

March 1952

# house + home



**News**

**On the horizon a revolution in plumbing**

**Gordon Drake**

**A challenge to the industrial world?**

**More space for the small house**

**20 ideas to improve builders' houses**

**Rigid interest rates won't work**

**Remodeling**

Revised housing controls ( p. 49 )

Exit the sewer and septic tank ( p. 110 )

His contribution to contemporary architecture ( p. 94 )

House and handcraft furniture set a high mark for mass producers ( below and p. 80 )

California outdoor living imported to Michigan ( p. 104 )

The garage is an unexploited bonanza ( p. 124 )

Veterans stand to lose by the cheap money policy ( p. 122 )

An old barn pays off in dramatic space ( p. 108 )

CHAS. W. CONNELLY  
ARCHITECT & ENGINEER  
CHARLOTTE, N. C.



**NUTONE MAKES A HOUSE A HOME**

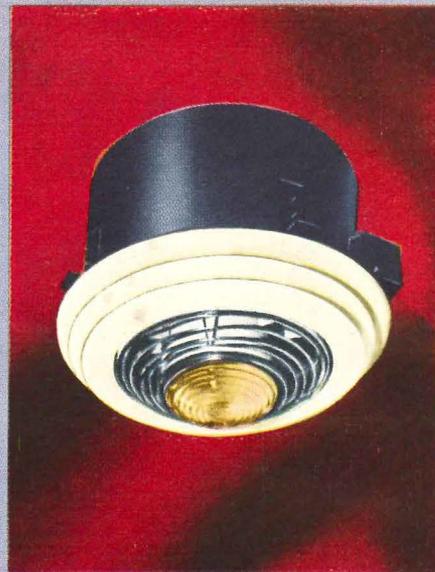
# NUTONE



NUTONE VENTILATING FANS



NUTONE DOOR CHIMES



NUTONE HEAT-A-LITE \*  
\* U.S. and Foreign Patents Pending

### 3 PRODUCTS FOR LOW COST HOUSING

Nothing adds so much to the comfort and value of a home . . . as these low cost NuTone conveniences. Now, with the emphasis on low cost housing . . . NuTone offers you today's **BIGGEST BUILDING BARGAIN** . . . to make your homes more attractive . . . more comfortable . . . and **MORE SALEABLE**.

For only \$84.95 or less (at list price) you can "dress up" your low cost homes with the "NUTONE PACKAGE" . . . including **ALL THREE NUTONE PRODUCTS** . . . a NuTone Ventilating Fan to eliminate kitchen grease and cooking fumes . . . a NuTone Door Chime for a friendly greeting at the front door . . . and a NuTone Heat-A-Lite, the revolutionary new electric ceiling heater and light, for greatest safety and real economy.

#### NUTONE VENTILATING FANS

. . . Eliminate kitchen grease and banish cooking odors with NuTone's exclusive, quickly removable patented grille . . . easiest to clean . . . highest air delivery . . . quieter operation. Lower in cost . . . easier to install. Choose from 15 wall and ceiling models — \$24.20 to \$36.95 list.

#### NUTONE DOOR CHIMES

. . . Get rid of "Noisy Bells and Buzzers." Give your homes a friendly, musical welcome at the front door. 14 smartly styled models for kitchen, hallway, or living room . . . harmonize perfectly with any interior. \$4.25 to \$82.75 list.

#### NUTONE HEAT-A-LITE \*

. . . Warm up "Cold Spots" in hard-to-heat rooms. A revolutionary new electric ceiling heater and overhead light. Saves valuable wall space. Easy to install . . . no pipes . . . no ducts. Safer than wall heaters. 4 models . . . \$49.95 to \$67.95 list.

**NUTONE**  
TRADE MARK

Write for free literature, specifications, diagrams and data on installing Ventilating Fans, Door Chimes and Electric Ceiling Heaters. NUTONE, INC., Dept. HH3, Cincinnati 27, Ohio.

March, 1952

Published by TIME Incorporated

EDITOR-IN-CHIEF Henry R. Luce  
 PRESIDENT Roy E. Larsen  
 EDITORIAL DIRECTOR John Shaw Billings

THE MAGAZINE OF BUILDING  
 ARCHITECTURAL FORUM Edition  
 and  
 THE MAGAZINE OF BUILDING  
 HOUSE & HOME Edition

EDITOR AND PUBLISHER  
 P. I. Prentice

EDITORIAL CHAIRMAN  
 Douglas Haskell, AIA

EXECUTIVE EDITORS  
 Joseph C. Hazen, Jr.  
 Suzanne Gleaves

ART DIRECTOR  
 Paul Grotz

ASSOCIATES: W. C. Bixby, Peter Blake, Gurney Breckenfeld, Louise Cooper, Virginia Forsythe, Mary Jane Lightbown, Walter McQuade, Carl Norcross, Boyce P. Price, Vernon Read, Richard Saunders (Washington), Ogden Tanner, Warren Unna. (In military service: Wilson Dizard; Harry J. Middleton.)

ASSISTANTS: Rosalind Klein Berlin, Marilyn Grayboff, Henry T. Martin, Alice O'Connor.

ART STAFF: Associate Directors, Amnon Rubinstein, Madelaine Thatcher. Assistants: Martha Blake, Linn Ericson, Jan V. White, Hannelore Teddie Wolff.

MARKET RESEARCH DIRECTOR: Arthur S. Goldman.

CONSULTANTS: Miles L. Colean, Ruth Goodhue.

CIRCULATION MANAGER: Walter F. Gruening.

PRODUCTION MANAGER: Lawrence W. Mester.

GENERAL MANAGER  
 Robert W. Chastaney, Jr.

ADVERTISING DIRECTOR  
 George P. Shutt

ADVERTISING MANAGER  
 Richard N. Jones

THE MAGAZINE OF BUILDING, HOUSE & HOME Edition, is published monthly by TIME Inc., Time & Life Building, 9 Rockefeller Plaza, New York 20, N. Y. Yearly subscription payable in advance. To individuals or firms (and their employees) engaged in building—design, construction, finance, realty; material distribution, production or manufacture; government agencies and supervisory employes; teachers and students of architecture and trade associations connected with the building industry; advertisers and publishers: U.S.A., Possessions and Canada, \$5.50; Pan American Union and the Philippines, \$9.00; elsewhere, \$12.00. To those not connected with the building industry; U.S.A., Possessions, and Canada, \$9.00; elsewhere \$17.50. Single copies, if available, \$1. All copies mailed flat. Copyright under International Copyright Convention. All rights reserved under the Pan American Copyright Convention. Entered as second class matter January 11, 1952 at the Post Office at New York, N. Y. Copyright 1952 by TIME Inc.

TIME Inc. also publishes TIME, LIFE and FORTUNE. Chairman, Maurice T. Moore; President, Roy E. Larsen; Executive Vice President and Treasurer, Charles L. Stillman; Executive Vice President for Publishing, Howard Black; Vice Presidents, Allen Grover, Andrew Heiskell, C. D. Jackson, J. A. Linen, P. J. Prentice; Vice President and Secretary, D. W. Brumbaugh; Comptroller and Assistant Secretary, A. W. Carlson; Manager, MARCH OF TIME Division, A. R. Murphy.

## 49 NEWS

## 70 LETTERS

## 76 BEHIND THE BLUEPRINTS

## 79 EDITORIAL

80 George Nakashima's furniture, house, and way of life

90 Garden apartments with single-house privacy; Harwell Harris, architect

94 Gordon Drake, 1917-1952: his place in contemporary architecture

104 Michigan house by Edward Elliott—cold-climate outdoor living

108 Edward L. Barnes remodels an old New York State barn

110 Sewerless toilet without chemicals

114 Park Forest—new co-ops highlight a \$25 million program for '52

122 Rigid interest rates won't work, by Miles L. Colean

124 Twenty garage ideas to sell builders' houses

130 NAHB's new president, Alan Brockbank—a profile

134 MIT trains architects to work with builders

138 Prefab with a packaged service core

## 142 REVIEWS

## 156 PRODUCT NEWS

## 188 TECHNICAL PUBLICATIONS

Cover: House by George Nakashima; photo by Ezra Stoller—Pictor

SIXTY-SECOND

# Annual Statement

WOODMEN ACCIDENT COMPANY

Presented by  
Home-Security  
department

## President's message

To Home Financing Executives  
We are proud to invite you to read this report of the financial condition of Woodmen Accident Company as of December 31, 1951, at the close of our 62nd year of progressive service.

Woodmen Accident Company has proved to be an adequate and dependable source of funds when disability strikes. Since 1890, Woodmen Accident Company has continuously provided self-reliant families with insured security. The \$28,035,000.00 paid to these families by Woodmen Accident Company alone, because of sickness or accidental injury attests to the effectiveness of the American insurance industry in action and at work.

By joining with responsible home financing firms to help safeguard private credit, Woodmen Accident Company further demonstrates the potency of our free enterprise system. Through our "Home-Security" service of providing home payment protection, a mortgagee fortifies its first line of defense against mortgage risk—the ability of the borrower to keep monthly home loan installments current.

"Home-Security" statistics are of vital significance to home financing executives at this time. The consensus seems to be that new ways of reducing overhead must be employed if good servicing and collection policies are to be maintained.

A study of "Home-Security" indemnity statistics discloses that during a thirty-six month period a mortgagee is exposed to having 22.32% of its borrowers disabled for more than 14 days. Of this group, 55.38% are disabled for more than 30 days and 20.66% are disabled for more than 90 days. This study also demonstrates how the "Home-Security" monthly indemnity of \$50, collected from Woodmen Accident Company and applied by the mortgagee or correspondent to the monthly home loan installment has prevented "slow down in collections" and delinquencies.

"Home-Security" service is one more proof that a "free mortgage market" operates in the public interest and is deserving of confidence.

With your continued support we look forward to the opportunity for even greater service in 1952 and the years to come.

*H. A. Atkinson*  
President

ASSETS		
Cash—	Money available for immediate payment of claims or other cash demands.....	\$ 357,568.47
First Mortgages Owned—	Assets invested in first mortgage loans on farms and city real estate.....	436,608.39
Bonds Owned—	Represents investment in bonds of the U. S. and Canadian governments and their political subdivisions and widely diversified U. S. Corporations.....	3,220,469.85
Stocks Owned—	Actual market value of preferred stocks in widely diversified U. S. Corporations.....	237,118.00
Real Estate Owned—	Book value of site for future home office building.....	63,250.00
Other Admitted Assets (Net)—	Miscellaneous minor items.....	27,793.30
Total Admitted Assets.....		\$4,342,808.01

LIABILITIES AND SURPLUS		
Claims Unpaid—	All claims are paid immediately upon receipt and approval of proofs of loss.....	None
Reserve for Claims in Process—	Company's estimate of the entire amount to be paid on pending claims upon which final proof has not been received.....	406,404.44
Reserve for Unearned Premiums—	Until premiums paid are fully earned, the entire unearned portion is held in this reserve.....	722,450.06
Reserve for Accrued Taxes—	A fund is set aside for the payment of State and Federal taxes incurred in 1951 but not due until 1952.....	105,044.33
Accounts Due and Accrued—	Commissions due agents and statements for current expenses not yet presented.....	57,711.70
Surplus to Policyholders—	Includes contingency reserves of \$250,000 and unassigned surplus of \$2,801,197.48 which provides an additional guarantee of all policy obligations.....	3,051,197.48
Total Liabilities and Surplus.....		\$4,342,808.01

If your home-financing firm does  
not now offer "Home-Security," write  
for detailed information to

H. A. ATKINSON, Director  
HOME-SECURITY DEPARTMENT

**WOODMEN ACCIDENT COMPANY**  
TIME-TESTED PROTECTION SINCE 1890

HOME OFFICE • LINCOLN, NEBRASKA



begun, enough (counting advance allotments) to see it through to completion.

The agency also took its first step to encourage advance planning and engineering on projects that can be built later this year as steel grows more abundant.

NPA permitted 645 religious, municipal and community projects to lay foundations now, promised metal allotments by the last half of this year and first quarter of 1953. And NPA was still considering allowing freer use of light structural.

## METAL ALLOCATIONS FOR NEW CONSTRUCTION

Quantities of controlled materials per dwelling unit which may be obtained by self-authorization for 1-through-4 family residential structures, commenced after March 1952.

Type of construction	Carbon steel Pounds	Copper & alloys Pounds	Aluminum Pounds	
Structures using steel pipe water distribution system.	1,800	35	Aluminum may be used for conduction of electricity in place of copper on basis of 1 lb. of aluminum for each 2 lb. of copper allowed in the preceding column. In such event, the allowable quantity of copper is reduced accordingly.	
Structures using copper pipe water distribution system.	1,450	135		
Structures using steel pipe for interior water supply pipes where local building code requires Type B or K copper tubing for underground water service connections.	1,635	80		
Structures using copper pipe water distribution system where local building code requires Type B or K copper tubing for underground water service connections.	1,450	145		Same as above.
Structures using sheet metal ducts for heat distribution.	In addition to the amounts of controlled materials allowed above, not more than 500 lb. of carbon steel per unit.	In addition to the amounts of controlled materials allowed above, not more than 15 lb. of copper per unit.		
Structures using electrical energy heating systems.				

## FOR CONSTRUCTION ALREADY STARTED

Quantities of controlled materials which may be self-authorized for one-through-four family residential structures commenced prior to March 1952. This table is not applicable to construction commenced after March 1952.

	Carbon steel	Copper & alloys	Aluminum
One-dwelling structures (using steel pipe water distribution systems).	1,800	35	Aluminum wire may be used in place of copper on the basis of 1 lb. of aluminum for each 2 lb. of copper allowed in the preceding column. In such event, the allowable quantity of copper is reduced accordingly.
One-dwelling structures (using copper pipe water distribution systems).	1,450	160	
Two-dwelling structures (using steel pipe water distribution systems) per structure.	3,500	65	
Two-dwelling structures (using copper pipe water distribution systems) per structure.	2,750	300	
Three-dwelling structures (using steel pipe water distribution systems) per structure.	5,100	100	
Three-dwelling structures (using copper pipe water distribution systems) per structure.	4,100	450	Same as above.
Four-dwelling structures (using steel pipe water distribution systems) per structure.	6,500	125	
Four-dwelling structures (using copper pipe water distribution systems) per structure.	5,200	575	

## LUMBER PRICES rebound from fall slump as orders zoom

Last fall, lumber prices were mired in the deepest slump since pre-Korea days. With mills sawing wood faster than customers bought it, green fir dimension, chiefly used for house framing, sank as low as \$65 per 1,000' at West Coast mills. Douglas fir plywood (about 95% of all construction plywood) plunged from \$92.50 in October to about \$75 per 1,000' a month later (roughly double that at retail on the East Coast).

But January saw an upturn. Plywood orders poured in fast from buyers who correctly figured prices had reached bottom. January cutting soared to 803 million board ft., but orders were 114 million ft. higher. Douglas fir dimension, which waves in the slightest economic breeze, also rallied because bad weather produced log shortages and mill shutdowns.

By the end of last month, both plywood and fir manufacturers were merrily announcing a second round of price hikes. West Coast plywood mills boosted 1/4" A-D (sound one side) another \$5 to \$88. This put plywood within 10% of last year's peak price (near which OPS dollars and cents ceilings are set). Fir 2 x 4 dimension went up another \$5 to about \$77 wholesale. With eastern markets beginning to thaw for spring buying, orders still mounted faster than production.

**General Rise?** Though prices of most other building materials stayed on an even keel (and the Bureau of Labor Statistics reported a mid-January drop on plumbing and heating supplies in San Francisco, New York's Nassau County, Atlanta, and Boston), some experts were betting the 1951 plateau in building costs would not last much longer. Construction labor would demand and get wage increases this spring. And the multibillion military construction program alone, warned Smith, Hinchman & Grylls in its monthly cost report, "is enough to produce a marked rise in costs."

## DIRECT LOANS: House votes VA \$125 million more funds

In an election year, it would be a brave congressman who cast his vote against veterans' benefits. Without a dissenting voice, the House last month whooped through a bill replenishing VA's authority to make 4% direct loans to veterans who cannot obtain home loans through normal lending channels. The Senate is expected to take similar action. The bill gives the VA \$125 million more to lend in areas where it rules that 4% private mortgages are unavailable with a ceiling of \$25 a quarter.





Kalman Klein, Builder



David Teicholz, Builder

Take it from these *SUCCESSFUL* builders!

**THEIR BEAUTIFUL NEW PROJECTS GAVE  
KALMAN KLEIN and DAVID TEICHOLZ**

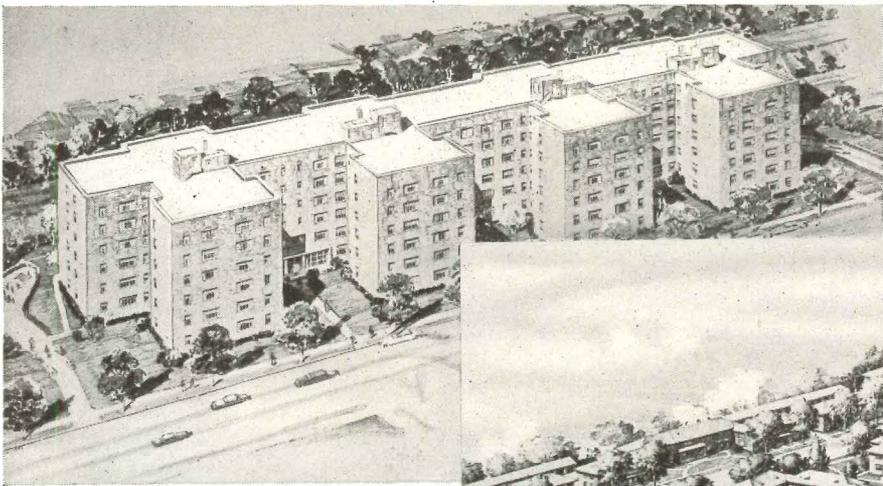
# 504 REASONS to choose KELVINATOR!

“**W**E'RE very proud of each and every apartment in Langdale Gardens and Austin Gardens. We feel that they speak well of our buildings. We decided that each apartment's refrigerator must be the finest, most attractive and most dependable. With Kelvinators in operation, we know

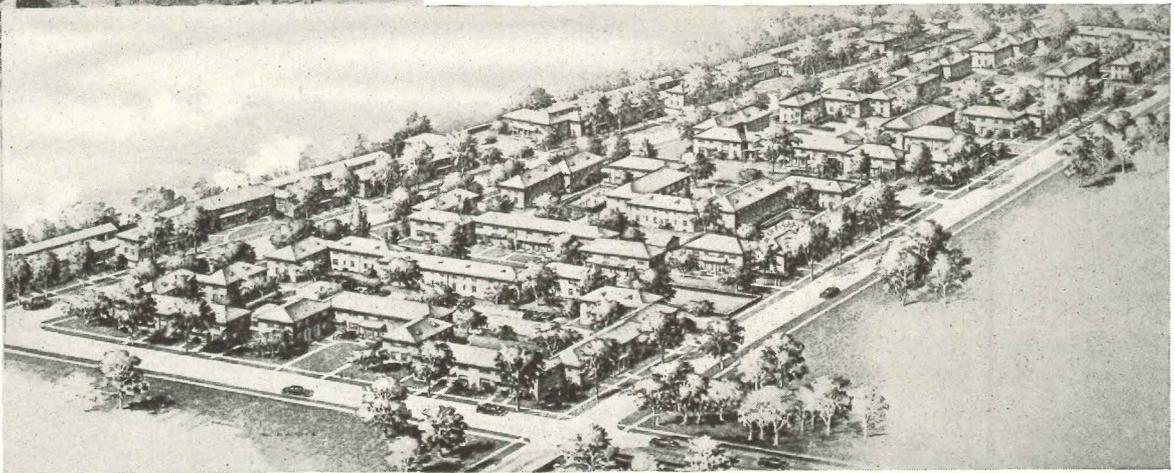
that each family will enjoy steadfast, flawless refrigeration over long years. And that will mean real savings to us.”

With these words, prominent New York builders, Kalman Klein and David Teicholz, sum up the feelings of many successful builders—who choose Kelvinator to match the smartness of their new projects.

Give the kitchens in *your* new projects more beauty, utility, and cost-saving performance . . . by specifying Kelvinator! For detailed information, write to Dept. AF-3, Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.



**144** brand-new apartments in pleasant Forest Hills—only 15 minutes from New York City. This is the new Klein-Teicholz Austin Gardens project. It provides up-to-the-minute space and convenience features—including a Kelvinator Refrigerator in every kitchen.



Samuel Paul, Architect

**360** garden apartments—each with unusually large rooms—each kitchen starring a Kelvinator Refrigerator. It's the Klein-Teicholz Langdale Gardens at Bellerose, Queens, New York—an outstanding project.

**THERE IS A BETTER REFRIGERATOR FOR BUILDERS . . .**

IT'S **Kelvinator**

Division of  
Nash-Kelvinator Corporation  
Detroit 32, Michigan

**REFRIGERATORS, RANGES, HOME FREEZERS, WATER HEATERS, AIR DRIERS . . . Electric, of course!**



**TOP!**  
*Tracy*

is the word for

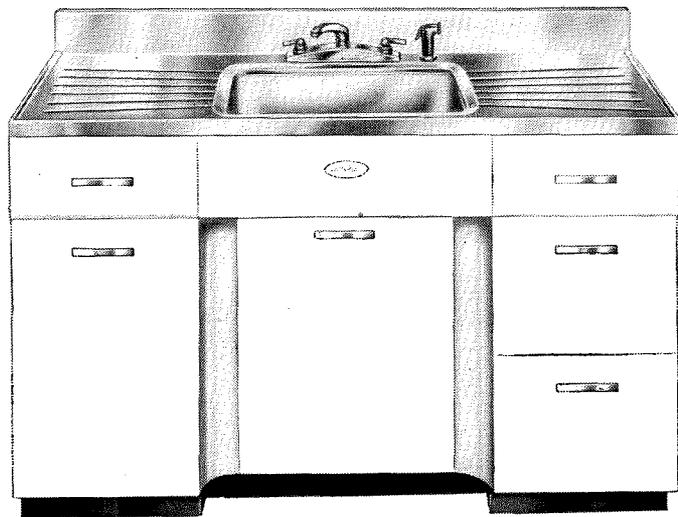
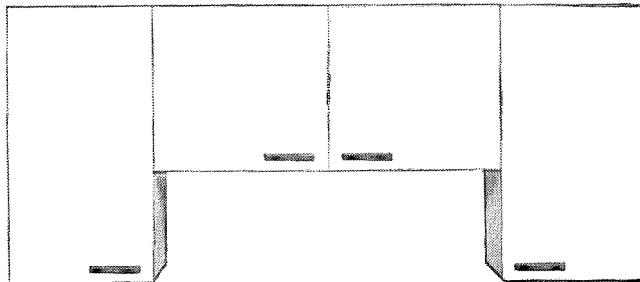
**QUALITY**

**KITCHENS**



*Heavier steel and finer workmanship are put into TRACY sinks and cabinets for sound reasons which are important to YOU!*

1. Superior **TRACY** quality assures user satisfaction, protects your good name and good will.
  2. **TRACY** quality eliminates complaints and service problems.
  3. **TRACY** quality is a master selling point—because your prospects SEE and FEEL it.
  4. **TRACY** quality puts you on top of the "light-weight" type of competition.
  5. **TRACY** quality, **IN VOLUME**, gives you advantages in both price and profits.
  6. (And incidentally) **TRACY** doesn't know how to make anything but top quality equipment.
- Add these up for a very unique **PLUS** in the kitchen business.



**BIG** is the word for  
*Tracy* **DEALER**  
Opportunities

If YOU are sincerely interested in a profitable kitchen business **TRACY** offers **EVERYTHING** you could ask for.

"**EVERYTHING**" includes the broad and complete line of sizes and styles, and the service that keeps an active dealer making money, and the promotions and advertising support to put continuous **POWER** behind his business.

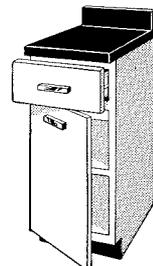
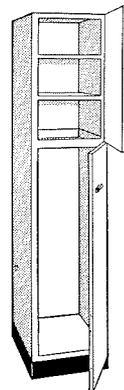
Never has the kitchen business been more flourishing, and never has there been a more promising opportunity for the **TRACY** dealer.

Ask for your distributor's name, and we'll put you in touch with a live-wire proposition.

**HIGH SKY QUALITY**



**DOWN TO EARTH PRICES**



**THE QUALITY-VOLUME LINE**

*Tracy*

**KITCHENS**

**TRACY MANUFACTURING CO., Division of Edgewater Steel Co., Pittsburgh 33, Pa.**

Hughes he could do just that. Until he did, however, his project would have required \$85 a month rent under FHA capitalization formula—\$15 above the HHFA rent ceiling in Borger.

Another trail-blazing assault on FHA's valuation came in the Savannah River area. Upshot was that FHA abandoned capitalization valuation for Title 9 rental projects there, switched to an "amenity" basis. Builders said the change made the difference between housing being built and not being built.

Under capitalization valuation, FHA figures the worth of a rental house by subtracting operating expenses, taxes, insurance and vacancy reserves from rent, then multiplying 90% of the remainder by a factor calculated to produce a 6½% return on investment. But under "amenity" valuation, the agency figures the replacement cost of a sale house, its long-range marketability, its location, and current housing demand.

In a typical case, Knox Corp., building 300 Title 9 rental homes (1,000 sq. ft., intended eventual sale price \$9,775), found it was offered a loan commitment of only \$6,800 under the capitalization formula. After the switch, FHA's commitment jumped to \$8,800.

**Why the change?** Chief credit for blasting off the capitalization shackles apparently belonged to Gross-Morton, the Long Island builders (one of the nation's biggest) who so far were the only northern firm able to gain a building beachhead in the Savannah River critical area. Undismayed by the initial advice of South Carolina FHA Director Bailey (*see p. 63*) to "go home," Gross-Morton opened an office in Aiken, optioned land, began buying materials. Cannily, Vice President and General Manager Edward J. Dennis put up two pilot houses atop an out-of-the-way knoll. FHA valued them at \$10,000 for a Title II commitment (which thus became \$8,500). A few weeks later, when Gross-Morton sought a Title 903 commitment on 337 programmed defense units of the *same house*, FHA valuation on a capitalization basis produced a \$7,400 commitment!

In reply, Gross-Morton marshaled a formidable array of testimony given Congress by HHFA and FHA last year while the Defense Housing Act was under consideration. It offered a double-barreled argument:

*First*, the houses should be considered as "sale houses," because they would be sold after two years. (House Report No. 795.)

*Second*, if FHA clung to its capitalization approach, it should be guided by documentary evidence of actual, not theoretical,

## DEFENSE HOUSING BOX SCORE

*On Feb. 13, HHFA tabulated the status of its defense housing program as follows:*

Units programmed . . . . .	70,100
Units applied for . . . . .	222,490
Approved . . . . .	60,184
Started . . . . .	6,636
Completed . . . . .	876

operating costs. Moreover, it should permit a 3% vacancy allowance, envisioned in an example submitted to the Senate by FHA, rather than 7%. Reason: Gross-Morton would offer its three-bedroom houses for \$75 a month, \$10 under HHFA rental ceilings in Aiken. After Gross-Morton took its case to Washington, FHA relented, hiked the valuation to a workable \$9,000.

**No precedent.** Although Ass't FHA Commissioner Curt C. Mack said last month that as far as he knew the Gross-Morton and Hughes cases were the only valuation problems throughout the nation, reports to NAHB's 77-member defense areas committee indicated the trouble was more widespread. Sample:

From Dover, Del.—"HHFA criteria under which allocations of defense housing units are made require in some instances approval of sites near military depots where the location is entirely rural, and where the FHA applies Section 203 concepts of mortgage financing (the basis for Title 9 valuation) it produces an available mortgage amount so restricted as to be unusable."

Mack left whether defense housing would undergo capitalization or amenity valuation up to FHA's 72 "autonomous" district offices. The choice rests on whether the local office rules that a defense housing site is predominantly a rental or an owner-occupied residential area. But either way, Gross-Morton and Hughes had showed builders throughout the country how to grapple effectively with one of the trickiest technical problems of defense housing construction.

## RENT CONTROL ended by three towns in critical areas

One of the trickiest questions bobbing up in the defense housing program is whether to tighten up Regulation X again if local pressure forces abandonment of rent controls that usually accompany critical area designations.

Congress paved the way for confusion by providing for imposition of complete rent ceilings on both old and new (since Feb. 1, 1947) housing in one law and for all the housing construction aids in another. But mobilizers say if rents are decontrolled again in a defense area

through state or local action, it obviously raises a question whether the shortage of housing and amount of rent gouging are still severe enough to warrant continued special inducements to build more homes.

By last month, the full rent control program had been imposed on only 94 of the 139 critical defense areas. Three of these had overthrown it.

▶ Temple, Tex. was decontrolled Dec. 20 after local landlords squawked that homes were being offered at rents lower than the rollback ceilings. (Under the law, Rent Stabilizer Tighe Woods must nearly always approve local votes for decontrol, but there is nothing to prevent him from reimposing rent lids again the next day.)

In the Temple case, Woods accepted the local verdict. Temple was one of three towns inside the critical area surrounding Fort Hood. But all of HHFA's programmed housing lay in the other two, Florence and Killeen. And *they* remained under rent control.

▶ Lorain County, Ohio, yelled so loud at full rent controls that Mobilizer Wilson and Defense Secretary Lovett officially removed them Feb. 18. Here, HHFA took the view that since rents were removed by Washington officials, the housing program need not be reshuffled.

▶ In Ventura, Calif., the city council voted 6-0 to rescind full rent controls imposed only the month before. From a roomful of spectators came not a single voice of opposition. Decontrolled Ventura (pop. 17,500) would be an oasis surrounded by still controlled county territory and five other towns. Within 20 miles of Ventura lie the Navy's Port Hueneme and Point Mugu and Oxnard Air Force Base, which is being reactivated.

Amid such signs of disaffection, HHFA administrator Foley issued a discreetly worded warning: if localities kill rent controls, the government will "review the facts to determine if a need any longer exists for special housing aids including relaxation of credit controls."

## DEMOUNTABLE HOMES: bids from 25 firms encourage HHFA

"We couldn't ask for a better start than this," said HHFA's Ralph Kaul last month. Nearly 25 prefabbers, operative builders and trailer coach makers (from 14 states scattered throughout the U. S.) had responded to his invitation to submit plans for *permanent, but demountable and portable*, defense housing (H&H, Feb. '52).

Some of the proposals were even better than Kaul had hoped. One called for a 721 sq. ft. two-bedroom home generally meeting FHA Title II standards. The price: only \$5,600 (not including the site), with an estimated cost of \$1,000 to redeploy it 100 miles. Another called for a three-bedroom house for \$8,250.

After HHFA architects and engineers study the plans, the agencies will award contracts to somewhere between five and 12 firms to erect a pilot model of their permanent demountables, then tear it down, move it 100 miles and rebuild it.

**ANNOUNCING**



**And—a Complete Line of *Spintex* Batts and Blankets**

Spintex insulation is available in Full-Thick Batts designed to provide maximum comfort and winter fuel savings. In addition there are Spintex Semi-Thick Batts and fully wrapped Blankets in three thicknesses—Thick, Medium and Service. All are made of

long fiber Rock Wool by an exclusive Johns-Manville manufacturing process. Originally developed to meet the exacting requirements of insulation for ships, refrigerator and passenger cars on railroads, household refrigerators and home freezer units, Spintex is now

available nationally for the insulation of houses and other types of buildings.

For full information about Spintex Insulation, write Johns-Manville, Box 290, New York 16, New York. In Canada, write 199 Bay Street, Toronto 1, Ontario.

**Johns-Manville**





the  
**BILT-WELL**  
Superior Window

has what everyone wants  
Complete weathertight protection  
and  
Easy sliding windows at all times

Thousands of prospective home owners will discover the Superior Window for the first time at home shows held this spring. This fast selling Superior weatherstripped unit is by far the most outstanding window today.

Laboratory tests prove it has almost double the weathertight efficiency required by the American Wood Window Institute's specification. And, the patented Superior flexible jamb-liner, which automatically compensates for swelling and shrinking, provides what everyone wants in today's weather-stripped unit—

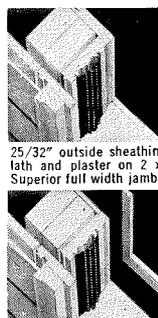
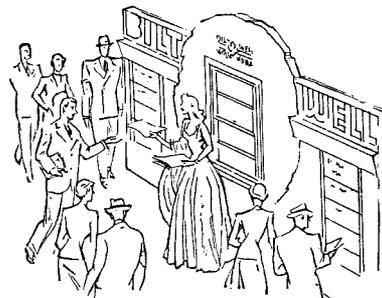
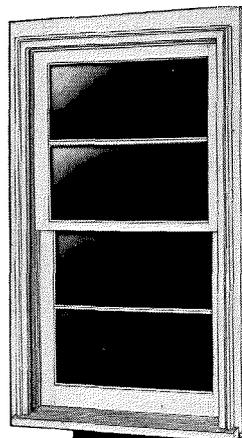
*Complete Weathertight Protection and Easy Sliding Windows at all times.*

Yes, the Bilt-Well Superior Window is today's outstanding unit—*counter-balanced, weatherstripped, \*adjustable and chemically treated.*

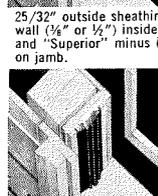
See our products in Sweet's Architectural Catalog pages 24B/CA and 17C/CA.

\*Adjustable to various wall thicknesses.

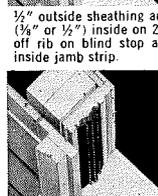
**CARR, ADAMS & COLLIER CO.**  
Dubuque, Iowa



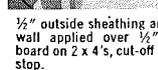
25/32" outside sheathing and 3/4" lath and plaster on 2 x 4's—and Superior full width jamb



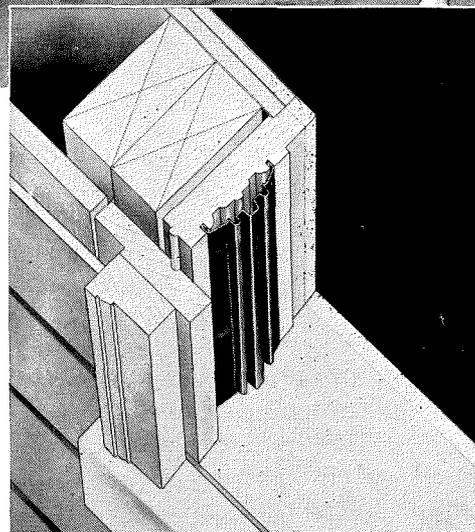
25/32" outside sheathing and dry-wall (3/4" or 1/2") inside on 2 x 4's, and "Superior" minus inside strip on jamb.



1/2" outside sheathing and dry-wall (3/4" or 1/2") inside on 2 x 4's, cut-off rib on blind stop and remove inside jamb strip.



1/2" outside sheathing and 3/4" dry-wall applied over 1/2" insulation board on 2 x 4's, cut-off rib on blind stop.



Cut-away view of Bilt-Well's exclusive Jamb-liner and weatherstrip—the secret of the Bilt-Well Window's superiority.

**Here's a list of the BILT-WELL LINE**

- Superior Unit Wood Windows • Nu-Style & Multiple-Use Cabinets • Carr-dor Garage Doors • Combination Doors • Screens & Storm Sash • Basement Unit Windows • Shutters • Exterior Doors • Interior Doors • Entrances • Louvers & Gable Sash • Corner China Cabinets • Ironing Board Cabinets • Mantels • Telephone Cabinets • Stair Parts



- LOW COST
- RIGID STRENGTH
- GALVANIZED STEEL
- BONDERIZED OVEN-BAKED PAINT COAT
- COMPLETELY WEATHERSTRIPPED
- MOTOR SPRING-BALANCED
- SOLID BRONZE HARDWARE
- ALL HARDWARE ATTACHED
- WON'T ROT
- WON'T SHRINK
- WON'T STICK
- FINGER-TIP CONTROL
- MANY TYPES AND SIZES
- ECONOMICAL INSTALLATION



**the window with the wonderful features!**

Truscon Series 138 Double-Hung Steel Windows since their introduction to the trade 14 years ago have become the most widely-used units of their type in the world. And good reason! Due to the wide range of standard types and sizes offered, the designer can create distinctive window arrangements that will harmonize with and enhance any residential architecture. Modular standards employed throughout. See "SWEET's" or write for illustrated literature giving complete details.

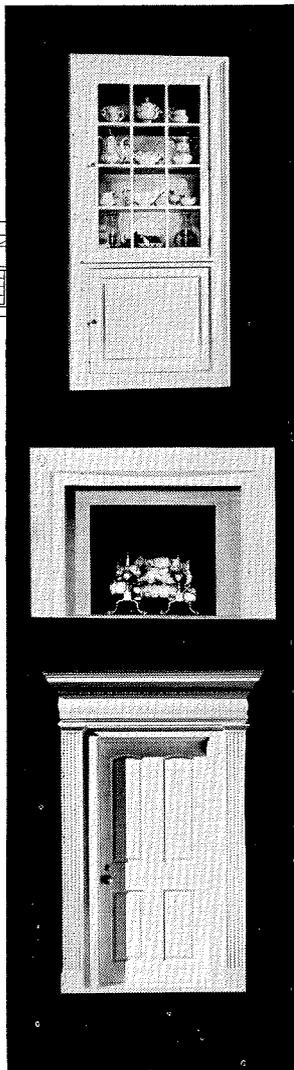
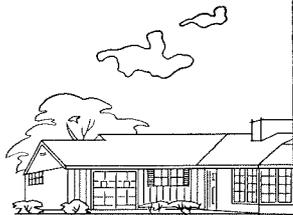


TRUSCON

a name you can build on

**TRUSCON® STEEL COMPANY** 1056 ALBERT STREET  
 Youngstown 1, OHIO  
 Subsidiary of Republic Steel Corporation





Ideal for a "ranch house," this Curtis cabinet is made for both corner and rectangular installation—and it may be had without glazed door, if desired. It has all of the fine craftsmanship and sturdy construction for which Curtis Woodwork is noted. One of many cabinet designs.



Here's a Curtis mantel that reflects the changes created by modern living—yet at no sacrifice of beautiful detail. The usual shelf is eliminated, and the bowed fascia board accentuates its beauty. Curtis offers a number of mantel designs for your choice.



There's a pleasing freedom of design in this Curtis entrance, which is suitable for any style home. The frame is adjustable to door openings from 2-8 to 3-4 in width and 6-6 to 7-0 in height. All pine parts of this and all Curtis entrances are toxic water repellent preservative treated.



at home in the modern scene

### CURTIS WOODWORK

In the contemporary home—with its emphasis on informal living—Curtis Woodwork fits easily, gracefully and economically. Through 86 years of woodwork manufacture, Curtis has kept pace with changing styles and tastes in architectural design. Today, Curtis offers you woodwork that harmonizes, no matter what type or size of home you design.

For handy reference, keep our booklet describing Curtis Woodwork and Silentite windows in your file. The coupon will bring you your copy.

Curtis makes a complete line of architectural woodwork and Silentite windows for homes of all types and sizes. Make your next house "all Curtis."



Curtis Companies Service Bureau  
MB-3 Curtis Building  
Clinton, Iowa

Gentlemen: I want to know more about Curtis Woodwork. Please send your free book.

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

Name.....

Address.....

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





"what a wonderful way  
to be welcomed...!"

**by warm, friendly  
Mosaic Carlyle Quarry Tile!**

Specify continuing contentment for the homes you design or remodel. Specify Mosaic Tile . . . the material of beauty and permanence that builds pride of ownership; gives more pleasure, more satisfaction, more in every way for your clients' money!

The warm, earthy colors of Mosaic Carlyle Quarry Tile—as illustrated on the opposite page—are wonderful to live with; never fade or lose their "just new" look! And, this type of Mosaic Tile is virtually indestructible, impervious to dirt and moisture, and easy to clean.

Use Mosaic Carlyle Quarry Tile indoors and out! For recreational rooms, entranceways, porches, breezeways, terraces and walkways! Choose from standard surfaces, in ten modern colors, or from 5 "non-slip" types—Abrasive Surface, Abrasive Body\*, Corduroy, Diamond Face and Safety Tread!

For quick facts, contact our nearest office. For helpful literature on the many other types of Mosaic Tile, write Department 29-8, The Mosaic Tile Company, Zanesville, Ohio.

*\*Abrasive Body is available in one color only—Navajo Red.*

**Branch Offices**

- |  |   |   |  |
|--|---|---|--|
| Atlanta, Georgia<br>780 Ponce de Leon Place<br>Phone: Elgin 0754                       | Chicago 51, Illinois<br>3712 Le Moyne Street<br>Phone: Capital 7-5120         | Little Rock, Arkansas<br>1709 East 9th Street<br>Phone: 5-7251        | Philadelphia, Pennsylvania<br>6229 West Girard Avenue<br>Phone: Granite 4-7116 |
| Boston, Massachusetts<br>384 Main Street, Waltham 54<br>Phone: Waltham 5-7292 & 5-7202 | Detroit 34, Michigan<br>20230 Sherwood<br>Phone: Twinbrook 3-1254             | Miami, Florida<br>7250 N. E. 4th Street<br>Phone: 89-4329 & 89-8812   | Portland 14, Oregon<br>43 S. E. Salmon Street<br>Phone: Fillmore 3717          |
|  | Hollywood 38, California<br>829 North Highland Avenue<br>Phone: Hillside 8238 | New York 17, New York<br>101 Park Avenue<br>Phone: Murray Hill 3-2768 | Salt Lake City 8, Utah<br>560 Gale Street<br>Phone: 9-8285                     |

## Isn't the architect's design worth the price of a bathtub?

***Designing a volume builder's house to combine maximum livability with minimum cost is just about the toughest job a house architect can tackle.***

As LaPierre says, the windows of his \$10,000 model had to be detailed and re-detailed 83 times before the right combination of economy and effect was found. The roof framing of Tom Coogan's \$7,000 house was not only detailed but built and time-studied five different ways to get the best solution. Planning a 1,000 sq. ft. house needs far more study than a house twice as large, for so small a home will be livable only if the architect makes every inch count. And working out a good site plan for a small lot is difficult at best!

***No architect can do right by a homebuilder if he attempts a quickie job on such a tough assignment.*** He must be prepared to spend hours and days studying and restudying his client's construction economies and market economies, hours and days working and reworking plans and details to add sales appeal or simplify volume duplication.

***But no builder should expect such a painstaking, creative job unless he is willing to pay for it.*** The worst mistake a builder can make is to think small about his need for better design and better planning, not only for the satisfaction of his customers but also for his own profits and perhaps for the survival of his enterprise. In the far more competitive markets ahead a Model T house will be as hard to sell as a Model T car.

***FHA could do a lot more than it has to encourage better design.*** The better resale value of homes well planned to fit local conditions and today's changed way of life has now been proved from Miami to Seattle, and that higher resale expectation should be reflected in higher FHA appraisals for better design, just as it was before the war. Good design is as important an appraisal factor as good construction, and if a builder found his mortgage base knocked down \$500 for inefficient planning and out-of-date styling he would very quickly realize the dollars and cents importance of design. The present FHA policy of allowing little more for even the best architect's fee than for a stock plan is a dangerous anachronism.

***Builders are penny-wise, pound-foolish to try to get the high plan and design quality they need for a small fee plus \$25 a house.*** That will seldom be enough to get a top-flight small house architect to do an all-out job.

Our advice to builders is to play double or nothing on design, to make sure of getting a bang-up plan from a top-flight man.



Ezra Stoller—Pictor

**GEORGE NAKASHIMA** is a second generation American anachronism of Japanese warrior ancestry, who lives with his wife Marion and their daughter Mira in a house he built himself near New Hope, Pa. For a self-confessed anachronism—as Nakashima is—New Hope is a good place to live.

**HIS FURNITURE**

**HIS HOUSE**

**HIS WAY OF LIFE**

*There is always need for the master craftsman. And although houses and the things that go into them are undergoing rapid industrialization, this in some ways makes a still greater need today.*

*The master craftsman sets standards of quality which the machine does not yet approach; he is the translator of handicraft patterns into patterns with which the machine can cope. And perhaps the fact that he is actually able to compete with the machine implies some weakness in the production and merchandising operation of industry.*

An old canal village on the Delaware River, surrounded by miles of rolling, stone-fenced farming country, it is small and quiet—the heart of nostalgic Bucks County. Gentleman farmers till the soil, and there is a big sign lettered on the side of the town's largest barn: ANTIQUE FURNITURE. Little visible evidence of Twentieth Century change has come to New Hope except rows of parking meters by the narrow twisting streets, which tax the summer motorists attracted by that barnside sign. There is also a snack shop to sell them "deliciously different fresh homemade pumpkin ice cream."

This winter, however, only 25 mi. south of New Hope, today's world has been moving into Bucks County with a vengeance. A prefabricated industrial city of 100,000 population is roaring up around the new U. S. Steel Fairless Works (Nov. issue '51). But it is doubtful that New Hope will become industrialized, nor will George Nakashima. He says he has only begun to perfect his anachronism.

Nakashima is a craftsman who makes modern furniture. Since the end of World War II he has fitted himself into this world of softly rolling countryside and strange summer compulsions, and the joinery has been very good. His furniture is in direct contrast to the carefully curried antiquity of Bucks County. Forms of this furniture are new, and are recognizably Nakashima's own; he makes no effort to seat the ghost of George Washington in the style to which it was accustomed. But

Nakashima is a craftsman who makes modern furniture. Since the end of World War II he has fitted himself into this world of softly rolling countryside and strange summer compulsions, and the joinery has been very good. His furniture is in direct contrast to the carefully curried antiquity of Bucks County. Forms of this furniture are new, and are recognizably Nakashima's own; he makes no effort to seat the ghost of George Washington in the style to which it was accustomed. But

his product and his way of life are still more like New Hope's old ways than the new steel city's.

His furniture is all put together by hand, and is hand finished. It is all wood, solid wood, no veneers. It makes no attempt to symbolize the present by using steel, or plastics, or any other material besides wood, lovingly handled. His native lumber (air dried to retain the depth of the grain) is finished only in rubbed oil, and in contrast to most modern furniture's "marble" finish gives pleasure to the touch, as well as to the eye. Nakashima is the first man, it has been said, to pick up the art of earlier American furniture makers and advance it another step in design, producing a real second generation American craftsmanship. The house which he has built himself also reflects this same craftsmanship.

Nakashima is about 40 years old, orientally short and stocky, with glossy bristling black hair, heavy cheeks and eyes, and a dab moustache. His normal expression is pleasantly receptive, his manner mild, jovial and somewhat deceptively imperturbable. His voice and diction are startlingly like that of a modest commentator between symphonies on a small FM radio station. He is highly educated, with architectural

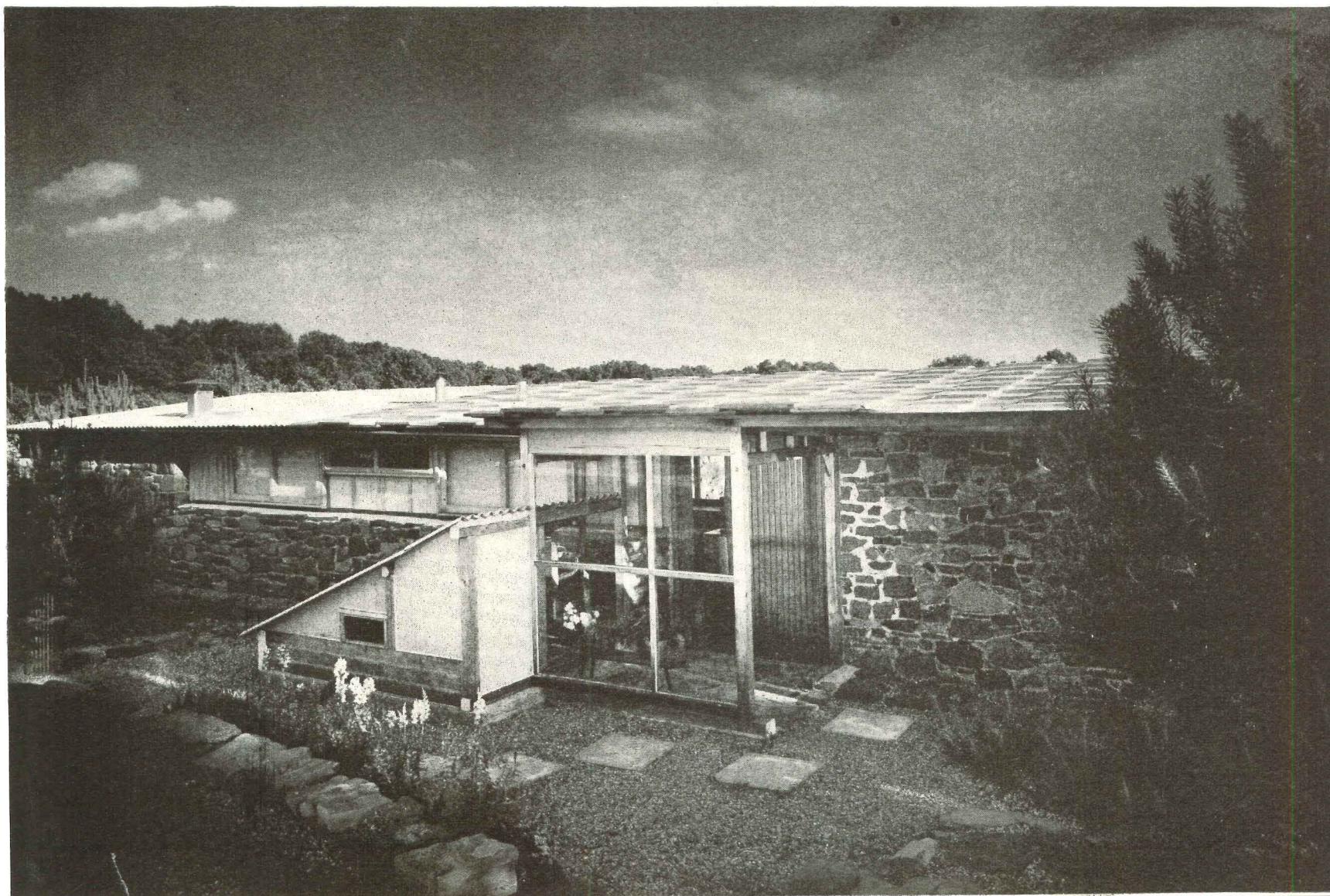
*(Text continued on page 82)*



*Mira chair (named for Nakashima's daughter) designed in 1949, is a three-legged stool which comes in several heights. One on the right is 16 or 17" high, suitable for dining. Nakashima's answer to the mass-produced steel and laminated wood chair, it costs \$25 in walnut with poplar seat, oil-rubbed.*

*North side of house (below) is stone wall, with glazed entry way. Under the low shed is the cistern. Closer half of roof is cast concrete slates; the rest is corrugated asbestos-cement sheeting.*

*Ezra Stoller—Pictor*



**NAKASHIMA**

degrees from the University of Washington and MIT, and a diploma from the *Ecole Américaine de Beaux Arts* in France. And he gave the modern industrial world a considerable trial run before he made his personal decision that the industrial revolution was past its peak, headed downhill, and that he was not going with it.

**He started shaping his anachronism** in a shop in New Hope in 1945 with about \$75 in capital under him. He did not send out announcements, or solicit business, and still does not. Aside from a few pieces he licenses for factory manufacture by a New York furniture house, and a few he supplies a retail store in New York, he disposes of all his output to people who come or write directly to him.

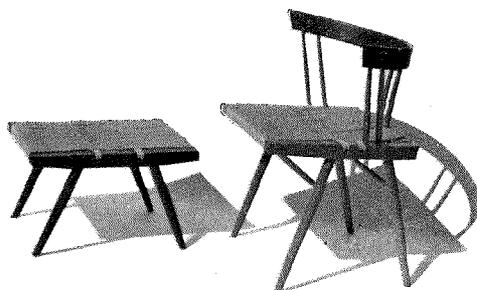
The output, and demand, was not great in the first three years of his enterprise. Nakashima figures that his rate of income was about 25¢ per working hour during that time. It was enough; the Nakashimas lived frugally, and George worked long hours. But his apprenticeship is over now; in the shop beside his house he has two full-time and two part-time assistants. There is another man in New Hope who does hand finishing for him; and a half-hour drive away, a three-man shop with a good deal of heavy equipment is kept busy doing rough preliminary cutting and shaping.

The total output of all his different designs now amounts to about 25 of his basic straight-backed chairs per week, or the equivalent in other designs. Nakashima himself still works at least 45 min. on each chair, and buyers of his pieces usually get delivery within three months of their order.

**Nakashima has not renounced the machine.** A point of great pride with him is the amount of preliminary work on his pieces which can be done mechanically. Spokes and spindles for his chairs, for example, are shaped in a nearby furniture factory, although it is the final hand shaving which brings out the grain and the feel, and proportions them to Nakashima's satisfaction. He thus remains master of the machine, not becoming a mechanic, and demonstrates that a craftsman still can exist in today's complicated world of marketing and distribution by making things and selling them directly to the user. He can if he is good enough, and tough enough to last out the introductory famine and create a market. Nakashima is tough. And with his toughness is a resiliency which



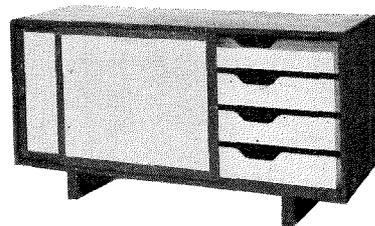
*Straight-backed chair in walnut with poplar seat was designed in 1944, sells for \$40.*



*Grass seated chair in walnut or cherry was designed in 1940, costs \$35. Stool is \$20.*



*Walnut coffee table (1949) uses natural edge of scarce wide plank; six exist, seven are on order. Price, \$125.*



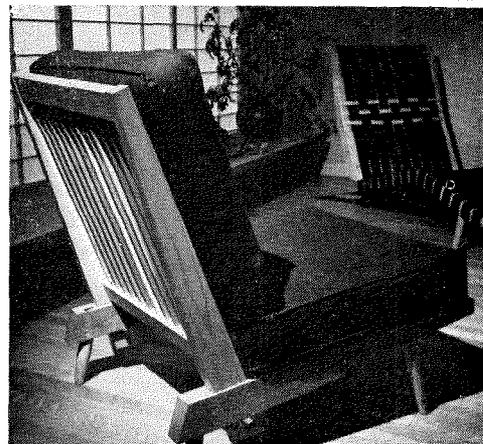
*Walnut chest (1949) with sliding trays, \$225*



*Walnut armchair (1947) with poplar seat, \$55*

*Below, cushioned chair (1940); walnut or cherry frame, \$60; cushions, in muslin, \$26.*

*Photos: Holland*



used to be described as restlessness 20 years ago. A friend of his of that time says, "He was good humored and pleasant, a bright Japanese kid with thick glasses. But he wasn't satisfied with textbook brilliance. He wanted integrity."

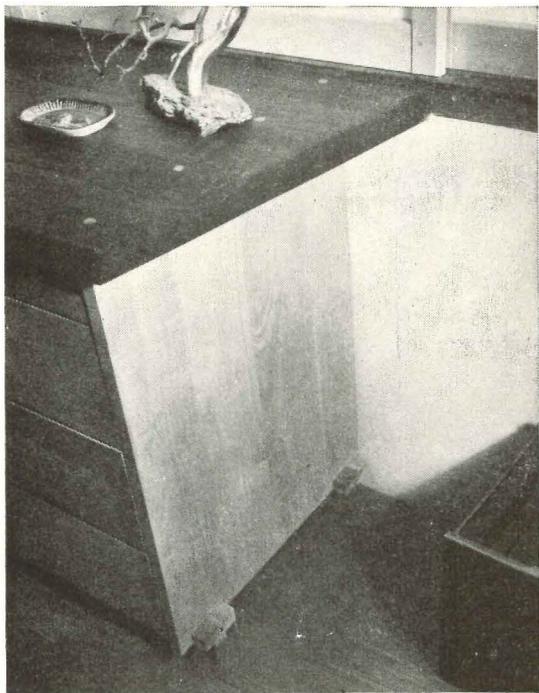
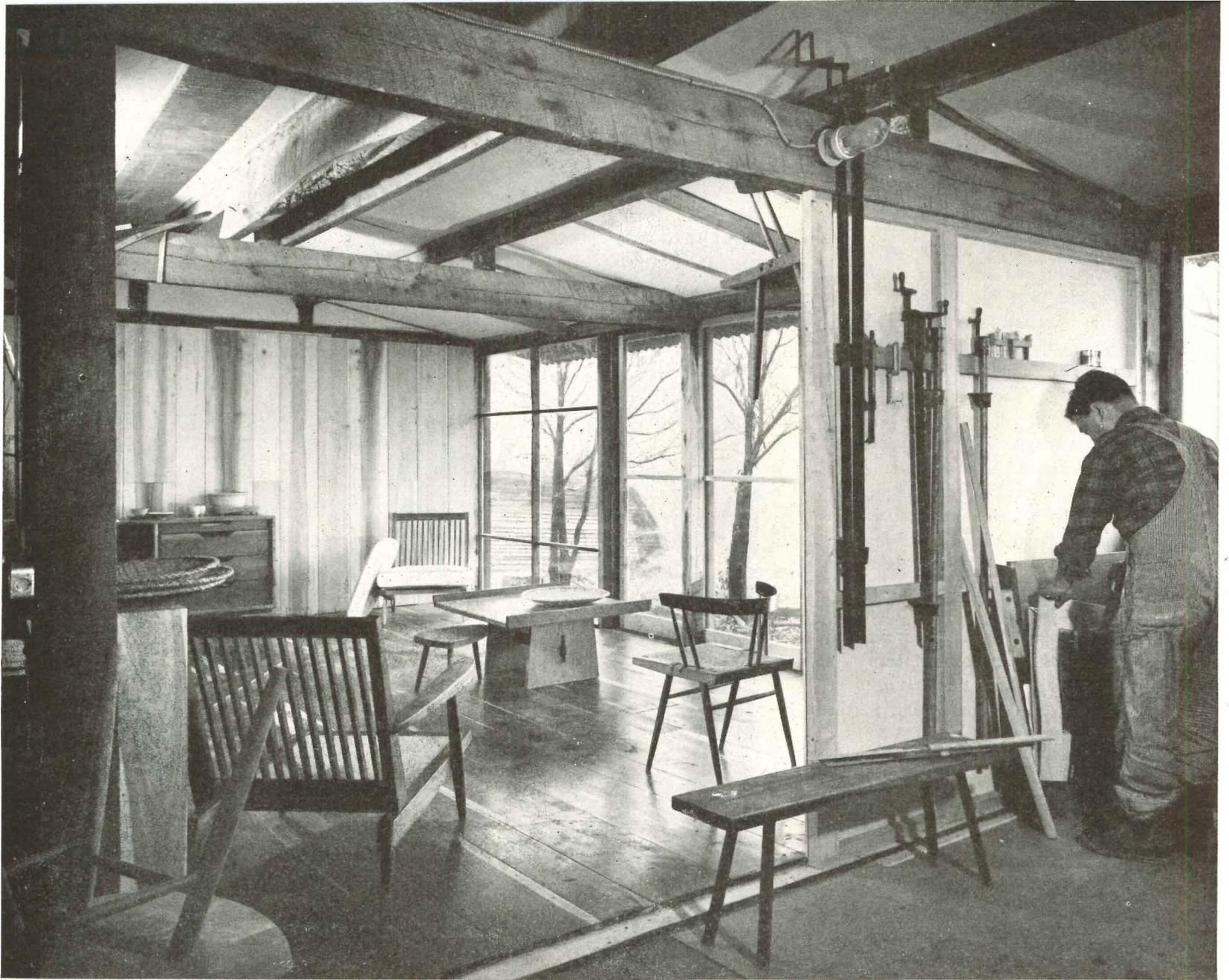
Nakashima's search for integrity led him through several architectural offices in New York, after graduation from MIT, and then to France, to India, and to Japan. In 1937 he was working in the Tokyo office of American architect Antonin Raymond, when he was sent to Pondichéry, a French colonial city in India. There he was to spend two years superintending construction on a dormitory for the followers of Sri Aurobindo, an Indian mystic who had moved to this small outpost of the French Empire in 1926 to get out of the British Empire. During these two years in India, Nakashima found what he was looking for.

In Pondichéry, he had his first experience of actually working on a building, not just drawing it on paper. He not only had to superintend construction of the dormitory, but he had to invent methods and teach the native workmen. "Reinforcing rods," he says, "were delivered on the beach like spaghetti, and we were the cooks." The resultant ferro-concrete structure was handsome enough to be printed in an American architectural magazine in 1949. Nakashima also became deeply interested in Indian mysticism while on this job, and threw away his glasses after curing his sight by exercises.

When the dormitory was finished in 1939, Nakashima returned to Tokyo. There he met Marion Okajima, a Seattle girl who was teaching English in Japan, and they became engaged. Complete with fiancée, serenity, 20-20 vision and a newly found satisfaction in architecture he sailed for home, the U. S.

**The satisfaction, however, was short-lived.** He made a tour of the West Coast to see the famous modern buildings, and was shocked by their construction. "They were badly, ignorantly built," he says. The forms had changed but not the methods—there were plastic shapes with bones of 2 x 4's held by nails. The architects were over-specialized and knew nothing about building, like cooks who draw pictures of cakes but can't make the batter themselves. Everything was toe-nailed, shoddy construction not typical of our civilization." Reacting, Nakashima looked for a design and construction process he could

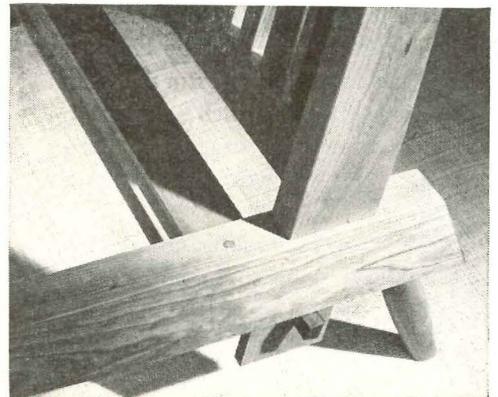
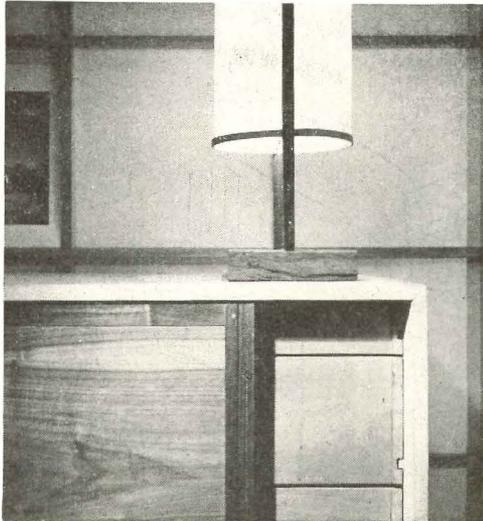
*(Text continued on page 84)*



*Details like legs of chest above, drawer slides, right, and pegged chair joint, far right, distinguish his work.*

**The shop and the furniture have the same grain.** In the construction of buildings as of cabinets the clear, strong, and precise joining of carefully cured wood sets the quality of Nakashima's work. Most of the wood he uses is felled within 35 mi. of the shop (*above*), except for Port Orford cedar from the West Coast. He avoids tropical woods because he says they do not survive well away from their natural environment. He is annoyed by interior designers and architects who finish walls with carefully matched thin veneers of sensuous woods like primavera. This he calls "chi-chi, using wood like wallpaper."

*Photos (below): Holland; (others) Ezra Stoller*



control entirely. He had brought some tools back from Japan, but was now married, with not enough money to go into the construction business. So he started to make furniture. Photographs of his first pieces were published in a California magazine in 1941, showing much the same character and finish as today's. Nakashima told how he felt about the pieces: "The love for the nature of teak and walnut can best be obtained by working with the material: by cutting, planing, scraping, and sanding the wood. Hours spent by the true craftsman in bringing out the grain, which has long been imprisoned in the trunk of the tree, is an act of creation in itself. He passes his hand over the satiny texture and finds God within. It is man's true relationship with the years and centuries that the tree has spent absorbing the bounties of nature and strengthening its fibers. It is this quality that is not to be found on the drafting board but in the experiences of the mechanic."

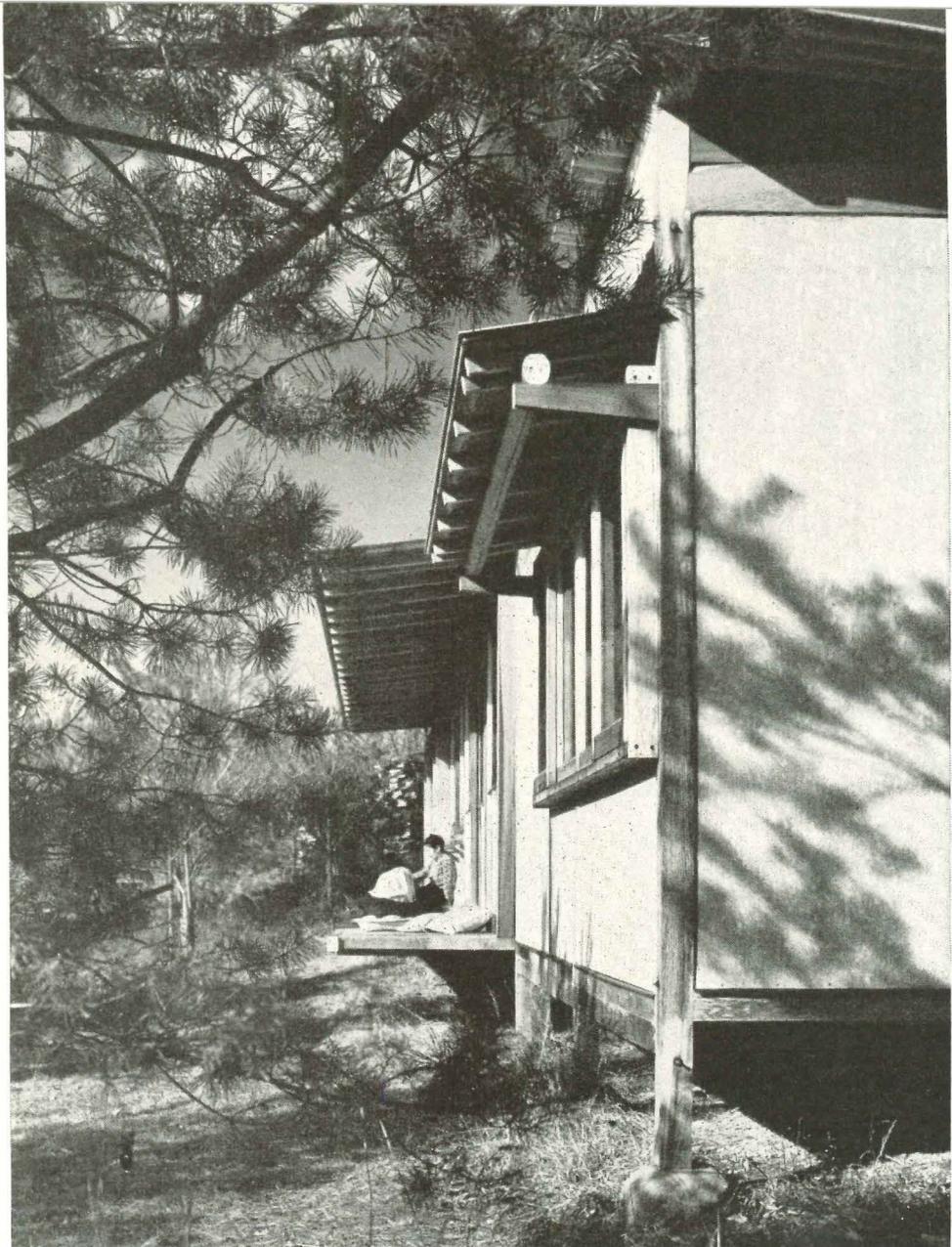
Today he speaks more pungently about modern furniture, saying that there are two schools of modern design: 1) Imitation, slicked-up folk art, like doweled Shaker chairs ("Greenwich Village Shaker, Cocktail Shaker"); 2) decadent industrialized designs made to show off the contradictory tricks which machines can be made to do.

**A second shock** came to Nakashima in 1942, after the war had started. He and his wife and their infant daughter Mira, and thousands of other Americans of Japanese ancestry, were moved to "evacuation camps." The Nakashimas were sent to one in Idaho. Ironically, it was in the evacuation camp that Nakashima, bearer of three Western college degrees and assorted academic honors, received from an old Japanese carpenter, a fellow "evacuee," most of his instruction in woodworking. The carpenter and Nakashima worked together until 1943, when the Nakashima family was once more relocated.

This time it was to New Hope. Antonin Raymond, Nakashima's onetime employer in Tokyo, had an office and farm there, and offered George the job which enabled him to be cleared from the evacuation camp. Nakashima went to work on Raymond's Pennsylvania farm.

In 1945 he struck out on his own, renting a house for \$25 a month so he could go back to making furniture. In 1947, when his rented house was sold out from under him, he bought three acres of countryside

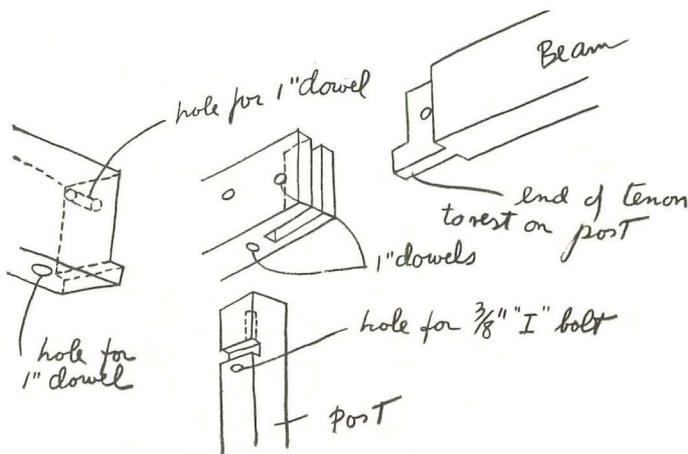
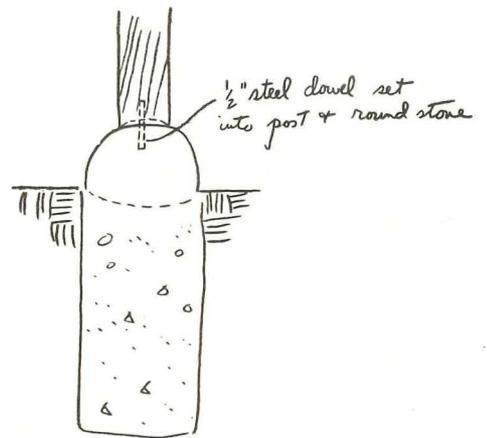
(Text continued on page 86)



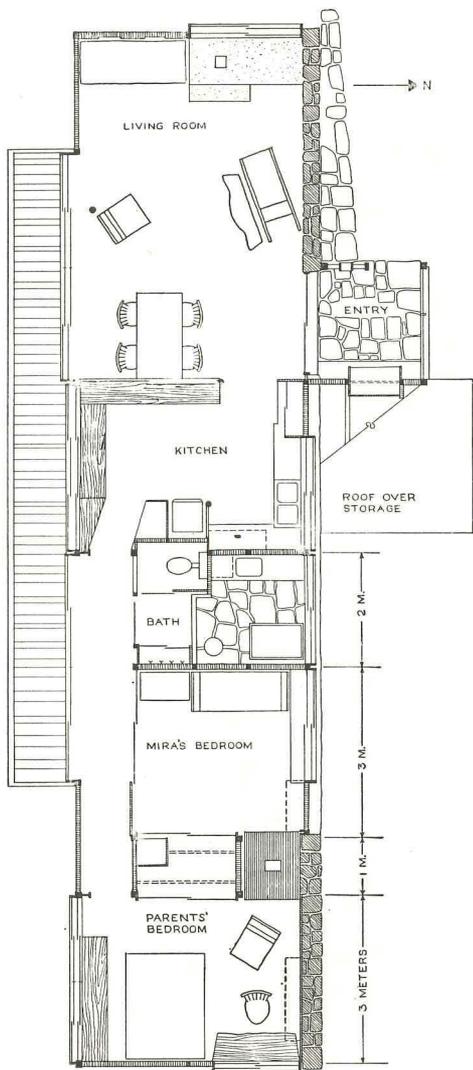
View along south side of the house



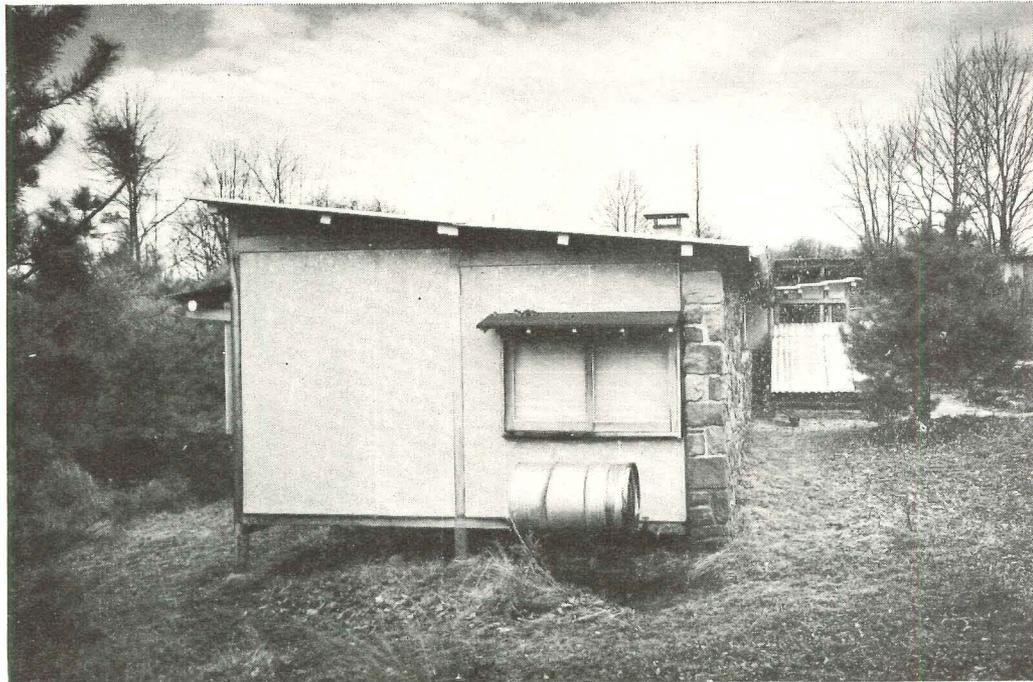
Nardin & Radoczy



Oak posts of building frame were patiently shaped to fit rocks, and doweled in place. Photo taken during construction and exploded sketch show how Nakashima avoids nailing.



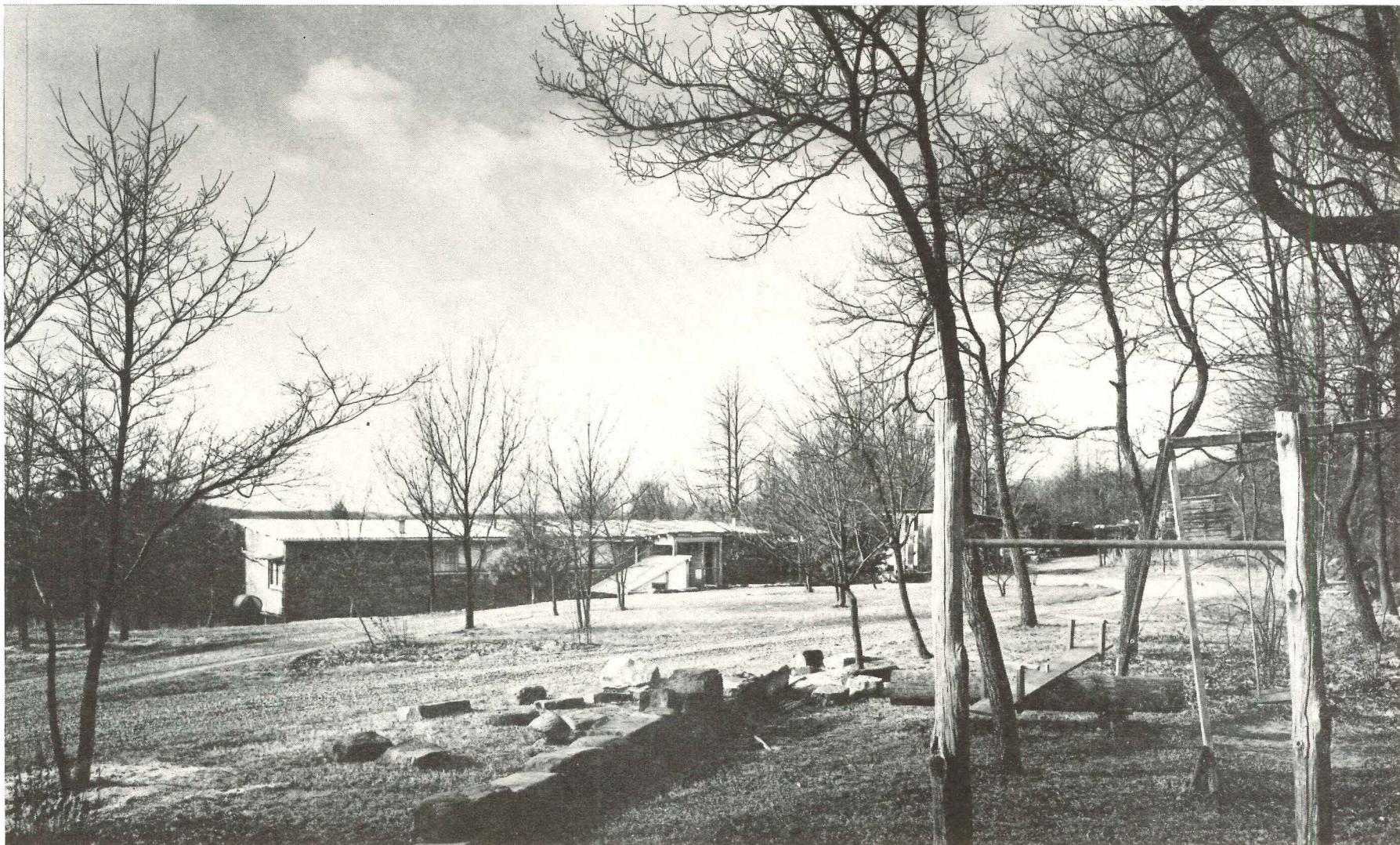
View from north, below, across driveway and play equipment



East end of house, with kerosene supply

**The module of this house is a meter,** possibly as a result of Nakashima's French training. But the materials are characteristically American—prefabricated. Asbestos cement sheets surrounded by oak frames wall most of the house, and are reminiscent in color and texture of precise Japanese exterior plastering. Exterior oak is left entirely without paint or other finish. Stone wall in picture (*below*) was being assembled on a board to be used in the lobby of a new Pittsburgh office building when photo was taken.

Photos: Ezra Stoller—Pictor



**NAKASHIMA**

for \$750 and put up a tent. The Nakashimas and their child lived happily in the tent for six months, until George had finished building a shop to work in, then in his spare time roughed in a house.

The house finally was finished last month, and it too is unique. The faintly oriental flavor which gives Nakashima's furniture a touch of honest exoticism is even clearer here . . . to a Westerner it looks like a Japanese house. It makes you think that if the Japanese used chairs (which they don't, preferring the floor), the chairs would be like Nakashima's. But to a Japanese professional eye the house is more an interpretation of traditional Japanese architecture than a part of it.

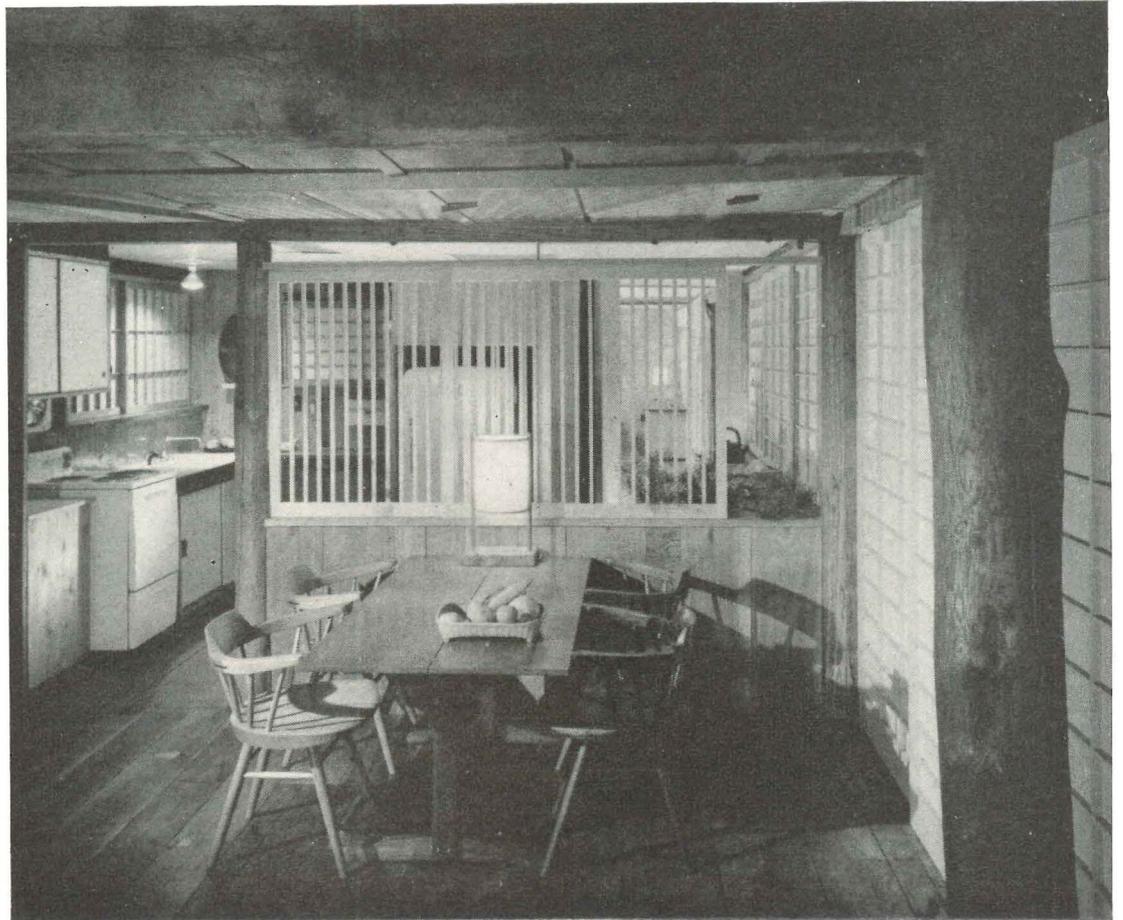
Ryuiti Hamaguti, a young Japanese architect and magazine editor, visited the Nakashima house in New Hope recently and admired it extravagantly, but pointed out the differences. One was the use of bolts in the oak frame (true Japanese carpenters use none, building their houses like cabinet work) and the use of prefabricated elements like sheets of corrugated asbestos cement for the roof and flat sheets as final outside finish of walls.

**The house**, which is about 800 sq. ft., was built for between \$4500 and \$5000, including all hired labor (but not its owner's). It may be the most finely finished house ever built for that price in the U. S., with wide plank floors of oil-rubbed walnut, birch, beech, and ash, and ceilings of matching wood of  $\frac{3}{8}$ " pressed pure asbestos panels (bought from Army surplus for a dollar each). When they see the fine floors most visitors reverently remove their shoes. There is a lot of glass in the walls, especially to the south, but each pane has a Japanese sliding wall inside it made of paper mounted on light wood frame. When the clear glass view is not wanted, these "shojis" are slid closed. They provide insulation, stopping the glass draft, and maintain privacy without shutting out the light.

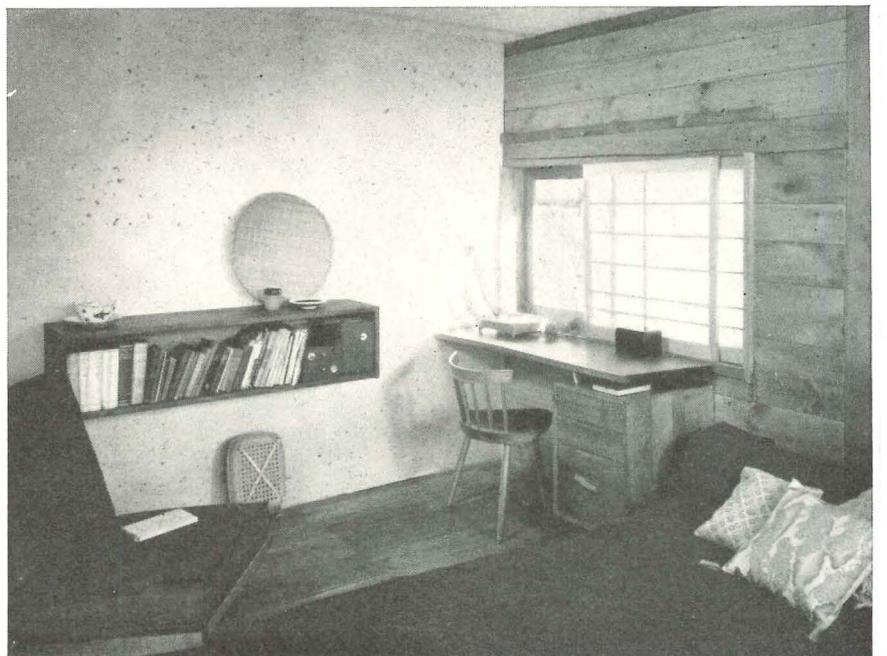
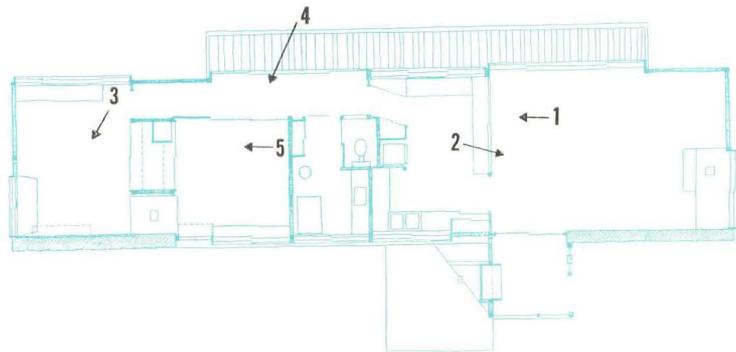
In Japan *shojis* are patterned traditionally, divided horizontally into thirds, then framed geometrically. Nakashima's are divided into halves, then framed geometrically. The visiting Japanese architect, Hamaguti, pointed out solemnly in his slow but precise English that in Japan this would be considered a free form.

There is no central heating system in the house; Nakashima couldn't afford one. At one end is a fireplace (*opposite page*), and at the other end between the two bedrooms, is a small floor-sunk kerosene space heater.

(Text continued on page 89)



1. In living room looking toward bedroom end of house



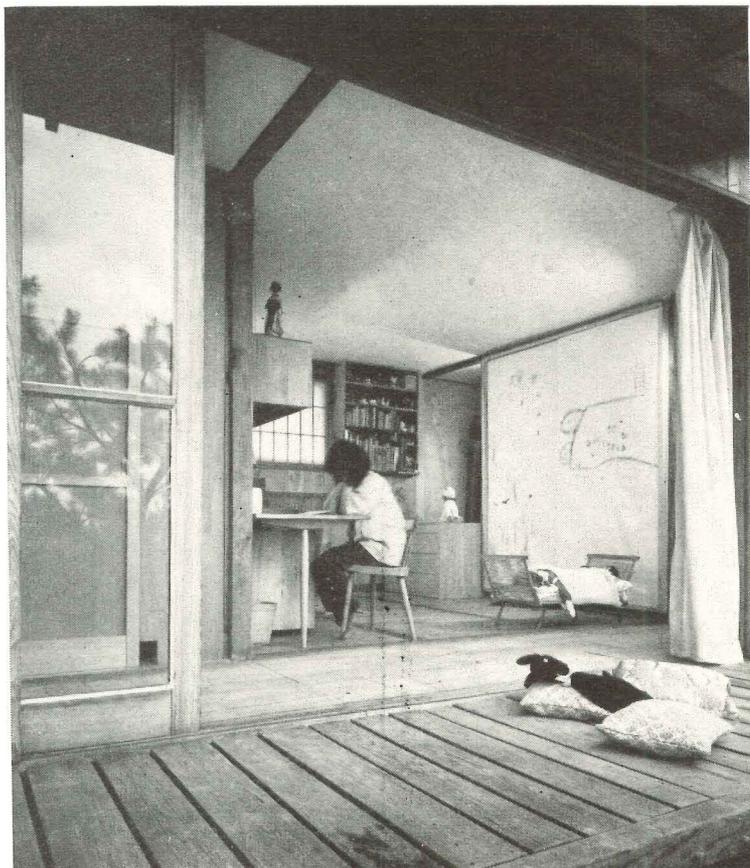
3. Bedroom at east end of house gets morning sun.



2. View over kitchen counter west into living room. Fireplace is sole source of living room heat.

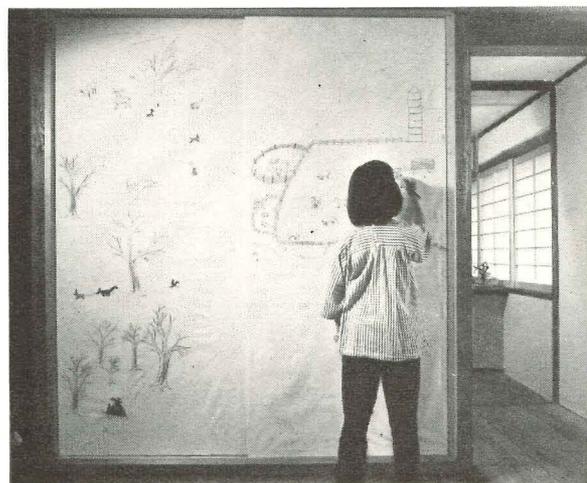
Photos: Ezra Stoller—Pictor

4. Sliding glass walls open Mira's room to porch



**The warmth of good wood without too much finish** makes this room an extraordinary experience in a modern house. Floor is broad walnut planks; far wall is even broader sap walnut planks; ceiling is common birch. Also extraordinary is the degree to which Nakashima has been able to create and shape his environment to fit his abilities and tastes. He built the furniture; he built the house; and he built his life around them. His 11-year-old daughter, a little girl who likes double bubble chewing gum and riddles, has also begun to put a skillful hand on her personal part of the house. In her bedroom she is drawing a large picture with a strong oriental flavor of farms, trees, foxes, and the view of Bucks County through her south glass wall.

Mira's mural is on the fabric covered sliding walls of the wardrobe closet which separates the two bedrooms.



5.

NAKASHIMA

Photos: Ezra Stoller—Pictor



South elevation of shop

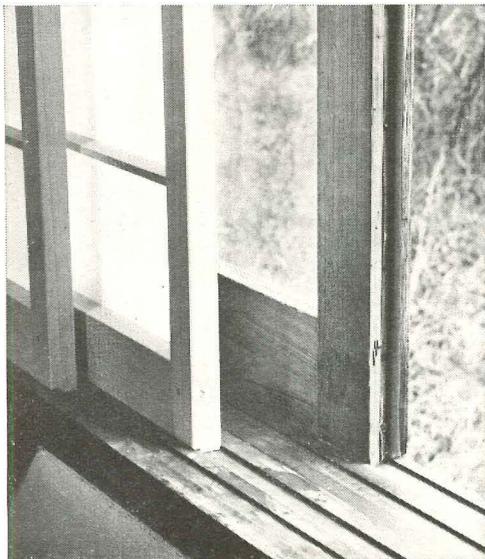
**Is this an oriental esthetic?** The answer to this question is that these forms are of distant oriental derivation, just as their designer is. But the directness, simplicity, and honesty of the structure is as much an essence of all that which is called modern architecture as it is of the palace at Katsura, built 500 years ago in the outskirts of Kyoto, Japan.

Perhaps Nakashima brought an increased sensitivity to these forms out of his cultural background; surely he studied the refinements during his years of work in Japan and India. It would, however, be a mistake to dismiss the beautiful proportioning and detailing of his buildings in New Hope, Pa. as a classic Japanese approach. For to Japanese eyes, it is distinctly a Nakashima approach.

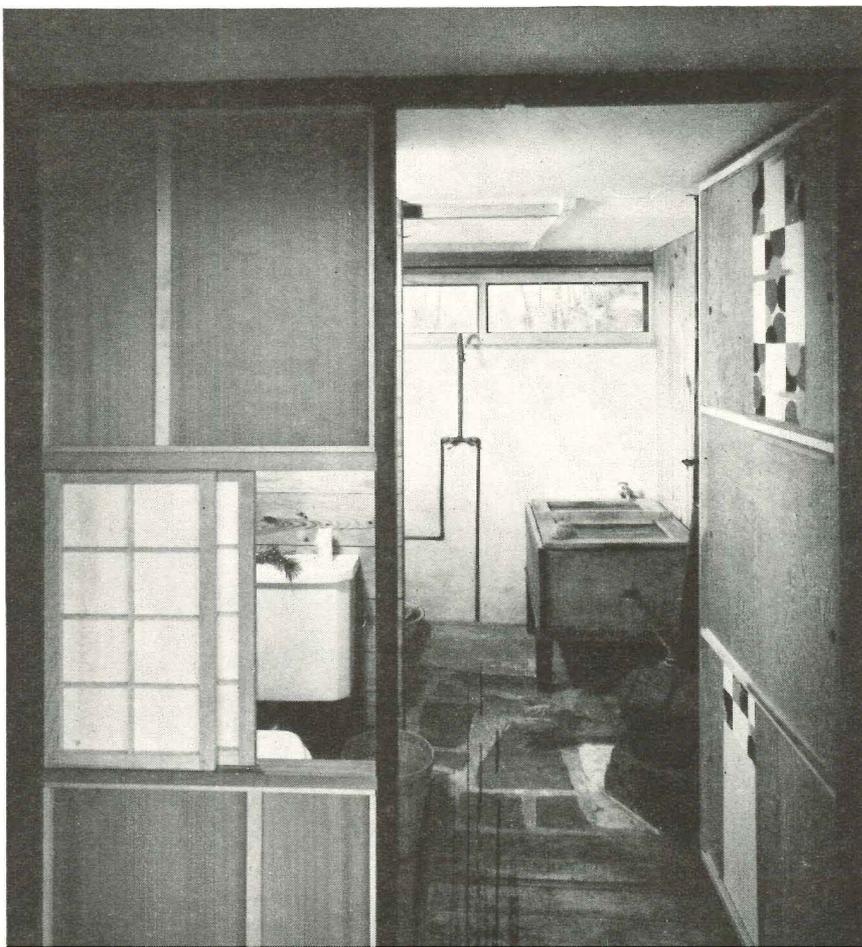


Between oil finishings chairs are hung out of the way on walls of the shop.

Typical sliding window is backed inside the house by another set of sliding surfaces. Like Japanese shojis, these are paper mounted on light wood frames. They furnish privacy (with diffused light) and also are an insulation barrier against cold down drafts.



Two-part bathroom has shower and Japanese style tub



(continued from page 86)

In the middle, in the kitchen ceiling, are some electric resistance panels, but Nakashima has never found it necessary to connect their wires.

When he built the house, Nakashima could not afford a well, either, so water for the house is collected in a cistern. This provides enough water for swift showers and the Japanese style bath (*page 88*) although it is not up to the usual profligate U. S. bath standards.

Hamaguti's final judgment on the house is interesting in what it says about both the U. S. and Japan. "I like the house very much," he said, "I am at home in it away from my country. It is Mr. George Nakashima's creative interpretation of the Japanese house and I like it. The most important principal difference between this house and a house in Japan is the high degree of industrialization and insulation of this house."

George Nakashima wants to build some more houses. "This one isn't really a success," he says, "I have to build another one before I can speak with any authority."

The second house will be built this summer, on his three acres, and will be a combination showroom and guest house. Today

their little house often must also be used as a showroom and although all three Nakashimas are amiable extroverts, the parades of prospective customers who stalk through in stocking feet to look longingly at the family furniture sometimes are a strain.

Behind George's desire to build some houses is his old striving toward structural integrity. "Architecture today is 95% advertising art," he said in a recent conversation during one of his rare visits to New York. "I don't believe in these superman architects, these masters of form. Usually the forms they produce are something entirely apart from the method of building. Even the Bauhaus movement was primarily intellectual."

**He looks upon housebuilding** as an industrial challenge, even to him. He wouldn't want to go into it without owning the machinery to do his own millwork, and do it well enough so the lumber frame which holds the house up would be handsome enough and well enough detailed so it could be left exposed, not concealed with finish. "No toe-nailed fir 2 x 4's," he says, "hidden behind something. That's the worst and most expensive way of building. Nothing

costs more than hammer and saw work on the job. With the proper equipment it would be economical to mill good connections in the members, and use better lumber. Why, I can buy oak for 8¢ a foot locally, but I have to pay 14¢ for shipped-in fir."

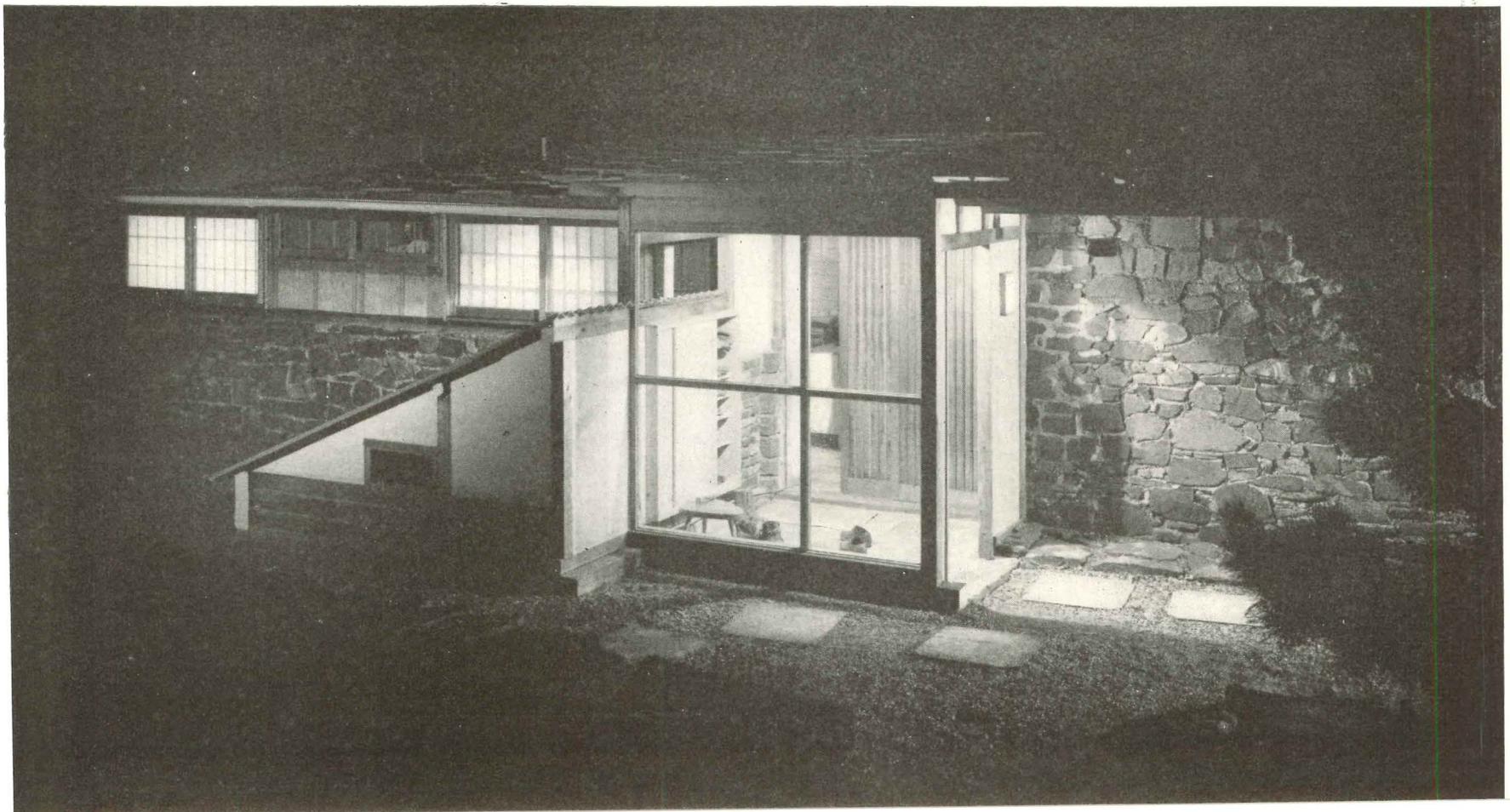
"But George," another member of the conversation asked, "would that be so if the people who are building 25,000 houses at the steel town near you also started to buy local oak?"

"Well, maybe not, but then fir would go down," Nakashima smiled.

"But you would have to put up every one of the houses yourself, George, and how could you operate that way? Don't you want a Cadillac, George?"

"No, but I know a milling machine I'd like for the price of a Cadillac. My Ford does the same thing for me that a Cadillac would do, but the other machine would produce. In the country we don't think of wealth in terms of Cadillacs, anyway, but more in terms of manure heaps. My lumber pile is my wealth . . . and I'm still buying good trees knocked down in the last big storm to add to it. I just want a living, that's all, and there has to be a little profit to buy machines with."

Night view of entrance to house

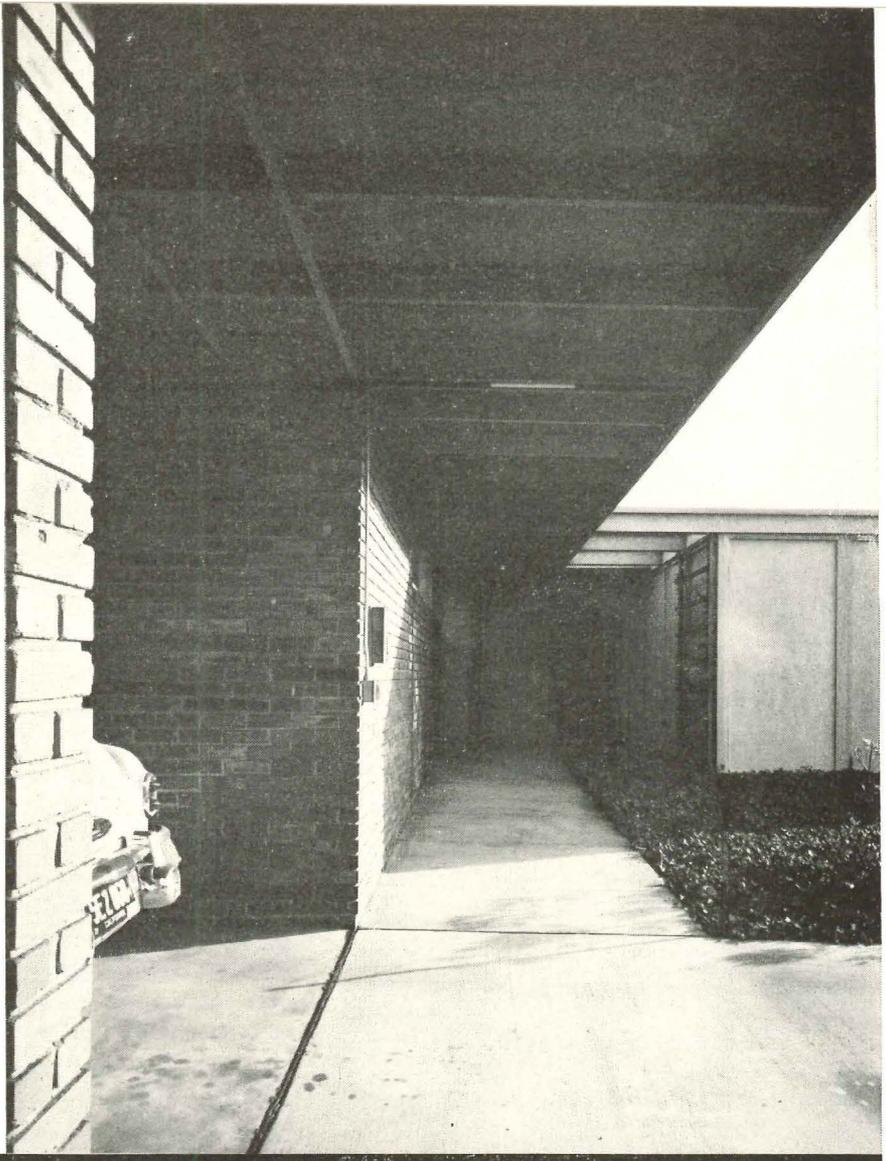


## OASIS FOR GOOD LIVING

**Garden apartments have the amenities of private houses: terraces, garages, enclosed service yards**

LOCATION: Berkeley, Calif.

HARWELL HARRIS, Architect B. REININGHAUS, Builder

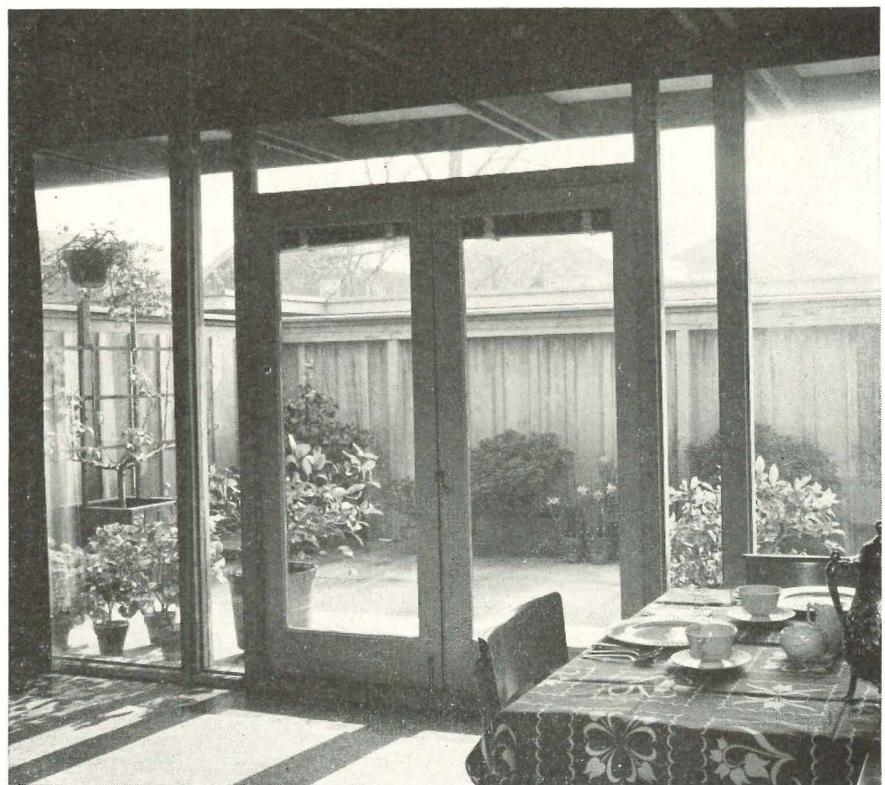


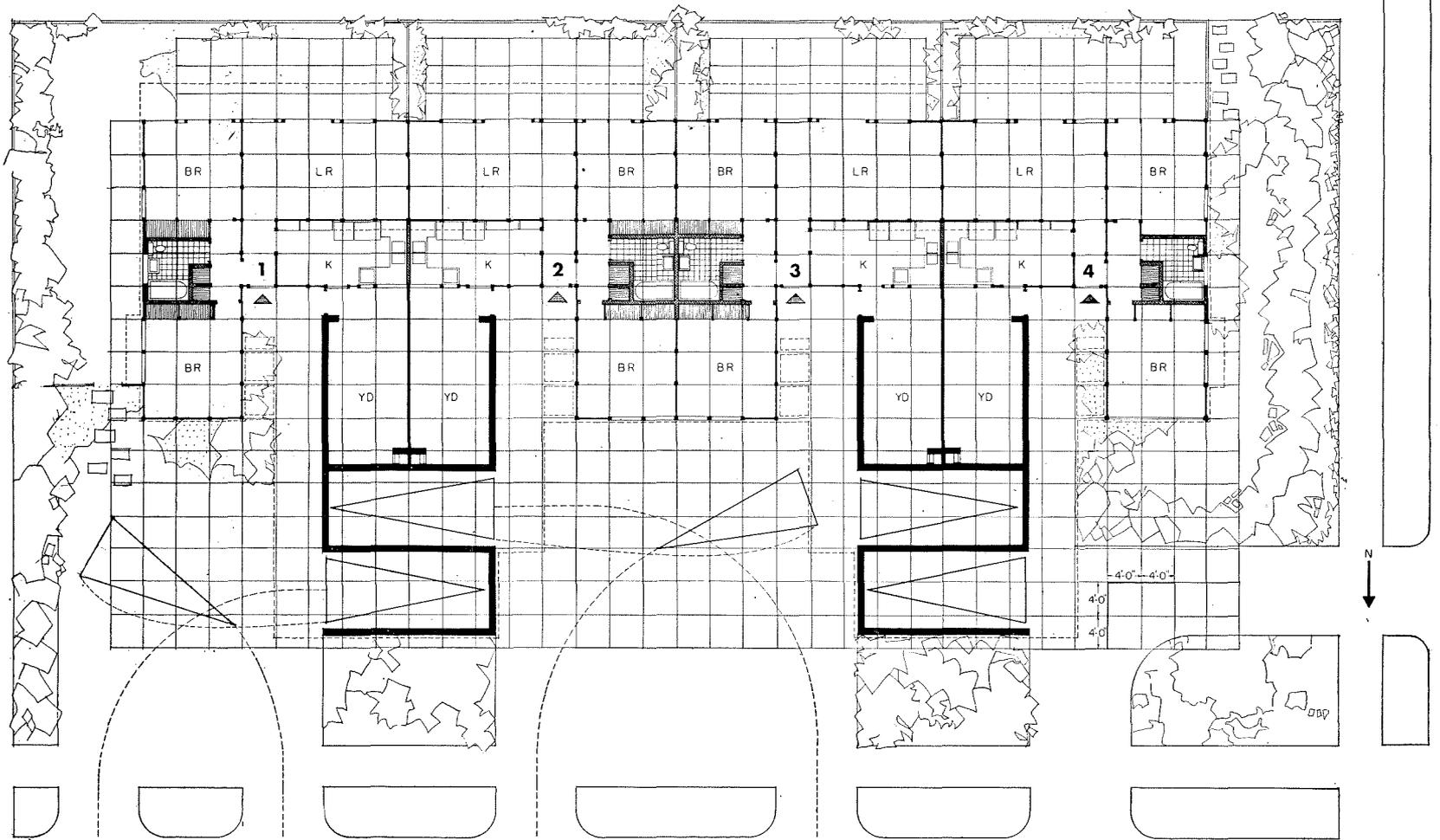
*S-plan carports are tied to service yards; roof overhang makes a handsome cover for the walk from street to both service and main entrances.*

*Private, walled-off terraces adjoin both living rooms (below) and bedrooms (see plan), and give tenants a chance to do some gardening.*

The "front" (*opposite*) of these garden apartments strikingly reverses the traditional order of materials: their carports are honored with brick; the apartments themselves are of dry-wall panels. (These panels are a stock fiberboard lined on both sides with asbestos cement.) Says architect Harwell Harris, "You can't drive a car through a brick garage wall but you could ram it through a panel." The kitchen yards—also rather remarkably placed in front of the apartments—are brick too. Pleasant walks, covered continuously with roof overhangs link apartments, carports and yards (*photo upper right*). With service areas concentrated at the front, each apartment has its own fenced-in terrace in back, adjoining living room and bedroom.

The problem was to create a small oasis for good living in an area which was on the fringe of the business district but still zoned for residential use. This oasis had also to be one of original low cost and continuing low maintenance, within a





Photos: Rondal Partridge

*In a near-business district of cumbersome old houses, this modern garden apartment offers privacy, convenience, simplified housekeeping.*

rental range of from \$90 to \$100 per month. The client further specified that he wanted to use panel construction. To meet these requirements, architect Harris had an adept way of making his floor plans fit his clients' needs, a conscientious respect for materials, and considerable interest in the pattern and design possibilities of panel construction.

Inside, each apartment is neatly organized into small but comfortable rooms, with a minimum of hall space and a dead-end living room completely free of traffic. Terraces not only provide for secluded outdoor living and a good bit of potted gardening; since only window walls separate them from living and bedrooms, they also add to the apparent, visual width of these rooms.

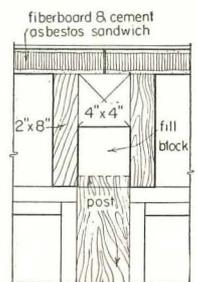
The planning job was not the comparatively simple one of merely working "from the inside out." It *had* to work just as well from the predetermined street side. By devising a kind of S plan for each two carports, Harris gave every family what

amounted to real privacy of locomotion and at the same time made each driveway serve for two cars. And by extending the garage roofs in a wide overhang, he made a cover for the walk from street to both service and main entrances.

Certain economies always result from post and panel type construction: each panel is its own insulating material, all in one piece and ready to be installed, and also supplies both interior and exterior finished walls. However, only the very careful detailing of joints and openings, in the hands of such a master as Harris, made possible the "finished" and permanent appearance. He says this did not boost costs. Wall panels were trimmed to fit between posts so that they would line up with roof panels. (See detail, next page.) Since this construction leaves no voids in which to run electrical, plumbing or heating ducts, spacers between ceiling beams and stops around wall panels conceal electric conduits; studs and corrugated cement asbestos between kitchens and bathrooms conceal plumb-



What looks like a luxurious modern house is exactly that—within an apartment. Note how the vertical pattern of the window wall is defined by the wide roof overhang. At the right, typical construction details



ing vents; cabinets conceal range and heater vents; and the cement slab floor is poured around the heating pipes.

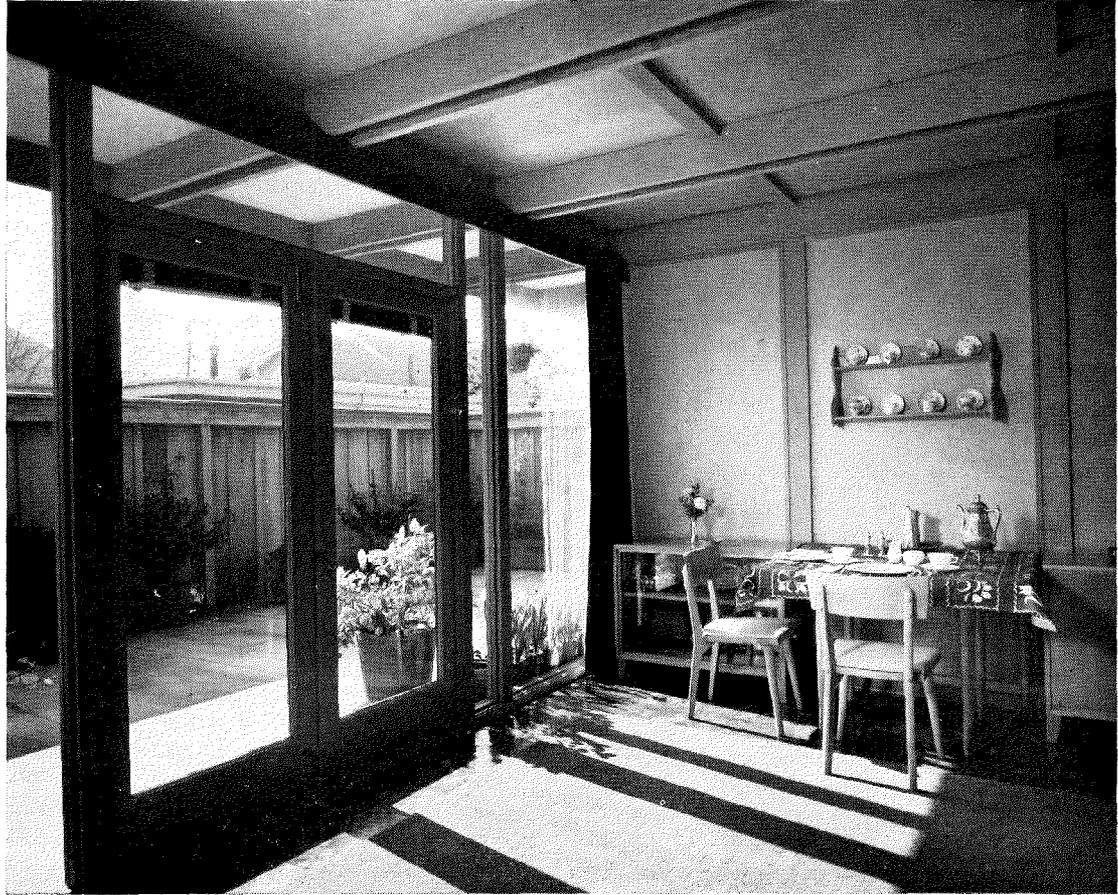
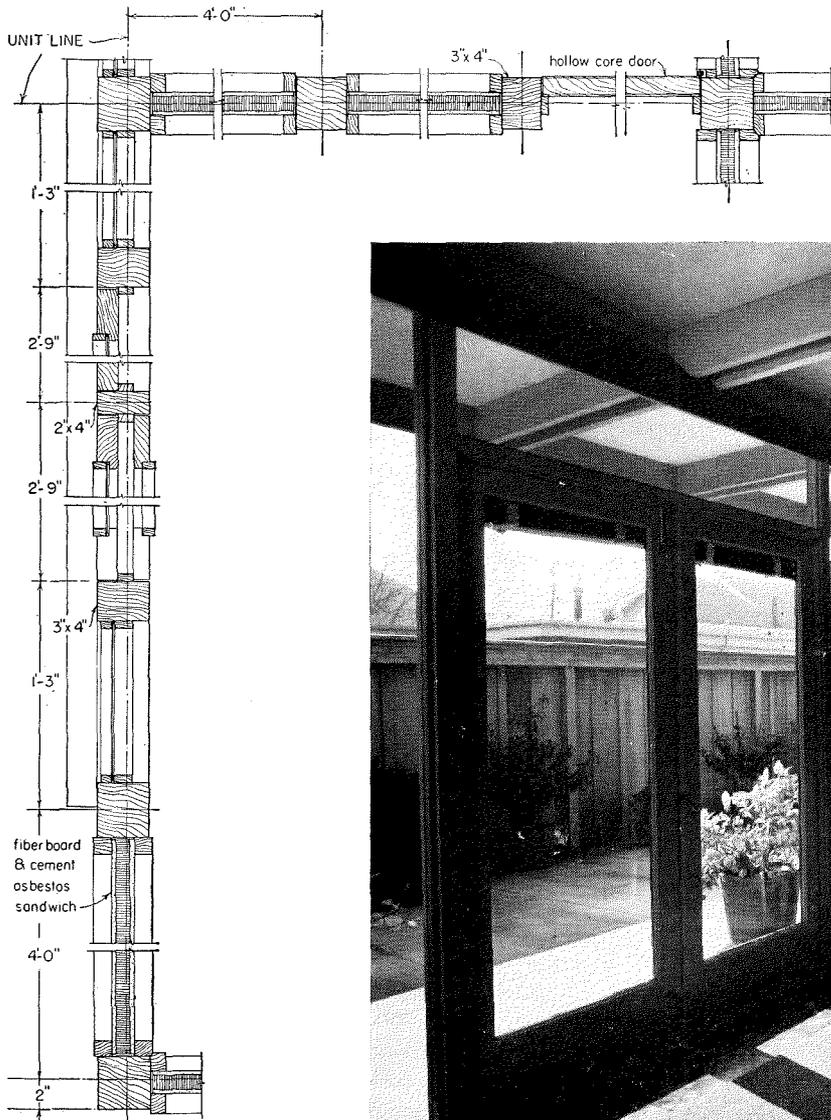
Otherwise, the building technique was simple and economical; likewise the materials. Flooring is asphalt tile in main rooms, ceramic tile in bathrooms. Ceiling-roof is of beam and panel construction, with composition and gravel topping.

On the exterior, the building is unpretentious and uses its flat roof adroitly to make skylighting easy. The design of the roof overhangs serves to overcome an appearance of boxiness. Harris has further installed other features (such as the covered front walks) which pay off in looks as well as in practical convenience. Perhaps best of all are the garages—instead of the far too common “chicken coops,” these are expertly designed and neatly joined to the apartments. Inside, where it counts most, there is no question about the quality of the design: it is simple, skillful and exactly right for pleasant, private indoor-and-outdoor living in a small apartment in a crowded section.

**COST BREAKDOWN, per apartment**

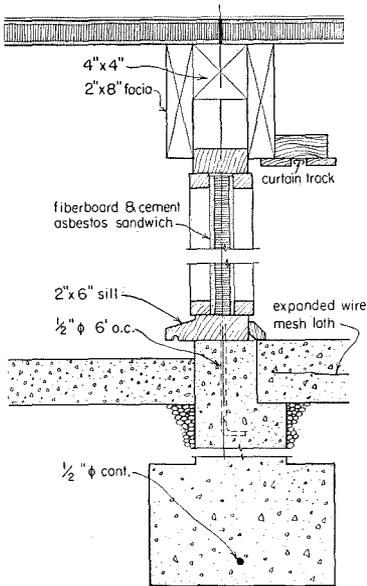
Foundation concrete .....	\$186
Reinforcing steel .....	45
Millwork .....	369
Masonry .....	611
Panel boards .....	964
Electric wiring & fixtures...	427
Heating .....	485
Plumbing .....	811
Cement floors .....	252
Asphalt tile .....	146

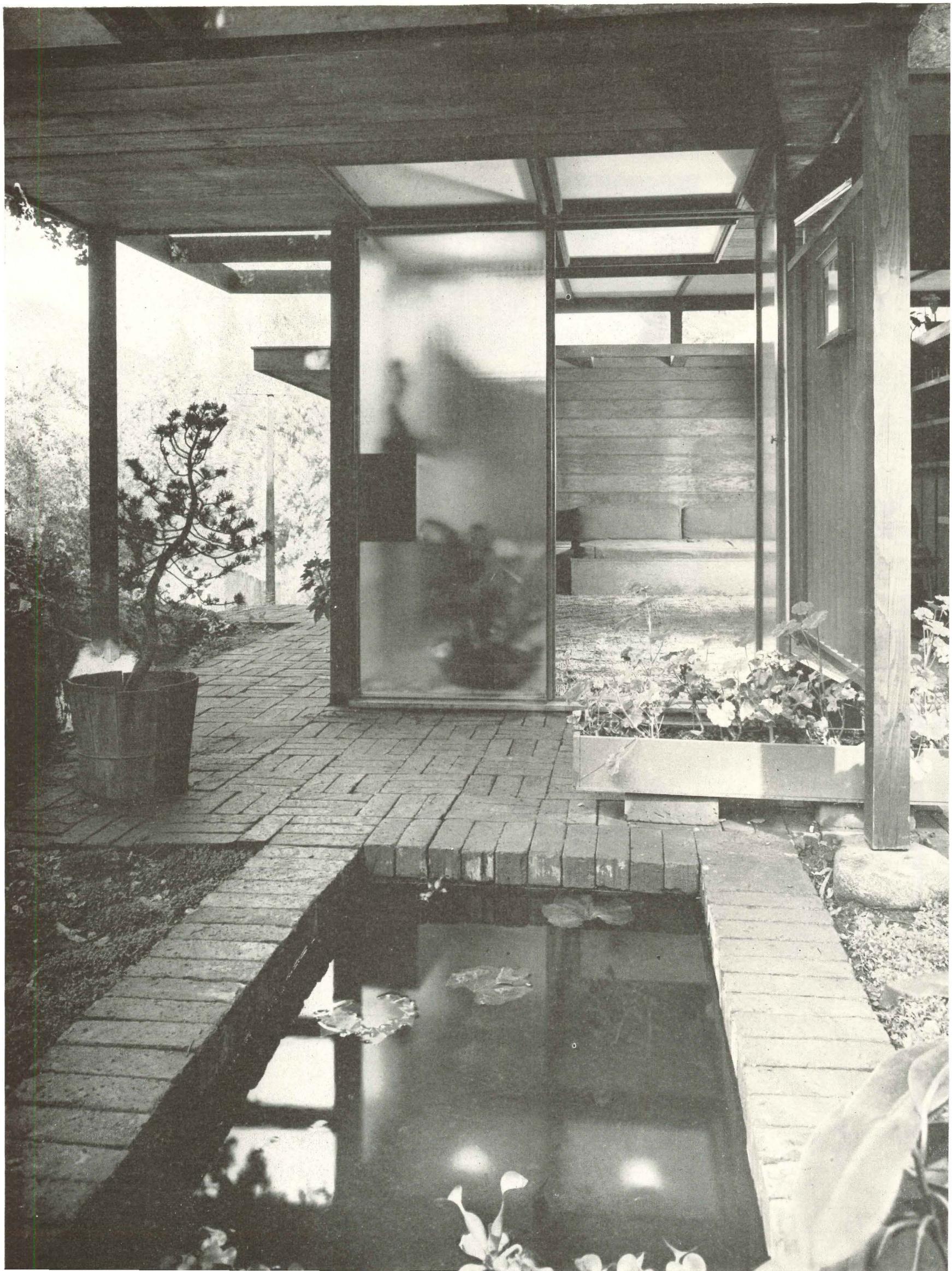
Ceramic tile .....	174
Sheet metal .....	113
Lumber .....	1,464
Cabinets .....	244
Paint .....	137
Hardware, rough & finish...	158
Glass .....	63
Roofing .....	167
Labor .....	1,932
<b>TOTAL</b>	<b>\$8,746</b>



*Floor-to-ceiling window wall admits light and adds to apparent width of living room. Exposed post and beam framing system has rhythmic pattern.*

*High walls not only make each terrace private and secluded; they also block surrounding built-up neighborhood view from inside of apartments.*





## GORDON DRAKE 1917-1952

Gordon Drake died on January 15th, in the blizzard that enveloped California's Sierra ski resorts. He was only 34 years old. Like architect Ernest Born, whose office was only a block away from Drake's, many people who knew his work may have said to themselves: "It's curious the way his death has touched me deeply, and I didn't even know him."

The truth is that Drake was a rather extraordinary young man. A Texan by birth, he spent a good deal of time in Hawaii before he won an athletic scholarship (he was a track star) to the University of Southern California. While there he came under the influence of the architect Carl Troedsson. "I can't play games any more," he told his track coach, "I've got something serious to do." Years later he added: "Troedsson taught me that architecture was a thing of the spirit. I still think he was right."

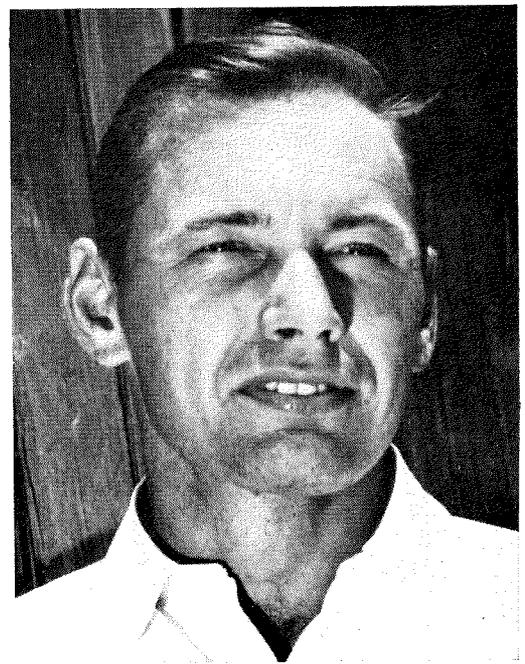
There followed several years with Troedsson, then five years with Harwell Hamilton Harris. Says Harris: "Many talk of the social obligations of the architect but their work seldom shows it; Drake's work did."

When Drake left Harris it was to join the U. S. Marines as an engineering officer. He lived through most of the major Pacific campaigns, was wounded several times, and several times had malaria. He used to send Harris plans and sketches from all over the Pacific, asking for his criticism. When the war was won, Drake—now a major—quit the Marine Corps to open his own office in Los Angeles. By this time he had built his own small house (*opposite*)—a house that attracted attention the world over. Nails were still hard to come by, and Harwell Harris lent him some to finish the house.

Drake got a few jobs in the San Francisco area and moved his office first to Carmel and then to San Francisco. "Gordon had a bitter struggle," says landscape architect Douglas Baylis, his associate. He would work 15 or 16 hours a day, "almost torn apart arriving at a good solution . . . We were all starry-eyed, but Gordon was the most starry-eyed of us all."

When Gordon Drake died, he left behind him some 60 houses, two tracts, one prefabricated unit, six commercial buildings. Last summer he wrote to this magazine: "There hasn't been time yet to produce any really good buildings. Perhaps in another ten years or so . . ." Just before he left on his last trip, he said to Baylis: "I've got my signals all clear, finally." His car was paid for, he expected to get married, he was excited about a big new job, and the Marines had decided against calling him back.

Perhaps the pictures on the next eight pages will give a hint of what Gordon Drake was after. Perhaps he had "got his signals clear" long before he knew it himself.

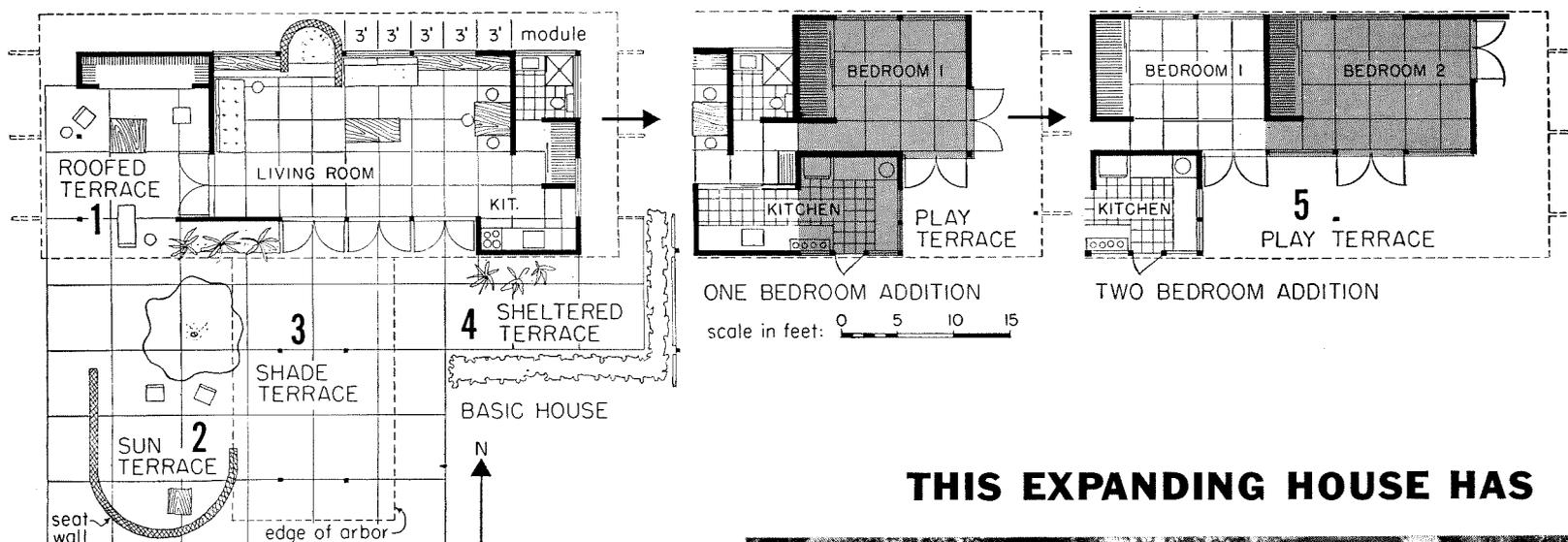


←  
*Pool and terrace outside Gordon Drake's own house in Los Angeles, which he built in 1947. Note the clear modular expression, the almost Japanese details, the use of light as an architectural element.*

*Photo: Julius Shulman*

Gordon Drake will best be remembered for his small houses.

On these and subsequent pages are shown pictures of half-a-dozen California homes built by Drake. The large pictures show one of his last (and most successful) houses: a "Unit House" designed to grow with the family, built last fall in Alameda County, Calif.



## THIS EXPANDING HOUSE HAS

The "Unit House" demonstrates four principles of modern domestic architecture which were especially dear to Drake. They are—

**The concept of outdoor living;**

**The concept of modular structure**

(with all the social and economic advances that this implies);

**The concept of light used architecturally;**

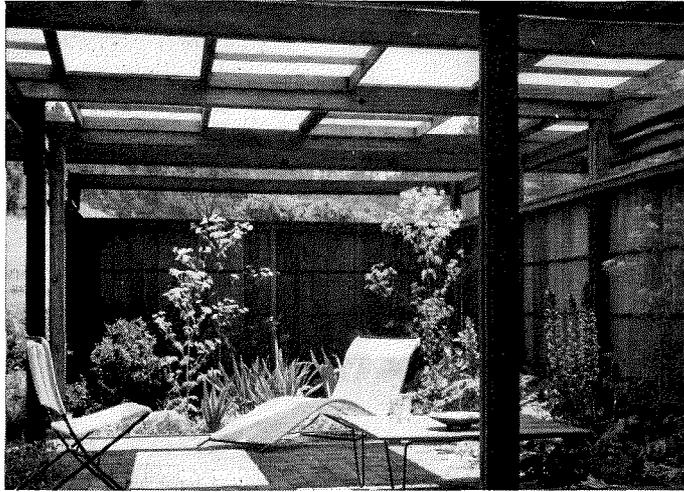
**And the concept of precise elegance—**

as practiced most successfully by the Japanese.

These principles Drake owed to Harris, more than to anyone else.

No Drake house has paid as much attention to *outdoor living*—and to different kinds of outdoor living—as the "Unit House" shown above and at right. As planned jointly with landscape architect Douglas Baylis, the house actually has *five distinct zones for California outdoor living*. In the plan, left to right, the "Unit House" garden consists of (1) a roofed terrace at the end of the living room; (2) a sun terrace framed in a curved retaining wall; (3) a shade terrace under a light trellis of wooden slats; (4) a sheltered terrace protected by screens and planting against the wind; and (5)—as the house grows to accommodate children—a play terrace that can be supervised from the kitchen. The plans on this page also explain the three-stage growth of the house made possible by its 3' square, modular structural grid.



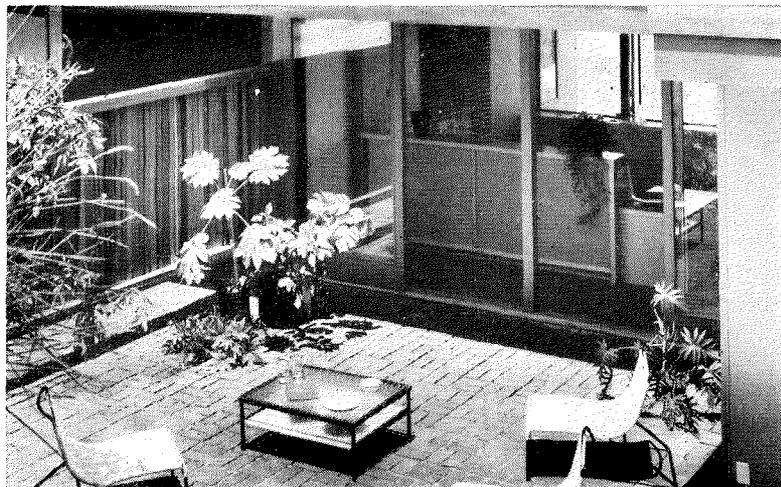


**IN HIS EARLIER WORK,** Gordon Drake frequently tackled the problem of outdoor living in imaginative and colorful ways. From left to right, these pictures

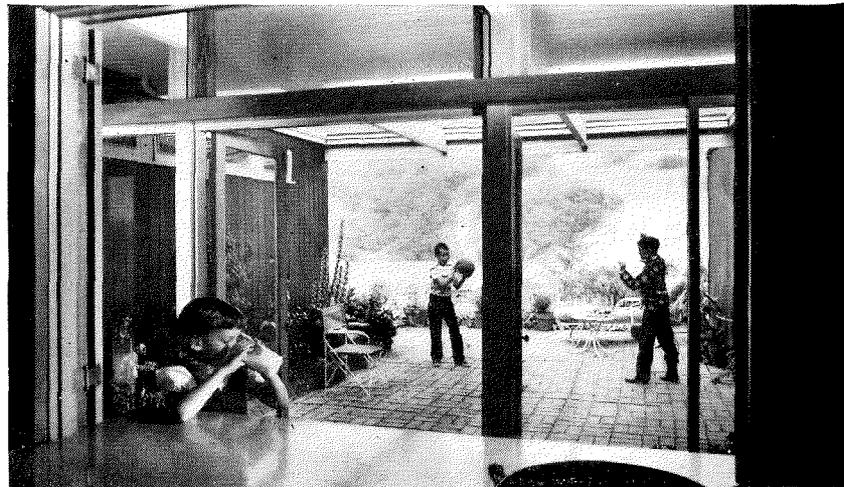
show the terrace in his own house (1947), the patio in a recent Carmel House (1950) and that in the Damman House (1949).

## FIVE ZONES FOR CALIFORNIA OUTDOOR LIVING





**EARLIER OUTDOOR LIVING PLANS** were also incorporated in the Prefab House (1947).



**ANOTHER VIEW** of Dammon House patio (see page 97), which can be supervised from the kitchen, thus serves as child play area.

## **MODULAR STRUCTURE GAVE DRAKE'S WORK FLEXIBILITY, DISCIPLINE, PREFAB POSSIBILITIES**

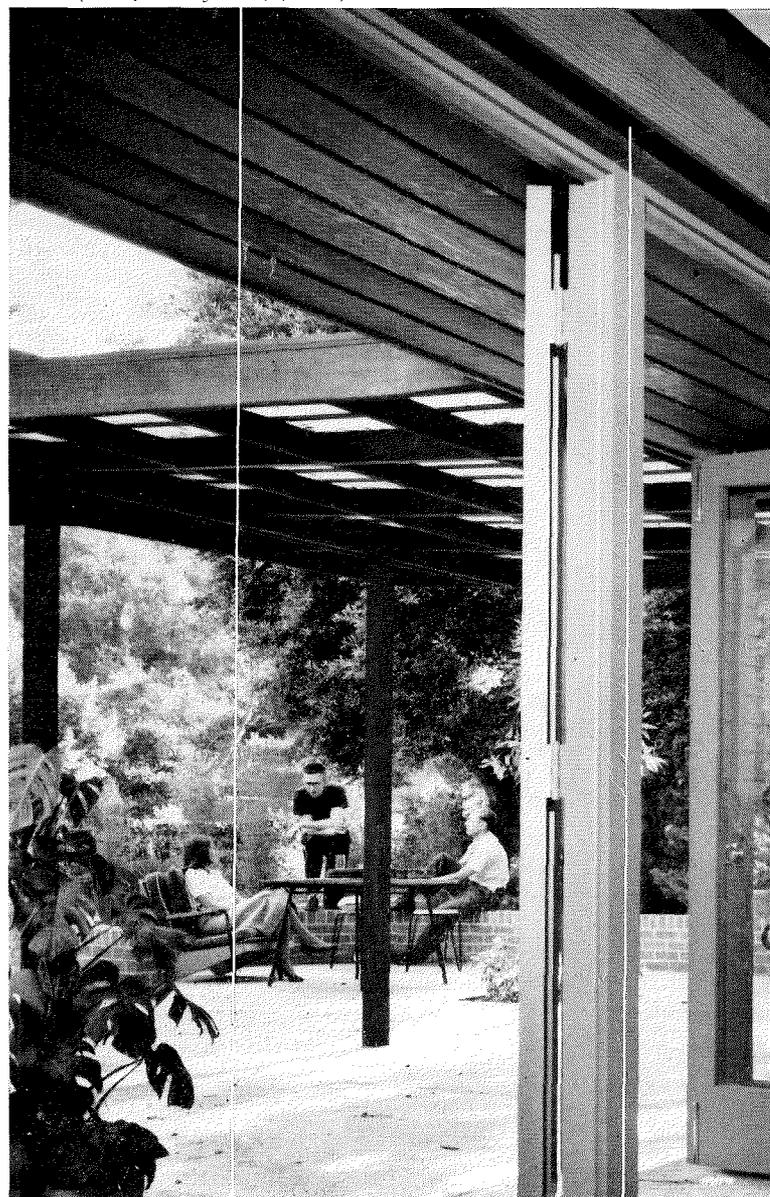
When ARCHITECTURAL FORUM, in Sept. '47, published a number of important postwar houses by young architects across the U.S., Gordon Drake's contribution (*opposite page*) was a modular structure, painstakingly detailed and carefully analyzed for modern assembly-line erection.

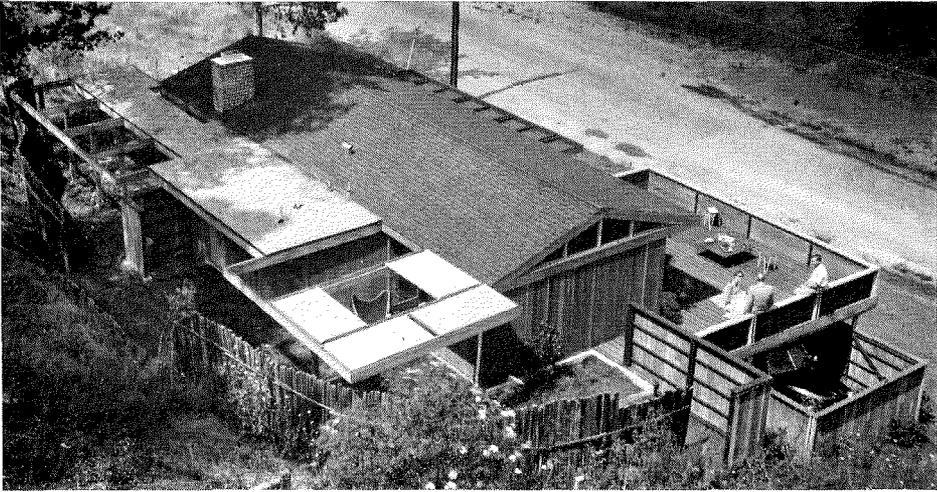
Drake's use and visible expression of a structural module gave his houses a rhythm similar to that which you get from a drumbeat repeated all the way through a piece of music. Just as the drumbeat will pull together a musical composition and give it a sense of discipline and order, so Drake's visible regular module gave his architecture a sense of discipline and order not always found in rambling, close-to-nature houses.

Drake believed that undisciplined building made for "waste, confusion and inefficiency . . . Architects concerned with housing," he would add, "will either work for prefabrication and building integration, or they will no longer exist economically." And because Drake felt that "the only way to prove the point now is build," he never built a house that did not conform to a modular grid—and thus helped to "prove the point *now*."

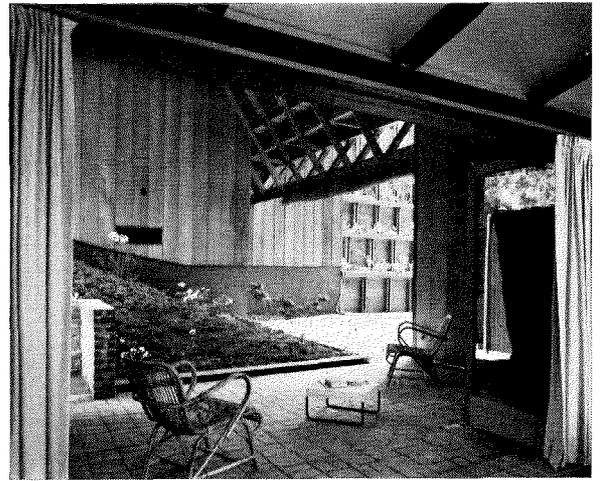
In the "Unit House" (designed on a 3' module throughout—the width of door plus frame) the points proved included the one that modular construction makes for easy expansion and greater flexibility. For this house was designed to grow from an original one-room apartment all the way to a final two-bedroom structure to take care of children. Realistically, Drake designed the house to grow in its kitchen facilities as well, provided for yet another roofed terrace for future child play under supervision from the kitchen (*see plans on previous page*).

Photos: (above) Morley Baer; (others) Julius Shulman

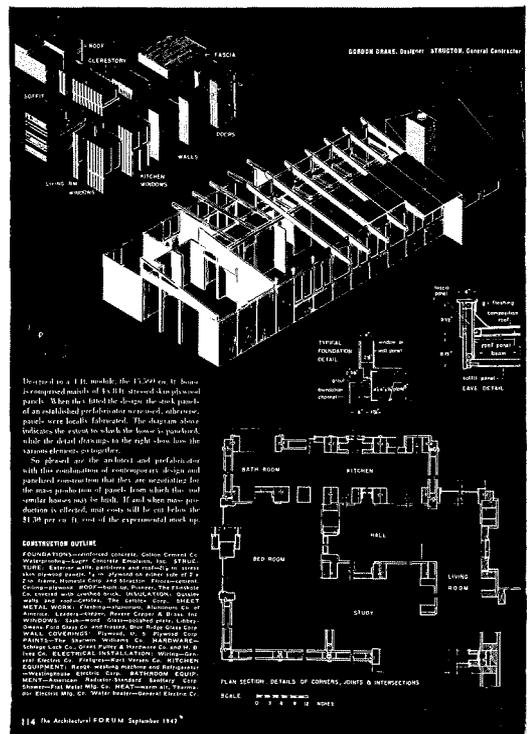




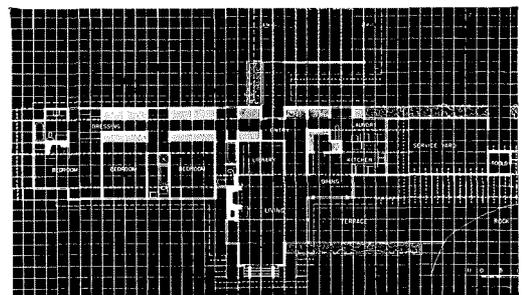
**BIRD'S EYE VIEW** of Carmel House shows three or four distinct patios, terrace and balconies, for different kinds of outdoor living.



**HARWELL HARRIS** taught Drake a good deal about outdoor living. Weston Havens patio by Harris (1943).



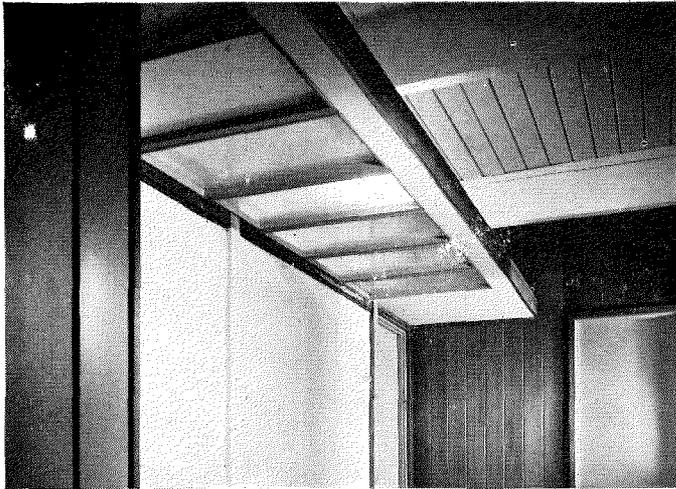
**EARLIER PREFAB** designed on 4' module was built by Drake in 1947, published in ARCHITECTURAL FORUM that year. Below: typical Harris plan on 3' grid.



GORDON DRAKE



1.

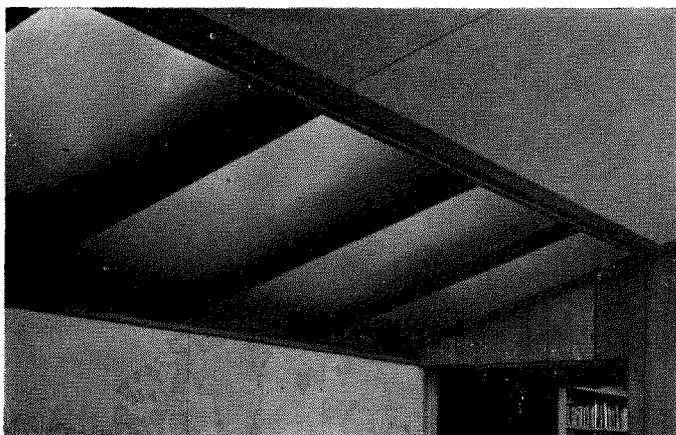


2.



3.

**EARLIER EXPERIMENTS WITH LIGHT** show Drake using glass gable ends (1), recessed light panels (2) and translucent glass screens (3) in his houses to create pleasant surprise effects. In this, as in other ideas, Drake followed Harwell Harris whose *Weston Havens'* living room (below) had luminous ceiling panels also.



## PLAY OF LIGHT GAVE DRAKE'S HOUSES THEIR POETIC QUALITY

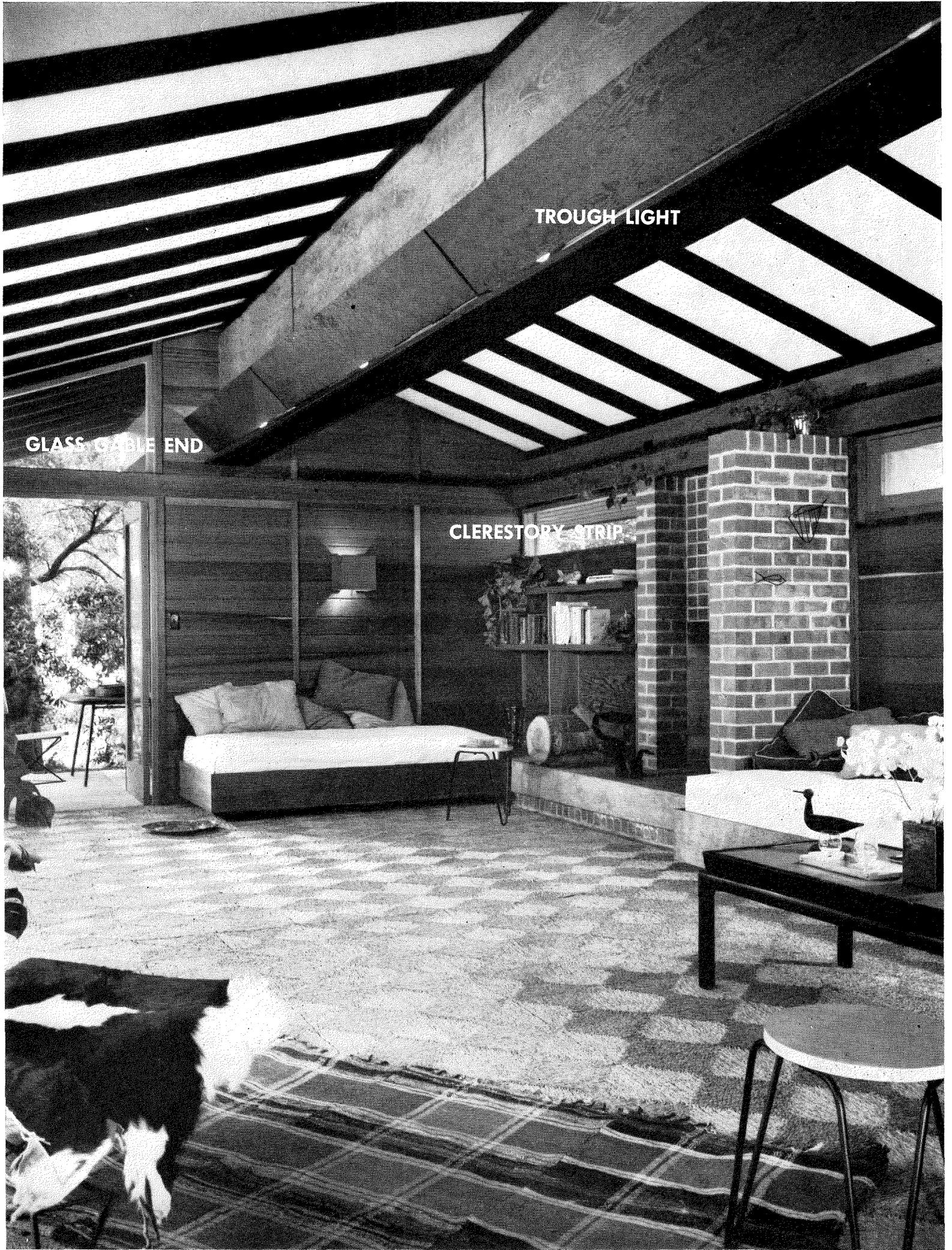
Among Drake's favorite architectural materials was light—*natural light* through clerestories, glass gable ends, translucent screens and, of course, through large walls of plate glass; *artificial light* recessed in the structural frame and shielded with obscure glass panels, or run in deep wooden troughs that helped to accentuate the direction of a space or to illuminate the structural patterns.

It is very unusual to see a freestanding lamp or an attached light fixture in a Drake house; light is always used as an integral element of the structure—an important element to stress a particular point in composition or in space.

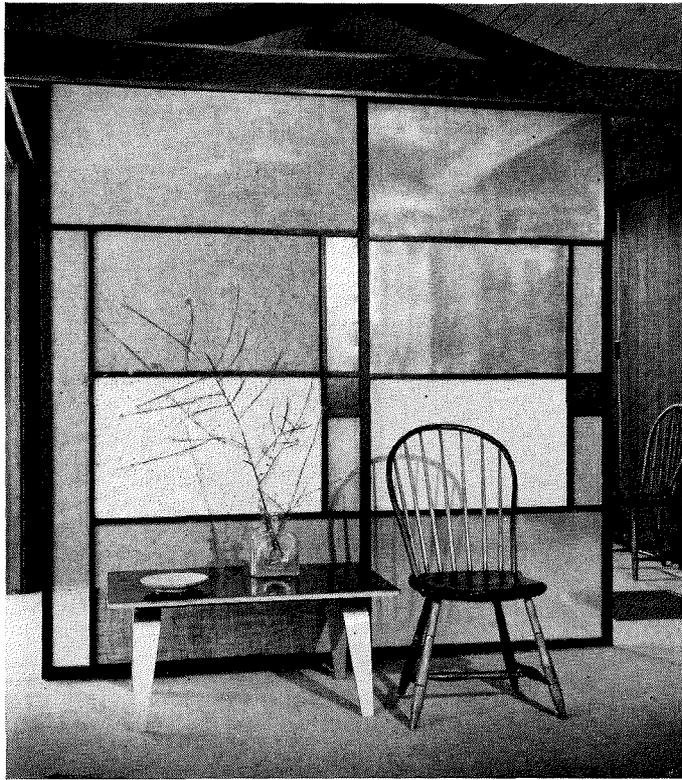
Drake realized that the rays of the sun entering a house through a virtual peephole—a thin clerestory slot, or a tiny triangle under a gable end—would travel across wall surfaces and floors, create fascinating patterns and animate interior spaces. He realized, too, how easily the apparent size, the apparent proportions or the apparent color of a room could be changed by the flick of a switch. Unlike many architects who can visualize only concrete materials, Drake understood abstract architectural qualities—like the changes in atmosphere that light alone can produce.

*Living room in unit house (opposite) has glass gable end, trough lights and clerestory strips.*

Photos: (top) Morley Baer; (others) Julius Shulman



GORDON DRAKE



Photos: (above) Morley Baer; (below) Fred R. Dapprich

**IN EARLIER HOUSES** like the ones above, Drake used Japanese motifs for their light elegance. The respect for Japanese architecture also came from Harwell Harris, whose own 1937 house is shown below.



## JAPANESE DETAILS GAVE DRAKE'S HOUSES LIGHTNESS AND GRACE

**This is what they said  
about Gordon Drake**

**ERNEST BORN:** "It was our great gain that he left Los Angeles and came up here. He had a pureness and poetic fervor about everything he did."

**GARDNER DAILEY:** "His Carmel house . . . showed imagination and a good understanding of structure and design. He seemed a young man of exceptional gifts."

**HARWELL H. HARRIS:** "What he used, he used well. The scale of his work was human. He didn't try to make small things look grandiose. . . . He exerted himself tremendously and never spared himself. He showed great promise."

**HENRY HILL:** "Drake was an architect in the fullest sense of the meaning. I wanted to know him more. He was a hell of a wonderful guy. It was a shocking loss."

**WILLIAM W. WURSTER:** "He was a most thoughtful, sensitive person. . . . His houses were very beautiful. We lost somebody who was working away at ideas and ideals."

*Note:* Landscape architect Douglas Baylis is currently preparing a book and a traveling show on Drake's work.



Like many architects on America's West Coast, Gordon Drake was deeply impressed with the art of Japanese designers of houses and gardens. To them he owed many of his details, his translucent screens, his shoji patterns, his post and beam connections. To them his houses owe much of their nimble grace.

*Julius Shulman*



Last summer, Gordon Drake was asked for a statement of his principles. He said: "The few architects of today who do wonderful building do so because they must. They weren't handed principles as a gift, they seized them through work, through struggle and through sacrifice . . . It's really up to the younger generation to go forward by themselves. There is no easy way out. A few young men will persevere and produce architecture . . ." He was one of those few.

# FOUR-TERRACE HOUSE

Michigan version of indoor-outdoor living

provides an extraordinary range of family activity:

outdoors with four terraces,

indoors with a flexible in-line plan

LOCATION: Franklin, Mich.  
 EDWARD P. ELLIOTT, A.R.I.B.A., Architect  
 EDWARD A. EICHSTEDT, Landscape Architect  
 ALEX GOW, Contractor

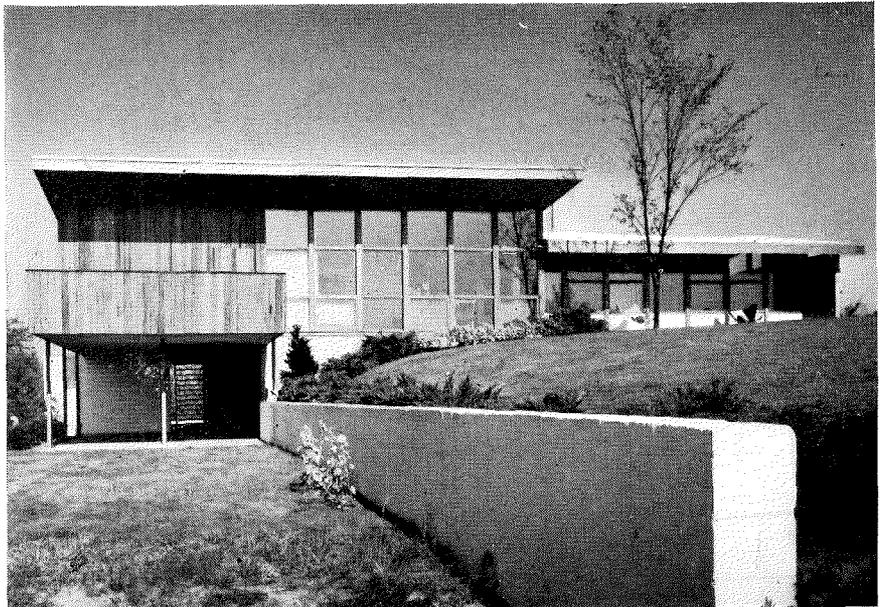
Michigan people, it seems, want to live outdoors too. And neither snow nor sleet nor sloping sites will stop them. In this house for an artist, his wife and small child, architect Elliott picked up the challenge, organized an undulating hilltop and a variable climate into a highly satisfactory spot for outdoor activities. Credit to him: the task was more exacting than simply importing California-style patios to Michigan. And the result, besides working well for the owners, has its own fresh regional flavor.

Coupled with an open modular plan for the interior (see p. 106), the four outside zones he created are as varied—and as suited to local conditions—as are Gordon Drake's five zones for California's outdoor living (pp. 96-97): **a)** Covered terrace (see sketch), with barbecue built into the chimney, for semi-outdoor meals, play, shaded relaxation. It is shielded from rain and hot sun by **b)** a sun bathing balcony, well placed at the sunny south corner of the house for maximum use, protected from wind and wandering eyes by a solid wood parapet around three sides, a blank wall in back. Adjacent to the dining area, it doubles easily for open-air dining. **c)** Morning sitting terrace, facing east, partially shielded by roof overhang and projections of the house. **d)** A dining and play balcony catches afternoon sun, is a large porch for children's play supervised from sink, range and ironing board, or a pleasant place for sunset watching and meal serving. Like the sun porch, it economically forms a roof, in this case for the carport. Placing carport on a lower level was logically determined by the roll of the site and by the fact that Michigan driveways if too steep, can turn into unnavigable ice in hard weather.

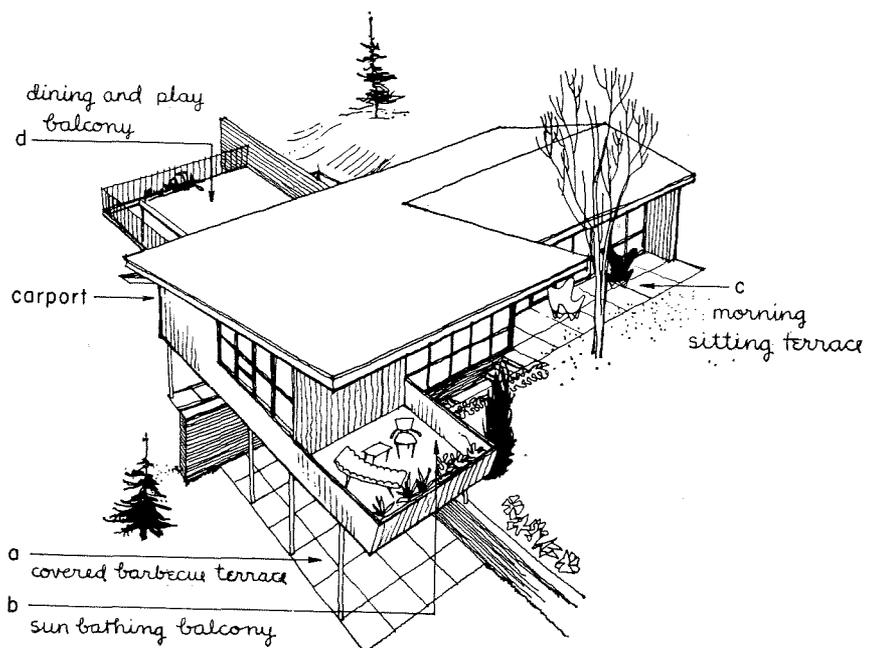
With a hilltop panorama in all directions, Elliott opened up with glass, then made solid walls separate and frame different views and give privacy where needed: between dining area and sun balcony, on the side of the bedroom facing neighbors, on the street side of the child's room to shut out headlights and other distractions. Exterior appearance, if a bit monumental (perhaps the solid influence of Saarinen, with whom Elliott worked as senior designer for five years), is warmed with natural cedar siding and accented with bright colors: red eave lines and pipe columns, yellow-painted plywood panels under windows.

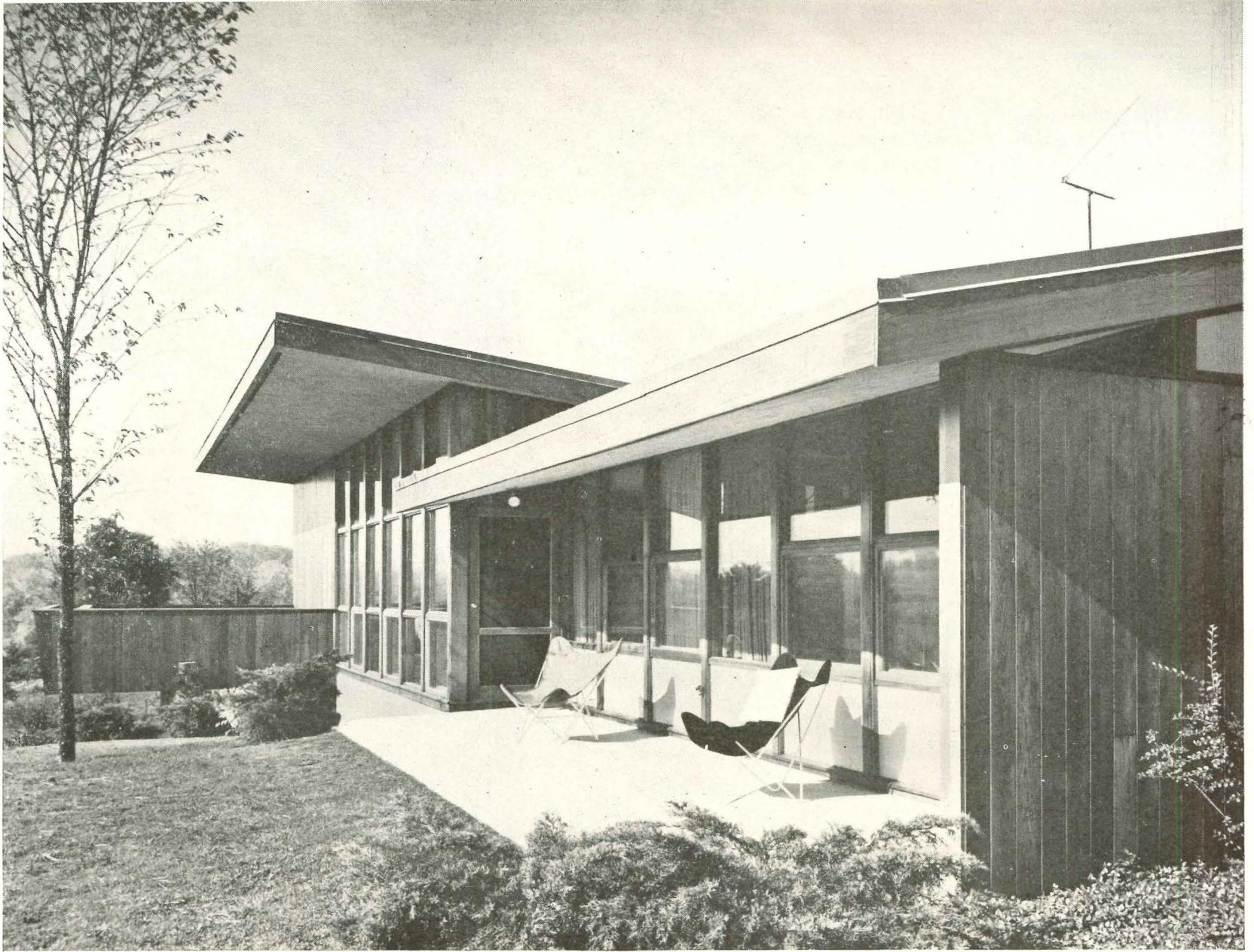
Construction notes: hollow clay wall tiles used for flooring match the effect and easy maintenance of quarry tile without the expense. Split in two and laid in cement, they provide good conduction for hot water radiant heating coils beneath. Cost of house (1,900 sq. ft. plus outdoor areas): just under \$17 per sq. ft.

Photos: Richard Shirk

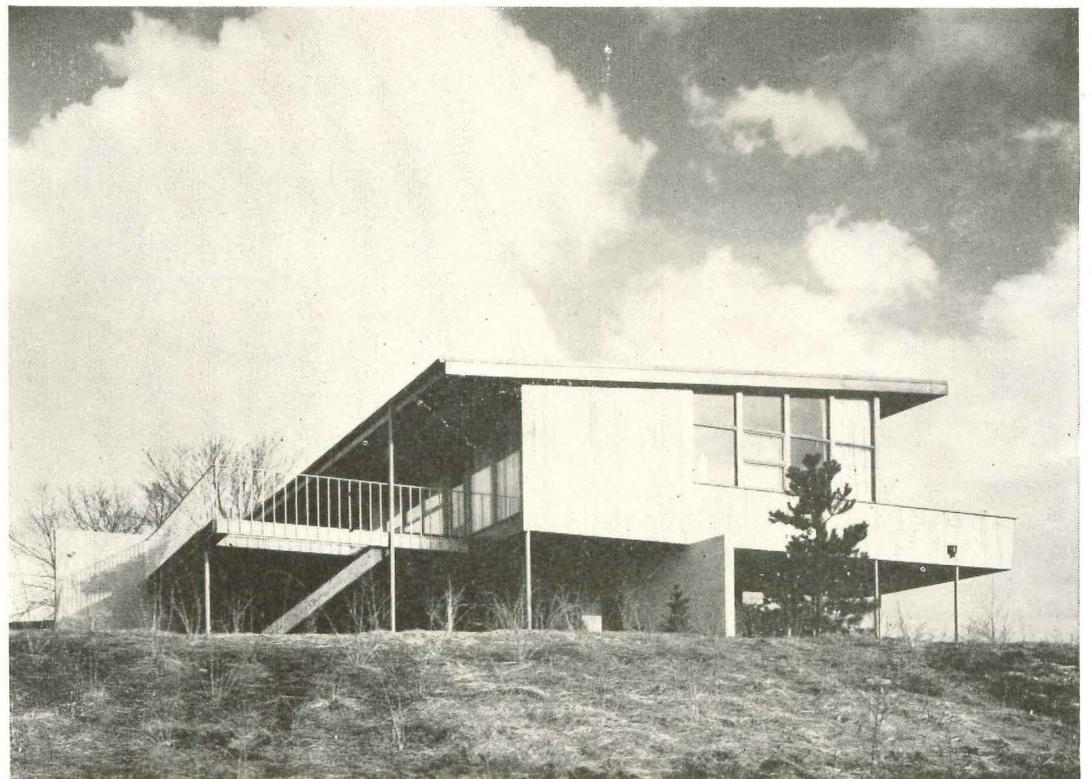


**a-b)** Rear of house has sun balcony, covered terrace beneath. Lower panes of double-glazed living room swing up to catch prevailing south breeze.





*c) Sitting terrace, outside bedroom windows, faces southeast, for morning sun. Jog in plan and extended wall create partial shelter on both sides and above, and covered door to living area (center). The 6' overhang roofs out summer sun, lets winter rays into the living room.*

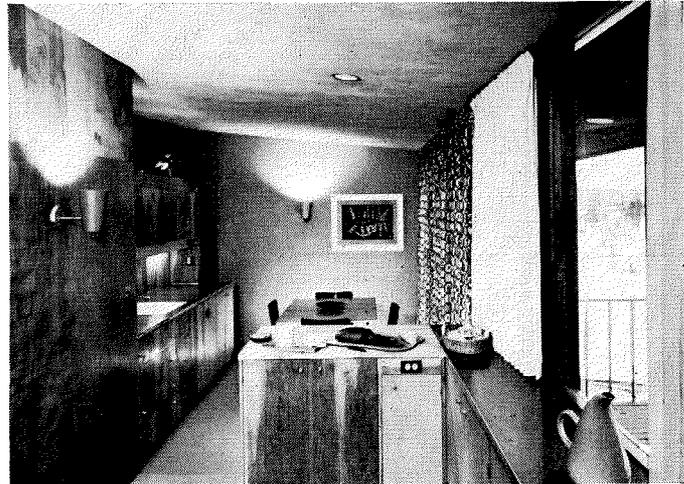


*d) View from west shows dining-play balcony over carport, left, and sun balcony over barbecue terrace, right. These under-house areas will be enclosed for garage, bath and artist's studio. Car is stored on lower level of sloping site to minimize steepness of driveway. Colored planes of masonry walls divide outdoor living areas.*

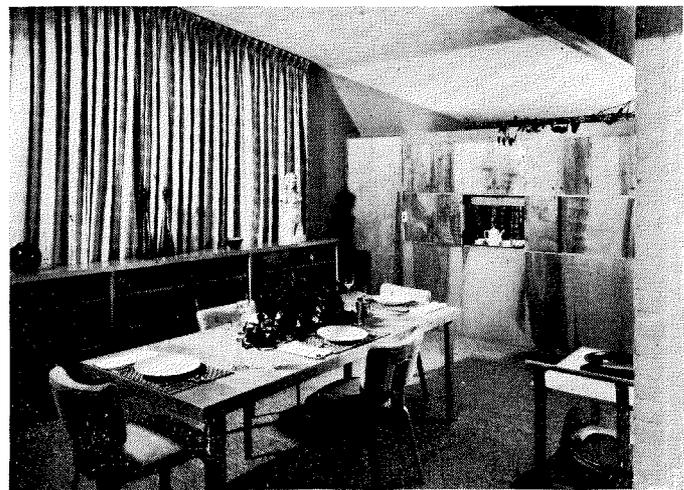
**FOUR-TERRACE HOUSE**

The in-line plan (below) of this house actually is a double in-line scheme, bisected by a storage-utility core that runs straight down the middle. Circulation is quick and convenient: starting at the main entry, directly across the center of the house to the back, left to bath and bedroom hall, right to laundry and kitchen. The second line of communication, parallel to the first, is open from end to end through the main living areas, which may be divided into their separate functions by drawing curtains, as in architect George Matsumoto's in-line plans for two small houses (H&H, Feb. '52). In addition, there are two openings at either end of the central core for cross-circulation, allowing a virtually uninterrupted path around the outside of the plan.

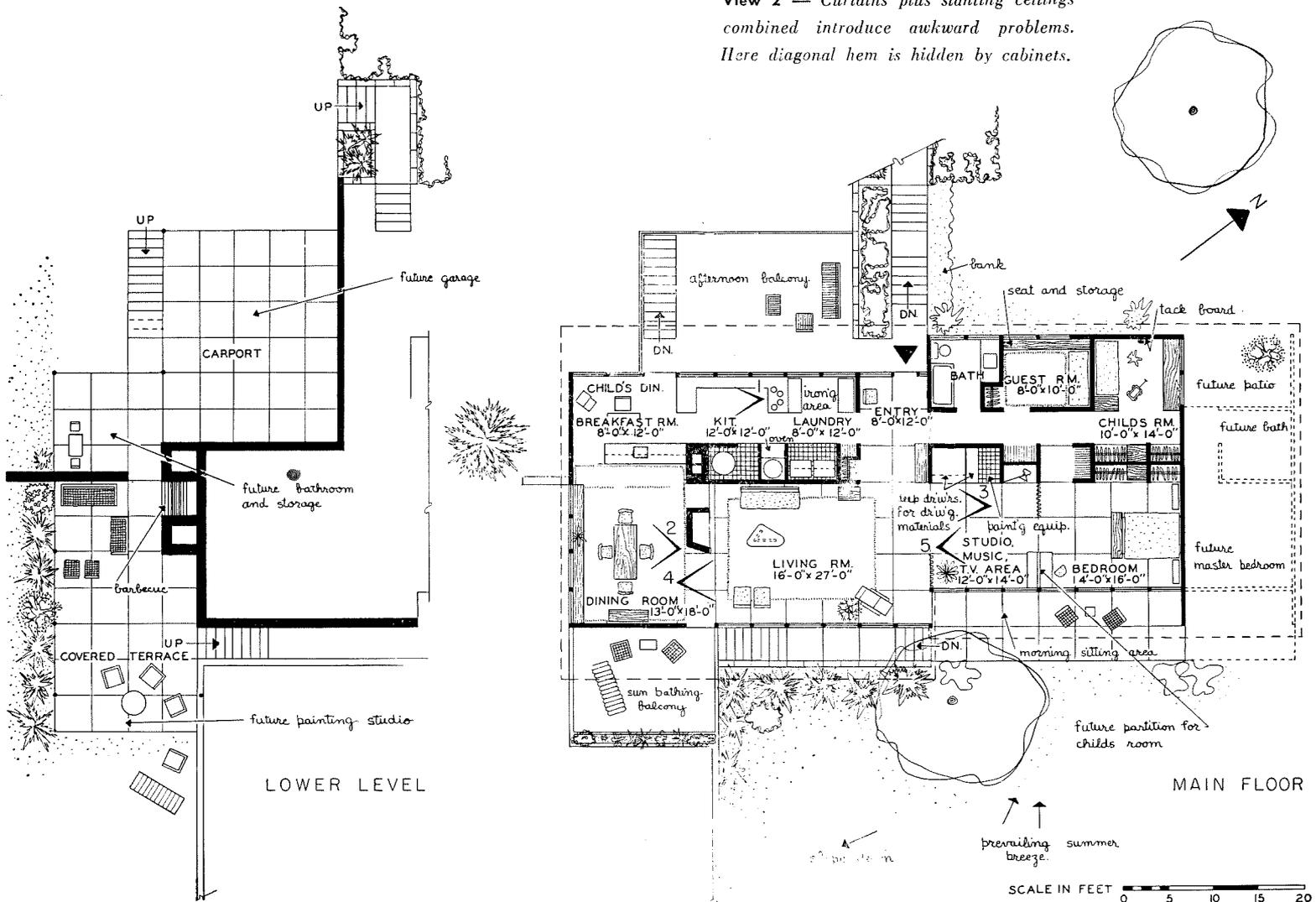
On the interior, walls and doors have been kept to a minimum; curtains allow flexibility in combining and separating living, studio and bedroom. The plan, essentially a rectangle with all elements lined up on a 4' module for fast, simplified construction, has one significant jog—by moving the bedroom end of the house 4' out of line, three things were accomplished: 1) on the front, a sheltered main entry and a deeper overhang above the "afternoon balcony," 2) at the rear, the same protection for morning sitting terrace and secondary entrance and 3) a jog in both front and rear elevations that breaks up their long expanse for the eye. Planning notes: kitchen is ideally located for carport and deliveries; bath is convenient for guests but a long trek from owners' bedroom. Future master bedroom seems stingy compared to present quarters but will have its own bath. Kitchen and bath plumbing lines were kept simple and grouped on the street side.

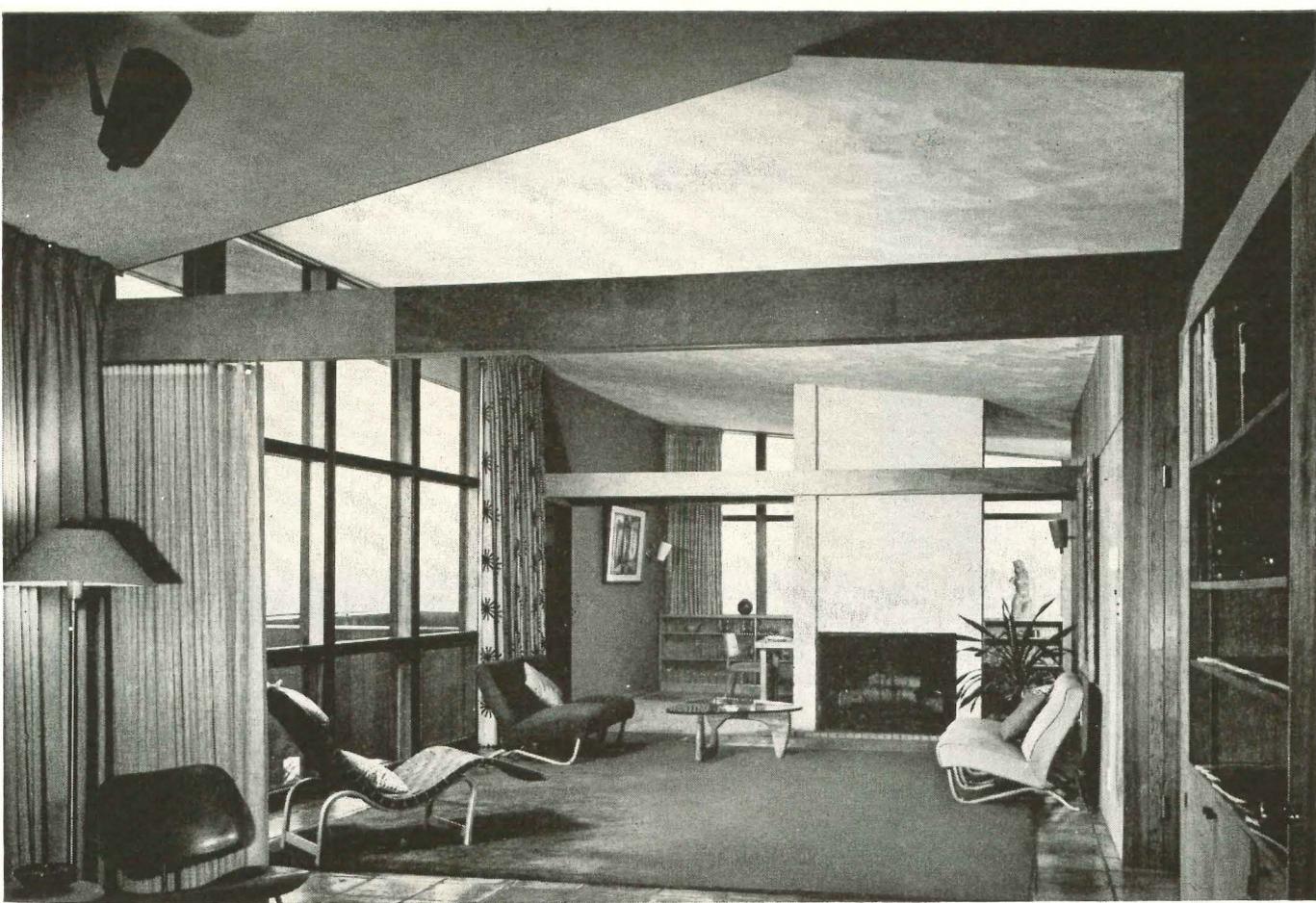


View 1 (see plan)—In-line kitchen has door to dining-play balcony at right, pass counter and access to dining room at left. Breakfast nook at back is so pleasant that the owner often sets up his drawing board there.



View 2 — Curtains plus slanting ceilings combined introduce awkward problems. Here diagonal hem is hidden by cabinets.



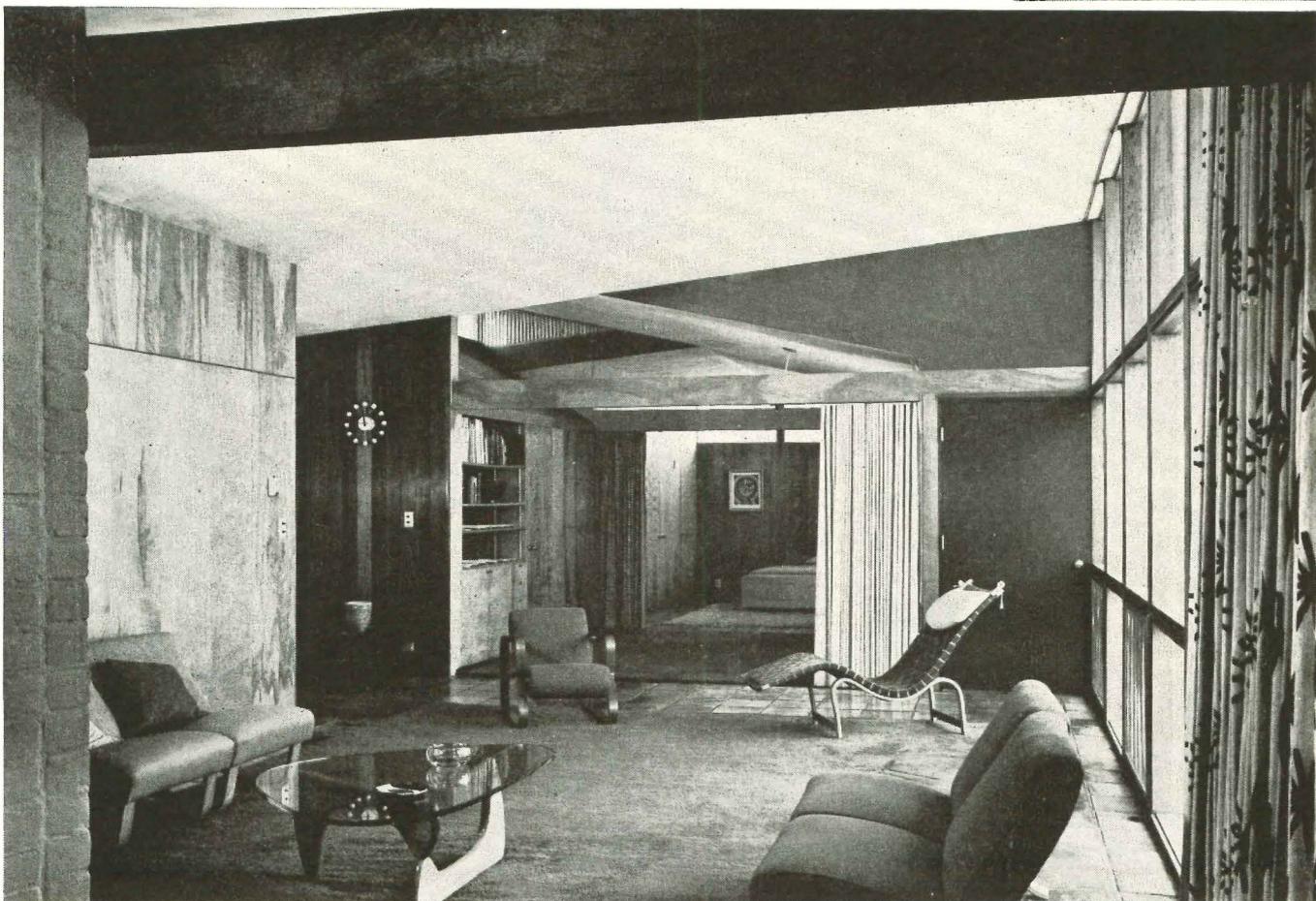


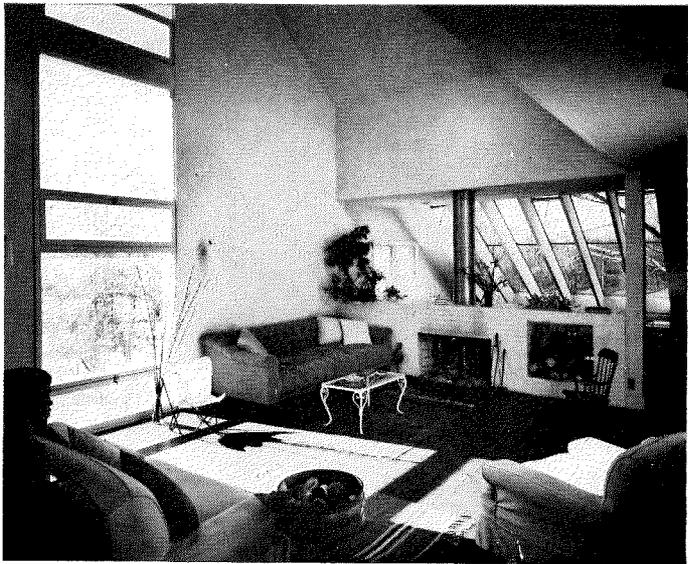
*View 3 — Bamboo-splint curtain draws back to join studio with living room; fireplace separates dining room beyond. The floor, of inexpensive split wall tile, has radiant heat.*

*View 5 — Another curtain allows master bedroom to become part of living area. Walls: birch plywood, cedar planks; ceilings: plaster.*



*View 4 — Ceiling slopes help to divide long open living area visually into separate spaces. Clerestory and fan over studio provide north light, ventilation.*





**HANDSOME SPACE** at low cost is  
dramatic proof that barn remodeling can pay

LOCATION: Port Chester, N.Y.  
EDWARD L. BARNES, Architect  
RAYBACK, INC., General Contractors

*Ezra Stoller—Pictor*



*Picture at right was taken from dining area, shows low brick chimney breast in foreground. Flue is of galvanized iron. Part of dining area (visible in picture above) is very low to permit skylight to dip down to floor line, open up the dramatic view below.*

This remodeled barn 50 min. from Manhattan is proof that there is probably no better way of getting cheap and unconventional space than to convert one of these large, empty farm structures for year-round living.

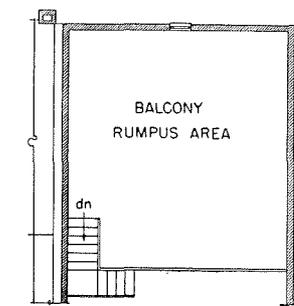
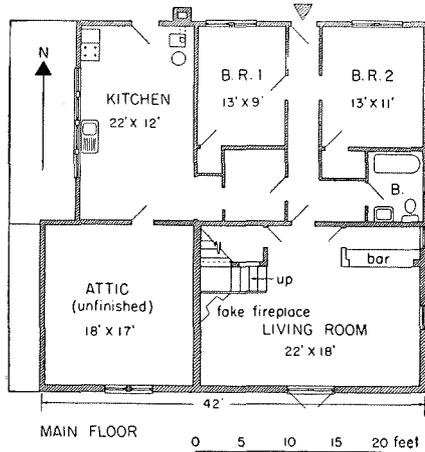
In this case, the owners had been given a slight head start: for the 75-year old barn which they bought for about \$3,000 (excl. of 2½ acres of land) had been remodeled once before—in the '20's, when it was turned into an unheated, uninsulated two-bedroom summer house (see plans).

Nonetheless, the job architect Ed Barnes did for his clients was a thorough conversion (incl. insulation and general repairs); for all intents and purposes, this was a remodeling job that started from scratch. Only two bedrooms were left intact.

- Here is what the owners got out of their \$3,000 structure:
- ▶ *On the ground floor*—a two-car garage, a heating plant, storage room and space for two bedrooms, dressing room and bath.
  - ▶ *On the main floor*—a 17' by 41' living-dining area, a kitchen-utility room, two bedrooms and a bath.
  - ▶ *And on the balcony level*—a master bedroom, a bath, large storage closets and a study-balcony.

The total cost of this conversion, plus the original cost of the structure, was only about \$21,000 (incl. fees, water and other connections, and kitchen equipment); for this, the owners got 40,000 cu. ft. of modern space. *The cubic foot cost, therefore, was a mere 50¢*—anywhere from one-half to one-quarter of the cost of an equivalent new structure at prevailing prices!

## BEFORE



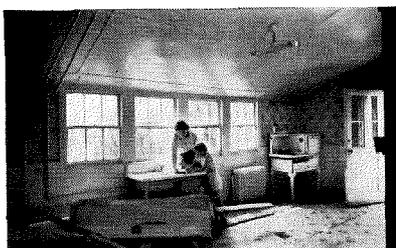
*Original plan had unused attic space adjoining kitchen; papier-mâché fireplace; stairs poorly located. Interior was very dark, damp and musty.*



*Old exterior was in bad repair. Owners did relatively little to ground floor, but expect to convert it later on.*

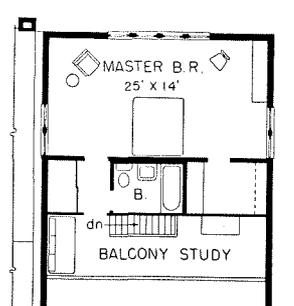
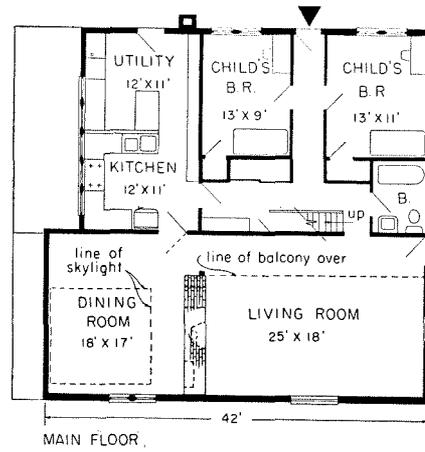


*Old balcony was used as rumpus area, had Tudor railing. Living room also boasted fake Tudor beams.*

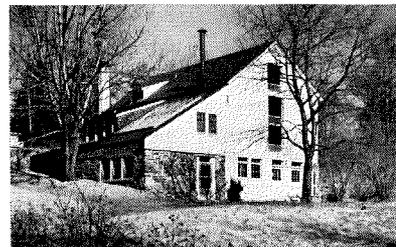


*Old kitchen contained water heater, little other equipment. Barnes relocated heater in ground floor utility room.*

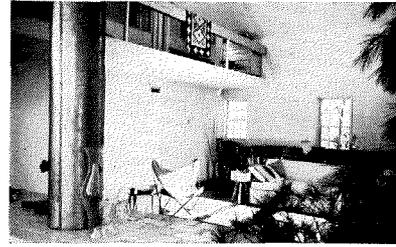
## AFTER



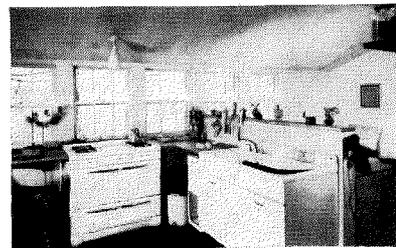
*New plan relocates stair, widens living room; removes wall, thus opens skylit dining room behind low chimney breast. New fireplace cost \$475.*



*New exterior shows 17' high window in living room (cost: \$250), new skylight over most of low dining area (\$500).*



*New balcony area is used for spacious master-bedroom suite. Walls and ceilings are white, with color accents in fabrics.*



*New kitchen has separate utility-eating area. New equipment cost \$700, is included in the total cost of this job.*

# SEWERLESS TOILET WITHOUT CHEMICALS

**New continuously flushing,  
closed circuit waste-disposal system  
needs neither septic tank nor  
municipal sewer line connection.**

**Although it is still only in the testing stage  
its significance to builders may well be:**

**1.** It may make it possible to put houses on land which today is impractical for big developments because it has neither municipal sewer lines nor a soil with characteristics which can be used economically for septic tanks. A case in point is Paducah, Ky., where the FHA will not insure sites for homes in the Atomic Energy labor living area because percolation tests on the land indicate that septic tanks will not work satisfactorily. Yet in this area there is no municipal waste-disposal system.

**2.** It may save money in the original installation, according to the inventor. For an average two- or three-bedroom house without nearby sewer lines the \$700 to \$1,100 plumbing bill might be cut drastically—as much as \$400, Boester figures.

**3.** It may save material. Waste pipes can be cut down from the average 4' size to 1½', an important metal economy, or plastic tubing might be used.

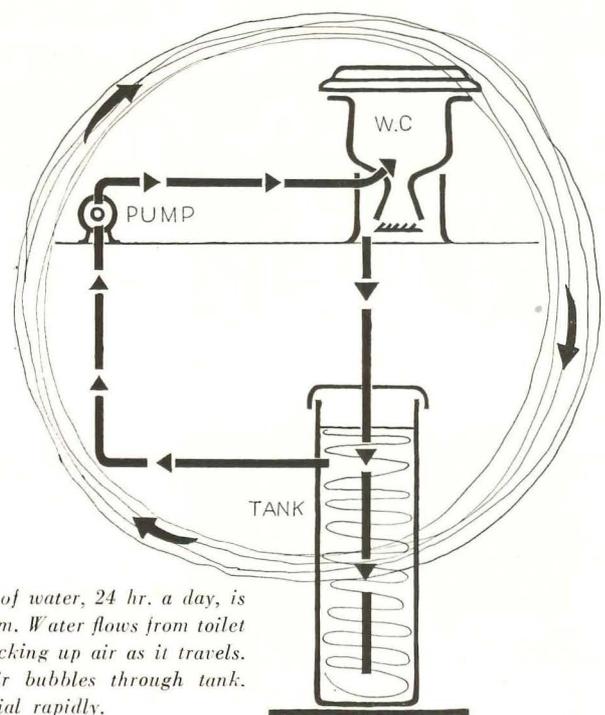
**4.** It may save operating expense. Although this individual disposal system runs a fractional horsepower electric pump continuously, at an average power cost of \$1.50 to \$2 per month, so much water is saved that utility economy of \$2 per month per unit is expected on a national average.

**5.** In short, it could help make the house autonomous—dependent of the land on which it stands. This notion has been vigorously pioneered by Buckminster Fuller for more than 25 years (Aug. issue '51). Pointing out that houses have innumerable umbilical cords that tie them to the earth (water, gas, electric and sewage lines), Fuller has long advocated a type of mobile shelter that would fit the needs of our mobile society, would generate its own power and heat, and dispose of its own wastes without tying itself down irrevocably to a fixed location. Fuller, too, has long sounded warnings against our waste of natural resources, frequently advocated the use of sprays (which use almost no water) and the re-use of water to minimize its waste.

Here is an important new plumbing package which may add to today's two safe ways of disposing of toilet wastes in the individual house (present methods: an expensive septic tank in the yard, or long circuits of costly piping to the municipal sewage disposal plant).\*

This projected method seems to send sewage practically nowhere; it is dissipated aerobically in a self-contained disposal system sized to fit the individual house: destroyed by low temperature flash oxidation in a small tank *without chemicals*. It's all done with air and water; and the ingenious new design—first unveiled by researcher Carl Boester at last month's National Association of Home Builders' Trade Secrets meeting in Washington, D. C.—circulates the same 60 gal. of water so many thousands of times that actual consumption is negligible.

To the nation, whose experts are justifiably anxious about a plunging water table, this could mean a 75% water saving in new building developments, and a sigh of relief by taxpayers concerned about the massive problem of constructing reservoirs to handle thirsty new population massings. (The average household consumption of water is estimated at approximately 150 gal. a day.)



*Constant circulation of water, 24 hr. a day, is essential to this system. Water flows from toilet to tank and back, picking up air as it travels. Oxygen entrained air bubbles through tank, oxidizes waste material rapidly.*

\*Municipal sewage systems are believed to serve about 92,000,000 people in the U. S., residential septic tanks about 17,000,000. The old cesspool is outlawed by most state health departments.



Ankers

*At NAHB Washington meeting on Feb. 19, Boester introduced new plumbing system, showed complete and cutaway toilets.*

### **There are three important elements in the new system**

- first:** a trailer-type waste-grinding toilet, which receives and grinds up waste;
- second:** a 60 gal. tank into which the waste is then drained by gravity;
- third:** a 1/6 hp self-priming electric "moyno" type pump, which continuously draws water from the tank and circulates it to the toilet.

For further details,  turn to next page.

**T**HE TOILET doesn't have to be flushed by a control; it is constantly flushing. The steady flow and reflow of water at about 3 gal. per min. enters the side of the toilet bowl with enough pressure (about 20 lb.) to spin the rotor of the grinding mechanism. This constant flow also does something of even greater importance in the waste-destroying process: it picks up air in its ceaseless passage from tank to toilet, and the entrained oxygen bubbles through the tank with always enough present in the water to disintegrate and oxidize the waste immediately when it arrives. The rotor revolves at 800 rpm and like a fan induces an excessive amount of air to be introduced into the grinding and mixing chamber.

Boester describes this as "a process of waste incineration or low temperature combustion of flash or instantaneous oxidation." According to him, all that remains of the waste is a minute amount of ash, some of which settles to the bottom of the tank, some remaining in suspension (amounting to only  $\frac{1}{2}$  to  $\frac{3}{4}$  lb. per year per person using the toilet), and methane, carbon dioxide, and carbon monoxide gases, which are vented. The ash, which is odorless and useless, can easily be drained out of the tank at long intervals, probably 10 to 40 years in normal use. Success of the invention hinges on whether this proves out—some experts think drainage may present serious problems. The 60 gal. tank setup would serve a household of six to eight people. Chemically speaking, says Boester, what occurs is "wet combustion" which succeeds because of the intimate relation of the finely divided comminuted carbon of the waste matter and the oxygen in the entrained air in the tank. He explains that the key to the system is the critical quantity of air employed in relation to the volume of water in order to secure successful flush oxidation.

What this new disposal system does is move a method employed in municipal waste-disposal systems into the home. Specifically, this is the aerobic method, in which waste is first broken down into small particles, then treated with oxygen air entrained, which oxidizes it rapidly and leaves only a minor residue.

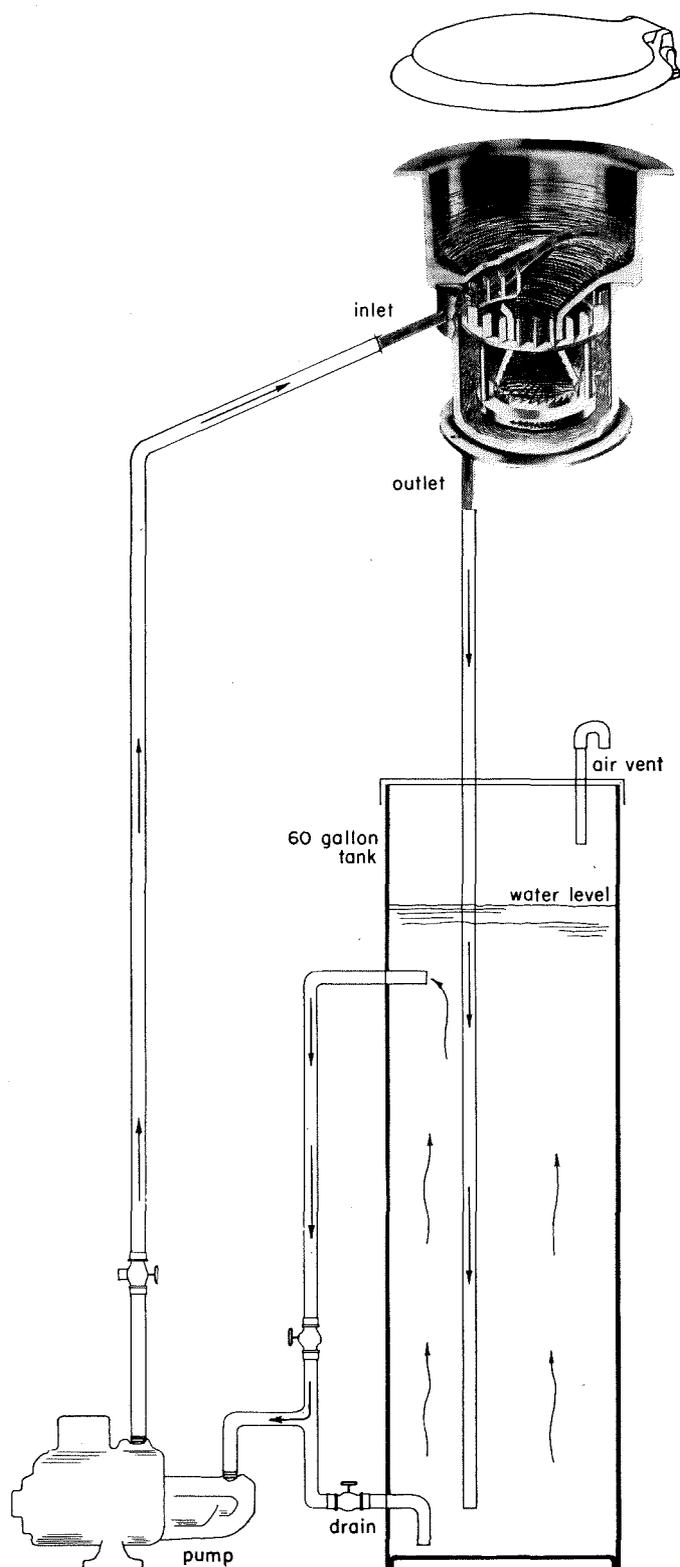
### Septic tanks are expensive, inefficient

In contrast, the anaerobic method of the septic tank requires much more time, which is why septic tanks have to be such substantial structures underground. The septic tank consumes wastes bacterially in a sedimentation tank at a very slow rate, and does it incompletely. (The grass which grows over a septic tank is almost invariably lusher than the grass which adjoins it.) Only 35 to 75% of the suspended solids actually are digested in the tank, before the dissolved organic matter is distributed to the soil. And unless the tile field of the septic system is in soil underlaid with sand or gravel, the field has to be very long, and is very expensive.

Another awkwardness of the septic tank arises because the anaerobic digester is incomplete, and the substantial residue of the operation, called sludge, must be removed periodically. Most septic tanks have to be cleaned every three to five years.

Boester calculates that this new toilet and midget sewage-disposal plant will cost about \$300 complete. No mass marketing date has been set, but manufacture will be a simple process—principally assembly, because all the parts are in production today. The McPherson toilet

## HOW THE SEWERLESS TOILET WORKS



*Rotor in toilet bowl grinds waste, is kept spinning by the flow and reflow of water. It also induces an excessive amount of air to be introduced into the system, essential to combustion by flash oxidation. Water travels from bowl to bottom of tank by gravity, is pumped back to bowl by 1/6 hp motor.*

is now made of aluminum, but Boester and Mr. McPherson think it would be practical to switch to less-scarce plastic when present aluminum stocks have been consumed. The piping of the system can be plastic tubing, tank can be ceramic or glass-lined steel.

The McPherson Co., manufacturers of the special waste-grinding toilet, sponsored investigation which suggested this development, with a grant to the Purdue Research Foundation, Purdue University, Lafayette, Ind., where Boester is housing consultant to the Purdue Research Foundation. Professor Don E. Bloodgood of the department of civil engineering at Purdue first suggested an aerobic septic tank and graduate student Robert Russell Perry studied its practicality with a long experiment which was his thesis for a masters' degree last year. In tests, the aerobic system seemed to work better than the anaerobic system. But it was not *enough* better to justify the cost of the necessary addition of an air compressor and air diffusing tube. It was only in conjunction with the special waste-grinding toilet that the whole system promised to be justified economically. Then Boester developed the closed circuit theory, with constant recirculation. The system is protected by patent.

The developers will petition FHA for acceptance, and plan to give the U. S. Public Health Service at its Cincinnati research center a model for study. Professor Bloodgood's opinion is that the new system overcomes all known pathological hazards.

## EARLY FORERUNNER: AN ELIZABETHAN INVENTION

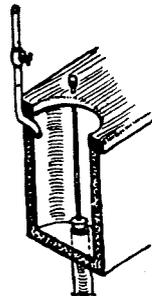
The toilet and disposal device could be used in houses with or without basements. Gravity flow would be maintained by burying the tank in the ground (the 60 gal. size measures only about 14" in diameter, is 7' high\*) and since circulation is constant, there is little danger of freezing. McPherson says the over-all system is more dependable and requires less maintenance than its conventional counterpart. Power failure would put the pump and toilet out of action temporarily, but Boester says this would not cause odorous trouble in the tank. Because oxidation of wastes is immediate, there is no chance for odors to accumulate. Evaporation in the cycle is just about replenished by the water content in urine, tests have established. For larger structures like multistory apartment houses, Boester says he can work out bigger units similar to this first single family model. This toilet cannot flood. It is splashproof compared to other toilets and the motor is as quiet as an electric refrigerator.

Boester has other investigations in progress to find simpler ways than the methods now in use for disposing of other household wastes, such as evaporative disposal for bath and dishwater instead of dry wells. But this new toilet is still the biggest method he has in mind for actually conserving water. Since every time a conventional toilet is flushed, 5 to 7 gal. of water are used, he has tackled a very extravagant convention.

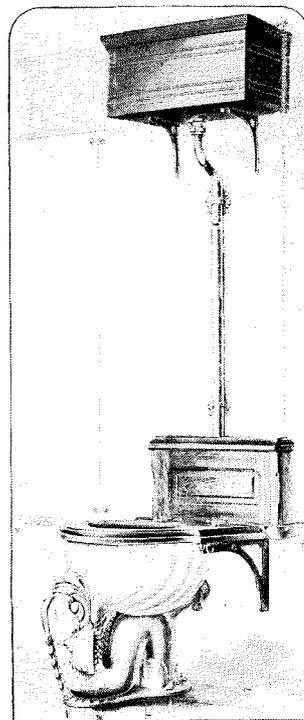
\* Where tank is sunk in the ground, a post-hole digger can easily provide the required excavation.



*Vandercook*  
Sir John Harington announced his invention of the first modern valve water closet in 1596 in an "Ajax" (toilets were called "jacks"—get it?).



Sir John's invention: a plugged-in receptacle, connected to a water line with a stop cock.



The Bettmann Archive

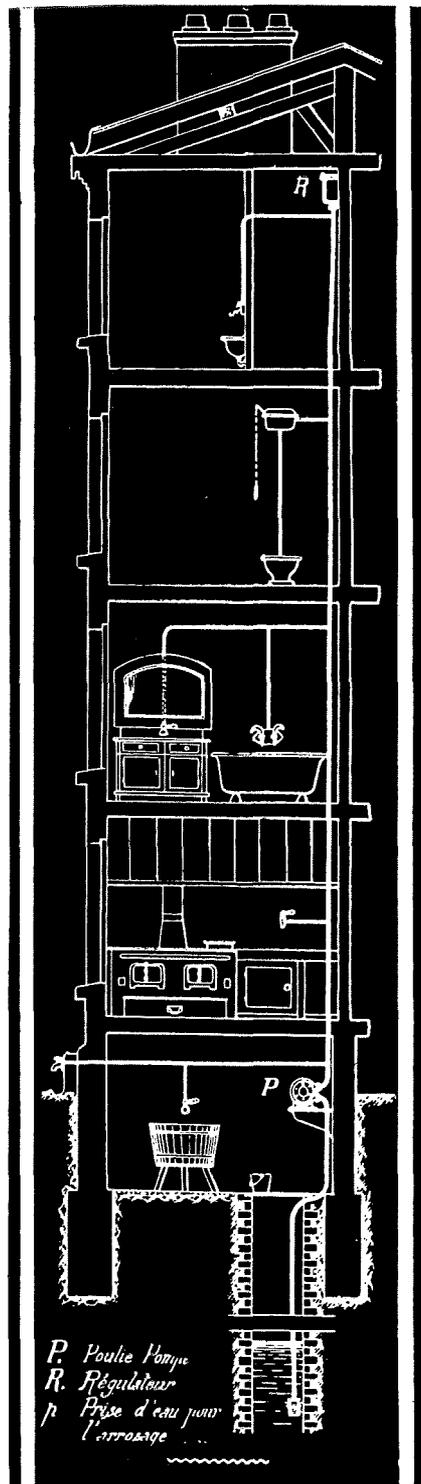


Diagram of the plumbing system of a 1915 French house shows how inextricably houses were tied to the earth and the water under the earth.

By the end of the 19th Century, water closets were housed in elaborately carved and painted wooden cabinets such as this one, made in 1880.



## PARK FOREST MOVES INTO '52

**New co-operatives, new house types, schools, churches and commercial buildings**

**for America's biggest planned community built with private money**

LOCATION: 30 mi. south of Chicago

AMERICAN COMMUNITY BUILDERS, Inc., Developers and Builders

LOEBL, SCHLOSSMAN & BENNETT, Chief Architects and Planners

ELBERT PEETS, Planning Consultant

*Park Forest is pioneering again. The news for 1952: American Community Builders, authors of the largest community ever planned by private enterprise in the U.S., are stepping forward with a \$25 million building program, highlighted by the first big co-operative venture in the comparatively conservative Midwest.*

The improved design of these row house co-operatives, in the words of architect Richard Bennett, "brings the row house up to date." (See pp. 120-121.) A thousand units are planned under Section 213 to fill what ACB President Philip Klutznick terms the "no man's land of housing"—the gap of 20% that exists in the

Chicago area (and many others) between the highest income group served by public housing and the lowest income class taken care of by private building. It is significant that an operation as large and level-headed as Park Forest is going into co-ops, often regarded as a risky investment, in the face of public skepticism.

In addition, ACB plans other building that should push the whole development well over halfway towards completion of the master plan for a city of 30,000:

► Some 800-1,250 modified versions of the popular stock two-bedroom house, stripped down to sell at \$11,995. With this they hope to open up their under \$12,000 market, satisfy the demand for less

expensive homes and take advantage of the more favorable financing in this bracket. (See pp. 118-119.)

▶ A new \$15,000 detached home with two bedrooms and attached garage, to broaden the range of sales appeal with houses that have "a little more livability." About 100 of these are scheduled for the first unit (p. 119).

▶ A \$250,000 secondary shopping center with parking for 300 cars in the homes-for-sale section.

▶ A new department store in the existing shopping center.

▶ Some 60 custom-built homes in the \$20,000-\$35,000 class on 35 acres set aside at the southern end of the community.

▶ Churches: a United Protestant church by architects Schweikher & Elting (now under construction), an Episcopal church and a synagogue to be started this year (p. 116).

▶ Schools: a \$1,250,000 high school (initial capacity: 750 students) and another elementary school.

▶ A new building adjacent to the main shopping center to house the post office and a bank.

▶ A medical center which will be expanded later on in order to include a hospital.

#### The four major elements

As it stands now, Park Forest presents a sharp contrast to Chicago's sooty, jam-packed grid of mixed industry and housing: trim buildings, spaced for light and air along curving streets and grassy malls. Its 2,400 acres, once farmland and a golf course, are divided into four major elements (see map below):

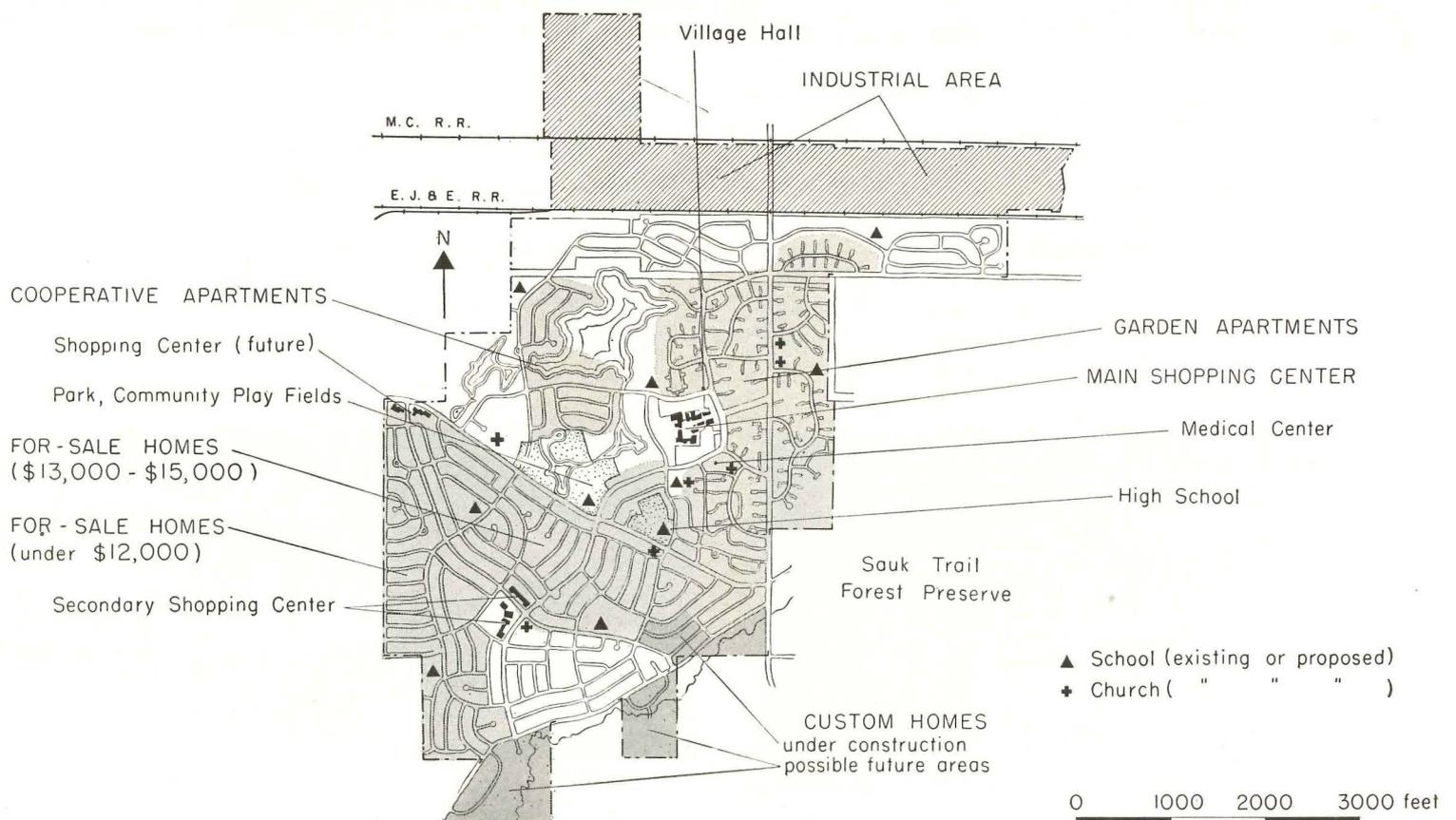
3,010 rental units (predominantly two-bedroom) in 682 two-

story garden apartment buildings, two to eight units per building. Rentals: \$75-\$117, well below the average for the Chicago area. Buildings face on wide lawns, are grouped back to back around inner courts for parking, deliveries and services. With a total of 12,000 persons living on 316 acres, the buildings are arranged in large blocks to eliminate through traffic, occupy only 11% of the ground area—a low density of ten families per acre. Each of the 105 groups has off-street parking in its court, a "tot lot" where children can play under mother's eye outside the kitchen window. Unsightly outside clotheslines are not permitted.

Almost 1,300 homes for sale have been completed; a total of 5,000 (enough for 17,500 people) are planned on 1,556 acres in the central and southern portions of Park Forest. During the past year 976 two-bedroom and 300 three-bedroom models were started, ranging in sales price from \$12,025 to \$15,000. Typical lot size, 60' x 125', is generous for this region.

Shopping center, centrally located, has 40 retail outlets totaling 120,000 sq. ft. of floor space, including the country's largest Jewel food store, a 1,100-seat theater, and virtually every type of shop and service from furniture, apparel and books to liquor store, restaurant and bar. Eventual goal: 75-100 outlets on 53 acres. At present the center is drawing a sales volume of some \$750,000 per month from a 42-mile radius. With 1,605,200 persons living in this area, ACB expects sales to rise to over \$1 million per month upon completion of new stores this year.

Industrial area—On the northern border of the community, strategically located between two main railroad lines, 475 acres have been reserved for gas-fired light industry. Instead of waiting, like the government's satellite towns until too late to lure industry, or having to build homes near already established factories, Park Forest included industry in its initial plans. A number of proposals for plant sites have been received and are now under con-



## PARK FOREST

sideration by ACB. Another planned advantage of the industrial location: prevailing winds from south and southwest which now blow the smoke pall from existing South Chicago and Calumet mills away from Park Forest dwellings will also disperse the town's own future industrial fumes.

Besides these four major elements, the small city is dotted with other communal facilities: three elementary schools (eight are planned), four churches (eight are planned), a Village Hall housing administration, police and fire departments. There are nine large playgrounds, plus the tot yards and the adjacent 1,000-acre Sauk Trail Forest Preserve to the east.

### The economics of town-building

When completed, Park Forest will represent a \$125 million investment, one that is already beginning to pay off in terms of hard cash. ACB has found that long-range planning, long-term profits are better than turning a quick dollar on a handful of houses and pulling out. They have proved, too, that big-scale town building is possible *and* profitable *without* government subsidy.

The formula they worked out: (1) First stabilize the gamble and attract potential shoppers with a "solid core" of rental housing, then (2) shift emphasis to a shopping center for major profits. (3) Plan to lure industry at the outset to provide employment for the residents and a sound economic base for the whole development. (4) Offer houses for sale after a stable community has been established.

Throughout the program, Klutznick and his board of directors have tried to broaden the base, spread the risk, diversify the investment. "You can lose money on one element, make it up on another," he explains. "Homes for sale yield the quickest profit, but the shopping center is the most reliable long-term item."

### Birth of a city

The whole Park Forest idea started back in 1946, when a 70-year-old ex-banker, Carroll Sweet, sold Chicago's biggest builder, Nathan Manilow, on the concept of a "G. I. town" that would give veterans' families the amenities of modern living in the spaciousness and greenery of a park. Manilow spent a year looking at possible sites, finally came up with an ideal green belt 40 min. by commuter train from Chicago's Loop.

Then came the mammoth job of tracking down owners and heirs, buying land in piecemeal bits—quietly and mostly through intermediaries—and resettling the farmers who had made their living there. With a million-dollar investment on their hands, Sweet and Manilow presented the challenge of a dream city to Klutznick, a brilliant Omaha lawyer who had won the respect of private builders as commissioner of the Federal Public Housing Authority

during the war. Klutznick brought in able Chicago architect-planners Loeb, Schlossman & Bennett, who in turn called on Elbert Peets, designer of the renowned Greenbelt Towns near Washington, Cincinnati and Milwaukee.

At first Chicago's mortgage bankers turned pale with fright at the unprecedented size of the project, but initial financing to the tune of \$27,500,000 for the first rental units—the largest single set of mortgages ever insured by FHA—was obtained from three insurance companies.

A study of other towns such as Radburn, N. J. and the "green towns" indicated one prerequisite: the new community would have to bring sufficient population into the area right away with rental housing or the total objective might never be reached. So the first phase decided upon was 3,000 rental units and shopping center—"bringing families to stores."

An "ideal" density of ten families per acre was set up and ground broken for the first building in October of 1947. To offset the high expense of this low density, other budget items were lowered through large-scale standardization and production methods, contracting for 90% of the labor and materials at one crack before construction started.

### A "civics laboratory"

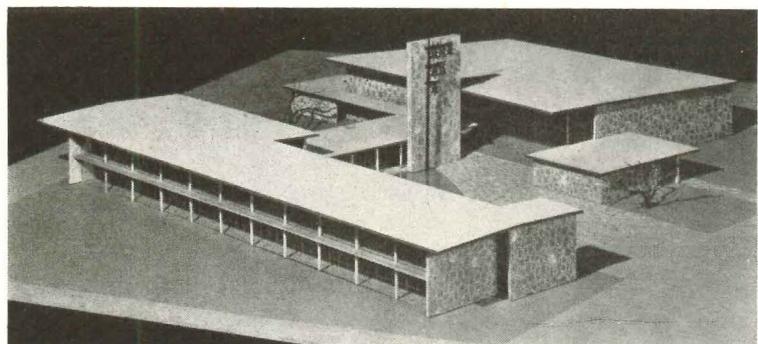
Following its original plan, ACB has advanced money for schools, police and fire departments, turned over the whole town to the inhabitants to operate and govern. More than once it has had to help the new citizens when they fumbled the ball. But, as one visiting congresswoman put it: "Park Forest is the best civics laboratory in the country." Its 15,000 residents are young and comparatively well-educated middle-income families. Average adult age is 30, income \$5,800; half of the men and one third of the women are college graduates. Under ACB's parental eye they have gone through most of the growing pains of a new community and come to a deeper understanding of local government by actually participating in it. They are aware of the uniqueness of their city and intensely proud of it. They probably have more clubs, committees and service organizations per square foot—and more children—than any other town of its size in the country.

### Honors

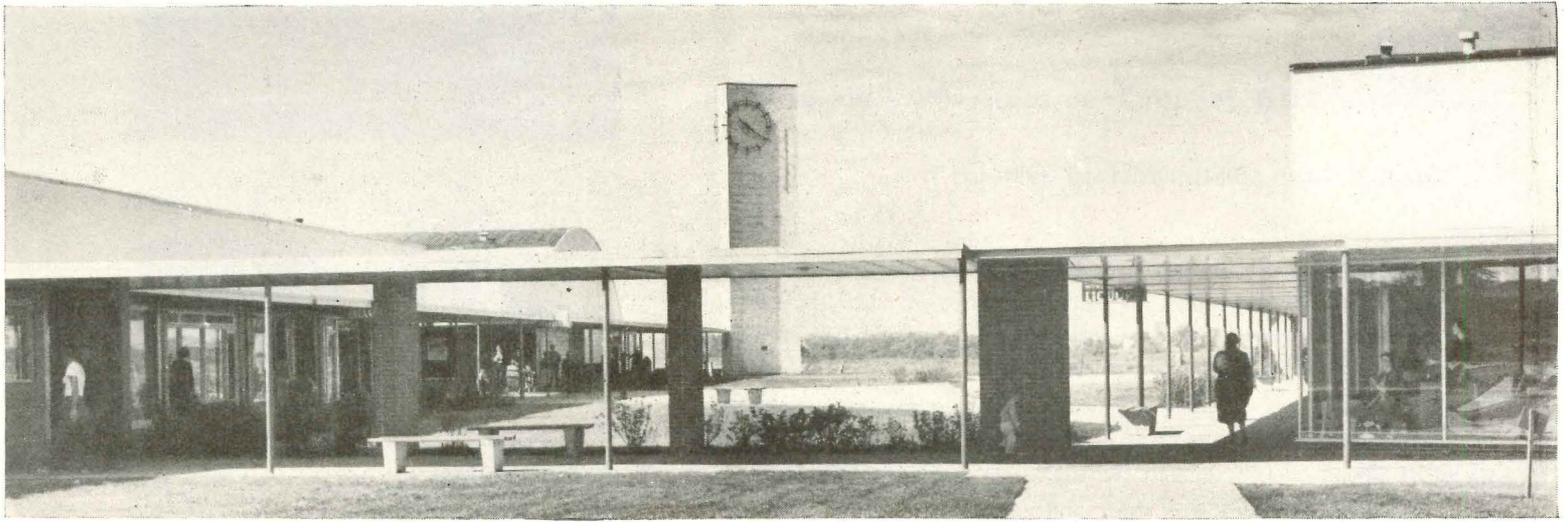
In addition to wide national publicity, Park Forest has received official recognition from architects and builders: an award of merit last year from the Chicago Chapter, AIA, for the "best suburban multiple housing project erected in Northern Illinois since 1945" (out of 35 developments, both public and private); and one of five awards of merit in the 1951 Neighborhood Development Contest sponsored by NAHB.



Elementary school has offices, kindergarten, auditorium at left, long classroom wing at right. Boiler stack was used as clock tower.



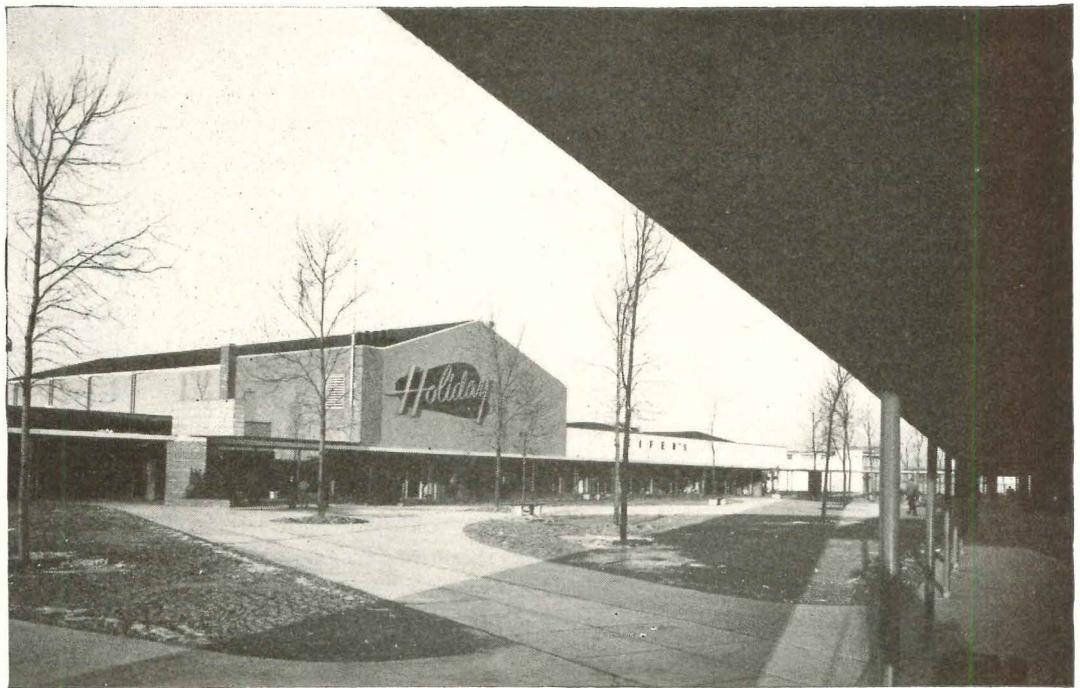
Nearing completion is school unit (foreground) of United Protestant church. Future additions: assembly room, church-chapel, bell tower.



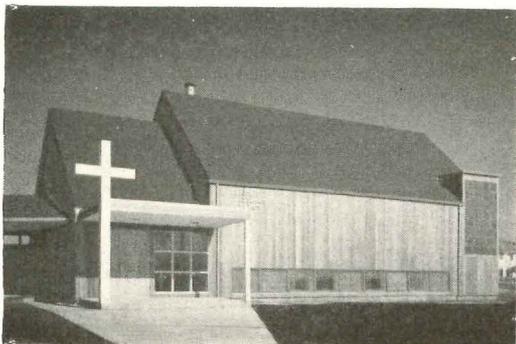
*Main approach to Park Forest's big shopping center is up a landscaped mall towards the clock tower. All stores are air conditioned, are served by underground utilities and linked by walks permanently canopied against Chicago's sun or snow. Within the center there are no streets to cross, and a play space is available for children while mothers do their shopping.*

### SHOPPING CENTER

*The 1,100-seat Holiday Theater serves as cinema, and temporarily as town meeting hall and church for Sunday masses. Surrounding stores, kept a uniform white with advertising subdued, are laid out for efficient merchandising methods, with no concentration of traffic or "100% locations." Gaily lighted at night, the whole center becomes a bright center of attraction to customers.*



*The commercial area, just west of the main boulevard through garden apartment section, accommodates shopping center, Village Hall, ACB headquarters, parking for 1,800 cars. New department store, other outlets and 1,200 more cars will go on unused land at the left.*



*This pleasant church for 113-member Lutheran group was community's first.*



PARK FOREST

## HOUSES for 1952 are conservative but are built with unique subcontracting system

Visitors to Park Forest are filled with admiration for the planning of the big project. But no one who has seen the best of merchant builder houses around the country can work up equal enthusiasm for the one-family houses.

Last summer, when construction of the masonry houses was being planned far ahead of orders, Sales Manager Jack Rashkin was asked: "How do you know you can sell this house?"

Rashkin's answer was short and confident: "Huh! We ought to know. We've been selling it in Manilow's own projects for three years!" True enough, sales ran far ahead of construction.

Few builders would start a big new project with a house design three or four years old. But this conservatism in design reflects several basic attitudes: Park Forest was going to be so large, and Klutznick and Manilow had so much at stake, they could not afford to take chances with an untested house any more than they could take chances with trouble from FHA or labor.

They wanted to be sure of everything, and one thing they were positive about: Chicagoans liked the house Manilow had been building in his own developments. In fact, people still like it today. When word got around last fall that Manilow had bought enough land in nearby Des Plains for 500 houses, he says he had 3,000 letters requesting him to build "the Manilow house." The new \$15,000 house for 1952 (*lower right, opposite page*) is the old house with a bit of face lifting and a garage added. The other new house at \$11,995 is so close a descendant a visitor has to look twice to see whether it is parent or offspring.

Park Forest is still building a two-bedroom house though most builders have concluded that size is too small except for really low cost designs. There is enough lost space in the utility room and laundry to make a third bedroom, especially if a more compact heater and hot water tank were used.

### Construction methods are efficient

While its house designs are conservative, Park Forest's construction methods are efficient—the result of many years of trial and error. Vice-president in charge of construction is Joe Goldman, an architect by training but a hard-headed builder by experience. He and Manilow have tried nearly everything.

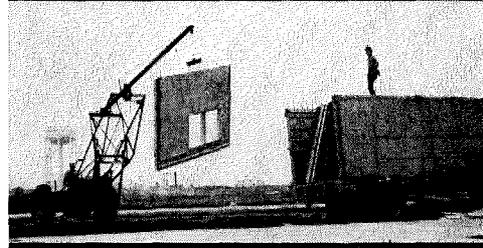
One of the most important trade secrets at Park Forest is its subcontracting system. They use numerous small subs in a trade rather than one big contractor. Goldman believes it is better to have eight mason contractors than one. He uses seven carpenter contractors, two for heating, two for plumbing and one each for roofing, sheet metal, painting, glazing, electrical work.

Goldman has put about 60% of these men in business and guides their operations with a fatherly hand, doing much of the buying in large quantities and selling to the subs. He is sure they are the right size for greatest efficiency.

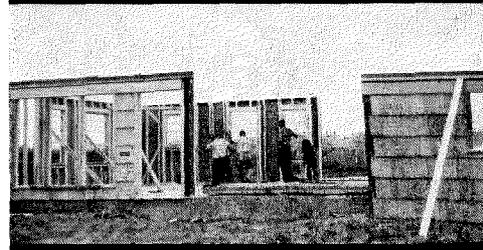
Competition is keen between the eight masonry contractors because each gets paid a fixed rate per house and each tries to keep his production high. A sub's men are working for a boss they know and call by his first name. They work harder than if they were employed by an unknown boss along with hundreds of men.



Same slab foundation served prefab and masonry houses.



Prefab wall panels came by truck from Milwaukee Expandable Homes, Inc.



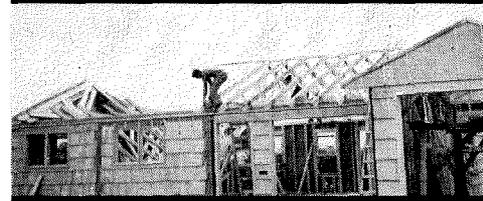
Small field crew rapidly set up panels. The inside walls were also prefabricated.



Roof trusses came pre-cut, were assembled at each house.



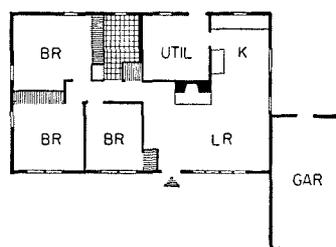
Erecting trusses was matter of only a few minutes and roof sheathing was done just as fast.



Speed of getting house enclosed was greatest advantage in use of prefabs.



Finished house with three bedrooms and garage was popular.



Park Forest went into prefabs in an effort to make up for delays caused by a terrible winter and a wet spring. Prefabs were no cheaper, but they could be put up faster with same supervisory and field force. After initial order for 300, no more were ordered.



"One main secret of lowering costs," Goldman says, "is not to handle materials more than once. Site mills and prefabrication are costly due to the number of times material is handled. Our method is to have suppliers deliver required lumber for each unit to the house. Moving from one building to the next, we cut the material with electric saws, installing it as we cut. Each crew is responsible for the lumber. Instead of one production line, we have ten separate line production crews in different areas, creating competition between them for production as well as quality of work.

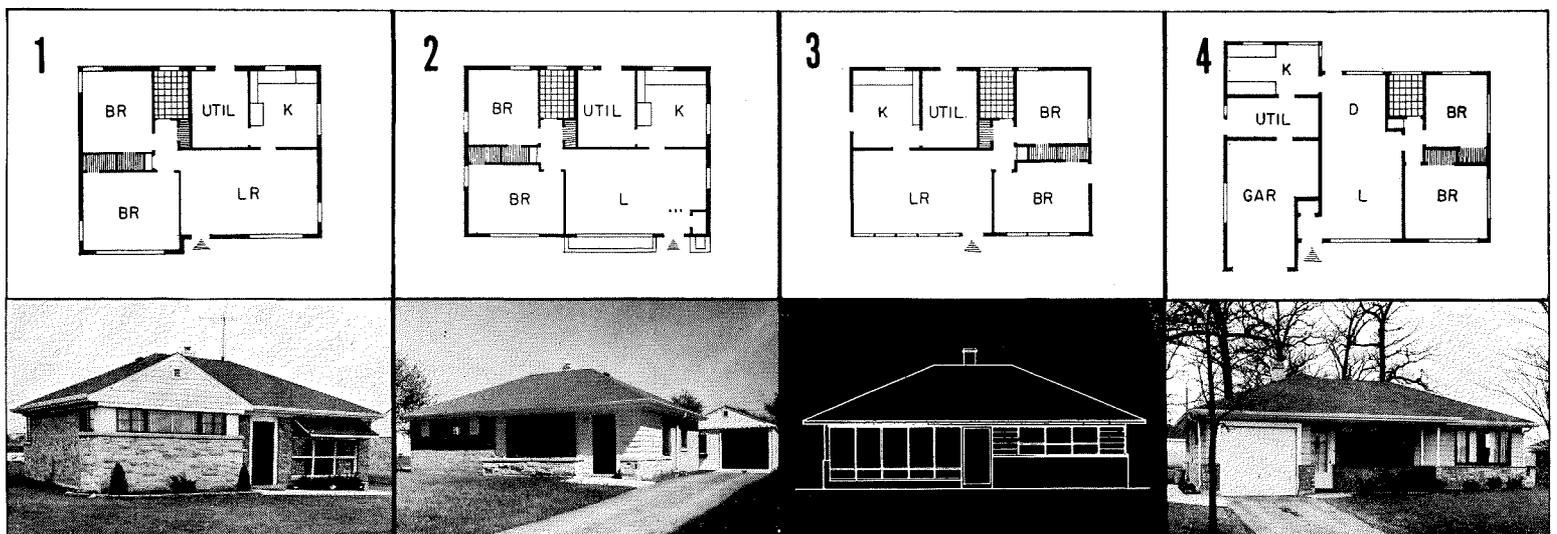
"One of our largest savings is in utilities and sidewalks. We install a combination sidewalk and roll type curb, eliminating the parkway and bringing our houses closer to the street. This reduces the cost of bringing in sewer and water and also saves 12' of copper pipe and sewer tile. We bring one sewer and water service in on every other lot line and then branch off for two houses. This saves 50% of water and sewer stubs."

Co-ordination of all elements on the job is one of the most important factors, Goldman believes. Carpentry subcontractors work for \$100 less per house because they know they won't be delayed by other trades.

Park Forest built a dozen experimental houses last spring to try out materials and methods. They built several prefabs, experimented with steel panels, plaster inside and out, mixtures of masonry and wood, steel studs with metal lath and plaster, concrete block. They then bought 300 prefabricated houses in Milwaukee to help make up for lost time due to bad weather.

*Curved streets and many trees give this section of Park Forest a handsome background for the brick and stone houses which are a trademark of the community. Setback is 25'. Houses are on 60' x 120' lots, considerably larger than most projects within the Chicago area. A two-bedroom, no garage house costs \$13,000.*

*1. This is standard masonry house, selling for \$13,025 to \$13,575 depending on amount of exterior stone and brick. 2. Another of the same type, to which buyer has added a garage at his own expense. 3. This is the new, "stripped-down" version about to go on sale for \$11,995, with slightly less equipment than earlier models. 4. This is the new \$15,000 house with garage. It has approximately 950 sq. ft. plus garage. Old design, bad planning notwithstanding, Park Forest homes sell fast to Chicagoans.*



## ROW HOUSES for 1952 have fresh design, new co-op financing

*Philip Klutznick and Nathan Manilow have made three basic decisions that will interest the building industry. Still happy over their rental units and while continuing their one-family houses (see page 119), they decided:*

1. *Section 213 co-operatives offer the best way to deliver more floor space at lower down payments and with lower monthly installments.*
2. *Row houses are the best bet of the several types of housing permissible under Section 213.*
3. *A better, more livable row house should be built.*

The fact that the savvy, experienced Park Forest management is starting co-operative row houses for some 1,000 families when most builders and mortgage bankers look warily at co-operatives means that this experiment will be closely watched. Two demonstration rows of houses are being built this spring and construction will then be pushed as sales are made.

To get a fresh, 1952 version of a row house, Klutznick and Manilow asked their architects Loeb, Schlossman & Bennett for new designs. The new houses (*opposite page*) have a number of improvements over the older apartments designed by the same firm in 1947 (*photo below*)

"We believe these new houses reflect the way people want to live today," said architect Richard Bennett recently. "They overcome many defects in older row houses. These recognize the automobile and the garbage disposer. We have given every family a carport, and the garbage disposer lets us have clean back yards."

After three years of experience with the rental units, the concept of what is "front" and "back" has been reversed. In the older rental units, cars were parked at the back of the houses and families, delivery boys, and even guests (after their first visit) used the rear service door leading to the kitchen. The main entrance door was at the front of the apartment which faced an open, grassy area limited to pedestrians.

In the new houses the front door is on the street. Cars are parked here, delivery boys and guests will use this door. The

rear of the house faces the open area and the only door here leads to the family's outdoor living area. In both old and new houses, living and dining rooms face the open area.

The big difference in designs is that in the old rental houses the open area belonged to the community; in the new houses every family owns a 25' strip running to the rear property line, (more for end units) where they may have a private terrace or garden if they choose. Park Forest management will leave to the co-operatives the job of defining how families use the rear area.

### No chopped-off ends

"Another change in our design," said Bennett, "is that these are among the first row houses in which the ends are designed. One reason row houses usually look bad is that the ends seem chopped off." Use of a one-story bedroom and a carport at the end give these row houses an attractive appearance.

Size of the new units is also different. The older apartments had one, two or three bedrooms. The new designs have three bedrooms in the center houses, four in the end. The four-bedroom unit is a direct result of requests from fast growing families now in the rental apartments who need more space.

Center houses have approximately 1,130 sq. ft. of floor space (no basements) plus a carport and about 20 sq. ft. of outside storage. These will cost about \$12,000 (final prices are not yet fixed), with about \$700 down. End houses have approximately 1,330 sq. ft. plus carport and 56 sq. ft. of outside storage. These larger houses will sell for about \$14,000.

Houses will be masonry construction on the first floor, frame on the second. First floor exterior walls will be brick with a 4" concrete block backup. Each family will have its own gas-fired hot water boiler with radiant heat in the first floor slab and baseboard radiators on the second floor.

Interior stud walls will have 1/2" plasterboard with aluminum foil on one side. Asphalt tile will be used on both floors. Interior doors are 20-gauge steel, with 16-gauge steel frames. Windows are steel casement. Kitchens are fully equipped.

*Large open areas with fine play space for children have brought Park Forest apartments many commendations.*





# Rigid interest rates won't work— How long must the government's present cheap money policy fail

by economist Miles L. Colean

before we realize that no one but the veteran stands to lose by it?

The only way to assure that a mortgage system will work is to provide it with a market rate of interest. Yet as the government gets itself deeper and deeper into the mortgage business the idea grows that:

**1.** Mortgage interest rates can be set by law at a level thought beneficial to special groups of borrowers and

**2.** Lenders ought to adhere to the prescribed rate as a matter of social obligation without reference to the state of the money market. (Note: this point of view ignores the obligation the lending institution has to people whose funds it handles.)

**Because** veterans deserve special consideration, government sets special interest rates for guaranteed loans to veterans.

**Because** co-operatives ought to be encouraged, government makes special rates for FHA insured loans for co-operative housings.

**Because** defense workers shouldn't pay high rates, government sets special rates for their loans.

These "because's" may be worthy, but they don't influence the market one iota.

## What is the result of rigid interest rates?

It took years to learn the answer because for a long time the conflict between these welfare concepts and market concepts was concealed by **the government's cheap money policy which forced the whole structure of interest rates down.** The special rates were low but not below the market rate of interest. Since 1946, however, market rates have gradually risen until the fixed rates are no longer attractive in the market.

The veterans' guaranteed loan unquestionably has a lot to recommend it:

The investor faces practically no risk.

He need not be concerned with waste.

In case of foreclosure he collects promptly, in cash.

Naturally these guarantees add up to a lower interest rate than would accrue to ordinary loans. But that's not the whole story. It doesn't mean that a rate which satisfied the market yesterday will satisfy it forever. This holds true of *all* types of investment: government bonds, for instance (if investors are to hold on to the ones they own and buy more).

## What a flexible rate does

Short of setting up a politico-economic dictatorship, there's only one way to decide who's going to get the money and at

what rates. That is, let borrowers bid for a share of the invariably limited funds available. Even a dictator would think twice before he fixed rates for one class of loan and left the rest to compete freely. If he were to guess wrong and fix too low a rate, his protected loans would just starve for funds and higher bidders would get the money. To offset this there are two avenues open: 1) allow the rates to move or 2) support a fixed rate by pouring in government credit. To do the second of these in a time of deficit financing is to pave the way to dangerous inflation.

## How the rigid rate started and where it went

Deep-seated though the fixed interest idea seems, it is new. A maximum rate was put into the FHA Act merely to prevent usury. Even so, some FHA originators thought it a mistake to mention interest rates at all, felt that the market and state usury laws were safeguards enough. The rate for the first FHA loans—5% plus ½% mortgage insurance, plus ½% annual service charge, making an effective rate of 6%—was fixed only after a careful check of the market. This proved satisfactory in spite of tight money conditions still prevalent at the end of 1934. But after that FHA activity reflected the gradual decline of the whole structure of rates. First, competition for loans drove out the special annual service charge.

Then lenders began to pay premiums for FHA loans.

Here was an unexpected development: the premium rate rarely went to the actual borrower. The builder might get it from the bank or mortgage company to which he brought the business. Or the original lender got it from another bank or insurance company to which he sold the loan. The borrower generally paid the prescribed 5% interest. What this meant was that the FHA maximum interest rate was not actually above the market rate. So FHA authorities pulled the maximum down to 4½%.

Many people still think homeowners could have obtained lower rates on FHA loans if there'd been no maximum. Their argument: the stated rate made it easier to persuade the borrower to pay the full rate, no matter what. Their evidence: rates on uninsured loans did move down with the market, created no premium problem.

## FHA followed the market

FHA revised its rate only when it was inescapably clear that the market had changed. It didn't try to lead or coerce the market, nor claim sanctity for particular rates. Following this principle, it later lowered the rate to 4¼%. And its announced policy still is that it will reverse itself whenever it is convinced that the facts call for change.

## VA rate not intended to be untouchable

Probably the same sort of thinking applied when the veterans' guaranteed loan system was set up. But the 4% maximum

was so low in the easy money days of 1944, it was doubtful that it would turn out to be a going rate. However, as long as the Federal Reserve Board arbitrarily maintained a low yield on government bonds, the 4% VA rate remained relatively popular.

But even in active times, the 4% rate proved vulnerable. In the first place substantial premiums didn't develop (as they had with FHA). And, in 1948 there was a rapid shift from guaranteed VA mortgages to investments that yielded more although the general interest rate structure rose only slightly. The shift was so decisive that in August 1948 Congress authorized VA, with the concurrence of the Treasury, to up its maximum rate to 4½%. What Congress evidently had in mind was to keep the VA guaranteed loan in competition with other investments in a tighter money market. Clearly it took the view that the rate was not untouchable.

**But the rate was not changed.** Trouble began to mount as VA loans continued a drug on the market. To cope with it: In October, 1949 the power of FNMA to buy VA loans was greatly liberalized so that 4% money would be channeled through private hands.

In April, 1950 Congress went further still, authorized the VA to make loans directly at 4% where private money had not been made available.

Now for the first time, the dogma of the sanctity of the 4% rate was enunciated; and the facts of mortgage financing ceased to be considered.

### The rigid rate theory breaks down

Liberal operation of FNMA coupled with the Federal Reserve Board's 1949 resumption of an easy money policy and the scare buying caused by the Korean crisis quieted the interest rate problem during the lush year 1950.

Finally, in the teeth of inflationary excesses, FRB faced up to the situation with its historic money-tightening action of March 4, 1951. Result: the flow of funds for VA loans not already committed upon was reduced to a trickle. At the time it was widely thought that when the shock was over and the huge volume of outstanding commitments had been "digested," the rapid accumulation of new savings would cause lenders again to seek VA loans at the 4% rate. During the late summer of 1951, yields on long-term government and corporate bonds slowly declined, giving some hope for this solution. By mid-October, however, the bond trend had once more swung upward and at the year's end new highs were reached.

Even credit restrictions failed to lower the demand for mortgage money for conventional loans and the volume of industry loans exceeded anticipations. Borrowers needed more money than lenders had to give them.

A new factor promised to keep demands of corporate borrowers at a high level: the excess profits tax.

### What the tax does to the money market

1. It absorbs earnings that would otherwise go into capital expansion (ordinarily earnings are used more than borrowings for this purpose).
2. It makes new equity financing impracticable.
3. It actually makes borrowing profitable for firms in the excess profits category.

It follows that a larger share of corporate financing in 1952 will probably be done by borrowing than has been the case in previous years. Nor will the borrowers be deterred by a high rate, as recent corporate issues carrying interest as high as 3¾% indicate.

### VA refuses to face facts

In the face of this situation all that VA did was to protest the advantages of its system (about which few would argue) and insist that consequently 4% was a proper rate—to which the market did not respond. Hope that conditions would ease grew dimmer. The future of a privately financed VA program depended on the dubious chance of its conforming to market conditions that grew steadily more adverse.

### It's the veterans who lose

Veterans are promised the benefits of low down payments, long amortization periods and a specially favorable interest rate, but the promise is illusory unless the benefits are available at all times. If the officially established rate is so rigid that it prevents the system from working when money is tight, he gains nothing. The veteran (unlike other borrowers) becomes the victim if the deprivations of the counter-inflationary policy fall disproportionately on his shoulders. No one but the veteran loses by the present policy. The lender has no trouble making loans to higher bidders. The builder is still able to sell all the houses for which he can get the necessary materials.

But the veteran is not permitted to obtain the VA advantages promised him by paying ¼% to ½% more than the present rate of interest (about 14 to 27 cents per \$1,000 per month). Instead he must make both the higher down payment required in the conventional market and also pay 5% interest or higher. A similar situation is dogging the financing of the FHA rigid 4¼% mortgage in defense areas.

### Canada cut the Gordian knot

Faced, as we were after the beginning of the Korean War, with the need to dampen inflation, Canada slapped on credit restrictions even more drastic than ours, and at the same time raised the maximum interest rate on its government-participation loan program. This action balanced activity in the mortgage market and assured that no one type of borrowing would be penalized more than another.

**How long must our present policy fail before we revise it?** Fears that the VA rate, once raised, could not be lowered if conditions warranted, are certainly disproved by FHA experience. What is clearly needed with respect not only to VA loans, defense area loans, and all other forms of government participation is an honest policy of following the market *up* or *down*. Rigid rates in free economy, whose very nature is to be elastic, can work only by accident. They are not working now.

Almost a year has passed and the failure to face the facts of the present market has become chronic. Neither through FNMA nor any other means can the government garner sufficient funds to support the VA program or the defense housing program at sub-market rates.

**It is time for government to face this issue.**

## 20 GARAGE IDEAS TO SELL BUILDERS' HOUSES

The "car stall" can be planned as a plus value in living space and looks

*The garage or carport is the greatest undeveloped sales asset of most merchant builders' houses: from 200 to 400 sq. ft. of golden space waiting to be improved. With good advance planning, it can add several hundred dollars to the value of a house—and sell it faster.*

To show what can be done, here and on the following four pages are 20 good ideas. They come from houses scattered from coast to coast. Some of the ideas are simple, a few are frankly expensive. Some are by builders, most by architects. But any one of them could be modified and adapted by a smart builder, and each shows one or more of the important things a good garage or carport can do for a house:

- ▶ It can provide extra living area. If anything is at a premium in small houses, it is space, and it is far cheaper to add space to the garage or carport than to the house.
- ▶ It can provide storage facilities for today's basementless, atticless houses. The enclosed garage can solve the problem of where to put things neatly, behind doors, so that rakes, tools and junk are stored out of sight.
- ▶ It can increase the apparent size and enhance the over-all design of a small house, and help unite house and grounds.

Architect Herman York, of Matern & York, who designs for more than 80 builders, adds that he thinks the garage has untouched possibilities only if a thorough job is done: "We feel that you

have to make a *big splash*. Making the garage a big selling feature can pay off handsomely, but just putting in a few storage shelves and nails on which to hang the garden tools won't make a dent on the public—and I don't see why it should."

### Garages and carports—as multipurpose rooms

All six examples on these two pages show how a garage or carport can be planned to double as an extra room. If the inside of the garage is open and attractive, it can be used as a summer porch, a shaded play area for children, an overflow room for big parties. In warm climates this may work year-round; even in the north it works all summer (longer if the garage is well oriented) when the car can be left outside.

But to capitalize on such a feature, the smart builder goes one step further than merely explaining this multi-usefulness. He furnishes his model so that buyers can see for themselves that garage space can do more than hold a car and a lawn mover.

### What have you done about the garage?

**HOUSE & HOME would like to hear about what you've done to make garage or carport a real selling point.**

**Have you used it as a design feature, as an extra room, as well-planned storage space?**

**Have you found new ways to economize on its construction?**

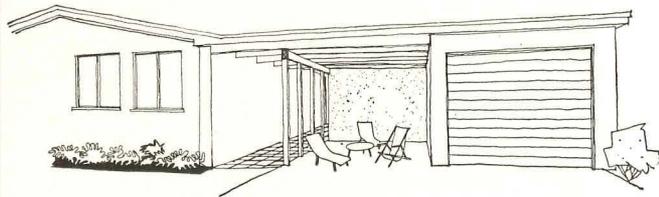
**Has it paid off in dollars and cents?**

**Write and tell us about your ideas, enclose pictures and plans if possible, and we'll publish the best of them.**

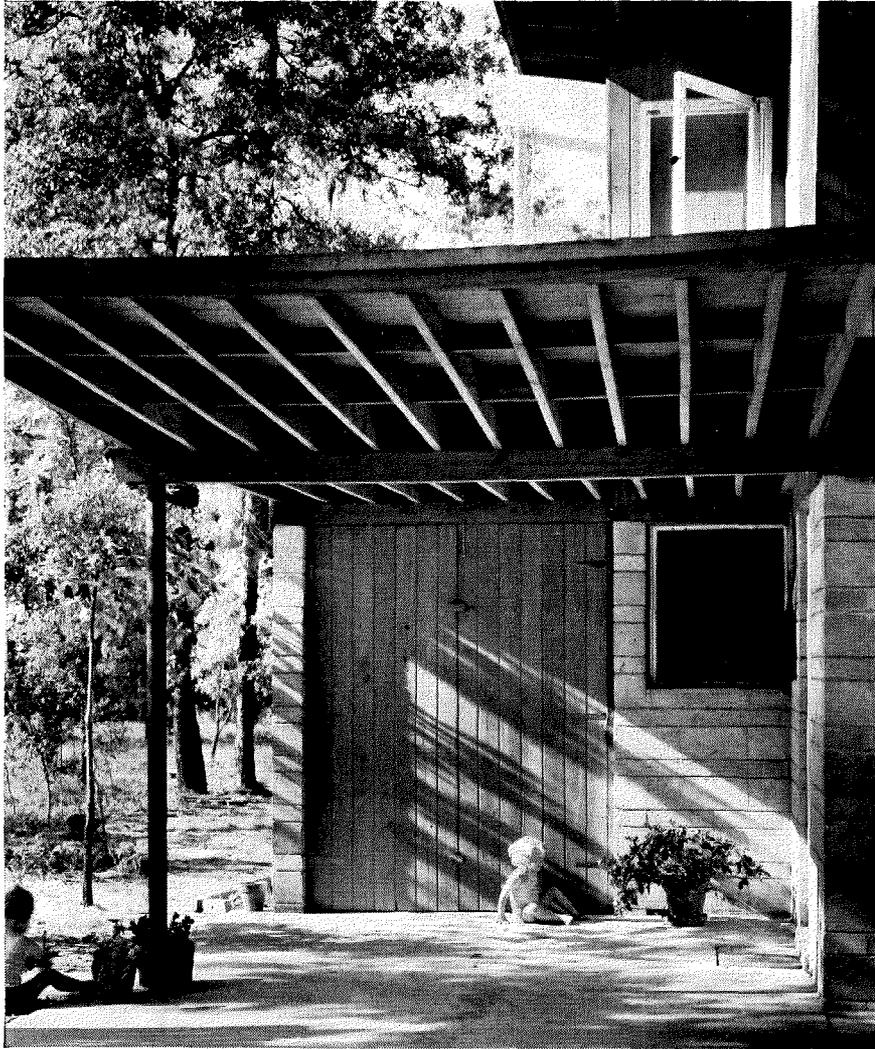
Haskell



**1. Porch in summer, garage in winter:** Even in a northern climate, a garage can double as living area for three or four months a year when car is left outside. This Massachusetts house by Royal Barry Wills has a garage with removable side sections opening to a terrace, an overhead door on driveway side. Garage enlarges the house.



**2. Combination carport-garage:** By offering buyers a choice of double carport, double garage, or one of each, Lacy & White of San Francisco created a real sales feature adaptable to individual pocketbook and family needs. Combination shown is a garage plus carport-porch.

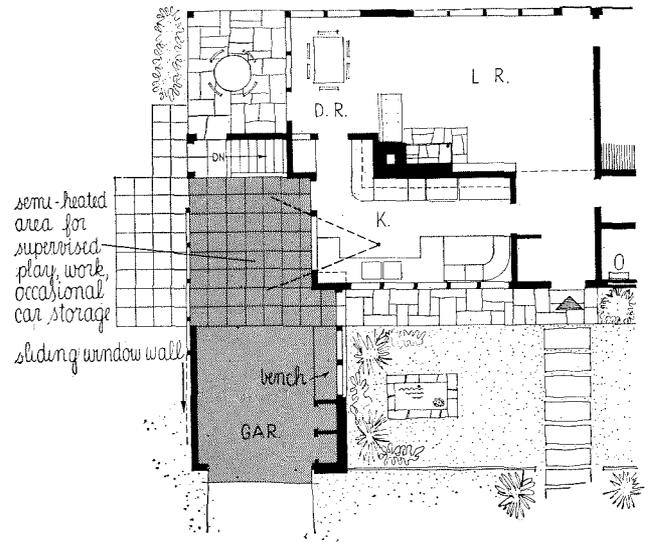
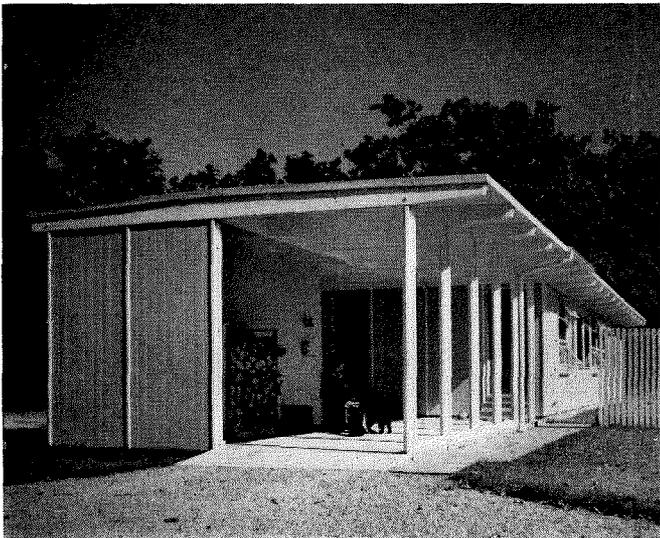


Rodney McCay Morgan—Photolog

**3. Play space-carport:** Neatly placed in the angle formed by kitchen (right) and dining area (window), this carport provides easily supervised play space and large storage cabinets at rear. By Alfred Parker, Miami, Fla.

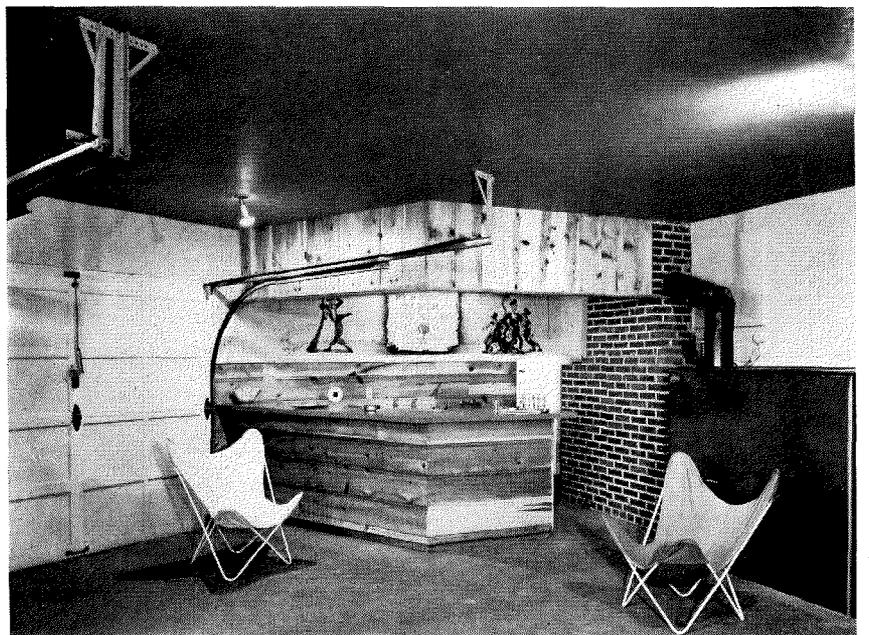
**4. Porch-carport-storage:** Nearly double-width carport (below) by Johnson & Whitcomb has three usable areas: enclosed storage room (left side), open storage space for cordwood and carport-summer porch. In Massachusetts.

Dearborn-Massar



**5. Heated play-work area:** Into this Long Island garage, architects Matern & York have fitted 1) play area with sliding window wall and separately zoned radiant heating in slab; 2) tool bench; 3) two closets. Walls are placed to serve as wind buffers for outdoor living areas.

Leonard Delano Studios



**6. Bar-utility room-garage:** In a basementless house, garage can well double as play and utility rooms. This one, by architect James C. Gardiner for a house in Portland, Ore., has completely equipped—though incongruously designed—knotty pine bar, hot water heater and washing machine (behind bar), heating plant. One wall has big windows and door leading to garden, makes space double for indoor-outdoor summer cocktail parties.

**Garages and Carports as storage space**

By providing storage space in the garage a smart builder can not only solve the tough problem of where to put things in a basementless, atticless house; he can also provide space for sports equipment *where it logically belongs*—next to the car that takes the family to golf course or ski slope. This storage space can be strictly utilitarian and achieved at minimum cost. For example, an 18" deep cabinet can be built along the entire side wall of a standard-size garage, equipped with sliding doors so it is accessible even with the car inside. Or, as in the carport below, a storage wall can be made a handsome and important architectural feature.

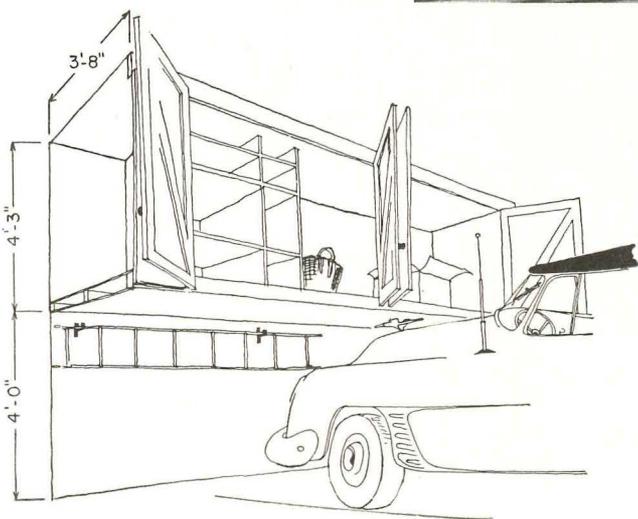


**7. Completely storage-walled:** Builder Frank Sheldon's own garage, in Los Angeles, has three walls lined with well planned closets and cupboards. Such a thorough job might cost several hundred dollars, but it would sell the house; even a little storage is a sales asset.

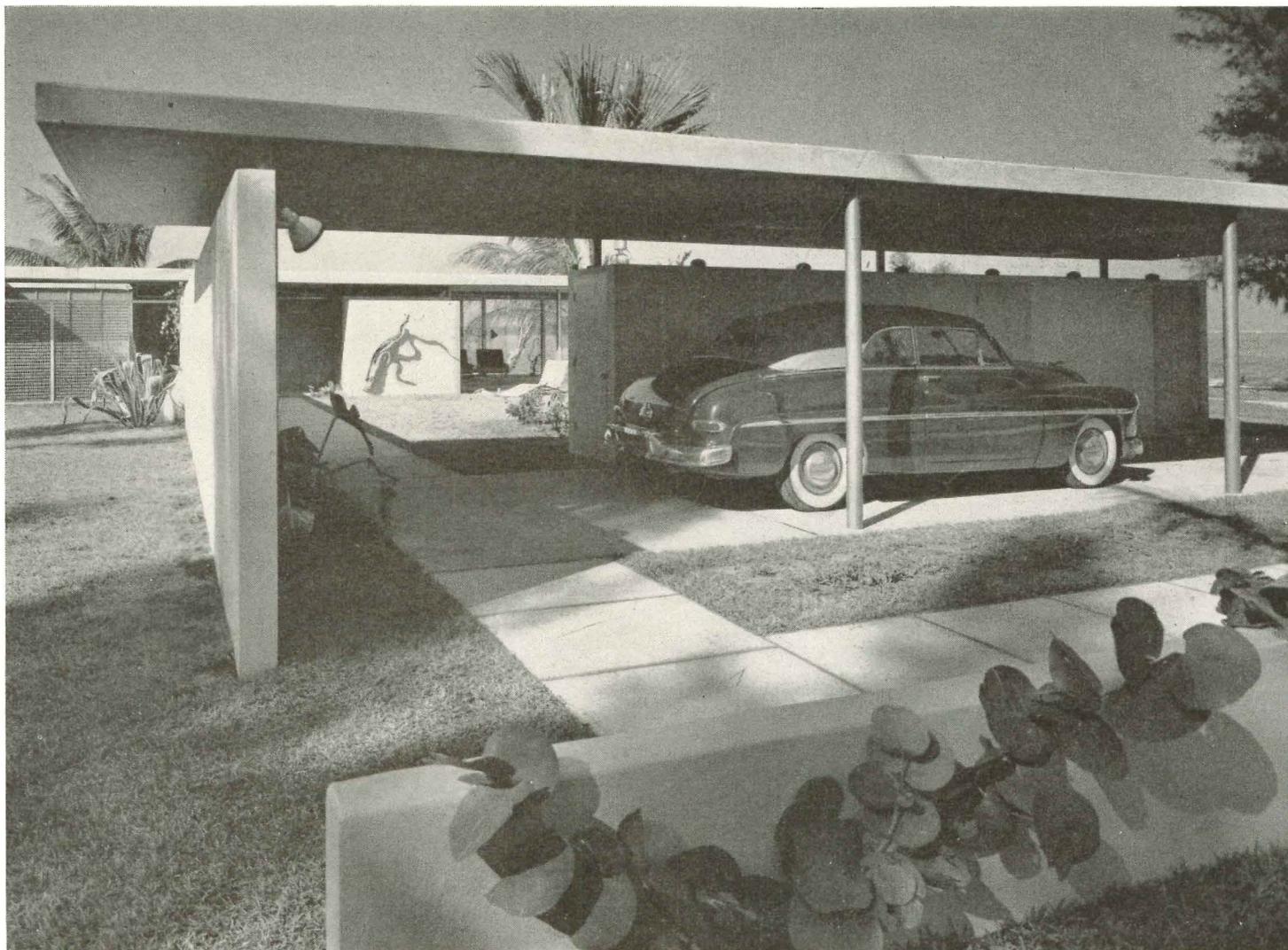
Julius Shulman



**8. Carport storage wall:** This storage wall custom-designed by Abe Grossman, Los Angeles, could be adapted by builders anywhere. It is an important design asset, makes the house seem wider; at the same time it provides about 700 cu. ft. of space, behind sliding panels.

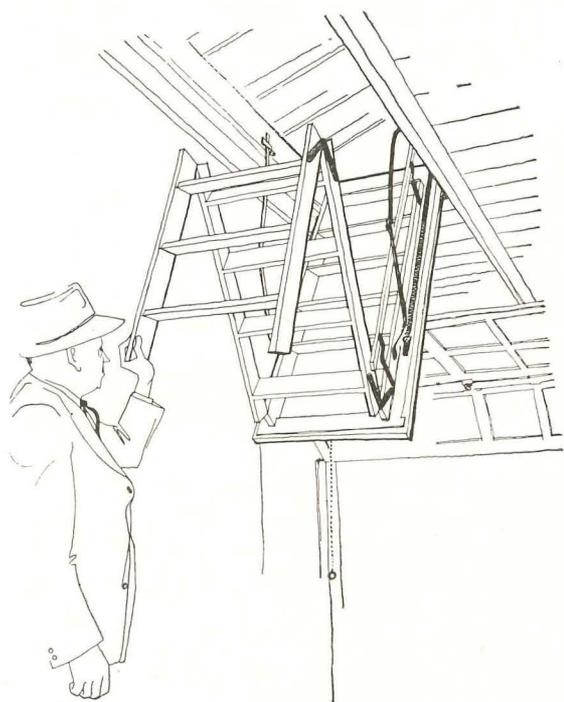


**9. Over-hood storage:** There is always room for storage above hood of car. Two-car garage (left) has cupboards 44" deep, 51" high—total, 265 cu. ft. and no floor space used! Framing is 2 x 4's suspended from ceiling, bottom is plywood, side walls and fronts are inexpensive hard-board. A merchant builder could add this sales feature at very low cost.

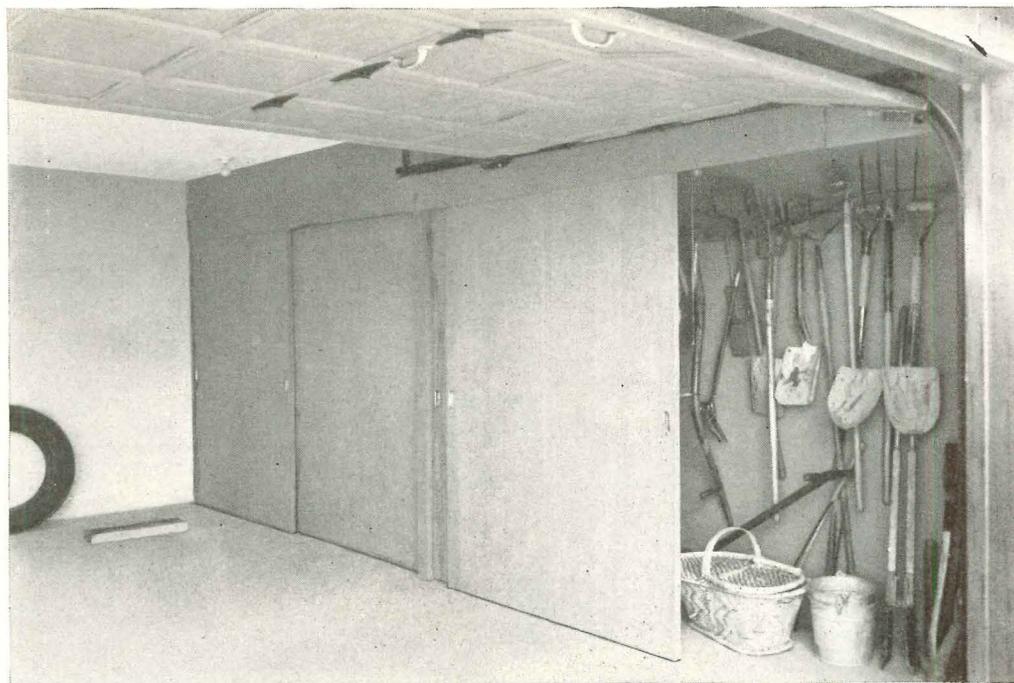


Rodney McCay Morgan—Photolog

**10. Carport-storage compartmented:** This free-standing storage wall is in Florida, but could work well in many parts of the country. It is good looking, and neatly planned with sections for garden tools, sports equipment, etc. By architects Twitchell and Rudolph.



**11. Folding stairs to overhead storage:** To make full use of any overhead space in a gable-roof garage, a folding stairway can be installed. These come in a variety of stock widths and heights, take up no space when not in use, cost as little as \$30.



**12. Standard-size garage with storage space:** Entire side wall of garage is lined with 18" deep storage closets; sliding doors (about \$75) take up no floor space. Extra advantage: even when garage doors are wide open, tools and miscellany are not exposed.

## Garages and Carports as design features

To increase the apparent size and enhance the looks of a small house—without hiking its price—smart builders pay careful attention to the placement and design of garage or carport. If the lot is wide, a side garage, either attached to the house or connected by a breezeway-porch, can make even a boxy house seem desirably long and relate it to its lot. If the lot is narrow, an up-front garage can screen the house from the street. If house and garage form an L or U, a secluded courtyard can be achieved. In many cases, good garage placement, along with suitable landscaping, can give a small house the grace of a larger place.

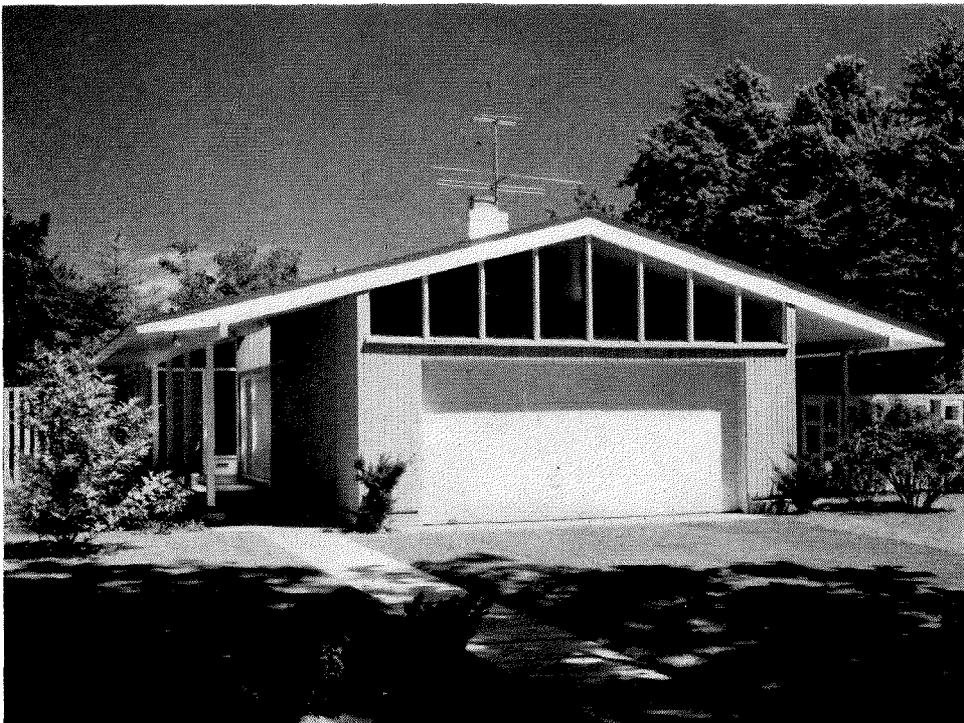


**13. Covered entrance-carport:** In straightforward treatment (left), architect Kenneth Welch put the carport right at front door of his Michigan house. It is 24' wide, provides a covered entrance. Wood is stored on a low concrete platform at rear, which also serves as bumper for front tires. Turn-around space is big, the driveway economically short.



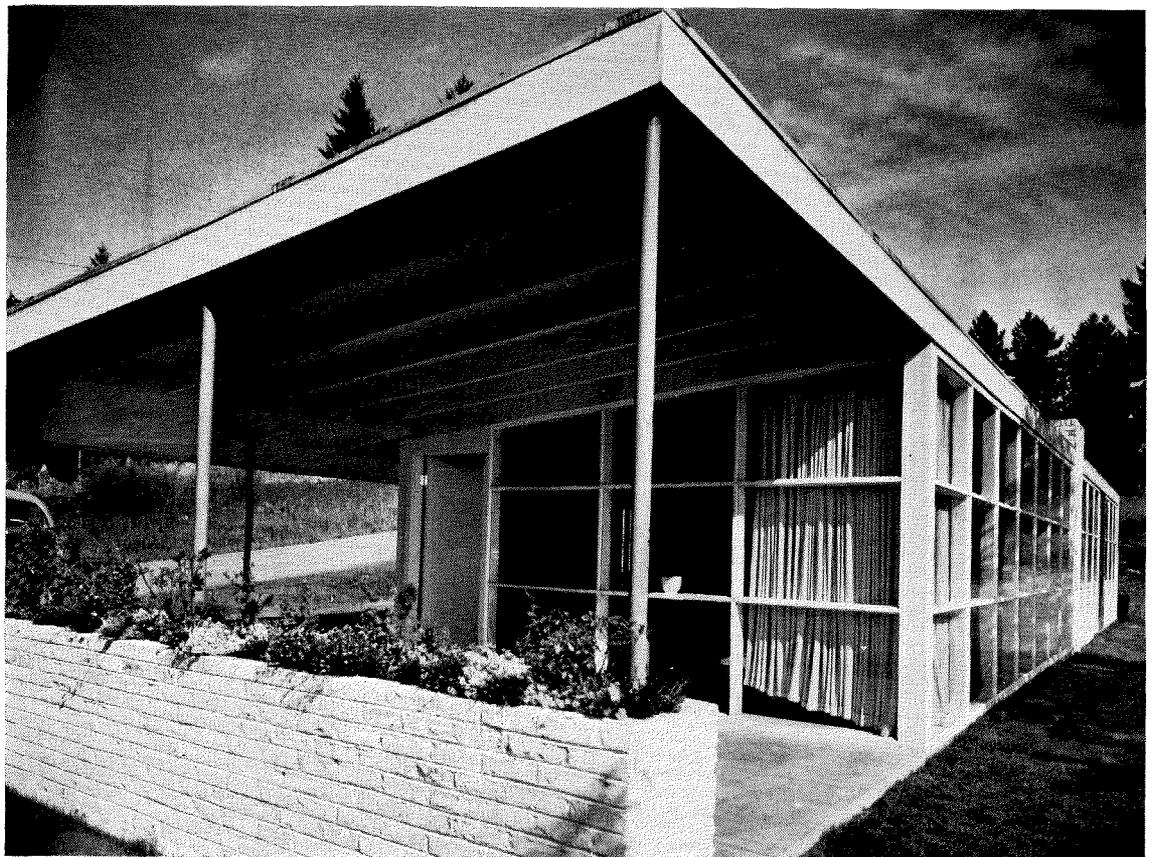
**14. Throughway carport:** Levitt's new \$17,000 house in Pennsylvania (H&H, Feb. '52) has the carport attached at side (or at an angle in front) to make house look wider. It has an 8' x 9' storage room at rear left; area between this and house can double as a porch or rainy day shelter for outdoor furniture. (There is a paved terrace at back, to the right.)

Ezra Stoller—Pictor

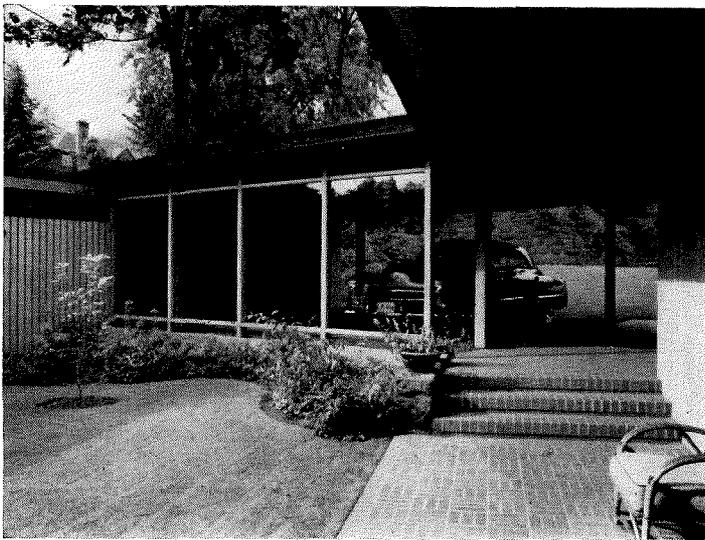


**15. Up-front garage:** It supplies a long, narrow-front house with a dignified facade. The wide overhanging roof is an economical continuation of house roof; it creates one covered walk to entry, another direct to living room. Plentiful light is supplied by modern version of New England transom-light. Garage gives house privacy from street. Designed by architect Hugh Stubbins, for a house in Massachusetts.

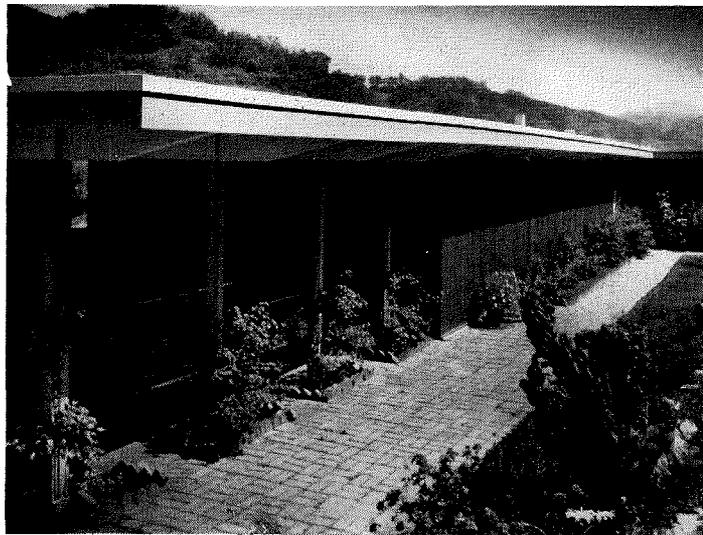
**16. Carport-porch:** For a house in Portland, Ore., architect John F. Whelen put the carport right next to living room window wall, used the top of the low brick carport wall as a planting box (less expensive and more effective than a higher wall). When car stands out during summer, carport is a living and dining porch.



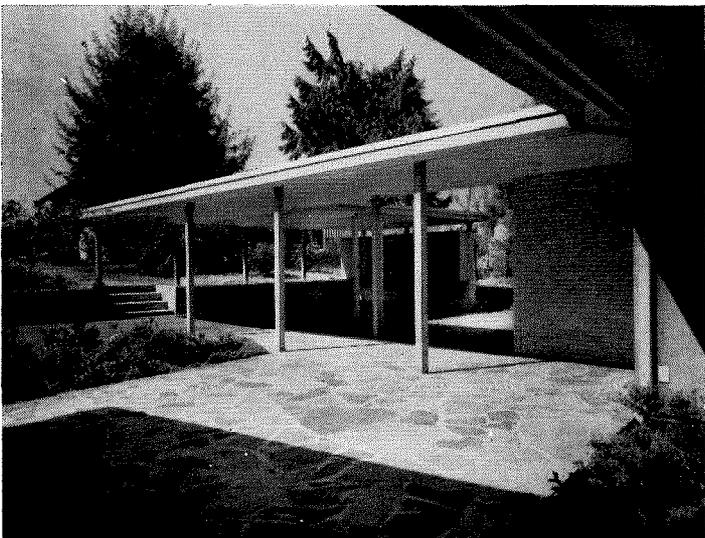
Leonard Delano Studio; Roger Sturtevant; Julius Shulman; Ernest Graham; Dearborn—Massar



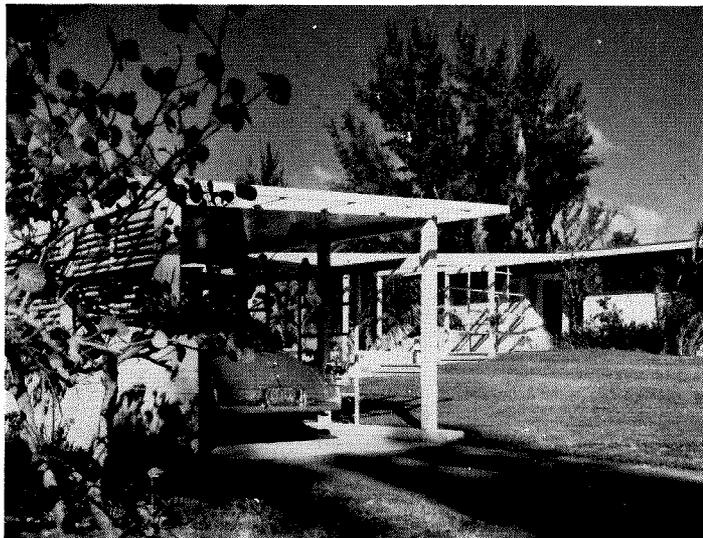
**17. Garden-enclosing carport:** For a house in Portland, Ore., Pietro Belluschi used carport and covered walk to frame a garden, and link house, right, and kitchen, left



**18. Carport-covered walk with planting:** Planting in time will hide posts of this carport by Gordon Drake for house in Los Angeles. At rear, parking for four guests' cars.



**19. House-extending carport:** Covered walk and flagstone-paved court tie garage to small house in Seattle, by architects Bassetti & Morse. Storage wall at side of carport.



**20. Trellised carport-walk:** They form U with Florida house by Robert Little. For a big lot, this arrangement is impressive, and gives the feeling of a small, private estate.



Photos: Joern Gerdtis

1952 promises to be one of housing's toughest years. NAHB, come of age, has flexed its biceps and found them chained to government controls. Membership has burgeoned to a new high of 25,000, but in output it won't be allowed to approach the record volume of house starts set in 1950. Homebuilders, who have a chronic tendency to regard every pinch as "Our Greatest Crisis," may indeed be facing one of the more challenging situations of their ten-year history as an organized industry: how to build more homes for a still-hungry market—with less metal, not enough mortgage money.

At their recent Chicago elections, it took NAHB's 200-odd directors exactly 30 seconds to hand the bulk of this assignment to a smiling housebuilder from Salt Lake City, Alan Elliot Brockbank.

NAHB's new president, at 48, is blue-eyed and deceptively boyish-looking, with a quick laugh and an engaging way of saying "folks" and "by golly" from a speakers' rostrum. He has that lucky blend of informality and earnest enthusiasm that usually begets co-operation, whether he is dealing with carpenters on the job or reluctant senators on the hill.

Underlying this personable exterior is Brockbank's main asset: an affinity for hard, thorough work. Since he joined the old Home Builders Institute as a charter member in 1941, Brockbank has quietly devoted an increasing segment of his time to the gamut of NAHB's committees and offices, from the little jobs on up. As first vice president, he spent close to half of last year as Bill Atkinson's stand-in, stumping the country and appearing in Washington, at his own expense. As NAHB president he will probably see home even less.

His industry's official representative, Brockbank is also highly representative of it as an individual—a medium-sized operator (about 100 houses a year). In the words of one longtime NAHB associate: "Alan is Mr. Average Joe Builder, U. S. A., a combination of the old on-the-job supervising contractor and the new up-to-date merchant builder." From others, he has merited the time-worn accolade: "A builder's builder." But if his volume is average, his standards are considerably higher (see page 132).

## Homebuilder BROCKBANK

NAHB's new president—the man for the year?



Brockbank and foremen talk blueprints on the job

NAHB's program and policy for 1952 bears the Brockbank stamp to no small degree, sets goals that he has been steering toward for years. Point by point, the industry plans to:

▶ **Give "top priority" to defense and military housing.** Of all members, Brockbank probably comes closest to being an authority in this line, having set up and led a 77-man "watchdog" committee that is currently attempting to break housing bottlenecks in critical areas, beat public housing to the draw.

▶ **Fight the "socialistic subsidized housing program"** by encouraging builders to do a better job in low rental housing before government steps in and does it for them. To Brockbank, the grandson of simple, industrious Mormon pioneers, the issue is clear and his conviction rocklike: "A man must acquire the good things in life through the toil and sweat of his own hands. No government or well meaning group of people can give these things to him."

▶ **"Weed out the shysters" in homebuilding** who have failed to live up to the industry's code of ethics. In part due to Brockbank's work, NAHB is adopting a homeowners' service policy which all builder-members will be required to give their customers (under penalty of expulsion from the association). Modeled after the policy given Cadillac car buyers, it will guarantee the owner that all reasonable and necessary repairs will be made without cost within six months after delivery of the house. Along with this formal warranty, NAHB recommends furnishing a homeowners' service manual that will help the buyer take care of his own home, and is distributing prototypes that can be tailored to local conditions and reprinted.

## Missions . . . .

As an individual much of Brockbank's philosophy stems from hard-working forefathers who came across the plains in covered wagons to build Utah out of the wilderness in the days of Brigham Young. Great-grandfather William Howard operated mule-drawn freight wagons and Utah's first leather tannery. Grandfather Isaac was a railroad and excavation subcontractor, builder and realtor who surveyed and laid out the town of Spanish Fork, Utah.

An honor student at Salt Lake public and high schools, young Alan went on to study industrial engineering at the University of Utah. An attack of smallpox forced him to leave halfway through freshman year, and on recuperating he took three years off to work as an engineering draftsman for Kennecott Copper.

Like many other conscientious young Mormons, Brockbank had been trained as a lay priest. So he now found himself called from the "reserve" to South Carolina. With the help of his father, a Salt Lake auditor and auto dealer, he financed himself while he looked after sick people, preached the revelation of the Latter Day Saints from door to door and on the street corners of up-country mill villages.

Two years later, Brockbank came home to finish college, put himself through with a part-time job selling electrical appliances. During his junior year he was elected president of his fraternity and met Gaylie Rich, a bright-eyed co-ed who later became his wife.

After graduation in 1933, Brockbank went to work for his father-in-law-to-be, who was then local director of RFC's Regional Agricultural Credit Corp. It was about this time that he got his first taste of building: when his own father couldn't find a contractor to build the house he had designed for himself, the younger Brockbank hired and supervised the craftsmen for the job. He found it so interesting he formed Modern Homes, Inc., which went on to build other individual houses in the area.

## . . . . and mortgages

While chief of RACC's mortgage department, Brockbank became a close friend of Franklin Richards, then in the legal branch of the agency. When the latter was appointed Utah state director of the new Federal Housing Administration, Brockbank went to work for him as a mortgage risk examiner and later as a valuator.

No one-job man, he soon joined a lumber and construction firm, which he later bought out to form Alan E. Brockbank, Inc., and a cinder block plant, which he started in the belief that lightweight aggregates would become the building materials of the near future. Building men told him he was off the track, and soon after he was forced to withdraw when he found it was interfering with his FHA work. Volcanic block from Brockbank's old mine is now one of Utah's big industries, and he is investigating new deposits of both cinder and copper in central and southern Utah.

Brockbank's main interest now, aside from NAHB, is his big Rose Park Development in Salt Lake City (*next page*). Partner and most effective supporter in all ventures is his tall, handsome wife Gaylie, former Junior League president and active community worker. (She is also one of the 2,000-odd descendants of Mormon Charles C. Rich, who arrived by wagon train in 1847 with six wives and set about populating Utah.)

Family man Brockbank spends his leisure time at home with offspring Gaylie Anne, 15, and Grover Rich, 10, his week ends in the garden cultivating a prize rose collection. Occasionally he plays a little golf or tennis, and he never misses a football game anywhere near Salt Lake. Major domestic ambition is to build a beautiful yard around his home, a \$40,000 brick house in the city's fashionable Country Club Heights. (He built it in 1948 as

one of the 77 Blandings Dream Houses constructed across the country to publicize Selznick's movie, moved in himself when he found no buyers.)

Not much of a home-town politician, Brockbank got sufficiently disturbed by the "socialistic activities" of local Democrats to turn Republican eight years ago, has worked to oust his former college professor, Elbert Thomas, and help elect Senator Wallace Bennett.

Brockbank is big (6'-0", 194 lbs.), mild-mannered, a nonsmoker and nondrinker, who gets along with almost everyone. But he moves fast, talks well and vigorously, and has the ideas and drive not always found in an essentially conservative community. As one of the founders of the Utah Home Builders Association, he has set out to improve local building and living standards, has plumped continually for more mortgage money, especially scarce in his state.



*Alan and Gaylie Brockbank posed for photographers and well-wishers after his election to NAHB presidency.*

## Joe Builder vs. Jerry Builder—exit pickle-packer?

As NAHB president, Brockbank is out to clean house this year, and it's a good bet he'll get some of his broom work done. With more builders building than ever before, he wants to improve the *quality* of the association's membership, thus attract new members. And he would like to see the NAHB seal on a house, like an underwriter's tag or a seal of approval, mean something to the public as well. "It's the nonprofessional builders," says Brockbank, "who are responsible for most of the public's complaints—the farmers, the junk dealers, even the pickle-packers, who jump into building shoddy homes for a quick buck." NAHB and Brockbank hope to cut down much of the justified criticism of the industry for turning out inferior merchandise. The above steps may whittle this criticism down to the minimum—there will always be Fritz Burns's "man in the twentieth house," the chronic complainer.

Another puzzler for NAHB in 1952—how to loosen up the mortgage money market—should be a familiar headache to its new chief, who is one of the founders and current directors of Housing Securities, Inc., a New York mortgage brokerage firm set up in 1950 to help relieve the shortage of money during credit curtailments.

## Joe Builder, Ph.D.—enter architect?

On Brockbank's personal program of good intentions for '52 are two other much-needed NAHB items. He intends to:

1) Continue a high degree of co-operation between AIA and NAHB to improve design, bring more architects and builders together. Brockbank has always used an architect himself, feels many builders have not kept abreast of their potential buyers with up-to-date design and room arrangement. In his words, "The training of the architect is an important factor in the beauty of any house." 2) Plug for more research into building methods and materials, and for more correlation of research so that it does some good.

This year he will continue to press for revision of local building codes—and government and lenders' requirements—to permit full use of alternate materials and conservation techniques.

Going a step further, Brockbank believes that in years to come regional schools should be set up for homebuilders who want to understand and improve their products. Another of his not-so-idle day dreams: that American colleges should include in their curricula courses in light construction to train young men properly for the field. He often talks of the "emergence of the homebuilder as a professional"—a man who must know a good deal not only about construction, but about labor, finance, merchandising, architecture, and other fields as well. If Brockbank had his way, the letters NAHB might some day approach the professional dignity of an M.D. or an LL.B.

### Brockbank the builder

"The best possible house for the lowest possible price," reads the direct, if not original, placard on the wall of the Alan E. Brockbank, Inc. business office. For the most part the firm has lived up to its motto in creating Rose Park, Utah's biggest private housing project and testing ground for some of the region's more advanced merchant-builder architecture.

At the end of the war Brockbank and three other builders bought up 360 acres in the city's so-called "undesirable" West Side industrial area. To date he has built some 700 of the 1700 houses in this planned community. To serve its fast-growing population (7,000 people now, almost 100% veterans' families) he is erecting schools and an eight-acre shopping center which will expand to ten acres for an expected population of 15,000.

The first houses, and the larger part of the development, were trim, conventional brick jobs with hip and gable roofs, staggered

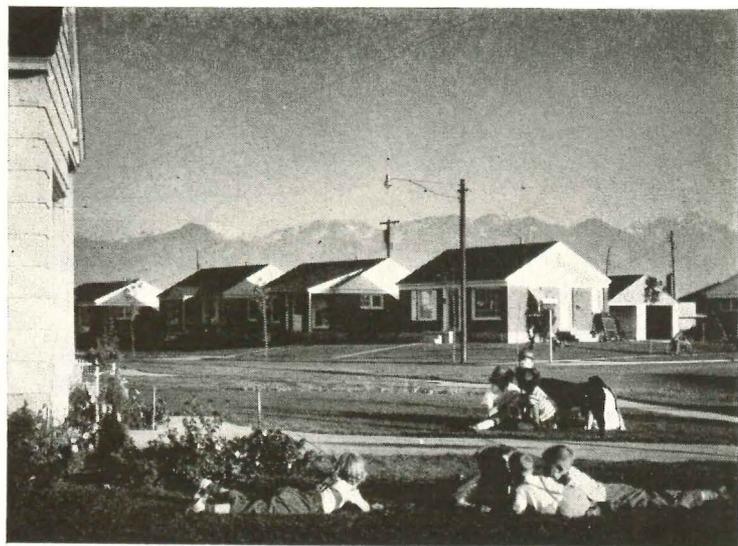
on 25' and 35' setbacks, with curvilinear streets and lots that average 60' x 110'. Then started the experiments.

In 1949 the organization came out with a clean, functional frame house to sell for \$11,500, and the public caught on fast. The Chamber of Commerce and the Utah Home Builders Assn. tagged it "Salt Lake's First Contemporary Low Cost House," and the Revere Institute conferred a Quality House Award. Architects were Fred L. Markham, AIA, and his associate W. Rowe Smith. (With a later design, Smith won honorable mention, Rocky Mountain region, in the NAHB-FORUM design competition—see March issue '51.)

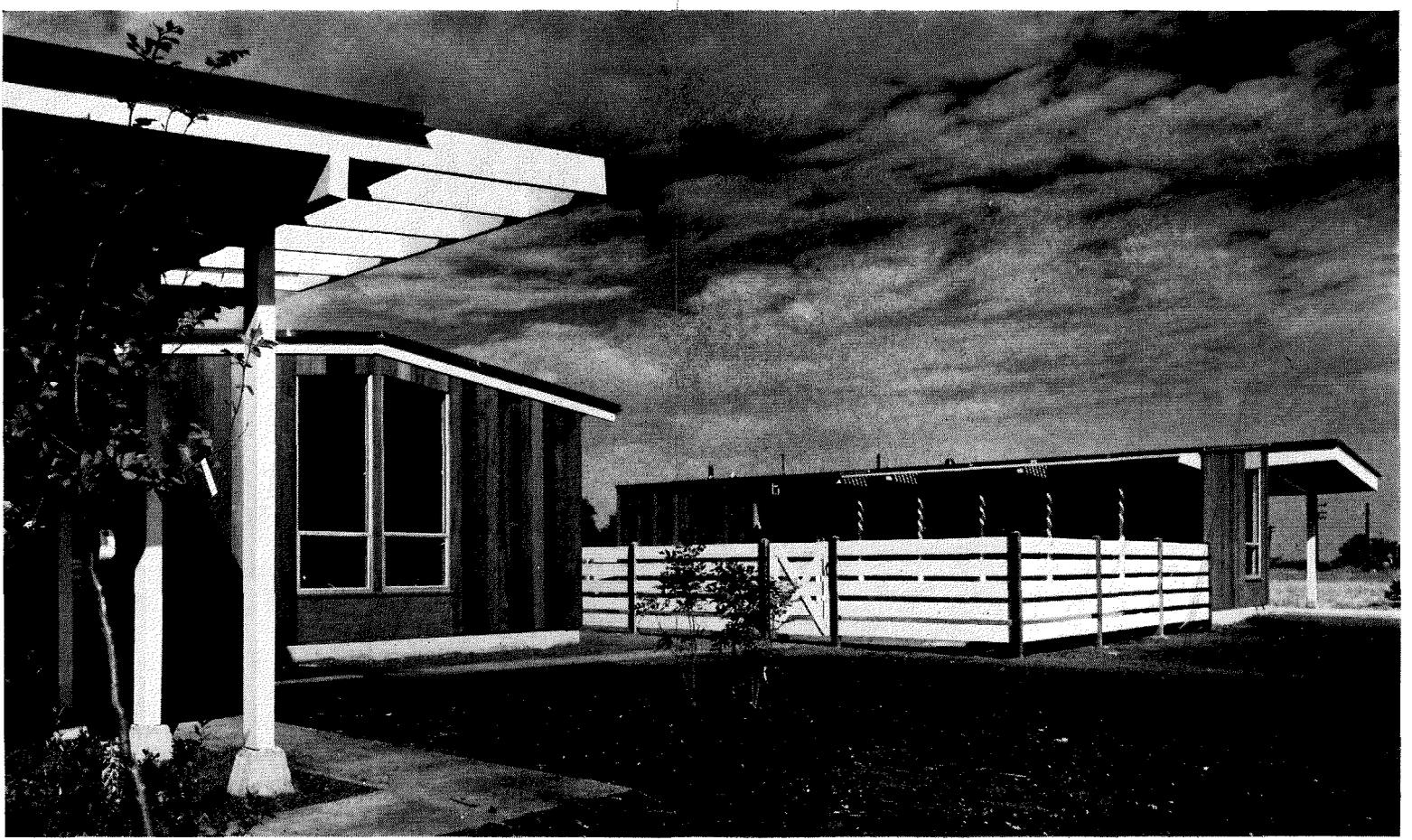
During 1950, Brockbank built a \$7,950 concrete block "cheapie," as he called it, sold 140.

Last year he hired M. E. Harris, Jr., AIA, to design a "transitional contemporary" model, a larger three-bedroom house of 960 sq. ft. with a carport and half basement. Dubbed the "CQ," after a Certified Quality award from the Southwest Research Institute, this one attracted 10,000 visitors during National Home Week, has sold ten so far. To get the most salable design possible for the CQ, Brockbank had handed out questionnaires to visitors at his first contemporary model, incorporated some of their ideas and rectified other points according to their criticisms.

For this spring, he plans his "Trade Secret" house, which will boast a dozen wrinkles garnered from other builders in NAHB-sponsored conferences—new windows and a perimeter heating system from builder Andy Place of South Bend, a roof without edge flashing, an open plan with sliding doors. To save materials he will group plumbing installations toward the street side of the house, align the whole mechanical core of the house on one wall. Also submitted for local code approval: foundations without footings, a heating system adapted from that of builder Rodney Lockwood which uses the crawl space as a warm air plenum.

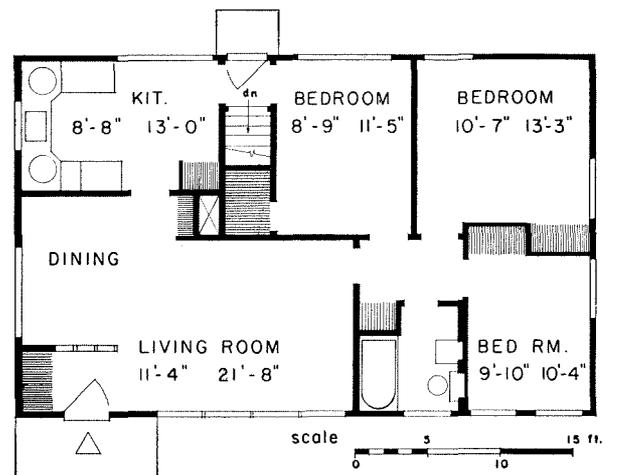


1948—Brockbank's stock in trade was a solid, conventional brick bungalow. His Rose Park development, (left) on 360 acres of long-idle land, is spacious and well maintained.

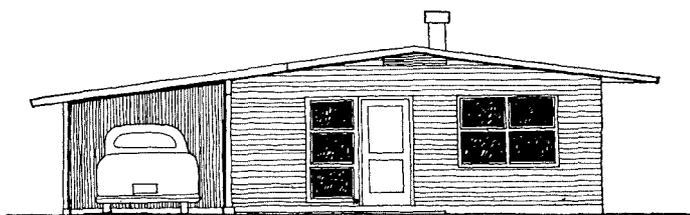


Photos: Joern Gerdtis

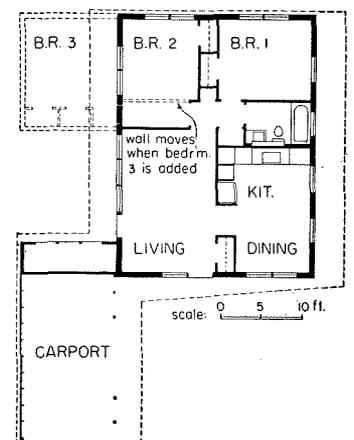
1949—The Revere Quality Houses made history in Salt Lake housing with their full use of glass, open carports, contemporary lines and natural wood siding. At 860 sq. ft., they sold for \$11,500, including fences, greenery, rugs, curtains, and kitchen equipment.



1951—Innovation of the year: a three-bedroom “Certified Quality” house, with living-dining up front, lit by big windows. With 960 sq. ft., this came in a “standard” model at \$11,000, a “deluxe” for \$13,000, including garage, paved terrace, appliances, fence and landscaping.



1952—Still on paper is this “Trade Secret” model for under-\$12,000 market. It incorporates ideas and techniques of other builders.



**T**HERE'S good news for the homebuilding industry out of the architectural schools. The schools are taking first steps to train young architects to deal realistically and specifically with the builder house—the quantity production house—the house that stands in a development and serves the mass market.

Significantly the lead has come from Massachusetts Institute of Technology, whose white dome surrounded by laboratories has long symbolized a close tie between liberal education and the problems of big industry. Last fall, MIT's teachers had

## IN THE MAKING . . .

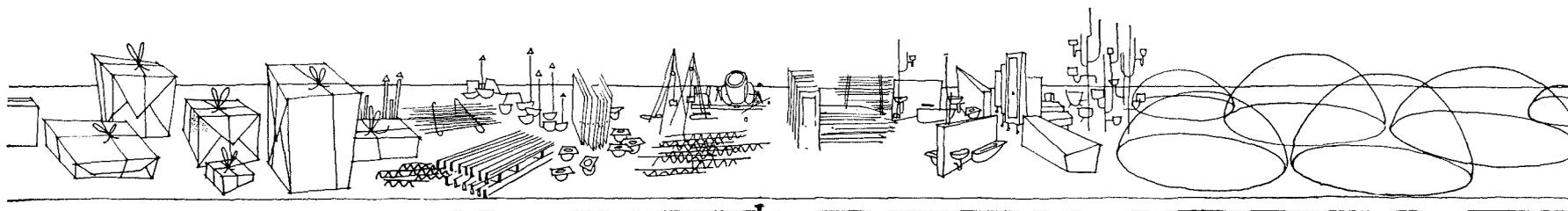


tramped with students through the mud and weeds of a fair-sized tract of land in nearby Wayland. Last month each of five student teams were ready with a development "proposal" for that tract—not just a site plan, not just house plans, not elaborate house facades such as an architect might prepare for an individual "client," but a coherent scheme involving ideas of financing and selling; the kind of proposal that a builder might submit to a banker. Actually the men Dean Beluschi had gathered to judge the submissions were far better qualified than the average banker. They were five of the most experienced and brilliant operative builders and prefabricators in America: Fritz Burns, Howard Fisher, John Galbreath, Foster

Gunnison and Alfred Levitt, not forgetting philosopher-prophet Buckminster Fuller, one of the teachers. (The other two teachers were experienced house-architect Carl Koch and the Bemis Foundation's Richard Hamilton.)

Surprisingly enough, the fascinated student listeners were not the chief beneficiaries of the occasion. The industry leaders, stimulated by the earnest attention of the students, and intent on giving their youthful new allies a broad perspective, ended by giving many a sharp insight into an emerging industry: its scope, its methods, its latest aims and problems. More than one veteran came away with a clearer understanding of his industry and his place in it.

## Architects university-trained for the builder house. Builders tell them about the industry



### For an industry of many branches— comprehensive research

One fact was instantly manifest: almost overnight, homebuilding as an industry had grown big. And one of the implications became evident as soon as research specialist Howard Fisher (trained as an architect) spoke of its needs in the realm of ideas rather than just physical production. Said Fisher, "In its thinking the construction industry today is not a unit . . . is more like a group of islands, an archipelago rather than a continent. Research must span across those water gaps: must unite the thinking of specialists such as architects, industrial designers, real estate men, money men, construction experts. Only so can industry-wide vision and leadership arise." Consequently he advocated research by teams of men each competent in one or more specialties, rather than research by separate individuals.

### —and division of labor in actual operations

Fritz Burns drew a directly contrary picture of the builder's actual physical operations: he suggested that these might often more profitably be *divided up* among several kinds of separate operators.

Said Burns, "Only about 10% of our housing is accounted for by prefabricators and by big builders putting up whole communities. The big volume is done by the man who does five, ten, 25, or up to perhaps 50 houses a year. A man doing 25 to 50 houses a year will make several decisions: first, whether to become a land developer or buy his lots already developed. He might go a step further: buy his houses prefabricated or partly prefabricated. He might eliminate any participation by himself in financing, and get a good mortgage broker. This developer—whether he is a builder, an architect, or whatever

combination—might even go another step and decide, rather than merchandising his own product and further spreading his efforts, to select a real estate agent to handle sales. Thus he can either *dilute* his efforts over the full expanse of building-industry activities, or he can try to *focus* on two or three to the extent of his ability or his capital. A fellow might decide, for example, that he is better off building more houses per year with his capital and foregoing his land profit than tying himself up in land development and limiting his volume of production."

Between Burns and Fisher there was no fundamental contradiction: the more complicated the steps leading to separate specialists in action, the greater the need for basic unity of common understanding.

### Who is to do what?

Though Burns' remarks on division of labor came late in the proceedings, they epitomized the kind of question that had been coming up all day: in homebuilding, who does what? and how does he mesh with the next fellow in the process?

### Who does the design?

"The architect does the design," said virtually every leader present; and each of them added "but . . ."

Said John Galbreath: "—but he must know the *production process*. At Fairless Town we had an architect who started to redesign the prefab house we were working with to get a different arrangement. The prefab president wanted to know whether this architect could spend part of his time at the factory on a consultant basis. Only then could his suggestions be made useful" . . . and even so probably only in time for the next year's prefab model.

(The MIT students were, however, skeptical of accepting prefab models "as is." The team assigned to a prefab model calmly redesigned it, finding that the present type was wasteful on their *unaveraged* tract of land.)

"The architect might do the design," chipped in Foster Gunnison, "but only if he knows *sales*. Production methods are not too hard; but you get men to go out and sell your product day in and day out. If you don't have a house the public wants to buy, the poor salesman will go broke trying to sell. Only architects who deal with this kind of stern reality can play an important part on an industrial team."

### Who provides the house?

In an industry which as Burns had shown could be readily subdivided, the debate was lively as to who should supply how much of the house.

Prefabricators, said Gunnison, supplied 50,000 units last year, will rapidly increase their share this year—a great proportion going to smaller developments. "Where Levitt or Burns goes in for 4 or 5,000 site-fabricated houses. I think they can effect as much economy . . . but you have got to have a *big* site project to do this."

"We find," said Levitt, giving this idea a different twist, "that we put many more man-hours into a prefabricated house than we do when we take certain truths of prefabrication and apply them on the site. Also the shell is—relatively—not so important. In producing a complete community, one-third of our working hours—no, half—are spent not on the house but on the site: paving roads, installing sewers, storm drains, underground electric lines; all the way to placing corner street signs, planting parks, building town halls and swimming pools. All of these you can't prefabricate."

### Who prepares the land?

Both the prefabricators and the site planners present agreed that efficiency in house production arose out of two things: assigning a workman a simple repetitive routine and giving him continuity of employment. Both declared the industry was improving as it cut down intermittent hiring and firing. But the greatest snag today was the fact that *land acquisition* must be intermittent; moreover, work on the land is seasonally restricted. "Where," Levitt asked Gunnison, "does the prefabricator who employs men the year round store the huge inventory that must accumulate during the three or four months when site work—such as concrete foundations—can't be done?"

Here Professor Carl Koch interposed a novel suggestion: in order that land might be prepared in advance against the winter months, and in order that this might not tie up the builder's often attenuated capital, why not let government agencies prepare the land ahead?

The idea of having government do this drew instant opposition, but the idea of *having* it done—by private agencies—drew instant approval. Said Howard Fisher: "There are two kinds of government interference, which businessmen regard differently. The FHA is the kind which the industry loves, since it relieves the builder of risk but takes away no profitable operations. Perhaps if some scheme were to be evolved where interest could be waived on the cost of predeveloping during the warm months, with FHA support, this would be the kind of aid that businessmen would love." Fritz Burns said, however, that preparing lots was just one of the many building industry

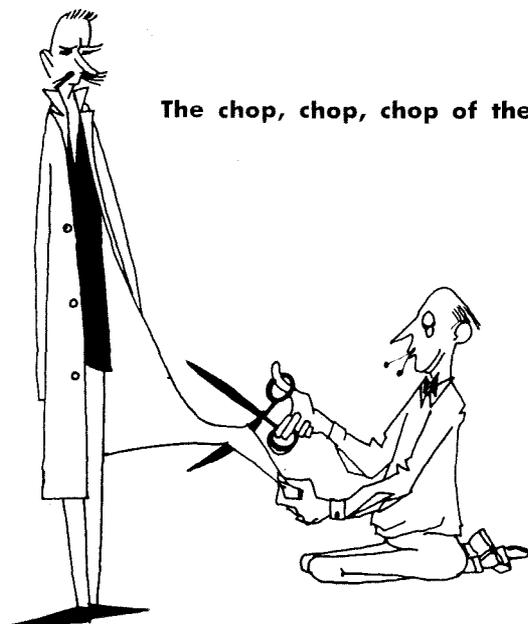
operations that are likely to be intermittent; if you were to try to correlate building with a constant supply of lumber you would run into the same problem as trying to correlate it with a constant supply of lots. One answer: a specialist in land development creating prepared lots ahead against demand, to even out the year.

### Who knows the market?

From Al Levitt the students absorbed some notion of the sheer mechanical intricacy of mass selling, compared to the ordinary personal relationship between one architect and one client. "We got really big when brother Bill learned to do something that is impossible," said Al. "At Levittown he learned—with the aid of half-a-dozen men—to speak to 5,400 customers in one year, conduct 5,400 title examinations, take 5,400 mortgage checks, do all the rest of what is involved in closing 5,400 separate deals. And tens of thousands of people are handled before you get down to the 5,400. I don't think the knowledge is shared in this country or in the world—how you mass handle and mass sell private individuals without offending them." (This year at Levittown, Pa., said Levitt, 1,600 houses were sold in the first month.)

To the students Levitt humorously recalled how the radical break came, from suiting the whims of individual clients to working with standard plans in advance of sale. "With the name 'Strathmore' we had learned we could sell about 200 houses a year—every one more or less to order. The customer came first; he looked at the plan and mangled it as he wished; and we built it with a customer for it in advance. By 1937 all three of us saw that the chop, chop, chop of individual customer relationship (by the way the beams were chopped, too, with a hand adze) gave us no peace of mind. So we settled on a new standard plan: seven basic house plans and I think 44 elevations.

"Each year we opened not just new houses but a new subdivision—brand new. The public likes something new. By 1940 we were clean. We had only *three* floor plans. When we moved to Norfolk, Va. there were a hundred possible buyers for every house. We built what *I* liked, what was easy to build and easy to live in: a one-story unexcavated house . . . they are still standing—built in 1940." The audience laughed.



The chop, chop, chop of the individual

"Every year we try to improve our models down to the last detail. For example in today's models you won't find a 'utility room'—it's just a cabinet 30" high and 25" deep alongside the washing machine in the kitchen." (H&H, Jan. '52.)

### Who are the leaders?

The audience liked Levitt's account of the big decisive leap from filling private orders to selling the mass market. And from the floor came the suggestion, warmly applauded, that the Levitts were wiser to draw on their own expert knowledge, producing something better than the consumer could yet imagine, rather than to wait on "consumer surveys." "Genuine advances," said one floor commentator, "such as cars, planes, and atomic energy, are made by people who know more than the public and who should act as leaders instead of surrendering to the most ignorant members of the community."

### Who will pioneer the future?

When it came to leaders, warm tribute was paid to one man, Buckminster Fuller. Said Foster Gunnison, "When Owen D. Young in 1932 suggested industrialized housebuilding to cure the depression, I ran into the early work of Buckminster Fuller. Everybody was laughing at him . . . they still do . . . but all that time he had the kernel of the idea. I wish to express my deep personal gratitude . . . and congratulate you on having his genius to keep feeding you ideas. I hope they can be made practical."

Said Fuller, "I built 240 practical houses in the '20's, so far as I know still standing. . . . I was a cotton millwright . . . had Naval Academy experience handling ships . . . designed a car. . . . In 1927 I made a rough estimate of the time required to develop scientific shelter, and I saw it as a 25-year job."

"All around me were people talking to architects; I wondered why they never talked the same way to doctors. 'Doctor, we think you have a nice office. We have decided to have my wife's liver out. While she is under the anesthetic you might throw in some face-lifting.' The doctor makes some beautiful measured drawings of Mary's liver, six different renderings of how her face could look after it's lifted. At this point,

for the sake of specialization, five local butchers are called in to bid on the job. . . . Now some of these people won't even go to this doctor—they simply go to the local drugstore and get some patent medicines. The patent medicine business is a very good business . . ."

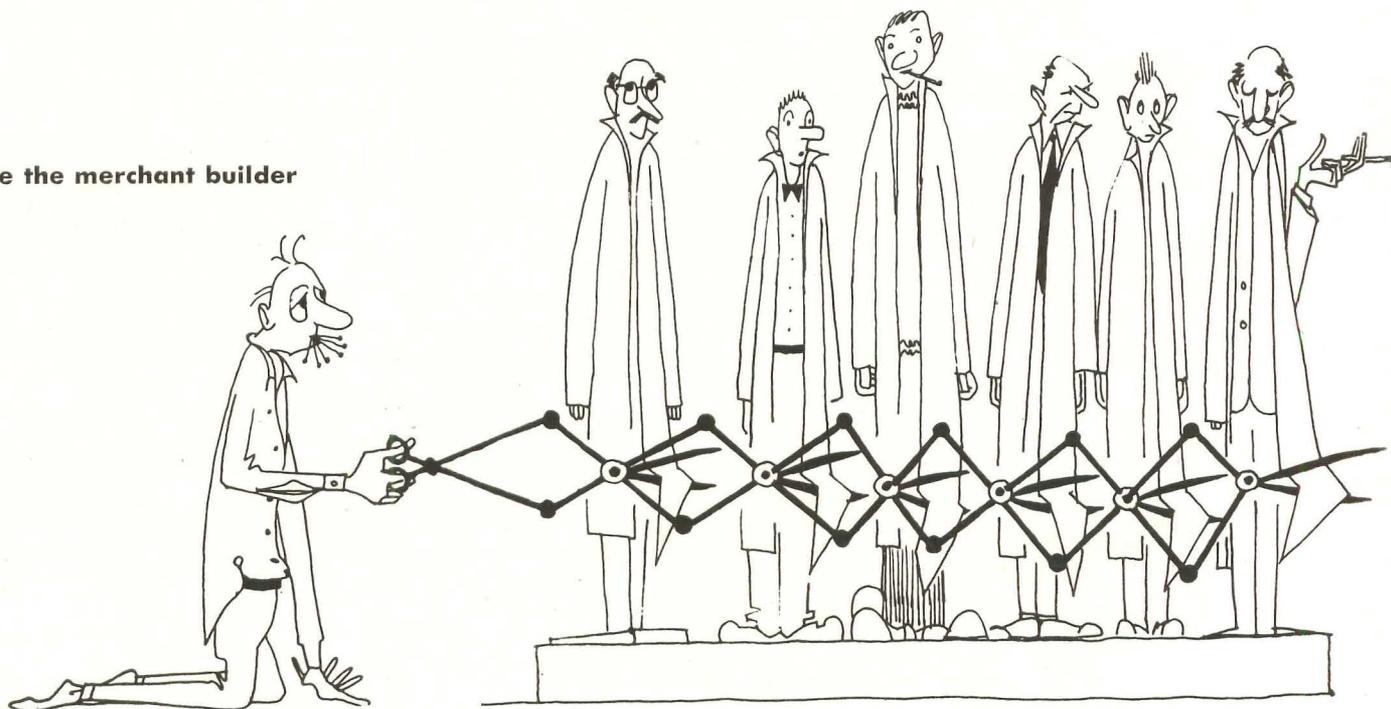
Over his 25-year scientific development program, Fuller has sought consistently not for sources of quick profits but for three things: 1) greater structural "advantage" in the shelter enclosure; 2) greater mechanical "advantage" in the equipment; 3) separation of the mechanics and structure of the house so as to develop maximum potential in each, unhindered by the other. And, as a fourth point, Fuller has sought to make the entire shelter system "autonomous"—independent of buried utilities such as water lines, sewers, electric lines; capable of operating "by itself" so long as fuel could be had to generate the necessary power (July issue '51).

To his devoted students there was nothing strange or impossible in Fuller's program. To Professor William Wheaton of Harvard, worried about the exhaustion by 1970 of iron, steel, copper, and some 23 other materials, it represented major conservation by obtaining several hundred per cent more "performance per pound"; to H. K. Phinney of Bakelite Co. it was a token of optimism since Fuller's 1970 house "did not mention a single material that is in wide use today."

And so the young architects at MIT found themselves at the end of the day thinking in terms that were in some ways thousands of years from the thinking of their fathers. For thousands of years architects had designed for individual clients or patrons. But Levitt had been talking in terms of 1,600 clients a month and Gunnison about 50,000 clients a year—the ordinary people of the USA—while Fuller was testing single-design housing instruments for the habitable globe. The architect's partner had always been the contractor bidding on houses one by one and the banker lending on one by one; here one of the builders declared that he didn't even know his construction cost until after the 50th house. The architect's arbiter had been individual taste; here it was the need for survival of people by the million. Deep down in their hearts the young idealists still treasured the same old ideals of beauty, of good living, and honest worth. Yet they knew that the practice of architecture would never be the same again.

Customer relationship can give the merchant builder

o peace of mind . . . .



## PACKAGED SERVICE CORE highlights new glued, laminated prefab house

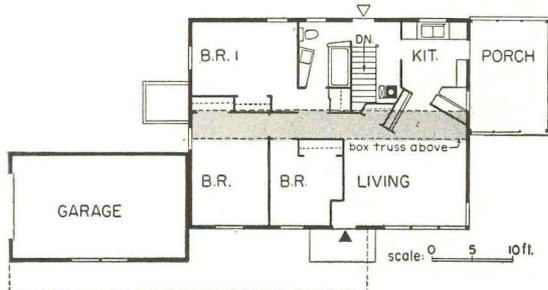
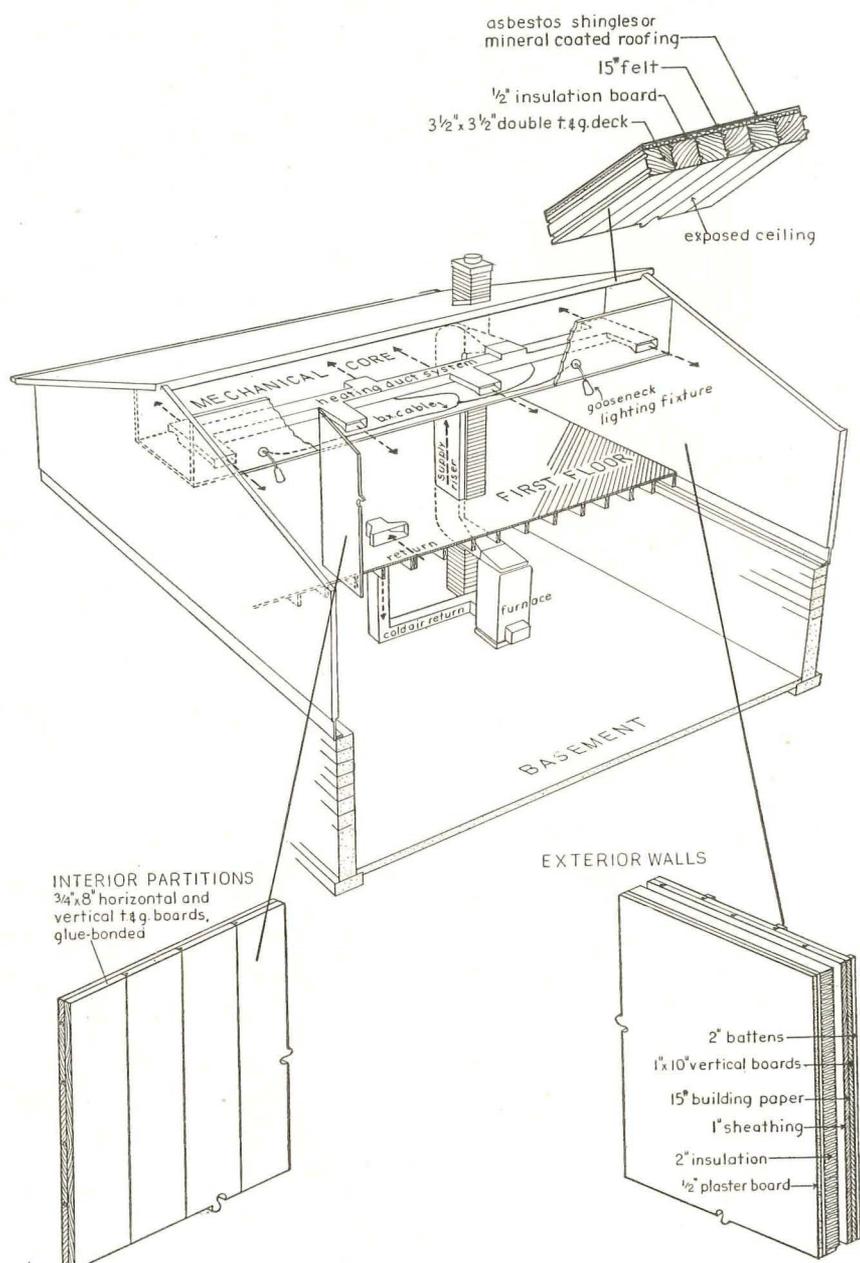
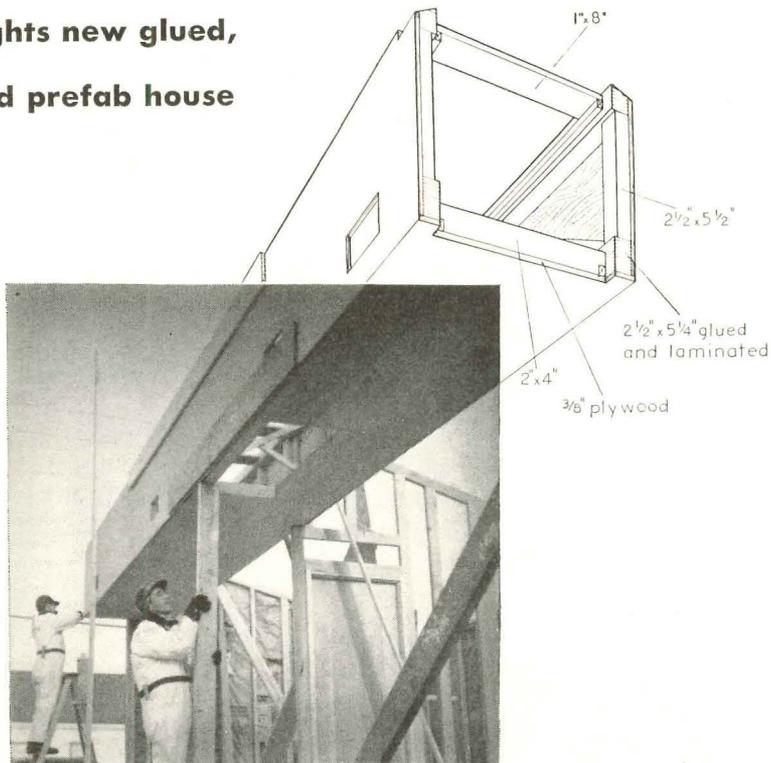
Prize house for this year's Milwaukee Home Show, opening this month: a prefab—the first factory-built model so honored in the show's 19-year history. It incorporates three out-of-the-ordinary construction elements that have stirred interest among trade and public alike:

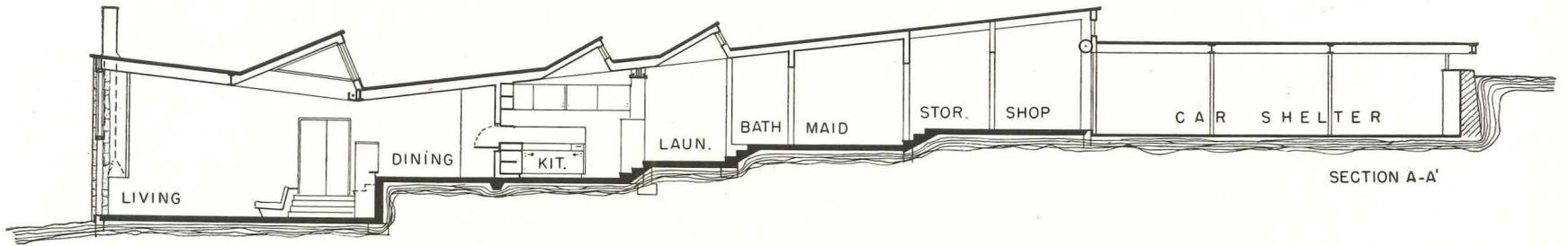
1. The mechanical heart of the house is a 3' x 3'-8" x 36' utility core running from one end wall to the other over the hall. In one neat package trucked from factory to site it bundles: an attic-type gas furnace, heating ducts and registers to every room, wiring and built-in ceiling light fixtures. Structurally, it is a frame box-girder sheathed with plywood, hung from the two end walls of the house as a ridge pole to support the roof without help from the interior partitions. The furnace will be installed in the core itself only where local authorities permit such construction, otherwise in the basement as shown in the sketch of the pilot model at right.

2. The roof is simply a solid deck of 3 1/2" x 3 1/2" timbers of porous Western cedar, double tongue-and-grooved together; topped with building paper and shingles on the outside, left exposed on the inside and finished with varnish or paint to form a sloping, open ceiling. (See detail.) Experience on the job indicates this massive deck has a high insulating coefficient, and the higher lumber cost is offset by faster erection time and lower costs.

3. Interior partitions are made of two layers of 3/4" x 8" cedar planks set edge to edge, horizontally on one side and vertically on the other and bonded together with glue under pressure. Installed for the first time on the pilot model, these thin panels appear to have adequate strength and sound insulating properties.

The three-bedroom, one-bath home show house, designed by architect Edmund J. Schrang and manufactured by Unit Structures of Peshtigo, Wis. took one day to erect and another seven to equip with heating, plumbing and wiring, ready for painters and finishing crews. As one of Unit's stock models, the package will sell to builders for \$7,450, the completed house to buyers at \$15,890. One of the pioneers of the glued, laminated arch in this country, the firm added houses to its production line during the war, currently boasts 29 stock models ranging from \$11,800 to \$30,000, an output of three houses per day.



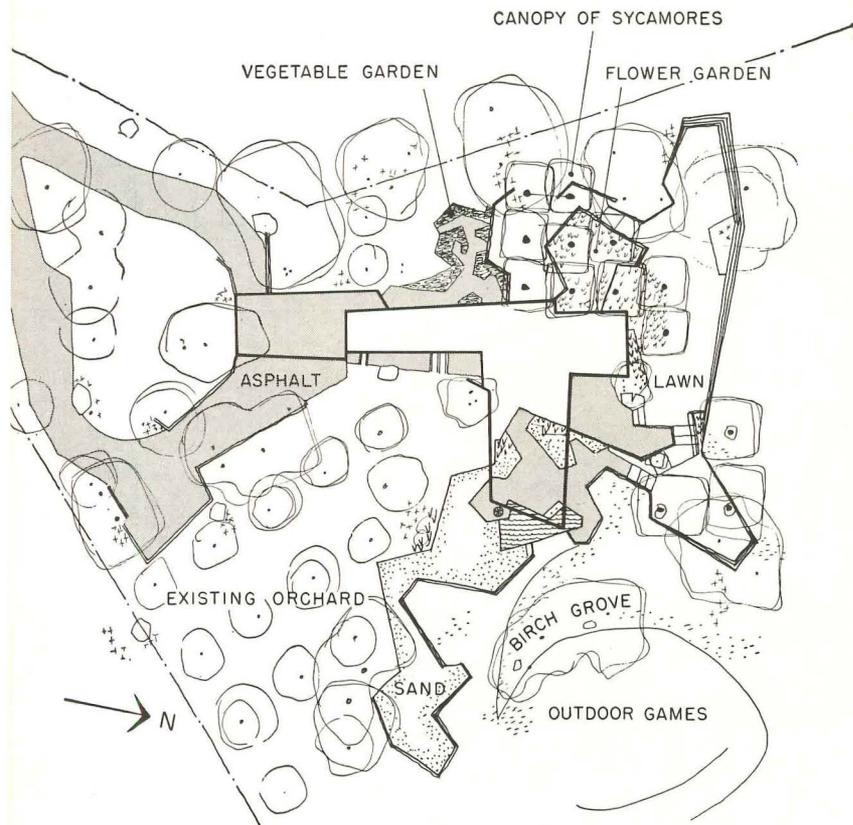


**1. On a Long Island hillside: a house dug into the slope**

*Lionel Freedman*



**LONG ISLAND HILLSIDE HOUSE**

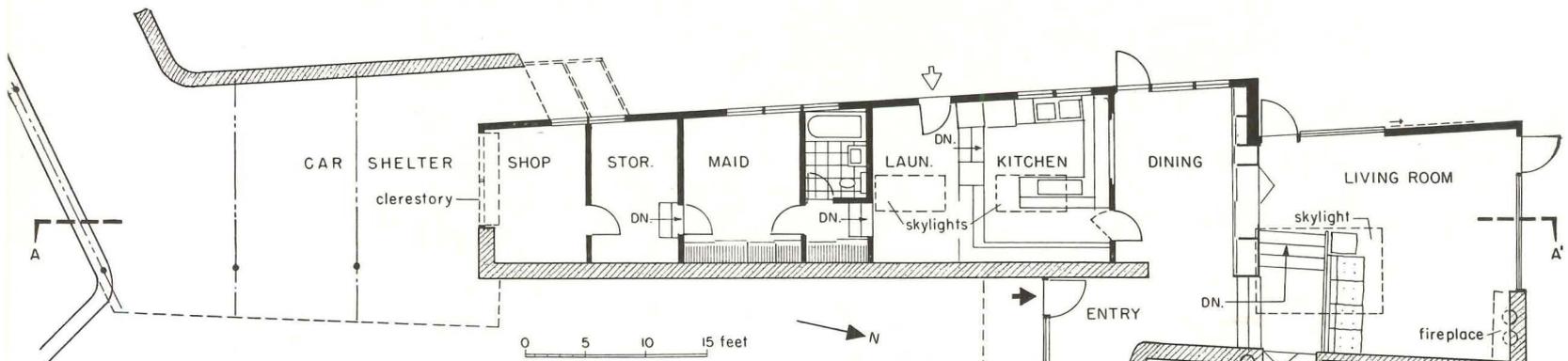


**From off the property this is an invisible house.** You have to come up over the top of a hill to get to it, and when you reach the hilltop, the house sprawls below you down the reverse slope, pulled into the earth amid huge boulders, rock outcroppings and handsome trees, viewing northeast and north across an ever changing salt-water marsh and private beach to Long Island Sound.

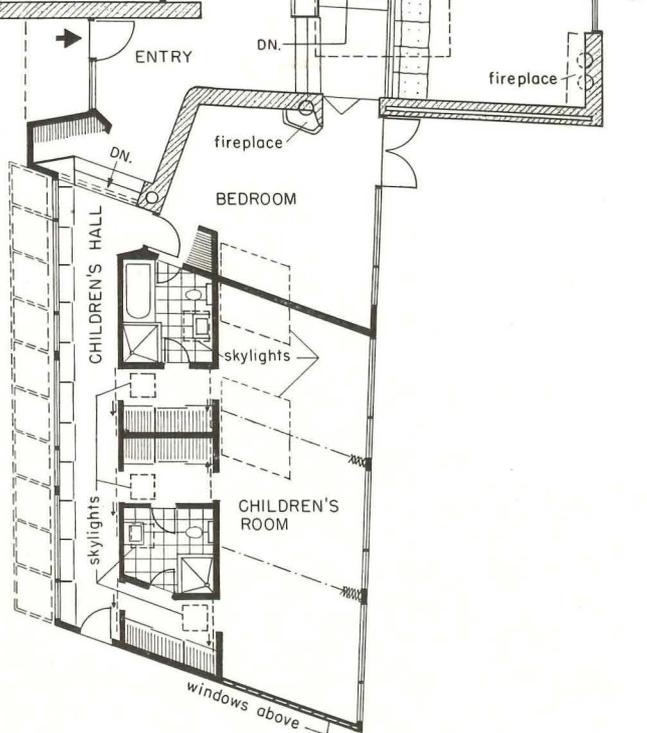
The cavelike car shelter is at the highest point, and then the house steps down the hill, continuing to dig itself in at each step so that it can have individual outdoor living areas on hillside terraces beside all rooms. Just before the last step down, which is the living room, a bedroom wing angles off to the east and finds itself in the air, abandoned by the slope, supported by pipe columns. Underneath is a covered play area for the three children of the family.

The roof of the long downhill wing slants with the hillside until it reaches the living room, where it then reverses pitch to stretch the glass north wall two stories high, giving full scale to the Sound view and letting the dining balcony share it too. The living room walls also are splayed subtly outward to complete this expansion toward the view.

*Landscaping is informal, following contours and emphasizing them with alternate strips of sand and sod. Retaining walls are built of railroad ties.*



*View from east, below. End of children's bedroom is splayed, to receive future addition which is planned to turn back on the natural land contours.*



Photos: Lionel Freedman

