Air conditioning
NAHB starts testing every advanced idea in home air conditioning in 22 experimental houses (p.128)
When do room coolers make sense for new construction? (p.152)
New I-hp compressor is said to yield 2 tons of cooling, promises to halve operating costs (p.151)
Design standards for the small air-conditioned house by Harold Sleeper, FAIA (p.158)

News
The '54 Housing Act analyzed; Northwest lumber strike pinches builders (p.124)

Lumber dealer
How to build a larger lumber business by prefabricating for small builders (p.144)

Patio houses
Almost every house could have the bonus of an outdoor room, either as a cheap way to open up a small plan or as added luxury for a large plan (below and p.102)
Here's why this special inlaid linoleum
is perfect for Carl Koch's space-stretching design:
The exciting principle of the TECHBUILT house is that you can buy as much space as you'll ever need for as little as $10,000. Carl Koch cut a substantial slice of the building costs by turning the ground level into a warm, handsome, living floor. To do this he needed a quiet, comfortable, practical flooring . . . yet a flooring that would go on concrete slab. He found the perfect solution in Gold Seal Ranchtile, the only genuine inlaid linoleum developed and guaranteed for installation on grade—with or without radiant heat.
Here's how Ranchtile will help sell the TECHBUILT house. It has true linoleum resiliency . . . customers notice the quiet and comfort underfoot. Its great soil resistance makes it one of the easiest floors to keep clean. It resists indentation . . . moisture, alkalis and grease. In fact it makes every house look like “more for the money” at very little extra cost. And it offers the Gold Seal Guarantee . . . satisfaction or your money back. Specify Ranchtile for your next on-grade project.
The state of homebuilding

- Burst of new subdivisions reflects builder confidence in sales prospects as mortgage money stays plentiful.
- Birth rates—far above all predictions—provide a prop for optimism. Some experts see 2 million homes a year.

Point in 1953 was distinguished by more good news of construction volume. Total first-quarter expenditures were listed by BLS and the Commerce Dept. at a record $16.6 billion, notes the Commerce Dept. These figures reflect a sharp rise in construction activity, particularly in the housing sector.

- Private expenditures making up $11.4 billion. Private spending ($2.2 billion) and public expenditures ($15.4 billion) both reached a peak in June.

- Expenditures forecasting a year-end figure for housing starts were raising their estimates. Experts are projecting a year-end figure of 1.2 million starts, up 20% from the previous year.

- Pat Riley, BLS construction statistics chief, told House & Home Magazine he thought this mark was "possible." The official BLS estimate was upped 10%.

- Florida buyers were not even paying closing costs in cash on the nothing-down house, which continued to give home sales a special impetus. In some states, the pull of the latter was causing some increase in rental housing vacancies, but the nation the vacancy rate was not worrisome. Sale of old houses was still slow, but new houses going nicely, with plenty of mortgage money available. A Houston banker predicted signs of greater salesmanship on the builders' part, but added that it was "a year." One bright spot: shipment of prefabs through May was up 17.6% over the same period.

- The marriage rate was down, but births would rise up this decline with a need for bigger and better homes (as builders knew). A Houston banker predicted signs of greater salesmanship on the builders' part, but added that it was "a year." One bright spot: shipment of prefabs through May was up 17.6% over the same period.

- In Michigan, owners and landlords reported the change to "move-outs stemming from no-down-payment buying." A few landlords were offering to cut rents $2 to $5 a month to retain tenants. Vacancies were going nicely, with plenty of mortgage money available. A Houston banker predicted signs of greater salesmanship on the builders' part, but added that it was "a year." One bright spot: shipment of prefabs through May was up 17.6% over the same period.

- The rental market in Memphis was weaker than in most US cities. But vacancy signs were going up in more and more places. Said a Washington, D.C. housing man: "The increase in vacancies has been creeping up on us for some weeks, but we have been hearing more complaints in the last 30 days." He attributed the change to "move-outs stemming from no-down-payment buying." A few landlords were offering to cut rents $2 to $5 a month to retain tenants. Vacancies were going nicely, with plenty of mortgage money available. A Houston banker predicted signs of greater salesmanship on the builders' part, but added that it was "a year." One bright spot: shipment of prefabs through May was up 17.6% over the same period.

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federal rent controls. Since December, the leveling off has been unmistakable. Percentagewise, the figures reveal even more. Since the month before rent controls ended, the national rent level has jumped 3.6%. But since this January, it has gained only 0.4%. This leaves the US rent index no higher than it was in the 20's. But the national disposable income is three times the level of the 20's.

Electric future for housing prophesied to financiers

"Since 1900, the electric industry has been expanding three times as fast as the average for all industries. And looking ahead, as much electrical equipment will be built, sold and installed in the next ten years as has been built in the entire 75-year history of the electric industry!"

This ebullient prediction by W. V. O'Brien, vice president of General Electric Co., was representative of a recent upsurge of enthusiastic opinion on the prospective growth of the electrical market. O'Brien figures that by 1964 the average electrified home will have $5,000 worth of the sort of products now sold by the big electrical companies, as opposed to a present investment of $1,300 for such products. Some excerpts from his speech before the National Federation of Financial Analysts Societies in Chicago:

"In the next ten years we confidently expect that refrigerators will approach a 100% saturation, rising from today's 90%. Homefreezer installations will triple; ranges and electric water heaters will almost double; clothes driers will jump almost five times over today's level; and very significantly, room air conditioners will increase 11 times. By 1964 we look forward to 66 million home television receivers in operation, 44 million of which will be color sets using almost twice as much electric power per receiver.

"Within the decade, the growth of these and all other well-established home appliances will multiply more than 2½ times the total kilowatt-hours used by such appliances today.

"This increase does not take into account those newly introduced appliances which will play an important role in the electrical future. For example, there is the heat pump, a newcomer in the appliance field, for which there are great expectations... [for this] combination home heating and cooling unit whose only fuel is electric power. Today this unit is installed in only a few thousand dwellings, mostly in the southern states. But with mass-production techniques and greatly improved technical advances already under way, it is anticipated that the heat pump will soon rival the cost of any other means of home heating anywhere. Consequently, we are forecasting that over half a million homes will be equipped with heat pumps by 1964.

"In addition to today's established appliances and the newcomers already on the market, still other home appliances will create new loads for the utilities in the decade ahead. Here are just a few envisioned in the near future:

1. An electric incinerator that will dispose of trash as well as waste food, and will even sanitize cans and bottles.
2. A television screen that can be hung like pictures on the wall, connected only by a thin wire to the television receiver.
3. An electronic device for thawing frozen foods very quickly.
4. Still another electronic device for cooking foods in a matter of seconds.

"There are many other such products, of course. But these few examples serve to illustrate new and expanding uses for electric power that will come from a continuous trend of product development.

"The significance of this projection exceeds far beyond our own electrical industry; it is a valid index to the growth and potential of all aspects of our national life. Be it a tremendous capacity for such human effort, electric power is a prime mover of progress, not a luxury that follows the wake of progress. In our modern world the availability of electric power determines large degree, the standard of living, the periphery, the cultural vitality and the military security of a nation."
TE PROBE OPENS, Chairman Capehart (with pencil) asks a question. Sen. Goldwater (L), Staffer McMurray and Counsel Simon listened, chin in hand.

FIRST WITNESS McKenna dragged big names into windfall profit charges, including former Housing Expediter Wilson Wyatt, three members of the du Pont family. He accused ousted FHA of discouraging investigations.

FIRST WITNESS McKenna dragged big names into windfall profit charges, including former Housing Expediter Wilson Wyatt, three members of the du Pont family. He accused ousted FHA of discouraging investigations.

nators call 608 builders on the carpet

Ignoring White House urging to wait until the housing bill is adopted, banking committee begins lengthy hearings

Two ex-FHA officials and some builders invoke Fifth Amendment. Democrats charge GOP with smear attempts

ate banking committee steamed ahead last month, accusing government officials of citizens of a variety of misdeeds, including free fishing trips and profiteering. From the White House that the investigation of FHA wait until the new bill was safely out of conference went unheard. With the McCarthy sideshow Capehart and friends were in a position to regain the klieg lights. During the ion of the public hearings last month they heard an increasing number of allega-

tions in high (and low) places of the sort they had previously heard and treated to a few new versions.

Senate floor, meanwhile, Sen. Harry F. Byrd (Va.) whose own investigation of dealing in the capital and discussed the Shirley-Duke apartment deal. The Washington Star, featured in the latter's offices. The fact that Powell had been in charge of the rental housing part of FHA from its inception until the firecracker went off does nothing to soothe the feelings of persons who have formed an antipathy to other people's 608 profits.

The other official who clammed up was Andrew Frost of Albuquerque, who was dismissed late in June as assistant FHA director in New Mexico. Frost decided he would not say yes or no to a series of questions on whether he did or did not attend a couple of girlie parties given by contractors, go south to fish at contractor expense, accept a gift of a couple of truckloads of concrete blocks for his own house.

Burton Bovard, who continued to provoke the ire of the senators by telling them he did not know of any "windfall" profits by builders under 608, also told them a quaint tale about the 1,137-unit Woodner apartment-hotel in Washington. Asked by Capehart how the edifice could have been built with an FHA-insured mortgage of $7.5 million when the law specified that no single project amount to more than $5 million, Bovard explained that the big building had been set up as two "legal entities," with provision for a wall through the middle. Bovard said he thought the wall had been built, but was "not sure."

Root of all evil. The nub of the inquisition was still 608—though Title I repair loan frauds would get the spotlight later. Tales of extra-curricular contact between official and customer (reports were submitted at the hearings of FHA men receiving wristwatches and

SHIRLEY-DUKE Project Builders Herman W. Hutman, Byron Gordon Jr. and Earl J. Preston were accused by provers of "discrepancies" in their testimony.
PROOF in the making at air conditioned village

it's CHRYSLER AIRTEMP waterless, all-electric COOLING for greatest efficiency and economy!

House in NAHB Air Conditioned Village, Austin, Texas, designed for Chrysler Airtemp Air-Cooled Air Conditioning by Fred W. Day and built by Wayne Burns. Cooling coil is located above Chrysler Airtemp Gas Furnace in hall closet. Air-cooled condensing unit for waterless cooling is mounted in wall of storage area at rear of carport at point marked by arrow in top photo.

High wall method of air distribution was used because of successful experience of builder and installer with this method in other homes in area. Compact duct system is confined to least used area of house.

Is year 'round air conditioning feasible for builder houses? The introduction of Chrysler Airtemp waterless, all-electric cooling over a year ago made it practical and economical for any house—anywhere! From actual installations in homes in every section of the country the proof has been recorded. And now, to make it official, there's final proof in the making at the "Chrysler Airtemp House" in NAHB's Air Conditioned Village.

Give your new home "starts" the tremendous "buy" appeal of Chrysler Airtemp Year 'Round Air Conditioning—with waterless, all-electric cooling. See your Chrysler Airtemp Dealer (he's in the Yellow Pages), or return convenient coupon for complete facts.

CHRYSLER AIRTEMP
HEATING • AIR CONDITIONING for HOMES, BUSINESS, INDUSTRY
AIRTEMP DIVISION, CHRYSLER CORPORATION
Dayton 1, Ohio

Airtemp Division, Chrysler Corporation
P. O. Box 1037, Dayton 1, Ohio

I'd like to know more about Chrysler Airtemp Air Conditioning for homes:
[ ] Waterless
[ ] Water-Cooled

Name __________________________
Address __________________________
City __________________________ Zone ______ State ______
The case of Herman Rutman, Earl J. Simon, and Bryan Gordon Jr. told how they and Bryan Gordon Jr. told how they had purchased a property for $14 million from Investors Dissing, the taxpayers have lost because of the so-called windfalls. It is notable that the financing expenses would be $2 million on an original investment of $24,168,000, almost $5 million under the mortgage amount (or about $1,250 a house). The profit, said Levitt. Next day, builders began to get in some historical comment on the 608 program. Sen. Sparkman (D, Ala.) interrupted McKenna on June 28 with the statement: "We have known about this mortgaging out for a long time." He pointed out that attempts by Sen. Russell Long (D, La.), who was a member of the banking committee in 1950, to tighten up the 608 program to prevent mortgaging out were defeated, and reiterated that mortgages were based only on estimated costs. Sparkman's view: "If Congress failed to tighten up the law, it could not escape responsibility for any abuses that may have occurred."

Sen. Burnet Maybank (D, S.C.), the ranking Democratic member of the committee, told House & Home after one of the sessions that he thought when the group really got down to bedrock on the 608 deals it would find that "the tax law was chiefly responsible for what ever mortgaging went on." The senator's comment clearly implied that a builder's desire to take advantage of the present interpretation that excess monies on apartment projects are capital gains was the actual motivation in persuading him to mortgage out. The tax law has already appeared as a potential weapon in the fracas—a test case is being run by Internal Revenue on the premise that a builder's excess monies are really ordinary income and that the present command of HHFA and FHA not done something about it—like ordering a rent reduction?

Industry reaction. If the opposition's politicians sensed that the investigators were shooting around the target, so did the building profession profess consternation at damage being caused by the committee's approach. Commented one builder: "The Republicans are so anxious to magnify the sins of the FHA as its program was conceived and carried out under the Democrats that they are willing to leave the implication in the public's mind that the building industry is dominated by crooks. They are even questioning the profit motive. It doesn't make sense."

Even Big Builder William J. Levitt got on the committee's hook. On the witness stand, Levitt recalled his firm received $29,946,500 in mortgage loans for 4,028 Cape Cod rental houses in Levittown, Long Island, insured under FHA Sec. 603. Final construction cost: $24,168,000, almost $5 million under the mortgage amount (or about $1,250 a house). The Levitts later sold their stock in the corporation created for this phase of the huge project, Bethpage Realty Co., to Junto, Inc., described by Levitt as a Philadelphia "charitable organization." Stock sale was subject to capital gains tax, whereas dividends, had they been divided among stockholders, might well have been subject to much steeper income taxes. Capehart called the profit a "windfall." It was no such thing, Levitt insisted. He defined a windfall as profit pocketed by a builder who kept the property, giving him the prospect of still more profit on sales or rents. His $5 million was simply building profit, said Levitt. Next day, builders began...
lake forest • shaker heights
forest hills • indian hills • westchester
darien • swarthmore • bryn mawr • wellesley

These are typical of the exclusive suburbs in nearly every middle western and eastern city, where Scholz California Contemporary Homes are being introduced by the nation's outstanding custom builders... eloquent testimonial to quality and design.

Here, at last, is a package home with the built-in prestige and design that quality builders, looking for lower, more firmly fixed costs, can be proud to put into their finest areas.

This can be your opportunity to be the first in your community to reach this vast market of Contemporary Home buyers who are being daily pre-sold in every women's, home and consumer magazine.

scholz home
incorporated
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Toledo, O
looking back to the investigating senators still
Bertram Bonner of Richmond, who had
$1 million in 608 mortgage profits, com-
tained it was "unfair" to criticize those who
ounced to urgent government appeals for
havior. Attorney McKenna gave the banking
vices of the operations of 6 groups which had constructed Sec. 608
acts-27 "horrid examples" of overfi-
ements in the New York suburbs,
a and Texas. Both McKenna and Cape-
gharged it was common practice not to
ctors' fees allowed by FHA regula-
Thoughtful building men agreed that
608 deals were pretty smelly. For in-
e, even if a 608 application was based on
pleased deal, the sponsor was probably vio-
the law if he put in an architect's fee
if he already had signed an agreement
the architect to do the design for less.
Kenna stressed other points of more
favorable merit. Samples:
study of 62 Sec. 608 cases in 11 states
that many did not pay the prevailing
rate as required by law on multifamily
projects (but not on detached homes).
fail to pay this rate was one of the
rs that resulted in mortgaging out...
if the certification that the prevailing
rate had been paid was false, FHA
the position that it could overlook this
as long as it was filed."
ere the Labor Dept. forced pay-
ning of prevailing rates, FHA often raised its
iment. "The key people responsible
se abuses have been dismissed or forced
ign. These abuses could not have arisen
under the present law if it had been prop-
charged it was "unfair" to criticize those who
f the corruption of the FHA.

Michael T. Cole sweeping power to reorganize US housing
Congress has given HHFA administrator Albert M. Cole sweeping power to reorganize its stable of housing agencies. The authority was
slipped in as a rider on the Independent Office
appropriation bill-a maneuver that took
by surprise the industry men who were primed
to try to block such a move. Before protests
could be lodged, the bill was on President
Eisenhower's desk and signed into law.
The amendment, inserted by Rep. John
Phillips (R, Calif.), provides that the HHFA
chief's "general supervision and coordination
responsibilities under reorganization plan No. 3 of 1947, shall hereafter carry full authority
to assign and reassign functions, including
the reallocation and transfer of administrative
expense funds and authority where applicable,
necessary to promote economy, efficiency and
fidelity in the operations of HHFA." Stripped
of legal jargon, that meant Cole can now as-
sume dictatorial control over policies, activi-
ties and personnel of FHA, the Home
Loan Bank Board, FPA and Fanny May.

Homebuilders and mortgage bankers were unhappy over the development. The two sav-
ings and loan leagues were particularly con-
cerned over what they saw as a threat to the
independence of the Home Loan Bank Board.
Cole, however, indicated he planned to go
slow in using his new authority, would prob-
ably use it mostly to continue the shake-up
of FHA.

Giving the HHFA chief command control
instead of merely "coordination and super-
vision" over his constituent agencies has been
a pet aim of the House appropriations com-
mittee for several years. Last year, the
committee stuck similar wording into the inde-
pendent offices appropriation bill. At that
time, FHA Commissioner Guy Holladay op-
posed it strenuously and Cole, noting that a
presidential committee would soon be restud-
yng the organization of federal housing agen-
cies, also suggested such a move would be
premature. This year he did not object.

FHFa reorganization sets
stage for 18 new top jobs
FHA shook up its top-level administrative or-
ganization, creating four new assistant com-
misioner jobs in place of all the old ones. The
shuffle cleared the way for FHA to use 18 new
Top-bracket jobs (with pay of $12,000 to $12,-
800) to be set up in the 1954 Housing Act.
With these, Acting Commissioner Mason hoped
to have better luck wooing outside talent into
the scandal-shaken agency. So far, efforts
have been cramped by low pay. A new assis-
tant commissioner for technical standards
(probably Charles A. Bowser) will head up
separate divisions of architectural standards
and appraisal-mortgage risk. Thus, FHA tech-
nical service will be divorced from domination
by underwriting—a move long advocated by
the building industry and congressional FHA
critics. Other assistant commissioners will
handle administration, programs, operations.
Air Conditioned Homes Need NUTONE Ventilation

NuTone Ventilating Fans in
NAHB Air Conditioned Village

11 out of 22 fan installations in Austin, Texas* are NUTONE

Here’s Why •

• TO GET RID OF ODORS & GREAS

AIR CONDITIONING controls temperature, lowers hum
and filters out dust ... BUT every kitchen needs a N
Ventilating Fan to get rid of greasy cooking odors |
they seep through the entire house.

• TO EXHAUST COOKING HEAT & S

NUTONE VENTILATING FANS get rid of excess heat
and moisture at the source, before they are drawn in
system ... keep greasy film deposits from walls, p
clogged air conditioning filters which are fire he

• FOR LOWER OPERATING COS

NUTONE SAVES MONEY. Without a Kitchen exhaust
cooking heat and moisture add an extra load on
air conditioning system ... to increase operating

Whether YOUR HOMES are Air Conditioned or not, b
p to include low cost NuTone Ventilating Fans. For
Catalog write NUTONE, Inc., Dept.HH-8, Cincinnati

*.builder W. A. Burns (Home #15) chooses a
NuTone 870 Twin Blower for kitchen ... and
also a NuTone Ventilating Fan for Bathroom.

*NAHB Air Conditioned Homes #6 and #12, built by B. N. Hahn
equipped with NuTone Model 821 Ceiling Ventilating Fans in
FELLOWS: at AIA's annual dinner, 21 architects were advanced to the honorary rank of fellow

1) Dean William W. Wurster of the University of California school of architecture,
2) Barry Wills of Boston and Ludwig Mies van der Rohe of Illinois Institute of Technology.

SYMPOSIUM speakers whose talks packed an auditorium were (l to r): Paul Rudolph, Jose Sert, Eero Saarinen and Ralph Walker. Asked Saarinen: "Have we gone overboard on too big

NEWS

TWO MILLION STARTS a year by 1964 were predicted by Paul B. Wishart (l) addressing an­
nual dinner. At right, AIA President Ditchy.

HONOR AWARD HOUSE in Ojai, Calif. was cited

panding housing markets predicted at architects' convention

nation's architects—who design very

f the nation's new homes but would like

more—have been told that the pace of

building seems likely to shoot up even

than optimists were predicting a few

back.

3 forecasts of expanding housing mar­

were made by leading speakers at AIA's

annual convention June 15-19 in Boston.

lected President Paul B. Wishart of

apolis-Honeywell Regulator Co.: "The

that will do more than any other to ex­

the American economy in the next ten is

the emerging sales appeal of a new

that will be more irresistible than the

dary sales appeal of the new American

ible. . . . Housing is coming down in

it is incorporating conspicuous engineer­

advances, year by year. The techniques

ling and of mass financing are being

confidently expect to see starts in the

come range far above the million-per­

. . . By 1964 this fascination of the

ican people for what they can get in a

ome more than they have in the old,

have pushed starts above 2 million a

. . . The American people are really

in realizing that there is more

and more satisfaction in having a new

all its advances, than in having y

e parked in front of the old home."

'54 outlook improves. Short-term op­

imism was in evidence at an AIA-Produce­

 Council session that found the construction

lookout for the rest of this year better than

viously anticipated. Watson Malone, vice

ident President R. S. Hammond of Johns-Manville Sales

Corp. reported J-M sales for the first 1954

quarter were within 1% of 1953's first quar­

s for five months had topped expectations.

Cookie tins and nudity. Most popular

vention talks were those of: 1) Editor Ed­

ward A. Weeks of The Atlantic Monthly, who

noted that a vast volume of new houses and

community facilities would be required by the

"inescapable, cheerful fact" that the nation's

population is increasing so fast, and 2) a

panel on "The Changing Philosophy of Archi­

ture" addressed by Architects Eero Saari­

en, Jose Luis Sert, Paul Rudolph, William

W. Wurster and Ralph Walker. Weeks con­

trasted the "cookie tin" school of American

architects 30 years ago with today's modernity.

said he: "At the time I speak of—1924—

architecture, as seen by a bookman, was a very

tasty profession. . . . and it didn't make the

sighest difference how often you plagiarized

dead. Every architect had a set of cookie

tins. If he was asked to do a public building,

bank, or a city hall, he used his largest

tin and turned out something that

looked like a badly swollen Greek temple. If

was to do a town house for a Vanderbilt, he

used the French chateau cookie tin; for the

moderately rich he made cookies Southern

style, or beam and plaster Elizabethan, and

for the little people he . . . turned out a copy

of a Cape Cod cottage .... .

Today's design, as Editor Weeks saw it,

become "more respectful of climate and

location," while "fenestration, under the stim­

ulus of Frank Lloyd Wright and Lihby-Owens­

Ford, has opened up the private dwelling .... .

the danger . . . is no longer the danger of

cookie tins, but the danger of novelty and

nudity; the danger of omitting essentials—

bookshelves, for instance; the danger of creat­

ing an interior so bare it hurt; the danger of

bringing so much of the outdoors inside that

man's ancient need for coziness and shelter is

left unsatisfied .... .

Chaos in the suburbs? Panelist Rudolph,

who devoted much attention to criticizing

the relation of city buildings to each other
SUNBEAM announces a new line of extra slim gas fired utility units for build

SUNBEAM quality...competitively priced factory assembled and Installation Tested*

The New Wyandotte

SMALLEST SIZE IS ONLY 13½ INCHES WIDE!

7 sizes—from 50,000 to 200,000 Btu input. All units are 57" high and 28½" deep. Maximum width only 28½".

These units undergo IMPORTANT 4-POINT INSPECTION
the industry's most thorough test

1—Heating elements are tested under 4 to 6 pounds of air pressure.
2—Gas manifolds are tested under 4 to 6 pounds of air pressure.
3—Automatic pilot valves and quiet action gas valves are factory-operated.
4—Units are "Installation Tested"* after factory assembly.

* "Installation Tested" means testing of the completely assembled unit as though it were finally installed. It includes fire testing and operation of the blower and controls.

These SUNBEAM tests assure you of high-quality, ready-to-operate units that will require little or no service after installation.

For detailed information and prices, contact your Sunbeam distributor or dealer. He's listed in the classified section of your telephone directory under "Furnaces" or "Air Conditioning." Sunbeam Air Conditioner Division, American Radiator & Standard Sanitary Corporation, Elyria, Ohio.

NEWS FROM AUSTIN Research for Better Living!

In cooperation with the National Association of Home Builders, we are happy to be represented in this important Air Conditioning Research Village by The American-Standard SUNBEAM home

MR. FRANK C. BARRON, Austin, is the builder of the American-Standard Sunbeam home.

THIS AIR-CONDITIONED HOME, featuring a large kitchen-dining-activity area, was designed for informal living. Eugene Wukasch, architect-engineer; Thomas Hainze, associate.

SUNBEAM HEATING units are loca utility room.

AMERICAN-Standard SUNBEAM AIR CONDITIONER DIVISION ELYRIA - OHIO

Executive Offices: Bessemer Building, Pittsburgh 22, Pa.

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR...
Military housing

After three attempts to provide military housing by other means, the House armed services committee last month was studying a scheme calling for direct government appropriations to build about 13,000 units of family quarters in the US and abroad. Probable cost: around $170 million. The committee claims the Wherry Act returns builders $50,000 in rent for each $8,100 unit, wants no more Wherry housing built.

Build it yourself

How widespread is the build-it-yourself trend? Georgia-Pacific Plywood Co. surveyed 9,000 home owners across the nation and came up last month with this answer: 67% of Americans whose homes are valued from $10,000 to $25,000 are engaging in build-it-yourself additions or improvements. Commented President Owen R. Cheatham: "We believe more strongly than ever that the do-it-yourself trend will continue to grow rapidly, enlarging the market potential not only for numerous materials, but for tools, work clothing and innumerable other products."

Toward better house design

Efforts to bring more architects and builders together in planning subdivisions received a significant boost from Allied Building Credits, Inc., a Transamerica subsidiary which finances light construction nationwide through 35 field offices. Allied now requires its field managers to urge builders to use architects in planning tract houses. If they do not, the builders' plans must be reviewed by approved architects before financing will be considered. Allied services about $75 million in mortgages.

Air-conditioned public housing

Air-conditioning units raised temperatures in Omaha last month. Executive Manager Edward Ouren of the Omaha Housing Authority reported that four or five window air conditioners had been installed by public housing tenants. He suggested the authorities limit the practice to avoid overload of the wiring. Chairman Ephraim Marks crowed happily that the Public Housing Administration had repaid the US Treasury $955 million borrowed by PHA to finance local housing authorities. Congress last year directed PHA to refinance its outstanding loans. The repayments reduced the federal debt, at least for the moment. But there was a catch in it.

What happened was that local authorities, taking advantage of falling interest rates, refunded direct Treasury loans with tax-free, fully government-guaranteed bonds. The bulk of the principal and interest on the bonds is paid by the US as annual contributions to local public housing agencies. These subsidies, plus loss of income tax revenue from the income of tax-free bonds—said fiscal experts—will probably cost the government and taxpayers more in the long run.

Home ownership: going up

The Federal Reserve Board, reporting on its annual survey of consumer finances, revealed a meaningful increase in US home ownership: "About 56% of all nonfarm families owned their own homes in early 1954 compared with 51% in 1950." The Fed also noted a "striking" increase in home ownership among World War II veterans, who now own their homes "about as frequently as other families." Another statistic underlined the mobility of mid-century America: "more than one third of all home owners had occupied their homes for less than five years." And 15% of home owners had lived in their houses less than two years.
BLS last month completed a big overhaul of its monthly measure of the nation's housing activity, housing starts. The housing series has been revamped periodically since BLS published its first city building construction report in 1921, most recently in 1946-47. Changes fall into three categories:

1. BLS will now have virtually universal coverage of all local building permit systems (6,800 locations instead of 4,500).
2. The sample in nonpermit areas will be based on 1950 rather than 1940 census data. With expanded coverage in permit areas, the nonpermit slice of housing will be cut from 25 to 15% of each month's starts total.
3. Adjustments stemming from its regularly scheduled studies of permit use will be made. From these, BLS statisticians divine how soon after issuance permits are actually used, and how many are allowed to lapse without being used. As an added bonus, the bureau will now issue both regional statistics and data comparing homebuilding in metropolitan areas with that in nonmetropolitan areas.

The new series began with the June reading, which was delayed by the change-over and was too late for this issue. BLS said the new figures will be "continuous" with the old ones.

The big money. The revamped method for determining starts was made possible by an appropriation of $95,000—a drop in the bucket compared to the request for more than $1.1 million put before Congress for improved and amplified information on other aspects of the construction industry. Renewed criticism of the government's present fact-gathering setup—plus urging from the White House—forced Budget Director Rowland Hughes last month to reconsider his initial rejection of the request (H&H, July '54, News). As a result, the administration asked $110,000 for BLS, which the agency said would be used for three types of statistics gathering: 1) modernization of the bureau's obsolete system of estimating labor requirements for construction—important in evaluating public works programs, 2) an annual survey of residential builders, especially as regards the number of firms, their relative size and their methods of operation and financing, 3) information on expenditures by the federal government for alterations and repairs. The Commerce Dept. (with $1 million share of the appropriation) would: 1) make quarterly surveys of expenditures, 2) an out-of-state market.

BLS revamps housing starts series; $1.4 million asked to improve other building figures

HOUSING STATISTICS:

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Futash and salt boxes

In Village, the Farm Bureau Mutual Automobile Insurance Co.'s town abuilding on 1,170 acres of rolling Ohio farmland outside Columbus to be a city planned from scratch. To people what they want ("colonial to contemporary") Peoples Development Co., the company's subsidiary building the is offering 14 different models, almost any architectural styles. Result: a mish-mash of design that lacks architectural sense.

"With few exceptions," says Carl R. Frye, president and general manager of PDC, "most cities of today are made-over relics of another day. The nucleus... is a a rotator core. In Lincoln Village we [can] start with fresh seed. We take a 100% homely "seed" includes Williamsburg-style Cape Cods, two-story colonials sprinkled (and often cheek to cheek with) low-ranchers and good-looking contempo- Example (cut, above): a good-looking pitched contemporary tucked between a peaked Cape Cod and a 5" in 12" pitched. Frye says his chief object is to give "complete freedom of choice, avoid a "podge" look. The danger: the homely, the homely style of a variety store.

Eventually Lincoln Village will have a mix of 1,000 single dwellings, 400 rental apartments.

Price range on the sale houses: from $50 to $20,000. Rents: from $80 to $95 month. Houses under $15,000 and with lots sell fastest, reports John W. Guelich, Sharp & Co., handling sales. Although 15 of the first 20 were sold basementless, Frye plans to sell more, reports, so it's market. By year's end Village will have about 220 houses completed. Next spring: the first unit of 1,000 three-bedroom rooms (all priced about $12,000) will be ready.

SHARP

Sharp, who is 48, recalls: "I lost $1,400 on my first project, a big four-unit apartment. But I got the initial experience out of it." He lined up more backing, dived back into building with the comment: "This time I'll know what the costs are." He has known enough about costs since to handle some 6,723 homes, building about half himself, selling other builders the land for the rest. His biggest development: 6,500-home Oak Forest addition. His new tract, though treeless, adjoins some of the best medium-priced residences in Houston. Says Sharp: "You know, every man working in an office wants to live in the part of town his boss lives in. This is it."

15,000-home subdivision

Millionaire Houston Homebuilder Frank W. Sharp, who went into the building business in 1936 with $150 capital, announced plans for a $200 million subdivision of 15,000 homes on Houston's prairie outskirts—one of the nation's largest subdivisions.

"The project will take ten years to complete. Construction of the first 1,000 three-bedroom homes (all priced about $12,000) will start Nov. 1. The project will also have shopping centers, parks, offices, two country clubs and sites for six grade schools, a junior and a senior high, and six churches.

Low-priced split-level in Florida

Dale Bellamah of Albuquerque had such success with modern-design homes built of a locally produced pumice aggregate mixture with color added that he decided to branch out into an extra 327 acres. Last winter he looked into the new material, picked a block 8" x 4" x 16" (to meet FHA and VA requirements) and gave customers a choice of colors, including natural. In two weeks, he sold 90% of the first 79 houses planned. His most popular model was a three-bedroom house (980 sq. ft.) with butterfly roof for $9,250 (see cut, left). A two-bedroom model was priced at $8,100 and a four-bedroom at $10,450. To step up interest in his first test project, Bellamah brought in some trees from the edge of the Rio Grande, transplanted them in the sun-baked soil of New Mexico and spray-gunned them with green paint for the opening. He also fashioned "lawn" of crushed pumice and turned it green with the same dye process used in the pumice aggregate—a system since adopted by many builders in the area. (The painted trees, incidentally, are now thriving on their own.) Bellamah, going ahead with the 327-acre subdivision containing 1,600 building sites, will offer six models, three of the colored pumice and three of stucco. He has added a sunken living room to the popular three-bedroom model. He will also give the project two tennis courts and a swimming pool, the latter he believes to be the first ever offered in a subdivision in the state. Trees? Bellamah will import 300 more and make a park.
From the laboratory have come test figures which recommend the use of Thermopane® insulating glass and Heat Absorbing Plate Glass to reduce the costs of air-conditioning operation . . . and sometimes to permit the use of a smaller air-conditioning unit.

Architects, builders and engineers have recommended and used these two special forms of glass to provide more efficient, more economical air conditioning. Experience has proved the value of both products.

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The Colorado subdivisions

Part Denver as the "outstanding city of the West" in terms of growth potential, Del Webb, ball-club owner and big Phoenix con-

sumer, announced plans for a $100-million town community 41/2 mi. north of the city

on 2,000 acres of high ground. Commu-

nity to downtown Denver: 12 minutes by

families who occupy the proposed 6,000

and four-bedroom homes will have their

plants at Rocky Flats and the college

 approved for

improvement for Boulder. Hoffman, incidentally, won

20th mi. north of the city

community 41/2 mi. north of the city

had enough water, sewage, trans-
First annual "award of high honor" of the California AIA went to Architect Ernest Born at a dinner in Berkeley honoring University of California architectural students. Given particularly for his work as a member of the San Francisco art commission, the award cited Born's "brilliant and selfless service to his community and his profession in advancing the cause of city planning, architecture and the arts." Making the presentation, Harold L. Zellerbach, paper executive and former art commission chairman, praised Born as "a modest man who cared more for beauty than success—and who believed so thoroughly in the importance of beauty that his was a determined fight to make it part of our everyday lives."

After several years of sparring, John Lloyd Wright and California's board of architectural examiners have come to grips in a court test which may have as a by-product result the revision—or at least a careful re-examination—of California's licensing procedures for architects. Wright, 62-year-old son of Frank Lloyd Wright, has been charged with four misdemeanor violations of the California business and professional code.

Specifically, John Wright was charged with displaying a sign indicating he is an architect, although he has not been licensed in California (he is licensed in Indiana, Nevada and Texas); with failing to notify a client that he was not licensed; with practicing civil engineering without a license, and with designing a structure which the examining board contends requires a civil engineer. It was the second complaint against Wright over the engineering requirements of the code, was not licensed; with practicing civil engineering without a license, and with designing a structure which the examining board contends requires a civil engineer. It was the second complaint against Wright over the engineering requirements of the code.

The new trend toward appointment of city housing coordinators continued as San Diego named Glenn Wade, former city manager of nearby Coronado, to the job. One of his main duties: helping speed disposal of leftover wartime public housing units.

The on-again, off-again move by Joseph McMurray, 42, brilliant staff economist for the Senate banking committee, to the New York City Housing Authority was on again last month. McMurray told House & Home would take the $20,000-a-year job as executive director of the nation's biggest local housing agency sometime this month. It would happen to the present executive director, Gerald J. Carey, 50, was not announced; expectations were he would be an assistant to Chairman Philip J. Cruise, 56.

Five more new FHA field directors took office in Albany, N. Y., where he notified Villasenor he was not accredited as an architect, California license when, according to Executive Secretary Robert Kelley of the architect examiners, he failed to pass a civil engineering section of a test given him by the examiners. Wright challenges the legality of what he terms the "schoolboy test." Blaming jealousy among other architects in his (Del Mar) section of the state, Wright said: "I guess I was too good too much business, and now they're going after me."

The new award of high honor of the California AIA chapter) indicates a claim by him that he is an architect; whether or not he notified Villasenor he was not accredited as an architect in California. California law requires a civil engineer for buildings (except houses or multiple dwellings up to two stories) with more than 25' between bearing walls. However, all structures, regardless of span, made of reinforced concrete or with steel framing, must have an engineer. The board contends the use of reinforcing rods and grout in the concrete-block walls of Villasenor's store makes it a reinforced-concrete building.

It was seven years ago when Wright moved to California from Indiana. He was denied a California license when, according to Executive Secretary Robert Kelley of the architect examiners, he failed to pass a civil engineering section of a test given him by the examiners. Wright challenges the legality of what he terms the "schoolboy test." Blaming jealousy among other architects in his (Del Mar) section of the state, Wright said: "I guess I was too good too much business, and now they're going after me."

BORN

Ernest Born wins California AIA honor award; John Lloyd Wright faces registration court test

DIED: Planning Official and Builder R. M. Watkins, 52, who had built many homes the College Park section of Maryland and who was the controversial chairman of the Maryland-National Capital Park and Planning Commission, July 3 in Washington, Arrigo M. Young, 70, dean of Seattle architects, who designed such Pacific northwest tures as Yellowstone Park hotel, Seattle's Children's hospital and civic auditorium and city library; Walter L. Forward Jr. filled the vacancy caused by the retirement of ailing Edward Walsh several months ago; in Washin, A. M. Prothro, FHA's acting general counsel was named head of the agency's new program.

60-year-old house remodeled, draws throngs at home show

As a demonstration of what remodeling can do for an antiquated dwelling, the Los Angeles Remodeling Contractors Assn. bought the abandoned church parish house shown at the right (for $750), moved it to the Los Angeles Home Show (for $700) and remodeled it into the modern melange of wood shakes, stone siding and service-station-sized carport shown above. To point up the contrast, the remodelers left three of the seven rooms in "before" condition, including one high-ceiling bedroom complete with brass bed and chamber pot.

The 1,800 sq. ft. structure was completely rewired, air conditioned, insulated, equipped with new utilities and interior decor. The association said it was delighted with the business tips provided by written inquiries that came: some of the estimated 75,000 people who inspected the house. A. J. Blackstone, in of the renovation, said much material was saved, making the cost of the job hard to
MODERN MORTGAGES

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

Open-end mortgage system would balk repair loan frauds by “dynamiters”

Washington headlines highlighting the abuse of FHA Title I repair loans sed attention more than ever on the open-end mortgage plan, whose use by building industry leaders have again and again declared “the one best to finance modernization and repairs.” Ace bond contractor would never be able to exploit home owners if they had their shoddy goods or services under open-end mortgage financing. This would thwart “dynamiters” from the start, because in each sale: 1) they would have to deal with the original lender who still held the mortgage on the buyer’s end; 2) to keep foreclosure risk at a minimum, each of these lenders would have a stake of his own in protecting the home owner from assuming too much debt, and 3) from increasing his mortgage balance for anything that was not h-while to maintain or to increase the basic value of his property.

ers who abused the FHA Title I repair program usually concentrated their spending on a single neighborhood. They usually operated on a single short-term credit from one unscrupulous lender. These lenders were concerned solely with the 9.7% interest they could obtain on their government-guaranteed loans. They cared not at all whether the home owner was getting a square deal or might be swamped by high monthly repayment requirements, a condition accentuated by the operations of the repair and improvement “dynamiters.” Most victims probably would have escaped disaster if they had made the same purchases on long-term repayment open-end mortgage financing.

Answers for dissenter. Acceptance of the open-end mortgage has become more widespread every year. From 1948 to 1953, reborrowing under this type of financing increased from about $100 million to $500 million annually. But there have been a few critics. Recently one of them wrote an article in Banking, journal of the American Bankers Assn. The author was John J. Redfield, of Cadwalader, Wickersham & Taft, general counsel for a number of New York savings banks. He approved open-end reborrowing for “appropriate capital improvements which increase the value of the security.” But he opposed re-advances for repair, maintenance or nonhome purposes.

Most of Redfield’s opinions, however, were at wide variance with the views of the majority of housing and lending industry leaders. Said President Ralph R. Crosby of the US Savings & Loan League only a few weeks earlier, when forecasting a record home-repair and improvement program this year: “The open-end mortgage is one of the most useful devices developed in recent years for encouraging sound home ownership and for fitting home-financing procedures to present-day needs.”

In similar vein, USS&L General Counsel Horace Russell and other leading advocates of open-ending have repeatedly pointed out that:

> The national economy requires a system like the open-end mortgage so an owner can keep up the biggest investment of his life without strapping himself, if he cannot afford to have it done with short-term high monthly repayment loans.

> If an owner allows his property to go into disrepair because he cannot afford a short-term loan, this not only depresses the value of his own property but also the value of his neighbor’s.
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A survey of their potentials for summer cooling in new houses, new apartments and such commercial buildings as new hotels and motels.

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Your nicest room

can be

outside your house

Plenty of people know how to plan the inside of a small house. Plenty of people know how to landscape a 75' lot. But how many people really know how to do both—plan lot and house together—and, in doing it, get an extra room thrown in as a cheap bonus?

That extra room, the dividend you get for good indoor-outdoor planning, is the patio. And the next 20 pages are devoted to its design.

For the purpose of this story, we will define a patio as an outdoor space surrounded by house walls, fences or screens on at least three sides. It is the bite out of the U, the center of the doughnut, the hole in the Swiss cheese, the bubble in the champagne. It does not come free of charge. but it is cheaper than an ordinary room with four walls, floor, ceiling, heat, windows, and so on.

Moreover, it can be a great deal handsomer than an equivalent indoor room, a great deal airier, cooler, easier to maintain. And—if it has been designed with taste and discrimination—it can sell your house faster than just about anything else: for nearly everybody recognizes a bonus when he sees one.
We said that patios should be designed with taste and discrimination

The dividing line between a glamorous, walled garden and a dreary-looking concrete yard is sometimes very thin, especially in inexpensive houses. How to make sure you stay this side of that dividing line is demonstrated in the four handsome patio houses on the next 20 pages. And on pp. 104-105, we have listed some of the devices used by patio planners to make their outdoor rooms the nicest things on the premises.
Patios helped sell the

The production houses shown above come from all over the country, but they have three significant points in common:
each incorporates a pleasant patio in its plan,
each was designed by a good architect,
and in several cases a good landscape architect, too,
each has sold fast in considerable numbers,
topping the competition in its area.
After a long day's house-hunting, these patios stuck in their buyers' minds.

Here are the ingredients:

Floors that are easy to use, easy to care for, easy the eyes. Bring the house down or the patio up so they at the same level (making sure to drain the patio away from house). This makes the patio a real extension of the indoor adding to its size and convenience.

Heavily used areas should be paved with concrete, hard b stone, cast stone, wood blocks or tile to support feet, furni wheeled toys—and to be washed or swept easily. Neutral colors are best: in a hot, unshaded place the raw white of unfinished concrete can create a dazzling glare, heat up glass-walled ad ing rooms. (Use pigments or stains to get a soft integral color. Black asphalt can absorb enough sun to become uncomfort hot and sticky, then reradiate all its stored-up heat into the h at night when it should be cooling off. Break up the pa into patterns, leaving open spaces for planting to avoid mony, help absorb heat and noise. Less-used areas can be cov with grass, clover, dichondra, gravel, tanbark.

Walls that make the patio private without boxing it Screen off undesirable views with fences or masonry walls plan to be irregular, patterned or planted. Design the fence for job (e.g. solid where you need to keep out strong winds, pie where you want to let cooling breezes through, translucent w you need light).
That shade part of the patio and adjoining rooms. That shade part of the patio and adjoining rooms. That shade part of the patio and adjoining rooms.

Deep roof overhangs, porch roofs, pergolas, vork, overhead vine trellises or the spreading branches of sized tree—all make a patio twice as livable in summer, test deciduous vines and trees shed their leaves, let welcome through.

ng that does a specific job and is easy to maintain. If the most familiar plant materials—grass, flowers, hedges any shrubs—require the most attention. Ask your landarchitect about attractive low-cost, low-maintenance planting.

ative built-ins that do one or more jobs. Your patio needs at least one fixed, three-dimensional object as its ive focal point—a bed of flowering shrubs, a piece of re or a couple of large rocks chosen for their sculptural Even more useful: raised plant beds with wide edges for a low stone wall that can be used as a bench: a sandbox oratively into the patio’s over-all design.

: for sparkle, for sound, for cooling. A shallow up pool can be designed inexpensively to double as a n’s wading pool, a setting for water plants, a bird bath. Being an appealing decorative asset, water helps keep a patio cool by evaporation, has an even greater psychological cooling effect. A fountain or a trickle of water falling into a splash basin adds the pleasing effects of water’s sound and movement (see photo second from right, above).

Night lighting to prolong the use of the patio, create dramatic effects. Overhead spots, installed in roof overhangs or tree branches, will illuminate the patio, eliminate blackness beyond wide windows. Waterproof floodlights concealed at the base of trees or fountains will turn the garden into a glamorous stage set at night. Use white light; colors create weird effects.

Movable outdoor furniture to set off the patio. Chairs and tables should be strong and light so they can be moved around, waterproof and durable so they can be left out in the rain or cleaned with a hose. Don’t use too many or too bulky pieces; underfurnish the patio, like the other rooms of the house, to make it seem larger.

Above all, lay out your patio so it can be used. Dining space and play space should be near the kitchen for easy serving, easy supervision. Pools, planting, benches, etc. should be placed where they do not get in the way of normal circulation or cut down usable terrace area. And don’t forget a hose connection on the patio side of the house!
What patios can do for your house:

Outdoor rooms can douλ

This is a 4,200 sq. ft. house—but more than 2,000 sq. ft. of its floor area are located out of doors. In fact, for almost every indoor room Designer Peter Fraser has built one completely equipped, completely “furnished” outdoor room that could be used for a large part of the year in any latitude, and can be used all year round in its Florida setting.

For example: this house has a 540 sq. ft. indoor living room next to a 670 sq. ft. living patio; it has a 220 sq. ft. foyer and an entrance court outside that is almost three times as big; and it has several small terraces, protected by cheek walls, that add both a sense of space and actual, usable space to bedrooms, dining area and living room.

In short, this house is an excellent demonstration of how to get the most out of a narrow and deep lot—and how to make a large part of that lot serve not as a shapeless appendage without privacy or definition, but as eminently useful living space directly accessible from every major room in the house.

Living room by day—and also by night: for this patio is equipped with small, flexible lighting fixtures hidden in flower and plant beds. There are many outdoor outlets around periphery of patio, so that these fixtures can be moved and plugged in at will. In addition, Designer Fraser has provided built-in soffit lights in roof overhangs. Floor of patio is white tile, walls are white stucco, fascia beams are gray. Planting includes sea grape tree (left), tropical ferns, palms. Just like any other room, the outdoor space has a “ceiling height”—but it is suggested by the fascia bands, rather than real. Small views are opened up through peepholes in one wall.
Our living space

Living room and patio (above and below) are a single, integrated, 1,200 sq. ft. indoor-outdoor living space, separated only by sliding glass walls.
Approaching the house, you pass through a succession of small patios, each of which has its own distinct character and function, each of which is part of one large, 1,300 sq. ft. space.

First there is a covered area, comprising the carport and the "outdoor foyer." These two are separated by a large storage bin. From here you descend three steps (a rather nice touch designed to make the entrance more formal) into an entrance court. A pattern of circular stepping stones directs you to the front door, and a suspended canvas canopy serves both as a filter for sunlight and as a shield against rains.

As you open the front door of the house you experience one of those dramatic surprises made possible by the patio plan: for instead of finding yourself indoors as you might expect, you are now faced by yet another view of another patio, right smack in the center of the house. From here, progress through the house is logical enough: nighttime areas are to the left, daytime areas to the right.

Fraser's plan is, basically, the familiar H-shape. The handsome manner in which he used the "bits" out of the H make his house unusually successful.
Living-room terrace faces west, is shaded by trees and overhangs. Stucco walls are chalk white, fascia boards light gray, brick panels are painted lavender or pink. Massive masonry is close in feeling to traditional Latin architecture.
LOCATION: Minneapolis, Minn.; PHILIP C. JOHNSON, architect; MAGNEY, TUSLER & SETTER, supervising architects, (Meurl E. Peterson, in charge); RICHARD KELLY, lighting; EIPEL ENGINEERING, structural engineers; JOHN DILLON, mechanical engineer; EMANUEL HOLM, general contractor.

What patios can do for your house:

Indoor gardens can
source of light

The main block of this spacious house is 55' wide and 70' long. To bring light and air into the center of so large a rectangle, Architect Philip Johnson carved a 450 sq. ft. patio out of the middle of the plan, turned it into a beautiful, glassed-in garden in the very heart of the house. This indoor garden does three things: it forms a focus of attention for all the rooms that open into it; it serves as a baffle between daytime and nighttime areas in the plan; and it is a source of light, by day as well as by night.

Granted that the central patio is a necessity in so large a house, its use even in smaller plans can add an unexpected dimension to more confined living areas.
Offset wings give form to outdoor spaces

While the central patio is the most dramatic feature of this classical house, it is familiar and straightforward device. More subtle, perhaps, is the manner in which two elements of the plan were offset to give form to surrounding outdoor spaces.

In the picture (above) there is a real sense of enclosure, repose, privacy, of this is suggested rather than real: this monumental terrace is screened or not by the house itself; the other two sides are merely hemmed in by a low wall, by the visual barrier of the pool, by a small clump of birches and by the gray of the limestone paving. In short, this is a classical "room" done in the manner: with walls on two sides, and with the mere suggestion of enclosure, the place of massively walled-in space. On the approach side, similar use of bollards used to suggest a formal entrance court.

Understated architecture of the sort practiced by Johnson is full of suggestion rather than blatant assertion, full of restrained effects rather than obvious appeals. This house has a simple dignity that should see it through its life.
Floors are of Sicilian travertine throughout. Its color is that of wild honey. Steel was painted taupe.
Owner is one of the leading art collectors in the US. Lighting by Richard Kelly was designed to serve paintings and sculpture. Furniture largely by owner. Main entrance is shielded by free-standing teak wall (below). Plan of house suggests some affinity to museum arrangements.

Central patio (opposite) has coffered ceiling of plywood, roofed over corrugated plastic during winter months, insect screening during summer. Daylight bulbs of 10 w. are concealed in coffers and accent plants. Coffers cut glare, conceal lighting fixtures at night. Artificial lighting assure patio can serve as a major lighting source at night also. Ground is gravel. Part of glass enclosure slides open.
What patios can do for your house

This patio wraps up fresh air and fun

in a gay cocoon of color

Like many an architect who designs and builds a house for himself, Taylor Hardwick had a good time with this one. He experimented with structure, materials and color (see p. 118) and he made them perform some highly useful jobs. The patio is especially ingenious:

1. **As an airshaft** in the middle of the plan, it takes the prevailing breeze and distributes it to living and sleeping (see diagram above).

2. **As a light well**, it gives the rooms around it natural light from inside.

3. **As an entrance court**, it provides a pleasant, gradual transition from street to living room, makes a small house seem larger and more engaging.

4. **As a sitting terrace**, it is completely private from street neighbors, sheltered against strong northeast winds and glar...
Building materials can be happy as well as practical

...rant colors enliven front of house. Blue..."cool off" harsh sun before rays enter kitchen and dining room. On the north a 50' length of yellow plastic lets in a warmer light.

brown firebrick makes up entire fireplace with open space above to let breezes into m at far left. Fireplace and heater vents sent asbestos are brightly painted for accent. olored panes toward screened porch soften glare. Durable, easily cleaned floor is ter-made of leftover chips of many colors.

bubble skylight 4' square gives owners view from their bed. On north side of roof, it gets little direct sunlight, does not heat up bedroom. Swinging glass doors open to screened porch.
What a patio does for this home-show house:

Outdoor living is central.

This show house proves that a house doesn't have to be in the luxuries to gain from a well-planned patio. Everyone recognizes a bonus: a smartly integrated patio in this 1954 Tacoma Home Show house, more than doubles its living space, helped to make it the talk of Tacoma.

Architect Bob Price gives much of the credit to the Tacoma Builders' Assn. (NAHB), its sponsor. Says he: "The really significant fact is the change in the sponsor's attitude toward the architect and modern design."

For the first time in the history of their home show, the assn gave Price a completely free hand. Only requirements were low cost, simple details (for easy production), standard building materials. The house paid off both builders and architect, sold two before opening, attracted huge and admiring crowds, got the commissions for three more houses like it.

Other associations planning hundreds of home-show houses can profit from the Tacoma builders' new outlook and success.

What changed the builders' minds about design? Says W. Witte, president of the association: "Outdoor living, contemporary design and open planning have captured the public's imagination. We want to capitalize on that and go public the one better by building up acreage for what many may still think of as extreme design."

"Besides, we believe that contemporary design means more square footage at less money."

Patio is behind block wall (left). House is a forthright expression of plan and use. Nothing was used to make it look cute. All materials were chosen to give service, texture, color or interest to a particular area. Exterior finish, except for pumice block, is stained or brightly painted fir plywood.

One accessible area

Shielded from street by long stretch of pumice-block wall, patio also extends a path of flagstone for outdoor entrance. Note high privacy fence (left).

Oriented toward patio, main living-dining area seems to double in size, helped by pumice-block wall which makes smooth indoor-outdoor transition. Transom glass between beams also carries eye outdoors. Floor-to-ceiling window (left) commands driveway approach to house.
Double "T" bath for children and guests has bathtub at left, double basin at center, toilet through swinging door at right. Space under basins is economically enclosed with plywood for additional storage. Elongated medicine cabinet with sliding perforated doors puts toilet items within easy reach, and sliding doors will not bump heads. Room has no windows, gets light from skylights, ventilation from exhaust fans. Sensible compartmentalization of fixtures puts basins, most frequently used, close to door; bathtub is completely separated from toilet.

Convertible children's bedroom can be shut off from all-purpose room (right) and can be split in two by folding doors. Whole area provides space enough for a real indoor romp for kids. Other features that make the area livable for the little people; under gaily colored curtains, a perforated wall where they can hang their drawings, built-in storage wall of plywood with shelves, desk, wardrobe and drawers painted in many different colors. Architect Price planned house for "average" couple with young son and daughter, used tough materials that can withstand hard knocks. Example: fir plywood floor is covered with easily wiped asphalt tile throughout the house.

Almost half the area needed for this all-purpose room was letting it do double duty as a bedroom hallway. This arra contrasts sharply with usual long, space-consuming corridor three-bedroom-and-bath arrangement. Washer and drier for servantless housewife who can also supervise children indoors or in patio. Cork and blackboard wall (left) is right children's bedroom. Master bedroom (through door, left) ground) has own bath, complete privacy, much needed for with kids.
The kitchen shares the patio

1) the heart of the house (center background of photo below) roost. Note from isometric how housewife mother can: 1) idren in patio, or 2) in all-purpose room, 3) serve outdoor: a minimum of steps. 1) visit with guests in living-dining while cooking or serving dinner, or 3) enjoy the outdoor view open-plan kitchen (photo right) is planned to keep appliances: room view. Ceiling fenestration makes entire kitchen and cheerful. Counter-height range, built-in oven, pass:ire becoming modern necessities. Note how space is fully storage—much needed in today's kitchen. Cabinets with cheap above pass-through are fir plywood.
New law gives housing new direction

Lower down payments are boon to middle-income homes. Better terms promise more sales, higher prices for homes. Antiwindfall rules will choke FHA rental Sec.

Under all the circumstances—the headline-hunting of the FHA investigation, thebbc attacks stigmatizing an entire industry for the long-known shady dealings of operators—the private homebuilding business could breathe a small sigh of relief th

The measure—it had emerged from conference and cleared the House only stalled by the Senate filibuster over AEC when these lines were written—hobbled phases of private housing. For instance, even the Congressional conference committee gave its final form conceded the antimortgaging-out clause would probably keep some active builders from putting up rental housing under FHA's Sec. 207.

The warranty requirement would probably induce many builders to add a small percentage to the prices of their homes—unless sales competition proves too keen. Fanny May's one-for-one plan, which has been a blessing to builders in money-shy regions, would be out of business, at least for a while.

But the act also made life pleasanter for some segments of private housing. Realtors, in particular, could look forward to easier selling of existing houses. And some federal officials said that the new FHA Sec. 220, designed to aid rehabilitation of blighted areas, should prove a real bonanza. Public housing, its enemies noted happily, would be cleverly anesthetized. The conference committee compromise (which two senators and three representatives refused to sign) called for only 35,000 units for one year—plus the 33,000 already in the pipeline. But the new 35,000 would be limited to rehousing families displaced by slum clearance, redevelopment and urban renewal—a hurdle which would limit the program to 10,000 units, some public housers asserted. The House accepted the compromise, 234 to 156. Some senators threatened a fight to force the whole Housing Act back into conference (where it could conceivably die in the adjournment rush). But chances were much better that the Senate would accept the law as it stood. In any case, nothing but the politically explosive public housing issue stood in the way of the most comprehensive overhaul of US housing law in years.

Limited profits. A new philosophy for government-backed private housing was threaded into the GOP measure: limited profits. It was the outgrowth of FHA investigations into the whopping income some builders derived from 608s (see p. 35). But the concept was applied across the board. Thus the rechartered Fanny May, when it eventually becomes privately owned, would be limited to a 5% dividend. Builders under FHA's Sec. 207 and 213, the Wherry Act, rental defense and rental Sec. 220 and 221 housing, would be limited to a 10% profit—a situation immediately attacked by public housers as "guaranteed profits."

The Housing Act itself would not actually fix a 10% limit on builders' profits, provided that a "reasonable allowance" for costs could be included in costs. But those fees pointedly advertised that they had in mind; that was the figure used in the Senate report which backed up the version of the housing legislation. FHA ably would limit profits to the 10%.

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Anti-mortgaging-out. In limiting via antimortgaging-out amendments, the act would require builders of rental cooperative housing to certify their costs (profit included) and then deduct mortgage by the amount the loan exeed allowable loan-to-value ratio. Land have to be listed at FHA's estimate before building. This was far stiffer than the cost certifications which had been imposed on Title IX defense housing and Wherry Act close to a standstill. A Senate compromise, 234 to 156. Some senators threatened a fight to force the whole Housing Act back into conference (where it could conceivably die in the adjournment rush). But chances were much better that the Senate would accept the law as it stood. In any case, nothing but the politically explosive public housing issue stood in the way of the most comprehensive overhaul of US housing law in years.

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IN THIS MONTH'S NEWS

Senators haul 608 builders on the carpet as a long probe into alleged windfall profits begins in Washington

Steel price boost foreshadows higher building costs although some builders think housing may escape—at least for a time

Congress gives HHFA dictatorial power to reorganize FHA and other federal housing agencies

$5,000 worth of electrical appliances per house in ten years? Industry executive forecasts it will be so

John Lloyd Wright and California architectural examiners tangle in a court test of the state's controversial registration rules
I repair loan terms, the industry is counting on open-ending to give the modernization market a shot in the arm. A last-minute controversy over Senate objections to letting additional advances exceed the original amount of the loan was settled by a compromise under which the mortgagor must certify that anything above the original loan total "will be used to finance the construction of additional rooms or other enclosed space. . . ."

Urban renewal was one of the act's most sweeping changes—but little noticed lately because of the FHA controversy. Title I re-development of the Housing Act of 1949 would be broadened to include not only slum clearance but slum prevention and the entire new concept of urban renewal. Significantly, the law would bar urban renewal grants (but not preliminary planning advances) to communities until HHFA approves "workable" official plans to attack existing slums and prevent growth of new ones. But city councils would be required to pass an ordinance or resolution before planning funds can be granted. This would close the door to many a stunt by which public houses flim-flammed property through before cities understood what was happening.

The new law would modify the requirement that blighted commercial or industrial areas be redeveloped primarily as housing to permit nonresidential rebuilding of areas with "substantial" deteriorating housing.

Military housing: In a new FHA section created for military personnel some homebuilders might find a little-suspected bonanza. It would be the most liberal government housing insurance ever legislated. The maximum mortgage of $17,100 would permit 95% loans on homes priced up to $18,000 (instead of $9,000 for civilians). Apparently, the new section also applied to existing homes—if sold to men or women on active duty. Moreover, a soldier who gets the new FHA-military loan would still be eligible for a VA home loan after he is discharged.

The law also would extend Title VIII and Title IX for another year—subject to overriding amendments like mortgage out.

Fanny May: The housing measure would give the President almost everything he sought in reshuffling the Federal Natl. Mortgage Assn. (H&H, March '54, p. 35). Basically, this involved revamping it into a tripprung operation part of which is destined for private control in some six to 12 years. Fanny May's "normal secondary market" would be gradually shifted into private hands, and people who sell mortgages to it would be required to buy capital stock amounting to 3% of the mortgage—a percentage builders think is too high. While the government retains its initial $70 million stock in the operation, dividends on the stock might not exceed what the government gets on its own securities. After the government is paid off, the yield would be held to 5%. And private participants would be barred from receiving any dividends based on earnings with the government's money.

A second Fanny May operation (with sepa-
rate accountability), treasury-financed aid to new mortgage programs, would have only $200 million authorization, plus $100 million for 20% participation loans. Theoretically, these might raise the kitty to $700 million to back items like low-cost or minority housing. Advance commitments under the one-for-one plan could not be revived until participants have paid some private money into Fanny May and will be limited to the amount of these mortgages. This would make the one-for-one provision almost worthless. Third Fanny May program: sell its existing $3.6 billion portfolio.

Voluntary credit committee: Creation of a Natl. Mortgage Credit Extension Committee to help steer mortgage funds into money-shy areas was authorized, under HHFA auspices. The committee was proposed by insurance companies, is aimed at making direct VA loans needless.

High-rise apartments: For Sec. 207 apartments, the act would remove the $10,000-a-unit mortgage ceiling, substituting limits of $2,000 a room ($7,200 a unit if less than four rooms). It would give FHA power to up limits for elevator buildings to $2,400 and $7,500 respectively. The new FHA Sec. 220—either old or new dwellings in designated urban renewal areas—would have the same financing limits as 203 for one- to four-family homes. Four- to 12-family structures would have a special maximum of $35,000 plus $7,000 each until four over with 203 loan-to-value terms. But an alternate deal for buildings of any size would permit builders to get 90% mortgages up to $2,250 per room (or $8,100 per unit of less than four rooms), and $2,700 per room ($8,400 per unit of four or more rooms) for elevator buildings—plus $1,000 a room more in FHA-approved high-cost areas. This struck experts as one of the most profit-laden features of the act. As with 608 terms, the underlying motive was a national need. In this case, Sec. 220 is designed to give big support to the drive against slums.

Eisenhower's brave new plan for 100%, 40-year loans (FHA Sec. 221) was amended into uselessness. It had been proposed as a try at a private enterprise substitute for public housing. Congress limited it to 95% loans for 30 years—just the same for cheap houses as would be available under Sec. 203. The White House also lost completely its effort to get flexible controls over FHA and VA interest rates. Spurred by cries of alarm from the veterans' lobby, Congress left intact the present rigid ceilings (5% for FHA, 4½% for VA). Congress dropped into 95% loans for 30 years—just the same for cheap houses as would be available under Sec. 203. The White House also lost completely its effort to get flexible controls over FHA and VA interest rates. Spurred by cries of alarm from the veterans' lobby, Congress left intact the present rigid ceilings (5% for FHA, 4½% for VA). Congress dropped into 95% loans for 30 years—just the same for cheap houses as would be available under Sec. 203. The White House also lost completely its effort to get flexible controls over FHA and VA interest rates. Spurred by cries of alarm from the veterans' lobby, Congress left intact the present rigid ceilings (5% for FHA, 4½% for VA). Congress dropped into 95% loans for

Northwest lumber strike

Some builders slow operations to avoid paying fancy pr for lumber and plywood as biggest lumber walkout record drains Douglas fir from supply pipe lines

A strike in the Pacific Northwest lumber industry, source of one third of the nation's softwood lumber, seemed almost unthinkable in mid-June. Lumber is the North's biggest and oldest money maker; 65¢ of every dollar of income in Oregon comes from lumber. As residential building had picked up, lumber buying had quickened, at prices that had risen $5 a thousand board feet at the mill. And employment was on the rise in the Northwest after a slow winter.

But on June 21 lumber workers came out of the woods and mills by the thousands in a few days lumber users across the nation were bidding up prices in a serious dwindling of stocks. Homebuilders were threatened with a shortage of dimension lumber at the height of the busiest season since 1950.

Two rival unions—the CIO International Woodworkers of America and the AFL-Lumber and Sawmill Workers Union—had joined ranks for the first time in the biggest lumber strike yet.

As they glared at each other across the bargaining table, representatives of the 100,000 workers and 465 lumber-producing operations (over half the producers in the Northwest) were beginning to wonder what they were doing to the already troubled lumber industry. The Douglas Fir Operators, a management group, was warning the strikers—and the public—that increased wages of any amount, not to mention the 12½¢-an-hour boost sought by the unions, would mean shut downs for many producers.

Log-choked river. Around Portland, main artery for outgoing Oregon shipments, lumber was piled up by the carload on docks and mill grounds. Acres of idle log booms choked the Willamette River upstream. The Kingsley Lumber Co., a sawmill in Linton, Ore., had 3.5 million board feet of Douglas fir sitting behind picket lines.

But wholesalers by mid-July were down to their last stick in Portland. Some were heading south to California to beat the bushwhackers for more. Contractors, who had been enjoying a nice little boom lately, began laying off carpenters. By mid-July lumber prices—which had shot up as much as 30% above prestrike levels—had started to settle back down as builders in increasing numbers decided to wait out the shortage. Some, wary of a price-conscious market, slowed work in several eastern and midwestern cities.

How long the walkout would last was a matter of conjecture. It is customary at this time of year to close down lumber operations for overhaul, and to give the men a two-week paid vacation. The strikers intelligently walked out pretty much at the start of that period, may have enough loose cash to tide them over a while. But with the highest wages in the US lumber industry, Northwest workers have been buying heavily on the installment plan. Money for payment ready right after a buyout, windfall gains could not get into the woods, will be tighter. Yet many were predicting a break, possibly two strike-bound months very serious disruption of management labor income. Using the steel settlement as their biggest pitch, the unions asked a across-the-board raise of 12.5¢ an hour their present average of $2.64 for loggers: $2.06 for sawmillers.

High wages. The steel average is the average for southern lumber (the other great source of US lumber only $1.16. Moreover, and most imp selling purposes, the unions argued that the Northwest lumber workers had to raise since April '52, when a month walkout got them a 12.5¢ hike.

The only raise in the interim was the 10¢ boost last year by the Weyerhaeuser Co. for its own men, which caused th of the industry considerably upset Weyerhaeuser, the biggest single, inter forest-products producer in the US as on only one which negotiates apart fro rest of the industry, acted to forest 10¢ strike. Last month, Weyerhaeuser caught with about 8,500 men out, was waiting mildly for the rest of the in to settle the fuss.

The strike was far from popular wi rank and file of the unions, especially wood. In that industry, cooperative not closed by the strike, were step production. These worker-owned plants, own no timber and are for the most part decapitalized, were getting a new cr the market. Normally they supply abo the nation's plywood, but it appears sible that if their competitors stayed a while longer, the cooperatives might ture another 5% of the market.

Industry seemed in no hurry to Said one industry spokesman: "We're going to relax and rest up for the big ahead." It was the view of managers the union determination to get a raise.

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Newspaper clipping from the Portland Oregonian

San Diego considers a ban on 210 sq. ft. homes

The question before the San Diego city council was whether such 14' x 15' structures like the above constituted a threat to property values and consequently whether a minimum-size zoning ordinance should be enacted to forbid their construction. Argument on both sides was spirited. A. R. Essery and Edward Tristram touched off the hassle by putting up ten of these houses-210 sq. ft., with tongue-and-groove ceiling and one door. "A shame and a sin," said one local NAHB official. But outbursts from some small-home builders and beach property owners were loud and the city council voted down the proposed ordinance change, 6-0. The buildings fit the slim state law, which sets minimum measurements only for bedrooms (80 sq. ft.), bathrooms (30-35 sq. ft.) and kitchens (50 sq. ft.). City Planning Director Glenn Rick plans to present a compromise ordinance for consideration by the council this month (it has twice been postponed) putting local home sizes variable according to the zone in which they are built-at 400 to 650 sq. ft. for single-family homes, 400 to 500 sq. ft. for duplexes and 250 sq. ft. for apartment and motel units.
Austin, Tex. is the new air-conditioning capital of the US. It may have fewer air-conditioned houses than Houston, Dallas or Phoenix but it has more types of equipment and more new ideas on air conditioning than can be found in other cities.

Hundreds of builders, designers and engineers from the building industry will travel to Austin in the next few months to see the 22 houses which up NAHB's big field-testing project. For in this one Texas city, the Research Institute has brought together equipment and ideas that sent most of the progressive thinking about summer cooling.

To those who cannot go to Austin for a personal inspection, Home offers this 16-page report as the next best substitute.

What can you learn about summer cooling from NAHB's Air-conditioned Village

On opening day (left) some 500 visitors representing the building and air-conditioning industries went to Austin to see the 22 experimental houses (below). NAHB President Dick Hughes said: "Our responsibility as builders is to produce more and better homes for more people. Without year-round air conditioning, no home can be comfortable."
What is Air-conditioned Village? Twenty-two houses plus an NAHB field office located in the new Edgewood residential area northwest of Austin. Houses are lived in by families who paid an average of about $15,000 for them. Each house has a different make of air-conditioning system. Houses are approximately the same size: ranging from 1,146 to 1,468 sq. ft. plus carport and outdoor storage. Families began moving in last June.

Who built it? Eighteen local builders, all NAHB members, at their own expense. Most used their standard 1954 house or a slightly modified production model; a few houses were freshly designed for this project. The majority of builders worked out the installation of their air-conditioning systems in cooperation with manufacturers or local dealers.

Who is behind it? NAHB, strongly backed by President Dick Hughes, Chairman Earl W. Smith of the Research Institute Committee, Leonard Haeger and Chris Christenson of the Washington office, and supervised in Austin by Ned A. Cole, chairman of the Air Conditioning Committee. Sponsoring it also are the National Warm Air Heating and Air Conditioning Assn., the residential section of the Air-conditioning & Refrigeration Institute, the National Mineral Wool Assn., Structural Clay Products Assn., 22 air-conditioning manufacturers and about 30 firms making other housing products.

What is its purpose? For one cooling season and one heating season the houses and the families in them are to serve as a field laboratory. It is hoped that investigators can get answers to many questions which will lead to the improvement of cooling-equipment installation methods and to summer-cooling use by typical families who buy merchant builders' houses.

Each house has a separate electric meter for the air-conditioning unit so that operating costs can be recorded and analyzed by University of Texas engineers. Practically every type of cooling equipment, air-distribution system, insulation and shading device is used. From instrumentation and observation many important facts can be learned (see the following pages).

Is the Village open to visitors? Village families have agreed to open their homes one day a week to qualified observers. For information write to NAHB Washington office, 1028 Connecticut Ave., Washington, DC. Reports will be issued by NAHB's Research Institute at a later date.
1 wide overhangs,
2 light-colored low-pitch roof,
3 plenty of windows, properly located,
4 carport or garage to shade west side,
5 other devices to keep sun off windows,
6 ventilated attic (some have electric fans),
7 thoroughly insulated attic,
8 wall insulation,
9 moisture barriers,
10 exhaust fans in kitchen and bath,
11 a variety of locations for cooling units, carefully engineered,
12 air-distribution system designed to fit the house.

These points, illustrated by house (above), contribute to cooling and good design, are repeated in all 22 houses.

What's good for cooling is good for design.

Testing! Air-conditioned Village is a laboratory.
Nat'l. Warm Air's field car is only one part of the testing facilities that Bill Nessell's crews are using this summer in Austin. Technicians, like man at right, will check temperatures, air flow, effectiveness of each installation and design.
Air conditioning improves design. The 22 test houses demonstrate that a house designed for air conditioning looks better and performs better than the average uncooled house. Factors that make a house cooler in summer also make it a better year-around house. A wide overhang on all four sides, for example, makes almost any house look better and bigger, provides shade and protection from weather for the wall below, casts little shadow in winter.

Proper shading of windows reduces sky glare, makes indoor living more comfortable. Proper location of windows for air conditioning reduces summer sun load whether or not the air conditioning is operating. A house well insulated and with efficiently designed moisture barriers is a more comfortable place during cool days of spring and fall as well as in the middle of winter.

Such companion factors of air conditioning as ventilated attics, kitchen and bath exhaust fans, carports or garages on the west or east to provide shade, trees and shrubbery to cool east and west walls, and the proper venting of clothes dryers and other heat and moisture-producing equipment all contribute to better family living.

Houses are experimental and not 100% perfect. A perfectionist, seeking the ideal house for air conditioning, will not find the perfect house in Austin because of several limitations imposed on the project. Ned Cole's air-conditioning committee was severely pressed for time and with so few people to do so much work it is a miracle that the Village was finished by opening day, June 2. Orientation is not ideal because houses had to be located in an established subdivision which already had streets and utilities.

There was a practical limitation on house design because not only were builders in a hurry, but they had to produce designs they were sure would sell in Austin and which would meet VA-FHA and lending institution requirements. Unlike Parade of Homes houses which sometimes stand unsold for months, these houses had to sell fast so families could move in and the testing program could be started.

There were also size and price limitations. The committee asked builders to produce a house of approximately 1,200 sq. ft. which would sell for $12,000 plus the land. While this was a target, some houses were priced up to $17,000 because of extra equipment and their experimental nature.

One of the ground rules laid down by NAHB's Research Institute was that each house be designed for a cooling load of approximately 2 tons. Houses in the raw had such variation in orientation, window area and other factors affecting heat gain, that it was necessary for the committee to equalize the cooling load by adding extra amounts of shading and insulation. It is emphasized that this is not a comparative test of different cooling units. Nor is it a laboratory type of research in which the essential elements are controlled. The fact that the 22 houses are different, the units are different and the families are different will provide a rich source of subject matter for observation. It is unfortunate that all the good ideas were not combined in at least one house as a demonstration of how good a house can be.

Field tests will be made by experts. Already at work are skilled technicians from the National Warm Air Heating & Air Conditioning Assn. under the direction of Bill Nessell. This is the third summer these field crews have been checking the efficiency of cooling systems. They will measure temperatures in each house at 3" from the floor, sitting height, standing height and at the ceiling. They will measure slab temperatures, room humidity, effect of intermittent fan operation and take thousands of other recordings. There will be a careful record of operating costs. Houses have been so well insulated and shaded that some builders hope their owners will be able to heat and cool all year for $100. Aim of the research is to discover how better cooling and distribution systems can be built and installed for less money.

Families, too, will be studied. Physicians from the Texas Medical Assn. will see families periodically to determine how a cool house influences allergy sufferers. University of Texas psychologists will study how air conditioning affects the mental health and spirits of the occupants. Other studies may be made.

Is air conditioning practical for the $12,000 to $15,000 house? Residential air conditioning in merchant builders' projects is so new that many observers are still uncertain if it is economically practical in houses at $12,000 to $15,000, FHA and VA officials are also watching the Village.
New insulation of mineral wool is topped with a silver-coated reflective paper that bounces back about 80% of the intense heat rays normally radiated to ceiling from a hot roof above. This paper should make a 3” “full thick” batt as good as 5” of regular insulation in summer. In winter, reflective paper is of little value. Under mineral wool is regular aluminum-foil vapor barrier. Cost of “full thick” size just introduced by National Gypsum: about 10¢ a sq. ft. installed.

Fully vented gables in Village house (left) emphasizes importance of good air wash of ceiling to prevent heat from building up in attic. Prefabricated metal gable is shown in sketch. Experts recommend as much as 1 sq. ft. of free vent opening at each gable for every 200 sq. ft. of attic. This helps cool in summer, also helps prevent condensation in winter.

The white roof reflects from 35% to 70% of sun’s heat, depending on roof texture and material. Engineers still do not know exactly how efficient a white roof is, so this one may supply important data. However, major emphasis in Village roofs was placed on insulation and vented attics.
New insulation method combines advantages of aluminum foil and bulk insulation. Single-foil sheet, tacked under rafters, not only stops roof heat from radiating to ceiling below but also provides a heat shield over cooling equipment in this attic. Usual 4" of bulk insulation was blown in over ceiling. Both attic and space above foil is well ventilated.

Forced ventilation over ceiling is being tested with 24" attic exhaust fans, thermostatically set to start when attic air is 100°. At left, fan blasts attic air out gable; replacement air is pulled in other gable. Fan above draws powerful airwash in through vented gables, out through carport ceiling. In no case is air inside house affected. Fan costs about $70.
Big overhangs are a standard feature, provide shade and generally improve appearance of houses. House above has a generous overhang at right end, plus an unusually large carport roof which serves as buffer between house and afternoon sun. Designers put carport at west end of house whenever possible but orientation often made this impractical.

Shading reduces the huge sun load on windows

Most designers of air-conditioned houses have completely overlooked the importance of shading devices. The variety of shades and their effectiveness in cutting direct sun heat through windows should contribute important data for future houses. Test results will undoubtedly show that air-conditioned houses can have plenty of windows if they are properly shaded.

The rich assortment of shading devices includes roof overhangs, wood trellises, awnings of canvas, aluminum, steel and plastic, wrought-iron grillwork, wood shutters, reflective metal screens, double-glazing and heat-absorbing glass, sun wall extensions of carports, and the use of carports or garages to shade entire sides of houses. All these devices are just as effective in making a nonair-conditioned house more comfortable as they are in cutting the cooling load on air-conditioned houses.

Grandpa was right when he used canvas awnings to shade his windows, for this is a practical way to cut sun loads. On other houses metal or plastic awnings were used for the same purpose. Builders' model houses should be equipped with awnings or shading devices to suggest their use to buyers. Signs might be used to explain their Btu value.

For vertical or horizontal shading, these canvas awnings do an efficient job. At left, awnings are swung up to extend roof over terrace, but as sun gets lower they can be lowered too (as shown at the right). When big windows face east or west, vertical shading is necessary.
Vertical shading devices next to windows, like these two ornamental iron grilles, can be effective in reducing direct sun on windows. Late afternoon sun is often so low in the sky it gets under the widest overhang. At extreme right (above) is a louvered wood shutter.

Louvered metal insect screening is a shading device, which manufacturer says lets only 12.5 to 18% of sun heat enter the room. Designed like miniature Venetian blinds, these screens let in light, but greatly reduce glare and will help to reduce the load on air-conditioning equipment. Such screens are made to fit any type of window.

Shade trees such as these are missing! one of best cooling devices of all has been neglected in Austin
Brick walls of house (above) were lined with insulation as shown (left). Over-all wall heat gain was cut sharply to 2,300 Btu's per hour. Same brick walls with no insulation would have heat gain of 7,000 Btu's per hour and house would need bigger cooler. Cost of 2" wall insulation: about 5¢ a sq. ft.

Brick cavity walls, backed-up with hollow tile, are being tested to see if heavy "mass" wall boosts cooling efficiency. Fiber insulation was poured into 2" cavity giving wall U factor of .12 and cutting over-all wall heat gain from 5,000 Btu's per hour with no insulation to under 2,000.

Frame walls, used in majority of Village houses, were bolstered with as much as 4" of bulk insulation or the equivalent in aluminum foil. Thus engineers hope to compare relative merits of foil vs. bulk insulation. Above photo shows walls blanketed with 3" mineral wool batts giving low .07 U factor.

All houses have wall insulation

The fact that every wall in Air-conditioned Village is bolstered with insulation of one kind or another is significant because wall insulation was practically unheard of in the South until a few years ago. Most Southern builders still omit it because heating problems are not severe. But air conditioning puts new importance on the need for heavy wall insulation because outside heat can penetrate, virtually unchecked, through uninsulated walls.

If the walls had not been insulated almost every house in the Village would have required a 3-hp air conditioner instead of the smaller 2-hp size. Various kinds of insulation were used including 2" to 4" of mineral wool and different types of aluminum foil. In addition, insulation board sheathing was used together with mineral wool or foil. Main objective of the first phase of the testing program is to find what kind of insulation gives best results cheapest.
Exhaust fans installed in the 22 kitchens of Air-conditioned Village emphasize the importance of getting rid of cooking moisture before it can spread through a house and load down the cooling unit. Ideal location for kitchen fan is directly over the range as shown by the ceiling fan (right). Housewives have been advised to turn on fan only when cooking, turn it off immediately afterward. Also, kitchen window near fan should be opened a few inches during cooking to let in replacement air, prevent cool air being withdrawn from other rooms. Seven of the kitchens also have hoods over the range as shown (right). Each hood contains both a fan and grease filter. Engineers hope to determine how much more efficient the hood is than just a fan alone.

How to solve moisture problems

Vapor barriers in walls and especially over the ceiling are believed to be quite effective in stopping high outside humidity from infiltrating the air-conditioned house. So several of the houses were enveloped with foil-backed insulation as shown (right). After these walls were insulated, similar insulation was laid in the attic with the aluminum-foil backing directly over the ceiling. All houses did not get vapor barriers because condensation is not a critical winter problem in the deep South.

Ground moisture can infiltrate the dry atmosphere inside air-conditioned houses, too. So several of the slab floors were sealed against moisture travel (as shown below). Layers of heavy roll-roofing paper were lapped over the fill before the slab was poured.
A basic question every builder must decide is where he will put his cooling unit. He may choose the center of the house, attic, basement or crawl space, garage or carport, or even a lean-to. And there are some divided units, half inside, half in the carport or outside. Each system can be found in Air-conditioned Village and each makes sense. Three of the most commonly used locations are shown here, and a crawl-space installation is on page 141.

Advantage of a central location is that ducts, piping and wiring are all relatively short. If ducts are short they are cheaper, and there is less work for a fan in pushing the air through to the outlets. Greatest disadvantage of a central location is the noise, which can be a source of irritation. Among the factors to be tested in these experimental houses is family reaction to noise and the effectiveness of sound baffling.

An attic location saves floor space and gets the noise away from the floor. Unit can be put in the center of a house so duct runs are short. There are two disadvantages: installation and icing are more troublesome than if it is located elsewhere; and an attic be so hot that it reduces unit efficiency.

After this photograph was made, the attic was carefully insulated with a of aluminum foil under the rafters insulation in the attic floor.

An outside location rids the house of noise and the serviceman, who do his work without entering the house. Here the heating and cooling unit is a separate room off the carport (as the diagram illustrates). The unit is only from the center of house, so not much ductwork was necessary. Ducts rise up to the unit, go overhead into house. Air is distributed through an overhead ple Return air passes through ducts in
lew ideas for hiding water savers

Camouflaging the water saver is done differently in each of the houses shown on this page. When water is precious, as it is in most of the Southwest, some device must be used to save it. House above uses an evaporative condenser which is hidden behind brick wall (shown in close-up at left). The refrigerant is cooled by a steady trickle of evaporating water, which costs less than $4 a season. The unit is in the center of the house, but most of the noise is kept outside at the condenser.

Landscaped air-cooled condenser is behind stone wall at the front door, and is only a few feet from the unit just inside. While the fan noise is at the front door, it is less objectionable here than if it were at the rear of the house where the outdoor patio is located. A forced-draft cooling tower could also be hidden away in the same manner. Either this condenser or a forced-draft tower can be located on any side of the house or at some distance away.

Under carport roof, this air-cooled condenser is out of the way, is inconspicuous, yet is efficiently located. This location is cheaper than the stone wall above. Copper lines carry the refrigerant back and forth between the condenser and the central unit. Other locations for air-cooled condensers include attic, or side wall of a garage or carport.
Ceiling outlets blend supply air with room air, then wash it down over windows in this system. Small prefabricated ducts are used which can be installed rapidly in this truss-roof house before partitions are in. Ducts are thoroughly insulated. This is only overhead distribution system in Village that would be acceptable in North for heating, in a slab house. Top drawing (on page opposite) gives more details on this house.

Overhead ceiling diffusers characterize this simple distribution system. It is economical because short runs of duct fan out from a centrally located unit and ducts can be installed rapidly. This would not distribute heat efficiently in cold climates, unless return air grilles were under windows.

Furred-down duct in hall in this system is efficient and inexpensive cause duct is built below regular ceiling, it eliminates insulation if it were in attic. Cool air passes from main duct directly to rooms th inexpensive grilles. While fine for the South, this system would not ma warm floors in winter in the North.
Distribution system

- Space cooling (and heating) will probably excite more interest
  than any other system. Will cold air rise through the floor registers?
  Draft cooler blows supply air into crawl space, which must be well
  insulated and moistureproof. Crawl space has triple layers of 15-lb.
  felt, paper, and paper rolled up side walls to floor. This cost $61 for
  100 sq. ft. house. No ducts are necessary. Main heating-cooling unit
  israge, with both hot-water pipes and refrigerant lines running to
  it in crawl space. Return air is drawn from house into top of unit.

Zoned system was installed in one house with living space as one zone,
sleeping rooms another. Cooling unit is outside (as shown in drawing), and
refrigerant is piped to and from each of the coolers. When a party is held
in living room, cooling can be intensified by turning thermostat down,
which calls for more refrigerant. In winter, hot water is distributed in same
manner. Ducts are furred down from ceiling.

Perimeter cooling and heating system in a slab house with radial ducts
was installed, as it is by many builders in the North. Both cool and warm
air are discharged into a plenum below the central unit, carried through
4" prefabricated ducts and discharged into each room through a 2" x 14"
floor register. Ducts installed cost less than $200 per house. Another similar
system has ducts in the crawl space, where they must be insulated.
First findings. When 22 kinds of cooling units are installed at once in different houses, especially by builders putting in their first air-conditioning systems, everybody concerned is bound to pick up some practical ideas.

1. There was no complete agreement on calculating heat gain, as different methods gave different results. Builders concluded the industry needs to agree on an accepted system so each manufacturer or dealer figuring a house will get the same answer.

2. Builders found that the manufacturers or their representatives did not understand the builders' problems, especially the fact that production schedules depend on precision timing, and that cooling units must be installed on time.

3. Local dealers did not give as much help on ductwork design as builders had expected. Some duct systems cost about ten times as much as others.

4. Electrical wiring was unnecessarily expensive in some cases, with one system costing over six times as much as another. Builders would like quick connections.

5. There seemed to be too wide a variation in total costs, as one unit costs over four times what the least expensive did.

6. A tug of war still goes on over the size of the equipment room: dealers want it larger, builders want it smaller. Some producers say it is impractical to crowd complex equipment into a small area.

Above are basic facts on all 22 houses
L. Wilson; 1,258
6" ceiling insulation
30" overhangs, awnings on northeast and southwest
3" insulation
24,751
US Airco

W. Burns; 1,170
4-ply aluminum foil, white roof
30'-48" overhangs, heat-absorbent clerestory glass
3-ply foil
29,784
Chrysler

J. Andrewartha; 1,170
4" ceiling insulation
32" overhangs, reflective screening
2" insulation
22,070
York

S. R. Sheppard; 1,300
aluminum foil under rafters
4" ceiling insulation
36" overhangs, port double glazing, canvas awnings on southwest
2-ply foil
22,891
Frigidaire

F. Barren; 1,270
6" ceiling insulation
60" overhang, over floor-to-ceiling windows
insulation board plus 2" batt insulation
24,973
American-Standard

B. N. Holman; 1,250
6" ceiling insulation
36" overhangs, reflective screening
insulation board sheathing, 68% rigid insulation, foil-backed plasterboard
26,017
American Furnace

H. T. Baker; 1,390
3" rigid insulation, in pitched, built-up roof
36" overhangs, outside awnings
4" insulation
25,288
Lennex

R. L. Struhall Jr.; 1,200
6" ceiling insulation
36" overhangs, reflective screening
3" insulation
22,767
Day & Night

W. H. Bullard; 1,210
4-ply foil
30" overhangs, reflective screening
2-ply foil
23,455
Drayer-Hanson

- 22 houses have a slab-on-ground floor
- And 22 have crawl spaces
- Exhaust fans, 12 have bath exhaust fans.
- Exhaust fan is the commercial term
- Insulation shears of foil installed with four air spaces
- Refers to a double-layer foil insulation installed with three air spaces
- Refers to a single sheet of air spaces, one on each side.

Photos: Dewey G. Mears and Bill Malone
Here is a traditional lumber dealer—Kansas City’s R. L. Sweet who is now evolving into a prefabricator.

"What Sweet is doing is the biggest new change in the building industry to benefit the small builder." So says Earl Hort, building superintendent of J. C. Nichols, Kansas City’s renowned land developer-builder-realtor.

What Sweet is learning and applying to his business is important to lumber dealers as it is to builders all over the

**Prefabrication—practical and essential**

Says Sweet: "The prefabricator has had enough experience success to make us realize it’s practical." To which his friend Earl Hortor, who now prefabs his own panels, adds "Bob realizes prefabrication is more than practical; it’s essential.

Sweet started prefabrication partly to help his best customer who were calling for "more complete packages," partly to keep from losing good customo from the smallest to the largest, who erect 300 or more houses per year. Remaining business with industry (pallets, lumber for remodeling), some retail.

His first experience in prefabrication started with big build two years ago Jim Stanton (450 houses a year) tried to build his own roof trusses with carpenter labor, ran into union trouble when he tried to set up his own shop. Sweet soon convinced him that Sweet’s lumberyard could make trusses cheaper and faster.

Sweet has since fabricated over 30,000 trusses, has the opera down to 15 minutes per truss.

Next Sweet found he was losing Big Builder Don Elbel’s business (up to 350 houses a year) because Elbel was getting knock down wall sections from the West Coast. Sweet countered with a better offer—to deliver wall sections to the job complete assembled, shingles, windows, insulation and all.

Soon Sweet was setting up separate departments to assemble more components and pre-cut more material. Among them: 8 and-door, kitchen-cabinet and garage-door departments. Altho
prefabber to help his builder customers and himself

Sweet does some of his own millwork, he says: “I'd rather stay in stock items. We manufacture only items we run out of. Our sash and door department puts windows together from components of several manufacturers. We’d need a larger volume to be the whole job and compete with big manufacturers.”

Each department must pay its own way,” says Sweet. “If operation doesn’t make money, we drop it.” Latest department, than a year old, is Sweet Lumber Fabricators Inc., wholly owned subsidiary.

Our idea is to help the small builder, the five- to six-houses-a-year man,” says he. “Anything we do for the big builder works well for the little fellow. In fact, we can save the small builder a lot of money even if we can’t give him the same low prices. When he buys his components from us all prefabricated, he soon sees his whole flow of work speeded up and his efficiency increased. We save on the cost of materials by sheer volume. Our sheds are already set up for mass production because we have a big yard. Our new sheds were designed for handling rather than storage, and aisle widths throughout our yards are planned with a fully mechanized operation in mind. Thus we can handle efficiently, and at an almost unbelievably low labor charge. Our location and a spur that holds 21 cars makes that possible.”

When should a builder become his own prefabber?

There is a volume below which it is not practical for a builder to set up his own prefab operation. Sweet is inclined to place “breakpoint” close to 250 houses a year. Earl Horttor places it close to 50 houses, “provided that the builder does 50 or 60 houses every year, year in and year out” (as J. C. Nichols does). “But above the 250-house breakpoint,” Sweet points out, “we already supply wall sections to Don Elbel who builds from 300 to 500 a year.

“Wherever the breakpoint is, builders below it literally can’t afford not to use us. Several medium-sized builders who have started prefab operations in their own yards have learned to their sorrow that it cost them money and have had to close down. If a builder wants to by-pass the lumberyard, he must have a great deal of capital he is willing to tie up in plant, equipment and inventory. And if he has ups and downs in his building operation, he soon has equipment idle and a big overhead to meet.”

“One big advantage a lumber dealer like Sweet enjoys,” says Horttor, “is that he can pay mill scale for fabrication whereas the build-for-sale fabricator must pay full carpenter scale.”

Packaged services for the small builder

“The really small builder who works on his own houses during the week and sells them on week ends himself just isn’t equipped to do the job we do for him,” says Sweet, who handles FHA paper, construction and final financing for his smaller customers.

“In effect we become the small builder’s bookkeeper.”

A design department headed by his architect son-in-law Ralph Kiene (see p. 147) is another packaged service Sweet offers. Like Lumber Dealer Clarence Thompson (H&H, July ’54), Sweet believes in giving the builder what he wants in the shape he wants it, has even sold roofing and oak flooring applied.

How do builders like working with Sweet?

Don Elbel: “On a $12,000 house with about 6,000 bd. ft. of lumber, I would pay $80 per M for on-site labor using conventional construction techniques. Prefabbers can do the same job for about $20 per M. The least that Sweet can save me is $350 a house.”

George Siemens, now doing 28 $10,000 houses: “What impresses me most about prefabrication is the saving in time. In 3½ months I will have 28 houses ready for occupancy. Besides, I have less overhead, can sleep nights if there’s a lumber strike.”

(To see Siemens‘ operation in action, please turn the page.)
Building from the back of a truck

Five truckloads, timed to reach site in building sequence, bring:
1. Lumber for platform over crawl space day before walls go up.
2. Exterior wall panels when workmen start the next morning.
3. Interior partitions five minutes before exterior walls are up.
4. Roof trusses and gable ends shortly before partitions are set.
5. Roof sheathing, doors and hardware when all trusses are up.

Houses for George Siemens (below) were fabricated by according to the builder's plans. With experience gained working with bigger builders, Sweet will engineer his own have his architects design them for small builders. Say: Builder Don Eibel: "The lumber dealer can help small bu with better design, spread it around the way new Fords do."

8:10 A.M. Labor force of five carpenters and two laborers has already worked ten minutes, put up two front wall panels. Ground was leveled so truck could back up to platform.

8:12 A.M. Side wall panel, tipped from back of truck, comes off easily, is slid on edge across platform to reduce friction, Sweet had tried loading panels flat, found work crews had more difficulty lifting that way.

8:40 A.M. Eighth panel is placed. Mallet is used to force panels tight against each other. Under ideal conditions all wall panels can be up in 45 minutes, usually take one hour.

8:50 A.M. Sixth panel is set in place. Crew is used while each panel is braced, joined to others. Awning window already glazed.

9:00 A.M. Preassembled interior partitions are moved into house through gap left in front wall where integral door and window wall will be placed after all the interior partitions have been erected.

9:10 A.M. Carpenter crew sets no bearing partitions before trusses are because workmen like it that way and found his "back of truck" system fit.

9:45 A.M. All partitions are erected, front window wall placed, first gable end in place. Truck circles house bringing gable ends and trusses closest to points of erection.

10:00 A.M. Builder Siemens watches truck pull around house after second gable end is set. "I may not save on materials cost," says he, "but I do on time and overhead. And we don't have materials shortages."

3:30 P.M. Houses are substantially roof at day's end. Neighboring convex builder, C. W. Jones (110 houses a ye deeply impressed by Siemens' speed.

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Sweet will offer new plans, models each year

Recognizing the demand for better design, Sweet says: "We have a design program outlined for a couple years ahead. But we've got a long way to go because we're just beginning."

With the "Sweet Dream Home" (below), he is bidding for the cost mass market and the small builder. House package for model below will sell for $3,735 excluding garage, fences. He worked for several months with Architects Linscott, Kiene & Jett to get the house engineered for economical building. The architects planned the house so it can be switched three ways on a thus offering builders built-in variation on their plots without hiring costly frills and flourishes.

"Once we get into production with this design," says Sweet, "we hope even the large and medium-size builders will find it active enough to order the whole package. Past experience indicates the large project builders leads us to believe they have rather definite ideas of what they want in a plan. As we continue to supply them, we'll probably follow their suggestions. But our big aim with the prefab subsidiary is to offer our own design, materials and financing packages to the small builders. If we get volume on certain basic plans, we will be able to lower the small builder's costs even more than we can now."

1954 model includes this four-bedroom house and two- and three-bedroom versions. Like other prefabbers, Sweet realizes he needs wide variety of sizes and models and must keep improving them.

1954 model, "Sweet Dream Home" (below), will shortly be erected and displayed in Sweet's yard for his small builder customers to inspect just as they inspect other Sweet products and samples. Model can be built with 5-in-12 roof pitch or with expansion attic. Plan neatly solves problem of getting garage on service side and still letting guests enter "dead end" living room directly.
Canals give water frontage to each site

LOCATION: Long Beach Island
SIDNEY M. SHELOV, at
LONG BEACH ISLAND DEVELOPMENT CO.,
A. MARTIN FUNNELL & CLARA COFFEE, landscape art

A web of canals, dredged from the low-lying peninsula, br
each house in the Loveladies Harbor beach colony with c
water on at least two sides of its site, and projecting lanais
antee that breezes from any direction will flow through the h

Architect Sidney Shelov provided all three walls of his
porch with full-length glass jalousies to capture any stray b
but made provision for walling off the house proper in c
bad weather. Surfaces are utilitarian: asphalt tile in the in
to resist sand and water; stained cypress board on the ex
to weather handsomely.

Because this entire shore is flat, all houses will be sited u
mit maximum views past their neighbors and across 6-mi
Barnegat Bay to the mainland.
Cross ventilation is main objective of window placement, while 5" insulation batts in walls and roof ward off the heavy sun load. Living room is paneled in mahogany, rest of house is dry wall. Exterior planking is stained cypress.

Sheltered porch offers hospitality to visitors arriving by road, while twin windows in kitchen permit observation of front entrance. Wall extension (left) provides shade for living-room corner window, also is structural brace.

Glass jalousies open all three lanai walls to prevailing winds, funnel air into indoor living and working areas. Sliding glass doors close off house from porch if ocean-front nights get cool.
NEW PRODUCTS

Grooved nails end "popping"

Plain shank nails lose grip

Nailheads back out of dry-wall surface

Leonard C. Fleming, Milwaukee, Wis.: "We had to go back and make major repairs in one out of every four houses. Now, for $2 to $3 per house, we have eliminated 98% of our nail pops, which used to cost us from $10 to $50 per house."

John A. Cicci, Melvindale (Detroit), Mich.: "We tried everything to stop nail popping, but in vain. Now the only popping we have is where framing is out of line and the nail doesn't hit enough wood to hold it. And it costs us only about $2.50 on a five-room house."

Andy Place, South Bend, Ind.: "We think the Stronghold nail moves with the wood as it dries, and eliminates the gap between the wallboard and stud, thereby keeping the board tight and stopping the movement that causes nail pops."

Lincoln Dry Wall Co., Lincoln, Neb.: "We used to use cement-coated nails, and had trouble only occasionally, but during the six months we have been using this nail, we have had no popping."

W. G. Best, Factory-Built Homes, Provin, Ill.: "We reduced our nail popping by about 85%.

Carl C. MacCartas, Bethesda, Md.: "Nail popping is no longer a problem with us, though it used to be very serious, and going back cost us from $10 to $20, plus the inconvenience."

Frank E. Harpel Jr., Laguna Beach, Calif.: "About six months ago we determined that a nail with the characteristics of a porcupine quill would be more satisfactory. This ringed nail fits that description. We believe that the wood fibers actually clinch around each individual ring on a far more satisfactory basis."

Charles A. Immer, Washington, D. C.: "We believe that this nail, properly driven, will not pop. The poorer the lumber, the greater degree of nail popping, and core and paper quality of the wallboard have a decided effect on the proper dimpling of the nail."

One of the most perplexing (and expensive) builder problems has been the tendency of cement-coated nails to "pop" from the face of gypsum-board walls, usually after the walls have been painted, and often after the buyer has moved into the house. Resetting the nails is simple, but repainting comes high.

Several years of research at Virginia Polytechnic Institute under Dr. E. George Stern, and on-the-job experiences of leading drywall applicators indicate that substituting an annular grooved nail, the Tapered Stronghold Screwnail, for the usual cement-coated, plain-shank nail, will almost completely eliminate this "smallpox" at a cost of less than $5 per house. The parallel rings of the nail, like the barbs of a porcupine quill, wedge themselves into the fibers of the wood and show no inclination to loosen or "creep."

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How strong, how long?

A different series of tests was sponsored by the Independent Nail & Packing Co., and findings have just been released by Dr. Stern. These experiments tested the holding power of cement-coated and grooved nails, with the following results:

"As soon as the test plank had seasoned, the effectiveness of the nails began to vary. The cement-coated, plain-shank nail quickly continued on p. 208..."
Cooling costs cut almost in half

One of Detroit's auto makers came out with a new engine that provided the usual plus hp, but used only half as much fuel. It could shake up the industry. Air conditioning may be in for just such a jolt from Sony Corp.'s Temtron, which claims a 2 tons of cooling from a 1 hp compressor motor.

Since the compressor's electrical demand mined operating costs, the current used by his unit will be 30% to 50% less than of the usual 2 hp, motor that powers 2-ton coolers. Total electrical input of Temtron will be less than 2 kw, instead of 3 to 4 kw usual for air-cooled units. Operating costs for 750 hours of operation will be only $30 at a 2¢ per kw-h rate. A doubled capacity of the Temtron is possible by a still secret arrangement of the motive condenser mechanism, an accelerated transfer of heat from refrigerant (Freon 141 or Freon 22) to the cooling coil, and an improved spray head that cooling water onto the entire rectangular condenser coil.

The average house all size of the Temtron is 42" x 36" x 36", permitting it to be installed in attic, near a crawl spaces, closets, or hung a hallway ceiling. Total weight includes assembly is only 285 lb. It operates on the usual 240-v., three-wire AC current. Since the unit has a built-in evaporative condenser, water consumption (critical any areas) is only 10 gal. per hour. No separate cooling tower is needed. A 1/4" is all that is required for water supply, a 1/2" outlet tube (local regulations may require a larger outlet). The light weight, utility, and modest installation requirements make the unit important to the modestly conditioned home.

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Summer air conditioning is provided in this 1,250 sq. ft. San Antonio house by three 1-hp room coolers carefully located to zone temperatures throughout the interior.

For summer cooling in new construction

When do window air conditioners make sense?

Everyone knows that window units are doing an admirable job of summer cooling in existing houses, offices, hotels and apartments. Why can't they do just as fine a job in new construction?

The answer is, they can. They are already being used in many new apartments and motels, especially in Florida and the Southwest. Room coolers will undoubtedly be used increasingly in new houses and other new construction, especially when dealers get out and start selling. Their market has mushroomed so fast of late that it is easier to fill orders from owners of existing buildings than to hunt up new-construction business.

In new houses

Room coolers make good sense in new construction but there are many strings attached as to when and how, some of them discussed in the next pages. One of the best examples of built-in window units is in the 1,250 sq. ft. house shown here, designed by Architect Milton Ryan. He has overcome one of the most common objections to room coolers: their appearance.

Ryan prefers radiant heating and did not want to install expensive ducts just for cooling. He bought three 1-hp units without cabinets at a wholesale cost of $260 each. In addition he spent about $100 each on his cabinets, installed. He brought in a 240-v. three-wire system as he would have for a central unit. He estimates total cost at about $1,200, for which he gets 2½ tons of actual cooling capacity. This is because each 1-hp unit only gives about 10,000 Btu's cooling whereas 1 ton is equal to 12,000 Btu's per hour.

Bedroom coolers (see plan, photos) were oversized deliberately to produce quick cooling when needed and where wanted. When the family is out for the evening they cut the bedroom units off.

Disadvantages of room units: cooling efficiency is less than with a central system, life of the units may be eight or ten years rather than 20, and operating costs will be more if all units are operated continuously.
Entirely inside the room, this unit looks well from within and also gives outside of house a clean line. Only external evidence is neatly designed horizontal louvers through which air circulates to the air conditioner. Bedroom units were oversized deliberately so that they can be left off in daytime and still produce fast cooling at night.

Front cover of living-room conditioner is easily removed and unit can be slid forward into room for servicing. Whenever room-unit covers are redesigned or adapted by an architect he must be sure he does not tamper with air flow, which has been carefully regulated at the factory.
Room conditioners fit well into some custom houses

Room coolers are well-adapted for special needs

While most air-conditioning engineers believe that a central cooling system will do a more efficient job for an entire house, window units make sense under the following conditions:

1. In geographical area where cooling is needed only a short time during the summer and the cost of a central system has not yet been accepted by the buying public. With window units built into the wall of a living room and a master bedroom, for example, a builder can provide cooling at less than the cost of a central system. (For costs, see below.)

2. In hot climates where cooling is needed and accepted, but there is a point in the price range, usually between $12,000 and $15,000, below which people will not pay $1,000 for cooling.

Yet builders can offer partial cooling of a house below this critical price level by installing two or three room coolers. In Phoenix, the lowest-priced new house with 2 tons of central cooling is $10,995, so this becomes the competitive break-even point for window units. In most cities it is higher.

3. In new houses where the builder, designer or client prefers a heating system which does not use warm-air ducts, such as any form of wet heat, radiant heat, electric heat, wall heaters. Because window units can be installed without ducts, they offer an economic advantage when combined with such heating.

4. In houses where only a portion of the total space needs air conditioning. It is sometimes uneconomical to cool bedrooms in the daytime if they are not used and if night temperatures are usually cool. Room coolers can be used in strategic spots such as the kitchen and living room.

5. In sprawling ranch houses where the cost of long duct runs might be excessive.

6. In one or two rooms of a centrally air-conditioned where a guest room, maid's quarters or a recreation room is at distance from the central unit—on the opposite side of a b way from the main house, for example.

7. In custom houses where members of the family want individual room controls so they can set temperatures to themse lv es. Elderly people usually prefer higher tempera

FHA has approved some built-in cooler installations

Whether or not a builder can get credit for installing w units depends on the local attitude of FHA and VA. A ago FHA's approval of air conditioning was limited to c systems but now it is recognized that "there is no need t fine air conditioning to homes of higher income groups," as McGahn, FHA's chief mechanical engineer, says. "Discrim ing against the vast majority of home buyers is not our pur FHA is more readily convinced that window coolers are of the structure and should be insured if they are built in wall and are not easily removable. Says J. Stanley Young, of FHA's property requirements section: "It is largely 1 regional FHA offices to determine what will or won't be inc in an FHA underwritten loan. When a new situation arises, the case of air conditioning, the regional offices turn to 'lington for advice and direction. I would say that room coolers installed in a wall or integrated with the house stri in some equally permanent manner would be considered a p nent part of the reality and eligible for inclusion under an loan." But FHA assumes that a room-cooler installation an efficient job, that contiguous areas are not blocked off by and that there is a unit in at least one bedroom. FHA has past insured in several different cities apartment houses with in room coolers.
The house of Kenneth Sloan outside Phoenix was designed for air conditioners, with two 1-hp units in living room, one in den, and one % hp unit in each of two bedrooms. He specified instead of central unit because they gave him flexibility of control. Only room cooled is a room being occupied.

How to wire a house for window units

Much of the dissatisfaction with room coolers stems from inadequate wiring. Units will not deliver full cooling capacity unless they can draw full power. Moreover, poorly wired units cause sharp voltage fluctuations, lights flicker and TV is affected.

Builders should run a separate circuit of No. 12 or No. 14 wire to each room cooler. A 120-v. circuit is usually ample for units up to % hp in size. However, those % hp models with thermostats for automatic operation generally draw such high starting currents that they need 240-v. circuits, unless the manufacturer supplies a current limiting device. For 1-hp sizes or larger, electric companies generally require a 240-v. circuit. Builders should consider using the three-wire system recommended in an earlier issue of House & Home (Nov. '53, p. 132).

One of the biggest wiring problems arises from a wide variation in electrical characteristics among the various cooling units made by different firms. Some units have power factors of less than 90% which is generally inefficient and causes trouble for both builders and electric companies. So many headaches have resulted from inefficient units operating at a low power factor that St. Louis' Union Electric Co., for instance, was forced to put wiring limitations on brands with less than a 90% power factor.

Some brands of coolers have power factors as low as 60%, which is unsatisfactory to the electric company. And some brands may draw as much as 25% more starting current than the same size unit by other manufacturers. For these reasons, builders are advised to call their electric company for wiring advice.

M. E. Skinner, vice president of the Union Electric Co., sums up the wiring situation this way: "There is nothing inherent in room air conditioners that makes them susceptible to electrical problems 1) if the power factor is 90% or better, 2) if starting currents meet minimum accepted standards, and 3) if units are served by adequate electrical circuits.

Coolers vs. central systems in new houses

Installation costs are usually lower for window units because there is no ductwork. Builders might pay anywhere from $200 to $350 for % hp units (bought at discount during the off season) which costs to $266 to $464 per hp. Central units vary in price; a typical figure is from $1,000 to $1,200 for 2 hp installed, including ducts. However, if more than three window units are installed, the cost tends to be the same as for a central unit.

Operating costs of a % hp unit of 1,900-w. in Dallas (rate: 2¢ per hour; 2½¢ per hour in San Antonio; rate: 1.75¢); and in cities where rate is 3¢ it is reported to be about 27¢ for ten hours of use in % hp units with a thermostat. In 3¢ areas a % hp unit operating ten hours a day in 95° outside temperature would add $8.20 to $11.40 a month to electric bills. Two tons of cooling for whole houses cost about $13 per month last winter in Dallas (H&H, March '54).

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In motels consisting of separate cottages, room units probably work at their very best. Operating costs are relatively low because units are not often on in the daytime. Transient guests arrive late in the afternoon or early evening and from experience a manager can turn on the coolers in time to take care of his anticipated guest load. Thus he only pays for the cooling he needs. Guests may set temperatures to suit themselves.

Said the manager of Old Faithful Inn at Phoenix: "Our room units are wonderful. Each guest can suit himself about using them. Surprisingly, some don't want air conditioning."

For a group of cottages installation costs are lower for room units because no ducts or plumbing are necessary. If a central unit is installed for dispersed cottages, the cost of piping is high.

Because of their low initial cost and great flexibility, room coolers are almost standard equipment in new motels throughout the South and Southwest and in the hot valleys of California. Most units are installed through the wall under a window.

In new apartments window units have six advantages over central units, according to apartment owners and managers:

1. Original cost is lower. Owner of the Park Central Apartments in Phoenix, where 150 1-hp and 2½-hp units were installed in 95 apartments, said that low bids for a central system were $110,000 compared with the window-unit cost of $45,000 plus another $12,000 for heating.

2. Tenants pay the operating costs.

3. Tenants control their own apartment temperatures.

4. Owner saves duct space.

5. Window units are ideal, especially early in the game when not all apartments are rented. Unrented apartments are not cooled as they might have to be with a central system.

6. If cooling equipment becomes defective, only one apt at a time is affected.

"But the servicing is terrible!"

"The cooling is great, but the service is terrible" said an apartment-house owner. "Everyone passes the buck. I have $7,50 an hour to servicemen." Said another: "We saved original unit costs but we are sure the maintenance is g cost more than we have figured. We are amortizing 6 years." Owners everywhere recognize that room coolers - automobiles: the older they grow the more servicing the need.

These remarks emphasize the importance of buying units dealer who takes responsibility for servicing and who has term interest in protecting his own reputation. In the N area 1,000 window units were installed in 362 units of Metrick's Long Island apartments (AF, April '53) and the manufacturer and the local dealer are anxious to promise services. As a result the installation was well done and calls, which have been few in the first four years, are efficiently. Tenants and landlord are happy over their apartment. As with most apartment installations, the superintendent office changes filters and makes minor adjustments, but a special maintenance is taken care of by a dealer who services in that county for the factory. In the Metrick apartment coolers were built into a 20" x 15" opening under the window. Installation was $57 each plus $25-30 for wiring.

What to look for when you buy room coolers

Anyone in the market for room coolers has such a wide choice that he is likely to be confused. Prices vary so much...