says Anguita. ESO, in contrast, has no special arrangements with Chilean astronomers, requiring instead that they compete for time alongside researchers from its member countries.

Poor labor relations have also dogged the European observatory. As an international organization, ESO did not recognize local trade unions at La Silla—workers had to take their grievances to the international labor organization in Geneva. Chilean workers formed an independent trade union, however, and in 1991 it protested the preferential pay and benefits given to staff recruited in Europe. In contrast, Mark Phillips, director of CTIO, says observatory workers there have had a trade union for years, and relations between the union and the observatory management have been good. "We follow Chilean law to the letter," says Phillips.

The most serious threat to the VLT project, however, is the dispute over the land, which crystallized what Phillips calls a "mood of antagonism" in Chile toward ESO. In 1988, Chile's military dictatorship gave ESO 725 square kilometers on Paranal for the new project and agreed to extend the privileges that ESO and the U.S. observatories enjoy at existing facilities—including exemption from taxes and immunity from national laws—to the new site. When democracy was restored to Chile in 1990, however, doubts about the deal began to surface.

ESO

Disputed ground. The first parts for the Very Large Telescope are being shipped to Chile's Cerro Paranal.

Last year some members of the Chilean parliament declared that the military junta's donation was not legal. Meanwhile, descendants of Admiral Juan Latorre, a hero of the 1879 War of the Pacific against Peru and Bolivia, claimed that they own some of the land around Paranal and are suing both ESO and the government. A judge from Chile's supreme court is examining the evidence. ESO maintains that, whatever happens in the parliament and the courts, Chile must honor its 1988 agreement. An international treaty overrides national law, says Giacconi.

To try to win the Chileans over, ESO has spent the last year negotiating a supplementary treaty with the Chilean government that would meet some of the demands of local workers and astronomers. "Politically, the time is right for a new set of rules," says Creola. Chilean labor law will be incorporated into the new treaty and, although the exact details are not yet finalized, Creola says that the current version guarantees 10% of the viewing time on the La Silla telescopes to Chilean researchers. On the VLT, the figures would be 5% for Chileans and another 5% for joint projects between Chilean and European astronomers.

But ESO is still taking no chances: If relations with Chile continue to worsen, ESO already has its eye on a nice, flat-topped mountain in Namibia called Gamsberg, which has climatic conditions similar to La Silla's. But many astronomers, even in Chile, would be sad to see the VLT go elsewhere. "Paranal is the best place for the VLT. It would be a loss for astronomy in general," says Anguita. Says Phillips: "It's time to heal the wounds and get going on this telescope."

–Daniel Clery

ECOLOGY

Wiping the Slate Clean at Biosphere 2

A few months ago, the outlook could hardly have looked bleaker for the ambitious glass-enclosed ecology project in the Arizona desert known as Biosphere 2. After 2 years of technical bugs and relentless criticism from scientists, Biosphere's troubles boiled over in late March, when its owner, Texas billionaire Ed Bass, brought in federal marshals to oust its managers, whom he accused of financial mismanagement. But now big changes are afoot, changes that some of the project's critics think could help it finally live up to its scientific potential.

This week, Bass announced that Biosphere has formed a non-profit joint venture with Columbia University's Lamont-Doherty Earth Observatory to conduct research at the $150 million, 3.15 acre facility, the world's largest sealed ecosystem. The venture will be run by an executive board including such prominent academics as Wallace Broecker, a Lamont-Doherty geochemist; its science committee will be headed by Michael McElroy, chairman of the Department of Earth and Planetary Sciences at Harvard University. The new managers will develop Biosphere's first research plan and will forge ties to other research institutions. Says biogeochemist Bruno Marino, who left Harvard this month to become Biosphere's new research director, "We're wiping the slate clean."

The formula is exactly what some scientific critics have said all along that the visionary but troubled project needs. "This is great news," says Gerald Soffen, director of university programs at the NASA-Goddard Space Flight Center, who was once an adviser to Biosphere and has since been an outspoken critic. Complete with rainforest, desert, and tiny ocean, the facility is "an experimentalist's dream," says Marino. But ever since its completion in 1991, critics have complained that science was taking a back seat to New Age theater as successive crews of "Biosphereans" sealed themselves into the miniature ecosystem. Biosphere's managers shunned controlled experiments and allowed outside scientists in only reluctantly (*Science*, 11 March, p. 1368).

"This is great news....It sounds like science is finally taking over."

—Gerald Soffen

Now those managers are gone, and Biosphere can get down to "good, basic, objective science," Marino says. At least a dozen researchers from fields such as ecology, plant biology, and soil physics are being commissioned to visit Biosphere and determine what science could be done there—for example, studies of how plant growth is affected by high concentrations of carbon dioxide.

Biosphere's new keepers know they have a lot of work ahead, especially if they are to attract funding from federal agencies and other sources to make the research self-supporting. "We need to show that we're credible, that we really are going to do good science," Marino says. Broecker, who is one of the few scientists to have done experiments within Biosphere, is already seeking federal funds for work there, and this fall he and graduate student Jeff Severinghaus may publish two papers on studies of the carbon cycle in Biosphere. "We're dipping our toe in the water to see what reviewers and government agencies think of this," Broecker says.

But Soffen thinks Broecker and his colleagues have made a good start. "It sounds like science is finally taking over."

–Jocelyn Kaiser