

share are now being aired in Geneva. CERN is anxious not to prejudice in any way the ultimate energy and beam intensity of the machine, and in the first place it is thought that cuts will come by having only one experimental area instead of two, by cutting down on ancillary equipment, or by attaining the maximum energy in several steps. That CERN is optimistic of finding ways of bringing about a 20–25 per cent cut in the cost of the accelerator shows just how flexible the project is, something the British Government has so far failed to realize. It is now even clearer than it was in June that the curt “no” from Britain was unnecessary, that there was plenty of room for bargaining, and that a reduction in expenditure on the project was there for the asking.

Last week's decision by Italy has given a boost to the revision of the project now going on at CERN because it should encourage the smaller nations which are members of CERN to join in. The Italian contribution of 11.24 per cent to the basic programme of CERN makes it something of a link between France, Germany and Britain, contributing between them 64.8 per cent, and smaller nations such as the Scandinavian countries, the Netherlands, Spain, Switzerland and Greece, contributing the remainder. Just now the odd per cent or two of the smaller contributions are vitally important to the project. CERN is hoping that these countries will follow the lead now set by Italy.

It has to be recognized that the June decision by Britain puts the earlier declarations from Belgium, France and Austria in a new light. At the 38th council meeting in June, these countries were urged to reconfirm their decisions. This they are confidently expected to do, as the new plans will not require any increase in the individual contributions they are being asked to make. As far as the French are concerned, a great deal of water has passed under the bridge since their verbal agreement in June last year to participate, and their later written confirmation. The French government is, however, still felt to be favourably disposed towards high energy physics research.

Meanwhile the Intersecting Storage Rings (ISR) project, which forms part of the basic programme of CERN and to which Britain still contributes, is going ahead. Construction of the ISR, which will in many ways be equivalent to a conventional accelerator of 1,700 GeV but not to be regarded as in any way a substitute for the 300 GeV machine, has now reached the half-way stage, at an expenditure which is so far 5 per cent below the estimates. This seems to give the lie to the notion that the cost of CERN projects escalate in a manner reminiscent of the aircraft industry. It is true that the cost of the 28 GeV accelerator rose considerably from the original 1953 estimates, but CERN would have it that most of this increase was not to make the project realizable, but was rather an expansion of the investment in view of the success of the project. And it is impossible to deny that as international cooperation in ambitious scientific projects go, CERN has been a notable success. If it really was escalation of the costs of the 300 GeV machine which worried the British Government—and this must be less of a fear as CERN becomes more experienced—then the thing to do was to suggest to CERN that the project be looked at again with a view to checking the costs and reducing them where possible. CERN is having to do this now anyway, and by the look of things is succeeding.

## BRITISH ASSOCIATION

### More Support Wanted

As it meets this week in Dundee, the British Association is hopeful that it will be able to continue and expand its wide range of activities. But financial problems remain. This year the association has again shown a small surplus on its accounts, but, as the annual report reveals, to achieve this it has been necessary to impose some very strict economies.

The largest decrease in expenditure has been a cut of some £2,500 in the financial aid given to area committees. Local activities have, however, been maintained with aid from local education authorities. In some areas, notably the West Midlands and Sheffield, authorities have agreed to contribute a fixed sum per thousand pupils on an agreed programme of activities, while in other areas support is to be more closely linked with the activities undertaken, on the basis of local participation in each event. Overall support from local education authorities and other local sources increased from £4,360 in 1966–67 to £10,236 in 1967–68.

The branches and area committees foresee fairly cheerful prospects as long as the association itself continues to provide the administrative services. Their lack of administrative machinery meant that the whole of the £10,000 grant from the Ministry of Technology to branches and area committees in 1967–68 was not used. Hopes of improving the local administration as increased activities demand have been dashed by the failure of the parent association to obtain an increase in its grant from the Department of Education and Science. This grant has been renewed at its previous level of £12,500.

Hopes for the future lie in the association's membership and in donations from various sources. The question of membership has been reviewed this year by a special committee which is due to report to the general council in Dundee. One possibility is that local membership could be increased considerably. The association also hopes to be able to increase its income from donations from trusts, business, industry and individuals, many of whom are already giving generous support.

## PRESIDENTIAL ADDRESS

### Science and the Good Life

It has become customary for the president of the British Association to give an address that is not concerned with any specialized field of science. In Dundee on August 21, Dame Kathleen Lonsdale, president of the association this year, took advantage of this freedom to comment on some of the things about which she obviously feels strongly. Her topic was “Science and the good life”, and she seemed to be giving a clear warning that although scientists are in a position to give us the good life, they might just as easily deprive us of it altogether.

Discussing some of the ways in which science has already affected life, Dame Kathleen argued that the human character has been influenced by the need to deal with increasingly complex moral problems. We feel guilty about people starving in India because with all the resources of science we ought to be able to help

them, and disasters such as floods make us feel guilty because we should have foreseen and prevented them. We do not yet feel guilty about earthquakes and eruptions, but as science and technology advance so does the range of man's control over nature.

Dame Kathleen discussed a catalogue of ills which science has brought in the wake of its advances. Industrial grime, noise, smells and fog are all the consequences of the commercial application of science. And, as a "so-called professor of chemistry and a grandmother", she was unable to avoid the issue of chemical and biological weapons, which could be the means by which future generations are deprived of the good life.

Dame Kathleen also condemned the "infamous trade" in armaments, justified by the argument that "we need the money we get from exports, and the developing countries need internal security". The real need of these nations, she said, is for teachers, doctors, nurses and engineers. But the best of these are often imported to Britain to replace those lost to America. In return for these imports of manpower we should offer not arms but technological aid in the form of, for example, roads, drains, agricultural equipment and radio sets. She cited the Germans, who have built technical colleges abroad and filled them with German made equipment, in order to gain a market for their goods. She said, "If our customers can afford to pay for armaments they can afford rather to buy the material fundamentals of a good life for their peoples when we have the wit and wisdom to provide these for export."

Another of Dame Kathleen's suggestions was that young scientists should work for two or three years, properly paid and organized, in those countries which are losing their own best scientists to other more advanced countries. The visiting scientists would have the opportunity of seeing the application of their scientific knowledge to the needs of people. And if the pure scientist has the privilege of spending much of his life being paid to do what he enjoys most, he cannot blame politicians, military men and others who misuse his results. Dame Kathleen believes that scientists have a responsibility to foresee the consequences of their research and to exercise their powers of influence as informed citizens to see that the right choice is made in terms of human happiness.

## FUEL

### More Gas

Two more gas wells have been discovered in the North Sea by the Phillips Group. The wells, which are comparatively small, are a few miles north of the large Hewett Field, discovered jointly by Phillips and Arpet. If the new fields had not been near to the Hewett Field, they would probably not have been worth developing—as it is, they can be developed together with the main field. In fact, the two new fields, named Dottie and Deborah by their discoverers, produce gas without sulphur, while the main Hewett Field produces gas which contains sulphur. The two new fields are also in a different geological stratum, which is likely to mean that the pressure of the gas will be higher. Phillips has said that the initial tests in the Deborah Field showed gas flowing at 26 million cubic feet a day. Presumably the gas will be supplied

to the Gas Council at the same rate already agreed for the Hewett Field, 2.87 pence a therm.

Renewed speculation about the possible formation of a British National Hydrocarbons Corporation is probably not a real threat to the Gas Council; but it is another example of the Labour Party's talent for argument. The supporters of the corporation, which would take over the Gas Council's responsibility for the North Sea gas industry, apparently see the issue as a test of the Government's attitude towards nationalization. But the Gas Council is already a nationalized body, so this is a hard argument to understand. And although the NHC would have a grander title than the Gas Council, its duties would be very similar. The hope of the supporters of the NHC is that it would be able to take a much harder line with the oil companies than the Gas Council so far has. In addition, when areas of the North Sea exploration area fall vacant in 1970 and 1971, the NHC would be able to take them over and exploit them.

The NHC has the support of the Labour Party conference, which voted in favour of it last year against the opposition of the then Minister of Power, Richard Marsh. Since the conference, more work has been done on the proposals. The present incumbent of the Ministry of Power, Roy Mason, has said that a decision to form the NHC would have to be taken by the whole Cabinet rather than by him alone. But it is hard to see the proposal getting any further. Whatever the mistakes of the Gas Council when gas was first discovered, it is now generally agreed that the council struck a very hard bargain with the companies which found gas. (Negotiations continue with some of the companies, notably Amoco, the Gas Council's partner in discoveries on the Indefatigable field.) The oil companies naturally regard the NHC with distaste, as a first step to full-scale nationalization of the oil companies' business in Britain. In the short run, nationalization may seem to offer advantages, but Britain would hardly benefit in the long run. The foreign earnings of British oil interests like Shell are very considerable; once the principle of nationalization had been accepted in Britain, it would be hard to prevent countries like Venezuela or Libya from doing the same. This would not help international British oil interests, though it might be a more equitable arrangement. The Government is likely to feel, once again, that earnings are more important than principles.

## RADIATION HAZARDS

### Back to Bikini

Not only the former inhabitants of the Bikini atoll will be glad that they are to be allowed to go back to the island where American nuclear weapon tests took place. The announcement last week will also be welcomed by those who feared that the explosion of nuclear weapons would permanently render the atoll uninhabitable. The Atomic Energy Commission and President Johnson are both apparently satisfied that the atoll is now fit for habitation, and the President announced the decision last week. The islands seem to have made a remarkable recovery, but the decision is nevertheless a surprising one.

The last test on Bikini took place just over ten years ago, on July 22, 1958. But by then the Bikinians