LEV GERASIMOVICH LOITSYANSKII

(ON THE OCCASION OF HIS SEVENTIETH BIRTHDAY AND THE COMPLETION OF FIFTY YEARS OF SCIENTIFIC TEACHING WORK)

December 26 was the 70th birthday of Doctor of Physicomathematical Sciences, Professor, honored worker in the science and technology of the RSFSR, and State Prize Laureate, Lev Gerasimovich Loitsyanskii.

After completing his work in the mathematics section of the physicomathematical department of M. V. Frunze Crimean University in Simferopol in 1921-1922, L. G. Loitsyanskii served as an assistant in that university in the higher mathematics department. In 1922 he became an assistant in the theoretical mathematics department of the physicomathematical faculty of the M. I. Kalinin Leningrad Polytechnic Institute; in 1924, a lecturer; and in 1930, a full professor of the same department. In 1934 Loitsyanskii organized the department of hydroaerodynamics at Leningrad Polytechnic Institute, and remains the head of that department at the present time.

The creative and pedagogical career of the jubilarian has been especially brilliant, multifaceted, and fruitful.

Loitsyanskii's technical publications have been dedicated mainly to the questions of the dynamics of viscous liquids and gases, the theory of laminar and turbulent boundary layers, and the theory of turbulent motion.

In the period 1941-1945 he developed new methods of calculating the laminar and turbulent boundary layers on a wing and rotating object, among them a monoparametric method, and these methods have come to be the basis for calculating the aerodynamic characteristics of high velocity airplanes. For this work, Loitsyanskii, together with Academician A. A. Dorodnitsin, was awarded the State Prize in 1946.

Even in the prewar period Loitsyanskii posed and solved problems concerning the boundary layer formed near the intersection of wing and fuselage and on the lateral edge of the wing, and in the postwar

period he developed theories on the distribution of twisted and fan shaped laminar and turbulent streams, and the theory of profile lattice resistance.

In recent years (1964–1969) Loitsyanskii published a series of works containing an exposition of a new (parametric) method of calculating the boundary layer, based on the possibility, which was established by him, of deriving the boundary layer equations in a universal form, unique for various problems in boundary layer theory in liquids, as well as in gases at high velocities. At the present time these equations have had much practical application in studies made both in the Soviet Union and abroad. His method is widely employed for calculating high velocity flows of homogeneous and inhomogeneous gases, in magnetic hydrodynamics, in the theory of a nonstationary boundary layer, in problems of a boundary layer on a permeable surface, in rheophysics, and spatial movements.

In the area of statistical theory of a turbulent flow, Loitsyanskii discovered the invariant, now known by his name throughout the world, which characterizes the damping of turbulent disturbances during the last stages of their degeneration.

The semiempiric theories of turbulence were developed in new directions in Loitsyanskii's works, in particular, in the establishment of the effect of molecular viscosity on turbulent transfer, especially in the main and boundary regions of the flow of very viscous liquids which are poor heat conductors.

Loitsyanskii is widely known for his studies in the area of hydrodynamic and gas dynamic theory of bearings and supporting devices, which are widely applied in present day navigation instrumentation.

Some of the earlier works of Loitsyanskii were devoted to the theory of mechanisms (conformal motion transformers), the theory of oscillations, and applied mathematics.

Lev Gerasimovich Loitsyanskii is rightly considered one of the creators of present day boundary layer theory. His fundamental works in this important field enter into the golden storehouse of Soviet and worldwide hydrodynamics.

Over a 50 year period of scientific activity (his first publications appeared in 1920–1921) Loitsyanskii has published more than 100 works, among them the widely known Mekhanika Zhidkosti i Gaza (Liquids and Gas Mechanics), which has been published in three editions in the Soviet Union, as well as in England, Czechoslovakia, and Hungary, Teoreticheskaya Mekhanika (Theoretical Mechanics), in three volumes, Kurs Teoreticheskoi Mekhaniki (A Course in Theoretical Mechanics), in two volumes, written in collaboration with Professor A. I. Lur'e, as well as monographs published in both Russian and foreign languages: Aerodinamika Pogranichnogo Sloya (Aerodynamics of a Boundary Layer) (1960) and Laminarnyi Pogranichnyi Sloi (The Laminar Boundary Layer) (1962). The last monograph was published in German in 1965 at Berlin, GDR.

Under Loitsyanskii's direction, 10 doctoral dissertations and about 40 dissertations for the rank of Candidate have been prepared and defended.

Along with his activities in the hydroaerodynamics department of Leningrad Polytechnic Institute and in his speciality of aerothermodynamics, Loitsyanskii carries on a wide range of professional work. He is an assistant to the President of the Presidium of the USSR National Committee on Theoretical and Applied Mechanics, an assistant to the President of the Scientific Soviet for Problems in Liquid and Gas Mechanics of the Mechanics and Regulatory Processes Division of the Academy of Sciences of the USSR, an assistant to the president of the Section for Physicomathematical Sciences of the Academy of Sciences of the USSR, a member of the Scientific Soviets of Leningrad Polytechnic Institute and the A. F. Ioffe Physicotechnical Institute of the Academy of Sciences of the USSR, a member of the editorial college of several All–Union journals, and also a member of the Presidium of the Scientific–Methodological Soviet for Mechanics of the Ministry of Higher and Specialized Intermediate Education of the USSR.

The merits of Loitsyanskii's publications were noted by his selection in December 1969 as a Corresponding Member of the International Astronautical Academy.

On this occasion, we wish Lev Gerasimovich good health and further new scientific attainments.