

Evgenii Ivanovich Zababakhin (Obituary)

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Soviet science has suffered a grievous loss. The eminent scientist and organizer of science, Hero of Socialist Labor, laureate of the Lenin and State prizes of the USSR, a full member of the Academy of Sciences of the USSR, lieutenant-general Evgenii Ivanovich Zababakhin died suddenly on 27 December 1984 in his 68th year.

E. I. Zababakhin was born on 16 January 1917 into the family of an office worker. He began working in 1936 after completing his studies at a technicum as a master-adjuster at the "Sharikopodshipnik" (Ballbearing) Plant. In 1938 he entered the Physics Faculty of the Moscow State University, and in 1941 he was mobilized into the Red Army and enrolled as a student at the Zhukovskii Air Force Engineering Academy from which he graduated in 1944.

Zababakhin's talent and creative originality became evident from the earliest years of his scientific work. In his dissertation he independently posed the problem of studying a converging detonation wave—one of the most complex theoretical problems of that time. His successful solution of it in the defence of his candidate's dissertation in 1947 drew attention of the prominent scientists of our country to the young investigator. The results of this work became one of the sources of a major direction in the investigations of the phenomena of unrestricted cumulation which later were begun to be associated in the scientific literature with the name of E. I. Zababakhin.

In 1935 on the recommendation of I. V. Kurchatov Zababakhin was awarded the degree of Doctor of Physico-mathematical Sciences without a defence of a dissertation, in 1958 he was elected a Corresponding Member, and in 1968 a full Member of the Academy of Sciences of the USSR.

The range of problems investigated by Evgenii Ivanovich Zababakhin is very broad. It includes a number of electromagnetic phenomena, problems of the course of phase transformations in dynamic processes, particular problems of the flow around solids, theoretical problems of obtaining extreme states of matter in dynamical processes and under static conditions, the process of convergence of shock waves and of collapse of bubbles. And although Zababakhin's publications are not numerous (about two dozen), in fact each one of them is devoted to an original problem, to a new class of phenomena or elucidates fundamental problems not treated by other investigators.

The principal direction in the scientific papers of E. I. Zababakhin is research on phenomena of unlimited cumula-



EVGENIĬ IVANOVICH
ZABABAKHIN
(1917–1984)

tion of energy density. He directed his attention to the possibility of unlimited cumulation in processes involving electromagnetic shock waves. Such cumulation is realized in systems which are ever more widely used in experimental practice. A deep investigation was carried out of the effect of real properties of media (viscosity, heat conductivity, phase transitions etc.) on the change in the nature of cumulative processes. In recent years Zababakhin devoted particular attention to the fundamental problem of the stability of unrestricted cumulation, to the construction of a general proof of the instability of such processes. For a series of papers on the phenomena of unrestricted cumulation the Presidium of the Academy of Sciences of the USSR awarded to Evgenii Ivanovich Zababakhin shortly before his death the M. V. Keldysh Gold Medal with the prize for 1984.

E. I. Zababakhin successfully combined a depth of theoretical development with a practical direction of his work, strove to test theoretical results experimentally, found elegant methods of designing experiments, and made an effort to utilize the discovered effects in new technical installations, in practically important processes. All this was aided by the knowledge and skills obtained in industry in his younger years.

He was very observant and had the knack of seeing the deep underlying meaning in phenomena which appeared simple to others.

All those who surrounded Zababakhin were greatly influenced by his ability to understand simply and clearly the most complex phenomena and processes, and to tell about them in a fascinating and vivid manner in his scientific and popular articles. He always studied himself in greatest detail all the most important problems which he encountered and made objective decisions in all events for which he carried responsibility. And, as a rule, they were the correct decisions. This working style exerted a tremendous influence on the scientific group directed by him. He was not motivated by ambition nor by following fashionable trends, but at the same time he boldly, and assuming complete responsibility,

initiated new work which would have important scientific significance even in those cases when its practical value was not obvious.

Zababakhin was a broadly educated man, who had a deep knowledge not only of science but also of literature, music and art. He did not strike poses, deliver exhortations or admonitions. And his personal example had a much greater influence than the usual methods of admonition and instruction. It is just due to this kind of influence that he created a school of students and followers that includes many doctors and candidates of science.

Zababakhin's life came to a sudden end. In the last day of his life he was completing the preparation for publication of a monograph on the phenomena of cumulation, had discussions with his collaborators on the results of the work for the past year and on plans for the future. It is difficult to accept the fact that these plans will now have to be brought to fruition without him. The bright memory of Evgenii Ivanovich Zababakhin—a remarkable scientist, man, communist—will be retained in the hearts of all those who were fortunate enough to have worked with him.

Translated by G. M. Volkoff