radio observatories in the United States and Canada will be affected.

One radio astronomer who is deeply involved in the protection of the radio astronomy bands says that the International Radio Regulations seem to offer no power to radio astronomers to prevent damage to the exclusive band, and describes the affair of ATS-F as "a sad and ironic example of the rapidly growing misuses of the electromagnetic spectrum".

JAPAN

China Comes Closer

from our Special Correspondent,
Tokyo, August

THE prospect of a *rapprochement* with China has excited not merely the politicians and their protégés, the chairmen of the large industrial companies, but also the scientific community, which would welcome closer links with Chinese universities and which acknowledges that the development of a stronger trading relationship with mainland China could profoundly influence the development of Japanese science in the coming decade. Since the appointment of Mr Tanaka's government last June, the talk of the development of the technology of anti-pollution has been more clamant than ever, but the prospect that Japan may now become the source of all kinds of new technologies for mainland China—consumer goods are likely to be much less saleable than machinery—may yet revive some of the old excitement about technology.

This prospect no doubt explains why so much attention is being given to the preparations for Mr Tanaka's visit to Peking in the next few weeks, and in particular to the agreement that a portable ground station for satellite telecommunications should be installed by Kokusai Denshin Denwa Company. The company, which has a monopoly on external radio and cable services, has already arranged to increase the number of short-wave radio telephone circuits between Tokyo and Peking from four to six, and there is also talk that the Japanese National Railways would be prepared to provide the Chinese with the technology of the high speed railway link now working between Tokyo and Osaka so long as the Chinese were prepared to buy rolling stock or to pay for the installation of new lines. In short, the prospect of a changing relationship with China is appealing because it may make demands on branches of technology which have not so far been directly involved in the export business.

In spite of appearances to the contrary, there is also some quiet pleasure at the agreement between Prime Minister Tanaka and President Nixon

that \$320 million would be spent on advanced purchasing of enriched uranium from the United States. The immediate objective, of course, is to make the Japanese dollar surplus seem less horrendous to the United States, but it is also acknowledged that by the 1980s, it will be hard to secure fuel supplies for the 60,000 MW nuclear reactor capacity expected to be operating by the middle of the decade. The new agreement will give the Bureau of Atomic Energy a lien on 10,000 units of separative work at American enrichment plants at a time when these will be most necessary.

Japanese willingness to rely on American facilities has also been apparent, in the past few days, in a strange dispute between the National Broadcasting Corporation (NHK) and the National Telecommunications Organization (NTT) on the one hand and the Space Development Agency on the other. The two former organizations have long been critical of the plan to develop an independent launching capability for telecommunications satellites and were instrumental in persuading the Space Development Commission that the three-stage rocket needed to launch synchronous communications satellites should be built on the Thor-Delta rocket well tested in the United States and now being manufactured by the Space Development Agency under licence. But the telecommunications authorities are still impatient with a plan which cannot, at best, launch independent telecommunications satellites before 1979 and have therefore let it be known that they would like to see four Japanese-built satellites launched with American rockets in 1975 and 1976. NHK's proposal would involve direct reception of television signals broadcast by satellites.

The two public corporations have had their knuckles rapped by Mr Makoto Miike, Minister of Posts and Telecommunications, who says the proposals are directly in conflict with the strategy that led to the creation of the National Space Development Agency three years ago. At the agency, it is said that the director first heard of the specific plans now canvassed by NHK and NTT by reading the newspapers and that he has not even now been given full details. The fact that the row has come out into the open in this way can no doubt be taken as a sign that there is more trouble ahead.

The campaign against pollution is being waged on every front. In the past few days, perhaps the most surprising development has been that the Ministry of International Trade and Industry has laid down a standard for the allowable concentration of sulphur dioxide in atmospheric gases of 0.15 parts per million, compared with a concentration of 0.05 ppm provided for in

current legislation. The ministry says quite openly that its new standard will only be attainable if there are radical changes in industrial methods and, fair play, it is already spending large sums of money on applied research aimed at devices for controlling environmental pollution. And in the past few weeks, persistent eaters of tuna fish have been warned of mercury contamination—one worker at the Central Wholesale Market has been found to have 25.62 ppm of mercury in a sample of hair. On the basis of a government survey, it has also turned out that the degree of contamination, unchecked until three or four years ago, is worse than anybody expected.

SOVIET SCIENCE

Soviet Education Policy

from our Soviet Correspondent

A HEAVY emphasis upon the sciences is a principal feature of Soviet education policy, and expansion in the field of higher education implies an expansion of science faculties and institutes. The new party and government resolution on "Measures for the Further Improvement of Higher Education" suggests, however, that this expansion is not sufficient to keep pace with the growth of the Soviet economy.

In many cases the level of theoretical and professional knowledge of the graduates "does not correspond to the increased requirements of science and industry". There are delays in the introduction of modern methods, and recent discoveries and innovations are not dealt with in the syllabus.

The close connexions advocated by educational policy between institutes of higher education and industry or agriculture are in many cases "still weak", and insufficient attention is paid, in teaching and research, to "the immediate problems of science and technology". In some areas there have been failures in providing proper finance, so that laboratories are poorly equipped. Finally, the planning for the training, distribution and use of specialists is said to be "not in complete correspondence with the needs of the national economy".

The resolution calls for the cooperation of All-Union and regional bodies concerned, from the Academy of Sciences downwards, to deal with the problem. Syllabuses are to be revised and new textbooks prepared with greater emphasis on the "general science and general technology disciplines". The teaching of "the organization of labour and control", engineering psychology, industrial aesthetics and computer technology is especially earmarked for improvement.