

will be devoted to energy research and development next year, and that \$10,000 million will be spent on such research over the next five years. AEC Commissioner Dr Clarence Larson told the Joint Committee that the fusion programme would fit into the expanded energy research and development programmes, and Hirsch added that he expects the fusion effort to grow over the next few years into a programme costing "hundreds of millions of dollars". Last year, the fusion programme was given some \$66 million, this year, it is set to receive some \$90 million.

As for the balance of the programme, Hirsch said last week that tokamak research will continue to receive about 60 per cent of the funds, while the rest will be evenly divided between research involving mirror machines and the so-called theta pinch machines.

In view of the large expenditures envisaged for fusion research, and the optimistic forecasts for commercial fusion power, members of the Joint Committee predictably asked whether priorities in the AEC's budget need to be reassessed. In particular, should the commission continue to give the breeder reactor top priority? They received the predictable reply, for Dr Larson pointed out that it is reasonably certain that breeder technology will work, and that there will be full-scale production of power from such reactors by the year 2000. Fusion technology, on the other hand, although promising, is by no means certain, and that even if the goal of a demonstration reactor by 1995 is met, it will probably be another 15 years after that before widespread commercial power production.

In that regard, it is perhaps symbolic that while the Joint Committee was conducting its hearings into the fusion programme, Dr Dixie Lee Ray, the Chairman of the Atomic Energy Commission, was in Chicago for the signing of agreements between the government and private industry setting out the responsibilities of each party in the programme to build a liquid metal fast breeder demonstration reactor.

In his first energy message to Congress in 1971, President Nixon called the breeder the "best hope" for meeting energy demand, and the goal is to build the demonstration plant, at a cost of some \$700 million, by 1978. Following that, the AEC reckons that the reactor will be commercially available by the late 1980s.

It has often been argued, however, that by sinking so much money into the breeder reactor, other attractive methods of providing energy have been foreclosed, and in particular, the argument has been raised that fusion research has been held back through lack of money. A federal appeals court recently decided, however, that the AEC must file an

environmental impact statement on the entire fast breeder programme (see *Nature*, 243, 431; 1973), which will require the commission to consider alternative methods of producing energy.

#### SCIENCE EXPENDITURE

## Budget Battle Continued

by our Washington Correspondent

FOR the best part of a year, Congress and the Nixon Administration have been locked in a constitutional wrangle over which branch of the federal government has the final control over public expenditure. Although the issue has been rather overshadowed recently by a more pressing constitutional crisis, the importance of the budget dispute to the scientific community was made evident last week by a set of figures released by the House Commerce Committee. In the 1973 fiscal year—which ended on June 30—the Administration failed to spend nearly \$1,100 million that Congress had earmarked for health programmes, and the unspent money included some \$226 million for research programmes of the National Institutes of Health (NIH).

In fact, as far as NIH is concerned, the Administration totally ignored Congressional mandates and followed its own course of action. The situation is complicated by the fact that last year Congress did not pass an appropriations bill acceptable to President Nixon for the Department of Health, Education and Welfare, but, in short, this is what happened. After two HEW appropriations bills had been vetoed by Mr Nixon because he considered them inflationary, Congress finally decided that the department should be funded according to a continuing resolution. Such a resolution directs the Administration to fund any given HEW programme at the smallest level contained in one of three measures: HEW's budget for the previous year, the Administration's original budget request for 1973, or the vetoed bill. In the event, however, the Administration simply used a different measure—a revised budget request which, for the health programmes of HEW, happened to be \$1,100 million less than the continuing resolution stipulated.

Even the politically sensitive cancer and heart and lung programmes did not escape the knife—they were given \$59 million and \$44 million, respectively, less than the continuing resolution would have provided. And the rest of the institutes of NIH between them received some \$123 million less than the amount available.

Congress has thus been trying for several months to change the law to give itself a stronger grip on the purse-strings. Last week, the House of Representatives passed a bill which would

require the President to inform Congress if he intends to impound appropriated funds, and to release the funds if either the House of Representatives or the Senate directs him to do so within 60 days. The Senate had previously passed a stronger measure which would require that the funds be released as a matter of course unless both houses of Congress approve the refusal to spend the money. The differences between the two bills must be resolved by a conference committee, but President Nixon has already promised to veto whichever version finally emerges.

#### EXECUTIVE SHUFFLE

## Train Moves On

by our Washington Correspondent

SINCE the Watergate scandal began to engulf some top officials in the Administration earlier this year, there has been much shuffling of Mr Nixon's team. Last week, it was the turn of Mr Russell E. Train, who was moved from the chairmanship of the Council on Environmental Quality to become Administrator of the Environmental Protection Agency. Train, who is completely untainted by the Watergate cesspool, replaces William D. Ruckelshaus, who was moved in April to head the FBI for a short time following the resignation of L. Patrick Gray. Ruckelshaus was also given a new job last week—he is now Deputy Attorney General.

Train's appointment to one of the hottest seats in the federal government has been greeted with some muted criticism from both sides—from environmentalists who fear that he will not be tough enough and from automobile manufacturers who fear the reverse. For his own part, Train said last week that he is his "own man", and that he will pursue a "strong, vigorous, fair enforcement policy".

The criticism that greeted his appointment is a fair taste of things to come, for Train will head the EPA during a critical phase of its existence. In virtually every area there are tough decisions to be made which Train acknowledged last week, "will test the commitment of the American public" to cleaning up the environment. One area in which particularly painful choices must be made is air pollution—the EPA has recently been issuing plans to meet the standards prescribed by the Clean Air Act which call for stringent cutbacks in traffic in some urban areas and for expensive emissions control devices to be fitted to automobiles. Mr Ruckelshaus used to say when he was Administrator of EPA that he was happy when his decisions were attacked from both sides and by that criterion, Train has started off on the right footing.