Georgiĭ Viktorovich Skrotskiĭ (Obituary)

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Georgii Viktorovich Skrotskii, a well-known physicist, talented teacher, active organizer and popularizer of science, died on July 13, 1992 at the age of 78. He was a doctor of physical and mathematical sciences and a professor at the Moscow Physicotechnical Institute.

Skrotskiĭ was born on January 11, 1915 to the family of a hereditary honorary citizen of Odessa. He began his career in 1928 as an electrician at a telephone station. In 1933 he entered the physics and mathematics department of Odessa University, and he graduated with distinction in 1938. At the same time as he was a student at the university, he was also working as a laboratory assistant in the physics department. He completed the evening session of the Odessa Institute for Communications Engineers, which later played an important role in the formation of his views on the relation between fundamental and practical research.

In the autumn of 1939 Skrotskiĭ worked in the physics department of the Ural Polytechnical Institute as an assistant. The institute was headed then by I. K. Kikoin (who later became an academician). At the same time Skrotskiĭ became a graduate student at Ural University under Professor D. D. Ivanenko.

The war found Skrotskiĭ on vacation in Odessa. He entered the home guard, where he served as an interpreter up to the evacuation. After he returned to Sverdlovsk at the beginning of October 1941 he was mobilized and sent to the N. E. Zhukovskiĭ Air Force Academy, which had been evacuated to Sverdlovsk. In 1942, Skrotskiĭ was transferred from being a student to being an instructor of physics, and after the Academy was re-evacuated to Moscow in 1943, he transferred to the department of general physics of Ural University, where he worked until 1953, first as an assistant, then as a docent, and later as the deputy director of the department and the head of the laboratory of nuclear physics.

Skrotskii's natural talent, unlimited enthusiasm for science, exceptionally sociable character and ability to grasp keenly and to generate new ideas provided him with a strikingly wide view of life and science, which enabled him to uncover completely new connections and aspects of phenomena which seemed to be completely studied long ago. As Academician V. A. Fok noted, "as Skrotskiĭ grew older, his imagination was not depleted, but instead grew stronger."

In Skrotskii's candidate's dissertation, "On a Comparison of the Conclusions of the General Theory of Relativity with Experiment," which he defended in 1947, he resolved several quantitative contradictions between the conclusions of the general theory of relativity and experiment. This dissertation, and especially his later publication (1957), "On the Effect of Gravity on the Propagation of Light" made it



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possible to reach a conclusion on the existence of two more experimentally observed consequences of the general theory of relativity, the bending of light and the rotation of the plane of polarization of light when it passes near gravitating masses. These publications were highly regarded by specialists, in particular, L. Infel'd and V. A. Fok. Fok considered one of these publications sufficient to award the scientist the degree of doctor of physical and mathematical sciences.

Skrotskii's work on the dissertation was accompanied by active pedagogical and comprehensive educational activity. He frequently spoke on various problems in physics before a large audience, and masterfully lectured students on military radio engineering and hydrodynamics, general physics and statistical physics, and theory of the electromagnetic field and the electron theory of the solid state, the theory of relativity and individual topics in mathematics. Skrotskii's lectures were distinguished by their clarity, intelligibility, and profound content, and were always a hit with his listeners. This was fostered by his Odessa humor, which colored his speech.

In 1953, Skrotskiĭ became the head of the department of theoretical physics in the physicotechnical faculty of the Ural Polytechnical Institute. He had a profound belief that successful theoretical activity is possible only on a good experimental basis, and he began active work to organize experimental research laboratories in magnetic resonance and quantum electronics, which are unusual for departments of theoretical physics. He also organized educational laboratories in electron microscopy, X-ray analysis, and atomic physics. Lectures on virtually all aspects of theoretical physics, atomic and nuclear physics, solid state physics, the theory of magnetic resonance, and radio spectroscopy were given at the department. The graduate students and young instructors were required to master two or more courses, which was characteristic for the head of the department as well.

The formation of a single friendly collective of theoreticians and experimentalists made it possible to develop extensive contractual scientifc work for the government in 1957. As a result, precision magnetometers were developed which were used by the government. Skrotskiĭ was awarded the "Badge of Honor" order.

In 1961 Skrotskiĭ successfully defended his doctoral dissertation (which was very far from the theme of his candidates's dissertation), "Some Issues in the Theory of Magnetic Resonance and Relaxation." This paper sums up one aspect of Skrotskii's multi-faceted career in the development of the theory of phenomena of magnetic resonance, methods of observing it (resonance absorption, free precession, dynamic polarization, optical methods of observation, etc.). In particular, he obtained fundamental results in the area of the theory of the shapes of resonance lines of electron paramagnetic resonance in paramagnetic solutions, and in ferromagnetic and other types of resonance. In 1959 he predicted that it would be possible to observe so-called spontaneous resonance (in a noise spectrum), which was later experimentally observed by E. B. Aleksandrov, and then by Hahn (USA) thirty years later. Thus, in Sverdlovsk the Ural school of magnetic resonance (second after the Kazan school) arose and began to develop rapidly. Another practical aspect in Skrotskii's career and that of the department is reflected in the world's first monograph on quantum magnetometry, which was published in 1972 (N. M. Pomerantsev, G. V. Skrotskii, and V. M. Ryzhkov).

In 1964 Skrotskiĭ won the competition to become the head of the newly created department of quantum electronics (later the department of macroscopic quantum physics) at the Moscow Physicotechnical Institute, where he worked until his death. In the Urals remained the scientific school which to this day continues research in the area of magnetometry.

The creation of the department at the Moscow Physicotechnical Institute began with the organization of basic lecture courses on various aspects of quantum electronics and the organization of the preparation of students at an industrial enterprise. A city-wide physics seminar began to be given regularly in the department, where a wide range of issues were discussed (quantum electronics, coherent and nonlinear optics, holography, etc.) and which reflected to a substantial degree the shift in Skrotskii's scientific interests. This activity prepared, to a great extent, for the organization of the All-Union School on Magnetic Resonance (1968, Sevastopol), which then was traditionally held every two years

in different cities of the Soviet Union, up to the twelfth school in 1991 (in Kungur). The tenth school was combined with the International IX AMPÉRE-SCHOOL symposium (Novosibirsk). Beginning in 1969 (Moscow Physicotechnical Institute) All-Union Schools on Holography and Coherent Optics were held annually. Skrotskii's last report was at the 22nd school in 1992 in Pereslavl'-Zalesskiĭ. He was the permanent rector of both schools to his last days. The colossal preparatory and organizational work of the rector of the schools insured their invariable success. The proceedings of all schools on holography have been published as individual volumes. The schools became widely known abroad as well. Among the participants one could usually see well-known foreign specialists, such as the founders of optical holography (Leith, Vienot, Lohmann, Stroke from the US, Kock and Belford from Great Britian, Lenk and Lanzl from West Germany, etc.) as well as the pioneers of magnetic resonance (Abragam and Kastler from France, Lösche from Germany, etc.).

These schools also played an important role in the preparation of highly-skilled world-class teams in the field of magnetic resonance, as well as in holography and coherent optics. Dozens of participants of the schools became doctors of sciences and hundreds became candidates of science. Skrotskiĭ was a member of a number of Scientific Councils of the USSR Academy of Sciences, and was a deputy chairman of the Academy of Sciences Scientific Council on the Problem of Magnetism.

Skrotskii's fruitful scientific and pedagogical career is reflected in more than two hundred scientific publications. He was the initiator and editor of Russian translations of more than twenty major monographs of foreign researchers. Among them one should note the series of monographs on magnetic resonance written by A. Abraham. Skrotskiĭ supervised the theses of forty candidates of science. There are more than ten doctors of sciences and a number of corresponding members of the Academy of Sciences among his students.

Skrotskii's was a highly-cultured, broadly-educated man. He had a great charm, and this drew people of various ages and interests to him. The range of professional and friendly associations which Skrotskii had was unusually broad and included several generations of physicists, and not just physicists. He warmly recalled his meetings with Ya. I. Frenkel and G. Beck, whom he considered to be his teachers, as well as G. Gamow, V. A. Fok, I. M. Lifshits, and other noted physicists. In 1973 Acta Physica Austriaca published a special edition devoted to the 70th birthday of Professor Guido Beck, and Skrotskii and his colleagues published an invited article on the problems of the self-focusing of light.

Those who had the good fortune to work with or simply know Skrotskiĭ will always keep in their heart good memories of Skrotskiĭ and a feeling of profound gratitude.

Translated by C. Gallant

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