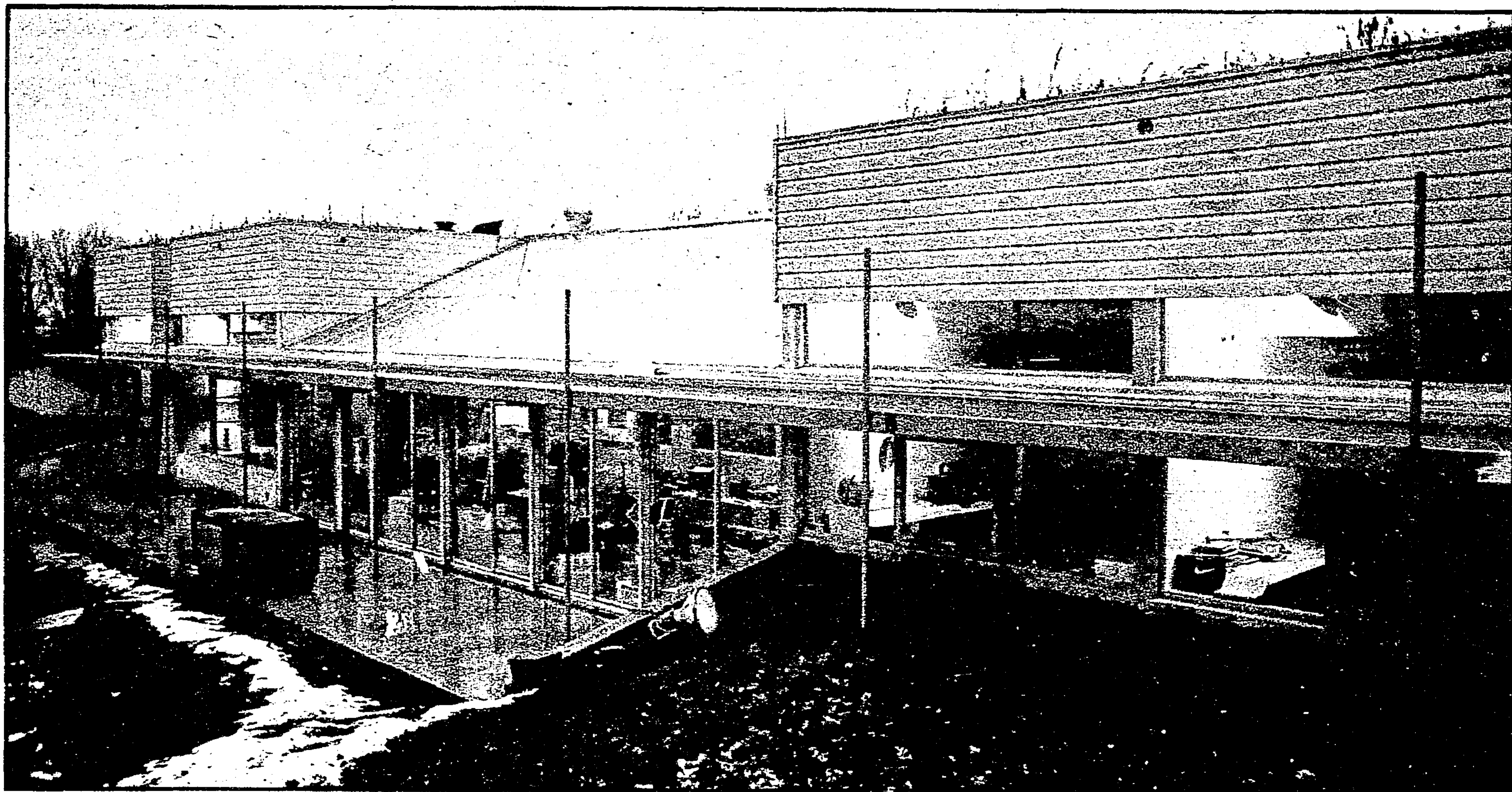


NORTHWEST ARCHITECTURE



An earth-sheltered home in Moses Lake, owned by the Tim Hansen family, faces south for maximum exposure.

Living Beneath the Earth

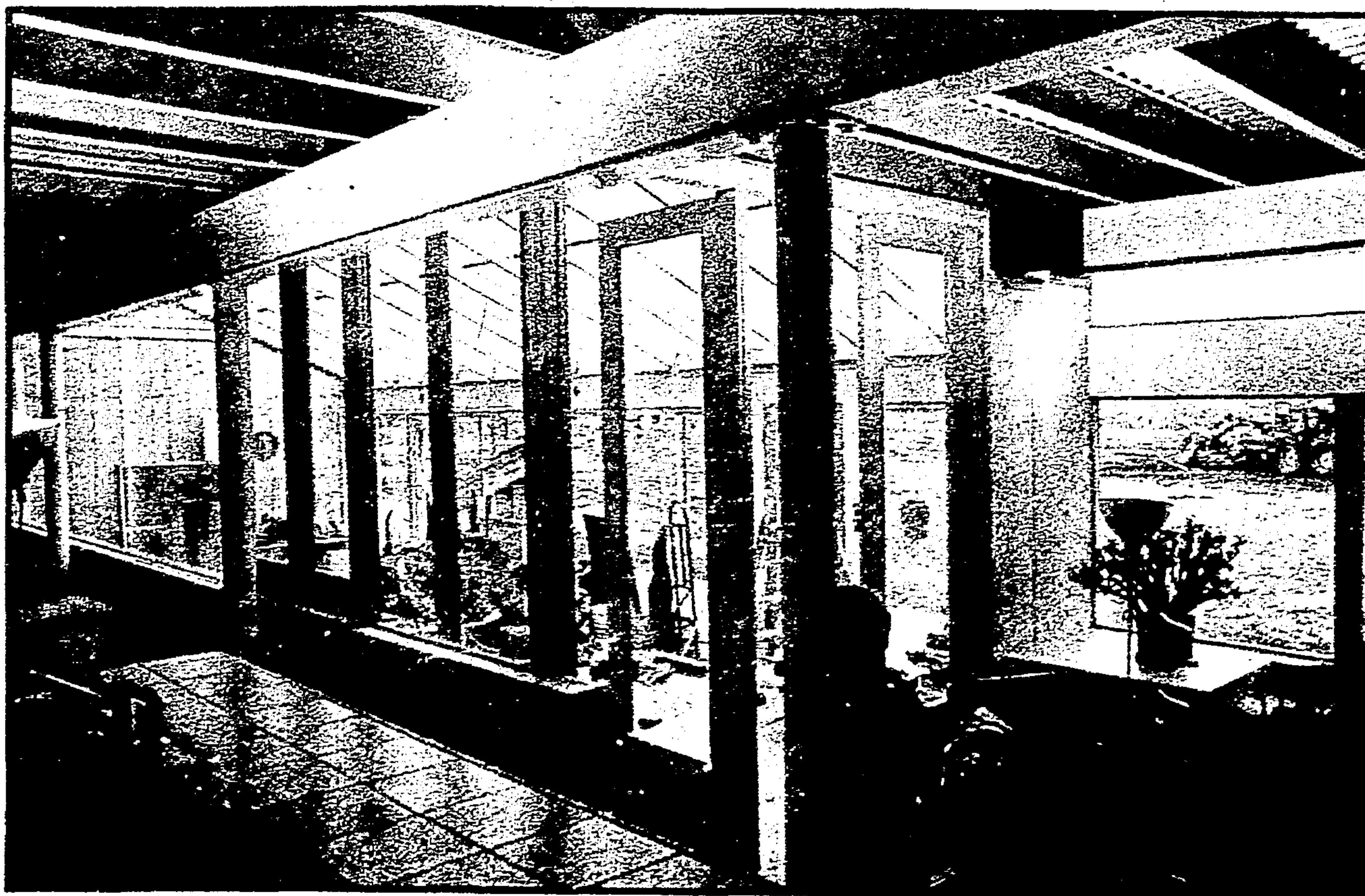
WRITTEN BY TOM STOCKLEY

If your idea of an earth shelter is living some sort of molelike existence beneath the surface of the earth where it is dark, damp and moss grows on the walls, forget it.

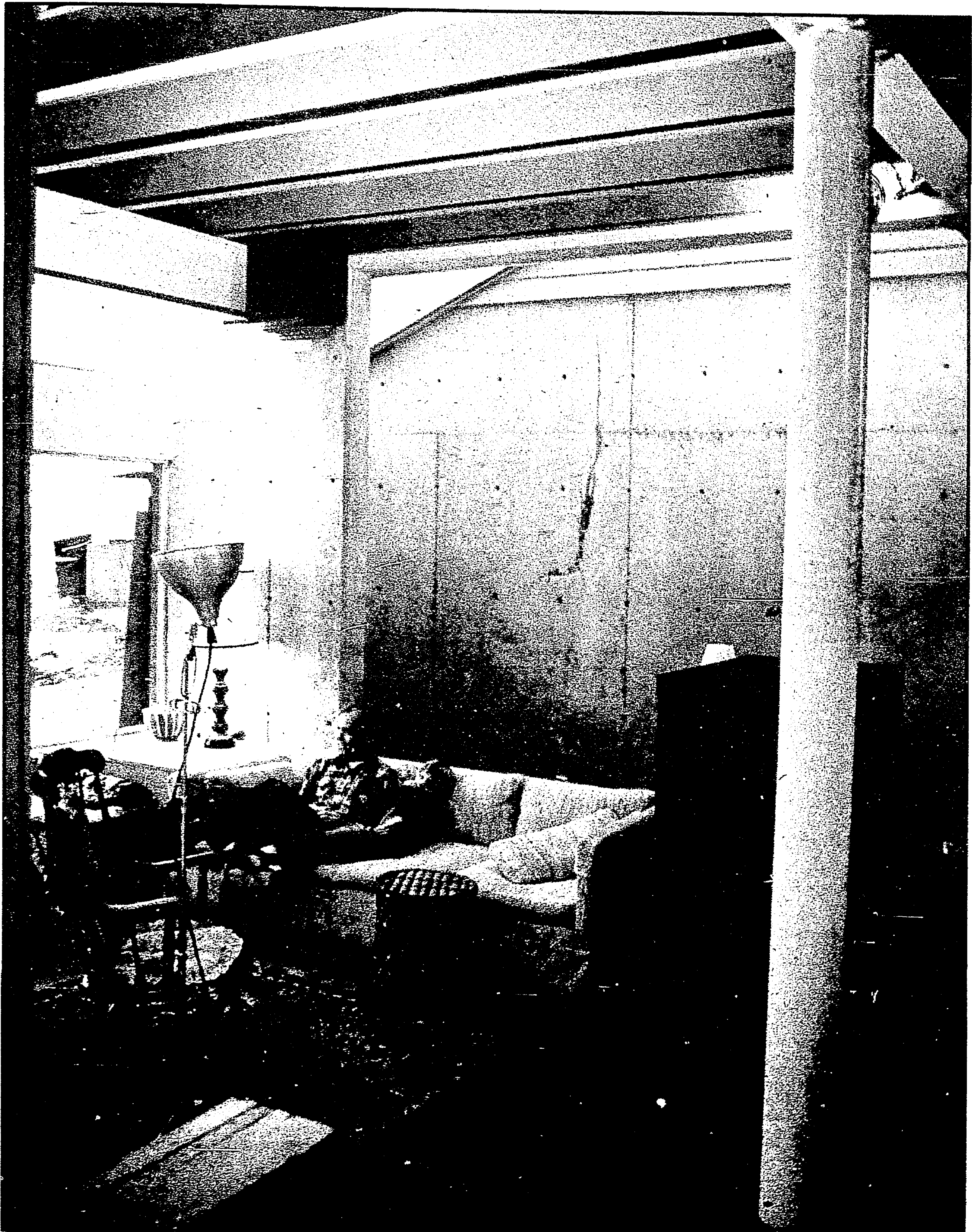
It isn't anything like that at all. In fact, you're apt to have more glass surface than in a normal house with the sunlight literally flooding in from the south. Heating bills will be slashed because the earth retains heat (not to mention coolness in hot summer months). Maintenance worries about exterior painting, a new roof and weatherproofing are nil. And to top the whole thing off (both figuratively and literally), you can plant a garden on the roof.

Why didn't someone think of this before? They did. Earth shelters are perhaps man's oldest dwelling. Sod houses on prairies were common in the past century. And cliff dwellers in prehistory days certainly knew the benefits of the earth as a natural shelter.

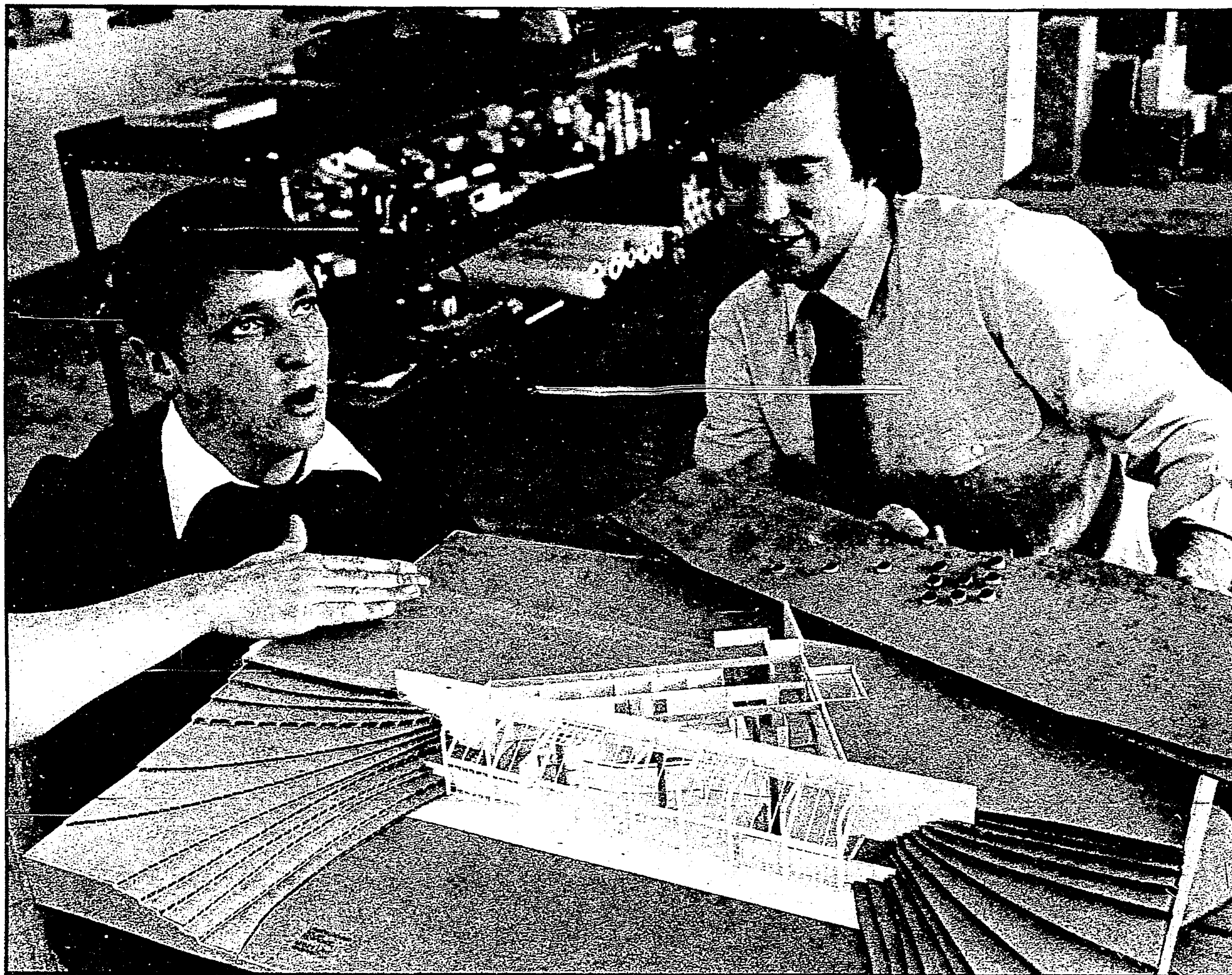
The caveman, lacking any kind of building skills, lived down in the earth out of survival. It was all he knew. Modern-day man, despite all the technology available to him above ground, may be burrowing under for the same reason. With the depleting energy resources on earth, underground may be his way of survival.



A greenhouse in the Hansen home acts as a buffer zone between the heat of the sun's rays and the rest of the house.



Hansen relaxes in the living room of his earth-shelter home with one of his sons. "We get more light than most houses," he says.



Two Seattle architects specializing in earth shelters are Bob Hull, left, and Dave Miller. Miller removes the roof of a model to reveal how the home fits into the hillside.

EARTH SHELTERS

Pacific Northwest residents are about to hear a great deal about earth shelters, if they haven't already. Books and magazine articles have appeared on the subject on the national level. But, more importantly, in recent months the first earth-sheltered homes have begun to appear (or, more accurately, disappear) in the state of Washington.

A group of Spokane architects, under the name Design Concept Associates, has designed 16 underground homes and have produced a book entitled "Homes in the Earth" (Chronicle Books, San Francisco, \$6.95). Others have appeared, including "The \$50 and Up Underground House Book," published by Mole Publishing Co. of Bonners Ferry, Idaho. And there is even a periodical published in St. Paul, Minn., called Earth Shelter Digest.

Closer to home, two avid proponents of earth shelters are David Miller and Bob Hull, young architects who share a practice in Seattle and, more importantly, an almost missionary zeal about living in the ground.

Miller and Hull already have completed several projects and are heavily engaged in even more ambitious plans. Their first completed home is at Moses Lake and they have others on the way in Cle Elum, Monroe and Snohomish County.

Presently under construction is an underground addition they designed for the Health Sciences Building at the University of Washington. Already complete is a project they worked on with a firm in Vancouver, B. C., the Sedgewick Library at the University of British Columbia, one of the West Coast's first earth-sheltered public buildings. Another early one is Multnomah County's maintenance building in Gresham, Ore., presently under construction.

To paraphrase an old ad slogan, if you want to know what it is like to live in an earth-sheltered home, ask the man who owns one.

Over in Moses Lake, in the first home completed by Miller and Hull, the Tim Hansen family has been underground since October. The Hansens couldn't be happier. They feel they have sacrificed nothing to live beneath the earth's surface and, in fact, have gained a great deal in heat efficiency and light.

The Hansen home, designed for a young family (there are two sons, 9 and 5), is an elongated plan with a greenhouse along the front that acts as a buffer for the solar system.

Hansen was so convinced about the value of earth shelters he did very little soul searching about trying it.

"Come to think of it," he said, "I never really sat down and made a decision to build an earth shelter. I just did it."

He admits his wife was a little hesitant at first. But after what he terms "some tactical maneuvering on my part," she was convinced, too.

"We moved in last October," says Hansen, "and have been exceptionally pleased with how it turned out. It really is the opposite of living in a dark cave. With the shallow and long plan (the widest side on the south is exposed while the north side is buried), we get at least a half more light than the conventional house."

Other than the solar system, the home's only other source of heat is a wood-burning stove in the main living area.

"I actually had the house wired for an electrical heating system," says the owner. "But it looks like

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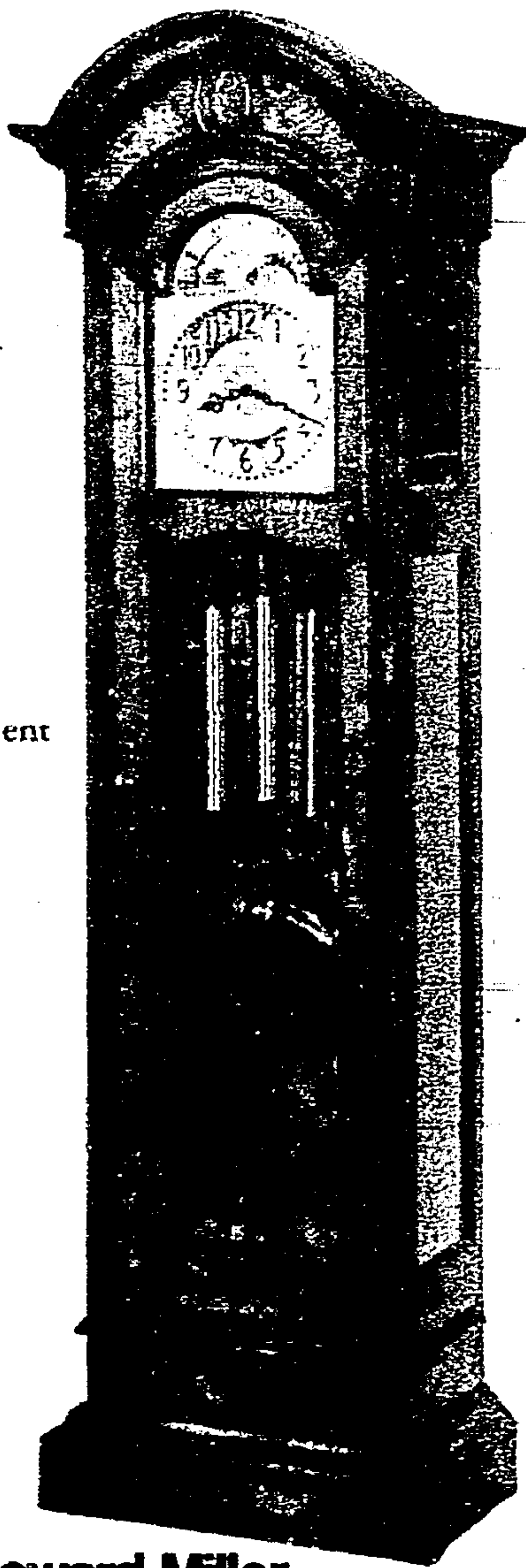
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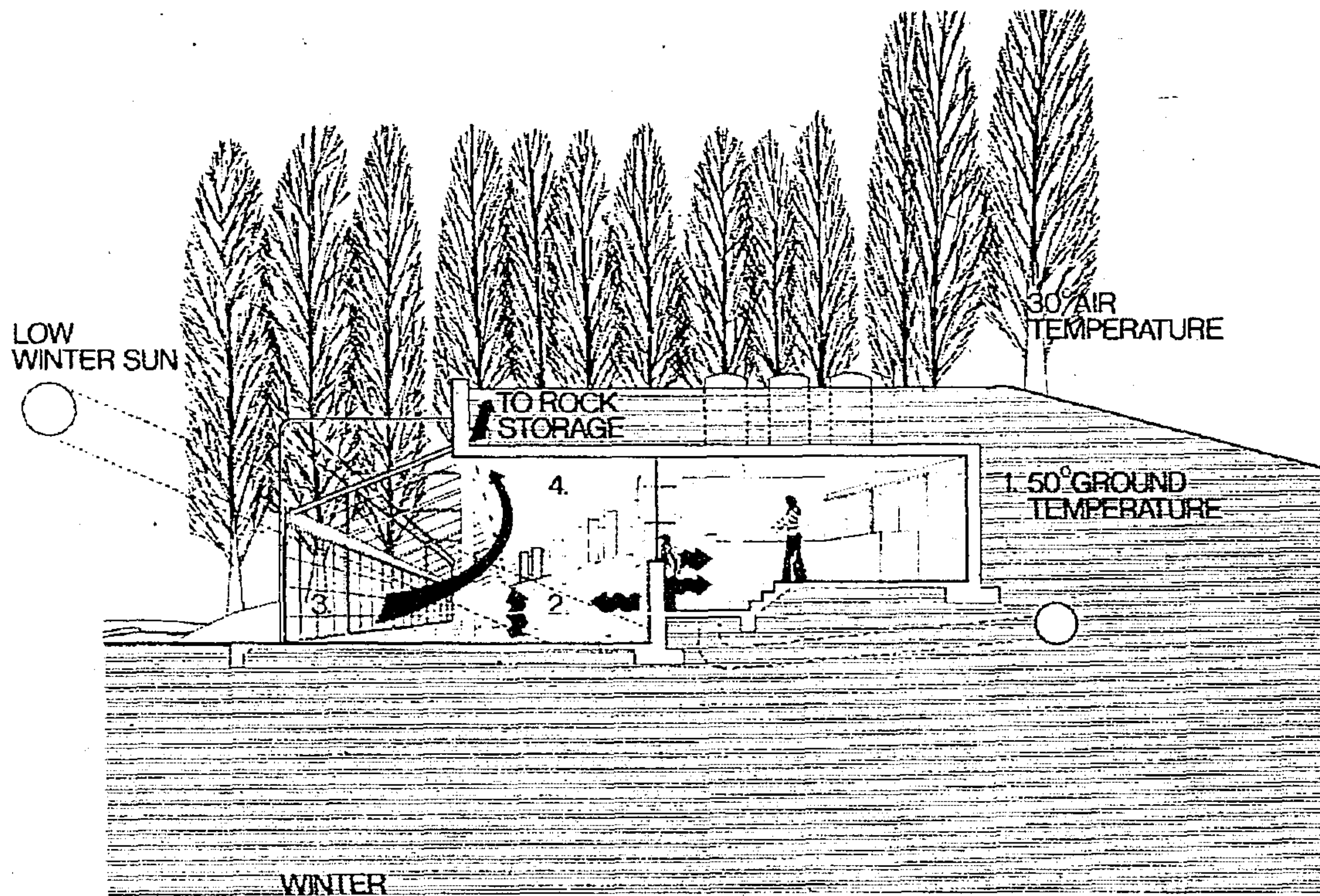
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EARTH SHELTERS



Profile of an earth shelter in winter reveals solar effects of the winter sun including the storage of heat.

we don't need it. I may install spot heat in a few places like by the shower and near the boys' desks.

A good test was over the New Year's holidays when the Hansens left Moses Lake to visit family. When they returned, the house had been without any supplemental heat for days and, although the outside temperatures were in the lower 40s, the house had stabilized to 62 degrees. There is every reason to believe the house would maintain that temperature for the entire winter.

Another big advantage Hansen has noted is the extreme quiet in an earth-sheltered house.

"You can't believe how quiet it is," he says. "The thing that we've noticed is how you can really hear the refrigerator when it turns on. In most houses, that would be drowned out by all the other noise."

Hansen claims that the house is pleasant in all kinds of weather.

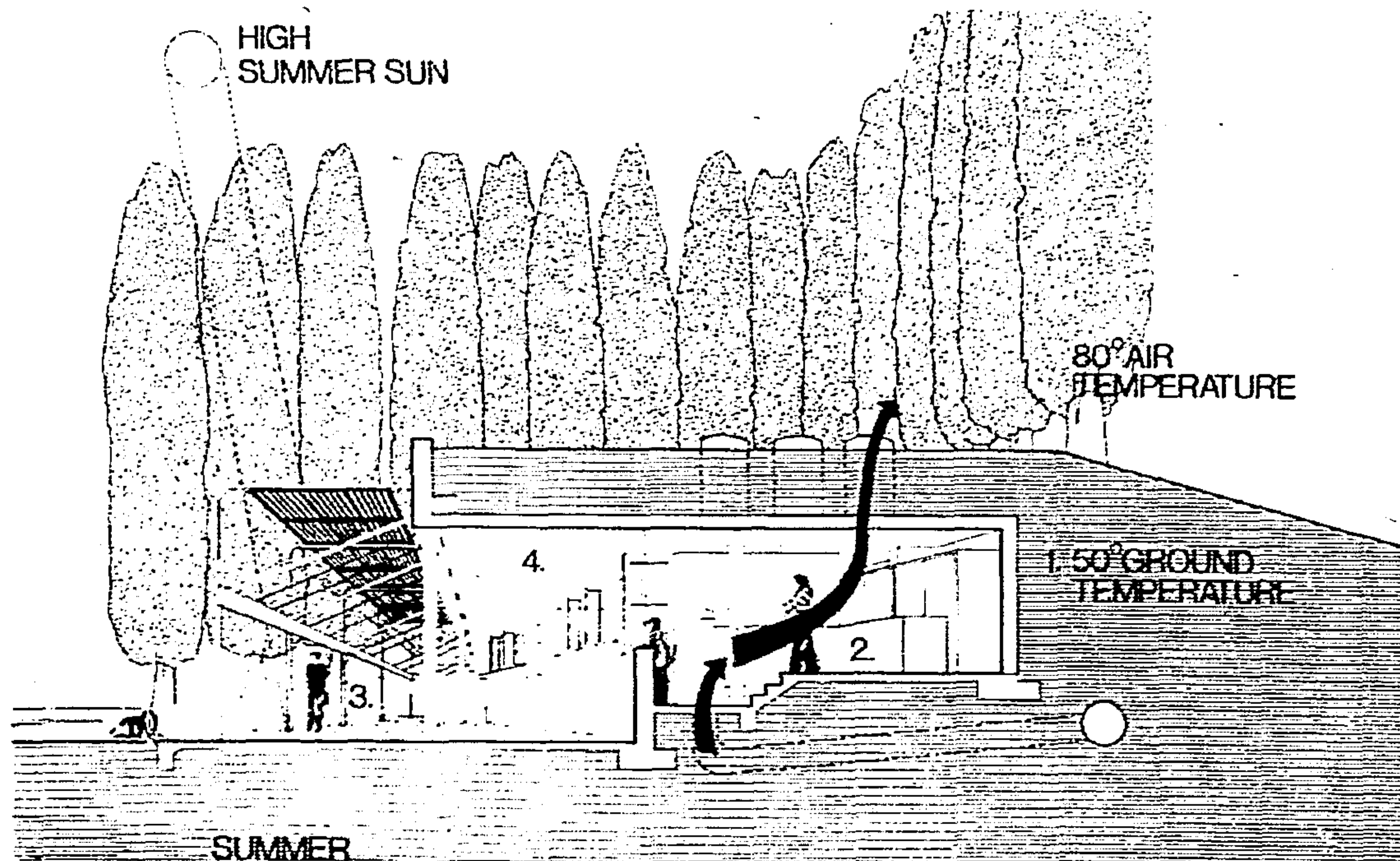
"It's just glorious when the sun is out. But even on cloudy days you never have

that closed-in feeling. We hardly ever turn on lights. (In addition to the large windows admitting light at the front, a series of skylights have been installed in the rear, earthward side of the house).

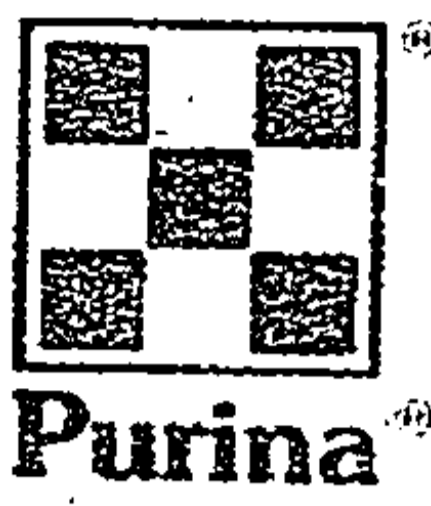
The Hansen house caused a great stir in Moses Lake and the family has grown accustomed to curious visitors dropping by from all over, including other states. One day an entire busload of people showed up. Already there is another earth shelter being built in the town.

Hansen believes firmly that, if anyone is considering such a move, professional advice is essential.

"You really need to spend some time with an architect on a project like this. It is important to understand that, beyond the esthetics of the home, you have to consider stress factors like weight on the roof and the pressure of the earth against the walls. Also waterproofing is very important and something an amateur might not even consider."



During the summer months, the house must be shaded from the sun. Note air intake system (lower right) which cools outside air and circulates it through the structure.



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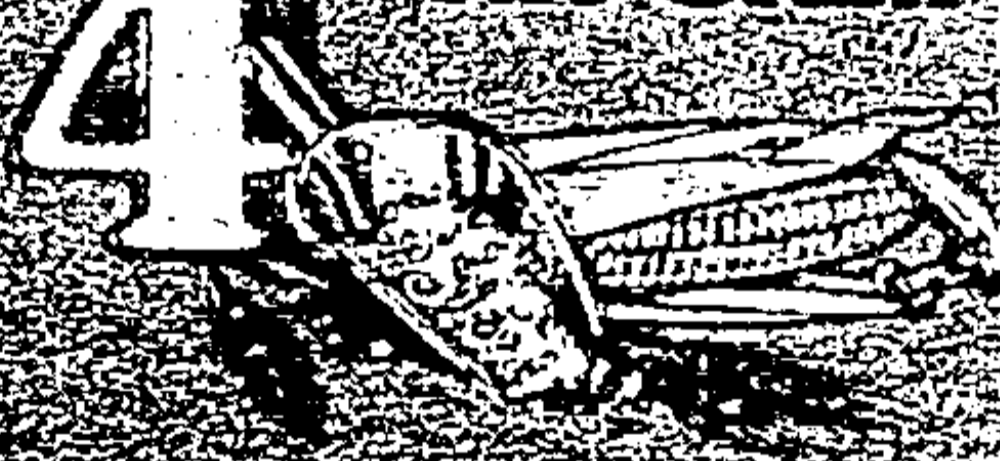
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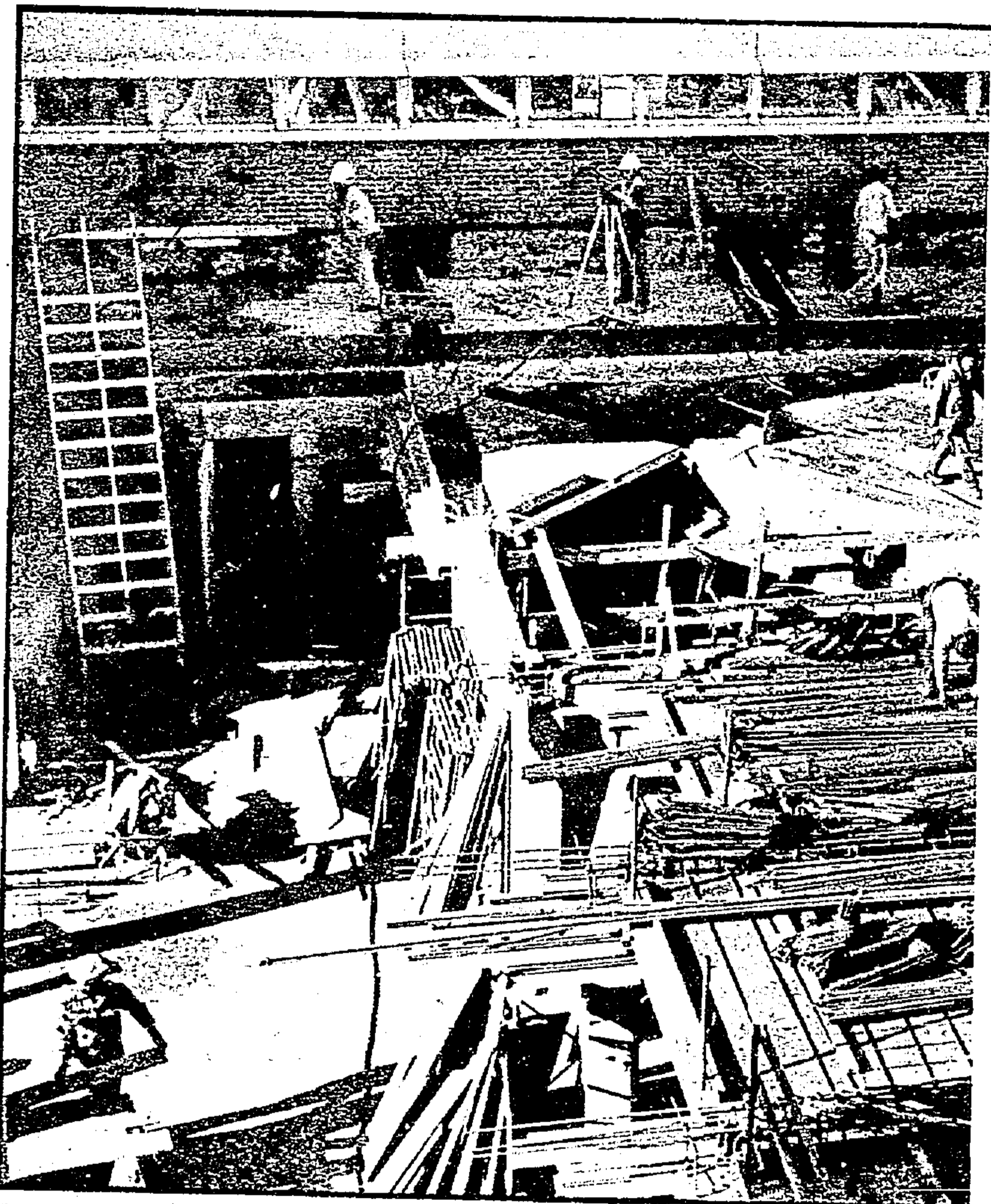
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EARTH SHELTERS



Construction of an underground addition to the University of

Meanwhile, back in Seattle, Miller and Hull have given the techniques of underground houses a great deal of thought since studying architecture together in college. Both served in the Peace Corps following college — Miller in Brazil and Hull in Afghanistan — and observed primitive housing which often uses the earth as shelter and insulation.

"It is actually a very simple idea," says Miller. "Basically, what you are doing is wrapping your house in a year-around temperature. And since in the Northwest the below-the-surface temperature is around 50 to 55 degrees, that is a real advantage."

Another advantage is the seasonal overlap of ground temperature. In other words, the warmth of summer ground temperature spills into winter. The same is true of winter temperature, overlapping into summer and serving as a cooling influence during the warm months.

"It really makes it an all-season kind of home," explains Hull.

The two architects outline the earth shelter into several basic concepts:

Materials or mass — "You have to start liking new materials in your home, like brick, concrete and other massive types," explains Miller. "First of all, they are needed structurally as well as to absorb and store solar energy."

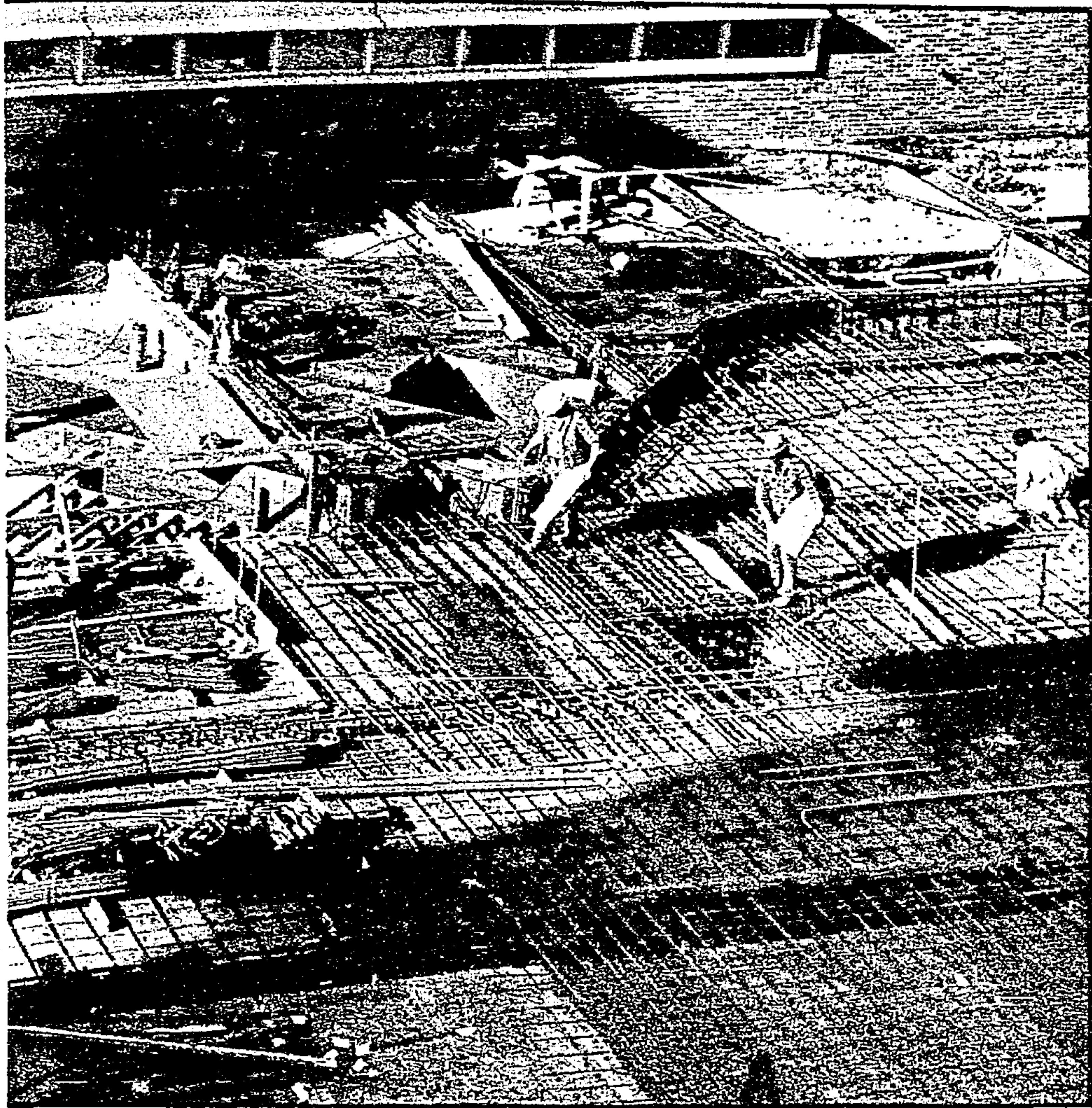
Wood is out in an earth shelter and wall-to-wall carpeting is definitely not suggested. Neither do anything for retaining heat. Best is a tile or brick floor with scatter rugs. Rock and masonry absorb heat during the day and radiate it at night.

Heavy retaining walls of rock or concrete blocks are necessary to handle the great weight of the earth in a below-surface house. But one can always decorate concrete and other materials with stain and designs, say the architects.

Solar energy — Earth shelters are ideally coupled with solar energy, claim Miller and Hull.

Double-glazed windows on the south side of the house added to the mass of the materials absorb a great deal of heat. An added feature of the south wall of glass is a better view than one would expect in an earth shelter. Because of the storage factor in this type of dwelling, a passive solar system is adequate (as opposed to an active solar system which has a specially designed system to store heat).

The house can work on solar energy year around even on the famous gray days of the Northwest, a condition referred to as "background radiation." Furthermore, the winter sun is



Washington's Health Sciences Building is well underway.

lower in the sky with the result the sun's rays shine directly into the glass wall. So intense is the heat from the summer sun, one needs some form of shade during the daylight hours.

Maintenance — "When you think of it," says Hull, "most maintenance on a regular house is on the exterior — your roof, siding, calking, etc. But in an earth shelter, only one side of the house is exposed to the weather. If you have earth on top you don't even have to worry about the roof."

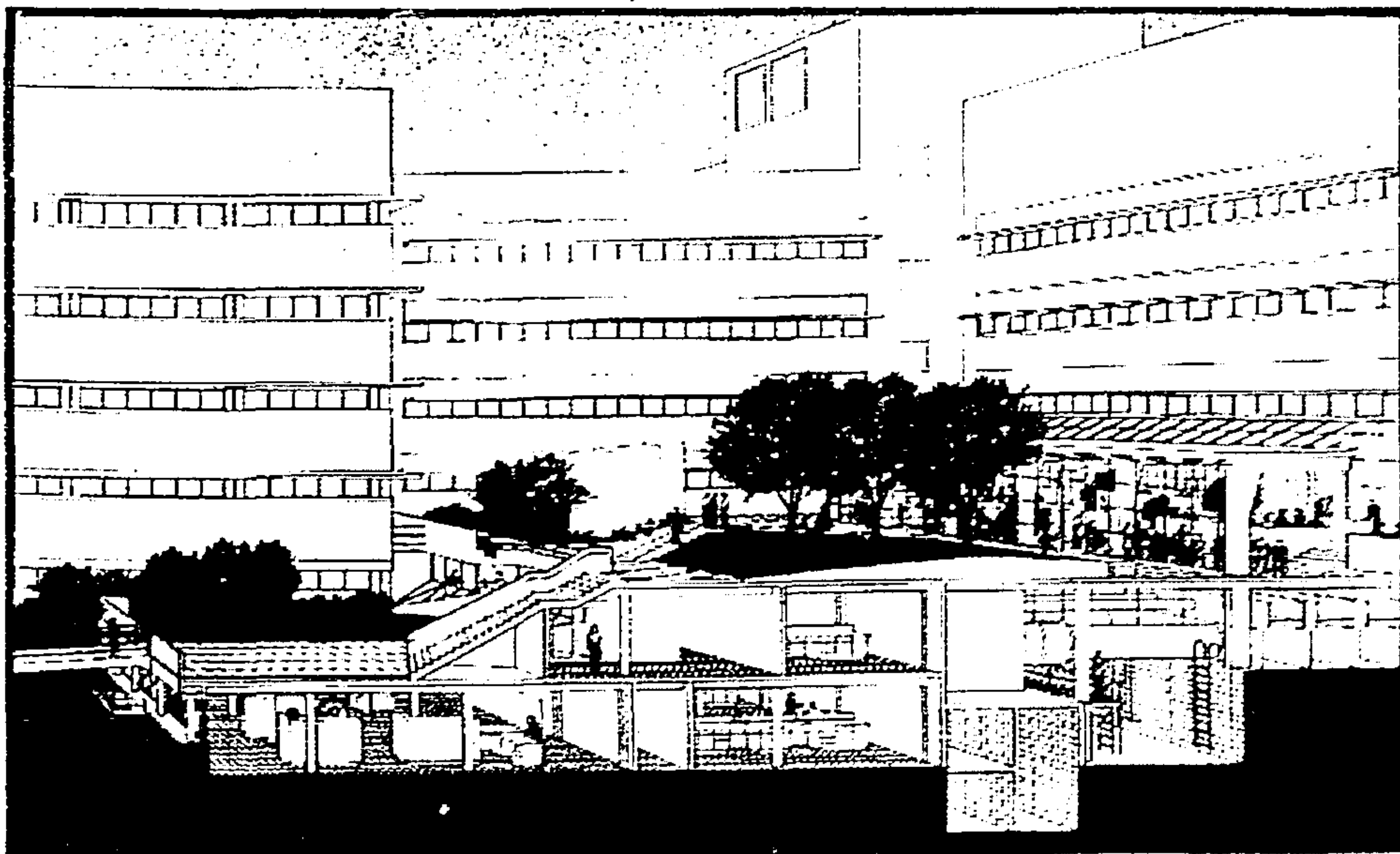
So far most earth shelters have been built in rural areas where better building sites are available. However, Miller and Hull do not reject the idea of working in more urban environ-

ments.

"I see earth shelters as ideal on some city lots considered undesirable," says Hull. "For example, sites along freeways would be a good use of land, if the house would open up on the south side and be buried on the freeway side. You wouldn't get any traffic noise at all."

Alas, turning your typical city house, built of wood, into an earth shelter just won't work (except in a very modified sense).

But, if you've got a piece of property with good southern exposure and enough soil to create a berm (banked with earth) and a certain sense of adventure, you are a candidate for taking the "plunge" into earth dwelling. You also may be one jump ahead of the future.



The underground addition at the Health Sciences Building fits snugly beneath the landscaping.

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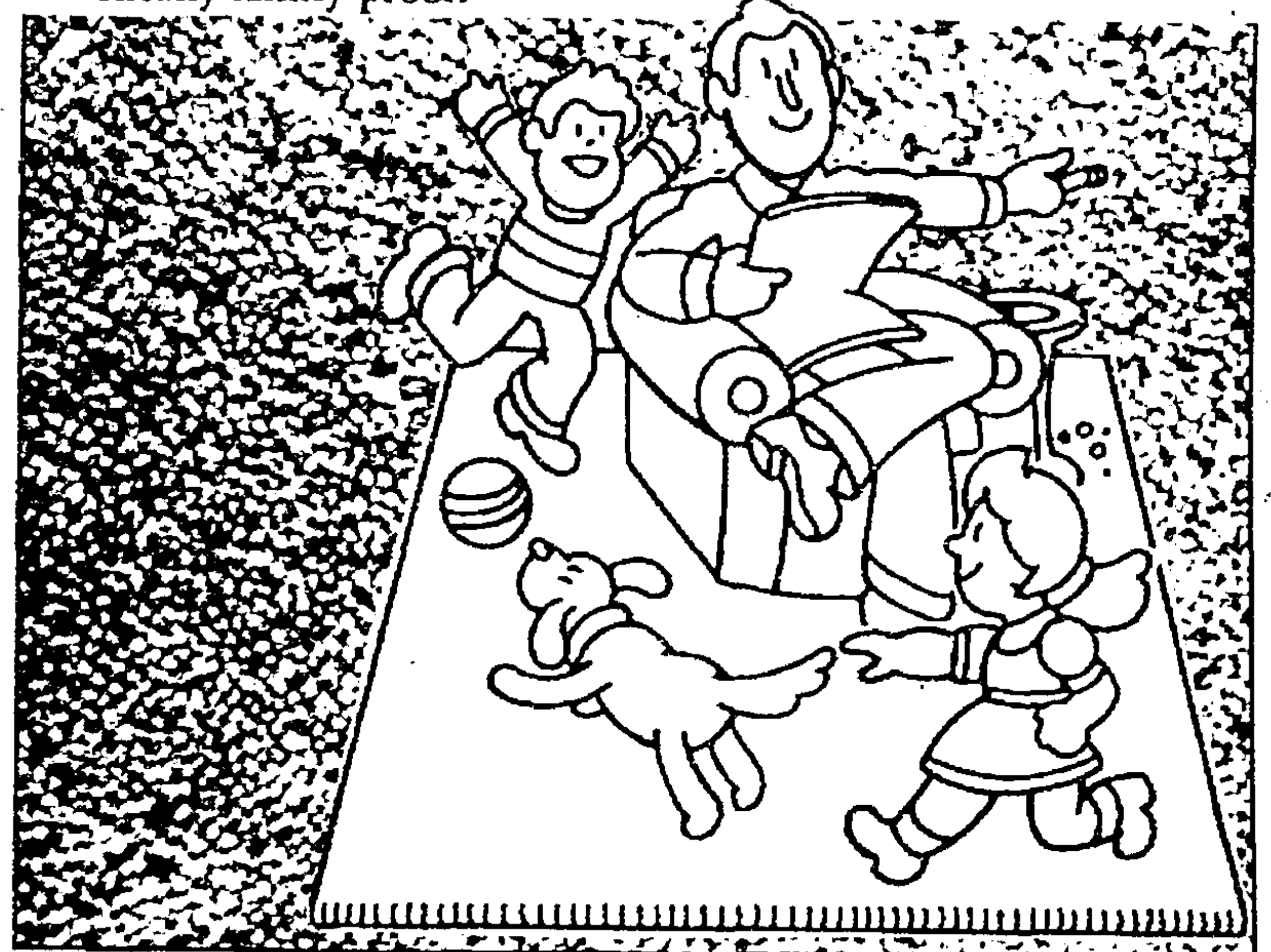
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