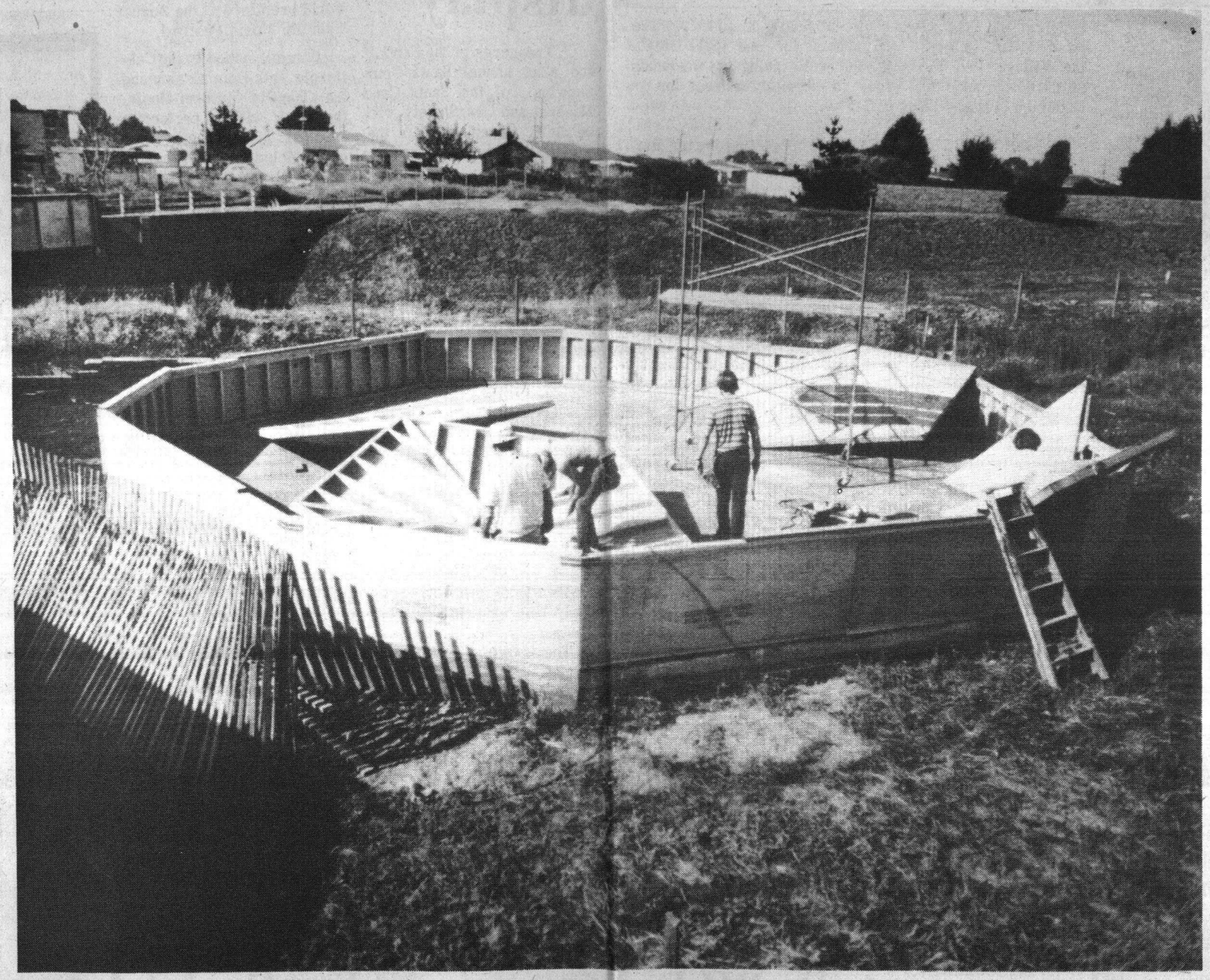
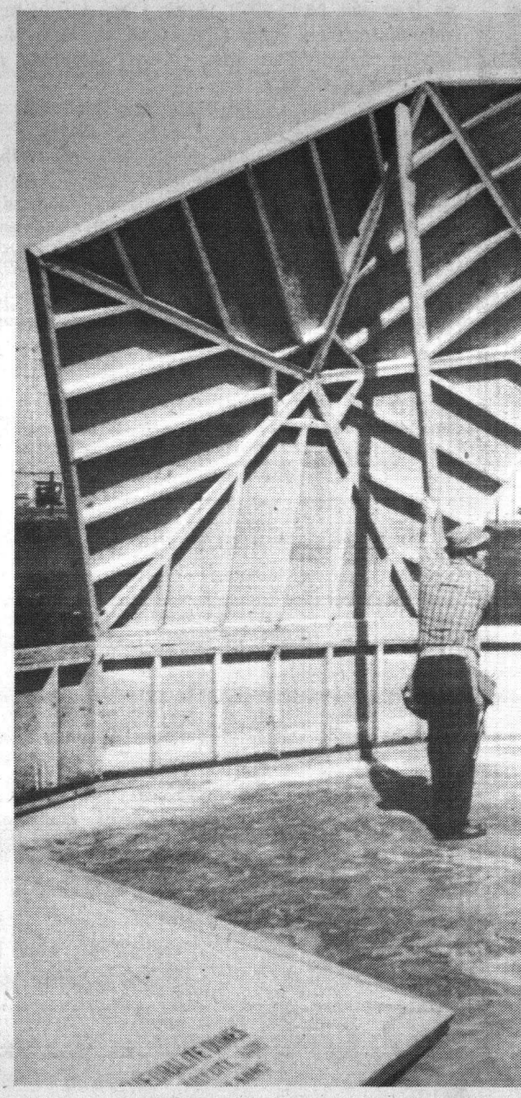
Geodesic Domes

If a motion picture camera had been set up... it would have shown a structure springing up like a flower -- opening -- and then closing.





Geodesic dome arrives

The genius of the Fuller dome: you get the mo

Perhaps it is because of lumber and labor costs, or perhaps it is just an idea whose time has come, but the dome home has arrived in the Santa Cruz Mountains.

As one construction engineer put it: "The terrain of the Santa Cruz Mountains is very conducive to domes. And the same people who come to Santa Cruz to get away from city living also want to get away from conventional housing."

The church had two important needs which its board of directors felt could be satisfied by a domed structure.

The first was for a day-care center for working mothers, and the second was to build that center for a minimum amount of money.

But the church could not afford to put up conventional

most living space with the least amount of material. And the dome goes up rapidly because it is just a lot of prefabricated parts. Each triangular frame has only three bolts per side of the triangle. When erected, the curving dome is self-reinforcing.

It's such a simple idea, the wonder of it is that

Story and photographs by Allen Grasso

As each experimental dome goes up, the owner is swamped with visitors who want to ask questions about building domes.

Why the furor over domes?

One of their main attractions is the fact that one man with three or four friends can put up a large dome within eight hours. After the dome is up, the builder and his family can move in and he can take his time about finishing it.

Finding favor with all types--from flower children to successful businessmen--the geodesic dome is Buckminster Fuller's best idea--a stack of triangles that can be quickly put together to make a shelter. First patented in 1954, the geodesic dome got off to a slow start being used occasionally for warehouses and exhibition halls until they recently caught on as a possible alternative to high cost housing.

Chicago architect Lawrence J. Harrison, who has built his own dome, says: "It's cheap, efficient, simple to put together and is the most economic way of covering space."

One of the more recent domes put up in Santa Cruz County was erected by the Aptos Assembly of God Church.

buildings. In desperation, they even considered using tents!

Then Tom Wade, a young board member, suggested that they build a dome as the heart of the preschool. In addition to saving money, this would allow board members an opportunity to see what effect being exposed to nonconformist architecture would have on the children.

The Aptos church ordered a dome 39 feet in diameter which arrived in a kit (approximately 60 wooden triangles) at a cost of $4,100.

Work began on the church grounds at 8 o'clock in the morning. At the start, there was only concrete slab and a stack of wooden triangles. But by 3 p.m. there was a geodesic dome, 17 feet high, almost 40 feet in diameter and containing 1,100 square feet of floor area. Before the sun set that night, children were playing in the dome.

If a motion picture camera had been set up for time-lapse photography, it would have looked like something out of a Disney nature film. It would have shown a structure springing up like a flower--opening--and then closing. Even a reporter could sense the precise kind of mathematics that radiate from this kind of form.

The genius of the Fuller dome is that you get the

someone didn't think of it sooner. It is very much on the order of the Roman arch, which can provide enormous support beyond what anyone would imagine by looking at it. There is no need for walls to support a roof, and many dome owners have remarked on the joys of having so much open space.

But owning a dome home presents some problems, and more of them will come to light as more dome homes are built. One basic problem, according to one dome owner, is that nothing in the dome is square and everything today is geared for square buildings. Conventional doors and windows, and anything with a right angle seems out of place in a curved home.

A Scotts Valley dome owner tells what problems he has been running into. "And please don't use my name," he said. "I already have too many people coming up here to gawk at it."

His dome is actually mounted on a first floor, making the structure a three-story house. He purchased the 39' foot model--and he is having some troubles he hadn't counted on.

"The biggest problem is the roofing," he said. "Getting somebody to roof the place cost an arm and a

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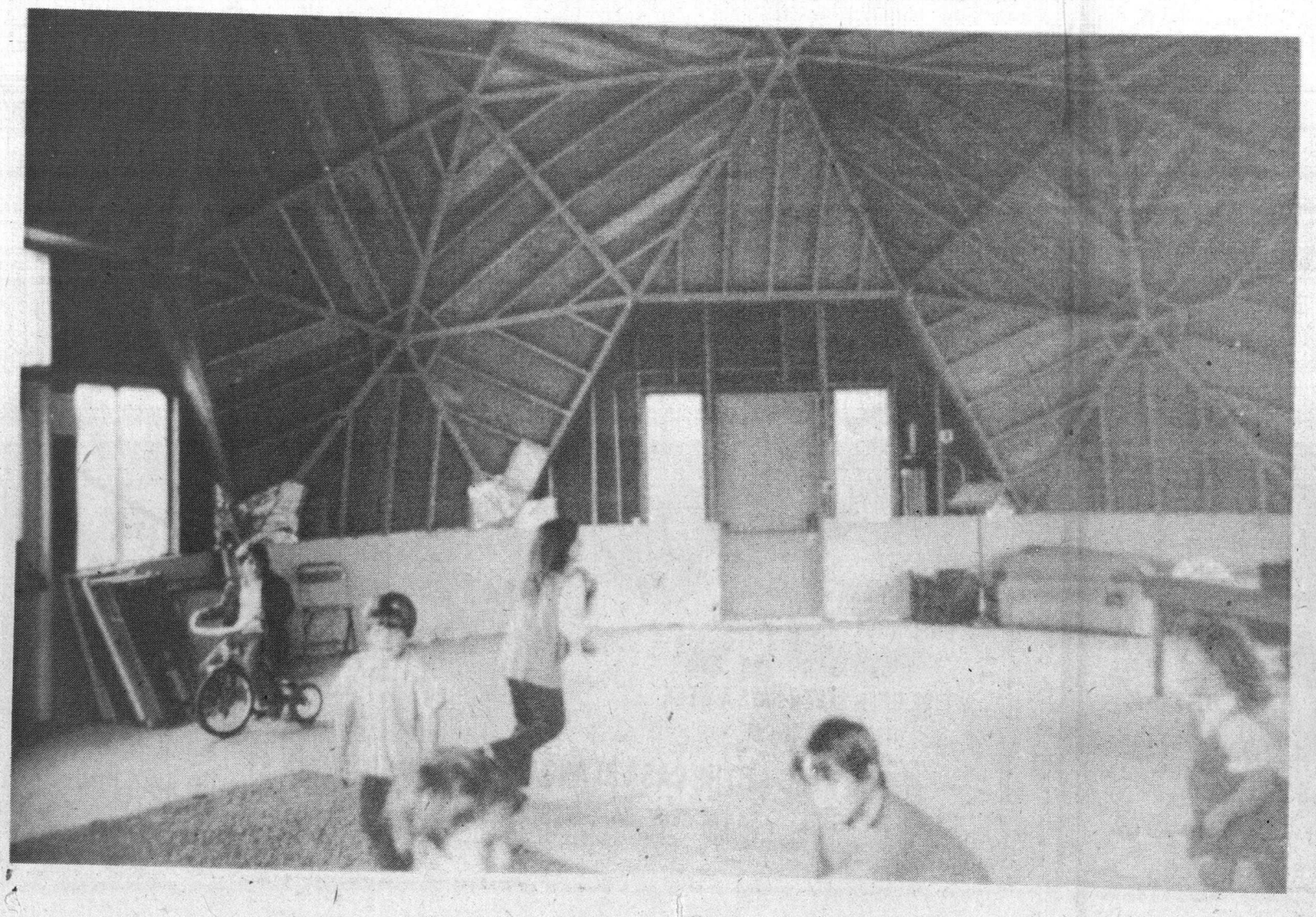

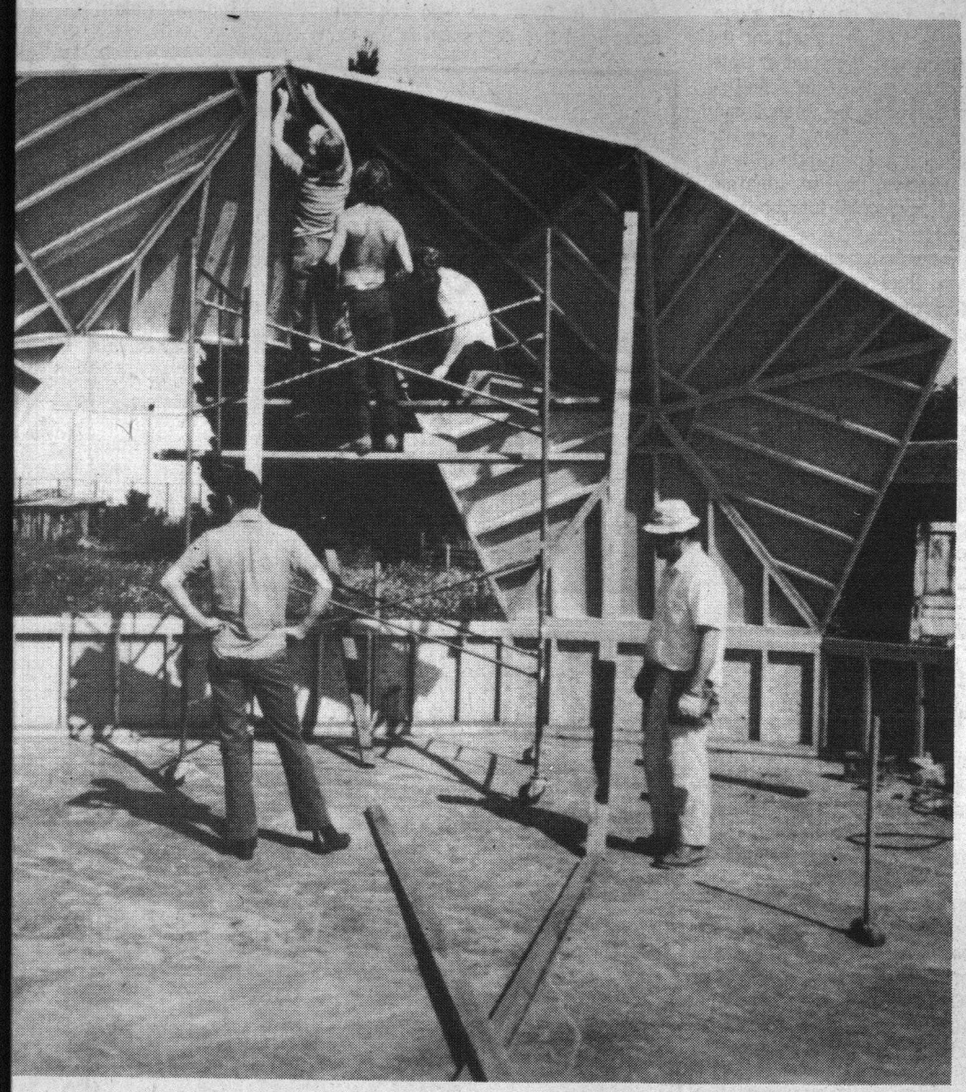

st living space with least amount of material

leg. The roofing material is hard to install and costs about seven times as much as a regular roof.

"Another problem is that contractors are wary of working on domes. Several of them gave us ridiculously high bids so that we wouldn't call on them, but we've managed to find one that has taken it on as a challenge."

finishing it."

The only problem Mrs. Culver could think of was one of ventilation. The Culvers have very large windows which let in a lot of sun and that makes the dome warm. On the other hand, they had no trouble heating the dome during the winter. They almost never use their

to explore every possible use for a dome--as green houses, solariums and churches. One dome was covered with plastic and made into a completely transparent home. (Which brings up the interesting question: cab a man be arrested for streaking inside his own home?)

In spite of these problems, this same Scotts Valley man said, "My cost is still less than if I had built a regular home. And if I had it to do over again, I would still build a dome."

David Culver, a high school English teacher who commutes to San Jose, built his own 39' foot 2,200 square foot dome in a beautiful and isolated part of the Santa Cruz Mountains. He was helped by some fellow teachers, who, like him, had very little building experience. The dome went up with very few problems.

Mrs. Culver was apprehensive about the idea of living in a dome because she knew no one else who had one. Now she is delighted with the new house.

"A dome is spacious," she said, "not cramped. I would never live in a conventional house again after this. The rooms are very unique. Nothing is square. The windows are angular. It's a decorator's dream if one knows how to decorate it."

After putting the dome up, the Culvers and their four children moved right in. "We lived in it while we were finishing it," said Mrs. Culver, "and that means we had no facilities. It sounds pretty bad, but most of the people who build dome homes are unconventional and wouldn't mind the inconvenience of living in the dome whil- they are electric heat, because their fireplace is enough to do the job.

Mrs. Culver isn't sure they saved any money over conventional housing, "But we were trying to build it as nicely as we could, not as cheaply as we could,"

Domes, it seems, can be good for business. Gary Kirshman, who owns Shalako Gifts in the Santa Cruz Mountains, decided to have a 26'foot dome built as a store. "I would estimate," says Kirshman, "that about 30 per cent of the people who come in here, come in here to see the dome."

Other things about domes excite Kirschman. "As you know," he said, "pyramids and domes attract cosmic energy out of the air."

About the only ones cursing Buckminster Fuller these days are some large property owners. Some domes are so light in weight that they can be backpacked into an area and erected into a permanent structure. Young people who have done this on private property have been run off by helicopters and mounted sheriffs. Backpack domes have been set up as high as 12,000 feet on Mt. Whitney and on some Alaskan islands.

Constant experiments are going on by young people

There are those who believe that domes will never be an alternative to high cost housing. Edward G. Grafton, a chairman of the A.I.A. Low - Income Housing Committee, said of domes: "It's an exciting way to play games, but nothing more. Sure, the dome costs only about a third of the going rate, but that's just the skin you're talking about. The real money in a residence is in the internal systems, not the structures."

Richard Slater, an expert on low-cost housing for the federal government, doubts that domes will ever become the favorite form of housing for the masses. As quoted in Time magazine, he said, "Low income families usually aspire to the ranch style homes higher income families have. As long as the dome has a reputation of a low-cost home, no one will want to live in one."

Talking to Santa Cruz County residents who own domes, one gets the impression that dome homes aren't that cheap. They can be as costly as any housing. The dome, in fact, can be anything anyone wants it to be from the simplest of shelters to the most expensive of homes. It is new, it is different and it is hard to guess its full potential.

It is the geodesic dome.

AUTHOR'S WORK IN LIBRARY

Author Allen Grasso of Aptos, a free-lance writer and photographer, recently has been published in the newest edition of Sea Frontiers. His story which is featured, the erosion of Capitola beach, first appeared in a more in-depth version in the April 10, 1974, edition of The Aptos Voice.

The Sea Frontiers publication (May-June, 1974) is available for reading in the Santa Cruz County Public Library.

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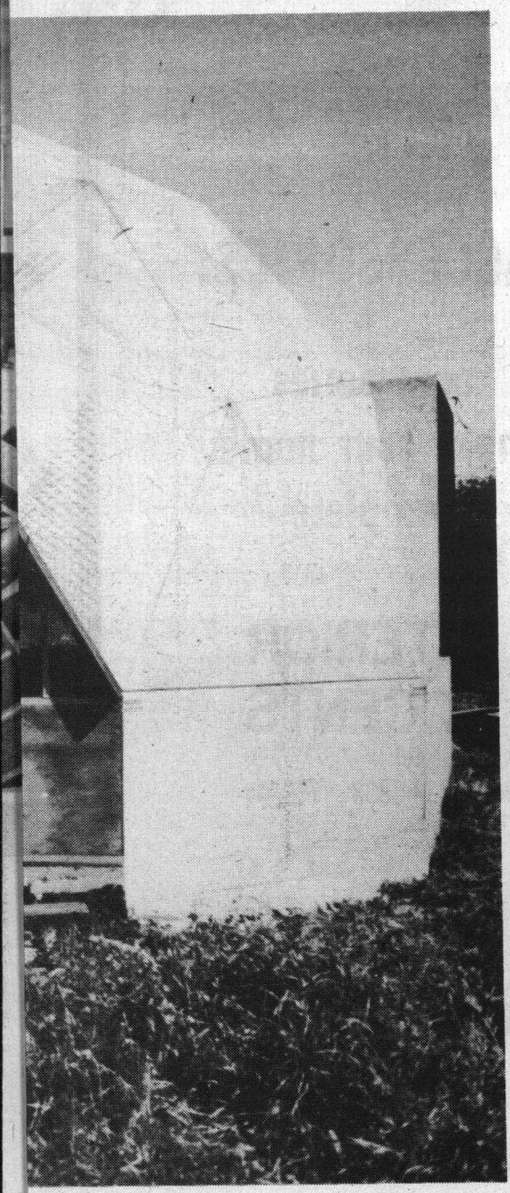

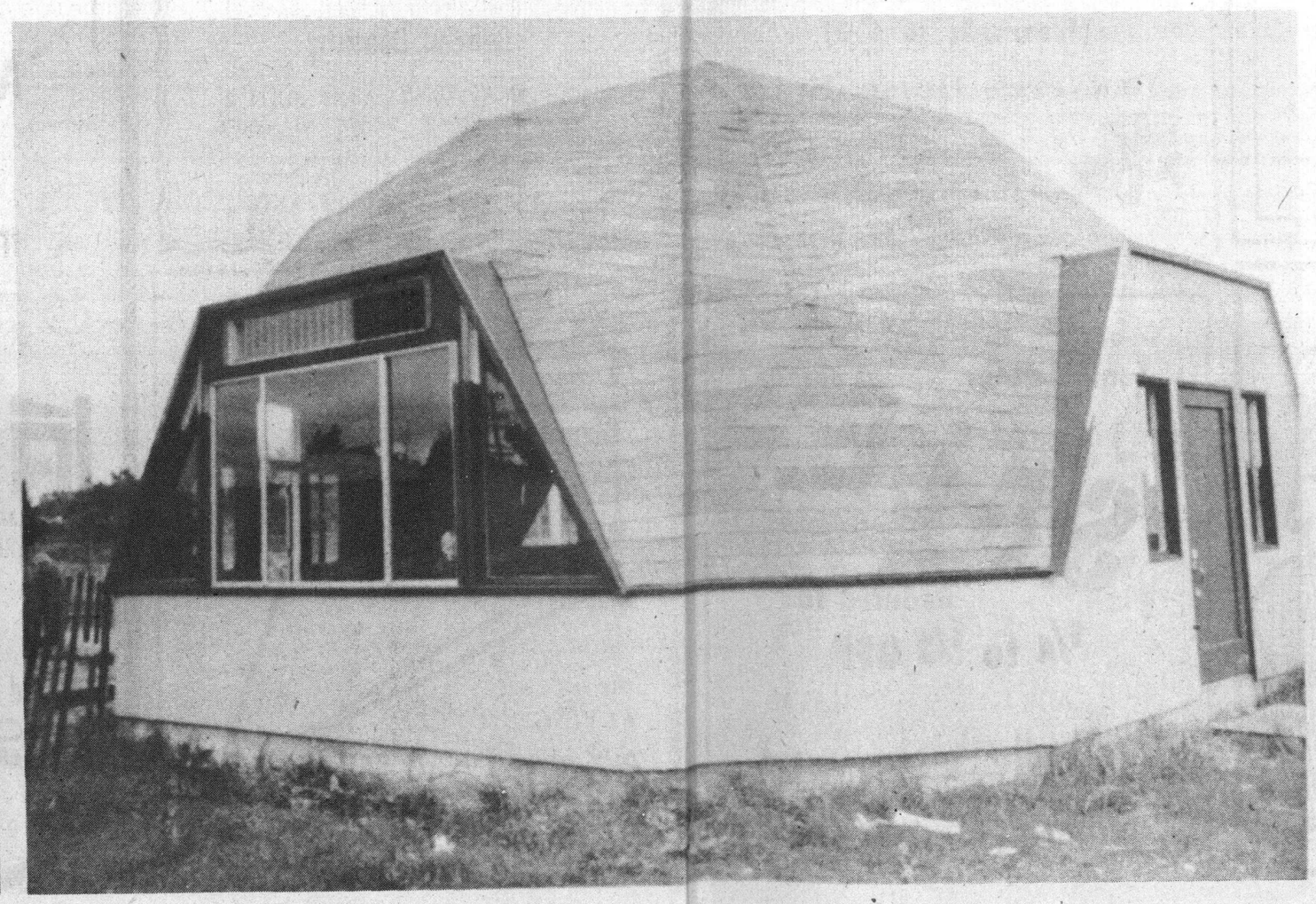

'Pyramids and domes attract cosmic energy out of air'