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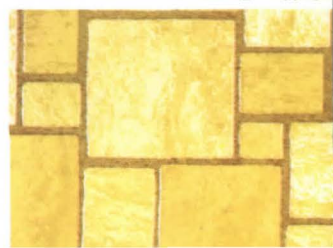
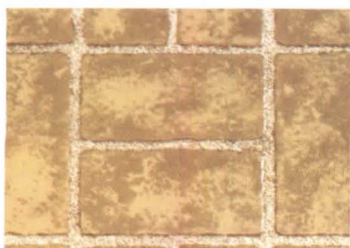
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APARTMENTS	16	Rising mortgage rates threaten the apartment rally
	52	The way to win the numbers game: Raise your rents
COMPANIES	12	Mobil buys much of Reston
COSTS	8	White House supports NAHB's cost-cutting drive
DESIGN	72	Ten HFBL custom-home winners
ENERGY	63	Selling solar without subsidies
MARKETING	18	Kaufman and Broad agrees to repair as many as 20,000 houses
	34	Merchandising Rx for a sick condo
	38	How large condos attract big-house move-downers
	58	Interior turn-on: selling from the inside
MORTGAGING	8	Credit unions setting up a secondary mortgage market
	9	How new savings certificates are saving housing
PEOPLE	28	Builders on the move—appointments and promotions in housing
WASHINGTON	20	Latest HUD scandal: arson for profit
	24	Government coming up with rating for new houses
DEPARTMENTS	44	Letters
	86	Products: featuring solar energy section
	98	Literature
	98	Classified
	100	Advertisers index
	101	Reader service card
COVER		Sculpture by Robert Strimban
NEXT MONTH		Kitchen planning and design . . . How a small local builder develops a statewide image . . . BIA survey—what buyers are looking for in 1978

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Redwood — a renewable resource.

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Selling the skeptics on solar

No one can accuse this magazine of being oversold on solar energy. If only from a dollar-and-sense point of view, we've always been skeptical about the benefits of solar in production housing.

We still have reservations. And we sure don't expect any massive breakthrough in the near future. But our latest research convinces us that solar bears watching by builders, architects and others in homebuilding. Here's why:

- The energy problem, now seemingly in remission, isn't about to disappear. In some form or other—either as fuel shortages or as astronomical price increases—it's bound to flare again.

- Consumer interest in solar energy is rising—partly because of blue-sky talk and high-powered promotion but also for legitimate reasons. Some buyers of solar-aided houses, for example, aren't fazed by long payback periods. They're willing to make an initial investment to avoid the threat of unpredictable fuel increases in the future.

- The state of the art is improving. More manufacturers now offer complete solar packages, so the builder doesn't have to shop for components and then try to match them with each other. There are also signs of a healthy shake-out among equipment manufacturers. Companies that had no business entering the field—either fast-buck hustlers or idealists who saw solar as the wave of the future—are beginning to drop out.

- Finally, and most importantly, solar-equipped homes are turning out to be saleable in the free marketplace. It's no surprise that people buy houses with solar systems funded by HUD grants; the government foots most of the bill for the system. But now builders are starting to sell solar without subsidy. For some of their stories—plus a solar update—read the report beginning on page 63.

Talking up the case for higher rents

Anyone who wonders why so many apartments don't pencil out should scan the Consumer Price Index since 1967.

Over all, the index has gone up 91.5% in the last 11 years. Food is up 107.7%. Medical care is up 115.6%. Various homeownership costs—which apply also to apartments—are up anywhere from 127.4% (maintenance) to 195.6% (fuel oil).

And apartment rents? Up only 61.4%.

Faced with militant tenant groups and the threat of rent controls, apartment owners tend to be timid about rent boosts. They needn't be. There's a strong case for raising rents and a right way to go about it. For the details, see the story starting on page 52. —JOHN F. GOLDSMITH

White House backs NAHB cost drive

The National Association of Home Builders won White House recognition of its campaign to hold down housing prices during a recent meeting between President Ernest A. Becker Sr. of the NAHB and Jimmy Carter's special inflation counselor, Robert S. Strauss.

"This voluntary action by the NAHB is the kind of step that will bring inflation under control," Strauss declared after the conference. He was referring to a three-point resolution adopted recently by the NAHB's executive committee [HOUSING, July]. The resolution pledged that housing-cost increases in 1978 should be less than in the December 1975-December 1977 period, when they were 12%; that NAHB members will try to limit 1978 wage increases to 5%; and that the NAHB will work with suppliers of housing materials to hold down costs.

Help from trade groups. Becker said he is going to invite more than 200 trade groups to follow the NAHB lead and endorse Carter's anti-inflation campaign.

Strauss likened the NAHB drive to



Anti-inflation meeting is held by Ernest Becker Sr., president of National Association of Home Builders (at left) and presidential advisor Robert Strauss at White House.

the anti-inflation campaign launched by the government, and he added:

"Now we have the private sector offering to do what it can to keep homeownership within the reach of our American people."

Grass roots drive. Strauss took note of the fact that the NAHB was seeking to curb inflation through efforts directed at its 103,000 members rather

than by dealing with such "big industrial structures" as the steel industry. But he pointed out approvingly that Becker and other NAHB leaders have also pledged . . . "to go to one-on-one meetings" carrying their anti-inflation message to all groups involved in housing.

—BOB DORANG
McGraw-Hill World News,
Washington

MORTGAGING

Credit unions creating mortgage mart

The credit unions are making it easier for members to buy and sell mortgages in a way that will enhance the broader mortgage powers the industry won earlier this year [HOUSING, June].

Leaders in the industry have approved a proposal for the Credit Union National Assn. to organize a secondary market for mortgages.

The market, which is about a year away, would buy mortgages from credit unions and resell them to permanent investors such as pension funds, insurance companies and large trusts. In the opinion of most industry leaders, it would provide the essential liquidity that credit unions will need if they are to become major factors in mortgage lending.

Pool of \$14 billion. Federal credit unions won permission in May to write up to 30-year mortgages with 90%

financing. While the rules limit the loans to larger credit unions—\$2 million in assets or more—they are still expected to free up as much as \$14 billion in funds for new mortgages for builders over the next four years.

So far, however, only a few of the bigger credit unions—the Redstone Federal Credit Union in Huntsville, Ala., the Alaska Federal Credit Union in Anchorage and the Navy Federal Credit Union in Washington—have ventured deeply into mortgage lending.

Sales to U.S. agencies. The CUNA plan for an independent secondary market represents only one of the changes that will help credit unions sell loans. The National Credit Union Administration has also moved to clear the way for sales to the big government mortgage purchasers—the Fed-

eral National Mortgage Corp., the Government National Mortgage Corp. and the Federal Home Loan Mortgage Corp.

The CUNA plan would create a secondary market facility that would help credit unions package loans so they could be sold to permanent investors. It would also aid credit unions that are new to the mortgage business with loan processing, servicing and underwriting support. Credit-union officials say they expect to spend up to \$2 million to create the facility, which would be privately owned by the credit-union industry.

Interim plan. Industry officials say the facility is probably a year away and that, until then, credit unions that begin mortgage lending will use such federal agencies as FNMA to lay off the loans they buy.

How savings notes are saving housing

After a month and a half of experience, savings and loan associations and mutual savings banks are finding that their new money market certificates are giving them a major weapon for holding savings and, in a number of cases, are providing a competitive edge for bringing in new money for housing.

The certificates, which have only been available since June 1, attracted \$2.5 billion in savings through June. They were a principal reason that savings flows stayed out of the red in most parts of the country through the critical July savings reinvestment period, according to housing analysts.

"The certificates seem to be making up for what might have been lost," says Michael A. Jesse, chief economist for the San Francisco Federal Home Loan Bank.

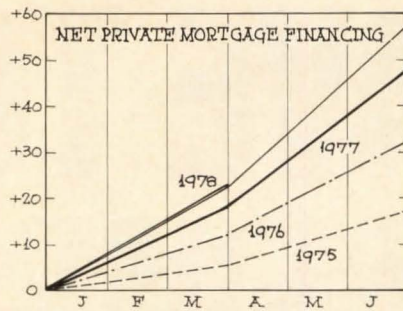
Savings losses. Federal regulators authorized the certificates last spring with an eye to cushioning mortgage lenders against severe savings drains this summer. Although savings flows themselves are off 40% from a year ago, many lenders and economists feel the situation would have been much worse without the new notes.

Through June, for instance, savings flows at the savings and loan associations were off 45% from the first half of 1977. That might have been as much as 60% were it not for the savings that the T-bill certificates attracted, estimates Allan Sinai, a financial economist for Data Resources Inc., a firm that closely watches savings flows.

Rate peak in sight. For the rest of the year, Sinai thinks flows will hold steady and then improve. He is betting on a peaking of interest rates soon.

To be sure, the money that is being drawn by the T-bills is expensive. Savers with \$10,000 to invest in the notes have been able to get rates of better than 8% at savings banks and S&Ls that offer daily compounding, the method most large city thrifts use to compute the interest.

That means the certificates, which now amount to around 2% of all thrift savings, could permanently drive up mortgage costs if they become established as popular high-rate notes. Some of the country's mortgage lend-



Strong gain over last year's record pace in net new private mortgage financing is shown in chart based on Fed's data for first quarter and second-quarter estimate by Salomon Brothers, the New York investment banker. U.S. agency and guaranteed mortgage pool acquisitions are excluded.

ers are afraid this will become the case.

Warning. "I would have preferred disintermediation [the loss of savings]," says George W. Raber, chairman of the Greenpoint Savings Bank in Brooklyn. He says that once savers get a taste of high-yielding money, "they'll want more of it."

But most thrift executives say they were glad to have the notes, even when they recognize that 40% or more of the savings they are collecting in T-bill certificates is being switched by their depositors from lower paying accounts.

In California, where S&Ls lost \$150

million in net savings during their April quarterly reinvestment period, the certificates helped retain savings when the tendency would have been to lose funds, notes an official of the American Savings & Loan Association in Los Angeles. Many savers had four-year certificates that came due in early July that could have been reinvested in money-market securities if the T-bill certificates were not available, other S&L executives point out.

And reassurance. Federal regulators say they are so far unconcerned about the cost of the certificates becoming a permanent prop to higher mortgage costs. "We always have viewed them as temporary," says Chairman Robert McKinney Jr. of the Home Loan Bank Board, the regulatory agency for the S&Ls. He is predicting that interest rates on both mortgages and money-market securities are near their peaks and that savings flows and mortgage rates will improve as the year goes on.

As market rates fall, savers will find longer term certificates—like the new 8-year, 8% notes S&Ls are offering—to be more attractive. Thus the problem of too much saving crowding into the T-bill accounts "will take care of itself," McKinney predicts.

—ROBERT DOWLING
McGraw-Hill World News,
Washington

George Martin runs for Congress again

George Martin, the former NAHB president (1973-74), is making his second run for the Kentucky congressional seat held for six terms by the conservative Republican Eugene Snyder.

Martin, 56 and a Democrat, lost his primary bid two years ago by 2,500 votes. He won his primary against several rivals this year and faces Snyder at the polls Nov. 7.

As an NAHB president, Martin presided over some of the darkest days of the housing industry. He says he spent so much time in Washington trying to salvage a deteriorating situation for the builders that his own business failed. He had headed George Clarke Martin & Associates, a Louis-

ville single and multifamily builder.

Martin, the principal founder of the Home Owners Warranty Program sponsored by the NAHB, is no longer a homebuilder. In 1975-76 he was a dollar-a-year consultant for the Kentucky Center For Energy. He also wrote position papers for three Democratic presidential candidates, Senator Howard Bentsen (D., Tex.), Sargent Shriver and his favorite, Senator Henry "Scoop" Jackson (D., Wash.).

Martin's district, the 4th C. D., stretches from the bedroom towns across the Ohio River from Cincinnati southwestward to the suburbs of Louisville. The area, Martin says, has about 458,000 residents.

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Reston taken over by Mobil Oil

The new town may not be on a par with California's prestigious Irvine Ranch but it's still a prize catch for land-hungry Mobil Oil Corp.

Forced to lower its sights after last year's unsuccessful bid to acquire Irvine [HOUSE & HOME, July '77], Mobil, the nation's fourth largest company, reasserted its presence on the real estate scene by buying most of the Reston, Va., holdings of Gulf Oil Corp.

Sold to the Mobil Land Development Corp. were some 3,700 acres of raw and partially developed land. Price was not disclosed. Gulf, the community's second developer, took over from founder Robert E. Simon in 1967 [HOUSE & HOME, Sept. '67].

Besides gaining a foothold in Fairfax County—a hot market with good growth potential—the Mobil land-development subsidiary (*see box*) picks up a highly visible operation to help showcase its other projects.

Bits and pieces. Still under the Gulf Reston Inc. banner, though, are several income-producing properties: 1,000 rental apartments, commercial space at three village shopping centers and a 300-room hotel/meeting center. Buyers for these are now being sought.

Reston, of course, has been up for grabs since late 1977 when Gulf announced plans to divest all of its non-energy related businesses [HOUSING, Jan.].

But Gulf imposed some conditions on the GRI sale. To ensure that future development would follow the community's master plan (and to keep out fly-by-nighters), it offered the subsidiary as a package—i.e., land and income properties as well as management staff. It also insisted on a cash purchase, probably on the order of \$130 million. The package deal attracted few takers, however, so Gulf had to settle for a land sale.

Business as usual. Aside from some corporate restructuring, development of the new town will proceed as before. Mobil has formed a new company, Reston Land Corp., to handle residential, commercial and industrial projects.

James Todd, former president of GRI, heads the new unit. He reports to New York-based Neil Smith, senior



Reston's Todd
Striking oil

vice president in charge of eastern operations for Mobil Land Development. Another 35 GRI staffers are also expected to sign on with the new organization. Thus far, anyway, Mobil has shown no inclination to stock the company with its own people.

"Basically," says Todd, "nothing changes. The present timetable for Reston's completion (the late 1980s) still holds. So does our general marketing approach. We will, in short, continue to go with the established master plan."

Out of the woods. Sidetracked earlier this decade by the housing recession and a local sewer moratorium, Reston has gotten back on track. Close to 11,000 of its projected 23,000 housing units have been built (plus 1,600 under construction) and the community's population now stands at 31,000, just under half of its targeted 68,000.

According to Todd, last year's sales were "excellent" and there's "a good chance" that '78 volume will set a record. The new town had its best

outing in 1972 when revenues hit \$29.6 million.

Future prospects look good, too.

Sperry Rand has just bought a 35-acre tract in Reston's industrial park, where it will build a 100,000-sq.-ft. R&D facility. Some of its 300 employees will probably buy homes in the community as well. Other housing sales should result from the construction of a new Mobil divisional headquarters (750,000 sq. ft.) in nearby Falls Church, Va. (This project had no bearing on plans for the Reston takeover.)

Unfinished business. Gulf, of course, still has some divestiture wood to chop. Most of Reston's 200-plus employees, meanwhile, remain with GRI which will manage the income properties until they are sold. William C. Cox, former vice president-finance for both GRI and its parent Gulf Oil Real Estate Development Co. (GOREDICO), was named president.

In addition to overseeing Reston's current construction program—jobs worth \$15-\$20 million over the next few years—GOREDICO is selling 2,000 apartments and 400 acres in Florida, a unit that develops lots for recreational vehicles and mobile home communities in three states and a warehouse facility in Puerto Rico. And its 50% interest in La Prairie, a 23,000-acre new town near Montreal (sales started last year), is being sold to Gulf Canada Ltd.

Once these holdings are shed, GOREDICO will continue as a real estate consultant for Gulf, mainly concentrating on employee housing and office building projects. —BILL MULLIGAN

Mobil moving into building business

Although Mobil's real estate game is strictly land development, that could change.

Says a spokesman: "We haven't done any building yet because we're still in the process of developing a new business [Mobil Land Development was formed in 1970]. However, construction projects in Florida and California are now under consideration. It's unlikely that we'll enter the single-family market, just commercial and multifamily. And probably only in our own developments."

Prior to its Reston buy, the land operation owned 13,634 undeveloped acres spread over eight locations in Florida, Georgia, Texas and California.

Last year the company acquired Colonial Village, a 1,100-rental apartment complex in Arlington, Va.

Mobil is also mulling an offer it had to buy Sterling Forest, the huge (20,000 acres) mixed-use project that never got off the ground in Orange County, N.Y. Cost: more than \$50 million. —B.M.

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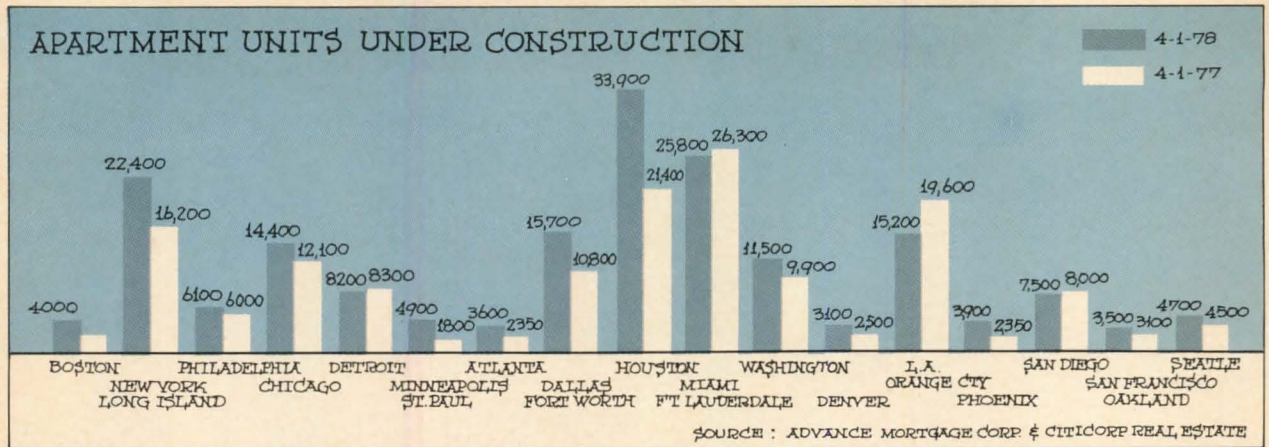
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Mortgage rise perils apartment rally

There has been a modest upturn this year in unsubsidized rental activity, but it is about to be cut short by the rapid rise in apartment mortgage rates.

Unsubsidized rentals this year will account for barely half of all multifamily starts, their lowest share ever. Next year's share should decline to well under half and the trend may not reverse until 1981 or 1982.

These are findings of "U.S. Housing Markets," the quarterly survey of local and national markets produced by Advance Mortgage Corp. and Citicorp Real Estate. Both are affiliates of Citicorp; the New York bank holding company.

Between 325,000 and 350,000 unsubsidized rental units will be started this year, President Philip Kozloff of Citicorp Real Estate estimates. That's up from roughly 290,000 last year.

But this sector should start declining quite sharply in the final quarter, and the total could drop below 250,000 in 1979. That would be the second lowest figure in 20 years for unsubsidized rentals.

Multifamily gains. Kozloff looks for total multifamily (which includes subsidized rental units and condominiums plus a small number of duplexes and fourplexes sold for owner occupancy) to hit 625,000 to 675,000 starts, up from 538,000 in 1977. An earlier forecast projected 700,000-plus multifamily this year; this has been scaled down because of the more rapid than expected run-up in mortgage rates.

Total multifamily may remain nearly as high in 1979. A projected increase in subsidized starts should

offset most of the decline in the unsubsidized sector.

Mortgage trend. "Even at last year's mortgage rates," says Kozloff, "it was hard enough to make the numbers work for a proposed rental project. Many of the projects in planning as this year began were barely above the threshold of feasibility."

"Now, since the first of the year, apartment mortgage rates have increased nearly 1/2% across the board and the end is not in sight. A number of major lenders have withdrawn from this market or scaled back mortgage allotments."

"Typical mid-June rates from national lenders were 9 3/4% to 9 7/8% and the rates are likely to go above 10% before topping out. Rates at local lenders, if funds are available at all, may be even higher than the national market."

"Many rates are being raised while mortgage applications are in process. Approvals are coming out of loan committees with rates marked up as much as 1/4% from the original submission and the loan amount scaled down."

Floating rates. Kozloff reports some savings and loan associations, particularly in Texas and California, are issuing commitments for proposed apartments on something akin to a floating rate basis. They will close the loan, when the project is completed, at whatever is the then-prevailing Freddie Mac (Federal Home Loan Mortgage Corp.) rate for apartment mortgages.

In San Diego, many projects that could not pass feasibility tests as rent-

als are being appraised and financed as condos. They will be rented for three to five years to capture depreciation, then converted.

Despite these trends, applications for apartment financing are still increasing. Developers are rushing to lock up their financing before it becomes even more prohibitive.

For a time last year and early this year, some developers were obtaining financing which enabled them to bet against the rising mortgage trend. For borrowers with sufficiently strong credit, some lenders would make construction loans without a takeout (commitment for permanent financing) or would make standing (interest-only) loans on completed projects. These developers plan to convert to permanent financing whenever rates fall back to a level they consider reasonable. This is a kind of lending which was associated with the swinging market of 1972-73 and died out in the 1974 credit crunch.

Tight market. The rental market overall is now the tightest since World War II, "U.S. Housing Markets" reports. The first-quarter rental vacancy rate was 5.0%, the lowest figure ever reported in the 23 years of the Census Bureau vacancy series. Vacancies in the South and West and in the smaller cities overall are especially low by historical standards.

Rental vacancies nationally should continue to hover around this 5% mark—and around 4% for suburban apartments—all year long, "U.S. Housing Markets" estimates. These rates are considered too low to allow for normal tenant turnover.

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Kaufman & Broad agrees to repairs

One of the nation's largest homebuilders, Kaufman and Broad of Los Angeles, has agreed to repair the major construction defects in as many as 20,000 homes sold since 1972.

The agreement came in a consent decree signed by the builder with the Federal Trade Commission. The order was accepted by the FTC, which had accused K&B of misstating to buyers that its homes were free of defects that could impair their use as dwellings.

Kaufman and Broad did not admit any violation of law, but it agreed to make the repairs and to halt all practices about which the FTC had complained. The builders will write to all owners of the homes covered by the decree and tell them they can claim free repairs any time in the next 50 days.

Coverage. Individual homes and condominiums on lots provided by Kaufman and Broad are covered, but not homes the company built on owners' lots. For the future, Kaufman and Broad must provide purchasers with a warranty similar but not identical to the guaranty promoted by the National Association of Home Builders.

The FTC did not say how many of the 20,000 houses might actually require repair, but original purchasers can claim repairs of major structural defects dating back to Jan. 1, 1972. And original purchasers who bought in the last two years may claim repair of faulty plumbing, electrical, heating and cooling systems.

Complaints. With respect to the major defects alleged, the FTC's complaint was severe. It said: "In some houses, walls were not properly supported by foundations, floor girders were not properly supported to prevent sagging floors, or foundations contained cracks due to structural failures."

The complaint said that in some cases "housing sold . . . was not built with good construction practices in the housing industry . . . fire walls were improperly anchored, foundation walls were not covered with membrane waterproofing to prevent water seepage . . . siding was not properly anchored, roof sheathing did not meet with roof edges, spaces between foun-

dation walls and sill plates were not sealed."

Company's response. A spokesman for Kaufman and Broad said in Los Angeles that the company was "unaware of any problems" with the 20,000 homes and said a reference in the FTC's complaint to "structural defects" was grossly misleading.

One company official minimized the number of repairs that might be involved. He said the company "could not be in business" if it had allowed such serious defects in the homes it has built since 1972. He said the problems that led to the complaint arose in the Chicago area, and the FTC cited two Oak Brook, Ill., subsidiaries of Kaufman and Broad in its complaint. The

Los Angeles official said those persons responsible for defects have left the company.

Earnings. The company earned \$15.6 million on revenues of \$382 million in revenues in the fiscal year ended November 30. Housing sales contributed \$298 million to those revenues and the company's public relations spokesman, Jana Greer, said the FTC order would have no financial impact on K&B's operations. The company is predicting total sales of \$500 million for fiscal 1978, with much of that coming from Sun Life Insurance Co. of America, a subsidiary acquired in 1971.

—BOB DORANG
McGraw-Hill World News,
Washington

BRIEFS

A 30% leap in 1979 housing sales to 10,500 units is predicted by Centex Chairman Frank Crossen in a talk before the New York Society of Security Analysts. Housing subsidiaries Fox & Jacobs and Centex Homes earned almost half of Centex's fiscal '78 profit of \$29.1 million.

Seven days in June warm Bill Levitt's heart. In the week after the announcement that he would build a \$600-million adult Levittown near Orlando, Fla., Levitt's company—International Community Corp.—handled 504 deposits from prospective homebuyers. Says Bill: "This pent-up demand for adult housing is reminiscent of the situation that existed when the original Levittowns were built after World War II."

Record sales and earnings are reported by the Jim Walter Corp. of Tampa, the big shell-house builder. Nine-month net is \$58.3 million, up 14% from \$51.2 million a year ago. Sales—\$1.22 billion—are up 22%.

Another record falls. The 20th Pacific Coast Builders Conference's final count comes in at 1,500 paid plus 7,000 visitors, and the PCBC's



Centex's Crossen
Bearer of good news

executive director, Gordon Blackley, says the record attendance mandates a move out of the Fairmont Hotel to more spacious quarters in San Francisco next year.

A 27% revenue increase—to \$64,658,000—is reported by Leisure Technology Corp. of Lakewood, N.J., now operating under the steady hand of President Michael Tenzer, a veteran builder. Net income for fiscal '78 (March) was \$5,201,000. Income before an extraordinary credit was \$2,718,000 compared with an operating loss of nearly \$10 million a year ago.

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Builder: Reiber Construction Company, Wexford, Pa.



Circle 19 on reader service card



Newest HUD scandal: arson for profit

The Housing and Urban Development Department disputes it, but arson for profit may be a grim side of the HUD-promoted FAIR plans conceived to make insurance available to residential and other property owners in high-risk, inner-city areas.

The Fair Access to Insurance Requirements plans were authorized by Congress in 1968 and are supervised by HUD's Federal Insurance Administration and by state insurance commissioners in 27 participating states. They require insurance companies to insure dwellings in high-risk areas at reasonable rates and share in premium profit or underwriting loss. The companies' incentive to participate is access to a low-rate government riot reinsurance program.

Residential targets. The FAIR-plan connection with arson for profit is made in a new report by the General Accounting Office, the investigative arm of Congress. The GAO said arson for profit appears to be "a serious problem in the FAIR plans as well as in the private insurance market."

The GAO investigators suggest that a high incidence of FAIR arson-for-profit fires may be occurring in residential properties. They cited a Maryland official who said 83% of that state's FAIR-plan losses had been occurring in "investor-owned, nonowner-occupied habitational properties."

'A way to refinance.' Many fire chiefs estimate that more than half of their fires are set intentionally. As one Boston official notes, arson is "a modern way to refinance a business."

In the Boston area, investigation was triggered by 35 suspicious fires in four years, including 29 in the 74 residential buildings on Symphony Road in Boston's Back Bay section.

Indictments have been handed up against 33 fire department officials, lawyers, insurance adjusters and loan and real estate figures.

The GAO investigators concede, however, that arson-for-profit statistics are scanty because of a negligible conviction rate. An FIA deputy administrator, J. Robert Hunter, minimized the arson-for-profit aspect of FAIR plans. He said:

"Most of the arson in FAIR plans is not arson for profit—its 'environmen-



Senate's Percy
His request bares arson racket

tal.'" Translated, that means that the arson arises from such causes as vandalism.

Ownership as deterrent. Hunter said that about 75% of the property insured under the FAIR plans is residential and that "a lot of it is owner-occupied." He contended that this is a disincentive to arson. Hunter also argued that FAIR plans do only about 3% of the total insurance business, and that the GAO was thus unduly magnifying FAIR-plan involvement in arson.

One of the GAO's three main criticisms was that many FAIR plans simply provide insurance in amounts requested without trying to determine property value. "Guarding against overinsuring removes an important incentive for arson for profit," the

report points out. The study was made at the request of Senator Charles H. Percy of Illinois, the ranking Republican member of a Senate subcommittee on investigations.

High coverage on request. Some FAIR plan officials told GAO investigators there is no point in evaluating a property because payment is made on market value at time of loss, which may be considerably later. One FAIR plan official told the investigators:

"You spend \$100 getting a property appraised for a \$75 annual premium." Hence the preference for insuring at requested amount and determining actual value later. The FIA's Gloria M. Jimenez also criticized the GAO report in a letter to Comptroller General Elmer B. Staats, but she conceded a need to find "a more sophisticated response to establishing value." She suggested that FAIR-plan officials might use the cost of "rebuilding the dwelling to a livable standard."

Lack of screening. Another GAO criticism was that some FAIR plans insure virtually any applicant. The report said "character and attitude of the insured should be considered."

Under the law, HUD must respond to Congress on the GAO report within 60 days.

—ROBERT DORANG
McGraw-Hill World News,
Washington

Here's another way to burn a city

For urban real estate speculators, arson is not the only way to make a buck.

The New York City Council's president, Carol Bellamy, says at least one developer in the ravaged South Bronx has found a way to reap windfall profits of up to 1,000% while avoiding payment of around \$1 million in back property taxes.

The scam, Miss Bellamy says, works this way: A speculator owns several slum properties, which he permits to decay and on which he pays no taxes. He uses the tax money for other investments. Because he has paid no city taxes, the city seizes the properties.

The speculator, often under another

corporate moniker, then scrutinizes the city tax list and picks out properties—sometimes his former buildings—he thinks may become valuable. Using HUD mortgage guaranties and Section 8 rehab funds, the speculator, Miss Bellamy claims, can pay for his investment. So, she explains, the federal government, in effect, pays the back taxes.

New York City, Miss Bellamy declares, "serves as a land bank for speculators, absorbing all losses while the speculator retains an amount of capital equal to his back taxes for further speculation." All the financially ailing city gets out of it, she adds, "is unpaid taxes and rundown housing."
—T.A.



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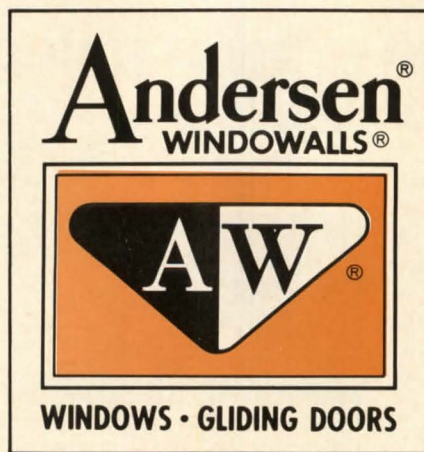
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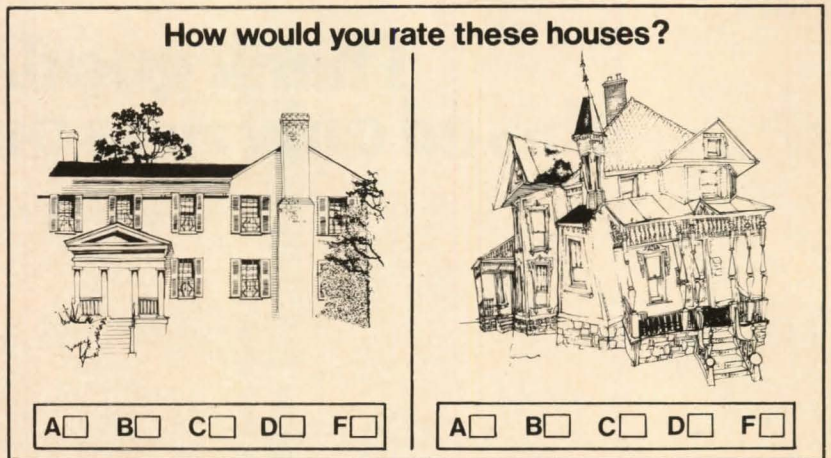
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A house rating system to protect buyers

Planners with the Federal Trade Commission are considering some far-reaching measures to protect homebuyers from fraudulent sales practices and shoddy homes. One idea under study is a housing label that might list such features as the energy efficiency of a house or apartment.

The study is motivated by concern in the FTC's Bureau of Consumer Protection that relatively little is done to protect buyers of new or used homes. The inability of the purchaser to obtain redress for faulty construction in new homes when builders have gone bankrupt is another concern. The bureau is also uneasy about some credit practices and settlement fees.

A repair fund. There are a number of avenues the agency can take. It can move through individual trade rules to establish better sales and disclosure practices, or it can use such existing mandates as antitrust laws to stimulate competition. Warranty rules are another vehicle, with the agency forcing industry to guarantee more new homes. Staff attorneys are also mulling the establishment of a contractors' pool of cash for repairs in new homes.



Brokerage practices already are being investigated by the FTC's regional office in Los Angeles. And in Chicago, staffers have been involved in a lengthy investigation of the construction practices of Kaufman & Broad Inc., one of the largest homebuilders in the country. That case ultimately could involve FTC demands that the builder carry out millions of dollars worth of repairs on homes built as far back as 1972.

The label. A housing label being

discussed could contain a wide amount of data, ranging from the availability of schools to energy costs used on utility bills, says Thomas Stanton of the FTC's Office of Policy Planning.

"We have to be fair in how much burden we place on the seller," Stanton says, "but we think that some information, such as utility bills or insulation data, would be useful to have for a buyer."

—MIKE MEALEY
McGraw-Hill World News,
Washington

THE CITIES

Dallas in-town project gains new life

The on-and-off plan to build several hundred houses in downtown Dallas is on again but the size of the development remains uncertain.

The Texas-sized builder Fox & Jacobs said last year that it would spend \$80 million to put up 800 single-family, detached units in the \$40,000-\$80,000 range on 80 downtown acres [HOUSE & HOME, March '77].

A year later F&J hit a snag [HOUSING, May]. The company had been able to buy only 54 acres for around \$3.5 million and the future of the in-town development was in doubt.

Fox's decision. Despite uncertainty about the dimensions of the project, F&J's President David Fox has now given it a green light. George Field,



F&J's Fox
Flashes green light

the company's chief of land acquisition and in-town development, explains that "we didn't get all the land we wanted but we have enough to build on and make the project work."

Last spring the number of projected units had shrunk to 500 and the price

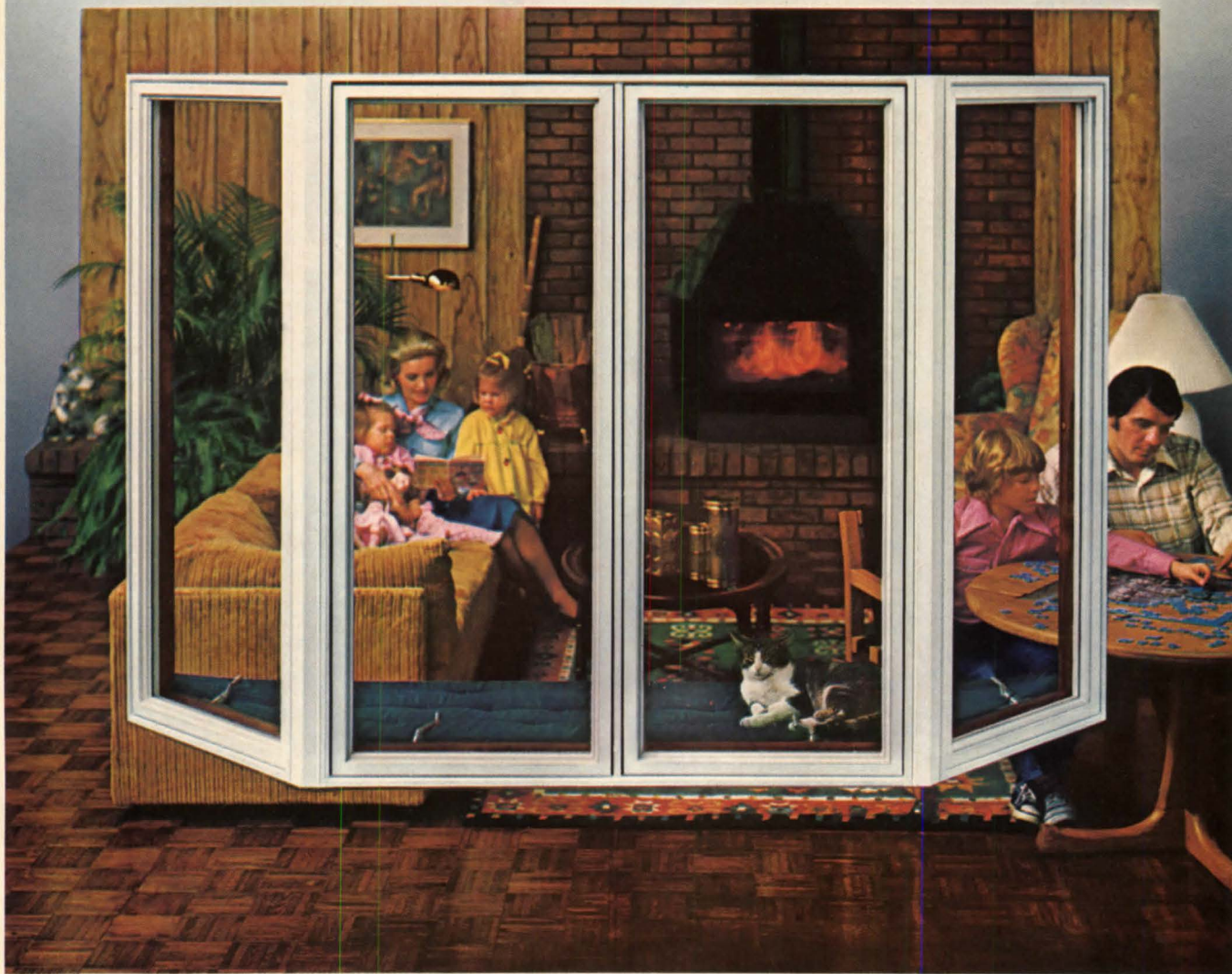
had edged up to \$60,000-\$90,000 per. Now, says Field, the company just doesn't know how many houses it can build on its 54 acres.

"We have no firm goal," Field insists. "Let's just say we'll end up with between 100 and 800 homes."

Starting times. There have been no groundbreaking ceremonies. However, Field notes, "we expect model construction to begin sometime this fall." The model homes "should be completed by next spring and sales will hopefully begin next summer."

The company began buying land in April '76 in an area containing small commercial buildings and deteriorating housing. It bought as a private developer without the aid of eminent domain or federal dollars. —T.A.

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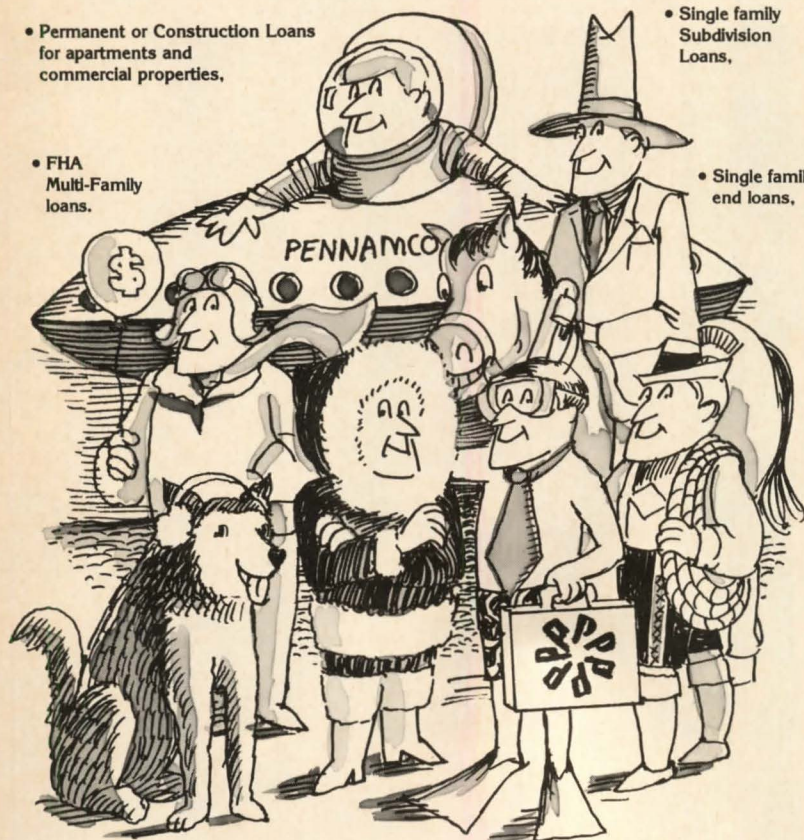
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Builder's wife steps out on her own ...

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She is **Annette M. Wood** and she is married to Seattle builder **Jim Forbes**. She founds A.M. Wood & Associates in the Seattle suburb of Bellevue to build both single and multifamily in the Seattle area. She'll also be a management development consultant for King County builders and do project feasibility studies and escrow closings.

Annette prepped for her new career by spending several years as operations coordinator at Forest Investment Corp., a residential and commercial builder headquartered in Seattle. Husband Jim is president of Forbes Development Corp. of Seattle. Annette, who retains her maiden name for professional reasons, is a member of the National Association of Women In Contruction.

Down the coast, in Santa Monica, Calif., **James H. Cole** assumes the presidency of Christiana Community Builders, a subsidiary of the Christiana Companies. He remains the parent's vice president of operations.

Thomas J. Harbrecht is named director of operations for Kaufman and Broad Homes, the Chicago subsidiary of the big Los Angeles homebuilder. He leaves B&H Industries, a Kansas City land developer, where he had been a vice president. **Roger Muterspaugh** joins K&B Homes as director of land development. He's been operations manager at Dickinson Homes of Kingsford, Mich.

Elsewhere in Chicagoland, **James P. Joyce** and **Leonard E. Miller**, partners in LaPointe Homes of Bourbonnais, Ill., buy a 40-acre tract where they plan to build 96 single-family homes in the \$60,000-\$70,000 range. The subdivision will be located within the Village Meadows PUD, 35 miles southwest of Chicago.

Jon Wimer moves from the vice presidency of the Sanford R. Goodkin Research Corp. of Los Angeles to director of marketing at Centex Homes of Florida, a Miami subsidiary of Dallas-based Centex Corp.

Tore DeBella advances from director of national shelter sales for General Development Corp. to assistant vice president of national housing sales.

Elsewhere in Miami, **Charles J.**



Builder Annette Wood
Heads her own company

Clark is appointed director of sales and marketing for the primary housing division of Arvida Corp., a new post. He was a senior veep with General Development for nine years.

Up north, **Warren B. Schulz** becomes sales manager of Leisure Knoll, a Leisure Technology adult community in Manchester Township, N.J. He had been sales manager for several Leisure Tech communities on Long Island for seven years.



Christiana's Cole
Adds 'president' to titles

Bernard M. Cusic is appointed sales manager of Fabricon Homes of Lancaster, Pa. He had been a sales representative for American Standard Homes of Martinsville, Va.

LENDERS: A Los Angeles investment banker, **Michael E. Tennenbaum**, buys the Arizona Valley Development Corp. and its Arizona City project from Fuqua Industries. Tennenbaum, a general partner in Bear, Stearns & Co. of Los Angeles, will change the emphasis from land sales to residential use. Arizona City sits on 3,520 acres between Phoenix and Tucson and has a population of 1,500.

Donald E. Lange is named chief operating officer and senior vice presi-

dent of Weyerhaeuser Venture Co. of San Diego. He moves over from Weyerhaeuser Mortgage of San Jose, where he had been a vice president. Weyerhaeuser Venture provides capital in limited partnerships with builders in southern California and Texas.

In Washington, D.C., **Robert F. Currin** is promoted from director of construction for the National Corporation for Housing Partnerships to executive vice president of Capital Homes, a subsidiary. Capital is developing 10 single-family housing projects in the Washington-Baltimore area.

DEVELOPERS: **Phillip E. Chappell** joins United Development Co. of Chicago as executive vice president, a new post. He was previously chief operating officer and secretary of U.S. Homes Inc. of Des Moines, Iowa. United Development is a subsidiary of the Urban Investment Co. of Chicago which, in turn, is a subsidiary of Aetna Life & Casualty, Hartford, Conn.

Herman F. Ward is appointed



The NCHP's Currin
Promoted in Washington

construction manager of HeatherRidge Development of Gurnee, Ill. He was the construction superintendent for Luther Hill & Associates, a Dallas commercial builder.

California builder **John D. Lusk** receives the first annual Presidents Award presented by the Construction Industries Alliance for the City of Hope. Lusk, founder of John D. Lusk and Son Inc. of Irvine, was awarded a gold golf putter by **Abraham Bolsky**, senior vice president of Tishman Construction Corp. of Los Angeles, at a ceremony at the home of builder **Nathan Shapell**. Bolsky was installed as president of the medical support group.



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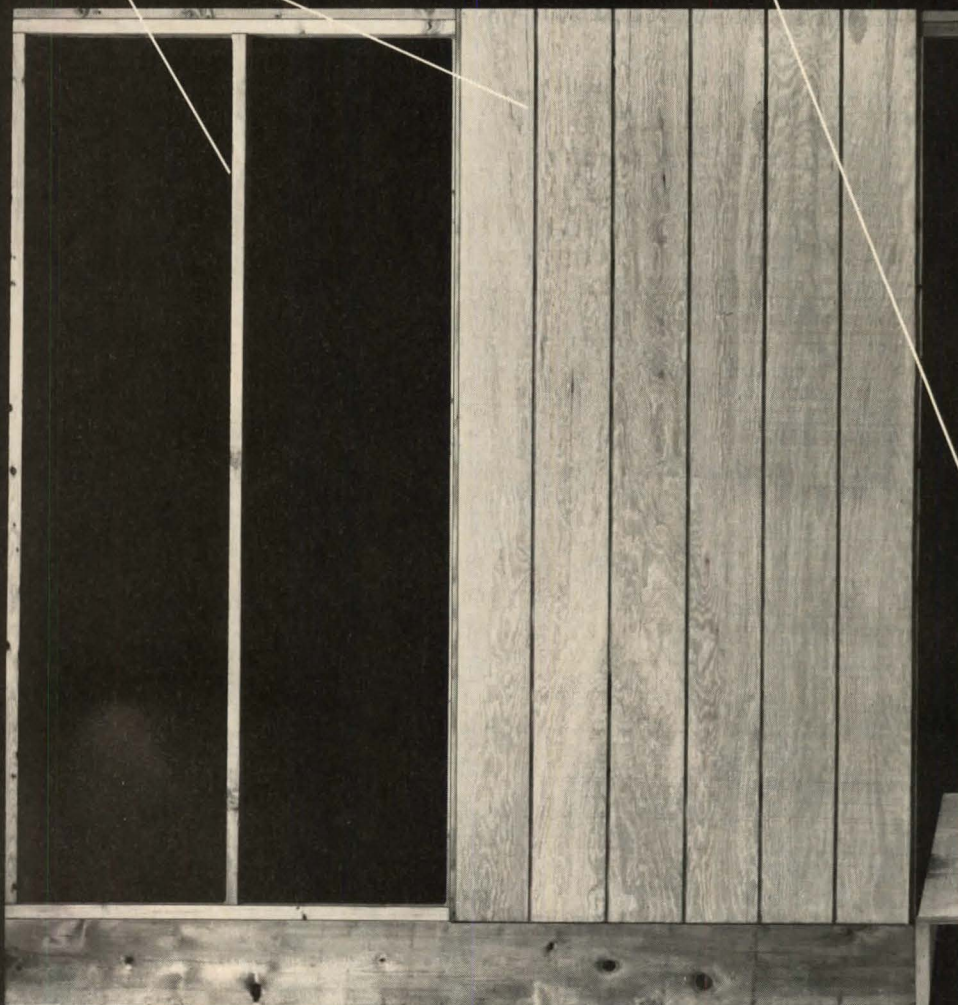
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NAHB data comparing 16" framing to 24" framing on two 1,344 square-foot, single-story ranch style houses. Total savings: \$343.23. Study available upon request.

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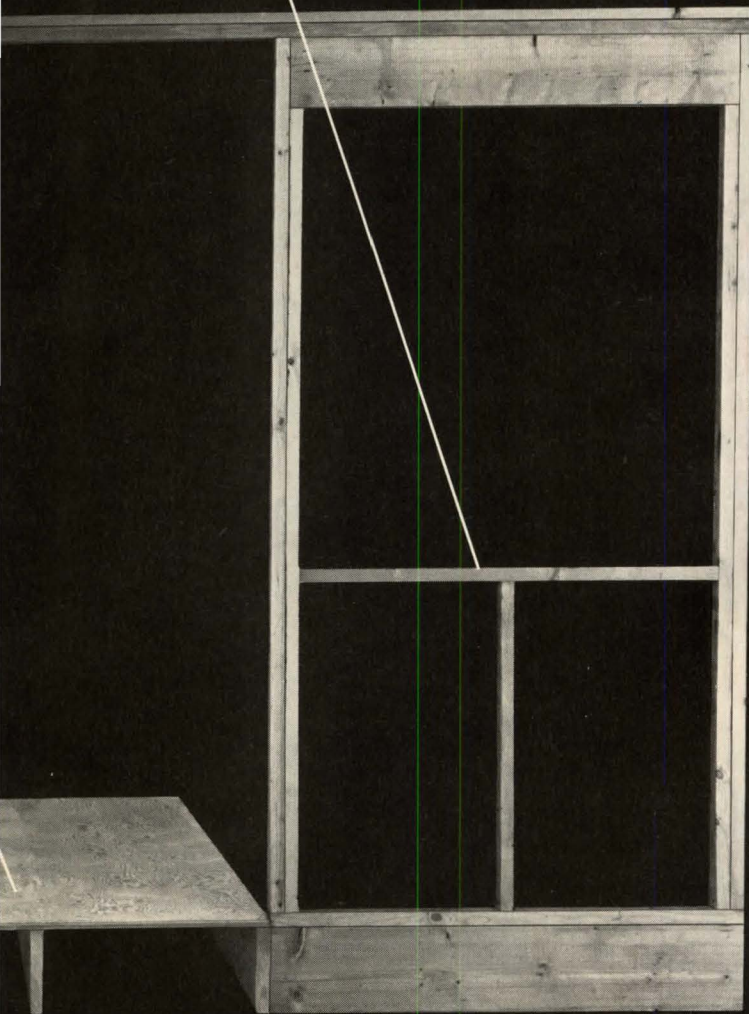
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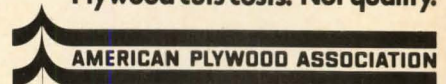
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No fiddling around.



Easy-to-clean styling



Saves water - energy too.

Good looks aren't the only reason for your customers to "Make it a Moen."

Recommending Moen products to your customers is good business because they give your customers unmatched benefits that translate to easy selling, and satisfied home buyers.

Easiest maintenance. Your customers can just about forget faucet problems which means you can forget about bothersome service callbacks. This unique, patented cartridge, standard on all Moen faucets, gives years of trouble-free service. If replacement is ever needed, a simple cartridge-change renews the life of the faucet.

No fiddling around. To get the desired water temperature, all your customers have to do is pre-set the handle before they turn the faucet on. No wasted water, no aggravation, no "fiddle factor." What's more, Moen gives the widest range of temperature selection.

Easy-to-clean styling. Women tell us they really appreciate how easy it is to keep a Moen bright and shining. No dirt-catching grooves; the smooth

surface wipes clean in a moment. And

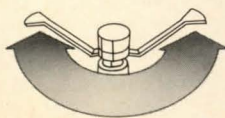
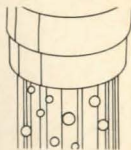
both men and women like the sophisticated styling that gives a quality look.

Saves water - energy too. Only Moen has the exclusive Flow-Rator® standard on all faucets - a feature sure to appeal to your energy-conscious customers. It automatically controls water flow for savings of up to 43% over conventional aerators. On Moen showerheads, the Flow-Rator cuts water usage up to 56% and still gives a great shower. And it also saves energy: since an estimated 60% of wasted water is heated.

And remember. Moen is spreading the word that you're the expert on faucets. With attention-getting ads in Better Homes and

Gardens, Sunset, Southern Living, Reader's Digest and Saturday Evening Post. For details on tying in with Moen's national advertising, see your Moen man. Or write Moen, a Division of Standyne, Elyria, Ohio 44035

There's only one.



Circle 33 on reader service card

PHOTOS: MARC NEUHOFF, PELHAM, N.Y.



Oceanfront view (above) is enhanced by new boardwalk and refurbished cabana/pool area. Cost: \$92,500.



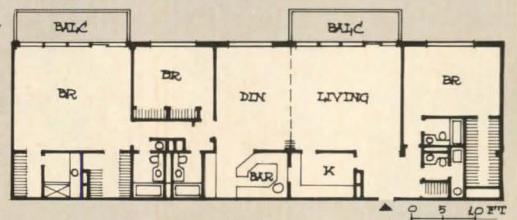
Combined unit (plan at right) offers 2,465 sq. ft. of living space. Elimination of partition that formerly divided two flats (dotted line) yielded 1,020-sq.-ft. living/dining area shown in photo above right. Unit sells from \$129,780 to \$153,720.

Are you going to miss your one last golden opportunity?

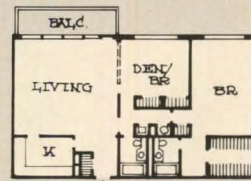
The Towers at Monmouth Beach is a unique opportunity to own a luxury apartment in a prime location. The building features high-end finishes, modern amenities, and stunning ocean views. This is your last chance to secure a unit in this exclusive development.

The Towers
 at Monmouth Beach
 Now previewing
 From the '50s
 to the '70s.

"Last-chance" ad keys \$250,000 promotion plan.



Best seller is 1,418-sq.-ft. plan at right. Den/bedroom option can be made more private with partition or bifold doors. Unit is priced from \$70,350 to \$97,650.



Merchandising Rx for a sick condo

It took strong medicine to bring this luxury high-rise back to life.

Bailout specialists JPS Associates achieved the cure with liberal doses of marketing, redesign, promotion and merchandising.

The twin 12-story towers had languished on the sands of Monmouth Beach, N.J., for four years. When the Washington-based consultants arrived in April, only 38 of the foreclosed project's 132 flats had been sold.

Today the Towers at Monmouth Beach is virtually sold out. Moreover, five price increases have boosted units by an average of \$18,000 each since the take-over. (Four plans, sized from 1,033 to 3,000 sq. ft., are selling from \$52,000 to \$170,835.)

"That's an increase of roughly \$9 a square foot," says President Jack P. Studnicki of JPS. "It has enabled the

lender to recoup all of its capitalization dollars plus \$400,000 in profits."

Bailout plan. The consultants began by redefining the market. They found that there were ample buyers in the area—mostly empty nesters—who were looking to leave expensive houses for luxury apartment condos.

"These people should have been attracted to the Towers," says Studnicki, "but the units had been presented so poorly that prospects were turned off."

So JPS got \$1.4 million from the lender to repackaging the project. The outlays included:

- More than \$600,000 to improve amenities. A boardwalk was built between the two buildings, recreational facilities were refurbished and a new lobby was designed.
- Another \$40,000 to move the sales

center and model units from the second to the two top floors for a better ocean view.

• More than \$270,000 to upgrade the units. This included giving one and two-bedroom flats more lavish fixtures and cabinets and combining some upper-floor units to make three and four-bedroom layouts.

• And \$300,000 for advertising and promotion. Ads stressed the fact that recent New Jersey environmental legislation forbade the construction of any more high-rise buildings along the area's shoreline.

Use of Realtors. "We also gave local Realtors a 3% commission on units their prospects purchased," says Jerry Kaufman, the JPS vice president for marketing and sales. "They've been responsible for almost 20% of our weekly traffic."
—J.G.C.



“THE 28-INCH WIDE GENERAL ELECTRIC REFRIGERATOR MAKES A BIG DIFFERENCE IN AN APARTMENT KITCHEN. WARWICK WEST IS A GOOD EXAMPLE.”

DON WILHITE, GE CONTRACT SALES REP.
WARWICK WEST APTS, OKLAHOMA CITY, OKLA.

“This 14 cu. ft. refrigerator is only 28” wide, so it’s a real space saver. The space the builder saves, the tenant gains in more workable countertop area. In a compact kitchen, a few inches of counter space is important.

“They chose the 28-inch-wide GE Model because it offers many of the deluxe features of a wider refrigerator: a spacious freezer (4.5 cu. ft.), twin dairy storage, two slide-out crispers, optional ice-maker; both the refrigerator and freezer are completely frost-free.

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Manager of Today's Caradco . . .

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and advanced wood window
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achieved through the efforts of
good employees dedicated to
teamwork.

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woodwork industry.

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customer satisfaction"—to
achieve this the entire Caradco
team is dedicated to the above
commitment.



Tony Harvill

**Caradco
Window and Door Division**

Scovill

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Circle 37 on reader service card

to our Customers”



In North Hills, N.Y.

Big condos attract big-home move-downs

These buyers are not giving up living space when they move from their detached houses into The Cricket Club's two-bedroom condos.

The club's two-story townhouses on Long Island's prestigious north shore are sized from 2,000 to 2,400 sq. ft. That's nearly as large as the homes from which the buyers are moving "down."

"These are people who would not be happy with a small unit," says builder Fred Bernstein. "With their children grown and gone, they don't need all the bedrooms and yards they had. But they still want a big house, and they're willing and able to pay for it."

Bernstein and partner Nick Constant have sold 55 townhomes in their 76-unit project at prices ranging from \$92,000 to \$121,000. Three-quarters of these buyers are affluent empty nesters who are moving out of \$150,000 detached houses in the area. (The others are small families and career couples who are also moving down from similar homes.)

"They're all coming with plenty of equity," states Constant. "So even though we've recently raised prices by as much as \$4,000 a unit, we don't expect any problems in selling out by fall."

The architects, Blum & Nerzig of Great Neck, N.Y., have designed three floor plans to offer different advantages. Specifically:

- One layout (*facing page*), a side-to-side split, features a sleeping loft open to a vaulted living/dining area.

- Another model (*far right*) contains an upstairs study that converts to a third bedroom if a wall is added.

- And a third unit (*right*) has a multipurpose room on the first floor that can be used for everything from a formal dining, breakfast or family room to a den, study or library.

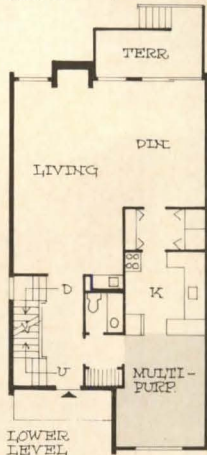
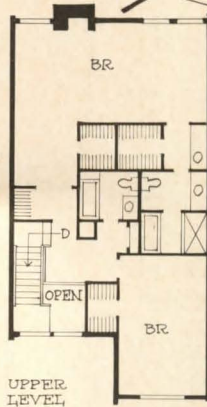
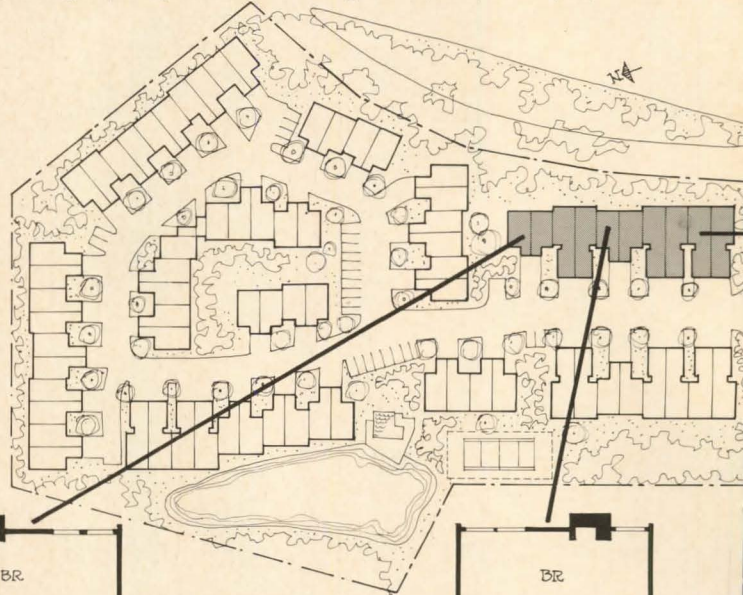
"All models have lots of halls and closets, oversized windows, buffered master suites and private entries and terraces," says architect Robert Nerzig. "We made the units look as much as possible like detached homes."

The builders bought the 8.2-acre tract for \$1.5 million. Site development cost \$600,000. Construction costs are averaging \$20 a square foot.

— JOEL G. CAHN



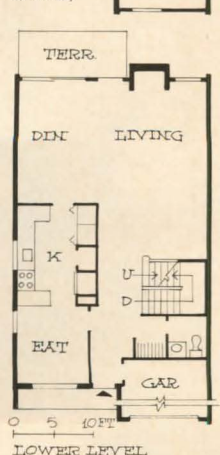
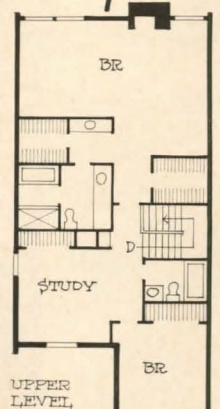
Staggered setbacks give privacy to ten-unit building above (*shaded in site plan*).

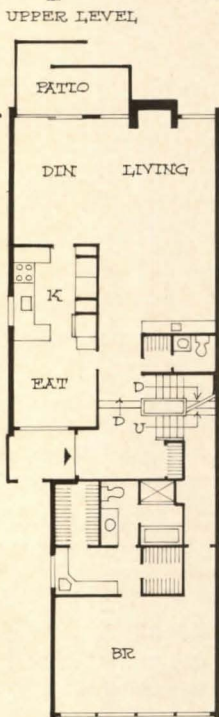
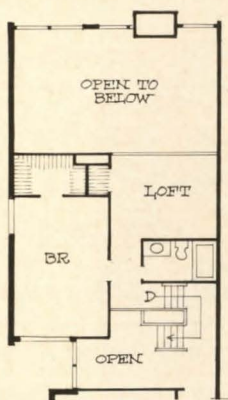


Varied buildings (*site plan above*) contain from four to ten units, for a density of 9.3 per acre. Since project is near parks, beaches and country clubs, builder offered only pool and tennis courts as amenities. Hence, monthly common charges are low (\$52.10 to \$62.96).

Smallest house (*left*) has room (*shaded*) which can be used for almost any purpose. This 2,000-sq.-ft. plan opened at \$92,000.

Most popular house is 2,100-sq.-ft. plan at right. Layout was used for 63% of project's preplanned units because builder felt more buyers would respond to attached garage and upstairs study that converts to third bedroom. Opening price: \$95,000.





Biggest home (plan above) is split-level that permits two private sleeping areas on separate levels. Buyers may use either one as master suite. Third-level sleeping loft is open to vaulted living/dining area (photo top right). Lots of sliding glass doors and windows open rear of house to the outdoors (photo right). The 2,400-sq.-ft. unit opened for \$121,000.

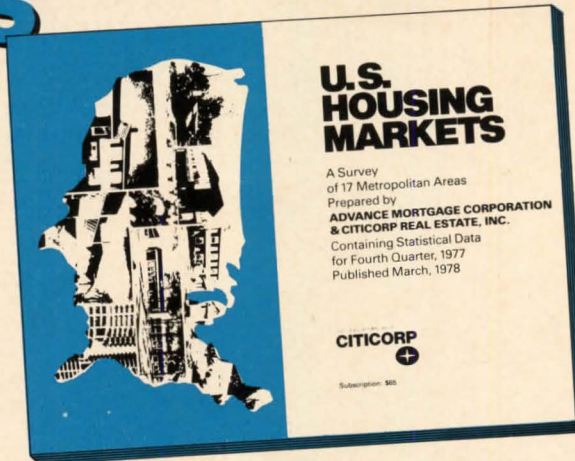
Project's interior designer was Norman Harvey, Farmingdale, N.Y.



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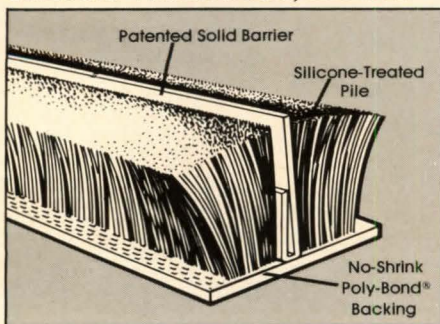
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You get maximum performance year after year...

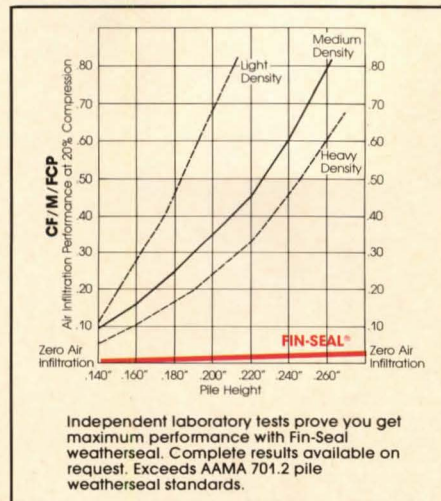
Fin-Seal weatherseal was used in the aluminum windows for a home built in New Canaan, Connecticut, in 1969. When built, the win-



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SOLAR LAW

Present and Future,
with Proposed Forms
by Sandy F. Kraemer

Here is the first comprehensive coverage of existing solar legislation which, additionally, comes to grips with solutions to potential questions of law arising out of accelerated utilization of solar energy.

None too soon does Kraemer's SOLAR LAW become available to the many diverse groups and individuals who will welcome its legal and practical analysis of the issues of solar energy as an alternative source for heating and cooling by homeowners and industries.

A \$1.3 billion market for solar components by the first half of the 1980's is now being predicted by industry leaders. The legal implications of this expansion should not be underestimated.

Kraemer tackles his complex subject with authority and instructs the reader with commendable clarity.

"What are the legal public and private alternatives to assuring access to direct sunlight?"

"How does the astronomical sun-earth relationship affect solar laws?"

"What is the interrelationship of public utility rates to solar energy?"

These are some of the questions that SOLAR LAW answers as it moves with orderly style from one aspect of its subject to the next.

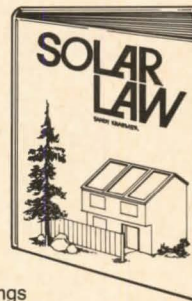
As absorbing as it is informative, Kraemer's SOLAR LAW takes the reader through an enlightening tour of the frequently murky areas of the energy shortage on its way to introducing solar systems. Solar easements, covenants, zoning, subdivision regulations, public and private nuisance issues are all examined individually with model examples followed by legal analysis and

recommended forms.

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come a mandatory addition to the library of people in the fields of law, land planning, engineering, architecture, solar energy fabrication and installation, consumer organizations, environmentalists, land developers, home builders, government, and utility companies. And property owners in general.

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About the Author

Sandy F. Kraemer is a Colorado Springs (Colorado) lawyer whose combined background in engineering and law has been channeled in support of new legal concepts to encourage solar energy development.

Author of many articles on solar law, he has sponsored relative state legislation and local ordinances. He is sought as a legal counselor by solar industries, is a nationally recognized speaker on energy policy and solar law. He serves as a consultant to the Phoenix Solar Project which is supported by the National Science Foundation.

Kraemer received his B.S. from Stanford University and J.D. from the University of Colorado for which he presently serves as a member of the Board of Regents.

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*Source available on request



Harwood K. Smith, Architect

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LETTERS

Golf course feasibility

HOUSING: Your April issue contains an article, "Cash in on these planning ideas," in which the writer says Ralph C. Bender "discourages developers from building golf courses because, with few exceptions, they're economic disasters." It is not stated that Mr. Bender believes golf courses to be disasters, but rather you report as gospel that, with few exceptions, they are.

But is Mr. Bender correct? Did he conduct a comprehensive nationwide survey? It is my opinion that Mr. Bender did not do his homework . . .

It is important to note that many of the unprofitable golf course projects may attribute their failure to overdesigned clubhouse complexes whose cost many times exceeds that of the golf course.

There are, however, many projects throughout the U.S. whose identity is keyed to a well planned, professionally designed golf course which constitutes an integral part of the development. Such courses . . . are realizing very substantial annual operating profits for their owners. These have been anything but economic disasters.

REES L. JONES, president
American Society of
Golf Course Architects
Chicago, Ill.

There are many examples of both successful and disastrous golf course developments. The high front-end and maintenance costs make it financially risky for most conventional developments.

You are right that many failures are due to overdesign or wrong design. But many are also the result of inadequate market research, which, had it been done correctly, would have shown that a golf course would be a loser.

—ED.

Predictions ring true

HOUSING: Just a long-belated note to thank you for sending me the piece you did on my press conference at the NAHB ["Martin Mayer—and telling it as it is," March].



Rees Jones
Are golf courses really economic disasters?

So far, my prediction seems to have held up about right. Both inflation and interest rates have been worse than were predicted in January, but the federally secured credit agencies have managed to maintain the flow of funds to housing. Chairman Miller has not yet come around to a realization that this procedure sabotages the Fed's control over the narrowly defined money supply through the creation of near-moneys. When he does, the Carter administration's little-boy approach to inflation-fighting will clash with some very grown-up fears at the Fed, and the arena will be housing finance.

MARTIN MAYER
New York, N.Y.

Pros and cons

HOUSING: Ken Campbell's piece, "The rise of the superbuilder" [HOUSING, June], is really impressively done. I also especially like the graphics and the tabular breakouts.

MICHAEL BAYBAK, partner
Coffin-Besser & Summers
Los Angeles, Calif.

HOUSING: I read with interest your article on the superbuilders but was disappointed that you overlooked Foremost-McKesson Property Co.

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JOHN A. DITZ
Foremost-McKesson
Property Co.
San Francisco, Calif.

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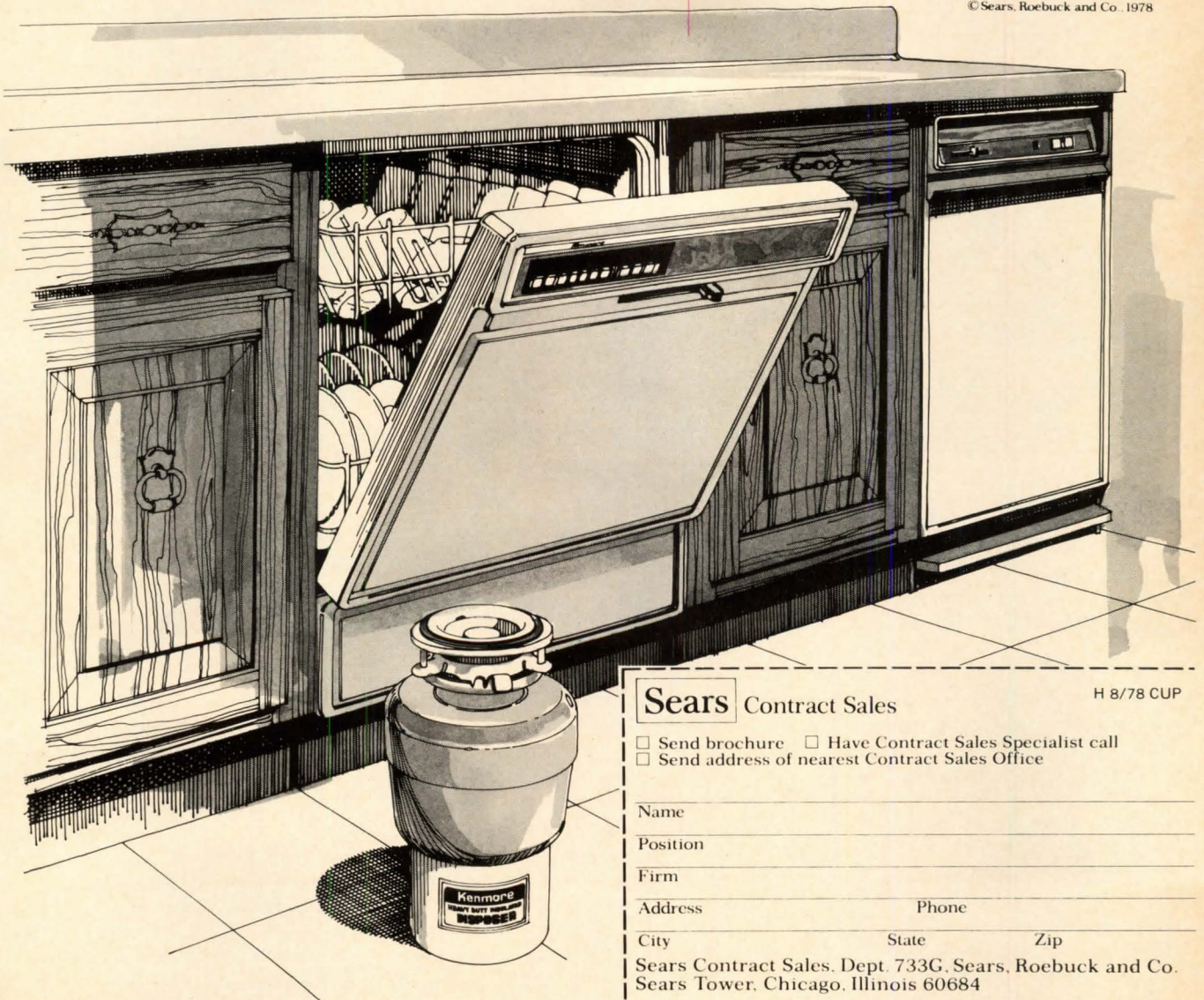
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Barry A. Berkus, AIA, is president and founder of Berkus Group Architects, a 20-year old firm with headquarters in Santa Barbara, California and offices in Santa Ana, California and Washington, D. C. Mr. Berkus is a member of the AIA and the Urban Land Institute and a past member of the subpanel of the National Academy of Sciences reviewing certification of new building technology.

Responsible for programs in Canada, Mexico, Japan, Puerto Rico, and France, his firm currently has projects in various stages of production and design in 22 states, including a 60-acre downtown redevelopment in Dallas, Texas.

Walter J. Richardson, FAIA, is president of Richardson-Nagy-Martin, the 20-year old Newport Beach, California, architectural and planning firm which has gained a national reputation for excellence in residential developments and community design. The firm has projects in 25 states and four foreign countries and has received over 30 national and regional awards. Mr. Richardson is a registered architect in ten states and has headed his own firm since 1958.

A frequent speaker at industry seminars and conventions, he is a past chairman of the American Institute of Architects' National Housing Committee and a past president of the Orange County Chapter of the AIA.

Gene E. Dreyfus is president of The Childs/Dreyfus Group, an interior design firm based in Chicago, with offices in New York, Palm Beach, and Toronto. He is a former builder who sold nearly 2,300 homes in the Chicagoland area from 1950 to 1960. Since 1960, first as head of Gene E. Dreyfus Associates and for the past 11 years with his present firm, Mr. Dreyfus has served as a merchandising consultant to more than 150 builders in the U.S., Canada and Europe. He is currently an instructor for Housing's "Effective Marketing and Merchandising" Seminar.

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The full registration fee is payable in advance, and includes all luncheons, workbooks, tapes and other meeting materials.

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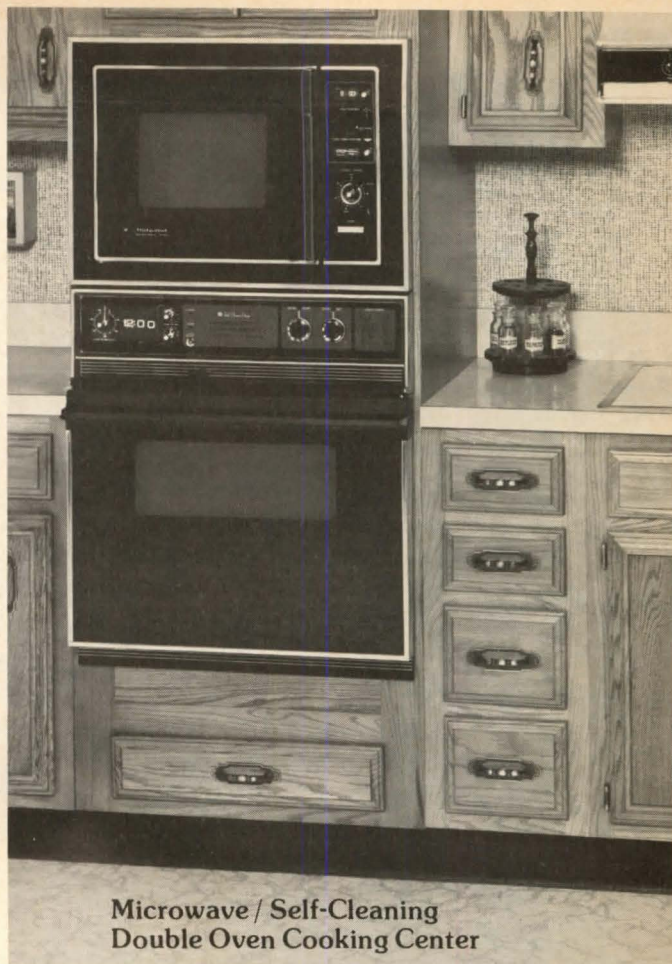
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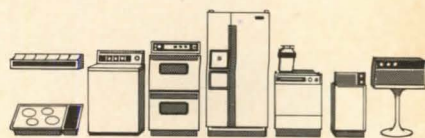
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Apartments: There's one way to win the numbers game...

RAISE YOUR RENTS

Whether you're planning new apartments or managing old ones, you're up against the same problem: negative cash flow.

And efficient management isn't the final solution. No matter how well you choose your tenants, how fast you turn over vacant apartments, how much work you get from your on-site staff, the basic fact remains: Materials and labor costs, taxes, insurance and other expenses are rising faster than rents. So sooner or later you're faced with cutting corners on service or deferring needed maintenance—both of which lower the value of your property in the long run.

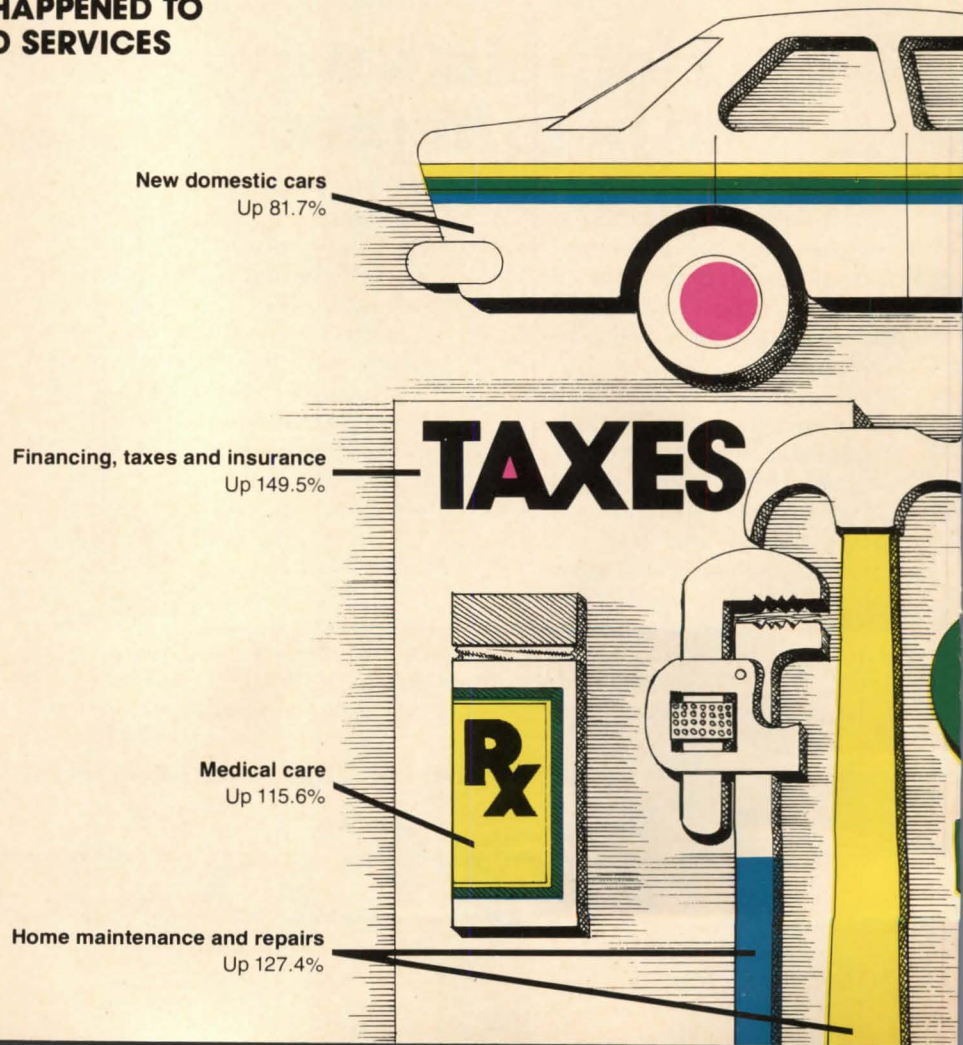
The real solution is to raise rents, and that's unpopular with everyone. Owners fear it will lead to rent control, managers dread high vacancies, and tenants resist belt-tightening.

"It almost seems un-American to expect a fair return—or even to break even—on an apartment house," says Ed Kelley, a widely known property management consultant, teacher and author.

"But," adds Kelley, "we're not doing anybody any favors by keeping rents low. Sooner or later the customer will have to pay the piper. There won't be any new rental housing (*see page 16*), and people who want a decent place to live will have to buy condos or co-ops. Because existing rentals will be run into the ground the way they were in New York."

Many owners and managers don't think the public will pay higher rents. "That's not true," says Kelley. "The reason we don't get higher rents is we've never asked for them. And we should." Here's why . . .

WHILE RENTS HAVE JUMPED 61.4% SINCE 1967, HERE'S WHAT HAS HAPPENED TO OTHER GOODS AND SERVICES



Every day you spend more money to buy less than the day before

That goes for food, which rose to 207.7 on the April Consumer Price Index, for which the base year of 1967 equals 100. It goes for clothing, which stood at 154.9 despite heavy imports of low-priced foreign goods. It applies to medical care, which stood at 215.6 on the CPI. To new cars, which now sell at an average \$6,014 versus \$3,310 in 1967. And, of course, to new homes at a median price of \$53,500 versus \$22,700 in 1967 and existing homes at \$48,200 versus \$20,100 in 1968 (the first year for which the Realtors compiled such figures).

Even more impressive are the costs of homeownership: Financing, taxes and insurance stood at 249.5 on the

CPI; maintenance and repairs at 227.4; fuel oil, coal and bottled gas at 295.6; and gas and electricity at 228.3.

These higher costs apply to apartments too. Yet, on the April CPI, residential rent stood at only 161.4.

Which shows why you have no bottom line, says Kelley.

Tenants say they can't afford more rent—But they can afford to buy homes

Despite the horrendous increase in the price of homes and homeownership, more and more people are buying.

Look at a few more statistics: government surveys show that in 1967 only 61.9% of the households owned their homes; 38.1% were renters. But by 1976, 64.7% of the households had become owners. And a study by the

research and marketing services department of Doyle Dane Bernbach (a large advertising agency) projects that by 1985 this figure will rise to 67.9%.

Yet according to the NAHB, between 1967 and 1978 average monthly payments for a median-priced new home (including taxes and insurance) rose from \$152 to \$430.

"That's the average," says Kelley. "Many people pay more. Yet we're so worried about guarding their pocket-books that we're afraid to raise their rents from \$300 to \$350."

New-apartment rents should average over 40¢ a sq. ft.

And instead they average just under 30¢ a sq. ft. for relatively new middle- or upper-middle-class apartments.

TO NEXT PAGE

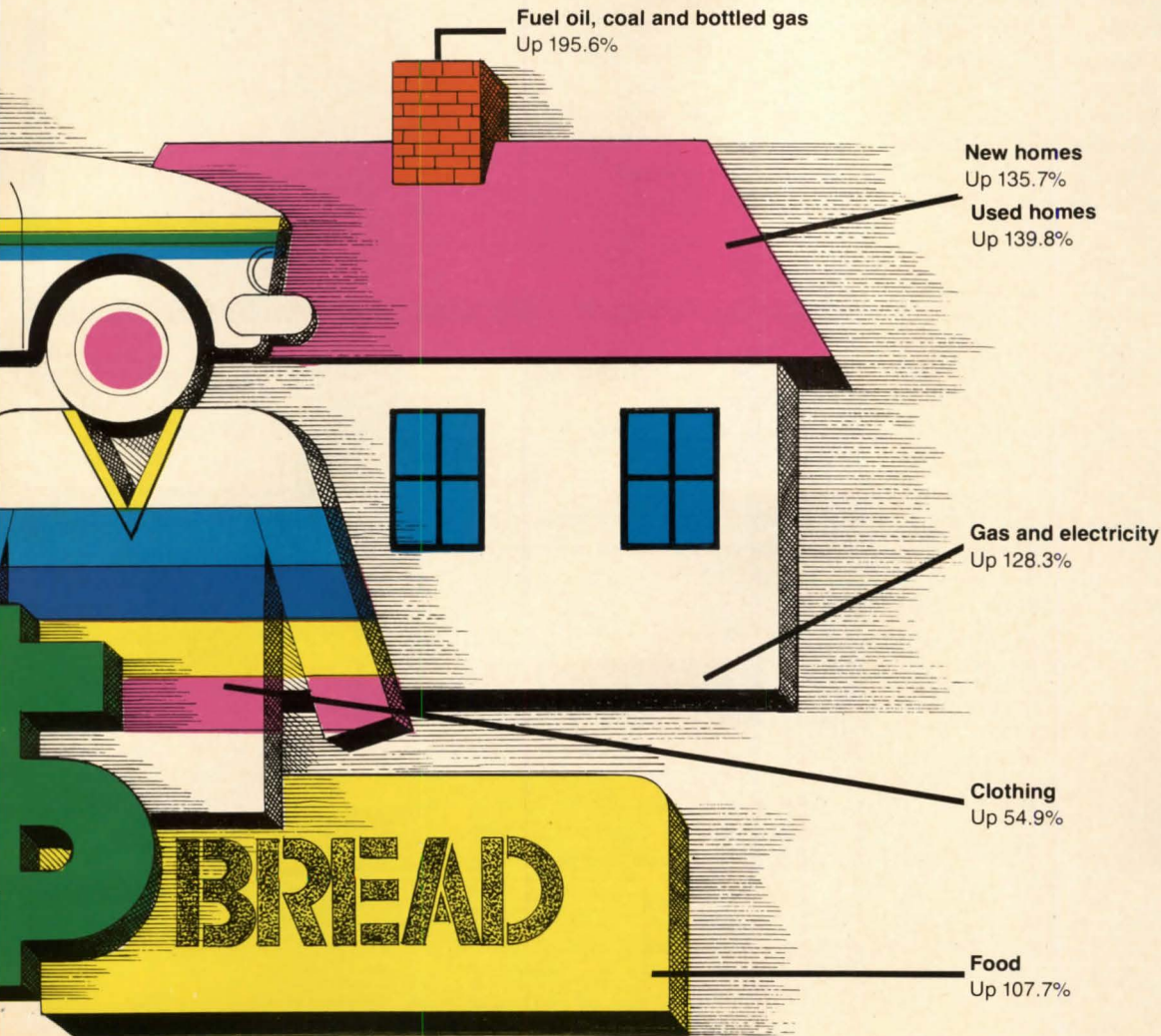


ILLUSTRATION: ROBERT STRIMBAN

RAISE YOUR RENTS

CONTINUED

Kelley's research confirms the 40¢ figure. For his new book, a cost, rent and profit calculator (see page 57), he had his staff compile up-to-date information on 60 major rental markets throughout the country. This information includes land and construction costs, operating expenses, turnover rate and other market data adjusted for expected inflation, cost increases and future market trends. When he used this data to calculate the rent necessary to produce a reasonable cash-on-cash return, he got the same results time and time again: Rents had to average more than 40¢ per net rentable square foot for new buildings to be economically viable.

To see how this works, let's take Cincinnati and Denver as examples (Table 1 at right). For these examples, Kelley's assumptions are fairly conservative: a 750-sq.-ft. apartment (50 sq. ft. smaller than the current average); a mortgage constant of 10.75%; a 75% loan-to-cost ratio; and an 8% cash-on-cash return.

Land, construction and operating costs are at the midpoint of actual costs incurred by developers in these two cities.

Yet based on these assumptions and costs, apartments in Cincinnati should rent for an average of 47.1¢ per net rentable square foot and those in Denver should rent for 51.3¢ to yield 8% cash-on-cash.

Who's to blame for the present low rents? "We are, because we ask for them," says Kelley. And also because we're often guilty of overbuilding.

"All other industries figure out their costs, measure supply and demand in the marketplace, and then either produce or don't produce. But they don't try to sell something below its cost."

Table 1
Current apartment costs and rent requirements in Cincinnati and Denver
(based on a 750-sq.-ft. apartment built in a good suburban area)

	Cincinnati	Denver
Land cost per buildable unit (well located land that is zoned, has EPA approval, water and sewer, and is ready to be built on)	\$2,000	\$2,600
Direct construction costs per gross sq. ft. (bricks and mortar)	\$24	\$26
Indirect construction costs per gross sq. ft. (architect's fees, permits, interim or construction financing, start-up costs, initial promotion costs)	\$3.60	\$3.90
Efficiency factor (% of net rentable sq. ft.)	85%	89%
Loan-to-cost ratio	75%	75%
Annual mortgage constant	10.75%	10.75%
Cash-on-cash return	8%	8%
Operating expenses:		
Dollars per unit per year	\$1,300	\$1,500
Cents per net rentable sq. ft. per month	14.4¢	16.7¢
Vacancy and collection loss (economic vacancy)	7%	7%
Average rent required (per net rentable sq. ft. per month)	47.1¢	51.3¢

Note: All costs were compiled by Kelley's staff from actual construction and operating costs as of June 30, 1978.

Forget the rule of thumb that operating expenses equal 45% of gross income

Says Kelley: "If operating expenses in a new project exceed 35% of gross possible income, the project won't be economically viable."

By that he doesn't mean that you should pare operating expenses unrealistically; he means you should raise rents to achieve a higher gross possible income.

Going back to the example (Table 1), if you were to calculate the operating expense ratio for Cincinnati (14.4¢ per net rentable square foot per month + 47.1¢ average required rent), you would get 30.6%. For Denver, you would get an operating expense ratio of 32.5% (16.7¢ per net rentable square foot per month + 51.3¢).

"Depending on circumstances—much cheaper land, lower building costs, a higher efficiency factor, a lower mortgage constant—it's possible to get as high as 35% and still come out all right," says Kelley. "But most of the time you come in around 32% to 34%."

To look at it another way, in 1967 (the CPI base year) rents were about 24¢ a square foot in Cincinnati. If they had kept up with the overall CPI, which now stands at 191.4, these rents would now be 45.9¢ a square foot—which almost matches the rent calculated by Kelley.

Table 2
What happens to collections when rents are raised
 (in areas with steady 95% to 100% occupancy)

	Raise Percentage	4%	8%	10%	15%
Notices to vacate		5%	13%	18%	23%
Units raised which result in vacancy		0	2.5	5	7
Current month's collections as a % of previous month's collections		104	106	103.4	105.8
Rent collections in 3rd month after raise as a % of previous month's collections		104	108	110	110.4
Raised units still vacant in 3rd month		0	0	0	4
Raised units still vacant in 7th month		0	0	0	0

Table 3
What happens to collections when rents are raised
 (in areas with steady 89% to 94% occupancy)

	Raise Percentage	4%	8%	10%	15%
Notices to vacate		8%	20%	26%	32%
Units raised which result in vacancy		1	6	8.5	12
Current month's collections as a % of previous month's collections		102	101.5	101.2	101.2
Rent collections in 3rd month after raise as a % of previous month's collections		104	108	105.6	108.1
Raised units still vacant in 3rd month		0	0	3	6
Raised units still vacant in 7th month		0	0	0	1

And don't get hung up on vacancies— Money in the bank is what counts

And besides, chances are that vacancies are less expensive than you think.

Kelley conducted a survey to prove it. His sample consisted of over 23,000 apartments in 17 cities, some of which had a steady 95% to 100% occupancy (Table 2) and the rest 89% to 94% (Table 3). No group studied had fewer than five properties and at least 1,000 units. Rents ranged from \$180 to \$320. And the time that had elapsed since the previous raise varied from a minimum of nine months to a maximum of 15, with an average of slightly less than one year.

Tenants were given three months' advance notice of their increase, and their responses followed a predictable pattern. Their immediate response was to say they'd move. Naturally, the higher the raise, the higher the percentage of tenants who threatened to move. In cities with a supply of vacant apartments the percentage was also higher.

Three months later, however, fewer than a third of those who gave notice to vacate carried out their threat. Obviously they had had time to shop

around and to realize that they weren't getting such a bad deal after all. Even a raise as high as 15% produced only 7% moveouts in the tight rental markets and 12% in the others.

The significant thing, however, is what happened to collections. In all cases, including the worst where there was a 12% moveout, the owner came out ahead the very first month the new rents were collected. And he had the potential of increasing his yield because of the vacant apartments.

The collection figures do not take into account the costs of getting the vacant apartments ready for new tenants. But it is clear that the additional rents collected will more than cover the costs of turnover within a very short time.

By the third month most of the vacant apartments in the high-occupancy area and a substantial number of the ones in the lower-occupancy area had been re-rented, bringing

collections to as high as 110.4% of what they had been before the raise. And by the seventh month, all of the properties were back to their original occupancy levels.

"We had expected this to take a full year, but that wasn't necessary," says Kelley. He thinks his study should put to rest the old myth about 100% occupancy: "If you have more than 80 units and you're full, you're not maximizing your rent potential."

Besides, you don't build tenant loyalty with cheap rents

"You can spoil tenants by giving them a bargain," says Kelley. "Because the day you try to catch up and raise their rent from \$180 to \$200, they'll go down the street and rent something else for \$240. They don't have any loyalty once the bargain stops."

Nor is there a correlation between low rent and full occupancy.

Kelley gives the example of four buildings on four corners, all built by the same builder within two or three

RAISE YOUR RENTS

CONTINUED

years. Three may rent one-bedroom apartments for \$180; the fourth rents them for \$220.

"You might think the one at \$220 won't rent until the three at \$180 are filled up," says Kelley. "But chances are the \$220 will be rented and the weakness will be in the \$180s."

Why? Because people equate higher prices with better things.

"I've seen it happen many times," says Kelley. "When people came back to me and said, 'I can get what looks like the same apartment across the street for \$40 less,' I'd say, 'Be my guest.' And then they would stop and think, 'Wait a minute. There must be a reason.'"

Kelley thinks the customer gives the landlord much more credit than he deserves: "He assumes that anyone who can own all that brick and mortar must know what he's doing," he says. "But the truth is, in all of real estate there's no greater unknown than what is the highest rent."

Of course there's a limit to how far you can push. You may get someone to sign a lease for an unreasonably high rent, but once he realizes he's been had, he'll be an unreasonable tenant.

It boils down to this: People aren't skilled enough to measure what an apartment is worth. But they can measure what it's worth to them. They may not say an apartment is \$40 overpriced; they'll say it's \$40 more than they can spend. But if they like what they see and can afford it, they'll buy it. They're used to buying with their eye and paying more for things that look better.

How much is the right rent to charge?

Kelley has come up with a novel way to find out: Learn a lesson from the small buy-up-fix-up guys who always get good tenants at top rents. Their secret: They do the work themselves and develop personal involvement.

"If you really want to know how

much rent you can get, try this," says Kelley only half-jokingly: "Wait until you get an apartment that's really run down. And you, the manager or the owner, put on your blue jeans and make it ready all by yourself.

"Get down on your hands and knees and stick your head in the oven to use the Easy Off. Then stick your head in the toilet and scrub it. Take the dead spiders out of the bathtub. Wash the windows inside and out. Rent a machine and shampoo the rugs. Paint the walls and fix the doors that won't close. Make the apartment perfect with your own two hands.

"When you're finished, you'll know how much you can get for that apartment. Because if you started out asking \$200, it will go to \$210 when you've got your head in the oven. When you put it in the toilet, the price will go to \$220. Every time you do another dirty, stinking job it will go up."

You'll get your price too, according to Kelley, because your personal involvement will convince you that the apartment is really worth the price. And better than that, you'll pick a tenant who's first-rate.

"You've got two weeks of your life invested in this apartment, and you won't give it to a slob," he says.

If you want to set rents without donning blue jeans, all you need do is reach. If you raised them from \$200 to \$220, for example, the next time a vacancy occurs try \$240.

"You'll always get higher rents if you ask for higher rents," says Kelley. "So you must keep testing with your vacancies to see how far you can go."

You'll gain confidence because you'll see what people are willing to pay. And in addition, you'll be putting your existing tenants on notice what to expect when their leases come due. They'll probably take pride in saying that they came earlier and so they got their apartment cheaper, but the message will be sinking in: When their lease is up this is what they'll have to pay. You've already demonstrated what the market thinks their apartment is worth. And you're convincing them it represents good value.

Always be one jump ahead of yourself in setting rents

Know what you would charge for each apartment if it were suddenly to become vacant today.

Kelley calls these theoretical rents "standard" rents. And he feels you should set them twice a year—more often if you're in a volatile market—based on your feel of the market at a given time.

Doing this can prevent what happened to one of Kelley's students recently. He was away at a seminar, and he got a call from his office telling him that one of his tenants had skipped with seven or eight months to go on the lease.

"But don't worry, boss," the manager said proudly. "I rented the apartment this afternoon." At the same rent!

When you raise rents, give tenants plenty of lead time

The longer the lead time, the less volatile reaction there'll be. And the lower the turnover.

"I'm not saying raise the rents three months later," says Kelley. "I'm saying start three months sooner. So if you want more money on June 1, tell the tenants in March."

There's a bit of psychology involved here. Everyone thinks the future—even if it's only a few months off—is going to be better than today. The tax refund will bail them out. Or the Christmas bonus. Or something.

Kelley calls it "on the come," and he says you can accomplish things on the come that you can't accomplish on the spot.

"People are funny," he says. "If something requires immediate cash, they can't deal with it."

He cites an experiment he made with security deposits in a fairly expensive complex some years ago. New tenants were given two choices: Either pay \$200 a month rent and a \$200 security deposit, or pay \$215 a month rent and \$100 in security.

Over a two-year period 93% of the tenants chose the latter. They were willing to pay \$180 more a year in rent, which is not refundable, so that they would not have to come up with an extra \$100 in security, which is refundable.

If you have a lot of catching up to do, give leases with graduated rents

It's another version of on the come. And your tenants are more likely to accept leases with graduated rents than one large or repeated small increases.

Suppose, for example, you need a \$30 rent raise on a \$200 rent. That's 15%, and you're afraid you'll lose most of your tenants if they have to come up with the whole thing at once.

Kelley suggests giving one-year leases with a \$17 increase for the first seven months and an additional \$13 for the last five.

"You can see the tenants do the arithmetic right in front of you," he says. "They say: '13x5=\$65. Okay, I can't even move for \$65.' For some reason, they acquiesce in the \$17. All they worry about is the five months of \$13. They don't worry about it being \$13 forever—besides what's added on next year—because that's so far in the future."

A seven-month lease with a \$17 increase wouldn't go over nearly as well: It would make the tenant suspicious of what you're going to do next.

And a series of small increases magnifies the importance of the raises. If you raised the rent \$7 every six months, for example, about the time of your second raise your tenant would say: "I can't put up with this every six months; I've got to find someplace else."

"Your moveouts from two \$7 raises would be greater than from one \$20 one," says Kelley.

"In sum," he says, "tell your tenants what you're going to be asking for, and then give them time to think it over. There's bound to be a volatile reaction to rent raises, and you've got to leave time for it to subside."

—NATALIE GERARDI

Need rent control worry owners?

"Yes," says Kelley. "There's bound to be a hue and cry for controls when owners try to raise rents to economic levels."

His best argument against rent control is that more cities have tried and discarded it than have kept it. But that is scant comfort to an owner in an area that has yet to learn the shortcomings of rent control.

An even greater danger than controls, in Kelley's opinion, is posed by California's Proposition 13. That's because, he believes, politicians will now want to divert attention from themselves. "If they're under fire for not spending money efficiently and at the same time owners and managers go berserk in raising rents," he warns, "the politicians will declare outright war on 'the landlords who are taking food out of babies' mouths and jamming the money into their already-fat pocketbooks.' And that will take the public's mind off the whole subject of taxes."

So it pays to approach the matter of raising rents with sensitivity.

One thing to do, says Kelley, is to keep reminding tenants that your costs are going up. Once they understand this, they'll expect rent increases and be less inclined to write irate letters to legisla-

tors. So when newspapers report the next hike in taxes, fuel oil or utility rates, or when a magazine discusses the rise in insurance premiums, send each tenant a copy. It costs very little to have clippings duplicated, particularly if you first make a montage of them.

On the other hand, Kelley advises against sending letters justifying rent raises by telling tenants how much your bills for these various items have increased. That gives them something to argue about. If your insurance was up \$7,500, for example, they'll want to apportion it by number of units or bedrooms; and no matter what you do, they'll be convinced you're cheating them.

"People really expect rent increases," says Kelley. "So it's better just to ask them to pay more."

And he adds: "I wouldn't talk this way if we were saying that in one situation you make 8% and in another, if you really squeeze your tenants, you make 10%. For most of us, however, it's a matter of getting the money from the tenants or taking it out of our pockets—or out of the building, which amounts to the same thing. We're not trying to get fat; we're trying to get even."

About the book behind the numbers . . .

Ed Kelley's new book, *Cost, Rent and Profit Computer: Rental Apartments*, to be published by HOUSING Press September 15, takes the work out of analyzing deals.



By means of an ingenious system of charts, the rent needed to cover land costs, average apartment sizes, hard and soft construction costs, efficiency factors, mortgage terms, investor yield and operating expenses can be determined.

Anyone who knows the numbers for a market area can do all this with a pocket calculator, of course. But what a calculator can't do without extra hours of work is to show what happens with different

combinations of alternatives. And this the charts can do instantly.

For example, if your monthly rent requirement works out to 45.2¢ a square foot, in no time at all you could see what it would be if you built smaller apartments, accepted lower yield, found cheaper land, etc.

To help multi-city builders, lenders and investors who may not be familiar with costs and market data in a given area, Kelley's book provides information on land and construction costs, expenses, densities, parking ratios and turnover rates for 60 major apartment markets. These represent actual costs experienced by builders and managers in mid-1978, projected into the future and adjusted for inflation.

Market-tailored models the inside sell

Models can speak as loudly as any salesperson. Market-sensitive room layouts and decoration tell prospects, "This is the house for a person like you."

The usual result? Speedy sales.

Just ask the people at Ponderosa Homes. The company's Park Paseo single-family project in Irvine, Calif., recently scored a two-week sellout of its 27-unit third phase. And it's a project where a great deal of care was taken to match model floor plans and furnishings to the tastes of potential buyers.

"Because they're zero-lot-line houses, they appeal to only a segment of the overall market to begin with," says sales director Rod Gilliland. "So we wanted to be sure to appeal to each type of prospect within that segment."

Thus four models, each with different attractions.

They're the joint effort of Ponderosa's sales and marketing staff, architect Bates-Bassenian-Pekarek of Newport Beach, Calif. and an interior design firm, Color Design Art of Santa Monica.

And they're shown to you here and on the following three pages.

—BARBARA BEHRENS GERS



GARCIA-CARMER ASSOCIATES



For active young couples

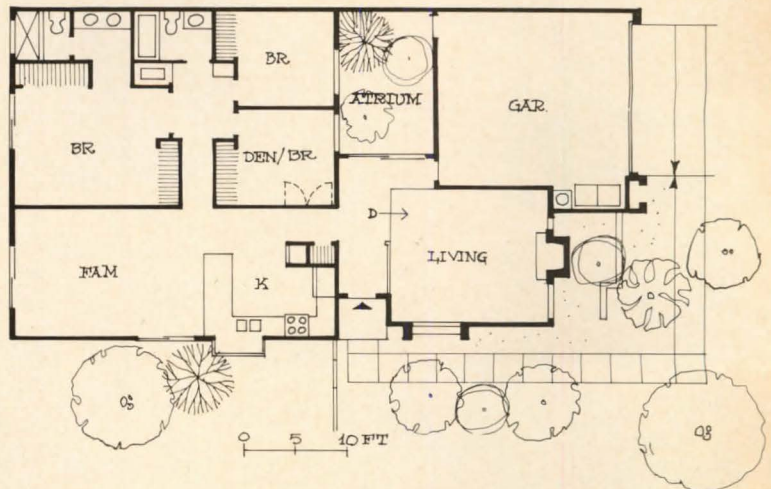
The family room/kitchen area shown above was given a sunny look—a color scheme well suited to the informal furnishings that young working marrieds like.

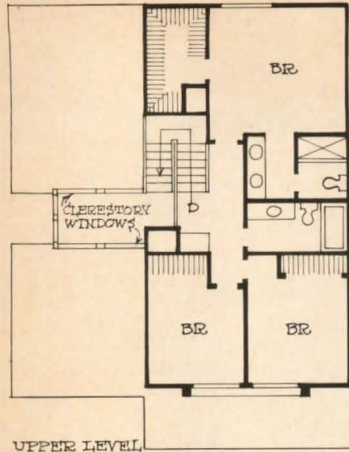
What's more, the bright yellows are memorable.

"Models are usually viewed quite rapidly," says Don Anderson of Color Design Art, "but bright colors will stick in prospects' minds and help them identify a particular model to the salesperson."

Note that the family room's eating area is the only one provided (*plan right*). Formal entertaining isn't important to this market. And note how the wicker chairs (which are also used in the living room) help draw attention to the house's outdoor orientation. (It's got three sets of sliding glass doors and an atrium visible from entry, living room and both secondary bedrooms.)

This 1,527-sq.-ft. plan goes for \$89,990 and has been one of Park Paseo's best sellers. As expected, most buyers have been couples between 27 and 33 years old.





PHOTOS: GARCIA-CARMER ASSOCIATES

For newly formed families

The living area pictured below was filled with comfortable furniture in a variety of styles—the eclectic look that’s popular with many younger buyers. Moreover, it’s a decorating scheme especially appropriate for the limited budgets of couples with young children.

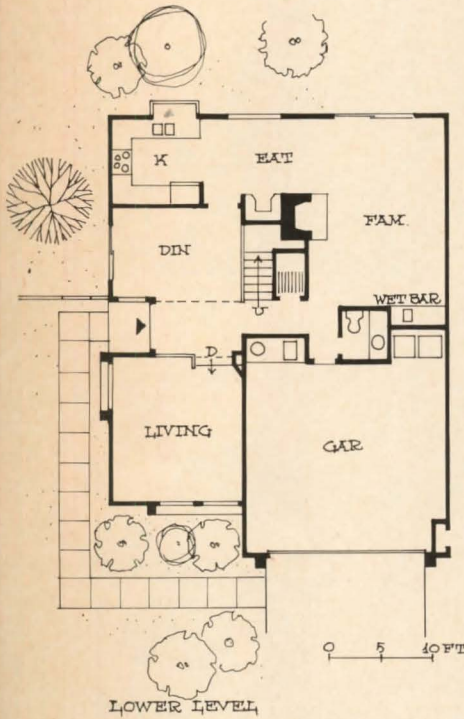
Although the living room is comfortable, the fireplace and wet bar are placed in the family room (*plan left*). That’s where family activities will center.

The dramatic red accents do more than help prospects remember this model. They’re a reprise of its red tile roof (*photo above*).

“Exteriors are important to buyers,” says Anderson, “so rather than ignoring them, we try to incorporate their elements in some way.”

The two-story plan has 1,833 sq. ft. Price: \$95,990.

The decorating job was right on target—buyers are primarily couples with one or two children of elementary school age or younger.



PHOTOS: GARCIA-CARMER ASSOCIATES





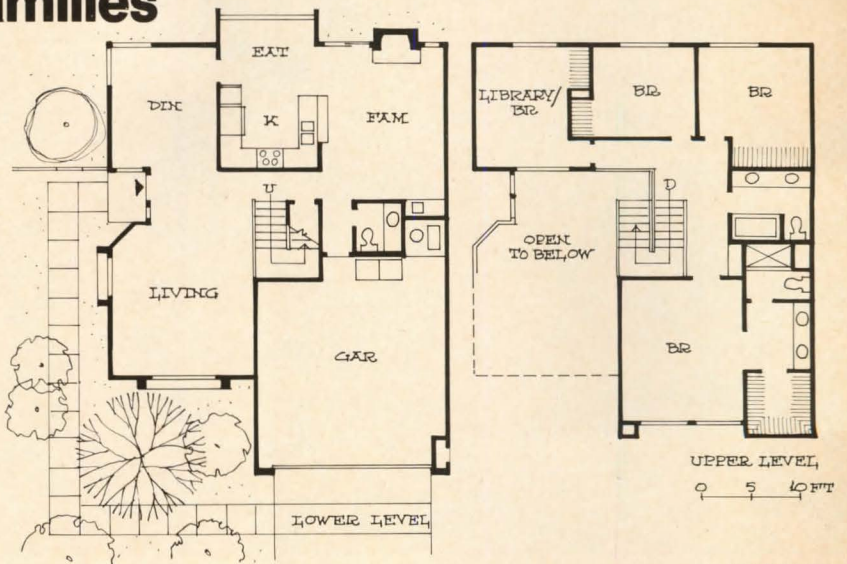
For established families

The interior shown above was decorated in a traditional fashion. And although the colors are warm greens and golds, this is the most formal-appearing of the project's four models.

The reason, according to Anderson: "In this family, the kids are older and most of their activities are outside the home. So the parents are free to enjoy the style they prefer."

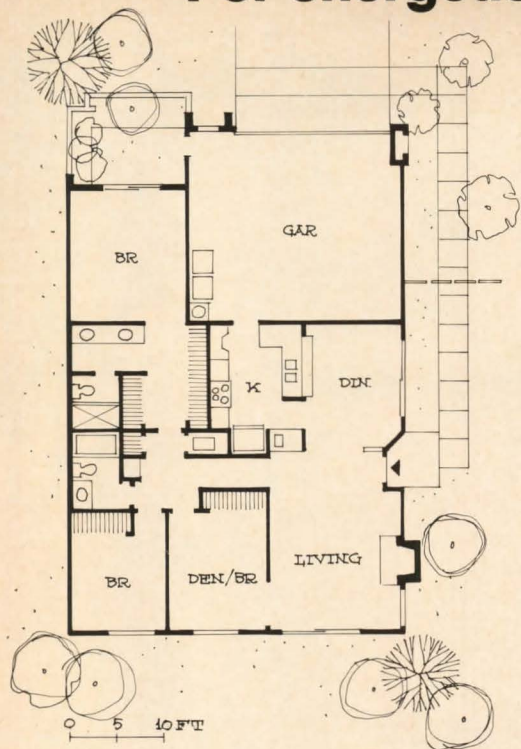
Note the library that overlooks the entry (*plan right, photo above*). "The older family has accumulated lots of books and mementos," says Anderson.

At 1,943 sq. ft. for \$99,990, this plan is Park Paseo's largest and most expensive. The age spread of buyers was wider than anticipated—from the 20s through the 40s—but this is the only plan that's been purchased by families with teenagers.



TO NEXT PAGE

For energetic empty nesters



The living room pictured below is toned down, but not traditional.

"These empty nesters aren't old fuddy-duddys," says Anderson. "They may be as young as their late 40s, and they're active travelers and sports enthusiasts."

Thus the contemporary flavor, but a muted blue-and-brown color scheme.

The emphasis is on rather formal living, however. For example, compare the well defined dining room in this model (*photo below, plan left*) with the informal eating area in the larger plan on page 59.

The positioning of the wet bar indicates that entertaining will center on the living room.

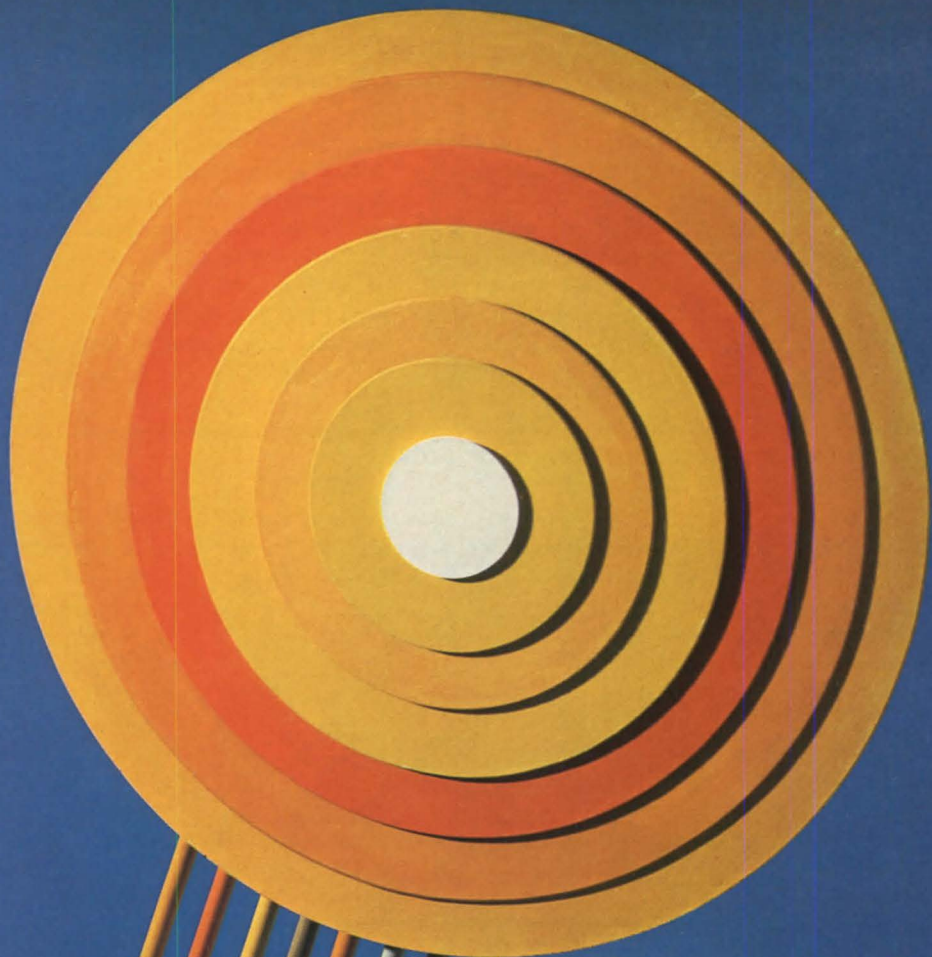
And the atrium helps make the master bedroom a very private retreat.

Even though the targeted market for this model is older, plants are used freely.

"Their appeal isn't limited to one age group," says Anderson, "and they make the model look a little more alive—as if the prospect could move right in."

One of the project's best sellers, this 1,314-sq.-ft. one-story plan is the smallest offered and goes for \$80,990. Half of the buyers have been over 50 and half young singles and childless couples.





SELLING SOLAR WITHOUT SUBSIDIES

Until recently, selling housing with solar-assisted heating systems wasn't played by the rules of the marketplace. HUD subsidies made the game easy. But now some builders are playing it straight. And winning. Solar-heated houses are attracting buyers—not yet in great numbers. But it's happening. Following are reports on 15 builders who are making it happen. And why. They are 15 of hundreds, and the list is growing. One reason: Homebuyers look at solar energy as an escape from rising costs for fossil-fueled energy. There's more: Passive solar is a sleeper in the market, and solar hardware is getting better (see p. 71).

—JOHN H. INGERSOLL

For a roundup of the latest solar products, turn to page 86.

SOLAR DOMESTIC HOT WATER

Model homes with solar-assisted domestic hot water systems are doing more than attracting lookers. They're beginning to sell, and sell without HUD subsidies—for three good reasons:

- The systems are reasonably priced, relatively speaking. Without flinching, a growing number of buyers pay from \$1,200 to \$2,500 extra for solar hot water.

- Buyers are sold on the short paybacks—as little as three years, seldom more than seven.

- They like the idea of getting value for their dollar all

year, not just during the cold months.

More builders are marketing solar hot water with model homes than any other solar-augmented system. That still accounts for only 1% of fuel-fired hot-water heater sales in the new-home market. But it's going to get bigger. About 5,000,000 sq. ft. of solar collectors will go for home and commercial taps this year, unassisted by subsidies. That figure is due to double in 1979, predicts Sheldon Butt, president, Solar Energy Industries Assn. (SEIA). Below are four taking part in the action.

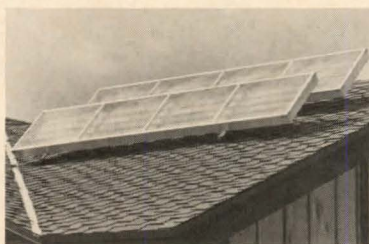
1

In Florida, a long-term advocate of solar

During 1976, some 120 of 300 buyers opted for solar hot water systems in the Tam O'Shanter Forest development in North Lauderdale, Fla. For single-family detached houses in the low \$30,000 range, the solar option cost an extra \$1,350.

Paul Kramer, vice president for sales and marketing, said Tam O'Shanter Development was encouraged to repeat the option at the

Highlands, another North Lauderdale project begun in February 1977. By then, solar costs were up to



\$1,650 and the houses sold in the middle \$40,000 bracket.

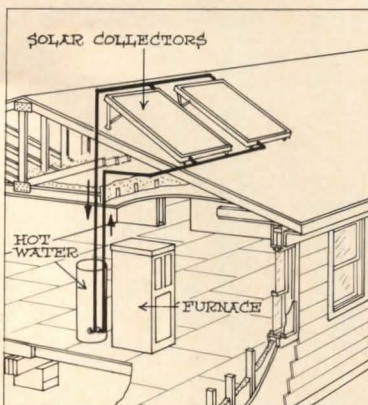
"Yet 90% of our 120 buyers chose solar," Kramer said. "In a second Highlands section of 174 houses, we made solar standard and we sold every one."

New solar collector panels (left) on a model in Tam O'Shanter's latest development permit four manual adjustments during the year to track the sun.

2

Packaged solar from a top home packager

National Homes, the biggest home manufacturer, may also be the biggest solar salesman in the nation. Sincer January, when National fired the opening gun for its Solar-Assisted Affordable Home program, the company has shipped more than 600 houses with solar hot water systems (typical layout, right). More than 400 of National's 1,800 builder/customers opted for solar "and the list is still growing," says Fred Harless, vice president for marketing. Payback: less than six years.



3

A firm belief in solar saleability

In Delray, Fla., 74 buyers paid a \$1,200 premium to get solar-assisted hot water in their single-family houses at Bass Creek, a development of builder George Fuller and the National Corporation for Housing Partnerships. That's 40% of the 183 units in the project, where houses range from \$38,900 to \$45,500.

According to Lee Granims, general manager of Solarex Inc., supplier

of the solar package, buyers will get 80% of their hot water from sun heat and 20% from electric power at 5¢/kwh. For a family of four, Granims estimates a \$35 monthly saving, or a 2.86-year payback.

Convinced of solar sales power, Fuller plans to offer solar hot water in his upcoming project, and is considering a solar cooling option, again without government subsidies.

4

Californians warm to solar hot water

Bob Spriggs (Darmor Development, Alternative Energy Resources, San Diego) and Ray L. Huffman (Ray L. Huffman Construction, San Diego) have built or planned 489 single-family houses with solar-assisted hot water systems. They have another 21 houses pre-plumbed, pre-wired and stubbed out for solar. All this activity is occurring in Bonita Greens (National City); PalmRidge (National City); El Rancho Verde (Rialto) and Vista Palmera (Redlands).

Prices in Bonita Greens ran from \$79,950 to \$83,950, and solar added \$2,500. Development Dimensions, sales agent for Darmor, reported that sales with solar moved smoothly, and three buyers of pre-plumbed houses ordered the job completed with solar equipment.

PalmRidge, under way now, will have 207 single-family houses, each with solar hot water as standard. Prices range from \$63,000 to \$83,000. Did buyers respond? Thirty of the first 50 houses were sold on the opening weekend and 11 during the second weekend. Darmor is rushing to open the second section.

SOLAR SPACE HEATING—ACTIVE

The builders selling homes with unsubsidized, active solar space-heating systems wouldn't fill the stands at a semipro ball game. Yet these builders are stirring excitement in the industry for two reasons:

- Solar space heating is a tough sell. It adds between \$7,000 and \$10,000 to the cost of the house. So any builder getting full price has a story to tell.

- But the buyer reaps the biggest payoff with this system. House heat accounts for nearly 45% of all residential energy, averaged nationwide. Heating tap

water takes 9% to 11% more. A solar space-heating system that also heats water—and most do—cuts the buyer's energy costs sharply. Nevertheless, the payback still runs anywhere from seven to 15 years.

President Butt of the SEIA estimates that 3,400 dwelling units will get unsubsidized solar equipment for space heating this year and the number will double in 1979.

Will the system ever take off? Yes, when high energy costs make the figures work. Meantime, here are eight builders who are selling such solar systems right now.

5

Prefab solar homes for the Northeast

Acorn Structures of Concord, Mass., was the first company to market a prefab solar home in January 1975. It was also the only prefabber to design and produce its own solar collectors and thermal storage tanks—a line it calls Sunwave. By the end of 1976 Acorn had sold three solar models. But today one of every four homes delivered from the factory features a solar-assist system (typical model, right).

There is an \$8,000 charge to the buyer for solar space heating, and the payback period runs from seven to 15 years. Yet solar models continue to sell. Why? Acorn's Steve Santoro says typical buyers are now

technically oriented, anxious about energy costs or retired on a fixed income. "They make a value judgement," he says.



7

Everyone took the solar option

McCuan Associates opened a 16-house project, Helios at Hawthorne, in Columbia, Md., last April 15. Solar space and water heat with heat-pump cooling was offered for \$7,990 extra with houses priced from \$82,900 to \$86,900. By June, 13 had been sold, and only one had no solar hardware.

"I killed that one myself," says President Patrick McCuan. "The lot was heavily wooded. I was afraid leaves would block the sun."

McCuan predicts a 70% energy cut in space heating, 80% for hot water, 30% on the cooling cycle (diagram right). The payback period is nine to 10 years. Why do people buy?

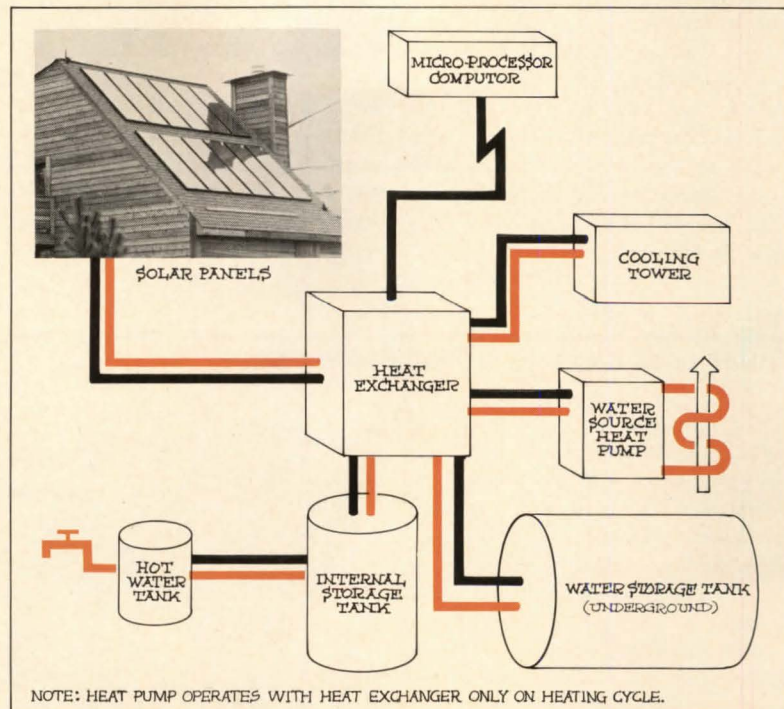
"I think Columbia residents are more sophisticated than most," McCuan says. "More than that, new gas tap-ins were halted three years ago, and electric rates are going up. People are worried."

6

A lone solar sale followed by ho-hum

Enthusiasm for a solar-assisted house may be measured by the cost of fuel. In Indianapolis, Cloverleaf Builders sold its one solar demonstration house at a profit but won no orders for more. The builders drew a blank even though 8,000 people visited the model in four months. One reason:

"Indianapolis Power & Light offers electricity at graduated rates that work out to about 1.8¢/kwh," says David Stroup, Cloverleaf project coordinator. "At those rates, buyers are much more interested in a bigger family room or a better grade of carpet. They don't believe there's an energy crisis."



8

A double payback convinces buyers

The scene below may preview the typical 1984 subdivision. It is a 34-lot parcel in Mentor, Ohio, developed by Mentor Shore Builders. The plan was to make solar space heat and hot water standard for every house. When others who were scheduled to build there bowed out, President Richard F. Koporc of Mentor plunged ahead on his own. He has

sold eight houses, all with solar units and none with a subsidy.

Houses run to \$60,000. The solar package costs \$10,000 more. One reason the houses may be selling: Koporc explains to buyers, "The payback period is seven years, but in three more years, at today's rates, you'll get *double* your payback due to compounded increases."



9

In three years: six solar models sold

Builder Ray Baker of Cincinnati is a solar partisan. "I feel angry reading stories knocking solar," Baker says. "Demand for energy is going to outrun supply. It's just a matter of time."

Baker backs up his belief. In three years he has sold six houses with solar space and hot water heating. The houses range from \$40,000—modest for the area—to \$140,000.

None was built with a HUD grant.

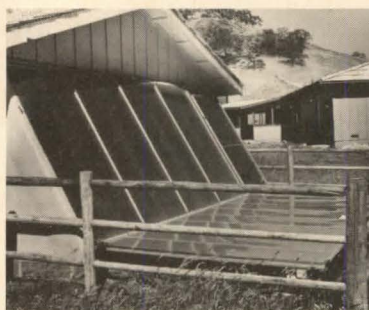
Baker is also a strong advocate of air collectors. "There is too much danger of leaks with fluid collectors," he explains. For his latest house, built to high energy conservation standards (23,000 Btu/hr loss at 0°F), solar will save 58% of the heating, 90% of hot water energy. Baker now is completing an essentially passive solar house.

10

Solar cost blurs in a \$160,000 model

Unhappy with the appearance of solar collectors on the roof, J.J. Seller, president of J.J. International in Santa Ana, Calif., specified ground collectors against a barn 60 feet from the house (right). The project is Ranchos de Uvas, near Morgan Hill, Calif.

The package prices for land, house and solar equipment range between \$145,000 and \$172,000.



11

The first zero-year payback on solar?

Builder William Spriggs of Ventura, Calif. (no relation to Bob, p. 64) may be the first to exploit solar heat on an instant-payback basis. For Ventura del Sol, a 254-unit apartment complex in Ventura, Spriggs installed Piper-Hydro collectors designed to do 25% of the space and hot water heating. Installation ran \$280,000 or a hair over \$1,100 per unit.

"The cost for solar, as close as we can determine, lies somewhere between zero and \$50 per unit more than we would have paid for non-solar and larger heating equipment," claims Spriggs. "Even at the \$50 maximum, we're convinced that the payback period will be less than four years." Spriggs & Co. retains ownership and pays all utility costs.

Because of a favorable first experience and fast-rising rates for energy, Spriggs plans 33% solar coverage in his next apartment project, also located in Ventura.

12

Glamour is still part of a solar sales appeal

"Some of the sell in solar is being first on the block with it," observes Builder Christopher Shipp, West Grove, Pa. Shipp built and sold three solar-assist houses. One, priced at \$250,000, "could have cost a lot less if the owner had agreed to a passive solar space heating system," Shipp says. "But he wanted the gadgets and gimmicks of solar to show all his friends."

When prices reach that point, buyers tend to lose sight of the solar cost and grow more receptive to energy savings. Seller estimates them at \$750 this year and more as each year passes.

Sun-heated air is ducted from air collectors to a rock bed in a Plen-Wood foundation beneath the house. Hot water is piped to a tank in the house from a single fluid collector.

SOLAR SPACE HEATING—PASSIVE

Thirty percent of the builders interviewed for this report are building houses with a passive solar heating system, adding some form of passive solar to an active system or planning to test a passive system soon. More than half believed that passive solar heating will be the wave of the future, but most agreed that won't happen until the drawbacks are overcome. First, the advantages:

- Passive solar heating requires no mechanical devices or at most very few.
- Construction relies on familiar materials, readily

available from ordinary sources.

- The cost is the same as or little more than that for conventional construction.

Here are the drawbacks that need attention:

- Glass in the home must nearly always face south.
- Passive design is often strange and unsaleable.
- Temperature and humidity control is unreliable.

Yet some builders are finding the advantages worth pursuing and the disadvantages less knotty than they had anticipated. Below are two good examples.

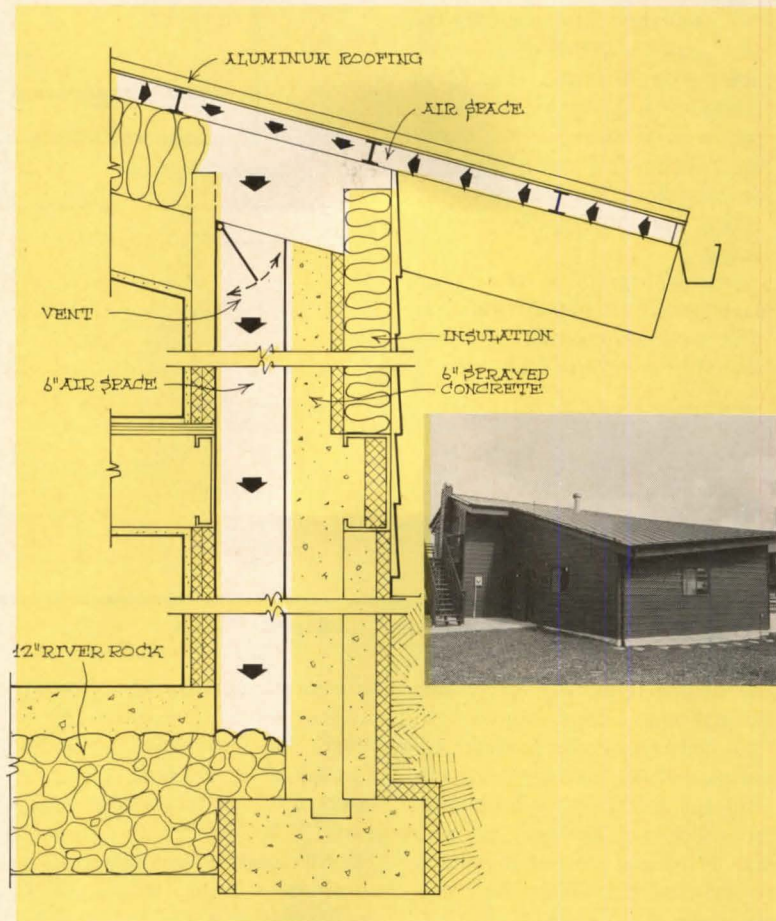
13 A passive design that struck gold with buyers

The cross section (*right*) is the core of a passive solar heating system (patent pending) invented by Gordon M. McCutcheon of Beaverton, Ore. McCutcheon's aim is to design an energy-independent house—one with no utility hookups. The model at right comes close. Its utility bill for the first year was \$100.

Alpine Energy Homes of Aloha, Ore., is the first builder to adopt McCutcheon's brainchild. Since early 1977 Alpine has built and sold four homes, and it is building a fifth that is already sold. It holds signed contracts for 10 more. The price is currently under \$70,000, or about \$35/sq.ft., competitive with Portland-area houses conventionally built.

Enthusiastic over the demand, Alpine recently began a 66-home passive project in Hillsboro, Ore.

Here's how the system works. Solar heat collects beneath a brown aluminum roof. The heat is drawn by a fan down wall cavities and into rock storage. The stored heat is sent to conventional forced-air heating and hot water units, which cut in when consecutive cloudy days fail to stoke solar heat storage.



14 A concrete barrier against heat flow

Builder Jesse L. Savell Jr. of Santa Barbara, Calif., has applied the lessons of ancient adobe dwellings to modern concrete homes. After building and selling 16 houses in California, Savell has records to justify his claim that his design cuts heating and cooling costs 67%. He has patented his system.

Walls in a Savell house are six inches thick: four inches of 3,000-psi

concrete, one inch of polyurethane insulation and a one-inch outer skin of stucco. The remainder of the house is standard for the area: single-glazed windows, wood doors, a concrete tile roof and six inches of fiber glass in the ceiling.

According to Savell, the walls impede summer heat waves and cold winter winds. The thick walls also develop a wicking action with the

soil temperature (56° F), which helps stabilize inside temperatures.

All models are on one level, although Savell is currently developing a two-story version. His pricing is competitive with custom-home construction. To date, Savell has licensed 16 builders in California, Wyoming and Texas to build models with his design, which he named Savell Systems International.

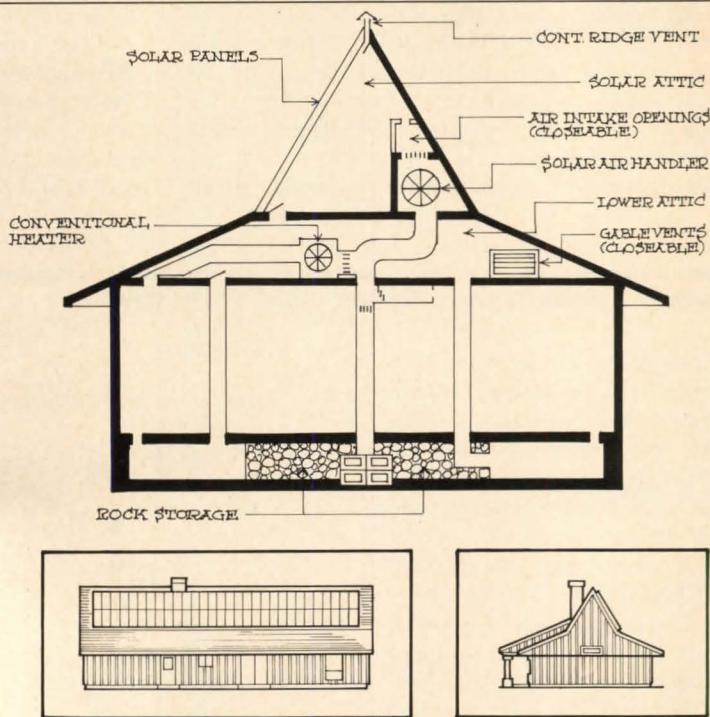
Test home may be on the market in 1979

Seeking to bring a passive solar house to market at competitive prices, National Homes is completing a solar-attic test home in Lafayette, Ind.

The 1,243-sq.-ft. model is the first stab at a passive solar home by a prefabber. The experiment is partially underwritten by HUD, which will help monitor and publish results.

A triangular structure atop the attic (*right*) is sealed off from the house with insulation. Glazing on the south-facing leg of the triangle passes solar heat to the closed inner space. This heat is moved by fan to a downflow heating system and/or to rock storage beneath the house.

National projects house heat savings of 60% to 80%. Summer heat is vented outdoors. The model should be completed Sept. 1.



SOLAR SPACE COOLING

Active technology is still a question mark

Solar cooling is moving out of the horse-and-buggy stage, but slowly. At this point only Arkla produces an absorption-chiller package sized for a residence and ready for hookup to solar collectors (*Products, p. 86*). York, Trane and Carrier manufacture solar-assisted chillers for commercial use.

As a test, Arkla installed one of its solar cooling packages in a house in Evansville, Ind. And the first two builders to use Arkla chillers for a solar cooling system were Arnold Morgan and Cyndal Barnhart in Houston, Tex. The systems were installed in two model homes and their curiosity value draws plenty of traffic. Neither has sold, however, and Morgan says the systems are not working at top efficiency.

Part-time collectors. Consistent performance of the collectors appears to be a problem. (Arkla doesn't produce its own collectors.)

An absorption chiller requires water intake at temperatures from 180° to 210°F. This heat level is readily achieved in a gas-fired chiller, a standard from Arkla for many years.

But flat-plate collectors operate at temperatures from 100° to 190°F, and the average is closer to 150° on a clear day in Des Moines, Iowa. On a hot summer day in Houston, these collectors can deliver water at temperatures above 180°F, but for only part of the day.

Possible answers. A solution to this problem may be found in one of three variations on flat-plate units, none of which has emerged completely from experimentation: (1) a flat-plate collector modified with a prismatic or other heat-trapping cover; (2) an evacuated tube collector; or (3) a concentrating collector in the form of a compound parabolic mirror. Most other configurations of

concentrating collectors and some evacuated tube collectors operate efficiently only under clear skies and bright sun. And a minor drawback: Most concentrators must track the sun, and tracking requires electrical power to move the roof-mounted units.

Experiments are continuing on a second form of solar cooling, in which solar heat drives a motor that operates a heat pump. Commercial production is some years away.

Passive systems. Meanwhile, Designer McCutcheon (*p. 67*) has arranged a passive cooling assist for his model by running large pipes underground. A fan draws ground-cooled air in the piping through rock storage into the heat-pump plenum. Builder Savell (*p. 67*) credits thick concrete walls with keeping interiors cool in summer. The same walls, he insists, keep the house warm on cold nights and in winter.

A New England house with no fuel-fired furnace

One pioneer has designed a 100% sun-heated home for his family in Sherborn, Mass. All space and water heat comes from a blend of active and passive solar systems (a hybrid, as the industry calls it.) So confident was its designer, Robert E. Parkin, Ph.D., that he installed no backup equipment. Using his home as a model, Parkin is now selling spin-offs of the design to Boston-area buyers.

The house was completed in February 1977, in time for the tail end of New England's brutal winter of 1976-77 and in plenty of time for the equally frigid winter of 1977-78. "We were comfortable both winters," Parkin says. "Last January the house was sometimes hot enough to open doors."

Parkin has sold three copies of his own home, plus three passive designs that do require backup heating. Buyers of Parkin's totally sun-heated models pay \$55,000 for 1,670 sq. ft. and just under \$74,000 for a 2,465-sq.-ft. version. Those figures cover all solar equipment but do not include the lot.

Parkin says 60% to 70% of the house's heat comes from active collectors; about the same amount from the passive system. "The 20% to 40% overage matches heat loss in the house," he explains.

Elements of the active solar system include:

- Thirty-eight solar collectors facing southward. They are fluid collectors, using water. Piping automatically drains down on sunless days and at night.

- A 6,000-gal. storage tank of 5,000-psi reinforced concrete, 12'' thick, insulated with two inches of urethane foam.

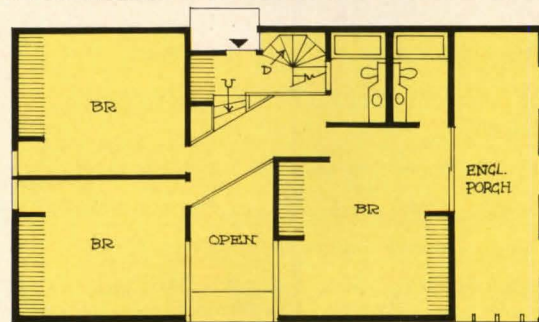
- Pumps and controls to deliver hot water from storage to (1) a radiant baseboard loop through the house; (2) a heat exchanger in an 80-gal. domestic hot water heater.

The passive system admits the winter sun through a lower-level wall of sliding glass doors and through four glazed panels placed among the solar collectors. A second-floor overhang blocks the sun from the same glass doors in the

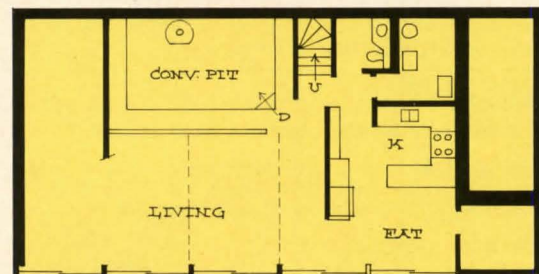
summer, throughout each day.

The winter sun slowly heats the first-level floor of native bluestone laid over four inches of reinforced concrete. At night, heat in the masonry and stone gradually permeates the house. To reduce heat loss, thermal blinds are pulled down over the glass doors.

Collected heat is retained elsewhere by 10''-thick foundation walls protected by two inches of urethane foam and by six inches of fiber glass in the north-facing second-level wall. The wall is broken only by the front entry and a functioning hopper window above it, a route for air flow in summer.



UPPER LEVEL



LOWER LEVEL

0 5 10 FT

Solar house designed by Robert Parkin (inset) assures free flow of heat by reducing first-level partitions (plan left) and opening space to second level. Collectors span pitched portion of roof (above), and the vertical panels immediately below.

STATE LAW SOLAR UPDATE

Thirty-five states have produced legislation on the use and abuse of solar energy. Most laws encourage solar use with a variety of incentives ranging from tax breaks to cash rebates. Most incentives apply to solar assists on residential and commercial construction. The chart

below incorporates the latest data from the National Solar Information Bureau. For precise information, contact the Bureau (*see facing page*) or call the state energy office. The "Solar Laws" column refers to legalities of access to the sun between adjoining properties.

STATE	SOLAR INCENTIVES	SOLAR LAWS	CODES
Arizona	A state income tax credit until 1984; exemption from property tax.	No	No
Arkansas	Deduction of solar cost from gross income for state tax.	No	No
California	State income tax credit until 1981; for disaster-stricken homes, an interest-free loan to add solar equipment.	No	Yes
Colorado	Solar systems assessed at 5% of value for property taxes.	Yes	No
Connecticut	Sales, use-tax exemptions; authorizes zero assessment by local tax unit.	No	standards
Florida	No incentives at present.	Yes	Yes, and standards
Georgia	Refund of sales, use taxes; authorizes exemption from property tax.	Yes	No
Hawaii	10% state income tax credit; exemption from property tax increase.	No	No
Idaho	Cost deduction from taxable income for state.	Yes	No
Illinois	Reduced valuation of solar equipment for assessment.	No	No
Indiana	Annual deduction from assessed valuation of solar costs (mobile homes included).	No	No
Iowa	Exemption of entire solar system from property-tax assessment until 1986.	No	No
Kansas	A 25% deduction from state income tax; reimbursement on property tax, and five-year amortization of solar on business tax returns.	Yes	No
Maine	Five-year exemption from property tax; refund of sales, use tax; \$400 subsidy for solar domestic hot water installation.	No	No
Maryland	Authorization of property tax credits by local units; assessment reduction.	Yes	No
Massachusetts	Authorization of liberal bank, credit union loans; real estate tax exemption, and corporate tax deduction for year of solar installation.	No	No
Michigan	Use tax exemption; authorization for property tax exemption; business tax break.	No	No
Minnesota	Exclusion of solar equipment from assessment.	Yes	standards
Montana	State income tax credit for solar installation; property tax exemption.	No	No
Nevada	Allowance for reduction of assessed valuation of solar equipment.	No	No
New Hampshire	Property tax exemptions.	No	No
New Jersey	Allowance for a deduction from property taxes.	No	No
New Mexico	State income tax credit of 25% of solar cost up to \$1,000.	Yes	No
New York	Provision for a property tax exemption.	No	No
North Carolina	Allowance for personal, corporate income tax credits; assessment break.	No	No
North Dakota	Provision for state income tax credit; five-year property tax exemption.	Yes	No
Oklahoma	Income tax credit for residence—25% up to \$2,000.	No	No
Oregon	State income tax credit of 25% up to \$1,000; allows liberal veteran's loans for solar installation; allows property tax reduction.	Yes	No
South Dakota	Allowance for residential owners annual deduction from assessed valuation; property tax credit for new or retrofit solar on residential or commercial.	No	No
Tennessee	Property tax exemption.	No	No
Texas	Exemption from sales tax; business tax credit.	No	No
Vermont	Personal property tax exemptions; personal, business tax credits.	No	No
Virginia	Allowance for personal property tax exemptions.	Yes	No
Washington	Property tax exemption.	No	No

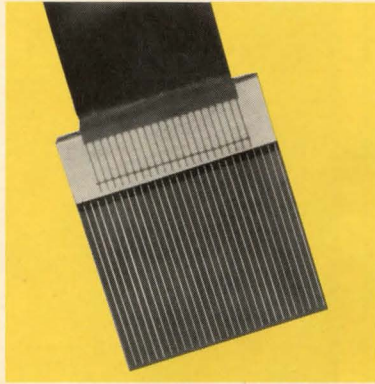
Solar cells: a promising word from Delaware

Solar cells convert radiant solar energy directly into electricity.

Single-crystal silicon has been doing the work. It is the principal element in spacecraft cells above the earth's atmosphere. On the ground the same cell drops to an efficiency of 5% to 8% and generation of electricity costs \$20 a watt.

Scientists at the University of Delaware's Institute of Energy Conversion in Newark, Del., have now improved a cell made from thin-film cadmium sulphide (right). Allen M. Barnett, institute director, says the cells have a proven efficiency of 9.15% in the laboratory. Barnett

says that by 1982 the cadmium-sulphide cell should generate electricity for 25¢ a watt.



First-rate sources for solar energy data

Want to dig in and learn more about solar energy? Here are five useful books culled from hundreds published since solar became news.

● *Architecture and Energy* by Richard G. Stein (Anchor Press/Doubleday, \$12.95) is judged by many as the best book on the subject.

● *Designing and Building a Solar House* by Donald Watson (Garden Way, \$12.95): complete coverage by a pioneer in the field.

● *Solar Energy: Fundamentals in Building Design* by Bruce N. Anderson (McGraw-Hill, \$21.50) is an excellent nuts-and-bolts review of solar techniques.

● *Solar Law* by Sandy F. Kraemer (Shepard's/McGraw-Hill, \$35) is vital for any solar planning.

● *The Solar Decision Book* by Richard H. Montgomery with Jim Budnick (Dow Corning Corp., \$10) is a practical analysis for builders.

DOE and HUD: catalysts for solar progress

The Solar Heating and Cooling Demonstration Act of 1974 was as clear a statement on the energy crisis as Congress has made. The message:

Find a way fast to reduce oil imports. With the act as its mandate, the Department of Energy (DOE) gave out millions of dollars to pump up the solar industry.

Since 1974, the agencies have given funds for solar assists on 130 non-residential buildings, 40 federal buildings (with General Services Administration help), and a number of health facilities (with HEW help). Last month, DOE began funding another 83 non-res buildings.

HUD received the largest chunk of money from DOE. With its funds,

HUD made 650 grants to builders, architects and public housing officials. The grants represent more than 7,000 housing units. Of those, 400 to 500 are single-family detached houses. A handful are high-rise apartments and the remaining units are in low-rise projects.

Twenty-five units (eventually, 100) are monitored by computer and the results are telephoned automatically to the Center for Environmen-

WHERE TO CALL

For data on any solar question, call toll-free: (800) 523-2929 (in Pa.: (800) 462-4983), or write Nat. Solar Heating & Cooling Information Bureau, Box 1607, Rockville, Md. 20850.

Solar truths and a myth

All of the 15 builders mentioned in this report packed their houses with extra insulation and worked in as many energy-savers—such as double glazing—as possible.

The reason: Solar heating is a low-energy technology. Heat delivered to interior spaces may sometimes be no more than 95°. Air at that temperature must not fight large heat losses. It cannot overcome the losses.

New warranties. Maturity in the solar equipment industry and progress among standard-setting agencies are producing more dependable solar devices with warranties supported by manufacturers. No less than 10 groups have set or are working on standards for solar equipment. And the Department of Energy is developing a solar-energy model code.

The price picture. Many builders believe solar collector prices will come down as technology improves and production-line economies take hold. "Not true," says President Sheldon Butt of the Solar Energy Industries Assn. and many other experts in the business. "There may be minor savings on the production line," Butt explains, "but these could be offset by rising material prices."

tal and Energy Studies at Huntsville, Ala. Joe Sherman (right), director, HUD Division of Energy, Building Technology



Joe Sherman

and Standards, says, "This will be the first major collection of solar energy data since the experiments at M.I.T. in 1958." Sherman, probably the most vocal advocate in government of solar, has generated five cycles of grants for solar space and domestic hot water heating and solar space cooling. This month he is closing out a sixth cycle—a design competition on passive solar systems.

TEN CUSTOM WINNERS

These one-of-a-kind award winners in the 1978 Homes for Better Living program* include:

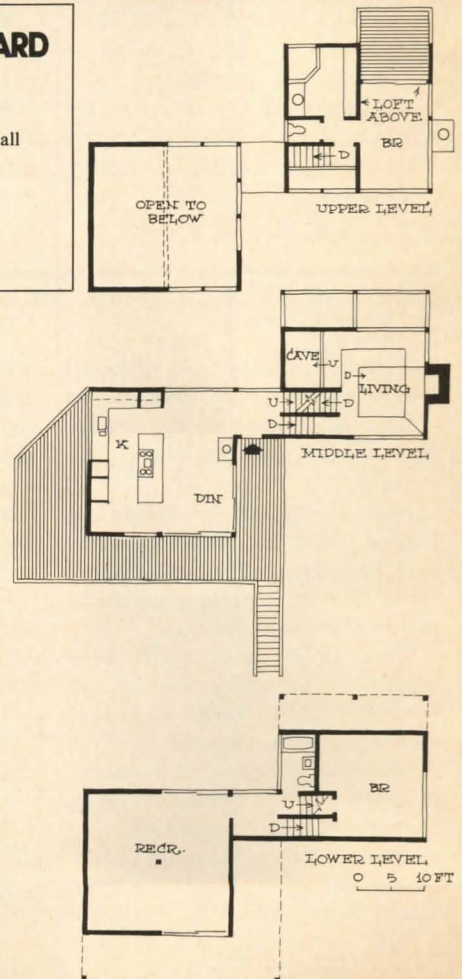
- A 1,800-sq.-ft. primary home with the look of a vacation house (*right*).
- A two-story design with traditional and contemporary overtones (*page 74*).
- A 6,300-sq.-ft., one-story house with setbacks and curves that reduce its scale (*page 75*).
- A desert home with a formal, 4,353-sq.-ft. floor plan (*page 76*).
- A 5,500-sq.-ft. house with three glass walls (*page 77*).
- A 6,500-sq.-ft. lakefront home with a cross-shaped floor plan and catlevered second story (*page 78*).
- A compact, 1,600-sq.-ft. home with irregular-shaped rooms (*page 79*).
- A multilevel vacation home protected from coastal winds by tall pillars (*page 80*).
- A 150'-long house that's open on one side, closed on the other (*page 81*).
- A four-level cube with a wide-open, 4,000-sq.-ft. floor plan (*page 82*).

—JUNE R. VOLLMAN



FIRST HONOR AWARD

Architect: Roland/Miller/
Associates
Builder: Charles Gentry
Owners: Clarence and Kay Hall
Location: Napa, Calif.



*The Homes for Better Living Awards Program is sponsored by the American Institute of Architects in cooperation with HOUSING. The full list of winners appeared in May. More individual winners will be featured in subsequent issues.



Compact year-round house, designed to resemble a vacation home, is tucked among the trees on a six-acre hillside site. A multilevel plan separates 1,800 sq. ft. of living space into two stacked modular (20' x 20') units that are connected by a stairwell. The uppermost level of the house—a private retreat

for the owners—consists of the master suite shown below at left. Another bedroom and a large recreation room occupy the lowest levels.

One of the mid-levels features a deck that wraps around the entry, the dining room and the kitchen shown below at right. The other consists of a

living room that steps up and down in three places and includes U-shaped, built-in seating.

Siding is plywood; interior walls are painted gypsum board; the ceiling is exposed framing and plywood; and part of the roof is glass. Construction cost: \$30 per square foot.

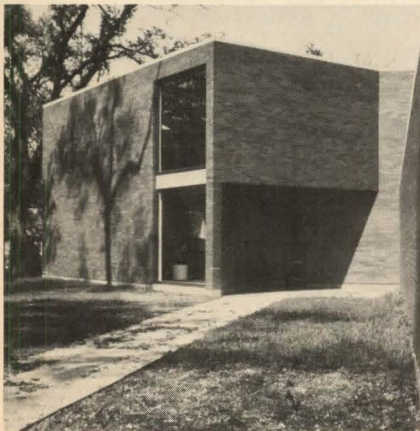
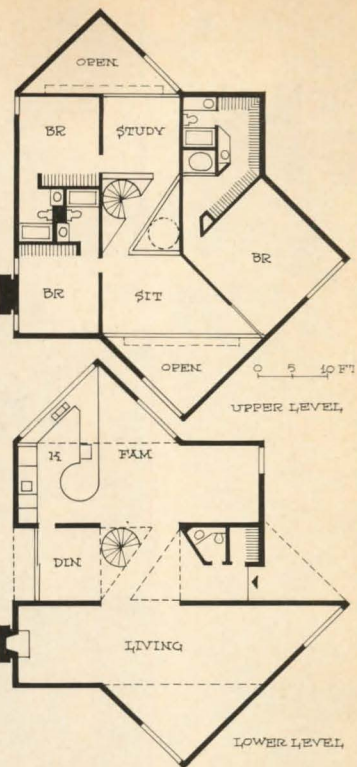
PHOTOS: BARBEAU ENGH





FIRST HONOR AWARD

Architect: Booth Nagle & Hartray/Ltd.
Builder: Maddock Construction Co.
Owner: Mr. & Mrs. Warren Barr Jr.
Location: Hinsdale, Ill.



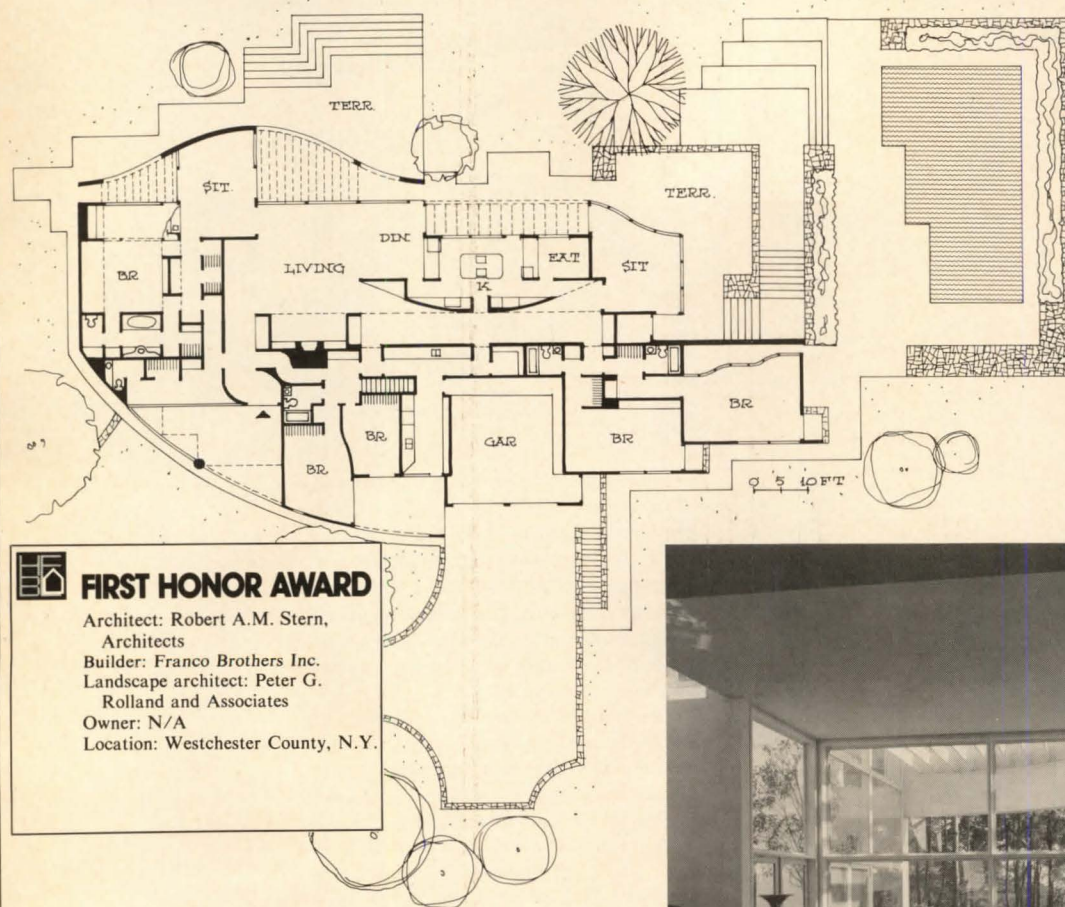
Eclectic two-story home borrows design and planning principles from traditional and contemporary architecture. The traditional features are the brick exterior walls, a central entry and the organization of the floor plan, with public areas on the first floor and sleeping quarters upstairs. Contemporary elements include the geometric shape of the home (*photos above*), broad and/or tall expanses of glass, an open floor plan in public areas and skylighted two-story spaces, as shown in the photo at right. Construction cost for the 3,300-sq.-ft. home was \$110,000. That includes a separate garage that is not shown.



PHOTOS: PHILIP TURNER



Sprawling home—there are 6,300 sq. ft. of space on one floor—appears much smaller than it is. The front elevation (*photo left*) gets its scaled-down look from a setback design and the perforated curved wall that forms an entry court. More curved walls, a bowed screen wall and extensive landscaping visually reduce the length of the rear elevation (*photo above*). The screen wall also shades rooms at the rear of the house from the sun and, as shown in the photo below, helps frame views of the woods that surround the hillside site. The home's floor plan is organized so that formal spaces and the master suite are oriented to the view side. Front-facing secondary bedrooms and servants' quarters are separated by a two-car garage (*floor plan at left*). Note the private outdoor living space for servants next to the garage.



PHOTOS: ED STOECKLEIN



FIRST HONOR AWARD

Architect: Robert A.M. Stern,
Architects
Builder: Franco Brothers Inc.
Landscape architect: Peter G.
Rolland and Associates
Owner: N/A
Location: Westchester County, N.Y.





FIRST HONOR AWARD

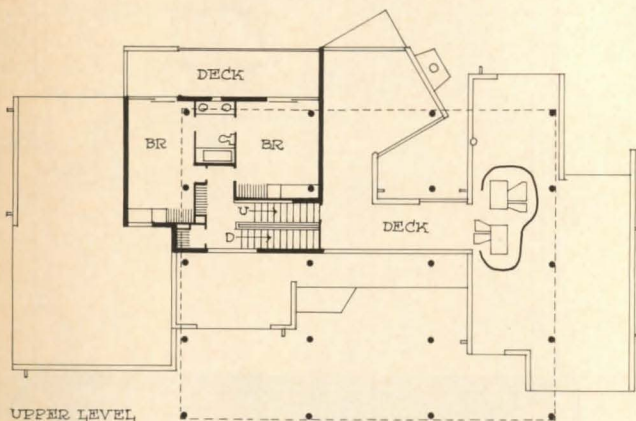
Architect: Judith Chafee
 Builder: George Mehl Construction
 Owner: N/A
 Location: Southern Arizona



PHOTOS: GLEN ALLISON

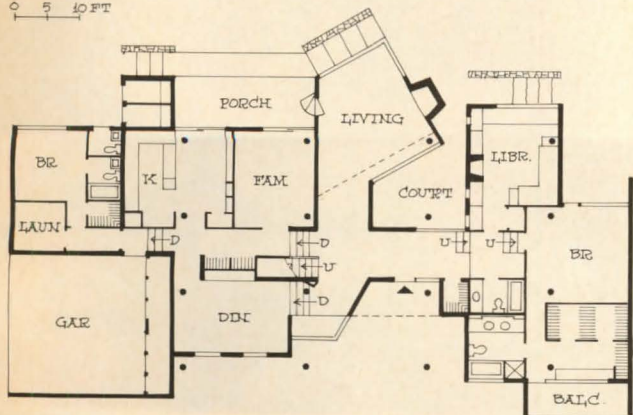
Ground-hugging desert home incorporates an openwork canopy (*top photo*), which protects north rooms from the sun's heat and glare. The canopy permits the use of a large bay window that opens living room to views of adjacent foothills (*photo above*). The open canopy design also allows air to filter through it so there is no heat buildup over the roof.

The house is reminiscent in its exterior materials and rambling layout of older homes in this area. It has a highly formal floor plan: Children and adult areas are segregated for both recreational and sleeping purposes; no two rooms open to each other; and the living and dining rooms are separated by the entry and stairs. The 4,353-sq.-ft. home cost \$129,700 to build.



UPPER LEVEL

0 5 10 FT

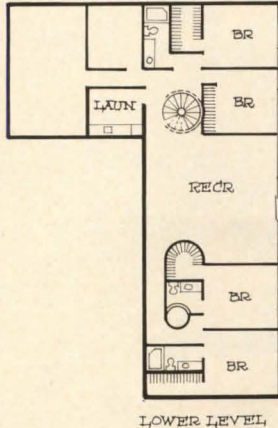
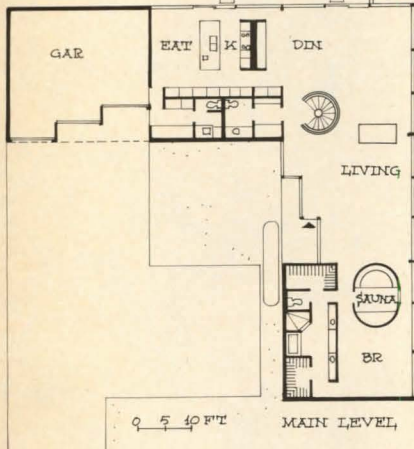
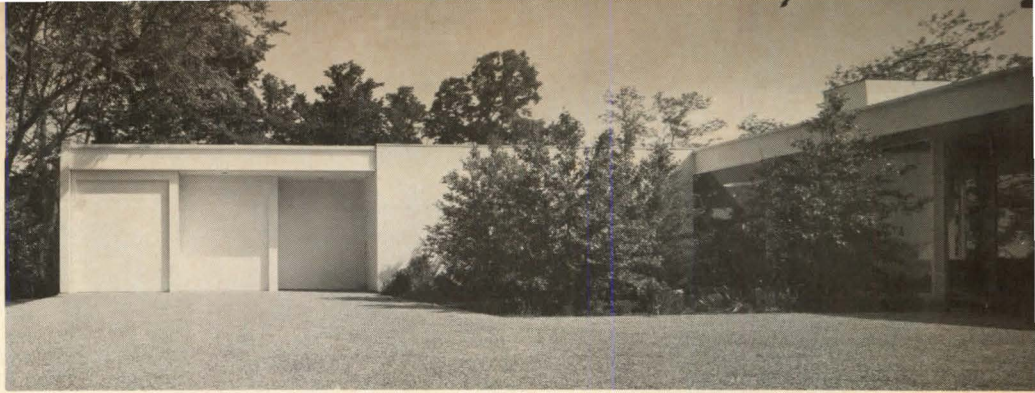


LOWER LEVEL



FIRST HONOR AWARD

Architect: Booth Nagle & Hartray/Ltd.
 Builder: Harold O. Schulz Co. Inc.
 Landscape architect: Joe Karr & Associates
 Owner: Mr. & Mrs. Shayle P. Fox
 Location: Glencoe, Ill.



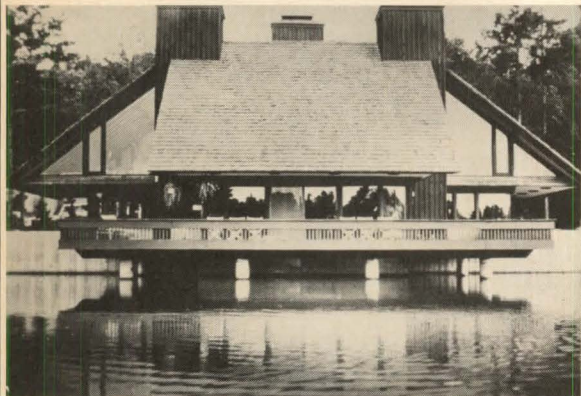
Transparent house is organized so that major living areas—all on the upper level—look out on woods and Lake Michigan from three sides (photo below). The main-level space is completely open, with only a sauna separating master suite from living room (see floor plans). This level is linked to a three-car garage (photo above) which gives the house its L shape.

The lower level, set into the sloping half-acre site, houses children's and guest quarters.

Window walls are double-glazed, 1"-thick glass; other walls are heavily insulated, stucco-covered concrete block. The house is designed around 27' bays, framed in steel. Construction cost for the 5,500-sq.-ft. house was \$350,000.

PHOTOS: PHILIP TURNER





PHOTOS DUNGAN/ALLEN INC

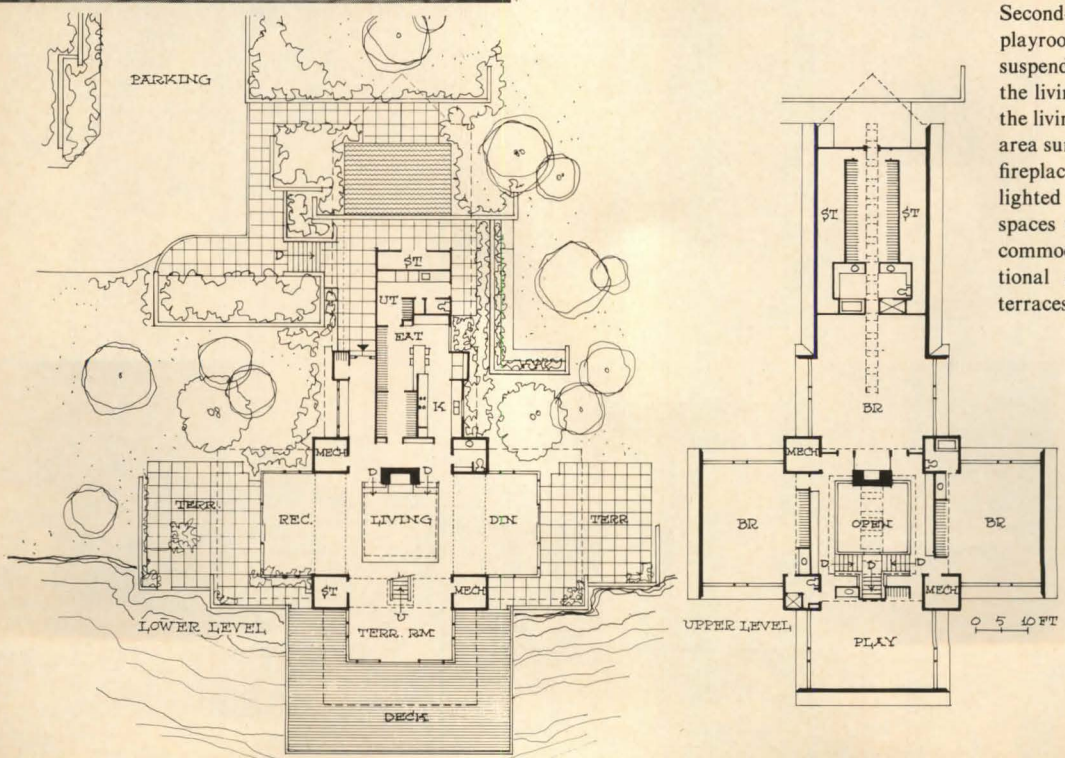


AWARD OF MERIT

Architect: E. Fay Jones
 Builder: Herb Davis
 Landscape architect: Landscape Associates Inc.
 Owners: Mr. & Mrs. Sam Pallone
 Location: Little Rock, Ark. (vicinity)

Plywood-sheathed towers are key design elements in this 6,500-sq.-ft. home. They provide vertical support and lateral stability for the cantilevered upper story, allowing three sides of the lower level to be glass-walled. The four corner towers (several are visible in the photo at left) also house mechanical equipment and include storage space and bathrooms.

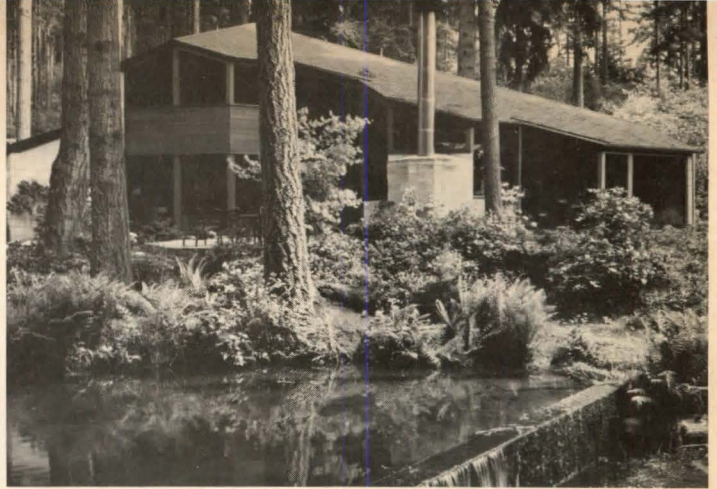
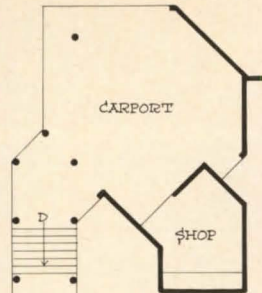
The floor plan, shaped like a cross, gives most rooms a view of the 15-acre, man-made lake. Second-story bedrooms and a playroom are reached by the suspended stairway shown in the living-room photo above. In the living room, a sunken sitting area surrounds a two-story-high fireplace that rises to a skylighted ceiling. Three adjacent spaces under lower ceilings accommodate dining and recreational activities and open to terraces and a broad deck.



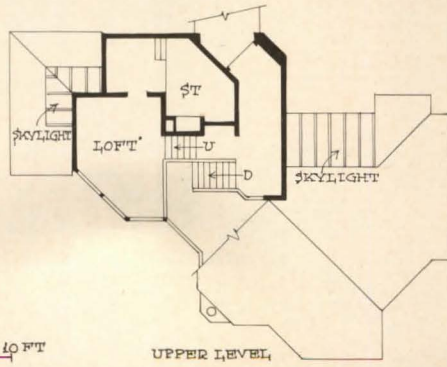
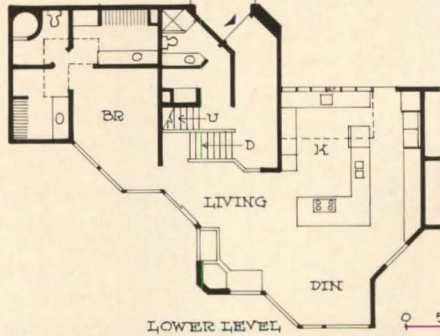


AWARD OF MERIT

Architect: Alan Liddle FAIA
Builder: Dick Wegner
Owners: Mr. & Mrs. Thomas Galbraith
Location: Tacoma, Wash.



PHOTOS: RAY O. WELCH

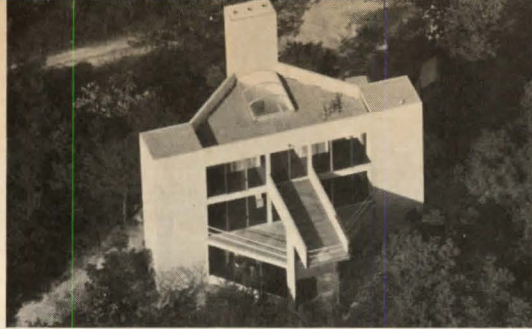


Small, low house is designed to follow the contours of its 80' x 150' site. Irregular-shaped rooms are clustered so that views of the surrounding woods and a meandering stream (top photo) are visible in several directions. Despite the heavy stands of trees and the low-scale building design, the interior of the home is bathed in daylight through broad, tall, unshaded windows (photo left), through the kitchen greenhouse extension (above) and through skylights over the kitchen and bedroom (see floor plans). The 1,600-sq.-ft. house cost \$60,000 to build.



AWARD OF MERIT

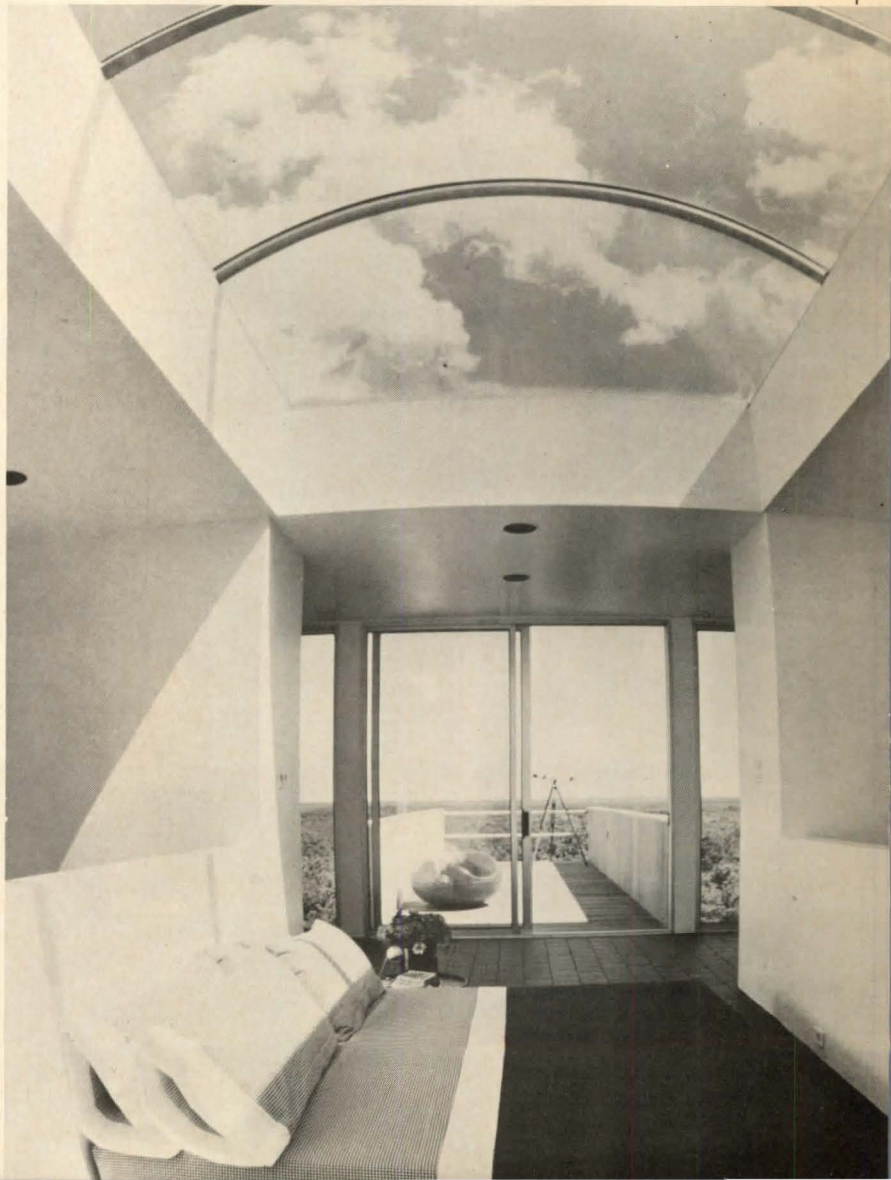
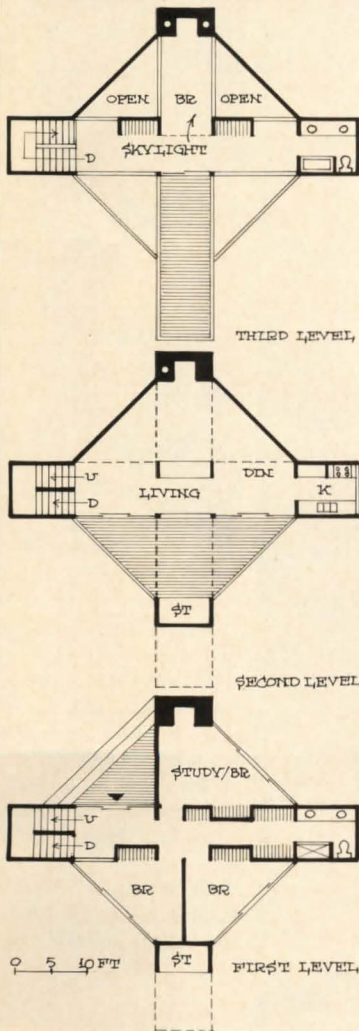
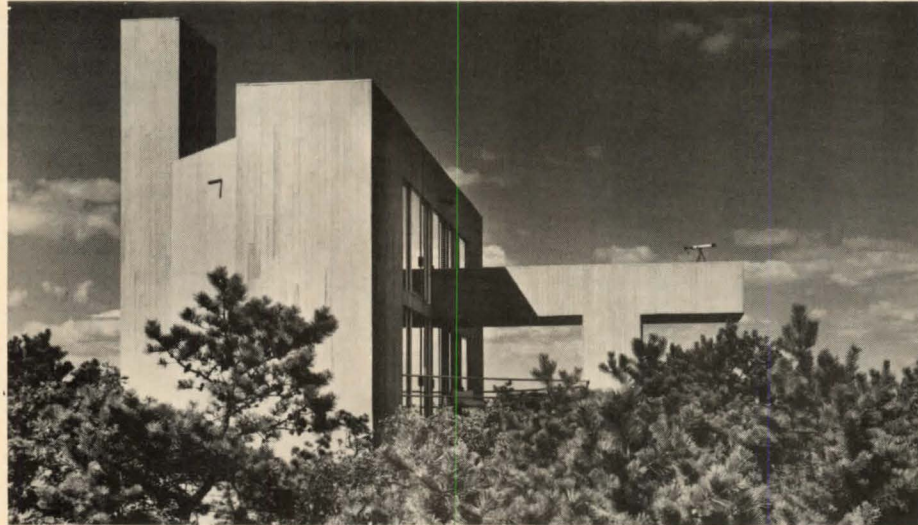
Architect: Myron Goldfinger
Builder: K.T. Galley Co.
Owner: Ira Marcus
Location: Chappaquiddick Island,
Massachusetts

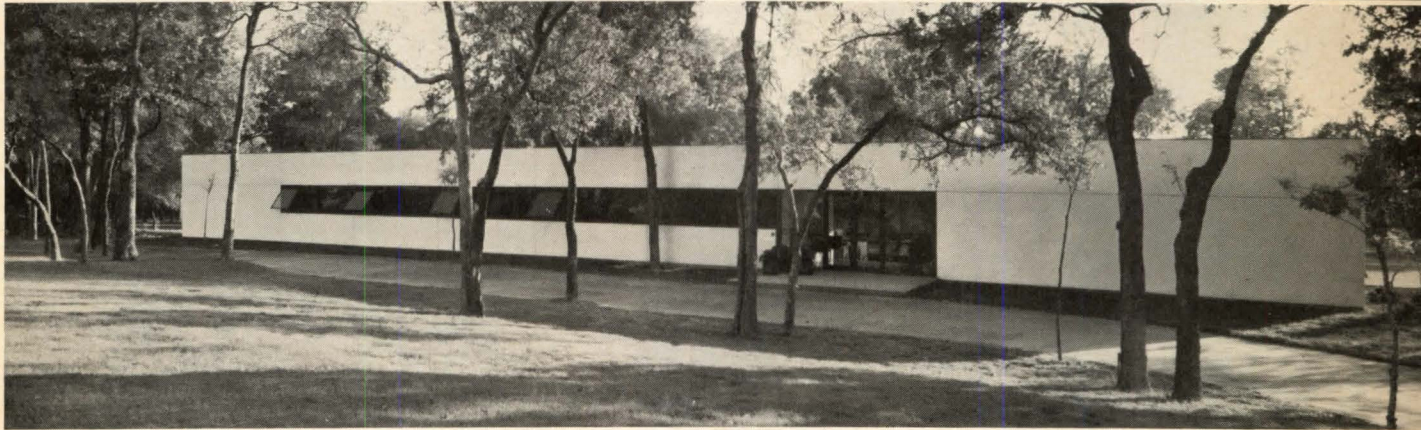
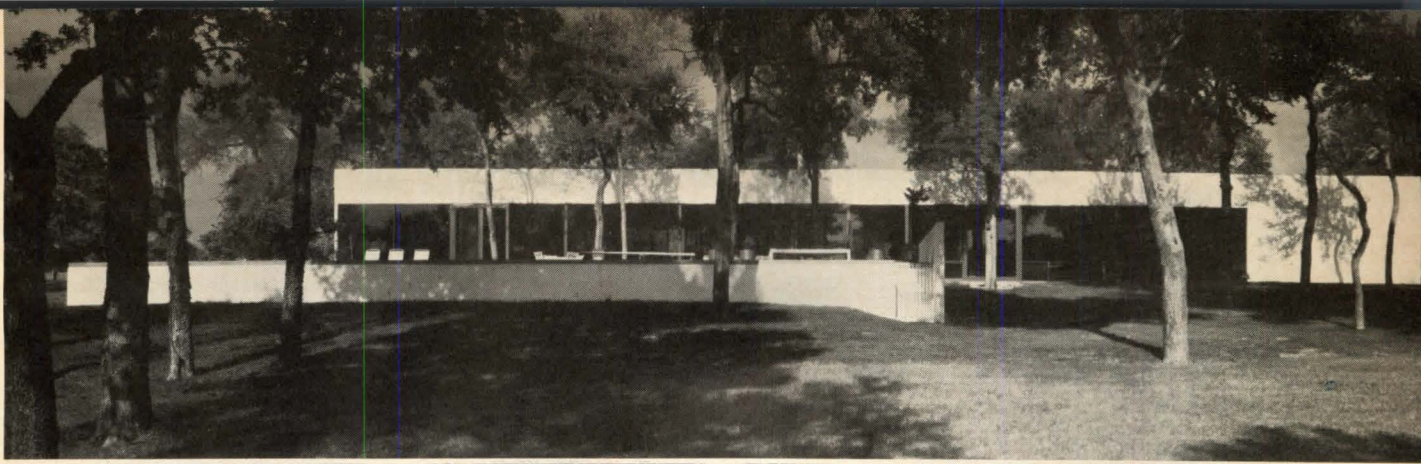


Triangulated home, built to withstand coastal winds, is braced by three tall pillars (*top photo*). The pillars, which contain the vacation home's stairs, baths and triple flues, are connected to decks on the first and second levels of the house. On the third level a skylighted master suite (*photo below and floor plans*) is designed like a pair of interesting bridges. At the intersection, sliding glass doors open to a long, narrow deck (*photo left*). It provides a view of Nantucket Island.

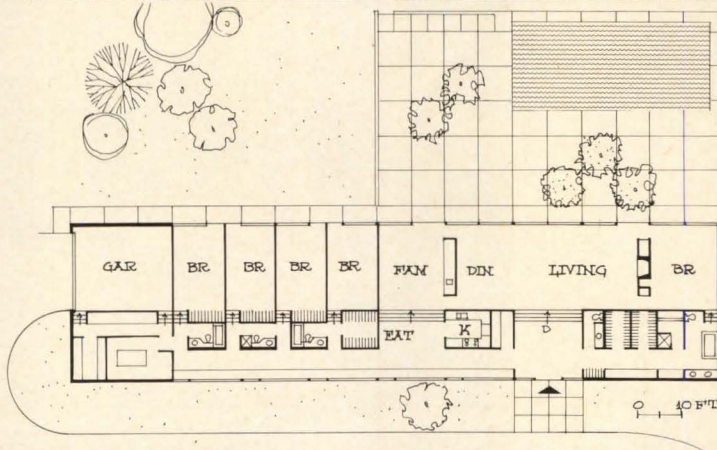
The 1,800-sq.-ft. house is closed on two sides against the weather and open on the other to views of the ocean. It is wood frame over a concrete foundation. The vertical siding is weathered cedar. Interior walls are painted hardboard. Flooring is quarry tile and decks are straight-grained fir planking.

PHOTOS: NORMAN McGRATH, COURTESY HOUSE & GARDEN





Long, narrow house was designed as a showcase for the owners' collection of painting and sculpture. So the entry (lower photo, above) opens to a gallery-like hall, whose walls are punctured by narrow awning windows. This entry side of the house, which has 8'-high ceilings, contains all service facilities (see floor plan). Ceilings at the rear (south) side are 11' high. This elevation features floor-to-ceiling glass walls and doors (top photo, above). So all rooms in the house have views of the broad deck and swimming pool.



AWARD OF MERIT
 Architect: Booth, Nagle & Hartray/Ltd.
 Builder: Wunderlick Construction Co.
 Owner: N/A
 Location: Dallas, Tex.

One half of the 150'-long home contains major living areas and the master suite. There are no interior partitions, and the suite is separated from the rest of the space only by a fireplace.

The exterior is white stucco. Interior walls and ceilings are white plaster. The 6,000-sq.-ft. home cost \$40 per square foot to build.



PHOTOS: HEDRICH-BLESSING



PHOTOS. JOHN SACCO

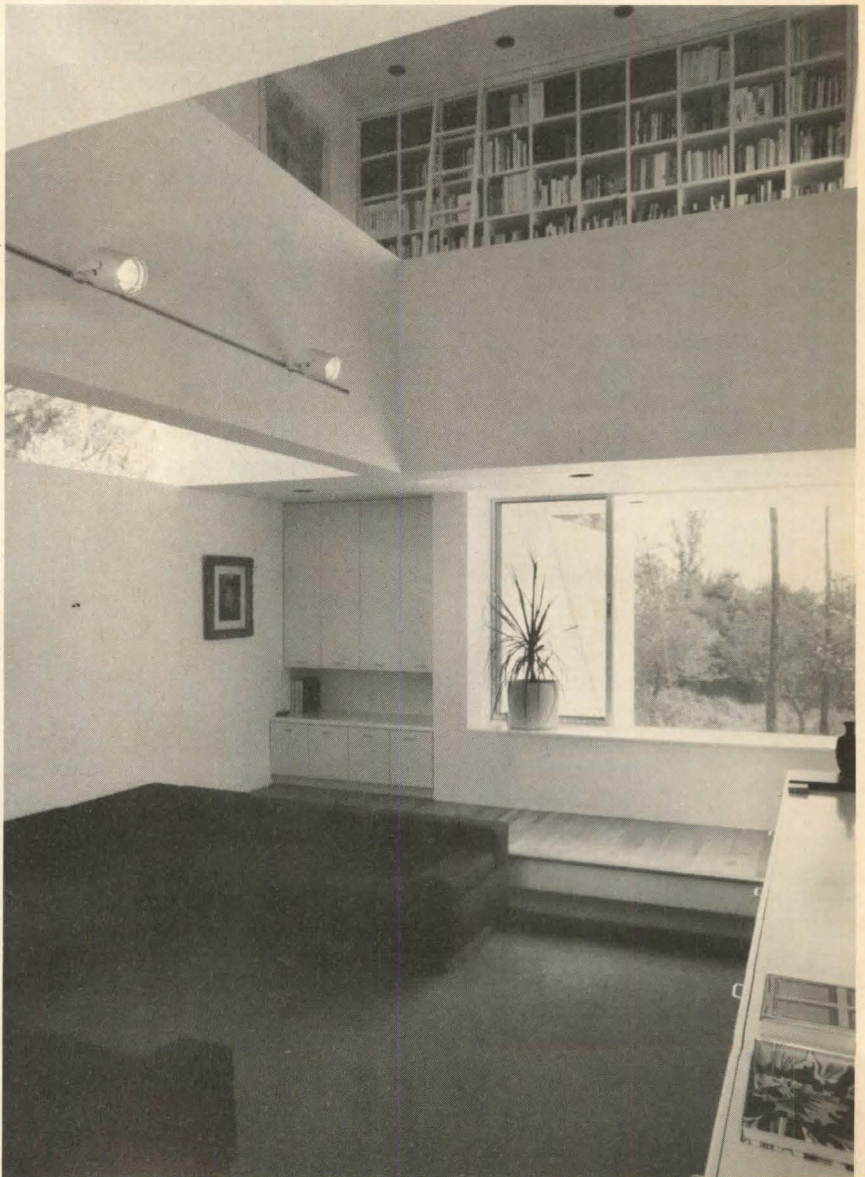
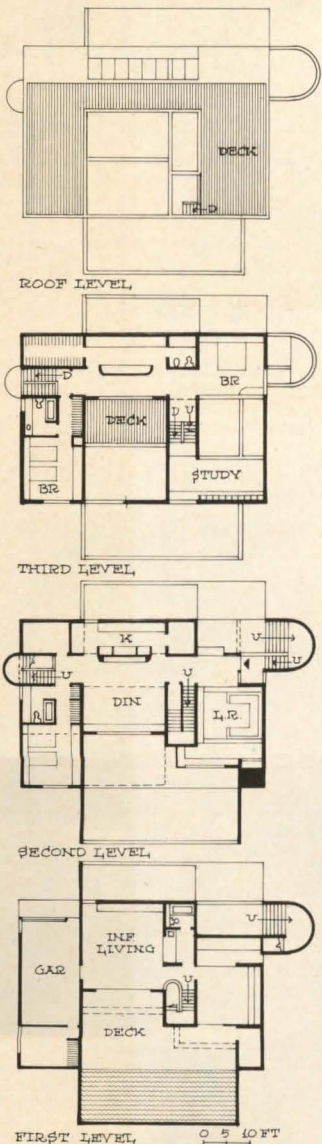
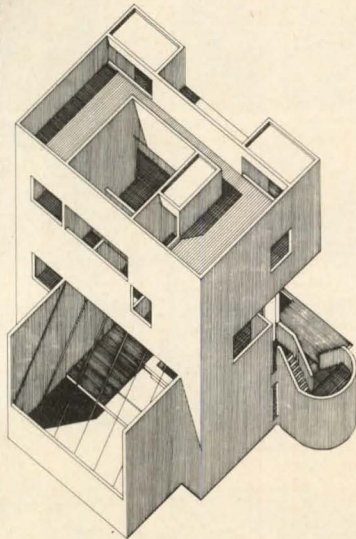


AWARD OF MERIT

Architect: Robert Whitton
 Builder: Vihlen Bros.
 Owner: Mr. & Mrs. Marvin
 Ross Friedman
 Location: Miami, Fla.

Austere stucco cube with few windows (*photo left*) is surprisingly open inside. Except for the secondary bedroom wing, rooms on each floor are separated only by gallery-like halls and the main stairwell. The two-story-high living room (*photo below*) is daylit by one of the home's many skylights, by a window in the balcony study (*see floor plans*) and by a slanted, two-level glass wall (*drawing left*) that shelters a swimming pool. The master suite gets much of its light from a broad deck that sits over the dining room. There are two more decks—one on the roof, the other separating the pool from the informal entertainment area on the first floor.

The 4,000-sq.-ft. home cost about \$40 per square foot to build. Concrete block bearing walls and poured-in-place concrete beams support the structure.



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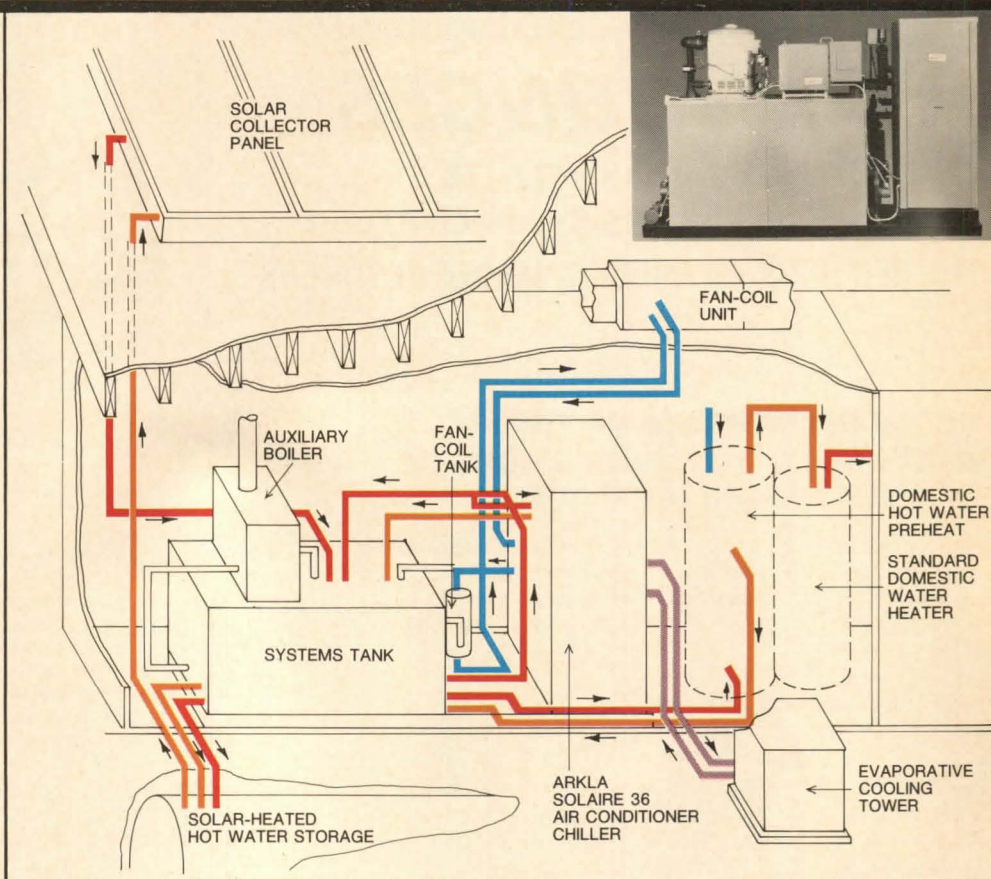
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| <input type="checkbox"/> Manufacturer | <input type="checkbox"/> Subcontractor |
| <input type="checkbox"/> Ad Agency/Consultant | <input type="checkbox"/> Realty |
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SOLAR ENERGY

Cooling system (right) is energized by 170° to 205°F solar-heated water. Hot water flows from the collectors to the systems tank (which provides expansion space for the water, vents the system and isolates the hottest water in the system) and hot water storage tank. The heated water energizes the absorption chiller. Cooled water from the chiller flows to the fan-coil unit, which contains a blower and a coil. Return air from the house blows over the cold-water coil, and continues through the ducts to cool the house.

Solaire system (photo, above right) is mounted on a skid. Heart of the system is an absorption chiller (right in photo) energized by solar-heated water. Systems tank (bottom left in photo) temporarily stores collector-heated water. Auxiliary boiler (upper left in photo) boosts the system during prolonged periods of heavy usage and short sun exposure.



Solar cooling: The first package for residential use

The Arkla Solaire system is a solar-powered residential domestic hot water, space heating and air conditioning system.

The package is preengineered. "And that," says Bill Ingle, manager of field engineering, "controls labor costs, minimizes mistakes, and in the end, is considerably less expensive than field installation."

The complete system is mounted on a skid. It includes:

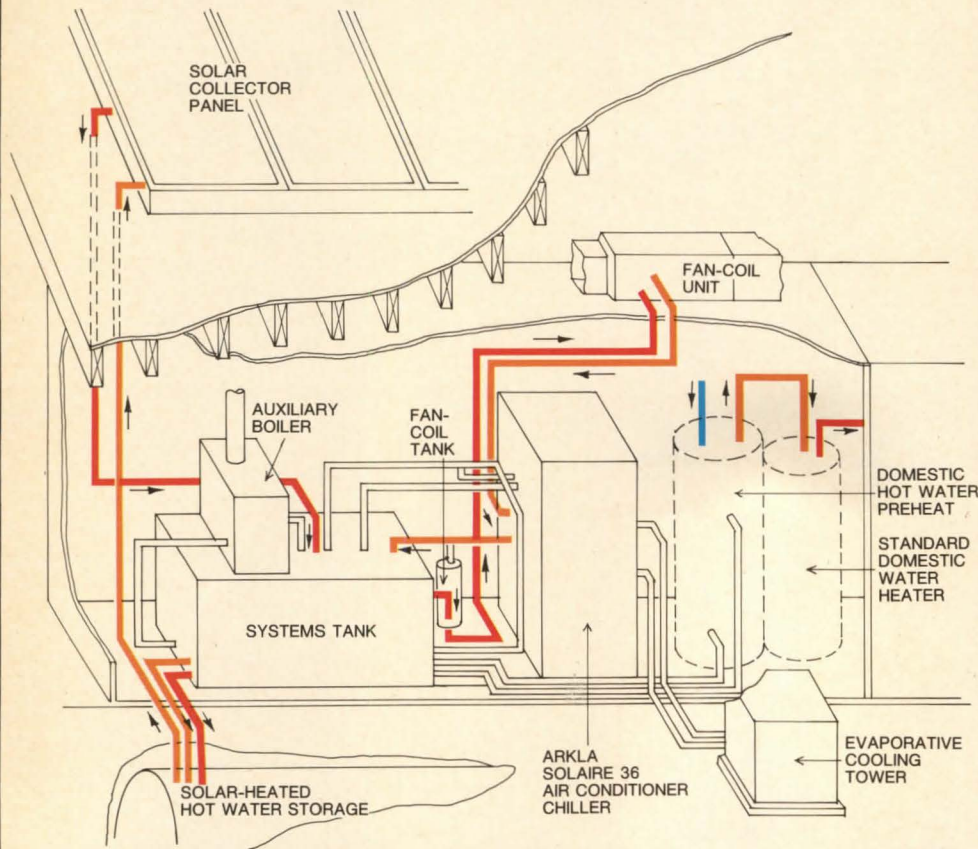
- The chiller: a 3-ton absorption unit energized by 170° to 205°F solar-heated water.
- A systems tank: serves as an expansion tank between collectors and chiller—also connected to the storage tank.
- System pumps: They pump fluids throughout the system and help maintain a constant water temperature.
- Controls: regulate the entire system.
- An auxiliary boiler: provides over-170°F water when insufficient heat remains in the storage tank, resulting from long periods of cloudy weather.

The 3-ton residential packaged system was installed in a two-and-one-half story, Tudor-style demonstration home (right) in Evansville, Ind. last August. While exact figures are not available yet, it is expected that the Solaire system will provide a year-round average of approximately 75% of the building's heating and cooling needs.

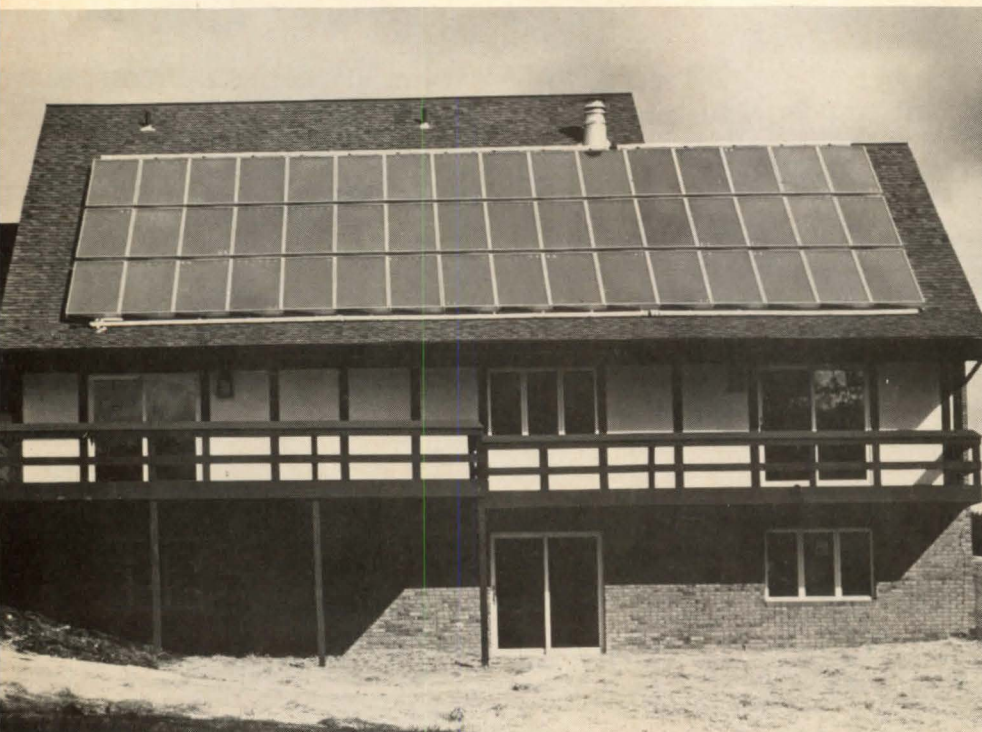
At the moment, Arkla engineers are working on packaging a 25-ton system for light commercial applications. Arkla, Evansville, IN. Circle 200 on reader service card

PRODUCTS

- 88 Space heating
- 89 Collectors
- 90 Domestic hot water
- 92 Passive hardware
- 92 Components

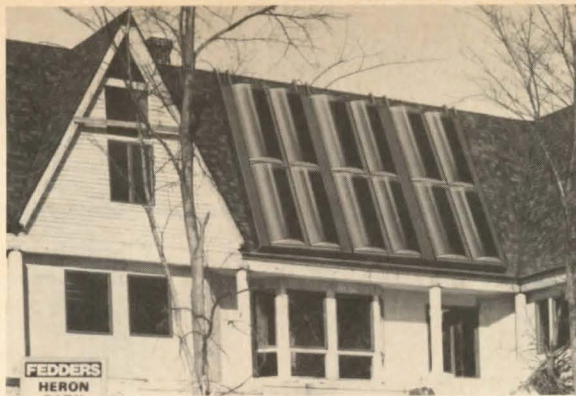


Heating system (left), like the cooling system, is energized by collector-heated water. In this cycle, hot water flows from the collectors directly to the fan-coil. Cool return air from the house blows over the hot-water coil, and continues through the duct system to heat the house. As you see in the drawing, water from the fan-coil unit flows through the evaporator coil in the chiller. This chiller is inactive, and does not alter the temperature of the water. Piping is connected for the cooling cycle, and to install new piping for the water returning from the fan-coil would be needlessly expensive. Domestic hot water system, also part of the Arkla system, is heated by solar-heated water flowing through a jacket which surrounds the domestic hot water preheat tank.



Front view of Tudor-styled house (above) appears like any other traditional two-and-one-half story house. Four bedrooms, three and one-half baths and a full lower-level recreation and storage area are included in the house.

Rear view of the house (left) reveals 48 flat-plate collector panels which provide 850 sq. ft. of collection surface. Solar equipment is located in the two-and-one-half car garage.



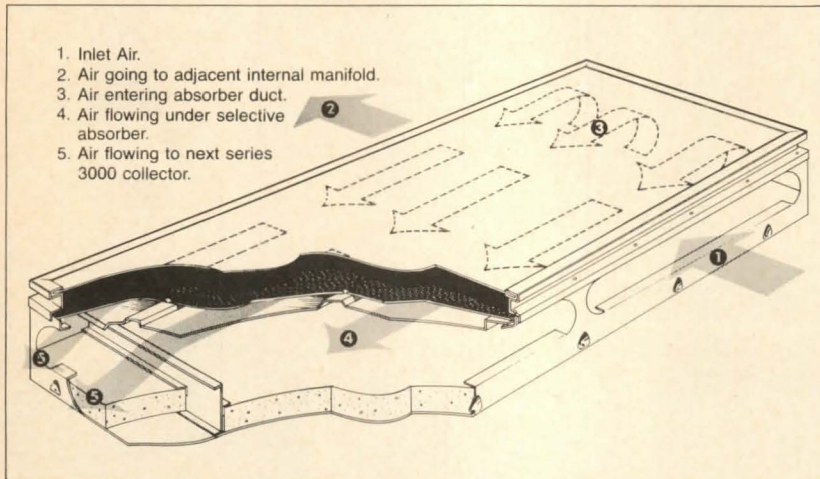
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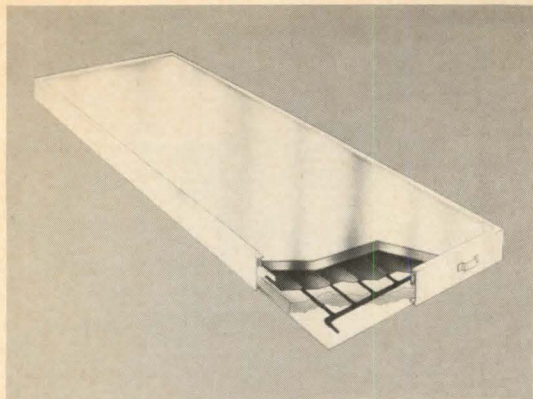
1. A solar-assisted heat pump is the heart of this system. Radiant solar energy supplies part of house heat and domestic hot water. The system includes a "Flexhermetic II" heat pump, solar hydronic heating coil, a storage tank and a bank of outdoor solar collectors. Fedders, Edison, NJ. *Circle 223 on reader service card*

2. Packaged auxiliary solar furnace contains all components to capture the sun's heat. Freestanding system, for retrofit or new housing, includes collectors and a storage area. An air handler distributes the solar heat. Champion, Dryden, MI. *Circle 224 on reader service card*

3. Space-heating system utilizes a Thermo-Spray™ solar collection process. The transfer fluid, through a series of spraying nozzles, covers all of the absorber plate. Solar Energy Research, Longmont, CO. *Circle 225 on reader service card*

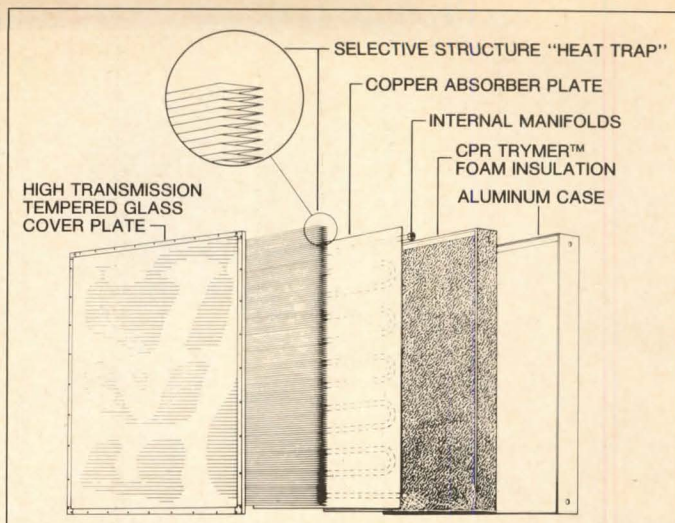
4. Solar heating system uses air as a transfer medium; is durable, easy-to-maintain and safe. Included in the system are collectors, an air handling module, an automatic system controller and solar heat storage plans. Solaron, Commerce City, CO. *Circle 226 on reader service card*

5. Suncell™ solar heating system is an air-to-air system. The automatic system transfers collected heat directly. With the addition of a rock storage area (which the builder installs), the system stores excess heat for later use; and either draws on this storage load or automatically shifts to an auxiliary furnace as needed. Research Products, Madison, WI. *Circle 227 on reader service card*



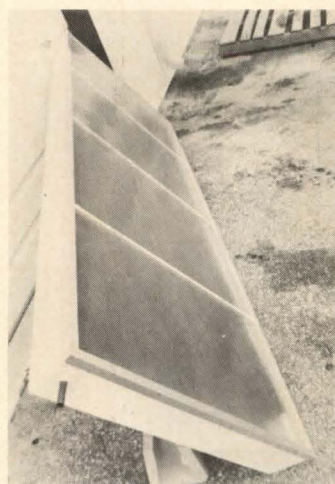
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6. "SunPanel" flat-plate collector consists of two tempered-glass cover plates; an all-copper absorber plate; three inches of high-temperature, low-binder, factory-treated fiber glass insulation to minimize off-gasing; and an all-copper fluid-carrying system. Libbey-Owens-Ford, Toledo, OH. *Circle 228 on reader service card*

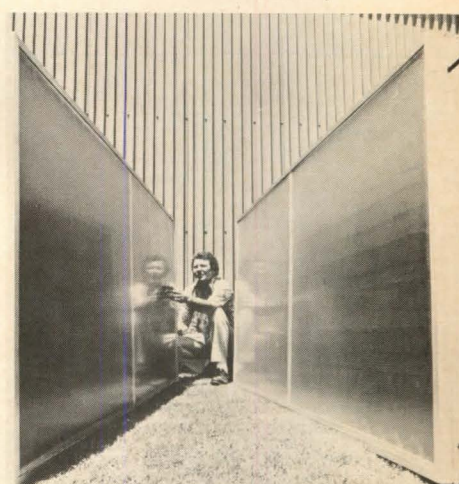


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7. Flat-plate "Daystar 20" solar collector features a heat trap of pleated polycarbonate sheeting. This configuration captures more solar heat than the average collector and directs it to the absorber plate. Daystar, Burlington, MA. *Circle 229 on reader service card*



8



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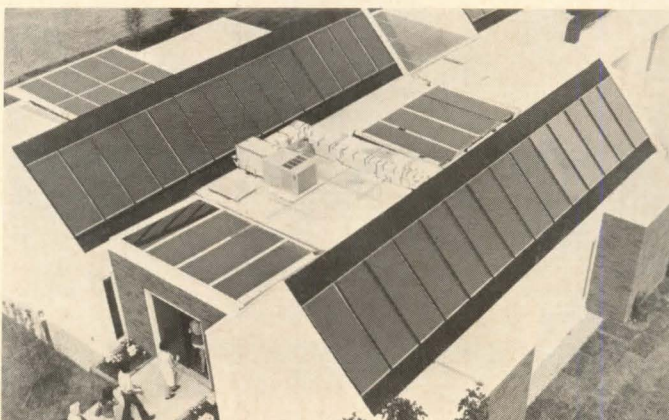
8. Copper or aluminum collector plate is encased in a urethane insulated fiber glass container. Copper-plated collectors have a ten-year warranty and aluminum collectors have a five-year warranty. General Energy Devices, Clearwater, FL. *Circle 230 on reader service card*

9. One-piece collector plate of extruded aluminum has an integral fluid-carrying tube and sheet. The collector panel includes the plate, insulation, a vapor barrier and a Tedlar®-treated glass cover. Reynolds, Richmond, VA. *Circle 231 on reader service card*



10

10. Concentrating solar collectors utilize linear "Fresnel" lenses that refract solar energy, and concentrate it on blackened copper absorbing tubes. Collectors are ganged together with a cable-and-pulley drive mechanism to track the sun throughout the day. Northrup, Hutchins, TX. *Circle 232 on reader service card*



12

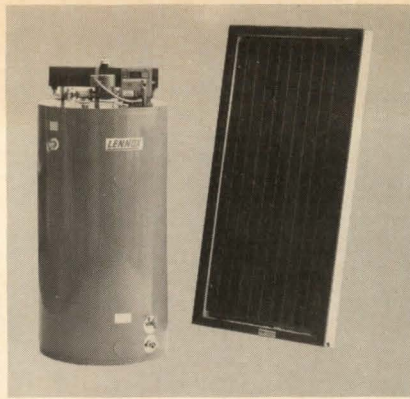
11. "Heat Trap" solar collector features a finned free-floating aluminum absorber plate fused to copper waterways. Panel has a urethane foam insulation backing. American Solar, Concord, CA. *Circle 233 on reader service card*



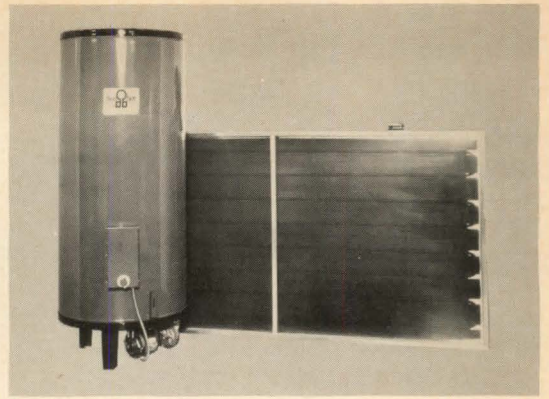
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12. Weather-sealed flat-plate collector is constructed of two tempered-glass cover plates over an all-copper absorber plate. PPG, Pittsburgh, PA. *Circle 234 on reader service card*

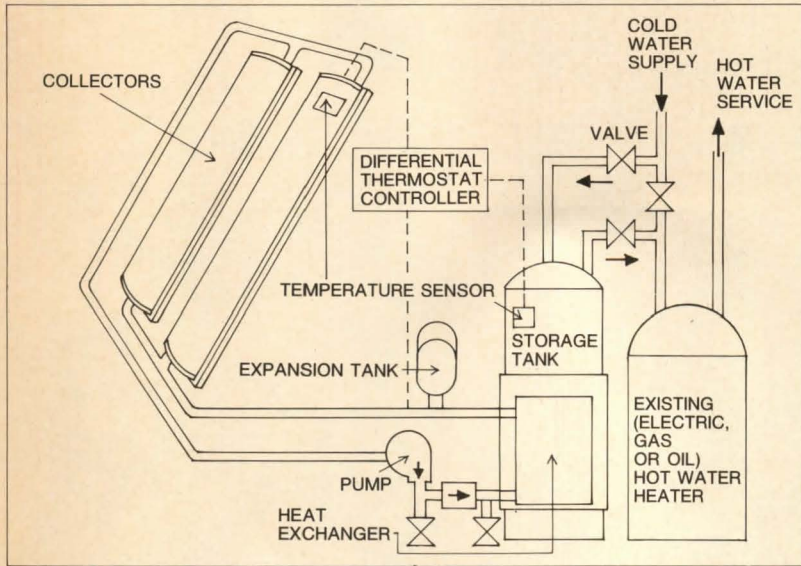
DOMESTIC HOT WATER



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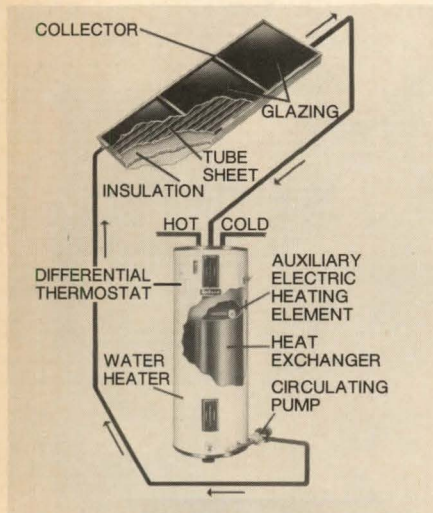


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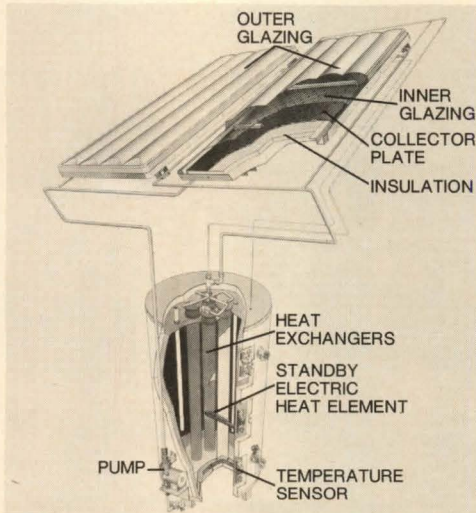
1. Domestic hot water system features factory-mounted controls, pump, valves and plumbing connections on top of the hot water tank for easy installation and servicing. The hot water module functions as a combination solar storage and hot water tank. Lennox, Marshalltown, IA. *Circle 240 on reader service card*

2. "Sun Set" solar water heating system consists of two solar collectors, mounting hardware, tubing, connections and a "Hydrocore" heat exchange tank. The absorption plate, which uses water as a transfer fluid, has a one-piece aluminum fin/tube configuration. Rheem, Chicago. *Circle 241 on reader service card*

3. Domestic hot water system features an 82-gal. glass-lined water storage tank insulated with 3½" of fiber glass. Expansion tank, controller, circulating pump and check valve are mounted on the tank. Sunstream, Ronkonkoma, NY. *Circle 242 on reader service card*



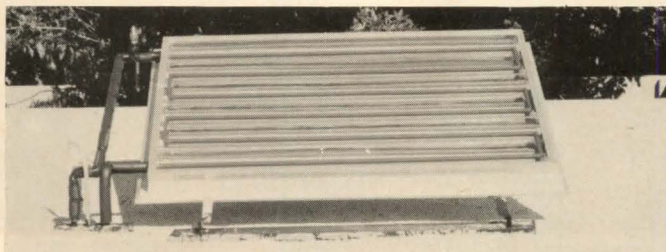
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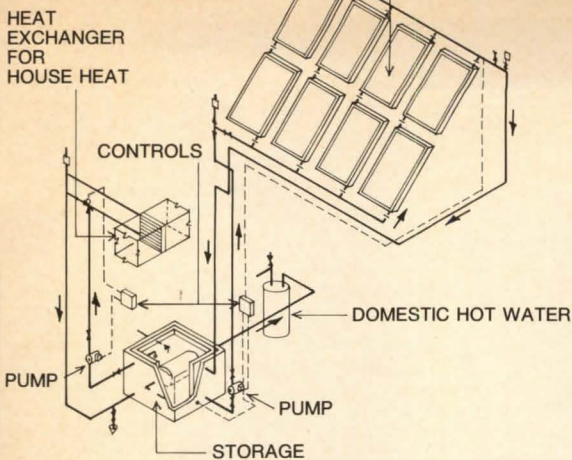
4. "Solar Loop" domestic hot water system features a closed-loop design. The heating system provides up to 95 gals. of 140°F water per day, for three to 10 cents per week. Jackson, Chattanooga, TN. *Circle 243 on reader service card*

5. Closed-loop, drain-down "Solarcraft" domestic hot water system transfers heat from the collectors through treated distilled water. Four chambers inside the hot water tank store the collector-heated water, and transfer the heat to water in the tank. State, Ashland City, TN. *Circle 244 on reader service card*

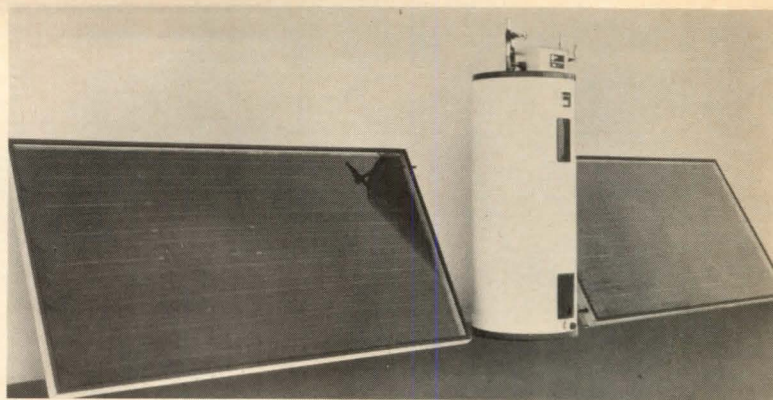


6

6. A concentrating collector is the heart of this domestic hot water system. Designed for use as a supplement to a conventional water heater, this unit will provide approximately 40 gals. of hot water during a sunny day. Solarcell, Fort Lauderdale, FL. *Circle 255 on reader service card*



7



8

7. Eight solar collectors provide space heating and hot water, which is stored in an insulated tank. "Right-hand" and "left-hand" panel outlets minimize installation and piping costs. System is freeze-protected by a drain-down feature. Solar Energy Products, Gainesville, FL. *Circle 256 on reader service card*

8. Preassembled domestic hot water heater includes two glass-covered collector panels with corrosion-resistant copper water tubes bonded to aluminum fins; an 82-gal. storage tank; electronic controls, connectors and pipes. Alten, Mountain View, CA. *Circle 246 on reader service card*

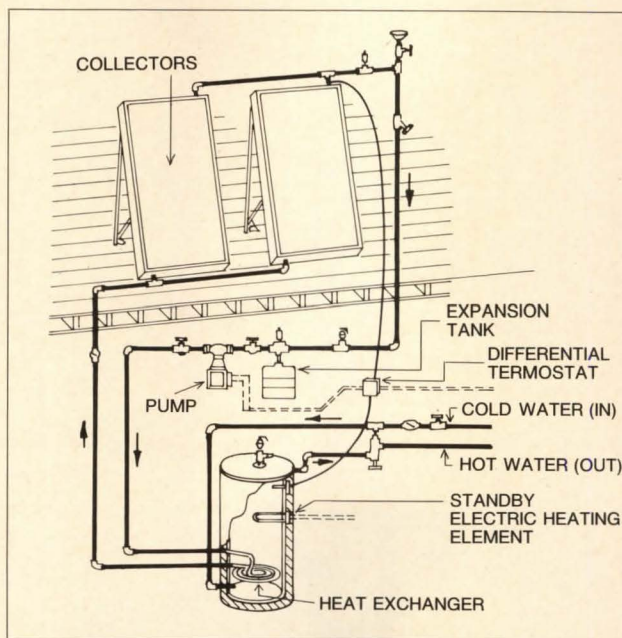
9. Solar-Bank™ domestic hot water system includes a storage tank, pump, heat exchanger and valves. Aluminum-housed copper "Tube-in-Strip" collectors can be purchased as part of the package or separately. Revere, Rome, NY. *Circle 247 on reader service card*

10. Closed-loop domestic water heating package is intended as a booster for existing hot water heater. Collectors, water heater and auxiliary storage tanks and connecting tubing are available separately. Solar Research, Brighton, MI. *Circle 248 on reader service card*

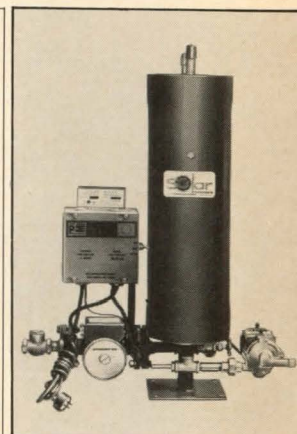
11. Conservationist™ solar water heating system features a Corona™ heat exchanger. This unit is a copper tube within a tube immersed in the tank water for direct transfer of heat from collectors. A.O. Smith, Kankakee, IL. *Circle 249 on reader service card*

12. Open-loop automatic drain-down system shuts off the water supply and drains the collectors when the water approaches freezing. System is suitable for retrofit applications. Sunworks, West Haven, CT. *Circle 250 on reader service card*

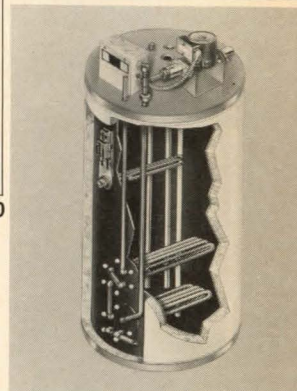
13. Drain-down water heating system consists of two single-glazed solar collectors, an 82-gal. storage tank with a backup heating element and all controls. Raypak, Westlake Village, CA. *Circle 251 on reader service card*



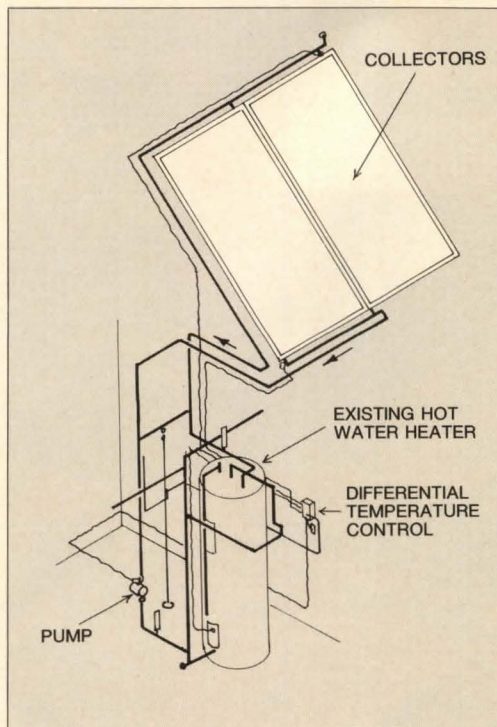
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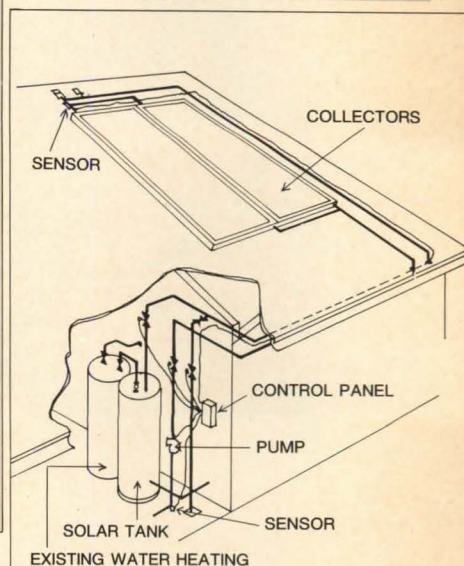
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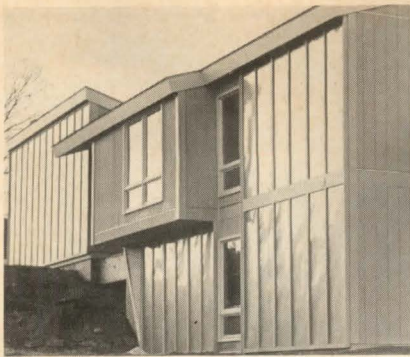


12



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PASSIVE HARDWARE



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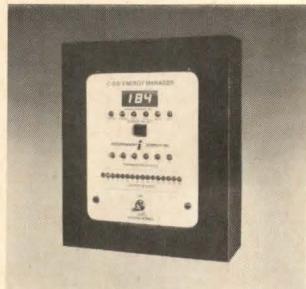
3

1. "Sunwall" is a sandwich panel system consisting of fiber glass polymer sheet bonded to an aluminum grid core. The 4' or 5' -wide panels can be installed to form a wall, clerestory, skylight or skyroof. Kallwall, Manchester, NH. *Circle 235 on reader service card*

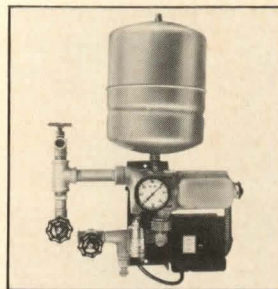
2. **Lightweight Acrylite® SDP** for insulated glazing is an extruded double-skinned acrylic sheet with internal ribs to trap air. The acrylic or polycarbonate panels can be used to glaze greenhouses, atriums, skylights and window walls. Cy/Ro, Wayne, NJ. *Circle 236 on reader service card*

3. **Solar-heating ceiling tile** consists of a polymer concrete envelope encapsulating a core of eutectic salts. They absorb and store both ambient and solar heat and release heat as needed. Sol-Ar-Tile®, Livonia, MI. *Circle 237 on reader service card*

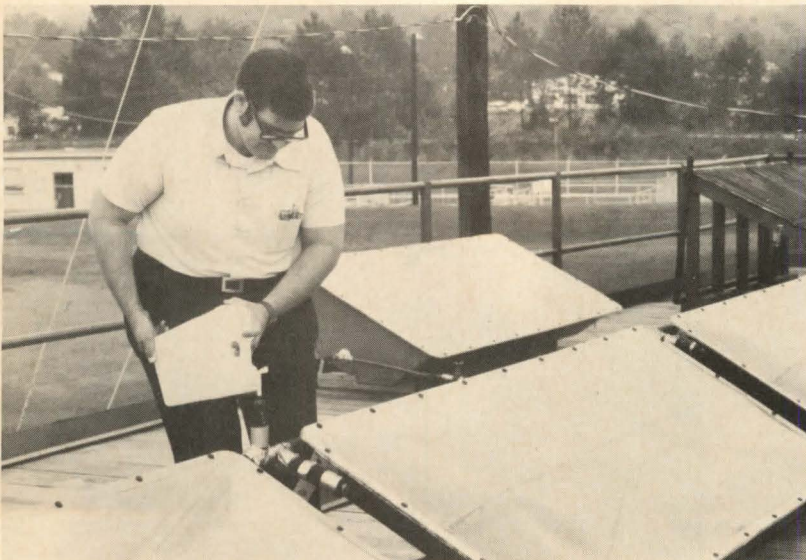
COMPONENTS



4



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4. **Solar controls** for all types of heating systems are available with microcomputer technology and three-digit LED temperature displays. Models offer protection against brownout and lightning damage. Independent Energy, East Greenwich, RI. *Circle 238 on reader service card*

5. **Compact pumping and control module** is designed for solar systems which have a storage tank with an integral heat exchanger. Unit, with an all-inclusive "Solar Cartridge Circulation" for pumping the water, is factory-assembled for easy installation. Taco, Cranston, RI. *Circle 245 on reader service card*

6. **Silicone heat-transfer fluid** will not freeze or boil—due to weather conditions—in the collector panels. Fluid will not contribute to corrosion problems inside the collector panels. Dow Corning, Midland, MI. *Circle 239 on reader service card*

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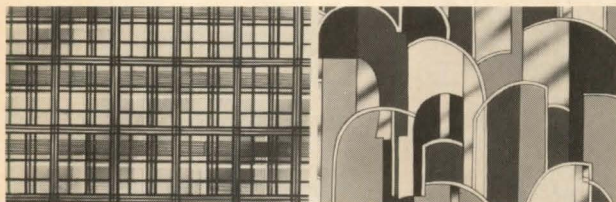
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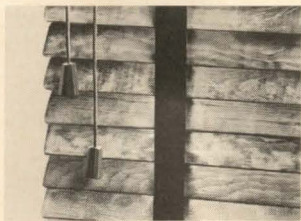


"Potter's Touch" ceramic wall tile (above) comes in 4 $\frac{3}{8}$ " squares. Tiles are available in six solid colors and four colors with fire-flashed edges. Florida Tile, Lakeland, FL. Circle 216 on reader service card

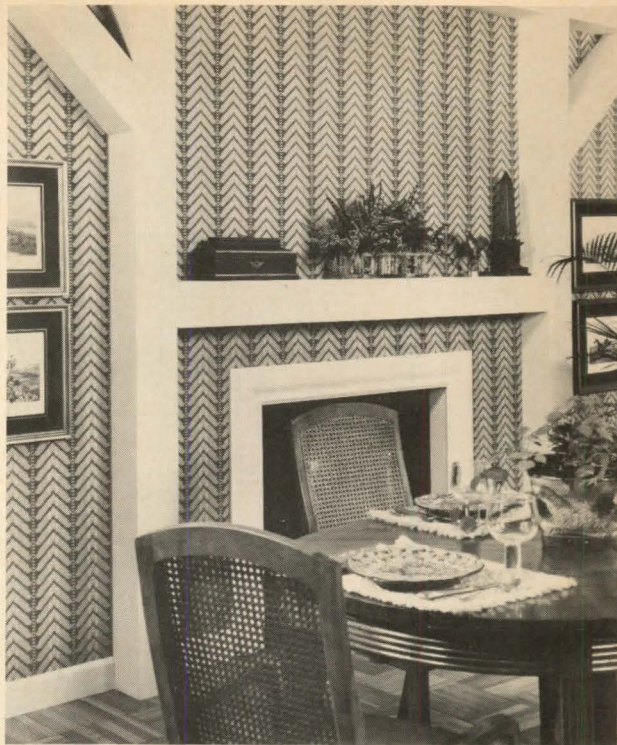


Self-adhesive plastic wallcovering features patterns printed on a Mylar® ground. "Glasgow Plaid" (above left) comes in brown/rust; "City Towers" (above right) comes in earthtones. Comark, Levittown, NY. Circle 217 on reader service card

Wood venetian blinds (right) are constructed of basswood. Blinds come in a variety of stains and finishes with color coordinated tapes and cords. Slat widths vary from 1" to 2 $\frac{3}{8}$ ". Holland Shade, New York City. Circle 218 on reader service card



"Bamboo Grove" wall mural (above) comes in panel sets. Mural is available in four colorways on vinyl, Mylar® and Tessitura™ fabric grounds. James Seeman, Garden City Park, NY. Circle 219 on reader service card



Handprinted wallcovering, "Fox Hollow" (above), is a herringbone pattern with a 4" repeat. Nils Anderson, Andover, NJ. Circle 220 on reader service card



Vinyl wallcovering pattern, "Blossoms" (above), is part of the "Signatures" collection. Floral-patterned covering has a fabric backing and a metallic finish. Stauffer, Westport, CT. Circle 221 on reader service card

Self-adhesive ceramic wall tiles, "Vanity Fair" (right), come with self-spacing lugs or flat edges. Tiles are available in four colors, including topaz. H&R Johnson, Keyport, NJ. Circle 222 on reader service card



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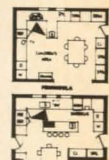
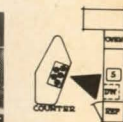
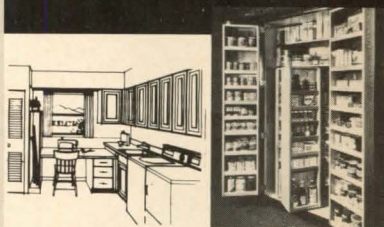
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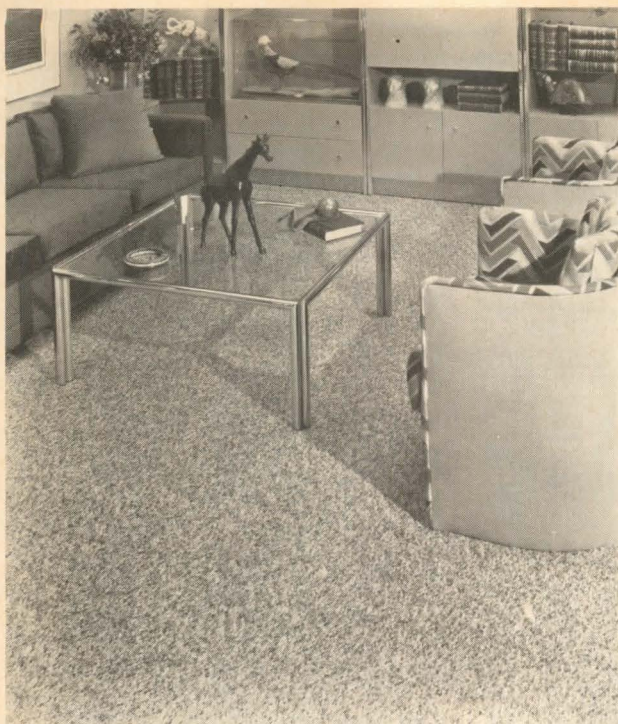
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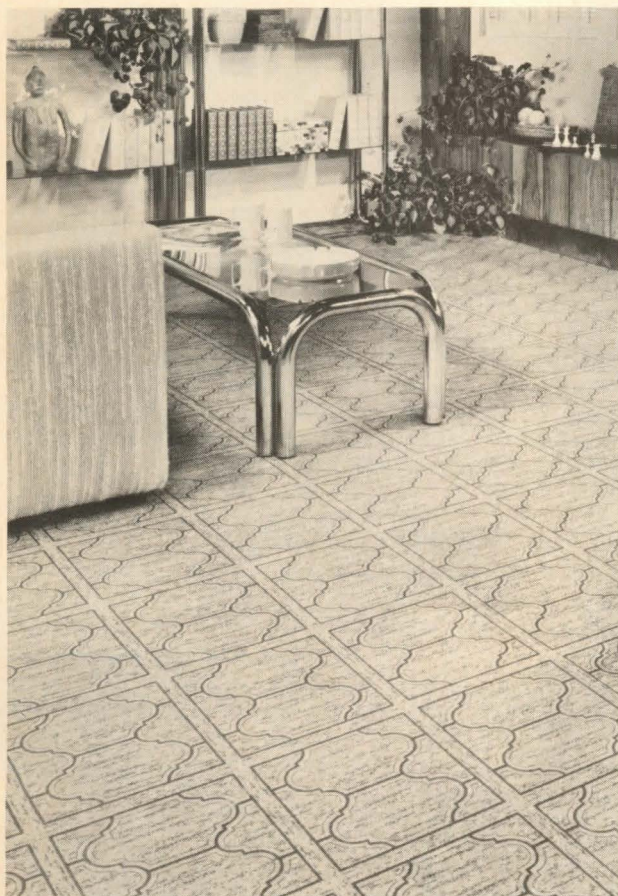
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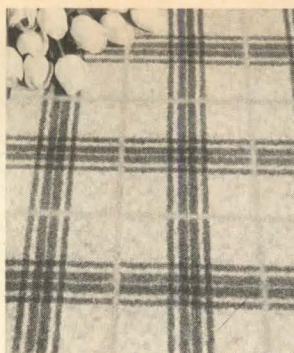
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Level-loop carpet, "High Stepper" (above), has a "Power Bac" urethane sponge backing which locks fibers in place. Multicolored floorcovering is space dyed. Trend, Rome, GA. *Circle 209 on reader service card*



Vinyl asbestos floor tile pattern, "Camino Real" (above), has a custom look. Flooring can be installed on or below grade. Azrock, San Antonio, TX. *Circle 213 on reader service card*



Cut pile carpeting, "Shepard's Row" (above), is constructed of Enkaloft® staple nylon. Plaid floorcovering has a Berber-styled background. Easy-to-maintain carpet is suitable for commercial applications. Callaway, LaGrange, GA. *Circle 210 on reader service card*



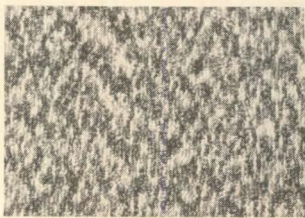
Cushioned sheet vinyl flooring, "Maple Knolls" (above), has a parquet design. Easy-to-maintain resilient flooring requires no waxing. Flooring pattern, available in three colors, comes in 6', 9' and 12' widths. Congoleum, Kearny, NJ. *Circle 211 on reader service card*



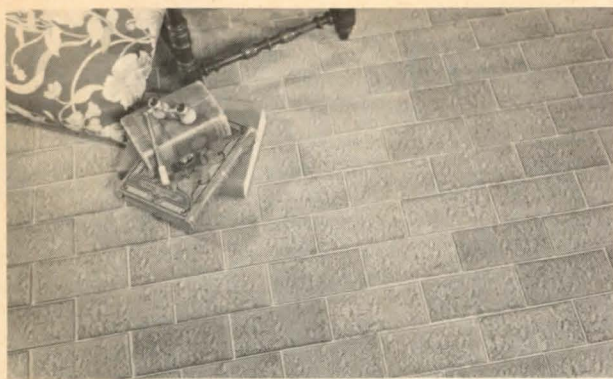
Cut-and-loop carpet, "Brookside" (left), is tufted of continuous-filament heat-set nylon. Saxony plush floorcovering comes in eight multicolorations. Walter Carpets, City of Industry, CA. *Circle 212 on reader service card*



No-wax resilient sheet flooring, "Classicon" (above), is alkali and moisture resistant. Flooring comes in 6' and 12' widths, and is offered with a two-year warranty. Mannington Mills, Salem, NJ. *Circle 214 on reader service card*



Level-loop carpet, "Sharpshooter" (left), is available with jute, foam or Plus Back™ latex primary backing. Multicolored floorcovering is space dyed. Carpet comes in 12' and 15' widths. Sheridan, Dalton, GA. *Circle 215 on reader service card*



Glazed "Antique" tiles (above), for use on walls or floors, have a mottled, irregular surface. Modular 4'' x 8'' x 3/16'' tiles are available in antique brown, olive, desert and beach. Gail, Orange, CA. *Circle 201 on reader service card*



Hardwood flooring, "Kentucky Crockett" (left), is made from end-grain mesquite rounds. Pre-grouted 1/2'' x 24'' x 24'' sections can be seamed together. Kentucky Wood Floors, Louisville, KY. *Circle 202 on reader service card*



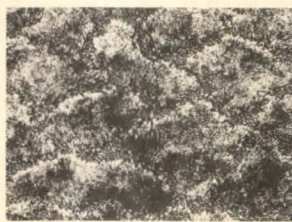
Cut-pile textured carpet, "Hamadan" (above), has a geometric hexagonal design. Floorcovering is available with a "Power-Bac" urethane or synthetic backing. Roxbury, Rome, GA. *Circle 203 on reader service card*



"Berber Loc" (above) is a random high/low-loop textured carpet for residential applications. The floorcovering, constructed of acrylic fiber yarn, comes in 15 colors. Alexander Smith, Amsterdam, NY. *Circle 204 on reader service card*



Woven axminster carpet, "Interlock" (above), has a geometric pattern formed by two deep golds and two reds. Carpet, with a dense nylon pile, comes in 12' widths. Mohawk, Amsterdam, NY. *Circle 205 on reader service card*



Cut-and-loop textured carpet, "Spanish Isle" (left), is tufted of continuous-filament nylon. Durable floorcovering is treated with "Scotchgard" carpet protector and 3M static control. Blue Ridge, Ellijay, GA. *Circle 206 on reader service card*



Cushioned vinyl flooring, "Pebblestone" (left), has a urethane surface. Composition resembles pebbles gem-set in stone. Flooring comes in six colors, including salmon. Amtico, Trenton, NJ. *Circle 207 on reader service card*



Inlaid sheet vinyl flooring, "Towne Brick" (below), features straight grout lines. Flooring, comes in red, white or camel. Easy-to-install sheeting is available in 6' widths. Armstrong, Lancaster, PA. *Circle 208 on reader service card*

Booklets shed light on new products

Here is a roundup of some recent lighting literature available:

The "**Lowbay**" lighting system is described in a full-color brochure. Photographs and details of each system in the line—the 10¼" refractor model, the 12" reflector model and the 16" combination—are included. Specifications are given for the easy-to-install luminaires. Hubbell, Christiansburg, VA. *Circle 301 on reader service card*

Answers to many of your commercial lighting requirements may be found in **Progress Lighting Commercial Catalog 201**. The booklet contains diagrams, photographs, features and accessories for a wide range of fixtures used in non-residential applications. Units discussed include recessed fixtures, energy-saving fluorescents and track systems. Also available is a **lighting ideas book** which features a variety of styles—from contemporary to traditional to fixtures for children's rooms. The full-color publication includes photographs and descriptions of each fixture; some are shown

in room settings. Each catalog is available for \$1.00 from Progress, Erie Avenue and G Street, Philadelphia, Pa. 19134, Attention: Herman Huffert, Manager, Mailroom.

According to a brochure on a **high-efficiency H Lamp**, the emergency unit produces 25% more light and consumes 50% less power than any sealed beam unit on the market. Black-and-white photographs of the H Lamp, as well as a comparison between its performance and that of conventional sealed beamed units, are presented. Exide Safety Systems, Randolph, MA. *Circle 302 on reader service card*

A full-color catalog sheet illustrates **seven traditional lighting fixtures**. A choice of solid brass finishes provides a variety of 23 new Williamsburg chandeliers and foyer lights. Wasley, Plainville, CT. *Circle 303 on reader service card*

Two indoor/outdoor fluorescent lanterns, the subject of a full-color data sheet, can

operate up to ten continuous hours on one set of standard "D" batteries. Photographs of the units are presented, along with a list of energy-saving features. Prestigeline, Brentwood, NY. *Circle 304 on reader service card*

A 16-page, full-color brochure on the "**Pericline Contemporary Outdoor Lighting System**" depicts much of the information a specifier requires. The new literature illustrates a large selection of sizes, finishes and high-intensity discharge wattages through the use of charts, photometric data, dimensional drawings and mounting details. Spacing charts and guides reveal the type and amount of luminaires needed for particular applications: general area illumination, parking lots, streets or narrow areas. Moldcast, Pine Brook, NJ. *Circle 305 on reader service card*

Three 12v compact PAR-36 lamps for general lighting and task lighting are described in a bulletin. Specifications for each are given. Westinghouse, Bloomfield, NJ. *Circle 306 on reader service card*

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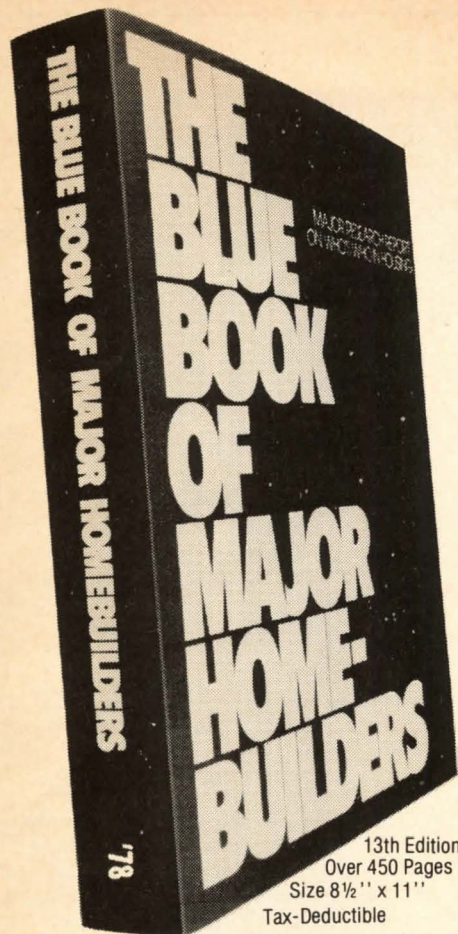
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Pre-filed catalogs of manufacturers listed are available in the Sweet's Catalog File as follows:

G General Building (green)
E Engineering (brown)
I Industrial Construction (blue)
L Light Construction (yellow)
D Interiors (white)

- A**
- E American Gas Assoc.22
 - J. Walter Thompson Company
 - American Plywood Assn. ..30, 31
 - Cole & Weber, Inc.
 - G-L Andersen Corp.23, 25
 - Campbell-Mithun, Inc.
 - G-I-L-D Armstrong Cork Co.Cov. II
 - Marsteller, Inc.
- B**
- G-L Bird & Son, Inc.27
 - Humphrey Browning
 - MacDougall
 - Black and Decker82G
 - Aitkin-Kynett
 - Blu-Ray, Inc.98
 - C. Franklin Thompson
 - Adv., Inc.
 - Blue Book99
 - Francis J. Litz
 - Building & Construction
 - Exposition & Conference82B
- C**
- California Redwood Assoc.6
 - Foote, Cone & Belding/Honig
 - L Caradco, Div. of Scovill ..36, 37
 - Charles Palm & Co., Inc.
 - Classified98
- E**
- G-L-D E. A. Nord Co.43
 - Ricks-Ehrig, Inc.
- F**
- Forest Fiber Products100A
 - Westerman-Webber, Inc.
- G**
- G-L General Electric4, 5, 35
 - Young & Rubicam
 - G-I-L-D Georgia Pacific Corp.14, 15
 - McCann-Erickson, Inc.
 - G-I-E Glidden17
 - Meldrum & Fewsmith, Inc.
- H**
- G-L Hotpoint Div./
 - General Electric Co.51
 - Compton Adv.
 - Housing Seminar
 - SMALL HOUSE47-50
- K**
- Kwikset (Div. of
 - Emhart Corp.)Cov. IV
 - Coltrahe & Company
- M**
- Magic Chef32
 - Keller Crescent Co.
 - Majestic Co.29
 - Fahlgren & Ferriss Inc.
 - L Marvin Windows13
 - Discovery Designs Adv.
 - G-L-D Masonite Corp.21
 - Markad, Inc.
 - Moen Div. (Stanadyne)33
 - Carr Liggett Adv., Inc.
- N**
- G-I-L Naturalite, Inc.44
 - Sumner & Associates, Inc.
 - Nicolai CompanyCov. III
 - The Pihas, Schmidt,
 - Westerdahl Co.
 - G Nutone, Div. of Scovill1, 2
 - Intermedia, Inc.
- P**
- G-I-E PPG Industries19
 - Ketchum, MacLeod &
 - Grove, Inc.
 - Pennamco, Inc.26
 - George Beach, Inc.
- R**
- Red Book of Housing
 - Manufacturers85
 - Francis J. Litz
 - Red Cedar Shingle &
 - Handsplit Shake100B
 - Cedarcrest Advertising
 - L Fred Reuten, Inc.100A
 - Arthur Falconer Assoc. Corp.
- S**
- G-L Schlegel Corp.41
 - Wilson, Haight & Welch
 - G-L Sears, Roebuck & Co.45
 - Stern Walters/
 - Earle Ludgin Inc/Adv.
 - Senco Products82A
 - Schindler + Howard Adv.
 - Shepard's Inc.42
 - G-I-L Simpson Timber Co.46, 100B
 - Kraft Smith
 - Skil Corporation82C
 - Bozell & Jacobs, Inc.
 - Sterling Faucet Co.93
 - Marsteller, Inc.
- T**
- Temple Industries100A, C
 - Ritchie, Hopson & Assoc.
- U**
- U.S. Housing Markets40
 - Shiefman & Associates
- W**
- Western Wood
 - Products Assoc.82D, 82E
 - McCann-Erickson, Inc.
 - Wilson Art11
 - Holmes/McKone, Inc.

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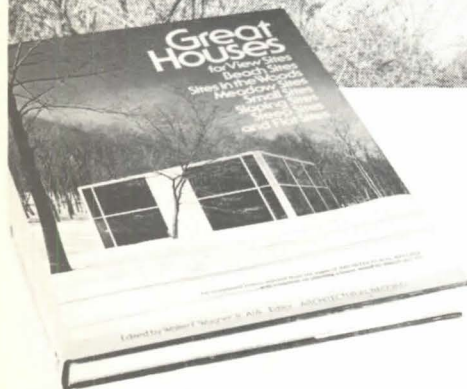


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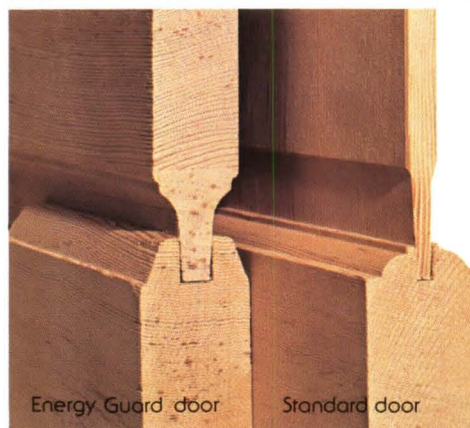


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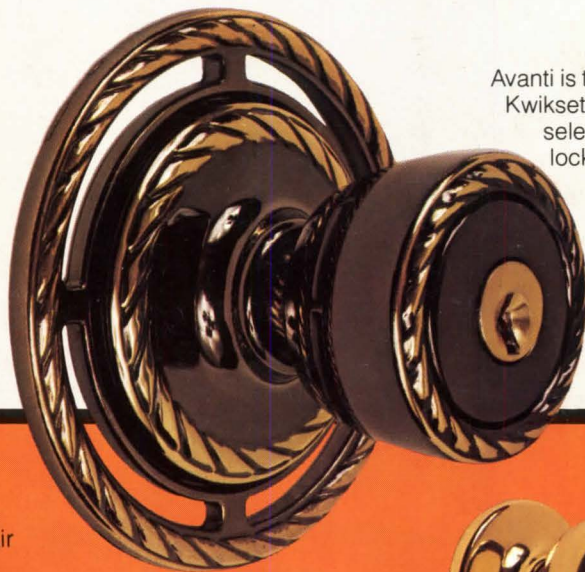
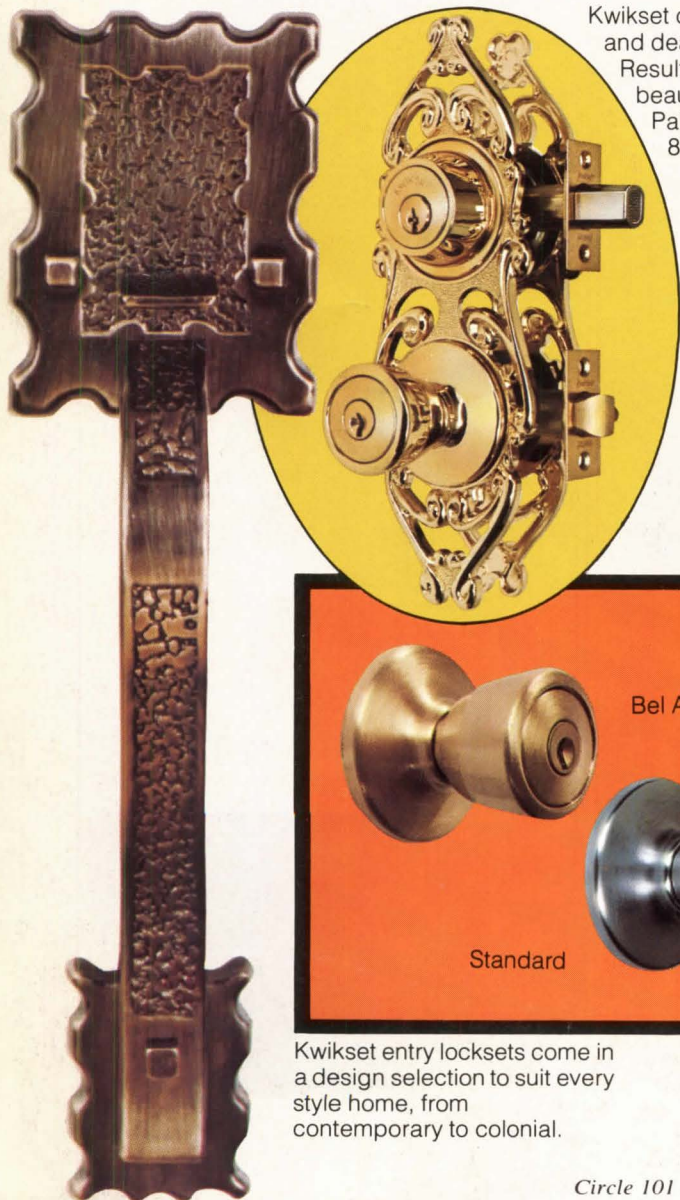
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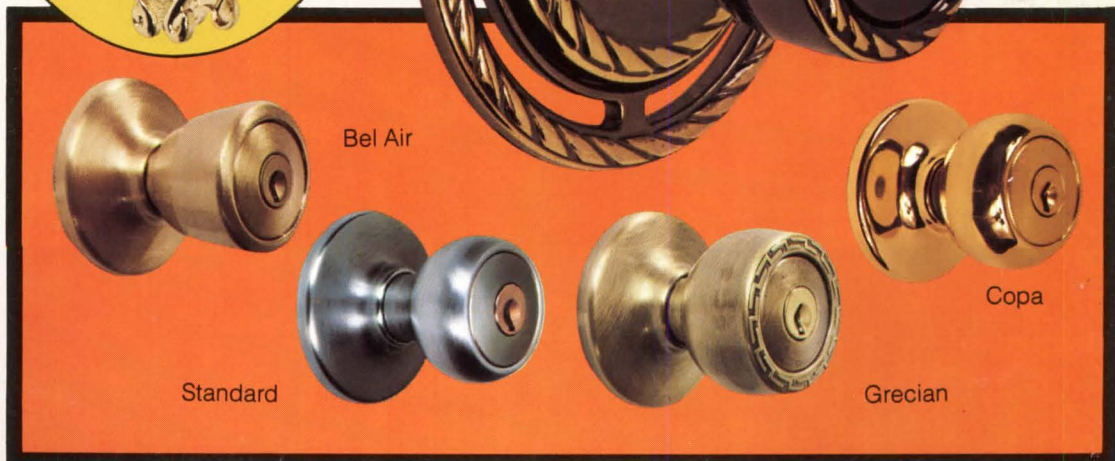


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