

French research

Better budgets

THE French government has proposed a 20 per cent increase in spending on research and development in 1981, as part of its plan that research and development should increase to 2.3 per cent of gross domestic product by 1985. The plan is part of the French budget and remains only to be approved by the Assembly and Senate. A total of 410 jobs would also be created, mostly at the senior postdoctoral level of 'chargés de recherche'.

French science spending, as a proportion of GDP, fell rapidly behind that of other countries in Europe during the 1970s. At present, France spends 1.8 per cent of its GDP on research and development, counting government-backed and industrial science together, compared with nearer 2.2 per cent in other large Western countries. According to figures published by the European Commission, the ratio of growth rates of government science spending and GDP in France between 1970 and 1977 was 0.79, the lowest in Europe. The highest was Ireland with 1.35; then came West Germany (1.25), The Netherlands (1.11), Denmark (1.9), the UK (1.01), Italy (0.94) and Belgium (0.92).

For this reason, Pierre Aigrain, Secretary of State for Science in the French government, has had little difficulty in convincing other ministers that the next five-year plan (1980-85) must show a substantial increase in science spending by government.

However, the recommendations of a controversial report — the Faroux report — on industrial research and development have not yet found favour. Roger Faroux, director-general of the chemical firm Saint-Gobain-Pont-à-Mousson, and his group reported to Aigrain in March that research spending in industry should increase by 65 per cent over the next five years, and that tax incentives should be used this end. The 65 per cent increase compares with the 40 per cent 'in a few years' set as the target by the Council of Ministers in August 1979; thus Faroux is recommending a substantial increase of the proportion (at present 42 per cent) of industrial research in the total research budget.

One of the principal beneficiaries of the new proposals will be the Centre National de la Recherche Scientifique (CNRS), which accounts for a large part of France's basic research. Its budget will rise 20 per cent from £874 million in 1980 to £1,040 million in 1981. (These sums include the salaries of some 20,000 scientists and staff.) Within CNRS, the biggest increase will come in 'moyens direct' — money which will be paid to laboratories without the need for approval by subject committees, and which will be used to buy and replace small to medium items of equipment (infra-red spectrometers, for example).

The CNRS has also been pressed to increase its connections with industry, and to this end has appointed a 'monsieur rayonnement' who will attempt to place departing senior CNRS scientists in industrial jobs — and also in ministries, where CNRS feels it should be better understood. There is now discussion in France as to whether to set up small scientific advisory groups in the ministries, rather than the lines of the 'chief scientist' departments in the UK; this talk is the consequence of the division of Aigrain's empire earlier this year between the Minister of Industry, M. Giraud, and himself. Giraud has taken on responsibility for the space, nuclear and other large projects that were once Aigrain's concern.

As CNRS, it has not been decided how to allocate the 240 new posts which it will receive under the new proposals; but, said a spokeswoman, 'the life sciences will be well off'. Of the other posts created by the government, 55 would go to INSERM (Institut National de la Santé et de la Recherche Médicale) and 38 to INRA (Institut National de la Recherche Agronomique).

Robert Walgate

More cosmonauts

French this time

FRANCO-SOVIET space cooperation took another step forward last week when the French National Centre for Space Studies (CNES) announced the selection of two air force fighter pilots to train for a Soyuz-Salyut orbital link-up scheduled for mid-1982. The two 'spationautes', Lieutenant-Colonel Jean-Loup Chrétien, aged 40 and Commander Patrick Baudry, aged 34, will travel to the Soviet cosmonaut training grounds 40 kilometers outside Moscow on September 1 where they will undergo a year and a half of training with Soviet colleagues. The mission calls for a Soviet pilot and a French co-pilot, who will be selected from one of the two French candidates, to spend a week on board the Salyut orbital station where they will conduct a series of eight experiments. Four of the experiments are in the area of the physiology and biology of space including an investigation of the control of bacterial infections in space environments and the effects of weightlessness on the flow of blood in the human body, two are in material science with special reference to the creation of aluminium-indium alloys and two will investigate high resolution space photography. The cost of the programme is 30 million FF.

The Franco-Soviet project is seen in France to come at a politically favourable time following the recent diplomatic meetings in Warsaw and the decision of France to participate in the Moscow Olympics. But Franco-Soviet space cooperation dates to a 1966 agreement negotiated by General de Gaulle for the

purpose of "special cooperation in space research". Since then France has launched a series of satellites on Soviet rockets including the 1977 Sign-3 gamma-ray astronomy satellite and a series of three SRET satellites between 1972 and 1975 to explore cooling and radiation protection problems in space technology. Since 1977, the fields of the biology of weightlessness and space crystallography have been opened up with French and Soviet scientists collaborating on the data collected by French satellites. Future joint experiments envisaged are explorations of the planet Venus including a balloon experiment to investigate the Venusian atmosphere planned for 1984. But the main thrust of French space research, which included collaboration with Germany and the US as well as the USSR, is in applied space research.

Joe Schwartz

Baltic oil

Moving offshore

Next month, Petrobaltyk, the consortium of Soviet, Polish and East German oil interests, will sink its first offshore bore-hole in the Baltic. This move follows four years of intensive prospecting, which, according to T. G. Vekilov, Deputy Minister of the Soviet Gas Industry, will continue in parallel with the drilling operations. Vekilov was also careful to point out, in a *Pravda* current affairs interview, that there is positively no energy crisis facing the Soviet Union, whose fossil fuel reserves are among the largest in the world. Soviet interest in possible oil or gas beneath the Baltic is, Vekilov implied, simply another aspect of the "forward thinking about future energy" urged by Mr Brezhnev at the 1979 Party Plenum.

For Petrobaltyk, this forward thinking began in November, 1975, when the three participating states signed an agreement about joint prospecting for oil and gas on the Baltic shelf. The area was, on the face of things, promising. Estonia has extensive oil shale deposits, and some small oil and gas deposits had been located in northern Poland.

The primary task of Petrobaltyk, to date, has been to carry out a major seismic survey of the Baltic — one interesting spin-off of which has been the development of a prospecting method based on anomalies of the natural electric field. By 1978, a team from Leningrad had established a set of tectonic, lithologic and hydrogeological indices for oil-bearing formations in the palaeozoic formations of the peribaltic syncline, and had deduced that for the Cambrian and Devonian strata, prospects increased from east to west, while for the Ordovician and Silurian strata the opposite is true.

Owing to the multinational structure of Petrobaltyk, however, publication of the results of individual surveys has been restricted and geologists taking part in the

surveys have been even more than usually reticent about their preliminary findings. For a time, plans were afoot to buy or hire a Vexco drilling rig, but when these had to be abandoned for lack of hard currency, the shut-down of information was total.

Petrobaltk's own self-produced rig, capable of operating in up to 90m of water, is now moored at Gransk, waiting to go into operation. A few weeks ago, the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area finally became law, binding on all states of the Baltic littoral. A major point of the convention is the prohibition of oil dumping and an appeal to the contracting parties to take measures to prevent pollution resulting from the exploration and exploitation of the sea-bed and its subsoil.

Rather surprisingly, although the Soviet media paid special attention to the Baltic republics and sea in their routine annual coverage of "environment day" (June 5), the emphasis was on effluent dumping, the need for on-shore purification installations, ecology courses in universities, and the necessity for international ecology film festivals.

No mention was made of Petrobaltk, or of what measures it proposes to take in the case of oil leakage. This may, of course, simply reflect well-placed confidence on the part of the planners. The Finns of the Åsland Islands, who caught the main brunt of an oil-slick from the Gulf of Riga last year, have however expressed considerable concern; while on the south-east Baltic coast-line, the citizens of the contracting states of Petrobaltk, though less vocal, are known to feel a similar concern.

Vera Rich

London Zoo

More falling-out

THE London Zoo has run into another spot of bother. Earlier this week, it became known that Mr Michael Hanson, the newly appointed director of administration at the Zoological Society of London, had resigned his post and would be leaving on 14 August.

Mr Hanson, whose responsibilities include the management of the establishment and the finances of the Zoo, was recruited from the British Civil Service in September 1979. It has been apparent for some time that the chief task of the administrative director is somehow to bring back to balance the Zoo's trading account, either by making sure that enough small children ride enough elephants at a sufficient price to keep all the animals (and their keepers) fed and housed or by some other means.

There is every reason to accept the statement put out by the Zoo earlier this week that Mr Hanson's resignation is unconnected with that of Dr Ronald



Zuckerman is the Zoo

Hedley, the part-time Secretary of the Zoo. Hedley, now Director of the British Museum (Natural History) is said to have been murmuring about overwork for several months.

The joint departure may however provide a chance for making a substantial appointment. The top establishment includes three directors (the other two responsible for animals and research), a secretary and a president, now Lord Zuckerman. Lord Zuckerman, by temperament and inclination, functions very much as an executive president — one council member said this week that 'Solly is the Zoo'.

Concern that he could not get on with the job for which he was hired without detailed scrutiny from above appears to have been one cause of Mr Hanson's departure. Recent meetings of the council have also dwelt on Mr Hanson's plans for re-organisation, considered to have been imaginative and yet similar in their essentials to plans out forward earlier.

When Mr Hanson first tendered his resignation, he was apparently asked by the council to reconsider it, but declined to do so. It is not known what may have passed between him and Lord Zuckerman.

Patent law

Bugs protected

By the narrowest of margins, the US Supreme Court had decided that living micro-organisms can be patented. In a verdict announced on Monday, the court ruled by five to four that there is nothing inherent in existing US patent law which prevents an invention from being patented just because it is alive. The court had been asked to decide on an appeal by the Patent and Trademarks Office against the decision of a lower court to grant a patent to Dr. Ananda M. Chakrabarty of the

General Electric Company for an artificially bred strain of the bacterium *Pseudomonas*, first developed to help clear up oil spills by degrading different chemical components.

Dr Chakrabarty's bacterium was not created with the use of recombinant DNA techniques. However it does fall within the general category of genetic engineering — and the court's verdict is seen as a welcome boost by pharmaceutical and other biotechnology companies which, together with several US university research groups, have had patent decisions on new micro-organisms held up until the Supreme Court's verdict was known.

The patent application had been rejected twice by the Patent Office, largely on the grounds that, in writing the original patent laws in the eighteenth century and in discussing their subsequent revisions, Congress had at no time indicated that living organisms were explicitly included.

Wide-ranging arguments had been brought in by both sides. Those supporting the patent application argued that it should be granted because of the economic importance of micro-organisms as part of the explosion of interest in biotechnology; opponents claimed that it would legitimize interference with natural processes in general, and should also be treated with particular care because of the potential health hazards.

In the end, however, the court's ruling was based on a narrow interpretation of congressional intent in writing the patent laws. Chief Justice Warren Burger, with four of his colleagues, argued that just because living matter was not mentioned in the patent laws, this did not mean it was excluded; the minority, led by Justice Brennan, argued conversely that, because of this very ambiguity, the issue of patentability should be decided by Congress rather than the courts.

Central to the case were the implications of a special law passed by Congress in 1930 allowing for the patenting of asexually reproduced plants, with an additional act in 1970 extending protection to new plant varieties capable of sexual reproduction.

The US Patent Office had argued that, unless Congress had intended the original act to exclude living matter, this additional legislation should not have been necessary. The minority agreed.

Chief Justice Burger, however, invoked the argument of Thomas Jefferson — the original author of US patent legislation — that "ingenuity should receive a liberal encouragement" to confirm that a novel micro-organism can legitimately be considered as a 'manufacture' or 'composition of matter' under the terms of the Patent Act of 1793.

The Supreme Court's decision, which finally ends almost eight years of legal debate, brings the US in line with several European countries, such as the UK, which already allow living organisms to be patented.

David Dickson