URANIUM ENRICHMENT

European Plant Planned

PRESSURE is growing for a European uranium enrichment plant. A report by the Parliamentary Committee on Energy, Research and Atomic Problems, which is to be presented to the European Parliament on Saturday this week, urges the community to establish a joint undertaking to study the problem of uranium enrichment in order to provide, by June 30, 1974, for a decision to be taken on which system should be built commercially.

The committee's report backs up almost to the last detail the recommendations that the European Commission has been making for some time. Two years ago the commission pointed out that by 1980 there would be a marked shortage of uranium enrichment capacity in the world. By 1980 Western Europe will be generating 70,000 MW of electricity by nuclear power; by 1985 output will have risen to 160,000 MW, according to the commission.

Enriched uranium is currently supplied by the United States Atomic Energy Commission, but its capacity will be only 26 million separative work units by 1980, and Europe's requirements alone will be 10 million SWUs in 1980 rising to 19 million units by 1985. As a result, the commission concludes that nuclear power stations ordered after 1974 cannot be sure of supplies of enriched uranium unless Europe builds its own plant.

The commission sent a draft resolution to the council of ministers last year urging it to establish a joint undertaking to study the problem. It is this recommendation that the parliamentary committee has now backed.

But the parliamentary committee emphasizes in its report that unless a political decision on a community energy policy is taken, no decision on a uranium enrichment plant can be made. Ministers are meeting to discuss, and hopefully devise, a common energy policy in May.

The committee's other chief recommendation is that, at first sight, there is no reason why more than one uranium enrichment method should not be developed by the community. Part of the problem is that there are three methods available; the question is which to choose.

Gaseous diffusion is the traditional method and is used in the United States. Nozzle separation, which is being studied in West Germany, is still in its infancy and is unlikely to be in the running for some years yet unless an enormous amount of effort is put into it. The gas centrifuge is the real alternative to gaseous diffusion. Britain has worked on the gas centrifuge for some years now and in 1971 a joint company was formed between Britain, Holland and West Germany to study ultracentrifuge separation.

Its protagonists claim that the centrifuge will ultimately prove far more economic than gaseous diffusion. Dr Jack Parry, technical director of URENCO, the marketing part of the tripartite centrifuge project, told a conference in Tokyo last week that from an investment point of view the centrifuge now looks viable. Backers need to be sure that the capital cost of plant can be predicted accurately before they agree to invest in it. "We have no hesitation in believing this to be the case," Dr Parry said.

An additional spur to the European programme is the proposal by the United States to raise its prices for enriched uranium by more than a third. Such an increase could go some way to making the centrifuge more economic more quickly.

SCIENTIFIC JOURNALS

ZhETF Centenary

from our Soviet Correspondent

THE Russian *Journal of Experimental and Theoretical Physics* (*Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki—ZhETF*) is this year celebrating the centenary of its publication. This journal, the oldest Russian periodical devoted to the physical sciences, started life as the official organ of the Russian Physical Society which was founded in March 1872. The first issue of the journal appeared early the following year.

In 1878, the Russian Physical Society amalgamated with the Chemical Society, and the joint publication of the combined body became the *Journal of the Russian Physico-Chemical Society* (*Zhurnal Russkogo Fiziko-Khimicheskogo obshchestva — ZhRFKhO*). The physics section of this journal, however, retained its separate pagination and its own editor and was virtually still an independent journal. In 1907 it once again resumed separate publication.

During its existence as the physics section of *ZhRFKhO*, its contributors included such eminent names as D. I. Mendeleev, P. S. Erenfest, V. K. Lebedinskii, and A. F. Ioffe. Up to 1917 its size remained small, averaging only thirty printed pages a volume.

The *ZhRFKhO* survived under its old title until 1930, when, as part of a general reorganization of scientific societies and institutes, it was transformed into its present form as the *Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki*. Since then its editors have been A. I. Ioffe and L. I. Mendel'shtam (1931–39), S. I. Vavilov (1939–52), N. N. Andreev (1952–56) and P. L. Kapitsa (1956–).

ENVIRONMENT

Whiskey in the Jar

THERE is little fear that man will exhaust the mineral resources of the Earth, according to Professor D. D. Hawkes of the University of Aston. Delivering his inaugural lecture as profesor of geological sciences, Dr Hawkes maintained not only that the 17 million million million tons of material in the outer ten miles of the Earth's crust contain enough metal to meet all man's needs provided he can extract it, but also that ores are still being formed.

Manganese nodules may be accumulating some minerals faster than man currently uses them, hot brines containing abnormal quantities of Mn, Zn, Cu, Pb, and Ag are forming beneath the Red Sea, and volcanoes can and do produce economic deposits—for example the 160 million tons of ore deposit (with an average content of 35 per cent) found in the Matsuo crater.

Professor Hawkes also took issue with estimates of current reserves. Based as they are on the limited data available which list only known deposits of ore and which assume no progress in mining or prospectiing technology, they are "always unreliable and invariably on the pessimistic side".

The ocean floor may well contain large quantities of ore, and a "great untapped mineral potential" lies beneath the continental crust. This crust is more than 25 miles thick in places but radically new methods of mining could enable man to conquer the "depth barrier".

Professor Hawkes went on to urge that a wide-ranging survey of Britain's mineral deposits should be launched, complete with exploratory drillings. Further, parliament should pass an act declaring all minerals the property of the state, for private ownership of mineral rights in Britain causes serious delays in the development of Britain's mineral resources.

Professor Hawkes also defended the findings of Lord Zuckerman's commission on mining and the environment which was sponsored by Rio Tinto Zinc and six other large mining companies.

Mineral prospecting in National Parks also received Professor Hawkes's approbation. Prospecting and exploratory drilling, he argued, causes little damage to the environment. After full-scale mining "the environment—admittedly in a changed form—is still there", and the change need not be a great one. A different emphasis in our attitude to the environment is needed, Professor Hawkes said. "If a copper deposit is discovered in North Wales, should we not be saying—'how can we mine it with least interference to the environment?'. Not, as at present, 'North Wales is beautiful; we cannot have a mine there'."