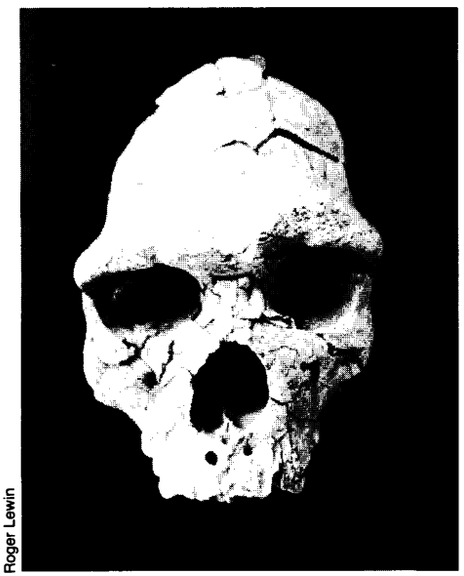
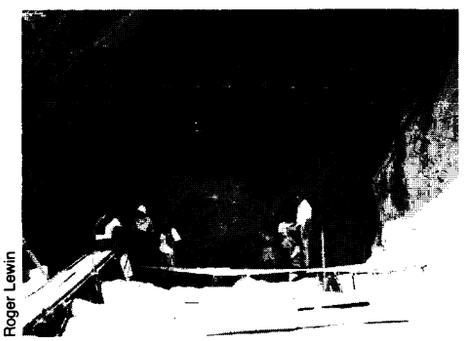


Roger Lewin



Roger Lewin

Qui est-ce? *The Arago fossil face (top), recovered from a cave site in the Pyrenees (bottom), is said by some to be* Homo erectus *and by others to be a form of* Homo sapiens.

however. "It's difficult to assign a date to this specimen because we don't know exactly which layer it was found in," de Bonis continues. "The date you come up with depends on the method of dating used, as well as on the level of the deposit you think is appropriate." Estimates range from 600,000 to less than 200,000 years old.

With both age and identity in dispute for many of the earliest European fossils, it's not surprising that researchers turn to stone tools to follow the trail of hominid history. Specialists from a dozen countries gathered at the Paris meeting to discuss archeological sites ranging from Israel to the Iberian peninsula. "Our goal was to bring together the paleontologists, the archeologists, and the prehistorians and to draw up an inventory of the oldest sites, to shed some light on the first appearance of humans in Europe," says Bonifay.

The Massif Central of France was not the only European region with claims of early human occupation. One site, Senèze, an ancient riverbank in the Haut-Loire, contains crude pebble tools: "rare, but incontestably of human origin," says Bonifay. The tools are dated to 2 million years ago. And Spain, Italy, Germany, Czechoslovakia, Romania, and Turkey also have candidate sites that would overturn the idea of a relatively recent arrival in the continent.

But Howell argues that these sites are in "the wrong places." If human ancestors really were in western and central Europe 2 million years ago, he reasons, it should be possible to find fossil and archeological traces of them even earlier in Turkey, Bulgaria, Romania, and Hungary. "I feel sure they arrived in Europe from the south and east," says Howell. "But so far, most of the early sites we're finding are in the northern Mediterranean. We're not yet able to track hominid dispersal into Europe."

Nevertheless, the consensus at the meeting in Paris was that the continent may have been occupied much earlier than most researchers had previously been prepared to accept. Putative artifact sites in the Massif Central, for example, have now been provisionally dated to 1.3, 1.5, and over 2 million years ago. And some participants in the conference were able to inspect them firsthand, on a field trip arranged by Bonifay.

Says Turner, "What Bonifay has done is open the debate and force people to go and look for themselves. It's important that people get together and examine the evidence on the ground. It was a very useful meeting in this sense." ■ SANDRA ACKERMAN

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Rifkin Tries to Stop Galileo Launch

On 28 September, activist Jeremy Rifkin and two antinuclear groups asked the U.S. District Court in Washington, D.C., for an injunction against the National Aeronautics and Space Administration's (NASA's) attempt to launch the Galileo spacecraft to Jupiter aboard the space shuttle Atlantis, an event now scheduled for 12 October.

The plaintiffs include the Christic Institute, a Washington-based public interest law firm; the Florida Coalition for Peace and Justice, a statewide activist group; and Rifkin's own Foundation on Economic Trends. As *Science* went to press, their hearing date was scheduled for 10 October.

The groups allege that the launch poses an unacceptable risk to the public because of Galileo's two Radioisotope Thermoelectric Generators, which are designed to provide the spacecraft with power from the radioactive decay heat of some 20 kilograms of plutonium oxide. They assert that a Challenger-like explosion could disperse the plutonium, which is a potent carcinogen when it lodges in the lungs or bones, and thus render large areas of Florida uninhabitable.

Nonsense, says Dudley G. McConnell, the NASA official in charge of the environmental impact statement on the Galileo launch. The number that Rifkin quotes for the probability of plutonium release, 1 chance in 430, "is no number that we recognize." If risk is defined as the consequences of an accident times the probability of its happening, he says, "then the average individual risk of cancer mortality [in any given accident scenario] is *never* more than 1 in 100 million."

Not surprisingly, however, Rifkin and company aren't buying it. "We are saying that NASA's final environmental impact statement is grossly inadequate," says Rifkin. The injunction suit charges that the agency has deliberately used overoptimistic risk assessments and, moreover, has refused to consider alternative power sources.

Not true, McConnnell replies. NASA did two independent risk analyses, one by the space shuttle office and one by the new safety office that was set up in the aftermath of Challenger. Neither found any significant risk. Simultaneously, still another analysis was carried out by the Interagency Nuclear Safety Review Panel. And with few exceptions, mostly due to differences in modeling assumptions, its findings were consistent with those of the other studies.

NASA argues, moreover, that there is no alternative power source for Galileo. If the spacecraft were equipped with solar arrays adequate for the faint sunlight near Jupiter it would weigh an extra 500 kilograms, too much for any U.S. launch vehicle to get it there. Besides, the solar cells would quickly fry in the giant planet's radiation belts.

Still, NASA is taking the injunction threat very seriously. Since Galileo's launch window lasts only from 12 October to 21 November, a long legal battle could force a delay in the mission until the next opportunity in May 1991, at a cost measured in the hundreds of millions of dollars. Lawyers at NASA and at the Justice Department have already been briefed.

Says NASA spokesman Charles Redmond, "We have great concern that a project that has suffered nearly a decade of delay be subjected to another delay. Is that in the best interest of the country?"

■ M. MITCHELL WALDROP