

# House & Home

January 1956 SIX DOLLARS A YEAR—ONE DOLLAR A COPY



What's selling in Los Angeles: Kitchens lead trend to more luxury — page 110

■ Round Table: Forty ways to save on materials handling — page 126

How a small builder tripled his sales — page 158

Philadelphia squeezes bootleg value out of slums — page 61

... .. 126

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# House & Home

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COVER

George Buccola's L.A. kitchen

by Smith & Williams, photo by Julius Shulman





Pacific Air Industries  
for H. Cedric Roberts

*In competitive Los Angeles*

## SALES STAY UP WHEN LUXURY IS BUILT I

**N**OWHERE this winter is homebuilding more competitive than in big, sprawling Los Angeles.

L. A. is competitive because builders are hustling to unload several thousand houses left over unsold from 1955's short-stopped boom. Prospective buyers can pick and choose, sorting out what they like and will buy from what they don't like and won't buy.

**Result: they are demanding—and getting—more luxury features at \$13,000 to \$20,000 than you could find a short time ago in houses selling for \$30,000 or more.**

The paradox of no takers for houses offered at nothing down while others sell briskly despite \$1,000 to \$3,000 down payments has confronted L. A. builders only since last fall (local VA applications fell 60% from October to November). Earlier in the year sales were zooming merrily.

### **Too many looked alike**

Much of what went sour in L. A. last fall was due to putting up the wrong kind of house. But there were also too many tracts all showing about the same kind of house at about the same price: \$14,000.

In most cases these builders had taken their market for granted, counted on easy terms to do the selling for them. Not

only did terms fail but so did searchlights, circus tents, giant road signs and other old standbys.

Skyrocketing land cost was another explanation for lagg sales. Some builders simply tacked the increase onto their selling price and went right on offering the same old model with the startling result: no sale.

In today's prosperous economy many L. A. home-buyers seem to follow an unwritten rule: the more the land costs, better the house must be (even though this means pay more).

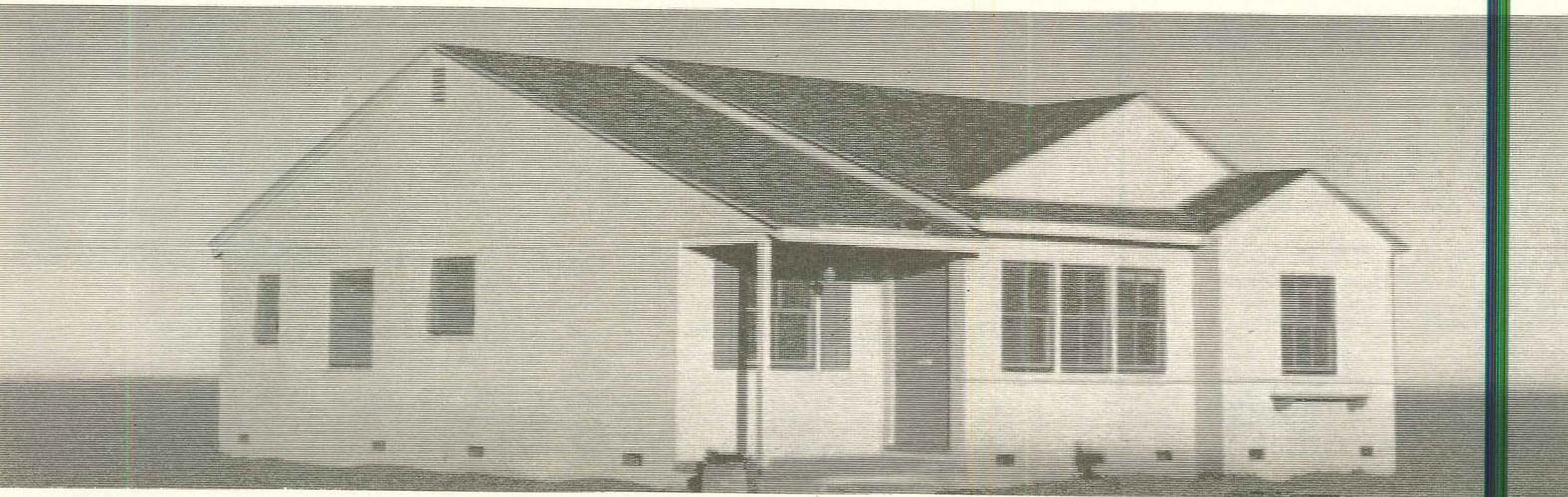
Almost invariably today's fast seller has "something different" to set it apart in the buyer's mind. Experts agree the best help is a choice location. But the site need not be big; "only buyers inexperienced with L. A. yard maintenance go for larger lots."

### **Best seller exteriors follow no rule**

A year ago even poor copies of second-rate modern were in vogue. Today contemporary design must be good in order to sell; and when it is, it's often a best seller (see pages 112-113 and 120-121).

The nondescript, all-stucco house—long a staple—another casualty of the buyers' market. Current successes often its antithesis and combine three exterior finishes: masonry block, stucco and wood.

**But plain Janes no longer sell now that buyers expect today's new features**



Keep your eye on Los Angeles market:

These popular builder house features

first became successes in California



1946... The patio won wide favor



1947... Open plans with glass walls



1950... Low-pitch roofs in demand



1952... Open beam ceilings popular

1956... More luxury in the house

Maynard Parker

Ezra Stoller

Julius Shulman

L. A. style of the moment is the story-book house (see page 115). Rich in ornament and romantic associations, this design recalls the cottage-style revivals popular in expensive Eastern suburbs during the middle 1920's.

#### Interiors are modern

Buyers all agree about the inside: more luxury. This means larger rooms, better detail and finish, more features (called "demand extras" even though included in the price).

One observer reports: "I believe most L. A. builders are approaching contemporary design via the inside of their houses. The insides are open plan, open kitchens, big windows, rear living, cleaner and simpler walls and doors." (See pages 114, 116-120.)

#### Kitchens boast color and built-ins

Architects Palmer & Krisel—designers of many of L. A.'s finest builder houses list "a fully equipped kitchen" near the top of their best sales features. George Siller, who handles advertising for 40 builders, claims: "Built-in appliances are the biggest thing that ever hit the housing market." For photographs and data on what sells L. A. kitchens, see page 119.

#### Two baths are a must

L. A. builders are promoting a new concept of bathroom luxury. Baths are bigger, have more equipment—and there are more of them. One builder put three in a \$15,000 model. Master bath generally has shower, second bath, a tub. If there's an extra half bath, it is "where the kids can use it coming in from outside."

An L. A. visitor comments: "Bathrooms are better lighted than in most other parts of the country. They have bright colors and attractive wallpaper." (See page 118.)

#### Master bedroom is important

Smart L. A. builders do something special for the master bedroom. Frequently it is at opposite end of house from children's rooms, has suite-like effect with closets just inside entrance so hall lends it extra space. Built-in storage units are as popular as private bath. (See page 114.)

#### Models feature living room

The living room gets extra attention in L. A. model houses, is professionally decorated and furnished to convey an impression of the good life. For data and photographs on role of fireplace and other luxury features, see page 116.

#### Don't cheat on family room

Today's best sellers show strong trend to the family room. Most favored location: off kitchen (with floor that matches kitchen's). But it must be a real room: "don't call a third bedroom or den a family room and think you'll get away with it." (Photographs and sales features, page 117.)

#### Garages and patios sell

Almost every best seller in L. A. today has a two-car garage, some oversized. Failure of one large project is attributed partly to its one-car, detached garages.

Paved patios are a usual feature, but the terrace should always be on same level as the interior, not one step down (see page 112-113).

#### "The house that has everything"

If there is a single secret for success in today's L. A. market it probably comes close to this: "Put a team of professionals to work—architect, color stylist, landscape specialist, decorator, realtor. And give the house just as many luxury features as you can crowd in."



**Model house** is one of three built around a landscaped court, each planned and polished like a Hollywood movie set

**Here's how one builder merchandises luxury for \$15,750**



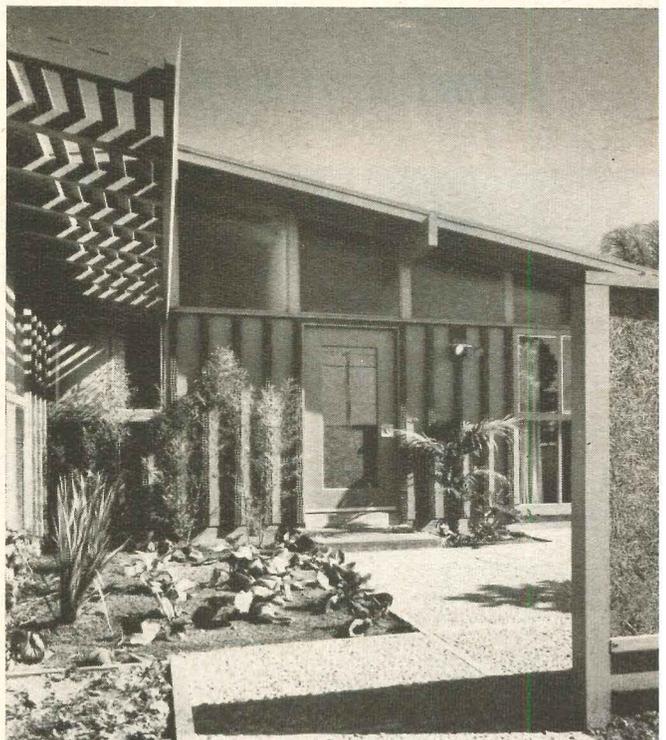
Ross Cortese's Frematic Homes are sold far ahead of construction in his 380-house tract in Anaheim. While some other builders were saying, "Modern is dead," Cortese sold 140 of these houses in the first three months, 60% FHA with down payments of \$2,150. His sales are good because he has worked hard to make every part of his house an attractive feature. His big houses (up to 1,506 sq. ft.) are different from any

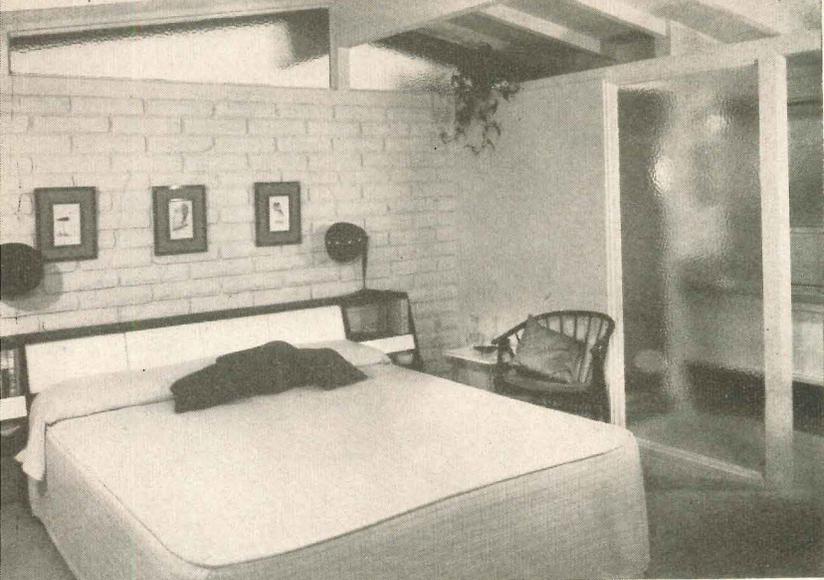
*Photos by Julius Schulman*



**Street view** shows palms, other trees and shrubs which were brought in to give an aura of distinction. Attractive privacy fences, big two-car garages are other sales assets. House designed by Jones & Urmston.

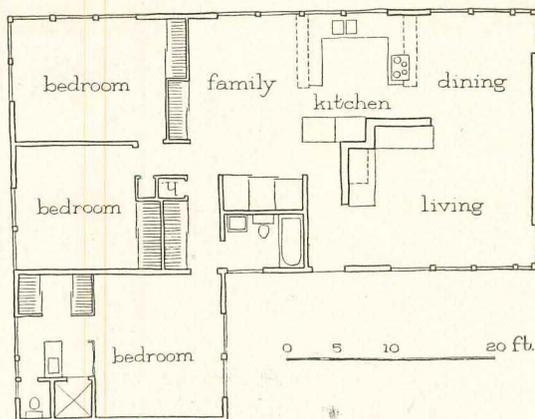
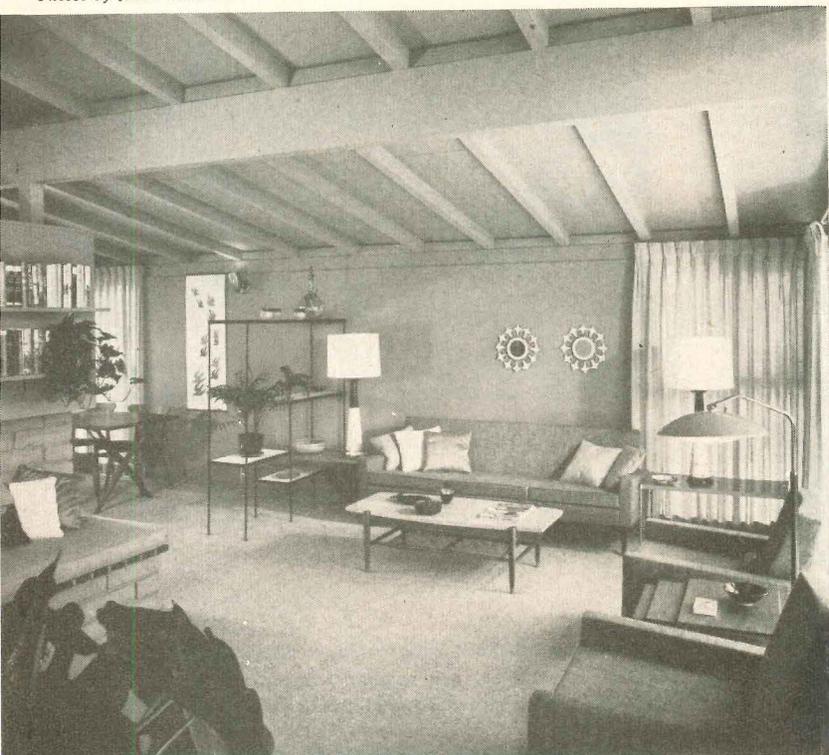
**Entrance court** of each model is different and suggests ways buyers can develop patios for easy maintenance. Front door has handsome opaque plastic panel.





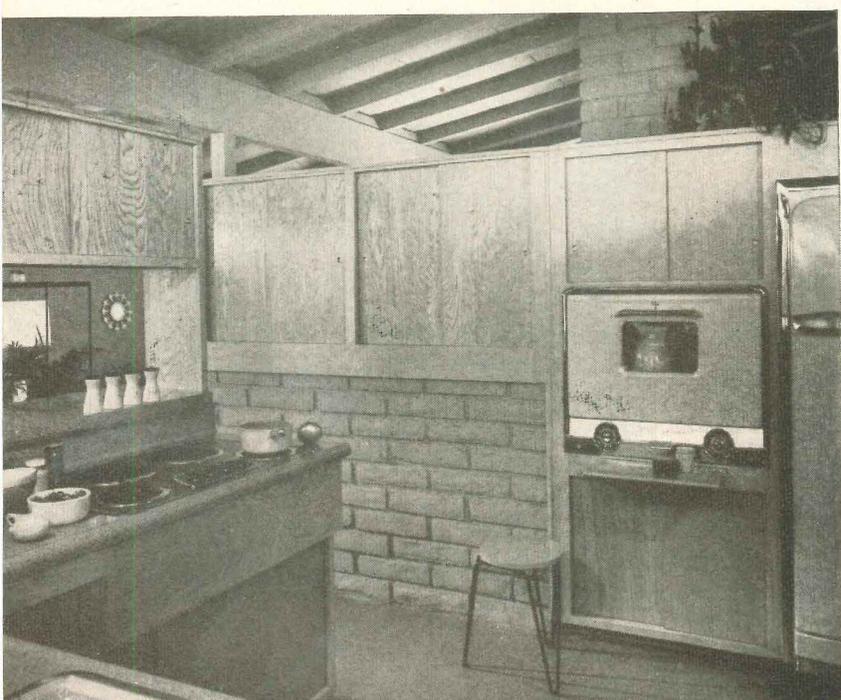
**Master bedroom** in Ross Cortese house is big, its spaciousness emphasized by the use of king-size bed in the model house. Private bath and dressing area (at right in photo) is much admired feature. Other good sales items include: beam ceilings, interior masonry, hammered glass in gable ends and lavatory partition.

Photos by Julius Shulman

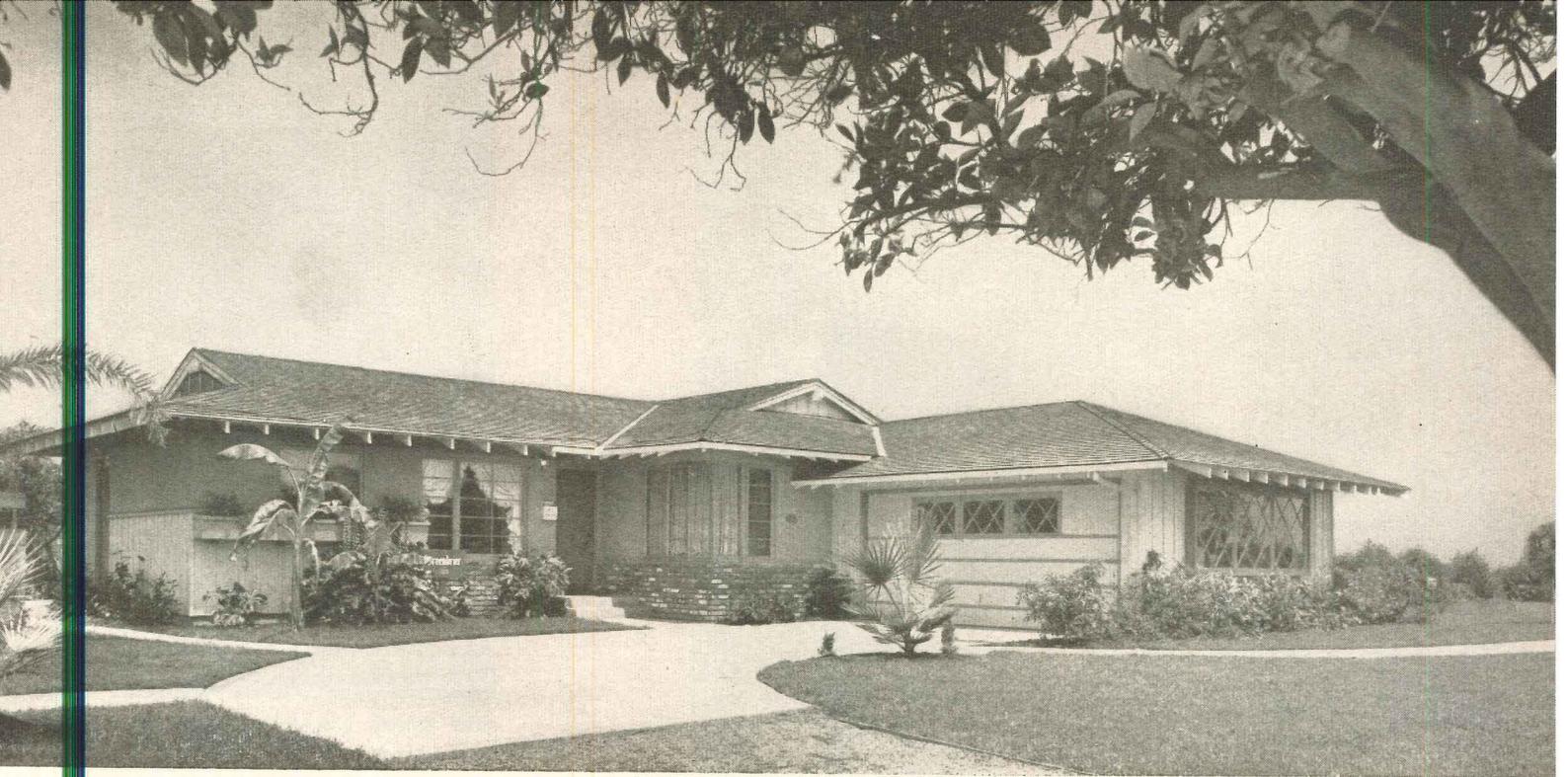


**Open living area** of 1,500 sq. ft. model is furnished handsomely. Glass doors in living and dining room lead to rear patio. Ceilings of living area are acoustically treated. Family room is centered for general use and bedrooms are well located for privacy.

## Interior of \$15,750 model is loaded with sales features



**U-shaped kitchen** of the Frematic Home is a "Betty Furness" promotion and the pivot point for billboard merchandising. Color-matched appliances, all built-in, are: cooking units, refrigerator and washer-dryer. Garbage disposer and exhaust fan are also included. Natural ash finishes, ample work surface and masonry add to kitchen's appeal.



California provincial architecture like this fulfills many buyers' dreams

## But modern has no monopoly on luxury

... these "story-book" houses are big sellers, too

Among the best selling designs in Los Angeles today are houses like these four.

This type has been called provincial, story book—even Hansel & Gretel. Two typical examples, named "Cinderella" by their designer (see photos, right), sold so well that astute builders like Reese Myers (now president of L. A.'s Home Builders Institute) are said to be paying up to \$5,000 for plans.

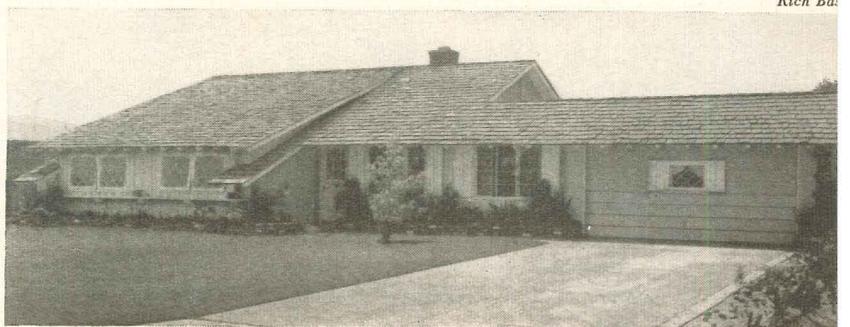
With cottage style architecture, small leaded window panes, scalloped gable ends and other folksy characteristics, these models represent a complete swing of the design pendulum away from contemporary. Architects and sales experts around L. A. explain it as a reaction to the thousands of poorly designed modern houses thrown on the market during the past two years.

Said one architect: "There's more bad modern in Orange County than anywhere else in the country." Much of it was a bad copy of a bad original. Buyers turned against it and looked for something new and different.

The market shifts so fast in Southern California that builders are wondering what will happen if too many firms duplicate the Cinderella type. In a builders' meeting early this winter, Walter Keusder (past president of HBI) warned his colleagues: "If too many of you copy this kind of design it will be a dead duck in six months."

The popularity of these houses indicates there is no one kind of design that is "right" for any area, because buyers are individuals and want many different kinds of houses. Of the four best sellers among all the houses handled by Realtors Walker & Lee, two are contemporary, two are traditional.

Rich Ba



Cinderella house, priced at \$13,600, has garage-door shutters, unusual roof



Another Cinderella features pseudo-Victorian gable end, leaded windows



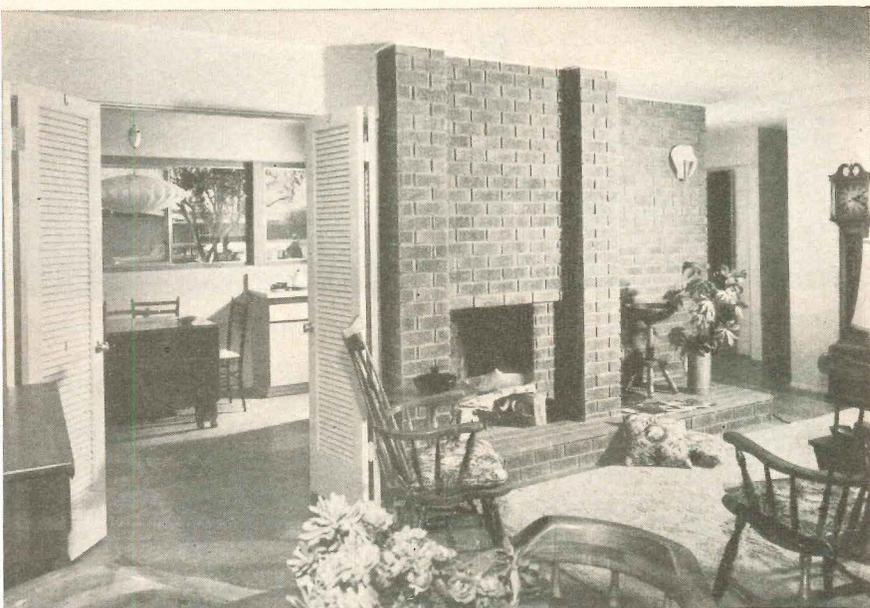
Aldon's version helped make firm one of nation's 15 top builders

Julius Shulman

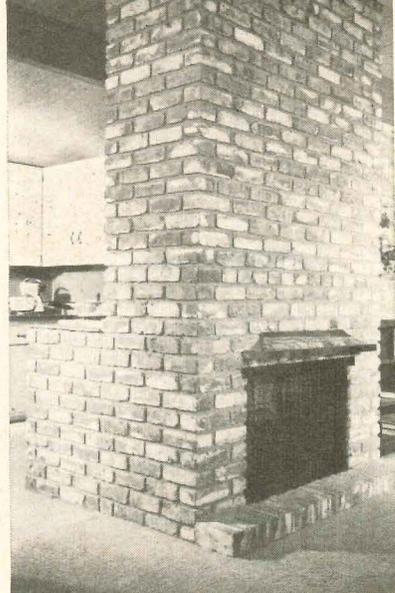


**Masonry wall** for fireplace with black metal hood dominates the room, adds to expensive look of this \$17,600 house. Flush joint between glass and masonry wall is a dramatic feature, is practical for temperate L.A.

Photos (above and below) Julius Shulman



**Louvered folding doors**, cork floors, and big brick fireplace wall give this living room in a "story book" house extra appeal for many buyers.



Robert Cle

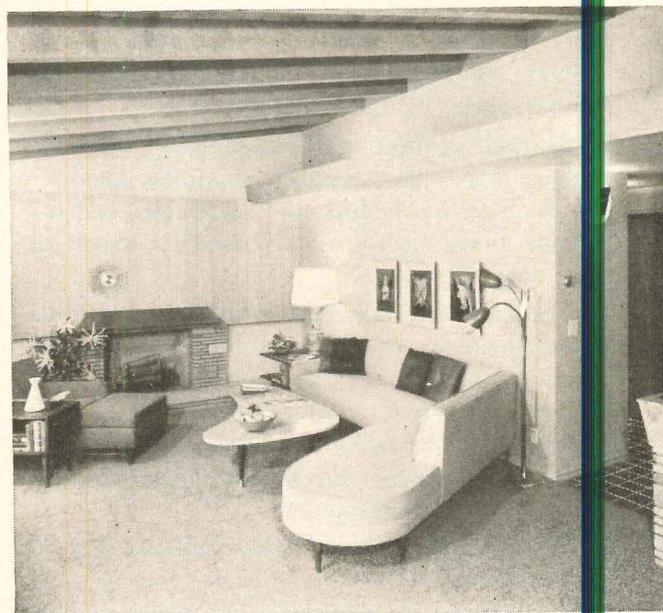
**Old brick** around fireplaces is a best-selling feature. Variations include range built into kitchen extension of this free-standing chimney.

*Luxury features sell*

## THE LIVING ROOM

Fireplaces are a sales necessity in houses over \$12,500, according to L.A.'s leading sales firm, Walker & Lee. These photos show that when fireplaces become important design features they also become sales features. Successful builders work as hard to make their living rooms attractive as they do their kitchens. They spend \$75 to \$125 for lighting fixtures, make walls handsome with masonry, wood paneling and wall paper, pay extra to employ professional decorators and color stylists.

Joseph Alpern of Parkwood Terraces



**Wood paneling**, open beam ceilings, light trough, tiled hallway and stone planter box are big attractions.



California provincial house has family room in character with exterior design

Julius Shulman of Aldon Construction

Luxury features sell **THE FAMILY ROOM**

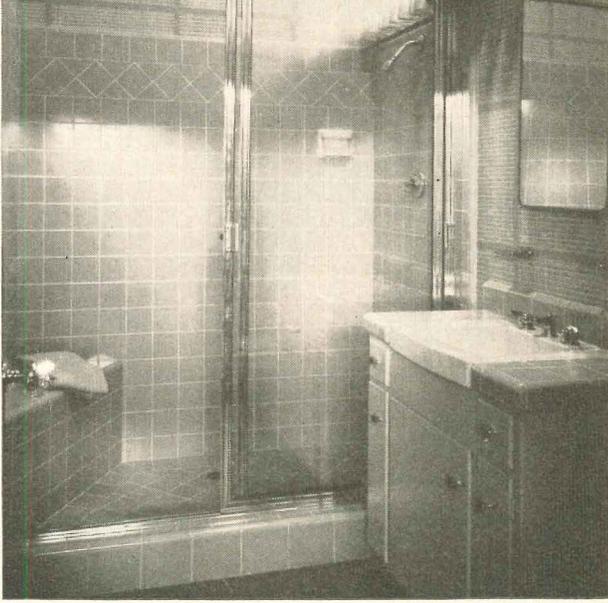
Photos Julius Shulman



**Convertible bedroom** is uncommon but well received feature. Fireplace and big masonry wall are keys to room's convertibility.



**Family room** is always found in L.A.'s current best sellers. Note concealed laundry, folding door, paneling.



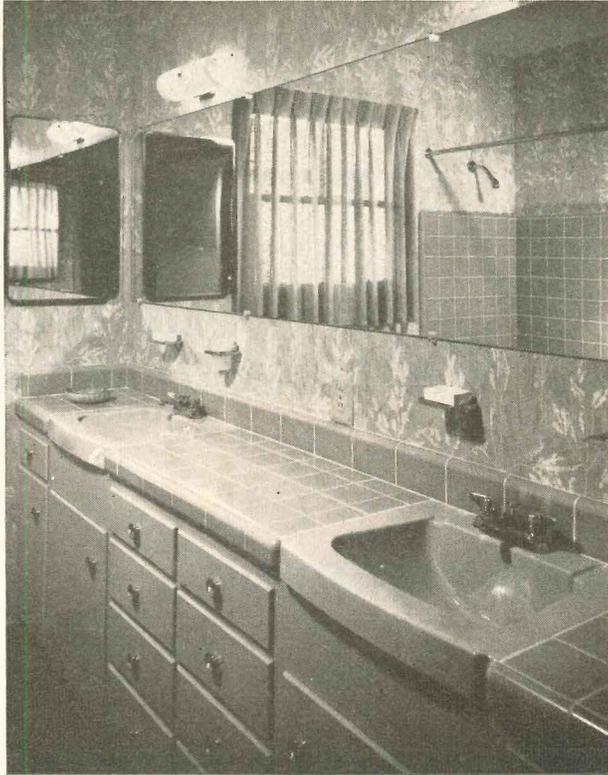
*Luxury features sell*

## THE BATHROOM



**Over-size shower** stall, lots of tile and color, better hardware give new elegance to this bath.

*Photos by Robert Cleveland of a Sun Gold house*



*Photo by Joseph Alpern of Parkwood Terraces*

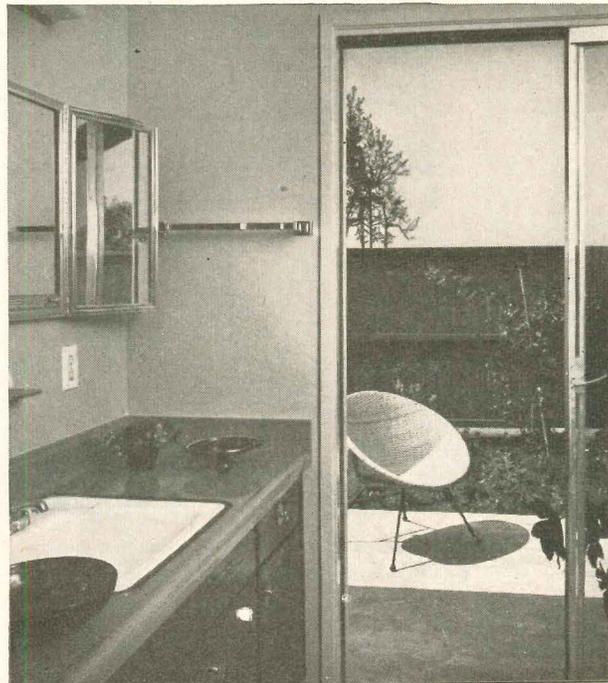


**Marble top** counters and double basins are used in houses priced as low as \$15,500.

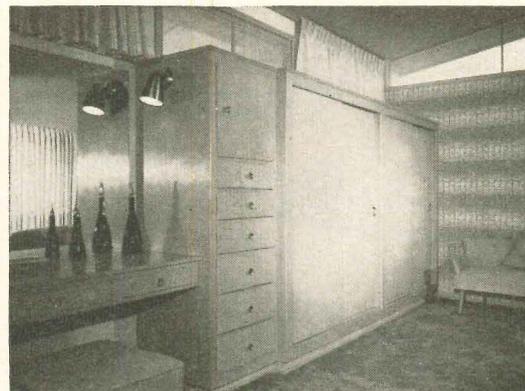


**Big mirrors,** storage space under basins, colorful wallpaper, better light fixtures are "best-sellers."

*Photo by Julius Shulman*



**Sliding glass** doors from master bath to private patio are a luxury touch of indoor-outdoor living.



*Robert Cleveland of Sun Gold*

**Built-in dresser,** drawers and closets off bath lend air of deluxe suite to design of master quarters.



Julius Shulman

**Color splashed kitchen** with its matched color appliances is one of most effective answers to competitive market

*Luxury features sell* **THE KITCHEN**

Photo: Julius Shulman; Architects Palmer and Krisel



**Built-in ovens, burner tops and free standing counter** with easy to maintain surfaces are typical

Kitchens get a closer inspection from buyers than almost any other room in Los Angeles houses.

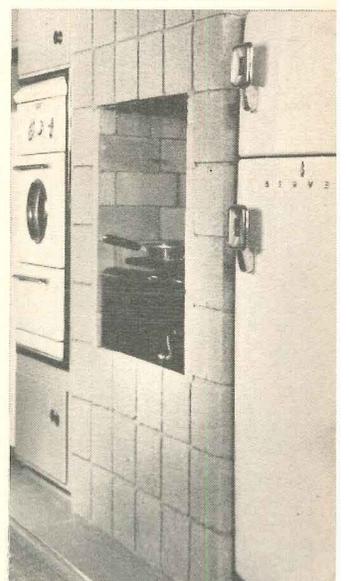
In today's buyers market builders hustle to keep up with every new kitchen feature that adds extra sales appeal. The real bonanza is the built-in oven.

Up to now few builders have been in the habit of including a stove in a house. But after the success of the built-in oven, practically no one leaves it out, even in a \$12,000 model.

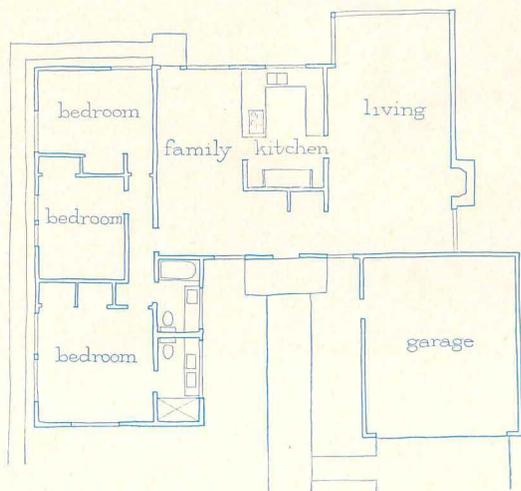
In one tract of 624 homes in Orange County, 400 houses had been sold when business hit last fall's slump. The builder reacted by putting built-in ovens in three models on an optional basis and immediately sold the remaining 224 houses. To top this, the buyers of the first 400 houses came back and paid extra to get the same equipment.

A breakfast bar in the kitchen is also a big sales feature, but its location is important. A spot between the kitchen and the family room is accepted, but not between kitchen and living room.

Robert C. Cleveland of Sun Gold

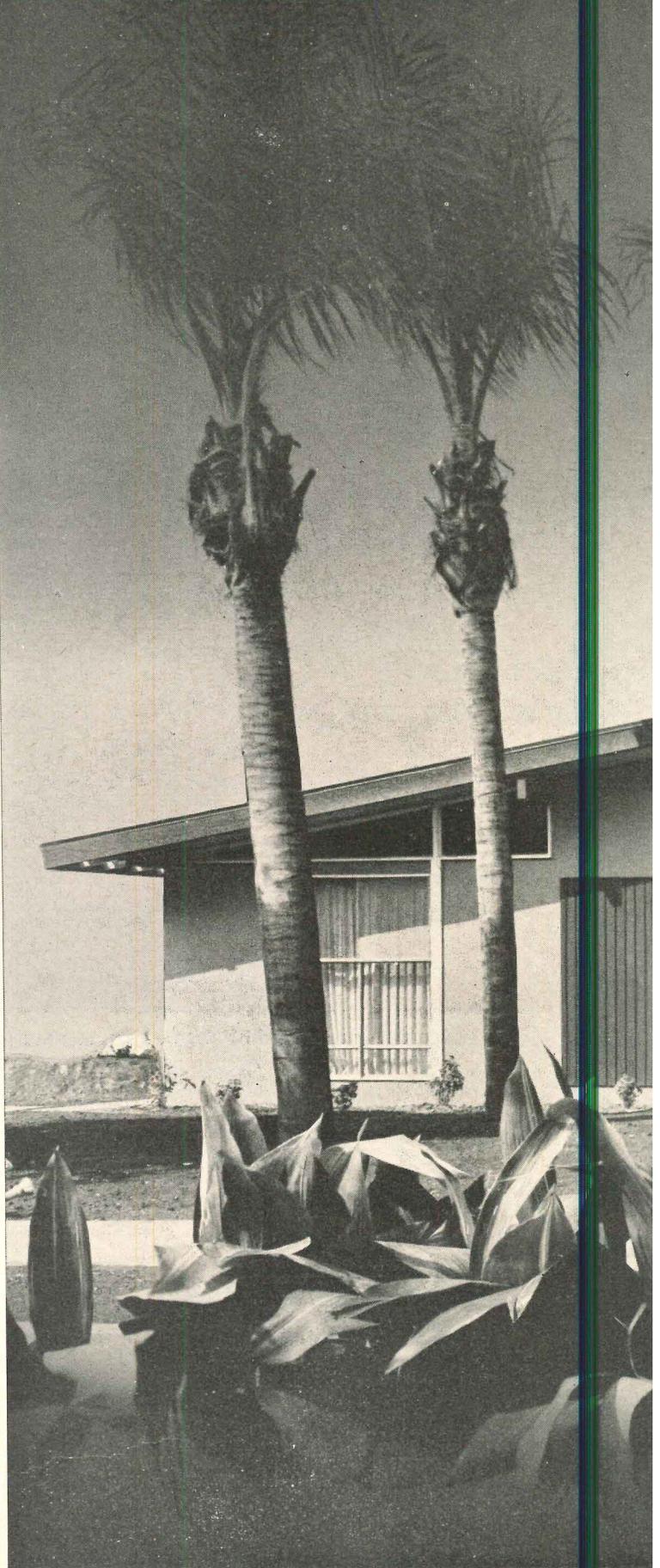


**Barbecue** in concrete block offers "something different"



**Square plan** balances bedrooms at one side with living room on the other. Family room is centrally located, opening to garden, kitchen, entry and hall.

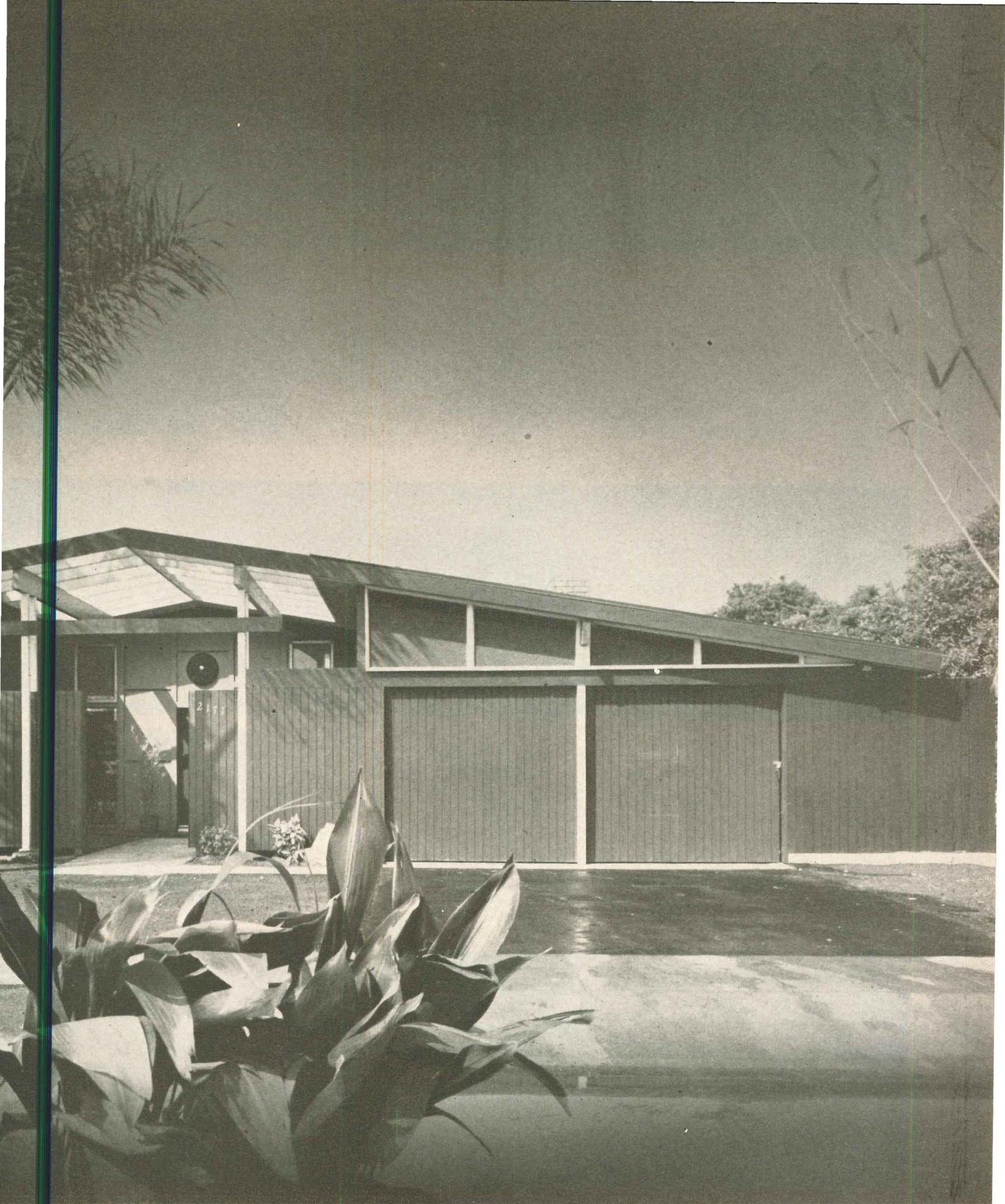
**Living room** fireplace is set on raised quarry tile hearth and in a masonry wall which extends outside as part of the patio. Big window wall makes an already very large room seem even more spacious.



**This \$18,500 model** of Sherwood Forest home sold 16 in ten days

*Los Angeles lesson:*

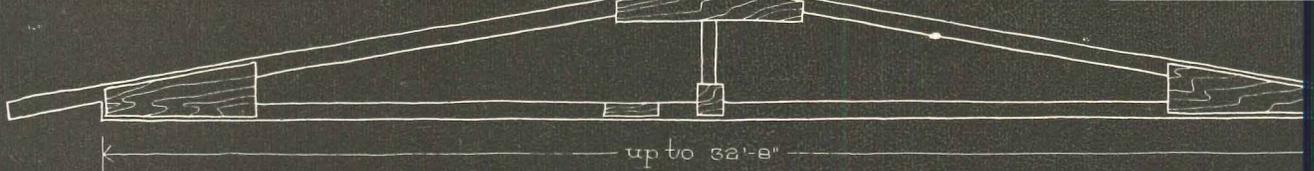
**At any price, in any style**



**...e try for perfection wins**

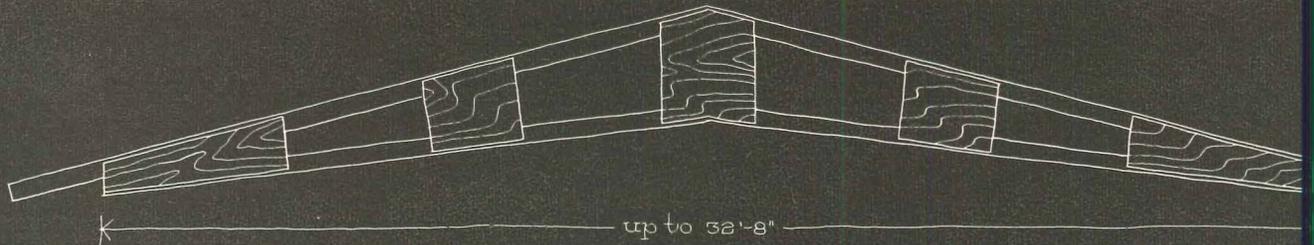
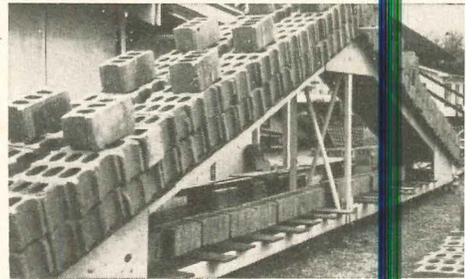
This fastest-selling Sherwood Forest model is a fine example of the contemporary design architects like Smith & Williams are doing for Southern California builders.

But the real point about this house is not its *particular* style. Far more important is the fresh spirit that sets it off from tired copies of yesterday's best sellers. Even more noteworthy is the meticulous care Builder George Buccola gave to every phase of his project—attention reflected again and again in homebuyers' appreciative appraisals.



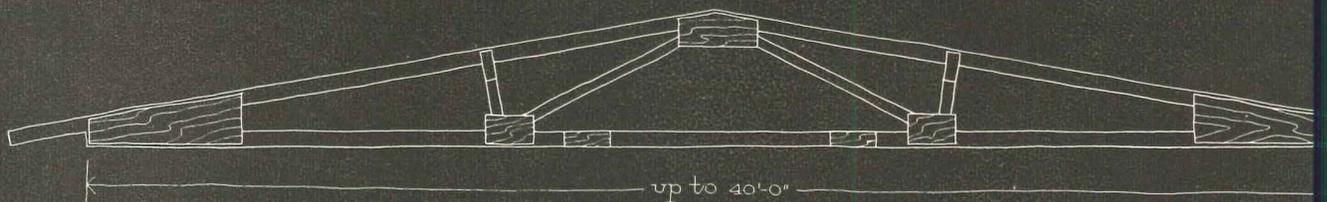
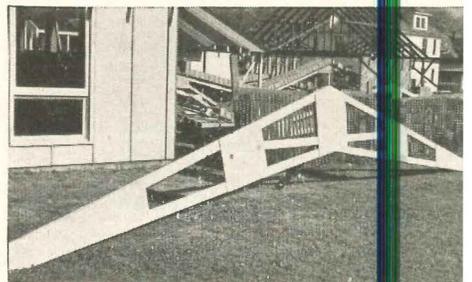
**This new king post truss is the cheapest way to span 24'8" or 32'8"**

"This new geometry makes all other truss designs obsolete for spans up to 24'-8" and also for 32'-8", says Jim Lendrum of the Small Homes Council. "It is not only cheaper and lighter [see table on opposite page] but stiffer and stronger too." Tested at Illinois and Purdue (see cut) it deflected only 3/4" under 100 psf roof load, 5 psf ceiling load. It is less economical than a W at 28' because it requires 2 x 6 chords.



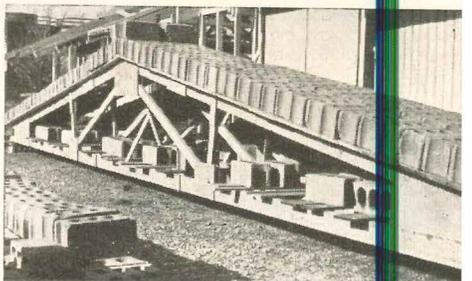
**This new web frame gives you a better sloped ceiling for less money**

Now builders can have the sales appeal of a sloped ceiling at lower cost than plank and beam construction. They can also avoid the condensation and insulation problems common when the roof does double duty as the ceiling. These new web frames are economical up to 32'-8". "They line up perfectly when used with flat ceiling trusses." Pitch is fixed at 3-in-12 for upper chords, 1 1/2-in-12 for lower.



**This W truss can now be used to save money up to 40'8" spans**

New tests show the glue-nailed truss can be economical far above the 28' limit of the old truss. That makes it truer than ever that the cheapest way to make a house bigger is to make it wider, using the added depth for better storage or inside baths. These trusses can also be used (at some extra cost) to turn the ridge the short way of a house 40' long. Like kingpost, pitch can be 1/12, 2/12, 3/12 or 4/12./END



# NOW YOU CAN SAVE TWICE AS MUCH BY SWITCHING TO TRUSS FRAMING!

Only a year ago the best truss you could use was a nailed truss that saved almost no lumber and stopped at a 28' maximum (because there was no room for all the nails needed for any wider span).

The first glue-nailed truss was announced by the Small Homes Council early in 1955 (H&H, March '55)—a W truss that required less labor and 35% less lumber. Maximum span was still 28'.

Now the Small Homes Council has pushed the advantage of glue-nailing much further. 1) It has developed a new kingpost truss that is much simpler to make and uses up to 50% less lumber than the old nailed truss. 2) It has developed a glue-nailed web frame for sloping ceilings. 3) It has tested and proved the glue-nailed W truss up to 40' spans. (The kingpost is cheaper at 32', but not at 28').

Today not ten new houses in a hundred use any kind of truss framing to cut costs, and not one of the ten uses anything better than the old nailed truss!

The economy of the newest trusses is much greater than the economy of last year's first glue-nailed trusses, which in turn was much greater than the economy of the old nailed truss.

How much longer can builders afford to pass up the bigger savings offered by better, lighter, cheaper trusses?

*Any good lumber dealer can glue-nail the trusses or the builder can make them himself in a shed where he can keep the temperature from falling below 50°. They can be moved without damage in the first half hour, but after that the glue must be allowed to set for eight hours. FHA approves them only when assured that they were made under these controlled conditions. Instruction sheets on making the new trusses can be ordered for 25¢ each from the Small Homes Council, University of Illinois, Urbana, Ill. The roof pitch must be specified.*

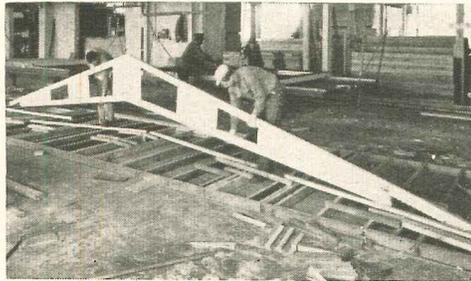
Look how much less lumber the three new trusses use!

Span	New glue-nailed trusses			Standard W nailed truss	
	Kingpost sloped W				
24' 8"	37	40	48	75	board ft. top chord bottom chord sq. ft. plywood weight in lbs.
	2 x 4	2 x 4	2 x 4	2 x 6	
	2 x 4	2 x 4	2 x 4	2 x 4	
	13	25	10	none	
	89	130	108	162	
28' 8"	69	42	56	87	board ft. chords sq. ft. plywood weight in lbs.
	2 x 6	2 x 4	2 x 4	2 x 6	
	16	25	10	none	
	156	150	142	185	
32' 8"	75	71	85	IMPRACTICAL	board ft. chords sq. ft. plywood weight in lbs.
	2 x 6	2 x 6	2 x 6		
	34	36	18		
	195	210	218		
36' 8"	IMPRACTICAL	IMPRACTICAL	94	IMPRACTICAL	board ft. chords sq. ft. plywood weight in lbs.
			2 x 6		
			40		
			265		
40' 8"	IMPRACTICAL	IMPRACTICAL	104	IMPRACTICAL	board ft. chords sq. ft. plywood weight in lbs.
			2 x 6		
			40		
			287		

Notes: All figures based on 3-in-12 roof pitch. Sloped ceiling & W truss use 1/2" plywood gussets, kingpost uses cheaper 5/16" plywood. Conventional nailed trusses require about 175 nails.

Photos: Courtesy Fairhill, Inc.

1. Five men made the 23 sloped-ceiling trusses needed in 4 1/2 hours. Photo shows truss raised for glue "squeeze-out."



2. For this house trusses span 28'. Each weighs 150 lbs., is easily lifted by two men. Sloped-ceiling covers whole house.



This builder made his trusses and roofed in his house in 36 man-hours

3. Two men on roof set each truss in place, two others help from below. House built by Memphis prefabricator Fairhill, Inc.



4. Trusses were put up and sheathed in 1/2 hours for this one house. Test time should be less on production houses.



# LU-RE-CO DEVELOPS A NEW SYSTEM OF NON-LOADBEARING WALL PANELS

Here is a simple answer to a tricky problem:

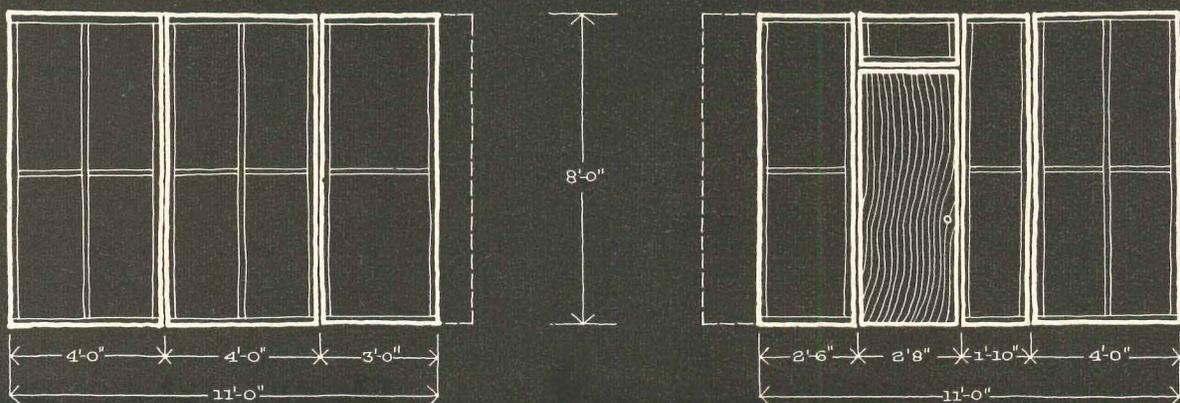
**The problem:** How can you panelize the interior of a house on a 4' jig when the walls of each room may be any odd length?

**The answer:** Take advantage of the standard 8' ceiling height, so two 4' panels laid sideways will always be ceiling high. Then it will be easy enough to make them longer or shorter to fit any room.

This simple answer was worked out for Lu-Re-Co by the Small Homes Council after experiments with vertical panels failed because so many odd widths were needed. (See drawing below.) The panels will have one center stud and use about 20% less lumber than conventional framing 16" on centers.

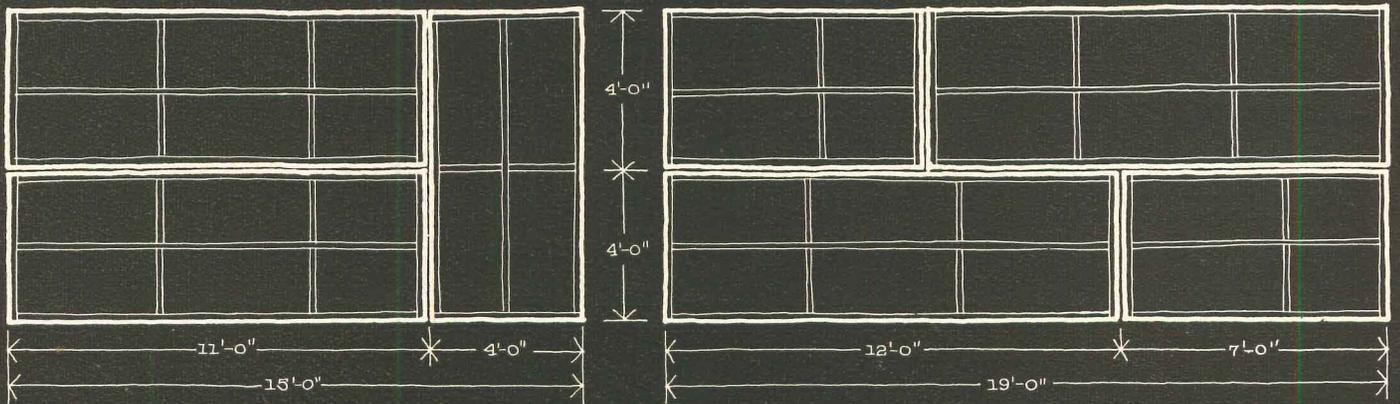
Increasing use of roof trusses will permit more and more use of such non-load bearing partitions. Even with conventional roof framing they can be used for one or more walls of every room.

**You can't use 4' vertical panels, for you would need too many odd widths**

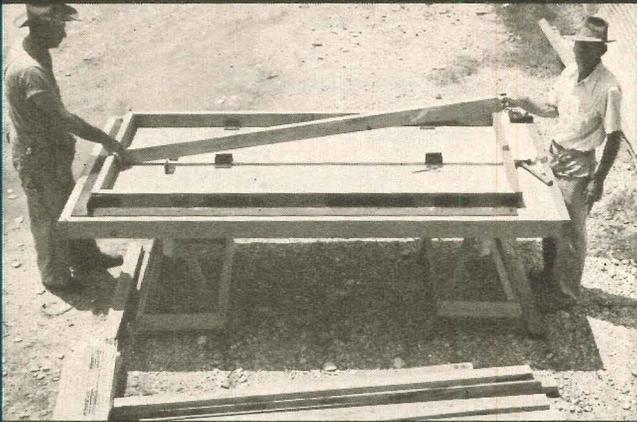


For example; An 11' wall could use two 4' wide vertical panels, but the third would have to be an odd width. A door in the partition would usually require not one but two odd-width panels.

## The big idea is to run the panels horizontally



Right drawing shows how horizontal panels could be lapped for walls between 16' and 24' long. (sometimes with one vertical) to make any wall up to 16' long. Left drawing shows how horizontal panels never longer than 12' could be pieced together

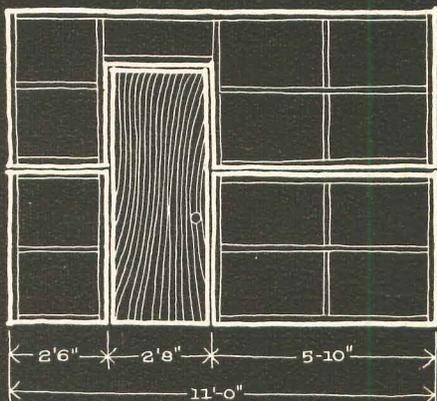


### You can make the panel in jig time on the same jig

← With a light 4' extension table (when needed) the regular Lu-Re-Co jig can make any panel length up to 12'. Wall board should be applied to one side only on the jig.

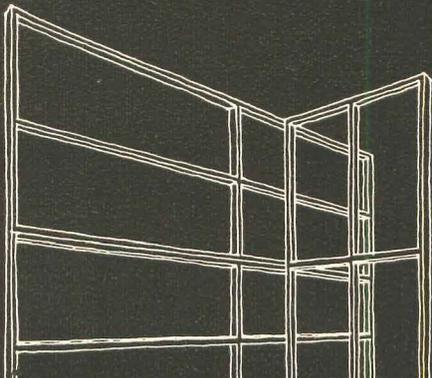
### You can frame doors on the jig too

← The rough opening in the upper panel should be cut  $3\frac{1}{4}$ " wider than the actual rough opening to leave space for an extra 2' x 4' on either side to form the door bricks and tie the top and bottom panels together. For stiffness, wall board should be applied in a solid sheet covering the door opening and cut out after erection. Lower panels would be two odd lengths with wall board projecting  $1\frac{5}{8}$ " to cover the extra stud at the opening.



### You need no extra stud where two partitions meet

← The horizontal stud serves as a nailer wherever two of these partitions meet. The intersecting wall should go against the wall board side of the intersected wall.





Photos: Walter Daran

# Round Table explores how to speed great savings in Materials Handling

Just what our industry must do to cut its materials handling costs \$1 billion a year is spelled out for the first time on the next seven pages.

This is Part II of the report of an industry Round Table jointly sponsored by HOUSE & HOME, the Prefabricated Home Manufacturers' Institute, and the Lumber Dealers Research Council.

The Round Table will reconvene next month to consider ways to speed action on its recommendations.

## The panel

### TECHNICAL ADVISER

JAMES T. LENDRUM, *AIA director*  
*Small Homes Council, University of Illinois*

### MODERATOR

P. I. PRENTICE, *editor and publisher*  
*HOUSE & HOME*

### For the Customers

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CLARENCE THOMPSON, *chairman*  
*Lumber Dealers' Research Council*  
RAYMOND H. HARRELL, *research director*  
*Lumber Dealers' Research Council*  
JOHN MOELING, *chairman, planning committee*  
*Materials handling section, Lumber Dealers'*  
*Research Council*  
R. L. SWEET, *executive committee*  
*Lumber Dealers' Research Council*

#### PREFABRICATED HOME MANUFACTURERS

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*PHMI*  
*President P. S. Knox Corp.*  
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HENRY HARNISCHFEGER, *executive vice president*  
*Harnischfeger Corp.*  
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*Modern Homes Corp.*  
GEORGE E. PRICE, *vice president*  
*National Homes, Inc.*  
DONALD SCHOLZ, *president*  
*Scholz Homes, Inc.*  
HARRY H. STEIDLE, *manager*  
*Prefabricated Home Manufacturers Institute*

#### NATIONAL ASSOCIATION OF HOME BUILDERS

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*Research Institute*  
RALPH JOHNSON, *technical director*  
ERNEST ZERBLE, *chairman*  
*Small Builders Committee*  
JOSEPH GOLDMAN, *vice president*  
*American Community Homes*  
WILLIAM WEIST, *chief engineer*  
*Place & Co.*  
LEONARD HAEGER, *technical director*  
*Levitt & Sons, Inc.*

#### AMERICAN INSTITUTE OF ARCHITECTS

JOHN HIGHLAND, *past chairman*  
*Home Building Industry Committee*

# Mechanized materials handling could save us at least \$1 billion a year

## Round Table report: part 2

### For the Manufacturers

#### POWER TOOLS

- S. H. CROSS, vice president and general manager  
*Electric Tools Div., The Stanley Works*
- R. G. HORNER, vice president  
*Black & Decker Manufacturing Co.*
- WILLIAM JONES, general sales manager  
*DeWalt, Inc.*
- IRVING G. MEYER, sales manager  
*Delta Power Tool Div., Rockwell Manufacturing Co.*
- MATHEW PATULSKI  
*Power-Cable Machine Co.*
- PAUL WATTS, vice president  
*Skil Corp.*

#### FASTENERS

- JAMES CLARKE, sales service manager  
*Rainset Fastening System, Olin Mathieson Chemical Corp.*
- WILLIAM COOK, assistant sales manager  
*Stanley Steel Strapping Div., The Stanley Works*

#### EARTH MOVING EQUIPMENT

- PATRICK CONOVER, manager industrial sales  
*Tractor & Implement Div., Ford Motor Co.*

#### TRENCHING EQUIPMENT

- ROBERT W. HUMES  
*Shurman Products, Inc.*
- J. A. PENOTE, vice president and general sales manager  
*Cleveland Trencher Co.*

#### DRILLING EQUIPMENT

- CHARLES A. SNYDER, chairman of the executive committee  
*Richmond Screw Anchor Co., Inc.*

#### TRUCKERS

- ROY ROBINSON, president  
*Pro-Fab Transit Co.*

#### MATERIALS HANDLING

- JAMES H. W. CONKLIN, former general sales manager  
*Phila. division*
- Yale & Towne Manufacturing Co.*
- R. H. DAVIES, vice president  
*Clark Equipment Co.*
- R. L. FAIRBANK, sales manager  
*Traco Motor Corp.*
- RICHARD JAY, sales manager  
*Co. Wood Industries, Inc.*
- DAVID MULLIGAN, vice president  
*American Tractor Corp.*
- ROBERT F. MOODY, sales manager  
*Hyster Co.*
- RUSSELL A. MOORE, sales manager  
*Traveloader*
- Hyster-Raulang Co.*

#### POWER MACHINERY

- NELSON THOMPSON, vice president and general sales manager  
*Hemelite Corp.*

#### CONVEYORS

- PAUL R. HATCHER, manager  
*Materials Handling Div., Richards-Wilcox Manufacturing Co.*

Ever since the Pyramids, the No. 1 building cost and the No. 1 building problem has been materials handling—getting our heavy materials to the site and in place for erection.

Today the building industry moves more heavy materials than any other industry except perhaps steel; it is one of the two main supports of railroad earnings.

Not counting 60 million tons for slabs and foundations, home building alone ships 30 million tons a year of products that go into houses above ground. Most of those 30 million tons get shipped, stored, and reshipped again and again as they pass from producer to fabricator to distributor to builder.

And most of those 60 billion lbs. are still picked up and moved not once but often 10, 25, or more times the same way the Pyramid builders would have moved them—by hand.

*For example: even National Homes, which has carried mechanization very far, has to unload and stack 87,000,000 bd. ft. of lumber a year a piece at a time by hand, at a cost of \$150,000-a-year-plus.*

*For a more common example: the average builder pays \$12 for the \$2-an-hour labor needed just to carry \$120 worth of dry wall from the street where it is unloaded into the house to the room where it will be used.*

## One-fourth of all the cost of a new house pays only for moving our heavy materials, we are told

That huge cost could be cut in half if our industry took full advantage of all the better materials handling tools and methods that are now available to us. That is another way of saying efficient materials handling could save us at least \$1 billion a year.

This \$1 billion saving can be compounded by greater use of prefabricated panels and other preassembled components. The more we mechanize our materials handling the bigger the components we can lift and carry and the less pieces we need assemble at the site.

*So the more we cut our materials handling costs the more we can cut our erection costs too by building with parts instead of pieces.*

In the more competitive years ahead we shall need every penny of these two-fold savings if home building is to meet the tougher and tougher competition of other industries and get our full share of the bigger consumer dollar.

## Other industries mechanized years ahead of us

Now it is high time for us to catch up, learning from their experience, borrowing where they had to pioneer, starting off with equipment that has taken years to develop.

## We cannot afford to move materials a few pieces at a time by hand

The basic way to cut our handling costs is to move our materials from first to last as "unit loads"—loads which combine scores or hundreds of pieces in a single package. These unit loads are far too heavy for human muscles, but they can be moved quickly and cheaply by mechanical muscles.

Our materials should be packaged as unit loads by the producers (see Problem No. 1 below), carried as unit loads by the railroads (see Problem No. 2), unloaded, stored, reshipped, and delivered as unit loads by the dealers (see Problems Nos. 4 and 6), handled as unit loads at the site by the builders (see Problem No. 5).

### **But here is the rub:**

Today only one lumber dealer in ten is equipped to handle unit loads; only one box car in eight has the wide doors needed for unit loads; only one producer in a hundred is equipped to package and ship unit loads; only one builder in a thousand is equipped to receive unit loads.

What becomes of the unit load saving when a producer ships dry wall or roofing in 2,000-lb. packages to a dealer who cannot lift them? What saving is there (except in breakage) when 240 bricks stacked and strapped to a cardboard pallet are delivered to a builder who has to break up the load and pay the bricklayer's helper \$2 an hour to carry the bricks eight at a time to the place where they will be laid?

Here is a real challenge to industry team work and concerted action, for the more producers, carriers, dealers, and builders get into the act the greater the saving each can derive from his investment in materials handling equipment. For example:

The more producers ship unit loads, the more use and the more saving a dealer can get from his materials handling investment.

The more dealers mechanize their handling, the more profitable it will be for producers to shift from manual loading to unit loading.

The team work we need will involve hundreds of producers (most of them small), hundreds of mills (most of them small), thousands of lumber dealers (most of them small), and thousands of builders (most of them small). All these are potential customers for materials handling equipment. They add up to more potential customers than the manufacturers will find in any other industry—so many potential customers that it should be well worth the manufacturers' while to join the team and devote more study and sales effort to our problems:

1. To show more of us how to make better use of their present products, most of which are designed to move heavy loads and operate on factory floors or paved roadways;
2. To develop more small and versatile multipurpose units that even small operators could afford to own—versatile units that would handle loads of one ton or less over rough or muddy ground.



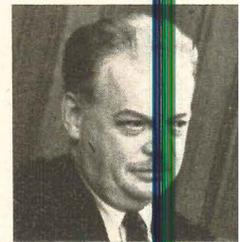
*Lendrum: The better you handle materials, the more you can go into components, and the more you go in for components the better handling job you can do.*



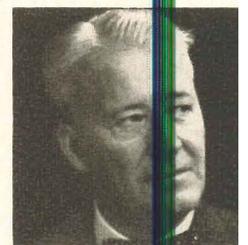
*Moeling: For better shipping we need bulkhead cars, improved strapping methods, planned loads*



*Johnson: You have a potential saving of \$1 to \$2.25 a M B ft., but it will cost the mills 50 cents more to do it.*



*Haeger: Our handling problem is out of the job site—getting these 4,000 lb. packages from the curb up to the house.*



*Mr. Roberson: Why shift 12,000 lbs. of wheels and underbody by rail?*

## This Round Table should reconvene with railroad and producer spokesmen

This Round Table is the first industry-wide conference ever held to consider the urgent and obvious need for industry-wide team work to cash in on the economies of mechanized materials handling. This Round Table report is the first attempt to spell out what each factor in our industry must do separately if we are all to reap these savings collectively.

Many more such industry conferences will be needed before our \$1 billion-year goal is reached. In fact, our first recommendation is that this Round Table should reconvene early in 1956 with representatives of the building material producers and the railroads added to the panel. Until we get better cooperation from the railroads and the lumber mills, the rest of us can make only limited progress.

The very question these future conferences must decide is:

### How big and heavy should the standard unit load be?

Until we agree on such a standard, producers will have no guide for their packaging; builders and distributors will have no guide for what size package they should buy equipment to handle.

Offhand, this much seems clear:

However large the unit load shipped from the mill may be, it should be packaged in multiples of smaller unit loads of 1,000 lbs. or less; and it should be so packaged that these smaller unit loads can easily be broken out. For three reasons:

Many lumber yards whose space is too cramped or whose surface is too uncertain to use big fork lifts can use small ones.

More builders and more lumber dealers will mechanize their materials handling if they can use smaller and therefore less expensive equipment.

The quantities of any one item used on the average house are relatively small, and the builder will often find it more profitable to divide even these small quantities into smaller loads and spot them near the point of use. For example:

A typical house uses 150 studs weighing a little under 2,000 lbs. The builder could save handling labor if they were laid down in two units rather than one—one unit near each end of the house. The  $\frac{3}{8}$ " dry wall for an 8' x 12' room weighs about 500 lbs. Plywood roof sheathing weighs about 35 lbs. for each 4' by 8' panel, or roughly 1,000 lbs. for each end of a small house.

Obviously the small unit loads the builder would prefer at the site are too small for maximum economy of long distance shipment. For example, they would double the strapping cost for lumber (now about \$18 per car of 32,000 l. ft. when the unit loads run to  $3\frac{1}{2}$  or 4 tons). But manufacturers should include dividers in their larger unit loads so a fork lift operator at the lumber yard can break them down without rehandling into such lightly-strapped smaller unit loads as might be approved as the industry standard for handling at site.

Fortunately most building materials are strong and rigid enough to need no aids or wooden pallets. Even bricks require nothing more than steel tape to hold them together on a cardboard pallet.



*Humes: The builder can buy cheaper if he can adapt some existing unit to his needs.*



*Thompson: At our next meeting we must bring in the railroads, the mills, and the lumber associations.*



*Cook: Anything that can be bundled can be secured with steel strapping.*

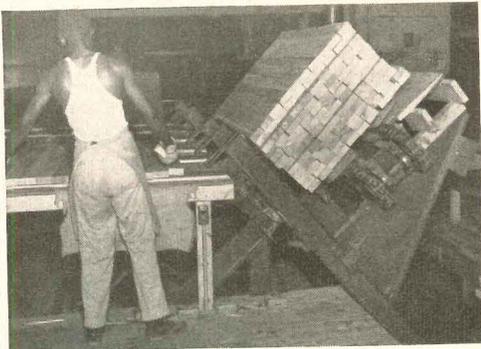


*Hatcher: Some lumber dealers send out conveyors on the side of their trucks and unload right on to the foundations.*



*Fairbank: Some lumber yards are just impossible for industrial trucks.*

Courtesy Moore Dry Kiln Company



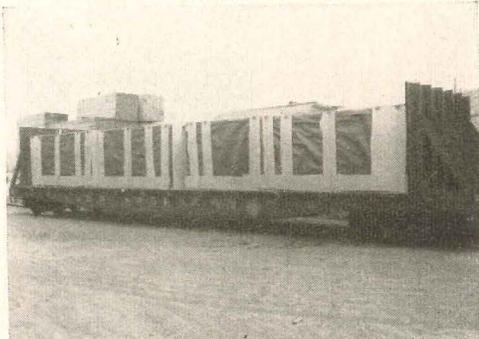
unit loaders at the mill

Courtesy United States Plywood



wide-door box cars

Courtesy United States Gypsum



high bulkhead flat cars

Courtesy Hyster Company



loads a forklift can split in small units

Courtesy Bucyrus-Erie Company



booms to move big pieces

## Problem No. 1: the reluctant lumber mills give five reasons for not mechanizing now

By weight half of all the materials used above the foundations of the average house starts from a lumber mill—the studs, joists, rafters, flooring, sheathing, siding, and some times the roofing.

That is another way of saying:

Until the lumber mills work with us and unit-load their products the rest of us can get much less than the full use, and much less than the full benefit, of any investment we make in mechanized materials handling.

### Up to now the lumber mills have shown little interest in unit loading

In this they have lagged behind the wallboard manufacturers, the composition roofing manufacturers, and even the brick yards. For their indifference there are five reasons:

1. They can sell everything they offer in today's market without bothering to package it better.
2. They have had a good piece work deal under which two men working together load lumber by hand for about \$1 per M bd. ft.
3. They might sometimes have to invest up to \$80,000 per \$1,000,000 of annual sales in the equipment and plant changes needed for mechanized unit-loading. The older the mill the bigger the new investment likely to be needed.
4. Only one lumber yard in ten is now equipped to receive unit loads, so it might be years before the mills could make full use of their unit-loading investment.
5. Only one order in ten comes in susceptible to unit loading (the lumber dealers answer they could and would change their ordering system if the mills gave them any incentive or encouragement).

For these five reasons most lumber mills refuse to sell their product in unit loads; others ask a prohibitive extra charge of up to \$5 per M bd. ft. The most progressive charge \$2 per M extra, which is more than a lumber dealer can save by fork-lift unloading, but still leaves him some profit in the subsequent economy of unit-load handling.

Eventually we believe the lumber mills, like all the rest of us, will find mechanical muscles cheaper than human muscles. They may not beat today's direct cost of \$1 just for loose loading a car by hand, but they could eliminate several costly handlings between trimmer and loading platform by putting a mechanical sorter and a unit-loader right back of the trimmer.

For their own profit, therefore, we believe the more progressive mills will in time mechanize their handling and offer lumber in unit loads at no higher price than loose-loaded cars. The other mills would have to follow.

To speed this change-over we recommend that lumber dealers and prefabricators would be smart to offer a premium of, say, \$2 per M bd. ft. to get unit loads. Their resulting saving on unloading alone would run close to \$1.50, and they could save substantially more on subsequent handling costs.

## we must solve by better teamwork

### Problem No. 2: the backward railroads do not have the right kind of cars

rong equipment and acceptance of badly loaded cars by the railroads are the two most serious obstacles to mechanized materials handling from start to finish in our industry.

This situation must be as unsatisfactory to the carriers as it is to us, for it is costing them a large volume of freight they could not be losing. The lumber mills now ship little more than half their output by rail.

To hang on to their remaining shipments and perhaps get back part of what is lost, the railroads have accepted open cars improperly loaded. These made so much trouble that some roads move them only by daylight. As a result, some cars take 14 extra days in transit, and the lumber arrives coated with soot from being all night in the yards.

The cost of rail shipment is already a major item for our industry. We pay \$1.23½ per c.w.t. from the West Coast to the Middle West. That means the freight adds about 40% to our lumber cost—about \$32 on 1,000 bd. ft. that costs around \$80 D.B. Now the railroads are asking a further increase.

We believe the railroads could handle more products for some building at lower rates at a higher profit if they would provide the right equipment and then insist on proper loading today's high freight train speeds and today's greater danger of impact damage in switching.

#### The railroads could profit too

With the right equipment properly loaded the railroads could carry at least 10% more lumber in a boxcar and at least 50% more on a flat car than today's average of around 25,000 bd. ft. (Trial shipments of properly loaded flat cars have gone as high as 38,000 bd. ft.) They could cut the no-income time while cars are being loaded and unloaded from two days at each end to less than an hour; they could run all cars night and day; and they could reduce damage claims.

In brief, the railroads have much to gain from unit loading—much to gain in lower costs, much to gain in added tonnage. They could help themselves as well as our industry by quoting incentive rates that would make it cheaper to ship cars of not more than 75,000 lbs. unit-loaded than it is to ship smaller cars loose-loaded. A 10% freight differential would make it profitable for all mills and lumber dealers to mechanize overhead for unit loads.

We believe 75% of all lumber could and should be shipped on flat cars—compared with less than 10% today. Green lumber will actually benefit from being in the open; and if gyp board can be packaged to travel safely in open cars we have no reason why, with proper loading, even kiln dried lumber could not do the same, protected only by a shroud of water-proof plastic or paper. Only oak flooring and other high grade sh lumber needs the added protection a boxcar offers.

Today more than 90% of all lumber is loaded loose into boxcars—loaded so loose that it is often badly impacted and it takes two men four hours to get out the first pieces. The 5-10% that travels on flat cars is loaded loose and then strapped top and sides to hold it. No wonder such shipments make trouble!

#### What we need from the railroads is:

1. Bulkhead flat cars; i.e., flat cars with strong high bulkheads at each end to keep the lumber from shifting on impact.
2. Wide-door boxcars; i.e., boxcars with double doors that provide staggered openings of not less than 6' on some of our cars today).

With today's growing trend to unit loading in all industries, we would assume that almost all shippers (except for loose grain) would prefer wide doors, but only 97,000 of the 740,000 boxcars last reported in service have them.

Either open cars or wide-door boxcars could be unit-loaded and unloaded with fork lifts in 30 to 40 minutes, whereas it now takes two men nearly two days to unload a loose-loaded boxcar a piece at a time.

The railroads would be smart to study and meet the needs of our industry without waiting for the shippers to wake up and start putting on pressure for the kind of equipment and rate structure that would be most profitable for all concerned.

### Problem No. 3: the prefabricators need piggy back freight to ship further

Better shipping and better materials handling is even more important to the prefabricators than to anyone else in our industry. Each of them has, in effect, his own lumber yard. Each of them works through local builders, most of them small.

So the prefabricators have all the handling problems the rest of us face plus a special problem of their own—the problem of shipping a whole house hundreds of miles and then unloading the parts economically in the right order at the other end.

The lower the prefabricators can cut this house shipping and unloading cost the wider the market they can serve from a given plant.

Almost all prefabricated houses travel by truck, for the extra handling required for boxcar shipment adds not only cost but damage and confusion. Most prefabricators find 450 miles about the limit for truck shipment over the highway if their product is to compete with the costs of site fabrication, but the prefabricators hope that piggy-back freight will soon enable them to ship 1,200 miles by rail for no greater cost than shipping 450 miles now by highway. They might cut their piggy-back costs still lower with mobile vans, for these big containers offer most of the trailer advantages without the freight cost of shipping 12,000 lbs. of wheels and undercarriage.

Some prefabricators believe they could cut their shipping costs substantially if they could load panels flat instead of horizontally, to be unloaded with the same small fork lift on tracks that would also best serve the needs of the conventional builder.

Courtesy Pennsylvania Railroad



piggy back freight for prefabs

Courtesy Clark Equipment Company



or container vans might be better

Courtesy Baker-Raulang



industrial trucks for modern yards

Courtesy Allis-Chalmers Mfg. Co.



forklifts on tracks for the smaller yards

Courtesy Sterling Lumber Co.



lumber racks to stack lumber higher

Courtesy Sherman Products, Inc.



small rough terrain units for the builder

Courtesy Tractomotive Company



versatile units with other attachments

## Problem No. 4: the hemmed-in yards often lack space to use fork lifts

Smart lumber dealers are assuming leadership in the drive to mechanize materials handling from start to finish.

This leadership is good for our industry, for only the dealers can pressure the mills and the railroads for unit-loaded cars, and only the dealers can help the builders handle unit loads. It is also good for the dealers themselves, for mechanized handling can help them cut their costs and so increase their sales.

### The lumber dealers have their own special problem to overcome before they can all mechanize

This is not a problem of equipment, for most lumber yards move a big enough volume of materials to warrant a sizable investment in the kind of readily-available roller conveyors and and fork lifts now used for factories and warehouses. As more lumber dealers become familiar with this standard equipment they will work out new ways and attachments to use it better.

For example, one lumber-dealer member of our panel has developed an end loader attachment for his fork lift to move hard-to-reach units in a boxcar. He is now developing an inexpensive electric roller to bring unit-loads to the door.

As more lumber yards use this equipment they will find new ways to make it do a better job. For example, one lumber dealer has developed an end loader to get lumber units out of freight cars. Now he is developing an inexpensive powered roller to move lumber units to the freight car door.

### So the lumber yards' problem is not equipment; it is space and layout

Today only some 10% of the 26,000 yards are mechanized. Perhaps another 40% could mechanize with standard factory equipment, provided many of them are willing to spend real money for a new yard layout with wide paved aisles (to get the space many would have to install racks for higher stacking—see cut). Perhaps another 25% could be partially mechanized to use small fork lifts that could travel over soft surfaces on tracks or big wheels.

But the last 25% are cramped and hemmed in by buildings that have gone up around them over the years. These yards may soon face the choice of moving or going out of business as mechanization cuts their competitors' costs.

## Problem No. 5: the forgotten builder needs smaller and cheaper tools

Even the biggest and most efficient builders still make little or no use of mechanical muscles to cut their above-ground handling costs at the site; yet these costs run to hundreds of dollars on every house. For this failure the reason is simple:

**Nobody has been making the right equipment  
the builders need to do the job cheaper**

The industrial truck makers have been so busy developing and selling equipment for factories and warehouses that they have had no time to study the builder's very different problem.

What the builder needs is different, for three reasons:

1. It can and should be much lighter and smaller. It need not lift more than a half-ton load, for even in half-ton loads all the materials for an average house could be moved from the street to the place of erection in less than two hours.
2. It must travel over rough ground, through mud, and over ditches. Perhaps it should run on tracks instead of tires.
3. It should be much lower-priced, for only 10% of the builders can spread their mechanical handling cost over more than 200 tons a year. Today the cheapest fork lift unit a builder can buy on tracks is designed for a three ton load and costs \$6,300.
4. It must be versatile. It must be so designed that its mobile power plant can be used for grading, filling, back hoeing, ditching, etc., when it is not needed for moving materials.

**For want of the right equipment,  
mechanization today stops at the curb in front of the house**

There bricks are laid down in 2,000 and 4,000 lb. pallets, asphalt shingles in 4,700 lb. bundles, asbestos shingles in 2,000 lb. From there on in everything is usually carried by hand, except that some builders set up lightweight roller conveyors between the street and the foundations. These are both useful and inexpensive. They cost about \$6 a running ft., or about \$250 for a 40' setback. They support about 100 lbs. per foot.

Fortunately there is now reason to believe that the low cost mobile equipment the builder needs is at last available as a by-product of the small farm tractor and the small army tractor, both of which are designed to travel over rough or muddy ground. Builders can now buy for less than \$3,000 a utility tractor with a 1,000-lb. fork lift attachment that can quickly be replaced with several other attachments. The next forward step to meet our needs might be to put this versatile unit on tracks instead of wheels. It is already available on half tracks.

Builders should also look into the second hand market. Lift trucks that cost \$6,000 new three years ago can be bought now for \$2,500 reconditioned and warranted.



## Problem No. 6: the helpful dealer needs handling equipment on his truck

Here is a golden opportunity for the progressive lumber dealer.

The best way a dealer can win and hold more builder business is to offer a service that will cost the dealer much less than it will save the builder.

Even at \$3,000 the great majority of builders; i.e., the 95% who build less than 25 houses a year, will hesitate to buy their own fork lifts to carry their materials in from the street.

The dealer has the volume to justify a far bigger investment in on-site materials handling equipment than any small builder can afford. Sometimes he can even make this equipment pay off just in quicker turn-around time for his delivery trucks. In such cases it will cost him nothing at all to give the builder materials handling help that could be a very great inducement to buy from his yard.

Many dealers make their deliveries on roller-bed trucks, sometimes with an elevator on the tail gate. Some go much further to help their builders. Some make deliveries with straddle carriers, which can run 30 miles an hour on the highway and then take off across rough (but not muddy) ground to drop their load close to the house. Some send out roller conveyors with each delivery, on which heavy materials can be rolled from truck to site. (For example, they are using roller conveyors to unload flooring and dry wall onto dollies inside the foundation line.) Others put a scissors lift (cost: \$3,000) on their trucks to deliver asphalt shingles right to the roof. Others put a winch and an A frame on a second truck, or a fork lift on the tractor.

With small fork lifts on tractors now available at \$3,000 or less, perhaps the lumber dealers' best answer would be to carry one from job to job on the elevator tail gate or tow it along behind, as some dealers are already doing.



Courtesy Clark Equipment Company

straddle carriers to make deliveries



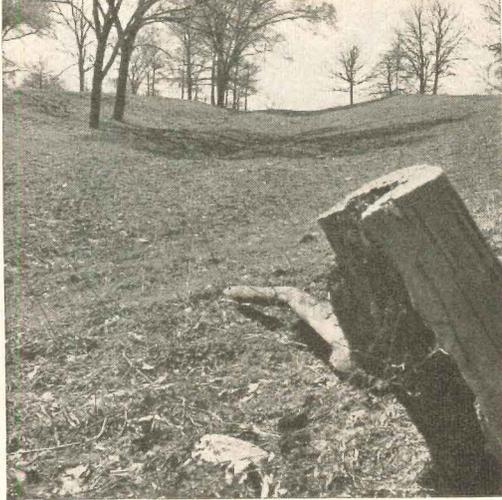
Courtesy Pice and Company

roller conveyors for curb to site



Courtesy Thompson Lumber Company

scissors lifts to deliver roofing



by Robert B. Filley

*The author has been a real estate market analyst and appraiser for 18 years, was a private consultant to HHFA in Southern California and Technical Director of the Chicago Land Use Survey. He has written books and articles on analysing and appraising, has lectured to many groups including the University of California. His consulting work takes him to all parts of the U.S.*

How to reduce speculation in land buying

## LET A MARKET ANALYST LOOK BEFORE YOU LEAP

*You can insure a new housing development against almost everything—except your own poor judgment in selecting a site.*

But you *can* double-check your judgment by means of a careful market analysis. A good market survey substitutes facts for guesses, and takes much of the speculation out of speculative building.

A market analysis helps a builder buy land for a *known* market, instead of trying to mold that market into conformity with whatever land is picked up at random.

This kind of research means analysing a particular community for its present and future growth, studying its employment and incomes, finding out how it spends its money. Such research includes a report on what other builders are doing, or are likely to do. It checks penetration of the market for houses in different price classes.

**Ten years of post-war building have used up much of the easy markets and most "no problem" land.**

Now, with increasing competition, ever greater care is necessary in selecting new areas and in studying possible sites—in financing and building the right number of right homes for the remaining markets.

Market analysis is a local matter. What is true for one neighborhood or one community is not always true for another. Builders who move from city to city or even from one part of town to another may meet alarming sales resistance if either their new location or their product is not quite right.

*In a Midwestern city, some cracker-jack merchandising failed to move elsewhere-popular contemporary homes because of a very conservative local market. So nearly a hundred beautiful and well-located homes are still vacant.*

**Learn everything possible about a town where you will build**

When a large developer and builder, who wants to find new areas for future operations, employs an analyst, the analyst can get basic facts for him on all communities over 10,000 population in his territory. By checking each community's current construction and vacancies against (a) census data on unhoused or underhoused backlogs, (b) current population growth, and (c) current employment trends, cities can be found which rank highest. Then full-scale field market analysis of them can be scheduled.

Getting local facts includes knowing local ordinances, facts on development requirements and costs, data on available land, labor, financing. You should

have lists of key brokers and local officials.

Local zoning and engineering costs per lot may be more favorable in one community than in another. You should know the requirements on lot sizes, paving, sewers, sidewalks, water, drainage. Check how many months' wait is required for a zoning change.

**Be sure you know the facts about sewers and other facilities**

*In the Washington area, two tracts have been built and sold, but they are unoccupied because the municipal sewers have been delayed. In the same area deposits on 500 homes may have to be returned because the authorities decide a stream could not carry the treated effluent of the project. In some Colorado cities, a builder must donate eight per cent of his land for schools and parks, a fact builders should know.*

When a builder follows a program of market research and area analysis, and finds good land in a new location, gets a discoverer's territorial rights, a pioneer's land prices, and an explorer's choice of sites.

*A Southern California developer spear-headed the creation of a flood-control district, opening a whole new area, with his project in the location.*

If you know the rules by which a city grows, you know where to buy land cheap so that the city itself helps to build up your values.

The wise builder doesn't pay today's premium prices to get the hot spot. Instead he bought acreage last year. Perhaps he plotted employment figures and income levels, investigated future construction of freeways and utilities, watched new plants or land absorption throughout the city.

### **Cities grow in new directions**

Urban development trends continue outward along a favored axis for a considerable period. But such trends don't go on forever, and an analyst who is also a student of city growth will know when this outward movement has reached the end of its run.

*In one Utah city, new housing developments along the favored boulevard have gone beyond logical limits and have created serious traffic congestion. Better sites are now in another quadrant where there is a new highway, and where builders can find large parcels of farm land.*

*In the Los Angeles area, public preference has shifted from the San Fernando Valley to San Gabriel, then to Orange County. It may swing back to San Fernando and to Palos Verdes.*

### **Market analysis can tell you where not to build**

*One builder, drawn by the boom in a nearby city, had a market study made just before he was about to buy substantial acreage. The analysis showed that from 60 to 70 per cent of the housing inventory had been sold. But it also showed that sales were very slow and more projects were about to be started. Sunday crowds were only tourists examining furniture and decorating, could not qualify as buyers.*

In another area an analyst was able to prevent a builder from buying land in what seemed an excellent location. A new steel mill had been erected and a cluster of airplane plants seemed to offer steady jobs. But a close market study revealed that families did not want to live in that area because of sand storms and that the airplane plants would soon transfer personnel elsewhere.

### **You may have the right land at the wrong time**

Development too soon can be just as

*In Los Angeles there is an excellent development which is only now recovering (after a change of ownership) from a premature birth. Although the site was beautiful, other sites much closer to the city were almost as attractive. It should have been clear that the market for this land was several years off.*

Even with the best of luck, the land you buy today will not be developed for months. Meanwhile, what will your competition be doing to cut down your share of the potential buyers? No matter how good sales are right now, you should know how much of the market will still exist when you are ready.

### **The time for opening model houses can be important to a builder**

Perhaps new personnel at a key plant, the completion of major highways, or the closing of a large group of temporary houses will stimulate the market. Sales promotions may be affected by school openings or, in some agricultural centers, by payment for crops. Your rate of building for any particular piece of land is as critical as your timing.

Careful analysis will show the size of the total market, but your speed of building depends on the anticipated rate with which the market can absorb all houses. A fast-growing town, or a large backlog of families needing housing, calls for faster production than if the market is drawn from rentals, from families moving up in income brackets, or out of crowded two-bedroom houses. Your financing and your terms with the land owner depend to a large measure on your rate forecast.

### **Market analysis shows if land could be used for special purposes**

Study may show that your houses should be planned for minorities, the aged, replacement, or for holiday use, and will indicate what price house will sell best. It will tell you if there is a market for rental units. It will help you allocate land for rentals, for a shopping center, for schools or a park.

### **Design acceptability can be studied**

Consumer preference surveys should cover a number of nearby tracts.

*A study made for a California builder showed that both dry wall and slab construction were acceptable below \$14,000 and that slab was acceptable in*

*vealed that younger families in GI tracts preferred contemporary design. But in FHA tracts families wanted front living rooms, conventional design. Ultra-modern designs sold slower.*

Key factors in selling were kitchens, and families wanted built-ins and space for dining there. Entrance halls and fireplaces were next in importance, and in four-bedroom houses a second bath was important.

Facts like these vary from location to location and should be taken into consideration.

### **How does market analysis help to get mortgage financing**

A professional analysis may bring prestige to the builder, shows he uses sound business principles, impresses a land owner that here is a good man to deal with. It likewise impresses favorably mortgage brokers, lenders, FHA and VA, as it gives them facts to base their decisions on, and creates a favorable business atmosphere.

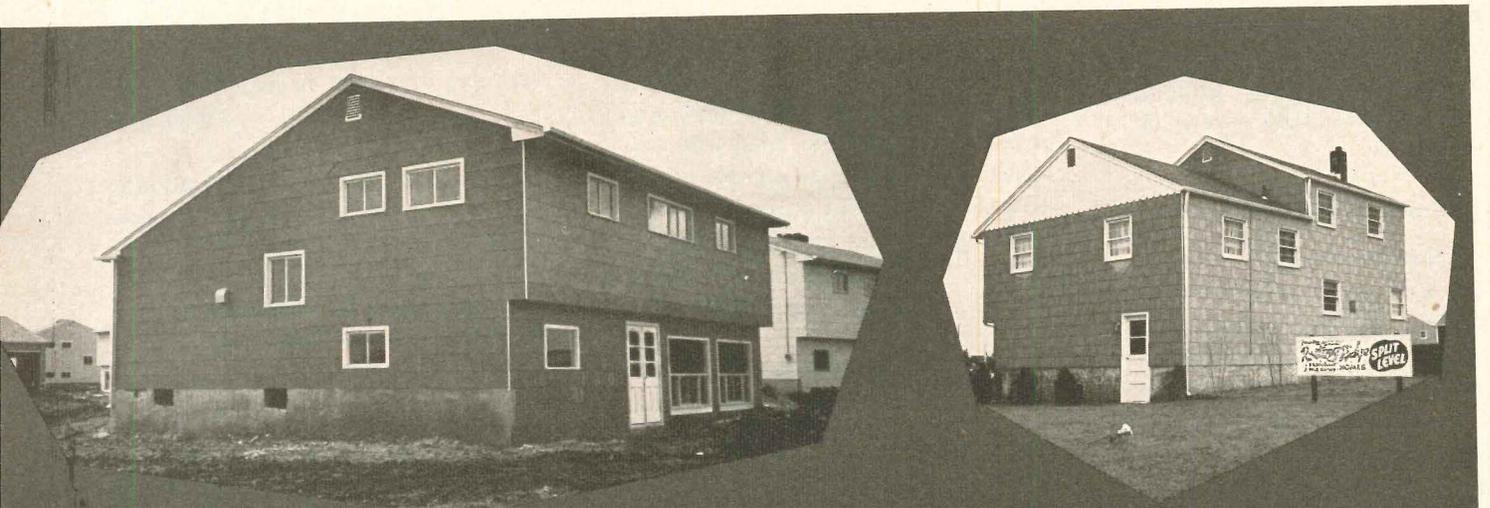
Here's how a market analysis was used in an outlying California city: Having confirmed the market, and pinpointed the price class for the builder, it next converted the lender's loan officer, whose policy had been biased by an older, misplaced and unsold tract. Then it prompted the loan committee to raise their volume limits on the client's tract. Finally the lender itself used the report in reselling the paper in the East.

### **Get facts on the local employment market**

In a Nevada city, gambling once predisposed lenders adversely. Here the analysis of the local economy showed a surprisingly favorable employment experience, revealed a logical support for all tourist traffic and emphasized the other sources, thus helping to brake through the financing log-jam.

In the South, market analyses prepared for an alert prefabricator are helping to overcome traditional resistance of some national lenders to investments in the smaller cities.

A good analyst sells not only his time but his experience and judgment as well. It is hard to make a fully documented basic analysis for less than \$1,000. The average cost on a medium sized tract will run about \$8 or \$10 a house. Many analysts work free lance or on annual retainers, but there seems to be a growing tendency for large builders, brok-



## DO SPLIT LEVEL HOUSES HAVE TO BE SO UGLY ?

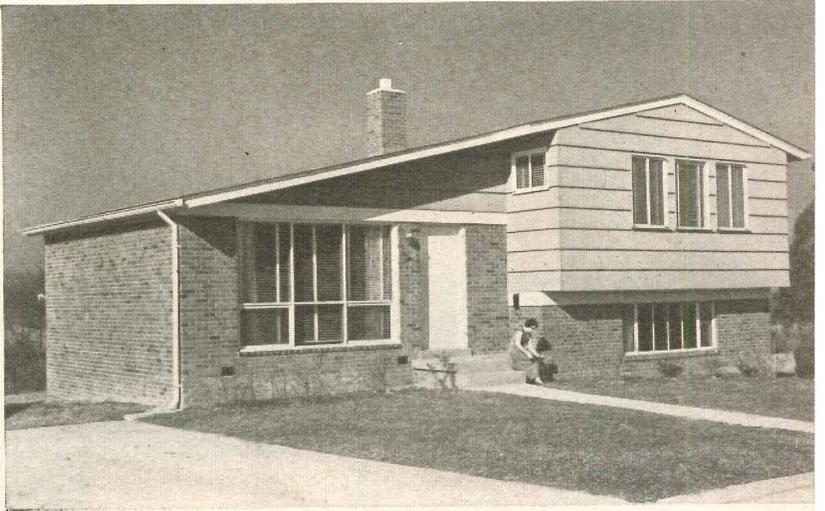
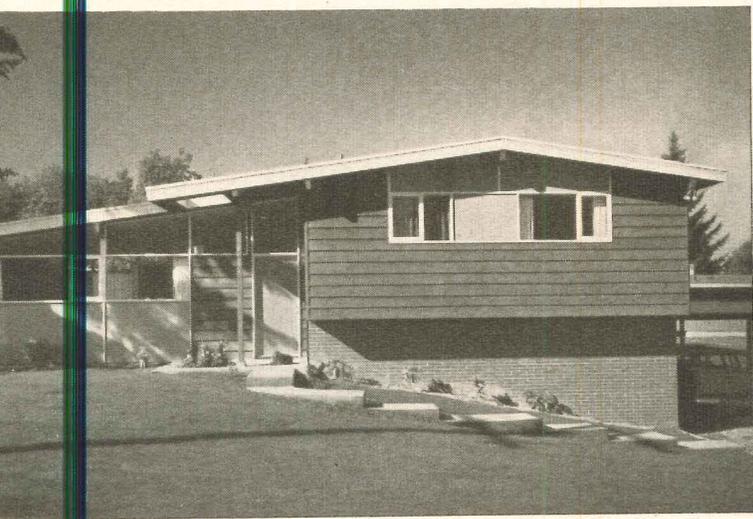


Not since the advent of the "Ranch House" has there been such a popular new house type. And not since the 1890's has a house-type been so abused.

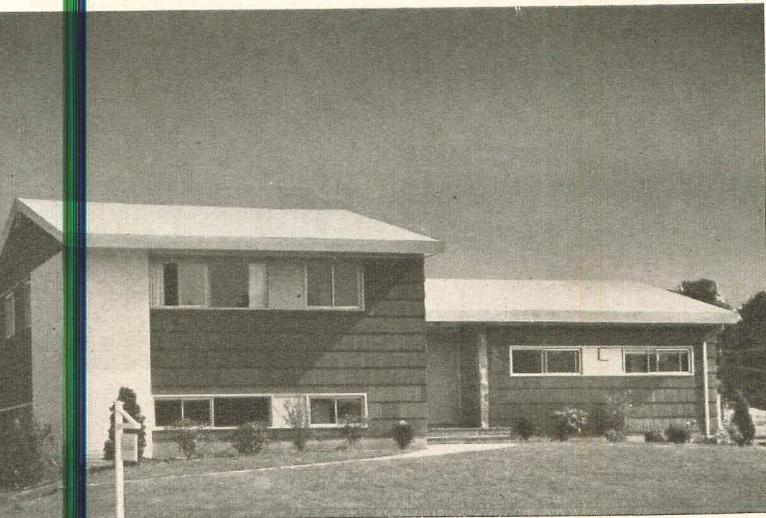
Is all this abuse necessary? Or justified?

On the next seven pages HOUSE & HOME's editors show how easy it is to design a handsome split, how much sense it makes to plan a house on three levels, and how—with a few changes here and there—today's split level house can pass the stiffest tests of good planning and good design.

Top row: Seth Fulcher, Architect; E. B. Vaughters, Builder. Location: Seattle, Wash. (Photo: Dearborn-Massar).  
Jack Cohen, Architect; Dan Ostrow, Builder. Location: Silver Springs, Md. (Photo: Adams Studio).  
Second row: Morris Lapidus, Architect; Joseph F. Carillo, Builder. Location: Huntington, L. I., N. Y. (Photo: Gottscho-  
Schleisner). Don Scholz, Designer & Prefabricator. (Photo: James T. Strong). Bottom row: Katz, Waisman, Blumenkranz,  
Stein, Weber, Architects; Knickerbocker Homes, Inc., Builder. Location: Huntington, L. I., N. Y. (Photo: J. Alex  
Langley). Jack Cohen, Architect; Dan Ostrow, Builder. Location: Silver Springs, Md. (Photo: Adams Studio).

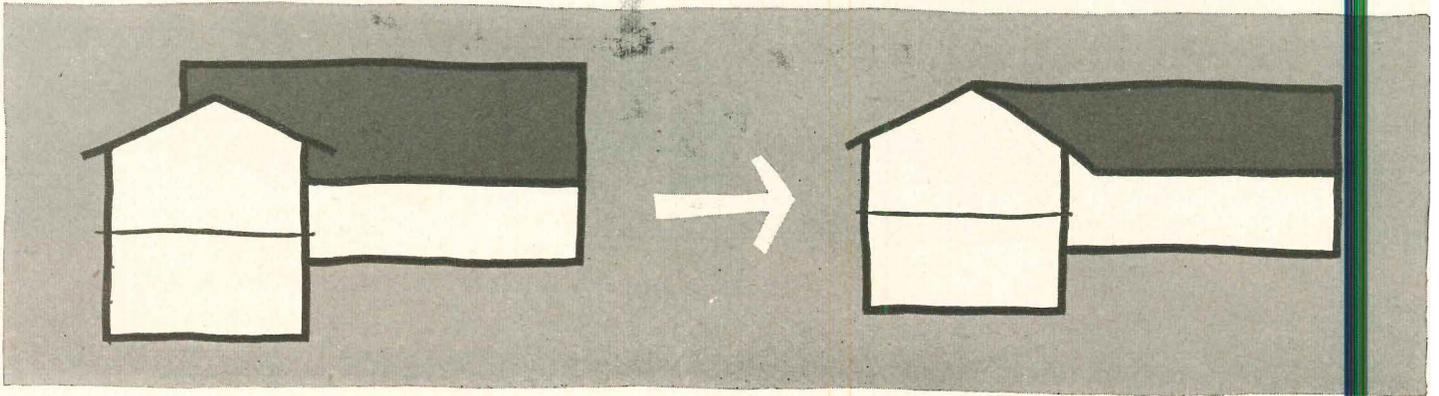


## OBVIOUSLY NOT - LOOK AT THESE



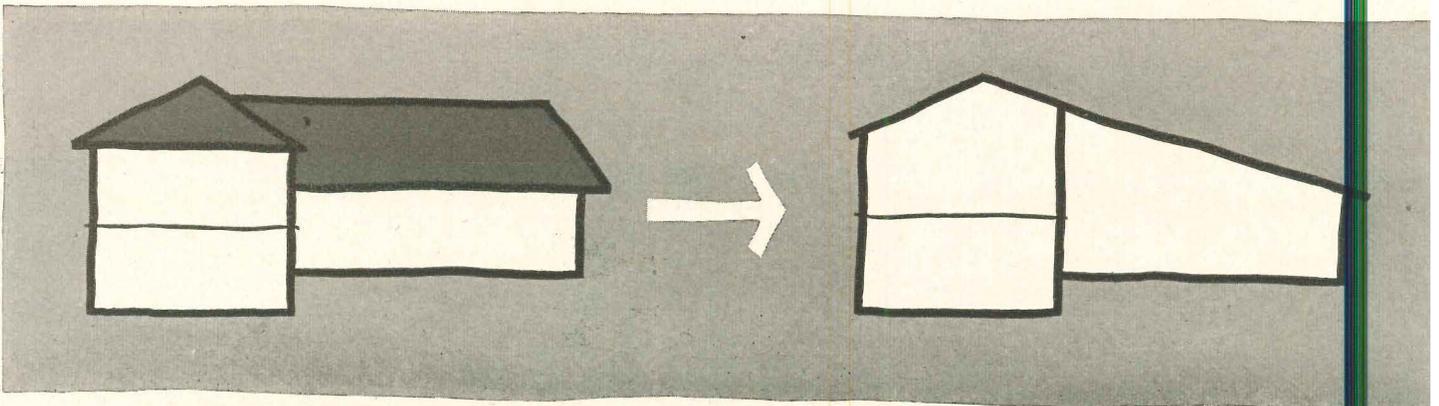
# HOW TO UNSPLIT A SPLIT

UNSPPLITTING THE ROOF: *Simpler roofs look better, cost less, unify the house*

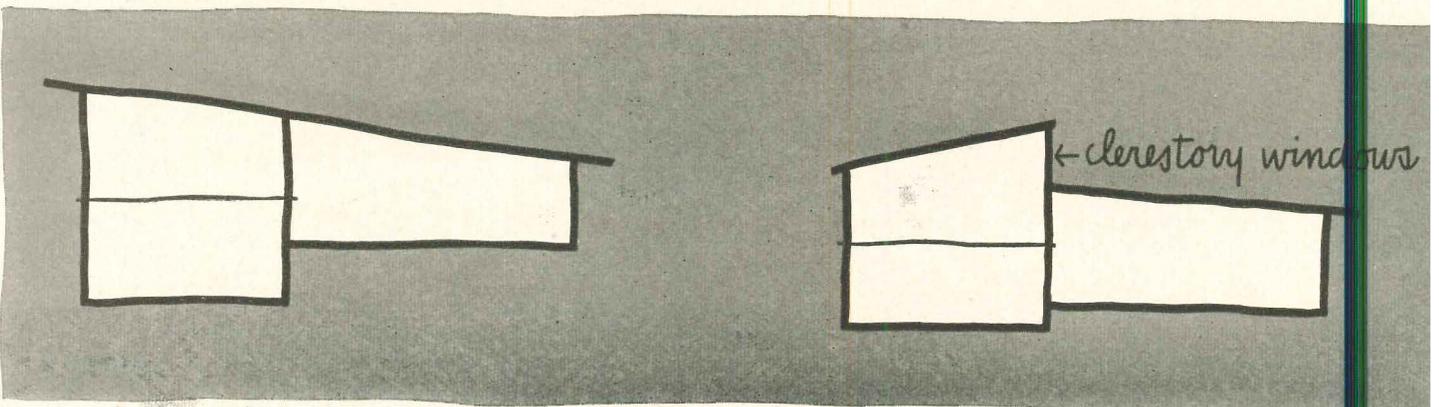


**Don't** build two separate roofs for one house (it costs more, makes the house look smaller).

**Do** simplify your roof structure (by aligning ridges and eaves, as shown above, or by using a single pitch, back to front, as shown below).



**Other roof variations:** Shed roofs make the split look longer; two-level roofs enable you to get a strip of clerestory windows along the bedroom level, thus help to light interior baths, hall and to cross-ventilate bedrooms.



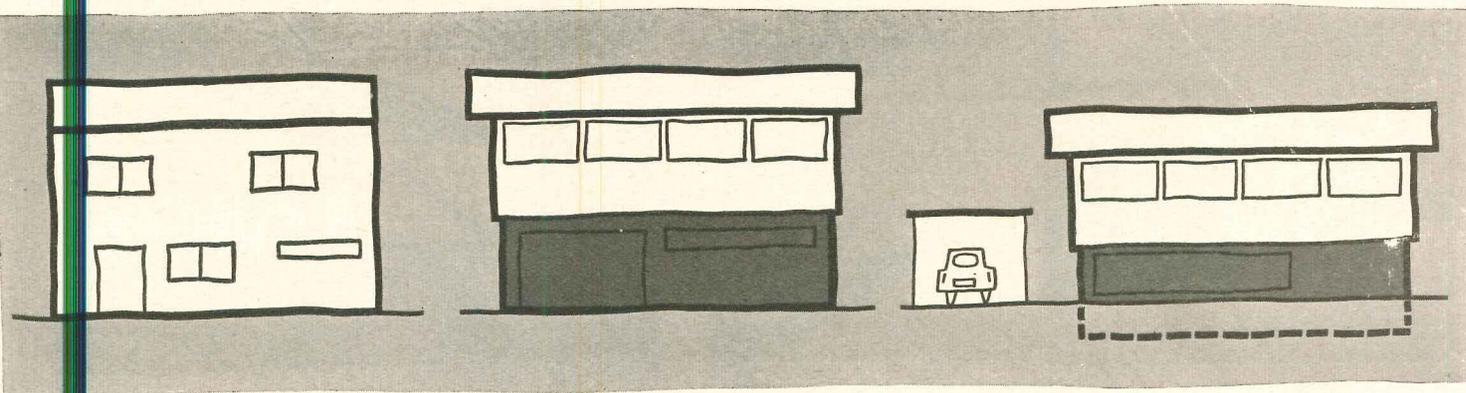
**The chief trouble** you run into when designing a split is this: Nothing lines up on the inside, so—*automatically*—nothing will line up on the outside.

And because nothing lines up on the inside, a lot of early splits were designed (and built) to look like two entirely separate houses “locked (as we said in April '53) in mortal combat.”

So the first rule in designing a split is that it

should look like *one* house rather than two. (That way it will look bigger, as well as better.) The way to make a split look like *one* big house is to simplify its roof and its sides, to line up as much as you can, and to group together window and door openings. Just pretend the split is another simple house-design problem, governed by all the rules that govern good design in *any* house.

#### UNSPPLITTING THE END: *Stretch out your 2-story facade*

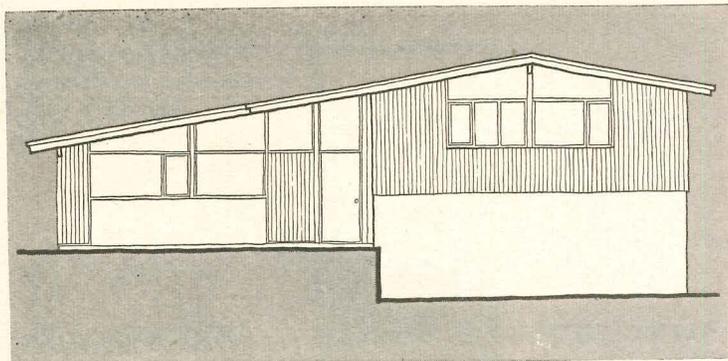
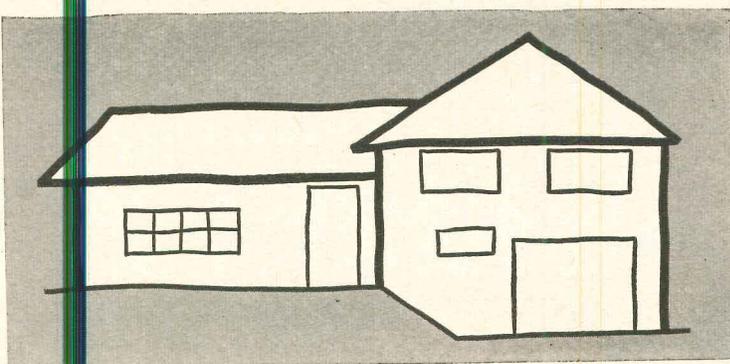


**Don't** count on the 2-story end of your split going unnoticed. (More and more splits now have the 2-story end facing the street, so your problem is to make that facade look best of all.)

**Do** try to make the 2-story end of your house look longer and lower, in one of two ways—

1. Recess the lower floor and give it a different finish. It will recede even more if the finish is darker;
2. Bury your lowest floor in the ground, down to window-sill height (see sketch), and recess it as in the first example. This is possible especially where the garage is out of the basement (an increasingly popular trend—see p. 142.) Result: your tallest facade is only 1½ stories high, so the house looks 25% longer.

#### UNSPPLITTING THE SIDES: *Line up whatever you can*



**Don't** make a patchwork quilt out of your facades

**Do** group your openings together and line up things like:

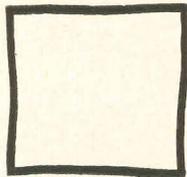
1. Window and door heads on the middle level with sill line in bedroom level;
2. Kitchen window sills on the middle level with floor line (if visible) of the upper level.

Fine example: Architect Seth Fulcher's new builder house in Seattle, shown in elevation above.

# DO SPLITS MAKE SENSE ?

The answer is—yes, they do. Here is why:

DAY



NIGHT

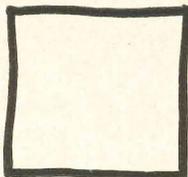


**Yesterday's house** was a 2-zone house—with a day zone and a night zone. Result: 2-story plans, double-square plans, 2-wing plans.

Yesterday's house was (generally speaking) a house of two zones: a night zone and a day zone. So yesterday's house tended to be a 2-story structure, or a rectangle (divided down the middle into day and night zones), or an L, T, U or H shape.

Today's bigger house calls for *three* zones: night, day and multipurpose (family room, special storage, utilities, etc.) And one of the best solutions for a 3-zone house is a 3-level plan. No other 3-zone house can be built as economically, no other 3-zone house can be planned as compactly to fit on our small lots, and no other 3-zone house has those qualities *plus* excellent circulation and control.

DAY



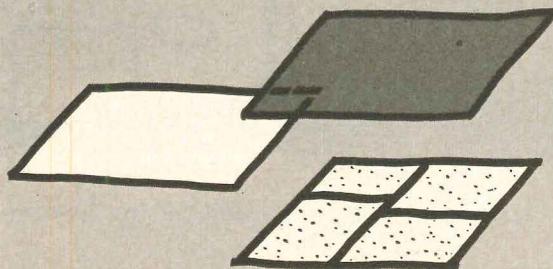
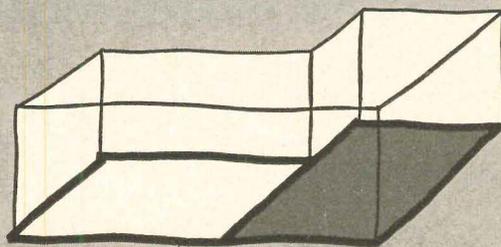
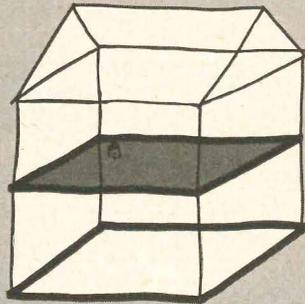
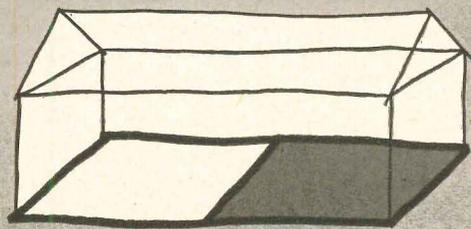
NIGHT



MULTI-PURPOSE



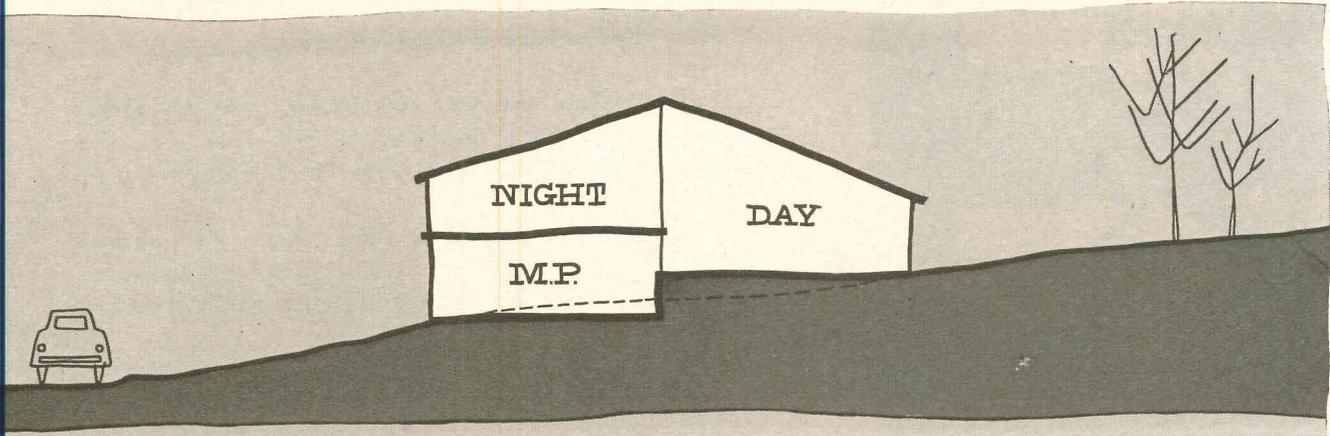
**Today's house** is a 3-zone house—with a day zone, a night zone and a multi-purpose zone. One result: the 3-level house.



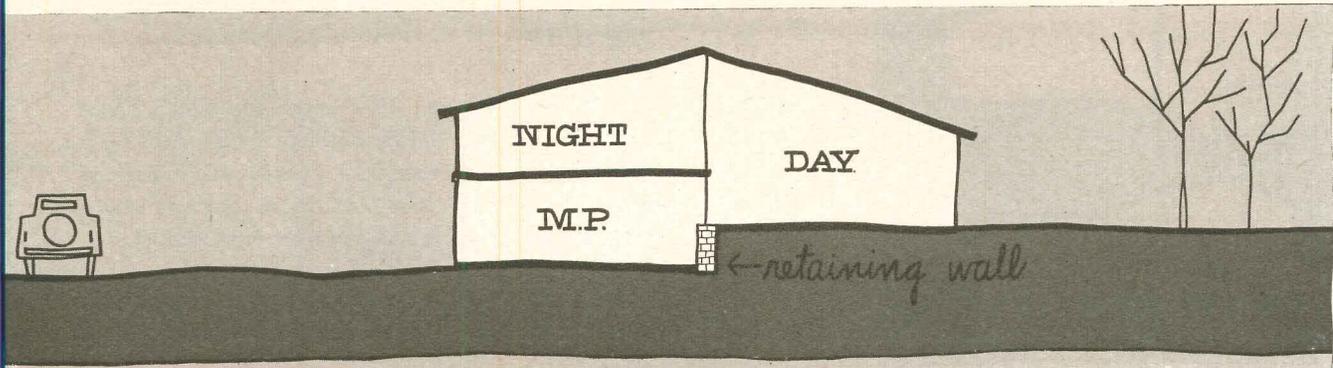
# DO SPLITS MAKE SENSE ANYWHERE ?

*The answer is—just about anywhere*

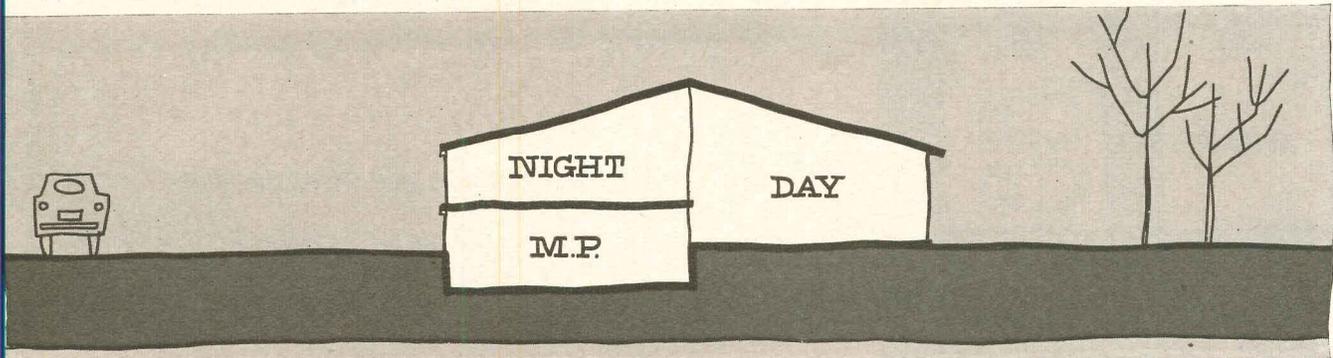
Splits make sense on sloping land, and for obvious reasons. Splits make sense on flat land as well—but on flat land they make sense only if you do something to the land—or to the split.



**Splits make sense on a slope** where two levels out of three have direct access to the garden.  
A good incline for most medium-sized splits is 1 in 8.



**Splits make sense on flat land** if you fit the land to the split



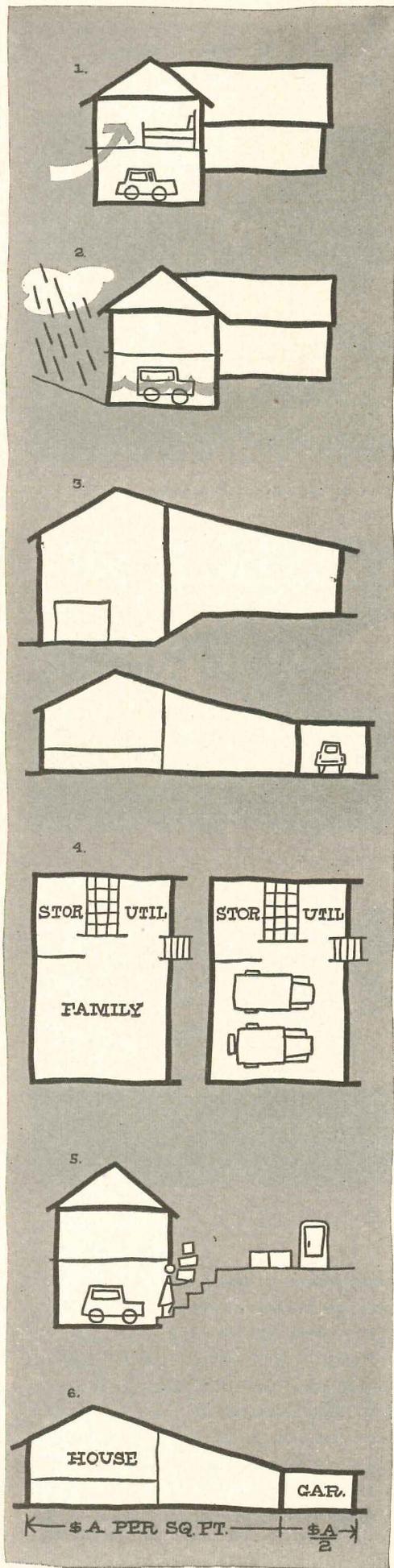
**Splits make sense on flat land** if you fit the split to the land

**How to fit the land to the house.** If you have a garage in your lowest level and a garden outside your living room, the best way to fit the land to your split is to use fill around the living-room end and to excavate at the garage end. Problem: how do you bridge the difference in grade and how do you keep water out of the garage?

The best way (unless your soil is sandy enough to absorb most rainstorms) is the one shown above (center): terrace your lot by using a retaining wall. That way you can be sure the next downpour won't wash your garden away.

**How to fit the house to the land.** If you decide that your house-cubage is too valuable to waste on a basement garage (see next page), then your grading problems are almost over: all you need to do is sink your lowest level into the ground to the window-sill height. This automatically puts your living room approximately on a level with the garden. (Semi-basement rooms with flowers and greenery outside the window sill can look very attractive.) Should you want to provide outside access to the lowest level, an areaway with a drywell will do the job very satisfactorily.

# TWO TROUBLES WITH SPLITS



1. GARAGES IN THE WRONG PLACE
2. STAIRS THAT ARE TOO STEEP

## ← Where to put the garage

There are six good reasons why the garage should *not* be in the lowest level of the split—why it should be attached to the side of the house instead:

1. Basement garages often mean cold bedrooms above, occasionally produce smells and fumes, frequently require costly insulation and fireproofing.
2. Basement garages often get flooded. Steep grades around driveway make serious drainage problems.
3. Basement garages make some facades of splits look tall and short. If lowest floor were half underground, 2-story end of split would look 25% longer (see p. 139).
4. Basement garages take away too much space from playrooms, storage, utility rooms, etc. 1-car garages (now on way out) occupy about half of typical split-level basement. 2-car garages (now on way in) would knock out playroom altogether.
5. Basement garages force housewife to climb 6 or 7 risers to kitchen while carrying groceries.
6. And house cubage is expensive cubage—too expensive to use for a garage.

## How to get rid of the stairs →

The most urgent interior design problem in splits is how to kill the stairs before they kill you and your customers.

Most split-level stairs are too steep for comfort, and too bulky for good looks. Both defects need fixing—fast—because the stairs are the chief circulation route inside the split. If *they* don't work, the house won't work.

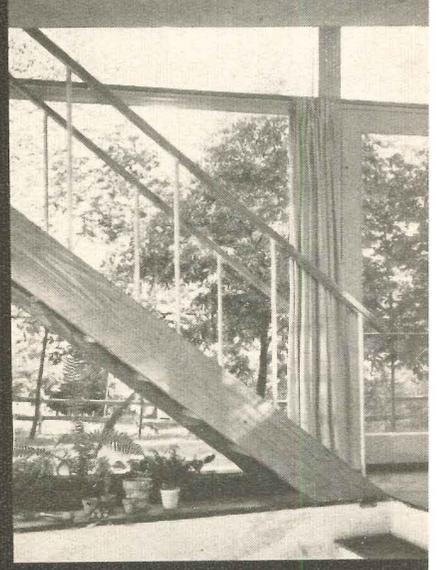
On the opposite page is a simple formula showing how to design comfortable and safe stairs for splits. Needless to say, a more comfortable stair takes up a bit more room. So the next problem is how to make stairs *look* less space-consuming. Architects have used open-riser stairs for years: they are inexpensive to build, easy to clean, safe, graceful, transparent—so much so that they practically disappear. They are an ideal solution for many small split-level houses. The pictures opposite show several variations on the open-riser theme.



Lawrence S. Williams

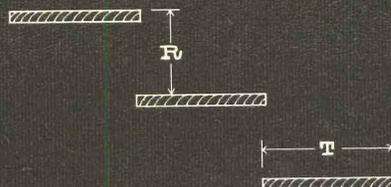
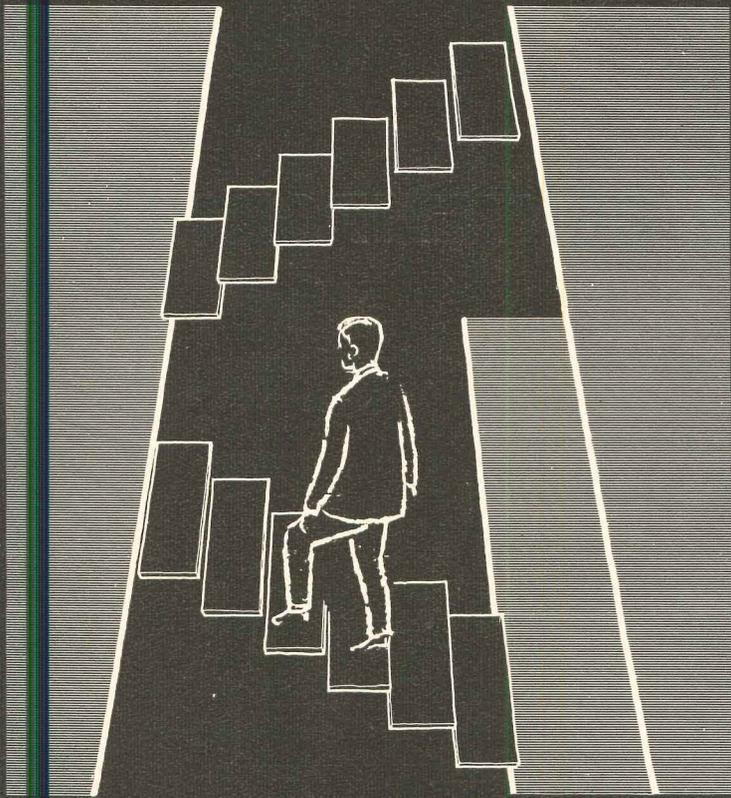


Ezra Stoller

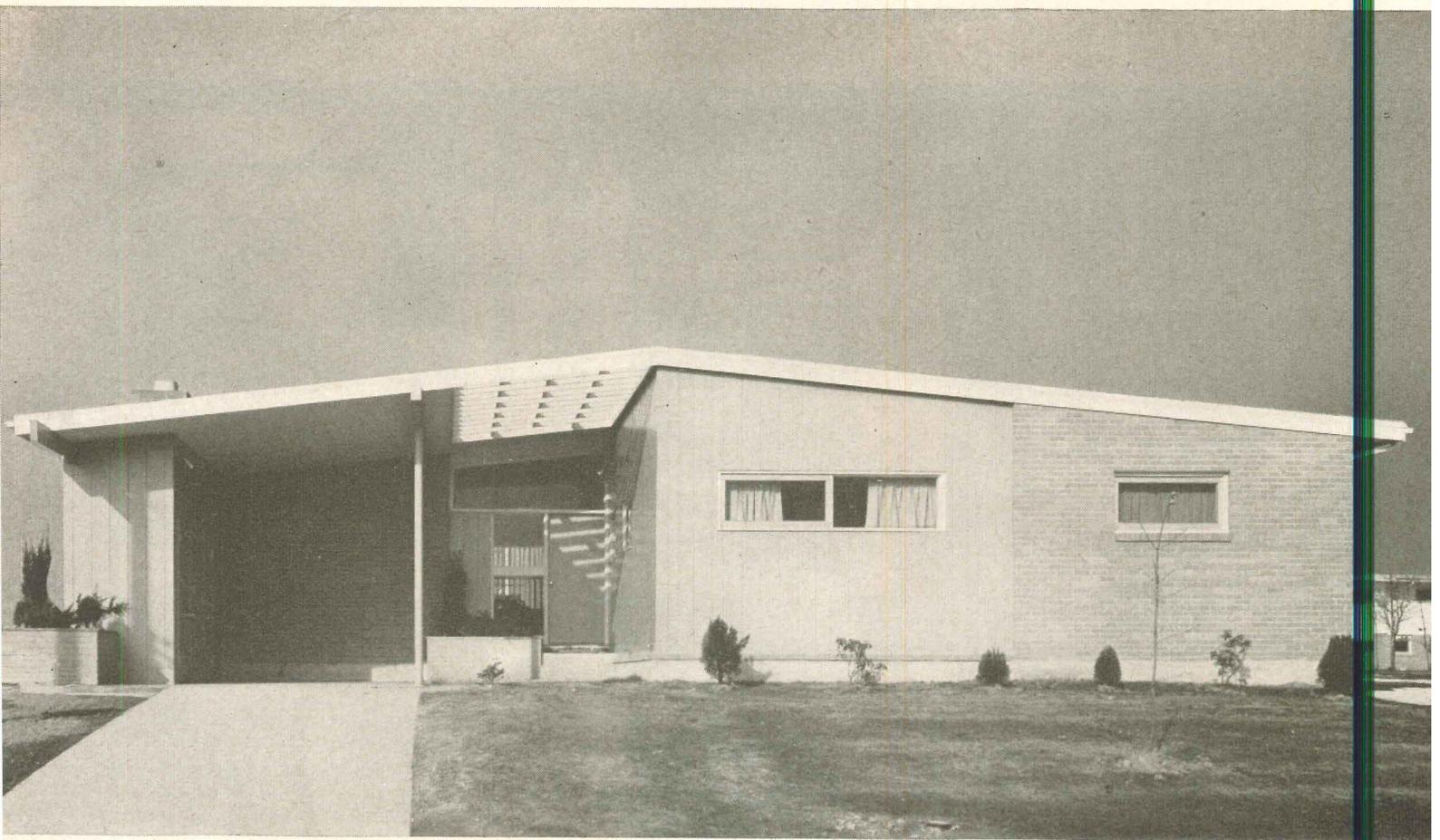


**Open-riser stairs** can look graceful and transparent. Result: they seem to take up less space than they do in reality. Here are three architect-designed examples (left to right): Vincent G. Kling, Architect, Twitchell & Rudolph, Architects and Carl Koch, Architect.

**Rule-of-thumb** stair-design formula long used by carpenters says that you get a comfortable and safe stair if riser-height, multiplied by tread-depth, comes somewhere between 70 and 80. Below is a chart of typical riser-tread relationships that will produce a good split level stair.



R	T
6.75"	11.7"
7"	11.2"
7.25"	10.7"
7.50"	10.3"
7.75"	9.9"
8"	9.5"



In “ultra-conservative” Wilmington

## BUYERS SWING TO CONTEMPORARY

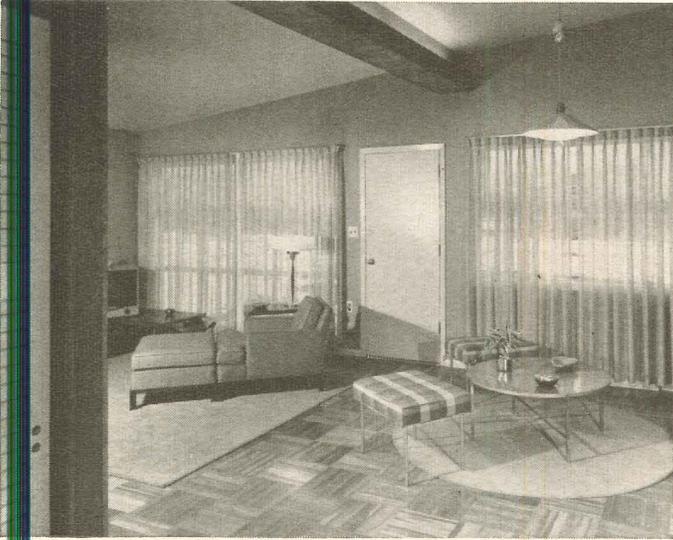
**O**ne more smart builder in one more conservative market has learned what many home builders still find hard to believe—buyers will readily accept new and different design if it makes sense.

What’s more, in conservative Wilmington, Del., second-time buyers more than anyone else have shown that they prefer the better-designed, top quality houses they have been reading about.

At this time last year no builder in Wilmington (population 106,000) ventured to offer contemporary design, exciting interiors, fully-equipped kitchens or other new ideas—except that a few were timorously introducing split-level houses with so-so design.

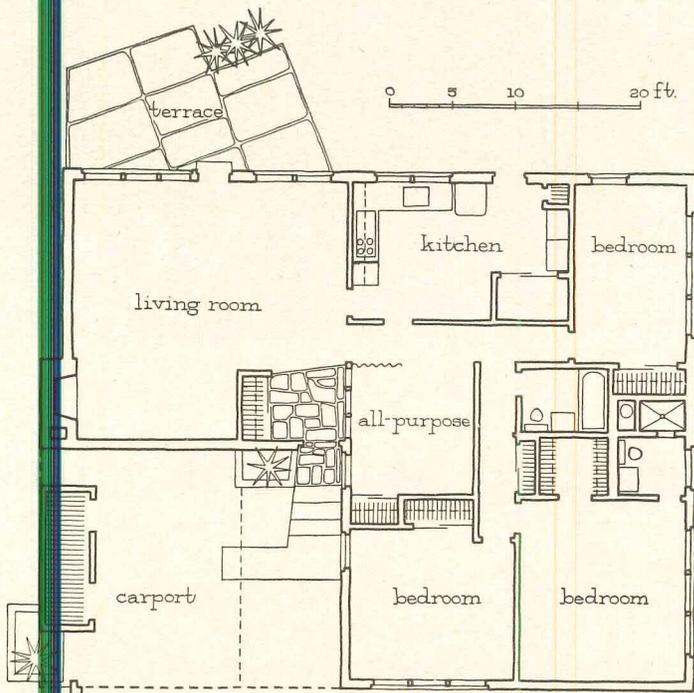
Last summer Franklin Homes brought out three colorful, radically new models on a 400-acre tract: a ranch house (above) and two split levels, at \$23,500 to \$31,000. No builder in Delaware had ever before opened a large tract in that price range, much less with contemporary design. Franklin expected to sell about 40 houses the first year.

Instead, they sold 60 in the first six months. And 50 of them went to home owners who bought because the new houses made their old ones seem hopelessly out of date.



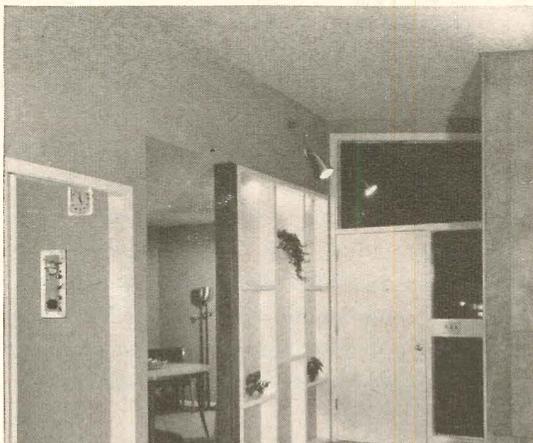
**Glass wall** of living room overlooks rear patio. Larger window at left has six 2'x4½' sections. All windows in Franklin's houses are 2'x3', 2'x4½', 2'x6' or multiples thereof (except over front door). Standardization like this reduces cost.

LOCATION: Wilmington, Del.  
 BUILDER: Franklin Homes  
 ARCHITECT: Theodore Brandow  
 LENDER: T. B. O'Toole, Inc.  
 DECORATOR: Jon G. Govados, Jr.



**Fully equipped kitchen** includes eye-level oven, built-in range, garbage disposer, exhaust fan, wall clock, wall cabinets with sliding glass doors and interior lights. Refrigerator is optional extra.

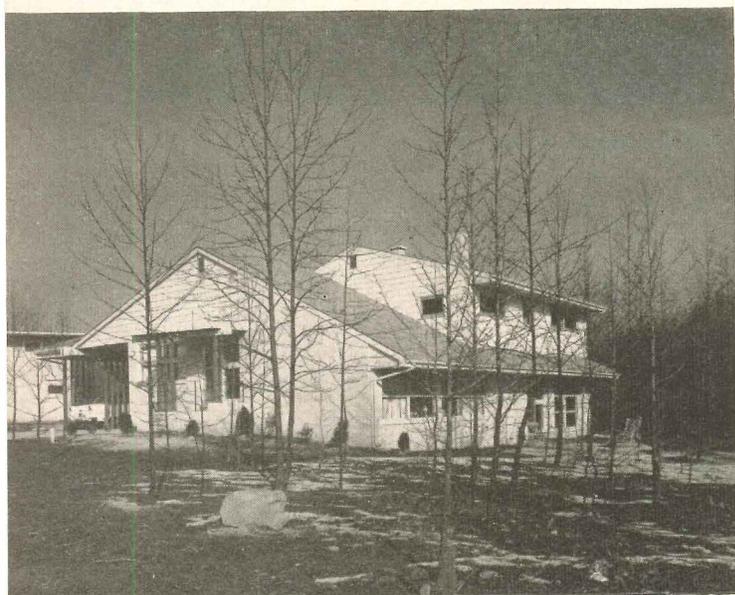
## Here's one-floor open living



**Front entrance** is paved with flagstone. At far left is kitchen, which opens both to living room and to the all-purpose room separated from foyer by opaque plastic wall. Access to bedrooms is off left through all-purpose room.



## This large split-level sells fast at \$31,000

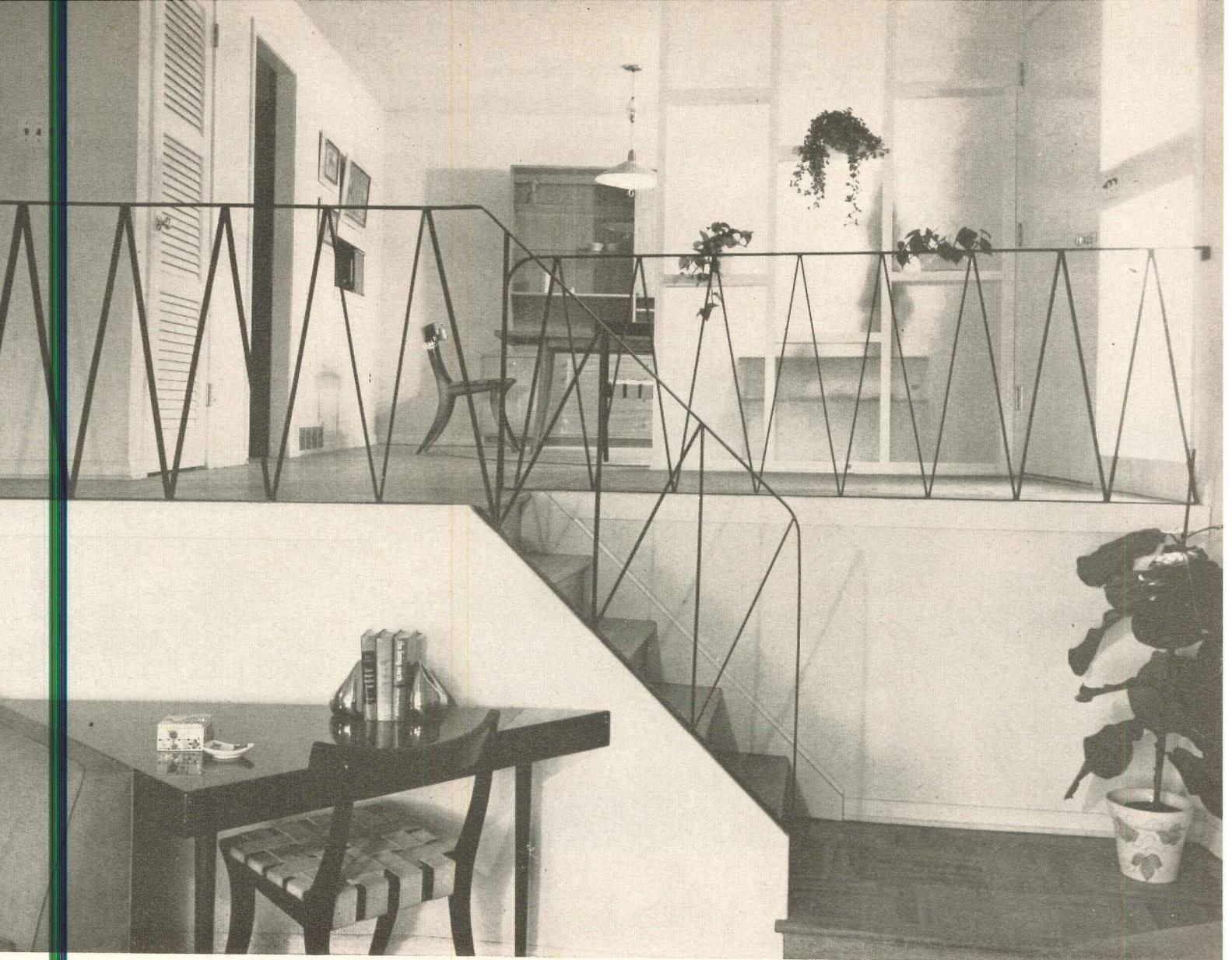


**Big split-level** can face almost any way on a lot, for it is so designed that the lower floor entrance (off patio, at right here) can serve as main entrance. Trees are saved by the builder wherever possible.

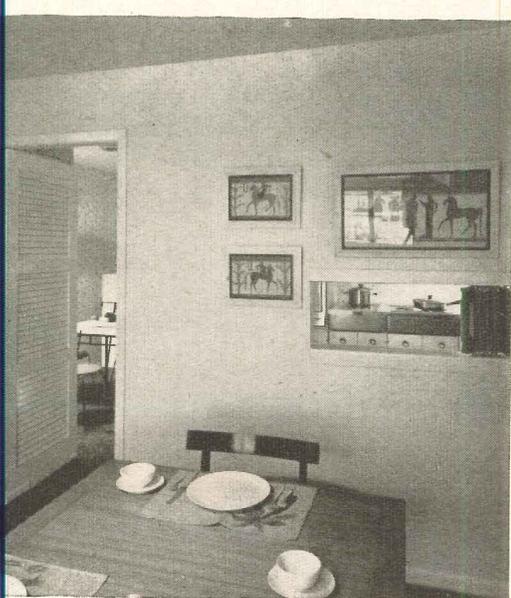
Twenty Wilmington families couldn't resist buying this house that is so deceptively plain on the outside but so quality-filled inside. (The first buyer was VA's chief underwriter in Delaware.)

The builders pulled out all the stops in furnishing this 2,300 sq. ft. split-level (it has a large basement and double carport). The two photographs shown above were taken from one end of the 26'-8" x 13'-5" living room. At left is view of living room looking toward the sound-conditioned family room at rear. Photo at right shows dining room and flagstone-paved foyer. The clean, ribbon like design of the stair rail links both parts of the house, helps to effect open feeling.

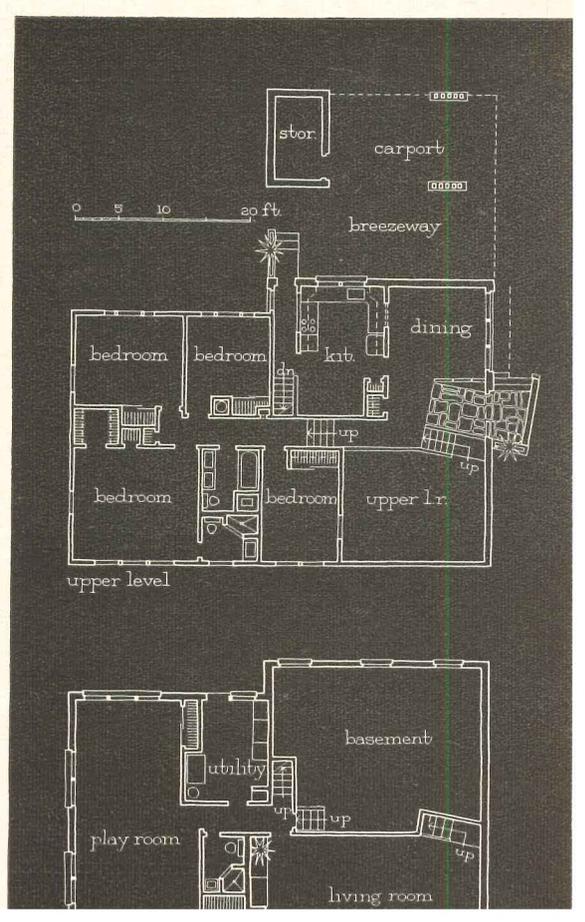
Equipment includes more than \$1,000 of electrical wiring and fixtures (note the living room two-way lamp and dining room pulldown lamp shown above), a well-equipped kitchen (with a bread-and-milk valet opening outside at back door), air conditioning, wall safe in the master bedroom and a built-in radio and communications system with plug-in for hi-fi record player.



because this interior greets prospects

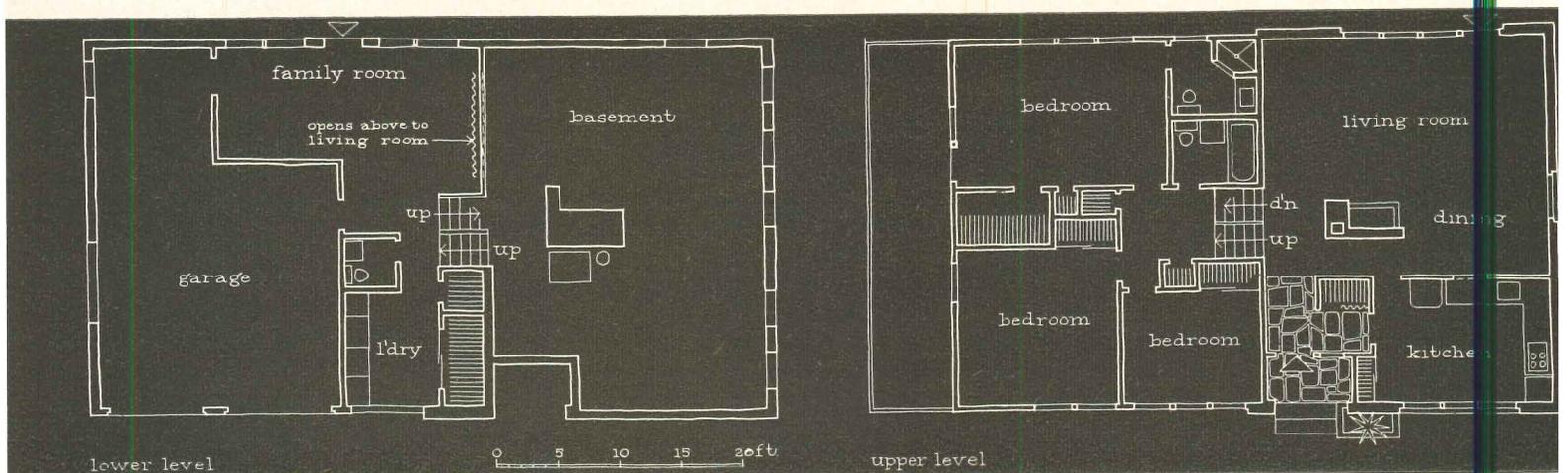


Louvered door and folding screen for the pass-through are used between the dining room and kitchen on main level. The kitchen includes breakfast area. **Floor plan** (right) shows excellent relationship of kitchen to carport (the latter a successful departure from the usual split-level's garage located in the house itself).





## This is Wilmington's best-selling big house



This handsome \$27,500 split-level has 2,100 sq. ft. of well-planned living area (plus garage and 650 sq. ft. basement). Although the most radical of Franklin's houses—its front kitchen is the first offered in the area—this house has sold best.

The central staircase offers easy access to all

levels; bedrooms have big closets, sloping ceilings; laundry commands view of front entrance; the kitchen is fully equipped, and the living room opens onto paved patio as well as to the family room. The two can be closed off from each other by a folding door, shown in photograph opposite.

## Sales appeals are many, including ...



Lubitch & Bungarz

### familiar furniture for the hesitant buyer

Franklin furnished the split level at left with period furniture (above) to reassure buyers that their old furniture would fit the new surroundings. (This paid off: the house with period furniture sold better than the builder's other two models.) In all, Franklin spent \$20,000 furnishing three models.

That is only one of many reasons for what happened in Wilmington. Franklin's success cannot in any sense be written off as a fluke. It is the earned result of months of careful planning by men who knew what they wanted to do and had the courage to try. No rash and lucky newcomer to homebuilding, Franklin's President Leon Wiener is executive vice president of the Delaware Home Builders Assn. Last year the company won an Acapulco award for outstanding merchandising.

Here are some of the things that Wiener, his partner Irving Megebow and sales vice president Henry Weinstein did to make sure of succeeding:

**Good location.** Franklin's Green Acres tract on high, mostly wooded land four miles northeast of downtown Wilmington is adjacent to an old, exclusive residential neighborhood. The company paid \$3,000 per acre for raw land.

**Architect designs.** Theodore Brandow, young (30) Philadelphia architect, was engaged months ahead to develop the plans. His job was threefold: (1) to provide up-to-date designs that (2) incorporated sales features the builders felt prospective buyers wanted at (3) a low enough cost to make the prices competitive. Brandow spent most time engineering the houses to take standard

dimension materials and "to keep to a minimum the time the carpenters spend on thinking." (Brandow works for merchant builders on an average fee basis of \$750 per plan plus a royalty of \$25 per house. About 800 houses were built from his designs last year around Philadelphia.)

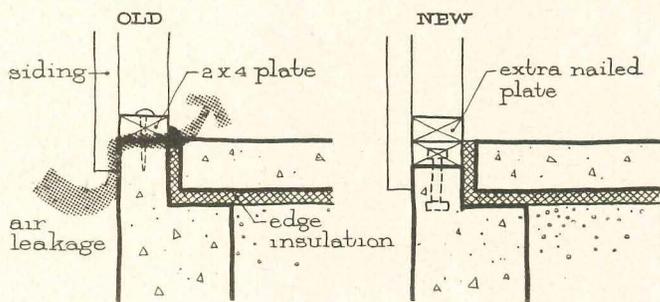
**Air conditioning.** All the houses have three-ton, air-cooled air-conditioners. The builders estimate the cooling system will add only \$85 a year in utility charges.

**Help in selling old homes.** Eighteen of the builder's first 60 sales involved helping prospective buyers sell their old homes. Franklin chose a realtor whom it knew would try his utmost to sell the old homes in the three to four months during which the new house was being built. He succeeded in all 18 cases.

**Adequate wiring.** These houses have about \$1,000 of electrical services and fixtures. They feature 3-wire 115-amp. entry boxes, 20 to 24-circuit load centers, multibreaker service boxes, 240-volt lines for range and clothes dryer. Wall outlets are spaced every 6'. Recessed living room lights, back-lighted kitchen cabinets and fluorescent lamps are included.

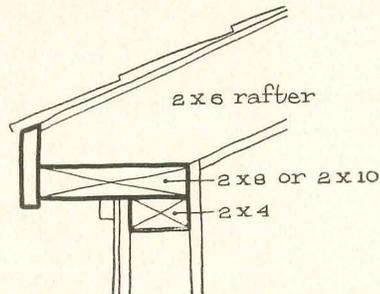
**Top merchandising.** Brochures on each house give more than 1,000 words of technical information on materials used. The ranch house has a basement which accounts for \$1,700 of its cost. "It's easier to sell the house that way," Leon Wiener says. "If they don't want a basement, we just knock off \$1,700. It's harder if you have to add \$1,700 for a basement."/END.

## 56 Slab detail stops air leakage



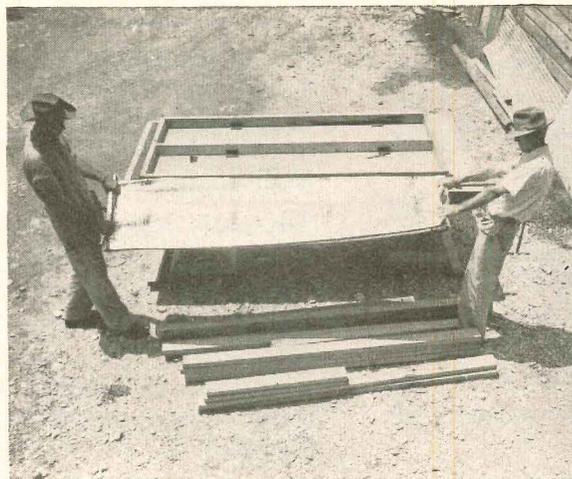
One of Don Drummond's biggest complaint headach Kansas City was drafts caused by air leaking into the l under the plate at the juncture with the slab. Even ce was not a sure answer. He now adds 2" of gravel to h 6" base, raising the slab that much higher, then use extra 2" x 4" plate nailed to the customary one bolt the foundation wall. Any cold air that might step in u the plate is thus dead-ended against the edge insulation the slab body, and the calking operation is no longer r sary. Best of all, says Drummond, "it has killed all plaints, and eliminated 'go-backs'."

## 57 Top plate doubles as soffit

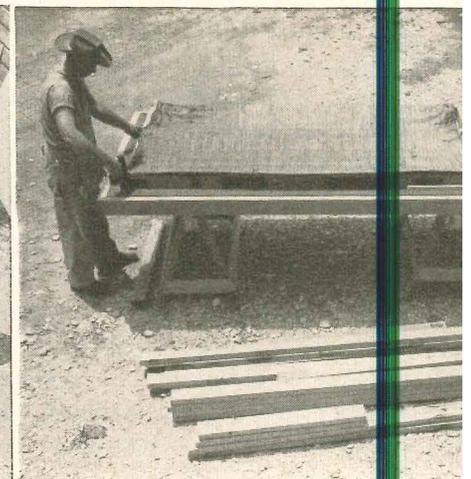


Box cornice work can consume expensive time, so M. C Smith, of Southampton, N.Y., uses 2" x 8"s or 2" x 10"s as a combination double plate and cornice soffit. The top plate acts as a nailing base for the angled ends of the 6" rafters, and with the addition of the fascia 1 becomes a completely enclosed cornice.

Conventional outriggers and exterior grade plywood fits are eliminated, and Smith estimates his net savi: 50¢ per lin. ft.



Insulation is stretched to full size



Tight fit is obtained on four sides

## 58 32 panels are insulated in one hour

Further refinement of the Lu-Re-Co panel system ha made by Lumber Dealer Fred Dill, Carmel, N.Y. applies 4'x8' blankets of foil-faced insulation whi panels are still in the jig. All 32 panels in his 1,000 house are insulated in an hour, compared to three t hours formerly, and Dill claims that a tighter, more e job results. In the early stages of construction, the fo

# BUILD BETTER FOR LESS

## 59

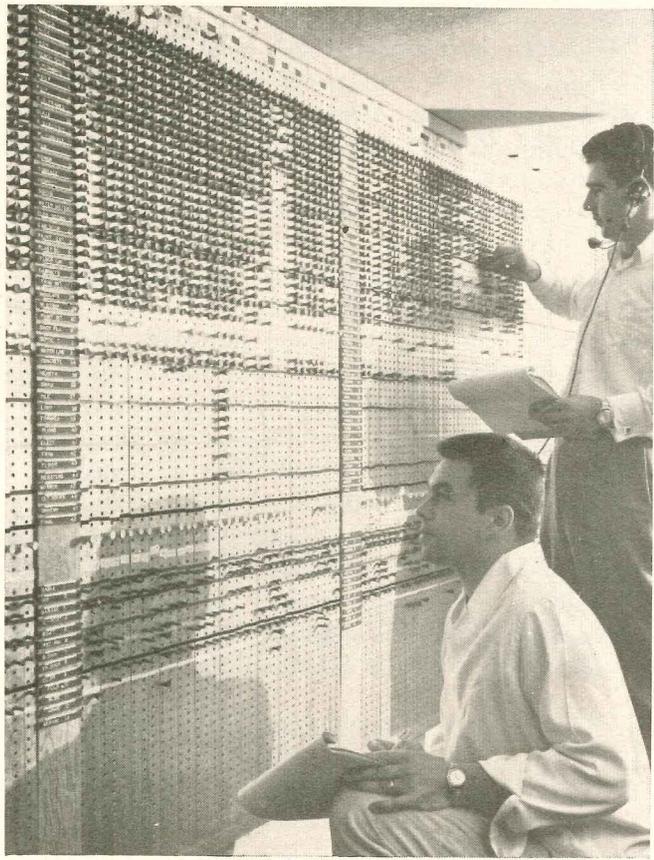
### Visual progress record cuts down construction time

Construction control is just as vital to home building as to any other industry. An aluminum pegboard system enables Century Builders to see at a glance the exact status of every house in their six widely separated building locations. This visual control helped cut building time from 90 days per house to 72 (1955 volume: 680 houses).

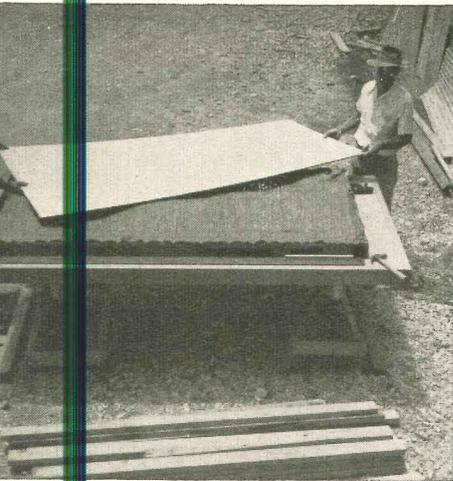
Each vertical row of holes (60 deep) represents a lot. The first 18 represent major operations (materials, construction, inspection), with 12 spaces below reserved for buyer materials. As work is started or material ordered, a yellow peg (actually a golf tee) is inserted. When completed, the color of the room changes the yellow peg to red.

Superintendents are responsible for a telephone report on the start and completion of every operation. Status of house is immediately changed on the control chart and necessary instructions given for the next phase of the work. Auditors use the board to authorize payments to subs and suppliers (payments without a "red flag"). The controller can give up-to-the-minute progress reports by telephone without leaving his desk.

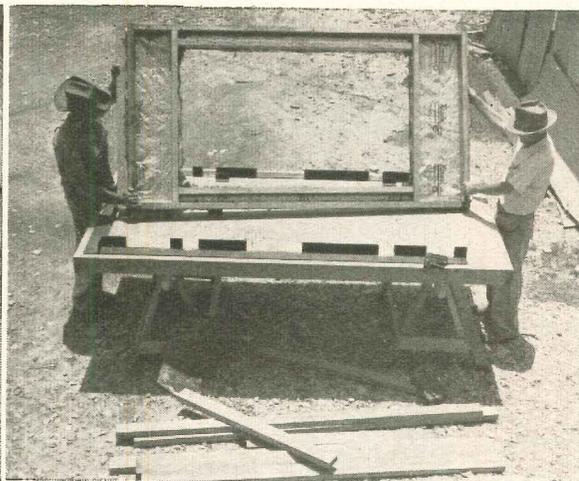
Howard Staples & Assoc.



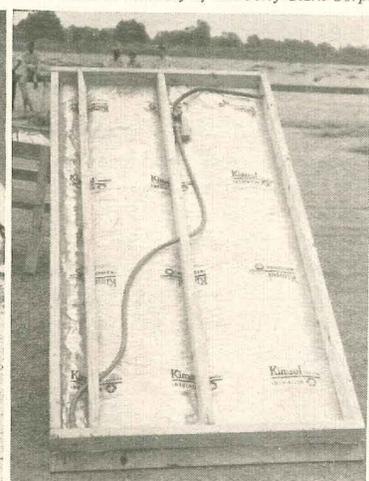
Photos: Courtesy of Kimberly-Clark Corp.



Sheathing goes on over insulation



Strips go around window opening



Finished panel has conduit attached

...esses buyers by its neat appearance, Dill adds. The compressed form of the blankets, as shipped (enough for a whole house in one carton), keeps required storage space to a minimum. Electricians and plumbers like the fact they can do their jobs without having to tear holes in insulation. Dill estimates the cost of insulation at approximately \$31 per M.

# BIGGEST BUILDERS OF 1955

*Tom Lively's Centex Construction noses out Bill Levitt for greatest volume of starts, but Levitt builds whole towns*

The typical giant home builder in 1955 put up a three bedroom two bath ranch type house on a small to medium sized lot. He sold it for \$12,000 to \$15,000.

The leaders often achieved their sales volume by marketing under give-away VA terms or offering more cubage per dollar than their competitors—thanks perhaps to the sheer magnitude of operation. Although design tends to be undistinguished, some plans are excellent.

This composite picture emerges from HOUSE & HOME's third annual survey of the men and firms who started \* the largest number of 1- to 4-family dwellings (excluding prefabs). For the top 15 (whose best selling models are shown on the next five pages), both total output and percentage of the US total are shrinking. Last year's 15 leaders started 31,659 houses—2.4% of the national total of 1,311,100 private starts. In 1954, the 14 biggest builders put up 34,125 of the nation's 1,201,700 private homes, 2.8% of the total. They accounted for 41,753 (3.7%) of 1953's 1,102,400 private starts.

The news that Tom Lively's Centex Construction Co. has displaced Community Builder William J. Levitt as the nation's biggest home builder requires special explanation. Levitt, amid a campaign for easier VA and FHA terms, has been announcing that sales at his mammoth Levittown, Pa., project have become

"very bad" lately. Alone among the nation's leading me housing, Levitt refused to furnish figures on his 1955 st HOUSE & HOME compiled them from official sources (see cap next page).

As in 1954, Levitt was the the only biggest builder w output was concentrated on one site. Nine others confined n all their operations to a single major market area—and s of these are in Los Angeles and southern California. Ce F&S Construction and Earl W. Smith remained for the year in a row leaders among the new breed of operators achieve volume by spreading their activity over as many a cities or even four states. This mobile-builder group is jo this year by Florida's Mackle Co., often a runner-up in pre HOUSE & HOME surveys. The Mackles are one of five newco to the 1955 list; turnover is high in the top ranks.

Most of 1955's big 15 are planning to hold the line on p this year. Seven say they plan to boost production; four cutbacks because of poor sales. Says Walter Bollenbacher Los Angeles: "Until we get rid of what we have, we're not b ing a lot more. I think the pipeline is filled for six mon

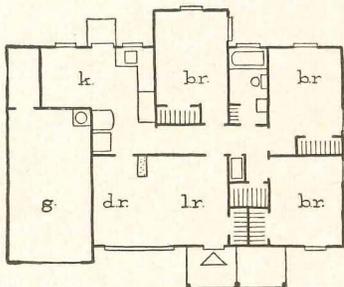
\* Starts figures are based on a canvass of NAHB chapters direct r from builders involved and, where pertinent, a double-check of bu permits, plat filings, title records or mortgage recordings.

1

Laughead



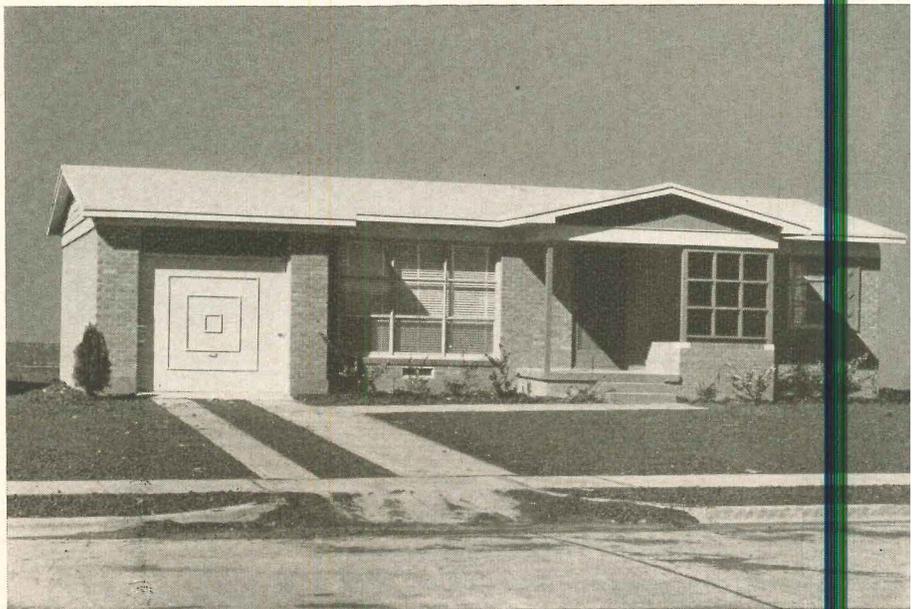
President Tom Lively (above) heads an executive team notable for its youth. Lively is 35. Only official of Centex over 45 is Executive Vice President Ira Rupley, 74. E. L. Higgins, vice president for construction, is 38. Osborne Fernald, secretary and purchasing agent, is 42. Says Rupley: "We departmentalize to a fare-thee-well. Our ability to build anywhere in the US is based on this."

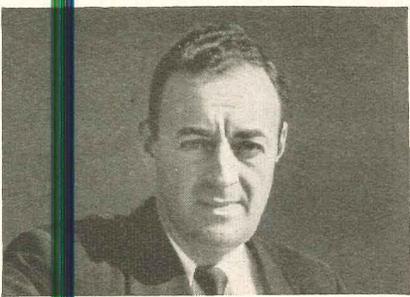


CENTEX CONSTRUCTION CO. started 3,214 single-family homes in such widely-scattered cities as Dallas (its headquarters), Garland, Grand Prairie and Houston, Tex., San Jose and Anaheim, Calif. The firm also began 476 units of luxury apartments.

The 1086 sq. ft., three-bedroom, one-bath brick veneer model shown below is typical of Centex output. It sold for \$10,950 (VA no-down,

FHA \$950 down) in Dallas. This house signed by Architects Milam and Roper of las, was one of ten floor plans (each with different elevations) offered in its subdiv Says Centex: "We try to make the custome he is getting a custom house without ac giving him one." Centex plans to enter s new cities, build 5,000 houses this year. A design change will be adoption of window

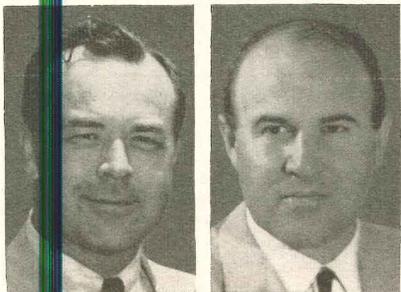
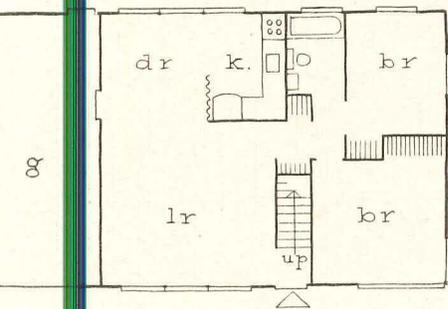




perly William J. Levitt, president of Levitt & Sons, takes pride not only in being the Henry Ford of housing, but also—as a TV documentary film about Levittown observed last May—being creator of “the biggest planned community since the Continental Congress invited an infant to plan Washington, D.C.”

LEVITT & SONS started some 3,000 single-family houses in Levittown, Pa. The starts figure, which President Bill Levitt has refused to confirm or deny, is derived from a check of tax assessment records in the three Bucks County townships, lot-approval records of the county planning commission, data collected by editors of the Levittown newspaper, building permit figures compiled by the state. All are in close

agreement, although one Levitt subcontractor says he built closer to 2,500 than 3,000 homes in '55. Says Levitt: “Building houses is the simplest part of our job.” The big part, he feels, is creation of a complete community with facilities for 70,000 inhabitants. The best-selling “Jubilee” model (pictured) has three bedrooms, one bath, sells for \$10,900. This year, Levitt hopes to complete the town (about 4,000 more houses).

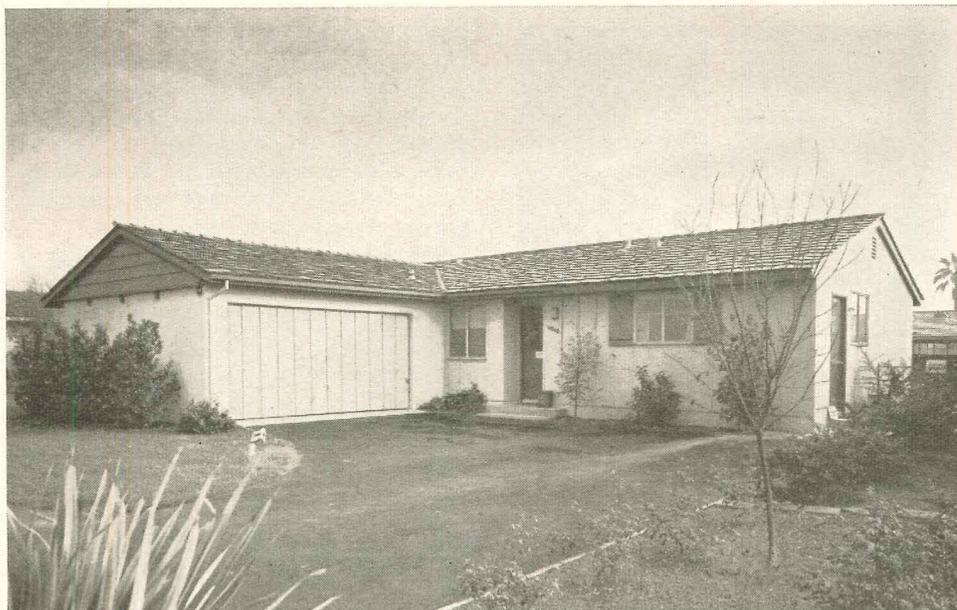
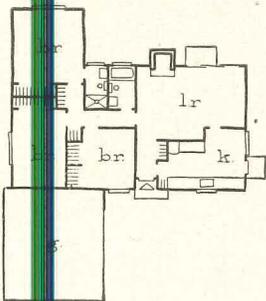


McDONALD BROS. reported 2,842 starts—nearly all in the Los Angeles-San Bernardino, Calif. area, with a few in Fresno and Reno and 120 government radar station houses in scattered eastern states.

pany architectural department, provides a living room which should be easy to fit with furniture, a well-sited fireplace. The house was offered on no-down, \$86 a month VA terms with built-in range, oven, refrigerator. Plans for this year: from 2,750 to 3,250 homes, mostly priced from \$13-\$15,000, mostly with four bedrooms, two baths, two-car garage. McDonald will continue to avoid contemporary design.

Among their best sellers is this 1,225 (plus garage) sq. ft., three-bedroom model which sells for \$13,165 on a 60' x 100' lot. The design, by Randall Williams and Leonard Poes of the com-

loyd L. McDonald (left) and Adrian Wilbur (right) are general partners in California's biggest home building firm of 1955. Wilbur handles the building, McDonald heavy construction. Leonard McDonald, in semi-retirement, retains small interest in the firm. The company planned to start 1,600 homes last month—almost as many as the 1,917 it built during all of 1954.



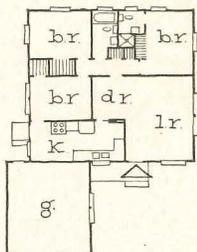
Mayfield Photos, Inc.

4



Inman

Milton Kaufman (l) and Don Wilson (r) have been building partners for three years.



KAUFMAN-WILSON reported 2,527 starts in Torrance, West Covina and Puente, Calif. (all Los Angeles suburbs). All were three- or four-bedroom models from 1,110 to 1,200 sq. ft. with prices from \$13,725 to \$14,300.

The firm credits much sales success to sticking to time-hallowed items like lath and plaster walls, hardwood floors on concrete wall foundations, pitched roofs. The square shape of

the \$14,150 best-seller shown below (Architect James R. Friend) cuts construction costs, but creates unlit interior space in a three-bedroom model. The 1,169 sq. ft. house came on a 50' by 100' lot, was offered only on VA terms.

This year's plans: another 2,500 houses, provided VA terms are eased again; if they are not, fewer.

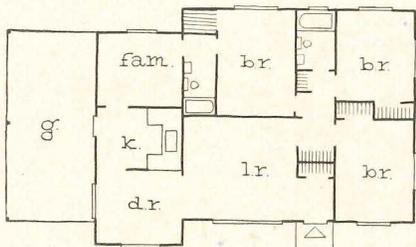
B. B. Erikson



5



President Sam Hoffman of F&S (which stands for father & son) is former freight trucker.



F&S CONSTRUCTION CO. started 2,378 houses in Denver, Salt Lake City, Phoenix and Chicago. All were three bedroomers priced from \$7,450 to \$14,950. F&S has 70-employee headquarters in Phoenix (where it has built some 3,000 homes) although the firm is no longer building there. President Sam Hoffman, 55, keeps in touch with his far-flung operations with two private company planes (ten-passenger Lockheed

Lodestar and a five-passenger twin Beech). The two-bath, 1,176 sq. ft. house shown below accounted for some 50% of F&S sales. It cost \$9,250 in Salt Lake City with concrete masonry and \$11,000 in Denver with brick veneer. F&S frankly stresses space for the price; plans to build "about the same" number of homes this year, but at higher prices.

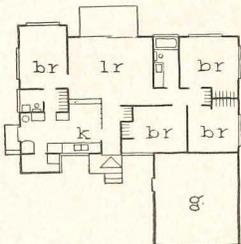
Al Frederic



6



Walter Bollenbacher (left) and Louis L. Kelton (right) have been building for 35 years.

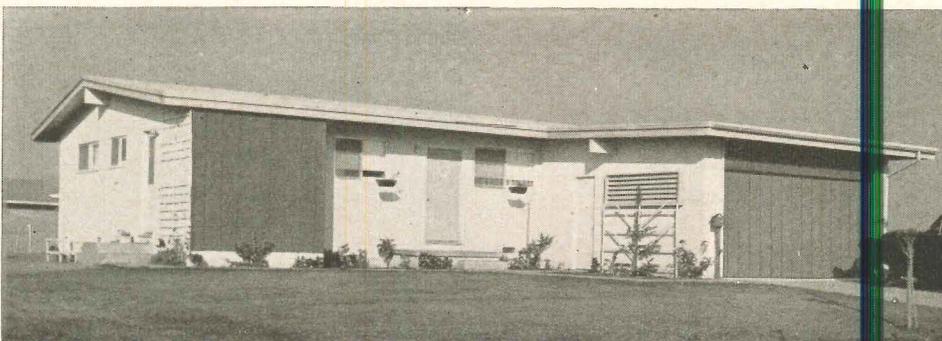


BOLLENBACHER & KELTON, operating in Los Angeles and San Diego Counties, Calif., began 2,287 homes with two to four bedrooms, 900 to 1,300 sq. ft. and price tags from \$11,000 to \$15,000. Some were ranch style, some conventional, some contemporary, but Walter Bollenbacher disclaims: "You can't get unusual features at those prices."

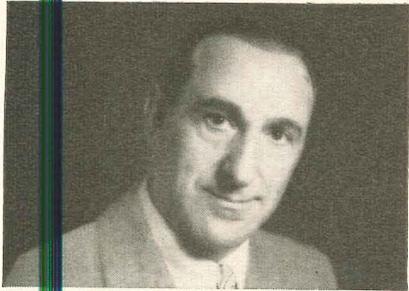
One of his best sellers was this 1,146 sq. ft.

(plus 350 sq. ft. garage) house designed by Architect Maxwell Starkman. It first sold for \$12,675 with no-down VA terms, is now priced at \$12,875. Average lot size: 60' x 105'.

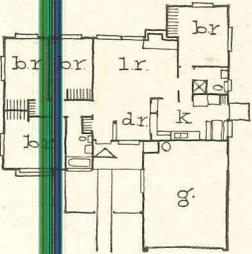
Plans for this year hinge on how sales develop. Right now, says Bollenbacher, "houses aren't selling." He puts part of the blame on sky-high land costs which mean homes "have to be too expensive."



Elson Alexandre



Richard S. Diller



RICHARD S. DILLER, in association (separately) with Richard S. Gunther and Irving L. Kalsman, accounted for 2,126 housing starts in the Los Angeles area.

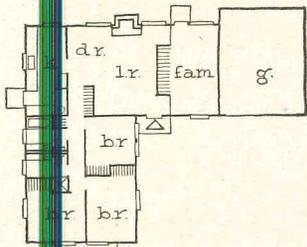
The Swiss ranch chalet pictured below, designed by Architect Martin Stern Jr., has four bedrooms, two baths, 1,238 sq. ft. (plus patio and garage), a semi-automatic dish washer and musical door chimes. It sold for \$13,200 on lots

averaging 60' x 100'. The Diller combine also built homes ranging from \$12,000 to \$17,500. Like most big Los Angeles builders, Diller pumps up sales with big display ads in Sunday realty sections. Last year, the copy appeal was tilted heavily toward nothing-down VA terms.

This year, Diller expects to build about 2,000 houses in the San Fernando Valley, 600 in Long Beach, 300 near Puente.



Aldon is partnership of (l to r) Willard Wood, Don Metz, Ira Oberndorfer.



ALDON CONSTRUCTION CO. began 2,093 homes in Los Angeles and San Diego and in Orange County between the two. All had three or four bedrooms, two baths. They varied from 1,100 to 1,350 sq. ft. at prices from \$12,750 to \$15,600. All were offered on VA terms—many with negative no down payments. In San Diego, Aldon was teamed up with Del E. Webb Construction Co., builder of 840 homes during the year.

For the first time last year, Aldon offered built-in ovens and ranges. One of the best sellers was this 1,100 sq. ft., three-bedroom model priced at \$13,150 on a 60' lot.

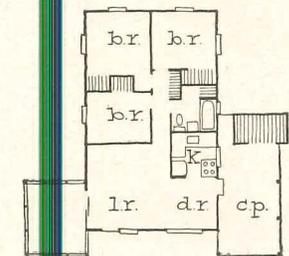
Aldon plans to curtail its production in 1956 because it is so hard to find cheap enough land where people want to live and because of stiffer VA terms. Aldon figures it has built some 25,000 homes in postwar years.



Julius Schulman



Mackle brothers are Vice Pres. Frank E.; Pres. Robert F.; Sec.-Treas. Robert F.



THE MACKLE CO. of Miami started 1,774 homes in nine south Florida locations from Miami to St. Petersburg. Many are small, but the prices are by far the lowest of any homes sold by the biggest builders. Mackle houses cost \$4,950 (for a one-bedroom unit) to \$7,750 (for their best-selling three-bedroom model).

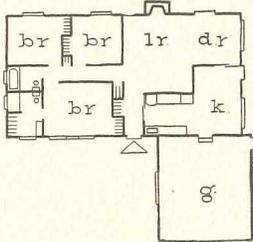
The latter, shown below, looks bigger than its 881 sq. ft. because Architect James E. Vensel

wisely carried the roof line over the screened porch and carport. This house was sold in one Mackle subdivision for \$175 closing costs VA, and in another for \$1,100 down and \$45 a month. It came on lots at least 75' x 100'. Mackle houses, like so many in south Florida, are CBS construction. This year, the company plans 2,000 houses, is also negotiating with four union groups for big retirement villages.





Andy Oddstad, 37, is a nephew of Big Builder Henry Stoneson of San Francisco.



ODDSTAD HOMES, one of the several corporations headed by NAHB Director Andres F. Oddstad Jr., began 1,640 homes in five tracts in San Francisco suburbs mostly on hillside sites. One of the best sellers was this 1,300 sq. ft. ranch style house (plus 437 sq. ft. garage). It was priced at \$16,500 on conventional or FHA terms, with a 7,000 sq. ft. lot. Other Oddstad houses

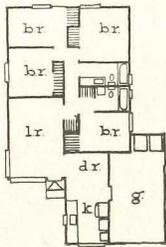
cost from \$9,750 to \$22,500. Oddstad got himself a lot of national attention last year when he agreed to sell the visiting delegation of Russian housers a split-level for \$8,000.

This year, Oddstad hopes to step up to 2,000 houses, including some in the Oakland hills on sites so steep that other builders have shunned them for years.

Don Faulkner



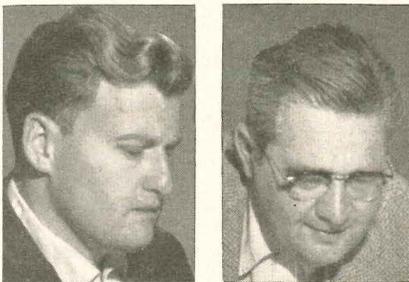
Earl "Flat Top" Smith gets big kick out of designing all his houses himself.



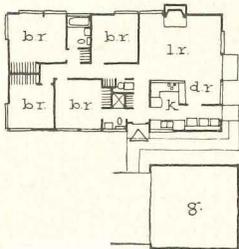
EARL W. SMITH started 1,562 units in 20 cities spanning 350 miles of northern California. Chief concentrations were 260 homes in Santa Clara County, 125 in Sacramento and some 240 in the Eureka-Fortuna area. Smith builds small projects in towns smaller than most big builders dare venture. His method involves central pre-cutting in his El Cerrito headquarters and spacing of building sites close enough so

one construction superintendent can cover several each day.

To build 1,562 homes in a year is no mean feat. To do it while serving as NAHB president is something nobody else has ever done. Even so, as with most NAHB presidents, Smith volume suffered; in '54 he started 2,316 homes. Typical model: 1,161 sq. ft., four-bedroom house for \$9,400. This year: about 1,000.



Jerome Snyder (l) and Max Levine (r) are partners in three-year old Midwood Homes.

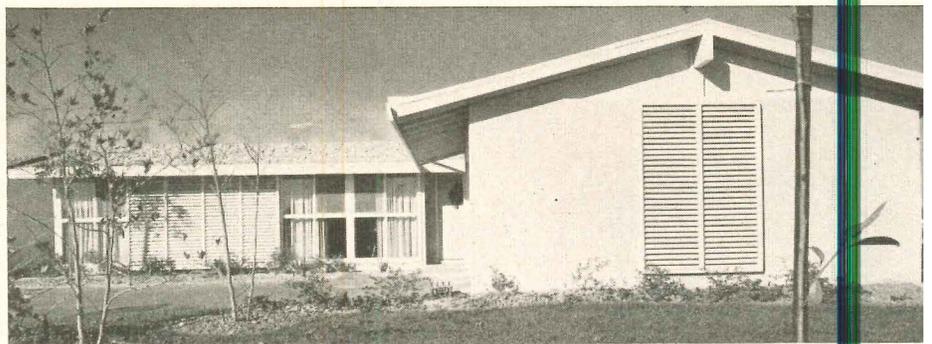


MIDWOOD HOMES started 1,530 houses in the Los Angeles area. Eighty per cent had three bedrooms and den, the rest two bedrooms and den. Prices ran from \$13,000 to \$25,000. Best seller was this 1,200 sq. ft. house on a 65' x 120' lot for \$13,000. On no-nodown terms, the subdivision sold out 221 units in one weekend.

Such success is understandable. Architects Palmer & Kreisel gave Midwood a handsome

structure with a first-rate floor plan. Praised worthy features: 1) one bedroom separated from the others, 2) good sized entry lobby—easily controlled from the kitchen as is the family room, 3) good traffic circulation.

Midwood's principals, Jerry Snyder, 25, whose father is a small contractor in Anaheim, and Max Levine, 38, his brother-in-law, have been building since 1953. '56 outlook: 2,000 homes



Gladser Studio



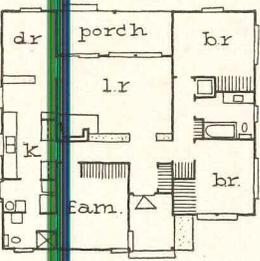
Daniel (l) and Edgar Cohn

DANIEL AND EDGAR COHN, brothers who operate under a variety of corporate titles in the Los Angeles area, started 1,529 homes—all three bedroom models. Size ranged from 1050 to 1250 sq. ft., price from \$12,000 to \$15,000.

The two-bath, 1,250 sq. ft. version shown below sold for \$14,575 in the San Fernando Valley, with no-down terms available to veterans. Lots

averaged 60' x 100'. Floor plan requires some 30' or 40' of inside corridor space to make it work.

The Cohn brothers hope to put up 1,600 homes this year. These will include some at \$12,000 but others higher-priced than in 1955 at \$16,000 and \$18,500. Like many other biggest builders in the Los Angeles area, they say they face no land or mortgage problems.



Tom Kennedy



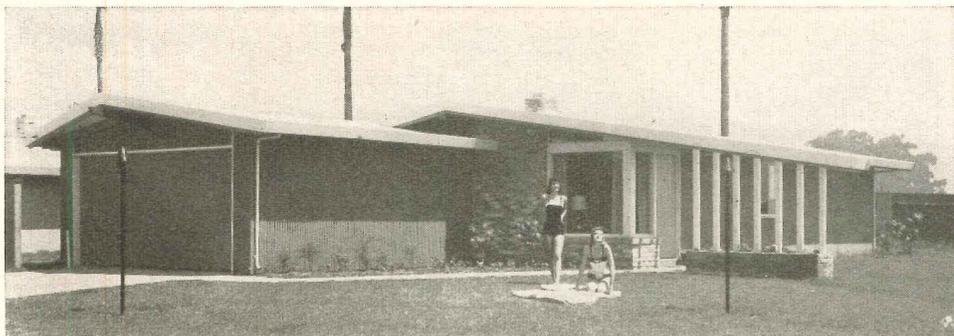
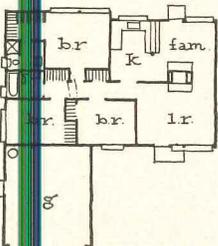
A. L. BRANDEN, 34 year old housing newcomer who went into the mass market in 1952 with mostly borrowed capital, reported 1,513 starts on three tracts around San Francisco Bay. (At one, he was teamed up with Big Builder Mark Taper of Los Angeles' Lakewood Village fame.)

Branden was offering three basic houses, priced from \$10,600 to \$15,900—all with three-

bedrooms and two baths. Most popular model (pictured) was a 1,120 sq. ft. (plus garage) house selling for \$12,200 at Hayward and \$12,250 at Sunnyvale. It had a family room and two-way, free-standing fireplace, was offered under no-down, 30 year TV terms. Merchandising includes a huge sales office at one tract.

This year, Branden hopes to up production to 2,500, with prices about \$500 higher.

Alec Lee Branden is the son of a Norwegian-Canadian builder.

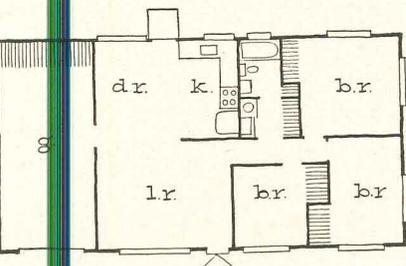


Donald L. Huber, exec. vice pres. (l) and Charles H. Huber, sec. treas. of Huber Homes.

HUBER HOMES of Dayton, Ohio started 1,265 houses there and in Sidney, Ohio. The firm builds only one model, varying between hip and gable roofs and left or right floor plans. It is a 1,060 sq. ft., three-bedroom, one-bath brick-veneer-on-slab house selling FHA and conventionally for \$12,450 on 7,500 sq. ft. lots.

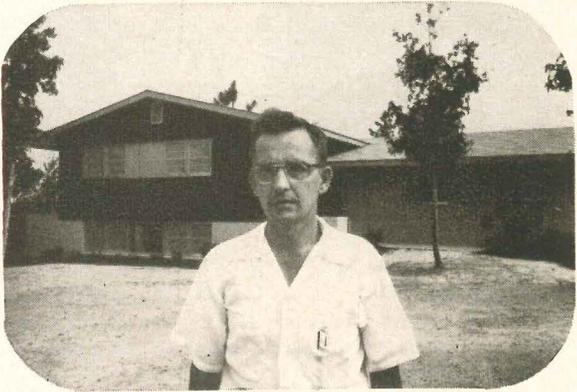
The company upped production from 32 houses in 1953 to 531 in 1954 and then to last

year's record despite the unexpected death of founder Herbert C. Huber in mid '54. His sons, Charles H. Huber, 26, and Donald L. Huber, 23, took over along with a son-in-law, William G. Brennan, 27, who is general sales manager. The firm also began selling its building package to other builders (June, News) but the houses counted here were both fabricated and erected by Huber. '56 outlook: 1,500 houses at same price.



# HOW A SMALL BUILDER GROWS BIGGER

**"I switched from cars to houses . . .**



**there's more to sell in a house"**

**"I learned the building business**



**from reading the magazines"**

**"I build one-of-a-kind houses**



**but I sell like a merchant builder"**

*Photos: H&H Staff,  
O. E. Cabaniss, Ed.  
Horouny*

**T**hree things have made Ray Wright successful—motors, magazines and merchandising.

Ray Wright is a young (36), energetic builder in Columbus, Ga. He is one of the few people qualified to make a comparison between construction and the automotive field—a comparison, trite because of constant repetition, suddenly fresh when Wright starts talking. He switched from selling used cars to building because he was convinced that there's more to sell in a house than in a car. Five years of success as a builder have strengthened this conviction.

*"But we have to prove to the public that home builders have much more to offer buyers than automobile manufacturers do."*

Ex-paratrooper Wright was still a sergeant in the Army when he started in the used car business. His first postwar try at building was disappointing—mainly, he now feels, because he supplied the money, let his carpenter-partner run the building end. Wright pulled out when he realized he wasn't really making money.

*"I didn't know much about building, but I did know we weren't going about it right."*

Wright needed to learn the building business, turned to professional building magazines, claims they taught him the construction business.

*"It's like hiring experts—practically free."*

Reading magazines paid off—\$24,000 worth—on his first solo venture. Wright hasn't stopped reading them since.

Magazines paid off in a different way: He built magazine-promotion houses to establish his name in the community.

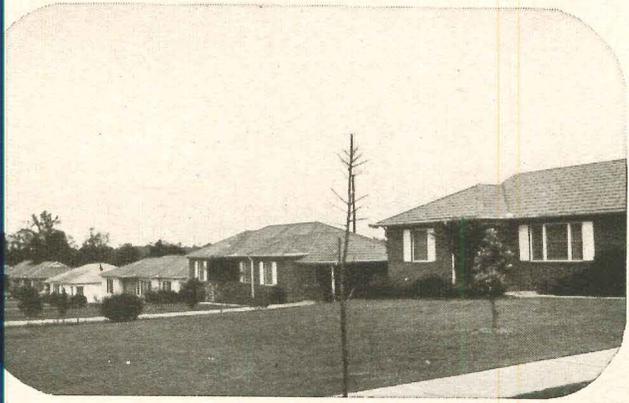
Wright gets local publicity that's extremely valuable, plus the benefit of something-to-talk-about to his prospects.

*"And it's no expense to the builder, beyond a press party."*

Wright's interest in national promotions and his varied selling features are perhaps more typical of merchant builders than one-of-a-kind builders. But they work for him.

*"You can't give people the same old house, year after year, and expect them to get excited. Get something to sell, and then sell it."*

That's what Wright says. That's what he's doing.



**1950 houses met Wright's market**



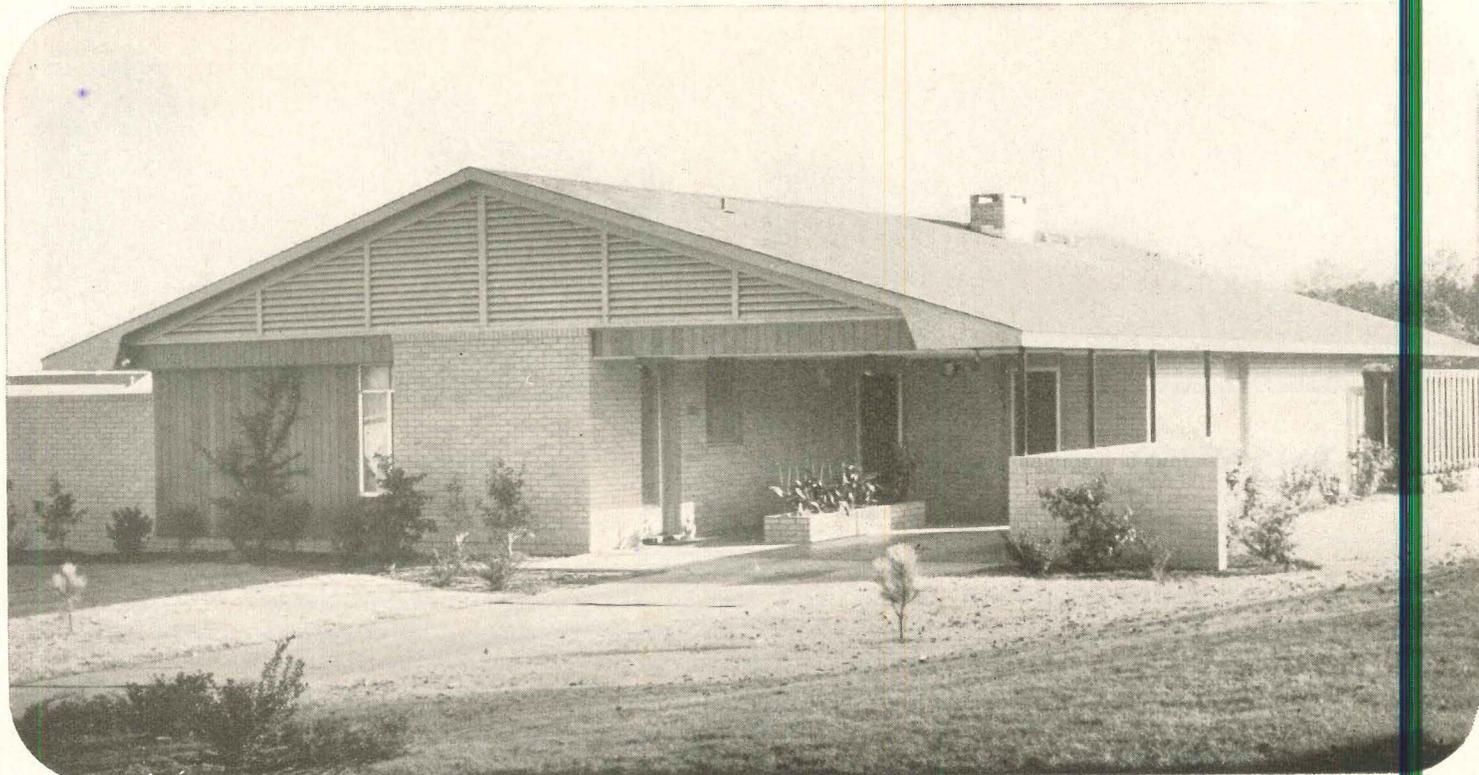
**. . . 1955 models tripled it**

When Wright started building, he concentrated on meeting his market, built "big bedrooms and brick" because that's what his shortage-market customers wanted. But reading and research convinced Wright that he was ignoring a larger market—a market that wanted *more* than satisfaction. He had sold chrome trim and a foreign-car look to his automobile customers, to step them up from a Ford to a Cadillac. So he looked for extra features that he could sell. His innate selectivity and his willingness to "give it a try" have paid off in stylish, salable houses like the one below—a clean-cut house that fits its lot, includes selling points like kitchen built-ins, a double fireplace (serving as living room hearth, terrace barbecue), a wrap-around terrace, a separate laundry off the kitchen, two baths for three bedrooms. The house writes its own sales talk to second-time buyers.

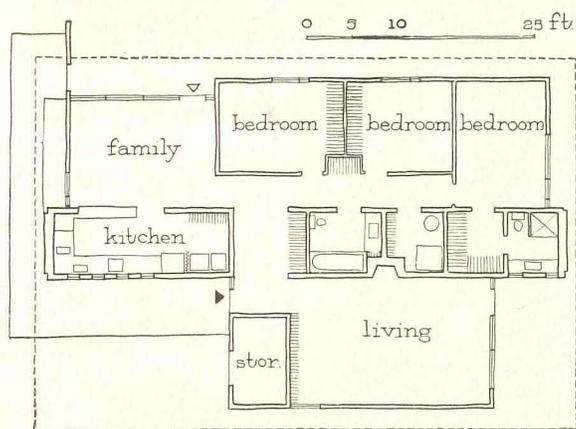
**Fresh design like this helps sell people out of their old houses**

*Photos: (above) H&H Staff; (below) Ledger Enquirer*





### Wright finds magazine promotion houses make money



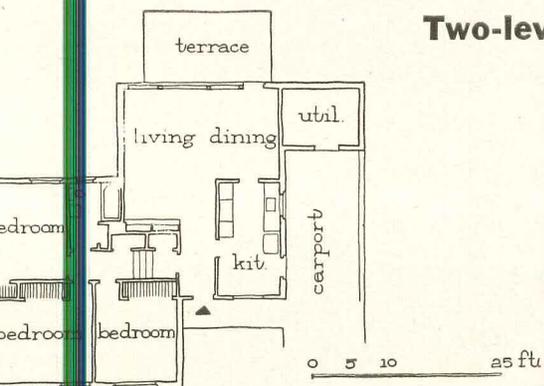
After building three magazine promotion houses, Wright is more enthusiastic than ever. The Columbus Sunday *Star-Ledger* gave him eight pages of publicity on the *Living-Hotpoint* house (above). He feels that association with a nationwide promotion, a top magazine, famous brand names, helps him sell *all* his houses. His whole-hearted cooperation assures return engagements for the promotions. Manufacturers are anxious to install their equipment in a magazine house, so he often saves money on materials, too. Three furniture companies vie for the chance to furnish his models. All this promotion and publicity is matched with good construction and sound business sense. Wright controls costs, supervises closely. He knows that all the showmanship in the world can't cover a sloppy job.

### Extras help sell houses

Sliding glass doors, porch skylights, slab construction are innovations in Columbus. Wright introduced them because they are new to second-time buyers, are an incentive to move them out of their old houses. He is constantly seeking new ideas in his reading, ideas that are practical for him to adopt. His nose for news is coupled with a willingness to attempt the unorthodox.

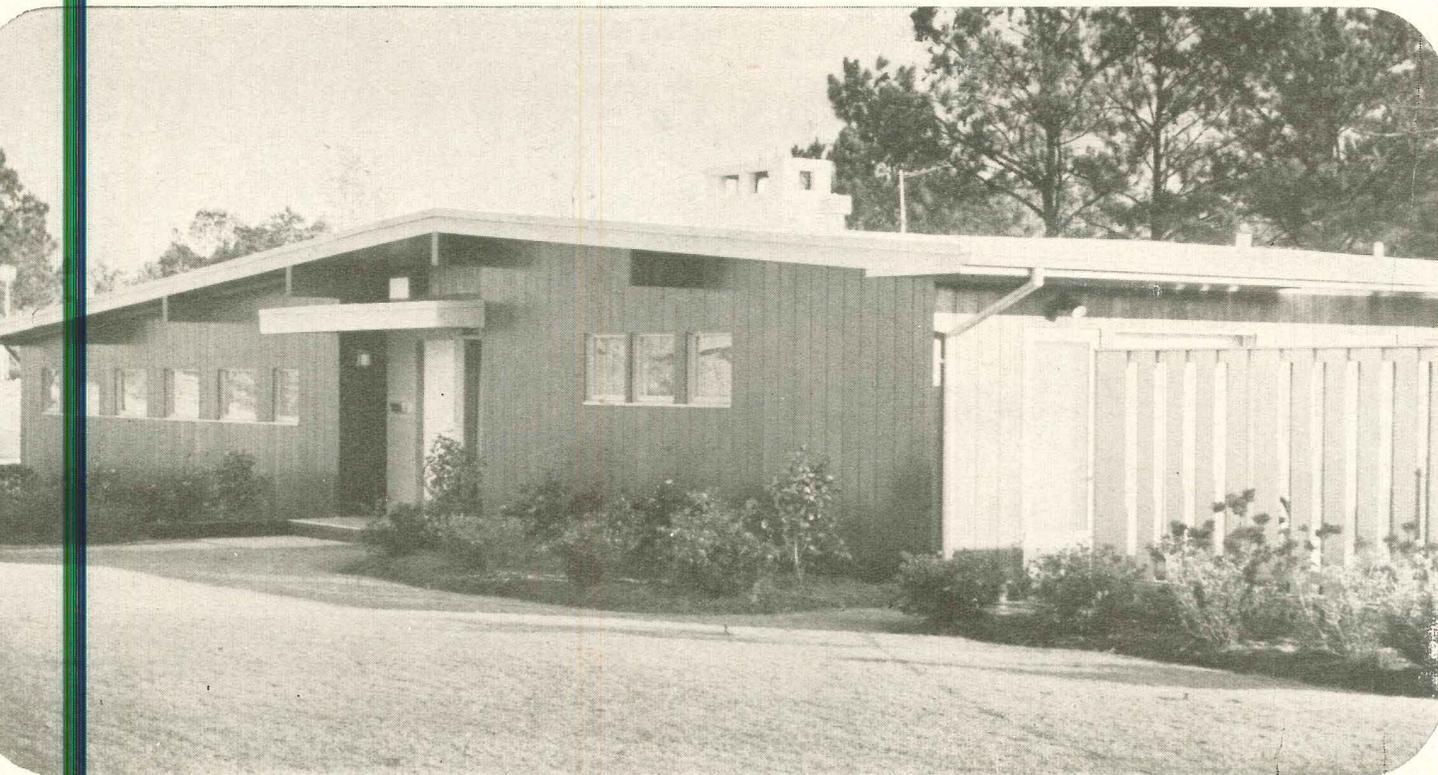


## Two-levels and splits are current best sellers

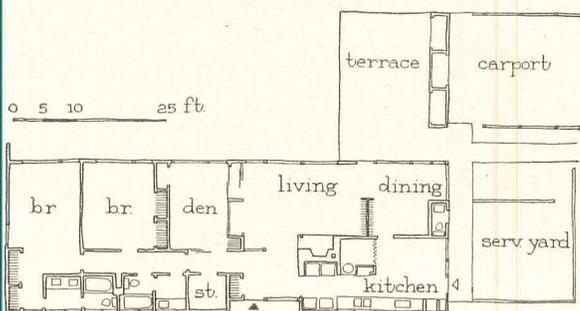


Wright favors multilevels; he sells them as fast as he builds them. He fits them to the site, never uses steep stairs, holds house low to ground. He built his first in '55, and now he's building lots more in '56. Architect: Wilbur D. Talley.

Photos: Ledger Enquirer; O. E. Cabaniss, and H&H Staff



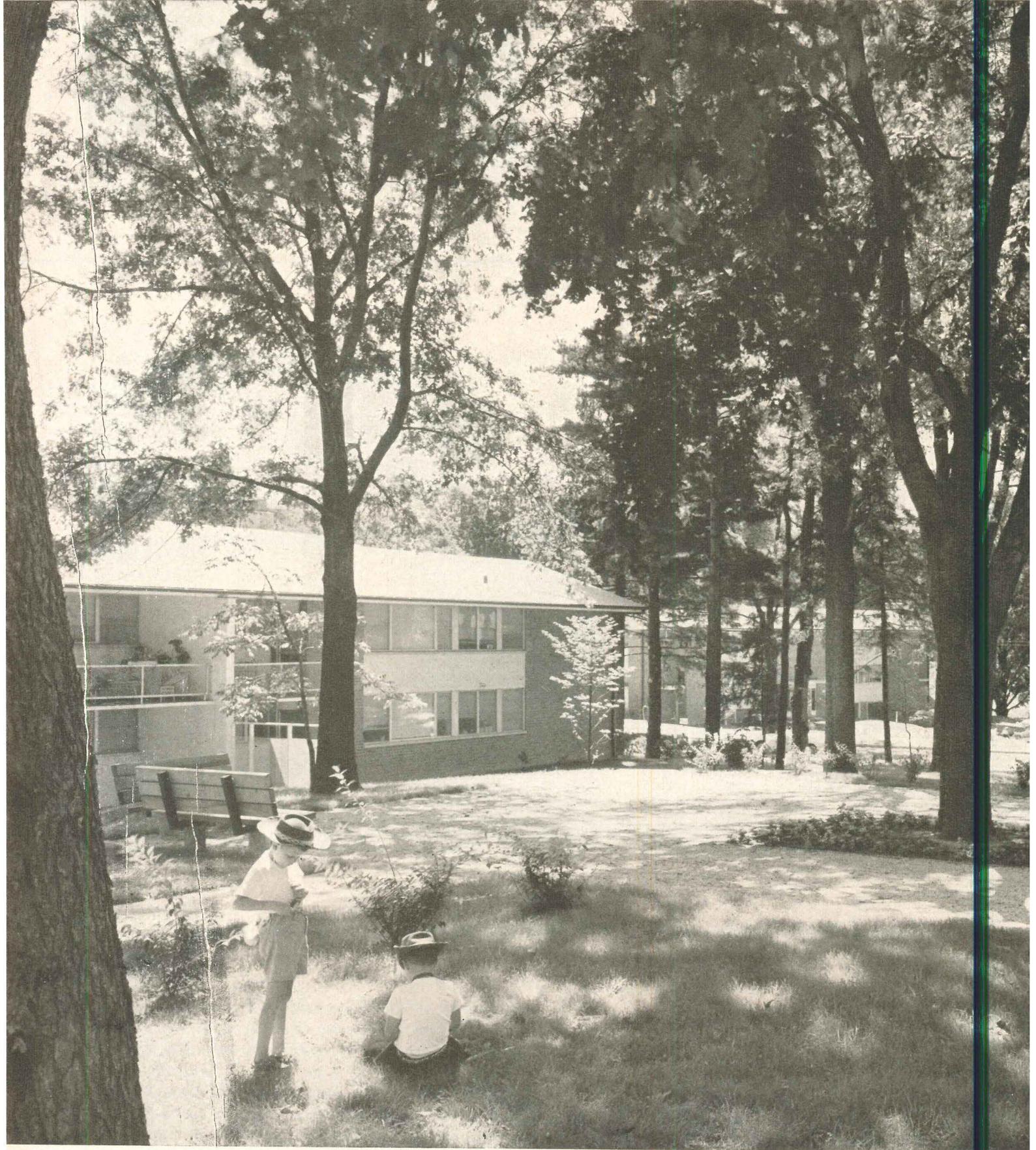
## His own house sums up Wright's secret—a mind open to new ideas



A measure of Wright's growth is the simplicity, suitability and utility of the house he chose for himself. It is a comfortable house, not at all startling, but every inch is planned for good living. The same common sense that brings Wright business success has dictated his choice here. For it is common sense that makes Wright see his customers as people, that tells him there's a lot to sell in a house, that helps him borrow from magazines and big builders—common sense that makes money for Ray Wright./END

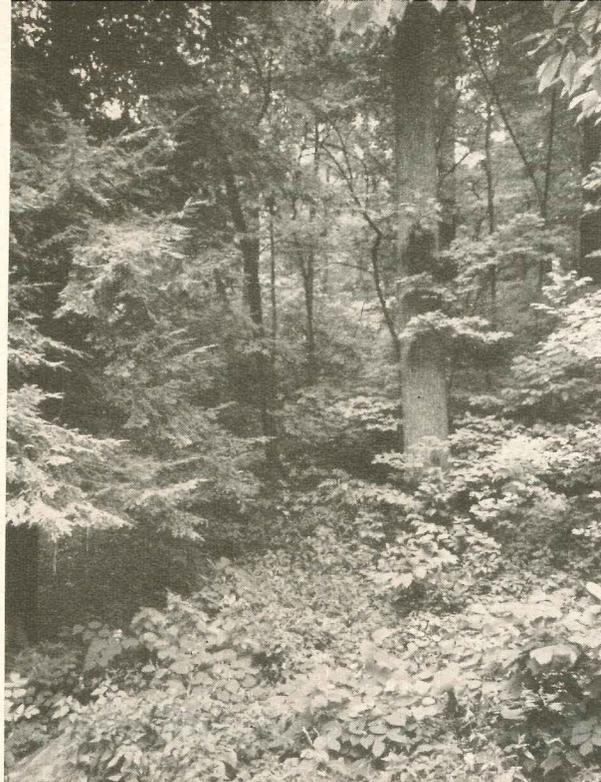
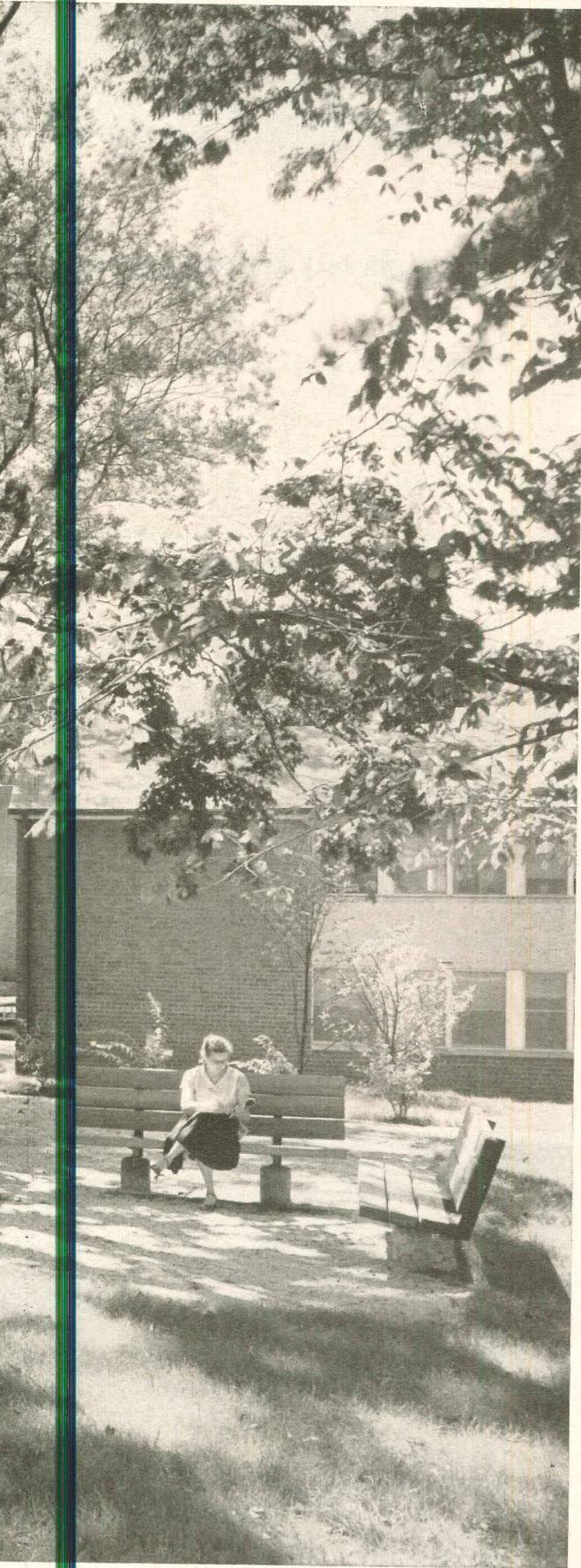
# GOOD LAND USE + GOOD ARCHITECTURE

ARCHITECT & PLANNER: Oskar Stonorov  
LANDSCAPE ARCHITECT: Cornelia Hahn  
GENERAL CONTRACTOR: Madway, Engineers & Contractors



# LONG EARNING LIFE

Photos: John Ebstel



**Old estate** was thickly wooded

Here is an example of post-608 rental housing—a 104-unit garden apartment project, called Cherokee Village, built on an old estate in Philadelphia's exclusive Chestnut Hill.

Even this rare example would never have been built if its owner had not seen a way around two obstacles:

1. How to persuade planning authorities and public opinion to approve multifamily housing on fine Class A residential property (zoned for three to four families per acre);

2. How to make rental housing an attractive investment without an appraisal that permits mortgaging out.

Architect Oskar Stonorov proposed a single formula that met both problems:

**“Preserve the character of the neighborhood. See that the buildings are well designed. Don't crowd them. Save the trees and hold the natural contours of the land. This will minimize present and future change and attract the best tenants today and tomorrow.**

Looking at Cherokee today (photos left and on following pages) you can see how scrupulously Stonorov followed his own counsel. You can also see why city officials and neighbors abandoned their traditional prejudice against multifamily housing.

From the investment point of view, the key feature of Stonorov's program is the way he guarded against physical and environmental deterioration and designed for high earning capacity long beyond the life of the mortgage. The 1954 tax law gives Owner Donald D. Dodge a chance to recover his investment (plus interest) through accelerated depreciation and then either to sell the project for a capital gain or to hold it for the substantial income available after the 20-year mortgage has been paid off. Either way, success depends on the project's planned ability to retain a high market value over a long term of years.

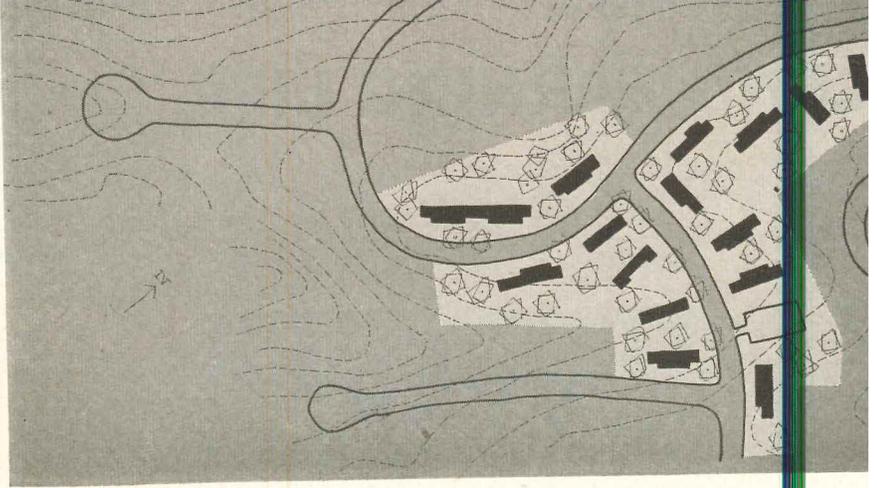
For more details, see next page.

**Cherokee Village** retains distinction of the original property



Fairchild Aerial Surveys, Inc.

**Don't** impose an arbitrary pattern of streets and buildings on your landscape. **Do** adjust streets and buildings to existing contours and to preserve existing trees. Stonorov had to go to court to force Philadelphia's street department to relocate one road by 4' in order to preserve seven magnificent oaks planted in 1860. After four months, he won his case.



## How to turn an old estate into a green-edged investment

At present Cherokee consists of 104 units in 15 buildings that occupy about 10.5 acres of the 51-acre Dodge estate adjoining Fairmount Park. (Future plans call for building two high-rise apartment houses on 19 acres and putting up 27 single family houses on the periphery of the property.)

Three of Cherokee's existing structures offer duplex apartments ("row houses" with 30' frontages and their own below-grade garages) and the others provide 40 street-floor and 40 one-story walk-up flats with a choice of one, two or three bedrooms. Eight upstairs flats have private entrances.

All buildings are of brick and stucco construction with low pitched roofs. Ground floor terraces and second floor balconies with walls or screens give every apartment space for outdoor living.

The site slopes sharply, falling off more than 30' along its main road. It was, and is, thickly wooded with mature and well cared-for trees: huge beeches, lindens, oaks and other hardwoods. Before any plans were drawn, Dodge spent \$3,500 to take an

inventory of trees. Location, size, condition and species were carefully plotted to enable the development to go ahead with a minimum loss of desirable specimens. Where grading threatened a fine tree, dry-laid stone walls were used to maintain the grade. Steep banks were replanted in ground covers. In all, Architect Stonorov and Landscape Architect Hahn saved 90 magnificent trees, some of them nearly 100 years old.

Other techniques employed by Stonorov in preserving the original character of the property: underground wiring (cost \$40,000); retaining walls to preserve natural grades (the great variety of outdoor areas achieved with very similar buildings is due largely to sloping terrain and planting); aluminum street light standards (extra cost \$100 per pole).

Prior to redevelopment, the land was appraised at \$5,000 per acre. In the completed section current appraisal is \$12,000 an acre. Construction cost was approximately \$11,000 per unit.

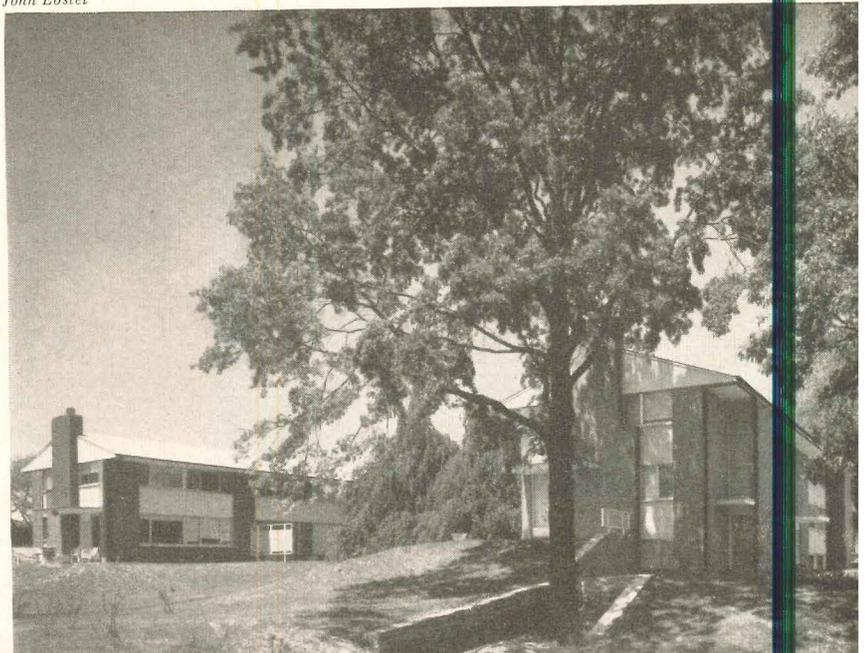
*Unit floor plans, page 166*

Tena Becksted



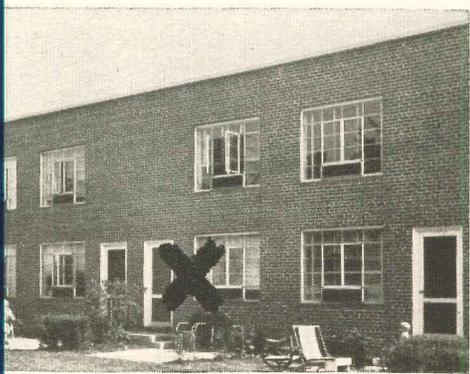
**Don't** rip out some of your finest assets—the trees. **Do** go out of your way to preserve them. Linden tree (right) was protected by stone retaining wall.

John Ebstel

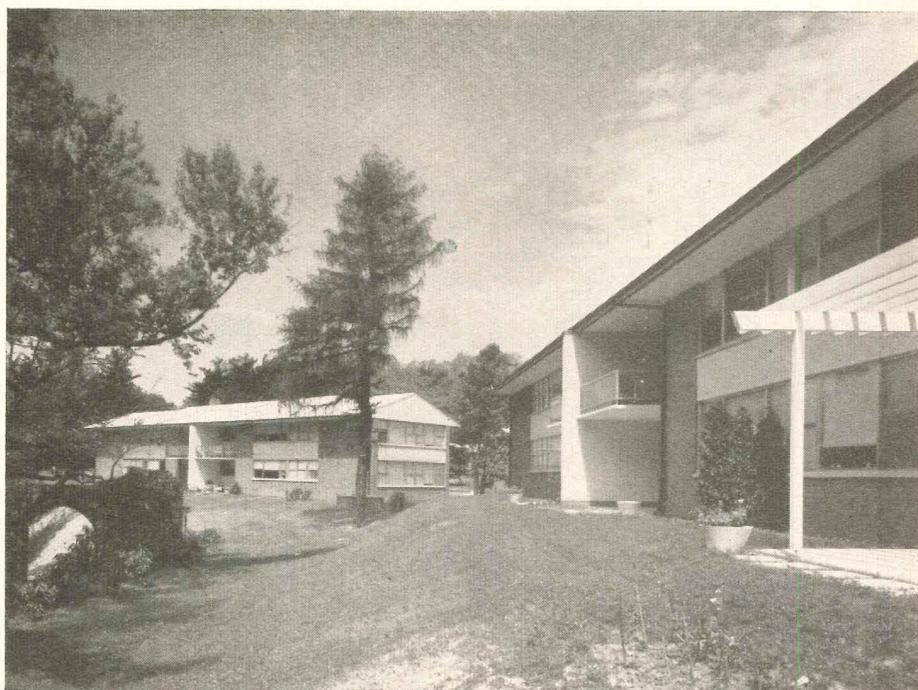




**Don't** flatten out your natural grades. Because some builders do that, many communities have lost their best residential areas against developers, forced latter into less stable (and secure) urban fringes. **Do** use retaining walls, steps, terracing etc. to keep charm of landscape.



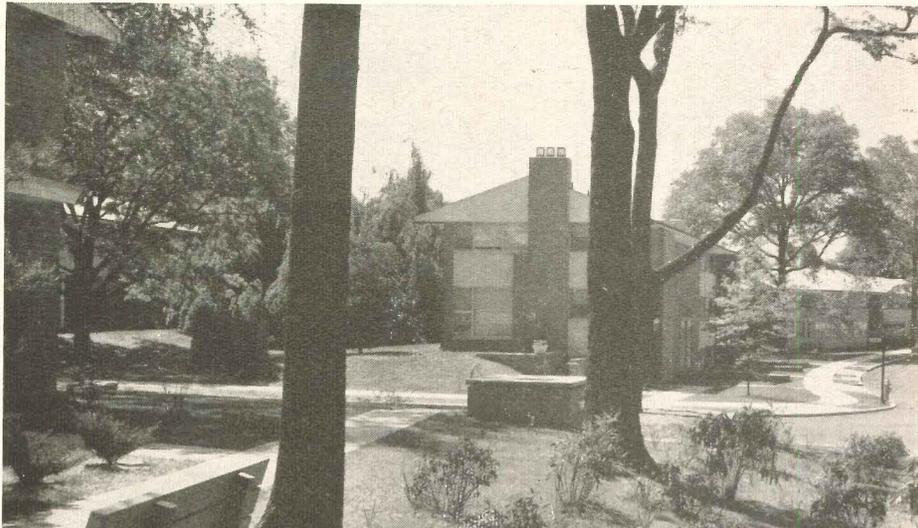
**Don't** think outdoor living just calls for a slab outside the back door. **Do** provide terraces and balconies, shaded and screened for privacy. A simple outdoor "space-divider" can be put in for \$160, will add immeasurably to making outdoors more inhabitable.

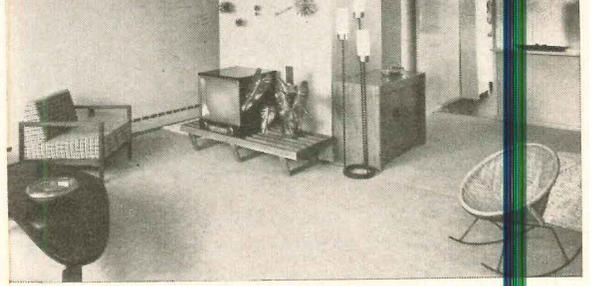
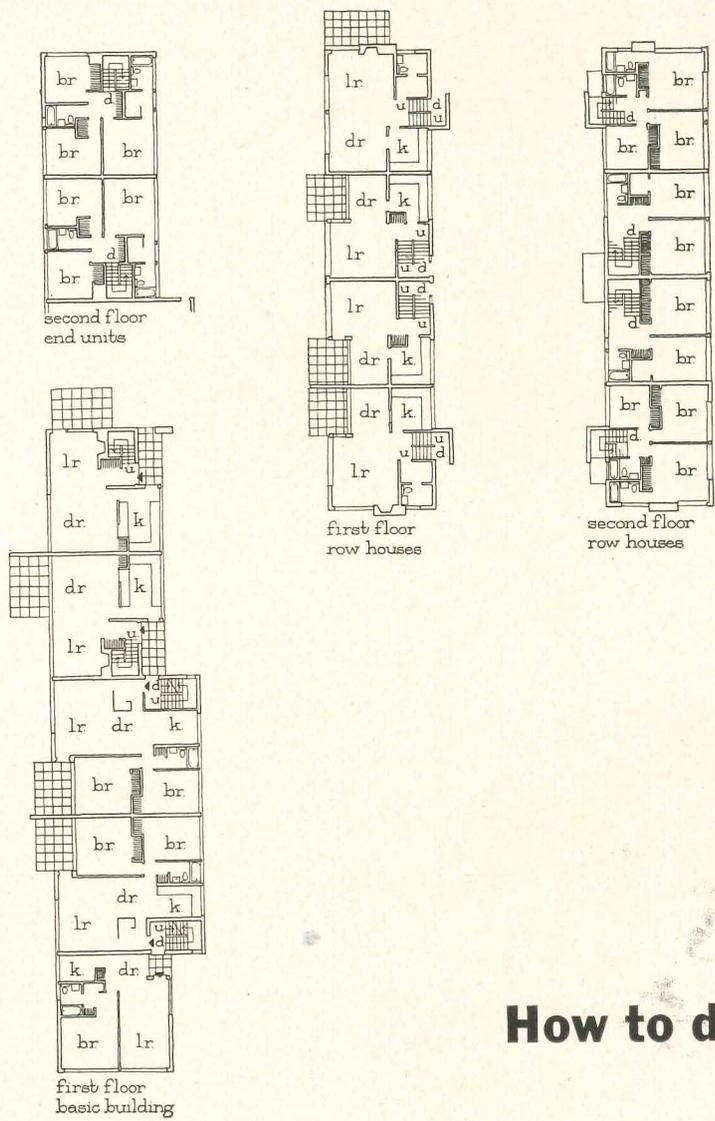


Photos: (top, l.) Fred Reid; (center, l.) Jerry Saltsberg; (others) John Ebstel

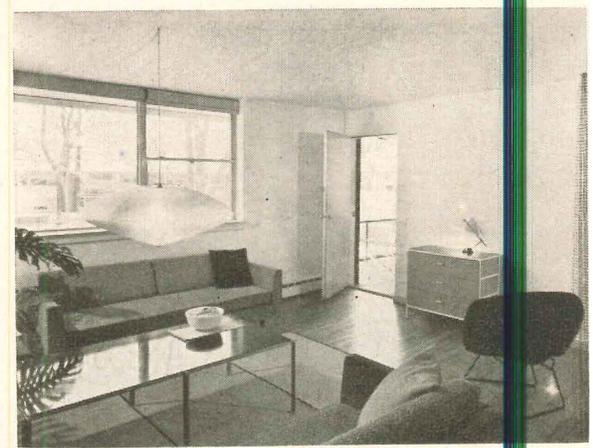


**Don't** replace your landscape with a "wire-crape". **Do** try to bury all your utilities. Cost per Cherokee unit: less than \$400. Transformers are located in low, brick vaults (center).





**Interiors** conform to open plan, with free-standing closets and translucent glass panels serving as space dividers. Living areas of upper floor apartments open onto balconies (below).



Photos: (above) Lawrence S. Williams; (opp.) John Ebstel

## How to diversify a real estate project

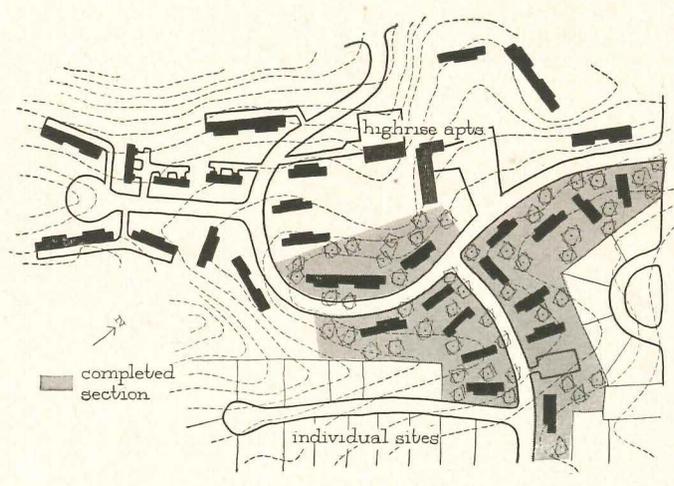
One-type residential developments often produce dull (and possibly unstable) communities—families of almost identical incomes, almost identical age almost identical numbers of children. Sociologists and planners have long deplored this—and so have smart investors.

During localized recessions projects with a single type of tenant may be specially hard hit. By including a variety of accommodations, and thus assuring a variety of tenants, Stonorov reduced the property's economic vulnerability. In Cherokee's completed first section, apartments range in size from three room units, renting at \$110 to one 6½-room end suite that rents for \$300.

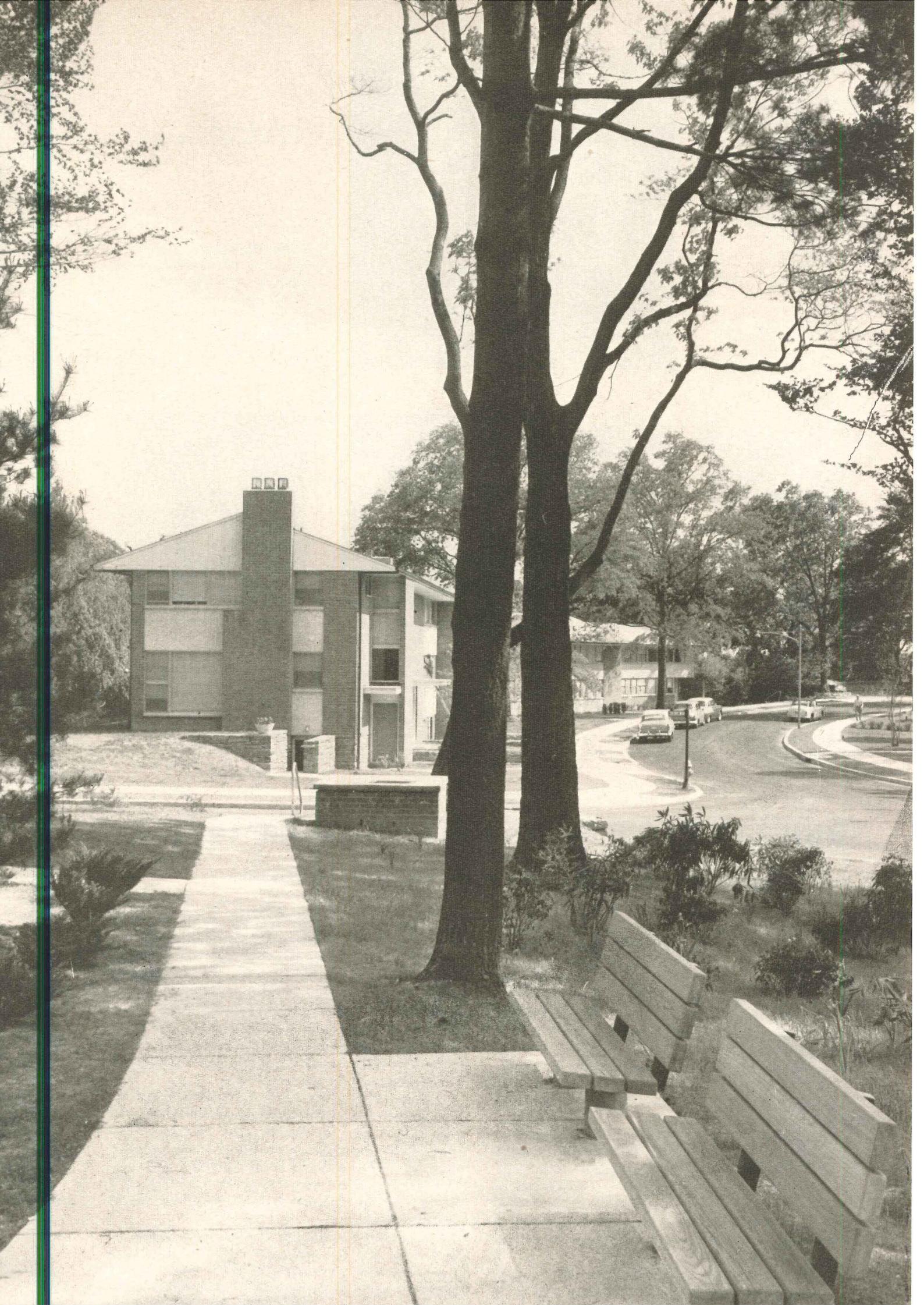
Because Cherokee has so much to offer its tenants it can command rents \$3 to \$5 per room higher than in other good Philadelphia neighborhoods, and \$10 higher than in run-of-the-mill garden apartments.

Cherokee is the kind of development that will have distinction long after shoddier development begin to crumble. Says MBA's past president William A. Clarke of rental projects: "We didn't have to foreclose a single, properly planned apartment project during the depression. But apartments built without sound planning advice all went under. *Tough renting times are the test.*"

**Street scene** (right) shows how Stonorov succeeded in avoiding views of long rows of buildings. Curving street and calculated siting of buildings brings sight line up short and gives intimate, human scale to public areas



**Complete plan** for project when finished shows sites for individual houses and for two highrise apartments (still to be built) as well as the two-story buildings already occupied.



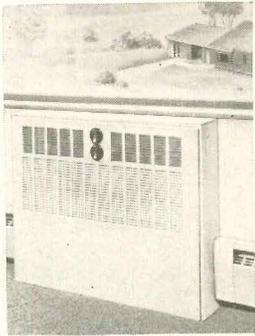


for further information  
check numbered coupon, p. 242

**A. Air cooled** operation is feature of all built-in conditioners; water is not needed so installation requires no pipes, only a nearby electrical outlet. York unit (left) can be installed in wall flush with interior or on floor inside room. York Corp., York, Pa.

S. Smith

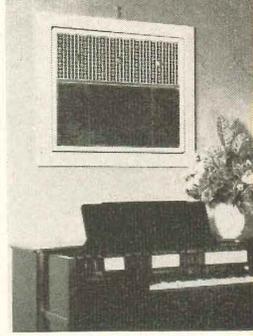
County Photo Service



**B. Steel sleeve** for Amic unit is delivered ahead of time for wall installation when house is being built; unit is delivered later, simply slides into the sleeve. Amic Manufacturing Corp., Long Island City, N. Y.



**C. Conditioned air** is supplied to room through adjustable louvers at unit top, as shown by Chrysler Airtemp model. Stale room air is drawn back to unit through fixed air louvers at lower front. Chrysler Corp., Dayton.



**D. In-the-wall** installation is not limited to under windows. GE model shows freedom of placement. Unit can be camouflaged in winter by a painting. General Electric Air Conditioning Division, Louisville, Ky.



**E. Typical exterior** appearance is shown in outside view of Lewyt unit installed under a bedroom window. Metal grille for outside air is practically flush with exterior wall surface. This model was introduced last year (H&H, April '55). Lewyt Mfg. Corp., Brooklyn, N. Y.

## BUILT-IN ROOM AIR CONDITIONING UNITS

Manufacturers introduce special room coolers designed for in-the-wall installation

The photographs on this page show the newest type of room air conditioner to hit the home market. These units are a new version of the standard window cooler, but unlike the window models they were designed especially for installation within the exterior walls of houses.

To fit the new models neatly in a wall, their makers started with a standard window unit and drastically reduced front-to-back depth to as little as 12". This was a dramatic step since some window units run up to 30" deep. The reduction in depth required a corresponding increase in width and height in order to accommodate essential cooling parts.

The new in-the-wall units provide conventional air conditioning in the same manner as window models but the cooling mechanism within is arranged more compactly to fit in the wall. Like window units, the new models are also air-cooled and are available in sizes of  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and 1 hp. Prices to builders range from \$175 for the  $\frac{1}{2}$  hp size up to \$400 for 1 hp, depending on the make and the number of units ordered.

Installation is inexpensive. It costs about \$20 to punch the wall opening and install the unit when a house is

under construction. Since units are anchored in wall and not easily removed, they have FHA approval.

One of the main advantages of the new built-in coolers is that they provide an inexpensive way for builders to offer air conditioning as a sales feature in low cost houses. Long Island Builder Milton Saper installs  $\frac{3}{4}$  hp models in the master bedrooms of his \$13,500 models. "We would prefer central air-conditioning," Saper says, "but in our price house buyers cannot afford it." So he offers partial air conditioning with in-the-wall units.

Compared with a central air-conditioning system, in-the-wall units have the advantage of individual room control. Experts point out, however, that installing built-in room coolers throughout a house will invariably cost more than the price of a central system. Moreover, individual built-ins, like window units, may not last more than eight or ten years, as compared to the 15 to 20 year life of a central system.

But for many builders such as Milton Saper, the in-the-wall model is a new product of especial interest since it provides home air conditioning at the lowest possible initial cost and with the neatest possible installation.

For more Product News, see p. 176

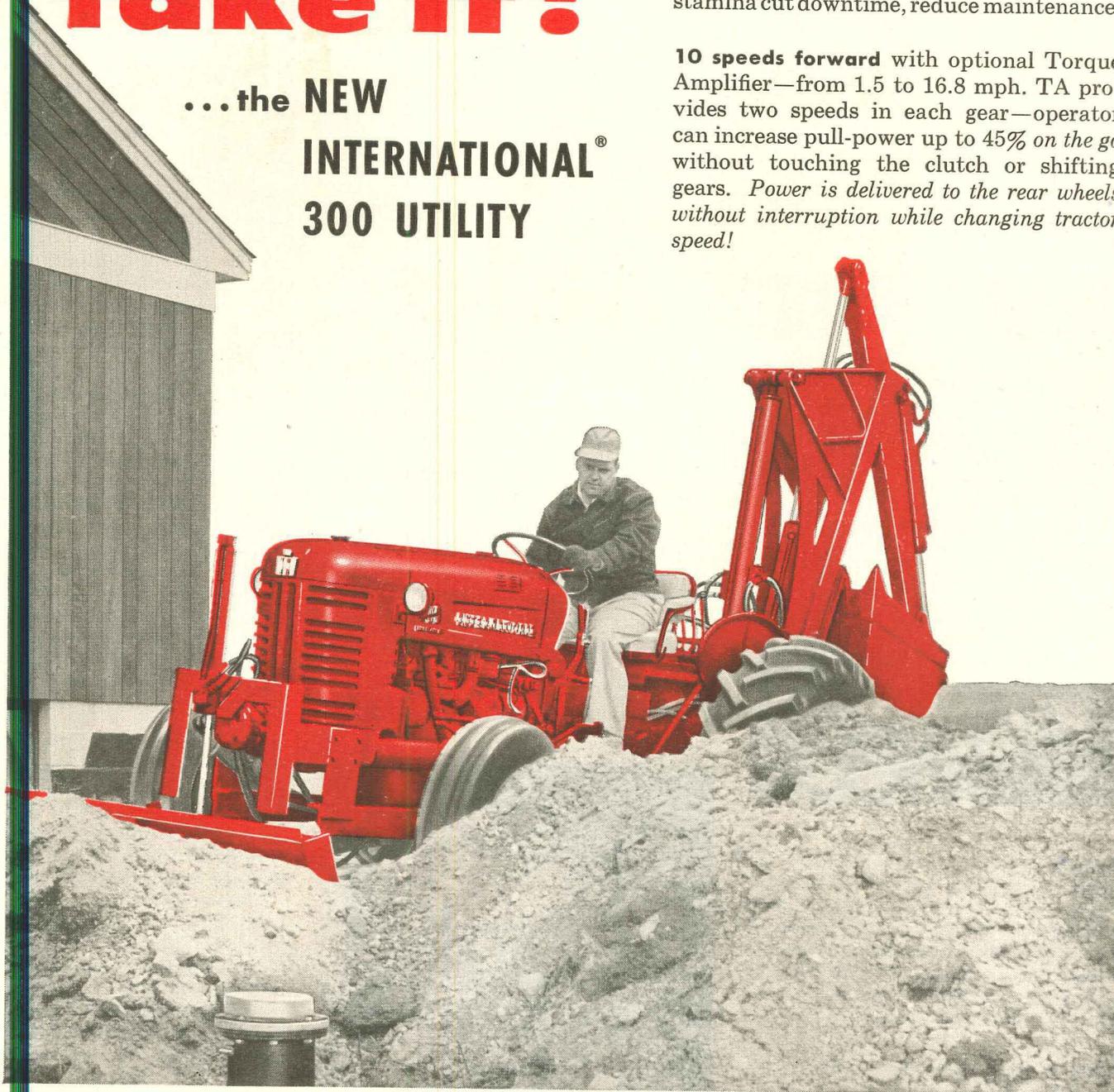
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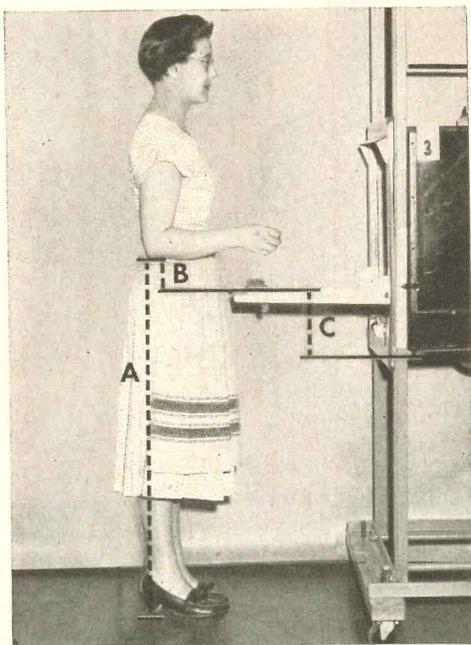
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# Right height found for built-in ovens

**Cornell tests show ovens often too high. Average woman risks burns unless oven bottom is 30" from floor**

New research from Cornell University shows that many builders are mishandling one of the greatest merchandising assets in the kitchen: the built-in oven. Most builders are locating the oven level with the 36" counter top, which is about 6" too high for the average woman.

The Cornell study reports that the proper height for built-in ovens ranges from 27" to 32" from the floor to bottom of oven, depending on the height of the individual user. For the average woman 30" is the right height. When the oven door is fully open, this will bring the top of the door to 36" above the floor and about 3" below the elbow height of the average woman. With the oven door at this level, the average woman can most easily lift heavy food in and out of the oven.



**Adjustable oven** was used by Cornell researchers to find ideal installation height for built-ins. Key dimension is A, distance from floor to woman's elbow height. Top surface of oven door should be "comfortable" distance—B—below elbow, which is 3" for most women. Distance C, from door to oven support, is about 6" for most built-in ovens.

Over 50 women cooperated with Cornell, to find the best oven height for "maximum safety, comfort and convenience." Shortest woman participating in the study was a diminutive 4'-10½", the tallest was 6'-1". Key dimension for each woman was her elbow height (distance from floor to elbow, as indicated in photo), which, with the women tested, varied from 35" to 46½". After they had tried out ovens at different heights most of the women tested preferred

\* The study shows a variation in individual preference of from 1" to 7".

to have the oven door 3" below elbow height\*. At this level they ran least risk of burning their arms or spilling food.

Obviously the tallest woman and the shortest woman did not agree on the most convenient height. For the women tested, the "right" height for the oven door varied from 34" to 41" above the floor.

## **Builders should design for average woman.**

Ideally, each woman should have the oven fitted to her individual height. Because production builders cannot operate on this basis they must design for the average American woman, who is 5'-4½" tall when she wears flat-heeled shoes. Her average elbow height is 39".

From this dimension comes the recommendation that production builders should locate the built-in oven so that the door opens 36" above the floor. This is the critical dimension, which for most (but not all) ovens will put the bottom of the oven 30" from the floor.

The Cornell home economists conducting the study experimented only with electric ovens. But an American Gas Assn. spokesman told H&H that the same height standards can be applied to gas ovens.

Some gas ovens come with a separate broiler compartment below the oven, but they should be installed on the same 30" floor-to-oven-door rule, according to AGA.

The 4 pp. Cornell report "What height for your separate oven?" is available free to New York State residents and for 5¢ to others. Write to Mailing Room, Stone Hall, Cornell University, Ithaca, N. Y.



**This built-in oven** pleases prospects in model house but is installed too high above elbow height, according to Cornell study.

## **Expert tells why splits are cold**

Why is poor heating one of the biggest summer criticism of the split-level house?

For three main reasons, according to recent check of heating complaints in Jersey and Long Island splits by top expert C. W. Nessel of the National Warm Heating & Air Conditioning Assn.: 1) heat is not supplied properly to the lowest rooms; 2) the jungle of studs in split level makes it difficult to install the vital ducts; 3) inadequate floor insulation is common for bedrooms located over cold garages.

**Loudest complaint.** Nessel says the most common living level in splits—usually a recreation or family room on a slab or base floor—is the object of the loudest homeowner complaints. He found very cold temperatures in these rooms. And the room temperature varied from floor to ceiling as much as 32°, which is much too high. The low level rooms are usually heated by means of warm-air ducts located at ceiling level. This means the warm air is discharged into the room from a high source and not enough warmth ever reaches the floor. The problem is critical since the floor below grade, is especially cold.

A good heating job calls for heat supplied to these rooms at floor level. Nessel says: "this goes for hot water heat, too. Architects and builders should specify meter heat or baseboard systems for the low-grade or on-grade rooms in splits, though the cost will be more than for ceiling ducts. (Nessel adds that edge insulation around the floor is also essential.)"

**Inefficient duct runs.** Second problem Nessel reported, arises because splits are usually a structural nightmare for heating men. He says: "joists and beam helters-skelter throughout the house, often impossible to run a straight trunk from one end of the house to the other."

This means primary supply and return ducts have to be snaked into place, by piece. This results in zigzag ducts that are highly inefficient and unsatisfactory because insufficient warm air is delivered to the rooms, especially at the far end of the house. Nessel said architects and builders who want warm air heating should frame low for installation of straight trunk.

**And more insulation needed.** As for bedrooms over garages, Nessel says the problem is due to the rapid loss of heat into the drafty garages below. Most builders in the bedroom floors "but not well enough." Many use the thinnest, cheapest grade of aluminum foil. This grade of foil does not necessarily work best in such a low temperature.

Nessel recommends enough insulation of any type to achieve an overall R factor of less than .10.