

working underground in collieries in much this spirit. In regulating the side-effects of modern technology, several simple lessons can be learned. For one thing, it is not sensible to hope to satisfy everybody. What is poison for one man is likely to be money for another. Then the community's expectations of the environment are likely to change with time. In particular, the more prosperous communities are likely to be most solicitous of the environment. A proper regard for the environment is something of a luxury, as the rubbish dumps on the outskirts of poverty-stricken towns will testify. But in circumstances like these, it is only to be expected that a community's regard for the environment will be expressed in what seems a somewhat arbitrary manner. Nobody should be surprised that a nuisance which goes unnoticed in one decade should be intolerable in the next. This is what has happened with air pollution in many advanced societies. And it is inevitable that governments, with their vested interest in concealing awkward conflicts between sections of the community not politically aligned in the party sense, should seem complacent and even malevolent when it comes to caring for the environment.

For nations like Britain and the United States, the implications are quite clear. To begin with, the community must look to the law and administration for means of controlling the damage done to the environment. It is something of a puzzle that governments should have been allowed to be as lax as they have on matters such as the use of food additives (where, to be fair, the Food and Drug Administration in the United States has a splendid record), the pollution of rivers and the introduction of new therapeutic drugs. Cases like these are best dealt with by means of rigorous bans on innovation which are lifted only when the commercial interests concerned have been able to demonstrate that no unacceptable amount of damage will be done. It may seem like rough justice to many pharmaceutical companies to ask that new drugs should be used, in the first instance, only where their benefits clearly outweigh any potential damage—in terminal cases, for example—but this is not an unreasonable requirement by the community.

More serious problems arise where it is necessary to strike a balance between social benefit and social damage—the building of urban motorways, for example, or the siting of airfields. This is where the interests of governments most frequently conflict with those of the community which they are supposed to represent. In designing the route for a new roadway, for example, a government will tend to argue that the cheapest route is the one which best serves the community interest, but its argument is reinforced by the difficulty of raising extra taxation to pay for more expensive schemes. The natural and long term corrective is somehow to work out schemes for compensating in money the people most immediately affected by avoidable nuisances—traffic noise is only one of many problems which might be dealt with in this way.

But what if the victims of a nuisance are not easily identifiable? Or what if the whole community is

affected? These are the cases of the use of insecticides or even fertilizers in agriculture. The organochlorine insecticides are a particular problem because of their longevity and ubiquity. These are circumstances in which the balance between advantage and potential damage should ideally be quantitative. In other words, in the fight against the pollution of lakes as a result of nitrates in run off water, it is important that the conservationists should have clearly in mind the economic value of fertilizers in agriculture. By doing so, they will be persuaded not merely to think of schemes for reducing the use of fertilizers but also of schemes, which might in the long run be much cheaper, for removing nitrates from lake water in substantial amounts. And is it entirely beyond the bounds of possibility that even the persistent insecticides may be removed from the ecosphere as quickly as they are put there by exploiting the capacity of some organisms to concentrate them?

The danger in the current wave of anxiety about the environment is, of course, that too uncritical a conviction that all nuisances must be abated will rob the community of benefits which are otherwise attainable. The conference organized by the Soil Association last week was right to conclude that there is a need of voluntary pressure on governments, for this is a political matter, but it is important that pressure groups which emerge should be hardheaded, able to welcome innovation and confident that its side-effects can be kept within bounds by a combination of well-tryed administrative devices and a dash of practical technology. And this, of course, applies also to the problem of living with technological innovation in general. The record of the past century shows how technology has prospered and how the quality of life has in the process improved. There is no reason why the same should not happen in the decades ahead, even if this does sound a little like a recipe for having your cake and eating it.

SCIENCE POLICY

Fabian Conference

LAST month the Fabian Society held a one-day conference on science and technology which seems to have conformed fairly well to the pattern of words speaking louder than actions. Certainly Mrs Shirley Williams, MP, in her closing speech, said that one of the main results of the conference was material for at least three more conferences. For those with memories going back to 1964, one of the most interesting features of the conference, reports of which are now filtering out, must be the way in which it evokes recollections of the conferences at which Mr Richard Crossman supervised the development of Labour Party policy on science.

Ostensibly, the aim of the conference, which included academics, industrialists, officials and politicians on a non-party basis, was to discuss government policy towards science and technology, but a much wider range of topics seems to have found its way into the day's work. In the first session, on science and society, Sir Brian Flowers argued that the distinction between

pure and applied science is illusory as is the concept of a border between long term basic research and short term commercial research. Given the shifting mosaic of scientific development, influenced as it must be by external forces of society, he nevertheless argued that there has been in the past a tendency to "put too much pressure" on the academics. He asked that there should be high priority for modernization of the pattern of higher education, and that the universities should produce biological engineers in recognition of the increasing importance of biology in the modern world. "The last war was a physics war", but, if things had gone differently, biology could have been the dominant influence. Education and the need for a reform of it seems to have featured in most of the speeches, which have not been published in full by the Fabian Society. Mr John Maddox, emphasizing the unpredictability of scientific development, also asked for a radical reform of tertiary education—the dropping of A-levels as university requirements, more general undergraduate courses with vocational and specialized training postponed to the postgraduate stage. To make the government machine for supporting science function more efficiently, he also asked for a reorganization of the research councils, so as to make them more clearly responsible for identifiable tasks.

But does industry want generalists? One minority view among participants was that industrialists are in practice more interested in reducing the time and money spent in job-training among new recruits, but most were agreed that quality matters more than specialization. This led into considerations of how far it was up to the education system to deal with the specific needs of industry, and how far scientists themselves were "objective-orientated", and Dr Walter Marshall gave it as his opinion that there has recently been a change of interest among those leaving the universities. What was agreed as urgent was to involve social considerations in technological decisions, to counteract the unpredictability of science by trying to foresee the consequences of what is already known.

Discussion in the session on industry and technology tended to be sceptical about the extent of Government involvement in industrial affairs. Once the basic economic directions have been laid down, the feeling was that it is better to let industry get on with the job—Sir Frank Kearton spoke of time-wasting and a general vagueness introduced by continual consultations and committee meetings about details. Bodies with specific aims, such as the Industrial Reorganization Corporation, have had greater success, but this seems to have been because of the way they were run and offers no strong argument for increasing their number.

Discussion of manpower and personal motivation seems to have stimulated more speculation from the contributors. To some extent, this overlapped with earlier discussions of education, but on the question of the individual's motivation several disturbing points were raised and others narrowly avoided. Professor Marie Jahoda, for example, mentioned changes in attitudes to work since the war, but, on the assumption that basic motivations are the same both in the Government and on the shop floor, left it to the Government to interpret its policies in terms meaningful at the other end of the hierarchy. Nothing was said about the difference between having the job one wants

at the top, and having little choice at the bottom: it might not be easy to convince a roadsweeper of the purpose for life inherent in his career, but a role of this kind was actually suggested for education. Mr W. E. J. McCarthy, on the other hand, emphasized the divergence of aims between management and manpower, and the consequent unresolved difficulties.

HEALTH SERVICE

Costs of Disease

UNTIL last November, the Ministries of Health and Social Security were quite independent, so it is hardly surprising that the first annual report (HMSO, £2) of the new Department of Health and Social Security, formed by amalgamation of the two ministries, reads as if the Stationery Office has by accident bound two separate reports under one cover. Descriptions of the measures the Government and the Civil Service have taken to coordinate the two ministries in more than name are being saved for the report of the department's first full year.

During the financial year 1967–68, expenditure on health and welfare services reached £1,490 million, about a ninth of all public expenditure by central government and local authorities. In the financial year just finished, it is estimated that the cost of these services will be £1,614 million. During 1968, the number of principals providing a full general practice service increased by 121 to 19,970; the steady decline in the number of GPs—in the three years up to October 1966 the number in practice dropped by 505—seems to have been halted, but only just in time. And the average number of patients per doctor also rose marginally by five, to 2,477. The General Practice Finance Corporation which began lending in May 1967 has been doing brisk business with its loans for financing practice premises—by March 1968, 320 loans worth £1,570,000 had been approved. Improvement grants from the executive councils, another way in which doctors can finance improvements of their surgeries, amounted to £139,000 during the year.

The reintroduction of prescription charges on June 10, 1968, had an interesting effect on the volume and cost of prescriptions. The number of prescriptions fell by 8 per cent compared with the second six months of 1967, but the average ingredient cost per prescription rose in 1968 by 8 per cent to 8s 1d. These changes no doubt reflect the decisions of patients to buy their own aspirins and common household remedies instead of bothering the Health Service for them, but at the same time it looks as if doctors may be prescribing some preparations in larger quantities, particularly to patients not entitled to exemption from charges. The ministry claims, however, that the net effect of reintroducing charges has been a decrease in the rate of increase of cost to the health service of pharmaceuticals; during the second half of 1968, the total cost of drugs prescribed was only 0.6 per cent more than in the same period in 1967, whereas in the second half of 1967 drug costs were 7–8 per cent up on the same period in 1966.

Local authority health services cost £216.2 million in 1967–68 and are estimated at £238.4 million in 1968–69. The national measles vaccination campaign launched in May 1968 had a marked effect on incidence of the