surfaces" and that the high concentrations of T-2 and related toxins found in yellow rain "indicate to me that they had to be put there by the intervention of man. There is no other conclusion I can reach."

In 15 years of testing agricultural samples, Mirocha says, he has detected T-2 only infrequently, and usually at levels no higher than 50 parts per billion, or 1000 times lower than in the environmental samples from Southeast Asia. One yellow rain sample tested at 150 ppm. "You just don't find that in nature, and it's ridiculous to suggest that you do, unless of course you have the data in hand." It is entirely another matter to argue that the samples have been spiked, but this is not the gist of the criticism, Mirocha says.

Bruno Schiefer is skeptical, too: "Bees can make yellow spots," he says, "but do they follow a selective flight path?" He recalls that on the day the Australian pollen samples were collected, he was less than 100 kilometers north of the place where they were gathered, "crawling through the jungle" looking for yellow stuff. "I can assure you I would have taken spots of any color, but I couldn't find any. Now should I believe that bees have a preference for certain villages?" (He thinks the Australian samples were put out as a "ruse.") If mycotoxins are abundant in bee feces, Schiefer wonders, why is there no traditional concern about yellow spots in the forest?

Sharon Watson, the mycotoxicologist leading yellow rain research at the U.S. Army laboratory at Ft. Detrick, Maryland, rejects the natural toxin theory, chiefly because the levels and combinations of toxins "are highly unusual and have not occurred naturally previously." Using data released by the government after Meselson's bee talk, she claims that there is no seasonal pattern in the poisonings. Mirocha has now analyzed frozen blood from several additional attack victims. Two samples that were positive for mycotoxins were taken from people exposed to chemical attacks in November 1981 and January 1982, earlier than the narrow season cited by Meselson.

Watson says there are many "control" samples from surrounding areas, none of which are positive for T-2. However, the data are not precise. The Army has around 200 environmental samples of yellow rain, only six of which have been tested, and five of which were positive. Watson does not know how many yellow rain samples contain pollen. Sarver's lab is now responsible for investigating this and for testing all environmental samples. In addition, Watson's lab at Ft. Detrick has about 180 biomedical samples, less than half of which have been tested. Of about 69 individuals whose blood or urine was tested, 36 were positive for toxins.

Watson and State Department officials also refer to a body of nonlaboratory evidence that favors their argument: refugees' accounts, symptoms reported after chemical attacks which seem to mimic trichothecene poisoning, and classified data. For example, Watson mentions that she found in the archives a German intelligence report on an interrogation of Russian prisoners of war. The author said he learned about Soviet research on a new toxin extracted from "bad millet." The effects he described, according to Watson, are similar to symptoms of mycotoxin poisoning.

This circumstantial evidence has been severely challenged by the bee pollen theory for the latter implies that no one has yet recovered a munition or a sample of the actual material used in the chemical attacks. Backers of the biotoxin warfare thesis are developing an interesting response. Watson, Schiefer, and Mirocha now dismiss most of the pollen-laden samples as fakes. Most of them, they argue, were collected after a "spoofing attack" when an unidentified plane dropped material on some villages in Thailand in February 1982 as Canadian and other foreign investigators were looking for samples. "My personal opinion of this very atypical attack was that it was a deliberate attempt to confuse those investigating the yellow rain mystery," Watson wrote in an unpublished letter to the *New York Times* in May. However, at least two government samples containing pollen, two United Nations samples, and the ABC News sample were collected before the "spoofing" raid, in 1981.

The problem with throwing out adverse evidence is that it invites a response in kind. Just how certain can government researchers be that their own samples are not fakes?

Once a technical discussion reaches this level of debate, it needs help from outside. Indeed, it may be wrong to call this a debate, for some participants such as Watson see "no point" in entertaining discussions with Meselson. The best way out of this morass is to create an independent panel of specialists and give them the funding and the authority to review all the data and come up with the most comprehensive interpretation the facts will permit. The Administration has no plan to do this at this time.

—ELIOT MARSHALL

Lobbying Pays Off for Catholic U. and Columbia

Catholic and Columbia universities have passed another hurdle in their unusual campaign to wrest money from the Department of Energy (DOE) for new research facilities. On 7 June, in spite of objections from President Reagan's science adviser, George A. Keyworth, the House of Representatives voted to give the two universities $5 million each to start constructing the facilities. What upset Keyworth was that neither facility has been reviewed by DOE or the House Committee on Science and Technology, which oversees DOE's research activities (*Science*, 3 June, p. 1024).

James Sensenbrenner

Upset by lack of peer review.

Instead of going through the long and uncertain review process, Catholic and Columbia took their proposals straight to Congress and enlisted a consulting firm to help in the lobbying. Thus it was that on 12 May, the House agreed to amendments proposed on the floor that approved the facilities in principle. On 7 June, the proposals came up again during debate on DOE's appropriations bill, and Representative James Sensenbrenner (R–Wis.) tried to shoot them down.

Sensenbrenner proposed an amendment to delete funding for the facilities, and to bolster his case cited a letter from Keyworth complaining that "Although these may be worthy construction projects, the method by which they were inserted into the authorization and appropriation bills will result in a serious erosion of the orderly Executive Branch planning and

Legislative Branch oversight processes."

What Keyworth did not point out was that Catholic and Columbia were moved to try this unusual route to secure funds in part by the way another DOE project—the National Center for Advanced Materials (NCAM) at the Lawrence Berkeley Laboratory—was put together. A proposal to build NCAM was put in DOE's budget request, largely at Keyworth's urging, just before the request went to Congress and without the usual internal DOE review. If NCAM could bypass the review process, why couldn't Catholic and Columbia?

Be that as it may, the House was not much interested in maintaining the principle of scientific peer review for the two facilities (although, ironically the House has not approved NCAM on the grounds that it has not been adequately reviewed), and Sensenbrenner's amendment was defeated by 312 votes to 105. The lobbying for the two facilities is now focused on the Senate.—**COLIN NORMAN**

Acid Rain Researchers Issue Joint Report

It was less than apocalyptic, but it was still news when the Administration released a report on 8 June stating that "Man-made atmospheric pollutants are probably the major contributors to acid deposition in Northeastern North America." This is the cardinal finding of the first annual report of the Interagency Task Force on Acid Precipitation, released by its research director Christopher Bernabo.

For 2 years, the Administration has said that the existing data do not tell enough about the origins of sulfur and nitrogen in acid rain to justify any government action to control industrial emissions. At the press briefing on 8 June, Courtney Riordan, director of research at the Environmental Protection Agency (EPA), said this policy may change. The new EPA administrator, William Ruckelshaus, has taken the entire subject under review, and may issue new directives on acid rain soon. However, the work in this report predates Ruckelshaus.

Although it represents a great stride into the present, the report does not go far beyond stating the finding that man-made pollution is the culprit in the Northeast. It gives precious little information on the impacts of pollution, other than to say that acid deposition "is probably the major contributor" to the acidification of lakes in the Adirondacks, "one of the most sensitive regions in North America." It does not try to estimate the degree to which this acidification is due to man-made pollution, nor does it discuss the degree to which acidification might be slowed by cutting back on pollutants.

Most of these difficult questions are set aside for further study. "Current data and available methods . . . are not sufficient to quantify relationships between pollutant emissions and acid deposition on a regional scale," the report notes, "nor is it yet possible to identify the specific changes in acid deposition patterns that would result from a given change in precursor emissions." The report avows ignorance about the general effects of acid rain: "Beyond the alteration of the chemistry and biology of certain sensitive surface waters, the other effects of acid deposition in North America are undetermined. . . ." There may be deleterious effects on crops, on buildings and bridges, and on spruce forests in New England. But judgment on these points awaits better documentation. "The National Program is speeding up investigations and analyses to determine the actual effects of acid deposition."

Bernabo mentioned several early accomplishments worth noting:

- The program has produced the first national map of acid-sensitive waters in the United States.
- It has set in place a 90-site monitoring network, the world's best system for tracking wet deposition, due to begin operating this year.
- It is planning a major field test to be carried out jointly with Canada this summer, involving the release of tracer gases on both sides of the border.
- It has completed a massive "critical assessment document" describing the problem, now in review.
- It has tested a prototype emission control technology, designed to reduce sulfur and nitrogen emissions from old utilities by 50 percent, with no loss in efficiency.
- Research funding is expected to grow by $4 million in the next budget.—**ELIOT MARSHALL**

Xerox Scientist Joins DOD Supercomputer Program

A Xerox Corporation researcher, who is widely recognized for her contribution to the development of very large scale integrated circuits (VLSI), will assume a key management role in the Defense Department's nascent supercomputer program. Lynn Conway, who heads the Knowledge Systems group at Xerox's Palo Alto Research Center, has been named to a new senior executive post of computer research manager at the Defense Research Projects Agency (DARPA), the organization assigned to manage the research program of the Department of Defense.

The Administration has requested an additional $50 million for fiscal year 1984 and $95 million extra in 1985 for the DARPA supercomputer program. The initiative is regarded as a direct response to Japanese industry-government collaboration in microelectronics and computers, notably the program to develop a so-called Fifth Generation computer capable of artificial intelligence functions. Congressional action on funding of the DARPA program is said to be contingent on Hill reaction to detailed plans for the program on which DARPA is still working.

Conway earned her M.S. in electrical engineering from Columbia in 1963 and worked for IBM and Memorex before joining Xerox in 1973. At the Palo research facility she established the large scale integrated circuit "area" of research and then a VLSI area and more recently founded a Knowledge Systems area which specializes in the application of artificial intelligence research to so-called knowledge-based systems and expert systems.

At DARPA, Conway will work in the Information Processing Techniques Office which will oversee the supercomputer program. Defense officials aver that the main purpose of the program is not to compete with Japan, but to develop new technologies for the military. The official DARPA title of the program is "Strategic Computing and Survivability." Conway is scheduled to join the agency in August. No detailed description of her duties is available.—**JOHN WALSH**