zone charges calculated according to distance to destination, and piece rates for sorting. Fortuitously, despite the 70 percent boost, *Science*'s new mailing costs are somewhat lower than they might otherwise have been because the magazine's computerized addressing system has made it possible to take advantage of a discount offered for sorting and bundling measures that make delivery easier.

The new rates narrow the differential between costs for commercial and nonprofit publications. Rates for the latter had been substantially lower. Under the new rates, a commercial magazine with the same balance of editorial and advertising content would cost an estimated 13.9 cents per copy to mail compared to 11.3 cents for *Science*.—***John Walsh***

France Toughens Position on Reactor for Iraq

The French government of François Mitterrand has decided to replace the nuclear reactor in Iraq that was destroyed last June by Israel, but only on the condition that it be powered by a special fuel of little value in an illicit program to build nuclear bombs.

The exact terms of the sale have not been agreed upon, but French Foreign Minister Claude Cheysson told his country's senate on 8 January that "It is obvious that Franco-Iraqi cooperation will take into account the possibilities offered by the most recent technology, including the use of fuel, so as to assure that the use of this reactor is exclusively peaceful."

Cheysson was alluding to a uranium fuel of French invention known as "Caramel," which is insufficiently enriched for diversion to a weapons program yet adequate for legitimate power needs (*Science*, 3 July 1981, p. 125). Iraq has refused to accept the special fuel in the past, insisting instead on highly enriched uranium, which could be used in weapons directly.

Although acceptance of the fuel would allay some concerns about Iraqi intentions, weapons-grade plutonium could still be created by the replacement reactor France is planning to sell. The procedure entails exposure of natural uranium, which Iraq already has on hand, to the reactor's neutron flux. The French claim it would be difficult to hide so long as their personnel are on the site, a matter also being negotiated.

—***R. Jeffrey Smith***

Another Look at Agricultural Research

The Office of Technology Assessment, a research arm of Congress, has produced a lackluster report on the agricultural research system.* The report offers a sketchy analysis of the problems, and has little to offer by way of solution except more money and another reshuffling of boxes on organization charts.

"Many people, including Congress, have voiced concern that little, if any, overall planning and coordination of research exist, especially at top levels of administration," observes the report, but its authors do not pause to ask the reasons for this odd circumstance. One is Congress. Whenever a USDA administrator wants to mount a significant new research effort, he has to shift existing resources away from a state or commodity. The affected parties complain to their congressmen, and often the plan is blocked. Change is not impossible but it is difficult—witness the fact that the USDA and state agricultural research systems are still playing somewhat of a minor role in genetic engineering and its application to agriculture.

The age structure of scientists in the USDA system reflects a serious failure to recruit new blood. In 1976, a mere 2 percent of USDA scientists were aged 30 or less, compared with 25 percent at the National Institutes of Health. For scientists 50 or over, the figures were 39 percent (USDA) and 15 percent (NIH).

Another obstacle to change is that the United States is blessed by not one but a pair of largely autonomous agricultural research systems. One is run by the states, the other by the federal government, the theory being that the state system concentrates on local problems, the federal on national issues. But the two systems "appear to be working on seemingly indistinguishable problems," notes the OTA report. Further, "There is no satisfactory long-term process for evaluating research activities, research opportunities and the development of research priorities."

A report issued by the National Academy of Sciences in 1972 (the Pound report) severely criticized the agricultural research system for its neglect of fundamental biological research and its performance of "a shocking amount of low quality research." The OTA report cites these charges but only to dismiss them as irrelevant. "It is generally meaningless for a group of scientists working in basic research to evaluate the quality

of those working in the applied area and vice versa. While quality is important, it can be measured only in a very narrow sense. . . . And by any measurement, U.S. agriculture has been extremely productive."

But the productivity of U.S. agriculture is no defense by which to avoid discussion of the quality of agricultural research. The two may be linked, but in ways that the OTA report only hints at. Since agriculture is so productive and chronic surpluses have long been a problem, the Office of Management and Budget has been asking why government should increase its outlays for research and why the private sector should not do more of its own. The OTA report rests its plea for increased funding on the need to feed the world's hungry and sustain the structural basis of domestic production. These are long-term fundamental problems that require a high-quality basic research effort. That was the issue addressed by the Pound report, and for some strange reason declared irrelevant by the OTA.

—***Nicholas Wade***

*"An Assessment of the United States Food and Agricultural Research System" (Office of Technology Assessment, Washington, D.C., 1982).