

of the 200 BeV machine at Batavia, however, will continue as planned. Other categories of physical research have been reduced by \$12 million to \$259 million.

The vast sums for military research and development included in the budget—a total of \$8,308 million—do not argue any very great confidence in the outcome of the SALT talks, although government officials are at pains to point to other explanations, such as the alleged increase in the Soviet Union's military research spending, the need to mechanize the infantryman as the size of the army is reduced, and the "backlog" of research postponed during the peak years of the Vietnam war. Be this as it may, research efforts on the undersea long-range ballistic system (ULMS) are being doubled and

another \$1,300 million, the same as for fiscal year 1971, is being requested for the Safeguard antiballistic missile system.

At a press conference on November 30 last year, the president of the National Academy of Sciences, Dr Philip Handler, warned that the scientific enterprise was in danger of decaying through lack of financial support and that "science does not have a high priority at this moment" in the Office of Management and Budget. Handler presumably had in mind the level of federal support implied in the balanced version of the budget then prevailing which offered the scientific community the same dollar amounts as for fiscal year 1971. Officials in the Office of Science and Technology, where Handler's independent stand is not alto-

gether appreciated, insist that the Nixon Administration, despite the academic community's persistent disbelief, does have a close concern for academic science and that even in the balanced budget the science agencies would have fared better than others. The abrupt shift in economic policy, and the windfall for science it brought in its train, have to some extent falsified Handler's forebodings as well as causing glee in the Office of Science and Technology at having shown him wrong. Whether or not the new budget will win credit for the Administration among Handler's constituency is another matter, but initial gratitude could turn out to be short lived, especially if Congress should cut the increases below the inflation rate they in some instances barely surpass.

Shopping List for the NSF

by our Washington Correspondent

THE largest single item in the budget of the National Science Foundation is \$257.8 million for individual research projects in all fields and disciplines. It is estimated that some 5,300 individual grants averaging \$48,000 each will be distributed, the beneficiaries being some 7,700 faculty scientists and a nearly equal number of graduate students. Of the increase of \$82 million in this item over last year, some \$40 million will be used by the foundation to pick up fundamental research projects abandoned by other agencies, in addition to which some \$12.8 million has been included for the support of the Interdisciplinary Materials Research Laboratories and \$1.8 million for the National Magnet Laboratory at MIT, both formerly funded by the Department of Defense.

A statement issued by the foundation in explication of its 1972 budget allocations says that "preferential emphasis" in the awarding of this category of grants will be given to "biology of human cells, to broaden our understanding of diseases, genetic damage, and fundamental life processes". Support will be extended to the increasing number of physicists expected to apply to the NSF as the result of cutbacks by NASA, AEC and the Department of Defense. Engineers will find the NSF favourable to projects on super-hard materials and material processing, biomedical materials and the effects of wind on buildings. Chemists should write their grant applications to emphasize "analysis and instrumentation techniques in the areas of molecular processes and configuration, chemical dynamics, and enzymes". In oceanography, ocean dynamics is in, along with currents, salinity and ocean ecology.

The second largest single item in the budget, \$166.6 million for eight national and special research programmes, includes

funds for the support of the international biological programme (\$10 million); the global atmospheric research programme (\$2.5 million), intended to improve long range weather forecasts and to analyse the data gathered during Project Bomex; the international decade of ocean exploration (\$20 million), where support will be focused on environmental quality, environmental forecasting and seabed assessment; the ocean sediment coring

programme (\$8.5 million); the arctic research programme (\$3.5 million); research and logistic support of operations in Antarctica (\$26.8 million); oceanographic ships and related facilities (\$14.3 million); and a group of directed research projects aimed at weather modification, earthquake engineering and other goals (\$81 million).

Programmes	Actual FY 1970 \$	Estimate FY 1971 \$	Estimate FY 1972 \$
Scientific research and facilities support	168.2	181.7	263.6
National and special research programmes	78.6	117.7	198.9
National research centres	27.2	37.1	40.4
Institutional support for science	44.7	34.5	12.0
Science education support	120.2	100.6	77.3
Programme development and management	21.7	23.7	27.0
Total NSF programmes	440.0	505.9	622.0

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A third major item in the budget is a sum of \$40.2 million intended to support the five national research centres sponsored by the NSF. The radio telescope at Arecibo, Puerto Rico, is down to receive \$4 million nearly half of it for resurfacing the dish. \$7 million is requested for support of the National Radio Astronomy Observatory to continue support of research projects and maintain existing telescopes. There are no funds in

Where the foundation has had to revise its ambitions is in the field of education, apparently because of a decision that science and engineering PhDs are becoming a glut on the market and that there is no need to continue expansion of the system for producing them. Thus the science development programme, which this year is scheduled to provide \$20 million for the improvement of graduate training courses, has been totally extirpated from the 1972 budget request. Postdoctoral fellowships, worth \$2 million in 1971, will exist no more, and graduate fellowships and traineeships are being slashed from \$28.3 million to \$20 million. The overall cut in science education support amounts to nearly 25 per cent, from \$100.6 to \$77.3 million.