

for waste disposal, it will have to be sufficient to process up to about 70,000 cubic feet of calcined material a year by the turn of the century. The Atomic Energy Commission estimates that by that time, about 900,000 cubic feet of waste will have been produced by the nuclear power industry in the United States.

## HIGH ENERGY PHYSICS

### Fat Free Diet

by our Washington Correspondent

IF high energy physicists were looking to the Joint Committee on Atomic Energy to provide salvation from the financial ills that have plagued them for the past few years, they have been badly disappointed. The joint committee, far from being a saviour, has not only recommended that \$2 million be cut from the AEC's budget request for high energy physics next year, but also has disquieting things to say about future funding.

If that were not bitterness enough for high energy physicists, the joint committee has given the AEC its traditional vote of confidence by recommending budget increases in many other areas. Each year the committee picks over the AEC's budget request and recommends upper spending levels, while the appropriations committees in the House of Representatives and in the Senate recommend the actual amounts of money that Congress should make available. And each year, the committee votes to give the AEC more money than it asked for. Few other government agencies can boast of such a cosy relationship with their Congressional watchdogs.

This year the joint committee has recommended that Congress should provide the commission with about \$2,710 million in the 1973 fiscal year—some \$61 million more than it requested. Chief beneficiaries of the joint committee's largesse are nuclear materials technology, civilian reactor development—particularly work on the fast breeder reactor—Plowshare and space nuclear propulsion.

What the joint committee recommends for high energy physics is that the AEC should get the \$126.4 million it requested to run its accelerators but that it should be denied \$500,000 of what it had requested for improving accelerators and \$1.5 million of the funds earmarked for capital equipment. These reductions would pare the budget for plant and capital equipment for high energy physics from \$30.5 million to \$28.5 million.

It is true that, even with the \$2 million reduction, if the AEC gets all the money authorized by the joint committee for high energy physics, that will halt and even reverse the decline of

the past few years. But past financial stringencies have bitten so deeply that, according to some AEC officials and most of the high energy physicists who testified during hearings on the AEC's budget earlier this year, the high energy physics programme has been pushed to the edge of viability. As a consequence, they claim that some vital areas such as accelerator research and development and accelerator improvements have suffered badly, and they are alarmed at the suggestion that accelerator improvements should be put off.

The joint committee's argument is that since the commission's six accelerators are all being run below peak capacity, it would be a misallocation of resources to spend a great deal of money on improvements, and that "a lower ratio of equipment and construction funds to operating funds would be more realistic". There are, of course, two routes by which the ratio can be lowered, and the committee chose the cheaper—reducing the capital funds rather than increasing the operating budgets.

The joint committee has also cast a shadow over the future. Although acknowledging the warning it has been given that shutting down either of the two older accelerators (the Bevatron at the Lawrence Berkley Laboratory or the Zero Gradient Synchrotron at Argonne National Laboratory) would cause irreparable damage to university and college high energy physics programmes, the joint committee is plainly in two minds about the desirability of spreading limited resources over several machines. Specifically, the committee points to a study by the General Accounting Office which suggests that, at 65 to 80 per cent of optimal operating funding, accelerators can be operated for only about 50 per cent of their available time. This conclusion, the committee suggests, "would seem to support a program policy of optimum funding for operation of fewer accelerators rather than less than optimum funding . . . of all existing facilities". The joint committee has therefore asked the AEC to provide Congress with a report recommending appropriate changes in funding "to assure improved efficiency in utilization of the high energy physics accelerator facilities while providing for facility improvements commensurate with high utilization". The AEC has, however, already pointed out to the joint committee that it would not sanction the shutting down of more high energy facilities (see *Nature* 236, 52; 1972).

Other funding recommendations made by the joint committee include \$2 million for the gas-cooled fast breeder reactor development programme, but since \$131.5 million is being provided for the base technology programme for the liquid-metal fast-

breeder concept, the work on the gas reactor is simply designed to provide an alternative approach to breeder reactor design; the committee has authorized expenditure of \$56.8 million for the AEC's reactor safety programme, which has recently been the subject of a public enquiry and much public anxiety, an increase of \$3.5 million above the commission's budget request; the joint committee has added \$7 million to the commission's request for \$5 million to develop a small nuclear powered space propulsion system, chiefly to ensure that not all of the \$1,400 million spent so far on development of the large NERVA rocket will be wasted. The committee has reluctantly acquiesced in the AEC's decision to terminate the NERVA project; the AEC's request for \$38 million for operating expenses for the controlled thermonuclear fusion programme has been agreed to, but the committee has instructed the General Accounting Office to conduct a study of the management procedures employed in AEC-supported facilities operating the programme; and, finally, the committee has added \$3.7 million to the AEC's request for \$10.5 million for the Plowshare programme, which is designed to excavate natural gas by use of nuclear explosives.

## Short Notes

### Invitations to Jupiter/Saturn

THE National Aeronautic and Space Administration, which substituted a Mariner Saturn/Jupiter flyby mission for the Grand Tour, is now inviting proposals from scientists to participate in the mission. The agency expects to distribute detailed information about the mission early in June, and proposals will be due in by August 31, 1972. Interested scientists should send names and addresses of potential proposers and the specific area of investigation to M. A. Mitz, Program Scientist, Code S. L., Outer Planets Missions, Office of Space Science, NASA Headquarters, Washington DC 20546.

### Drug Abuse

THE Drug Abuse Council, a newly established organization funded by the Ford Foundation, the Carnegie Corporation, the Commonwealth Fund and the Henry Kaiser Family Foundation, has awarded its first grants. The grants, which amount to \$425,000, are aimed at encouraging scientific research in drug abuse and for drug education. The largest package of grants, amounting to \$300,000, will be used to set up fellowships which will be open to individuals with a proven record in research. As many as 15 will eventually be awarded.