in thermal reactors will affect the demand for uranium very much. The estimate for demand in the second half of the next decade is quite large—between 73,000 and 106,000 short tons of $U_3O_8$ a year.

It is impossible to predict where new uranium supplies will be discovered. The OECD report, however, has charted the present uranium production of nine countries (Argentina, Australia, Canada, France, Portugal, South Africa, Spain, Sweden and the United States) as well as their potential for the next few years. Of these, Canada seems to have the greatest room for expansion—its present annual production is 4,200 tons of $U_3O_8$ (each ton of which yields 770 kg of uranium metal), a capacity which it could triple in five years time. The United States capacity is more fully stretched: 13,000 short tons in 1968, a potential of 16,000 tons within a few years. All of these countries have thousands of tons of reserves, but to tap these would probably be prohibitively expensive, at least in the immediate future.

TELECOMMUNICATIONS

## Post Office under Fire

THE attack on the Post Office Bill, the legislation to turn the Post Office into a public corporation, seems to be led by the Confederation of British Industry. The bill is at present in the committee stage, but is expected to become law during the summer. Criticism is coming chiefly from the suppliers of telecommunications equipment, worried that under the new bill the Post Office will be allowed to make inroads into their spheres of activity without the restrictions with which private industry lives. And industry as a big user of Post Office telecommunications services has a host of worries about the way the services are going to be run in future. The computer service bureaux are particularly likely to be affected. One of their fears is that the bill does not ensure that the Post Office will not discriminate against the private bureaux in favour of its own National Data Processing Service.

The root cause of the discontent is that when the Post Office becomes a public corporation, its activities will not be watched over by Parliament to anything like the extent they are now. This is why the CBI wants the wording of the bill tightened up so that there can be no doubt about what the Post Office is forbidden to do. Although the Government has made an effort to allay many of the fears by assurances given during standing committee debates, the CBI is not satisfied.

Under the new bill, parliamentary scrutiny is replaced by what is called a Post Office Users' Council. Major proposals relating to any of the Post Office's main services have to be referred to the council, but the CBI says that this leaves a loophole. They want the wording altered so that proposals relating to any of the Post Office services have to be referred to the council. They would also like the chairman of the Users' Council to be an *ex officio* member of the governing body of the Post Office.

The power the Post Office will have to manufacture telecommunications equipment seems chiefly to worry the CBI and the trade associations which it represents. They argue that this clause in the bill, designed to restrict manufacturing by the Post Office, will not put it on the same footing as private industry. The aim is to limit the Post Office to what it does now, coupled with regulations to prevent any manufacturing activity being hidden in the accounts. On top of this, the CBI wants to bring the Post Office within the terms of reference of the Monopolies Commission, unheard of in the nationalized industries. The hope is that this will put the Post Office and private industry on the same terms.

What particularly annoys the CBI is that, as well as itself having power to manufacture, the new Post Office will continue to censor equipment provided to customers by other manufacturers for connexion into the telecommunications network. Although there is little hope that the Postmaster General will give way on this point, the CBI is still hoping to see a move toward the situation in the United States and West Germany, where it is legal to plug equipment other than that provided by the Post Office into the telephone system, provided a protective device is incorporated. As well as giving customers a wider choice of equipment, this would, the CBI hopes, improve the export potential of the suppliers.

There are also a host of niggling little worries which the CBI has taken up. Prospective users of the National Data Processing Service are bothered about the secrecy of the information being processed. And the computer service bureaux are worried that if they want to run a private data network themselves they will have to apply for a licence from the Post Office, their main competitors. It is hard to think that even the Post Office will thank Mr Stonehouse for saddling it with responsibility for discriminating among its own would-be competitors. And is it really sensible to set up a state monopoly in such a quickly moving field without also providing some means of regulating it as time goes on?

VACCINES

## Wellcome Supplies Frozen

THE Ministry of Health last week asked local medical officers of health to stop using 'Wellcovax', the measles vaccine manufactured by Burroughs Wellcome. This follows the reports of three cases of encephalitis among children treated with the vaccine 8–12 days previously. The cause of death of a fourth child, who had also been vaccinated, has not yet been established, but a spokesman at Burroughs Wellcome said that an inquest is to be held.

Burroughs Wellcome has been marketing the vaccine —prepared at their laboratories in Beckenham—for two years. So far, more than a million doses have been distributed in Britain and another four million doses overseas—chiefly in Brazil and Hong Kong. The virus strain is Beckenham 31, a further attenuated version of the Edmonston strain of Enders developed in the United States and taken over by the Beckenham laboratory in 1958. A spokesman at Burroughs Wellcome said this week that, although it is true that this strain causes more adverse reactions than the Schwartz strain used by Glaxo (which shares the measles vaccine market), these reactions are essentially mild and include, for example, slight fever and/or a rash. Furthermore, the immunity conferred by using this slightly more virulent strain seems to be longer lasting than that conferred by the Schwartz strain.

Although there is no evidence that the Beckenham vaccine was directly responsible for the reported encephalitis, supplies are being frozen all over the world until further evidence has been assembled. This unfortunate setback is almost certain to cause a shortage in the mass measles vaccination programme announced by Mr Kenneth Robinson, then Minister of Health, in February 1968. But in spite of this, as a spokesman at the ministry pointed out, there are no plans to import vaccine from overseas. Some 500,000 children under the age of 14 were vaccinated during the first 4 months of the programme; recent figures are unfortunately not available.

POWER STATIONS

## Too Much Delay

POWER stations built for the Central Electricity Generating Board (CEGB) tend not to be built on time. The reason, according to a committee of inquiry under Sir Alan Wilson which reported last week, has less to do with technical faults than with management problems (*Report of the Committee of Enquiry into Delays in Commissioning CEGB Power Stations*, HMSO, 5*s*). The report makes clear the magnitude of the problem. At present, the power station programme is running about 18 months late, and there seems little hope of reducing the backlog before the end of 1972. Between 1959 and 1967, 22 new power stations involving 70 generating sets were released for construction, and the report is based on an analysis of the delays that occurred. Of the 70 generating sets, 30 are known or expected to be more than twelve months late, involving 14 power stations. The reason is not that the CEGB is excessively optimistic about the time needed to build a station—the targets it set itself are if anything less ambitious than in the United States where power stations are usually finished on time.

The difference, according to the report, is that the CEGB management is less effective than its American counterparts. The chief cause of the delays which the report points out occurred in the early 1960s, when the programme was increased to cover the shortage of electricity which was then becoming apparent. But the expanded programme turned out to be too much for the CEGB and its contractors to cope with. The report therefore urges more efficient long term planning, which would also have anticipated the fall in demand which has now left the CEGB with far too much capacity. The burst of activity during the early 1960s also found the management structure in the CEGB and in the contract industry less well defined than it might have been. One of the chief criticisms of the CEGB is that, perhaps unwittingly, it is placing too much emphasis on the engineering aspects of its brief to the detriment of management. And with the construction of a power station involving up to ten large contractors accounting for about 70 per cent of the cost, with many different workers from different trades on the site, effective management is a prerequisite for completion on time.

But much of this is past history. The committee also enquired whether the CEGB has learnt its lesson, and the conclusion is that by and large it has not. This is why the report says it does not expect a major improvement in the backlog until much nearer the end of the 1972 deadline. A number of suggestions are put forward. The CEGB should reduce the amount of time consuming dialogue with the contractors over the specifications, the number of contractors should be reduced and there should be more allowance for design difficulties when prototype machines are installed. The committee is also surprised at the scant attention paid by either the employers or the unions to labour relations on the site.

OPEN UNIVERSITY

## Physicist of the Air

IT seems that Dr Gerald F. Elliott has been appointed the professor of physics of the Open University, Britain's University of the Air, which is planned to start broadcasting in late 1970 or early 1971. Dr Elliott is at present a member of the Medical Research Council's Biophysics Unit at King's College, London, although for the past several months he has been on leave of absence at the Carnegie Mellon University in Pittsburgh. Ever since taking his first degree in physics at Oxford, he has been a member of the muscle group at King's, which is headed by Professor Jean Hanson and included, until he recently took a chair in Denmark, Dr Jack Lowy. Dr Elliott is, of course, well known for his X-ray diffraction studies of muscle. As a physicist who works with biological systems, he is ideally suited to the interdisciplinary approach to science which the Open University promises

The most serious drawback of the Open University, as far as staff are concerned, is the provision of facilities for research. The Open University has said that its staff will be given research facilities, presumably at Milton Keynes when it has settled down there. It is, however, difficult to see how the Open University can hope to match the facilities provided by conventional universities, or indeed whether it is sense for it even to try. There is a strong case for arguing that the Open University would do better by encouraging its staff, if need be by arming them with grants, to find laboratory space in the nearby conventional universities.

INFORMATION RESOURCES

## Data for Innovation

from a Correspondent

ASLIB seems to have embarked on a programme to reassess the importance of information services as adjuncts of industrial innovation. At a symposium held at the University of Nottingham on March 21 and 22, Dr Jeremy Bray, Joint Parliamentary Secretary at the Ministry of Technology, emphasized the need that industrial leaders should continually be trained and retrained. He also pointed out that innovation too often seems to be outside the control of society, and urged a shift of emphasis away from a concern with techniques to a concern with goals: society should decide its goals and implement innovations which will further those goals.

Mr Dargan Bullivant argued that information should be treated like raw material which has to be processed to the specific needs of the firm. Mr J. K. L. Thompson of the Ministry of Technology drew attention to the