

USA

● Total spending on research and development in the United States is expected to reach nearly \$41,000 million this year, according to figures compiled by the National Science Foundation. If the estimates are correct, support for research and development would stay ahead of inflation for the second year running, though the combined two-year increase would not be sufficient to wipe out inflationary losses incurred during the early 1970s.

According to the NSF study, the federal government is expected to spend about \$21,800 million in 1977, a 10% increase over 1976, while industry is expected to spend about \$17,500 million and about \$1,500 million will come from universities, non-profit institutions and so on. In terms of constant dollars, the total is expected to be about 6% below the peak spending years of the late 1960s. Measured as a proportion of the gross national product, spending on research and development has declined steadily since 1964.

NSF has also published an estimate of the number of scientists and engineers employed in 1976, which suggests that after four years of growth, the scientific labour force now numbers 542,000. The total is about 20,000 below the 1969 level, however. Some 40,000 science and engineering jobs were lost during the 1969-1973 cutbacks, NSF reckons.

● While the nuclear industry in the United States was licking its wounds last month, following President Carter's decision to defer commercial reprocessing and to downgrade the breeder reactor programme, a report on nuclear power plant security drew some fresh blood. Published by the General Accounting Office (GAO), an investigatory agency of the Congress, the report concludes that "security systems at perhaps all power plants would not be able to

withstand sabotage attempts by threats that are now considered minimum by (the Nuclear Regulatory Commission)".

Based on inspections of security systems at six power plants, carried out by GAO investigators, the report is written in uncharacteristically blunt language, laying blame at the doors of both the nuclear industry and NRC. It states that though the quality of security forces seems to vary greatly from plant to plant, some deficiencies were encountered on each inspection. The faults included lack of training of security guards (as little as four hours at one plant), high turnover of security personnel (up to 48% a year), and poor security equipment. In particular, the report cites the following two horror stories:

We accompanied an NRC inspector to one power plant at night. The inspector asked the guard manning the guardhouse to aim a closed circuit television camera on a particular spot. The guard tried but was unable to work the system. The inspector opened a door which rang an alarm in the guard house. After waiting several minutes, the guardhouse was called to find out why no one responded to the alarm. A guard in the guardhouse answered that all of the available guards were too busy.

At yet another site, we asked a guard about the locations of certain critical systems of the plant, including the control room. He told us that the guard force knew nothing about the location of these systems because the guards were not allowed inside the power plant.

Although the NRC has recently published a set of new regulations designed to increase the effectiveness of security systems at nuclear plants, the regulations are not due to come into effect until August 1978. The GAO report says that although the new regulations are "on the right track", NRC should take steps immediately to ensure that operating plants are made more secure.

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serve just as well. To try to limit such potential abuses, the Institute recommends that medical insurance companies should establish an advisory committee to develop criteria for paying CT scan charges. It also recommends that requests for use of CT scans should be reviewed by a physician with responsibility to control access to the machine, who would determine whether the scan is appropriate.

The central question here is not whether CT scanners are useful, but what level of investment can be justified and how the machines should be allocated and managed. Those are questions that the American health

care system finds difficult to address, given its fragmented nature, the competition between hospitals for revenues and prestige and the third-party payment system. As Dr Harvey Fineberg, Director of the Graduate Program in Health Policy and Management at Harvard School of Public Health put it last week, "The fundamental assumption that we in this country have not yet made is that the pot of resources available for health care is limited . . . if you ask whether CT scanners are useful, the answer would be 'yes', but if you frame the question 'would they be a sound investment', you may come up with a different answer". □

WEST GERMANY

Energy plan published

Werner Gries reports from Bonn on the energy research programme recently approved by the West German government

THE main emphasis of the German federal government's DM 6,200 million energy research programme for 1977 to 1980, published at the end of last month, is on nuclear research, but the rational use of energy, progress in coal technology and the development of new energy sources are also prominent. Details of the programme, which marks the first time the state has intervened to bring together systematically both nuclear research and work on other energy resources, are as follows:

Nuclear energy will take some 75% of the state funds. Fast breeder and high temperature reactors remain the first priorities in the country's nuclear power programme, but research and development work is to continue in the fields of uranium enrichment, reprocessing and the disposal of radioactive waste. A state subsidy of about DM 1,200 million will be needed just to complete the prototype power stations now under construction to house the breeder and high temperature reactors. Reactor safety is a key aspect of the programme; R&D on nuclear-powered ships will be continued only on a fairly modest scale, receiving about DM20 million annually.

Rational energy use: Around DM100 million annually will go into research into technologies for rational energy use. Attention will be given to techniques of remote heat supply, reverse cycle heating systems, heat recovery processes and the use of waste heat from power stations.

Coal technologies: R&D in coal technology, one of the most important aspects of the non-nuclear side of the programme, will receive increasing amounts of funding, amounting to an average of DM140 million annually. Coal gasification, improvements to coal-fired power stations to reduce pollution, coal liquefaction and improved mining techniques will all receive support.

New energy sources: The government will support the development of new sources of energy to the tune of DM130 million a year on average, with the focus on nuclear fusion (about DM90 million annually) and on solar energy. In the government's view, solar energy is of interest in West Germany only as a means of heating build-