For the centenary of L. I. Mandel'shtam

From the editors

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The 4th of May of this year is the hundredth anniversary of the birth of the outstanding Soviet physicist, academician, and professor of Moscow State University Leonid Isaakovich Mandel' shtam. He was the founder of that fruitful direction in physics which is characterized by a unified ("oscillatory") approach to widely different phenomena in mechanics, acoustics, radioengineering, optics, etc. This approach, based on the utilization of oscillatory, wave nature of phenomena in widely different traditional fields of physics and comprising the prinicpal scientific heritage of L. I. Mandel' shtam, has been analyzed in detail by his closest collaborators and students (N. D. Papaleksi, I. E. Tamm, A. A. Andronov, G. S. Gorelik, S. M. Rytov.) Their papers, which have become bibliographical rarities, together with fresh reminiscences of L. I. Mandel' shtam have been published this year as a special collection by the "Nauka" publishing house.

It is undoubtedly important to publish articles in which the conception of physical and technical problems and those fundamentally new methods of their solution developed in the works of L. I. Mandel' shtam and his school are described. In this historical aspect the editors published recently [Usp. Fiz. Nauk **126**, 123 (1978); Sov. Phys. Usp. **21**, 779 (1978)] some material and the article by I. L. Fabelinskii dedicated to the 50th anniversary of the discovery by L. I. Mandel' shtam and G. S. Landsberg of combinational light scattering. In the present issue in the same historical aspect there is published the article by V. V. Migulin "L. I. Mandel' shtam and research in radiointerferometry." As is well known, these studies allowed the development of the methods of measuring the velocity of propagation of radio waves under real conditions or, if this velocity is sufficiently well known, of methods of measuring long distances using radio waves.

A demonstration of the extent to which his ideas related to the theory of oscillations and waves have been developed in breadth and depth in ourday is no less a grateful tribute to the scientific activity of L. I. Mandel' shtam. During the last two-three decades the ideas developed in the theory of nonlinear oscillations were applied to studies of processes in distributed systems including hydrodynamics, nonlinear optics, plasma physics, chemical and biological kinetics. Reviews of these studies were published earlier in Usp. Fiz. Nauk.

In the present issue the contemporary stage of the development of the theory of nonlinear oscillations and waves is described in the article by A. V. Gaponov-Grekhov and M. I. Rabinovich "L. I. Mandel' shtam and contemporary theory of nonlinear oscillations and waves" and also in the article by V. A. Vasil' ev, Yu. M. Romanovskii and V. G. Yakhno "Auto-wave processes in distributed kinetic systems."

In the forthcoming issues of Usp. Fiz. Nauk the proceedings of the joint scientific session of the Division of General Physics and Astronomy and the Division of Nuclear Physics of the Academy of Sciences of the USSR dedicated to the centenary of the birthday of L. I. Mandel' shtam will be published.

Translated by D. Kirillov

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