

pilloried as a skinflint by the Musicians' Union for seeking to reduce the number of independently maintained orchestras by four. The problem, of course, is that the BBC is trying to live within the substantially fixed income of the revenue from radio licences, and in a world where costs are bound to go on rising, economies are inescapable. The modest proposals which the corporation has put forward for the reorganization of the sound services would probably have been justified on the grounds of good management if there had been no immediate need for saving money. But it is an important question to know whether the attempt to live within a fixed budget is compatible with the corporation's wish to be a pace-setter in broadcasting.

The trouble, of course, is that the whole nature of broadcasting has changed since the twenties, when the BBC first burst on the air. Then, the technical difficulties were so formidable that it was entirely sensible that broadcasting services should often consist of a single organization providing a single range of programmes. It was an uncovenanted benefit that ordinary radio receivers were quickly able to pick up programmes from distant places. But now there is at least the hope that it will be possible for television programmes to be made as widespread as short-wave radio has ever been, partly through the use of television satellites and partly by means of cable television. Ordinary television sets may soon be used for receiving programmes from anywhere in the world, and the result of that could well be as big a revolution in the use made of broadcasting as anything accomplished by the BBC in the twenties. So is there not a case for asking that the corporation should put some of its energy into these technical developments as well as into schemes for saving money? There is even a chance that it could use cable television as a means of safeguarding its income for the future. In the long run, only a device like that will free it from this repetitive recourse to one round of economy after another.

#### PUBLIC HEALTH

### Stopping the Rot

THE cause of fluoridation in Britain received a powerful boost last week with the publication of a report of the Committee on Research into Fluoridation by the Department of Health and Social Security (HMSO, 5s 6d). The committee has reviewed the experience of fluoridation in Britain in the past eleven years, and has concluded that it should be possible to reduce the incidence of dental caries by about a half by a vigorous application of fluoridation. This argument was cheerfully accepted by Mr Richard Crossman, the Minister for Social Services, who promised a campaign to persuade unwilling local authorities—80 of the 204 local authorities are committed against fluoridation—to lace their water with one part per million of fluoride ion. Undoubtedly there will now be a howl of protest from the anti-fluoride organizations. Mr Crossman will, however, be supported by 18 local authorities already adding fluoride to drinking water, including Birmingham and Newcastle.

The studies on which the new report is based were set in hand in the mid-fifties, after the Medical Research Council and the then Ministry of Health had decided that a strong case for fluoridation seemed to have been made by evidence from other countries. The new report therefore strengthens the case presented by the research committee in 1962, after five years' experience.

Most of the studies reported have been carried out in Anglesey and in the London area. In the south, for example, water at Watford was fluoridated at the expense of the Ministry of Health, but controlled studies were also carried out in Sutton, another outer suburb of London. The comparisons are complicated by the improvement which there seems to have been in the condition of children's teeth even in the control areas, presumably as a result of better dental hygiene. In Sutton, for example, the number of decayed teeth in the mouths of children aged eight to ten declined from an average of 3.0 to an average of 2.5 between 1956 and 1967. During the same period, however, the number of damaged teeth in the corresponding children in Watford declined from an average of 3.0 to an average of 1.5, a decrease of 50 per cent. In the same spirit, although the percentage of children entirely free from dental decay increased from 14 to 23 among eight to ten year old children in Sutton, the corresponding percentage in Watford increased from 14 to 42. For the study and control areas as a whole, the percentages of eight to ten year olds entirely free from dental decay were respectively 34 per cent and 18 per cent in 1967, implying an increase of 127 per cent in the fluoridated areas and only 13 per cent elsewhere.

Some of the most dramatic evidence in favour of fluoridation seems, however, to have come from the experience of Kilmarnock, where the town council decided in 1962 to abandon fluoridation. In an appendix to the report, Professor J. N. Mansbridge of the University of Edinburgh describes how the percentage of children without tooth decay increased after the town council gave up fluoridation and has by now returned to the point at which it started. In four year old children, for example, the average number of decayed teeth was 7.12 when the study began, was reduced to 2.97 in 1961 as a result of fluoridation but finally increased again to 6.08 in 1968. These studies, however, show that older children in Kilmarnock, with some experience of fluoridation, do nevertheless have better teeth than those entirely innocent of it.

In the modern fashion, Mr Richard Crossman has estimated the saving to be expected from fluoridation on a national scale. Altogether, it is expected that the full benefits of treating water supplies would consist of 3.5 million dental fillings at a cost of about £2.5 million a year. The cost of making sure that water is properly fluoridated will be something between £2.5 and £3 million, which implies that the costs will almost exactly cancel each other out.

#### WEST GERMANY

### Slackening of Growth

THE expenditure of the West German Government on scientific research during 1969 has risen noticeably less than was predicted in the Federal Government's financial programme adopted in July 1967, according

to figures released by the West German Ministry of Scientific Research last week. The first table compares the actual expenditure with that envisaged in the 1967 programme, and the second shows how the Government's scientific budget has actually been divided between the different sciences and technologies.

Table 1. FEDERAL GOVERNMENT EXPENDITURE ON SCIENTIFIC RESEARCH (millions of Deutschmarks)

Year	Actual	Per cent increase (over previous year)	Allocation (over July 1967)	Per cent increase (over previous year)
1968	1,922.3	19.9	1,930	20.4
1969	2,141.2	11.4	2,220	15.0
1970			2,550	14.9
1971			2,940	15.3

Table 2. BREAKDOWN OF 1969 FEDERAL EXPENDITURE ON SCIENTIFIC RESEARCH (millions of Deutschmarks)

General Scientific Research .. .. .	1,020.8	
Universities and technical colleges .. ..		700.0
Government research establishments .. ..		127.1
Max Planck institutes .. .. .		131.8
Oceanography .. .. .		6.2
Other items .. .. .		55.7
Nuclear Research and Technology .. .. .	709.5	
Nuclear research centres .. .. .		285.6
Work outside nuclear centres .. .. .		343.2
International organizations .. .. .		78.3
Documentation .. .. .		2.4
Research on Space and Air Transport .. .. .	351.2	
Extraterrestrial research .. .. .		24.5
Satellites, etc. .. .. .		53.4
Basic programmes and international organizations .. .. .		273.3
Data Processing and New Technologies .. .. .	90.8	
Data processing .. .. .		73.7
New technologies .. .. .		17.1

The funds actually allocated for scientific research this year are some DM 80 million less than had been foreseen in 1967. One of the explanations is that federal expenditure on universities and technical colleges has not risen as steeply as had been intended. Whether any modification of the overall scientific research programme will be called for in the light of the latest figures remains to be seen, but considerably more money will have to be earmarked for scientific research for the next two years to keep in line with the ministry's forecast of an average growth of expenditure of 16 per cent between 1968 and 1971.

ROYAL SOCIETY

**More Foreign Relations**

THE Royal Society can boast that it had a Foreign Secretary long before the British Government. The society's continuing involvement in international affairs is now described in a progress report by the

Foreign Secretary of the Royal Society (London: The Royal Society, 1969). There are now more than forty committees and subcommittees handling the society's international affairs, and together they account for more than a third of the budget. Contact with the National Academy of Sciences in Washington is close, but there are already many agencies devoted to cooperation across the North Atlantic and perhaps more important has been the Royal Society's recent ventures in Europe and elsewhere. The European science exchange programme has now been under way for two years, a programme in which every nation of Western Europe is cooperating. The Royal Society contributed £200,000 to the scheme in 1968, and hopes to give £250,000 this year. The money is spent on visiting fellowships, both junior and senior, and also on research conferences, modelled on the lines of the American Gordon Conferences.

The scheme is happily free of bureaucracy as it is, but even so the Royal Society is considering the possibility that science might be better served if its own scheme was merged with ventures like the EMBO fellowship programme. Meanwhile, separate agreements have been framed for exchanges with Israel and several countries of Eastern Europe. The Eastern European programme has been bedevilled to a certain extent by administrative difficulties, but there is a good chance that there will be greater flexibility in the future.

The Royal Society acts as the British member of the International Council of Scientific Unions, a task that grows more onerous as the activities of ICSU proliferate. The International Union of Nutritional Sciences was admitted to ICSU in 1968, so that there are now sixteen unions in membership, each entailing much routine administrative work. The Assembly of ICSU last year discussed a proposal to set up a committee on the social implications of science, but action was shelved pending the planned investigation of the topic by various agencies of the United Nations.

A sector of the world still without formal scientific ties with Britain is South America. The Royal Society sent a delegation to Brazil, Mexico and Cuba last year, and a reciprocal visit is planned. There is every likelihood that a planned series of exchanges will be set up with these and other South American countries before long. Nearer home, the closing two-culture gap is claiming the society's attention. Most European national academies cover both the sciences and the humanities, and it is natural that the increasing British cooperation with these academies should suggest the possibility of liaison between the Royal Society and the British Academy. As a first step the two bodies have planned a joint symposium later this year on the use of radioactive dating in archaeology. Similarly, the British National Committee for Geography has suggested that some needs of the subject would be better satisfied by the formation of a new committee including members from both the society and the academy.

TECHNOLOGY

**When Britain led the World**

THIS year is the bicentenary of the granting of patents for two inventions which played a crucial part in making Britain the most important nineteenth century indus-