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● The need for a closer connection between research and the requirements of the national economy is a constant theme in Soviet planning. Last autumn, the Far Eastern Science Centre was criticised by the Party for having failed to direct its research towards local needs. More recently, the prestigious Siberian Branch of the Academy of Sciences of the USSR came under similar censure. A statement from the Central Committee of the Party, while praising the Siberian Branch for its work in fundamental research, finds "insufficiencies and unresolved problems" in its activity; work on "the complex use of the natural wealth of the eastern regions of the country" is going too slowly; the Presidium of the Branch is paying too little attention to the work of certain centres; and filials, scientific forces and material resources are not being concentrated on "the most important lines of science connected with the acceleration of scientific and technical progress". In particular, insufficient attention has been paid to the problems of the Kansk-Achinsk coal basin, the Norilsk mining and metallurgical combine, and the route of the Baikal-Amur Mainline (BAM) railway.

Instead of admitting these faults and promising amendment, however, Academician Gurii Marchuk, the Chairman of the Siberian Branch, issued a statement extolling the work of the Branch, and softening the rebuke of the Central Committee to a gentle directive showing "ways of improving the quality and efficiency of scientific research". Marchuk stressed that during the 20 years of the Branch's existence, science centres, in addition to its main centre at Novosibirsk, have been established in many cities including Irkutsk, Ulan-Ude, and Krasnoyarsk. The Siberian Branch now includes 48 research and design organisations, representing practically every field of the natural and social sciences. Marchuk himself envisaged the future of Siberian science as "a growing effective force, transforming huge tracts of land along the Leninist path and exerting an increasing influence on many sides of the life of Soviet society".

Within a week, the critical tone of the Central Committee had been de-emphasised even further. Addressing the Moscow meeting of the heads of Academies of Science of the Comecon block, Mr Brezhnev held up the Siberian Branch and the Ukrainian

Academy as examples for emulation. "The Siberian Branch is carrying out a very interesting experiment", he said. "The Institutes of this Branch are directly connected to many sections of the national economy, with many major [industrial] enterprises. They have worked out long-term programmes of scientific-technical cooperation and are gradually implementing them."

Since the Brezhnev speech, articles have appeared in the Central press commending the work of individual Institutes of the Branch in the service of the economy—the Hydrodynamics Institute, has been commended for surveying the line for the BAM and the Institute of Atmospheric Optics for weather-forecasting. Marchuk's defence of his Branch seems to have been successful and its present shortcomings have been accepted as temporary deficiencies rather than a failure to understand the fundamental task of the Branch.

● Although the Soviet lunar research programme has so far been confined to unmanned probes and lunokhod rovers, biophysicists at the Siberian Branch of the Academy of Sciences are already working on the possibility of farming in lunar conditions. Experiments with wheat, carrot, beetroot and turnip seedlings suggest that plants could be grown under suitable transparent domes using the natural lunar illumination cycle. The plants were kept at a temperature of 3–4 °C during the 'night' periods, and were grown hydroponically, using common tap water as the nutrient medium. In spite of the lack of minerals, especially nitrogen, and the artificial illumination cycle, all the plants produced roots with the "normal biochemical composition", and during the second lunar 'day' the wheat produced ears. The team stresses that if plants can be grown

successfully by natural sunlight, the energy problem of settlements on the moon would be much easier.

● The current difficulties with international fishing limits have evoked considerable rethinking of Soviet fisheries policy; in contrast to the old theory of large catches and the over-fulfilment of targets, the new line stresses that since catches are limited, the entire quota must be suitable for food. The new policy is to be implemented in various ways: Latvia is to use refrigerated factory ships in the Baltic to reduce wastage; and the Deep Sea Fishing Flotilla, operating in the Sea of Okhotsk, has been instructed not to catch Okhotsk grenadier (which accounts for up to 50% of all catches in the area) since the experts have decided that grenadier is unmarketable.

Following a recent order from the Ministry of Fisheries, likely lakes and reservoirs for fish-farming are being appraised, and existing fish-farms are being extended. An experimental trout-farm is already in operation in the out-fall of the Kola atomic power station in the Arctic. The use of fish wastes is also being investigated. According to an official of the Sevryba (Northern Fisheries) organisation, the fishing industry has for some time been able to collect and deliver heads, tails, and gut to shore enterprises for further processing. These waste products, he stressed, contain 30% fat, 8–12% protein and a "considerable quantity" of the B vitamins. At present such wastes are used for animal food, but research is underway on their possible use for human consumption—a project more likely to appeal to the planners than to the average consumer.

● The RATAN-600 radio-telescope, the largest in the world, is at last officially in operation. The telescope, sited at Zelenchuk in the Stavropol' district, was constructed jointly by the Academy of Sciences of the USSR, Moscow University, the Ministry of Power and Electrification, and the Ministry of Power Plant Construction. Mr Brezhnev's formal message of congratulation was issued on 20 March, 1977.

Each of the four sections of the telescope can operate autonomously and part of the Ratan-600 has been receiving signals since 1974. A number of research projects are already in hand including studies of the fine radio-structure of the sun, the moons of Jupiter, and the galactic nucleus.

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