

Personalia*SERGEĬ VLADIMIROVICH TYABLIKOV*

N. N. BOGOLYUBOV, V. L. BONCH-BRUEVICH, D. N. ZUBAREV, B. V. MEDVEDEV,
G. V. SKROTSKIĬ, Yu. A. TSEKOVNIKOV, et al.

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SERGEĬ Vladimirovich Tyablikov, one of the leading Soviet specialists in statistical mechanics and solid-state theory, passed away on 17 March 1968, in the 47th year of his life.

Tyablikov was born on 7 September 1921 in Klin. On graduating with distinction in 1944 from the Physics Department of the Moscow State University he was retained by A. A. Vlasov for postgraduate training at the Department of Theoretical Physics. He soon began to work under the direction of N. N. Bogolyubov, who at that time had moved to Moscow. Tyablikov was one of the first physicists to be educated by N. N. Bogolyubov and proved to be one of the most eminent representatives of his school. Since 1947 until the end of his life he had been working at the Mathematics Institute of the Academy of Sciences, where he had been head of the Division of Statistical Mechanics since 1962.

Twenty-two years of active work is not really a very long time. Yet during that period S. V. Tyablikov succeeded in accomplishing enough to last for a lifetime. He began his creative work at a time that coincided with the period of a radical revolution in the solid-state theory, whose fundamental scope just then had to be forcefully expanded to allow for problems associated with the consistent consideration of the mutual interaction between carriers as well as of the interaction between carriers and other elementary excitations. The new problems required a new mathematical apparatus and Tyablikov played a major role in developing that apparatus. He was one of the first to perceive the profound relationship between these problems and quantum field theory.

Already in his Candidate's dissertation (1947), devoted to the crystallization theory, he reported methodological accomplishments that have since firmly come into wide use among theoreticians (method of the diagonalization of forms bilinear in Bose or Fermi operators, etc.). In subsequent years he subjected to a thorough analysis the problem of the interaction between a particle and the quantum field, a problem to which many topical problems of physics of the condensed medium reduce (polaron theory, the effect of impurities on the energy spectrum of superfluids, etc.). The mathematical methods that had been developed at the time with his active participation (operator form of perturbation theory, method of approximate second quantization, adiabatic approximation in problems with translational invariance, etc.) played a major role in the development of the many-particle theory. Subsequently these ideas and methods were further elaborated by many theoreticians. At present this apparatus has become so customary and commonly accepted that the name of its author has practically sunk into oblivion.



СЕРГЕЙ ВЛАДИМИРОВИЧ
ТЯБЛИКОВ
(1921—1968)

The culmination of this stage of his work was his doctoral dissertation, "Studies of the Polaron Theory," which was brilliantly defended in 1954 at the Moscow University.

Subsequently Tyablikov began to focus his attention on the quantum theory of ferromagnetism and antiferromagnetism, in which he soon occupied an eminent position. The beginning of this cycle of studies dates from as far back as 1948 when he, in collaboration with N. N. Bogolyubov, had announced a consistent mathematical theory of the "polar" model of metals. It was then also that Tyablikov had constructed the first consistent quantum-mechanical theory of magnetic anisotropy.

In the theory of ferromagnetism he had achieved particularly important results following the development of the method of quantum temperature Green's functions, co-authored the first book to deal with a consistent exposition of the method of Green's functions. He was the

first to succeed in deriving, within the framework of a unified microscopic theory, the temperature dependence of the magnetic susceptibility of ferromagnetics over a broad range of temperatures encompassing both the region of virtually total saturation and the region close to and above the Curie point. The numerous findings presented in the next series of studies by S. V. Tyablikov and his co-workers provided the foundation for his monograph, *Metody kvantovoĭ teorii magnetizma* (Methods of the Quantum Theory of Magnetism). This book, which was the first to provide an integrated exposition of essentially the entire present-day rigorous theory of ferromagnetism, is at present indispensable to any theoretician working in this field.

Recently Tyablikov began to be interested in aspects of the theory of the ferromagnetism of non-ideal systems. He had been considering and discussing with friends the attendant problems and program of research until the very last days of his all too brief life.

A great impression is produced by Tyablikov's style of work. He steadfastly strived to obtain only "pure" findings with an explicit formulation of the physical model and complete elucidation of the meaning of basic premises. He displayed a characteristic skill in finding latent relationships and underlying affinities between effects that sometimes outwardly seem completely different. Particularly amazing was his ability to find the most effective, elegant, and yet simple path for the solution of any concrete problem. All who knew him were attracted by his independence of thought. He never chased scientific fads, and he always firmly pursued his outlined program. Disdaining rapid and cheap successes, he never was in a hurry to see his works published and he always first carefully polished his findings. In general, Tyablikov was unusually parsimonious so far as publishing is concerned, and many interesting findings that he had made have unfortunately never been published.

Despite all his modesty Tyablikov was distinguished by the severity and uncompromising nature of his judgments and evaluations, particularly with respect to scientific problems. He invariably took a rigorously fundamental position and hewed to it with absolute consistency; it is difficult, nevertheless, to point to a more restrained and tactful individual. He displayed constant benevolence and interest in everyone, regardless of title and rank, who conscientiously worked for science. This quality he prized in men more than any other.

All these traits, combined with his exceptional scrupulosity in the problems of scientific ethics and his purely personal charm, attracted to him young aspiring scientists perhaps no less than his scientific reputation.

Tyablikov had a lively interest in the life of his homeland. He had been to the Far East, had toured the Baikal, the Sayany Mountains, Podkamennaya Tunguska, Soviet Central Asia, and beyond the arctic circle. He was a reliable and irreplaceable travel companion. Wherever he was, he was always interested in people and in their lives and interests. He knew how to find a common language with everyone and to rapidly establish contact with the most varied individuals.

Tyablikov had many disciples, both Soviet and foreign, but an even larger number of people had been educated under the influence of his ideas. He had long become the head of a scientific school of his own, whose representatives work not only in Moscow but in Kishinev, Sverdlovsk, Erevan, Dubna and elsewhere. But even after he had become the leader of an entire new scientific orientation, he remained to the end of his life the good and modest comrade whom his friends had known during the undergraduate and postgraduate years and whom they will never forget.

Translated by E. Bergman