posed was sufficiently different and larger, that it might have an impact on physics larger than other programs would. . . . It might become something unique."

It was not just the size of the commitment, Drummond insists, but the depth of understanding in the university administration that won Rosenbluth over. Drummond mentioned that one of the regents had prepared himself for the meeting by reading *Project Sherwood*, a quasi technical history of fusion research. Every boy scout in Austin, he added, must tour the tokamak fusion device at the University of Texas twice before winning an "eagle" badge. Those who have supported this program, Drummond said, are not rich oil men, but ordinary people who have done their homework: "They knew that fusion had been the biggest program on campus here for the last 10 years."

The fusion institute is a particularly attractive prize for the University of Texas because it provides long-term funding for basic research with few strings attached. The government's purpose in creating it is to get the best minds in the country together to work as they see fit on the fundamental problems that stand in the way of building a fusion reactor.

Fusion's promise is that some day it should provide a limitless supply of energy with only a fraction of the risk posed by fission reactors. Its fuel (deuterium and tritium) can be produced in abundance and cannot be embargoed. Its wastes, it is thought, will be easier to manage than those from a coal furnace or fission reactor. But there is an important catch: No one has built a fusion reactor that even approaches efficient operation. Fusion researchers, for that matter, have not even reached a consensus on the best course to follow in building such a reactor (*Science*, 8 February).

Despite this uncertainty, Congress is pushing to have a demonstration reactor built and operating by 1990, and will undoubtedly cause some demonstration device to be built soon in fusion's name. "There is a feeling," said an aide to Representative Mike McCormack (D-Wash.), "that if you leave it to the scientists all the time, you won't get any energy out of it. It's becoming unacceptable to have an energy program that costs half a billion dollars a year and doesn't produce anything." Congress and the DOE will soon pick a leading candidate in fusion technology and build it. Because Congress is not necessarily guided by the highest wisdom, there is a chance that it may pick wrong. For this reason it seemed important to keep funds flowing to various alternative reactor projects and to the basic theorists of fusion. The commitment to build one type of reactor should not stifle other concepts.

The new theory institute, which will open for business this fall in Austin, Texas, is meant to be free of all dogma save that of its director and senior staff, who will be chosen by the director. The institute will not perform research chores for other laboratories, nor will it have any formal links with experimental projects—except at its own initiative. According to a DOE grants official, the institute will serve as a center of excellence for magnetic fusion theory, an international meeting place for the exchange of ideas, and as the home of the American half of the joint U.S.-Japan Institute for Fusion Theory. The Japanese half will be at the University of Nagoya.

The DOE's new fusion theory center is a largely undefined creature at this point. It will be years before it establishes its identity. Shaping it will be the long-term work of the director. His immediate chore, however, is to comfort the wounded in the funding battle which has just concluded.—ELIOT MARSHALL

R & D Will Share in Budget Cuts

Budget-cutting fever has hit Washington and scientific programs are bearing at least a fair share. Some $600 million worth of science initiatives in President Carter's initial 1981 budget proposal is now earmarked for cancellation or delay.

The cuts have been proposed by the budget committees of the House and the Senate, with President Carter's concurrence. Phil Smith, of the White House Office of Science and Technology Policy, says "the general picture is that basic research has not been picked out for excessive treatment." But the latest Administration version of these cuts places in jeopardy the goal of inflation-proof increases in outlays for research in fiscal 1981.

The proposals now circulating are not binding on the appropriations committees, even though the spending limits are. So the numbers are bound to change. But the overall theme is to defer or cancel most of the new programs proposed for 1981, and to reduce the present year's spending to levels just above what they were in 1979. A hiring freeze has also been imposed, and drastic cutbacks are planned in the use of federal consultants. Here are the details of the cuts proposed in science:

Health. The National Institutes of Health faces a loss of $40 million for the current fiscal year and a reduction of $90 million from Carter's initial proposal for 1981. Funding support for the Administration's decision to stabilize the number of research grants at 5000 has survived intact. Cuts will be made in biomedical research training programs, major research contracts, intramural research, support for research centers, and general overhead, which includes equipment purchases.

Defense. The President has proposed to cut $60 million in R & D from his original 1981 proposal, including $40 million for laser weapons testing; the program has encountered technical problems connected with laser operation in the earth's atmosphere. The House is pushing for a slowdown in funds for development of the MX-missile basing system.

Science. The National Science Foundation will lose $75 million, with slower development of the ocean margins drilling program and reductions in funding for oceanographic ships, the Antarctic program, applied research, and science education. The new program of automobile research will be deferred. The National Oceanographic and Atmospheric Administration budget will be $100 million less than expected.

Space. The budget increases for the space shuttle have survived as the result of pressure from the defense department and a White House judgment that any delay would ultimately cost more than the short-term savings. Space science and applications are bearing a disproportionate share of the expected $200 million reductions, with major delays imposed on Spacelab experiments and the solar polar mission. NASA will not be able to analyze data from Pioneers 6 through 11 until fiscal 1982 at the earliest.

Energy. Energy R & D will lose at least $200 million from the 1981 proposal, with mostly across-the-board cuts.—R. JEFFREY SMITH

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