

**EDUARD IVANOVICH GRIGOLYUK**  
**(13.12.1923–29.4.2005)**



Eduard Ivanovich Grigolyuk – an outstanding scientist in the field of the mechanics of deformable bodies and its engineering applications, a corresponding member of the Russian Academy of Sciences, a full member of the International Academy of Aeronautics, the Russian Academy of Transport and the New York Academy of Sciences, a winner of the State Prize of the Ukrainian SSR and an Honoured Scientist of the Russian Federation, has passed away.

His scientific and engineering activity was always linked with the development and improvement of the defence screen of our homeland. He was Scientific Director of the Bondaryuk ‘Red Star’ Engineering Design Bureau, he worked in a number of scientific research institutes, collaborated with designers in bureaus headed by Glushko, Korolev, Chelomei, and other outstanding designers, and was President of the Commission on the Strength of Engines of the USSR (Russian) Academy of Sciences and of the ‘Dynamics and Strength of Automobile Structures’ Section of the USSR (Russian) Academy of Sciences.

His work was devoted to important problems of the design of modern thin-walled engineering structures, he was well known in this country and abroad, and in many ways stimulated research in a number of leading fields of the mechanics of deformable bodies. He developed methods for designing ramjet engines and nuclear powered spacecraft and was a participant in the development of engines

for the “Burya” and “Buran” cruise missiles. He invented a number of new methods for investigating engineering solutions, including strength analysis of the bodies of aircraft at the design stage, he solved the problem of the stability of a cylindrical shell loaded with inertial forces and proposed a model of a shell with a rigid longitudinal array, enabling an accurate solution to be obtained. He developed a general theory of the strength and stability of bimetallic, laminated and inhomogeneous thin-walled structures; in particular, he introduced the broken-line hypothesis in the theory of inhomogeneous structures. He developed the theory of the stability of shells under elasto-plastic strains and under creep condition. As regards the design of heat exchangers for nuclear power plants, he studied the stress-strain state of perforated plates and shells, and he participated in the design and manufacture of test machines for plotting the stress–strain diagrams of samples under nuclear radiation and the streamlining of samples by a heated liquid metal heat carrier. As regards the action of shock waves on the structures of aircraft and ships, he studied the interaction of weak shock waves with thin-walled structures in air and water. He also studied the vibrations of thin-walled shells of revolution containing liquid. Studying the problem of the landing of a space probe, he analysed the non-linear vibrations of rod, plates and shells, including those in gas and liquid. He was the first to solve the problem of the asymmetrical snapping of a sphere, and constructed the simplest one-dimensional model for studying the asymmetrical snapping of thin elastic shells. He investigated the contact interaction of the plates and shells of aircraft and obtained a solution of the problem of optimizing the heating of thin-walled shells during welding. He constructed a theory of the non-linear deformation of multilayer reinforced structures and applied it to the design of pneumatic tyres. He raised the question of the need to introduce strength standards for automobiles and did much to promote their development.

The results of research by him and his students on these problems have been published in articles and monographs. Quite recently, to celebrate his eightieth birthday, our journal published a detailed review of his scientific achievements and a full list of his scientific publications.

He expended much effort in studying the history of mechanics in Russia and the work of I. G. Bubnov, G. V. Kolosov, A. N. Krylov, S. P. Timoshenko and others. He and his students published a four-volume collection of papers by Timoshenko with a detailed review and commentaries. His book on Timoshenko and his time has been republished.

He devoted much attention to his teaching activity. He taught in a number of Moscow institutes, in the Academy of the Armaments Industry of the USSR Ministry of Armaments, in the Moscow State University and, finally, in the Moscow Automotive Institute, where, until his final days, he led the Department of Applied and Computing Mathematics.

He was awarded the orders of the “Badge of Honour” and “Friendship of Nations” and many medals. The E. I. Grigolyuk Scientific School of the Mechanics of Deformable Bodies, the alumni of which includes 35 doctors and 80 masters of science, has received wide recognition. Its numerous students are working in many cities in Russia.

A talented engineer and scientist, he possessed an encyclopedic knowledge. He was an avid collector and above all a bibliophile. The main subjects of interest in his priceless collection were Pushkin, and Pushkinalia, and the greatest poets and writers of the period stretching from the eighteenth century to the first third of the twentieth century. These were favourite themes of his conversations with students and colleagues. A gifted narrator, he used to fascinate any audience.

In the photograph shown here, he was sixty. He was energetic, sociable and witty, interesting company and a charming man – this is how we will remember him. We mourn his death, but our sorrow is radiant – he will influence our affairs, deeds and thoughts for a long time to come.

*Translated by P.S.C.*