transuranic elements in the "island of stability" (atomic numbers 114–120), studies of black holes and quarks. Mr Leonid Brezhnev, at the twenty-sixth Party congress, had emphasized the need for "fruitful cooperation of all states" on these problems, yet Sakharov has been unable to meet or correspond with his colleagues abroad since 22 January 1980.

Vera Rich

UK industrial research

All change

Britain's Department of Industry has reorganized the way in which it supports industrial research, seemingly to counter criticism that it has been poor at defining priorities and has relied too heavily on reacting to research proposals from industry. The nine research and development requirements boards, each aimed at a particular sector of industry, have been replaced by five boards, each dealing with a particular technology.

The five new boards are to cover the same spread of research as the old ones, the idea being that by increasing the spread of each board's responsibilities the government's definition of long-term objectives and priorities will be made easier. Hence for example, the new Mechanical and Electrical Engineering board will take over the work of the old Ship and Marine, Mechanical Engineering and Machine Tools and Electrical Technology boards. The old Chief Scientist's board, which considered topics not covered by the other boards, is to be incorporated into the new Textile and Other Manufactures board.

The other new boards are Electronics and Avionics which replaces Computer Systems and Electronics, Materials and Chemicals which replaces Chemicals and Minerals and Engineering Materials, and Metrology and Standards which remains the same under the chairmanship of Dr Duncan Davies, now called Chief Engineer and Scientist in the department.

The functions of the new boards will remain largely unchanged. Industry and universities will be able to apply to them for government support for industrial research and they will continue to place contracts for research of their own choosing within industry and the department's own research establishments. The arrangement whereby levies are charged on the profits accruing from research funded by more than 50 per cent by the department will remain. And each board will have an executive committee to approve projects. It is hoped that the reorganization will encourage the boards to place more contracts in priority areas of research. However, the fact that there are no plans to appoint subcommittees has led to some fears that the boards' remit could be too wide to be effective.

The department's budget for industrial

research is to remain roughly constant. This year it is £600 million, £35 million of which will be spent in industry and £25 million in the department's research establishments. A small saving in funds will be made from the reduction in staff expected to follow the reorganization.

Judy Redfearn

Bioengineering hazards

Europe doubts

Brussels

An inconclusive meeting on the safety aspects of research on recombinant DNA was held here last week by the European Community's Economic and Social Committee (ESC). At this stage, it is hard to tell whether the meeting will influence the development of Community legislation on the subject — and, if so, in what direction that influence will be directed.

The discussions ranged from the long-term ethical problems posed by the possibility of tampering with human genes to the risks of accidentally releasing a new and dangerous strain of microorganism. The impetus for the meeting was the European Commission's draft recommendation on the registration of DNA research — ESC is required to give an opinion before the Council of Ministers make a decision.

Most participants seemed to agree that industry was already being over-cautious. By trying to avoid the mistakes of the nuclear industry, the safety measures recommended in the early 1970s for DNA research now seem to reflect exaggerated fears.

One pointer in this direction was the conclusion by the European Science Foundation's Liaison Committee on Recombinant DNA in January that recombinant DNA research as such entails no significant novel biohazards. It was also stressed that recombinant DNA techniques can be safer than conventional methods for studying pathogens and toxins. Safety guidelines for handling pathogenic viruses, it was argued, were far more necessary, and the World Health Organization's guidelines are late in arriving. These are due to be published within the next few months.

It was over the social risks that most of the participants were divided. Representatives of trades unions pointed out that there was a danger that decision-making would be restricted to industry. British speakers pointed out that the British Genetic Manipulation Advisory Group has retained control, but French participants conceded that this was not the case in France and elsewhere. Several participants were convinced that the concentration of knowledge in the hands of industry will lead to commercial (or even military) applications not necessarily beneficial. Calls for less secrecy were, however, answered by reference to the fact that all patents are by definition publicly available.

But does the public have sufficient say

over the uses to which the recombinant DNA techniques will be put? This issue overlapped with that of the role of the media in informing the public. By attempting to bridge the gap between the scientist and the layman, was there a danger that the press was exaggerating the dangers or speed of developments in this field?

Although many of the speakers argued that the DNA guidelines were safety regulations looking for a hazard, some members of ESC confirmed afterwards that they were in favour of legally enforced safety regulations, even if they needed to be frequently revised to take into account changes in risk assessment. It was suggested that the Community was merely going through the same process that had taken place in the United States a few years ago, but a little later because of the several countries involved.

Jasper Becker

US defence budget

Laser destruction

Washington

The US Senate last week proposed adding an extra \$50 million to the budget of the Department of Defense to speed up the research and development of a space-based laser system designed to shoot down incoming enemy missiles. At the same time, a Senate appropriations committee has not passed on Mr Reagan's request for \$20 million to be added to the Pentagon's construction funds for the current year to begin work on the production of binary chemicals weapons at the Pine Bluff arsenal in Arkansas, although this decision could be overturned in negotiations with the House of Representatives, which has already given its approval for the money.

The decision to add additional funds for the laser system is the result of growing pressure from the US military to respond to reports that the Soviet Union is already testing ways of using lasers to destroy missiles — and in the face of continuing scepticism from several quarters that space-based lasers can in fact be produced with the required degree of reliability and accuracy.

The proposed \$50 million, which will include a detailed systems definition of a space-based laser weapons system, is a compromise between the \$250 million being requested by some advocates of the system, and fiscal conservatives concerned about an unnecessarily large expansion of the arms budget, which the Senate approved at a record figure of \$136,500 million for 1982.

Asked for comments on the original \$250 million proposal, Dr John Foster of the Department of Defense's Defense Science Board said it was too soon to accelerate space-based laser development towards integrated space demonstration for any mission, and that "a push toward integrated on-orbit demonstrations would seriously endanger necessary [research and

development] work". However, according to Senator John Warner, the Defense Science Board has concluded that the potential utility of space-based lasers is significant and that an average of \$50 million per year should be added to the programme.

The money for the binary chemical weapons facility which the Senate armed services appropriations subcommittee has left out of the supplemental request for the fiscal year 1981 would have been the first step towards renewed chemical weapons production which has been halted since 1968. The Administration is thought to be moving cautiously, aware of the public concern about the deployment of a new generation of chemical weapons in Europe. The main debate will probably take place later this year, when the details of next year's budget request, likely to contain substantially more funds for chemical weapons, are debated in Congress.

David Dickson

Soviet space

Romanian resources

Last Friday's launch of Soyuz-40, carrying into orbit Romanian cosmonaut-researcher Dumitru Prunariu for a week's stay aboard the Salyut-6 space station, completes the series of manned flights envisaged under the Comecon "Interkosmos" programme. Since the series was inaugurated with the flight of the Czech Vladimir Remek in March 1978, these "international" programmes have taken on a standard form, regularly including Earth-resources photography, astrophysics, biomedical studies and technological experiments. On each occasion there has been a smelting and crystallization experiment, using a Soviet "Splay" furnace and a capsule provided by the non-Soviet partner, with an appropriate patriotic code-name: "Altai" for Mongolia, "Berolina" for East Germany and in the latest case, "Dacia" for Romania.

Each joint programme, however, has also reflected the contribution made by the non-Soviet partner to the whole "Interkosmos" programme. In the case of Romania, the emphasis was initially on instrumentation. According to Dr Ioan Ursu, First Deputy Chairman of the Romanian National Council for Science and Technology, from the beginning of the programme in the late 1960s, Romania had specialized in the production of magnetometers, specially adapted spectrometers and radiation detectors. Romanian instruments, he said, had contributed considerably to the accumulation of data on the chemical composition of the upper atmosphere, variations of the Earth's magnetic field and particle physics. The current programme, according to Dr Eugen Mendescu, Secretary of the Romanian commission for

space activity, will include the "Astro" experiment, which will attempt to capture super-heavy nuclei. Other innovations include an experiment on the behaviour of liquids in "microgravitational" conditions and the monitoring of dynamic disturbance of the space station itself, in order to determine possible effects on the experiments (the Polish "Syrena" crystallization experiments in 1978 seem to have run into trouble on this account).

What prospects the Soviet manned space programme now holds for international cooperation remains a mystery. Current plans for Soyuz-Salyut still include flights by a French and an Indian cosmonaut, and during last month's celebrations of the twentieth anniversary of Yuri Gagarin's flight it was suggested that Finland might also be invited to participate.

Future international cooperation may well have received a setback with the death last autumn of Academician Boris Petrov, head of the "Interkosmos" programme. Academician Petrov was a firm supporter of such international flights, unlike, for example, the President of the Soviet Academy of Sciences, Anatolii Aleksandrov, who on one occasion commented sourly that "Solyuz is not a trolleybus". Nevertheless, the options remain open. At a press conference in Berlin last month, cosmonauts Pavel Popovich and Vladimir Aksenov observed that a manned flight to Mars was a "problem for the coming decades" which could "best be settled" by means of international cooperation involving many countries.

Vera Rich

Viewdata systems

Battle joined

Although the British viewdata system, Prestel, was not expected to make a profit within the first eighteen months of operation, the results so far are disappointing. As yet only 1,288 people have bought the special television sets for domestic use. British Telecom's early hope that no home could do without its Prestel set seems to have been ill-founded. Sales to businesses, however, have been slightly brisker, although the 8,216 registered represent only a modest achievement.

British Telecom has, nevertheless, changed its marketing strategy, aiming at business rather than the domestic users. The National Economic Development Office hopes that business registrations will rise to 46,000 in the next eighteen months. The target for home registrations within that time is now 4,000.

The main lesson so far is that cost and the quality of information on the system are crucial to the home buyer. A custom-built Prestel set costs £400-500 more than an ordinary colour television set, although special adaptors costing about £200 are now coming onto the market. As well as ordinary telephone charges, a tariff for

connection to a central computer is also levied, so the cost to home users who want only information on train timetables, local cinemas and so on can seem expensive. The recent decision to increase the computer connection charge for peak day-time use does not augur well.

The quality of information at present stored on Prestel is variable. As yet nobody quite knows what type of information the domestic user is prepared to pay for, so two television supply companies are conducting a market survey in four provincial towns. Businesses, however, seem more prepared to pay for information, the greatest users so far being travel agents and financial companies.

One obstacle to further adoption by business is the increasing number of private viewdata systems, most of which are nevertheless compatible with Prestel. British Telecom regards these systems as complementary rather than competitive. It also hopes that the introduction next year of its Gateway system, whereby private databases can be linked to Prestel, will at least prevent British Telecom from being squeezed out of the market.

The teething problems of Prestel, the longest running public viewdata system in the world, will no doubt be watched with interest by competitors and potential buyers outside Britain. Although Prestel has been licensed to more telecommunications authorities than any of its rivals, the French Teletel and the Canadian Telidon may yet emerge on top. Arguments over which system should be recognized as a standard by the International Consultative Committee on Telephones and Telegraphs seem to have been resolved by all three being accepted. And the problem that no one system is compatible with either of the other two seems to have been resolved, at least for the French and British systems, by recent developments in software which will soon allow access by each system to the same computer.

Nevertheless, Telidon, which uses an alpha-numerical rather than an alpha-mosaic standard and is thus better at graphics, may have advantages over Prestel for some uses. What everyone wants to know is which system, if any, AT&T will choose in the United States. Some indication is expected to be given this week at Videotex '81 in Toronto. **Judy Redfearn**