would entail a detailed geological survey down to the mantle, using every available technique, of a band 2 to 20 kilometres wide stretching from the North Cape in Norway to North Africa, across the many major ancient geological boundaries of Europe.

The exercise would be a continental parallel to the International Deep Sea Drilling project and would cost around £3 million over seven years, 2–3 years of which would be used to gather data. The Swiss national research council will pay for a pilot study.

On a smaller scale, the foundation has decided to set up a new fellowship scheme — this for toxicologists — similar to its existing European Training Programme in Brain and Behaviour Research. Each year £70,000 will be made available by council in nine countries (Denmark, Finland, Ireland Italy, The Netherlands, Norway, Sweden and the United Kingdom) for short-term and long-term fellowships in toxicology. The object is to stimulate research on the toxicology of environmental chemicals — and to help increase the number of experts in Europe who could advise governments and industry. The first fellowships will be advertised next spring to be available in autumn 1982. **Robert Walgate**

EEC Research Council

Broader future

Brussels

EEC's ten research ministers have finally approved the first stage of a biomolecular engineering programme and the 4-year programme on microelectronics (worth $40 million). This agreement, reached at a meeting on 9 November, reflects the future attitude of the Community to research and development.

The European Commissioner for industry and now research, Etienne Davignon, sees research and development as being one of the prime vehicles by which Europe's flagging industrial competitivity compared with the United States and Japan can be revived. That his ideas are being taken seriously by member states is demonstrated by the council's decision to go ahead with biomolecular engineering and microelectronics programmes.

Only the first stage of the 4-year programme (indirect action) on molecular engineering has been agreed. The original six comprehensive projects proposed by the commission still stand, but the whole programme will now be focused on agriculture and on safety and environmental questions. So for two years and with about $8 million to spend on 50 per cent support, the commission will fund research on, say, the synthesis of vaccines and pesticides of importance to European agriculture; on the biotransformation of agricultural surpluses and wastes; and on plant molecular genetics and gene transfer. The safety work — accounting for 20 per cent of the grant — will cover the detection of contaminants in industrial microbial strains and the extension of risk assessment procedures.

After two years, the programme will be re-assessed and if successful continued — probably with a further injection of cash. The commission hopes to call for tenders around the end of this year, and the programme will start in earnest on 1 April 1982.

The commission's 4-year action programme in microelectronic technology is the second arm of the strategy to stimulate European research into telematics and informatics. A programme has been under way since September 1979 on data processing and a third programme on telecommunications is expected to be proposed before the end of 1981. The agreed budget is for $40 million, $12 million less than was originally asked for.

This programme is also important because member countries have agreed to coordinate their activities and keep each other informed of new developments to ensure that a microchip production industry is soon established in Europe.

Figures from a report being prepared on the competitivity of European industry illustrate the struggle facing Europe. Jobs created in Europe between 1970 and 1980 numbered 2 million compared with 19 million in the United States and 5 million in Japan. Japan spends globally half as much money on research as EEC, but Japanese researchers register four times as many patents.

In the field of microprocessors, EEC is calculated to have spent $470 million developing chips compared with Japanese expenditure of $240 million. But Japan and the United States each supply 40 per cent of the world microprocessor market, while European production accounts for less than 10 per cent.

The commission's desire to coordinate research efforts carried out at national levels would involve holding regular twice-yearly meetings to plan and exchange information and analyse national spending. By discussing programmes at the early stages, overlapping and duplication could be avoided and lead to an efficient dissemination of research results both among the member states and between universities and industry. Using Euronet as an industrial data base and the planned INSIS integrated numerical network, the gap between research and industrial application would be narrowed.

For the Community's joint research centres, Davignon foresees the scope of the research being widened — a move that might involve the opening of the centres to agricultural research for the African, Caribbean and Pacific countries linked to EEC by the Lomé convention. The concept of promoting "centres of excellence" is also being discussed.

Agriculture research will also be boosted. Only 1.1 per cent of EEC's research budget is devoted to this field despite the vital role the Common Agricultural Policy plays in EEC affairs.

Although the commission seems to be backing the argument that increased research and development is a means of solving current economic problems, a belief supported by European industrialists, ministers were non-committal on Davignon's request to double between now and 1986 the amount of money from the Community budget actually devoted to research and development. **Jasper Buker**

Netherlands universities

Misery ahead

Ending several weeks of uncertainy the Netherlands government announced on Monday the latest forward plan for the universities. Briefly, the Ministry of Education and Science is looking for a 2 per cent cut in university salary budgets in the years 1984 and 1985, together with a 3 per cent cut in other expenditure. Although the percentage reductions of the university budget (expected to save a total of 75 million Dutch guilders (£16.5 million) a year) are not at first sight large, coming as they do after several years in each of which university budgets have been reduced by 3 per cent, the consequences could be serious.

In the two years ahead, the ministry has also decreed that there should be a freeze on academic vacancies. During that period, the ministry also hopes that there will be a rationalization of the structure of university departments, with resources concentrated in the stronger departments. The Academic Council, which advises the ministry, has already begun to put individual departments in order of merit. It is possible that if the universities concerned do not take the initiative in reorganizing themselves, the minister will provide an incentive by adjusting the grants they are offered in the years ahead, either up or down.

One curious features of this week's proposals is that the government expects the universities collectively to pay their bills less promptly. The result may be that the drain on the government's cash resources is reduced by up to 40 million guilders in 1982. The reactions of the universities' creditors are not yet known.

On the face of things, there will be no immediate need of redundancies among academic staffs, although the ministry has set up a central register of vacancies. Even during the two years ahead, universities will be free to apply for a dispensation to fill vacant posts considered essential to their academic or research programmes. There is, however, a possibility that some universities will prefer to reduce their staffs than to stomach for a further two years the acute shortage of disposable income from which they have been suffering.

The next step will be for the parliament

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in the Hague to approve the two university budgets — for teaching and for research — now proposed. Further support for research projects is provided by the Netherlands research council (ZWO) whose financial importance in university affairs has been increasing in recent years.

However, ZWO will have to do without a science minister — a post established only eight years ago. The previous minister, Anthonius van Trier, was without portfolio, but he badgered his ministerial colleagues into giving him control of substantial parts of their budgets. The new government has removed this irritation, the support of science reverting to the new minister of education, Josephus van Kemenade. And as Kemenade's major political interest is in establishing comprehensive education for Dutch schoolchildren, scientists in the Netherlands are worried.

Agricultural research

Changes mooted

Washington

"Reach out and touch somebody", the slogan being used in the United States to promote the use of long-distance telephone calls, has also become a newly-prominent policy theme for the thirteen agricultural research institutions which constitute the Consultative Group for International Agricultural Research (CGIAR).

The group is an informal network organized under the auspices of the World Bank through which developed countries, multilateral agencies and private foundations channel their support for research at the institutions into developing countries' agricultural needs.

At their annual meeting in Washington last week, both donors and research administrators endorsed current efforts by the institutions to increase linkages with outside research workers in two directions. One is to strengthen collaborative research projects with universities and other institutions in developed countries, in order to make the best use of present scientific knowledge. The second direction is to improve links with national agricultural research programmes in the developing countries.

It was the tenth annual meeting of the group, which has grown from four to thirteen members since it was founded in 1971. Since then, the total amount of funds channelled through the CGIAR system has risen from $20 million to $135 million.

In the past few years, however, as the rate of inflation has crept upwards, the growth of the institutes in real terms has begun to slacken off. Last year, for the first time, several institutes had to trim their programmes when it was realized that with various industrialized countries — and private institutions — cutting back on their aid programmes, voluntary contributions would not meet the targets.

This year the situation looks as if it will be even tighter. Pledges for donations made at last week's meetings totalled $155 million, an increase of about 15 per cent over the currrent year. However, according to Mr Warren C. Baum, the present high inflation rates plus fluctuations in the exchange rates covering the currencies in which donations are made mean that real growth will be small.

The combination of financial stringency and structural changes in the international research environment stimulating various shifts in strategy. One has been to increase the emphasis on basic research either at the institutions themselves or through links with the international scientific community.

Complementary to this will be the efforts to assist national research programmes. In the past, tensions have arisen when donors faced difficult choices over whether to allocate funds to a particular country's research effort or to the international institutions. At a meeting held earlier this year in Nairobi, Kenya, for example, representatives from several African countries expressed strongly their view that CGIAR as a group should be doing more to assist indigenous efforts in their region, a message which is now being acted upon.

Keen to maintain the minimum of bureaucracy, last week's meeting reacted equivocally to a suggestion from the review committee that a new committee be established to coordinate budget request and allocations, and the issue has been deferred.

David Dickson

Sowing more seeds

Mexico City

One of the biggest and best known of the research centres funded through the Consultative Group on International Agricultural Research (CGIAR) is the International Maize and Wheat Improvement Center (CIMMYT, after its Spanish initials), whose headquarters nestle in foothills on the edge of a high, fertile plain thirty miles north of Mexico City.

Based on a programme initially set up by the Mexican government and the Rockefeller Foundation in the early 1940s, CIMMYT was formally established as an international centre in 1966, and was one of the four founding institutes when CGIAR was created in 1971. Its current budget makes the largest financially of the 13 centres which now constitute the group.

In terms of its initial mission — the use of scientific breeding techniques to increase the yield of wheat and maize crops — CIMMYT has been spectacularly successful. It is known internationally as the home of the Green Revolution, due to the high-yielding varieties of dwarf wheat for which its most famous scientist, Dr Norman Borlaug, was awarded the Nobel prize. Among its more recent success stories is Bangladesh, which has increased its wheat yield from 114,000 tons in 1975 to 1.2 million tons in the current year.

But times are changing at CIMMYT. Although the mainstream research continues along conventional lines, CIMMYT is increasing its efforts in "farm systems research", addressing questions such as crop management and agricultural economics. Greater emphasis is being placed on the development and dissemination of improved research procedures to national research programmes, as well as on the support of indigenous training programmes.

One of the more controversial issues the centre faces is the growing demand on both sides of the Atlantic for greater patent protection for plant breeders. Dr Borlaug, acting director of CIMMYT's wheat programme, has criticized the new legislative initiatives, arguing that they could make developing countries more vulnerable to exploitation by unscrupulous outside companies. But others at CIMMYT seem prepared to accept, if reluctantly that tighter patent rights could accelerate the dissemination of new agricultural technologies.

The changing economic dynamics of food production are producing their own tensions within CIMMYT. Until now the centre nas been distributing its germplasm with no charge and virtually on request. But after recent incidents, the rules are being tightened up.

Some recent scientific developments are also being watched warily. For example, there is scepticism about the size of the potential contribution of recombinant DNA technology to the direct improvement of crop yields, and CIMMYT has no molecular biologists on its staff. "We think that Wall Street is being widely optimistic", says CIMMYT's director general, Dr Robert D. Havener, referring to the heavy investor demand for shares in the new genetic companies, and quoting Dr Borlaug's view that "it will be 50 years before there is any significant impact on complex plants coming out of genetic engineering".

At the same time, however, CIMMYT is strengthening its links with research scientists in developed countries so that they can exploit any major breakthrough. Meanwhile Dr Havener's principal concern is to ensure that political and economic pressures do not upset the arrangement under which centres such as CIMMYT operate with minimum outside interference and the maximum amount of flexibility.

David Dickson

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