Andrei Stanislavovich Borovik-Romanov (On his seventieth birthday)

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Academician Andreĭ Stanislavovich Borovik-Romanov, a prominent Soviet experimental physicist, celebrates his seventieth birthday on 18 March 1990.

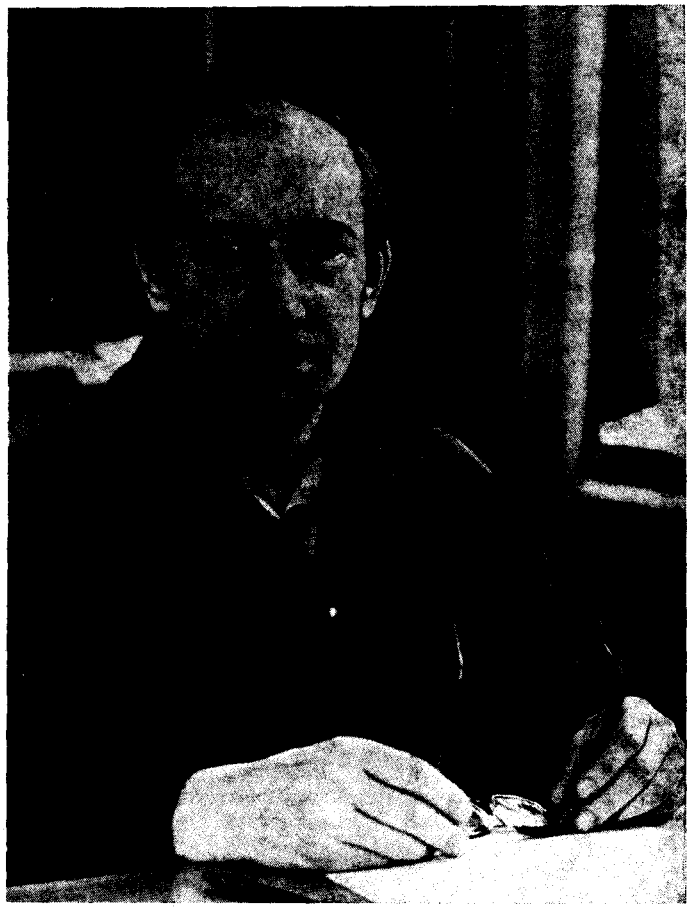
Viktor (= Andreĭ) Stanislavovich Borovik-Romanov was born in Leningrad into a family of physicists. In 1947 he graduated from the Department of Low-temperature Physics of the Moscow State University. He began his scientific activity already as a third-year student, participating in the development of the application of emission spectrum analysis to metallurgy. For a number of years beginning with his student days, Andreĭ Stanislavovich worked in the laboratory under the supervision of his teacher, Corresponding-Member of the Academy of Sciences of the USSR P. G. Strelkov where he was well schooled in fine physics experimentation.

At the present time Borovik-Romanov is working in the field of the physics of magnetic phenomena and of low-temperature physics. He has made a number of discoveries in these fields of science.

The first fundamental results obtained by Borovik-Romanov are related to the investigations of static magnetic properties of antiferromagnetics. A fortunate choice of objects and the use of highly-sensitive experimental technique has made it possible for him to discover the weak ferromagnetism in anti-ferromagnetic manganese and cobalt carbonates. The idea of noncollinearity of spins proposed by him for a qualitative explanation of the obtained results was confirmed in later experiments and provided with a theoretical foundation.

At the present time such type of magnetic ordering has been discovered in many substances. The aforementioned investigations carried out in the 1950's led to an essential change of our concepts concerning magnetism. An important result is the discovery of Borovik-Romanov of piezomagnetism in manganese and cobalt fluorides. The success of this work is associated with the clever construction of an instrument which made it possible to combine the press for producing the pressure with a highly-sensitive magnetic balance.

The cycle of Borovik-Romanov's papers devoted to an investigation of the dynamics of antiferromagnetics is widely known in world science. Here he proved himself both as an experimentalist and a theoretician, having calculated for the first time the spectrum of antiferromagnetic resonance of a weak ferromagnetic placed in an external field and later having experimentally confirmed these calculations. He discovered parametric generation of spin waves in antiferromagnetics, which has become an effective method for studying the spin system.



ANDREI STANISLAVOVICH BOROVIK-ROMANOV

This set of papers, and also the experiments that have become classic on the measurement of heat capacity and magnetic moment are devoted to the investigation of the fundamental problem of magnetism—the problem of spin waves. As a result it was shown that spin waves in antiferromagnetics indeed do have a linear dispersion law, and their velocity was determined. The existence of two branches in the energy spectrum predicted by him was also confirmed experimentally.

At the beginning of the 1970's Borovik-Romanov undertook the investigation of elementary excitations in magnetic substances by yet another method—the magneto-optical one. In this cycle of publications the discovery of inelastic scattering of light both by thermal and also by parametrically excited spin waves and phonons was a special achievement.

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In recent years Borovik-Romanov has changed the object of his research. The physics of ultra-low temperatures and of superfluid ^{3}He became a new field of his interests. For the study of ^{3}He an apparatus for obtaining temperatures of the order of 10^{-3} K was constructed which is one of the best in the world. The dynamic magnetic structure of ^{3}He has been discovered that has no analogs in ordinary magnetics—a two-domain precession of magnetization. A most important result was the discovery of the macroscopic coherent transfer of magnetization—a superfluid spin current. This fundamental phenomenon is in many respects analogous to superfluidity and superconductivity. In particular, the analog of the Josephson effect was observed in the case of the superfluid spin current.

One should also note the important contribution of Borovik-Romanov to low-temperature metrology. Already at the beginning of his scientific activity he constructed a precision gas thermometer and with its aid a national standard of the practical temperature scale.

Distinctive features of Borovik-Romanov's scientific style are the breadth of his interests, his love of the methodological side of an experiment, his purposefulness in obtaining the results, his innovative approach both in the choice of scientific subjects and also in the methodology, and also a critical attitude to his own results.

Andreĭ Stanislavovich loves to work with young people, he teaches them and learns from them. He is always surrounded by his pupils, he infects them by his lively interest in science and in various vital problems. Over the course of many years he has been teaching in the Moscow Physico-Technical Institute where he heads the Department of Physics and Low-temperature Techniques. His lectures, well known in our country and abroad, on low-temperature magnetism, and also his review papers are widely popular.

While still being the Deputy Director of the Institute of Physics Problems of the Academy of Sciences of the USSR, Andreĭ Stanislavovich together with Academician P. L. Kapitsa devoted much attention to the organization of scientific work in the Institute. His benevolent attitude to people together with the authority of a prominent scientist have earned him the sincere respect of his colleagues. Since 1984, A. S. Borovik-Romanov is the Director of the Institute of Physics Problems of the Academy of Sciences of the USSR.

Andreĭ Stanislavovich Borovik-Romanov participates actively in the organization and coordination of scientific research on magnetism and on low-temperature physics in the USSR, and also within the framework of international research programs.

One of the great contributions of A. S. Borovik-Romanov is the organization of our "scientific physics newspaper" the journal "Pis'ma v redaktsiyu ZhETF" (translated by AIP as JETP Lett.) which he edited for many years. He is now the editor of "ZhETF" (translated by AIP as JETP).

We sincerely congratulate Andreĭ Stanislavovich on his anniversary and wish him good health, much joy in his life, and scientific successes.

Translated by G. M. Volkoff