

have become diluted in rivers and lakes, and the report suggests that biological methods of neutralizing harmful chemicals should be sought and applied before factory wastes are voided into rivers and streams.

This last point emphasizes a new and disturbing feature of chemical pollution. The report mentions that increasingly larger amounts of the polychloro-biphenyl compounds (PCBs) are being detected, especially in bird carcasses. These are not pesticides, but are widely used in industrial processes. Neither their distribution in the environment nor their effect on living organisms is yet known in detail, but they are distantly related chemically to the organochloride pesticides, and like these compounds they are persistent, and become concentrated to a high degree in animal tissues.

The report describes some methods of pest control which might be substituted for pesticides, including the use of natural predators and sterilization, but notes that, in general, the progress made in developing these techniques has been disappointing. Pesticides remain the most economical and effective form of pest control, but further research is clearly required if the pesticides are to be controlled as effectively as the pests.

SATELLITES

Back to Nature

from our Soviet Correspondent

THE recent launch of Kosmos 368 comes as an interesting variation in a series of satellites whose payloads have been either unannounced, or which consist of physical experiments. Kosmos 368 is stated to include "scientific apparatus for testing experimental life support systems for laboratory animals, for the further study of the effect of space flight on living organisms and for the continuation of the investigation of the physical characteristics of space".

It is several years since the Soviet space programme concentrated on the orbiting of test animals. This new emphasis on life support systems, following hard on the heels of clear hints that Moon missions, let alone interplanetary missions, will remain unmanned at least in the foreseeable future (see *Nature*, 228, 6; 1970), seems to indicate that there is to be a new attack on the problems of weightlessness. Such an attack may be a preliminary to establishing a manned space station as a base for manned exploration of the Moon or planets.

The Kosmos series of satellites, inaugurated on March 16, 1962, has long been recognized to be not only a regular programme of investigation of the upper atmosphere but also a useful label to attach to a diversity of launchings, including unmanned precursors of manned missions, failures of comsats or interplanetary probes and a number of special projects such as testing of electrical generators, automatic docking and the orbiting of dogs.

HIGHER EDUCATION

Bursting at the Seams

by our Education Correspondent

IF children now in Britain's junior schools are to be given the same opportunity of having a higher education as those now in the sixth forms of secondary schools, the number of places available in institutions

of higher education must nearly double in the next ten years. By the same token, unless dramatic savings can be made in the cost of higher education, government expenditure in that sector must also nearly double by 1981. These are the chief conclusions to be drawn from reports published by the Planning Unit of the Department of Education and Science and the Scottish Education Department (*Student Numbers in Higher Education in England and Wales*, HMSO, 12s; *Student Numbers in Higher Education in Scotland*, HMSO, 2s 3d).

What the planning unit has done is to estimate the numbers of school leavers who are likely to achieve at least the minimum qualifications for entry into higher education during the 1970s. This estimate is then used to predict the number of places which must be made available to maintain the demand for them at its present level. The predictions are based on trends established during the 1960s and publication of these reports simply puts flesh on the skeleton which the DES has used for the past year as a basis for its discussions on the development of higher education.

The report suggests that by 1981, 835,000 full-time students will have to be accommodated in higher education establishments in Great Britain, compared with about 509,000 in 1971. The universities' share of these students, the report suggests, may be about 54 per cent, or 460,000. The costs of such an expansion are reckoned to increase expenditure on higher education in England and Wales from £590 million to £980 million over the next ten years.

These predictions are, however, simply the results of a planning exercise which seeks to point out the consequences of maintaining the demand for places at its present level. They do not imply any government commitment to higher education expansion and they make no attempt to assess the extent to which existing establishments can increase their capacity. Moreover, no account is taken of any possible changes in the structure of higher education. The chief function of the reports is therefore to provide Mrs Thatcher, Secretary of State for Education and Science, with a framework in which to plan the development of higher education and they also help to underline the urgency with which policies must be formulated.

The vice chancellors have already told the government that the number of places which existing universities can reasonably hope to provide by 1981 is 50,000 less than the DES predictions suggest should be made available (see *Nature*, 226, 790; 1970). If the shortfall is to be taken up by establishing new universities, a commitment must therefore be made very soon; otherwise the new capacity will be established too late to affect the situation by 1980. The report also suggests that the greatest increase in demand for places is likely to be in the advanced higher education sector—the sector which includes the polytechnics whose role has still to be fully worked out.

It is the projected costs, however, that are likely to cause the most concern. The estimates suggest that expenditure on higher education will grow at 5.4 per cent a year, which means that higher education would take a larger and larger share of government expenditure. Mrs Thatcher will therefore have to convince her cabinet colleagues that the axe must not fall as heavily on higher education as on other areas, or new ways of saving on unit costs must be found. The vice