at a cost of about \$600! How each of these maximum loads can be cut down is detailed on the next eight pages.

	A	B	C
1. Sun heat on:			
1,000 sq. ft. roof	250,000 Btuh	19,000 Btuh	345 Btuh
360 sq. ft. of S & W wall	32,000	6,000	170
160 sq. ft. S & W glass	11,750	12,000	—
2. Outside air heat on:			
1,000 sq. ft. roof	20,000	6,000	100
790 sq. ft. total wall	15,800	4,000	485
250 sq. ft. total glass	5,400	5,000	1,965
3. Heat created indoors:			
Cooking one big meal	12,500	10,000	1,500
Unvented clothes drier (1 load)	9,000	9,000	900
Lights and other appliances	2,000	1,000	500
Body heat from four people	920	920	920
4. Heat from moisture:			
Cooking one big meal	5,000	4,000	} 2,768
From the same clothes drier	5,000	4,000	
From four people	480	480	
All other water vapor seeping in through walls or created inside	5,000	4,000	
5. Heat from infiltration:			
At ½-1 air change an hour	4,000	2,500	1,000

When will a 2-ton unit do the work of a 3-ton unit?

Biggest air-conditioning headache is this: You must size up your system to handle a peak cooling load it will face only a few days each summer. The heat load on a sunny humid 95° day is about twice as heavy as on a dull 85° day, but the house must be able to take those few extra hot days in its stride. There is nothing so maddening as being in an air-conditioned house when the temperature gets away from the cooling system.

(In most places those critically hot days are relatively few. For example, though New York had one of the worst summers on record last year, the weather bureau reported 90° on only seven days.)

Fortunately you can plan your system to take advantage of two big reserves that are yours for the taking and will save you a lot of money if used in combination:

1. In the hottest weather you can plan to run the compressor full tilt all around the clock, instead of the normal intermittent 16 hours. (It costs no more to run a 2-ton cooler 24 hours than it costs to run a 3-ton cooler 16 hours. Operating costs are tied directly to the *total* number of Btu's removed over a 24-hour period; therefore, it makes little difference whether one unit has to run longer to do the job.)
2. You can plan to take full advantage of the inherent thermal storage capacity of the house itself to level off the worst daily peaks. That means getting the whole structure as cool as you can at night and taking care not to dissipate the stored-up "coolness" in the morning. That way the structure will still be able to absorb a lot of the peak afternoon heat load which would otherwise heat the air.

So if you want a 2-ton cooler to keep the house comfortable on a critically hot day:

▶ Plan to set the thermostat to 70° or below, so the compressor will run all the time. No matter how long it runs it probably won't get the air temperature down to 70°, for the air temperature cannot go far below the temperature of the structure, and it takes a lot of cooling to cool the whole house structure 5° overnight.

The ideal daytime temperature is indeed 75° (at 50% relative humidity), but don't let anybody tell you 70° is objectionable at

night. A cool night is mighty pleasant after a hot day—and the cooler you can get your house at night the cooler it will stay all the next day.

▶ Put the house on a slab instead of over crawl space. The hot air under the thinly insulated floor of a crawl-space house will actually add more to the heat load than hot outside air will add through a well-insulated wall. But the 25 tons of concrete in a slab on the ground can store up 10,000 Btu's for every one degree its temperature is lowered.

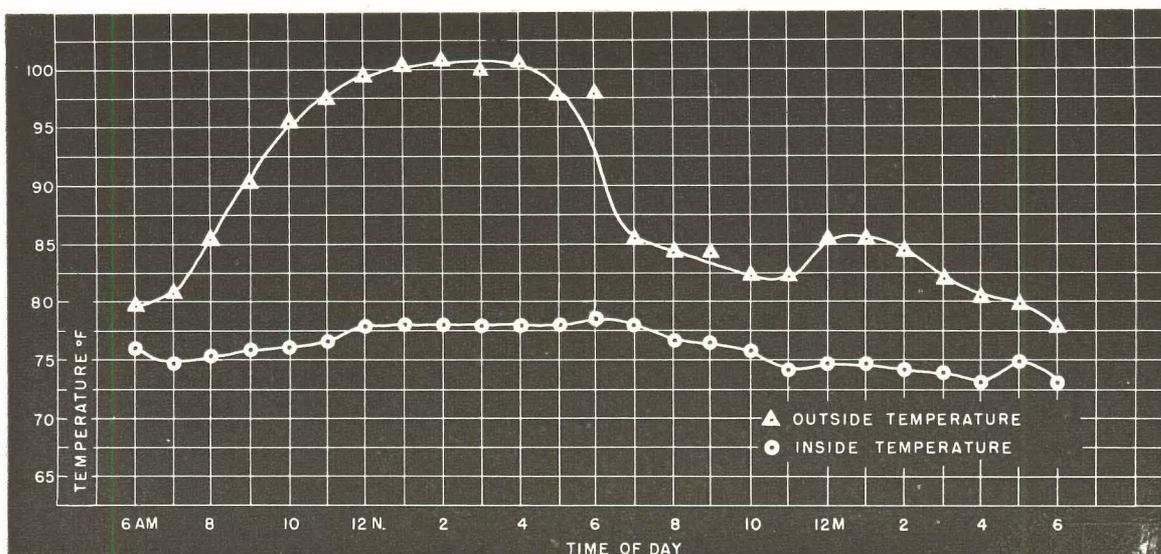
Air-conditioning engineers still lack precise knowledge of how this storage action works, say only that "you can safely figure on 10% less cooling capacity for a slab house."

▶ Don't dissipate your stored-up coolness (i.e., heat absorbing capacity) in the morning. Save as much as you can for the late afternoon and early evening, when the cumulative effect of all the day's heat load makes it hardest to keep the house comfortable. Specifically, figure on keeping the temperature below 75° as long as you can. And above all, don't waste your stored-up coolness by letting the morning sun shine in through the east windows if you expect the day to be a scorcher. The morning sun may seem pleasant if the house is cool, but sun pouring in through 100 sq. ft. of glass from 6 A.M. to 11 A.M. will add up to 60,000 Btu's. That will use up all the cooling capacity built up during the night, leaving no reserve for afternoon. In other words, east windows should be shaded as carefully as west windows. A Btu is a Btu whether it comes from the east or the west at 6 A.M. or 6 P.M.

▶ In dry climates with hot days and cool nights, you can open all the windows as soon as the temperature outside gets below 70°.

▶ Don't think you can save money with a trick split system which cools only the sleeping quarters at night and only the living quarters by day. Such a system will get little benefit from storage action, so you would really need a bigger unit—the same size as needed to do the job right in the first place.

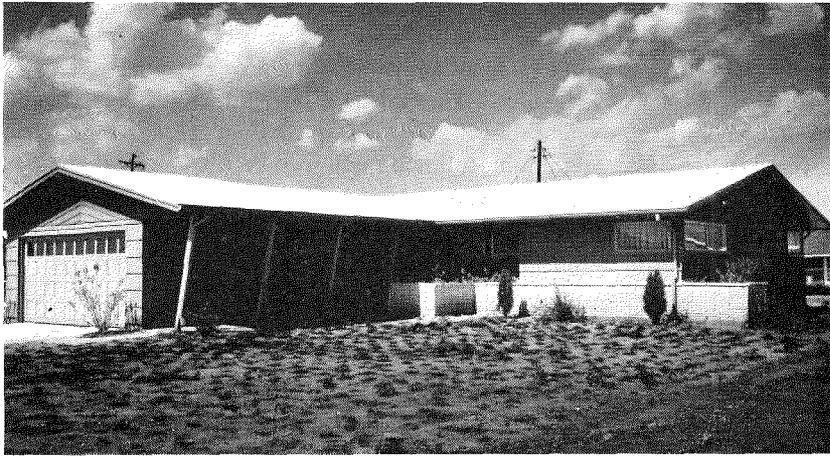
Finally, the frosting on the cake with storage action is that the longer a compressor runs the better dehumidification you get. Using a big unit that cycles on and off all day results in higher humidity.



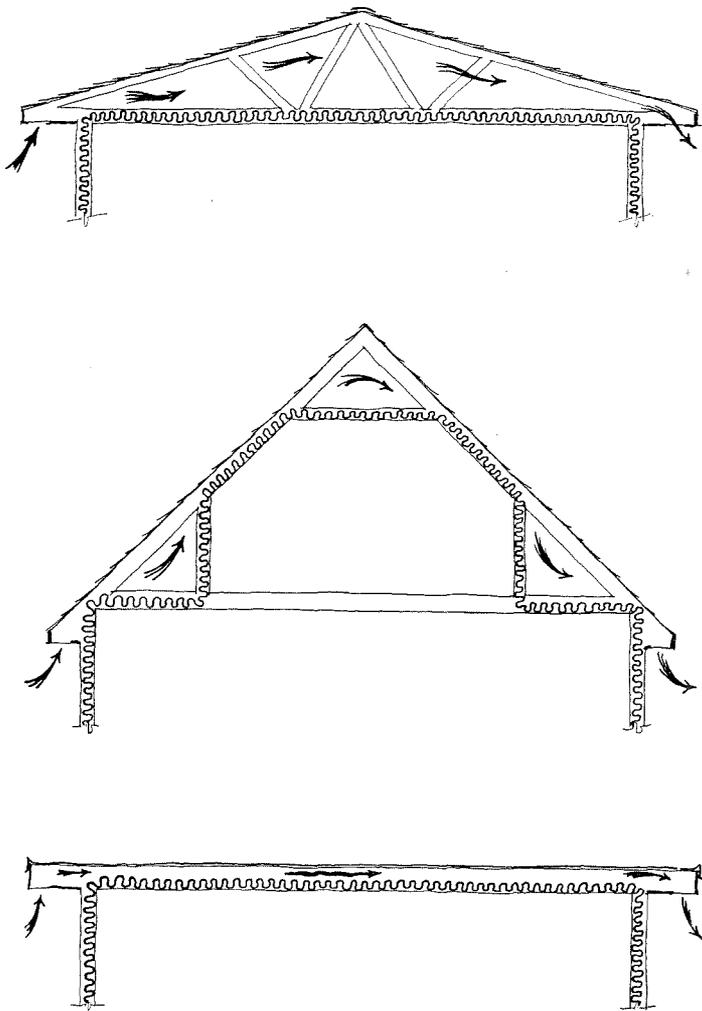
Proof that storage effect works: although a 5-ton unit would normally have been needed in a big Dallas house, this curve shows how a 3-ton size running around the clock cooled the house in 100° weather last summer. Relative humidity was almost ideal, 45-55%.

Courtesy Carrier Corp.

Top priority No. 1 the roof



White roof is feature of 1,400 sq. ft. house designed for cooling by Houston Builder J. S. Norman. Windows are high so they will get maximum shading; e.g., west sun does not hit high end window above until after 3 P.M. Walls have insulation board sheathing. Heat load was cut from 3 to 1.8 tons.



Vented eaves and louvered gables are necessary to achieve efficient air wash over ceilings. Hot air up to 155° (without ventilation) is blown away; heat load from overhead sun can be cut 20% or more.

QUESTION: How can you slash a potential heat load that sometimes tops 250,000 Btu's a single hour down to a cool 600 Btu's?

ANSWER: Use a white roof, a good air wash, and enough insulation for a .04 U factor

The total amount of sun heat that pours down on the roof of a house at noon on a clear summer day is two or three times as great as all the other heat the house (and its cooling system) has to get rid of. It may run higher than 250,000 Btu's on a 1,000 sq. ft. roof in a single hour.

Fortunately, even the wrong kind of roof can do a pretty good job of dissipating that heat. The right roof will do a 98% job.

The wrong kind of roof will be dark in color, with poor ventilation, and no insulation. It would have a U factor of about .30. Even that completely wrong kind of roof would reflect about 5% of the heat, lose another 35% by convection to the outdoor air, re-radiate about 50% outward and let about 10% into the house. But that 10% comes to 25,000 Btu's, more than a 2-ton compressor could handle for long.

Now let's see how much further that sun load on the roof can be cut down, first by a change in color, second by good ventilation, third by insulation.

1. White paint. A smooth, white-painted roof surface would reflect back about 68% of the sun's heat compared with 5% by a dark roof. In other words, it would reflect back 170,000 Btu's instead of 12,500 and the roof surface, which often heats up to 155° and sometimes as high as 180°, would not get much hotter than 110°.

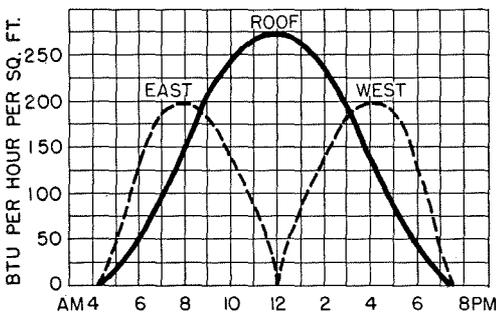
Since a coarse surface bounces back fewer sun rays, roof shingles are not so reflective as this ideal white-painted surface. Based on the best available information, white asbestos shingles reflect about 55%, yellow 35%, green 15%, red 14%, blue 5%, black 4%.

Asphalt shingles are coarser and recent tests by their makers indicate that white asphalt bounces back about 35%, yellow about 20%, darker shades less than 10%. With all colored shingles, reflectivity increases or decreases depending on whether a light or dark shade is used. Unpainted aluminum shingles only reflect about the same amount of sun heat as green ones. (On the other hand, aluminum is a topflight reflector of the much longer wave-length heat *under* a roof or *inside* walls; see p. 104.) The usual white marble chips used on flat or low-pitched roofs will bounce back 30% to 50%, the smaller the chips the higher the reflectivity.

2. Ventilation. In an unventilated attic, the air under a dark roof has registered as high as 155°. Air that hot does little to cool the undersurface of the roof deck. A good air wash, however, can eliminate 20% or more of the heat that gets through the roof. Architects at Texas Engineering Experiment Station say the bigger the vents the better. Leonard Haeger, technical director of The National Association of Home Builders, recommends 100% louvered gables for every house.

In any case vents for gable roofs should never be smaller than 1 sq. ft. of free inlet and 1 sq. ft. of free outlet area for every 300 sq. ft. of attic; for flat roofs, twice as big.

Gable louvers are just as important in winter because plenty of air flow is a good antidote for attic condensation during cold weather. And if the ceiling is properly insulated, the difference in heating costs will be too small to matter.



Solar radiation on east, west walls and roof varies in summer hour by hour as shown above. This does not consider sky reflection or cloud interference. In winter these values are 50-75% lower than in summer.

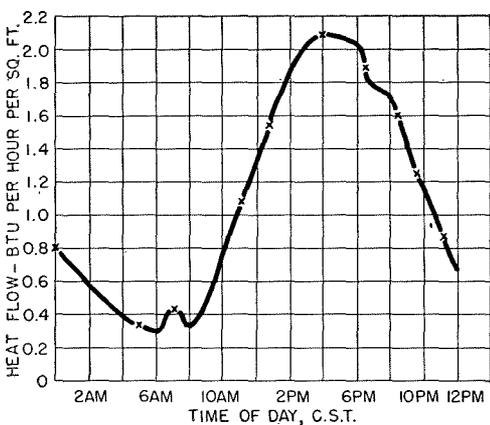
How well does aluminum foil insulate?

Equivalent bulk insulation
 In summer In winter Approx. installed cost

Over the ceiling:

	In summer	In winter	Approx. installed cost
One-layer foil			
installed with 2 air spaces	2½-3"	1"	3½¢ per sq. ft.
Two-layer foil			
installed with 3 air spaces	4"	1½-2"	5½¢
Three-layer foil			
installed with 4 air spaces	6"	2½-3"	7¢

When reflective insulation is installed in walls, its year-around rating is the same as when it is over the ceiling in winter.



Actual measured heat flow through ceiling of University of Illinois test house on 95° day averages out to approximately 1,200 Btuh per 1,000 sq. ft. House had dark roof, ventilated attic, and 5" of insulation over ceiling (.07 U).

3. Insulation. A good thick layer of insulation spread over the ceiling will save more money than insulation can save anywhere else. Even 6" of ceiling insulation at 1½¢ for installation plus 2¢ a sq. ft. for each inch of thickness will pay for itself.

Since aluminum bounces back 95% of the long heat waves re-radiated from the underside of the roof, three-layer reflective insulation at 7¢ a sq. ft. installed would be a bargain, for it can be the cooling equivalent of 6" of bulk insulation. (Even if covered with dust, aluminum foil will still reflect 90% of all radiated heat.) In winter, however, foil does not work so well; then three-layer reflective insulation (installed with four air spaces) is equal to 2½-3" of batt insulation for keeping heat in. Other types of reflective insulation are compared with batt insulation in the chart at the left.

All other factors being equal, a flat roof will let 25% to 50% more heat into the house than a gable roof. This is simply because a good air wash is tough to achieve under a flat deck, especially when the roof is big and the air space has small vertical clearance. And obviously no heat at all can be washed out with an exposed plank-and-beam ceiling, whether flat or cathedral, where roof, insulation and ceiling are all one piece. But if the poorly ventilated roof is white the importance of the air wash will be very much less.

Score card: So with a white roof, a good air wash under the roof and a ceiling insulated to a .04 U factor, what happens to the 250,000 Btu's of noonday sun? The roof gets rid of about half of them, or 125,000 Btu's by reflection, perhaps another 50,000 by re-radiation out, another 30,000 by convection to the outside air. If the air wash through the open attic blows out another 20,000, then 35,000 Btu's will reach the top of the ceiling. A .04 U factor would cut this to 1,400, and storage action would make it safe to assume that less than half of that 1,400 would ever get through in any one hour.

None of the figures above is suggested as scientifically accurate. Actually, nobody knows yet exactly what happens to all the sun heat on the roof. So these figures give an approximate explanation, an explanation that comes out to about the same figure that the ASHVE Guide below arrives at by a very different route—averaging the roof heat load over 24 hours, or based on a mean 101° Sol-air temperature, 83° Sol-air with no sun.

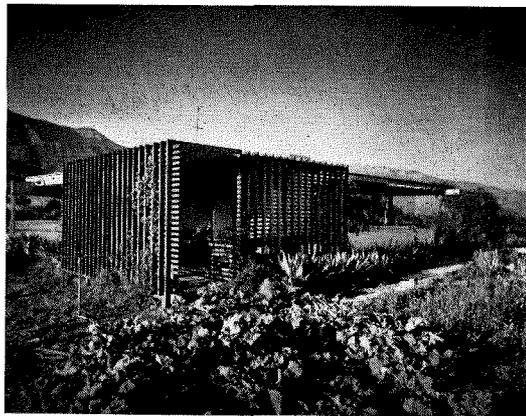
		4" of insulation, or equivalent U=.09	5" of insulation, or equivalent foil U=.07	6" of insulation, or equivalent foil U=.04
1. Dark gable roof no attic ventilation	Outside air heat	880 Btuh	560 Btuh	320 Btuh
	sun	2,020	1,260	720
		<hr/>	<hr/>	<hr/>
		2,900	1,820	1,040
2. Same with well-ventilated attic	Outside air heat	720	560	320
	sun	1,580	895	510
		<hr/>	<hr/>	<hr/>
		2,300	1,455	830
3. Same as 2 with white roof	Outside air heat	720	560	320
	sun	900	495	280
		<hr/>	<hr/>	<hr/>
		1,670	1,055	600

Note: the use of insulation board will permit proportionately less insulation over the ceiling. In any case and regardless of the type of insulation used, the final test for all ceilings is the over-all U factor.

Priority No. 2 windows



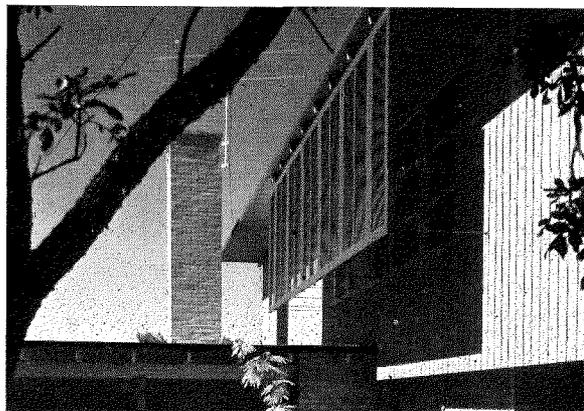
South overhang fully shades window wall in Florida, by Architects Twitchell & Rudolph.



Trellises for shading in California: above by Architect Richard J. Neutra; at left by Architect Edward Fickett.



Shutters, below, shade west glass in Texas by Architects O'Neil Ford & Jerry Rogers.



QUESTION: What can you do about glass—which lets in 35 times as much heat from the sun and 10 times as much heat from the outside air as insulated wall?

ANSWER: 1) Keep the sun off the glass; 2) insulate it with double glazing

There is absolutely no good reason not to put all the windows you want in an air-conditioned house—and put them where you want them. If the nicest outlook is to the west, you might as well put in a big west window and enjoy it. A west window lets in no more heat than an east window—and north, south, east or west, there are plenty of good, inexpensive ways to handle the heat problem.

First, let's consider direct sunlight. Single glass itself will stop only 15% of the sun's radiation and double glazing will stop only 25%.

Heat-absorbing single glass will cut the radiant heat load from direct sunlight about 30%, and double glazing with the outside glass heat absorbing will cut the sun load more than 40%. Heat-absorbing glass is also very pleasant, for the green tint cuts out glare without spoiling the view, is very easy on the eye. But double glazing, especially with heat-absorbing glass, is also expensive—just how expensive glass manufacturers themselves don't know because each glazier sets his own mark-up.

Once the sun heat gets through the glass it is too late to do much about it. White curtains pulled all the way across might reflect a quarter of it back through clear glass; white Venetian blinds about 35%; much less through heat-absorbing glass. In brief, the place to stop the sun's rays is outside the house.

The handsomest and most fashionable shading device is a roof overhang. On south exposures it may well be the best; but on the east and west it is just about the least efficient. A wide roof overhang works perfectly as long as the sun is overhead, but by 4 o'clock on a summer afternoon a 3' west overhang will shade only the top third of the west wall, and by 5 o'clock it will be so nearly useless that an 8' x 12' picture window under an overhang will let in almost as much heat as it would without the overhang—about 24,000 Btuh!

Conversely, the least-fashionable method today is the old-fashioned window shutter, but on the east and west it is just about the most efficient—especially when it is painted white!

White Venetian blinds outside the house (if properly designed) would likewise be almost 100% effective—more than twice as good as inside. Awnings are better than overhangs east and west because they can roll down lower when needed. All these outdoor answers are as cheap as they are good—so cheap and so good that you might as well put your windows where you want them.

And don't forget the best outdoor sunshade of all—trees and planting.

Now as for insulation: Good as they are against radiant heat from the direct sun, overhangs, awnings and blinds are all useless against conducted heat—the heat picked up from the hot air outside. On a 95° day, 250 sq. ft. of single glass will let in an average of 3,750 Btuh of this conducted heat—ten times as much as an equal area of insulated wall. And conducted heat will come in at the same rate regardless of orientation—north, south, east or west.

The answer is double glazing or storm sash, which cuts conduction through the glass about 40%—from 3,750 to as low as 1,965 Btuh.

Double glazing, however, is roughly two to four times as expensive as single, so it will hardly pay its way for summer cooling alone. It may add around \$250 to the cost of 250 sq. ft. of window—more than the \$98 the 1,965 Btu saving would knock off the cooling bill at 5¢ a Btu. But in a two-season climate—cold winters, hot summers—double glazing will have two chances to pay off in an air-conditioned house: on winter heating as well as on summer cooling. And the winter saving where temperature drops to 0° will be even greater than the summer—a whopping 10,000 Btu's saved, or up to a \$100 dividend on heating.

Double glazing will pay an extra winter dividend in more usable space, always important in a small house. It will make the 2' next to the window, usually too chilly behind single glass, just as comfortable as the rest of the house.

How wide a south overhang do you need?

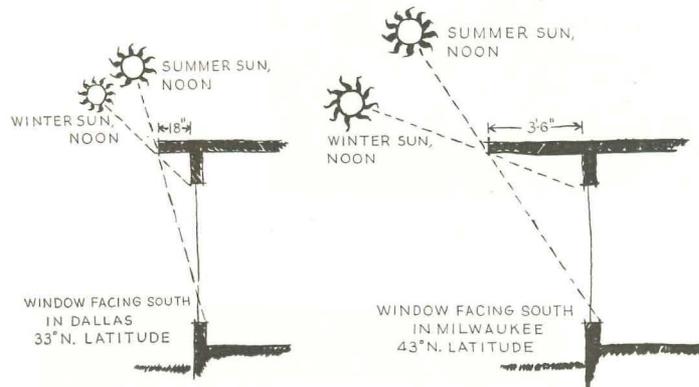
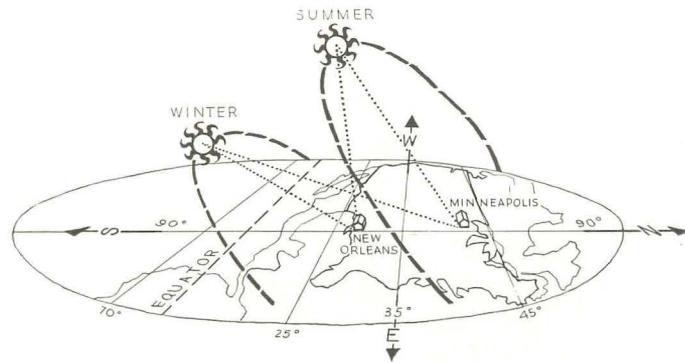
The chart below gives the overhang widths needed to shade south windows in July and August.* These are figures for glass down to 24" above the floor in an 8' high wall. Shading floor-to-ceiling windows will require overhangs 12" wider than those given in the chart. If windows face between true south and 30° east or west of south, you can interpolate from the table to determine the size of overhang needed; e.g., a window facing 15° east of south in Tulsa will require a 3'-6 1/2" overhang for full shading. If windows face more than 30° off true south, other shading devices are needed.

28° N:	For windows facing 30° east or west of true south	Only for windows facing true south
Southern Fla.	3'-10"	1'-5"
32° N:		
Savannah, Dallas,	4'-2"	1'-11"
Tucson, San Diego		
36° N:		
Raleigh, Nashville,	4'-8"	2'-5"
Tulsa, Death Valley		
40° N:		
Phila., Indianapolis,	5'-4"	3'-0"
Denver		
44° N:		
Watertown, N. Y.	6'-0"	3'-6"
LaCrosse, Wis.;		
Boise, Ida.		

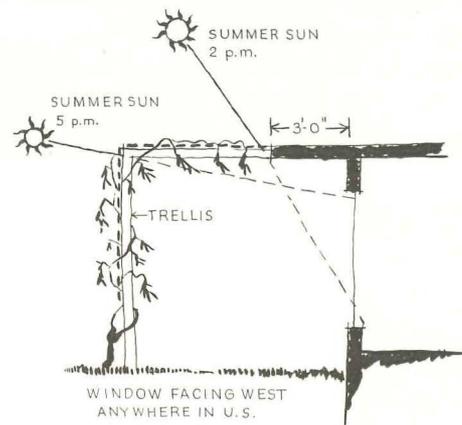
Window score. Here is how the mean window heat gain is shaved down by designing for air conditioning in our 1,000 sq. ft. house. Column one: all windows single glass, east and west shaded by Venetian blinds only. Column two: full shading, east and west. Column three: all windows double glazed, fully shaded. In each case the south glass is fully shielded by an overhang.

Sun heat:			
60 sq. ft. east & west	2,000	—	—
110 sq. ft. south	—	—	—
Conducted heat:			
<i>(including reflected glare):</i>			
250 sq. ft. total glass	3,750	3,750	1,965
Total heat gain	5,750	3,750	1,965 Btuh

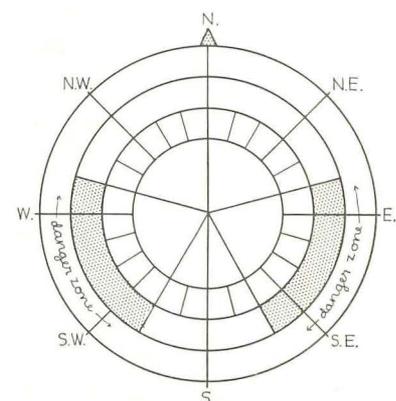
* Easiest way to figure required overhangs for any spot in the US is by means of Libby-Owens-Ford's excellent sun angle calculator (\$9.50); it reduces complex solar computations to 10-second operations. Next month H&H will publish exhaustive overhang and shading data for all size windows at virtually all latitudes.



Overhang widths are dictated by the summer sun which rises in the northeast, sets in the northwest. Note that since the noon sun is more nearly overhead in the South than in the North, overhangs must be bigger in the North.



East and west overhangs can hardly be big enough to shut out the sun in early morning or late afternoon. Therefore whenever a house is oriented so big windows face east or west, in the shaded danger areas below, overhangs should be supplemented by additional shading devices, such as shutters, trees or trellises.



Priority No. 3 moisture

QUESTION: Why does moisture end up being about 25% of the total heat load?

ANSWER: Because moisture is one of the hardest parts of the heat load to reduce by design

The case of the canvas shower curtain vividly illustrates the importance of moisture. Last summer the National Warm Air Heating & Air Conditioning Assn. investigated an air-conditioned house where the baffled owner said it was "too hot" during the morning, but perfectly cool when outside temperature climbed to 100° in the afternoon. Instruments showed that *humidity* inside the house jumped way up around 8 A.M.

The trouble was finally traced to the bathroom, where each morning the family took showers. It turned out that a canvas shower curtain was soaking up shower water. This moisture evaporated into the house all morning. Result: high inside humidity. Solution: change to a nonabsorbing plastic curtain and the high-humidity condition was brought under control.

Water vapor from two chief sources will be present in all air-conditioned houses:

1. Moisture generated inside the house by cooking, bathing, clothes drying, etc.

This is the easier part of the problem. The answer is to vent it as fast as you can. In the kitchen an exhaust fan is mandatory; in the bath highly desirable. A shower creates up to 1/2 lb. of moisture, equivalent to 500 Btu's, according to Purdue experiments. Don't hang anything to dry inside the house, and be sure the clothes dryer is well vented.

2. Moisture from outdoors—high-humidity outside air and wet ground under or around a house.

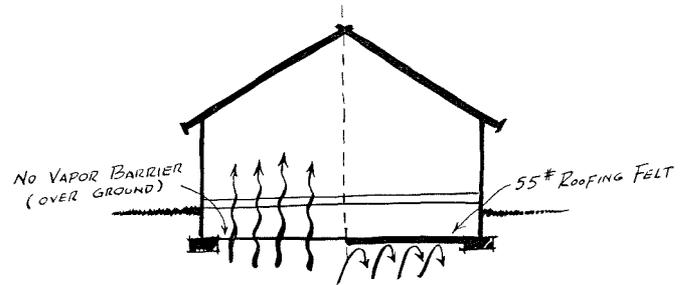
High-pressure outside vapor tries to get through ceiling, walls and floors.

The problem of outside moisture is most difficult in a two-season climate, for the vapor barrier must be on the warm side of the insulation. In other words, it should be on the outside in summer, on the inside in winter.

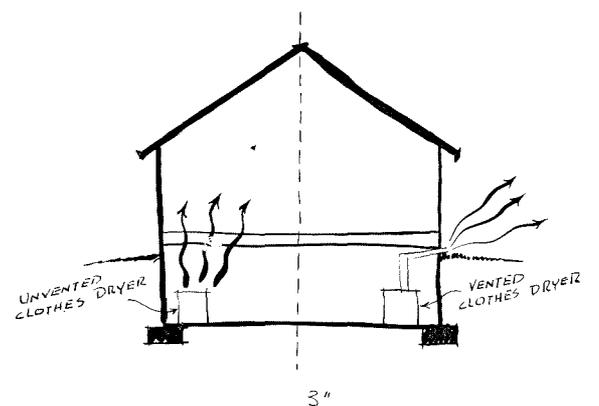
In the Gulf Coast states, where the dew point goes higher than 75°, an outside vapor barrier is imperative. In Illinois, on the other hand, some engineers throw up their hands in despair, say the outside vapor barrier needed by an air-conditioned house in summer will create such winter dampness in walls and ceiling that the best thing to do is forget about it; just use a single vapor barrier on the inside.

Engineers still do not know all the answers on moisture. Even in houses specially designed for air conditioning they have not been able to cut moisture to less than about 25% of the final load on the compressor—a daily load of up to 160 lbs. of water actually taken out of a house by the cooling unit. In fact, the big problem is to keep moisture from building even higher. And it takes 1,000 Btu's for every pound of water!

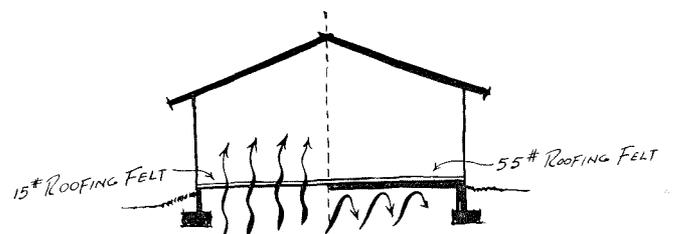
There are so many unanswered moisture questions that air-conditioning engineers usually play safe in predicting the moisture load, assume it will be about 25% of the total provided the precautions detailed on the right are taken:



In crawl-space houses put in an impermeable vapor barrier—at least 55 lb. roll roofing—under the floor boards or over the ground. Otherwise an enormous quantity of vapor is sucked up through the floor. (See H&H, Feb. '53, p. 186 for two disastrous examples of moisture trouble in crawl-space houses.)

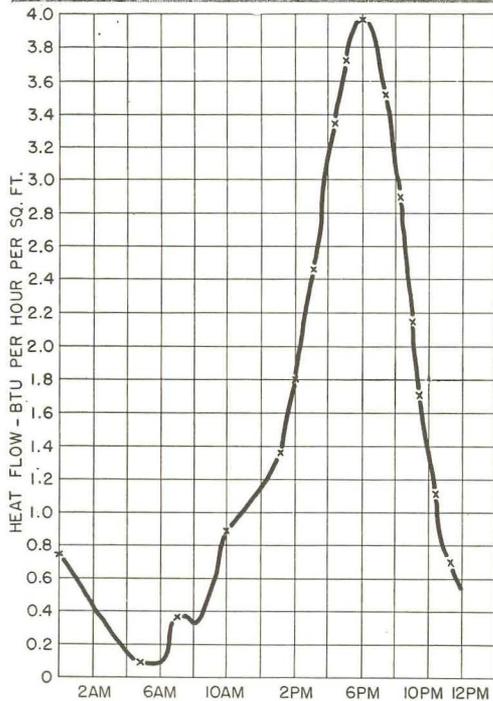
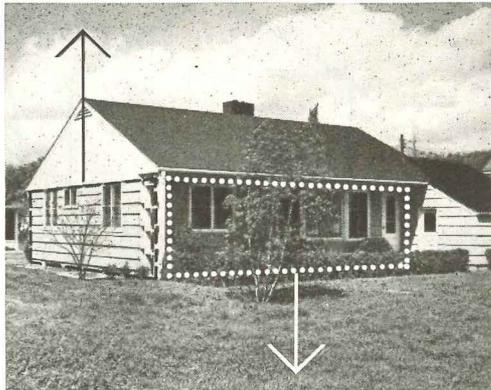
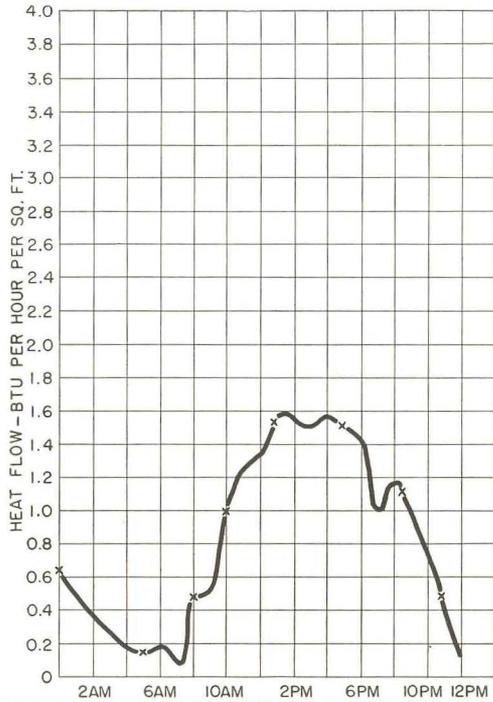


In basement houses keep the cellar dry. Otherwise vapor will come up through the floor as in crawl-space houses. Even when an automatic clothes drier is in the basement it must be vented because the drying process gives off up to 10 lbs. of moisture an hour, equivalent to an extra load of 1,000 Btu's.



Slab houses are the least troublesome. Upward vapor travel is easily controlled when the moisture seal under the slab and edge insulation conform to good practice (H&H, July '53). Beside these specifications, ceilings may be the biggest booby traps in all types of houses. Carrier engineers think 85% of all the vapor sucked into an air-conditioned house from outside comes through the ceiling, which is about ten times more permeable than the walls. When they studied a two-story New Orleans house last summer they found the humidity load far greater on the second floor than on the first, despite a normal cooking routine in the downstairs kitchen. Further research, however, is currently underway to come up with a final answer on ceilings.

Priority No. 4 walls



Measured heat on 95° day at University of Illinois test house show how unshaded west wall lets in 150% more heat per square foot than south side. Walls contain 3 3/8" insulation, U is .07. Note that heat gains reach their peaks 2-4 hours after maximum outside heat had occurred.

QUESTION: How do you cut a peak 10,000 Btuh load through walls of a 1,000 sq. ft. house down below 600 Btuh?

ANSWER: Use an insulated wall with an over-all U coefficient of approximately .075 achieved with 3" insulation or its equivalent

On the roof the direct sun load is so heavy that you can almost forget conducted heat from the air; even on a 95° day the air will be cooling the roof instead of heating it when the sun is shining straight down.

On the walls, on the other hand, direct sun is less important. The sun can never shine full on more than one wall at a time (or obliquely on more than two); and in a well-designed house the north and south walls will probably be well shaded by overhangs.

An uninsulated stud wall with gypsum sheathing under shingles will have a U factor of about .30 and will let in an average of 2.4 Btuh per sq. ft. picked up from the outside air on a 95° day. For 790 sq. ft. of wall that would be 1,900 Btuh.

Substituting 25/32" of insulation board sheathing would cost about 2¢ a sq. ft., or \$15.80. It would give the wall a U factor of .19, cut the transmission to 1,200 Btuh, save \$35 on the cooling installation or \$20 net after deducting its cost.

Two inches of batt insulation at 5 1/2¢ a sq. ft. installed would cost \$43.40, give a U factor of .10, cut the transmission to 633 Btuh, save \$63.40 gross, or \$20 net. Three inches at 7 1/2¢ would cost \$59.30, save \$76 gross, or \$17 net.

When you figure the winter saving on the heating installation would all be clear gain, you can see that even with no sun load 3" of batt insulation (or the equivalent) will pay for itself twice over.

Here are some more points to remember about the walls:

1. Where the sun actually strikes a dark wall, it may heat up to 150°—all the more reason for good insulation there.
2. Using white to reflect 68% of the sun's heat rays is less important on the walls than on the roof, because only about 25% of the heat load on the walls is direct sunlight.
3. Extending an overhang for the sake of wall shading only is seldom justified.

Wall score: here is how the heat load breaks down for frame walls in our 1,000 sq. ft. house:

1. Dark walls, no west shading.	2" of batt insulation or its equivalent	3" of batt insulation or its equivalent
Conducted heat:		
790 sq. ft. total wall	685 Btuh	550 Btuh
Sun:		
155 sq. ft. west	170	135
210 sq. ft. south	45	35
	900	720
2. Total with full shading on west	730	585

Priority No. 5 heat created inside the house

QUESTION: What can you do with 50,000 Btu's created at one time or another by cooking, clothes drying, hot tubs and showers, etc.?

ANSWER: Try to vent them



Big hood over range traps heat and odors until exhaust fan can pull them outdoors. In air-conditioned houses housewife should turn on fan only when cooking, be sure to turn it off after cooking.

The heat generated inside a house is a problem, not because of its amount, but because it comes in sudden bursts that can make a room very uncomfortable for a short time (whereas the heat from outdoors is slowed down and evened out by the structure).

Fortunately much of this sudden heat is concentrated in a small area, and the best thing to do is to blow it out of the house as fast as you can. Specifically:

▶ The 9,000 Btu's of heat and the 5,000 Btu's of moisture created by each load on a clothes drier must be vented.

▶ About half the 25,000 Btu's generated by cooking three meals a day on a gas range (less for an electric stove) can and should be blown out by an exhaust fan right over the stove. To keep from drawing too much cool air from the rest of the house to replace it, the kitchen window should be opened a few inches while the range is going strong.

▶ The 500 Btu's from a hot shower should be vented by a small bathroom exhaust fan (which is needed anyway to get bathroom odors out). Recommended fan capacity: 100 cfm.

▶ The only indoor heat source that cannot be vented is the 360 Btu/h of body heat given off by each occupant. For that the best advice is simply: don't give too big a party on a hot night.

How to add up all the heat loads when you take full advantage of storage effect

All windows	1,965 Btuh
Wall U=.075	720
Roof U=.04	600
Four people	1,440
Cooking	1,500
Infiltration air	1,000
	<hr/>
Subtotal	7,225
Add 15% for heat gain to ducts; lights, safety factor, etc.	1,084
	<hr/>
Total sensible heat	8,305
Moisture load (above divided by .3)	2,768
	<hr/>
Grand total	11,073 Btuh*
(Net capacity of cooling unit required: .93 tons)	

* If all windows are single glass the grand total will be 13,820 Btuh. And if the 60 sq. ft. of east and west glass are not fully shaded the grand total will jump to 17,000 Btuh.

Total heat gain score: At the left is the final tally for the 1,000 sq. ft. house described at the beginning of this article. This house is now designed for air conditioning. And no tricks were pulled on the basic plan just for the sake of air conditioning.

The mean 24-hour heat gains, left, are based on 20° cooling down to 75° inside. All windows are fully shaded, all glass is double glazed or has storm sash. Remember that these values apply only to cities with a 95° outside design temperature, e.g., New York, Miami, Houston. For Dallas, Kansas City and other 100° cities the total heat gain will be 20-25% higher.

... Final notes. Generally speaking, any similar house will have heat gains proportionate to those given for our 1,000 sq. ft. model. If this house were scaled up to 1,500 sq. ft. its heat gain would be 50% more; 2,000 sq. ft., twice as much. However the heat gains are proportional only when the design measures described on these pages are applied.

Every architect and builder should know that a cooling system may put out 10-15% less tonnage than its rated horsepower, e.g., a 2 hp. unit may only produce 1.8 tons (21,600 Btuh). You must always be sure that the *net* capacity is big enough to handle the total heat load of the house.

A house that works

because it was built around a family

and their real needs

A lot of people start leading "lives of quiet desperation" the moment they move into a new house—a house that *looked* fine when they bought it, but actually doesn't *work* very well. Living in it becomes a series of small and unnecessary struggles. And the house, being less flexible than the people, usually wins.

Architect Robert Little didn't want that kind of fight on his hands. Believing that the people should determine the house, instead of vice versa, he studied his family closely, changing his plans again and again to fit a house around their lives.

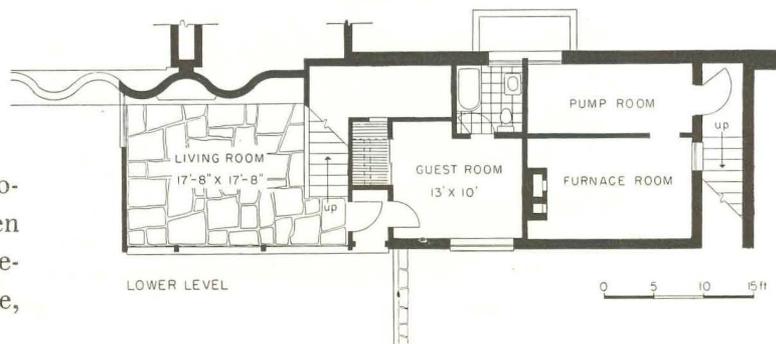
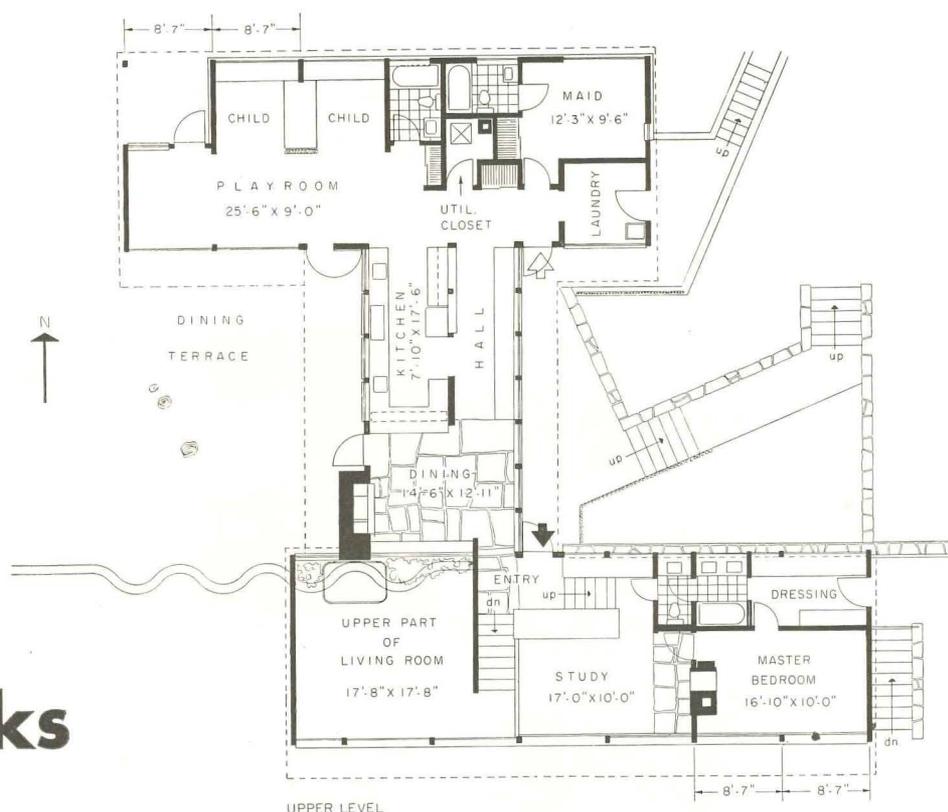
Here are the questions he asked, and answered, before the house took shape:

How do people really live?

First, apart . . . Little realized that the members of his family, like most families, naturally do some things alone. So like Architect Walker Field (H&H, July '53), he gave his two boys, ages 9 and 10, a wing of their own where their noise and mess wouldn't bother the adults, and where they could develop a sense of ownership, individuality and independence. Their "living room" and sleeping cubicles can be watched from the kitchen, but each can be closed off by folding partitions to give the boys varying degrees of privacy and self-reliance. They have their own front door to the main entrance court, their back door to the corner nearest the community's playground, and their comings and goings need not disturb the rest of the house.

He also gave the adults their own separate wing, with their own living room and bedroom, and a study for books and piano. Their back entrance off the bedroom leads directly to a private terrace and beyond to their workshop, office and darkroom in the garage building.

. . . and together. They also do some things as a group. So adults' and children's wings are joined by a common link which contains 1) a hall, 2) a kitchen that opens in four directions to control the entire house, and 3) a multipurpose dining room, and dining terrace adjacent, where family and guests meet for meals, conversation, games and parties.



LOCATION: Cleveland
 ROBERT A. LITTLE, architect
 GARTH ANDREW, interior consultant
 ANTON HEJL, contractor



Adults' wing is connected by canopied stone wall to separate garage at right, which houses Robert Little's office, darkroom, workshop and carport. Living room, far left, faces south to sun and view.

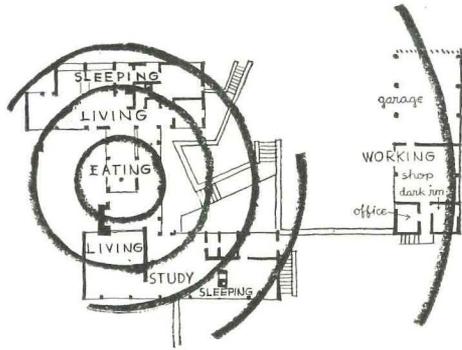
Formal living room is open to dining room and kitchen which share its spaciousness and view. Serpentine brick wall continues through low window to terrace, makes a stable retaining wall for upper level. Fireplace hood is plaster on a metal frame, with flue leading into stone chimney in dining room.



How can people be separated?

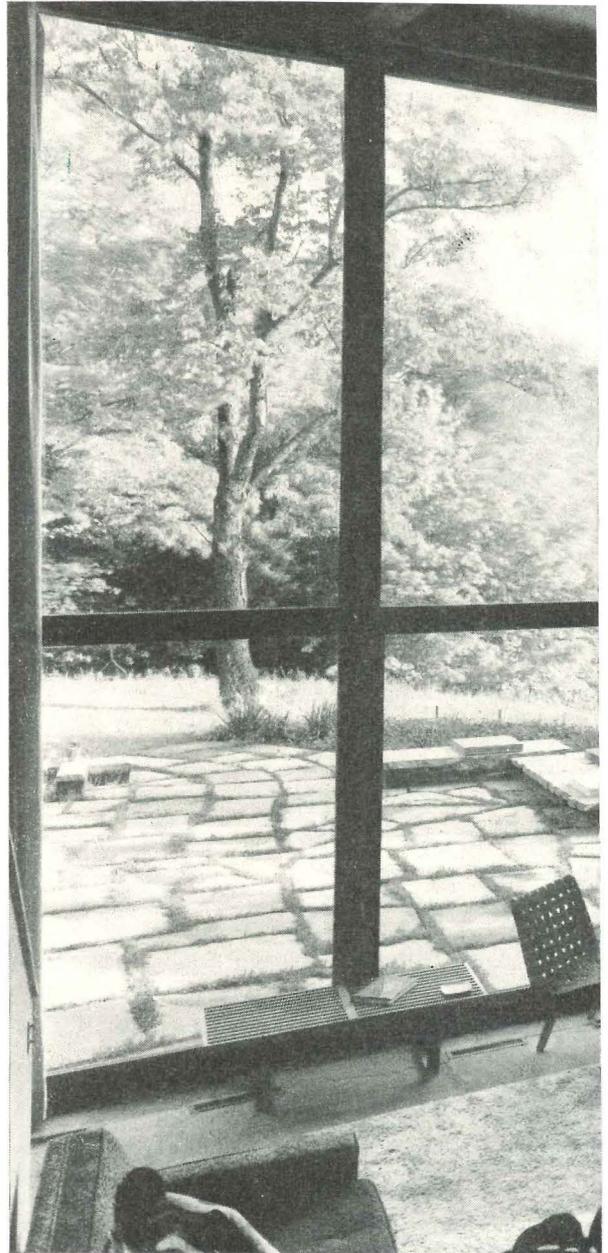
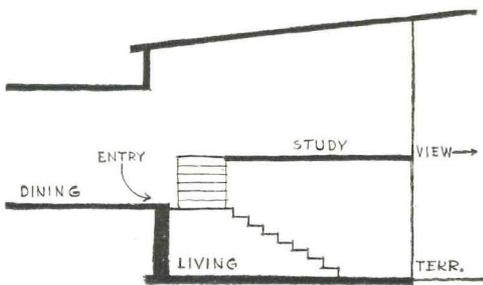
Horizontally . . . Visualize a target of concentric circles on the floor plan and you can see how the different functions in the house are placed and graded out from the center according to their need for privacy.

The "bull's-eye" or core of the house is the bustling kitchen - dining area; the next ring contains indoor and outdoor living and play areas; the quiet outer rings embrace sleeping and study rooms. Like a small community, eating and entertainment districts are "downtown," sleeping and relaxing places in the "suburbs."



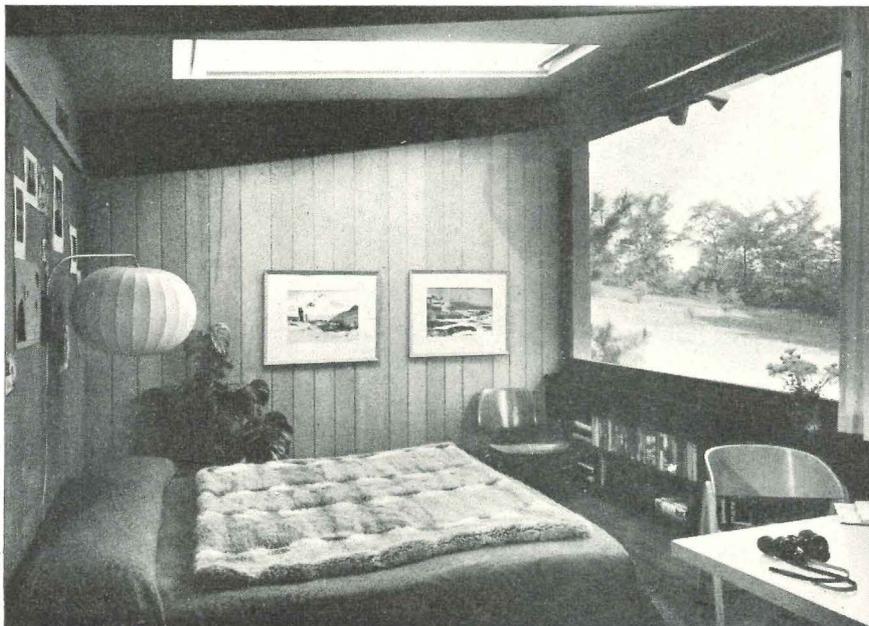
. . . and vertically. Different levels are used to keep adjacent activities apart. Around the main entry hall three types of activity come closely together. To separate them (and to add a little spatial glamour) the formal living-entertaining room is dropped half a flight toward the lowest corner of the sloping site;

the more private study is raised half a flight, leaving space to tuck guest room and furnace rooms underneath. The dining room, in constant use as an informal "family room," is on the main level, convenient to kitchen, front hall and dining terrace.



THE ADULTS' WING

Photos: Lionel Freedman



Scenery and stars come into master bedroom through window, plastic bubble skylight



Three-passenger bathroom has big kitchen sinks, natural light over tilted medicine-cabinet mirrors.



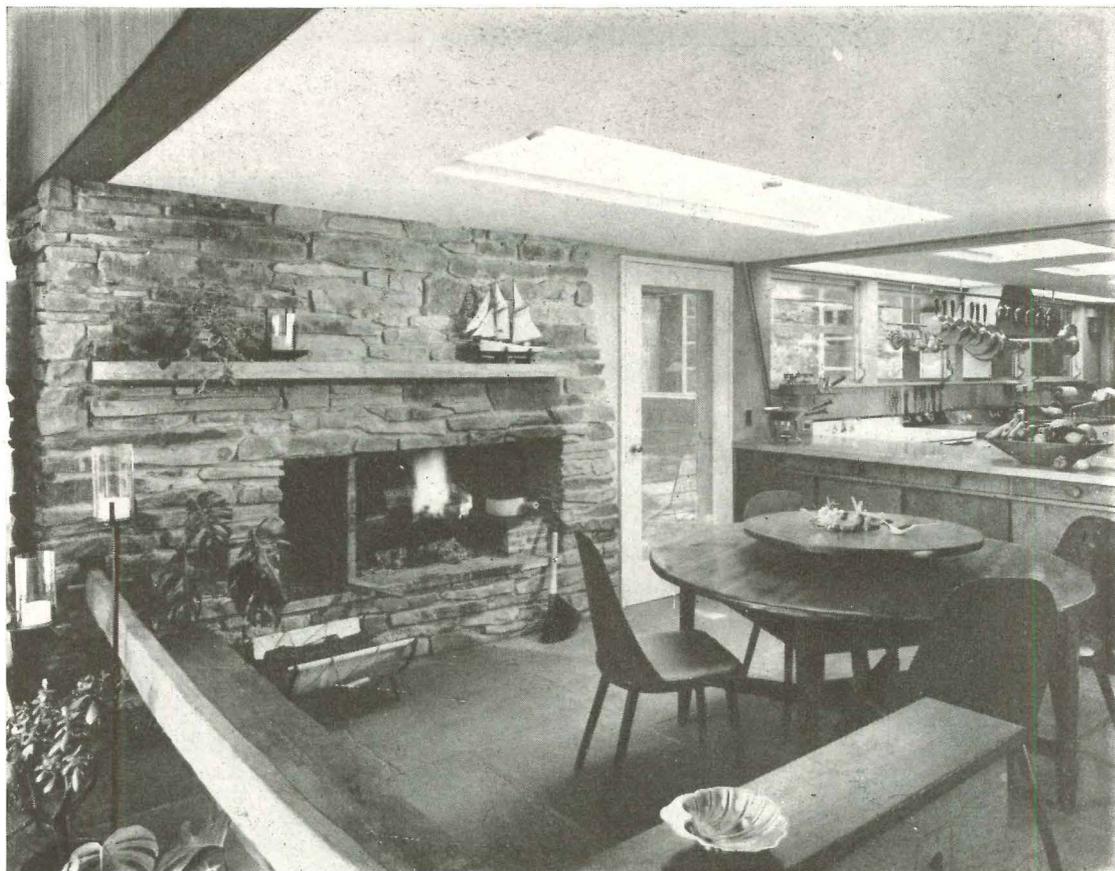
All rooms of adults' wing get the view and south breeze

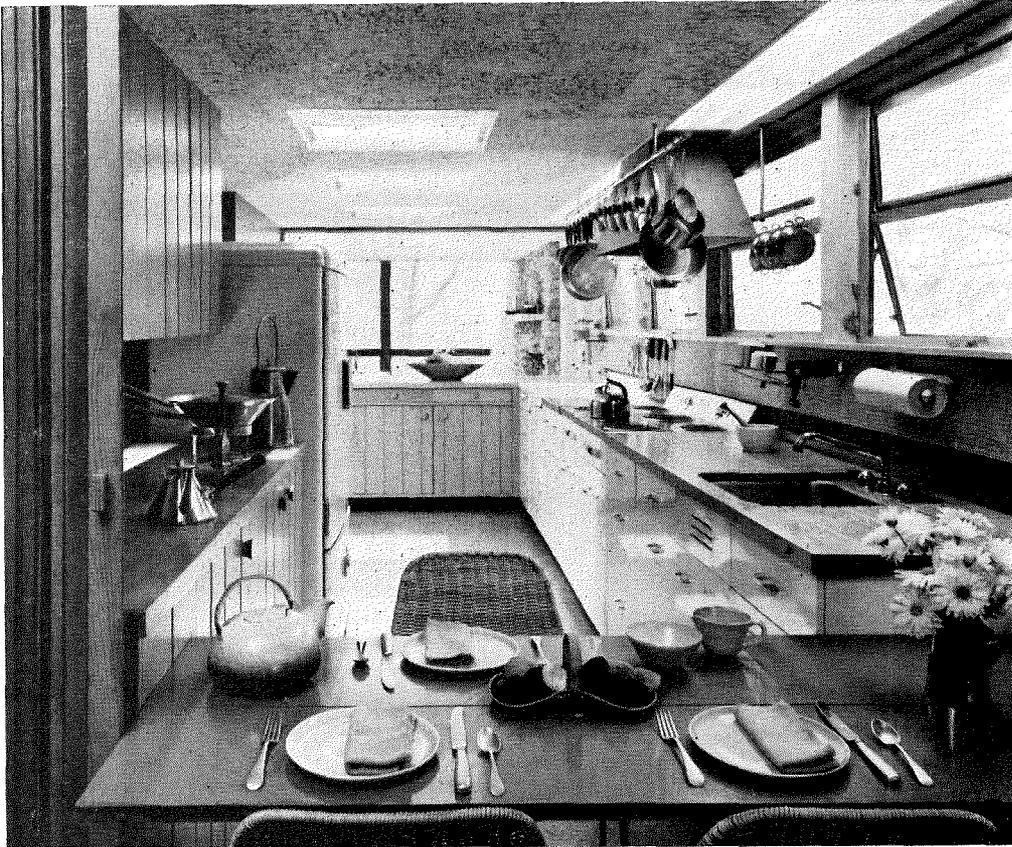
Open planning puts living room below dining, but open to it. Bench, which acts as guard rail, is seen in both pictures, left and below. Living room is to left of guard rail and lower; dining room to the right at higher level. Openness causes spacious effect. Glass wall at left lights both areas. Wall at right is virtually windowless to keep out the hot sun of summer afternoons: its built-in cabinet houses phonograph, records, books and a firewood box that can be loaded from the outside.

THE LINK



Common ground is the dining room, where adults, children and guests spend leisurely meal-times near the fire. It has the living room's view and light (left), the sociability of an open kitchen (right), and access to dining terrace (door, center). Plastic skylights house slat canopies for sun control and fixtures for night lighting; acoustical-tile ceiling reduces noise in both rooms. Kitchen can be closed off by slat screen which rolls down from drum in ceiling structure. Hewn oak bench, left, acts as guard rail: The Lazy Susan table is easy for serving and for conversation.

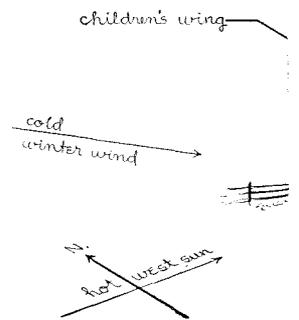




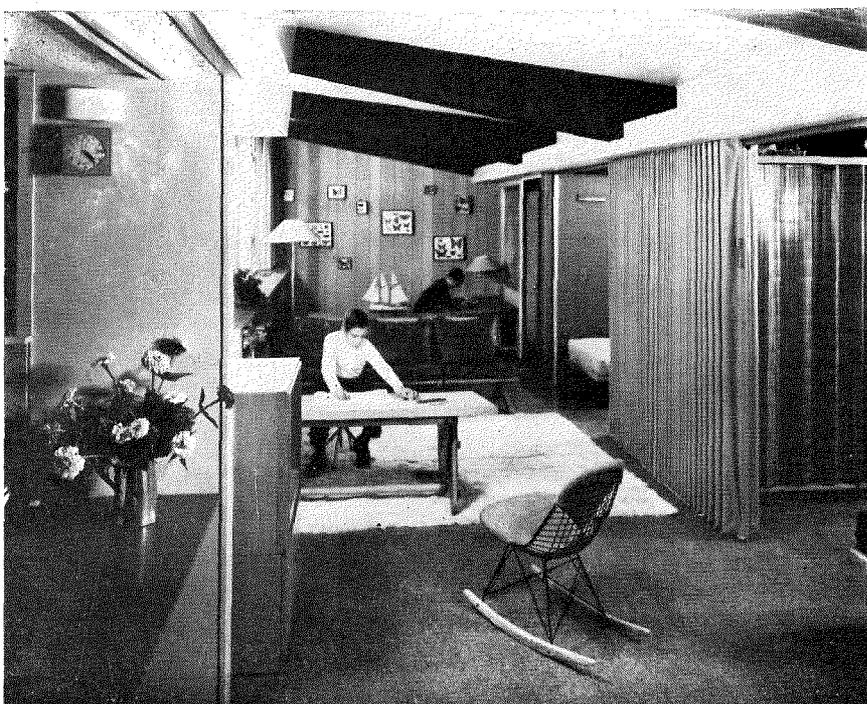
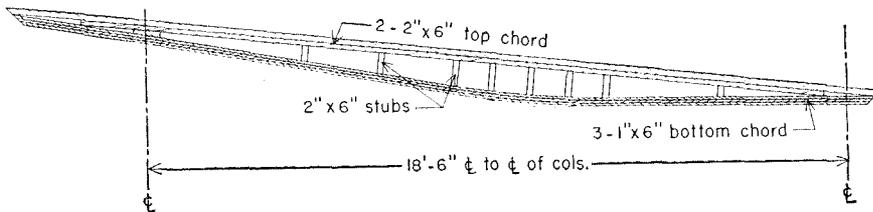
THE LINK



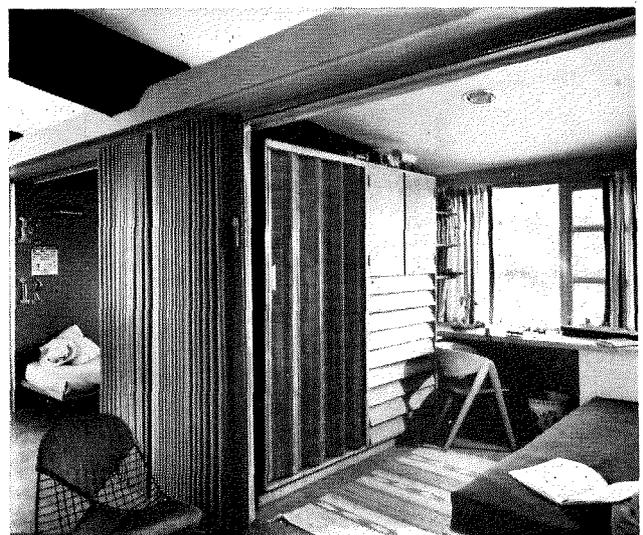
Children's eating space is at their end of the common wing, between kitchen and playroom. Half of counter is a drop leaf to keep it out of way and allow folding door (left) to close between rooms. With partitions open, kitchen controls house from end to end, oversees dining-play terrace house from end to end, oversees dining-play terrace outside windows. Note range hood for fumes, ceiling strip of ribbed glass containing fluorescent tubes that light all work surfaces.



Box beams on 8'-7" centers span 18'-6" between outside walls in adults' and children's wings (photo below). Curved to actual stresses, they are sheathed in with panels of striated plywood.



THE CHILDREN'S WING



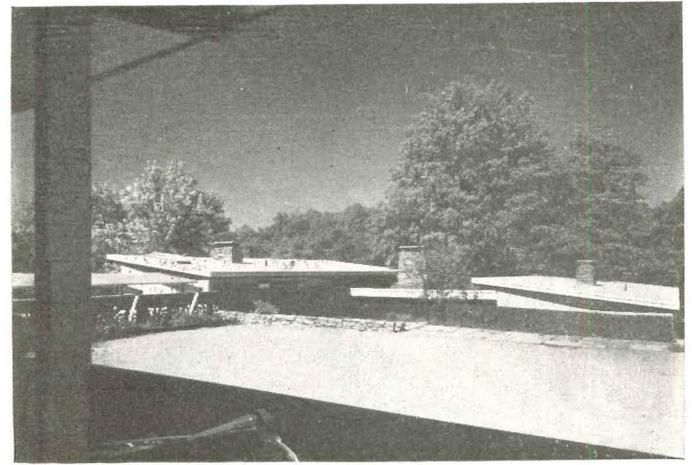
Sleeping cubicle for each boy contains bed, built-in desk, large wardrobe, can be closed off for complete privacy by a stock folding partition.

Playroom has separate entrance (center background) and a door to the play terrace (behind TV set). It can be supervised from kitchen through snack counter opening, left.

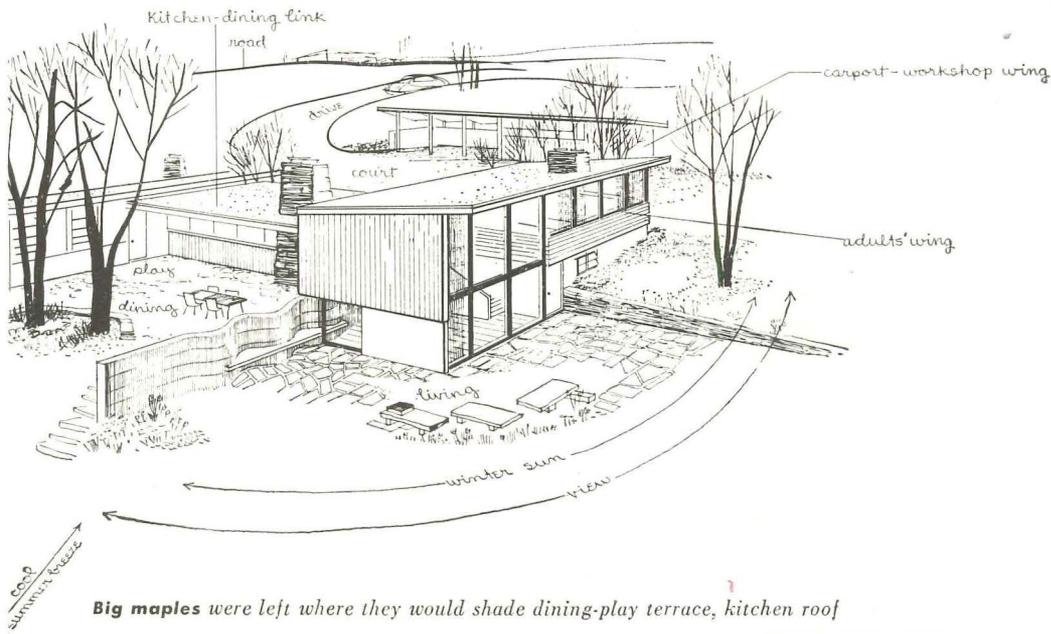
What kind of shelter do people need?

First, protection from the weather. The people in this house are close to nature, but see only the best side of it: the south side, where all rooms face out on terraces toward the view, the winter sun and summer breeze. The shed roofs of both main wings sweep upward to the south, with overhangs properly calculated to keep out too much summer sun. Hot western sun is stopped by nearly windowless walls, and by shade trees saved for this purpose. Bitter north winds are ducked by digging the house into the hillside.

Second, protection from other people. This house is close to the neighbors and the road, but protected on three sides by use of few windows. On the east the separate workshop wing screens the neighbors and helps form an entrance courtyard and protected parking area.



Entrance court: white pebble roofs reflect summer sun



Big maples were left where they would shade dining-play terrace, kitchen roof

Photos: Lionel Freedman

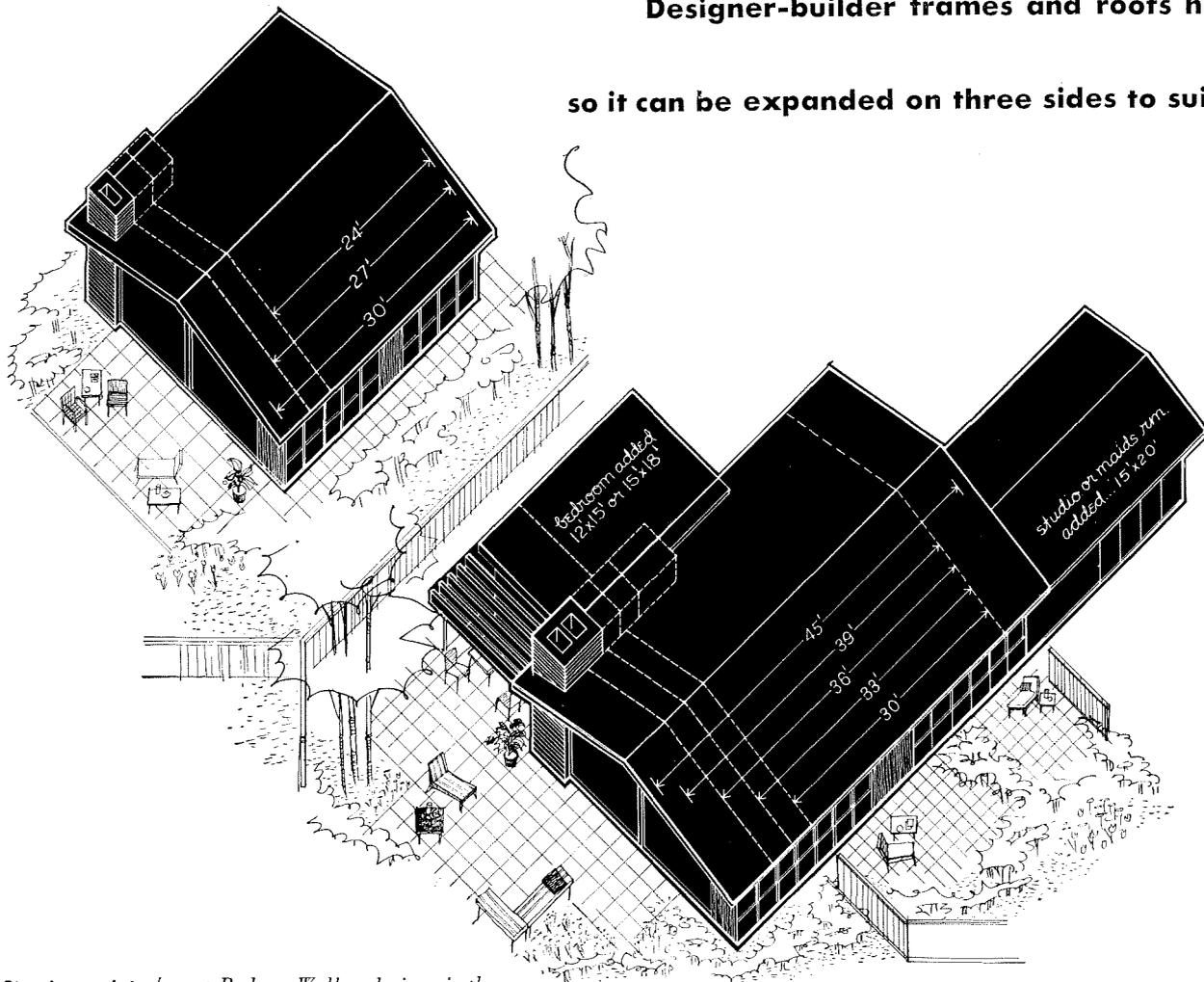


Custom design

at repeat-order prices

Designer-builder frames and roofs his standard model

so it can be expanded on three sides to suit all clients



Starting point of most Rodney Walker designs is the 30' x 30' house at left. The larger sketch illustrates how house can be extended in 3' sections, how rooms can be added on at either side or at the far end.

RODNEY WALKER, designer and builder
LOCATION: Los Angeles

Rodney Walker of Los Angeles has found an answer to one of the contract builder's toughest problems: how to offer one-of-a-kind houses at repeat-order prices.

His 920 sq. ft. basic house is framed so it can be extended to 2,400 sq. ft. or more, with as many rooms as a client wants. Using a flexible 3' module, he keeps construction costs at \$7 to \$8.50 per sq. ft. (Plans, overhead, profit add 25%.)

"I worked out this system for clients who could not otherwise afford as nice a house as they want," says Walker. "It lets us spread our basic planning costs over many houses, in addition to every house getting the benefit of all the study that went before."

Walker's expandable house owes its flexibility as much to the use of plywood as to the 3' module (for details on the modular system, see p. 122). He has been a plywood man since 1937. He likes it because he finds it strong for both impact and shear panels, easily worked, varied in texture and grain,

dimensionally stable, very weatherproof in the combed exterior grade, light to handle and right in price.

Against these advantages, here are three drawbacks and how he overcomes them: 1) joints between panels are a problem for interior plywood walls, 2) its strength is relatively lower in the direction of the single center grain, and 3) there is some public resistance to it as "not solid."

To surmount the first difficulty Walker uses a spread joint with a recessed batten which tends to take care of twisted posts and eliminates the problem of joints except at corners where small, easily handled strips can be used for variety.

Diagonal braces and one fireblock, which breaks up each 3' bay into four triangles, take care of the second problem by capitalizing on the strength of both vertical and horizontal grain.

The war helped solve the third problem by accustoming the public to plywood and by encouraging the development of an improved plastic glue known to be rotproof and toxic to termites.

The size 40

Like a size 40 suit which can be shortened or lengthened to fit almost any man, Walker's house can be fitted to any family. The four musts which govern his design:

1. It must fit any lot, even the Los Angeles 40' minimum

Walker settled on a 30' width for his basic house because it is a multiple of his 3' module, fits even the 40' Los Angeles lot, yet provides rooms at least 9' x 12'. Any expansions in width are on a 15' multiple of the 3' module and adjoin the main structure.

2. It must fit any exposure

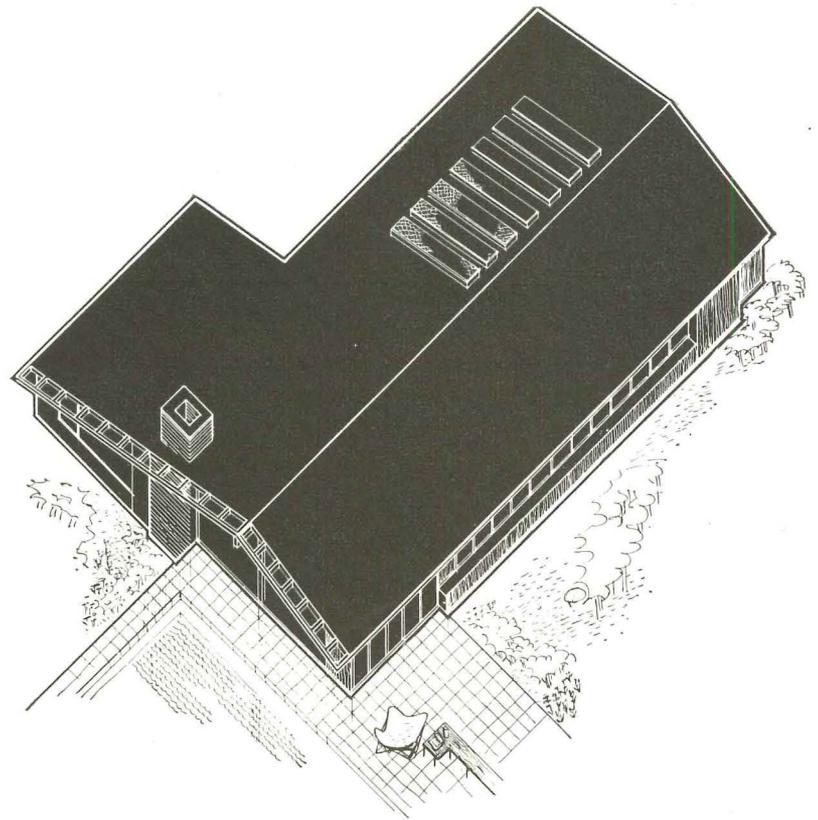
When windows, doors and interior partitions can be switched around at will, a house can be sited effortlessly for view, sun and privacy. Only after a Walker house has been sited are the storage, carport, trellises, etc. added.

3. It must be designed around a central core and expandable in any direction to fit family needs

The location and size of kitchen, bath and one bedroom remain constant; living-dining area, study, and all other bedrooms can be fitted to specific family needs.

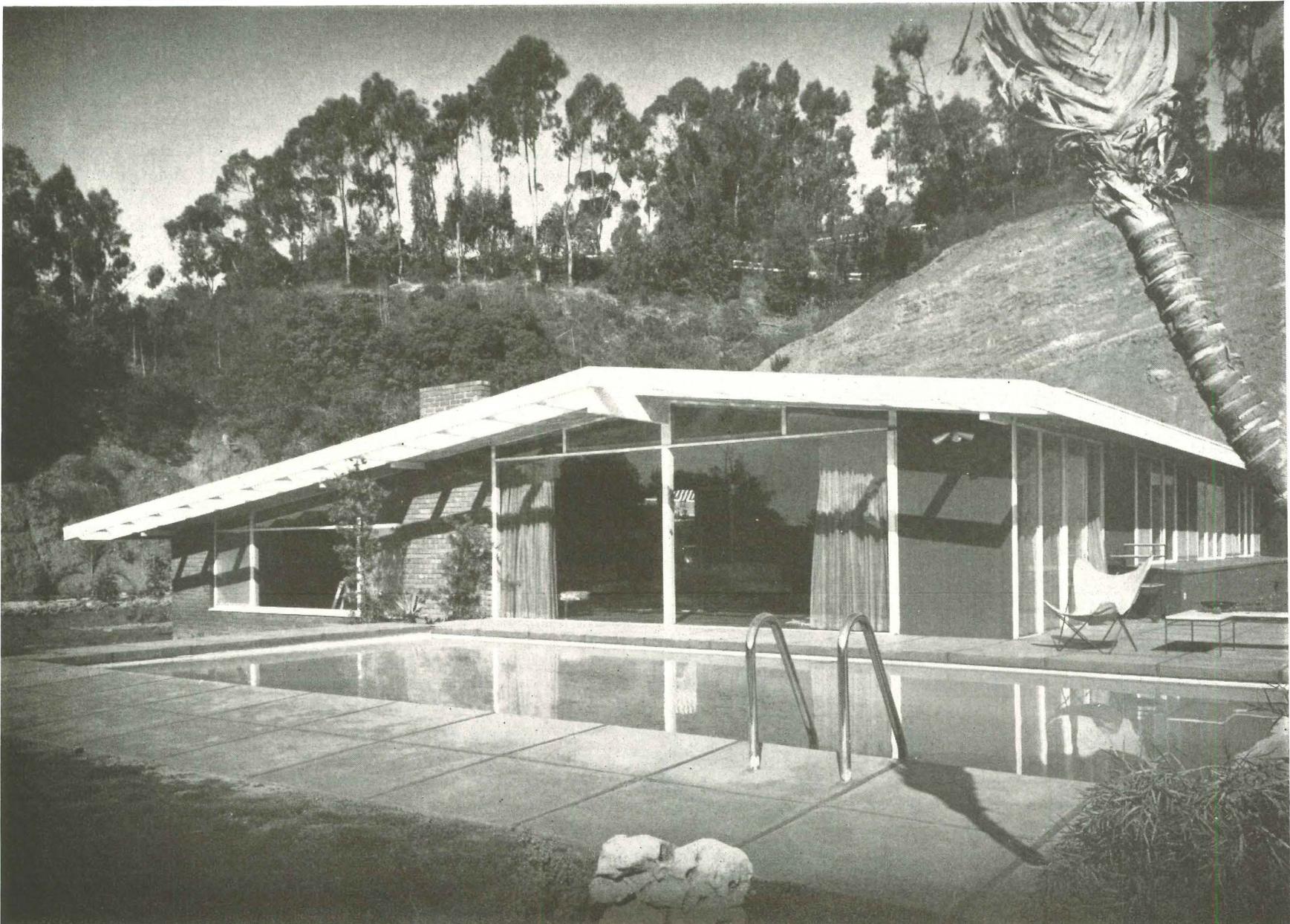
4. It must be simple in construction and details

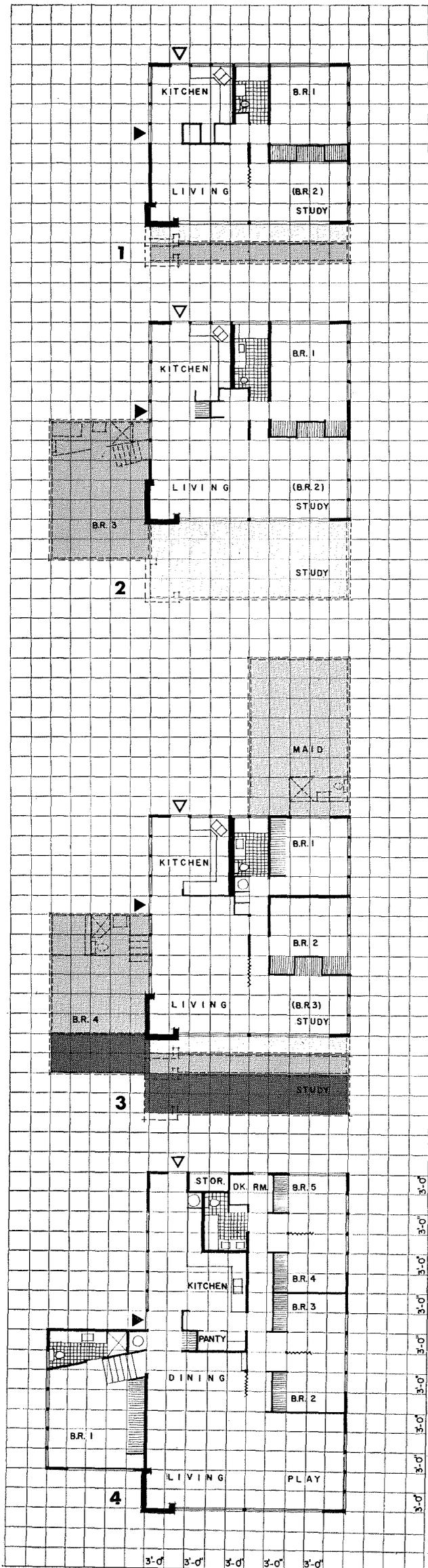
Starting with a 24' deep rectangle, the plan can be expanded by any multiple of 3'. Each stretch-out just means adding another 4' x 4' post, a sheet of 3' plywood and/or a window unit, and a similar lengthening of the laminated roof.



Luxury version of Walker house totals 2,400 sq. ft., 69' long and 54' wide at swimming-pool end. Bedroom, left, is at lower level than living room. For plan, further photos and description, see p. 120.

Photos: Robert C. Cleveland





Plans flexible, construction economical

Walker's house is more than a drawing-board exercise in flexibility. He has built and sold 16 versions, 10 to custom clients, six speculatively, at prices from \$10,000 to \$12,500 (including land). Two are on narrow city lots, surrounded by older houses; others perch on Los Angeles hills. The largest of all, which he built for his own family (the Walkers have five children), is admittedly a 4,400 sq. ft. "special," consists of three basic houses joined together.

Plans at \$1 per sq. ft. Walker's schedule of fees is comforting to the client who wants the most for the least. He charges 75¢ a sq. ft. for complete custom plans if he is to be the builder, otherwise \$1. But for the basic house, or any extension of it, he has been charging only \$300, regardless of size, and this \$300 includes Walker's supervision during the builder half of his dual role. Because he cannot build as many houses as he can sell, he is now planning to raise the cost of his flexible house plan to \$500, and will let the client choose his own builder.

Construction system. Because he frequently acts as his own builder, Walker is sure his blueprints translate into economical, efficient production. Each design benefits from his 15-year experience with plywood. Money-saving details do not have to be created for every new house, are drawn from a stockpile built up through the design of almost 75 houses.

Based on the 3' module, the framing is as simple as a Meccano set. Instead of the usual bottom plate bolted to the foundation, predrilled 4" x 4" posts are fastened to lag screws embedded every 3' in the slab. A large square socket, chucked in a 1/2" drill, grasps the post at the top and turns it onto the screw. Top plates, also 4" x 4"s, are bolted to the posts with more lag screws, and spliced for compression where they join. Where windows and doors occur, they are mounted directly on the structural posts without casing or framing.

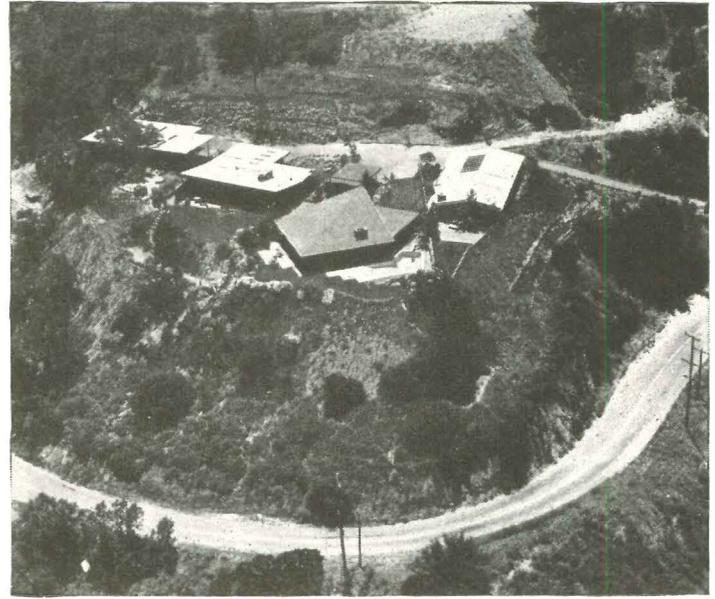
Three-way sill. After erection, posts are cross-routed to receive a one-piece combination sill, stool and window slide which has been slotted every 3' to fit the posts. It is installed from the inside so that the stool is unbroken and the 1" x 4" that retains the glass fits into and fills the slot outside.

Exterior plywood panels are 1/2", generally have a combed surface. A spread joint with a recessed batten compensates for any irregularities in posts. Outside battens, V and flush joints, used for variety, require extra labor. Joints in interior 1/2" panels are flush.

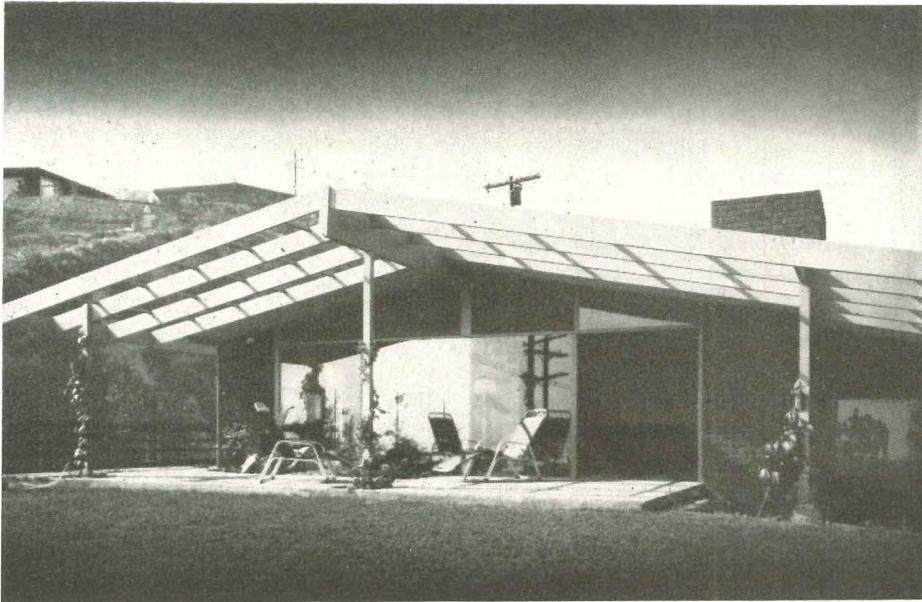
1. Smallest house can be expanded on living-study end in 3' moves. Basic width is always 30'. **2. This expansion** makes living room 30' wide, moves third bedroom to side, adds second bath. **3. Three-way stretch** now adds studio, multipurpose or servant's room to end opposite living room. **4. Example** of how a special house can be expanded to be 51' deep, have five bedrooms, interior bath, darkroom and oversize kitchen. Walker has put the storeroom, carport, roof trellis and fences in almost every conceivable position.



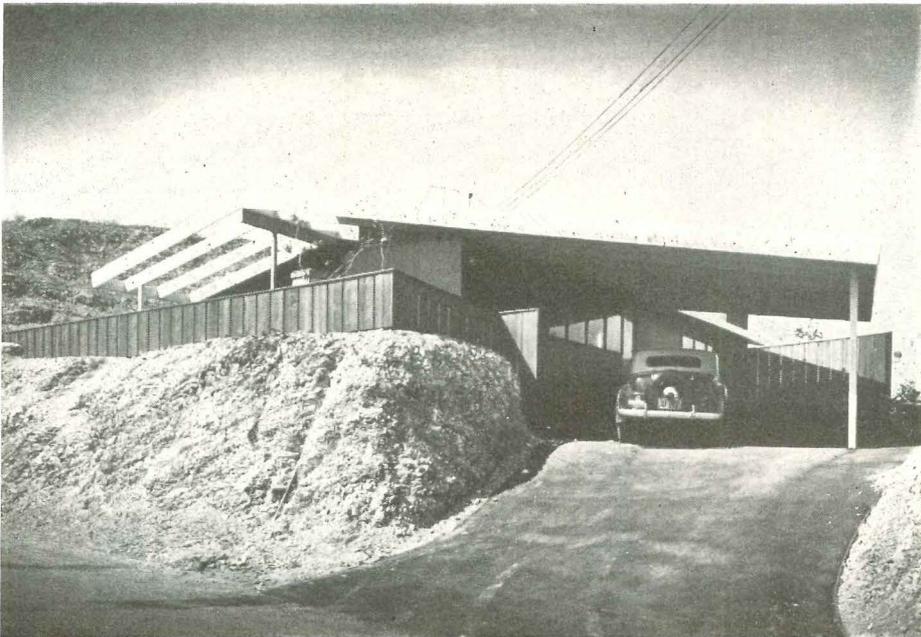
Large glass windows that slide in showcase tracks are standard, make living room a part of patio or garden. Transom windows open for ventilation.



Skillful orientation, above, and fences let Walker put four houses close together, yet each family gets privacy and a house quite different from neighbor's.



Roof pitch 3-in-15, left, makes pleasant angle for open trellis sunshade protecting this outdoor living area. Here the living-room window wall is slid open.



Kitchen roof extended to side covers carport. Trellis, left, shields bedroom windows. Walker always uses handsome, fences on street side for privacy.

Case history

One of the best examples of the flexibility of the Walker system is the 2,400 sq. ft. house shown on these two pages and at the foot of p. 117. Though it is a rich relation of the small house from which it sprang, the lineage is unmistakable.

In this speculative house Walker first extended the basic rectangle to 30' x 48', then added a 15' x 21' servant's room on the rear. At the view end of the living room a 24' x 21' bedroom wing was added on the downhill side of the house, converting the rectangle into an L.

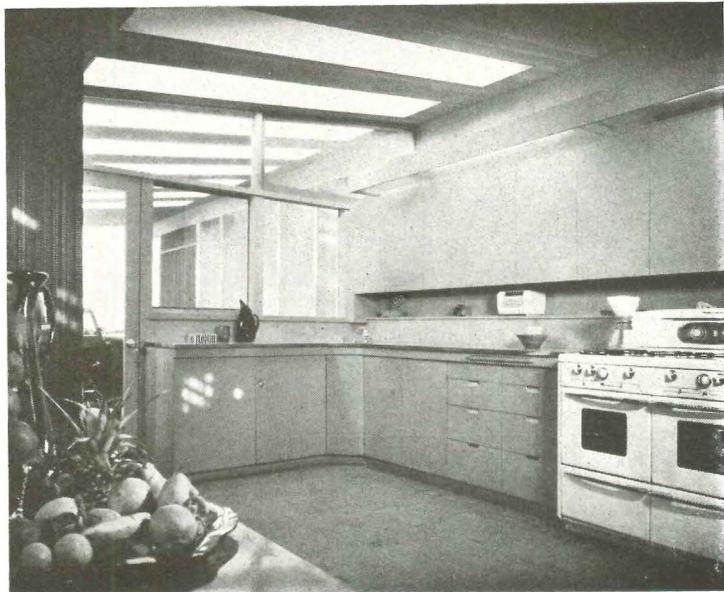
When the house was barely started, it was optioned by a buyer who wanted a hallway extended to the servant's room through a planned closet. This shifted the entrance indoors, from the carport. After Walker did this the customer dropped his option, and a new buyer entered the picture who wanted the bedroom dropped and its area added to the living room—study.

For the changeable client. At this stage, the house was a good example of why architects sometimes say: "Architecture would be a fine profession if you could get rid of the client." Original plans had to be changed several times: new rooms planned, other rooms dropped. However, the flexibility of the Walker module made it possible to build the house, with all the shifts in design, for less than \$11 per sq. ft., not including the \$15,000 site.

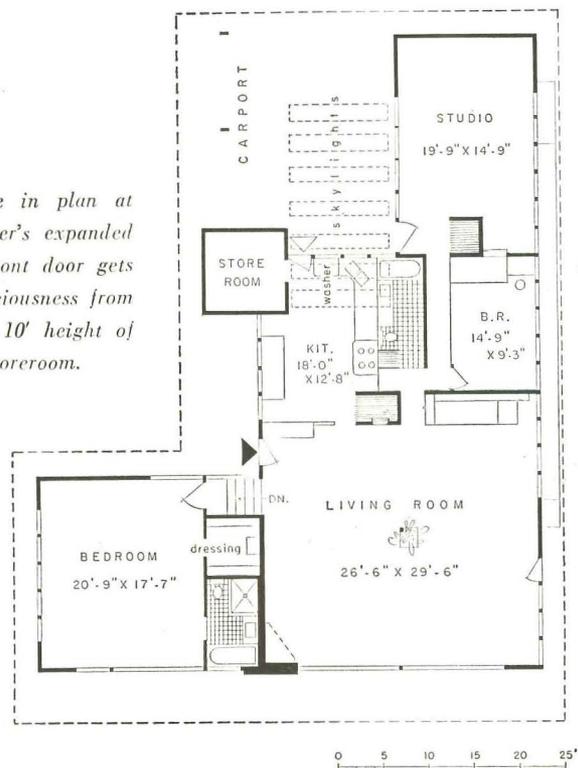
Lots of flexibility is provided by the 3' module:

- ▶ Two modules gave a 6' wide bath and dressing room for the master bedroom.
- ▶ Three gave a 9' x 9' storage space, overlapping a corner of the kitchen one module, handy to indoors or out.
- ▶ Eight "let-outs" of the 3' dimension provided the servant's room. It was easy to extend the laminated roof over the 24' area (see plan).
- ▶ One module furnished space for the hallway demanded by the original buyer.

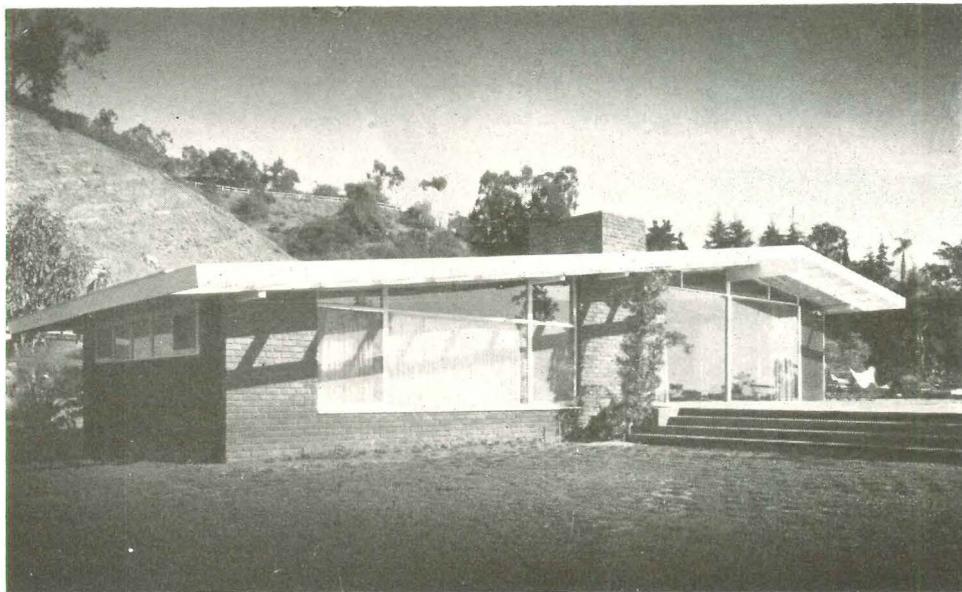
Luxurious kitchens, typical Walker item, are close to carports, convenient for informal meals, planned so food can be served on outdoor terrace. Pleasant, efficient skylights are important trademark.



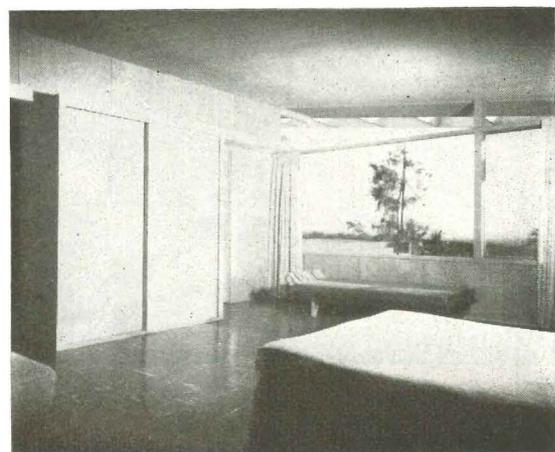
Large rooms, like those in plan at right, are mark of Walker's expanded houses. Guest entering front door gets immediate feeling of spaciousness from two big glass walls and 10' height of ridge. Each house has storeroom.



High ceilings, big windows, with ample closets, below, help sell houses.



Sloping ground is turned to architectural advantage by putting bedroom (left) slightly below living room, carrying roof over it in long, graceful line. Walker uses big egg-crate overhangs of redwood for sunshades and good looks.

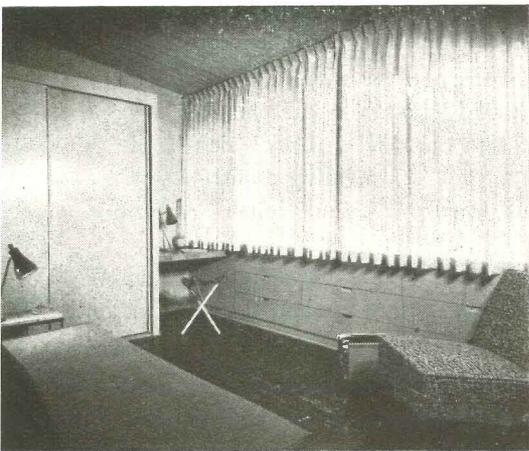




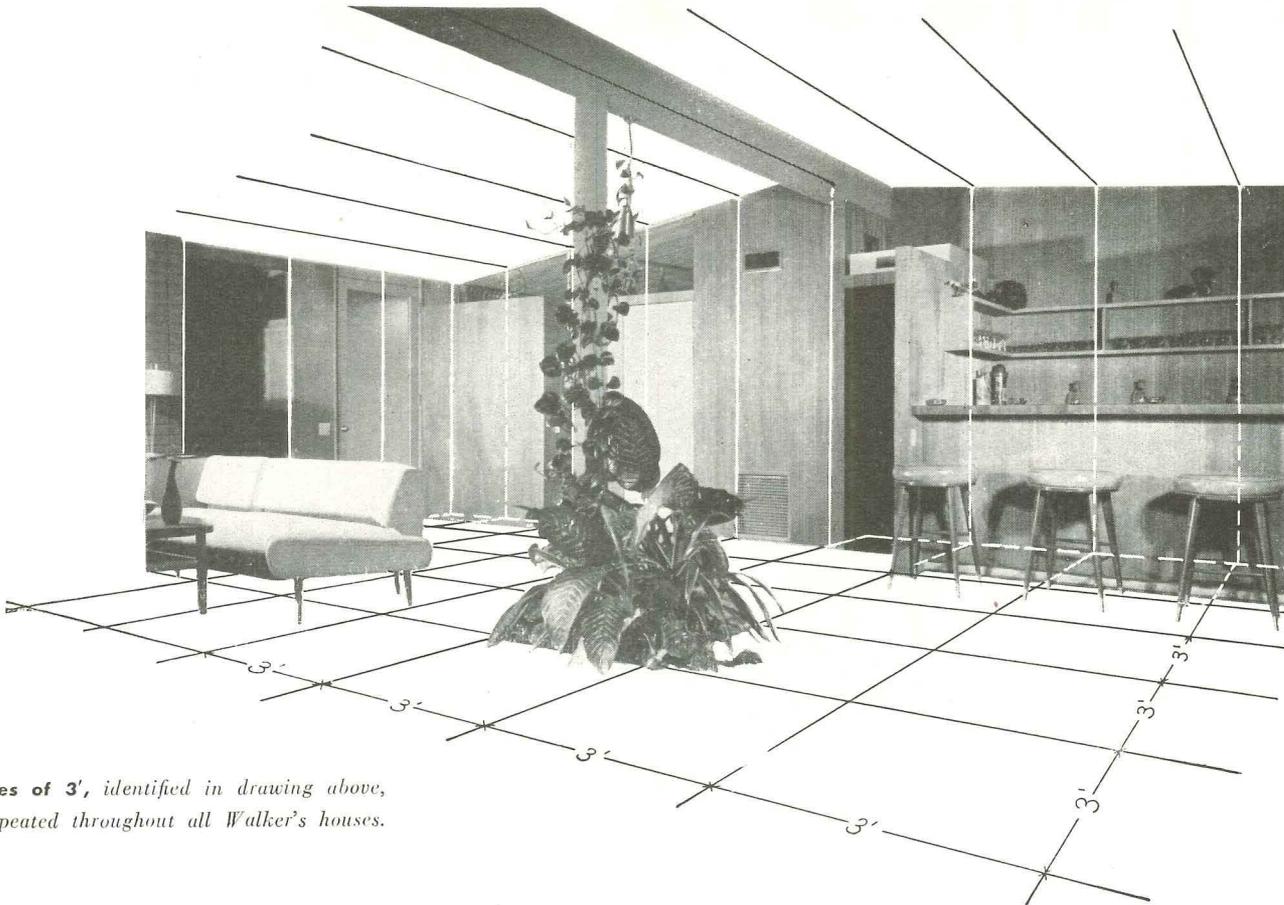
Ceiling of 2 x 3's is handsome in this living room. Concrete floor with redwood strips and fireplace are standard but the far wall has more brick than is usual in Walker houses. Another view, lower right, shows enormous size of this expanded room.



Built-in drawers extend outside, are boxed in, protected by overhang from weather.



Larger living room and bar were made possible when clients eliminated bedroom usually in area at the right. Planting area in center is a modest example of luxurious tropical garden growing in the midst of some of Walker's houses.



Modules of 3', identified in drawing above, are repeated throughout all Walker's houses.

The case for the 3' module

Walker has experimented with the 4' module but feels that the greater versatility of the smaller module is more useful in 11 specific ways:

1. Standard 2'-8" doors fit perfectly between 4" x 4" posts 3' o.c., covered with 1/4" plywood.
2. No intermediate support (required with 4' module) is needed for 1/2" plywood over the 3' span.
3. Single 2'-8" casement windows can be used. Double, split windows would be needed for 4' openings.
4. Normal floor or roof load is easily carried over 3' spans by a 4" x 4" top plate.
5. Sliding glass windows are available up to 5' high in the 3' width.
6. Bath fixtures fit the 3' module well (two modules for the tub, one each for shower, basin and toilet).
7. Roof sheathing 1" thick will just span 3', but not 4'.
8. Two 3' modules are fine for small rooms like baths, storage, dressing rooms, entries, or walk-in closets.
9. A 9' bedroom dimension gives space around the end of the bed; an 8' room leaves little more than 1'.
10. New kitchen appliances average 30" deep, so that 8'-8" gives much more adequate working space than the 7'-8" dimension where appliances are on opposite sides of the room.
11. The yard is still a basic measurement in our economy. Carpeting, linoleum and many fabrics come in 36" widths, and floor tiles are usually 9".

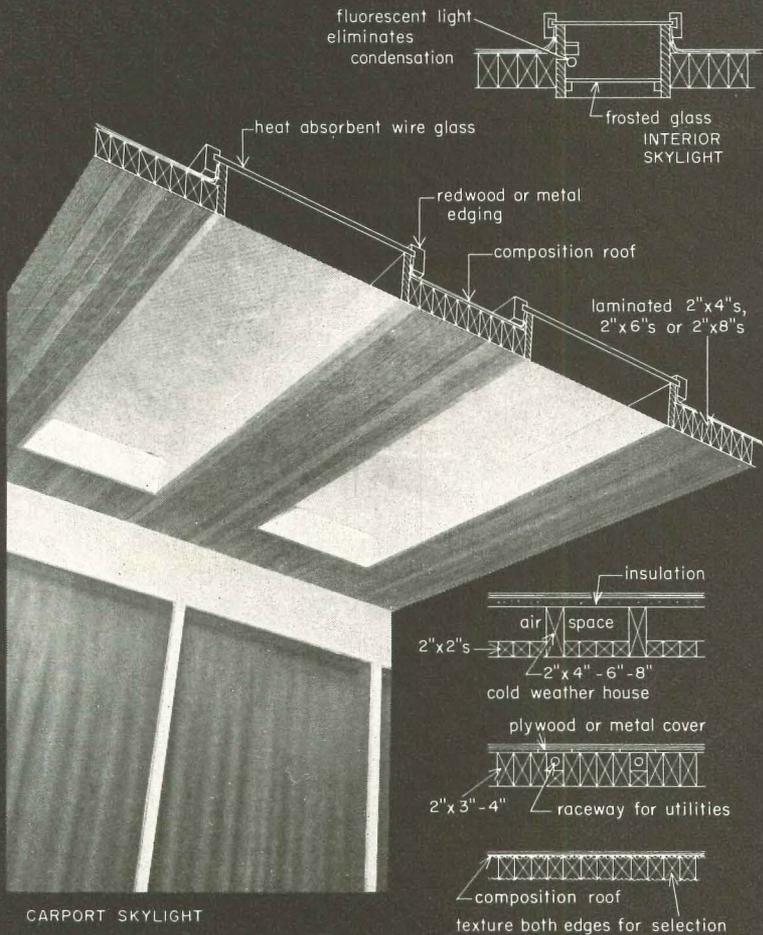
The laminated roof. One of the most popular features in these houses—the unbroken sweep of the ceiling from one end of the house to the other—is made possible by combining 18' timbers into a solid roof, uncluttered by beams every 4' (see opposite). The roof, built in place from 2" x 3"s spiked into ridge beam and top plate, does not require the expensive blocking needed at conventional rafter ends. Unfinished lumber, used to obtain the full 2" width and the underside, is combed, smooth-finished, or left rough-sawn, as desired.

The Los Angeles code requires that the roof members be nailed together every 18", and spiked to plate and beam. So labor is costly. But there is no waste since using the full 18' length of the timbers eliminates all piecing. The sheer weight of the roof gives a good joint where it bears on the top plate, but Walker recommends gun-caulking if moisture is a serious problem.

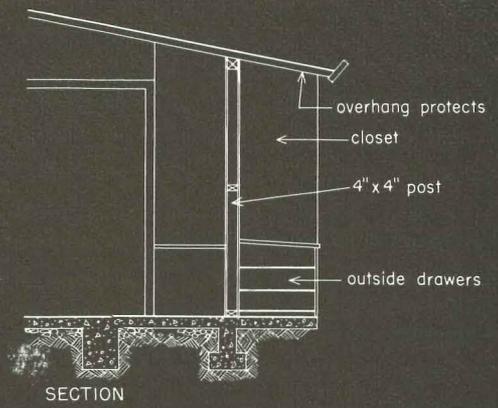
Not a luxury. A built-up composition roof, consisting of three layers of 15 lb, hot-mopped felt and a covering of white or colored stone, is added to this solid surface. Walker figures the cost of his laminated roof at 43¢ per sq. ft. which he feels cannot be matched by vaulted plywood or conventional beams plus 2" x 6" roof sheathing, neither of which can give the unbroken ceiling.

Two interesting variations are the raceway version, where the use of an occasional 2" x 2" gives a 1" space wherever desired for wiring ceiling fixtures; and the hollow roof, which has 2" x 3"s at 2' intervals between 2" x 2"s, providing a smooth surface on the underside and a platform for 1" insulation board on top, with a hollow core between.

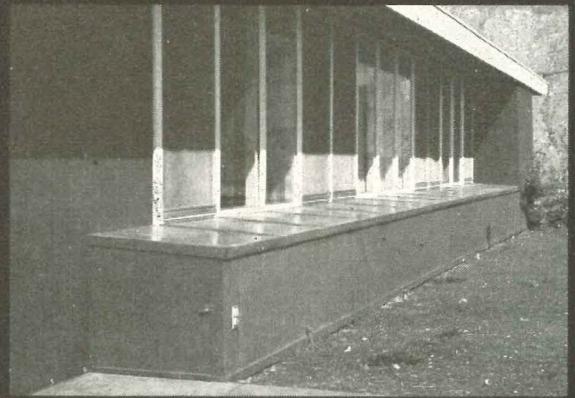
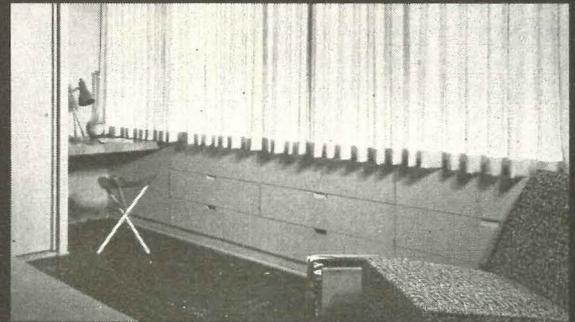
Walker gets a straight roof line by snapping a line and making one power saw cut across all his roofing lumber, then nailing on the fascia board.



CARPORT SKYLIGHT

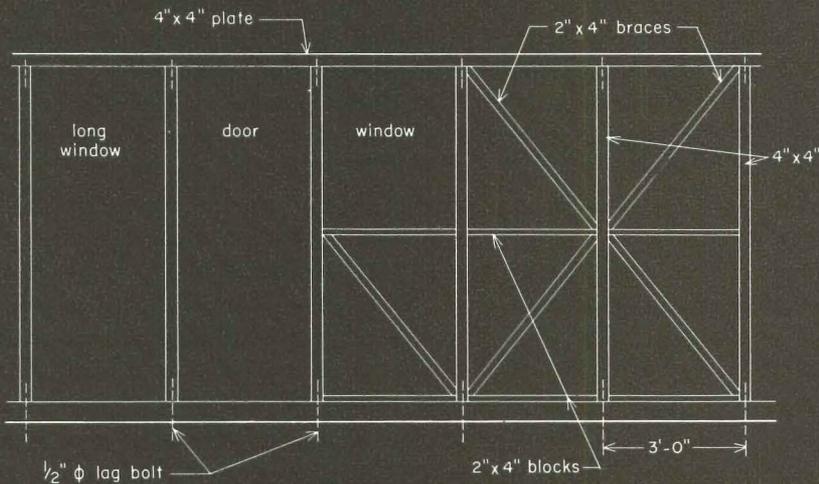


SECTION



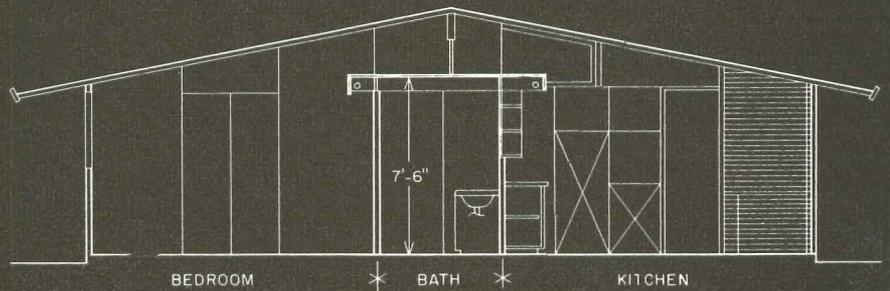
"Skylights have been neglected in residential construction," says Walker, "not for ventilation, but for light and effect." Drawing shows details of skylight, as well as of his laminated roof construction. "Skylights of this construction are not expensive," he says, "and add many times their cost to the value of an otherwise dark area."

Bedroom cabinets projecting outside below windows are about the cheapest possible storage because they increase room area without adding to roof or walls.



Typical wall construction: 4" x 4" posts are secured to lag screws in slab every 3'. On top a complete length of spliced plate is screwed to the posts. Posts are cross-routed to receive one-piece sill, stool and window slide.

Only dropped ceiling is in the bathroom shown in this sectional drawing. Ceiling extends into the kitchen to form light troughs.



BEDROOM * BATH * KITCHEN

Public housing slashed to 20,000 starts; Los Angeles row settled

IN THIS MONTH'S NEWS

(see pp. 35 through 43)

Housing market turns steadier under new housing act and easier money conditions

Increased output of small houses foreseen through third liberalization in FHA Title I, Section 8 loans

Lawsuits add to AEC's headaches over Savannah River defense housing

California designer wins \$50,000 settlement after threatening to sue for piracy of prize plans

Study by Dr. Leo Grebler shows US helped finance more than 45% of new units erected from 1946 to 1951

Public housing foes won their greatest victory in years last month, practically repealing the subsidized public housing section of the 1949 Housing Act.

And it was a sweeping, clear-cut victory. It was won without any reliance on the "defense" restriction argument used to curb the program in 1951 and 1952.

In 1951 Congress set a 50,000 limit for the year on federal public housing starts as a defense measure. Last year, while materials curbs and credit restrictions on private homebuilding continued, it lowered the ceiling to 35,000 starts. For this year (US fiscal 1954) HHF Administrator Albert M. Cole, with White House concurrence, urged authorization for another 35,000 starts as the "fair and consistent thing to do" pending evolution of the new administration's new over-all housing policies.

Minimal program. But the new Congress, which helped abolish defense controls, would not even approve last year's restricted figure, no less allow any return to normalcy under the existing law that gives the President power to set the number up to a maximum of 135,000 a year. Instead it hacked this segment of the housing field even harder. Within a month after enacting more aids for private homebuilding (H&H, July) it limited this year's public housing starts to 20,000.

This was a 43% slash from last year's defense-curbed 35,000-unit authorization. It was only 14% of the maximum 135,000 units a year for six years authorized in the act Congress adopted in 1949. It would amount to only 2% of total housing production at the rate of 1 million units a year.

Purse-string control. To nullify the existing statute Congress simply withheld funds, which are appropriated on a yearly basis. In the Independent Offices bill it limited PHA to loan and subsidy funds sufficient for starting only 20,000 out of a backlog of 62,000 units already "under contract" between PHA and various cities.

Technically the House had voted against any "new" starts, but would have allowed the 62,000 "under contract" to proceed. The Senate had voted for the 35,000 starts recommended by Administrator Cole. But the actual emasculation occurred in the joint Senate-House conference committee, which cut even deeper, wrote the 20,000 unit "compromise" into the final take-it-or-leave-it draft of the bill. The House adopted

the measure July 21; barring an upset, the Senate was to do so by month's end.

Los Angeles liquidation. When Los Angeles elected Congressman Norris Poulson as mayor (H&H, July), most Angelenos figured the city's embattled 10,000-unit public housing project was on its way out. Poulson had campaigned with a pledge to curtail public housing in deference to last year's Los Angeles referendum in which the vote for abandoning the program was 379,050 to 258,777. After only eight days in office, Poulson persuaded the feuding Los Angeles Housing Authority and city council to accept a compromise. Then Poulson and LA officials flew to Washington to obtain quick approval from HHF Administrator Cole for PHA's role in the settlement.

For Los Angeles, it involved abandoning two projects not yet started, thus cutting the 10,000 units to 4,300 and slicing the cost from \$137 million to \$42 million—the amount the federal government had already underwritten. The federal government would absorb \$8 million already spent for planning and administrative overhead on the canceled projects, less what sale of the sites brings (estimate: \$2 million).

The deal required Congressional approval, which was obtained in a rider to the Independent Offices bill. This authorized cancellation of local projects already under way if PHA would be reimbursed for all federal outlays. It also approved previously negotiated special contract termination agreements—the Los Angeles settlement. Cole, while not too happy with the compromise, called it "better than any alternatives."

Defense office asks funds for more A-blast test houses

To build up its meager store of information on atomic bomb effects on various types of houses, the Federal Civil Defense Administration wants to expand its research. Its new administrator, Val Peterson, former governor of Nebraska, requested \$477,000 for the current fiscal year, \$290,000 to erect houses and shelters for test explosions, the other \$187,000 for instrumentation.

"We want to know what will happen to the buildings Mr. and Mrs. America use," Peterson explained. "This is something that has been sadly neglected."

Previous experiments were confined to two frame houses (H&H, April '53). Under the proposed program two-story brick houses,

both wall-bearing and brick-veneer, would be tested. Some brick row houses also would be erected, on the theory that such construction is very prevalent in many target areas.

FCDA also wants to equip the houses with all normal utilities such as gas, electricity and water. In some oil burners would be placed in operation. No equipment of this sort was used in former tests, partly for economy's sake, partly because officials wanted to keep fire hazard to a minimum and concentrate on studying structural damage. In future tests efforts would be made to approximate the destructive effects of a blast on fully operating households. In the event of a sneak raid, it is argued, few persons would be able to turn off gas or elec-

tricity, to say nothing of putting out coal fires or shutting off oil-burning furnaces.

The House, not entirely sold on the idea of building more houses for test destruction, last month reduced the requested research appropriation to \$350,000. The Senate was still to act.

FCDA in June issued *Operation Doorstep*, a 32-page evaluation of the results of the March 17 Yucca Flats test on two houses and various shelters, last month issued *Home Shelters for Family Protection in an Atomic Attack*, an 86-page pamphlet for the householder who wants to build his own small hideaway. These are available from the Government Printing Office, Washington 25, D. C., for 25¢ and 30¢ respectively.

FHA authorizes inside baths for one- and two-family houses, may ease heater rules

Last month, FHA did something builders, architects and other elements of the industry have been urging for years. It authorized windowless bathrooms for one- and two-family houses if proper mechanical ventilation is used. Skylights will not be required as long as there is adequate artificial lighting.

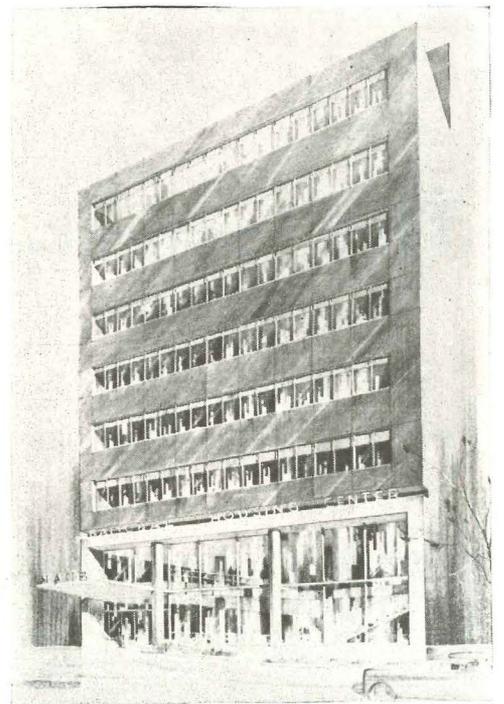
Although the new ruling, bathroom MPR (Minimum Property Requirements) revision No. 43, comes from national FHA headquarters, it does not mean that each FHA insuring office *must* go along. (Those that think local market conditions make outside bathrooms necessary can still insist on them.) Nor does the relaxation apply yet to walk-up garden apartments—even though FHA already permits inside baths in elevator apartments.

Honors divided. Who should get credit for the relaxation for one- and two-family houses? Some nominate new FHA Commissioner Guy Hollyday. They credit him with bringing FHA a realistic, fresh outlook on keeping its standards abreast of the times. But a case can also be made for the persistence of homebuilders and prefabricators, who have never let up in their campaign to make FHA see reason. FHA did not let up all at once. There was a preliminary relaxation early this year, when it authorized inside second bathrooms in houses processed by the New York and Florida insuring offices.

Approved inside bathroom equipment for one- or two-family houses that may now be authorized by any FHA insuring office includes: 1) an exhaust fan of 24 cfm capacity operated in parallel with the light switch, its noise not to exceed 50 db; 2) an upper wall or ceiling grille with louvers which close automatically when the fan is turned off and which

are adjusted to allow an air velocity not exceeding 600 cfm; 3) a corrosion-resistant metal discharge vent to the attic or outside air; 4) a 1/2" opening under the bathroom door or a louver in the lower part of the door or wall.

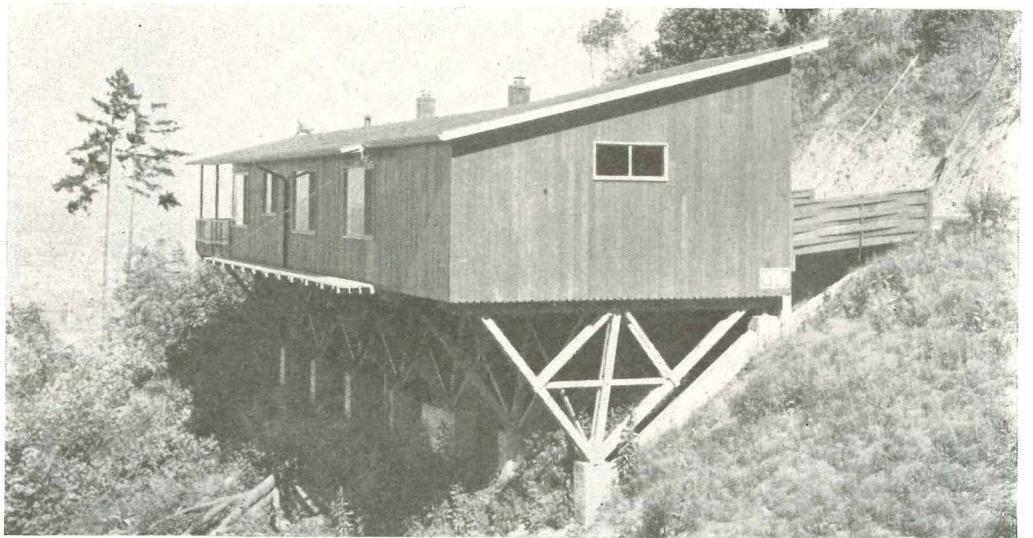
Heater changes next. FHA is now working on a revision of its MPR for water heaters. This will probably authorize 30-gal. storage tanks for one-family houses, (perhaps even 20-gal. tanks for one-bedroom, one-bathroom units) but allow local insuring offices to set higher limits.



NAHB starts National Housing Center, headquarters building

Last month wreckers started razing two old buildings at 1625-27 L St., Washington to make way for NAHB's modern National Housing Center. This will be an eight-story, reinforced concrete, air-conditioned building with the six lower floors devoted to a permanent exhibition of the homebuilding materials and construction industries, the two upper floors occupied by NAHB's new research institute and national headquarters staff. Architects were Aubinoe, Edwards & Beery, and the builder Washington Homebuilder Alvin L. Aubinoe, Inc. The dedication is scheduled for September, 1954.

Edmund Y. Lee



Cantilever house is perched on steep Portland, Ore. hillside

Two years ago a logging operation within the city limits of Portland, Ore. cleared a steep hillside overlooking the city and provided a magnificent view across the Willamette Valley to the Cascade Mountains. The property adjoined the high-class Portland Heights residential section, and the Chrystal Co., managed by Bill Chrysler, promptly started construction of 36 homes to capitalize on the premium views along the winding roads hugging the sharp incline.

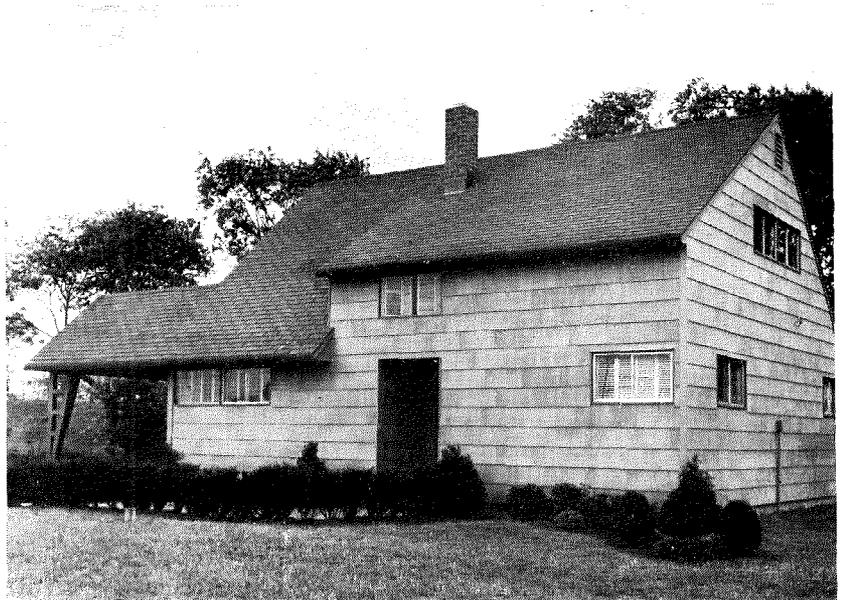
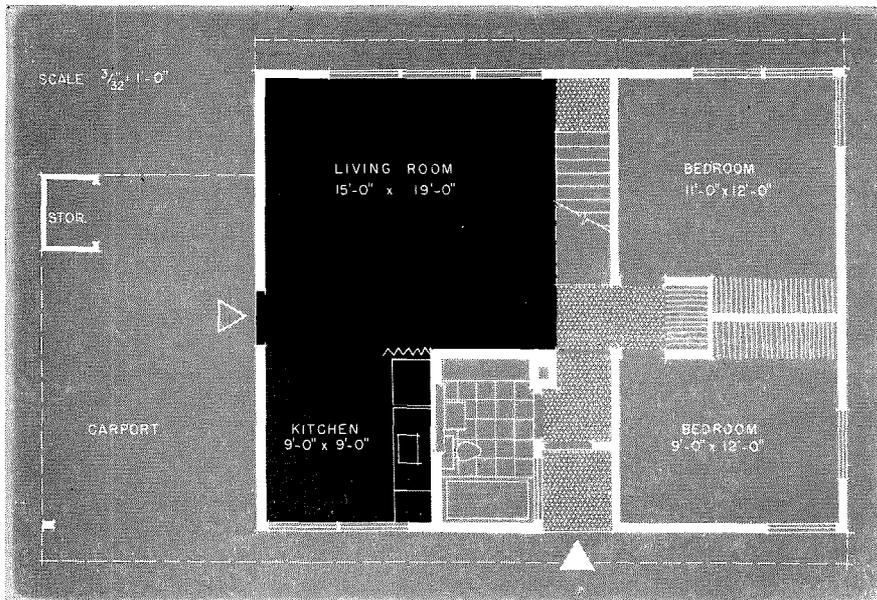
Most unusual of the group was this \$30,000, two-bedroom house with 1,220 sq. ft. of living

area, plus porches and garage. It has only one edge touching the ground, its cantilever foundation supported on two rows of steel and concrete piles driven 16' to 30' to solid rock and connected at ground level by a series of reinforced concrete bridges. Three extra piles help support the garage (foreground) reached from a driveway (off right).

Pierson & Tidball, of Portland, were under-structure engineers; George H. Otten, landscape and foundation engineer; Roi Morin, architect, and Coma & Kibbe, contractor.

The fastest-selling houses in the USA

This is the fifth installment in a grass-roots' survey made each month by HOUSE & HOME to show you the fastest-selling houses in the country and tell you why they set records

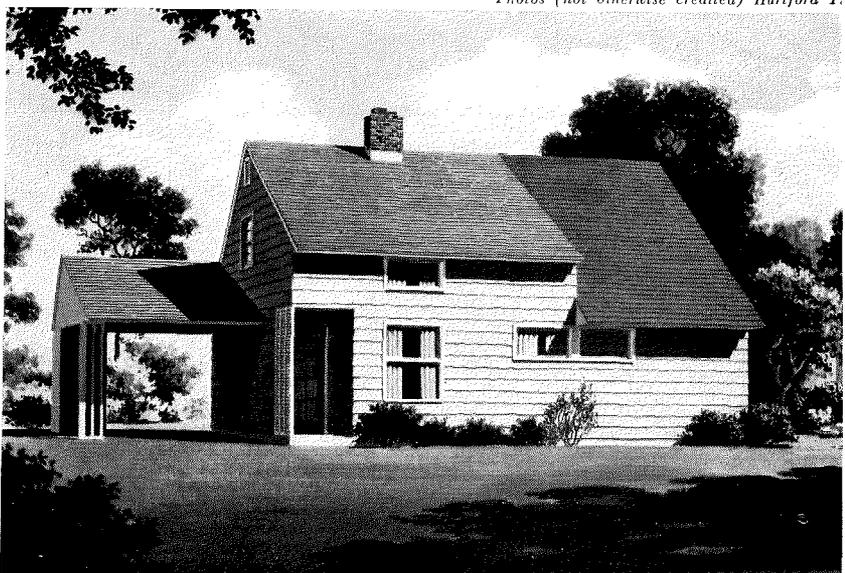
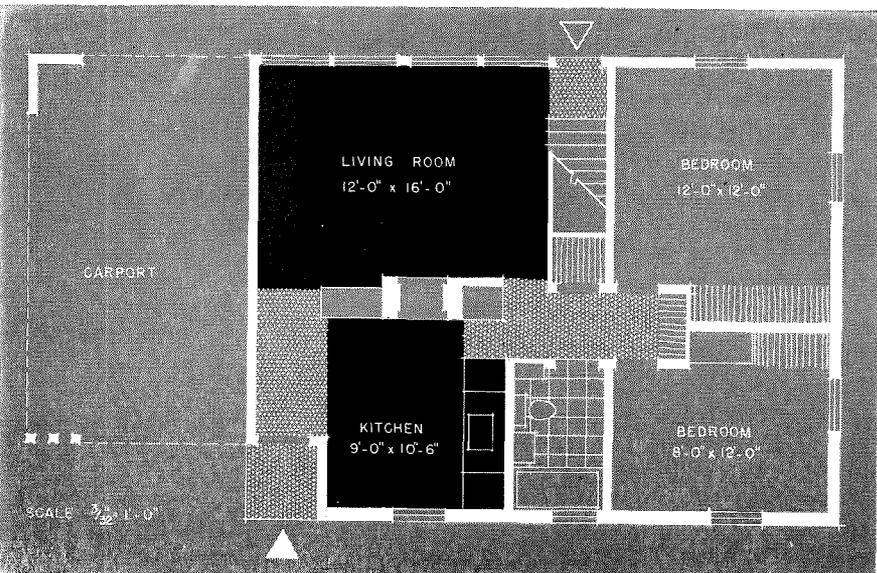


1953 house: To make a new best seller, the Levitts modernized an old one. On the same 32' x 25' foundation, they not only increased living area under roof by eliminating front porch of older house (see below), but turned a 19'-1" x 12'-6" living room into a 19' x 15' room. Kitchen, though inches smaller, seems bigger because it is open combines with the living room (black area).



1947-50 house: Greatest space saving in new house was accomplished by rearranging hall space of older house (see shaded portions of plan, diagrams at right). For the 1947-house fireplace a single solid brick wall was substituted at one end of the living room. Stairwell to expansion attic was originally enclosed, is now open.

Photos (not otherwise credited) Hartford T.



The world's biggest builders introduce an \$8,990 house
in booming Levittown, Pa.,
better 100-a-week sales of \$10,990 Levittowner

Levitts' new "Rancher": nation's No. 1 best seller

With an unerring eye for the most house for the money, over 1,400 of the more than 2,300 buyers of Levitt houses in two months chose an improved version of the old Levitt expansion-attic house, the "Rancher." It is a two-bedroom house with space for two more bedrooms and bath upstairs. Price: \$8,990; closing fee: \$10; no down payments for vets.

The combined sales record of the Rancher and the \$10,990 Levittowner, now going at a better than 1,000-sales-a-month clip, betters any previous records set by the US building behemoth.

Carrying charges are \$57 per month on the Rancher; sum includes taxes and fire insurance as well as interest and mortgage amortization. Corner lots, 80' x 100', are \$500 more, make payments an even \$60. Inside lots are at least 60' x 100'. Levittowner payments are \$67 per month.

When the first Rancher was set in among Levitt's row of display houses, it immediately jumped out ahead of the Levittowner in popularity—almost without benefit of advertising. The single furnished model attracted thousands of new prospects from as far as Camden and Trenton, N. J. as well as from Philadelphia. Paradoxically, it also helped increase sales of the more expensive house.

Reception of the Rancher prompts a Levitt ad to state: "There isn't a single finished house in Levittown for sale. Applications are now being taken for October occupancy on the Rancher and December occupancy on the Levittowner. Make a \$100 good-faith deposit and you'll be protected against any price rise."

Within economic reach. Like Chicago's big builder, Nate Manilow, the Levitts were finding that unless they could build houses within economic reach of nearly all people, they would not be able to continue a high rate of production. Several months ago while building only the Levittowner, they found that for every buyer who had the income to qualify for this \$11,000 house,

they were losing one prospect who could not make the financial grade. The obvious solution: build a lower-cost house. "Every dime in a down payment is critical," says Bill Levitt. Even the 100 sales a week of Levittowners—big enough to satisfy almost every other builder—was not high enough to keep the Levitt production machine running full tilt; so they put the Rancher into production.

Back and forth. The builders chose to go back to their 1947-50 expansion-attic house rather than design another one-story for several reasons:

Speed: It could be redesigned fast, put into production to take advantage of the ideal summer building months (a wet spring and problems of building water, street and utility systems for a whole new city had slowed production).

Familiarity: Levitt subcontractors with the experience of many thousands of such houses on Long Island could build this house almost blindfolded.

Materials: These were almost the same as those in the Levittowner already on the production line.

Costs: The Levitts were probably more familiar with these than anyone else.

Popularity: This was proved by the previous expansion-attic models. "And," says Bill Levitt, "everyone needs expansion space."

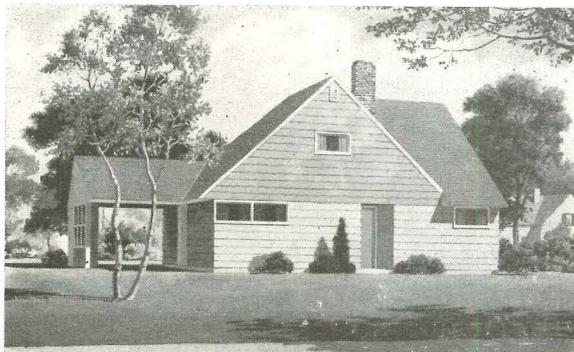
Building economics: The efficiently used perimeter of a 1½ or 2-story house was a sure way to give buyers who demanded it more room at little extra cost.

As the world's biggest builder the Levitts were being watched closely by other builders. To critics who might say the Rancher is turning back the clock of progress, shown in the three-bedroom Levittowner and Landia houses, Bill Levitt had a ready retort: "This is a new and better expandable house and no one else is building a house like it in this area."

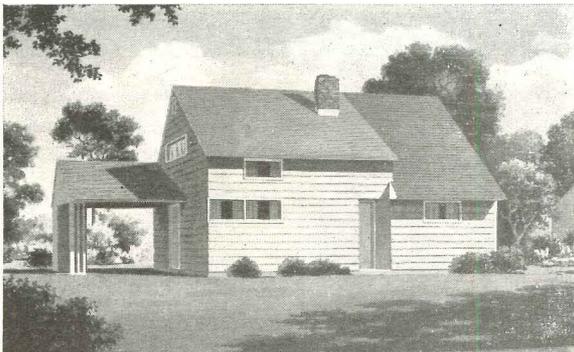
1953 Rancher models



Unbroken eave line of this model makes it appear longest. Shed, three-gable and salt-box roof variations (here and below) were all offered at same price. Rear elevations are always the same.



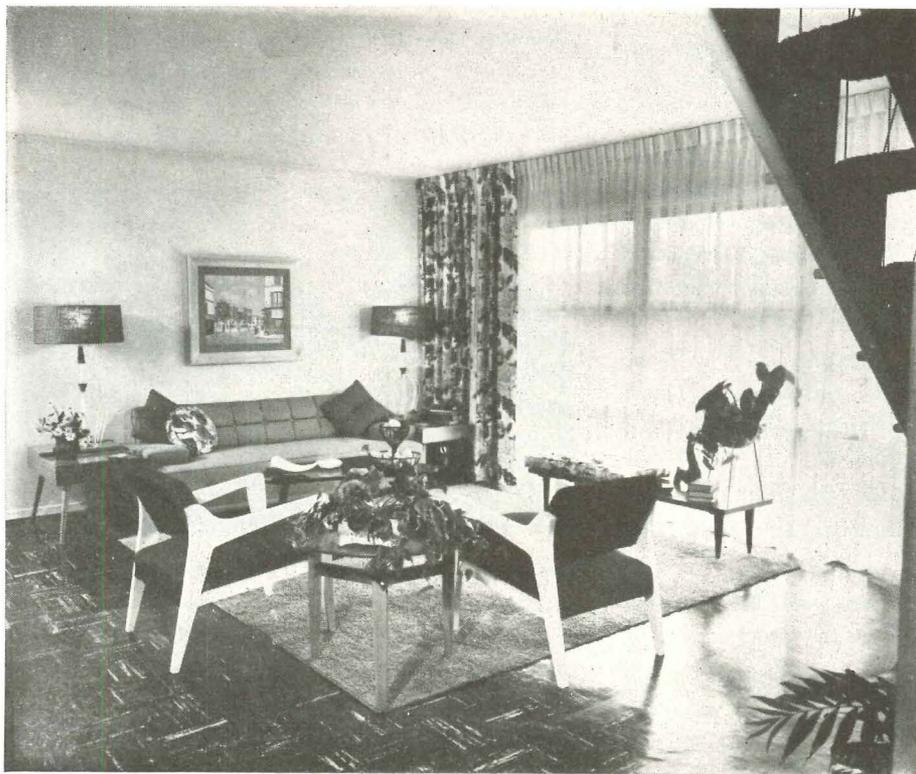
Carport toward rear and break in roof line tends to foreshorten front facade. Note how window placement varies slightly in each model. Single window on right benefits by shade of overhang.



Most popular houses have high kitchen window though Levitts offered floor-to-ceiling type at first. Result: all houses have high windows. High pitch of roof is seen from rear (see overleaf).



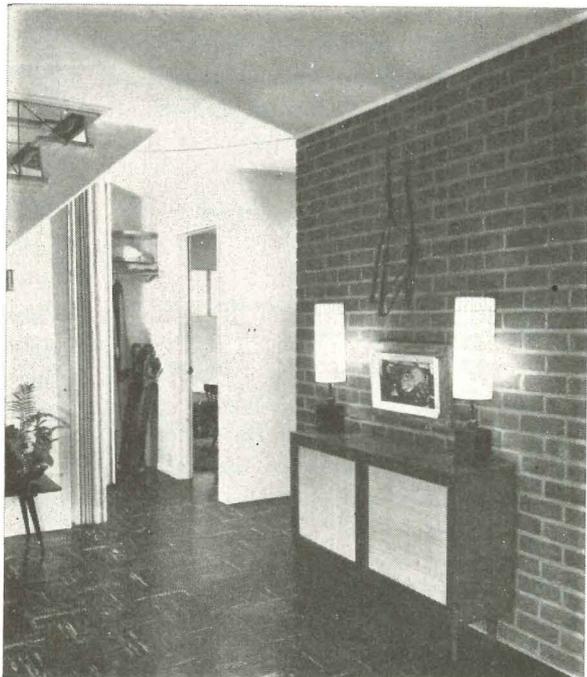
Biggest window faces rear yard. Kitchen, open to living room with this big window, affords housewife opportunity to supervise children's play in yard. Access to rear for outdoor living is through door to carport (near kitchen) where children can play on rainy days.



Rear living room appears again in latest Levitt model, is larger and looks larger still because of open stairway, big rear window bringing outdoors inside, open plan of kitchen that allows eye to scan full depth of house. Note curtains hung from ceiling to show visitors to model how to furnish.



Most novel change in new house is open stairway which hangs like a piece of wall furniture, does not stop the eye as would a closed-in stairwell. Cord lacing in place of wood balusters adds clean, contemporary touch. Stair risers, with clear finish shown here, are now painted in all houses.



Gradual transition from fireplace to TV as family center of interest is smoothly suggested by brick wall against which TV receiver can be placed. Note curved track with folding doors to separate bedroom-bathroom area from living area. Closet in hallway also has folding doors.

Greater usable space. Brother Alfred Levitt worked over the old expansion house, gave it a better floor plan, added more usable space and more livability. Greatest change was in transforming hall space into living area (see diagrams, p. 126), but space was also saved by moving the oil burner and a washing machine out of the kitchen and into the bathroom. Gone from the new house is the fireplace. Today's smaller chimney saves space and runs through future hall space in the expandable attic, rather than through either of the bedrooms as in the older house.

Two other improvements: the master bedroom is 1' longer (although space was taken from the other bedroom). The front door was moved to permit better use of space.

Similar construction. Biggest difference in exterior of new and old house stems from a new asbestos shingle. It lines up with windows both top and bottom, is probably the first shingle that has been made on a module based on the height of a house. It is nailed to the studs instead of to sheathing as in the older house, comes in gray, oak, green and cedar tones.

"The new shingle looks better than the old because it has ribs," says Bill Levitt. "The old one looked too flat." Another member of the firm believes the new shingle just looks better on the high sides of the Rancher, but the older shingle looks best on the low, one-story house.

New look. The last of the Levittowners is being finished now, but the long rows of high-peaked Ranchers are already giving the town a new look. The Ranchers will be placed in their own neighborhoods, but surrounded by Levittowners to increase variety. This should add interest to the looks of the town, allay a criticism that too many Levitt houses of one type look monotonous even though they are staggered and variously oriented.

No production problem. "Production is no problem here now," says Bill Levitt. "but getting the tough, clayey soil ready is." He figures this costs almost three times what it did on sandy Long Island.

Levitt subs are up to no new cost-saving tricks: they've learned most of them already on past expansion-attic houses. Because the Levitts find roof trusses use more materials than rafter-joist construction, and because crews are so adept at putting on roof

after roof (each crew specializes), the builders can save on material without losing on labor, though few builders can pull off this trick successfully.

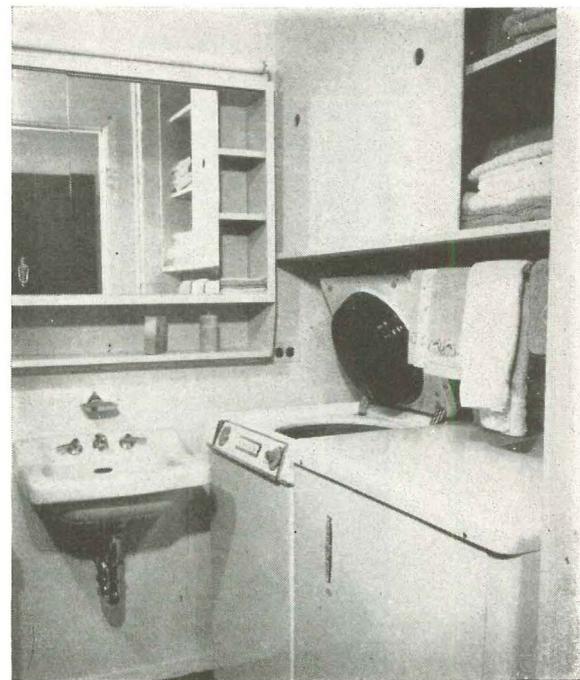
Specialty of crew operation coupled with apple-pie order of materials keeps building teams working smoothly together. The age-old cry, where's the material? is not heard. Each subcontracting crew is supplied with the materials it needs, sets its own techniques and pace for efficiency.

One production line. Because Bill Levitt thinks it is less confusing and far more efficient to build only one kind of house at a time, from now until December only Ranchers will be built, then for several months only Levittowners. Almost 25 houses a day are rough-framed. "We expect to hit 50 a day some time this month," says Bill Levitt. "We laid 266 slabs in one week." If all goes well—and financing is available—the Levitts will build 6,000 houses in their fiscal year (Feb. to Feb.). Best previous year: 5,300. VA mortgages have been for 30 years, FHA's for 25.

Big value. Under a package-mortgage deal, buyers get an automatic washer, electric range. A refrigerator is \$189 extra. Some of the items buyers like particularly: colored bath fixtures, hot-water radiant heat, complete landscaping, circuit breakers instead of fuses, outside garden storage closet, free use of playgrounds, swimming pools. What buyers probably like best of all: the economy with which the attic can be completed by a contractor who makes a business of finishing Levitt attics. Cost of the complete attic job—two bedrooms, two closets, a bath and finished stairwell: \$2,100. Bath alone plus heating: \$750. Materials for two bedrooms if the owner does the job himself: about \$600.

Sales pick-up. "We've had good sales because the whole community looks lived in," says Bill Levitt. "We're no longer just a lick and a promise. We've got stores open, swimming pools and playgrounds in use, our own railroad station (22 trains a day)—we're in business. We've got individuality and some identity. We're a suburb of Philadelphia. Families move out here and they find friends. We give more value than buyers can find in other places. You can't fool the public; they're the only ones who can judge a bargain. Levittown has caught on. It's settled down to a steady thing."

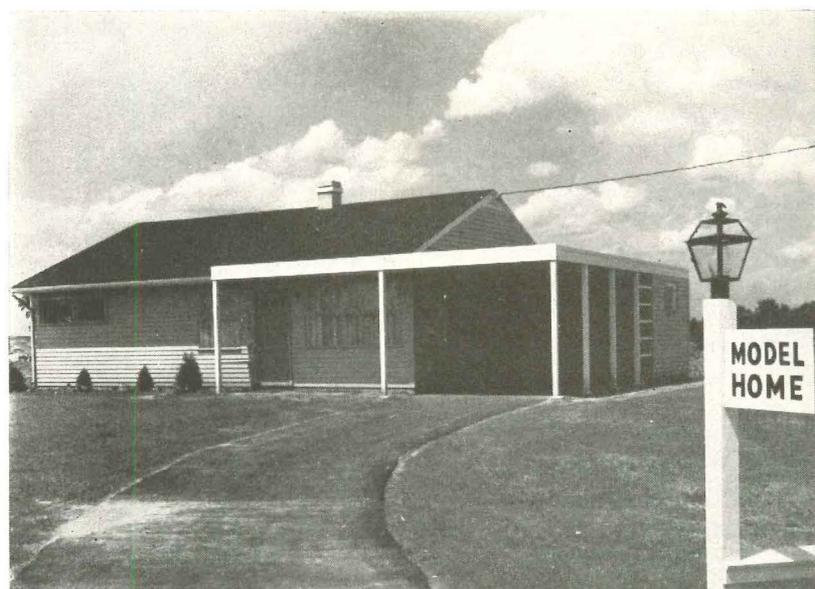
	Old expansion-attic house	The Rancher
Dimensions	32' x 25'	32' x 25'
Living area	19'-1" x 12'-6" including stair	19' x 15'
Kitchen	9'-10" x 10'-10" not including heater, washer	9' x 9'
Bath	5'-1/4" x 8'-3/8"	Slightly smaller usable floor area
Bedroom	12'-1/2" x 12' closet 7'-10"	11' x 12' closet 7'
Bedroom No. 2	12'-1/2" x 12' closet 7'-10"	12' x 9' closet 7'
Hallways	100 1/2 sq. ft.	61 1/4 sq. ft.
Front door	On corner	Near center
Fireplace	Yes	No
Shingles	12" x 24"	14'-5/8" x 32"



Space was saved by putting washer, oil burner on one side of bathroom against brick wall. Top-opening washer needs no floor space in front. Top of heater is handy storage shelf. Most soiled linen originates in bathroom, salesmen explain.

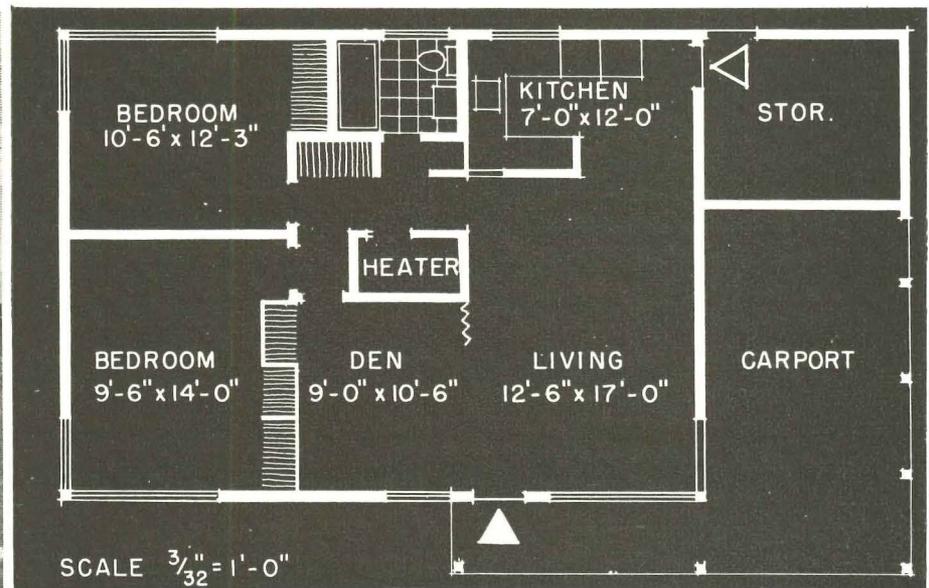
53-house sellout in 30 hours near Hartford

“These houses,” says their builder,
 “resulted directly from the HOUSE & HOME Round Table
 on the low-income family and the too-cheap house”

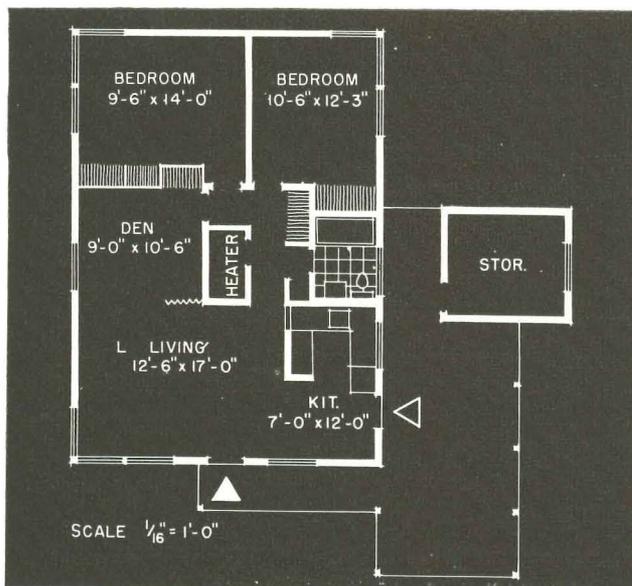


Photos: (following pages) A. J. Kiely, Jr.

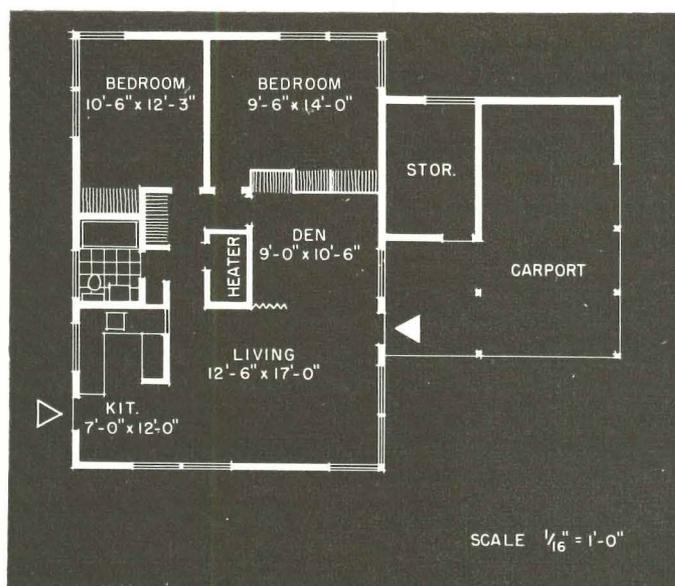
No advocate of the banana split, Architect Barker used only bevel siding as facing material, says: “Nothing shows poorer taste than a jumble of materials.” He persuaded builders to use 2' overhangs front and back. Previous Bent-built houses had them only in front. Trusses permitted overhangs at low cost.



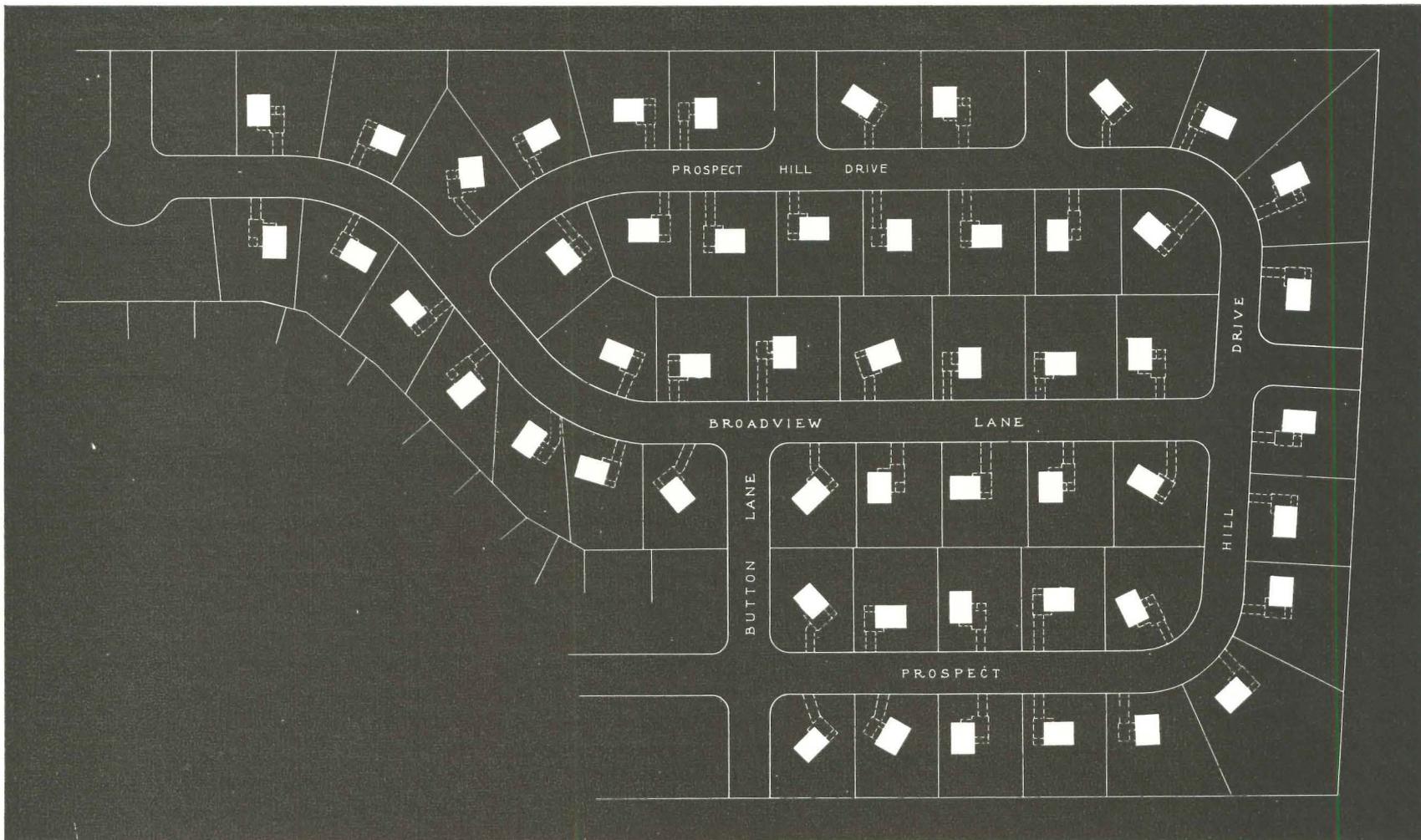
Most popular model had this plan. Builders attribute sales mainly to fact that this was the furnished model. Originally kitchen had rear door, but plan was revised, as shown here, to permit access to storage room from both kitchen and garage since salesmen believed many buyers wanted it as extra room.



Separate storage-room plan was not as popular as house above. Access to rear yard or patio would be made from kitchen door through space between house and storage room. A rear-living-room model was discarded: builders thought added cost of split plumbing unwarranted on such a low price house.



Variety of project appearance was achieved in this plan and plan at left by facing narrow side of house to street. Carport and storage room on narrow size helped increase apparent size of house. Driveway from street to rear of carport is included with each house. All three models were offered in plans.



Sight seldom seen in a lower-cost house: site planning of houses to take advantage of breeze, view, avoid row-on-row development look. The 100' lot was such a buyer bonus and sales-tipping feature that all future houses will get 100' lots.

LOCATION: East Windsor, Conn.
 BENT & STEVENS, builders
 DAVID C. BARKER, architect
 LOOMIS & SULLIVAN, engineers
 FRED S. DUBIN & ASSOC., consulting engineers

This may very well be the fastest-selling house ever offered in Connecticut. In 30 hours 53 houses sold and people still waited in line. Price on the 1,026 sq. ft. house: \$10,900. FHA down payments: \$1,500; no down payments for vets. The vast majority were sold VA.

Perhaps these houses could be called the Round Table development because Builder Jim Bent credits their success to the good ideas he picked up as a panel member of the Round Table on the low-income family and the too-cheap house (H&H, Oct. '52).

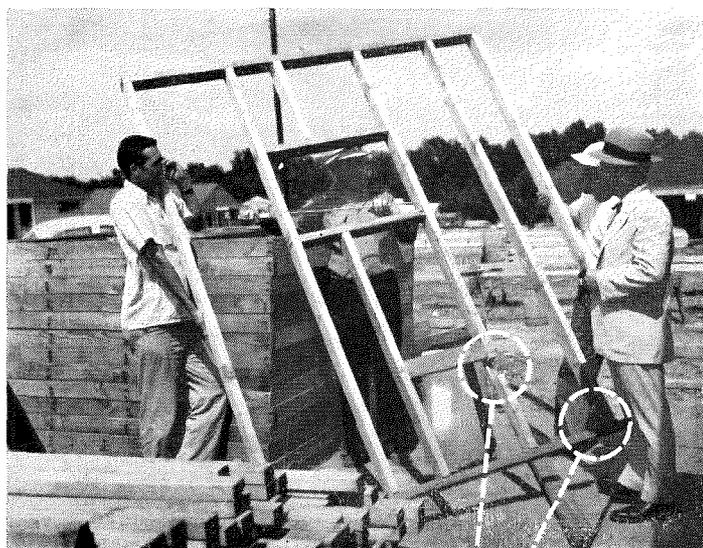
Before the Round Table neither Bent (who is also president of Hartford Federal Savings & Loan Assn.) nor partner Bill Stevens had ever called in an architect until plans were virtually complete. But for their Warehouse Point project, 14 miles from downtown Hartford, Bent handed Architect Dave Barker his Round Table notes, told him to design a house that would sell for under \$11,000 adequate for a family with two children.

"The houses were the end product of many architect-engineer-salesmen conferences," says Bent.

Architect's part. Architect Barker, on his first merchant-builder design after almost 10 years of design in Japan and Batavia (he had been with Skidmore, Owings & Merrill), was guided by these ideas from Bent's notes:

- ▶ Elimination of the basement with its water hazard.
- ▶ Provision of ample storage room to make up for the lack of basement.
- ▶ Use of one basic rectangular design for economy in building.
- ▶ Equivalent of three bedrooms.
- ▶ A car porch designed to double as porch and garage.
- ▶ Bigger lots (100' width as opposed to 30' widths in a 92-unit project in the same area last year, 60' widths the year before).

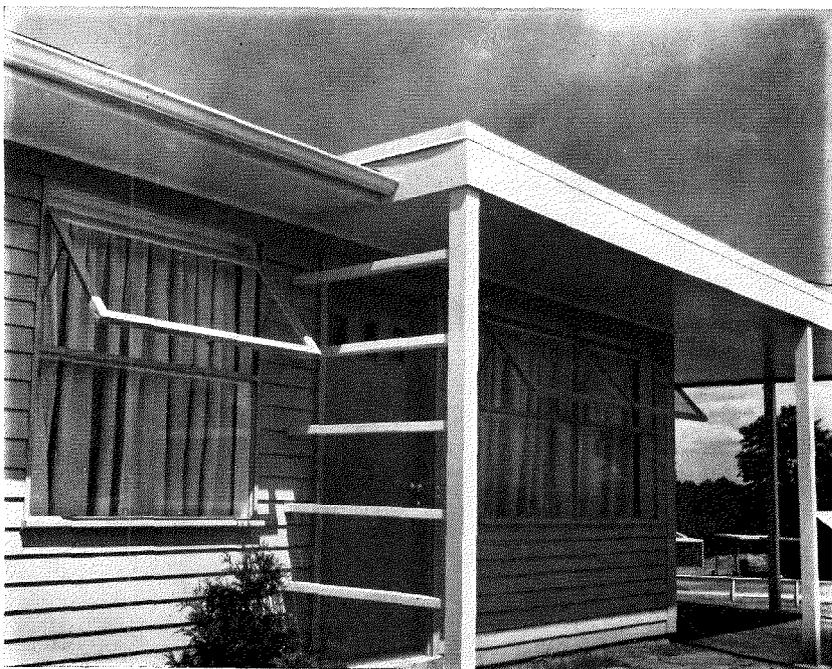
Clean-cut inside and out. Almost every square foot under roof is put to good use (see plans). Use of "landscape" colors on exteriors—bright reds of flowers, soft greens and yellows of foliage, grays and browns of rocks and earth—added more variety to project with its skillful place-



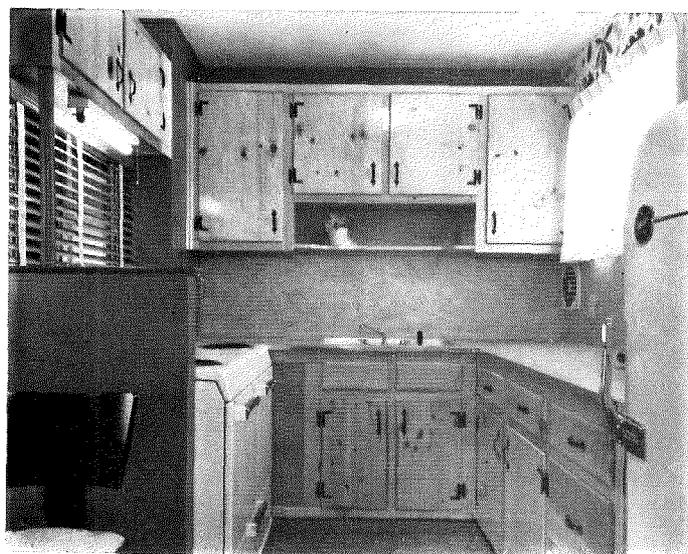
To give the most house for the least money, Bent and Stevens applied many of the labor and materials saving techniques recommended by the Small Homes Council of the University of Illinois. First and foremost: precutting. Virtually every piece of lumber was cut in advance in this special carpentry shop set up on the site, protected from rain.

Notches for pipes

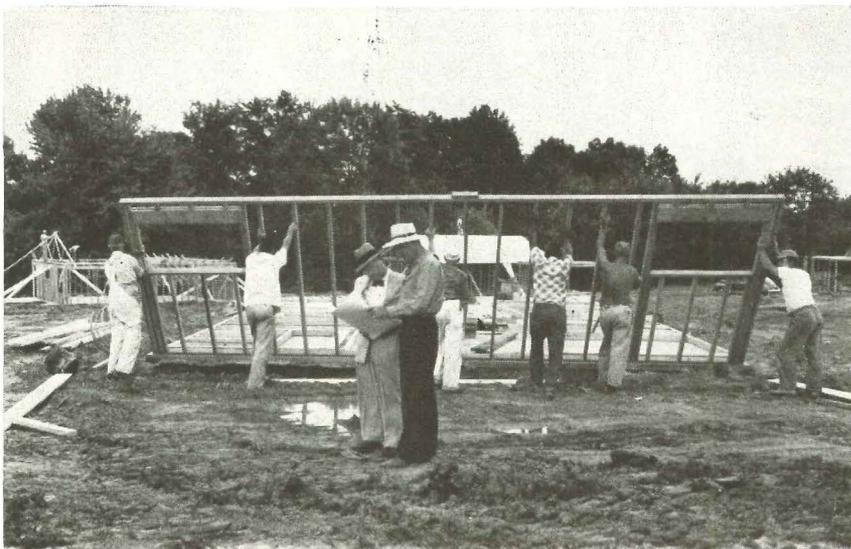
Pre-notched, prefabricated plumbing partition, slotted to receive pipes, gave builders particular satisfaction. "In not one case," says Stevens (background with ruler), "did a plumber have to recut or renotch for pipes." Plumbing contractor made his own jigs for precutting all pipe, passed along \$35-per-house saving, may soon pass along \$60.



Awning-type windows were specified by Architect Barker, who wanted a larger-than-average size window. They were manufactured by a local company. Cost: \$243 per house, including sash and glazing. Builders were happily surprised at reception of windows, think buyers saw their advantages: funnels for summer breezes, protection against rain squalls.



Kitchen must be attractive, though small, and unexposed to living room, salesmen told builders. Way to combine open planning with privacy is demonstrated by use of Venetian blinds in passthrough. Number of cabinets shows how Bent learned from HOUSE & HOME Round Table way to overcome restricted facilities of low-cost house.



Tilt-up method was used on all exterior walls, again as a result of Small Homes Council influence and HOUSE & HOME articles. Walls were assembled on jigs, later carried to slabs, could also have been built on jigs laid on slabs. On slab is another wall ready to be tilted into place. Stevens acted as general superintendent of operation.



Truss roofs were fabricated on site using split ring connectors. Trusses permitted interior partitions to be preassembled, installed after house was completely under roof. Added advantage, Ben points out: flexibility of storage-wall placement. All trusses are in place and nailed within 45 minutes. Operation is handled by four men for 3 man-hour total.

placement of storage rooms in each of the three different models. Barker designed a fourth, rear bedroom model, not built because it required a split in the plumbing, added costs that could not have been absorbed on a \$10,900-house tract.

Engineer's part. Engineer Dubin established working layouts for septic tanks to insure proper functioning, laid out ground-water interceptors for a lower water table, worked with architect on site planning.

Salesmen's counsel. Bent's salesmen emphasized the necessity for well-organized storage space, especially in a slab house. Storage-wall closets with top section for dead storage was an immediate hit with women. Salesmen pointed out the sales appeal of an attractive kitchen that "does not have to be big but must not be exposed to the living room." assured the builders sliding doors would go over big and that a storage room uncluttered with utilities or design jogs was an essential. This room has waste and water connections.

Other sales-tipping features: fully tiled baths with a limited choice of tile and fixture colors, linoleum countertops and knot-pine cabinets in the kitchen.

Hot-water radiant heat rather than hot air was used because salesmen said buyers in the area believed hot water was the more reliable heating agent and would bolster faith in the slab-house warmth.

Merchandising. After several publicity stories and a few teaser ads in local papers, the builders used only two full-page weekend ads, the one on Sunday hardly being necessary. The almost immediate sellout saved them an estimated \$5,000.

"The remarkable thing about sales," says Bent, "was the lack of great swarming crowds. This was good; salesmen can't answer questions when the crowd is too big. In this tract we never had more than two dozen or less than eight people in our only furnished model. We made a sale to about every fifth couple who visited the model house."

The builders still keep a salesman on the premises to show the houses to hundreds who know the tract is a sellout. Seventy prospects want Bent to build the houses for them elsewhere or on their own lots.

Basementless bargain. "Although this was the first sizable slab house in the area," says Bent, "no one mentioned the lack of a basement. To us this indicates people won't ask for a basement or even miss it if the house is big enough and has enough storage. The almost 100 sq. ft. storage room went over big with women. Many, I'm sure, envisioned it as a spare room."

Most house, least money. FHA appraised the house almost 5% above selling price. That made other builders open their

eyes. One frankly admitted he would copy the house. Equally frankly, Bent told him that wouldn't be necessary, offered him a full set of plans. But Bent suggested the better approach would be to hire Barker to do a house for him. He hasn't yet, but the architect already has another merchant-builder project as a direct result of the phenomenal success of Warehouse Point.

Architect-builder team. "I'm convinced that bringing an architect in from the start is the only way to work," says Bent. His comment on why more builders do not: "It's hard to convince them they are getting real value unless they see a nail driven or a board sawed. Sooner or later they'll have to learn as we did that an architect is worth his fee a dozen times over. Builders who try to chisel on architectural service or offer peanuts either get chiseled in turn or get peanut services."

From his experience at Warehouse Point he concludes: "I used to think that land was the greatest single advantage you could give to a house. Now I add a second: architectural service; they're the two cheapest items in the long run, regardless of cost."

Says Architect Barker: "I've learned the importance of saving on each piece of lumber because the saving or loss is multiplied many times over. And I now recognize the importance of simplification and the importance of standardization.

Maximum wiring in a competitive house

Third in a series of three articles on adequate wiring

Chattanooga builder's house is a preview of the low-cost all-electric house of the future

LOCATION: Chattanooga, Tenn.
M. L. AKINS, builder
OSCAR DRINNON, designer
J. L. WASHBURN, electrical contractor



Any \$11,300 house with over 71½% of its cost budgeted for wiring is bound to shock a cost-conscious industry. But in TVA-land, where low-power rates make it practical to add electrical heating to the normal lighting and appliance load, such a high percentage makes sense because builders can eliminate the "furnace" and "chimney" items from their cost sheets. (NAHB figures these at 5% and 2%, respectively, in their breakdown of typical costs.) As the use of electricity is rising in every part of the country, this 1,139 sq. ft. house can serve as a model for the all-electric small house that is growing increasingly common with the disappearance of servants.

Two good reasons

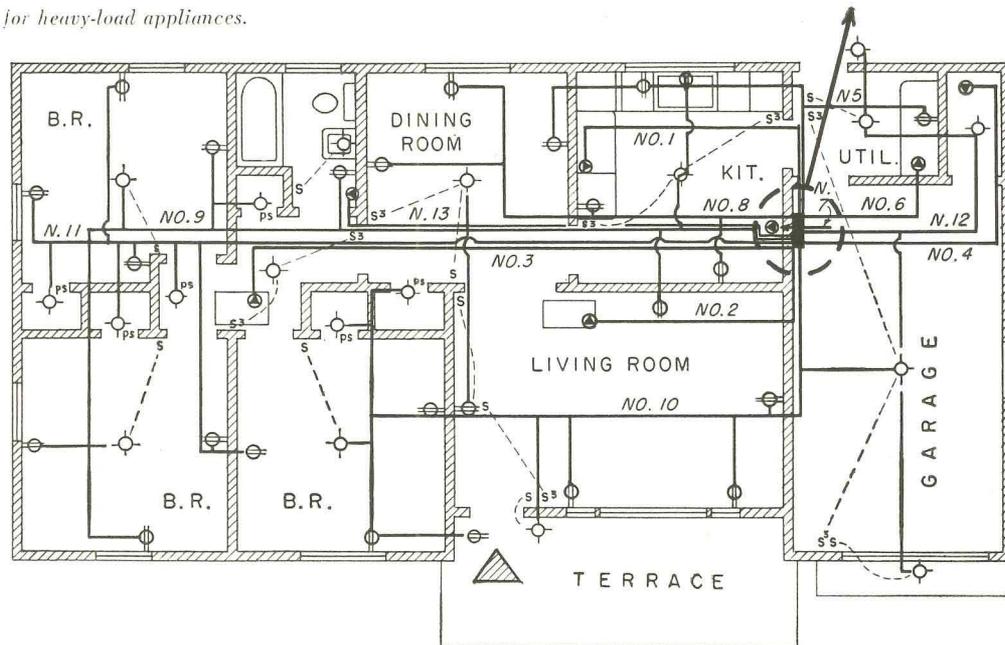
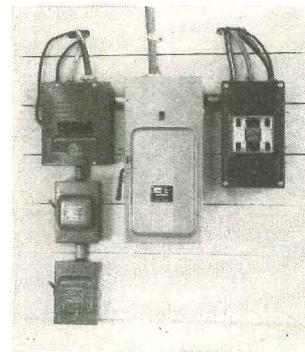
Builder Akins gives two reasons for his emphasis on adequate wiring, even in low-cost houses:

First, because part of his operations have been in the more-demanding \$15,000-\$20,000 market, he learned that family desire for electrical convenience does not vary in different price brackets. The \$10,000 house buyer is not more modest in his wants—he just has less ability to pay. The complete wiring that is a strong selling point in the expensive house will be many times as impressive in a lower price range.

continued on p. 138

Significant feature of this 1,139 sq. ft. builder house is its generous provision for appliances and lighting, rare in an \$11,300 house. Exterior outlets for living terrace and at garage entrance are attractive points.

Wiring plan, below, shows multiplicity of outlets which permit any desired arrangement of furniture. At right, the 100 amp. main switch from which 13 circuits branch, five general purpose, eight for heavy-load appliances.



CIRCUIT SCHEDULE

No.	Item	Capacity	No.	Item	Capacity
1.	Range	50 amp. 3 w. 115/230 v.	8.	Appliance	20 amp. 2 w. 115 v.
2.	Electric heater	40 amp. 2 w. 230 v.	9.	General purpose	15 amp. 2 w. 115 v.
3.	Electric heater	50 amp. 2 w. 230 v.	10.	General purpose	15 amp. 2 w. 115 v.
4.	Electric water heater	20 amp. 2 w. 230 v.	11.	General purpose	15 amp. 2 w. 115 v.
5.	Automatic washer	20 amp. 2 w. 115 v.	12.	General purpose	15 amp. 2 w. 115 v.
6.	Electric dryer	25 amp. 3 w. 115/230 v.	13.	Electric heater	15 amp. 2 w. 115 v.
7.	Electric heater	20 amp. 2 w. 115 v.			



3-in-1 room saves space, builds sales

THE problem of saving costly space is increasingly important these days—yet it's often hard to achieve without losing sales appeal. Here's a good idea for making one room do the work of three, without the cramped feeling that home buyers dislike.

The basic plan calls for a storage wall that houses a two-section table. The housewife can use the table in the kitchen as a work counter, then push it through the wall into the living room, and set it for dinner, as in the big picture above. After dinner, it may be pushed part way back into the wall (upper small photo), to serve as a buffet or library table. For a party, this versatile table can be divided to form two card tables (lower right). Folding chairs are stored away in the storage wall compartments.

In a room that has to be attractive and practical, you offer extra value with a floor of Armstrong's Linoleum. It provides wall-to-

wall color that holds the room together decoratively and has many other advantages that have made it the housewife's favorite. She knows how easy it is to clean and how long it will last. Armstrong's Linoleum never needs costly refinishing, it's greaseproof, quiet and comfortable underfoot.

Armstrong's Linoleum is available in a wide range of styles and colors, and the extra attraction of a simple custom design like the one shown here costs surprisingly little. Offer floors of Armstrong's Linoleum in every house—and in every room in the house—they will help speed sales.

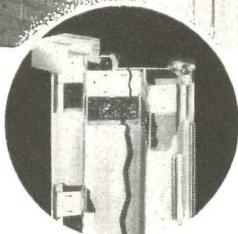
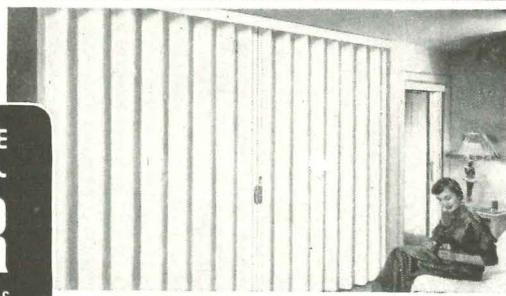
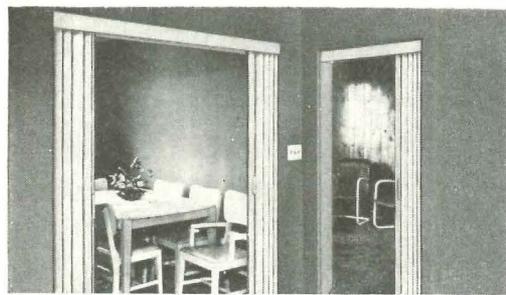
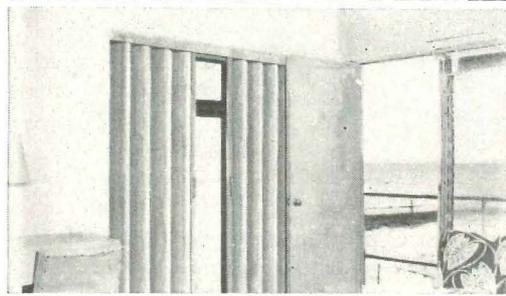
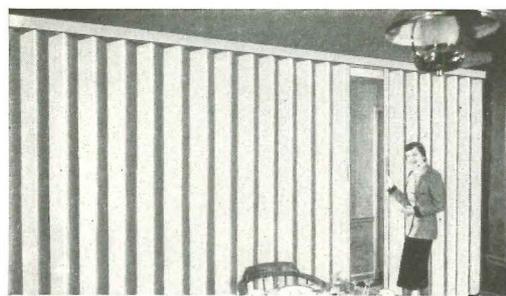
SEND FOR FREE ROOM PLAN

For a floor plan of this combination living, dining, and party room, with a layout of furnishings and a color scheme description, write directly to the Armstrong Cork Company, Floor Division, 108 Sixth Street, Lancaster, Pennsylvania. 



ARMSTRONG'S LINOLEUM

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space
from the
same area!



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- ★ Vinyl plastic coverings, wide color range—easy to clean with soap and water, long-lasting and fire resistant
- ★ Exclusive Multi-V design—with center-line support—requires less stack space
- ★ Easy, low-cost installations
- ★ Nationally distributed, advertised and accepted
- ★ Backed by 56 years of engineering and manufacturing experience

Cut construction costs and add a sales "plus"—figure FOLDOOR in your building plans.

Every square foot of floor space you save means a lower-cost home, an easier-to-sell housing project. And with FOLDOOR, you can design a new home with less total floor space and still get as much usable space as a larger house with conventional swing-type doors.

FOLDOOR's wonderful flexibility and beauty, too, give every home prospect an impression of something "extra." FOLDOOR divides! It separates! It can even add an entire room!

There is a type and size FOLDOOR for every need. See Sweet's Catalog and consult your nearest FOLDOOR installing distributor. Holcomb & Hoke Mfg. Co., Inc., 1545 Van Buren Street, Indianapolis, Indiana.

MAXIMUM WIRING *continued*

More power to them

Second, every Chattanooga builder is faced with a statistic that points up the absolute necessity of providing ample electrical service, no matter what the cost of his house: Chattanooga's average annual residential use of electricity is 4,702 kw-h, compared to 1,458 kw-h for Chicago or 1,352 for Albany, N. Y. This high consumption is principally due to the almost universal use of electric heat in houses.

Ample capacity

As in all good wiring installations, Akins provides ample service capacity. The 100 amp. main switch is serviced by three No. 2 wires, a must in any house that anticipates future electrical expansion.

Thirteen circuits branch off from the main: five general-purpose or appliance circuits, and eight that serve specific heavy-load appliances. In addition to the usual water heater and range circuits, Akins adds separate circuits for washing machine and dryer, and an appliance circuit serving kitchen and dining room, where the heaviest load of small appliances originates.

Electric heat

Of the \$350 wiring bill, heating units and their wiring account for \$375. Two 50 kw floor furnaces provide the bulk of the heat, with 1.5 kw auxiliary units in kitchen and bath. All are convector units, as radiant panels would not fit the heating budget.

Plenty of outlets

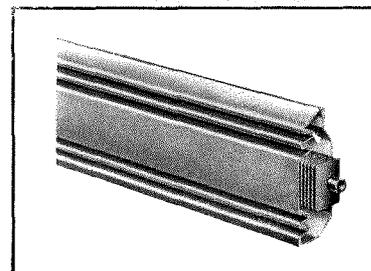
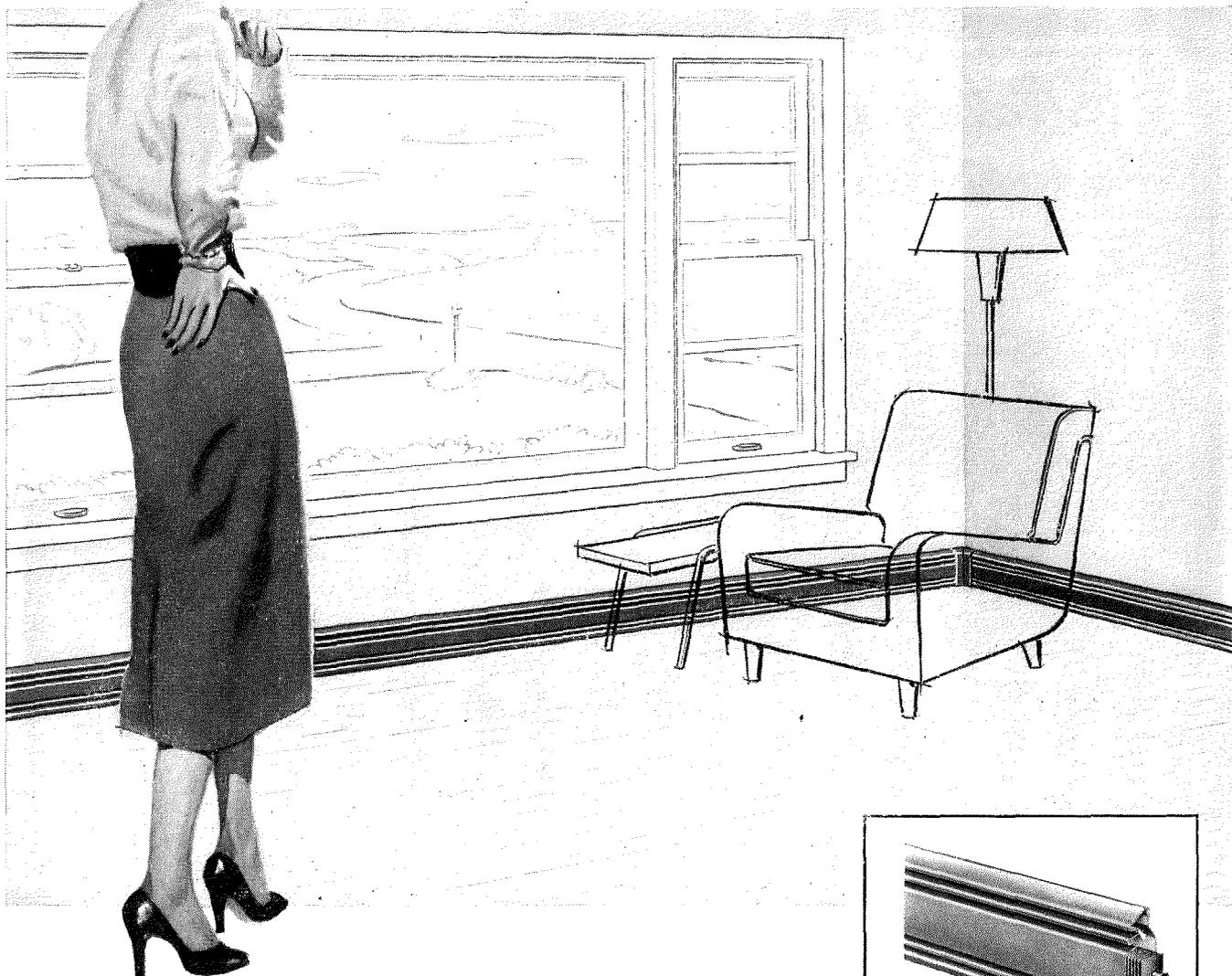
The four general-purpose circuits provide more than enough convenience outlets, planned for varying furniture arrangement. Each bedroom has at least three outlets, while five serve the living room. Lighting is not neglected, either, for there are overhead lighting fixtures in every room except the living room, as well as hall, closet, front and rear terrace, and garage lights.

Three built-in raceways in living room and bedrooms eliminate obtrusive telephone wires and permit extensions.

Tomorrow's wiring

Though Chattanooga's heavy use of power is unique today, many other areas would benefit by this example. Wiring is usually inadequate for the growing list of home appliances, and makes no provision for the current-demanding newcomer, air conditioning. This house furnishes a preview of the large-scale electricity consumption for which servantless houses should provide.

Her first glance helps you sell faster



What does Mrs. America look for *first* inside your house?

She tries to see *just exactly where her furniture will go*. And that takes *free wall space*.

With Dunham Baseboard Heating she'll have enough "wall" to arrange things as she wants them—even when picture windows and fireplaces "knock out" valuable wall space.

That's because Dunham Baseboard runs only along outside walls, and only at *floor level*. No above-the-floor warm and cold air grilles to keep furniture "clear of."

Let Mrs. America place her furniture where she feels "at home" . . . and she's more apt to buy *your* home.

Dunham baseboard is distinctively different. Modern, smooth-surfaced enclosure has inconspicuous air openings, fits flush with floor—no "cleaning under" problem. Complete line of accessories give installation unusually neat, finished appearance. See your local heating contractor for full information, or write direct to C. A. Dunham Company, Dept. 5, 400 W. Madison Street, Chicago 6, Ill.

DUNHAM

BASEBOARD HEATING

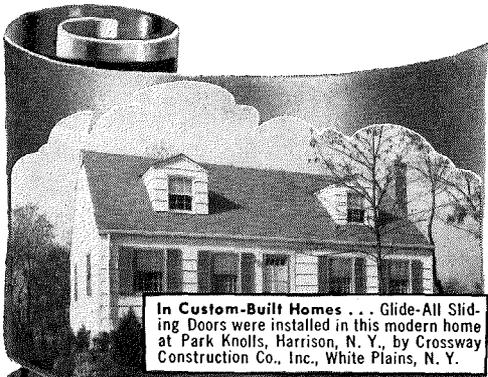


Quality first for fifty years

SALES ENGINEERS AND JOBBERS FROM COAST TO COAST

There's a place
in every blueprint
for
GLIDE-ALL
Sliding Doors

...they're durable, versatile, lower in cost



In Custom-Built Homes... Glide-All Sliding Doors were installed in this modern home at Park Knolls, Harrison, N. Y., by Crossway Construction Co., Inc., White Plains, N. Y.



In Apartment Buildings... Dubin & Dubin designed this 516-unit luxury apartment building at 4950 Marine Drive, Chicago, specified and installed Glide-All Sliding Doors.



Aerial view of Valley Stream housing development in Long Island, N. Y. Glide-All Sliding Doors were specified by Green Acres Homes, Inc., builders.

GLIDE-ALL Sliding Doors are appearing in an increasing number of blueprints and buildings these days. Little wonder. They're as much at home in custom-built homes as they are in vast housing developments and multi-unit apartment buildings. They're lower in both initial and installation costs than most doors, more dependable and longer lasting. Handsomer, too, they lend beauty to any room. For all these good reasons, more architects and builders are specifying and installing Glide-All Sliding Doors.

GLIDE-ALL DOORS LEAD TO GREATER VALUE

- choice of Overhead or Bottom Roller Types
- choice of 8' Floor-to-Ceiling or 6' 8" Standard heights
- choice of Modern Flush or Recessed Panels
- panels may be painted, papered or waxed in natural finish

Write today for new low price schedule and specification bulletin.

INSTALLATION AS SIMPLE AS ABC



A Top track is easily mounted on ceiling with screws.



B Aluminum threshold is screwed to floor.



C Doors are simply placed in upper track, then engaged in threshold... as easily removed to allow storage of large articles.

FOUR WOODALL PLANTS COAST-TO-COAST

SAVE YOU SHIPPING TIME and COSTS!

- Chicago, 3501 Oakton Street
Skokie, Illinois
- Laurel, Mississippi, P.O. Box 673
- New York, Glen Cove Road
Mineola, New York
- San Francisco, 1970 Carroll Ave.

Glide-All Sliding Doors are a product of

WOODALL INDUSTRIES INC. DETROIT 34, MICHIGAN

REVIEWS

BEFORE YOU BUY A HOUSE. By John Hancock Callender, AIA. Crown Publishers, Inc., 419 Fourth Ave., New York 16, N. Y. 160 pp. 211 illus. \$2.95

Each of the 34 houses (75% of them first published in this magazine) in this book is the result of successful architect-builder collaboration. Though they are of exceptional quality, not typical of the average builder's house of today, the fact that they exist suggests that they constitute a preview of the kind of houses the public is learning to want and will increasingly demand.

Mr. Callender leads the prospective home buyer through a simple but explicit course in such matters as how to judge a house, a neighborhood, a lot; and he has pointed things to say about appraising the outside of the house, the community services and the integrity of the builder.

Since all of this tends to set up some quite specific standards for the development house, most merchant builders will probably want to read it with considerable care.

The Housing Research Foundation of Southwest Research Institute affords a solid base for much of the author's text; the evaluation check list he reproduces was originally prepared by the Foundation.

Similarly interested in well-designed builders' houses, the Architectural League of New York made available its selection of photographs and plans. The book was sponsored by these two organizations.

It is worthy of note that this is the first book to be devoted primarily to the problem of buying a new house in a builder's development. As such it may be expected to have considerable influence on buyers and builders alike. The goal of architect-builder collaboration—which *HOUSE & HOME* has always advanced—is well served by Mr. Callender's excellent work.

THINGS TO KNOW ABOUT BUYING OR BUILDING A HOUSE. Prepared by American Trust Co., San Francisco, Calif. 64 pp. Illus.

Although written specifically to guide the average layman about to buy or build a house in California, this unusually comprehensive booklet merits wider readership.

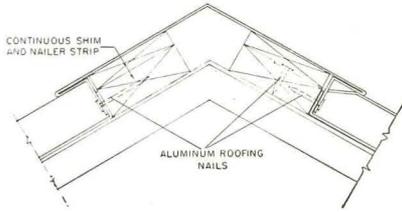
Enlivened by more than 30 clear, helpful drawings of architectural types, plans and details, it affords a simple, well-organized pattern for alerting the buyer as to the functions of the architect and contractor as well as helping him to understand his own role and responsibilities in the building operation. By placing such a book in the hands of a new client, an architect might conceivably save hours of consultation time.

well on low-pitched roofs and it offers excellent wind resistance. On a small home the 50' rolls can span from eave to eave without cross seams or special ridge treatment. The material comes in widths of 14", 20", 24", and 28", and in narrower widths for use as weather sealing. It can be left as is or painted.

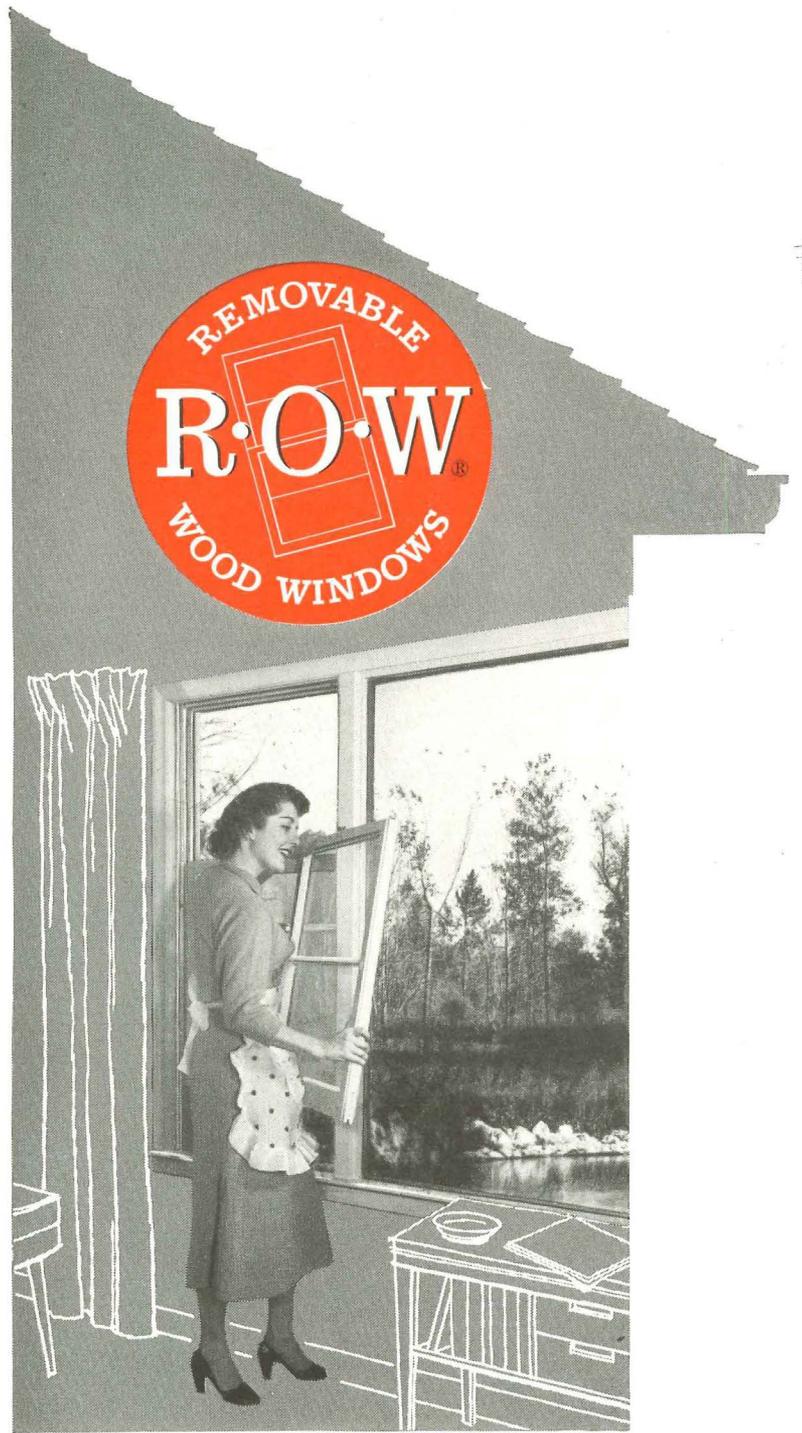
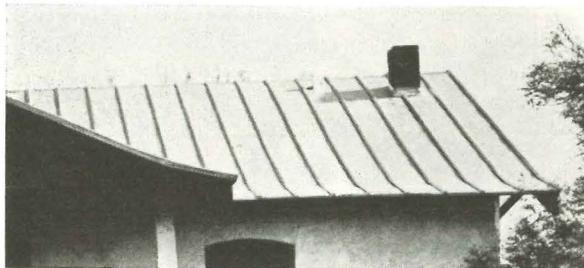
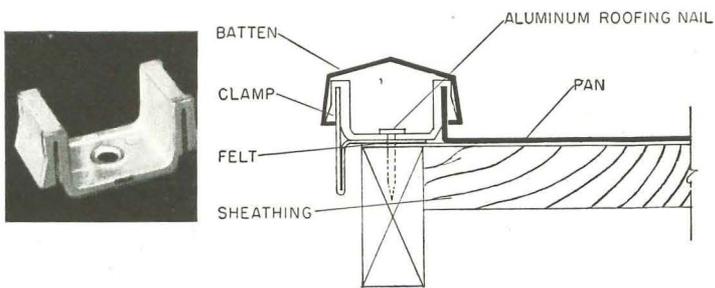
Aluminum sheeting fed from the former to rooftop

From Phoenix, Ariz. came news of a patented system not only for forming an aluminum pan roof, but for feeding it directly up to workmen. The *Roliton* method, licensable to roofing contractors and builders, is centered around a trailer-type roller device that can be hitched to a pickup truck. A rack attached to the machine guides the pans and battens to the roof; no scaffolding is needed. The coils of aluminum can be formed in continuous lengths without horizontal seams or end laps. Applied over a 30 lb. overlapping felt base, the *Roliton* roof shows

continued on p. 156



Aluminum pans are directed to workmen on the roof from the two-wheeled former. Clips and battens dress the edges.



**LIFT-OUT WINDOWS
SIGNS OF THE TIME**

Eliminate the annoyance and hazard of climbing ladders to wash windows. R.O.W. patented construction permits removal of the window from inside the house for easy washing, painting, or glazing indoors. And—*snug-glide* construction is an R.O.W. exclusive.

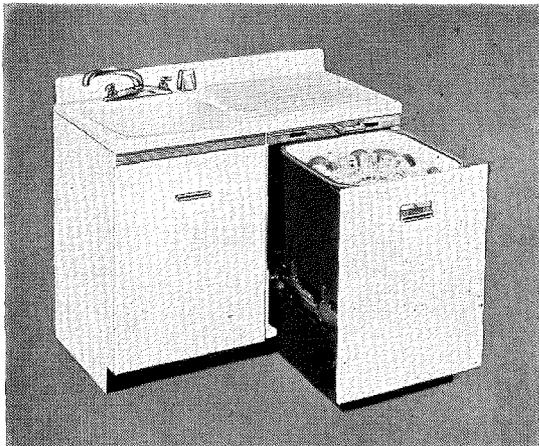
See your local lumber dealer or write

R.O.W. SALES COMPANY 1336 • 76 ACADEMY AVENUE • FERNDALE 20, MICHIGAN

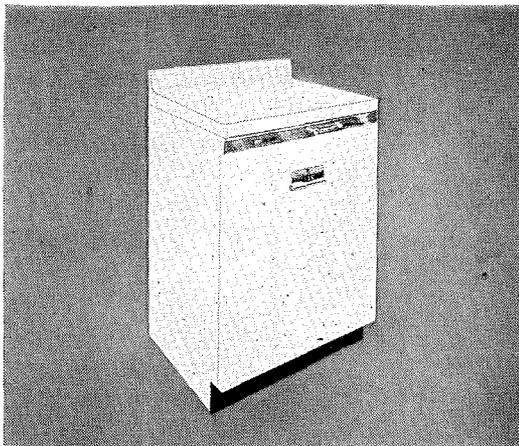
Rich Honduras mahogany adds



**Look at these G-E appliances
designed and priced especially
for builders!**



Model SEB 120. Here's the G-E Sink built especially for you . . . and at a low price you want to pay. The G-E Electric Sink is *pre-plumbed* and designed in *standard sink width*. It costs little more to install a G-E Electric Sink than a regular sink.



Model UCB 120. Here's the G-E Automatic Dishwasher so many women prefer. It installs in minutes! And it's designed to satisfy the strictest plumbing codes. Cost-conscious builders know this G-E Dishwasher to be a really powerful sales-maker!



Model FA 4. The G-E Disposall is backed by a written 5-year protection plan. A G-E Disposall installs in the sink drain line easily. And G-E Disposalls operate efficiently with septic tanks as well as sewers. Over 100,000 are in operation *right now!*

General Electric brings you



Profits

Real profits are yours with a G-E Electric Sink priced *right* for builders!

Dependability

G.E.'s written 5-year Disposall protection plan is the kind of dependability prospective home buyers like!

Consumer preference

A recent survey shows 1 out of 2 of *your* house hunters is already pre-sold on G-E!

SEE HOW G-E HAS HELPED THESE BUILDERS TO MORE HOME SALES!



BERNHARD DAHL

Mr. Bernhard Dahl, builder of quality homes for over 20 years, has this to say: "I have never had any trouble selling houses. They are usually sold before they are finished . . . because they have the very best in modern appliances—*General Electric.*"



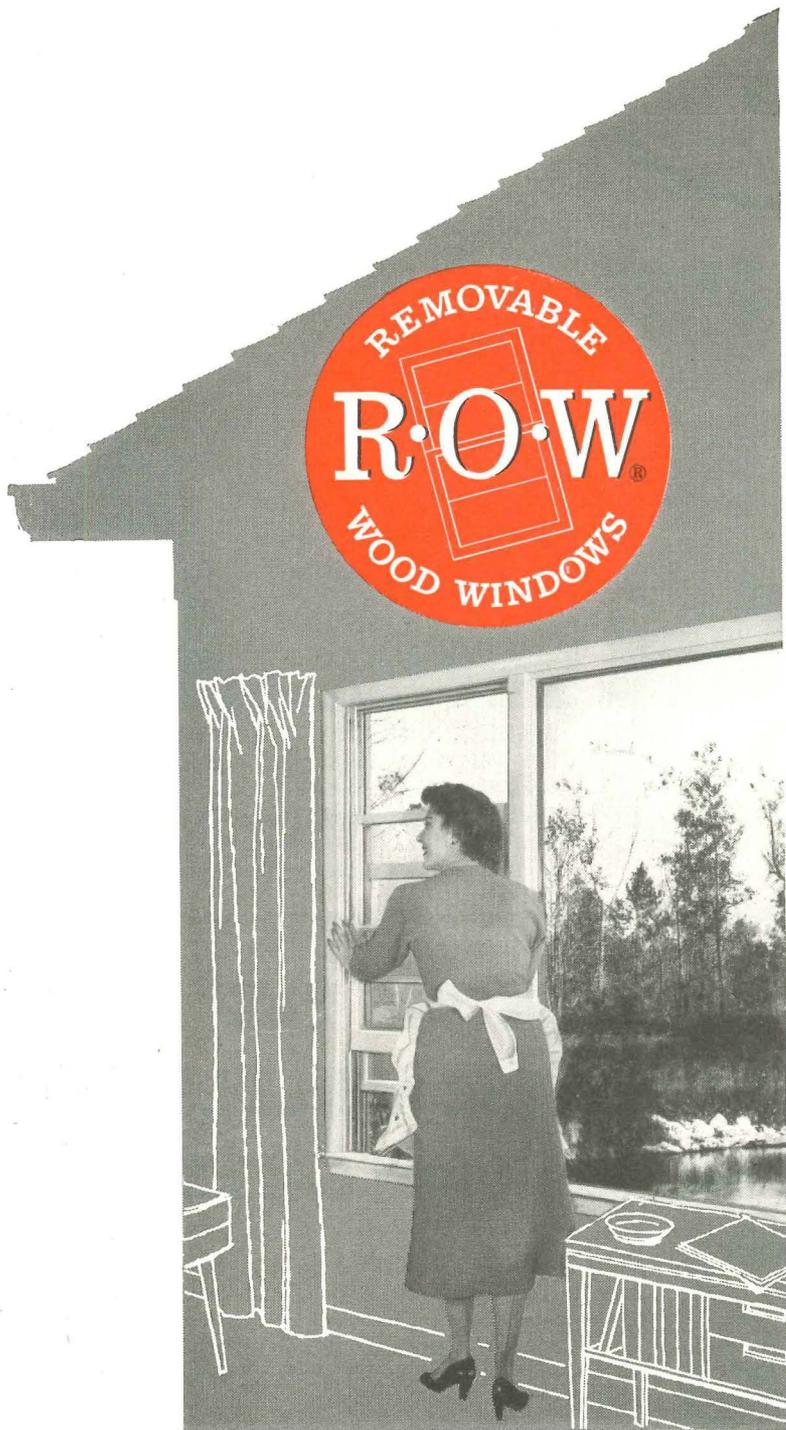
KALMAN KLEIN

Mr. Kalman Klein of Klein and Teicholz, New Hyde Park, New York says: "It's a fact . . . all 1050 of the houses we built these past 3 years sold *faster* because they were *General Electric* equipped."

You can do as Mr. Dahl and Mr. Klein have done. Start selling *your* houses faster, easier, and for greater profit with General Electric!

You can put your confidence in —

GENERAL  ELECTRIC



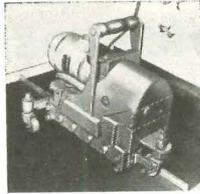
SIGNS OF THE TIME LIFT-OUT WINDOWS

The key word today is "convenience." It is wrong for anyone to think that our modern architects are primarily concerned with designing homes for beauty alone. The best architects put convenience first, then beauty. Architects prefer R.O.W.s by 2 to 1.

See your local lumber dealer or write

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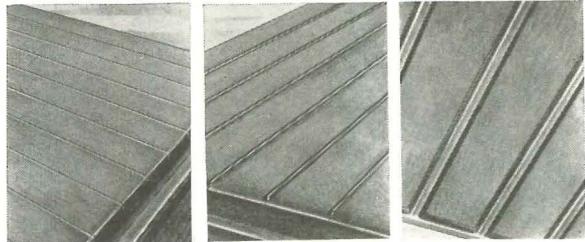
NEW PRODUCTS



The electric device (top) assures uniform seaming.



A portable former (right) turns up pan flanges 30 times as fast as by hand.



Seams on Terne metal can be handled in three ways—flat, standing, or batten—to suit roof pitch and house style.



METAL ROOFING; mechanization takes command of a craft, cutting corners and costs

No one, not even the VA, expects the conventional shingle roof to last the life of a 30-year mortgage and only the heavy 210 lb. shingles will stand up 20 years. Metal roofs have held up in performance and fashion for a half-century and longer on institutional structures and plush dwellings. Although their longevity makes good sense to financing agencies and home purchasers, their luxury prices have kept most metal roofs out of range for the merchant builder. A close look at the installed price of such roofs, however, reveals that (except for copper) less than a third is for material, the rest for labor.

Recently, two manufacturers of metal roofing—one making Terne-coated steel, the other aluminum—announced the development of machines that could be used on the job to eliminate much custom shopwork and time-consuming labor. Follansbee Steel Corp. has available a hand-operated pan former that can turn up the edges of a 50' roll of steel roofing in 1 minute (29 minutes less than if done by hand). The company will sell the formers at cost—\$175—to roofing contractors and builders. Follansbee is also working on an electric seamer. These two machines, coupled with stapling devices, could absorb a large chunk of labor time. Present cost of a Terne roof runs about \$40 with flat-locked seams and \$50 to \$55 with battens. Only \$13.50 of each of these per-square prices is for the metal (roughly \$4 more than 100 sq. ft. of asphalt shingles). Follansbee's steel roofing is hot-dip coated with an alloy of 80% lead and 20% tin. The lead provides corrosion resistance and the tin acts as a binder. The roofing comes in seamless rolls 50' long, and weighs 70 lbs. per square, or 11 oz. per sq. ft. Fireproof, watertight and easily grounded, Terne roofing is a smooth complement to the contemporary home. Its vertical battens look