Science Center in Siberia

London. The Soviet science center established in Akademgorodok, a science city near Novosibirsk in Siberia, has now developed to the point where it should be included in the physical scientist's "normal rounds," according to Michael J. Lighthill, a leading British mathematician. Lighthill visited Akademgorodok in June 1965 and described his visit in a public lecture at the Northampton College of Applied Technology in London on 16 March.

Lighthill visited eight of the 15 institutes of the Soviet Academy of Sciences that are located in Akademgorodok and talked to scientists from some of the others. According to him, a notable feature of the Siberian science center is its close association with the university of Novosibirsk and with a special boarding school in Akademgorodok for about 600 students of physics and mathematics, chosen from candidates from all parts of Siberia. Soviet observers have frequently criticized the separation of Academy institutes (there are about 200 in all) from teaching facilities.

Lighthill was particularly impressed with the work of the institute of hydrodynamics, which is directed by Academician M. A. Lavrentyev, 65, president since 1957 of the Soviet Academy of Sciences' Siberian department and founder of Akademgorodok.

In Lavrentyev's institute, under the direction of Korchina, a woman scientist, large-scale work is done, in collaboration with the Leningrad Institute of Hydroprojects, on problems associated with canals for navigation and irrigation. Work on this scale, Lighthill said, is usually done by the big applied-research laboratories of the technical ministries of the government.

Lighthill's judgment of Akademgorodok is significant. He is a physical secretary of the Royal Society and a member of the Natural Environment Research Council, Britain's new granting agency for the earth sciences. He advises the government on technical problems of the shipbuilding industry. After 5 years as head of the Royal Aircraft Establishment at Farnborough, he is now Royal Society Research Professor at Imperial College, London. On the occasion of his lecture at the Northampton College of Applied Technology he was introduced by G. A. Tokaty, a former Soviet aerodynamicist who is now a professor at the college. In fluent English Tokaty remarked that Lighthill's Russian was better than his (Tokaty's) English.

Lighthill is one of a small number of Western scientists who have been allowed to come to Akademgorodok since 1963, when the center—under construction since 1958—was judged far enough along to receive them (see *Science*, 27 August 1965). Lighthill said he felt the chief obstacle in the earlier years had been the lack of a hotel (one has now been completed) rather than any unwillingness on the part of the Soviets to permit visits to Siberia or to large industrial centers like Novosibirsk. In fact, Lighthill noted, the Soviet Academy of Sciences has agreed, through the Royal Society, to permit British scientists to work in Akademgorodok for extended periods.

Lighthill showed his audience a sketch map of the science center. Located on Science Road are the following institutes: heat physics, inorganic chemistry, catalysis, organic chemistry, nuclear physics, applied and theoretical mechanics, physical chemistry, hydrodynamics, combustion and semiconductors, and economics and organization of industry. On University Road, at right angles to Science Road, are the institutes of cytology and genetics, mathematics, automation and instrumentation, and geology and geophysics.

In addition, there is a computer center, one of the largest buildings at Akademgorodok. A group of numerical analysts, under scientist Zhukov, is hard at work on problems of radiation transfer and weather prediction. The building has space for much larger computers than those now installed there.

The institute of mathematics concentrates on basic problems of algebra, geology, and topology, Lighthill said, while the institute of heat physics focuses on problems related to the operation of extremely large plants for liquefying gas and boiling liquids under conditions of free and forced convection. Lighthill guesses that the institute may also do a good deal of work on magnetohydrodynamics and other high-temperature applications.

The institute of nuclear physics uses a clashing beam machine built by staff members at Akademgorodok. Lighthill commented that Soviet scientists are often not as lucky as their Western colleagues in having departments of industry serving big-scale fundamental research. Hence, they are forced to build large apparatus in their own workshops, and this is often a slow process.

The institute of theoretical and applied mathematics was founded by an expert on turbines for airplane engines, but the directorship has now passed to a younger man, a plasma expert. The institute is also interested in static deformations in the earth around partly worked mines and in other geophysical problems.

The institute of geology and geophysics is making very detailed gravimetry surveys to achieve inferences about local crustal structure.

While supervising the development of Akademgorodok, Lavrentyev also has had responsibility for planning the growth of science in the rest of Siberia. According to Lighthill, Lavrentyev is convinced that Akademgorodok should not grow beyond its planned maximum population of 40,000 (the population is now about 30,000), and that the two other major Siberian centers of science, Irkutsk and Yakutsk, each with eight or nine Academy institutes, should also stay near their present size. For large new development, Lavrentyev is urging a new site. This, like Akademgorodok, would be on an artificial lake created by one of the huge dams that have been built in Siberia.—VICTOR K. MCELHENY