

Japanese technology

MITI seeks friends from abroad

Tokyo

JAPAN'S Ministry of International Trade and Industry (MITI) last week took the remarkable step of inviting foreign representatives to attend a joint meeting of two of its key councils concerned with the planning of research and development projects.

A major new bill to promote high technology research is in preparation (see *Nature* 310, 614; 1984), and MITI seems anxious to sound foreign opinion before presenting the bill to the *Diet*. What remains unclear is whether the meeting will turn out to have been a sop to those feeling threatened by MITI's new plans or a first step in an initiative to encourage international research cooperation. For the foreigners, at least, the hope was that this would be the first of many meetings.

The two councils, the Industrial Technology Council and the Industrial Structure Council, between them play the major role in deciding the thrust of MITI's big research and development projects. All too often, these projects have been fiercely criticized by foreign governments for "targeting", or for aiming to use the combined strength of government and industry to achieve Japanese technological domination in some highly profitable area.

Recent projects have evoked strong reactions worldwide. Those under way at the moment include the fifth generation computer project (which has frightened many advanced nations into launching their own "artificial intelligence" programmes); an optoelectronics project designed to rid optical fibre circuits of relay electronics through the use of optical switching; the massive sunshine and moonlight projects intended to exploit new energy sources (geothermal, solar and biomass) and to find new ways of conserving and storing energy; a host of projects on improving industrial performance through use of robots, flexible manufacturing systems equipped with lasers and computerized sewing and garment assembly machines; and long-term projects aimed at new ceramics and superlattice semiconductors.

The first MITI project that really evoked foreign discontent, however, was the VLSI (very large scale integrated circuit) project that ran from 1976 to 1980 and which involved 100 researchers from the seven large computer manufacturers, MITI's own electrotechnical laboratory and the telecommunications monopoly NTT's electrocommunications laboratory. Virtually all aspects of the production of microchips were investigated, seven hundred new inventions were patented and within a year of the end of the project, Japanese manufacturers had seized 70 per cent of the world market in 64K random access memories (rams) and were leading world

research in the production of 256K rams and 1 megabit microchips.

US electronics companies sent reeling by this assault on their markets vigorously protested that the pooling of competing companies' research resources was unfair — particularly as their own anti-trust laws would have made a similar strategy impossible. Japanese companies on the other hand show little respect for the value of the MITI project, and instead attribute success in the world microchip market not to a mythical "Japan Inc." but to the fierce competition among themselves to produce the finished item as cheaply as possible.

Since that time, there have been regular demands from the United States to allow foreigners to act as witnesses, or even participants, on Japanese government research councils. While this may seem unreasonable interference in another government's deliberations, the United States says it seeks only a clear understanding of new legislation before it can cause industrial hostilities. In Japan that means seeing the legislation before it is submitted to the *Diet* which can hardly be considered a major forum for debate when more than

eighty per cent of bills pass without any amendment whatsoever. (The general procedure is that a consensus is worked out behind the scenes before a bill is ever presented.)

In the event, the representatives invited to the MITI councils' meetings — from the United States, United Kingdom, West Germany and France — were from their respective Chambers of Commerce rather than from embassies. MITI itself made no specific proposals, although suggestions have been made that foreign companies operating in Japan may be allowed to use the new industrial technology centre that MITI wants to set up, and that exchanges of personnel may be encouraged in areas in which Japan now leads the world. Foreign representatives were however, given a chance to say how international cooperation might be brought about.

Other attempts by Japan to encourage major international research projects have so far yielded little fruit. The series of proposals made at the Williamsburg summit, such as that for the development of new robots to work in dangerous environments, may have hung fire because they tried to involve all the summit nations. Smaller scale projects arrived at through bilateral agreement may prove more successful.

Alun Anderson

Britain in space

Strong links with Europe urged

BRITISH scientists and grant-making agencies are urged to play a fuller part in the work of the European Space Agency (ESA) in the report of a committee to consider future policy. The committee, under Sir Mark Richmond, the vice-chancellor of the University of Manchester, also says that its parent, the Science and Engineering Research Council, should take the initiative in persuading government departments to set up a strong coordinating body for British space research.

Among academics working in the field, the overwhelming reaction is relief that the Richmond committee has not advocated a retreat from space research. The same interests complain that the committee has not openly advocated some way of financing space research other than by subventions from the academic research budget. No doubt the committee would have been more explicit if it had some inkling of what the British government would be prepared to spend (if anything).

The origin of the committee, reflected in the arguments of the report now published, is the financial pressure of British space research in recent years. The committee points out that British government spending in the civil field is £80 million a year, compared with £200 million a year in West Germany and £300 million a year in France (the main sponsor of the Ariane launcher).

The committee notes that British scientists have in the past been able to sustain

their research by means of bilateral agreements, chiefly with the United States, largely on the strength of good science and competence in the design and construction of instruments. But this period, the committee says, is drawing to an end, partly because British scientists are no longer outstanding among Europeans, partly because they have less to offer in cash as well as kind, partly because of some recent failures of instruments built for other people's satellites (such as some of the detectors of the EXOSAT satellite) and partly because of a change of US policy, now slanted towards collaboration with ESA wherever possible.

The Richmond committee acknowledges the relatively high cost of international collaboration but says that if British academic science does not intend to abandon space altogether, it should participate more fully in ESA. On particular points, the committee recommends a transfer of the Science and Engineering Research Council's interests in remote sensing by satellite to the Natural Environment Research Council and the encouragement of British industry to interest itself in microgravity experiments.

The Richmond report has not been formally adopted by the Science and Engineering Research Council. The council is probably as embarrassed as the committee by uncertainty about the government's financial intentions. □