

NIKOLAI VASIL'EVICH FEDORENKO (Obituary)

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NIKOLAI Vasil'evich Fedorenko died suddenly on February 1 of this year. News of his untimely death plunged all those who knew him into deep sorrow.

Fedorenko was born in 1910 at Chernigov; his parents were teachers. He spent the first 14 years of his life there, after which the entire family moved to Leningrad. Fedorenko remembered vividly how they arrived in the city on the Neva on the day before the famous October Flood, the picture of which was clearly etched into his memory. Here in Leningrad, Fedorenko finished school, and here he began his career, working for three years, from 1929 to 1932, as a factory engine mechanic. In 1932, he was admitted to the Workers' High School, and soon thereafter entered the Institute of the Civil Air Fleet, at which he studied successfully for three years. His deep interest in physics asserted itself during these years; in 1934, he transferred to the Physico-mechanical Faculty of the Polytechnic Institute, from which he graduated with distinction in 1938. His senior paper, which was written under the supervision of L. A. Artsimovich, was devoted to a study of the photoelectrons that appear when various substances are acted upon by hard γ radiation. This study was made in the Fast Electrons Laboratory of the Physico-technical Institute of the USSR Academy of Sciences [PTI AS USSR], which was headed by L. A. Artsimovich; it was in this laboratory in July of 1938 that he began his own scientific activity.

Since that time, his entire conscious life revolved around the A. F. Ioffe Physico-technical Institute of the USSR Academy of Sciences, where he advanced from Junior Scientific Colleague to become supervisor of one of the largest laboratories and, during his last 15 years (1957-1972), was Deputy Scientific Project Director. A Communist scientist, he was several times head of the Party organization at the PTI AS USSR, a high and responsible post in which he also won general esteem.

During the war, Fedorenko spent several years at Vladivostok, where he worked hard to introduce a method developed at the PTI for protection of ships from magnetic mines. In the years that followed, he engaged in research on cosmic rays, taking an active part in the postwar commissioning of the PTI's cyclotron. In 1948, as a Senior Scientific Colleague in V. M. Dukel'skii's laboratory, he began studies in atomic physics that were to grow into a new division of that field—the physics of atomic collisions. Fedorenko can rightly be considered one of the creators of this important trend. During the quarter-century that has passed since then, he carried out a number of groundbreaking researches that originated the principal trends in this field of science. His papers devoted to investigation of elementary processes and to scattering and inelastic energy losses in collisions between atomic particles are widely known. Data that Fedorenko obtained



in 1948-1954 on ionization, stripping, and charge exchange were of great importance for solution of the problem of industrial electromagnetic separation of isotopes. In later years, processes in which hydrogen ions, atoms, and molecules participate were subjected to detailed study under the supervision of Fedorenko in connection with the development of work on controlled thermonuclear fusion.

A characteristic feature of Fedorenko's scientific activity was the broad scope of the problems that he studied, the combining of investigations that were of value for solution of fundamental problems in atomic physics and important for solution of applied scientific-technical problems. The research methods developed by Fedorenko now form the basis of experimental technique in the physics of atomic collisions. Data that he obtained on the interactions of atomic particles are in many cases the chief source of our knowledge in this field. Fedorenko always worked at the frontiers of knowledge. The long-standing and undisputed priority of Soviet science in the physics of atomic collisions is

due in large part to his efforts. In April of 1972, the Lenin Prize was awarded for the cycle of these studies, with V. M. Dukel'skiĭ, V. V. Afrosimov (PTI), O. B. Firsov, and V. A. Belyaev (Atomic Energy Institute) as laureates along with Nilolaĭ Vasil'evich.

Fedorenko did a great deal of work to organize international collaboration between scientists in the field of atomic physics. His merit was recognized in his election as Chairman of the International General Committee that brings together scientists working in the physics of electronic and atomic collisions, and also in his membership in the Commission on Atomic and Molecular Physics of the International Union of Pure and Applied Physics (IUPAP). He was a member of a number of interdepartmental scientific councils and was on the editorial staffs of the Journal of Technical Physics and the Journal of Experimental and Theoretical Physics.

The services that Fedorenko rendered Soviet science were recognized when the "Badge of Honor" (1945) and "Red Banner of Labor" (1962) orders and numerous other medals were conferred upon him.

Fedorenko cannot but be remembered as an extremely gentle and retiring individual. He always did his best to help those who turned to him as Deputy Director, no matter what the nature of the problem—whether it was a routine business matter or an oc-

casional personal one. If, as occasionally happened, he was obliged to turn down a request, it was quite obvious that it was simply not within his power to help with it.

To his close associates, he was not only a concerned scientific preceptor, but also a kindly older friend. It was fitting that his many kindnesses to people should be stressed at the gathering on the day of his funeral: many of them had been rendered in such a way that their beneficiaries were unaware of his intercession, which in some cases profoundly affected the rest of their lives.

We knew that Fedorenko suffered two heart attacks, but working with him, meeting him in the Institute at Leningrad and at conferences in other cities, we could not possibly imagine how grave his condition was: he never complained and always appeared healthy and collected, with his usual affable smile. As late as December of 1971, he travelled to Uzhgorod, where he gave a highly successful series of lectures on ion-atom collisions and held a number of consultations. This is why his untimely demise came as a severe shock to all of us.

We shall always cherish grateful memories of Nikolaĭ Vasil'evich Fedorenko.

Translated by R. W. Bowers