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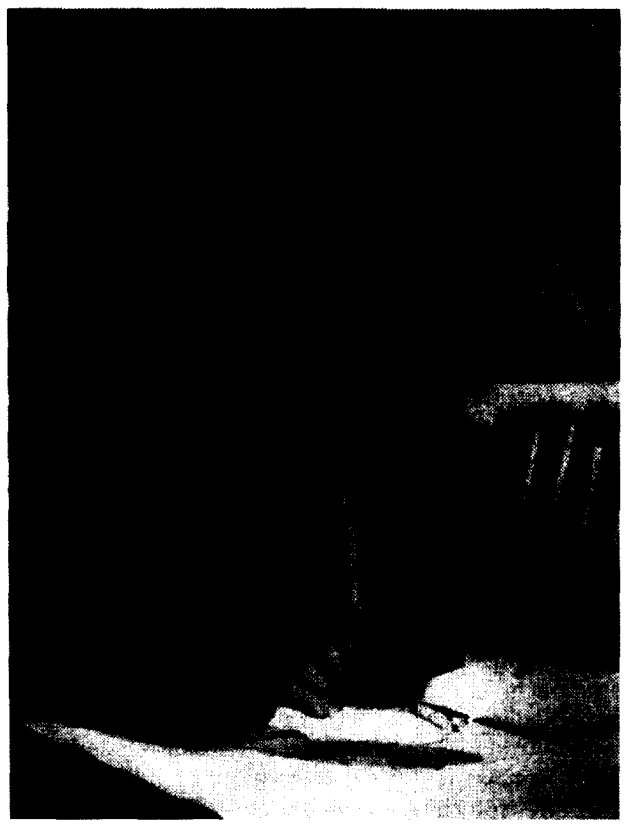
NIKITA NIKOLAYEVICH MOISEYEV (23.8.1917–29.2.2000)†



Nikita Nikolayevich Moiseyev, an active member of the Russian Academy of Sciences and an outstanding scientist in the field of mathematics, mechanics, and modern control theory, died on 29 February 2000, at the age of 82.

He was one of the scientists who, from the 1950s onwards, helped create the scientific potential of Russia and give the country the authority of a superpower. Like many of his peers, he returned to science from World War II. He served in the army from 1942 until the end of the war, was wounded, and was awarded military orders and medals. His Candidate dissertation on rocket dynamics was completed while he was still a lecturer at the Military Engineering School in Khar'kov.

He is rightly considered to have been the founder of a number of new areas in applied mathematics. His research covered a wide range of aspects of the theory of the motion of a body containing a liquid, the theory of gravitational waves asymptotic numerical methods in non-linear mechanics numerical methods in optimal control theory, the theory of hierarchical systems, simulation modelling, and inter-disciplinary studies of ecological problems. In each of these areas, he obtained fundamental results. In his long working life as a scientist he published over 300 scientific and popular science articles and 20 monographs.

In the theory of the motion of a body with a liquid, he obtained classical results, which extended the work of N. Ye. Zhukovskii, and developed effective numerical methods for solving applied problems. His research on the dynamics of a body with a liquid was awarded the USSR State Prize. In the classical theory of non-linear waves, he proved theorems that made it possible to use more effective research methods or to remove previous limitations. Asymptotic methods which he developed made it possible to understand anew processes of wave decay on the surface of a liquid.

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In optimal control theory, he proposed an original numerical method for solving problems with phase constraints, which became an effective tool for solving applied problems of astrodynamics. In the theory of hierarchical systems, he proposed formulations of problems that took account of the non-identical interests of various levels of the hierarchy and laid the foundations of the information theory of hierarchy.

In the theory of computer-aided design, he initiated the creation of a computer-aided design system for general schemes for the development and organization of oil fields and a computer-aided design system for aviation technology. For his part in the development of the computer-aided design system for aviation technology, he received the USSR Soviet of Ministers Prize.

In the field of systems analysis and mathematical modelling of global ecological problems, under his scientific guidance and with his direct participation models of the interaction of mankind and the biosphere as an integral system for assessing the possible consequences of particular scenarios of human activity were set up. The cycle of this research ended with calculations of the consequences of a nuclear attack. The "nuclear winter" phenomenon was discovered, which gave rise to wide international interest and influenced the worldwide process of disarmament.

Research of anthropogenic effects on processes in the biosphere led him to a critical interpretation of established ideas concerning the importance of nature in the development of society and the role of mankind in processes on a global scale. He developed a new view of natural science and its relationship to human knowledge. Developing the ideas of Poincaré, Bohr and Vernadskii, he came up with an original concept termed universal rationalism. Within the framework of this concept he arrived at a new understanding of the principles of the coevolution of mankind and nature and understood the need for new moral imperatives as a condition for preserving humans as a life form on the planet.

The breadth of his views and his enthusiasm and kind nature attracted young scientists from all the republics of the former USSR. An important role in producing research specialists in the various republics was played by the All-Union Optimization Methods and Control Theory Summer Schools which he regularly led in the period from 1965 to 1985. These schools spawned original lines of research into numerical methods of optimization theory, the theory of games and operations research, mathematical modelling of economic systems, and computer-aided design systems. His researchers include three Members and two Associate Members of the Russian Academy of Sciences, a Member and an Associate Member of the Ukrainian Academy of Sciences, and many Doctors and Masters of Science.

The nature of his research was determined by his keen interest in the urgent problems facing the country and by his anticipation of the role of computer technology in the development of applied mathematics. He always remained in close contact with industrial research institutes and design offices, created new departments at the Computer Centre of the Russian Academy of Sciences, and organized the training of research specialists for them. He was the founder of the Faculty of Control and Applied Mathematics at the Moscow Physicotechnical Institute and was its first Dean.

His work in recent years was devoted to the main problem facing Russia – analysing the causes of the crisis of the socio-political system of Russia and finding ways of overcoming them. He used general views and approaches to develop projects for exploiting the economic and geopolitical potential in order to revive the country. Having given up all his official posts, he remained an outstanding public figure and used all means – the press, television and public auditoria – to popularize his natural-science view of socio-economic and political processes. He was President of the Russian Green Cross. President of the International Ecological and Political Science Independent University, and President of the Russian Committee of UNEP.

His scientific and social activity received wide public recognition throughout the world. He was elected a full and honorary member of four academies, was a laureate of the Globe-500 prize, and was awarded the P. L. Kapitsa Gold Medal of the Russian Academy of Natural Sciences.

For many years, he worked actively with the editorial board of this journal.

The memory of Nikita Nikolayevich Moiseyev, a remarkable man, will always remain in our hearts.

Translated by P.S.C.