Round Britain

TEN countries agreed last week on a multi-million pound international programme of five research projects, all based in the UK, designed to develop new technology in the use of coal and so help to solve the energy problem.

The biggest project, costing £10 million, involves the design, construction and operation of an advanced experimental plant near Barnsley which will apply a new technique to coal. It will be financed by the UK, the USA and West Germany.

The technique, known as fluidised combustion because powerful air jets turn burning coal into a bed of red-hot ash that looks and acts like boiling liquid, is said to offer important advantages over conventional steam-raising plant.

Its compactness means a lower capital cost—a big advantage in an era of economic stringency. In addition, it has a high thermal efficiency even with low quality coal, and it cuts pollution by retaining sulphur in the ash bed. It is these advantages which the project is designed to assess.

The other four projects, which cover research services, will together cost about £1 million a year, to be financed by the 10 countries—Austria, Belgium, West Germany, Italy, the Netherlands, Spain, Sweden, Turkey, the UK and the USA.

These aim to estimate the reserves of economically recoverable coal, provide information on coal as an energy resource and assess the costs of new techniques for mining and using coal. A mining technology service will also be established.

The programme is the result of the efforts of the coal technology working group, operating under the aegis of the International Energy Agency. The group is headed by Mr Leslie Grainger, the science member on the UK's National Coal Board, which will be the operating agent for each of the five projects. The hope is that the programme will cut the costs of heat for industry and for generating electricity by making a more efficient use of coal.

● An agreement concluded earlier this month will effectively make the UK's Chemical Society owners in the British Isles of all the abstract data produced by the American Chemical Society's Chemical Abstracts Service (CAS). In exchange, the CAS will receive payment in kind in the shape of the specialised expertise developed by the UK Chemical Information Service (UKCIS), a part of the Chemical Society based at the University of Nottingham.

Chemical abstract services are quite big business nowadays, with a total of 5 million chemical compounds known at present and 5,000 new ones being discovered every week. Chemists report their work in fully 14,000 journals.

Even keeping up with the abstracts is itself a considerable chore for many chemists, and the cynics say that it is sometimes quicker to do a simple experiment (to determine a melting point, for example) than to look up the information in *Chemical Abstracts* (the present five-year index of which runs to 68 volumes!).

Although the CAS spends some $25 million a year putting the abstracting material on to a computer and producing *Chemical Abstracts*, it has paid little attention to the problem of how to manipulate further such a vast data base. In the USA, information centres run by bodies like Battelle and Lockheed reprocess the information for their own particular purposes.

The UKCIS, however, has made a point of developing personalised services by making available to individual chemists a current-awareness service which caters for their individual interests. It also, for example, publishes subject-oriented bulletins, 'Macroprofiles'.

At present the UKCIS markets and distributes *Chemical Abstracts*, and some other publications and services of the CAS, in the British Isles. As its contribution to the CAS it also produces the 5% or so of all CAS abstracts and index entries which originate in papers published in the UK.

The annual budget of the UKCIS is, however, small beer by comparison with its American counterpart. Its non-capital expenditure at present is £1.2 million a year. But, like the CAS, its aim is to break even.

The UKCIS can obviously widen its horizons quite considerably now that it is much more than simply an agent for the CAS. In particular, it is actively considering, together with the Department of the Environment, the setting up of a data bank on environmentally significant chemicals. Called DESCNET, it would allow biological data on chemical compounds to be stored with other information about them and "should assist in the freer flow of information concerning potential environmental hazards".

● The Post Office exhibited much of its current work in telecommunications research and development last week when the Queen opened the new £11 millions Post Office Research Centre at Martlesham Heath in Suffolk. But most of it was unexpectedly overshadowed by the news that the Post Office is to place major contracts with the telecommunications industry for the development of a computer-controlled switching system code-named System X.

The new system, which will use the latest microelectronics technology, will lead to a modern telecommunications network in Britain capable of handling the wide range of services expected to be in demand by the 1980s, including visual transmission and high speed data print-outs. The development of System X, which is expected to take from five to seven years and cost up to £100 millions, is reportedly the biggest single item of expenditure of the Post Office's annual research bill.

The joint development programme will involve about a dozen contracts with such firms as Plessey, GEC, STC and Pye TMC, the final details of which have yet to be drafted. Advanced as System X is compared to existing telephone switching systems, it is unlikely to supercede current Post Office research work in this field. Both the new waveguide system, which is capable of handling up to half-a-million transmissions simultaneously, and developments in the field of fibre optics will provide important contributions to it. Indeed, it is because System X is based on a series of sub-systems that it offers the Post Office a good degree of flexibility as the development matures.

● A research team at the Harwell Atomic Energy Research Establishment has developed a miniature, nuclear-powered battery which may, quite literally, provide a boost to sufferers with certain types of heart disease. Designed to fit into a small "pacemaker", the new battery works on the thermocouple principle, and because the power output of its plutonium 238 heat source falls off by only about 1% a year it could have an implanted lifetime of 10 or even 20 years. By contrast, conventional chemical pacemaker batteries rarely operate for more than three years before they need to be replaced surgically. The Department of Health and Social Security has ordered 100 pacemakers from British Nuclear Fuels Limited (BNFL) for chemical trials, and the device, now costing about £2,000, could be worth about £10 millions to BNFL.