because infected children may not show the effects of the virus.

Despite such numbers, development of a vaccine against hepatitis A had not been a high priority in the United States until recently. Jordan speculates that this comparative nonchalance arises from the fact that, unlike the other two strains of the virus, hepatitis A is not a chronic disease and is not associated with long-term health effects like liver cancer. One reason it has now become more important, he says, is that the rise in day care centers has increased the opportunity for young children to pass around the virus.

Until now, the only prophylactic measure available was a large injection of antibodies, or gamma-globulins, isolated from blood. CDC estimates that these painful injections can be only 80% to 90% effective. Worse, protection does not last long: The shots have to be administered frequently, usually every 6 months for individuals in high-risk situations. In contrast, the new vaccine may be protective for as much as 7 years, Nalin says.

The data on the vaccine's effectiveness come from a trial conducted in Monroe, New York, that included more than 1000 children. Pediatrician Alan Werzberger, the study's principal investigator, gave half the participants a placebo and half the vaccine in a double-blind study. When the first analysis of the study results was made on 6 November, all of the 18 participants who manifested signs of hepatitis were found to be in the placebo group. Furthermore, says Nalin, all of the children receiving the vaccine had protective antibodies in their blood about 2 weeks after inoculation. In an earlier study that determined that the vaccine was well tolerated and had no serious side effects, 98% of adults receiving the vaccine had protective antibodies after receiving two doses.

The vaccine, says Nalin, causes the recipient to manufacture up to 200 times the protective antibodies that they could receive from a gamma-globulin shot. "This is the most potent human vaccine ever developed," he says. Which is why Merck is planning to request approval from the Food and Drug Administration to market the vaccine—a step that would relegate, at least in the United States, those painful gamma-globulin shots to the past. ■ MICHELLE HOFFMAN

A Cold Fusion Déjà Vu at Caltech

Pasadena—His hair was thinner, his voice trembled a bit, and his confidence seemed shaken, but Martin Fleischmann still managed to draw a full house at the California Institute of Technology on only 24 hours notice. He had appeared out of the blue to insist that cold fusion was real, whether or not the scientific community chooses to believe it. But to judge from the content of the lecture and the audience's tepid response, there's no sign he's about to elicit new scientific warmth about the prospects of cold fusion.

The 5 December seminar was the British chemist's first public discussion of cold fusion in the United States since serious interest in the subject faded a year or so after Fleischmann and Stanley Pons of the University of Utah made their electrifying claims in March 1989. In the meantime, Fleischmann has returned to England, while Pons, according to Utah sources, has been working in Nice, France. Neither researcher retains a clear institutional affiliation.

Officially, Fleischmann and Pons still hold research positions at Utah, though sources at the university say the chemistry department has unofficially informed the administration that it is not eager to have Pons, at least, return to the tenured teaching post he resigned a year ago. But the Caltech chemistry department was happy to hear out his cold-fusion collaborator.

Fleischmann had called Fred Anson, head of the department, to say he would be in the area and wanted to examine the negative cold-fusion data collected by Caltech chemist Nathan Lewis. "Martin thought the data-examination process had been very one-sided," said Lewis, "that his and Stan's experiments were under much closer scrutiny than those of people [like Lewis] who thought it was not cold fusion." To help settle the matter, Lewis suggested that Fleischmann bring a working cold fusion cell to Caltech, where they could verify it together. Fleischmann instead opted, at Anson's suggestion, to give the seminar on the state of cold-fusion research.

Fleischmann might have expected rough treatment from his listeners, but he didn't get it. Lewis and Caltech physicists Steven Koonin and Charles Barnes, all of whom had reported negative results in tests of cold fusion, had previous engagements out of town. Even the young researchers who did the cold-fusion benchwork 2 years ago had graduated and moved on. The audience Fleischmann did draw listened politely as he presented his compilation of cold-fusion data.

What's left to support the argument for cold fusion? In the case of what he called "the dominant signature of cold nuclear fusion"—the anomalous heat generated by the Utah fusion cells in 1989—Fleischmann listed only one group, at the Stanford Research Institute, that still purports to confirm it. As evidence of tritium generation in the cells, he cited only an ambiguous 2-year-old result from the Bhabha Atomic Research Institute in Bombay. In support of neutron generation, Fleischmann discussed 1989 work from "people in the Soviet Union." He also mentioned unpublished data from Steven Jones of Brigham Young University, who took cold-fusion cells to Japan, where he put the Kamioka neutrino experiment to work as an ultrasensitive neutron detector. And Fleischmann sought comfort in reports that helium-4—another fusion product Pons and Fleischmann had claimed to see—has been detected in cold fusion cells run by the Naval Weapons Laboratory at China Lake.

But many skeptics would call Fleischmann's report selective. For example, Jones' data may not offer the confirmation Fleischmann is hoping for: Paul Palmer, one of Jones' collaborators, says he wouldn't say they are positive, but, "Steve is cautiously optimistic." Similarly, researchers working with the China Lake group have said that those observations, like the original Utah results, could be explained by helium-4 contamination from the ambient atmosphere.

And Fleischmann made no mention of the negative results from Lewis's group—the work that had brought him to Caltech—nor of those from the British Atomic Energy Commission. Both groups have published extensive papers explaining the anomalous heat in the Utah experiment as an artifact.

When the hour-long talk ended, Fleischmann received a short round of applause, and then his audience quickly evaporated. No more than half a dozen out of maybe 150 listeners stayed on to ask questions of the cold-fusion pioneer. The answers they got were those of a true believer: "The thing is correct," he told *Science*. "This is the woeful thing. It's true. In the end people will have to give way." ■ GARY TAUBES

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