



50 MUST-SEE NATURAL AND MAN-MADE MARVELS

Wonders of the world: Biosphere 2

There never really was a Biosphere 1. Well, actually, according to the folks originally behind Biosphere 2, there was and still is. They considered the earth and its environment to be Biosphere 1, and their sprawling 3.15-acre glass-enclosed ecosystem in the Arizona desert was therefore Biosphere 2. This name game was just one of the many things about this scientific (or pseudo-scientific?) enterprise that seemed too clever by half.

Built in the late 1980s with \$150 million of Texas oil magnate Edward Bass's money, the giant terrarium was indisputably an engineering marvel. Covered with 6,500 plates of high-performance glass, the structure is airtight, with mammoth air conditioners and heaters in constant operation to keep the interior environments stable. Those environments include a nearly 3,000-square-yard farm, a 2,000-square-yard rainforest, an "ocean" with a coral reef, wetlands, grasslands and a desert. There was housing inside, since the original intent was to pioneer an effective system for space colonization.

In an experiment, eight men and women shut themselves in on September 26, 1991, and embarked on a two-year "voyage." Things did not go well. The oxygen began to thin, eventually to a level approximating that of air at 18,000 feet of altitude. Two supplies of pure oxygen were pumped in from outside to keep the project going. While bananas in the rainforest did well, other crops failed, and each crew member's diet was restricted to 1,750 calories per day. Crankiness ensued; before a year was out, the group had split into two tense factions. The researchers endured the two years, but after they emerged, rail thin, details of their ordeal became widely known. As *Time* magazine reported,

"[T]he veneer of credibility, already bruised by allegations of tamper-prone data, secret food caches and smuggled supplies, has cracked ... The two-year experiment in self-sufficiency is starting to look less like science and more like a \$150 million stunt."

That was then, this is now: After a sale of the facility, management was assigned, in 2007, to the University of Arizona, which will use the Biosphere as a laboratory to study climate change and other environmental issues. The big glass folly has finally found its mission.



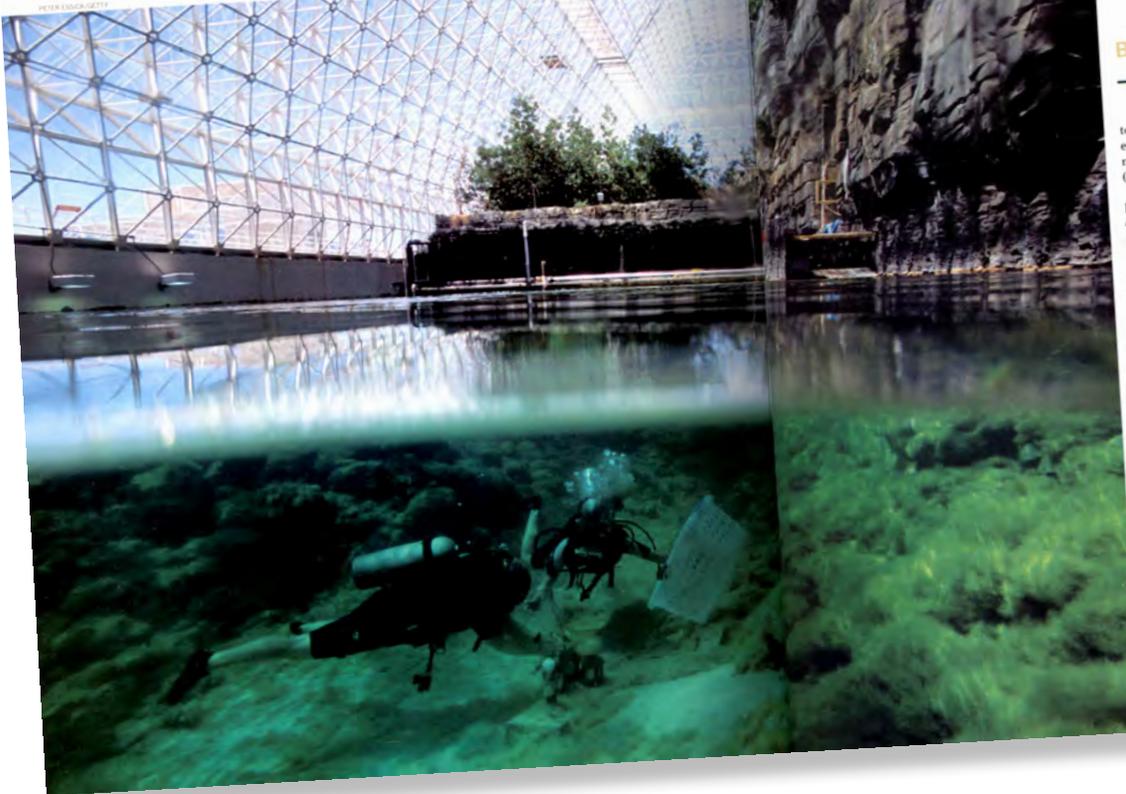
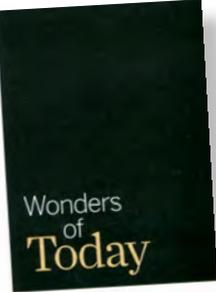


Wonders of the world: Biosphere 2

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It's easy to make fun of Biosphere 2 as a kind of bizarre white elephant in the arid Arizona highlands. But put to proper use, the place can produce some solid science. Below: Technicians in Biosphere's ocean are placing calcareous algae in jars during an experiment that hopes to determine how increases in atmospheric CO₂ reduce the amount of calcification in coral and algae. If data gathered in the desert ultimately helps in efforts to stabilize the planet's threatened coral reefs, Biosphere 2 will certainly have had the last laugh.

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