mation and the productivity of French industry were "disturbing". Management had often preferred to avoid the risks of industrial conflict over automation, and capital investment since 1974 had been small. The result was an "obvious under-equipment" of French industry. For example, France has only half as many robots per worker as Sweden or Japan, and the mean age of industrial capital equipment had increased in France from 14 years in 1974 to 16 years now.

What's to be done? As usual, M. Chevenement prescribed massive financial intervention by the government: FF2,500 million (£200 million) over 3 years for the machine tool industry (following a plan established by his predecessor at the ministry of industry), the launching of a robotics research programme involving 300 researchers and other such grand concepts.

Last week, however, a new note was struck. Part of the investment must flow from a reflation of the home market, said Chevenement, who thus offered a strong hint to the finance minister Jaques Delors that the recent freeze on French wages must not last too long. "The issues at stake are so important we cannot waste time" he said.

Robert Walgate

Indices of world robot production, according to figures contained in a French government report on robotics released last week

Country	Annual production (no. of robots)	Cumulated production	Cumulated production of robots each worth ≥ £12,500	Current turnover	Cumulated turnover	No. of workers building robots
Japan	11,000	43,000	4,750	£65m	£217m	3,750
USA	8,130	19,000	3,800	£82m	£192m	3,420
West Germany	1,600	4,800	1,200	£16m	£58m	—
Italy	1,300	3,900	1,000	£16m	£49m	—
France	1,037	3,815	687	£16m	£52m	838
Switzerland	800	2,400	—	£1.2m	£4m	—
Scandinavia	560	2,060	1,600	£16m	£57m	700
UK	80	300	30	£0.5m	£2m	—

UK plant biotechnology

ARC joins in

The British Agricultural Research Council seems well on the way to joining up with a new biotechnology company specializing in plant genetics. The new company is being organized by the British Technology Group, the product of the *de facto* merger a year ago of the National Research Development Corporation and the National Enterprise Board. The group is expected to provide about a third of the initial capital of the new company, in which a total investment of between £12 and £15 million is being sought.

The new company is thus closely analogous to the British company Celltech, established in 1980 by a group of city institutions in partnership with the then National Enterprise Board. Part of the intellectual capital of Celltech is an agreement with the Medical Research Council under the terms of which the company has the first refusal to exploit discoveries arising in council establishments.

While the agricultural proposal has been in the air since the beginning of the year, it seems to have come to life only in the past few weeks, with an expression of firm interest from the British-based international oil company Ultramar. The intention now is that the British Technology Group will be drawing up a firm prospectus and business plan for the new company, which should be formed before the year is out.

There appears to be little danger that the new company will conflict with Celltech, which has apparently taken a policy decision not to engage in plant genetics. Celltech's chief executive, Mr Gerald Fairtlough, said last week that his company welcomed the proposed company linked with the Agricultural Research Council and thought there might be opportunities for collaboration.

At this stage, none of the backers of the proposed company is willing to speculate about the directions in which its research and development may lead, although it does seem to be understood that it will not venture into the veterinary field, in which Celltech has declared an interest. The British Technology Group, destined to be a shareholder in both companies, says however that competition between the two would not be unduly worrying.

As yet, the Agricultural Research Council has not seen a formal version of an agreement for its participation in the company, which is nevertheless likely to be for a limited span of time in the first instance. The Medical Research Council's commitment to Celltech was for an initial period of five years.

The new company will be principally concerned with the genetic manipulation of plants, in which the council's Plant Breeding Institute at Cambridge and its John Innes and Rothamsted stations are involved together with research groups such as that concerned with nitrogen fixation at the University of Sussex. But Dr Ralph Riley, the council's secretary, says that the new company will also use other techniques for producing new strains of plants, including the propagation of plants from single cells by "conventional" cloning techniques. He says that the new company will aim not merely to carry out research and development but that it will also market new products. ●

Win for whales

Conservationists are jubilant. Last week the annual meeting of the International Whaling Commission (IWC) voted 25–7 in favour of phasing out commercial whaling by 1986. In view of the uncertainty over the numbers of whales and condition of stocks, the decision was taken to be safe rather than sorry. Meanwhile whaling nations now have a three-year breathing space in which to decide whether to accept the ban or to go their own way. Interim quotas have been allocated and fishing will continue until 1986.

Obstacles to an effective ban still remain. The motion, moved by the Seychelles, did not call for a ban or moratorium by 1986, but for zero catch limits. If new scientific evidence were to emerge that stocks were in a better condition the decision could be reversed. Whaling nations have 90 days to lodge a formal objection which under IWC rules would allow them to carry on fishing whales. By taking up such a position, whaling countries would keep their options open and it is a likely course of action for the majority.

The vote on fishing quotas was taken at an extended session of the meeting. Peru is to be allowed to take 165 bryde's whales in the 1982–83 season from a population that best estimates put at 1,000. Spain, which voted for the ban, was given a quota of 270 fin whales for the phasing-out period, with a maximum of 120 per year. Some estimates put the stock as low as 800. Japan can take 450 sperm whales this season and 400 next.

Many participants felt that in view of the phasing out of whaling such quotas would not have a serious effect on whale stocks. Some conservationists, however, viewed the quotas as a sell-out. They had hoped that the conservationist countries would stick together not only to impose a total ban but also to push through protection for the bryde's, fin and sperm whales.

Although after years of campaigning the conservationists have persuaded the IWC plenary session to vote for what is in effect a total ban, the outcome depends entirely on the Japanese. The other whaling nations will be swayed by the stand Japan takes. If Japan carries on whaling, IWC will have no further control over catch limits. The whaling nations will simply set their own. While environment groups are growing in Japan the fishing industry remains a powerful lobby. It is by no means clear that the United States has the political will to impose unilateral fishing and trade sanctions against Japan in the event of a decision to continue hunting. There is no other restraint — except Japanese good sense. **Jane Wynn**

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