

Part of this fight is a clash of outlooks. Fiedel zeroes in on stone-cutting tools and projectile points, which he and others consider of prime importance because they are undoubtedly made by humans. "Dillehay should make sure that everybody knows where those bifaces come from," says Driver. "That's what's going to convince many North American archaeologists."

But Dillehay's team built its case mainly on simpler stone flakes. The researchers used wear patterns and the preferential use of certain stone types to argue that the flakes were human handiwork, and they determined their age from nearby radiocarbon-dated materials. Ruth Gruhn, a University of Alberta archaeologist who has worked extensively in early South American sites, thinks that's a reasonable approach. "North American archaeologists have a very strong bias towards bifacially flaked projectile points because North America is just saturated with projectile points," she says. But in South America, Paleo-Indian peoples preferred simple unifacial tools, she says. She thinks that there's "no question" that the Monte Verde flakes were created by pre-Clovis humans.

All the same, other researchers are dismayed both by the substance and the sheer quantity of errors in the report. "To find that many mistakes and confusions in the final report for such a significant site is certainly very disappointing," says Sandweiss. But the question remains: Are those errors fatal? Dillehay's team now needs to clear up the inconsistencies, says David Meltzer, an archaeologist at Southern Methodist University in Dallas and a member of the panel that visited Monte Verde. "Then once all [the minor glitches are] eliminated," he says, "it will be worth taking a look and saying, 'Are there legitimate issues here?'" —HEATHER PRINGLE  
Heather Pringle writes from Vancouver.

#### SCIENCE EDUCATION

## Scientists Strike Back Against Creationism

New Mexico's school system took an evolutionary leap earlier this month when the State Board of Education voted to ban a creationist credo that had influenced the curriculum for 3 years. The counterpunch was largely the result of a grassroots campaign engineered by a group of scientists who are now moving to raise the scientific sophistication of teachers and students throughout the state. "Without scientists, the trend to reverse [the teaching of creationism] would never have started," says Kim Johnson, a physicist at Quasar International Inc. in Albuquerque and president of New Mexico's Coalition for Excellence in

Science Education (CESE).\*

New Mexico's success is encouraging researchers in Kansas who are rallying opposition to new statewide education standards that eliminate the teaching of evolution and anything suggesting our planet has been around for billions of years (*Science*, 20 August, p. 1186). Because creationists believe that God created the universe, the Earth, and life in 6 days 10,000 years ago, any science that contradicts that view—including the big bang theory, the geologic timescale, and the validity of radioactive decay as a measure of great age—is vulnerable, says Marshall Berman of Sandia National Laboratories in New Mexico. "We have to realize that this is an assault on all science," he says.

The assault took most New Mexicans by surprise in 1996, when with just 2 hours of public notice, the New Mexico board voted to purge many aspects of biology, geology, and physics from the state's education standards, which guide the development of teacher lesson plans and test materials. In a matter of days, Johnson and Berman began rallying colleagues to action. "We zeroed in on the solution—to get somebody knowledgeable on the board," Johnson says. Berman won a seat on the Board of Education last year, replacing a creationist, then helped orchestrate a public education campaign. "We had all these Ph.D. scientists walking around neighborhoods, pounding on doors," recalls Berman, a nuclear physicist. "It was a miracle—pardon the expression—to watch these personal transformations take place." Two other staunch pro-science candidates ousted a creationist and a supporter of creationist policy in local elections last November, setting the stage for change.

Stealing a page from the creationist play book, the grassroots campaign built a broad base of support that includes teachers, parents, and many religious leaders anxious to defend the separation of church and state in public education. Supporters also formed CESE last year to raise the state's level of science teaching. One program they initiated is "Hotspots," which pays for teachers to spend 2 weeks in the summer out in the field with geologists. Meanwhile, a state-appointed panel drafted science performance standards—what students need to know at each

grade—that reincorporate evolution and other science fundamentals. "Just about every Methodist minister in New Mexico signed a letter supporting these changes," Berman says. The two-pronged effort paid big dividends: On 8 October, the Board of Education voted 14 to 1 to adopt the new standards and ban creationism from the curriculum. In a ringing endorsement, Catholic Archbishop Michael J. Sheehan published a letter in two New Mexico newspapers on 15 October strongly supporting the revisions.

Kansans opposed to their school board's new anti-evolution guidelines are hoping for a similar victory. They have put together a coalition, Kansas Citizens for Science<sup>†</sup>—initiated largely by scientists drawn from state universities and colleges—that is planning an education campaign to reverse the decision. Other groups are considering a legal challenge to the standards based on the separation of church and state.

In the meantime, Kansans are getting supporting fire from a surprising weapon: copyright law. The National Research Council, the

American Association for the Advancement of Science (publisher of *Science*), and the National Science Teachers Association have all denied the Kansas board permission to use portions of their respective science standards publications in the state's new guidelines. That means the guidelines cannot be implemented until after they are revised to remove the copyrighted materials—a costly and timely endeavor—which should leave last year's sound standards in place for the rest of the fall term, predicts biologist Steve Case, a member of the new coalition. He and others welcome the delay. "It's tough to weed something out once it's been implemented—very much like cancer," Case says.

Creationists forces are not resting on their gains, however. The Web site of the Christian Coalition of New Mexico warns its constituents that Berman will continue to "take a strong pro-evolution stand" and urges them to try to unseat him in the 2002 elections. But Berman and his colleagues have their sights set on the road ahead. "The board will be regularly reviewing and improving its standards, because science is a growing, changing field," he says.

—BERNICE WUETHRICH

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**Leading the charge.** Berman's group helped purge creationism from New Mexico's public schools.

\* [www.cesame-nm.org](http://www.cesame-nm.org) † [www.kcfs.org](http://www.kcfs.org)