

## Plans for research

# Europe awakes

Brussels

"It is of course the duty of the European Commission to be ambitious", commented one British official cynically on the European Commission's new plans to increase EEC science cooperation. Next week's council meeting of the research ministers (on 30 June) will be sitting in judgement on a strategy for the future of European science policy, the fruit of two years of conferences and discussions that followed the 30 May mandate of 1980, when Mrs Margaret Thatcher won Britain's refunds from EEC's budget and when the other nine member states agreed to strengthen and broaden EEC's activities in the industrial, social and scientific fields.

Step by step, the European Commission has been subtly building up momentum by calling unusually frequent research council meetings during the past nine months. Previously, research ministers met every two years but, pushed by the European Commissioner with the science portfolio, Vicomte Etienne Davignon, the EEC ministers met in November and March and will see each other next week and again in the autumn.

The momentum for change is being created not so much by decisions as by ministerial debates intended to set the mould for a recasting of the priorities and design of EEC research programmes. The meetings so far have established the important role of research and development in achieving industrial competitiveness with the Japanese and Americans in new technologies and the economic and social dangers of failing to do so.

Davignon wants a new research and development programme with five objectives: improving the competitiveness of agriculture and industry; the management of raw materials and energy resources; the quality of life in terms of health and safety and the environment; helping the less developed countries; and stimulated science and technology in the Community. EEC spending — 645 million European currency units (£1,150 million) in the 1983 budget — represents only 2.7 per cent of the budget as a whole. Sixty-nine per cent of the total budget goes on energy, 13.5 per cent on industrial competitiveness, 9 per cent on the quality of life, 2 per cent on agriculture and 1 per cent on raw materials. But research and development employs more staff (3,000) than any other directorate general in the Commission if the staffs of the Joint Research Centres are included.

The new strategy would be based on five massive long-term programmes. One of these, thermonuclear fusion, is already in operation. The others would tackle information technology, biotechnology, the stimulation of industrial and agricultural competitiveness and research intended to

aid developing countries.

The broad outlines of the information technology programme, dubbed "Esprit", have already been sketched out (see *Nature*, 3 June, p.352); work on the other programmes may begin after the forthcoming council meeting. The reason for this is significant. Instead of laboriously budgeted and detailed programmes being presented to infrequent ministerial meetings, the planning would in future work from the top downwards.

There would be a new body, the Committee for the European Development of Science and Technology (CODEST) bringing together twenty of the great and the good in the world of science, technology and industry to select research objectives. It would interpret a master plan agreed by ministers, who would specify in advance the resources available. A plan for encouraging the research judged necessary would then be devised by CODEST and the Commission, on which basis proposals from research teams capable of achieving the objectives in question would be chosen. But independent experts drawn largely from industry would actually run the programmes. The first steps towards a long-term programme would be pilot projects funded by EEC.

In this way, with CODEST operating as a think tank, the Commission as its administrative arm and the day to day running handled independently, the political rows that sully programmes such as the reactor safety project Super-Sara would be avoided. There would no longer be haggling and long delays over the budgets of programmes that had already been worked out in detail.

The realization of the Commission's plans depends on the momentum established by the forthcoming council meeting. It is suggested in Brussels that Davignon will continue merely to be humoured because in a time of budgetary restraint EEC research, whatever other purposes it may fulfill, is not on its past record the best value for money. Few deny that there is a drastic rethinking of the rationale behind European research and development.

Jasper Becker

## Soviet mathematics

# No more sets

The Soviet Union is to introduce a new mathematics syllabus in the senior classes of secondary schools. The objective according to Dr M.I. Kondakov, president of the Academy of Pedagogic Sciences, is to resolve the major debate which has been raging among Soviet educationalists since the introduction of the present syllabus into Soviet schools a few years ago.

The new syllabus was part of a major overhaul of school education, begun in the mid-1960s. Special emphasis was placed on an adequate grasp of general principles and on pupils' ability to reason for themselves.

Learning by rote was to be replaced by an increased amount of independent work. In particular, mathematics was to be firmly based on set theory.

Initially, the new syllabus appeared to be a success. In the first three school years the proportion of poor achievers in mathematics dropped from 15 per cent in 1967 to 3 per cent in 1975. But in the middle and senior years, the situation was less happy. In 1977, when the first batch of students to have experienced seven years of the new syllabus took their school-leaving examinations, it was found that a majority had failed to grasp the new concepts.

One particular failing was a marked lack of spatial imagination, attributable either to the introduction at too early an age of a purely academic approach or else to the fact that, so far from working "independently", the pupils were issued with ready-drawn diagrams to save time in class. The

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curriculum seems also to have nullified the avowed purpose of the reforms by using a different terminology from that used in science classes, so that pupils found themselves unable to solve quadratic or trigonometric equations arising in physics classes.

These examination results triggered a major debate in the Soviet educational press, with the president of the Academy of Sciences, Dr Anatolii D. Aleksandrov, and the prestigious mathematician L.I. Pontryagin criticizing the syllabus. Their equally prestigious colleagues S.L. Sobolev and L.V. Kantorovich, however, cautiously supported it.

The debate raged for two years (a detailed analysis of the arguments appears in the current issue of *Journal of Curriculum Studies*), and, perhaps significantly, teachers' complaints centred around difficulties in implementing the syllabus (lack of classroom aids and teachers' handbooks) rather than the actual content, although their main difficulties seem to have arisen from the highly theoretical orientation of the syllabus.

Parallel with this debate, the weekly *Literaturnaya Gazeta* launched its own