
**COMMENTS
ON THE BOOK BY BORIS SOLOMONOVICH GOROBETS
“LANDAU’S CIRCLE” PUBLISHED IN THREE PARTS
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In the book by B.S. Gorobets, on the basis of plenty of documents, the life and creative activity of Academician, the Hero of Socialist Labor, the winner of Nobel’s prize L.D. Landau and his nearest environment were covered rather completely. As is well-known, L.D. Landau was the author of a number of general theories (the theory of phase transitions of the second kind, the phenomenological theory of superconductivity, the theory of superfluidity, the density matrix theory) and many specific results in all branches of modern physics.

Especially should be noted his outstanding – without any analogs in the world science – role as a creator of the worldwide known scientific school. The Course of theoretical physics by Landau and Lifshitz was published in 20 languages, enjoying a huge popularity all over the world up to date.

All that, as well as many other facts related to the ingenious, outstanding, and original personality of L.D. Landau, is reflected, interestingly and documentary evidenced, in the reviewed books. We have read them with a great pleasure, and we recommend everyone, who is interested in the history of science and its creators, to familiarize with them.

The first part, called by the author “The Life of Genius”, consists of six chapters and illustrates L.D. Landau’s life in the chronological order. In the first chapter (“Optimistic”), the Leningrad period of L.D. Landau’s life is illustrated – very brightly and interestingly – on the documentary basis. His study at the Leningrad State University and the beginning of scientific activity, creative interrelations with R. Peierls, G. Gamov, M. Bronshtein, and D. Ivanenko, participation in the 6-th International congress of physicists in Moscow, his work at the theoretical physics department headed by Ya.I. Frenkel, and the reasons that forced L.D. Landau to move to Kharkiv are told about. In the second chapter (“Kharkiv”), information concerning the formation of the theoretical physics school at Kharkiv under the guidance of L.D. Landau, the 1-st International conference on theoretical physics (Ukrainian Physical and Technical Institute, 1934), charging the leading UPTI experts with anti-Soviet activity is of indisputable interest.

In the third chapter (“Prison”), the documentary information on arrests in 1937–1938, further destinies of L.V. Shubnikov, L.V. Rozenkevych, L.D. Landau, and other physicists, as well as P.L. Kapitsa’s contribution to L.D. Landau’s discharge, is presented. In chapter 4 (“Family”), the characteristics of Landau’s wife K. Drobantseva-Landau, his son I.L. Landau, and his niece M.Ya. Bessarab are given. The main topic of discussion is the spiritual portrait of L.D. Landau’s wife, Concordia Terentievna Drobantseva, made on the basis of her book and notes left by the niece M. Bessarab and E. Ryndina. L.D. Landau’s son Igor Landau and his niece Maya Bessarab are characterized quite briefly.

In the fifth chapter (“Characterologic”), the system of L.D. Landau’s viewpoints on the community and individuals, literature and art is discussed. The author makes an attempt to create a characterologic portrait of L.D. Landau, proceeding from his three qualities (dominants) and giving some substantiation:

– **Searching the truth and sincerity.**

L.D. Landau possessed – at the genetic level – an extreme intuition in the domain of physics and mathematics, a huge ability to analyze and generalize the laws of inanimate nature. He tried to reach the essence in every arising issue, not confining himself to his science. In so doing, his impact, when searching the truth, was so powerful that it crossed often a shaky threshold of admissible risk, threatening to abruptly change the conditions of Landau’s existence at that. A lot of his colleagues emphasized that he was an example of absolute sincerity and honesty in science. He taught his collaborators: “Be exclusively fair. Don’t be thieves!”

– **Rationality and regularity.**

There was no region in theoretical physics, in which L.D. Landau did not know specific phenomena and details, and where he was not an expert. A system approach was typical of him in any vital problem. He classified everything: physicists-theorists by their level, men by what is the most valuable for them in women, women by their beauty, institutions by the quality of their staff, sciences by their relation to the nature, brain workers by the combination of quick-wittedness and diligence, sci-

entific works by their validity and novelty, conversations by the value of the contact, and so on.

– **Egocentrism.**

L.D. Landau suffered from graphophobia. However, it was not a simple consequence of his rationalism and egocentrism, because he considered spending the precious time for the phrase selection to make expressions laconic and clear as a stupid and unproductive occupation. At the same time, L.D. Landau perfectly lectured, by quickly formulating a logic sequence of phrases and formulas. L.D. Landau's rationality in his choice of some personal contacts was rather puzzling, which revealed itself as an application of useful features of those people, whom he either did not appreciate as professionals or estimated as mediocre, for his own needs. He disliked if anybody disagreed with him, even on insignificant issues. His disciples do not remember that L.D. Landau actively promoted anybody to the Academy.

In the ninth chapter (“Catastrophic”), the chronicle of major events associated with a struggle for L.D. Landau's life after the tragic road accident in January 1962 is given. The author describes in detail how the unprecedented activity of governmental institutions, the amazing activity of physicists – Landau's disciples, non-disciples, and foreign physicists – aimed at delivering medicines and preparations, and resolute actions of Soviet and foreign physicians allowed L.D. Landau – who, in opinion of medical stars, had sustained injuries incompatible with life – to be raised from the dead. In this chapter, a very large interest is drawn to the analysis by Kirill Semenovich Simonyan, who had played an extreme role at the next prolong stage (from the middle of 1965 to 1968) of the medical treatment of L.D. Landau. The analysis also includes the estimations of treatment within the whole period of Landau disease after the accident. Indisputably important is the analysis, carried out by the author of the book, of reasons of the drastic deterioration of interrelations between L.D. Landau and E.M. Lifshitz, his devoted friend and permanent co-author for thirty years, who made very much at the most critical moment after the accident. The speculations of the author concerning the objectivity of the Nobel committee with respect to the award of the prize to our domestic scientists are very non-trivial.

Also of interest is the information on the preparation for and cancellation of the All-Union meeting of the heads of physical faculties at universities and colleges. Indisputably useful is information concerning the virtual meeting of L.D. Landau with A. Einstein on quantum mechanics.

The second part is called “Physics of War and Peace”. It consists of three chapters and illuminates the outstanding results that were obtained by L.D. Landau's group in the domains of nuclear physics and the physics of explosion. On the basis of recently declassified materials, the author tells about the contribution of L.D. Landau's group to the Soviet atomic project, in particular, about the Landau–Lifshitz–Khalatnikov equations, which allowed the explosive burnup efficiency to be calculated for various designs of nuclear and thermonuclear bombs; about the principle and the first calculations of nuclear charge explosion in the framework of the Landau–Stanyukovich theory; and other important results, for which L.D. Landau was awarded the Hero of Socialist Labor; he was also awarded the Lenin Order, and he became the winner of the Stalin prize of the second degree.

In the first chapter (“Thermonuclear”), the especially important role of L.D. Landau in the creation of nuclear and hydrogen bombs is analyzed, as well as his mutual relations with the main participants of those projects and the reasons of P.L. Kapitsa's disgrace.

In the second chapter (“Popular science”), a rather understandable description of the main achievements by L.D. Landau is made – not only those ten that were indicated on the tables presented to L.D. Landau on the occasion of his 50-th anniversary by the collaborators of I.V. Kurchatov Institute. An undoubted advantage of the book is that attention is also paid to the mistakes of the great physicist. They are discussed by well-known scientists, who are experts in the problems under consideration. It is very useful, because it allows the outstanding person to be described truthfully, with all his complexities, and not ignoring his shortcomings. In particular, the stories concerning L.D. Landau's works on parity violation, a kinetic equation in plasma, and the discovery of a varitron are given. The presentation of memoirs and estimations given by his closest disciples and co-authors also promotes the adequate representation of the versatile personality of Landau. Very characteristic is the statement of L.D. Landau himself: “Somebody thinks that the teacher robs his disciples, the other that the disciples rob their teacher. I believe that both sides have a right to do it, and this mutual robbing is remarkable”.

In the third chapter (“Private science”), a very impressive description is made of passing the exam on “theoretical minimum”, discussion of papers at L.D. Landau's seminars, his classification of scientific researchers, L.D. Landau's viewpoints on the mathematical training of physicists and the probability theory, little-known de-

tails of creation of the Course of theoretical physics by L.D. Landau and E.M. Lifshitz, in particular, what occurred after L.D. Landau died. Brilliantly written is the section about L.D. Landau's School and the main professional features and characteristics of the members of this School.

The third part called "Landau's and Lifshitz's Circle" consists of 12 chapters, where the very interesting sketches about L.D. Landau's disciples and contemporaries, who closely contacted with him, are presented. Very bright and interesting are the sketches, based upon documents and illustrated by plenty of photos, about outstanding scientists, who belonged to L.D. Landau's school. In particular, these are Academicians, brothers E.M. and I.M. Lifshitz; Academician, the winner of Nobel prize A.A. Abrikosov; Academician, the winner of Nobel prize V.L. Ginzburg; Academician A.B. Migdal; Academician I.Ya. Pomeranchuk; Academician I.M. Khalatnikov; Academician Ya.B. Zeldovich, and Professor O.S. Kompaneets.

The book by B.S. Gorobets "Landau's Circle" is undoubtedly of great value for a wide range of readers, including physicists-theorists, because, first, it is based on plenty of documents; second, it contains a rather detailed information concerning several most re-

markable scientists of L.D. Landau's school; third, it presents a rather deep analysis of the personality of such a great scientist as L.D. Landau; and, fourth, each part contains an informal and constructive foreword. Those forewords were written by the outstanding physicist-theorist, Professor A.A. Rukhadze (A.M. Prokhorov Institute of General Physics, RAS, Moscow); the outstanding mathematician, Professor B. Kushner (Pittsburg University); L.D. Landau's disciple, Professor V.I. Man'ko (P.M. Lebedev Physical Institute, RAS, Moscow). The afterword was written by the Corresponding member of the Russian Academy of Science B.Ya. Zeldovich (University of Central Florida, Orlando).

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