

much more closely concerned with the development of a strategy for fuel policy than it has been up to now. Several more radical possibilities also suggest themselves. It would, for example, be useful to know if there is any scope for the AEA to offer its services as a design organization to electricity utilities abroad. Should the AEA have more to say about the kinds of reactors which the CEGB seeks to build? Is there a case for developing fast reactors in concert with Germany and France? And should it occasionally be allowed to function as a consortium as well as a design authority? These and many other issues are well within the select committee's terms of reference.

There remains the problem of Europe and of the relationship there would have to be between Euratom and the AEA if Britain should join the European Economic Community. The select committee could do a useful service by bringing into the open some of the misgivings which abound in Britain and elsewhere about the inadequacy of Euratom as a co-ordinating agency. Its research programme has been organized untidily. In its administration, there is a marked tendency towards bumbledom. No doubt British officials are unwilling to speak their minds about the organization when the relationship of Britain with the EEC is as delicate as it has become. The trouble, of course, is that what remains unsaid at this stage may easily be much more difficult to say some years from now. It is also entirely possible that the present members of Euratom would welcome constructive criticism of Euratom from outside. In other words, this is yet another field in which the select committee's flair for the encouragement of plain speaking could perform yet another public service.

MANGANESE FOR PEACE?

MUCH has been said and written during the past year about the exploitation of the solid mineral resources of the oceans. Sensibly enough, most people advocate activity on the continental shelves. There is not much support for large scale action in the ocean deeps, largely because of the impracticability of these ventures. Yet there remains a niggling wish to do something about the manganiferous nodules which abound on the ocean floor and which have the potential of a valuable ore.

These pelagic nodules vary in diameter from less than 1 cm to more than 10 cm. Sometimes they are spherical but frequently they are very irregular in shape. They seem to have been built up on a seed, and frequently at the core of a nodule there is a fragment of volcanic material. The series of crusts deposited on this seed vary considerably in composition. The dominant components are manganese and iron oxides, but silica, nickel, copper and cobalt are also frequently present. Although manganese may account for as much as 50 per cent of the whole, cobalt, nickel and copper may amount to one or two per cent.

Unfortunately, in mining the ocean floor as in other branches of extractive metallurgy, it is easier to identify mineral resources than to exploit them economically. The first flush of enthusiasm about the manganese nodules in the fifties, when it seemed as if it would only be necessary to build more efficient dredgers to win access to a new Eldorado, has long since disappeared. Even in the United States, where everything to do with oceanography tends to be indulged excessively, the President's Advisory Committee said last year that "the potential resource is enormous, but the economic or mineable potential is certainly much less". There seems to be a general recognition that dredging with precision beyond the continental shelf is bound to be a somewhat random process, a kind of blind man's buff. It is also agreed, however, that research may bring great benefits. A decade from now, the prospect of dredging from the ocean floor may be much more cheerful. Only time will tell.

But who owns all this manganese? Although there is now a good deal of legal precedent for regulating the exploitation of the continental shelf, the deep oceans are still a kind of no man's land, subject only to the rules of free passage known collectively as the freedom of the high seas. So will the manganese nodules become the property of whatever organization, public or private, is the first to deploy a really workable deep dredger? Or will there be an unseemly scramble for the pickings from the ocean floor—a kind of gold rush? No doubt there are lawyers already kept awake at nights by all the problems there will be. They and others may therefore be comforted to learn of a move to turn the resources of the deep oceans over to the United Nations. Lord Ritchie-Calder has, for example, been hard at work persuading the Parliamentary Group for World Government to take up this cause. One of the objectives is to provide the United Nations with a continuing source of money with which to finance its operations. And it is true, of course, that the United Nations Organization is frequently embarrassed by the difficulty of wringing contributions from reluctant members. Unfortunately, however, there can be no assurance that transferring the manganese nodules to the United Nations would guarantee its independence—or even peace of mind for lawyers. What, for example, would happen if mainland China—not yet a member of the United Nations—chose to object? Would the United Nations be empowered to defend its manganese against piracy by member nations? And who would regulate the rate of exploitation and thus the market price of manganese and other elements? It is also possible to argue that persuading member nations to pay the bills is a necessary part of what the United Nations does, so that financial independence could be an impediment, not a blessing. In other words, there is plenty for the lawyers to worry about, even if the manganese is internationalized; but that is only another reason for asking that something should quickly be done to identify the most immediate problems and to solve them.