## SOVIET MEN OF SCIENCE

### PANTELEIMON DMITRIEVICH LEBEDEV (on his sixtieth birthday)

In 1966 Professor P. D. Lebedev, Doctor of Technical Sciences, celebrated his 60th birthday.

Many scientists and engineers, both in the Soviet Union and abroad, know him as a leading specialist in the field of industrial thermal power engineering.

Lebedev's studies began at 18 at the Archangel'sk Industrial Technical College and continued at the Moscow Power Engineering Institute from which he graduated in 1934.

In the period from 1924 to 1934 Lebedev worked in the forestry, ship-building, and automobile industries and in structural engineering organizations. He displayed unusual engineering talent in operating and improving various types of thermomechanical equipment.

In 1939, after successfully completing his graduate studies and defending his candidate's dissertation, Lebedev began work as a lecturer at the Moscow Power Engineering Institute (MPEI). Since then his chief scientific and teaching activity has been connected with that institute.

In 1953 Lebedev completed his doctorate studies ahead of time and defended his doctoral dissertation, a valuable contribution to thermophysics and a rich source of theoretical and experimental material on the nature of high-intensity, especially thermal-radiation, drying processes. Even now the results of that study are widely used in connection with research into the intensification of heat and mass transfer processes.

Since May 1953 Professor Lebedev has taken an active part in the organization of MPEI and is dean of the first industrial thermal power engineering department in the Soviet Union. Much of his energy is devoted to teaching and the design of new study schemes and programs. He has written a number of popular textbooks including Heat-Exchange, Drying, and Cooling apparatus, The Calculation and Design of Driers, and Infrared Drying. The textbook Industrial Heat Engineering (with A. A. Shchukin) and the teaching manual Driers (with G. K. Filonenko) are published in all the socialist countries.

The teaching activity of Professor Lebedev, who since 1953 has headed the Department of Drying and Heat-Exchange Systems at MPEI, is closely associated with his varied research in the area of industrial heat engineering and heat and mass transfer processes. He systematically advises on large-scale projects in the chemical, aviation, and other industries. He has directed more than 50 pieces of scientific research with important practical results and has written and published more than 50 papers.

Professor Lebedev has made two particularly important contributions to drying theory. He has established that moisture transport in wet capillary-porous bodies is affected not only by the moisture content gradient and temperature gradient but also by the total pressure gradient. This form of moisture transport, which Lebedev observed in connection with infrared drying, has since been observed in connection with drying in a high-frequency electric field and sublimation drying.

This important result has formed the basis for a system of differential equations of heat and mass transfer describing high-intensity heat and moisture transport.

A second valuable contribution is his establishment of the dependence of the Nusselt number on the parametric criterion $T_e/T_m$, ratio of temperature of emitting surface to ambient temperature. This criterion enters into the relation between the Nusselt number and the Reynolds and Gukhman numbers characterizing convective heat transfer in the drying process.

The existence of the parametric criterion $T_e/T_m$ is attributed to the volume evaporation of dispersed liquid in the boundary layer.

Moreover, it has been established that in the period of falling rate the Nusselt number continuously diminishes with time, as a result of which in the relation between the Nusselt number and the Reynold and Gukhman numbers and $T_e/T_m$ it is also necessary to introduce the parametric criterion $W/W_c$, where W is the moisture content and $W_c$ the critical moisture content of the material.

We propose that in recognition of Professor Lebedev's great services one of the criteria $T_e/T_m$ or $W/W_c$ be called the Lebedev number ($Le = T_e/T_m$ or $Le = W/W_c$).

Professor Lebedev has given much attention to the training of scientific cadres. More than 30 candidate and doctoral dissertations have been written and defended under his guidance.

Apart from his talents as scientist and teacher, Professor Lebedev has also demonstrated skill as an administrator and organizer. From 1956 to 1964 he performed administrative duties at the Ministry of Higher and Secondary Specialized Education, working fruitfully first as head of the Main Board of Polytechnic and Machine-Building Institutions and later as president of the Scientific-Technical Council and as a member of the ministry board.

Professor Lebedev is much concerned with the development of programmed learning, being deputy president of the Interdepartmental Council of the State Committee for Science and Technology of the Council of Ministers USSR on the Problem of "Programmed learning," and also scientific director of the MPEI interdepartmental laboratory on the improvement of teaching methods and techniques.

Moreover, Professor Lebedev acts as president of the Industrial Thermal Power Engineering Section of the Joint Scientific Council of the Ministry of Higher and Secondary Specialized Education of the USSR and RSFSR, president of the Committee on Heat and Mass

Transfer in Drying Processes of the Scientific Council of the State Committee for Science and Technology of the Council of Ministers of the USSR on the problem "Heat and mass transfer in industrial equipment," a member of the presidium of the Committee on Drying of the VSNTO, a member of the honorary editorial board of the international journal "Heat and Mass Transfer," and a member of the editorial board of the "Energiya" publishing house.

Professor Lebedev has participated in numerous international scientific congresses and conferences and has studied systems of higher education and the organization of scientific research abroad.

He deservedly enjoys the high esteem of his comrades, fellow workers, and numerous students and has won six government awards.

We wish him health, happiness, continued fruitful activity, and success in his creative endeavors.

Academician AS BSSR A. V. Luikov, Professor V. L. Shevel'kov, Professor A. V. Nesterenko, Professor Yu. L. Kavkazov, and Professor A. S. Ginzburg