

additional costs of science projects such as the space telescope, and the new projects described above, the total requested budget for NASA comes to \$6,700 million. This would be a 20 per cent increase over the budget for the fiscal year 1981 which began last October, and if it is allowed to stand, would be the largest annual increase in the agency's budget since the early 1960s.

The National Science Foundation has also put in for a hefty 23.5 per cent increase, from \$1,096 million in the current year to \$1,353.5 million next year. Most of this reflects the Carter Administration's keenness to support both research and training in engineering fields. The new engineering directorate will receive a 20 per cent increase in its research budgets.

At the National Institutes of Health (NIH), the proposed increase for biomedical research is less spectacular. On the basis that whatever the president asks for is traditionally increased by Congress, Mr Carter is suggesting that the NIH budget for basic research be raised by 9.4 per cent. Allowing for inflation, this would result in a drop of 1.1 per cent between 1981 and 1982.

At the Department of Energy, increased support for research into synthetic fuels and nuclear power — particularly fusion energy — has resulted in a requested increase of 9.4 per cent in real terms for basic research, second only to that of NASA.

Many of these figures will remain only as indications of the "good intentions" with which the Carter Administration is leaving office. Perhaps of more lasting significance are the figures prepared by Dr Press to demonstrate the main trends of federal support for science during Mr Carter's four years in the White House.

These reveal, for example, that overall the biggest winner as far as support for basic research is concerned has been the Department of Defense. If the proposed 1982 budget figures are taken into account, the Pentagon's basic research efforts will have grown by almost a quarter — 22.6 per cent — between 1978 and 1982.

Next come NIH. Congressional enthusiasm has raised the NIH research budget by 13.3 per cent over the four years, compared with a growth of 12.8 per cent at the Department of Energy.

The National Science Foundation, even if it is granted this year's large increase, will still only have seen its basic research grow by 9.2 per cent. And at NASA, reflecting the pressures which the space shuttle has imposed on the space science programmes, the basic research budget actually fell, in real terms, by 0.6 per cent over the same four years.

Overall, the growth in basic research, including the 1982 proposals, would come to 10.8 per cent for the period of the Carter Administration. In current dollars, the budget would grow by 58.2 per cent, from \$3,704 million to \$5,801 million.

Ironically, the research and development budget shows an identical increase of 58.2 per cent from \$26,388 million to \$41,734 million.

"Anyone who says that we do not engage in long-term planning is proved wrong by these figures", quipped Dr Press — expected soon to be elected president of the National Academy of Sciences — although he added that the agreement was actually fortuitous and that "the figures just happened to fall our this way". In practice, he will not be required to explain why it should be otherwise.

David Dickson

Argentinian power

Soviets help

Argentina has bought five tonnes of heavy water from the Soviet Union under International Atomic Energy Agency safeguards, the Argentinian Comisión Nacional de Energía Atómica announced last week. It is intended for "topping up" the Atucha-1 nuclear station, which needs on the average an annual heavy-water replacement of 1.5 tonnes.

The sale is part of the growth of Soviet-Argentinian trade since January 1980, when Argentina refused to back President Carter's embargo of grain sales to the Soviet Union. The Soviet Union is now Argentina's main market for agricultural products. In July of last year, Argentina's Secretary of Commerce, Alejandro Estrado, signed an agreement to supply the Soviet Union with 20 million tonnes of feed grain and soya beans during the next five years. There are also persistent rumours that a major agreement to export meat to the Soviet Union is now being negotiated.

In return, the Soviet side has shown considerable interest in Argentina's nuclear programme. Argentina has been conspicuous among third world countries since the early 1950s for its nuclear programme aimed at ultimate autonomy in both research and technology. The commission has announced that the target will be for practical purposes attained by the end of 1981, when the Córdoba uranium processing plant will begin producing an estimated annual production of 150 tonnes. Rafael Coppa, the director of the plant, said last year that Argentina will then have full control of the primary uranium cycle, from prospecting for

Promises for President Reagan to deny

Specific proposals included in the budget are as follows.

- Major difficulties with the development of a vehicle to launch the two Galileo spacecraft on their journey to Jupiter from the space shuttle have caused NASA to propose delaying the Galileo project for one year and switching to a new launch vehicle, a converted Centaur rocket.

- The Carter Administration proposes that the National Institutes of Health should aim to stabilize support for both competitive research grants and research traineeships. Last year, the Administration promised to provide enough money to keep the number of new and renewing competitive research grants constant at about 5,000. Given general fiscal constraints, however, this meant cutting back severely on the number of traineeships, a move which brought strong protests from various sectors of NIH, and was subsequently overturned by Congress.

- Defense Department support for research on US campuses seems destined to

continue to grow faster than support from any other federal agency. According to the budget request for the fiscal year 1982, military funding for research and development at US universities and colleges will be 21 per cent greater than in 1981, totalling \$639 million.

The proposed figure, most of which will be spent on unclassified basic research projects, is part of a 16 per cent increase in all military-sponsored basic research expenditure.

- One major new start proposed by the National Science Foundation (NSF) is the detailed design and initial construction of a 25-metre millimetre-wavelength radio-telescope which is planned for installation at Mauna Kea in Hawaii.

Plans for the new telescope have generated widespread support in the radioastronomy community. NSF has asked Congress for funds as part of a 29 per cent increase in the NSF budget for astronomical sciences, rising from \$58.5 million to \$75.6 million.

- The Carter Administration is proposing to cut support for research and development in the Environmental Protection Agency (EPA) from \$364 million to \$345 million. At the same time, the outgoing Administration wants to earmark an extra \$28 million to improve its review of the environmental impact of proposed major energy projects in the west of the country — particularly in connection with the synthetic fuels programme — and to launch a government-wide research programme on the effects of acid rain.

- The Carter Administration wants to give a major boost to research into magnetic fusion. The 1982 budget proposals include an increase of 28 per cent in fusion research, to a total of \$520 million in budget obligations. \$32.8 million of this would be spent on a new centre for magnetic fusion energy, as proposed by the Administration following a thorough review of the magnetic fusion programme last year. Research on magnetic confinement systems would increase from \$119 million to \$151 million.

David Dickson