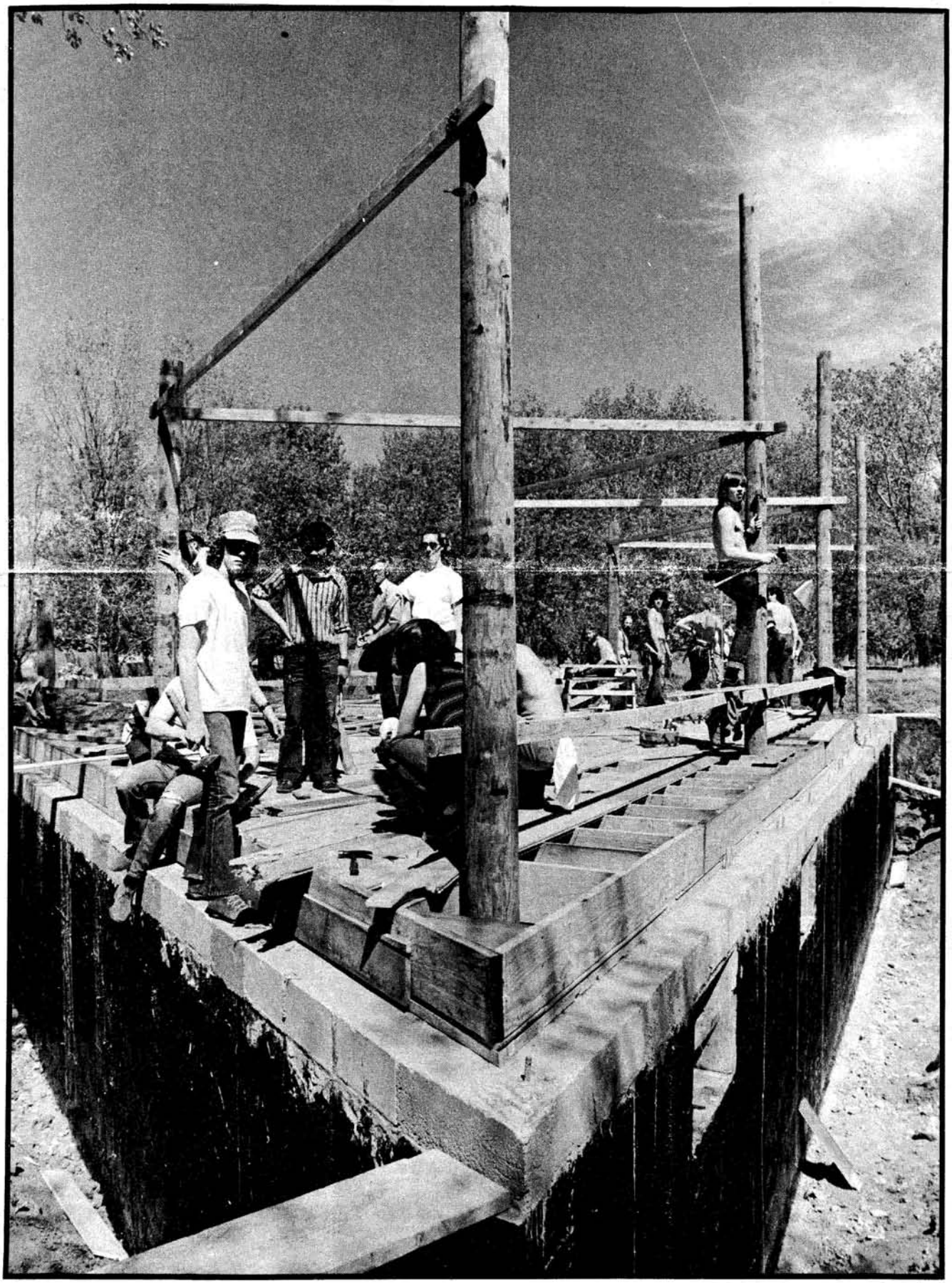
COMPLEMENT
Coordinator: Monica Bay Photo editor: Jim Byrne Design: Rick Beaulieu

Energy conservation

Sketches



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Project Ouroboros: dragons & compost

Reorienting industrialized civilizations toward energy conservation is going to take a lot of re-education and attitude change. One logical place to start this process is in architecture classes.

This year's Environmental Design class (Arch 1-003) is devoted entirely to architecture's role in energy conservation. Students are developing an awareness of energy conservation through design and construction of an energy conserving structure.

The structure is a small, two-level house incorporating energy-conserving design features such as increased insulation, solar water heating and a windmill to generate electricity.

The Environmental Design class project is named Ouroboros. Ouroboros, a mythical dragon that survived by consuming its own tail, is symbolic of energy conservation.

The house, which is being built on University land in Rosemount, was not designed to be a direct substitute for existing housing. Rather, it serves as an "action-oriented" learning experience for architecture students and a laboratory for testing energy conserving techniques.

Work on project Ouroboros began last fall when the 160 freshmen and sophomore members of the design class participated in orientation sessions and multi-media presentations designed to increase their awareness of architecture and energy conservation.

During winter quarter the students researched alternative sources of energy and construction techniques and held a design contest to derive a plan for an energy conserving house.

Engineering students also participated in the project by designing mechanical components of the house.

Final house plans were a synthesis of the many ideas submitted to the contest. The house resembles a trapezoid; the largest wall faces south so that windows and solar panels can collect the sun's energy. Side walls taper back to a small northern wall to reduce exposure to cold winter winds. A small greenhouse complements the south side of the building.

Inside the house, only the bathroom is enclosed by walls. Kitchen, dining and living areas can be modified by movable panels. A small loft provides a sleeping area.

Construction began spring quarter. Money and materials were provided by government agencies and local power companies and contractors. Environmental Design students provided the labor.

Working on the actual construction of the building they designed improves the students' architectural abilities 100 percent, Tom Bender, an associate professor of architecture, said.

Architects, particularly those who design extremely large buildings, have become too detached and alienated from the structures they design. Getting their hands dirty in effect brings them back down to earth, Bender said.

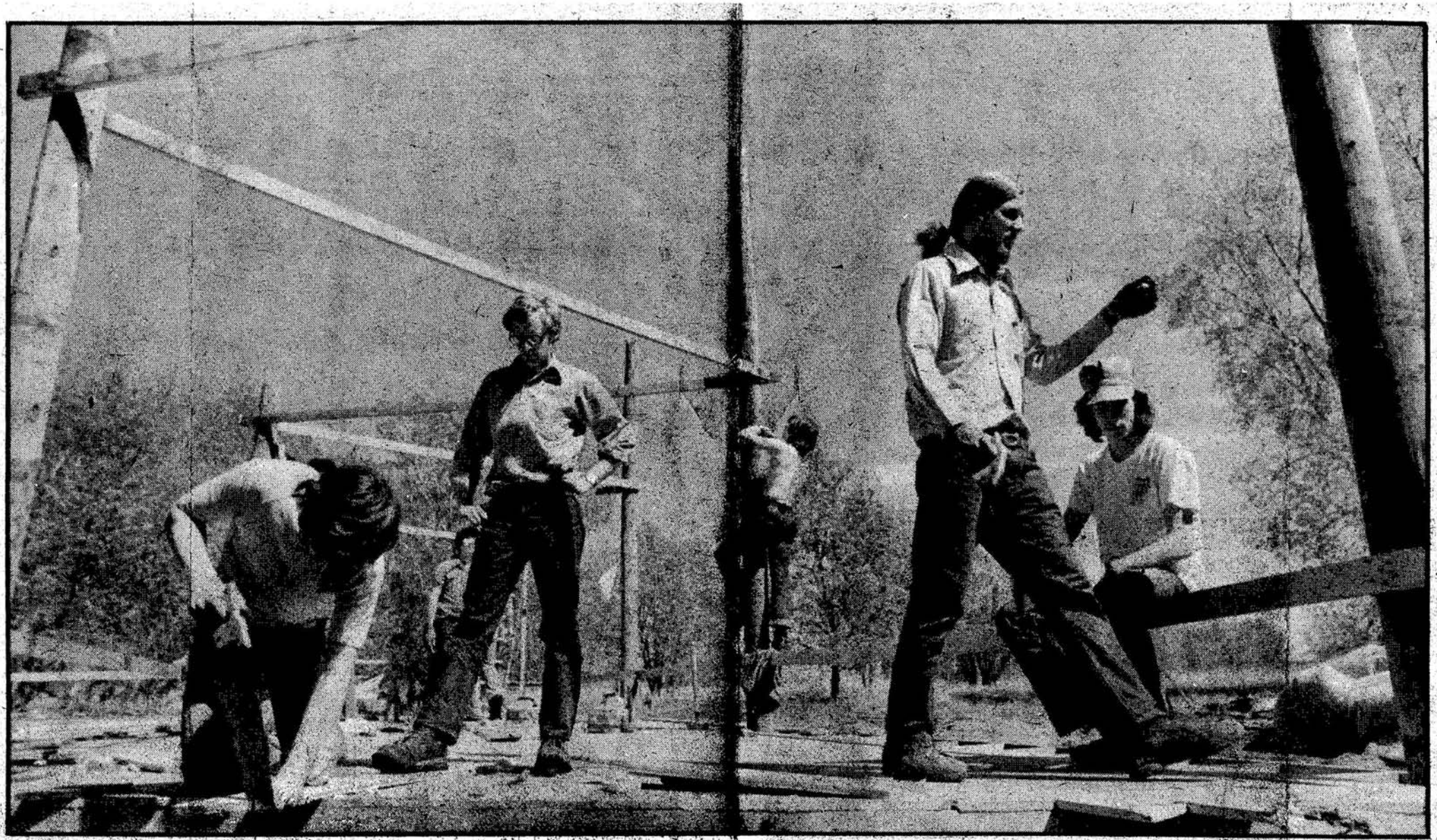
Experiments will include testing a sod roof. The sod insulates the house during the winter and cools it during the summer through evaporation of water. Experimenters may find it necessary to water the roof later in the summer.

A composting toilet is currently being installed in the house. Rather than using water to flush wastes into streams or to sewage plants, the composting toilet uses bacteria to break wastes down into fertilizer for use in gardens.

Eventually a methane generator may replace the composting toilet. The generator would use bacteria to convert domestic and plant wastes into methane, a usuable fuel, and fertilizer.

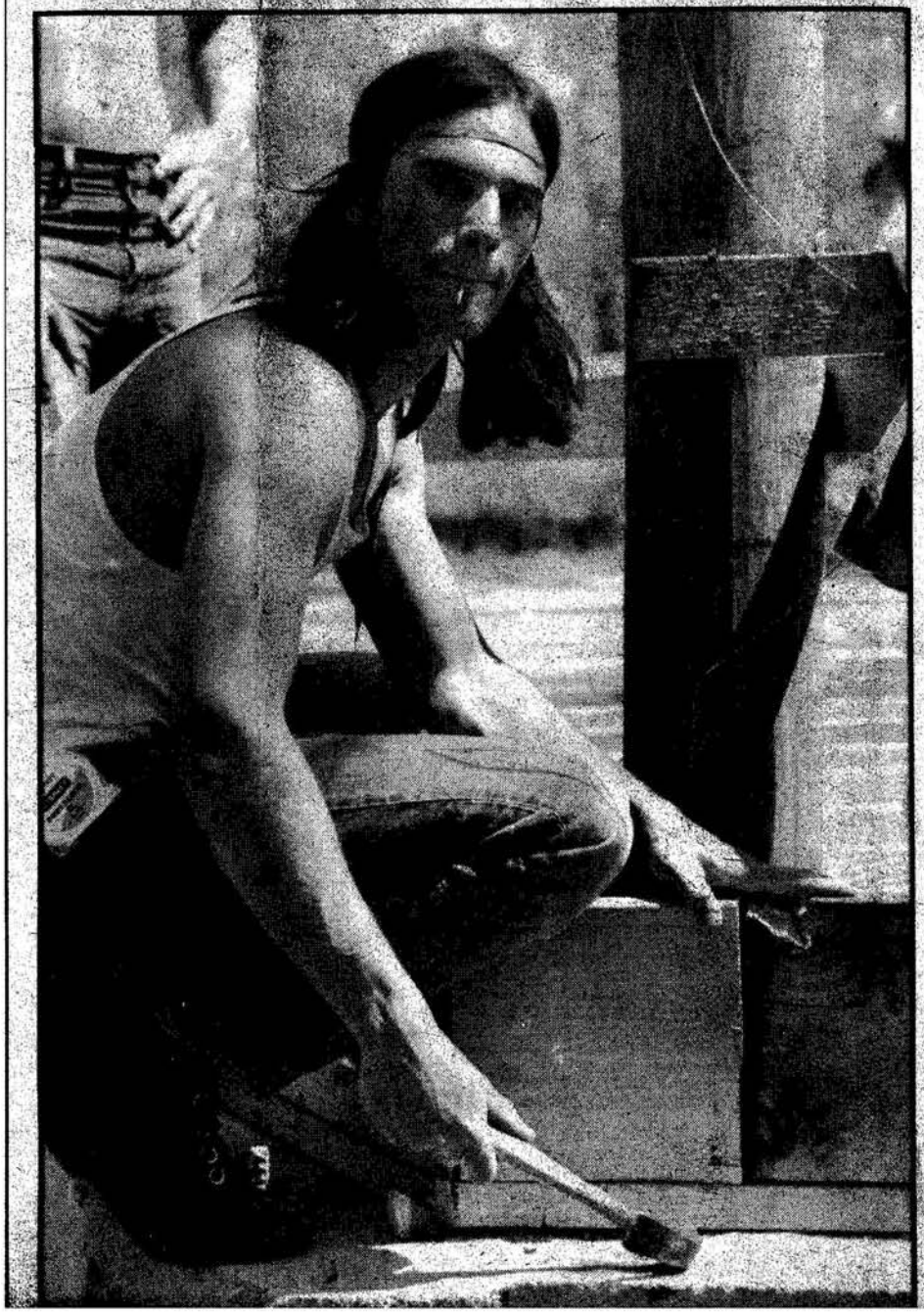
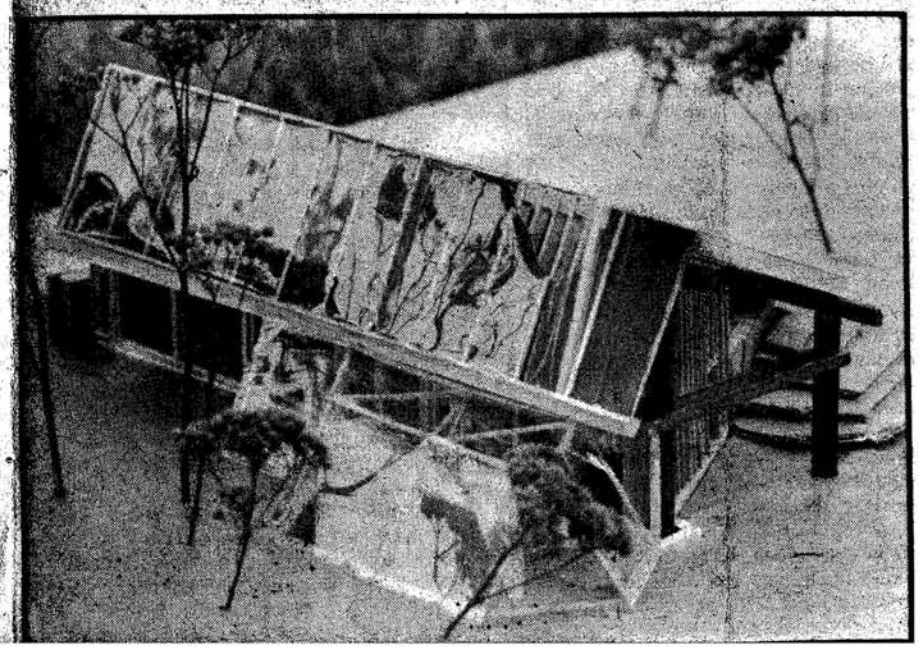
One of the more visible elements of the project, a windmill, will generate some of the house's electricity.

Living in an energy-conserving house may require a bit more effort than living in a contemporary house. Composting material must be removed from the toilet at regular intervals. Insulating panels may have to be put over windows on cold winter nights. House-dwellers should know how to repair and maintain the simple devices that help conserve energy.



Energy conservation in architecture

Photography by Bob Hain

Energy conservation in architecture

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