92:53

Personalia

DMITRIĬ IVANOVICH BLOKHINTSEV

(on his sixtieth birthday)

B. M. BARBASHOV

Usp. Fiz. Nauk 94, 185—186 (January, 1968)

THE eleventh of January 1968 marks the sixtieth birthday of Dmitriĭ Ivanovich Blokhintsev—a well known Soviet theoretical physicist and a corresponding member of the USSR Academy of Sciences.

Blokhintsev belongs to that class of scientists whose activity is inseparably linked not only with science itself, but with its organization, with the training of scientific cadres, and with active participation in the development of philosophical and methodological principles of science.

Blokhintsev was born in 1908 in Moscow; his father was a student at the Petrovsk Agricultural Academy and later became an agronomist.

In 1925 he was graduated from the Moscow Commercial-economic Technical School and started to work as a senior worker in the "Azvin" trust (Moscow). Interest in science and engineering was evinced by him from his youth. While still in school, he independently studied the elements of higher mathematics and corresponded with the famous K. E. Tsiolkovskiĭ, being interested in problems of interplanetary travel.

In 1926, he entered the physics faculty of the Moscow State University, where he attended lectures by S. I. Vavilov, L. I. Mandel'shtam, and I. E. Tamm. Blokhintsev himself says that the greatest influence was exerted on him during his student days by L. E. Mandel'shtam and I. E. Tamm, who urged him to specialize in theoretical physics.

In 1930, after graduating from the Moscow State University, he stayed on as a graduate student under professor Tamm. Blokhintsev's years of study at the Moscow State University coincided with the period of vigorous development and broad application of quantum theory, and he devoted his first scientific papers to the quantum theory of solids. His first scientific paper, written jointly with I. E. Tamm, dates back to 1932. In subsequent papers in the field of theory of solid state, Blokhintsev obtained such important results as an explanation of the phosphorescence of solids, on the basis of quantum theory of semiconductors, and explanation of the rectification of electric current on the boundary between two semiconductors (an effect which now has extensive technical application).

In 1934 he defended successfully a dissertation, for which he was awarded the degree of Doctor of Physico-mathematical Sciences, and in 1935 he became a professor in the department of theoretical physics at the Moscow State University.

Blokhintsev has served continuously as a professor in the physics department since that time, and is now in charge of the department of nuclear theory. During that time he taught a large number of different theoretical courses, most notable among which is the course of quantum mechanics, which he started to teach back in

1933, after finishing his graduate studies. Subsequently, the well known textbook "Principles of Quantum Mechanics," which was translated into five languages, was based on this course. This book was awarded a state prize of the first degree.

Many of Blokhintsev's students, trained by him during their work at the Moscow State University, have become full fledged independent scientists, professors at higher technical schools, and staff members of scientific research institutes.

Blokhintsev started to take part in the theoretical investigations of the Kiev Physics Institute even before the war, and guided there the work of young Ukrainian physicists. In 1938 he was elected a corresponding mem-member of the Ukrainian Academy of Sciences.

During the time of the war, being a staff member of the Physics Institute of the USSR Academy of Sciences, Blokhintsev undertook research on problems of acoustics of inhomogeneous and moving media, connected with important governmental projects. Special notice should be taken of work connected with the theory of moving sound sources and sound receivers, and the

passage of sound through a shock wave. The results of Blokhintsev's extensive research on acoustics are summarized in the monograph "Acoustics of Inhomogeneous and Moving Media," published in the USSR and in the USA. This work was rewarded with an Order of Lenin.

Since 1947, Blokhintsev has been actively engaged in the development of Soviet atomic science and technology. In 1950 he was appointed director of the scientific research laboratory in Obninsk, where one of the leading institutes dealing with nuclear reactors has grown under his guidance. This institute was in charge of creating the first atomic electric station in the world. As is well known, this station started successful operation in 1954. The construction and operation of this station were reported by D. I. Blokhintsev and N. A. Nikolaev at the First International Conference on the Peaceful Use of Atomic Energy in Geneva in 1955.

For guiding the work on the creation of the atomic electric station, Blokhintsev was awarded the Lenin Prize. Simultaneously, for fruitful scientific and social activity, he was awarded by government resolution the high title of Hero of Socialist Labor.

A prominent place among the more than one hundred scientific papers written by him is occupied by papers devoted to the theory and technical problems of chain reactions in atomic reactors. The theory of fast-neutron reactors, which are highly promising from the scientific and commercial point of view, was developed under his guidance. He personally participated in the development of effective methods for design of intermediate-neutron reactors, and also many theoretical and engineering problems of multiplying systems using thermal neutrons.

Since 1956, when he was chosen director of the then created international Joint Institute for Nuclear Research, the leading institute in the field of high energy, his main scientific interests had been concentrated in elementary-particle physics, and principally in high-energy physics. Even at the dawn of the development of atomic physics, in the 30's, Blokhintsev did interesting research on various problems of quantum theory, such as the diffraction and absorption of molecules by solid surface, the Stark effect, etc. In subsequent years, his interest in quantum theory did not weaken. In particular, he is interested in searches for a non-Hamiltonian method of the theory, capable of replacing the apparatus of quantum mechanics, in the development of a stationary method of perturbation theory for problems heretofore solved by a non-stationary method, and in the investigation of a relativistically-invariant apparatus, that takes into account the reaction of the field. An idea proposed by him, that of taking into account the Brownian motion of an atomic electron under the influence of electron-positron pairs in vacuum, failed to yield the values of the hyperfine splitting of atomic levels only because renormalization theory was still unknown at that time. Working as the director of the institute, and since 1965 as the director of the laboratory of theoretical physics of this institute, Blokhintsev continues to carry on extensive scientific work. He published articles on the structure of elementary particles, and advanced the idea of separating nuclear collisions into peripheral and central ones, an idea that turned out quite useful for the analysis of experiments with accelerators. Reports presented by him recently at international conferences and seminars, concerning problems of macrocausality in the theory of elementary particles, have aroused great interest among Soviet and foreign scientists.

Blokhintsev's scientific activity has received extensive recognition in the world's scientific community. He was chosen a member of the Hungarian and East German Academies of Sciences, and received honorary doctorates from the Higher Technical School in Prague and from the Leipzig University.

Besides scientific work, Blokhintsev carries on great communal activity. He is a member of the Soviet Committee for the Defense of Peace, a president of IUPAP (The union of pure and applied physics of UNESCO), and a member of the Scientific Council in the General Secretariat of the United Nations.

Blokhintsev reaches his sixtieth birthday in the full bloom of his creative forces and scientific ideas. We wish him continuation of this creative ardor for many years to come.

Translated by J. G. Adashko