Skeptics Question Whether Flores Hominid Is a New Species

When a research team announced last month that it had found a new species of 18,000-year-old tiny human in a cave on the Indonesian island of Flores, it seemed almost too amazing to be true (Science, 29 October, p. 789). Now a small but vocal group of scientists argues that the skeleton dubbed *Homo floresiensis* is actually a modern human afflicted with microcephaly, a deformity characterized by a very small brain and head. Meanwhile, an Indonesian scientist who also challenges the skeleton’s status has removed the skull to his own lab for study. But members of the original team of Australian and Indonesian scientists staunchly defend their analysis, and outside experts familiar with the discovery are unmoved by the critique.

The main challenge comes from paleopathologist Maciej Henneberg of the University of Adelaide in Australia and anthropologist Alan Thorne of the Australian National University in Canberra. Neither has seen the specimen itself, and as Science went to press, they had yet to publish their criticisms in a peer-reviewed journal. But Henneberg published a letter in the 31 October Adelaide *Sunday Mail* arguing that the skull of the Flores hominid is very similar to a 4000-year-old microcephalic modern human skull found on the island of Crete. And at a press conference on 5 November, Indonesian paleoanthropologist Teuku Jacob of Gadjah Mada University in Jakarta claimed that the specimen was a diminutive modern human. Jacob, once described as the “king of paleoanthropology” in Indonesia (*Science*, 6 March 1998, p. 1482), has had the skull transported to his own lab from its original depository at the Center for Archaeology in Jakarta, according to center archaeologist Radien Soejono, who is a member of the original discovery team.

In its original paper, the team considered and rejected several possible deformities, including a condition called primordial microcephalic dwarfism (*Nature*, 28 October, p. 1055). But Henneberg claims that the authors failed to consider a related condition called secondary microcephaly. “They jumped the gun,” he told *Science*. Henneberg, who with Thorne favors a multiregional model of human origins that some say is at odds with the finding of a distinct but recent human species on Flores, concludes that the skeleton is “a simple *Homo sapiens* with a pathological growth condition.” (Multiregionalism holds that modern humans evolved after 2 million years of interbreeding among worldwide populations; the evolution of a distinct species would require a long period without interbreeding).

But archaeologist Michael Morwood of the University of New England in Armidale, Australia, a leader of the team that discovered the skeleton, insists that the skeleton is not a pathological case. “We now have the remains of at least seven individuals,” he says. “All are tiny, and all can be referred to as *Homo floresiensis*.”

The team is backed by several outside researchers. Anthropologist Leslie Aiello of University College London says the skeleton cannot be that of a modern human because the postcranial bones indicate a separate species. “The pelvis is virtually identical to that of an australopithecine,” much wider than the modern human pelvis, she says. And compared with modern humans, “the arms are long in relation to the legs.” Chris Stringer of the Natural History Museum in London sums up many researchers’ opinions by saying, “This cannot be a peculiar modern human.”

—MICHAEL BALTER

Condensed Matter Physics

Spin Current Sighting Ends 35-Year Hunt

The electron’s charge gets all the glory: It is, after all, responsible for the plethora of electronic gizmos that surround us. But the particle’s magnetic behavior—a property known as spin—has also been tantalizing scientists for decades. Thirty-five years ago, for example, Russian theorists suggested that impurity atoms in a semiconductor might interact with electrons’ spins to redirect currents flowing through it. A related effect, called the Hall effect—in which magnetic fields push electrons around by interacting with their charge—had been known for more than a century. But despite decades of work, the spin-based Hall effect had never been spotted—until now.

In a paper published online this week by *Science* (www.sciencemag.org/cgi/content/abstract/1105514), researchers led by David Awschalom, a physicist at the University of California, Santa Barbara (UCSB), report the first experimental sighting of the spin Hall effect. “It is as beautiful as it is a breakthrough experiment,” says Gerrit Bauer, a theoretical physicist at the Delft University of Technology in the Netherlands. Daniel Loss, a theoretical physicist at the University of Basel, Switzerland, agrees. “The data is very clear,” he says. “It’s very impressive.” The new scheme works in standard semiconductors widely used in industry today. That could be a major boon to the nascent field of spintronics, which promises to create a new class of high-speed, low-power electronic devices that manipulate the spin of electrons.

An American physicist named Edwin Hall discovered the original Hall effect in 1879. The effect occurs when an electric current moves through a metal strip while a magnetic field is applied perpendicularly through the metal. The magnetic field interacts with the charge of the moving electrons, deflecting some to the left and some to the right sides of the strip. In 1971, Mikhail Dyakonov and Vladimir Perel of the Ioffe Physico-Technical Institute in Leningrad suggested that electrons’ spins might trigger similar detours. These spins behave like...