

emasculate the promised bill by last minute amendments which he introduced unilaterally. At that time, the minister's action was thwarted by the threat of a nationwide university strike. Strikes, of course, are now illegal under martial law.

Vera Rich

Planetary science

Going downhill

Washington

Ever since Mr George A. Keyworth II, the President's science adviser, made some remarks to the effect that it had already had its day, planetary science has been struggling to find favour in Washington. Its trials are continuing, for its traditional patron, the National Aeronautics and Space Administration (NASA), is cutting back support, and it is not clear that the National Science Foundation (NSF), the logical alternative patron, will take up the slack. Although much more than hardware is involved, the controversy centres at the moment on the imminent closure of the relatively new Infrared Telescope Facility (IRTF) atop an extinct volcano on Mauna Kea, Hawaii.

Clearly, the entire field of astronomy is not going to get everything it wants from the government. For instance, a major study for the National Academy of Sciences (NAS) of future astronomical needs, chaired by George Field, director of the Harvard Smithsonian Center for Astrophysics (see *Nature* 8 April, p.482), has produced a list of desirable future facilities requiring \$1,700 million in expenditure over the next decade. The problem, however, is how to set priorities — a task scientists are reluctant to take on, with the result that it falls to the budget men in Washington.

Earlier this year, the Office of Management and Budget (OMB) told NASA that it could have only two of its three major efforts in astronomy. NASA opted to keep the space telescope, scheduled for launch in 1985, and the science programme for the space shuttle. This means that NASA's third major effort, planetary science, must suffer: the Earth and Planetary Sciences Division of NASA will be cut by half in 1983 compared with 1981, if the proposed \$61 million cut is not restored when Congress considers the NASA budget later this year.

The cuts affect funds that support young graduate students entering planetary science and astronomy, and small grants to astronomers around the United States, away from major facilities. Among the programmes axed was the Venus Orbiting Imaging Radar (VOIR) and funds were not restored for a US Halley's comet probe to complement the Giotto project. Moreover, although support for the solar-polar mission has risen to \$21 million, the increase supports only American work aboard the European spacecraft.

But the most conspicuous cut in the fiscal 1983 budget was the IRTF, which sits 13,000 feet above sea level on Mauna Kea. The IRTF was a pioneering facility built by NASA to observe the planets as support for Voyager and other missions. Its tasks include monitoring volcanism on Io and plotting the infrared signatures of the outer planets and their possible moons.

Axing the IRTF was not an arbitrary decision. All NASA facilities are supposed to support actual missions, and no US spacecraft will encounter a planet until Voyager reaches Uranus on 24 January 1986. Moreover, according to a policy statement made some years ago, all ground-based telescopes funded by the government should be supported by NSF, the government's basic research agency.

On 1 January 1983, the IRTF will be homeless, patronless and mothballed unless Congress restores its \$1.7 million annual operating cost in the NASA budget. NASA has recommended that NSF picks up this tab, but the NSF budget for 1983 is more or less set. Mauna Kea's administrators will have to file a proposal to NSF to get the money — but even then may well not succeed.

John T. Jeffries, director of the Institute for Astronomy at Mauna Kea (which includes other facilities besides the IRTF), is urging Congress to restore the funds to NASA. For the moment, Jeffries says he is reluctant to ask NSF for the money, which at this late stage could come only from other astronomers.

If the telescope goes, United States astronomers would have no national centre for infrared work — either within the Solar System or outside it. The infrared facilities at Wyoming and Arizona serve mostly local astronomers, while a comparable facility on Mauna Kea, the United Kingdom Infrared Telescope, is available mainly to British astronomers.

The Mauna Kea IRTF's plight is typical of the dilemma facing much of the basic science carried out by mission agencies in the United States. The facility is built and operated by NASA, so dedicates half its work in support of NASA's planetary exploration programme. But applications to work on objects outside the Solar System, such as the gas clouds of Orion, are more than double IRTF's applications for planetary work.

But whatever the merits of Mauna Kea's IRTF or the fate of Jeffries' attempts to save it, the issue not being discussed is the one Keyworth raised originally, of whether planetary science has had its day and deserves lower priority than other branches of astronomy. According to Field, chairman of the NAS study, "traditionally, NASA has tried to encourage cooperation rather than conflict between planetary research and galactic and extragalactic astronomy. It has not allowed them to come into conflict but has maintained constituencies for both."

Deborah Shapley

Biotechnology

Dutch go-ahead

Waalre, The Netherlands

The Dutch have at long last got their "innovation programme" for biotechnology, eagerly awaited since the beginning of the year (see *Nature* 14 January, p.91). A government-sponsored committee under the chairmanship of Professor R.A. Schilperoot, who works on recombinant DNA research at the University of Leiden, did not, as might have been expected, recommend setting up new centres for biotechnology along the lines of those planned in microelectronics. Instead his committee has opted for the rapid strengthening of cooperation between government institutes, universities and industry.

The committee urges that the government should provide extra support to stimulate innovation in biotechnology — at least an extra 75 million guilders between now and 1988. This money would come from the government's fund for industrial innovation and be in addition to the planned biotechnology budget, which is much larger.

Efforts should be concentrated on applied research, the committee concludes, especially in sectors where Dutch companies are traditionally strong — such as agriculture, the dairy industry, fermentation and antibiotics production. Areas highlighted for future research include the development of host-vector systems for use in applied research, somatic cell hybridization, second-generation biotechnological reactors for enzyme production and the isolation of useful products from process liquids.

Professor Schilperoot is confident that the existing large and medium-sized Dutch companies (such as Shell and Unilever) will be better able to tackle the challenge than would newly-formed small companies. Discussions on the regulation of recombinant DNA research went on in The Netherlands for far too long. Professor Schilperoot believes, badly holding up research; "The discussion should stop now. There certainly must be rules, but not stricter than necessary or stricter than in other countries. Permits to start work should be issued quickly, and the rules should be established nationally. Rules made by regional safety authorities have sometimes been too strict."

Schilperoot, who himself sometimes acts as an adviser to a foreign company, says that Dutch industry and universities often have extensive contacts abroad at the expense of national cooperation. "Better structures here would create a favourable climate that would encourage more confidence in this field and put The Netherlands in a strong position in 5 years' time and have a great impact on society and industrial activity in the next 10 to 20 years."

Casper Schuurin