

## Hidden in the Hills

By Dave Milano

Two and a half miles up a steep dirt road deep in the mountains west of Galeton, Pennsylvania, lives an unusually talented man in an equally unusual building. John Ryan, retired electronics engineer, pilot, violinist, enthusiastic autodidact and now self-taught builder, makes his home in an underground, or “earth-sheltered,” house of his own design.

Ryan’s house is emphatically not what one might expect in a sub-surface structure. It is sunny and bright, warm, dry, and snug—not at all damp, dark, or cave-like. The building is also extremely energy efficient and astoundingly rugged. (The roof can easily support not only the requisite eighteen inches of earth needed to sustain plant life, but also the backhoes, loaders, and bulldozers necessary to build and perhaps someday repair) it. Ryan’s house is unique in the region and quite rare in the country—there are only an estimated 6,000 earth-sheltered buildings extant in the United States.

Ryan spent his professional career designing aircraft instrumentation at the Naval Air Development Center in Warminster, Pennsylvania. His workdays there were full of specialized technical labors; his spare time full of equally technical play. Ryan was and is an avid learner, indulging himself with books and articles on anything and everything interesting and new. Some of that effort took him into the world

of alternative architecture, including the writings of noted underground architect Malcolm Wells. Ryan became fascinated by the thought of designing an environmentally friendly, energy-efficient, earth-sheltered building. Not a man to be satisfied with mere intellectual exploration, he wanted to actually build one, and eventually, several years after retiring from his position at the NADC, he decided to give it a try. “I was getting bored with bowling,” Ryan explains. “I needed something to do.”

He began by searching for an appropriate building site “by looking over maps of Pennsylvania for a big green area,” Ryan recalls. He found a satisfactory location in Pennsylvania’s northern tier. Numerous trips to this region of wooded hills, guided by local realtors, led him to his site: a 365-acre parcel of plunging forests and hidden glades west of Galeton. What caught his attention there was a rolling semi-plateau that faced directly south—the perfect place to make use of sunshine for light, heat, and perhaps electric power.

Ryan had his location, but there was a problem. The building site was 300 feet higher than the nearest road, and the only vehicular access

was an old logging skid-lane—rough, precipitous, barely adequate for 4-wheel drive vehicles, and impossible for construction traffic. Ryan turned to local forester Jim Leach to help build another access road, which turned out to be a full mile and a half of new cuts and switchbacks. Once the road was carved out of the hillsides, Ryan was finally ready to launch the project.

He had imagined his building as seven reinforced concrete “cells,” each approximately twelve feet wide by twenty-four feet deep, nested alongside one another and embedded into the hillside. The southern ends of the cells would be glassed over and the only visible part of the home. The rest of the building would be covered with earth and native plants. With this vision in mind, Ryan sat down at his computer and created floor plans, cross sections, and construction details, consulting a structural engineer to determine just

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