

finished its report, which was being considered by the Select Committee this week. It should be published by the end of the session.

## Breach of Privilege

MR TAM DALYELL, a member of the Select Committee on Science and Technology, has been severely reprimanded by the House of Commons Committee of Privileges for passing on information about the Porton establishments. In a report published this week, the privileges committee says that Mr Dalyell was guilty of a serious breach of privilege and a serious contempt of the House; Mr Laurence Marks, Assistant News Editor of the *Observer*, who wrote the story about Porton, was also guilty of a contempt of the House, but the committee recommends that no action be taken against him. Mr David Astor, Editor of the *Observer*, was guilty of a more serious contempt, but again the committee recommends that no action should be taken.

The information given by Mr Dalyell to Mr Marks was contained in minutes of evidence taken by the Select Committee on a visit to Porton. Although these minutes had been published for the members of the committee, they were not generally available and the meeting at Porton had been private. Some of the material in the evidence would be "side-lined" (that is, deleted) before the evidence was officially published. Mr Dalyell gave it as his opinion that the proposed side-lining was "fatuous", but admitted that he was gravely at fault and offered profound apologies. Mr Marks said that he was unaware that a question of privilege arose, but he checked the story before publication with the D notice committee, which is responsible for clearing stories which may contain breaches of security. Admiral Denning of the D notice committee cleared the story for publication. As Mr Marks pointed out in evidence to the committee, it was not Admiral Denning's job to tell him the rules of parliamentary privilege.

The report of the committee draws one general moral from all this. The new committees, it says, rely for their success on the existence of mutual trust and confidence between their members and those who appear as witnesses, and breaches of this confidence may imperil their work.

The committee is within its rights, of course, to deal with members of the House of Commons as it chooses—which is not to imply that it is right. But there must be serious doubts whether the committee is wise to try to bring the press to heel as well.

## Cheaper Water

THE cost of supplying London with water in the seventies may have been cut by a system for upsetting the stratification of reservoir water which has been developed by the Metropolitan Water Board. Because of the tendency for water to stratify, especially during the summer when the demand for water is at a peak, deoxygenated and unusable water accumulates in the deeper layers with the result that reservoirs have had to be shallow and have had to cover large areas. Research at the Metropolitan Water Board's King George VI reservoir, where axial flow pumps have been used to break the summer epilimnion and hypolimnion

stratification, has now, however, convinced the board that reservoirs 22 metres deep are an economic proposition; its existing reservoirs have a maximum depth of about 13 metres. The reservoir at Wraysbury, which will be fitted with the pumping system and which is due to come into service two years from now, will store 7,000 metric gallons on 340 acres. The largest of the board's existing reservoirs stores 6,500 metric gallons on 770 acres. The saving in land costs alone is estimated at £1.7 million, and there will be a comparable saving at the new reservoir being built at Datchet.

The trials of the pumping system which have been carried out at the King George VI reservoir have been impressive. Within five days during the summer of 1966, the volume of usable water was increased by  $6 \times 10^6$  cubic metres—almost a third of the capacity of the reservoir—by lifting water between 11 and 13 metres below the surface to 4.6 metres below. The volume of usable water was increased at a rate of 14 cubic metres a second although the output of the pump was only one cubic metre a second, apparently because pumping creates conditions in which wind-water energy interchange is effective at comparatively great depths.

The problem of stratification in reservoirs is not new, of course, and neither are attempts to break it by pumping. The secret of the board's success seems to be the efficiency of the pumping system. Water is discharged horizontally as jets a few metres below the surface and these entrain large volumes of surrounding water so as to ensure turbulent heat exchange. In the experiments at the King George VI reservoir, mixing occurred to a depth of one metre below the level of the pump discharge even though the pumps were designed to draw water only from radial positions. According to the board's 42nd annual report, the operating cost of the pumps is negligible.

Transfer of deoxygenated bottom water to the surface layers necessarily reduces their oxygen content, but surface re-aeration and photosynthetic algae rapidly restore the oxygen level to near saturation. By bringing deep water rich in minerals to the surface, there is the risk of inducing algal blooms. Thus, in the King George VI experiments, pumping resulted in a bloom of the diatom *Asterionella formosa* which normally blooms in the Thames valley in February and March—not in July—but the bloom died dramatically in August. In fact, the board considers that by controlling pumping operations, it can prevent micro-organisms rendering the water unacceptable.

## New Fields to Conquer

THE Radiobiological Laboratory of the Agricultural Research Council at Wantage is one of the few laboratories to have redirected much of its research from an area of decreasing importance. The laboratory was established in 1957 to investigate environmental radioactivity from fallout, but the decreased demand for surveys and for quantitative measurements of the amount of strontium-90 in milk has meant that more time and effort can be spent on nutritional relationships between soil and plants. The laboratory claims to work in close cooperation with the other institutes of the ARC—the Grassland Research Institute, the Weed Research Organization, the Plant Breeding

Institute and the Rothamsted Experimental Station—and that its close proximity to Harwell continues to be useful in work with radioactive tracers.

One previously neglected area of research is the effect of micro-organisms in the soil on nutrient uptake in root systems. It seems that metabolically active micro-organisms on the surface of roots absorb a great deal of plant nutrient at the expense of the plants, but that nutrient transport in sterile soil is far more efficient, with greater uptake in the centre of the root and more even distribution overall.

At Wantage, radioactive tracers are being used extensively to study nutrient uptake in field conditions, and the comparative efficiency of various types of systems. This supplements work already being carried out on the growth and development of root systems in water culture. One by-product of these studies is a device using the attenuation of beta radiation for measuring the water in soil to a depth of 70 cm. Nylon pads are placed between a radioactive source and a Geiger counter; the attenuation of beta radiation varies with the mass of material between source and counter, so that the water absorbed by the nylon pads can be directly related to the beta radiation recorded at various levels.

## Graduates for Industry

Graduates are 20 per cent more plentiful this year than last, but there has been an increase of only 10 per cent in the number of postgraduate grants awarded by the Science Research Council. Professor Brian Flowers, the chairman of the SRC, has said that compared with 1967 there will be between 600 and 1,000 more good quality graduates in science and technology who will not find grants and will be available for industry.

To what extent has industry benefited from this situation? Most companies have now finished their recruiting campaigns at the universities and have made their offers. But final acceptances have not yet been received and it is too early to judge the exact results for this year. The general impression, however, is that the SRC's policy has had little or no identifiable effect on graduate recruitment.

In the words of one veteran recruiter, "Graduates are hungrier this year and there are a lot of social scientists looking for sales jobs". Most companies have seen more people this year but there has been no marked change in quality. ICI has the impression that higher quality graduates are easier to get, but Shell has noticed no difference in quality from previous years. Twenty per cent more graduates applied for interviews with GEC, but this is in part attributable to the favourable publicity brought about by the recent merger with AET. In recent years GEC has noticed a progressive improvement in the quality of electrical and mechanical engineers from certain universities, but it is hard to detect any alteration in this trend effected by the policy of SRC. Ford finds that graduates who had applied for SRC grants are in general of the same quality as those who had not applied.

A more definite change is apparent in the recruitment of postgraduate students. Several companies have received more applications from postgraduates this year, probably because the slowing down of the expansion of new universities has brought fewer new academic posts on to the market.

The SRC itself does not yet have the figures with which to appraise the results of its policy, but if the impressions so far gained in industry are correct, it seems that some of the graduates disappointed of grants have turned elsewhere than to industry, perhaps to teaching or to various short term jobs.

## Technology at Teddington

THE reorganization of the National Physical Laboratory now seems to be complete, judging by the annual report of the laboratory for 1967 (HMSO, 24s.). The changes have been designed to fit the laboratory more closely to the technological needs of industry, and have involved the division of the NPL into three groups—the measurement group, the materials group and another referred to in the report simply as the "third group" but which can be called, without too much injustice, an engineering sciences group. This third group is concerned with aerodynamics, autonomies, mathematics and ships, and last year took over the hovercraft unit at Hythe. One result of the reorganization has been the setting up of committees to oversee the activities of the NPL—chiefly a steering committee which prepares an annual report and a research programme for the ensuing year, and presents these to a second committee, the visiting board. The function of the visiting board seems to be to convey the report of the steering committee to the Royal Society and to the Ministry of Technology, the twin masters of the NPL. The report now published is the second annual report of the steering committee. The chairman is Professor Brian Flowers, the chairman of the Science Research Council, and he seems quite satisfied with the NPL as it is now, and with the programmes of the groups. The steering committee adds that it has considered the need for a new large high-speed wave-tank for the ship division but realizes that this is not the time to ask for such a costly facility. Professor Flowers, the would-be sponsor of the 300 GeV machine, knows that as well as anybody.

## Will Indians Survive?

THE American Indians are splendid subjects for the study of the adaptation of human communities, as the International Biological Programme (IBP) has quickly recognized. To begin with, the date and place of their arrival is more accurately known than for any other population group. The land bridge across the Bering Strait was open only between 26,000 and 10,000 years ago and the present Indian inhabitants, from the Yukon to Tierra del Fuego, are descended from the migrants who crossed then. The rapid spread across the continent means that a homogeneous ancestor group quickly colonized a great variety of habitats. Although isolation was complete for more than 15,000 years, and although even today there are a few communities in South America still operating a Stone Age economy, the integrity of these groups cannot be expected to last much longer.

This emphasizes the importance of a conference held recently in Washington under the sponsorship of the Pan-American Health Organization and the IBP. With the opportunities for studying the 16 million American Indians in mind, the chairman of the conference, Dr James V. Neel, said that "Ours is the last