

study of what is called an Earth Resources Technology Satellite (ERTS) was assigned to NASA's Goddard Space Flight Center, the criticism of NASA has continued, chiefly on the count of foot-dragging. Lack of push in asking for money for ERTS, a symptom of NASA's disaffection with the project, last year resulted in the House Science and Astronautics Committee recommending an increase in funding. The indications are that NASA is sensible enough not to take the criticisms of the report too much to heart and rush into projects whose worth, to say the least of it, is far from proved. NASA's line, which is to continue aircraft experiments to see just what information satellites can pick up, and how valuable it is likely to be, is the right approach. After all, this bullish report itself says that a determination of cost effectiveness is not yet possible—without such an analysis it would be foolish to go on.

GEOPHYSICS

Foreign Aid

from a Correspondent

AFTER two years of deliberation, the US National Academy of Sciences has finally announced what it will do with the \$1 million estate bequeathed to it in 1966 by Arthur L. Day. Dr Day, a geochemist and former director of the Geophysical Laboratory of the Carnegie Institution of Washington (1907–36), stipulated that the income from the estate should be used "for the purpose of advancing the studies of the physics of the Earth". A large part of it will thus be used to establish a grant programme (to be known, somewhat ponderously, as the Arthur L. Day Projects in Foreign Cooperative Geophysics) to aid foreign collaborators of American geophysicists, though some will go to the founding of a bi-annual geophysics lecture series and the balance to partially support a new geophysics conference room at the academy's Washington headquarters.

In creating the grant programme, the academy has recognized the importance of global coordination in geophysics. Apparently, some American scientists have also been speaking up for research workers and their budgetary problems in areas where geophysical studies are less than successful. Although no country is specifically excluded, the academy clearly has in mind the so-called underdeveloped nations as recipients rather than the relatively well-off western European nations. The basic idea is not to give full support to the foreign scientists in question, but rather to add a little financial lubrication to critical projects which are failing to realize their full potential.

American support for foreign geophysics is not, of course, a new departure. The International Geophysical Year of 1957–58 represented global cooperation *par excellence*, though since that time the United States has sponsored bilateral projects—notably the US–Japan Cooperative Program of the early 1960s. However, the latter was financed largely by the National Science Foundation. With US governmental support for even the most innocuous of foreign scientific projects frequently being grossly misrepresented by student revolutionaries and others, it is perhaps as well that the latest attempt to foster cooperation is in the hands of an autonomous, non-governmental institution.

DESALINATION

Water for the South-West

WHERE desalination plants are concerned, there is plenty on paper, very little on the ground. Every so often a new plan emerges—bigger, better and more expensive than the last—and the fact that few plants have so far been built does not yet seem to have put a damper on optimism. Two major projects, for an agro-industrial complex in the Middle East, and for a power and water complex at Bolsa Island in California, are on ice; but last month another plan, which would provide water for Southern California, was published by the IAEA, the United States AEC and the Mexican Government, which were the three sponsors. The report, *Nuclear Power and Water Desalting Plants for Southwest United States and Northwest Mexico*, costs \$3.

The survey team seems to have satisfied itself that the plant is technically feasible, although a further study of the economics of the system is necessary. The plant would produce a thousand million gallons of fresh water a day, in addition to a gross power capacity of 2,000 MWe. It would take 9 or 10 years to build, after the decision to go ahead had been made, and would cost somewhere between \$850 and \$1,000 million if it were built at the cheapest site. Other possible sites would increase the total cost by \$250 million; annual running costs would be around \$80 to \$180 million a year, and the cost of the fresh water produced would be between 15.5 and 40 cents per 1,000 gallons, depending on the interest rates and the site chosen. Power would sell at between 1.8 mills per KWh and 3.1 mills per KWh, although for more advanced plants, using breeder reactors, a reduction of 0.5 mills per KWh could be expected.

The study assumed that the reactor used would be of the light water type, and that two would be used. The desalination plant, using the flash distillation principle, would consist of four trains, each capable of producing 250 million gallons of water a day; the total plant would be 900 feet long and 1,900 feet wide. Evidently, with a plant this big, one of the problems is devising ways of marketing the power and the water produced, and the report deals with these problems too. It points out that the area concerned is a semi-tropical desert region, in which underground water reserves are being depleted and the water quality is declining at an accelerated rate. The water deficit for the region, the report estimates, will be 1,300 million gallons per day by 1980, and 2,500 million gallons a day by 1985. It also seems that the power from the plant could be absorbed, 600 MWe of it on the Mexican side of the border, and 1,100 MWe on the United States side. (The other 300 MWe is used up inside the plant.)

Three sites were selected as the best available; they are at El Golfo de Santa Clara, Riito and San Luis Rio, Colorado. The report collects together a large amount of relevant information about the sites, including the possibility of cyclones or earthquakes; but it adds that more information about problems like these will be needed before a decision can be taken. It also recommends that further engineering and economic studies should be made, including an examination of the impact on regional development of the building of the plant. Even if these are favourable, however, these seems to be a long way to go before the people of the area have enough water.